VILLAGE OF GLENCOE

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# Virtual Meeting Information

As the Village of Glencoe and its partner agencies continue to follow social distancing requirements and Governor Pritzker's *Restore Illinois* Plan, the July 15 special Plan Commission meeting will be held virtually via telephone and video conference (individuals may participate either by telephone or by video conference). Individuals may call the following to participate in the meeting:

**By Telephone:**
Phone Number: (312) 626-679
Webinar ID: 987 1536 3938

**By Zoom Video Conference:**
Zoom video conference link: Click here

Video conference participants using a computer will be prompted to install the Zoom client; participants using smart phones or tablets must download the Zoom app from their app store.

**Public Comment Submittal Options**

**Option 1: Submit Comments by E-Mail Prior to Meeting**
Public comments can be submitted in advance of the meeting by e-mail to glencoemeeting@villageofglencoe.org. Public comments received by 5 p.m. or one hour before the start of the Plan Commission meeting will be read during the Plan Commission meeting under Public Comment. Any comments received during the meeting may be read at the end of the meeting.

All e-mails received will be acknowledged. Public comment is limited to 400 words or less. E-mailed public comments should contain the following:

- The Subject Line of the e-mail should include the following text: "July 15th Plan Commission Meeting Public Comment"
- Name of person submitting comment (address can be provided, but is not required)
- Organization or agency person is submitting comments on behalf of, if applicable
- Topic or agenda item number of interest, or indicate if the public comment is on a matter not listed on the Plan Commission meeting agenda

**Option 2: Submit Comments by Phone Prior to Meeting**
Individuals without access to e-mail may submit their comments through a voice message by calling (847) 461-1100. Verbal public comments will be read aloud during the meeting and will be limited to three minutes.

# MINUTES
## VILLAGE OF GLENCOE
## PLAN COMMISSION

Virtual Meeting – Video Conference
Wednesday, June 24, 2020 – 7:00 p.m.

**1. CALL TO ORDER**
The June 24, 2020 meeting of the Plan Commission of the Village of Glencoe, Cook County was called to order virtually at 7:03 p.m.

**2. ROLL CALL**

*The following were in attendance:*
Bruce Huvard, Chairman, Public-at-Large Representative
Barbara Miller, Vice-Chairman, Village Board Representative
Georgia Mihalopoulos, Public-at-Large Representative
Dev Mukherjee, School District 35 Representative
Dudley Onderdonk, Glencoe Park District Representative
John Satter, Zoning Board of Appeals Representative
Laura Solon, Glencoe Public Library Representative
James Thompson, Public-at-Large Representative
Greg Turner, Public-at-Large Representative
Peter Van Vechten, Historic Preservation Commission Representative

*The following were also in attendance:*
Taylor Baxter, Development Services Manager
David Mau, Public Works Director
Lee Brown, Village Planner
Stew Weiss, Village Attorney

**3. CONSIDER THE MARCH 4, 2020 PLAN COMMISSION MEETING MINUTES**
The minutes from the March 4, 2020 Plan Commission meeting were moved for approval by Commissioner Turner and seconded by Commissioner Satter and approved as drafted.

**4. PUBLIC COMMENT TIME**
There were no comments from the public.

**5. CONSIDERATION OF EXTERIOR APPEARANCE REVIEW FOR PROPOSED WALL SIGN AT 700 VERNON AVENUE**
Development Services Manager Taylor Baxter provided a brief overview of the existing acrylic wall sign installed without a permit on the south wall of the building that houses the Hometown Coffee and Juice business located at 700 Vernon Avenue. He clarified the roles of the Zoning Board of Appeals and the

Plan Commission in reviewing and approving wall signs in the downtown business district. The ZBA is responsible for granting variations on the size, ROW encroachment and elevation of the bottom of the wall sign. The PC is responsible for determining whether the sign is appropriate for this location based on the criteria found in the Design Guidelines. It was also noted that if the Plan Commission denied approval of the sign under its authority then the sign application would not go to the Zoning Board.

Lou Rubin, the owner and operator of Hometown Coffee and Juice provided the background on the evolution of the wall sign and its vision and purpose. He hired an artist who designed the image with a 3-dimensional effect to allow the public the ability to interact with the sign in the public right-of-way.

The Chair then asked each Commissioner to weigh in on the wall sign and the comments were largely supportive of the sign as well as the creativity of other past efforts of Hometown, specifically the temporary igloo structures erected on the sidewalk last fall and winter. It was also noted that while this type of sign is not fully contemplated in the present sign code, it is something that is generally of interest and supported by the community, so a future discussion on the sign code is warranted.

Following the discussion, Commissioner Mukherjee moved for and Commissioner Thompson seconded approval of the wall sign erected outside Hometown Coffee and Juice provided that the sign is maintained as a temporary installation not to exceed six months or such shorter period as the Village Board may direct.

The motion was approved by the following vote:

| **RESULT:** | **ACCEPTED** |
|---|---|
| **AYES:** | Huvard, Miller, Mihalopoulos, Mukherjee, Onderdonk, Satter, Solon, Thompson, Turner, Van Vechten (10) |
| **NAYS:** | None (0) |
| **ABSTAIN:** | None (0) |
| **ABSENT:** | None (0) |

**6. STANDING COMMITTEE REPORTS/ANNOUNCEMENTS**
Updates were provided on behalf of the Sustainability Task Force, curbside service and reopening plans for the Glencoe Public Library, School District 35's work on plans for the new school year and the Historic Preservation Commission's report on the plans for Booth Cottage relocation in July.

**8. SCHEDULE NEXT MEETINGS OF THE PLAN COMMISSION**
The next Plan Commission meeting was noted to be a special meeting on July 15, 2020 for the consideration of the Final Plat of Subdivision for the 1801 Green Bay Rd property.

**9. ADJOURNMENT**
Following a motion by Vice-Chairman Miller and a second by Commissioner Mukherjee the meeting was adjourned at 8:46 p.m.

DRAFT

VILLAGE OF GLENCOE
MEMORANDUM
675 Village Court, Glencoe, Illinois 60022
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DATE: June 26, 2020

TO: Bruce Huvard, Chair; Plan Commission Members

FROM: David C. Mau, P.E., Public Works Director
Lee M. Brown, FAICP, Village Planner
Taylor Baxter, AICP, Development Services Manager
James Tigue, P.E., CFM, Civil Engineer

**SUBJECT: 1801 Green Bay Road Subdivision**

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**I. Summary and Background**

The Petitioner, Glencoe Developers LLC, is proposing to develop the 12.2-acre parcel located at 1801 Green Bay Road into a 29-lot, detached single-family residential subdivision ("***Development***"). The Plan Commission reviewed the Preliminary Plat of subdivision for the proposed Development over three public meetings in the summer and fall of 2019. After extensive review and public comment, the Plan Commission passed a recommendation of approval of the Preliminary Plat with conditions on September 25, 2019. On October 17, 2019, the Village Board approved the Preliminary Plat by a resolution that included 20 conditions to be addressed by the Final Plat of subdivision. The Petitioner has since worked to revise the plans for the Development to meet these conditions. Staff analysis of these conditions and the Petitioner's fulfillment of them follows in Section III of this report.

After multiple rounds of submittals and revisions in response to staff review comments over the course of several months, in early June 2020, the Petitioner submitted updated and revised plans sufficient to support a Final Plat review by the Plan Commission. The revised plans do not change the proposed number of lots, site layout, or access and traffic management components of the Development. All proposed changes were made in response to the Village's Board's conditions of approval of the Preliminary Plat. The most substantial changes relate to the Development's proposed stormwater management system.

Following review and public comment, the Plan Commission is required to make a recommendation of approval or denial of the Final Plat, along with any recommended conditions of approval, to the Village Board which will make a final decision on the sufficiency of the plat along with other development approvals. Staff is of the opinion that this final plat has successfully met all the conditions required by the Village Board in its approval of the Preliminary Plat.

**II. Role of Plan Commission in Final Plat review**

The Plan Commission's role in Final Plat review is to provide a recommendation of approval or denial of the Development, along with any recommended conditions of approval, to the Village Board. This recommendation is to be made in accordance with the criteria for approval of a plat of subdivision set forth in the Village's subdivision code and the Preliminary Plat conditions approved by the Village Board.

Staff has determined that all changes to the Final Plat were made in response to Village Board comments and Preliminary Plat conditions of approval. There have been no changes to the, number, size, or arrangement of lots or rights-of-way. Therefore, the Plan Commission's review of the Final Plat should take into account the previous determination by the Village Board that if the Preliminary Plat conditions of approval are met, the number and location of lots are appropriate as proposed. The Final Plat review is not intended to be a full-scale re-review of the Development, but should rather focus on conformance with the Preliminary Plat and compliance with the Village Board's conditions. As with its Preliminary Plat review, the Plan Commission is tasked with fact-finding and decision-making based on the Final Plat and supporting documentation provided by the Petitioner, along with the testimony it hears and according to the criteria for review.

**III. Analysis**

*A. Traffic and road alignment, site landscaping, tree preservation, neighborhood connectivity, open space, construction impact*

There have been no alterations of the lot lines of the proposed 29 subdivided lots or proposed rights of way. The proposed road alignment, intersection improvements, deceleration and turning lanes, traffic control signage, markings and devices, and pedestrian access ways and neighborhood connectivity are consistent with the approved Preliminary Plat as modified by the conditions adopted by the Village Board. Site landscaping is generally consistent with the Preliminary Plat, with modifications that reflect the changes to the stormwater management changes and refinements requested by Village Staff. The tree preservation plan and open space details are consistent with the Preliminary Plat with additional refinements made to management of the site during and post construction, as requested by Village staff. As described below, the stormwater impact of the development on the Village's existing storm sewer system and surrounding private properties is anticipated to be significantly mitigated due to the Development's compliance with the MWRD's requirement that projects subject to the Watershed Management Ordinance (WMO) use the updated rainfall data from the Illinois State Water Survey Bulletin 75 and the Petitioner's subsequent modifications to the stormwater management system.

*B. Stormwater management*

The Petitioner has revised the stormwater detention system design to accommodate the updated rainfall data projections set forth in the updated ISWS Precipitation Frequency Study, referred to as "***Bulletin 75***". In order to provide the enlarged storm water detention capacity required by from the updated rainfall data included in Bulletin 75, the stormwater detention system was redesigned as with (a) an underground storm water storage system with a discharge to the Terrace Court Basin storm sewer system to the southeast and (b) a combined above-ground and underground storm water detention system with a discharge to Cook County Forest Preserve District (CCFPD) Turnbull Woods property to the northeast.

The underground storm water storage system consists of prefabricated chambers enveloped in stone backfill, to provide storage both within the chamber and the surrounding stone voids. The underground system will be

installed along the east side of Lots 16-24, between Lots 6 and 7, and beneath two permeable paver sections of the proposed Forest Edge roadway. This system will discharge out to the Terrace Court Basin storm sewer underground through a restricted outlet. The discharge rate from the restrictor will be a lower rate than the current overland flow from the property into the basin.

The above-ground storm water detention system consists of conveyance pipes around the bulb of the street and a dry pond (depressional area) in the rear of Lots 23 and 24. This above-ground system will discharge out to Turnbull Woods through a restricted outlet.

The underground and above-ground storm water storage systems will be interconnected via a manhole with a small diameter (1.5"), a low-flow restrictor pipe, and an internal weir to equalize flow during heavy rain events. The internal weir for equalizing flow allows for overland flows to discharge to Turnbull Woods. During rain events in excess of the 100-year storm, overflow will begin to discharge out of the surface discharge to Turnbull Woods. Should additional discharge be necessary, the above ground storm water system will overflow through a concrete weir along the north side of the dry pond onto the Turnbull Woods property. Should even more additional overflow capacity be necessary, internal overflows may discharge into the 12" storm sewer connection to the Terrace Court Basin storm sewer. <u>No overland flow drainage will be directed towards the Terrace Court Basin properties or other adjacent residential properties</u>. Berms are proposed along the east side of the Subdivision to provide additional protection from overland discharges to the adjacent residential properties.

*C. Preliminary Plat conditions of approval from Village Board*

On October 17, 2019, the Village Board approved the Preliminary Plat for the proposed subdivision of 1801 Green Bay Road. The Board's approving resolution included 20 conditions for the Petitioner to address prior to its submission of a Final Plat to the Village President and Board of Trustees. Since October, the Petitioner has worked to revise the Development plans to address these conditions. The following section analyzes the Petitioner's responses to the conditions.

<u>Storm Water Management and Detention</u>

*1. The Final Plat and Final Engineering Plan for the Development must address how the proposed storm water detention system will accommodate extraordinary rainfall events. The system design must incorporate (a) a gravity fed equalizer pipe that will ensure than any rainfall exceeding the capacity of the southern detention basin proposed to be located on Outlot E ("Southern Detention Basin") be transferred to the northern detention basin proposed to be located on Outlot D ("Northern Detention Basin") and released gradually via overland flow; and/or (b) storm water detention basins of sufficient capacity to accommodate the rainfall projections set forth in the updated Bulletin 70 "Frequency Distributions of Heavy Precipitation in Illinois" published by the Illinois State Water Survey dated March 2019 and with the volume required by the most recent version of the Metropolitan Water Reclamation District's Watershed Maintenance Ordinance (WMO) in effect at the time all necessary permits for the storm water detention system are issued by the appropriate permitting authority, whichever is deemed to provide the Village, its storm water infrastructure, and the residents of the surrounding parcels with the greatest protection from unreasonable storm water overlap drainage. The determination of the solution providing the greatest amount of protection shall be made on the advice of the Village Engineer.*

The Petitioner has proposed a revised storm water detention system design which includes an underground storm water detention system with a discharge to the Terrace Court Basin storm sewer system to the southeast and both above ground and underground storm water detention systems with a discharge to the

CCFPD Turnbull Woods property to the northeast. These systems are connected via a manhole with a small diameter (1.5") pipe connection and an internal weir for equalizing flow during heavy rain events. The internal weir for equalizing flow allows for overland flows to discharge to Turnbull Woods.

Additionally, the Petitioner has revised the storm water detention system design to accommodate the rainfall data projections included in Bulletin 75.

Note: The Petitioner's storm water management plan including all the detailed calculations and engineering modeling data has been carefully reviewed by the Village's staff engineers along with the Village's storm water consultant, Engineering Resource Associates.

*2. The Petitioner must, prior to the approval of the Final Plat for the Development, obtain an easement to permit connection of the Southern Detention Basin to the Terrace Court Basin storm sewer, in a location and manner acceptable to the Village Engineer and in a form acceptable to the Village Attorney.*

The Petitioner has purchased the property at 1188 Carol Lane and has commenced the process to reserve and dedicate an easement along the south property line of the property to allow for the installation and maintenance of an underground drainage line that will connect the storm water detention system for the southern portion of the Development to the Terrace Court Basin storm sewer system.

*3. The Petitioner shall make all commercial reasonable efforts to include best management practices for creating better water infiltration at areas (other than the detention basins) throughout the site. Such practices should be considered and incorporated when beneficial.*

The Petitioner has proposed the installation of pervious pavers installed in two locations of the roadway and a bioswale in the rear yards of Lots 20-23. In addition, all stormwater detention chambers will be surrounded by compacted stone containing air voids that will serve to retain stormwater.

<u>Maintenance of Subdivision Improvements; Declaration</u>

*1. The obligation of the homeowners' association ("**HOA**") to repair, maintain in good working condition, or replace the Storm Water Detention Improvements (as defined below), pedestrian access paths, landscaping, fencing and other commonly owned subdivision improvements (collectively, the "Common Improvements") shall be memorialized in a Declaration of Covenants for the Development ("**Declaration**"), which Declaration shall be executed and recorded against the entirety of the Subject Property by the Petitioner simultaneously with the Final Plat.*

This requirement will be integrated into the Subdivision and Development Agreement, which will be recorded against the parcel. The Village Attorney is also reviewing a preliminary version of the Declaration to ensure that this concept is included.

*2. The Declaration shall be in a form and substance acceptable to the Village Attorney and shall clearly establish the right of the Village to either (a) take legal action to compel the HOA to repair, maintain, or replace the Common Improvements, or (b) to enter upon the Subject Property, or any lot thereupon whether privately or commonly owned by the HOA, to undertake such work as may be necessary to repair, maintain, or replace the Common Improvements.*

This requirement will be integrated into the Subdivision and Development Agreement, which will be recorded against the parcel. The Village Attorney is also reviewing a preliminary version of the Declaration to ensure that this concept is included.

*3. The approvals of the Final Plat and Declaration for the Development shall explicitly provide for the creation of a special service area to be created if deemed necessary by the Village to ensure that sufficient funds are available to pay for the repair, maintenance, or replacement of the Common Improvements as may be needed from time to time in the absence of the HOA assessing sufficient funds for this purpose.*

This requirement will be integrated into the Subdivision and Development Agreement, which will be recorded against the parcel. The Developer will be required to agree not to object to the establishment of this "***Backup SSA".*** Staff and the Village Attorney are working together to determine how much of a reserve should be levied to ensure that there are sufficient funds to maintain essential improvements in the event that the Developer or the HOA fails to do so.

*4. The Declaration shall include a detailed Operation and Maintenance Plan for the storm water detention basins and all appurtenant mains, pipes, pumps and other facilities (collectively, the "Storm Water Detention Improvements") that shall include a schedule for regular cleaning and landscaping as well as mosquito control measures that will be followed.*

This requirement will be integrated into the Subdivision and Development Agreement, which will be recorded against the parcel. The Village Attorney is also reviewing a preliminary version of the Declaration to ensure that these plans are incorporated into the Declaration.

*5. Outlot A shall be reserved and dedicated in the Declaration as open space for passive enjoyment of the residents of the Development and the general public. This reservation and dedication shall not preclude the improvement of Outlot A with such accommodations and improvements as picnic seating, benches, shelters, or gazebos, so long as such improvements are open and available to the general public. Outlot A shall remain owned and maintained by the HOA.*

This requirement will be integrated into the Subdivision and Development Agreement, which will be recorded against the parcel. The Village Attorney is also reviewing a preliminary version of the Declaration to ensure that this concept is included.

*6. Outlot B shall also be subject to an easement for public access and enjoyment.*

This requirement will be integrated into the Subdivision and Development Agreement, which will be recorded against the parcel. The Village Attorney is also reviewing a preliminary version of the Declaration to ensure that this concept is included.

<u>Public Rights of Way, Roads, and Sidewalks</u>

*1. The Final Plat shall include a permanent irrevocable emergency access easement from the Northwood Drive cul-de-sac to Estates Road through the side yards of either or both Lots 28 and 29 sufficient accommodate the passage of a ten-foot-wide emergency vehicle between the two public rights-of-way.*

This has been included on the Final Plat.

*2. The Final Plat shall also include a permanent irrevocable pedestrian easement allowing members of the general public to access the Development from the Northwood Drive cul-de-sac. The final configuration and route of such easement shall be approved by the Village Engineer. The pedestrian easement shall be paved, ADA accessible, and considered a Common Improvement to be maintained, repaired, and replaced by the HOA.*

Consistent with the condition, above, the Petitioner has proposed a 5-foot wide concrete sidewalk with 2.5 feet of Grasspave along both sides, creating a ten-foot-wide corridor within the emergency and pedestrian access easement.

*3. No sidewalks shall be required to be installed on Outlot A, C, D or E, but a sidewalk shall be installed along the frontage of all Lots with street frontage on Estates Road within the dedicated public utility easements.*

Consistent with the condition, above, the Petitioner has proposed a 5-foot wide sidewalk along the frontage of all Lots with street frontage on Forest Edge Drive.

*4. The existing masonry entry piers and walls located on the proposed Lot 1 ("**Historic Gateway Features**"), shall be preserved and incorporated into the design and landscaping of the Development. The maintenance of the Historic Gateway Features will be the responsibility of the HOA; provided, however, that the Petitioner shall grant to the Village a preservation easement, or such other legal right deemed sufficient, in the opinion of the Village Attorney, to allow the Village to prevent the destruction, removal, or damage to the Historic Gateway Features and to enforce the HOA's responsibility to maintain the Historic Gateway Features.*

Consistent with the condition, above, the existing masonry entry will be maintained in its current location. This condition will be incorporated into the Subdivision and Development Agreement.

*5. That any entrance signage at the Estates Road entry to the Development must conform to the Village's sign ordinance.*

The Petitioner is no longer proposing any entrance signage.

*6. That all improvements, realignments, re-striping, and other traffic control improvements necessary to align Westley Road and Estates Road, and to reconfigure the lanes, turn lanes, traffic advisory signs, and other traffic control devices recommended in the revised traffic impact study from KLOA, last revised August 16, 2019, be the sole responsibility of the Petitioner to fund and, unless required otherwise by the Village, construct in accordance with all applicable road construction standards.*

All traffic control improvements on Green Bay Road, Westley Road and Forest Edge Drive included in the engineering plans prepared by IG Consulting for the Subdivision improvements will be constructed and installed by the Petitioner.

<u>Tree Protection and Landscaping</u>

*1. The Petitioner will be required to enter into a subdivision and development agreement ("**Development Agreement**") requiring the implementation of the tree protection plans (as presented in the application and as otherwise required by the Village Code) for both the Common Improvements and private lot development,*

*subject to review and approval by the Village Attorney.*

The Petitioner has submitted a tree preservation plan and draft agreement language that is consistent with the tree protection plan as presented as part of the Preliminary Plat of subdivision. In addition to identifying the specific trees that will be lost to the construction of roads, utilities, and other site improvements, the plan identifies in detail the areas that will be enclosed by tree protection fencing during the construction period, and trees that will receive specific root and crown reduction pruning, auguring or air spading or other preventative measures.

*2. The Development Agreement will memorialize and quantify, the Petitioner's commitment planting substitute trees on the property "where feasible", with specific exceptions or limits to the determination of "where feasible" to be adopted prior to approval of the Final Plat.*

The Village's practice as outlined in the Tree Preservation ordinance is to require a deposit of funds by the developer, in advance of issuance of permits, to compensate for the loss of any existing tree exceeding eight caliper inches in diameter (other than prohibited species and trees of very poor condition). Replacement trees offset the loss of existing caliper inches. The loss of trees due to the construction of public improvements, lot grading, and other site improvement necessary for the preparation of developable lots is the responsibility of the developer. The submitted plans estimate the loss of 82 trees requiring a deposit for compensation of approximately 1,570 caliper inches.

Consistent with the condition, above, the Petitioner has submitted tree replacement plans which indicate the anticipated planting of 189 new trees on the site, totaling approximately 1,100 caliper inches. The proposed siting of trees, "where feasible" have focused along the back lot line of proposed lots, particularly along the eastern edge of the property as a buffer to existing neighborhoods, as street trees along the proposed Forest Edge street pavement, and as infill within the cluster of trees in Outlot A. Areas that have been specifically precluded from planting replacement trees include those areas with underground stormwater detention structures.

Trees within the individual subdivided lots will also be lost but are not part of the calculation of tree preservation deposit at the time of Final Plat approval. Some lots will be unaffected, but most lots have existing trees that are unlikely to be avoided as part of the siting of new homes. Each home builder/new owner will be required to meet the requirements of the tree preservation ordinance and thus, at the time of the request for a building permit, will be required to make a deposit based on the calculation of lost caliper inches resulting from construction of the house they plan to build. The Petitioner cannot know at this time how a home will be sited and which trees will be lost on each lot. The Village has had success in minimizing tree loss when it has been able to discuss the tree preservation ordinance requirements with a prospective home builder in advance of the submission of a building permit request. As such, the Village Staff seeks to include language within the Subdivision and Development Agreement that will require a preapplication conference with each home builder to encourage the preservation of the greatest number of trees on each lot.

*3. The Development Agreement will incorporate a tree replacement plan to be approved by the Village arborist to assure that competitive canopies or root disturbances are not likely to result in future tree losses.*

Consistent with the condition, above, the submitted tree replacement plan includes siting of trees where pre-existing trees have died or will have been removed due to their decayed condition. These replacement trees

may require sensitivity in addressing the root structure of existing healthy remaining trees, and the development agreement will include language on the use of best management practices.

*4. The Development Agreement will require that the removal of existing trees or plants, including invasive species like Buckthorn or other "Removable Trees," as defined in the Village Code, not create nuisance conditions on surrounding parcels, including, without limitation, unreasonable runoff of herbicides or soil erosion.*

Consistent with the condition, above, the tree preservation and landscape plans submitted anticipate the removal of all invasive species including buckthorn, poplar, cottonwood, ash, Siberian elm, boxelder, and Norway maple, as well as trees that are dead, dying or otherwise a threat to safety. Language within the Subdivision and Development will address surety of landscape management practice to protect surrounding parcels and public health.

*5. The Development Agreement will require that the perimeter fence proposed to be installed around the Development be a uniform board-on-board wood fence at the perimeter of the subdivision on lots 1, 2, 3, 10-22, 28, 29 and Outlots B, E and the western side of Outlot C; and a wrought iron-look fence at the perimeter of the subdivision on lots 23-27, Outlot D and the northern side of Outlot C.*

Consistent with the condition, above, the final subdivision plans include specific location and identify the materials planned for perimeter fencing consistent with condition 5.

**IV. Recommendation**

Staff has thoroughly reviewed the proposed Final Plat and has determined that it is in compliance with the criteria for approval as listed in the Village's Subdivision Ordinance and with the Preliminary Plat conditions of approval required by the Village Board. If the Plan Commission determines that this assessment is correct, staff recommends that the Commission make a recommendation of approval of the Final Plat to the Village Board. The Plan Commission may also recommend approval of the Final Plat with conditions, or, if it determines that staff's assessment of the Final Plat is incorrect, it may recommend denial.

**Attachments:**

1. Engineering Resource Assoc. – Technical Memorandums (2) – both dated 6/8/20
2. Forest Edge Plat of Subdivision – dated 6/8/20
3. 1801 Green Bay Engineering Plans – dated 5/8/20
4. Forest Edge Landscape Plans – dated 6/8/20
5. Storm Water Report – IG Consulting – dated 5/8/20
6. O & M Report – IG Consulting – dated 6/8/20

# Technical Memorandum

Project:
Forest Edge Subdivision Stormwater Management Review

Location:
Glencoe, IL

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Prepared For:
Village of Glencoe
675 Village Court
Glencoe, IL 60022

Prepared By:
Engineering Resource Associates, Inc.
3s701 West Avenue, Suite 150
Warrenville, IL 60555
630.393.3060

Prepared On:
June 8, 2020



ENGINEERING RESOURCE ASSOCIATES

## Introduction

IG Consulting Inc. has submitted plans to develop a 12-acre parcel of land on the east side of Green Bay Road just south of Turnbull Woods and west of Carol Lane. Engineering Resource Associates (ERA) has completed several design reviews to ensure the project has a positive stormwater impact on Carol Lane properties and the recently improved Terrace Court storm sewer system. The latest review was performed on plans and calculations dated May 8, 2020.

## Methodology and Purpose

The purpose of the ERA review was to ensure that the plans substantially meet Village and MWRD ordinances prior to submitting to the MWRD for permit. The review was also performed to verify that the changes to the land do not adversely impact neighboring properties and the recently constructed Terrace Court storm sewer system. Utilizing the applicant's design, ERA revised the 2014 Terrace Court study model to evaluate how the proposed land use and design impact the constructed sewer improvements. The Terrace Court technical memorandum summarizes those results and can be found under a separate cover.

## Conclusions and Recommendations

Based on our review of the project plans and stormwater report we feel the design meets the requirements set forth by the Village Plan Commission in 2019 and substantially meets Village and MWRD stormwater requirements. The applicant's design has successfully accomplished the following:

1. The detention pond significantly reduces flows to the Terrace Court storm sewer system. A complete analysis of the changes to the Terrace Court system were modeled and a separate technical memo was submitted summarizing the detailed results.
2. The detention pond significantly reduces runoff to the rear yards of homes located on Carol Lane.
3. The detention pond has been sized for the increased rainfall amounts recently adopted by the MWRD.
4. The emergency overflow for the detention pond has been directed into Turnbull Woods and away from Carol Lane Properties and the Terrace Court storm sewer system.
5. The design has provided a storm sewer system with capacity to convey the 10-year storm event with overland flow paths that can convey the 100-year runoff safely to the detention facility.

ERA recommends that the design be submitted to the MWRD for their review and approval. All correspondences with the MWRD and design changes requested by MWRD should be forwarded to the Village for their review as well.

# Technical Memorandum

Project:
Terrace Court Storm Sewer Analysis
Forest Edge Subdivision Comparison

Location:
Glencoe, IL

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Prepared For:
Village of Glencoe
675 Village Court
Glencoe, IL 60022

Prepared By:
Engineering Resource Associates, Inc.
3s701 West Avenue, Suite 150
Warrenville, IL 60555
630.393.3060

Prepared On:
June 8, 2020



ENGINEERING RESOURCE ASSOCIATES

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Appendix

Exhibit 1: Revised Terrace Court Watershed

Exhibit 2: Existing Condtions Flooding Limits from 2014 Study

Exhibit 3: Forest Edge Subdivision Existing Conditions Tributary Areas

Exhibit 4: Proposed Conditions 1% Flood Risk from 2014 Study

Thumb Drive Containing XPSWMM Models

## Introduction

The Village of Glencoe (Village) completed the Terrace Court Basin Storm Water Drainage Study in December 2014. The study recommended increasing the storm sewer capacity to convey the runoff from a storm with a 1% chance of occurrence in a giving year. The recommended improvements were constructed in 2016 and have resulted in significant improvements to the frequency and severity of flooding in the neighborhood. In 2019 the rainfall data used to size storm sewer systems in Illinois was updated to reflect the trend of more intense rain events. In general, rainfall was increased by approximately 10-15%. In addition, IG Consulting Inc. submitted plans in 2019/2020 to develop approximately 12 acres of property at 1801 Green Bay Road just west of Carol Lane of which a portion of the development is tributary to the Terrace Court improved storm sewer system. The Village of Glencoe requested that Engineering Resource Associates, Inc. (ERA) update the 2014 Drainage Study with the new Illinois rainfall data and compare the system performance with and without the new Forest Edge development to ensure that the design will have a positive impact on the new storm sewer system.

## Historical Background

The primary purpose of the original 2014 study was to reduce the frequency and severity of the stormwater leaving the public right-of-way and contributing to private property flooding problems. Exhibit 2 from the original study (attached) shows how frequent and severe flooding was prior to the 2016 improvements. Exhibit 4 from the original study is also attached and depicts the extent of flooding following the 2016 improvements for comparison purposes. It is important to note that public right-of-way improvements alone would not eliminate flood risks for certain areas as shown on Exhibit 4. Internal drainage from the properties surrounded by Carol Lane, Terrace Court, and Park Place drain directly to a significant swale along the south side of the property at 1162 Terrace Court where a storm sewer drains the water under Terrace Court to a swale directly across the street. During extreme storm events water fills the swale opposite of 1162 Terrace Court and wants to back up into the property. A backflow preventer was installed to minimize this backup. However, high water elevations in the swale will block runoff coming from the internal drainage area. Exhibit 4 from the 2014 study depicts that potential flooding during extreme events.

## Purpose and Methodology

Utilizing the 2014 hydrologic/hydraulic XPSWMM model ERA updated rainfall data and revised tributary areas of the area west of Carol Lane to reflect the pre and post conditions of the proposed Forest Edge Subdivision (Subdivision) currently under review. The revisions are reflected on Exhibit 1 provided in this memo. The hatched area is what was originally modeled as runoff to the Terrace Court system. This area has been reduced in the Pre- Subdivision model to reflect the 1.6-acre tributary area (Area A) from the Subdivision existing conditions plan provided as Exhibit 3. The hatched area has been replaced by the proposed detention facility release rate in the Post-Subdivision model to reflect the developer's detention design. In addition, the 3.6-acre tributary area (Area B) has been added to the Pre-Subdivision model to mimic the survey from the Subdivision existing conditions plan provided as Exhibit 3. Pre- and Post-Subdivision XPSWMM models were run to understand the impacts to the Terrace Court system. Summary tables have been provided that directly compare the performance of the storm sewer pre- and post- Subdivision.

## Summary of Results

The Terrace Court system has four critical areas that determine the extent and severity of flooding. These locations are the sag on Park Place just east of Carol, the sag on Old Elm Lane just north of West Elm Court, the low spot at the north end of Linda Lane, and at the Terrace Court Basin outfall across from 1162 Terrace Court. Tables 1-4 compare the pre- and post- Subdivision water levels at these four critical spots for four significant storm events (10% chance of occurrence or 10-year storm, 4% chance of occurrence or 25-year storm, 2% chance of occurrence or 50-year storm, 1% chance of occurrence or 100-year storm).

| *Event* | *10% Occurrence* | | *4% Occurrence* | | *2% Occurrence* | | *1% Occurrence* | |
|---|---|---|---|---|---|---|---|---|
| *Model* | *PRE* | *POST* | *PRE* | *POST* | *PRE* | *POST* | *PRE* | *POST* |
| *Water Elevations* | 667.98 | 667.92 | 668.47 | 668.35 | 671.34 | 670.39 | 672.78 | 672.32 |

TABLE 1: HWL at Park Place Sag

*Street ponding begins at approximately 673.25

| *Event* | *10% Occurrence* | | *4% Occurrence* | | *2% Occurrence* | | *1% Occurrence* | |
|---|---|---|---|---|---|---|---|---|
| *Model* | *PRE* | *POST* | *PRE* | *POST* | *PRE* | *POST* | *PRE* | *POST* |
| *Water Elevations* | 665.78 | 665.78 | 666.58 | 666.35 | 670.19 | 669.64 | 671.16 | 671.10 |

TABLE 2: HWL at Old Elm Lane Sag

*Street ponding begins at approximately 670.60

| *Event* | *10% Occurrence* | | *4% Occurrence* | | *2% Occurrence* | | *1% Occurrence* | |
|---|---|---|---|---|---|---|---|---|
| *Model* | *PRE* | *POST* | *PRE* | *POST* | *PRE* | *POST* | *PRE* | *POST* |
| *Water Elevations* | 669.14 | 669.11 | 670.70 | 670.58 | 675.06 | 674.07 | 676.72 | 676.48 |

TABLE 3: HWL at Linda Lane

*Street ponding begins at approximately 676.25

| *Event* | *10% Occurrence* | | *4% Occurrence* | | *2% Occurrence* | | *1% Occurrence* | |
|---|---|---|---|---|---|---|---|---|
| *Model* | *PRE* | *POST* | *PRE* | *POST* | *PRE* | *POST* | *PRE* | *POST* |
| *Water Elevations* | 661.64 | 661.32 | 663.19 | 662.87 | 664.06 | 663.79 | 664.51 | 664.34 |

TABLE 4: HWL at Outfall Ditch

## Conclusions and Recommendations

Based on the analysis of the pre- and post-Forest Edge Subdivision the proposed development will have a positive impact on the Terrace Court storm sewer system. As shown on the summary tables provided in this technical memorandum the proposed detention facility, as currently designed, will reduce flows to the storm sewer system, reducing water levels and increasing the level of service to the residents in the Terrace Court Basin area. Water elevations in the receiving swale across from 1162 Terrace Court will be reduced, further protecting properties. This improvement alone will not eliminate high water elevations in the receiving ditch from blocking runoff from the internal drainage area. To that end, ERA would recommend that further improvements such as a permanent pump station to relieve the volume of water from the internal drainage area that drains to the 1162 Terrace Court property during extreme rainfall events be investigated.

# Exhibt 1
# Terrace Court Watershed

## Legend

Glencoe Storm Sewer

Watershed Sub Boundary

Watershed Boundary

| Watershed Area | |
|---|---|
| Basin | Area(Acres) |
| 1 | 0.73 |
| 2 | 0.61 |
| 3 | 0.33 |
| 4 | 4.3 |
| 5 | 0.09 |
| 6 | 0.18 |
| 7 | 3.55 |
| 8 | 0.94 |
| 9 | 0.19 |
| 10 | 1.62 |
| 11 | 3.1 |
| 12 | 0.37 |
| 13 | 1.65 |
| 14a | 2.25 |
| 14b | 1.76 |
| 15 | 2.09 |
| 16 | 1.61 |
| 17 | 0.85 |
| 18 | 0.44 |
| 19 | 1.46 |
| 20 | 1.63 |
| 21 | 0.79 |
| 22 | 0.99 |
| 23 | 4.63 |
| 24 | 14.78 |
| Hatched | 3.99 |
| Total | 54.93 |

ENGINEERING
RESOURCE ASSOCIATES

1 inch = 100 feet

0 50 100 200 300 400 Feet

Document Path: O:\Cook County\Glencoe\140706 Glencoe Adjusted.mxd User Name: glordan Date: 5/13/2020

## Legend

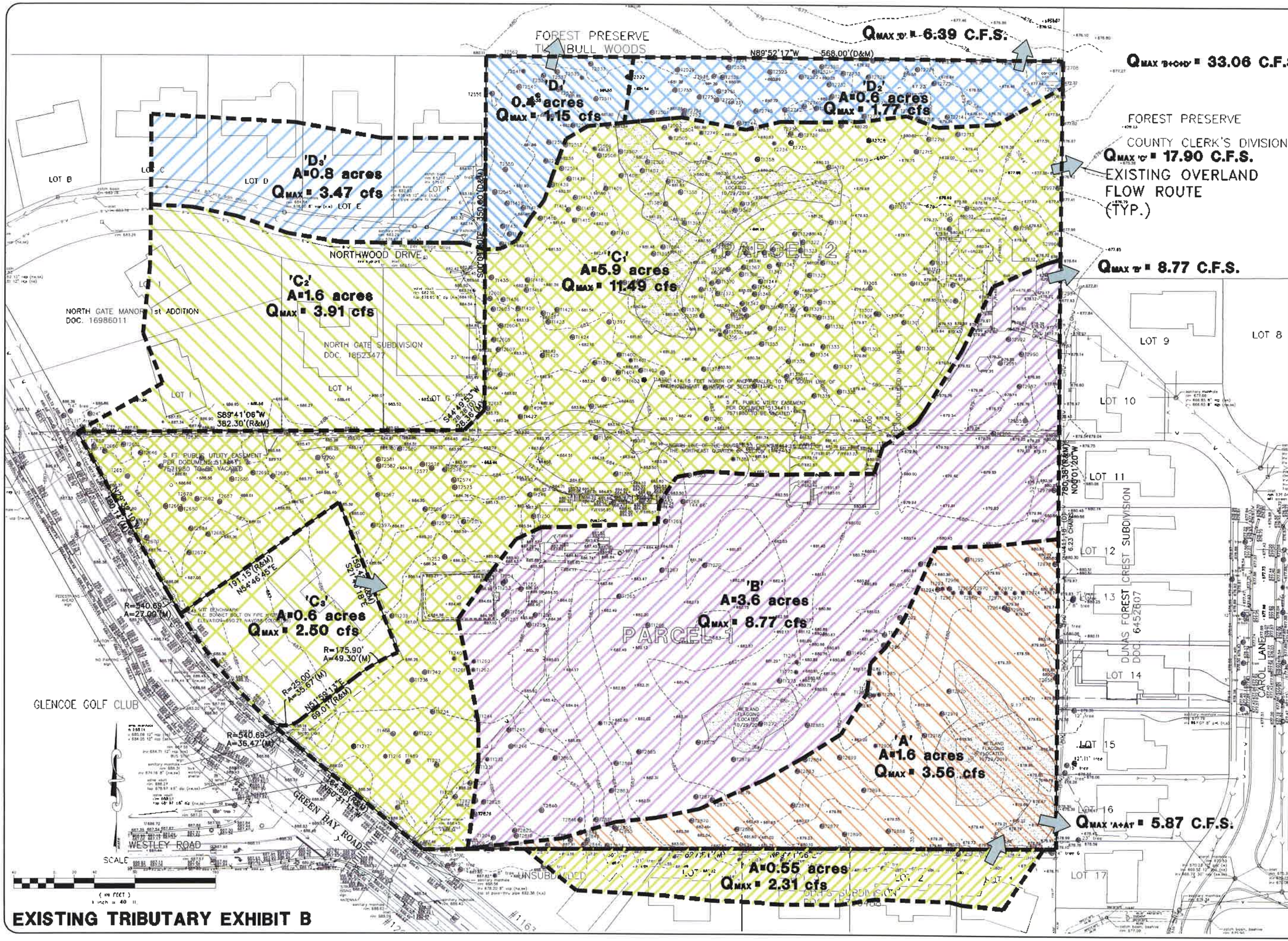
- Watershed Boundary
- 50% Flood Risk (2-Year Storm Event)
- 10% Flood Risk (10-Year Storm Event)
- 2% Flood Risk (50-Year Storm Event)
- 1% Flood Risk (100-Year Storm Event)
- Manhole
- Existing Storm Sewers
- 1 Foot Contours

EXHIBIT 2
TERRACE COURT
EXISTING CONDITION
FLOODING LIMITS


ENGINEERING RESOURCE ASSOCIATES, INC.
Consulting Engineers, Scientists & Surveyors
www.eraconsultants.com


100 50 0 100 Feet

1 inch = 50 feet




**EXISTING TRIBUTARY EXHIBIT B**

REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 06/03/19 | VILLAGE REVIEW | S.R.M. |
| 07/22/19 | REVISED ENTRANCE | S.R.M. |
| 07/29/19 | FOR SUBMITTAL | S.R.M. |
| 12/06/19 | FOR SUBMITTAL | S.R.M. |
| 01/17/20 | FOR SUBMITTAL | S.R.M. |
| 02/20/20 | FOR SUBMITTAL | S.R.M. |

IG CONSULTING, INC.
CONSULTING CIVIL ENGINEERS, PLANNERS & LAND SURVEYORS
300 MARQUARDT DRIVE, WHEELING, ILLINOIS 60090 PH. (847) 215-1133 | FAX (847) 215-1177
1129 MAIN STREET UNION GROVE, WISCONSIN 53182 PH. (262) 878-6200 | ig@igconsulting.net

EXISTING TRIBUTARY EXHIBIT

DESIGN: K.C.L. DRAFTING: S.R.M.
SCALE: 1"=40' DATE: 05/06/2019

# 1801 GREEN BAY ROAD SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS

COPYRIGHT AS DATED © IG CONSULTING, INC.

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FIRM NO. 184-001330

PROJECT No. 18557

**Legend**

- Watershed Boundary
- Existing Storm Sewers
- Manhole
- 1 Foot Contours
- 1% Flood Risk (100-Year Storm Event)
- 2% Flood Risk (50-Year Storm Event)
- 4% Flood RIsk (25-Year Storm Event)

EXHIBIT 4
TERRACE COURT
PROPOSED CONDITION
1% FLOOD RISK SOLUTION
(100-YEAR STORM EVENT)

ENGINEERING RESOURCE ASSOCIATES, INC.
Consulting Engineers, Scientists & Surveyors
www.eraconsultants.com

100 50 0 100 Feet

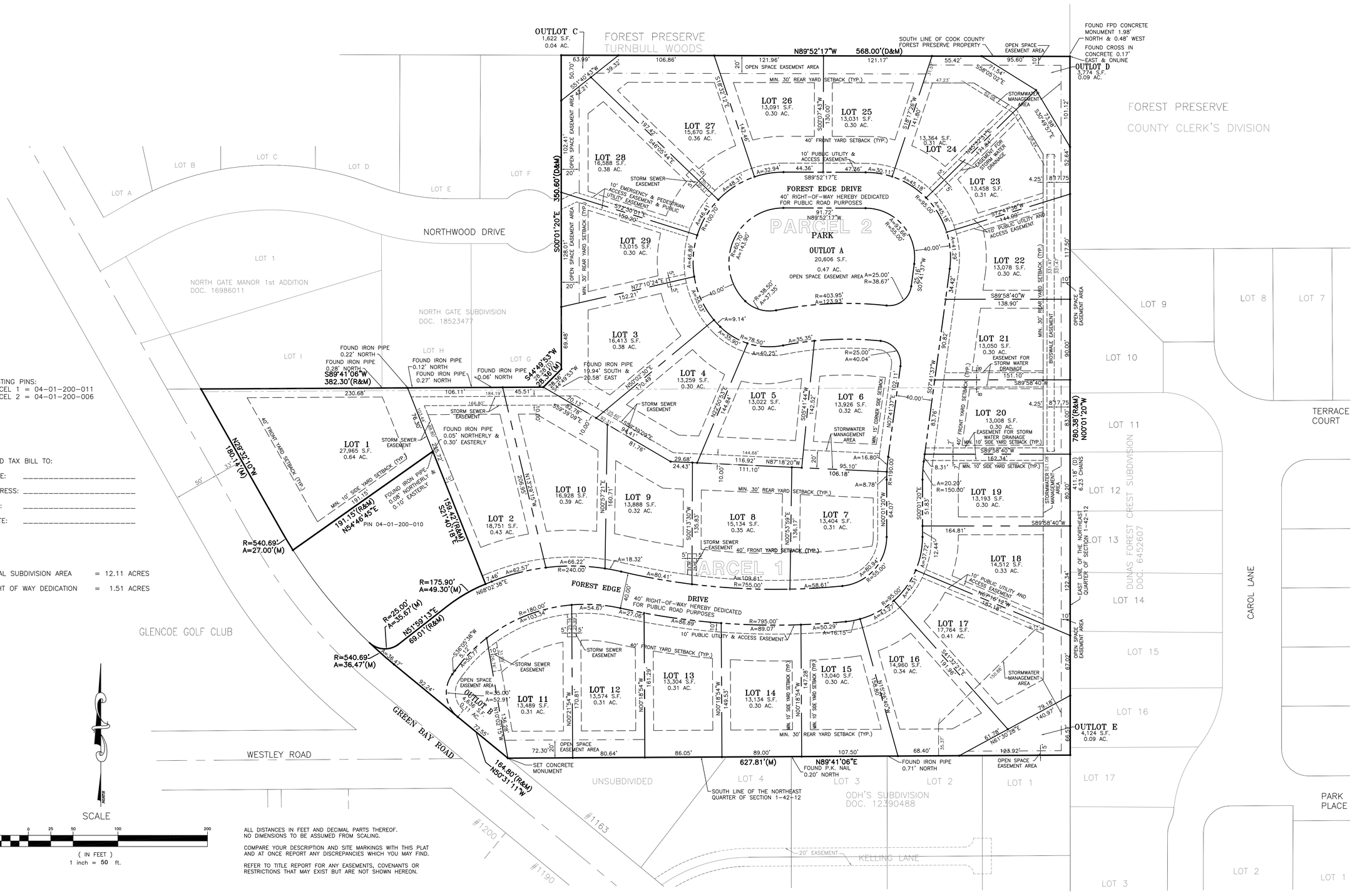
1 inch = 50 feet

# FINAL PLAT OF SUBDIVISION

# FOREST EDGE SUBDIVISION

OF

BEING A SUBDIVISION IN THE NORTH QUARTER OF SECTION 1, TOWNSHIP 42 NORTH, RANGE 12 EAST OF THE THIRD PRINCIPAL MERIDIAN, COOK COUNTY, ILLINOIS.




EXISTING PINS:
PARCEL 1 = 04-01-200-011
PARCEL 2 = 04-01-200-006

SEND TAX BILL TO:

NAME: _____

ADDRESS: _____

CITY: _____

STATE: _____

TOTAL SUBDIVISION AREA = 12.11 ACRES

RIGHT OF WAY DEDICATION = 1.51 ACRES

ALL DISTANCES IN FEET AND DECIMAL PARTS THEREOF.
NO DIMENSIONS TO BE ASSUMED FROM SCALING.

COMPARE YOUR DESCRIPTION AND SITE MARKINGS WITH THIS PLAT AND AT ONCE REPORT ANY DISCREPANCIES WHICH YOU MAY FIND.

REFER TO TITLE REPORT FOR ANY EASEMENTS, COVENANTS OR RESTRICTIONS THAT MAY EXIST BUT ARE NOT SHOWN HEREON.

SHEET 1 OF 2

REVISED: 06/08/20
REVISED: 04/17/20
REVISED: 02/20/20
REVISED: 02/19/20
PREPARED: 01/17/20


IG CONSULTING, INC.
CONSULTING CIVIL ENGINEERS & LAND SURVEYORS
300 MARQUARDT DRIVE WHEELING, ILLINOIS 60090 PH. (847) 215-1133 | FAX (847) 215-1177
1129 MAIN STREET UNION GROVE, WISCONSIN 53182 PH. (262) 878-6200 | ig@igconsulting.net


| | | | |
|---|---|---|---|
| PREPARED FOR: | GLENCOE DEVELOPERS LLC | DRAFTED BY: S.R.M. | SCALE: 1"=50' |
| FIELD CREW: D.J. | FIELD WORK:2018 | CHECKED BY: | FIRM NO. 184-001330 |

FINAL PLAT OF SUBDIVISION
FOREST EDGE SUBDIVISION
1801 GREEN BAY ROAD
GLENCOE, ILLINOIS

PROJECT NUMBER
18557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# FINAL PLAT OF SUBDIVISION

# FOREST EDGE SUBDIVISION

OF

BEING A SUBDIVISION IN THE NORTH QUARTER OF SECTION 1, TOWNSHIP 42 NORTH, RANGE 12 EAST OF THE THIRD PRINCIPAL MERIDIAN, COOK COUNTY, ILLINOIS.



PRESIDENT AND BOARD OF TRUSTEES CERTIFICATE
STATE OF ILLINOIS}
}S.S.
COUNTY OF COOK}

APPROVED AND RIGHT OF WAY DEDICATION HEREBY ACCEPTED, BY THE PRESIDENT AND BOARD OF TRUSTEES OF THE VILLAGE OF GLENCOE, COOK COUNTY, ILLINOIS

THIS _____ DAY OF _____ A.D., 20__.

_____
VILLAGE PRESIDENT

_____
ATTEST: VILLAGE TREASURER

VILLAGE ENGINEER CERTIFICATE
STATE OF ILLINOIS}
}S.S.
COUNTY OF COOK}

APPROVED BY THE VILLAGE ENGINEER OF THE VILLAGE OF GLENCOE, COOK COUNTY, ILLINOIS

THIS _____ DAY OF _____ A.D., 20__.

_____
VILLAGE ENGINEER

PLAN COMMISSION CERTIFICATE
STATE OF ILLINOIS}
}S.S.
COUNTY OF COOK}

RECOMMENDED BY THE PLAN COMMISSION OF THE VILLAGE OF GLENCOE, ILLINOIS

THIS _____ DAY OF _____ A.D., 20__.

_____
CHAIRMAN

_____
SECRETARY

EASEMENT FOR STORM SEWER

A PERMANENT AND PERPETUAL NON-EXCLUSIVE EASEMENT IS HEREBY GRANTED TO THE VILLAGE OF GLENCOE, COOK COUNTY, ILLINOIS ("VILLAGE"), TO SURVEY, CONSTRUCT, RECONSTRUCT, USE, OPERATE, MAINTAIN, TEST, INSPECT, REPAIR, REPLACE, ALTER, REMOVE OR ABANDON IN PLACE STORM SEWER MAINS, TOGETHER WITH RELATED ATTACHMENTS, EQUIPMENT AND APPURTENANCES THERETO, IN, UPON, UNDER, ALONG AND ACROSS THE AREAS DESIGNATED "STORM SEWER EASEMENT" ON THIS SUBDIVISION PLAT. THE OWNERS OF THE PROPERTY SUBDIVIDED ON THIS PLAT OR ANY PART THEREOF HEREBY RESERVE THE RIGHT TO USE THE AREAS DESIGNATED "STORM SEWER EASEMENT" AND THE ADJACENT PROPERTY IN ANY MANNER THAT WILL NOT PREVENT OR INTERFERE WITH THE EXERCISE BY THE VILLAGE OF THE RIGHTS HEREBY GRANTED; PROVIDED, HOWEVER, THAT THE OWNERS SHALL NOT IN ANY MANNER DISTURB, DAMAGE, DESTROY, INJURE, OBSTRUCT OR PERMIT TO BE OBSTRUCTED THE "STORM SEWER EASEMENT" AT ANY TIME WHATSOEVER WITHOUT THE EXPRESS PRIOR WRITTEN CONSENT OF THE VILLAGE'S VILLAGE MANAGER.

PUBLIC UTILITY & ACCESS EASEMENT

A PERMANENT AND PERPETUAL NON-EXCLUSIVE EASEMENT IS HEREBY GRANTED TO THE VILLAGE, NORTH SHORE GAS COMPANY, COMCAST CABLE, COMMONWEALTH EDISON COMPANY, AT&T AND WIDE OPEN WEST, THEIR SUCCESSORS AND ASSIGNS, IN ALL AREAS DESIGNATED "PUBLIC UTILITY & ACCESS EASEMENT ON THIS SUBDIVISION PLAT. SAID EASEMENTS SHALL BE FOR THE INSTALLATION, MAINTENANCE, RELOCATION, RENEWAL AND REMOVAL OF PUBLIC UTILITIES, DRAINAGE FACILITIES AND RELATED APPURTENANCES, IN, UNDER, ACROSS, ALONG AND/OR UPON THE SO DESIGNATED PROPERTY. IT SHALL INCLUDE THE RIGHT TO ENTER THE SUBDIVIDED PROPERTY AND SUCH AREAS FOR ALL SUCH PURPOSES, AND THE RIGHT, WITHOUT LIABILITY, TO CUT, TRIM, ALTER AND/OR REMOVE ANY VEGETATION, ROOTS, STRUCTURES OR DEVICES WITHIN THE DESIGNATED EASEMENT PROPERTY AS MAY BE REASONABLY REQUIRED INCIDENT TO THE RIGHT HEREIN GIVEN.

WITHOUT PRIOR WRITTEN CONSENT OF THE GRANTEES, NO BUILDINGS, STRUCTURES OR OTHER OBSTRUCTION SHALL BE CONSTRUCTED, PLANTED OR PLACED IN ANY SUCH EASEMENT AREAS, NOR SHALL ANY OTHER USES BE MADE THEREOF WHICH WILL INTERFERE WITH THE EASEMENTS GRANTED HEREBY. SUCH EASEMENTS SHALL FURTHER BE FOR THE PURPOSE OF SERVING ALL AREAS SHOWN ON THIS PLAT AS WELL AS OTHER PROPERTY, WHETHER OR NOT CONTIGUOUS THERETO, WITH GAS, ELECTRIC, TELEPHONE, FIBER-OPTIC AND/OR CABLE TV, WATERMAINS, SANITARY AND STORM SEWERS.

SUCH EASEMENTS SHALL SURVIVE THE VACATION BY PROPER AUTHORITY OF ANY STREET AND OTHER PUBLIC WAY AND PLACE SHOWN ON THIS PLAT, UNLESS OTHERWISE EXPRESSLY MENTIONED IN AN ORDINANCE OF VACATION.

EMERGENCY & PEDESTRIAN ACCESS EASEMENT

A PERMANENT AND PERPETUAL NON-EXCLUSIVE EASEMENT IS HEREBY RESERVED FOR AND GRANTED TO THE VILLAGE ON, OVER, UPON AND ACROSS, THOSE AREAS DEPICTED ON THE PLAT AS "EMERGENCY & PEDESTRIAN EASEMENT" FOR MUNICIPAL EMERGENCY VEHICULAR USE AND PUBLIC PEDESTRIAN USE, BICYCLE USE (NON-MOTORIZED VEHICLES), AND ACCESS, AND FOR THE VILLAGE TO IMPROVE, INSTALL, CONSTRUCT, RENEW, CLEAR, RECONSTRUCT, REPLACE, REMOVE, REPAIR, ALTER, INSPECT, OPERATE, AND MAINTAIN SAME.

RESTRICTIVE COVENANTS AND EASEMENT FOR STORM WATER MANAGEMENT AREA

1. THE AREA OF THE PROPERTY DESIGNATED ON THIS PLAT AS "STORM WATER MANAGEMENT AREA" SHALL BE CONTINUOUSLY MAINTAINED IN A FIRST RATE MANNER BY FOREST EDGE SUBDIVISION HOMEOWNERS' ASSOCIATION (THE "ASSOCIATION") AND AN EASEMENT ON, UNDER AND ABOVE THE STORM WATER MANAGEMENT AREA IS HEREBY GRANTED TO, AND FOR THE USE AND BENEFIT OF, ALL OF THE LOTS IN THIS SUBDIVISION AND THE HOMEOWNERS' ASSOCIATION FOR THE SOLE PURPOSE OF STORM WATER DETENTION AND DRAINAGE.

2. NO CHANGE SHALL BE MADE IN THE FINISHED GRADE OF THE LAND WITHIN THE STORM WATER MANAGEMENT AREA, NOR SHALL ANY CONSTRUCTION OF ANY KIND WHATSOEVER BE ERECTED OR PERMITTED TO EXIST WITHIN THE STORM WATER MANAGEMENT AREA THAT MIGHT MATERIALLY IMPEDE STORM WATER DRAINAGE THEREIN OR MATERIALLY REDUCE THE STORM WATER DETENTION CAPACITY THEREOF. TREES, SHRUBS, FENCES AND NORMAL LANDSCAPE PLANTING ASIDE FROM THOSE DEPICTED IN THE FINAL ENGINEERING AND LANDSCAPE PLANS FOR THE FOREST EDGE SUBDIVISION SHALL BE PERMITTED WITHIN THE STORM WATER MANAGEMENT AREA ONLY WITH THE PRIOR WRITTEN APPROVAL OF THE VILLAGE MANAGER OF THE VILLAGE OF GLENCOE, COOK COUNTY, ILLINOIS (THE "VILLAGE").

3. IN THE EVENT THE VILLAGE DETERMINES, IN ITS SOLE AND ABSOLUTE DISCRETION, THAT PRIOR MAINTENANCE OF THE STORM WATER MANAGEMENT AREA, AS REQUIRED BY THE DECLARATION FOR THE FOREST EDGE SUBDIVISION, IS NOT PERFORMED AT ANY TIME, THE VILLAGE, AFTER TEN (10) DAYS PRIOR WRITTEN NOTICE TO THE ASSOCIATION, MAY, BUT SHALL NOT BE OBLIGATED TO, ENTER UPON THE STORM WATER MANAGEMENT AREA FOR THE PURPOSE OF PERFORMING MAINTENANCE WORK ON AND TO THE STORM WATER MANAGEMENT AREA.

4. IN THE EVENT THAT THE VILLAGE SHALL CAUSE TO BE PERFORMED ANY WORK PURSUANT TO THESE PARAGRAPHS, THE VILLAGE SHALL HAVE THE RIGHT TO CHARGE THE ASSOCIATION AN AMOUNT SUFFICIENT TO DEFRAY THE ENTIRE COST OF SUCH WORK OR ACTION, INCLUDING ADMINISTRATIVE COSTS, EITHER BEFORE OR AFTER SUCH COST IS INCURRED. IF THE AMOUNT SO CHARGED IS NOT PAID BY THE ASSOCIATION WITHIN THIRTY (30) DAYS FOLLOWING A DEMAND IN WRITING BY THE VILLAGE FOR SUCH PAYMENT, SUCH CHARGE, TOGETHER WITH INTEREST AND COSTS OF COLLECTION, SHALL BECOME A LIEN UPON THE STORM WATER MANAGEMENT AREA AND LOTS 1-29 IN THIS SUBDIVISION AND THE VILLAGE SHALL HAVE THE RIGHT TO COLLECT SUCH CHARGE, WITH INTEREST AND COSTS, AND TO ENFORCE SUCH LIEN AS IN FORECLOSURE PROCEEDINGS AS PERMITTED BY LAW.

5. NOTHING IN THESE PARAGRAPHS SHALL BE CONSTRUED TO CONSTITUTE A DEDICATION OF ANY PORTION OF THE STORM WATER MANAGEMENT AREA TO, OR AN ACCEPTANCE THEREOF BY, THE VILLAGE.

6. THE VILLAGE SHALL BE UNDER NO OBLIGATION TO EXERCISE THE RIGHTS GRANTED IN THESE PARAGRAPHS EXCEPT AS IT SHALL DETERMINE TO BE IN ITS BEST INTEREST. NO FAILURE TO EXERCISE AT ANY TIME ANY RIGHT HEREIN GRANTED TO THE VILLAGE SHALL BE CONSTRUED AS A WAIVER OF THAT OR ANY OTHER RIGHTS.

7. THESE COVENANTS SHALL RUN WITH THE LAND IN THE SUBDIVISION SHOWN ON THIS PLAT, AND SHALL BE BINDING UPON AND INURE TO THE BENEFIT OF THE OWNERS OF ALL LOTS OF RECORD THEREIN, THEIR RESPECTIVE SUCCESSORS, ASSIGNS AND GRANTEES AND ALL PARTIES CLAIMING BY, THROUGH AND UNDER THEM. ENFORCEMENT OF THESE COVENANTS MAY BE SOUGHT BY THE OWNERS OF ANY LOTS OF RECORD IN THIS SUBDIVISION, ANY PERSON WITH AN INTEREST IN ANY OF SAID LOTS OF RECORD, OR THE VILLAGE OF GLENCOE BY ANY PROCEEDING AT LAW OR IN EQUITY AGAINST ANY PERSON OR PERSONS VIOLATING OR ATTEMPTING TO VIOLATE ANY COVENANT, EITHER TO RESTRAIN VIOLATION, TO COMPEL AFFIRMATIVE ACTION, OR TO RECOVER DAMAGES, AND AGAINST THE LAND TO ENFORCE ANY LIEN CREATED BY THESE COVENANTS.

OPEN SPACE COVENANT AND EASEMENT

THE AREA OF THE PROPERTY DESIGNATED ON THIS PLAT AS "OPEN SPACE EASEMENT AREA" SHALL BE CONTINUOUSLY MAINTAINED AS OPEN SPACE IN ITS NATURAL CONDITION BY FOREST EDGE SUBDIVISION HOMEOWNERS' ASSOCIATION (THE "ASSOCIATION"). NO MANMADE STRUCTURE OF ANY KIND SHALL BE CONSTRUCTED THEREON NOR SHALL ANY GRADING BE PERMITTED EXCEPT FOR THOSE IMPROVEMENTS WHICH ARE INCLUDED IN THE APPROVED PLANS AND SPECIFICATIONS FOR THE SUBDIVISION.

EASEMENT FOR STORM WATER DRAINAGE:

A PERMANENT AND PERPETUAL NON-INCLUSIVE EASEMENT IS HEREBY GRANTED TO THE VILLAGE OF GLENCOE, COOK COUNTY, ILLINOIS ("VILLAGE"), ITS SUCCESSORS AND ASSIGNS, AND TO, AND FOR THE USE AND BENEFIT OF, THE OWNERS OF ALL OF THE LOTS IN THIS SUBDIVISION, FOR THE SOLE PURPOSE OF OVERLAND STORM WATER DRAINAGE, IN, UPON, ALONG AND ACROSS THE AREAS DESIGNATED "EASEMENT FOR STORM WATER DRAINAGE" ON THIS SUBDIVISION PLAT. NO CHANGE SHALL BE MADE IN THE FINISHED GRADE OF THE LAND WITHIN ANY "EASEMENT FOR STORM WATER DRAINAGE," AND NO CONSTRUCTION OF ANY KIND WHATSOEVER SHALL BE ERECTED OR PERMITTED TO EXIST WITHIN ANY "EASEMENT FOR STORM WATER DRAINAGE" THAT MIGHT MATERIALLY REDUCE THE STORM WATER DRAINAGE CAPACITY THEREOF. TREES, SHRUBS, FENCES, AND NORMAL LANDSCAPE PLANTING SHALL BE PERMITTED WITHIN ANY "EASEMENT FOR STORM WATER DRAINAGE" ONLY WITH THE PRIOR WRITTEN APPROVAL OF THE VILLAGE MANAGER OF THE VILLAGE OF GLENCOE. EACH OWNER OF A LOT WITH ANY "EASEMENT FOR STORM WATER DRAINAGE" LOCATED ON IT SHALL MAINTAIN A GRASS COVER ON THE SURFACE OF THAT PORTION OF SUCH LOT LOCATED WITHIN THE "EASEMENT FOR STORM WATER DRAINAGE," AND SHALL KEEP SUCH GRASS AND LANDSCAPING IN A FIRST-CLASS AND TRIMMED CONDITION. THE OWNERS OF LOTS ON WHICH ANY "EASEMENT FOR STORM WATER DRAINAGE" IS LOCATED SHALL NOT IN ANY MANNER DAMAGE, DESTROY, INJURE, OBSTRUCT, OR PERMIT TO BE OBSTRUCTED THE "EASEMENT FOR STORM WATER DRAINAGE" AT ANY TIME WHATSOEVER WITHOUT THE EXPRESS PRIOR WRITTEN CONSENT OF THE VILLAGE MANAGER OF THE VILLAGE OF GLENCOE.

BIOSWALE EASEMENT:

THE AREA OF THE PROPERTY DESIGNATED ON THIS PLAT AS "BIOSWALE EASEMENT" SHALL BE CONTINUOUSLY MAINTAINED IN A FIRST RATE MANNER BY FOREST EDGE SUBDIVISION HOMEOWNERS' ASSOCIATION (THE "ASSOCIATION") AND AN EASEMENT ON, UNDER AND ABOVE THE STORM WATER MANAGEMENT AREA IS HEREBY GRANTED TO, AND FOR THE USE AND BENEFIT OF, ALL OF THE LOTS IN THIS SUBDIVISION AND THE HOMEOWNERS' ASSOCIATION FOR THE SOLE PURPOSE OF STORM WATER DRAINAGE. NO CHANGE SHALL BE MADE IN THE FINISHED GRADE OF THE LAND WITHIN THE BIOSWALE EASEMENT, NOR SHALL ANY CONSTRUCTION OF ANY KIND WHATSOEVER BE ERECTED OR PERMITTED TO EXIST WITHIN THE BIOSWQALE EASEMENT THAT MIGHT MATERIALLY IMPEDE STORM WATER DRAINAGE THEREIN. TREES, SHRUBS, FENCES AND NORMAL LANDSCAPE PLANTING ASIDE FROM THOSE DEPICTED IN THE FINAL ENGINEERING AND LANDSCAPE PLANS FOR THE FOREST EDGE SUBDIVISION SHALL BE PERMITTED WITHIN THE BIOSWALE EASEMENT ONLY WITH THE PRIOR WRITTEN APPROVAL OF THE VILLAGE MANAGER OF THE VILLAGE OF GLENCOE, COOK COUNTY, ILLINOIS.

OWNER'S CERTIFICATE
STATE OF ILLINOIS}
COUNTY OF COOK}S.S.

THIS IS TO CERTIFY THAT HOOVER OWNER, LLC, A DELAWARE LIMITED LIABILITY COMPANY, IS THE OWNER OF THE LAND DESCRIBED IN THE ANNEXED PLAT, AND THAT IT HAS CAUSED THE SAME TO BE SURVEYED AND SUBDIVIDED AS INDICATED THEREON, FOR THE USES AND PURPOSES THEREIN SET FORTH, AND DOES HEREBY ACKNOWLEDGE AND ADOPT THE SAME UNDER THE STYLE AND TITLE THEREON INDICATED.

THIS IS TO FURTHER CERTIFY THAT HOOVER OWNER, LLC, HAS DETERMINED, TO THE BEST OF ITS, KNOWLEDGE, THAT EACH OF THE LOTS DEPICTED ON THE ANNEXED PLAT LIES IN THE FOLLOWING SCHOOL DISTRICT:

ELEMENTARY SCHOOL DISTRICT 35 — HIGH SCHOOL DISTRICT 203

DATED THIS ___ DAY OF _____, A.D., 20_____.

HOOVER OWNER, LLC

BY: _____
MANAGING MEMBER

NOTARY PUBLIC CERTIFICATE
STATE OF ILLINOIS}
}S.S.
COUNTY OF COOK}

I, _____, A NOTARY PUBLIC, DO HEREBY CERTIFY THAT _____, APPEARED BEFORE ME THIS DAY IN PERSON AND ACKNOWLEDGED THE EXECUTION OF THIS STATEMENT AS HIS FREE AND VOLUNTARY ACT.

GIVEN UNDER MY HAND AND NOTARIAL SEAL THIS __ DAY OF _____ A.D., 20__.

_____
NOTARY PUBLIC

DRAINAGE CERTIFICATE
TO THE BEST OF OUR KNOWLEDGE AND BELIEF, THE DRAINAGE OF SURFACE WATERS WILL NOT BE CHANGED BY THE CONSTRUCTION OF THIS SUBDIVISION OR ANY PART THEREOF, OR, IF SUCH SURFACE WATER DRAINAGE WILL BE CHANGED, REASONABLE PROVISION HAS BEEN MADE FOR COLLECTION AND DIVERSION OF SUCH SURFACE WATERS INTO PUBLIC AREAS, OR DRAINS WHICH THE OWNER HAS A RIGHT TO USE, AND THAT SUCH SURFACE WATERS WILL BE PLANNED FOR IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRACTICES SO AS TO REDUCE THE LIKELIHOOD OF DAMAGE TO THE ADJOINING PROPERTY BECAUSE OF THE CONSTRUCTION OF THIS SUBDIVISION.

_____ HOOVER OWNER LLC _____
OWNER

ITS MANAGER: _____ NAME: _____ KEVIN C. LEWIS _____

SIGNED: _____ FIRM: _____ IG CONSULTING, INC. _____

DATED: _____ DATED: _____

SURVEYOR CERTIFICATE
STATE OF ILLINOIS}
}S.S.
COUNTY OF COOK}

THIS IS TO CERTIFY THAT I, KEVIN C. LEWIS, AN ILLINOIS PROFESSIONAL LAND SURVEYOR NUMBER 3681, HAVE SURVEYED AND SUBDIVIDED THE FOLLOWING DESCRIBED PROPERTY.

PARCEL 1:
THAT PART OF THE SOUTH 6 CHAINS AND 23 LINKS OF THE NORTHEAST QUARTER OF SECTION 1, TOWNSHIP 42 NORTH, RANGE 12 EAST OF THE THIRD PRINCIPAL MERIDIAN, WHICH LIES EAST OF THE CENTER LINE OF THE GREEN BAY ROAD (EXCEPTING THAT PORTION AS BEING MORE PARTICULARLY DESCRIBED IN DEED RECORDED AUGUST 22, 2016 AS DOCUMENT NUMBER 1623529020), ALSO THAT PART OF THE NORTHEAST QUARTER OF SECTION 1, TOWNSHIP 42 NORTH, RANGE 12 EAST OF THE THIRD PRINCIPAL MERIDIAN, BOUNDED AND DESCRIBED AS FOLLOWS: COMMENCING AT THE INTERSECTION OF THE EAST LINE OF SAID NORTHEAST QUARTER WITH THE NORTH LINE OF THE SOUTH 6.23 CHAINS OF SAID NORTHEAST QUARTER; RUNNING THENCE NORTH ON SAID EAST LINE 3 FEET; THENCE WESTERLY, PARALLEL WITH THE NORTH LINE OF SAID SOUTH 6.23 CHAINS, TO THE CENTER LINE OF GREEN BAY ROAD; THENCE SOUTHEASTERLY, ALONG THE CENTER LINE OF GREEN BAY ROAD, TO THE NORTH LINE OF SAID SOUTH 6.23 CHAINS; THENCE EASTERLY , ALONG THE NORTH LINE OF SAID SOUTH 6.23 CHAINS TO THE PLACE OF BEGINNING, ALL IN COOK COUNTY, ILLINOIS.

PARCEL 2:
THAT PART OF THE NORTHEAST QUARTER OF SECTION 1, TOWNSHIP 42 NORTH, RANGE 12 EAST OF THE THIRD PRINCIPAL MERIDIAN, DESCRIBED AS FOLLOWS: BEGINNING AT A POINT IN THE EAST LINE OF SAID NORTHEAST QUARTER, 414.18 FEET NORTH OF THE SOUTHEAST CORNER OF SAID NORTHEAST QUARTER; THENCE NORTH, ALONG THE EAST LINE OF SAID NORTHEAST QUARTER, 366.2 FEET TO THE SOUTH LINE OF THE PROPERTY OF THE FOREST PRESERVE OF COOK COUNTY; THENCE WEST, ALONG THE SOUTH LINE OF THE SAID FOREST PRESERVE OF COOK COUNTY, 568 FEET; THENCE SOUTH, ALONG A LINE 568 FEET WEST OF AND PARALLEL WITH THE SAID EAST LINE OF THE NORTHEAST QUARTER, 350.6 FEET; THENCE SOUTHWESTERLY, ALONG A STRAIGHT LINE, 28.28 FEET TO A POINT ON A LINE 414.18 FEET NORTH OF AND PARALLEL WITH THE SOUTH LINE OF SAID NORTHEAST QUARTER AND 588 FEET WEST OF THE EAST LINE OF SAID NORTHEAST QUARTER; THENCE EAST, ALONG SAID LINE 414.18 FEET NORTH OF THE SOUTH LINE OF SAID NORTHEAST QUARTER, 588 FEET TO THE PLACE OF BEGINNING, IN COOK COUNTY, ILLINOIS.

I ALSO CERTIFY THAT THE PROPERTY IS WITHIN THE CORPORATE LIMITS OF THE VILLAGE GLENCOE, WHICH HAS ADOPTED AN OFFICIAL COMPREHENSIVE PLAN.

I FURTHER CERTIFY THAT BY SCALED MAP LOCATION AND GRAPHIC PLOTTING ONLY, THE PARCELS INCLUDED IN THIS SUBDIVISION ARE LOCATED IN THE "UNSHADED ZONE X" PER FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP 17031C0094J EFFECTIVE DATE OF AUGUST 19, 2008.

GIVEN UNDER MY HAND AND SEAL THIS _____ DAY OF _____, A.D. 20___.

BY
ILLINOIS PROFESSIONAL LAND SURVEYOR NO. 3681
LICENSE EXPIRES NOVEMBER 30, 2020

REVISED: 06/08/20
REVISED: 04/17/20
REVISED: 02/20/20
REVISED: 02/19/20
PREPARED: 01/17/20

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| | | |
|---|---|---|
| PREPARED FOR: GLENCOE DEVELOPERS LLC | | SCALE: 1"=50' |
| FIELD CREW: D.J. | FIELD WORK:2018 | DRAFTED BY: S.R.M. CHECKED BY: |

FIRM NO. 184-001330

FINAL PLAT OF SUBDIVISION
FOREST EDGE SUBDIVISION
1801 GREEN BAY ROAD
GLENCOE, ILLINOIS

PROJECT NUMBER
18557

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# FOREST EDGE SUBDIVISION

## 1801 GREEN BAY ROAD

### GLENCOE, ILLINOIS

## LEGEND

| EXISTING | | PROPOSED |
|---|---|---|
| | STORM SEWER | |
| | SANITARY SEWER | |
| W W | WATER MAIN | W W |
| | GAS MAIN | G G G G |
| | TELECOMMUNICATION & ELECTRIC LINE (BURIED) | TE TE TE TE |
| OHW OHW OHW OHW | OVERHEAD ELECTRIC, | |
| | SANITARY MANHOLE | |
| | STORM MANHOLE | |
| | STORM CATCH BASIN | |
| | UTILITY MANHOLE | |
| | TELEPHONE/UTILITY PEDESTAL | |
| | STORM INLET | |
| | UTILITY POLE | |
| | FIRE HYDRANT | |
| | VALVE VAULT | |
| | STREET LIGHT | |
| | TRANSFORMER | |
| | ELECTRIC PEDESTAL | |
| | EDGE OF PAVEMENT | |
| | CURB & GUTTER | |
| | DRAINAGE FLOW | |
| | EMERGENCY OVERLAND FLOW ROUTE | |
| × 691.18 | SPOT GRADE | + 641.6 |
| | TOP OF CURB ELEVATION | + T/C=642.5 |
| | TOP OF PAVEMENT ELEVATION | + 642.0 |
| | TOP OF FOUNDATION ELEVATION | F/F=642.1 |
| | ROOT PRUNING | |
| | STAKED SILT FENCE | |
| | TREE PROTECTION FENCE | x x |
| | CONSTRUCTION FENCE | |

**THE CONTRACTOR MUST CALL J.U.L.I.E FOR THE LOCATION AND STAKING OF EXISTING UNDERGROUND UTILITIES (GAS, ELECTRIC, TELEPHONE, ETC.) AT 1-800-892-0123 48 HOURS PRIOR TO DIGGING.**

VILLAGE CONSTRUCTION HOURS OF 7AM-6PM M-F, 9AM-6PM SATURDAY AND NO WORK ON SUNDAYS OR HOLIDAYS.

**2019**

## LOCATION MAP

SECTION 1, TOWNSHIP 42 N, RANGE 12 E

**NOTE:**
EXISTING WATER, SANITARY SEWER AND STORM SEWER INFORMATION IS BASED ON RECORDS PROVIDED BY THE MUNICIPALITY AND SURVEY DATA DETERMINED BY IG CONSULTING, INC. CONTRACTOR MUST VERIFY LOCATIONS, DEPTHS, MATERIALS AND POTENTIAL CONFLICTS PRIOR TO BIDDING AND CONSTRUCTING THE PROPOSED IMPROVEMENTS. SUCH VERIFICATION SHALL ALSO INCLUDE FACILITIES OWNED AND OPERATED BY VARIOUS UTILITY COMPANIES. ENGINEER MAKES NO REPRESENTATION AS TO THE ACCURACY OR EXISTENCE OF PLAN INFORMATION PROVIDED BY OTHERS.

ENGINEER: KEVIN C. LEWIS DATE

ILLINOIS REGISTRATION NO. 062-055368 EXPIRATION DATE: 11-30-2021

THESE PLANS OR ANY PART THEREOF SHALL BE CONSIDERED VOID WITHOUT THE SIGNATURE, SEAL, AND EXPIRATION DATE OF THE SEAL OF THE ENGINEER.

## INDEX


1 – COVER SHEET
2 – EXISTING CONDITION & SITE CLEARING PLAN
3 – GEOMETRIC PLAN
4 – LOT GRADING PLAN
5 – MASS GRADING LIMIT
6 – SOIL EROSION CONTROL PLAN
7 – CROSS SECTIONS
8 – CROSS SECTIONS
9 – SITE DEVELOPMENT MANAGEMENT PLAN
10 – UTILITY PLAN
11 – OFF-SITE UTILITY CONNECTION & DETAILS
12 – PLAN & PROFILE, STA. 0+00 TO 5+00
13 – PLAN & PROFILE, STA. 5+00 TO 10+00
14 – PLAN & PROFILE, STA. 10+00 TO 15+00
15 – PLAN & PROFILE, STA. 15+00 TO 15+73
16 – PLAN & PROFILE, OFF-SITE UTILITY CONNECTIONS
17 – PROJECT NOTES AND SPECIFICATIONS
18 – GLENCOE WATER MAIN SPECIFICATIONS
19 – CONSTRUCTION STANDARDS
20 – CONSTRUCTION STANDARDS
21 – CONSTRUCTION STANDARDS
22 – CONSTRUCTION STANDARDS
23 – CONSTRUCTION STANDARDS


ALL ROADWAY CONSTRUCTION SHALL CONFORM TO THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND ALL AMENDMENTS THERETO AS ADOPTED BY THE STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION (I.D.O.T.).

STORM SEWER, SANITARY SEWER AND WATER MAIN CONSTRUCTION SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS, LATEST ISSUE, AND THE VILLAGE OF GLENCOE SUBDIVISION AND ENGINEERING GUIDE, INCLUDING THE LATEST CONSTRUCTION DETAILS, WHICHEVER IS MORE STRINGENT.

VILLAGE BENCHMARK #296:
NORTHWEST BOLT OF FIRE HYDRANT AT SOUTHWEST CORNER OF WESTLEY ROAD AND FAIRFIELD ROAD, 200'± WEST OF GREENBAY ROAD.
ELEVATION= 646.11

SITE BENCHMARK:
NORTHEAST BONNET BOLT OF FIRE HYDRANT AT THE NORTHEASTERLY CORNER OF #1799 GREENBAY ROAD
ELEVATION = 690.27 NAVD 88 (GEOID12B)

REVISIONS

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|---|---|---|
| 12/06/19 | FOR SUBMITTAL | S.R.M. |
| 01/17/20 | FOR SUBMITTAL | S.R.M. |
| 02/20/20 | FOR SUBMITTAL | S.R.M. |
| 04/17/20 | PER VILLAGE COMMENTS | S.R.M. |
| 05/08/20 | PER VILLAGE COMMENTS | S.R.M. |


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COVER SHEET

DESIGN: K.C.L. DRAFTING: S.R.M
SCALE: NONE DATE: 10/28/19

FIRM NO. 184-001330

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1801 GREEN BAY ROAD
GLENCOE, ILLINOIS


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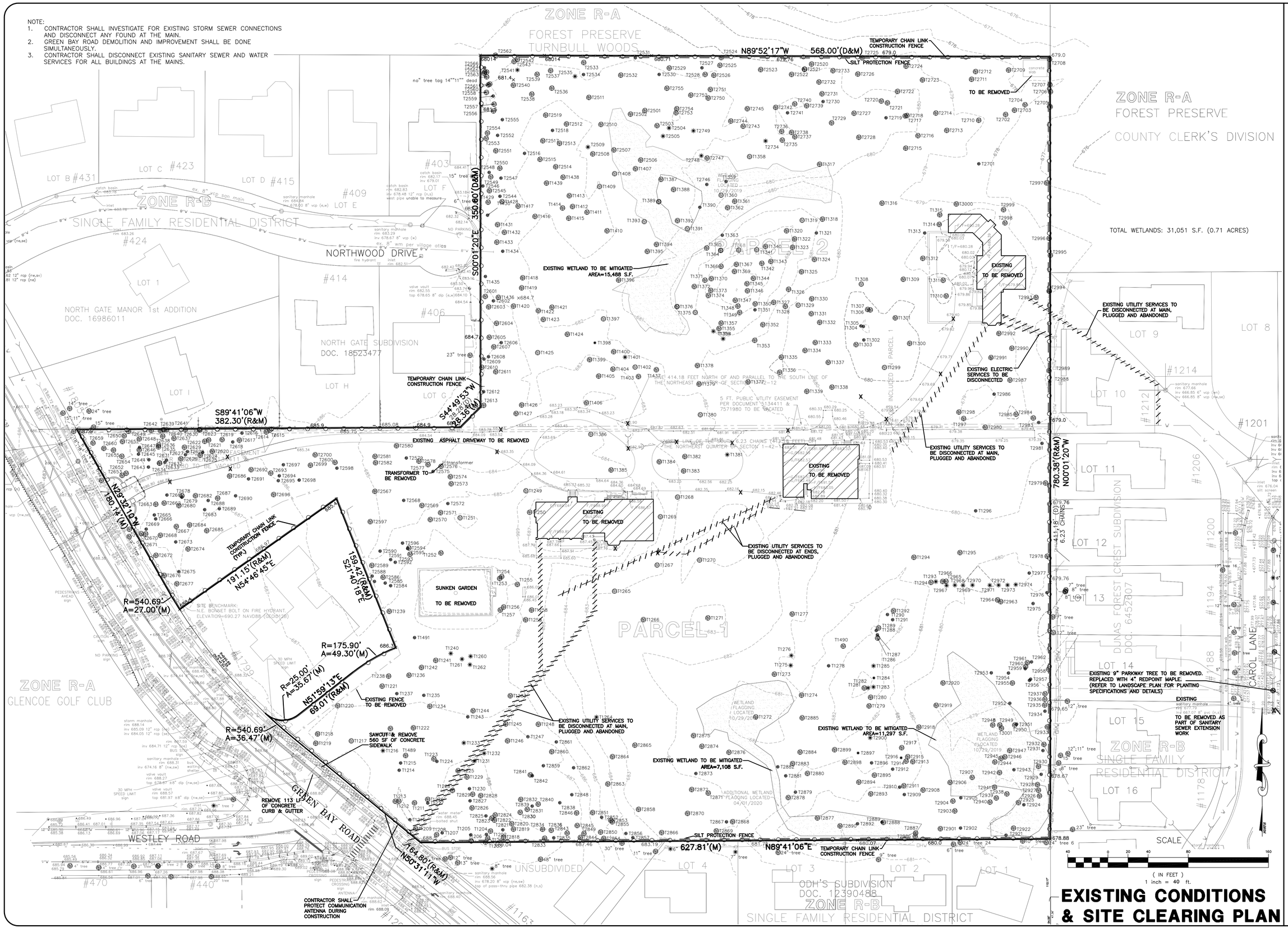
PROJECT No. 18557

NOTE:
1. CONTRACTOR SHALL INVESTIGATE FOR EXISTING STORM SEWER CONNECTIONS AND DISCONNECT ANY FOUND AT THE MAIN.
2. GREEN BAY ROAD DEMOLITION AND IMPROVEMENT SHALL BE DONE SIMULTANEOUSLY.
3. CONTRACTOR SHALL DISCONNECT EXISTING SANITARY SEWER AND WATER SERVICES FOR ALL BUILDINGS AT THE MAINS.




# EXISTING CONDITIONS & SITE CLEARING PLAN

## REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 12/06/19 | FOR SUBMITTAL | S.R.M. |
| 02/20/20 | FOR SUBMITTAL | S.R.M. |
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EXISTING CONDITIONS & SITE CLEARING PLAN

DESIGN: K.C.L. | DRAFTING: S.R.M.
SCALE: 1"=40' | DATE: 10/28/19

FIRM NO. 184-001330

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS


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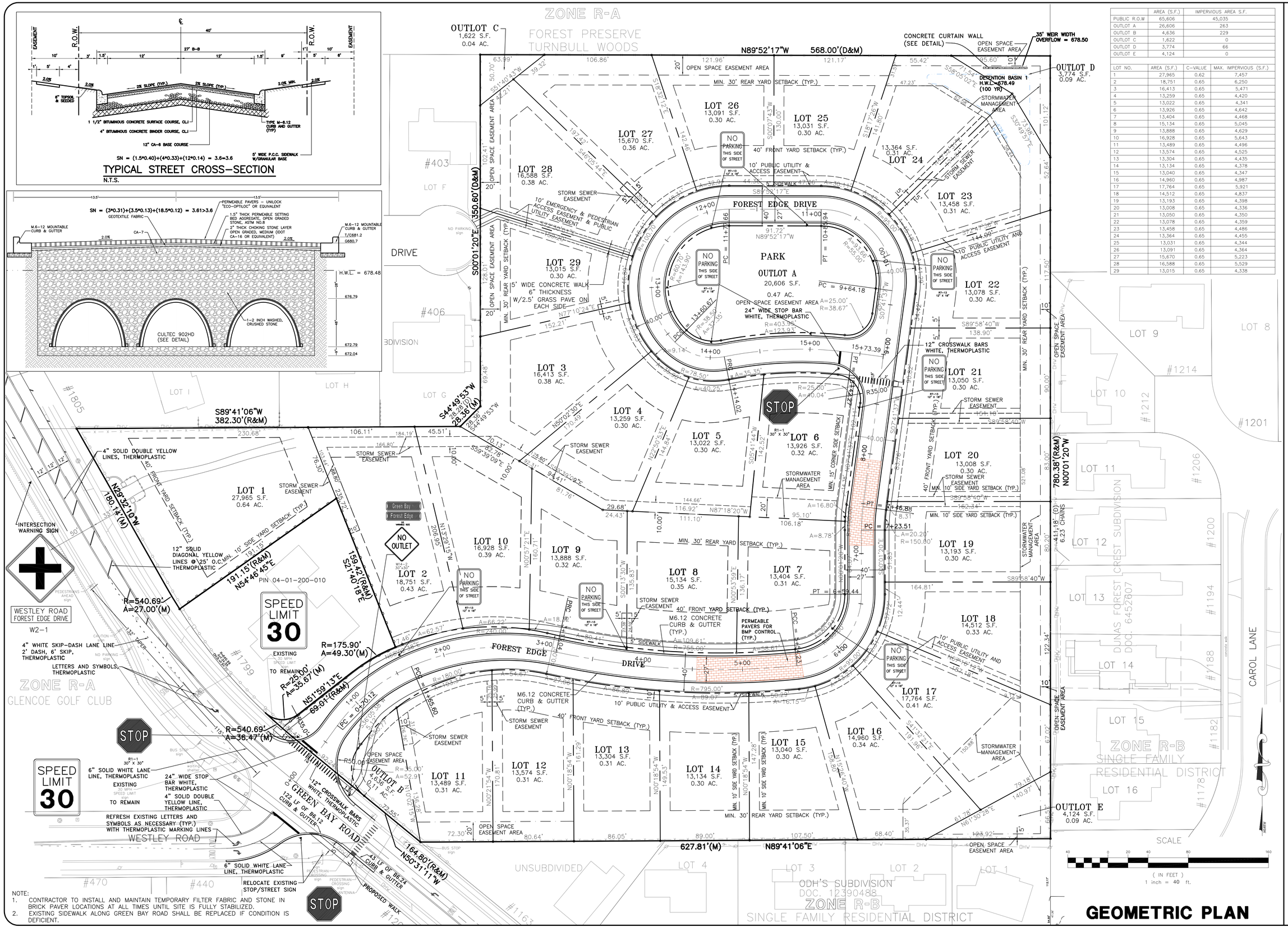


| | AREA (S.F.) | IMPERVIOUS AREA S.F. |
|---|---|---|
| PUBLIC R.O.W | 65,606 | 45,035 |
| OUTLOT A | 26,606 | 263 |
| OUTLOT B | 4,636 | 229 |
| OUTLOT C | 1,622 | 0 |
| OUTLOT D | 3,774 | 66 |
| OUTLOT E | 4,124 | 0 |

| LOT NO. | AREA (S.F.) | C-VALUE | MAX. IMPERVIOUS (S.F.) |
|---|---|---|---|
| 1 | 27,965 | 0.62 | 7,457 |
| 2 | 18,751 | 0.65 | 6,250 |
| 3 | 16,413 | 0.65 | 5,471 |
| 4 | 13,259 | 0.65 | 4,420 |
| 5 | 13,022 | 0.65 | 4,341 |
| 6 | 13,926 | 0.65 | 4,642 |
| 7 | 13,404 | 0.65 | 4,468 |
| 8 | 15,134 | 0.65 | 5,045 |
| 9 | 13,888 | 0.65 | 4,629 |
| 10 | 16,928 | 0.65 | 5,643 |
| 11 | 13,489 | 0.65 | 4,496 |
| 12 | 13,574 | 0.65 | 4,525 |
| 13 | 13,304 | 0.65 | 4,435 |
| 14 | 13,134 | 0.65 | 4,378 |
| 15 | 13,040 | 0.65 | 4,347 |
| 16 | 14,960 | 0.65 | 4,987 |
| 17 | 17,764 | 0.65 | 5,921 |
| 18 | 14,512 | 0.65 | 4,837 |
| 19 | 13,193 | 0.65 | 4,398 |
| 20 | 13,008 | 0.65 | 4,336 |
| 21 | 13,050 | 0.65 | 4,350 |
| 22 | 13,078 | 0.65 | 4,359 |
| 23 | 13,458 | 0.65 | 4,486 |
| 24 | 13,364 | 0.65 | 4,455 |
| 25 | 13,031 | 0.65 | 4,344 |
| 26 | 13,091 | 0.65 | 4,364 |
| 27 | 15,670 | 0.65 | 5,223 |
| 28 | 16,588 | 0.65 | 5,529 |
| 29 | 13,015 | 0.65 | 4,338 |

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GEOMETRIC PLAN

DESIGN: K.C.L. | DRAFTING: S.R.M.
SCALE: 1"=40' | DATE: 10/28/19

FIRM NO. 184-001330

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS


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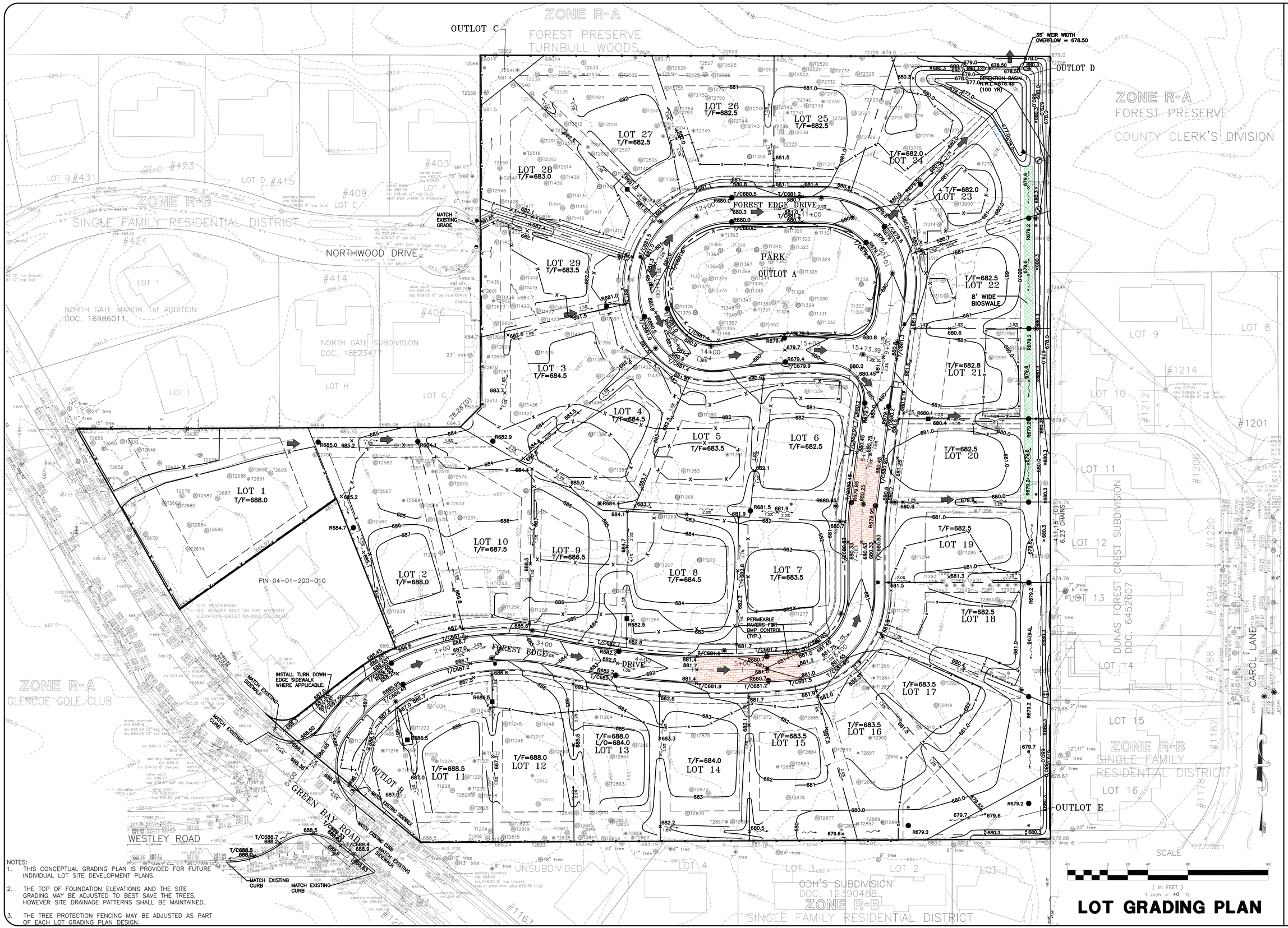
PROJECT No. 18557



NOTE:
1. CONTRACTOR TO INSTALL AND MAINTAIN TEMPORARY FILTER FABRIC AND STONE IN BRICK PAVER LOCATIONS AT ALL TIMES UNTIL SITE IS FULLY STABILIZED.
2. EXISTING SIDEWALK ALONG GREEN BAY ROAD SHALL BE REPLACED IF CONDITION IS DEFICIENT.




NOTES:

1. THIS CONCEPTUAL GRADING PLAN IS PROVIDED FOR FUTURE INDIVIDUAL LOT SITE DEVELOPMENT PLANS.
2. THE TOP OF FOUNDATION ELEVATIONS AND THE SITE GRADING MAY BE ADJUSTED TO BEST SAVE THE TREES, HOWEVER SITE DRAINAGE PATTERNS SHALL BE MAINTAINED.
3. THE TREE PROTECTION FENCING MAY BE ADJUSTED AS PART OF EACH LOT GRADING PLAN DESIGN.

REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 12/06/19 | FOR SUBMITTAL | S.R.M. |
| 01/17/20 | FOR SUBMITTAL | S.R.M. |
| 02/20/20 | FOR SUBMITTAL | S.R.M. |
| 04/17/20 | PER VILLAGE COMMENTS | S.R.M. |
| 05/08/20 | PER VILLAGE COMMENTS | S.R.M. |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LOT GRADING PLAN

DESIGN: K.C.L. | DRAFTING: S.R.M.

SCALE: 1"=40' | DATE: 10/28/19

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# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
### GLENCOE, ILLINOIS


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PROJECT No. 18557

# MASS GRADING LIMIT

NOTES:

1. THE MASS GRADING PLAN IS PROVIDED FOR THE CONSTRUCTION OF THE SUBDIVISION ROAD AND INFRASTRUCTURE IMPROVEMENTS.
2. TREE PROTECTION METHODS AND/OR DIRECTIONAL BORING SHALL BE USED TO PROTECT TREES DURING CONSTRUCTION.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOSS OF ANY TREES IF TREE PROTECTION PROCEDURES ARE NOT USED.
4. CONTRACTOR SHALL CONTACT THE OWNER, ENGINEER OR ARBORIST IF TREE SURVIVABILITY IS IN QUESTION.

REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 02/20/20 | FOR SUBMITTAL | S.R.M. |
| 03/30/20 | PER VILLAGE COMMENTS | S.R.M. |
| 04/17/20 | PER VILLAGE COMMENTS | S.R.M. |
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| 05/08/20 | PER VILLAGE COMMENTS | S.R.M. |

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MASS GRADING LIMIT

DESIGN: K.C.L. | DRAFTING: S.R.M.
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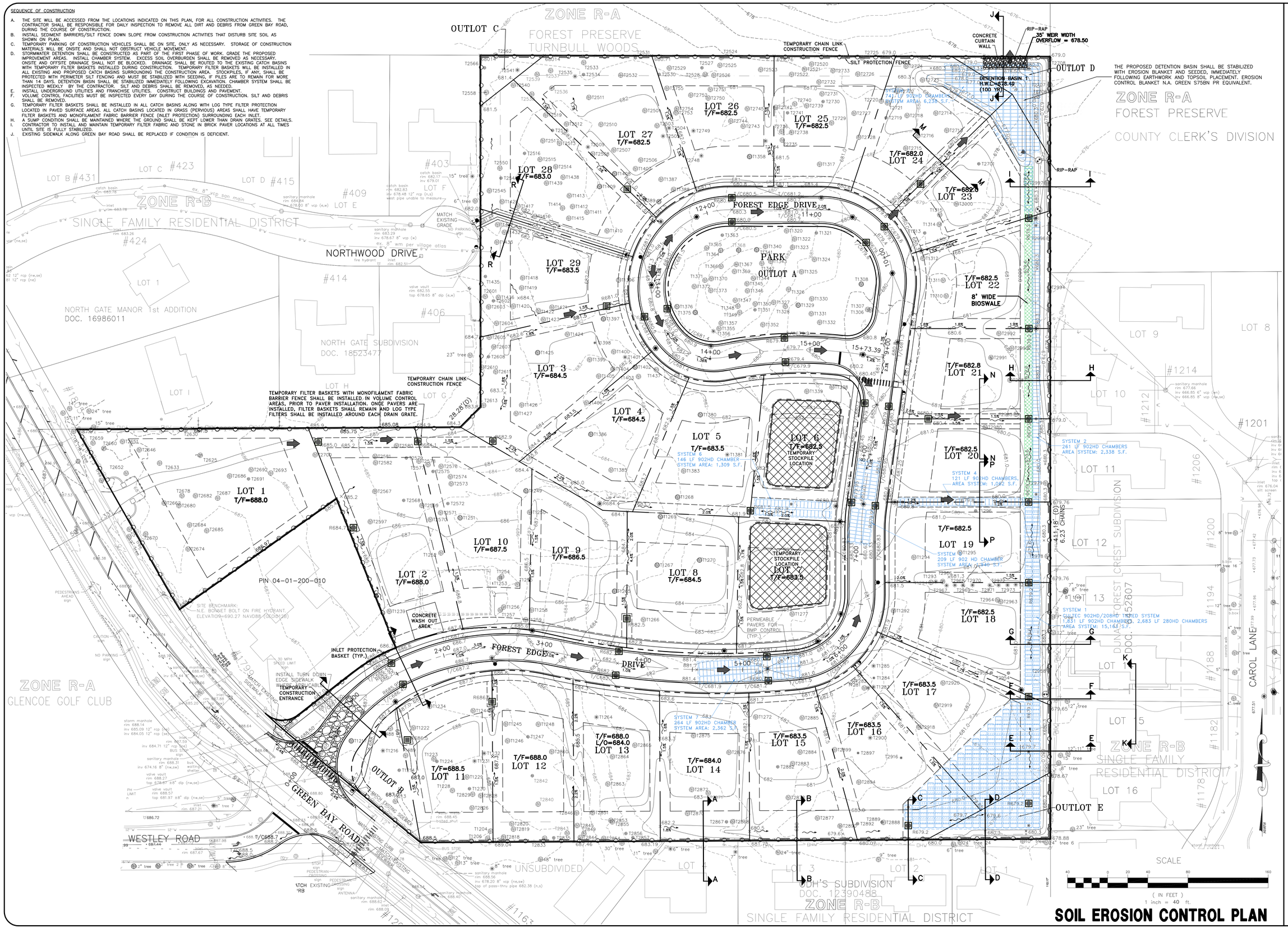
PROJECT No. 18557

SEQUENCE OF CONSTRUCTION

A. THE SITE WILL BE ACCESSED FROM THE LOCATIONS INDICATED ON THIS PLAN, FOR ALL CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAILY INSPECTION TO REMOVE ALL DIRT AND DEBRIS FROM GREEN BAY ROAD, DURING THE COURSE OF CONSTRUCTION.
B. INSTALL SEDIMENT BARRIERS/SILT FENCE DOWN SLOPE FROM CONSTRUCTION ACTIVITIES THAT DISTURB SITE SOIL AS SHOWN ON PLAN.
C. TEMPORARY PARKING OF CONSTRUCTION VEHICLES SHALL BE ON SITE, ONLY AS NECESSARY. STORAGE OF CONSTRUCTION MATERIALS WILL BE ONSITE AND SHALL NOT OBSTRUCT VEHICLE MOVEMENT.
D. STORMWATER DETENTION SHALL BE CONSTRUCTED AS PART OF THE FIRST PHASE OF WORK. GRADE THE PROPOSED IMPROVEMENT AREAS. INSTALL CHAMBER SYSTEM. EXCESS SOIL OVERBURDEN SHALL BE REMOVED AS NECESSARY. ONSITE AND OFFSITE DRAINAGE SHALL NOT BE BLOCKED. DRAINAGE SHALL BE ROUTED TO THE EXISTING CATCH BASINS WITH TEMPORARY FILTER BASKETS INSTALLED DURING CONSTRUCTION. TEMPORARY FILTER BASKETS WILL BE INSTALLED IN ALL EXISTING AND PROPOSED CATCH BASINS SURROUNDING THE CONSTRUCTION AREA. STOCKPILES, IF ANY, SHALL BE PROTECTED WITH PERIMETER SILT FENCING AND MUST BE STABILIZED WITH SEEDING, IF PILES ARE TO REMAIN FOR MORE THAN 14 DAYS. DETENTION BASIN SHALL BE STABILIZED IMMEDIATELY FOLLOWING EXCAVATION. CHAMBER SYSTEM SHALL BE INSPECTED WEEKLY BY THE CONTRACTOR. SILT AND DEBRIS SHALL BE REMOVED, AS NEEDED.
E. INSTALL UNDERGROUND UTILITIES AND FRANCHISE UTILITIES. CONSTRUCT BUILDINGS AND PAVEMENT.
F. VOLUME CONTROL FACILITIES MUST BE INSPECTED EVERY DAY DURING THE COURSE OF CONSTRUCTION. SILT AND DEBRIS SHALL BE REMOVED.
G. TEMPORARY FILTER BASKETS SHALL BE INSTALLED IN ALL CATCH BASINS ALONG WITH LOG TYPE FILTER PROTECTION LOCATED IN PAVED SURFACE AREAS. ALL CATCH BASINS LOCATED IN GRASS (PERVIOUS) AREAS SHALL HAVE TEMPORARY FILTER BASKETS AND MONOFILAMENT FABRIC BARRIER FENCE (INLET PROTECTION) SURROUNDING EACH INLET.
H. A SUMP CONDITION SHALL BE MAINTAINED WHERE THE GROUND SHALL BE KEPT LOWER THAN DRAIN GRATES. SEE DETAILS.
I. CONTRACTOR TO INSTALL AND MAINTAIN TEMPORARY FILTER FABRIC AND STONE IN BRICK PAVER LOCATIONS AT ALL TIMES UNTIL SITE IS FULLY STABILIZED.
J. EXISTING SIDEWALK ALONG GREEN BAY ROAD SHALL BE REPLACED IF CONDITION IS DEFICIENT.




SOIL EROSION CONTROL PLAN

REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 12/06/19 | FOR SUBMITTAL | S.R.M. |
| 01/17/20 | FOR SUBMITTAL | S.R.M. |
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DESIGN: K.C.L. | DRAFTING: S.R.M.
SCALE: 1"=40' | DATE: 10/28/19

FIRM NO. 184-001330

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
### GLENCOE, ILLINOIS


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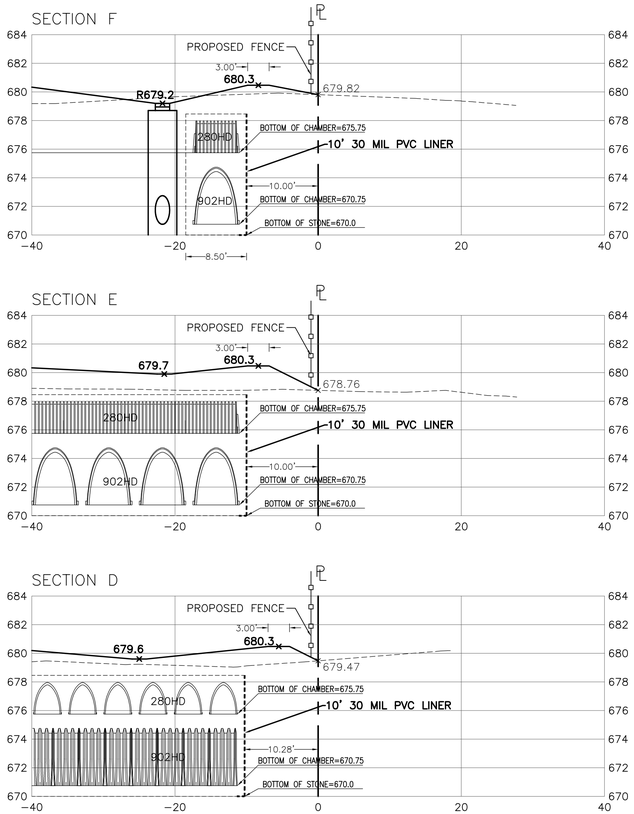
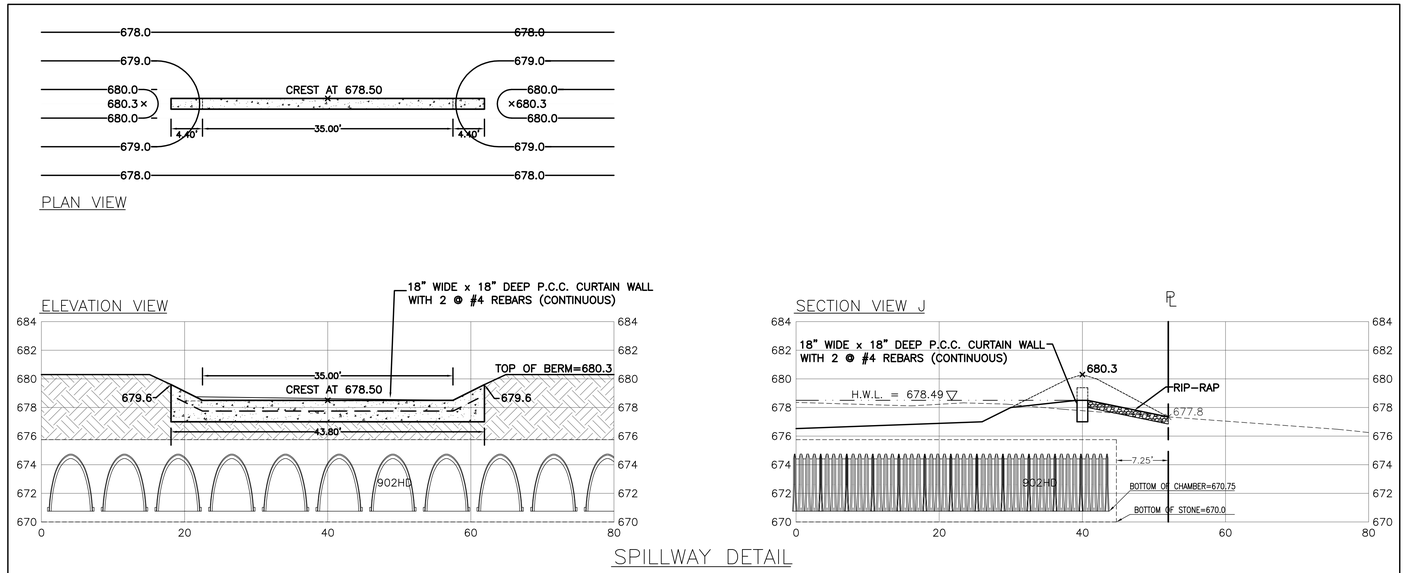
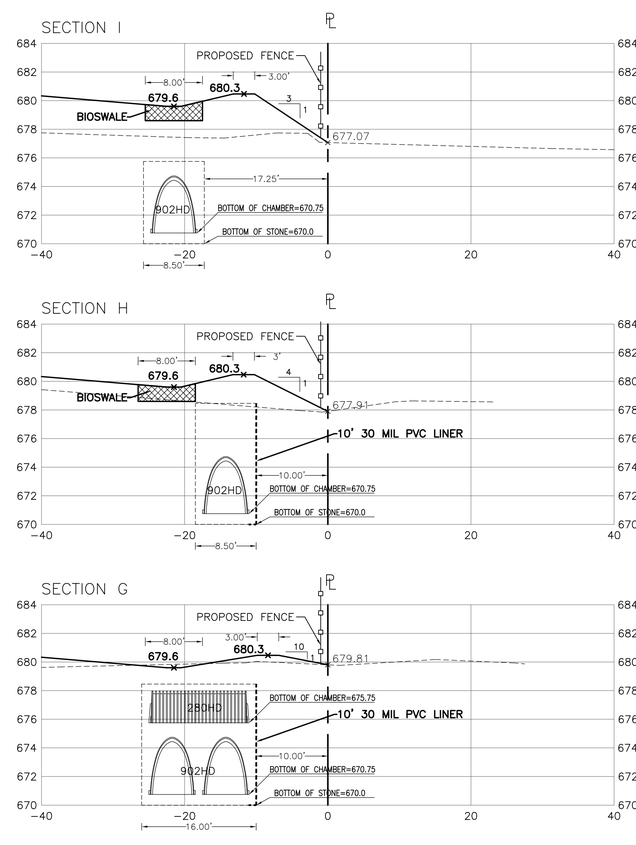
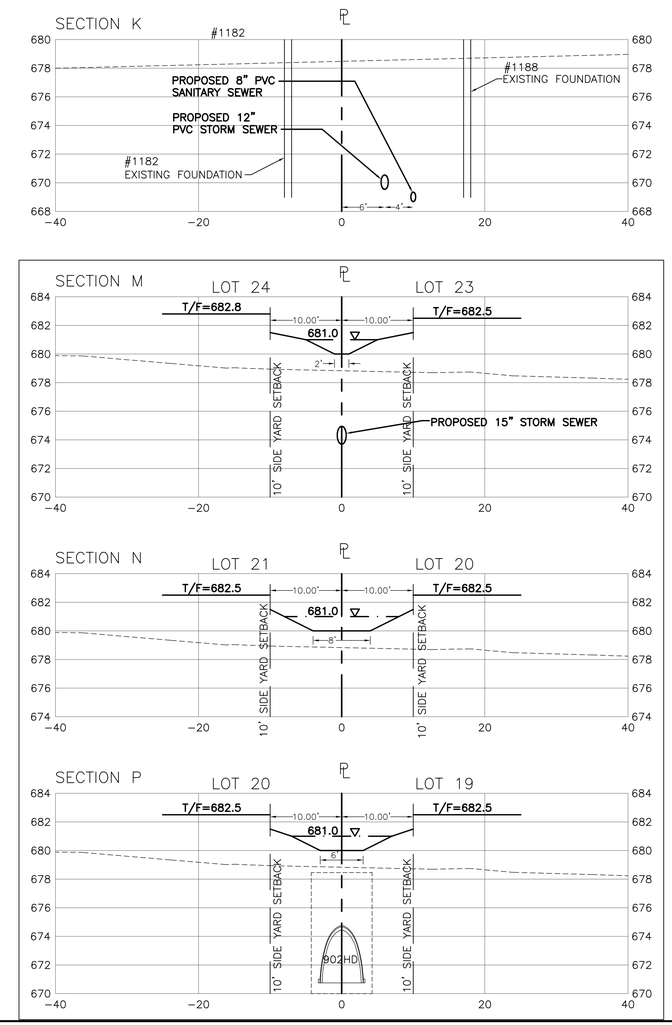



SCALE: H: 1"=10', V: 1"=10'

## CROSS SECTIONS




| REVISIONS | | |
|---|---|---|
| DATE | DESCRIPTION | DRAWN BY |
| 12/06/19 | FOR SUBMITTAL | S.R.M. |
| 01/17/20 | FOR SUBMITTAL | S.R.M. |
| 02/20/20 | FOR SUBMITTAL | S.R.M. |
| 04/17/20 | PER VILLAGE COMMENTS | S.R.M. |
| 05/08/20 | PER VILLAGE COMMENTS | S.R.M. |

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1129 MAIN STREET UNION GROVE, WISCONSIN 53182 PH. (262) 878-6200 | ig@igconsulting.net

CROSS SECTIONS

DESIGN: K.C.L. | DRAFTING: S.R.M.
SCALE: 1"=10' | DATE: 10/28/19

FIRM NO. 184-001330

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
### GLENCOE, ILLINOIS

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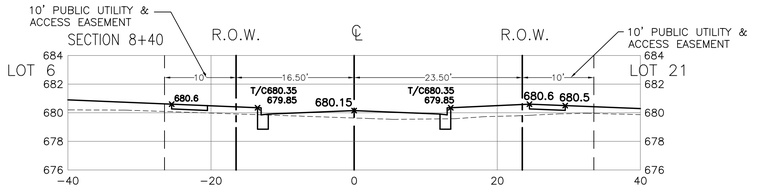
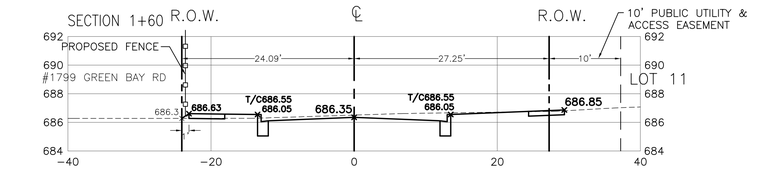
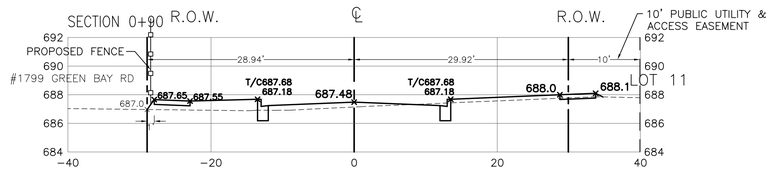
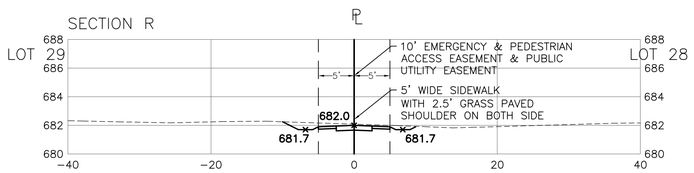
PROJECT No. 18557




**CROSS SECTIONS**

REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 12/06/19 | FOR SUBMITTAL | S.R.M. |
| 01/17/20 | FOR SUBMITTAL | S.R.M. |
| 02/20/20 | FOR SUBMITTAL | S.R.M. |
| 04/17/20 | PER VILLAGE COMMENTS | S.R.M. |
| 05/08/10 | PER VILLAGE COMMENTS | S.R.M. |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CROSS SECTIONS

DESIGN: K.C.L. | DRAFTING: S.R.M.
SCALE: 1"=10' | DATE: 10/28/19

FIRM NO. 184-001330

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
### GLENCOE, ILLINOIS


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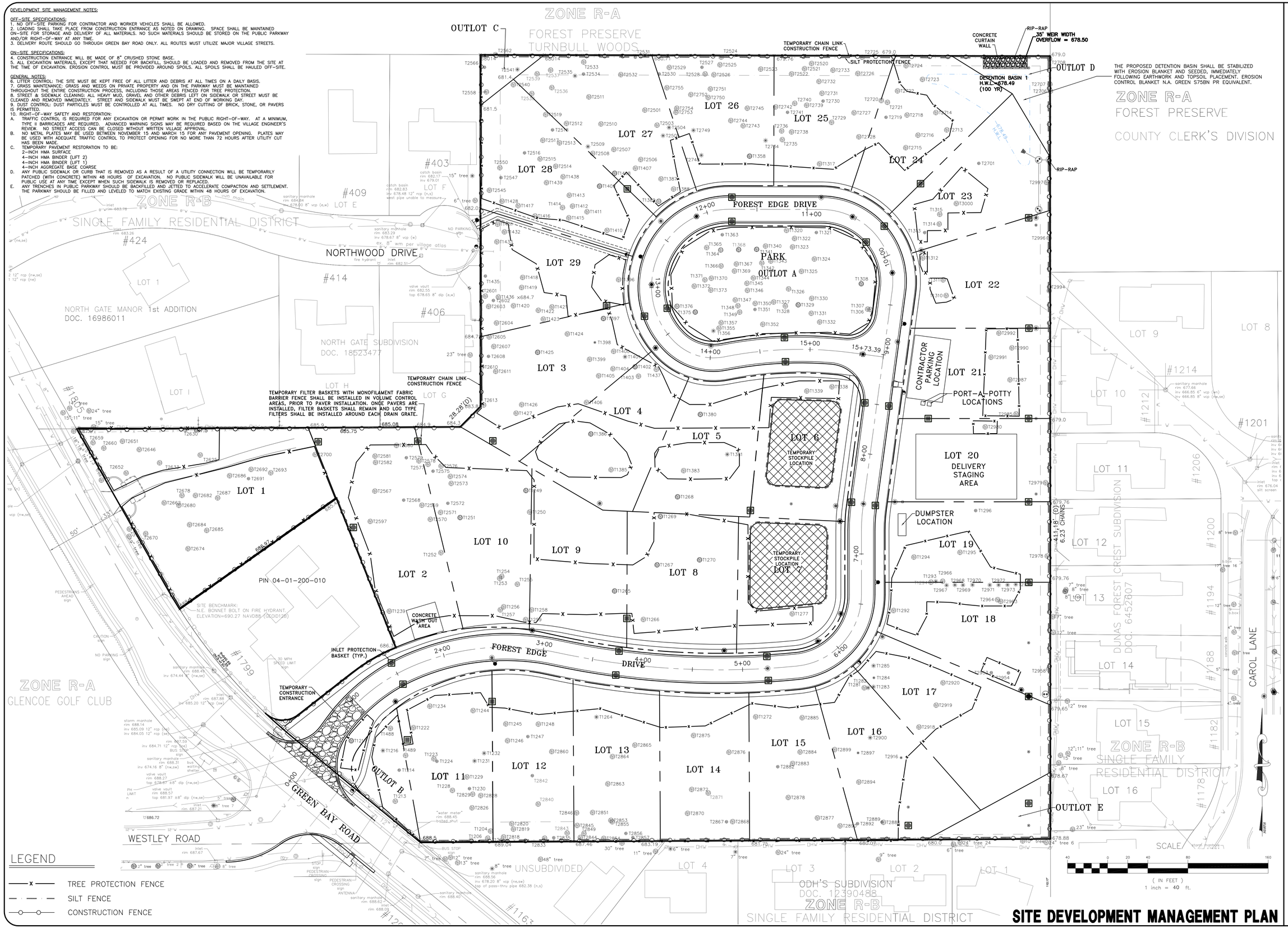
PROJECT No. 18557

DEVELOPMENT SITE MANAGEMENT NOTES:

OFF-SITE SPECIFICATIONS:
1. NO OFF-SITE PARKING FOR CONTRACTOR AND WORKER VEHICLES SHALL BE ALLOWED.
2. LOADING SHALL TAKE PLACE FROM CONSTRUCTION ENTRANCE AS NOTED ON DRAWING. SPACE SHALL BE MAINTAINED ON-SITE FOR STORAGE AND DELIVERY OF ALL MATERIALS. NO SUCH MATERIALS SHOULD BE STORED ON THE PUBLIC PARKWAY AND/OR RIGHT-OF-WAY AT ANY TIME.
3. DELIVERY ROUTE SHOULD GO THROUGH GREEN BAY ROAD ONLY. ALL ROUTES MUST UTILIZE MAJOR VILLAGE STREETS.

ON-SITE SPECIFICATIONS:
4. CONSTRUCTION ENTRANCE WILL BE MADE OF 8" CRUSHED STONE BASE.
5. ALL EXCAVATION MATERIALS, EXCEPT THAT NEEDED FOR BACKFILL, SHOULD BE LOADED AND REMOVED FROM THE SITE AT THE TIME OF EXCAVATION. EROSION CONTROL MUST BE PROVIDED AROUND SPOILS. ALL SPOILS SHALL BE HAULED OFF-SITE.

GENERAL NOTES:
6. LITTER CONTROL: THE SITE MUST BE KEPT FREE OF ALL LITTER AND DEBRIS AT ALL TIMES ON A DAILY BASIS.
7. GRASS MAINTENANCE: GRASS AND WEEDS ON PRIVATE PROPERTY AND ON THE PARKWAY MUST BE MAINTAINED THROUGHOUT THE ENTIRE CONSTRUCTION PROCESS, INCLUDING THOSE AREAS FENCED FOR TREE PROTECTION.
8. STREET & SIDEWALK CLEANING: ALL HEAVY MUD, GRAVEL AND OTHER DEBRIS LEFT ON SIDEWALK OR STREET MUST BE CLEANED AND REMOVED IMMEDIATELY. STREET AND SIDEWALK MUST BE SWEPT AT END OF WORKING DAY.
9. DUST CONTROL: DUST PARTICLES MUST BE CONTROLLED AT ALL TIMES. NO DRY CUTTING OF BRICK, STONE, OR PAVERS IS PERMITTED.
10. RIGHT-OF-WAY SAFETY AND RESTORATION:
A. TRAFFIC CONTROL IS REQUIRED FOR ANY EXCAVATION OR PERMIT WORK IN THE PUBLIC RIGHT-OF-WAY. AT A MINIMUM, TYPE II BARRICADES ARE REQUIRED. ADVANCED WARNING SIGNS MAY BE REQUIRED BASED ON THE VILLAGE ENGINEER'S REVIEW. NO STREET ACCESS CAN BE CLOSED WITHOUT WRITTEN VILLAGE APPROVAL.
B. NO METAL PLATES MAY BE USED BETWEEN NOVEMBER 15 AND MARCH 15 FOR ANY PAVEMENT OPENING. PLATES MAY BE USED WITH ADEQUATE TRAFFIC CONTROL TO PROTECT OPENING FOR NO MORE THAN 72 HOURS AFTER UTILITY CUT HAS BEEN MADE.
C. TEMPORARY PAVEMENT RESTORATION TO BE:
2-INCH HMA SURFACE
4-INCH HMA BINDER (LIFT 2)
4-INCH HMA BINDER (LIFT 1)
4-INCH AGGREGATE BASE COARSE
D. ANY PUBLIC SIDEWALK OR CURB THAT IS REMOVED AS A RESULT OF A UTILITY CONNECTION WILL BE TEMPORARILY PATCHED (WITH CONCRETE) WITHIN 48 HOURS OF EXCAVATION. NO PUBLIC SIDEWALK WILL BE UNAVAILABLE FOR PUBLIC USE AT ANY TIME EXCEPT WHEN SUCH SIDEWALK IS REMOVED OR REPLACED.
E. ANY TRENCHES IN PUBLIC PARKWAY SHOULD BE BACKFILLED AND JETTED TO ACCELERATE COMPACTION AND SETTLEMENT. THE PARKWAY SHOULD BE FILLED AND LEVELED TO MATCH EXISTING GRADE WITHIN 48 HOURS OF EXCAVATION.




LEGEND

TREE PROTECTION FENCE
SILT FENCE
CONSTRUCTION FENCE

SITE DEVELOPMENT MANAGEMENT PLAN

REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 12/06/19 | FOR SUBMITTAL | S.R.M. |
| 01/17/20 | FOR SUBMITTAL | S.R.M. |
| 02/20/20 | FOR SUBMITTAL | S.R.M. |
| 04/17/20 | FOR SUBMITTAL | S.R.M. |
| 05/08/20 | PER VILLAGE COMMENTS | S.R.M. |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SITE DEVELOPMENT MANAGEMENT PLAN

DESIGN: K.C.L. | DRAFTING: S.R.M.
SCALE: 1"=40' | DATE: 10/28/19

FIRM NO. 184-001330

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS


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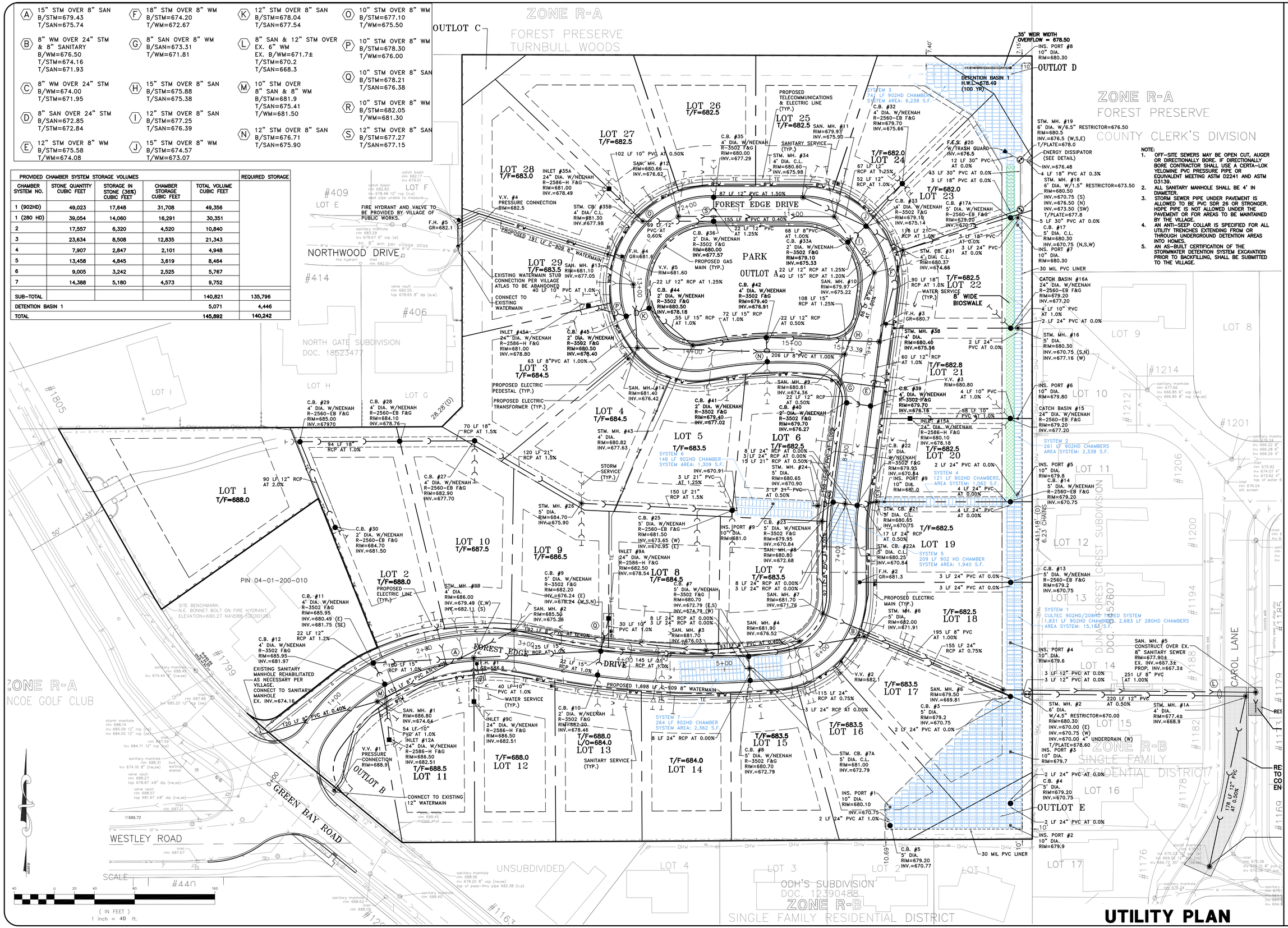
PROJECT No. 18557

| | | | |
|---|---|---|---|
| (A) 15" STM OVER 8" SAN B/STM=679.43 T/SAN=675.74 | (F) 18" STM OVER 8" WM B/STM=674.20 T/WM=672.67 | (K) 12" STM OVER 8" SAN B/STM=678.04 T/SAN=677.54 | (O) 10" STM OVER 8" WM B/STM=677.10 T/WM=675.50 |
| (B) 8" WM OVER 24" STM & 8" SANITARY B/WM=676.50 T/STM=674.16 T/SAN=671.93 | (G) 8" SAN OVER 8" WM B/SAN=673.31 T/WM=671.81 | (L) 8" SAN & 12" STM OVER EX. 6" WM EX. B/WM=671.7± T/STM=670.2 T/SAN=668.3 | (P) 10" STM OVER 8" WM B/STM=678.30 T/WM=676.00 |
| (C) 8" WM OVER 24" STM B/WM=674.00 T/STM=671.95 | (H) 15" STM OVER 8" SAN B/STM=675.88 T/SAN=675.38 | (M) 10" STM OVER 8" SAN & 8" WM B/STM=681.9 T/SAN=675.41 T/WM=681.50 | (Q) 10" STM OVER 8" SAN B/STM=678.21 T/SAN=676.38 |
| (D) 8" SAN OVER 24" STM B/SAN=672.85 T/STM=672.84 | (I) 12" STM OVER 8" SAN B/STM=677.25 T/SAN=676.39 | (N) 12" STM OVER 8" SAN B/STM=676.71 T/SAN=675.90 | (R) 10" STM OVER 8" WM B/STM=682.05 T/WM=681.30 |
| (E) 12" STM OVER 8" WM B/STM=675.58 T/WM=674.08 | (J) 15" STM OVER 8" WM B/STM=674.57 T/WM=673.07 | | (S) 12" STM OVER 8" SAN B/STM=677.27 T/SAN=677.15 |

| PROVIDED CHAMBER SYSTEM STORAGE VOLUMES | | | | | REQUIRED STORAGE |
|---|---|---|---|---|---|
| CHAMBER SYSTEM NO. | STONE QUANTITY CUBIC FEET | STORAGE IN STONE (36%) CUBIC FEET | CHAMBER STORAGE CUBIC FEET | TOTAL VOLUME CUBIC FEET | |
| 1 (902HD) | 49,023 | 17,648 | 31,708 | 49,356 | |
| 1 (280 HD) | 39,054 | 14,060 | 16,291 | 30,351 | |
| 2 | 17,557 | 6,320 | 4,520 | 10,840 | |
| 3 | 23,634 | 8,508 | 12,835 | 21,343 | |
| 4 | 7,907 | 2,847 | 2,101 | 4,948 | |
| 5 | 13,458 | 4,845 | 3,619 | 8,464 | |
| 6 | 9,005 | 3,242 | 2,525 | 5,767 | |
| 7 | 14,388 | 5,180 | 4,573 | 9,752 | |
| SUB-TOTAL | | | | 140,821 | 135,796 |
| DETENTION BASIN 1 | | | | 5,071 | 4,446 |
| TOTAL | | | | 145,892 | 140,242 |




NOTE:
1. OFF-SITE SEWERS MAY BE OPEN CUT, AUGER OR DIRECTIONALLY BORE. IF DIRECTIONALLY BORE CONTRACTOR SHALL USE A CERTA-LOK YELOMINE PVC PRESSURE PIPE OR EQUIVALENT MEETING ASTM D2241 AND ASTM D3139.
2. ALL SANITARY MANHOLE SHALL BE 4' IN DIAMETER.
3. STORM SEWER PIPE UNDER PAVEMENT IS ALLOWED TO BE PVC SDR 26 OR STRONGER. HDPE PIPE IS NOT ALLOWED UNDER THE PAVEMENT OR FOR AREAS TO BE MAINTAINED BY THE VILLAGE.
4. AN ANTI-SEEP COLLAR IS SPECIFIED FOR ALL UTILITY TRENCHES EXTENDING FROM OR THROUGH UNDERGROUND DETENTION AREAS INTO HOMES.
5. AN AS-BUILT CERTIFICATION OF THE STORMWATER DETENTION SYSTEM EXCAVATION PRIOR TO BACKFILLING, SHALL BE SUBMITTED TO THE VILLAGE.

REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 12/06/19 | FOR SUBMITTAL | S.R.M. |
| 12/13/19 | PER LANDSCAPE ARCHITECT COMMENTS | S.R.M. |
| 01/17/20 | FOR SUBMITTAL | S.R.M. |
| 02/20/20 | FOR SUBMITTAL | S.R.M. |
| 03/30/20 | PER VILLAGE COMMENTS | S.R.M. |
| 04/17/20 | PER VILLAGE COMMENTS | S.R.M. |
| 05/08/20 | PER VILLAGE COMMENTS | S.R.M. |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UTILITY PLAN

DESIGN: K.C.L. | DRAFTING: S.R.M.
SCALE: 1"=40' | DATE: 10/28/19

FIRM NO. 184-001330

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS


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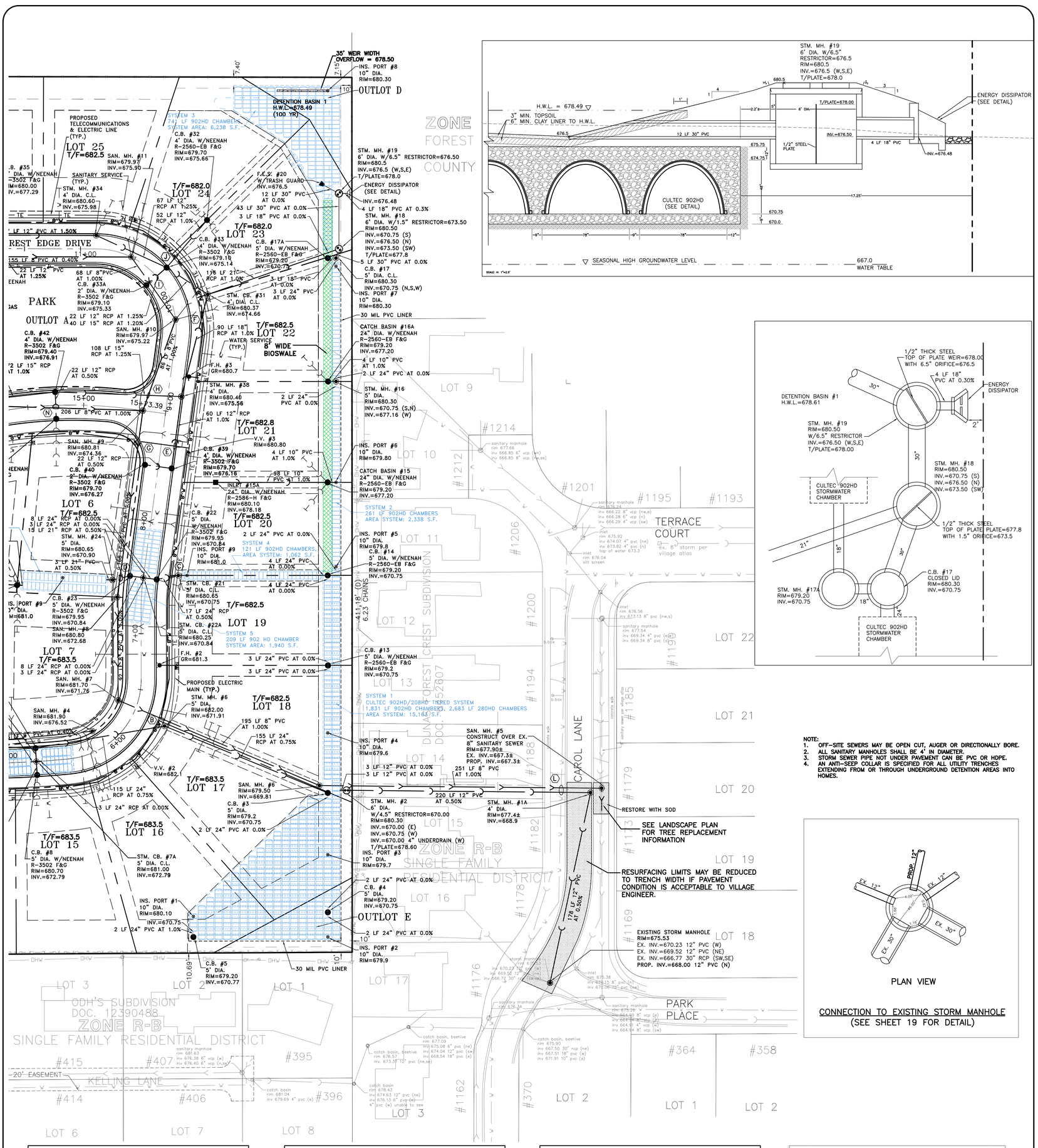
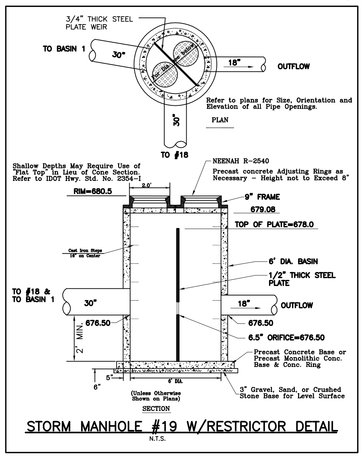
PROJECT No. 18557



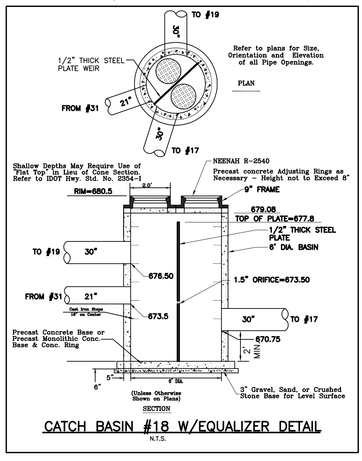
UTILITY PLAN



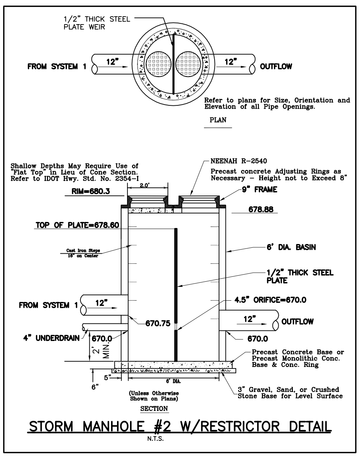

NOTE:
1. OFF-SITE SEWERS MAY BE OPEN CUT, AUGER OR DIRECTIONALLY BORE.
2. ALL SANITARY MANHOLES SHALL BE 4' IN DIAMETER.
3. STORM SEWER PIPE NOT UNDER PAVEMENT CAN BE PVC OR HDPE.
4. AN ANTI-SEEP COLLAR IS SPECIFIED FOR ALL UTILITY TRENCHES EXTENDING FROM OR THROUGH UNDERGROUND DETENTION AREAS INTO HOMES.



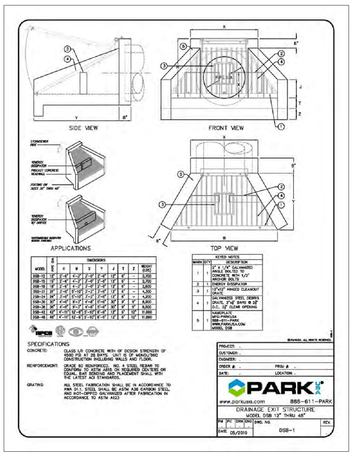

STORM MANHOLE #19 W/RESTRICTOR DETAIL




CATCH BASIN #18 W/EQUALIZER DETAIL




STORM MANHOLE #2 W/RESTRICTOR DETAIL




PROJECT No. 18557

11 of 23

# FOREST EDGE SUBDIVISION

## 1801 GREEN BAY ROAD

## GLENCOE, ILLINOIS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OFF-SITE UTILITY PLAN

| | |
|---|---|
| DESIGN: K.C.L. | DRAFTING: S.R.M. |
| SCALE: 1"=40' | DATE: 10/28/19 |

REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
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| 12/06/19 | FOR SUBMITTAL | S.R.M. |
| 12/13/19 | PER LANDSCAPE ARCHITECT COMMENTS | S.R.M. |
| 01/17/20 | FOR SUBMITTAL | S.R.M. |
| 02/20/20 | FOR SUBMITTAL | S.R.M. |
| 02/20/20 | FOR SUBMITTAL | S.R.M. |
| 04/17/20 | PER VILLAGE COMMENTS | S.R.M. |
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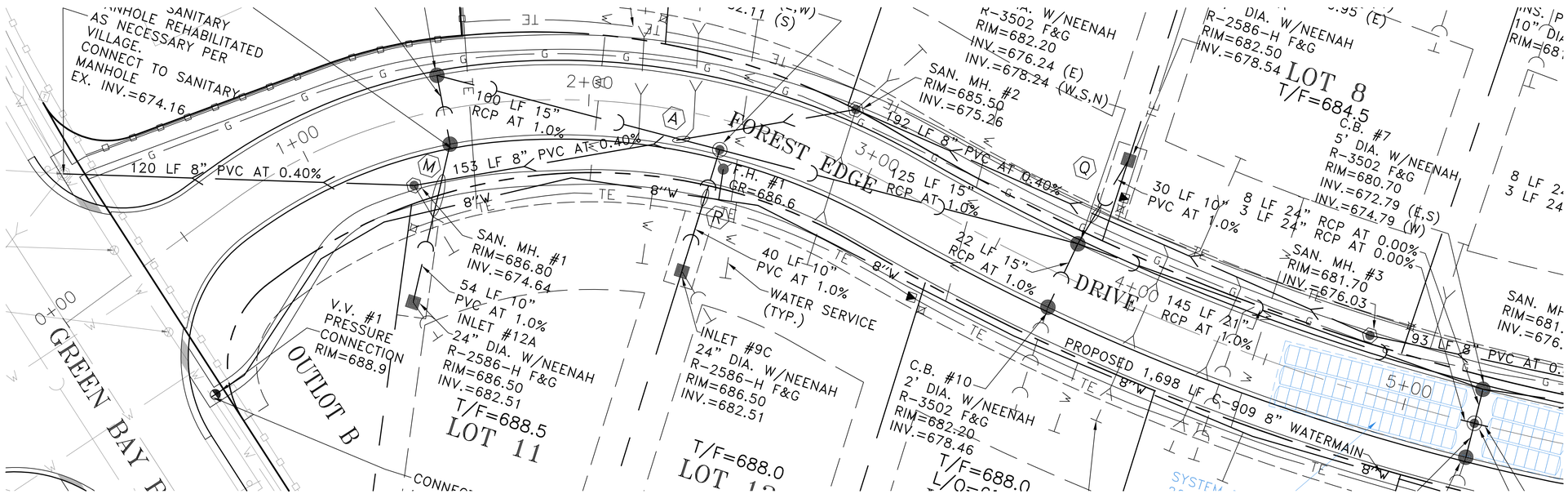
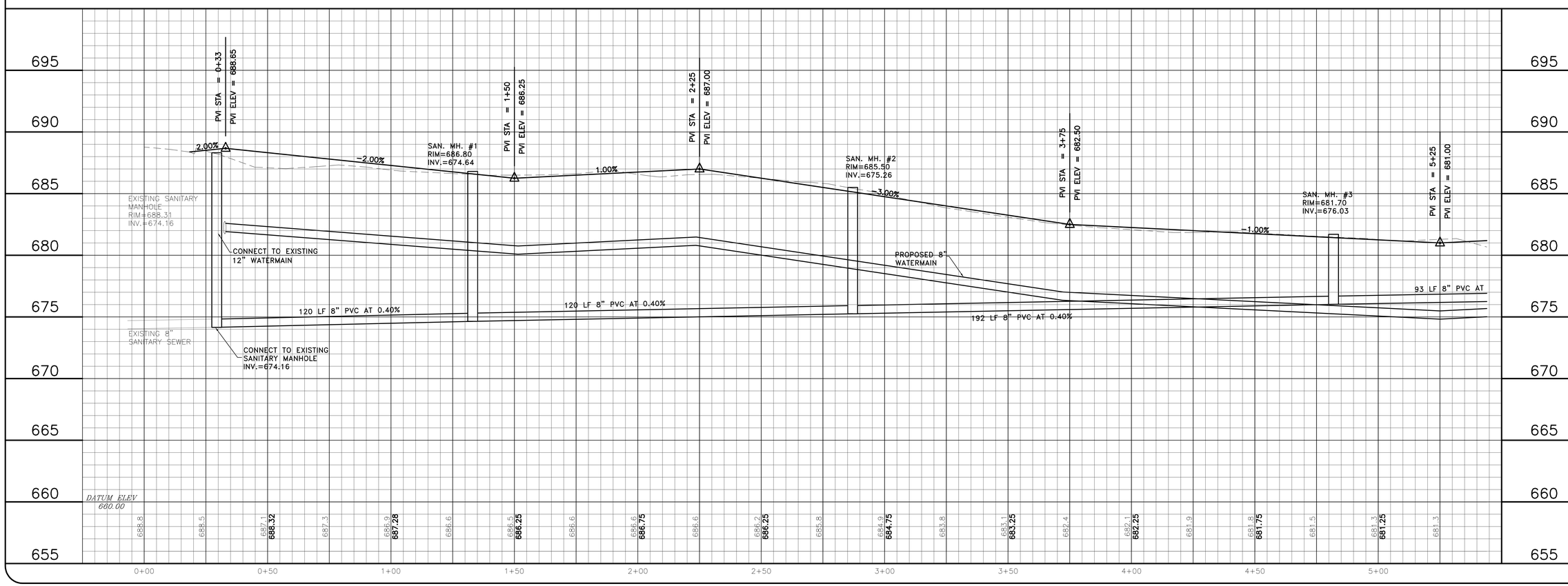



## PLAN AND PROFILE

SCALE: H: 1"=20', V: 1"=4'




| REVISIONS | | |
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| 02/20/20 | FOR SUBMITTAL | S.R.M. |
| 04/17/20 | PER VILLAGE COMMENTS | S.R.M. |


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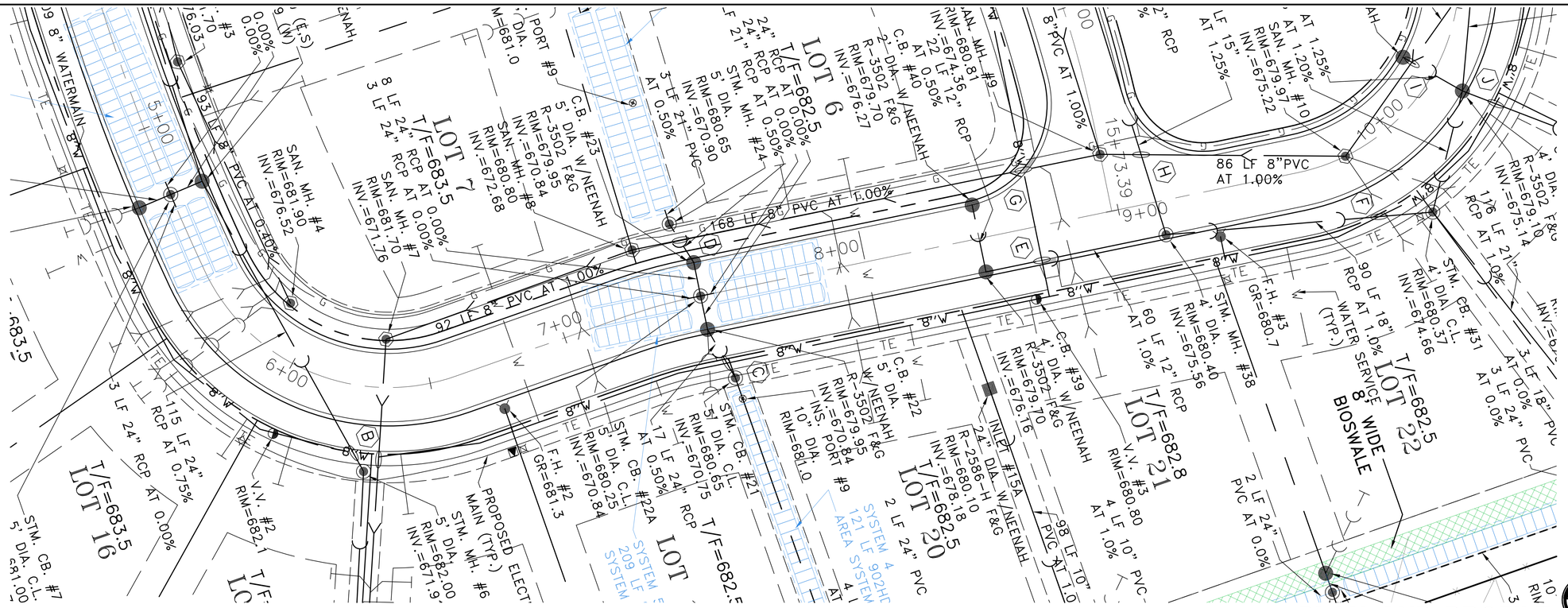
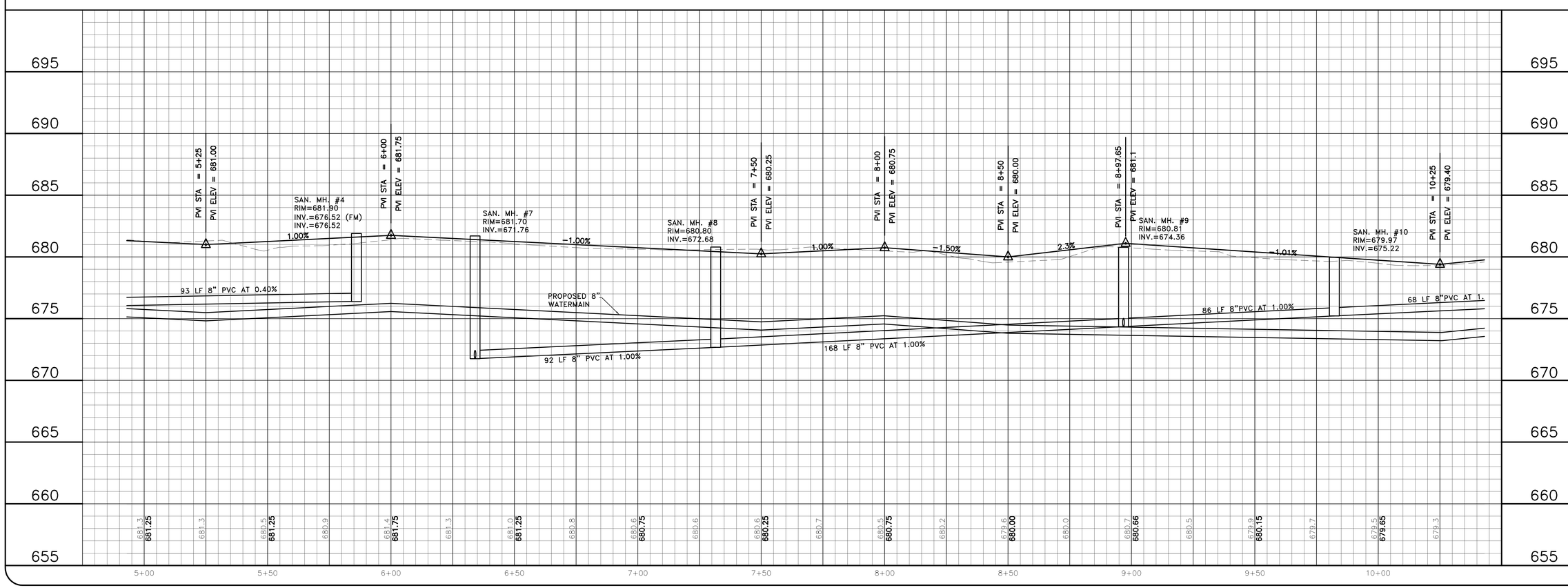
PLAN & PROFILE
STA: 0+00 TO 5+00

DESIGN: K.C.L. | DRAFTING: S.R.M.
SCALE: 1"=20' | DATE: 10/28/19

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
### GLENCOE, ILLINOIS

PROJECT No. 18557




REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
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| 12/13/19 | PER LANDSCAPE ARCHITECT COMMENTS | S.R.M. |
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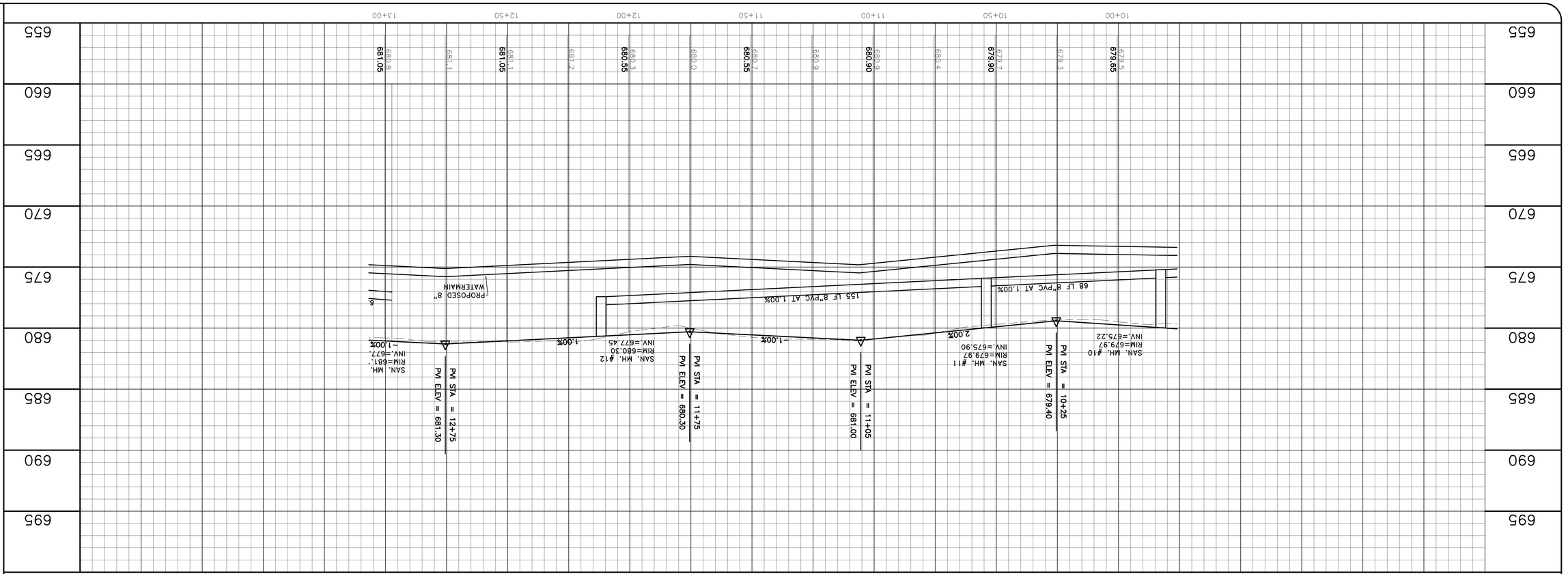
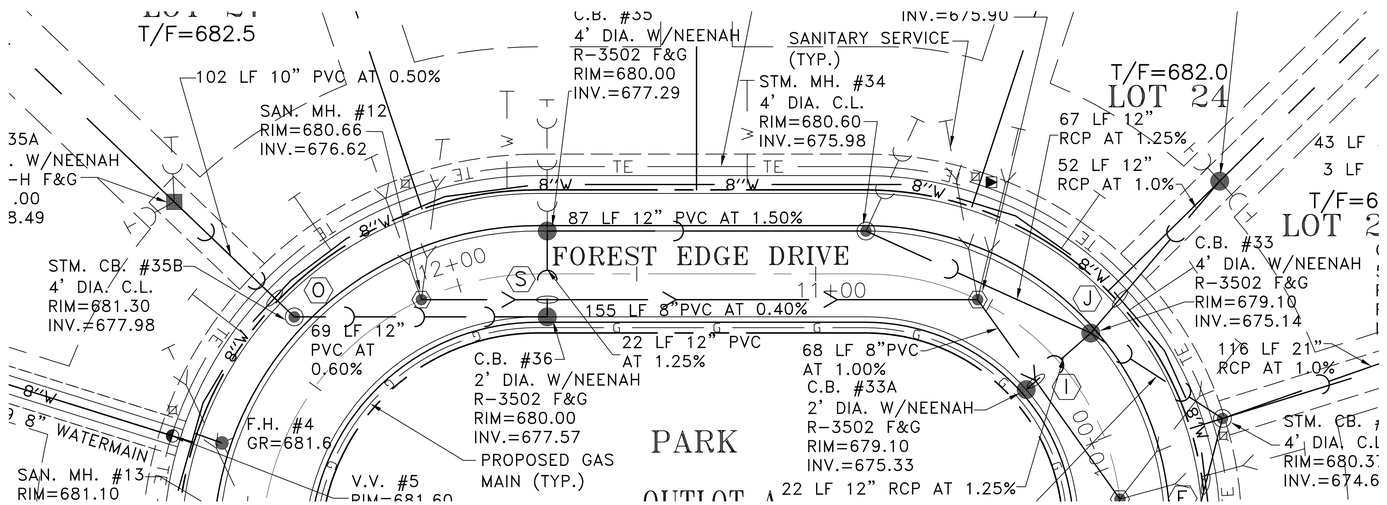
PLAN & PROFILE
STA: 5+00 TO 10+00

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
### GLENCOE, ILLINOIS

| | |
|---|---|
| DESIGN: K.C.L. | DRAFTING: S.R.M. |
| SCALE: 1"=20' | DATE: 10/28/19 |

PROJECT No. 18557




# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
### GLENCOE, ILLINOIS

PROJECT No. 18557

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PLAN & PROFILE
STA: 10+00 TO 15+73.39

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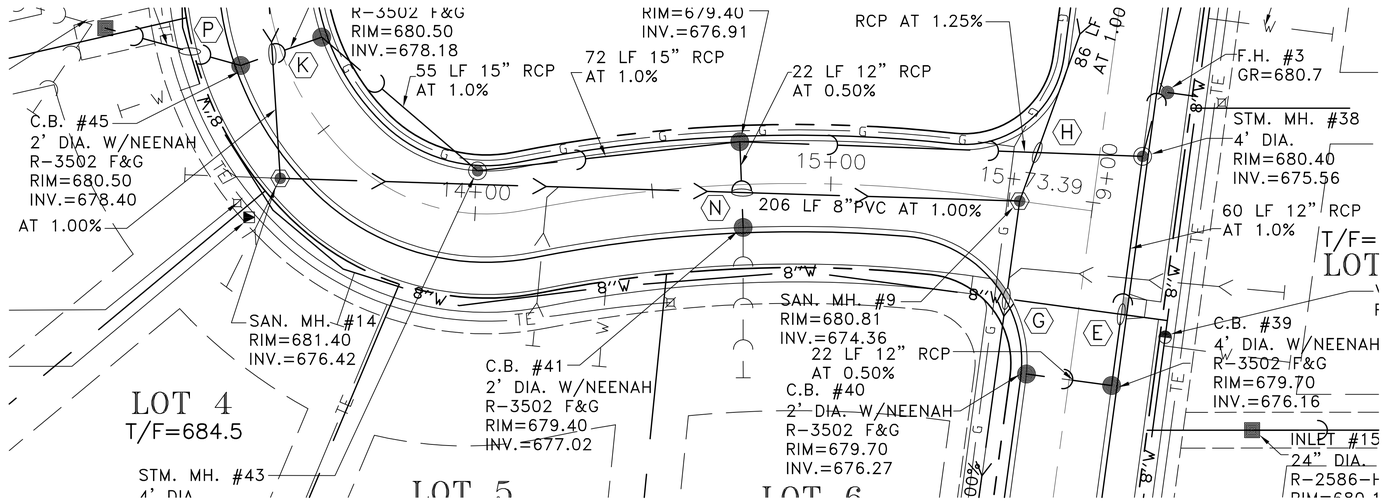
| SCALE: 1"=20' | DESIGN: K.C.L. |
| DATE: 10/28/19 | DRAFTING: S.R.M. |

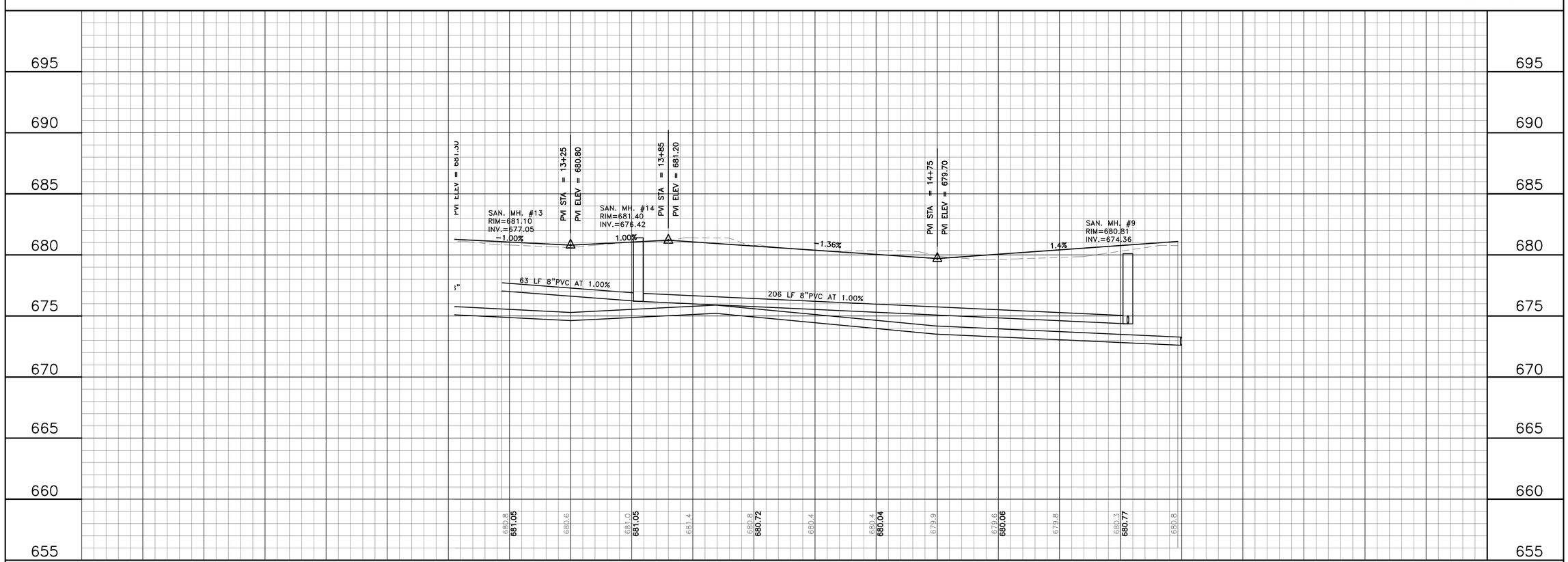
REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 12/06/19 | FOR SUBMITTAL | S.R.M. |
| 12/13/19 | PER LANDSCAPE ARCHITECT COMMENTS | S.R.M. |
| 01/17/20 | FOR SUBMITTAL | S.R.M. |
| 02/20/20 | FOR SUBMITTAL | S.R.M. |
| 04/17/20 | PER VILLAGE COMMENTS | S.R.M. |




## PLAN AND PROFILE

SCALE: H: 1"=20', V: 1"=4'

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PLAN & PROFILE
STA: 10+00 TO 15+73.39

DESIGN: K.C.L. | DRAFTING: S.R.M.
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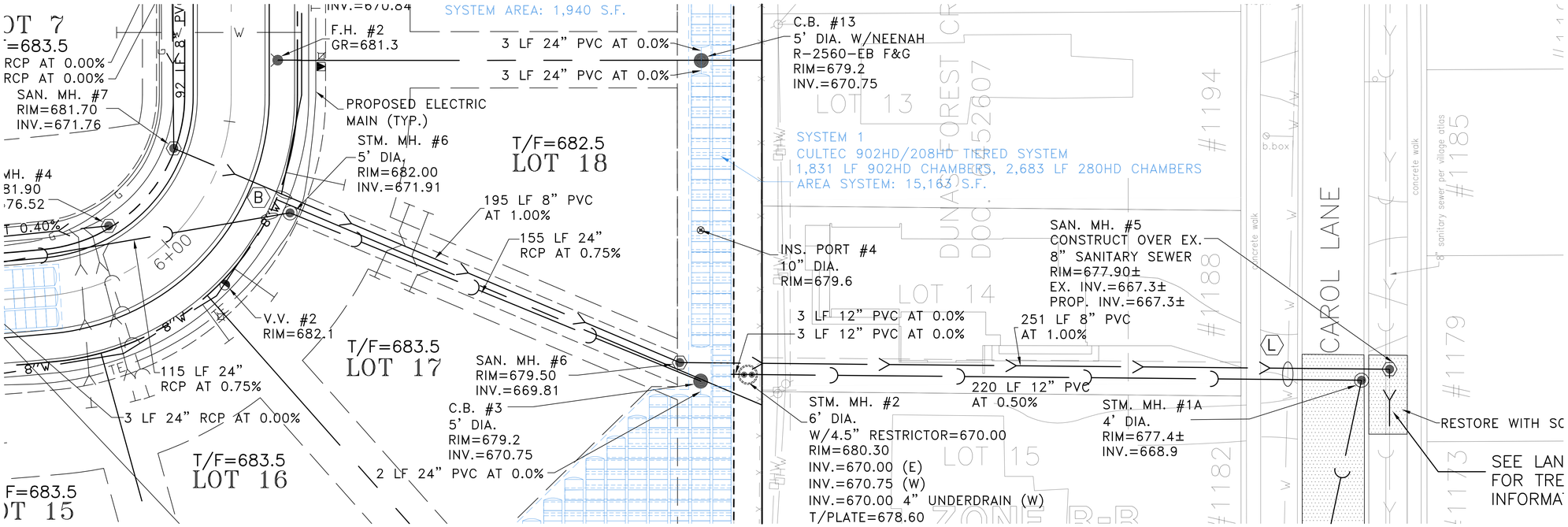
# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
GLENCOE, ILLINOIS

PROJECT No. 18557

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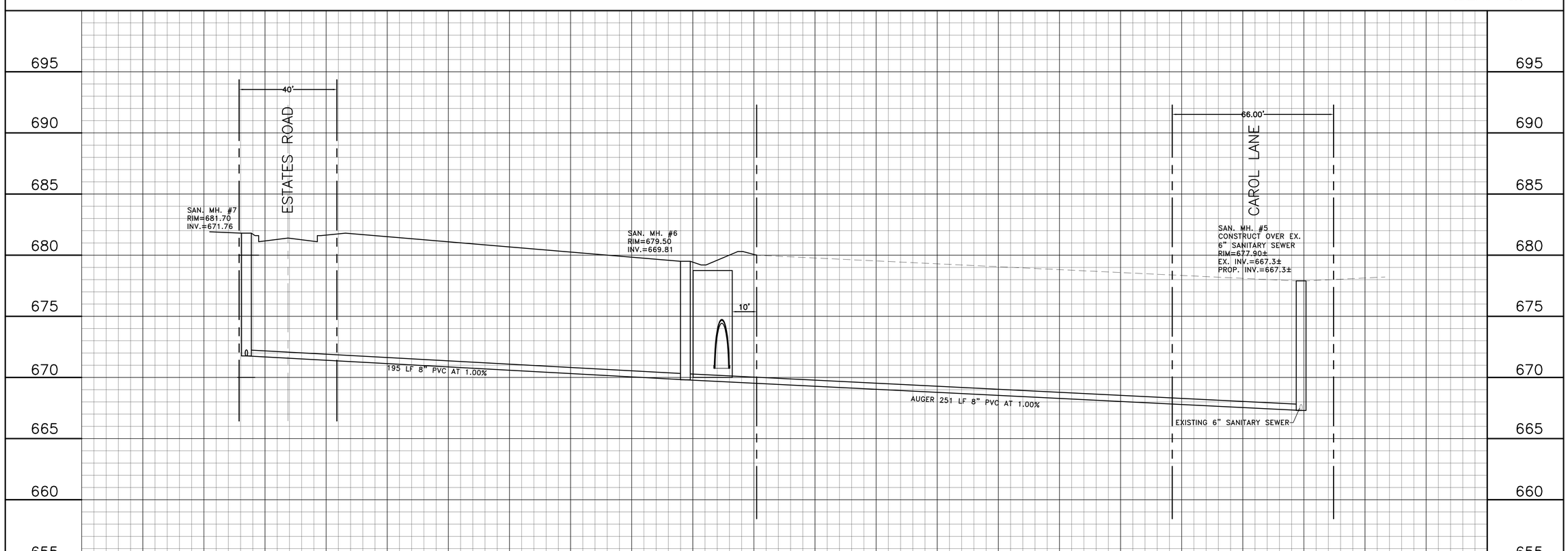


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# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
### GLENCOE, ILLINOIS

PROJECT No. 18557

# GENERAL

1. CONTRACT DOCUMENTS AS REFERRED TO HEREIN INCLUDE THE CONSTRUCTION CONTRACT, PLANS, SPECIFICATIONS, APPROVED SHOP DRAWINGS, CHANGE ORDERS, AND ANY OTHER DOCUMENTS IDENTIFIED IN THE AGREEMENT BETWEEN OWNER AND CONTRACTOR.

2. UNLESS MODIFIED BY THE CONTRACT DOCUMENTS, ALL WORK PROPOSED HEREIN SHALL COMPLY WITH THE FOLLOWING:
   A. ALL ROADWAY CONSTRUCTION SHALL CONFORM TO THE MOST CURRENT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION DATED JANUARY 1, 1997, AND ALL AMENDMENTS THERETO AS ADOPTED BY THE STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION (I.D.O.T.).
   B. STORM SEWER, SANITARY SEWER, AND WATER MAIN CONSTRUCTION SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS (STANDARD SPECIFICATIONS), LATEST EDITION.
   C. ILLINOIS RECOMMENDED STANDARDS FOR SEWAGE WORKS, AS PUBLISHED BY THE I.E.P.A., LATEST EDITION.
   D. THE SUBDIVISION AND OTHER PERTINENT CODES AND STANDARDS OF THE **VILLAGE OF GLENCOE, WHERE APPLICABLE.**
   E. THE NATIONAL ELECTRIC CODE, LATEST EDITION.
   F. THE STANDARD SPECIFICATIONS FOR TRAFFIC CONTROL ITEMS, AS PUBLISHED BY I.D.O.T., LATEST EDITION.

3. THE FOREGOING STANDARD SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS, CONSTRUCTION PLANS, AND SUBSEQUENT DETAILS ARE ALL TO BE CONSIDERED AS PART OF THE CONTRACT. INCIDENTAL ITEMS OR ACCESSORIES NECESSARY TO COMPLETE THIS WORK MAY NOT BE SPECIFICALLY NOTED BUT ARE CONSIDERED A PART OF THIS CONTRACT.

4. NO CONSTRUCTION PLANS SHALL BE USED FOR CONSTRUCTION UNLESS SPECIFICALLY MARKED "FOR CONSTRUCTION". PRIOR TO COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AFFECTING THEIR WORK WITH THE ACTUAL CONDITIONS AT THE JOB SITE. IF THERE ARE ANY DISCREPANCIES FROM WHAT IS SHOWN ON THE CONSTRUCTION PLANS, HE MUST IMMEDIATELY REPORT SAME TO THE ENGINEER BEFORE DOING ANY WORK. OTHERWISE, THE CONTRACTOR ASSUMES FULL RESPONSIBILITY. IN THE EVENT OF DISAGREEMENT BETWEEN THE CONSTRUCTION PLANS, STANDARD SPECIFICATIONS, AND/OR SPECIAL DETAILS, THE CONTRACTOR SHALL SECURE WRITTEN INSTRUCTIONS FROM THE ENGINEER PRIOR TO PROCEEDING WITH ANY PART OF THE WORK AFFECTED BY OMISSIONS OR DISCREPANCIES. FAILING TO SECURE SUCH INSTRUCTION, THE CONTRACTOR WILL BE CONSIDERED TO HAVE PROCEEDED AT HIS OWN RISK AND EXPENSE. IN THE EVENT OF ANY DOUBT OR QUESTION ARISING WITH RESPECT TO THE TRUE MEANING OF THE CONSTRUCTION PLANS OR SPECIFICATIONS, THE DECISION OF THE ENGINEER SHALL BE FINAL AND CONCLUSIVE.

5. THE ENGINEER AND OWNER ARE NOT RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES, TIME OF PERFORMANCE, PROGRAMS, OR OTHER SAFETY PRECAUTIONS USED BY THE CONTRACTOR. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR EXECUTION OF HIS WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND SPECIFICATIONS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR SAFETY ON THE JOB SITE. THE CONTRACTORS SHALL PLAN THEIR WORK BASED ON THEIR OWN BORINGS, EXPLORATIONS, AND OBSERVATIONS TO DETERMINE SOIL CONDITIONS AT LOCATION OF THE PROPOSED WORK.

6. NOTIFICATION OF COMMENCING CONSTRUCTION:
   A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING THE UTILITY COMPANIES LOCATE THEIR FACILITIES IN THE FIELD PRIOR TO CONSTRUCTION AND SHALL ALSO BE RESPONSIBLE FOR THE MAINTENANCE AND PRESERVATION OF THESE FACILITIES. THE ENGINEER DOES NOT WARRANT THE LOCATION OF ANY EXISTING UTILITIES SHOWN ON THE PLAN. THE CONTRACTOR SHALL CALL J.U.L.I.E. AT 800-892-0123 SUFFICIENTLY IN ADVANCE OF COMMENCING WORK.
   B. THE CONTRACTOR SHALL NOTIFY THE OWNER AND/OR HIS REPRESENTATIVE AND THE AFFECTED GOVERNMENTAL AGENCIES IN WRITING AT LEAST THREE FULL WORKING DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION. IN ADDITION, THE CONTRACTOR SHALL NOTIFY ALL NECESSARY TESTING AGENCIES SUFFICIENTLY IN ADVANCE OF COMMENCING WORK.

7. ALL WORK PERFORMED UNDER THIS CONTRACT SHALL BE GUARANTEED AGAINST ALL DEFECTS IN MATERIALS AND WORKMANSHIP OF WHATEVER NATURE BY THE CONTRACTOR AND HIS SURETY FOR A PERIOD OF TWELVE (12) MONTHS FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK BY THE MUNICIPALITY, OTHER APPLICABLE GOVERNMENTAL AGENCIES, AND THE OWNER.

8. BEFORE ACCEPTANCE BY THE OWNER AND FINAL PAYMENT, ALL WORK SHALL BE INSPECTED AND APPROVED BY THE OWNER OR HIS REPRESENTATIVE. FINAL PAYMENT WILL BE MADE AFTER ALL OF THE CONTRACTOR'S WORK HAS BEEN APPROVED AND ACCEPTED AND IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

9. UPON AWARD OF THE CONTRACT AND WHEN REQUIRED BY THE OWNER, THE CONTRACTOR SHALL FURNISH A LABOR AND PERFORMANCE BOND IN THE PENAL SUM OF ONE HUNDRED (100) PERCENT OF THE CONTRACT GUARANTEEING COMPLETION OF THE WORK. THE UNDERWRITER SHALL BE ACCEPTABLE TO THE OWNER.

10. OWNER SHALL OBTAIN EASEMENTS AND PERMITS NECESSARY TO FACILITATE CONSTRUCTION OF THE PROPOSED UTILITIES. THE CONTRACTOR, HOWEVER, SHALL FURNISH ALL REQUIRED BONDS AND EVIDENCE OF INSURANCE NECESSARY TO SECURE THESE PERMITS.

11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS FOR CONSTRUCTION ALONG OR ACROSS EXISTING STREETS OR HIGHWAYS. HE SHALL MAKE ARRANGEMENTS FOR THE PROPER BRACING, SHORING, AND OTHER REQUIRED PROTECTION OF ALL ROADWAYS BEFORE CONSTRUCTION BEGINS. HE SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THE STREETS OR ROADWAYS AND ASSOCIATED STRUCTURES AND SHALL MAKE REPAIRS AS NECESSARY TO THE SATISFACTION OF THE ENGINEER.

12. EASEMENTS FOR THE EXISTING UTILITIES, BOTH PUBLIC AND PRIVATE, AND UTILITIES WITHIN PUBLIC RIGHT-OF-WAY ARE SHOWN ON THE PLANS ACCORDING TO AVAILABLE RECORDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION IN THE FIELD OF THESE UTILITY LINES AND THEIR PROTECTION FROM DAMAGE DUE TO CONSTRUCTION OPERATIONS. IF EXISTING UTILITY LINES OF ANY NATURE ARE ENCOUNTERED WHICH CONFLICT IN LOCATION WITH NEW CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY SO THAT THE CONFLICT MAY BE RESOLVED.

13. LINE AND GRADE STAKES WILL BE SET ONE TIME AND ONE TIME ONLY BY THE SURVEYOR AT THE OWNER'S EXPENSE. CONTRACTORS SHALL NOTIFY THE SURVEYOR THAT STAKES WILL BE NEEDED AT LEAST THREE (3) WORKING DAYS IN ADVANCE OF STARTING THEIR WORK (ADDITIONAL NOTIFICATION SHALL BE PROVIDED PRIOR TO THE START OF INITIAL PROJECT CONSTRUCTION OPERATIONS). ANY AND ALL REQUIRED RESTAKING WILL BE PERFORMED BY THE SURVEYOR AT THE EXPENSE OF THAT CONTRACTOR REQUIRING THE RESTAKING. IT SHALL BE THE RESPONSIBILITY OF EACH CONTRACTOR TO PROTECT STAKES PROVIDED FOR HIS USE AND TO REPORT TO THE OWNER'S SUPERINTENDENT ANY SPECIFIC INSTANCES OF DESTROYING STAKES AND/OR MONUMENTS PROVIDED. LOT CORNER IRONS ARE TO BE CONSIDERED AS CONTROL STAKES.

14. THE PROPOSED ELEVATIONS SHOWN ON THE PLANS ARE FINISHED SURFACE ELEVATIONS, UNLESS OTHERWISE SPECIFIED.

15. ALL TOP OF FRAMES FOR STORM AND SANITARY SEWERS AND VALVE VAULT COVERS REQUIRING ADJUSTMENT TO MEET FINAL FINISH GRADE SHALL BE SO ADJUSTED BY THE SEWER AND WATER CONTRACTOR, AND THE COST IS TO BE CONSIDERED INCIDENTAL TO THIS CONTRACT.

16. ALL CONTRACTORS SHALL KEEP ACCESS AVAILABLE AT ALL TIMES FOR ALL TYPES OF TRAFFIC. AT NO TIME SHALL ACCESS BE DENIED TO HOMES SURROUNDING THE SITE.

17. ANY EXISTING SIGNS, LIGHT STANDARDS, AND UTILITY POLES WHICH INTERFERE WITH CONSTRUCTION OPERATIONS AND NOT NOTED FOR DISPOSAL SHALL BE REMOVED AND RESET BY THE CONTRACTOR AT HIS OWN EXPENSE AS DIRECTED BY THE ENGINEER. CONTRACTOR SHALL NOT BE RESPONSIBLE IF OWNER HAS PREVIOUSLY ARRANGED FOR SUCH REMOVAL OR MODIFICATION AT OWNER'S EXPENSE. ANY DAMAGE TO THESE ITEMS SHALL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE. ANY SIGNS NOT REQUIRED TO BE RESET SHALL BE DELIVERED TO THE RESPECTIVE OWNERS.

18. REMOVED EARTH, PAVEMENT, SIDEWALK, CURB AND GUTTER, ETC. SHALL BE DISPOSED OF BY THE RESPECTIVE CONTRACTOR AT HIS OWN EXPENSE AT LOCATIONS APPROVED BY THE ENGINEER. IF ON-SITE DISPOSAL IS NOT FEASIBLE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AN OFF-SITE DISPOSAL SITE AT HIS OWN EXPENSE, INCLUDING ANY PERMIT COSTS.

19. ALL FIELD TILE ENCOUNTERED DURING CONSTRUCTION OPERATIONS SHALL BE CONNECTED TO THE PROPOSED STORM SEWER SYSTEM OR EXTENDED TO OUTLET INTO A PROPOSED DRAINAGEWAY. IF THIS CANNOT BE ACCOMPLISHED, THEN IT SHALL BE REPAIRED WITH NEW PIPE OF SIMILAR SIZE AND MATERIAL TO THE ORIGINAL LINE AND PUT IN ACCEPTABLE OPERATING CONDITION. A RECORD OF THE LOCATION OF ALL FIELD TILE OR DRAIN PIPE ENCOUNTERED SHALL BE KEPT BY THE CONTRACTOR AND TRANSMITTED TO THE ENGINEER UPON COMPLETION OF THE PROJECT. THE COST OF THIS WORK SHALL BE CONSIDERED AS INCIDENTAL TO THE CONTRACT, AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

20. WHENEVER, DURING CONSTRUCTION OPERATIONS, ANY LOOSE MATERIAL IS DEPOSITED IN THE FLOW LINE OF GUTTERS, DRAINAGE STRUCTURES, DITCHES, ETC. SUCH THAT THE NATURAL FLOW LINE OF WATER IS OBSTRUCTED, THIS LOOSE MATERIAL SHALL BE REMOVED AT THE CLOSE OF EACH WORKING DAY BY THE RESPONSIBLE PARTY. AT THE CONCLUSION OF CONSTRUCTION OPERATIONS, ALL DRAINAGE STRUCTURES AND FLOW LINES SHALL BE FREE FROM DIRT AND DEBRIS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT. DRAINAGE MAY BE ACHIEVED BY DITCHING, PUMPING, OR ANY OTHER ACCEPTABLE METHOD. THE CONTRACTOR'S FAILURE TO PROVIDE THE ABOVE WILL PRECLUDE ANY POSSIBLE ADDED COMPENSATION REQUESTED DUE TO DELAYS OR UNSUITABLE MATERIALS CREATED AS A RESULT THEREOF.

21. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ADEQUATE SIGNS, TRAFFIC CONTROL DEVICES, AND WARNING DEVICES TO INFORM AND PROTECT THE PUBLIC DURING ALL PHASES OF CONSTRUCTION. BARRICADES AND WARNING SIGNS SHALL BE PROVIDED IN ACCORDANCE WITH ARTICLE 107.14 OF THE I.D.O.T. STANDARD SPECIFICATIONS. ADEQUATE LIGHTING SHALL BE MAINTAINED FROM DUSK TO DAWN AT ALL LOCATIONS WHERE CONSTRUCTION OPERATIONS WARRANT OR AS DESIGNATED BY THE ENGINEER. ALL TRAFFIC CONTROL WORK SHALL BE DONE IN ACCORDANCE WITH THE I.D.O.T. MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

22. ALL PERMANENT TYPE PAVEMENTS OR OTHER PERMANENT IMPROVEMENTS WHICH ABUT THE PROPOSED IMPROVEMENT AND MUST BE REMOVED SHALL BE SAWED AS DIRECTED PRIOR TO REMOVAL. ALL ITEMS SO REMOVED SHALL BE REPLACED WITH SIMILAR CONSTRUCTION MATERIALS TO THEIR ORIGINAL CONDITION OR BETTER. PAYMENT FOR SAWING SHALL BE INCLUDED IN THE COST FOR REMOVAL OF EACH ITEM, AND REPLACEMENT WILL BE PAID UNDER THE RESPECTIVE ITEMS IN THE CONTRACT, UNLESS OTHERWISE INDICATED.

23. WHERE OVERHANGING BRANCHES INTERFERE WITH OPERATIONS OF CONSTRUCTION, SAID BRANCHES SHALL BE TRIMMED AND SEALED IN ACCORDANCE WITH SECTION 201.05 OF THE I.D.O.T. STANDARD SPECIFICATIONS, AND THE COST OF SAME SHALL BE INCIDENTAL TO THE CONTRACT. TREES SHALL BE REMOVED ONLY AFTER RECEIVING APPROVAL OF THE OWNER. THE OWNER SHALL DESIGNATE THOSE TREES WHICH ARE TO BE REMOVED. THE CONTRACTOR SHALL ALTER THE ALIGNMENT OF SEWERS, WATER MAINS, PATHWAYS, SIDEWALKS, AND DRIVEWAYS AS DIRECTED TO PRESERVE TREES. A CONTRACTOR REMOVING TREES WITHOUT OWNER'S APPROVAL WILL BE RESPONSIBLE FOR REPLACEMENT OF SAID TREE(S) AS DIRECTED BY THE OWNER AT CONTRACTOR'S EXPENSE. IF TREES OR SHRUBS MUST BE REMOVED, THEY WILL BE PAID FOR IN ACCORDANCE WITH THE SPECIFICATIONS.

24. ALL EXISTING TRAFFIC SIGNS, STREET SIGNS, ETC., WHICH INTERFERE WITH CONSTRUCTION OPERATIONS AND NOT NOTED FOR REMOVAL OR DISPOSAL SHALL BE REMOVED AND RESET BY THE CONTRACTOR AT LOCATIONS AS DESIGNATED BY THE ENGINEER. THIS SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT, AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED. DAMAGE TO THESE ITEMS SHALL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE. ALL SIGNS NOT REQUIRED TO BE RESET SHALL BE DELIVERED TO THE MUNICIPALITY AS APPROPRIATE. IN ADDITION, ALL MAIL BOXES THAT INTERFERE WITH CONSTRUCTION SHALL BE SIMILARLY RELOCATED AT NO ADDITIONAL COST IN ACCORDANCE WITH ARTICLES 107.19 AND 107.21 OF THE I.D.O.T. STANDARD SPECIFICATIONS.

25. SPECIAL ATTENTION IS DRAWN TO THE FACT THAT ARTICLE 105.06 OF THE STANDARD SPECIFICATIONS REQUIRES THE CONTRACTOR TO HAVE A COMPETENT SUPERINTENDENT ON THE PROJECT SITE AT ALL TIMES IRRESPECTIVE OF THE AMOUNT OF WORK SUBLET. THE SUPERINTENDENT SHALL BE CAPABLE OF READING AND UNDERSTANDING THE PLANS AND SPECIFICATIONS, SHALL HAVE FULL AUTHORITY TO EXECUTE ORDERS TO EXPEDITE THE PROJECT, AND SHALL BE RESPONSIBLE FOR SCHEDULING AND HAVE CONTROL OF ALL WORK AS THE AGENT OF THE CONTRACTOR. FAILURE TO COMPLY WITH THIS PROVISION WILL RESULT IN SUSPENSION OF WORK AS PROVIDED IN ARTICLE 108.07.

26. THE CONTRACTOR SHALL COLLECT AND REMOVE ALL CONSTRUCTION DEBRIS, EXCESS MATERIALS, TRASH, OIL AND GREASE RESIDUE, MACHINERY, TOOLS, AND OTHER MISCELLANEOUS ITEMS WHICH WERE NOT PRESENT PRIOR TO PROJECT COMMENCEMENT AT NO ADDITIONAL EXPENSE TO THE OWNER. BURNING ON THE SITE IS NOT PERMITTED.

27. ALL EXISTING UTILITIES OR IMPROVEMENTS INCLUDING WALKS, CURBS, PAVEMENTS, AND PARKWAYS DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE PROMPTLY RESTORED TO THEIR RESPECTIVE ORIGINAL CONDITION.

28. HYDRANTS SHALL NOT BE FLUSHED DIRECTLY ON THE ROAD SUBGRADES. WHENEVER POSSIBLE, HOSES SHALL BE USED TO DIRECT THE WATER INTO LOT AREAS OR THE STORM SEWER SYSTEM (IF AVAILABLE). WHEN HYDRANTS MUST BE FLUSHED, DAMAGE TO THE ROAD SUBGRADE DUE TO EXCESSIVE WATER SATURATION FROM HYDRANT FLUSHING OR FROM LEAKS IN THE WATER DISTRIBUTION SYSTEM SHALL BE THE RESPONSIBILITY OF THE SEWER AND WATER CONTRACTOR.

29. ANY DEWATERING OF SEWER AND WATER TRENCHES, AS WELL AS TEMPORARY SHEETING OR BRACING THAT MAY BE REQUIRED, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AND SHALL NOT BE CONSIDERED EXTRA WORK. IN THE EVENT THAT SOFT MATERIALS WITH UNCONFINED COMPRESSIVE STRENGTH LESS THAN 0.5 TSF ARE ENCOUNTERED IN SEWER AND WATER MAIN CONSTRUCTION, THE CONTRACTOR SHALL (UPON APPROVAL OF THE OWNER AND/OR ENGINEER) OVER-EXCAVATE TO A DEPTH OF ONE (1) FOOT BELOW THE BOTTOM OF THE PIPE AND BACKFILL WITH COMPACTED CRUSHED STONE, PROPERLY FORMED TO FIT THE BOTTOM OF THE PIPE.

30. THE CONTRACTOR SHALL PROVIDE ONE MYLAR AND THE REQUIRED QUANTITY OF BLUELINE SETS OF "RECORD DRAWINGS" TO THE ENGINEER PRIOR TO ANY REQUEST FOR FINAL INSPECTION. IF PROVIDED FOR IN THE CONSTRUCTION CONTRACT, SAID PLANS SHALL INDICATE THE FINAL LOCATION AND LAYOUT OF ALL IMPROVEMENTS, INCLUDE VERIFICATION OF ALL BUILDING PADS, TOP OF FOUNDATION, INVERT, RIM AND SPOT GRADE ELEVATIONS, AND INCORPORATE ALL FIELD DESIGN CHANGES APPROVED BY THE ENGINEER.

31. CONTRACTOR SHALL VIDEO TAPE THE WORK AREA PRIOR TO CONSTRUCTION FOR THE PURPOSE OF DOCUMENTING EXISTING CONDITIONS.

32. IT SHALL BE THE RESPONSIBILITY OF THE OWNER OR OTHERS DESIGNATED BY THE OWNER TO ARRANGE FOR PROTECTIVE FENCING AT THE CONSTRUCTION SITE. IG CONSULTING, INC. SHALL NOT BE RESPONSIBLE FOR PROVIDING DESIGNS, SPECIFICATIONS, METHODS, SAFETY PRECAUTIONS, OR SEQUENCING OF CONSTRUCTION SITE FENCING OR BARRICADES.

# SOIL EROSION CONTROL

1. THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROCEDURES AND STANDARDS FOR URBAN SOIL EROSION AND SEDIMENTATION CONTROL IN ILLINOIS, THE I.E.P.A. STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENTATION CONTROL, AND WITH ALL APPLICABLE COUNTY AND LOCAL ORDINANCES AND REGULATIONS.

2. ANY SOIL EROSION CONTROL MEASURES, IN ADDITION TO THOSE OUTLINED IN THESE PLANS AND WHICH ARE DEEMED NECESSARY BY THE OWNER, ENGINEER, AND MUNICIPAL ENGINEER SHALL BE IMPLEMENTED IMMEDIATELY BY THE CONTRACTOR.

3. BEFORE COMMENCING CLEARING AND SITE GRADING WORK, A CONSTRUCTION ENTRANCE SHALL BE INSTALLED AS SHOWN ON THE PLANS. THE CONSTRUCTION ENTRANCE TO THE SITE SHALL BE STABILIZED WITH GRAVEL OR ASPHALTIC SURFACE AS SHOWN ON THE PLANS PRIOR TO ANY WORK ON THE SITE. THE ENTRANCE SHALL BE MAINTAINED PERIODICALLY FOR ITS EFFECTIVENESS TO REMOVE DIRT WHICH COULD LEAVE THE SITE BY CONSTRUCTION VEHICLES. ALL ROADWAYS SHALL BE KEPT CLEAN AT ALL TIMES. CONSTRUCTION VEHICLES ARE LIMITED TO THE CONSTRUCTION ACCESS ROAD NOTED ON THE PLAN (STABILIZED CONSTRUCTION ENTRANCE).

4. STREETS ADJACENT TO THE SITE SHALL BE KEPT FREE OF DIRT, MUD, AND DEBRIS.

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER INSTALLATION AND MAINTENANCE OF ALL TEMPORARY AND PERMANENT EROSION CONTROL DEVICES.

6. THE CONTRACTOR SHALL INSPECT AND DOCUMENT EROSION CONTROL MEASURES ON A WEEKLY BASIS AND WITHIN 24 HOURS AFTER ANY RAINFALL EVENT IN EXCESS OF ONE-HALF INCH.

7. NO SEDIMENT (SOLID OD LIQUID WASTE) SHALL BE ALLOWED TO ENTER THE EXISTING STORM SEWER SYSTEM.

8. ALL STORM SEWER, CATCH BASINS, AND SUMPS PROVIDED WITHIN THIS PROJECT ARE TO BE CLEANED AT THE END OF CONSTRUCTION OF THE PROJECT AND PRIOR TO FINAL ACCEPTANCE. CLEANING MAY ALSO BE REQUIRED DURING THE COURSE OF CONSTRUCTION OF THE PROJECT IF IT IS DETERMINED THAT THE SILT AND DEBRIS TRAPS ARE NOT PROPERLY FUNCTIONING AND THEIR PERFORMANCE IS IMPAIRED.

9. TOPSOIL STOCKPILES SHALL BE LOCATED TO AVOID EROSION OF SAID STOCKPILE ONTO OFF-SITE AREAS, I.E., THE STOCKPILE SHALL BE LOCATED SO THAT AN ON-SITE DRAINAGE SWALE IS LOCATED BETWEEN THE STOCKPILE AND THE DOWNSTREAM OFF-SITE PROPERTY. IF A STOCKPILE IS TO REMAIN IN PLACE FOR MORE THAN TWELVE (12) MONTHS, IT IS REQUIRED THAT THE STOCKPILE BE SEEDED SO AS TO MINIMIZE SOIL EROSION BY BOTH WIND AND WATER.

10. TEMPORARY SOIL STABILIZATION SHALL OCCUR WITHIN SEVEN (7) DAYS AFTER ROUGH GRADING IF A DISTURBED AREA WILL REMAIN IDLE LONGER THAN THIRTY (30) DAYS. PERMANENT SOIL STABILIZATION SHALL BE INSTALLED WITHIN SEVEN (7) DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. PERMANENT VEGETATION IS A GROUND COVER DENSE ENOUGH TO COVER 80% OF THE SOIL SURFACE AND MATURE ENOUGH TO SURVIVE WINTER WEATHER CONDITIONS.

11. THE TEMPORARY EROSION CONTROL MEASURES SHALL BE PLACED EFFECTIVELY UNTIL ALL THE PERMANENT EROSION CONTROL ITEMS ARE FULLY FUNCTIONAL.

12. THE GUARANTEE PERIOD SHALL BEGIN AFTER ALL THE PERMANENT EROSION CONTROL MEASURES ARE FULLY FUNCTIONAL AND ACCEPTABLE TO OWNER OR HIS REPRESENTATIVE.

13. UNLESS SOIL EROSION CONTROL ITEMS ARE SPECIFICALLY REFERRED TO AS BID ITEMS (SUCH AS TOPSOIL RESPREAD, SEEDING, ETC.), THEY ARE TO BE CONSIDERED AS INCIDENTAL TO THE COST OF THE CONTRACT.

14. UPON COMPLETION OF TOPSOIL RESPREAD OPERATIONS, ALL DISTURBED AREAS SHALL BE SEEDED, SODDED, OR LANDSCAPED AS NOTED ON THE PLAN.

15. SEEDING AND MULCHING SHALL BE IN ACCORDANCE WITH SECTIONS 250 AND 251 OF THE STANDARD SPECIFICATIONS. SEED MIXTURE SHALL BE CLASS 1.

16. SODDING SHALL BE IN ACCORDANCE WITH SECTION 252 OF THE I.D.O.T. STANDARD SPECIFICATIONS.

# SITE PREPARATION AND EARTHWORK

1. WORK UNDER THIS SECTION SHALL INCLUDE BUT NOT LIMITED TO THE FOLLOWING:
   A. CLEARING AND REMOVAL OF ALL UNDESIRABLE TREES AND OTHER VEGETATIVE GROWTH WITHIN THE CONSTRUCTION AREA. TREE REMOVAL SHALL BE AS DESIGNATED BY THE OWNER AND SHALL BE KEPT TO A MINIMUM. WHERE FEASIBLE AND WHEN PERMITTED BY THE OWNER AND BY THE LOCAL JURISDICTION, TREES AND BRUSH CAN BE CUT, CHIPPED, AND BURIED OR SPREAD IN DESIGNATED LOCATIONS ON-SITE. IF ADEQUATE AND APPROPRIATE SPACE IS NOT AVAILABLE FOR ON-SITE BURIAL, THE TREES AND BRUSH SHALL BE DISPOSED OFF-SITE. NO BURNING SHALL BE PERMITTED ON-SITE. THE CONTRACTOR SHALL COMPLY WITH LOCAL TREE ORDINANCES. TREES AND SHRUBS DESIGNATED TO BE SAVED SHALL BE PROTECTED BY PLACING HIGHLY VISIBLE CONSTRUCTION FENCING ALONG THE DRIP LINES. TREES DESIGNATED FOR RELOCATION AND/OR TEMPORARILY STORED FOR TRANSPLANTING SHALL BE PROTECTED IN THE SAME MANNER. WHERE REQUIRED BY OWNER, TRUNKS OF DESIGNATED TREES SHALL BE PROTECTED WITH STRAPPED 2" X 6" PLANKING FROM THE BASE TO A HEIGHT OF EIGHT (8) FEET.
   B. STRIPPING OF TOPSOIL FROM ALL STREET, DRIVEWAY, PARKING LOT, RIGHT-OF-WAY, BUILDING PAD, AND OTHER DESIGNATED STRUCTURAL AREAS.
   C. STOCKPILING OF TOPSOIL AT LOCATIONS AS DIRECTED BY THE OWNER. TOPSOIL STOCKPILED FOR FUTURE USE SHALL BE RELATIVELY FREE OF LARGE ROOTS, STICKS, WEEDS, BRUSH, STONES LARGER THAN ONE (1) INCH DIAMETER, OR OTHER LITTER AND WASTE PRODUCTS INCLUDING EXTRANEOUS MATERIALS NOT CONDUCIVE TO PLANT GROWTH. TOPSOIL SHALL BE STOCKPILED IN SEQUENCE TO MINIMIZE REHANDLING. FAILURE TO PROPERLY SEQUENCE THE STOCKPILING OPERATIONS SHALL NOT CONSTITUTE A CLAIM FOR ADDITIONAL COMPENSATION. NO MATERIAL SHALL BE STOCKPILED IN FRONT YARDS, OVERLAND DRAINAGE SWALES (FLOOD ROUTING AREAS), IN WETLANDS, IN PROPOSED UTILITY LOCATIONS, IN UTILITY EASEMENTS, OR IN THE RIGHT-OF-WAY. ABSOLUTELY NO MATERIALS WILL BE STOCKPILED OR DISPOSED UNDER THE CANOPIES OF TREES DESIGNATED FOR PROTECTION.
   D. REMOVING UNSUITABLE MATERIALS AS SPECIFIED FROM ROADWAY, DRIVEWAY/PARKING, BUILDING PAD, AND OTHER DESIGNATED AREAS.
   E. DEMOLITION AND REMOVAL OF EXISTING BUILDINGS AND/OR PAVEMENTS INCLUDING OFF-SITE DISPOSAL OF SAME, AT A LEGAL DISPOSAL SITE SELECTED BY THE CONTRACTOR. ON-SITE DISPOSAL WILL ONLY BE ALLOWED IF EXPRESSLY APPROVED BY OWNER IN WRITING.
   F. CLAY CUT AND CLAY FILL WITH COMPACTION WITHIN ROADWAY, DRIVEWAY/PARKING, BUILDING PAD, AND OTHER DESIGNATED AREAS.
   G. EXCAVATION AND GRADING OF THE OPEN SPACE AND/OR YARD AREAS PER PLAN INCLUDING DESIGNATED POND REGRADING, CONSTRUCTION OF BERMS, ETC.
   H. PLACEMENT AND COMPACTION OF CLAY TO STANDARDS AND DETAILS REQUIRED ON THE CONSTRUCTION PLANS TO THE DESIGN SUBGRADE ELEVATIONS. THE CONTRACTOR WILL NOTE THAT THE ELEVATIONS SHOWN ON THE CONSTRUCTION PLANS ARE FINISHED GRADE ELEVATIONS AND THAT PAVEMENT AND/OR TOPSOIL REPLACEMENT THICKNESS MUST BE SUBTRACTED TO DETERMINE SUBGRADE ELEVATIONS.
   I. PLACEMENT AND COMPACTION OF NON-STRUCTURAL FILLS.
   J. IF REQUIRED, REMOVAL FROM SITE AND DISPOSAL OF ANY EXCESS OR UNSUITABLE MATERIAL UPON COMPLETION OF MASS GRADING.
   K. MOVEMENT AND COMPACTION OF SPOIL MATERIAL FROM THE CONSTRUCTION OF UNDERGROUND UTILITIES.
   L. BACKFILLING OF CURBS AND/OR PAVEMENTS AND SIDEWALK AFTER INSTALLATION OF SAME BY THE PAVING CONTRACTOR.
   M. FINAL SHAPING AND TRIMMING TO THE LINES, GRADES, AND CROSS-SECTION SHOWN IN THESE PLANS; AND TOPSOIL PLACEMENT TO DESIGN FINISHED GRADE ELEVATIONS.
   N. SOIL EROSION CONTROL MEASURE IN ACCORDANCE WITH THE APPLICABLE SPECIFICATIONS, UNLESS SPECIFICALLY EXCLUDED IN THE CONSTRUCTION CONTRACT.

2. THE QUANTITIES GIVEN IN THE ENGINEER'S SUMMARY FOR EARTHWORK ARE INTENDED AS A GUIDE FOR THE CONTRACTOR IN DETERMINING THE SCOPE OF THE COMPLETED PROJECT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALL MATERIAL QUANTITIES AND APPRAISE HIMSELF OF ALL SITE CONDITIONS. THE CONTRACT PRICE SUBMITTED BY THE CONTRACTOR SHALL BE CONSIDERED AS LUMP SUM FOR THE COMPLETE PROJECT. NO CLAIMS FOR EXTRA WORK WILL BE RECOGNIZED UNLESS ORDERED IN WRITING BY THE OWNER.

3. PRIOR TO ONSET OF MASS GRADING OPERATIONS AND IF INCLUDED IN THIS CONTRACT, THE EARTHWORK CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE SOIL EROSION CONTROL SPECIFICATIONS. THE INITIAL ESTABLISHMENT OF EROSION CONTROL PROCEDURES AND THE PLACEMENT OF FILTER FENCING, ETC. TO PROTECT ADJACENT PROPERTY SHALL OCCUR BEFORE MASS GRADING BEGINS AND IN ACCORDANCE WITH THE SOIL EROSION CONTROL CONSTRUCTION SCHEDULE.

4. THE GRADING OPERATIONS ARE TO BE CLOSELY SUPERVISED AND INSPECTED BY THE SOILS ENGINEER OR HIS REPRESENTATIVE, PARTICULARLY DURING THE REMOVAL OF UNSUITABLE MATERIAL AND THE CONSTRUCTION OF EMBANKMENTS OR BUILDING PADS. ALL TESTING, INSPECTION AND SUPERVISION OF SOIL QUALITY, UNSUITABLE REMOVAL AND ITS REPLACEMENT AND OTHER SOILS RELATED OPERATIONS SHALL BE ENTIRELY THE RESPONSIBILITY OF THE SOILS ENGINEER.

5. THE GRADING AND CONSTRUCTION OF THE SITE IMPROVEMENTS SHALL NOT CAUSE PONDING OF STORM WATER. ALL AREAS ADJACENT TO THESE IMPROVEMENTS SHALL BE GRADED TO ALLOW POSITIVE DRAINAGE.

6. THE PROPOSED GRADING ELEVATIONS SHOWN ON THE PLANS ARE FINISHED GRADE. A MINIMUM OF SIX (6) INCHES OF TOPSOIL IS TO BE PLACED BEFORE FINISH GRADE ELEVATIONS ARE ACHIEVED.

7. THE SELECTED STRUCTURAL FILL MATERIAL SHALL BE PLACED IN LEVEL UNIFORM LAYERS SO THAT THE COMPACTED THICKNESS IS APPROXIMATELY SIX (6) INCHES; IF COMPACTION EQUIPMENT DEMONSTRATES THE ABILITY TO COMPACT GREATER THICKNESSES, THEN A GREATER THICKNESS MAY BE SPECIFIED. EACH LAYER SHALL BE THOROUGHLY MIXED DURING SPREADING TO INSURE UNIFORMITY.

8. EMBANKMENT MATERIAL WITHIN ROADWAY, DRIVEWAY, PARKING LOT, AND OTHER STRUCTURAL CLAY FILL AREAS SHALL BE COMPACTED TO A MINIMUM OF NINETY-FIVE (95) PERCENT OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM SPECIFICATION D-1557 (MODIFIED PROCTOR METHOD), OR TO SUCH DENSITY AS MAY BE DETERMINED APPROPRIATE BY THE SOILS ENGINEER. EMBANKMENT MATERIAL FOR BUILDING PADS SHALL BE COMPACTED TO A MINIMUM OF NINETY-FIVE (95) PERCENT OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM DESIGNATION D-1557 (MODIFIED PROCTOR METHOD) OR TO SUCH OTHER DENSITY AS MAY BE DETERMINED APPROPRIATE BY THE SOILS ENGINEER.

9. EMBANKMENT FILL WITH NON-STRUCTURAL MATERIALS APPROVED BY THE SOILS ENGINEER SHALL BE COMPACTED TO A MINIMUM OF NINETY (90) PERCENT OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM SPECIFICATION D-1557 (MODIFIED PROCTOR METHOD).

10. THE SURFACE VEGETATION, TOPSOIL, AND ANY OBVIOUSLY SOFT UNDERLYING SOIL SHALL BE STRIPPED FROM ALL AREAS TO RECEIVE CLAY FILL. IF THE UNDERLYING SUBGRADE SOILS RUT DEEPER THAN ONE (1) INCH UNDER THE CONSTRUCTION EQUIPMENT OR IF THE MOISTURE CONTENT EXCEEDS THAT NEEDED FOR PROPER COMPACTION, THE SOIL SHALL BE SCARIFIED, DRIED, AND RECOMPACTED TO THE REQUIRED SPECIFICATIONS (SEE SECTION 301.03 OF THE I.D.O.T SPECIFICATIONS).

11. ALL PAVEMENT SUBGRADE SHALL HAVE A MINIMUM IBR OF 3.0 AS DETERMINED BY THE SOILS ENGINEER. THE PROPOSED PAVEMENT DESIGN HAS BEEN BASED ON A MINIMUM IBR OF 3.0. THEREFORE, IF AREAS OF PAVEMENT SUBGRADE ARE ENCOUNTERED WHICH DO NOT PROVIDE A MINIMUM IBR OF 3.0, SUBGRADE REPLACEMENT OR PAVEMENT DESIGN REVISIONS SHALL BE PROVIDED WHICH ARE ADEQUATE TO OBTAIN EQUIVALENT PAVEMENT STRENGTH, AS DETERMINED BY THE SOILS ENGINEER AND DESIGN ENGINEER, RESPECTIVELY.

12. PRIOR TO UTILITY CONSTRUCTION, PROPOSED PAVEMENT AREAS, BUILDING PADS, DRIVEWAYS AND SIDEWALKS, AND YARD/OPEN SPACE AREAS SHALL BE ROUGH-EXCAVATED OR FILLED BY THE CONTRACTOR TO PLUS OR MINUS ONE (1) FOOT OF DESIGN SUBGRADE ELEVATIONS.

13. THE SUBGRADE FOR PROPOSED STREET AND PAVEMENT AREAS SHALL BE PROOF-ROLLED BY THE CONTRACTOR AND ANY UNSTABLE AREAS ENCOUNTERED SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE SOILS ENGINEER.

14. UPON COMPLETION OF THE SURFACE IMPROVEMENTS, THE EXCAVATION CONTRACTOR SHALL RESPREAD A SIX (6) INCH LAYER OF TOPSOIL ON ALL DESIGNATED LANDSCAPE AREAS AND OTHER NON-STRUCTURAL AREAS PER PLAN.

15. SOIL BORING REPORTS, AVAILABLE AT THE OFFICE OF THE ENGINEER AND THE OWNER, ARE SOLELY FOR THE INFORMATION AND GUIDANCE OF THE CONTRACTORS AND OWNER, AND ENGINEER MAKES NO REPRESENTATION OR WARRANTY REGARDING THE INFORMATION CONTAINED IN THE BORING LOGS. THE CONTRACTOR SHALL MAKE HIS OWN INVESTIGATIONS, AND SHALL PLAN HIS WORK ACCORDINGLY. ARRANGEMENTS TO ENTER THE PROPERTY DURING THE BIDDING PHASE MAY BE MADE UPON REQUEST BY THE OWNER. THERE WILL BE NO ADDITIONAL PAYMENT FOR EXPENSES INCURRED BY THE CONTRACTOR RESULTING FROM ADVERSE SOIL OR GROUND WATER CONDITIONS.

16. IF SHOWN ON THE PLANS, OPEN AREAS TO BE SEEDED SHALL BE SEEDED IN ACCORDANCE WITH THE SOIL EROSION CONTROL SPECIFICATIONS.

# SEWER AND WATER

1. GENERAL
   A. WORK UNDER THIS SECTION SHALL INCLUDE TRENCHING, INSTALLATION OF PIPE, CASTINGS, STRUCTURES, BACKFILLING OF TRENCHES AND COMPACTION, AND TESTING AS SHOWN ON THE CONSTRUCTION PLANS. FITTINGS AND ACCESSORIES NECESSARY TO COMPLETE THE WORK MAY NOT BE SPECIFIED, BUT SHALL BE CONSIDERED AS INCIDENTAL TO THE COST OF THE CONTRACT.
   B. ALL SEWER AND WATER MAIN SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR SEWER AND WATER MAIN CONSTRUCTION IN ILLINOIS, CURRENT EDITION, AND THE STANDARD SPECIFICATIONS AND CONSTRUCTION DETAILS AND ORDINANCES OF THE LOCAL JURISDICTION.
   C. ROUGH GRADING TO WITHIN ONE (1) FOOT OF FINISHED SUBGRADE SHALL BE COMPLETED PRIOR TO COMMENCEMENT OF UNDERGROUND UTILITY INSTALLATION.
   D. ALL UTILITY TRENCHES BENEATH PROPOSED OR EXISTING UTILITIES, PROPOSED OR EXISTING PAVEMENT, DRIVEWAYS, SIDEWALKS AND FOR A DISTANCE OF TWO FEET ON EITHER SIDE OF SAME, AND/OR WHEREVER ELSE SHOWN ON THE CONSTRUCTION PLAN SHALL BE BACKFILLED WITH SELECT GRANULAR BACKFILL (CA-6) AND THOROUGHLY COMPACTED IN ACCORDANCE WITH SPECIFICATIONS.
   E. ALL SANITARY SEWERS, STORM SEWERS, AND SEWER SERVICES SHALL BE INSTALLED ON GRANULAR CRUSHED STONE BEDDING, CLASS I, (I.D.O.T. GRADATION CA-11) CONFORMING TO ASTM D-2321, WITH A MINIMUM THICKNESS EQUAL TO ONE-QUARTER (1/4TH) OF THE OUTSIDE DIAMETER OF THE SEWER PIPE, BUT NOT LESS THAN FOUR (4) INCHES OR MORE THAN EIGHT (8) INCHES. BEDDING SHALL EXTEND TO SIX (6) INCHES OVER THE CROWN ON THE PIPE IN ALL CASES. FOR PVC SANITARY SEWER, THE BEDDING SHALL EXTEND TO ONE (1) FOOT ABOVE THE TOP OF THE PIPE. BEDDING MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-33 FOR SOUNDNESS AND ASTM C-67 FOR GRADATION. COST FOR BEDDING SHALL BE MERGED WITH THE UNIT PRICE BID FOR THE SEWER, WATER MAIN, ETC.
   F. THE UNDERGROUND CONTRACTOR SHALL DISPOSE OF EXCESS EXCAVATED TRENCH MATERIAL IN AN ORDERLY FASHION SO AS NOT TO CREATE A HAZARD OR OBSTRUCTION, AND SHALL MAINTAIN AND RESTORE THE SITE TO A WORKABLE CONDITION. THE DISPOSAL AND PLACEMENT OF ALL EXCESS TRENCH MATERIAL SHALL BE THE RESPONSIBILITY OF THE EARTH EXCAVATING CONTRACTOR.
   G. THE UNDERGROUND CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING ANY EXCAVATION FOR THE INSTALLATION OF THE SEWER OR WATER SYSTEMS. ANY DEWATERING ENCOUNTERED SHALL BE INCIDENTAL TO THE RESPECTIVE UNDERGROUND UTILITY.
   H. AN ANTICIPATED COST OF SHEETING SHALL BE REFLECTED IN THE CONTRACT AMOUNTS. NO ADDITIONAL COST WILL BE ALLOWED FOR SHEETING OR BRACING.
   I. STRUCTURES FOR SANITARY AND STORM SEWERS AND VALVE VAULTS FOR WATER MAINS SHALL BE IN ACCORDANCE WITH THESE IMPROVEMENT PLANS AND THE APPLICABLE STANDARD SPECIFICATIONS. WHEN GRANULAR TRENCH BACKFILL IS REQUIRED AROUND THESE STRUCTURES, THE COST SHALL BE CONSIDERED AS INCIDENTAL AND SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR THE STRUCTURE.
   J. FRAMES AND LIDS (OR GRATES) FOR SANITARY, WATER MAIN, AND STORM SEWER STRUCTURES SHALL BE AS INDICATED WITHIN THESE IMPROVEMENT PLANS (SEE CONSTRUCTION STANDARDS).
   K. TOTAL THICKNESS OF P.C.C. ADJUSTING RINGS SHALL NOT EXCEED EIGHT (8) INCHES, UNLESS OTHERWISE NOTED.
   L. ALL TOP OF FRAMES FOR STORM AND SANITARY SEWERS, VALVE VAULT COVERS, AND B-BOXES ARE TO BE ADJUSTED TO MEET FINAL FINISH GRADE UPON COMPLETION OF FINISHED GRADING AND FINAL INSPECTIONS. THIS ADJUSTMENT IS TO BE MADE BY THE UNDERGROUND CONTRACTOR, AND THE COST IS TO BE CONSIDERED INCIDENTAL. THE UNDERGROUND CONTRACTOR SHALL INSURE THAT ALL ROAD AND PAVEMENT INLETS OR STRUCTURES (FRAMES AND GRATES) ARE AT FINISHED GRADE. ANY ADJUSTMENTS NECESSITATED BY THE CURB OR PAVING CONTRACTOR TO ACHIEVE FINAL RIM GRADE, RESULTING IN AN EXTRA FOR SAID ADJUSTMENTS, WILL BE CHARGED TO THE UNDERGROUND CONTRACTOR.
   M. THE CONTRACTOR SHALL INSTALL A 2" X 4" X 8' CEDAR POST ADJACENT TO THE TERMINUS OF THE SANITARY SERVICE, WATER MAIN SERVICE, SANITARY MANHOLES, STORM MANHOLES, CATCH BASINS, INLETS, AND WATER VAULTS. THE POST SHALL EXTEND A MINIMUM OF FOUR (4) INCHES ABOVE THE GROUND. THE TOP TWELVE (12) INCHES OF SAID POST SHALL BE PAINTED AS FOLLOWS: SANITARY – RED; WATER MAIN – BLUE; STORM – GREEN.
   N. IT SHALL BE THE RESPONSIBILITY OF THE UNDERGROUND CONTRACTOR TO REMOVE FROM THE SITE ANY AND ALL MATERIALS AND DEBRIS WHICH RESULT FROM HIS CONSTRUCTION OPERATIONS AT NO ADDITIONAL EXPENSE TO THE OWNER.
   O. TELEVISION INSPECTION OF SEWERS: CONTRACTOR SHALL CAUSE THE SEWERS TO BE TELEVISED. IN THE EVENT ANY PORTION OR PORTIONS OF THE SEWER WERE NOT INSTALLED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS, WERE NOT CONSTRUCTED TO THE REQUIRED LINES AND GRADE, OR ARE FOUND TO BE OTHERWISE DEFECTIVE, THE CONTRACTOR SHALL PROCEED AT ONCE TO MAKE THE NECESSARY REPAIRS AND CORRECTIONS REQUIRED TO ELIMINATE SAID DEFECTS. AFTER SUCH REPAIRS AND CORRECTIONS HAVE BEEN COMPLETED, THE SEWER WILL BE RE-TELEVISED, AND ANY FURTHER CORRECTIVE WORK WILL BE DONE AS NECESSARY. THE COST OF THE CLOSED CIRCUIT TELEVISION INSPECTION SHALL BE AT THE CONTRACTOR'S EXPENSE.

2. SANITARY SEWER
   A. CONSTRUCTION MATERIALS: THE FOLLOWING SPECIFICATIONS SHALL APPLY TO MATERIALS GENERALLY USED IN SANITARY SEWER CONSTRUCTION. THE MATERIALS SPECIFICALLY PERMITTED BY THE LOCAL JURISDICTION ARE IDENTIFIED ON THE "CONSTRUCTION STANDARDS" SHEETS OF THE PLANS.
      1) POLYVINYL CHLORIDE PLASTIC GRAVITY SEWER (PVC) CONFORMING TO ASTM DESIGNATION D-3034 WITH AN SDR OF 26, WITH ELASTOMETRIC GASKET JOINTS CONFORMING TO ASTM DESIGNATION D-3212.
      2) DUCTILE IRON PIPE (CLASS 52 MIN.) CONFORMING TO ANSI A21.51 WITH JOINTS CONFORMING TO ANSI A21.11 (AWWA C151, AWWA 11).
      3) MANHOLES SHALL BE REINFORCED PRECAST CONCRETE WITH PRE-CAST OPENINGS CONFORMING TO ASTM C-478, FORTY-EIGHT INCHES IN INTERNAL DIAMETER, FIVE (5) INCH MINIMUM WALL THICKNESS, AND A SIX (6) INCH THICK MONOLITHIC CONCRETE BASE SET ON A THREE (3) INCH COMPACTED SAND CUSHION. CONES SHALL BE ECCENTRIC AND CENTERED IN A MANNER PERPENDICULAR TO THE MAINLINE FLOW. SECTIONS SHALL BE TONGUE AND GROOVE OF VARIABLE HEIGHT. ALL JOINTS SHALL BE SEALED WITH ONE (1) INCH BUTYL JOINT SEALANT IN ROPE FORM MEETING ASTM C-443 OR APPROVED EQUAL. THE BOTTOM SECTION OF EACH MANHOLE SHALL BE PROVIDED WITH THE PROPER OPENING TO RECEIVE THE PIPELINES. EACH OPENING SHALL HAVE A FLEXIBLE WATERTIGHT PIPE TO MANHOLE SEAL, EITHER LOCK JOINT FLEXIBLE MANHOLE SLEEVE OR PRESS WEDGE II. SECTIONS SHALL BE FURNISHED WITH CAST IRON STEPS, NEENAH R-1981-1 OR EQUAL, AT TWELVE (12) INCH TO SIXTEEN (16) INCH CENTERS. THE TOP OF SECTIONS SHALL BE OF THE OFFSET CONE TYPE. NO MORE THAN EIGHT (8) INCHES OF ADJUSTING RING SHALL BE ALLOWED BETWEEN THE TOP OF THE PRECAST CONE AND THE CAST IRON FRAME. CONTRACTOR SHALL PROVIDE CHIMNEY SEALS. EACH MANHOLE SHALL BE FURNISHED WITH A NEENAH R-1015 MACHINED BEARING FRAME (OR EQUAL) WITH TYPE B LID. LIDS SHALL HAVE CONCEALED PICK HOLES, BE SELF-SEALING, AND BE LETTERED "SANITARY" IN TWO INCH LETTERS.
   B. "BAND-SEAL" OR SIMILAR FLEXIBLE TYPE COUPLINGS SHALL BE USED WHEN CONNECTING SEWER PIPES OF DISSIMILAR MATERIALS. WHEN CONNECTING TO AN EXISTING SEWER MAIN BY MEANS OTHER THAN AN EXISTING WYE, TEE, OR AN EXISTING MANHOLE, ONE THE FOLLOWING METHODS SHALL BE USED:
      1) CIRCULAR SAW-CUT OF SEWER MAIN BY PROPER TOOLS ("SHEWER-TAP" MACHINE OR SIMILAR) AND PROPER INSTALLATION OF HUB-WYE SADDLE OR HUB-TEE SADDLE.
      2) REMOVE AN ENTIRE SECTION OF PIPE (BREAKING ONLY THE TOP OF ONE BELL) AND REPLACE WITH A WYE OR TEE BRANCH SECTION.
      3) WITH THE PIPE CUTTER, NEATLY AND ACCURATELY CUT OUT DESIRED LENGTH OF PIPE FOR INSERTION OF PROPER FITTING USING "BAND-SEAL" OR SIMILAR COUPLINGS TO HOLD IT FIRMLY IN PLACE.
   C. ALL FLOOR DRAINS AND FLOOR DRAIN SUMP PUMPS SHALL DISCHARGE INTO THE SANITARY SEWER.
   D. ALL DOWNSPOUTS, FOOTING DRAINS, AND SUBSURFACE STORM WATERS SHALL DISCHARGE INTO THE STORM SEWER OR ONTO THE GROUND.
   E. SANITARY SERVICES SHALL BE LAID TO A MINIMUM GRADE OF ONE (1) PERCENT. THE END OF EACH SERVICE SHALL BE SEALED WITH A MANUFACTURER'S WATERTIGHT PLUG. SANITARY SERVICE STUBS SHALL BE MARKED IN ACCORDANCE WITH THESE CONSTRUCTION NOTES.
   F. SEWER SERVICE RISER SHALL BE USED WHEN MAINLINE SEWER EXCEEDS TWELVE (12) FEET IN DEPTH.
   G. NEOPRENE COUPLINGS WITH STAINLESS STEEL BANDS SHALL BE USED TO CONNECT SANITARY SERVICE LINES TO THE BUILDING PLUMBING OUTLET.
   H. ALL SANITARY SEWERS INCLUDING SERVICE LINES SHALL BE SUBJECTED TO EITHER AN INFILTRATION TEST OR AIR TEST AND APPLICABLE DEFLECTION TEST BY THE CONTRACTOR. ALLOWABLE INFILTRATION SHALL NOT EXCEED TWO HUNDRED (200) GALLONS PER INCH DIAMETER OF PIPE PER MILE PER DAY. THE CONTRACTOR SHALL COORDINATE ALL TESTING SO THAT IT CAN BE WITNESSED BY THE MUNICIPAL ENGINEER AND SANITARY DISTRICT, AS APPROPRIATE.
   I. IF PVC SEWER PIPE OR ABS TRUSS PIPE IS USED FOR SANITARY SEWERS, THE CONTRACTOR SHALL PERFORM DEFLECTION TESTS AS OUTLINED IN THE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS, LATEST EDITION OR AS OTHERWISE REQUIRED BY THE LOCAL JURISDICTION.
   J. TRENCH CONDITIONS
      1) TRENCH BOTTOMS: UNSTABLE SAND AND SILTY SUBSOIL SHALL BE COMPLETELY DEWATERED WITH WELL POINTS WHERE DEEMED NECESSARY BY THE ENGINEER. IN SUCH CASES, THE PIPE SHALL BE BEDDED IN A LAYER OF STONE UNDERLAY EIGHT (8) INCHES IN THICKNESS BELOW THE STANDARD BEDDING MATERIAL TO PROVIDE NECESSARY SOIL SUPPORT AND STABILITY. STONE UNDERLAY SHALL CONFORM WITH SECTION 704 OF THE STANDARD SPECIFICATIONS AND BE CRUSHED LIMESTONE OF GRADATION CA 3 ONLY. WHERE SPECIFICALLY AUTHORIZED BY THE ENGINEER, STONE UNDERLAY WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER TON IN PLACE. NO ADDITIONAL COMPENSATION WILL BE PAID FOR DEWATERING WITH WELL POINTS OR OTHER MEANS OR FOR BRACING AND SHEETING TRENCH WALLS, EXCEPT WHERE SPECIFICALLY PROVIDED FOR IN THE PROPOSAL AND AUTHORIZED BY THE ENGINEER.
      2) SEWERS SHALL BE SO LAID THAT THE PIPE BARREL SHALL BE SUPPORTED THROUGHOUT ITS LENGTH BETWEEN PIPE BELLS OR COUPLINGS. THE BEDDING SHALL BE SHAPED TO PROVIDE UNIFORM SUPPORT OVER THE LOWER QUADRANT OF THE PIPE BARREL. BELL_ HOLES SHALL BE EXCAVATED SO THAT AFTER PLACEMENT, ONLY THE BARREL OF THE PIPE RECEIVES BEARING PRESSURE FROM THE TRENCH BOTTOM. THE USE OF BRICK, TIMBER, OR EARTH FILL TO RAISE THE PIPE FOR JOINTING OR UNIFORM GRADE WILL NOT BE PERMITTED.
      3) TRENCHES SHALL BE KEPT WATER-FREE AND AS DRY AS POSSIBLE DURING BEDDING, LAYING, AND JOINTING AND FOR AS LONG A PERIOD AS REQUIRED. AS SOON AS POSSIBLE AFTER THE JOINT IS MADE, SUFFICIENT BEDDING SHALL BE PLACED AND COMPACTED ALONG EACH SIDE OF THE PIPE TO OFFSET CONDITIONS THAT MIGHT TEND TO MOVE THE PIPE OFF LINE AND GRADE.
   K. BACKFILL
      1) ALL TRENCHES AND EXCAVATIONS SHALL BE BACKFILLED IMMEDIATELY AFTER THE PIPE IS LAID THEREIN, UNLESS OTHER PROTECTION OF THE PIPE LINES IS DIRECTED. UNDER NO CIRCUMSTANCES SHALL WATER BE ALLOWED TO RISE IN UNBACKFILLED TRENCHES AFTER THE PIPE HAS BEEN PLACED. NO MATERIAL SHALL BE USED FOR BACKFILLING THAT CONTAINS STONES OVER SIX (6) INCH DIMENSION, FROZEN EARTH, DEBRIS, OR EARTH WITH AN EXCEPTIONALLY HIGH VOID CONTENT. FOR BACKFILL UP TO A LEVEL OF TWO (2) FEET OVER THE TOP OF THE PIPE, ONLY SELECTED MATERIALS SHALL BE USED. EACH LAYER OF THE SELECTED FINE GRADED BACKFILL, FREE FROM STONES, LUMPS, AND CLODS SHALL BE CAREFULLY PLACED AND UNIFORMLY TAMPED IN A MANNER TO ELIMINATE THE POSSIBILITY OF LATERAL OR VERTICAL DISPLACEMENT.
      2) ALL BACKFILL MATERIAL UP TO A HEIGHT OF TWENTY-FOUR (24) INCHES ABOVE THE TOP OF THE PIPE SHALL BE CAREFULLY DEPOSITED IN UNIFORM LAYERS NOT EXCEEDING EIGHT (8) INCHES IN THICKNESS (LOOSE MEASURE), WITH EACH LAYER FIRMLY COMPACTED BY PNEUMATIC OR HYDRAULIC TAMPING EQUIPMENT APPROVED BY THE ENGINEER IN SUCH A MANNER AS NOT TO DISTURB OR INJURE THE PIPE. BACKFILLING ABOVE THIS HEIGHT SHALL BE DONE BY THE MATERIAL BEING DEPOSITED IN UNIFORM LAYERS NOT EXCEEDING TWELVE (12) INCHES IN THICKNESS (LOOSE MEASURE), WITH EACH LAYER COMPACTED BY PNEUMATIC OR HYDRAULIC TAMPING EQUIPMENT APPROVED BY THE ENGINEER.
      3) ALL BACKFILL MATERIAL SHALL BE COMPACTED BY PNEUMATIC OR HYDRAULIC TAMPING EQUIPMENT (APPROVED BY THE ENGINEER) TO NINETY (90) PERCENT OF AASHTO T-180 MODIFIED DENSITY. ALL BACKFILL MATERIAL WITHIN TWO (2) FEET, MEASURED VERTICALLY FROM THE BOTTOM OF ANY PROPOSED OR EXISTING PAVEMENT DRIVEWAY OR SIDEWALK, SHALL BE COMPACTED TO NINETY-FIVE (95) PERCENT OF AASHTO T-180 MODIFIED DENSITY.

3. STORM SEWER
   A. CONSTRUCTION MATERIALS: THE FOLLOWING SPECIFICATIONS SHALL APPLY TO MATERIALS GENERALLY USED IN STORM SEWER CONSTRUCTION. THE MATERIALS SPECIFICALLY PERMITTED BY THE LOCAL JURISDICTION ARE IDENTIFIED ON THE "CONSTRUCTION STANDARDS" SHEETS OF THE PLANS.
      1) REINFORCED CONCRETE PIPE CONFORMING TO ASTM C-76 AND JOINTS CONFORMING TO ASTM C-443, USING ROBBER "O"-RING GASKETED JOINTS EXCEPT WHERE DESIGNATED OTHERWISE ON THE PLANS. THE PIPE CLASS SHALL BE NO LESS THAN CLASS III IF NO HIGHER DESIGNATION IS SHOWN ON THE PLANS.
      2) POLYVINYL CHLORIDE PLASTIC GRAVITY SEWER PIPE CONFORMING TO ASTM D-2751 WITH SOLVENT CEMENT JOINTS, AND ASTM D-3212 WITH ELASTOMERIC JOINTS, PER THE SDR VALUE SHOWN IN THE CONSTRUCTION STANDARD SHEETS.
      3) DUCTILE IRON PIPE (CLASS 52 MIN.) CONFORMING TO ANSI A21.51 WITH JOINTS CONFORMING TO ANSI 21.11
      4) CONCRETE STORM SEWER MANHOLES, CATCH BASINS, AND INLETS SHALL BE PRECAST STRUCTURES WITH THE DIAMETER DEPENDENT ON THE PIPE SIZES AND WITH FRAMES AND LIDS DEPICTED IN THE CONSTRUCTION STANDARDS.
   B. TRENCH CONDITIONS
      1) TRENCH BOTTOMS: UNSTABLE SAND AND SILTY SUBSOIL SHALL BE COMPLETELY DEWATERED WITH WELL POINTS WHERE DEEMED NECESSARY BY THE ENGINEER. IN SUCH CASES, THE PIPE SHALL BE BEDDED IN A LAYER OF STONE UNDERLAY EIGHT INCHES IN THICKNESS BELOW THE STANDARD BEDDING MATERIAL TO PROVIDE NECESSARY SOIL SUPPORT AND STABILITY. STONE UNDERLAY SHALL CONFORM WITH SECTION 704 OF THE STANDARD SPECIFICATIONS AND BE CRUSHED LIMESTONE OF GRADATION CA 3 ONLY. WHERE SPECIFICALLY AUTHORIZED BY THE ENGINEER, STONE UNDERLAY WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER TON IN PLACE. NO ADDITIONAL COMPENSATION WILL BE PAID FOR DEWATERING WITH WELL POINTS OR OTHER MEANS OR FOR BRACING AND SHEETING TRENCH WALLS, EXCEPT WHERE SPECIFICALLY PROVIDED FOR IN THE PROPOSAL AND AUTHORIZED BY THE ENGINEER.
      2) SEWERS SHALL BE SO LAID THAT THE PIPE BARREL SHALL BE SUPPORTED THROUGHOUT ITS LENGTH BETWEEN PIPE BELLS OR COUPLINGS. THE BEDDING SHALL BE SHAPED TO PROVIDE UNIFORM SUPPORT OVER THE LOWER QUADRANT OF THE PIPE BARREL. BELL_HOLES SHALL BE EXCAVATED SO THAT AFTER PLACEMENT, ONLY THE BARREL OF THE PIPE RECEIVES BEARING PRESSURE FROM THE TRENCH BOTTOM. THE USE OF BRICK, TIMBER, OR EARTH FILL TO RAISE THE PIPE FOR JOINTING OR UNIFORM GRADE WILL NOT BE PERMITTED.
      3) TRENCHES SHALL BE KEPT WATER-FREE AND AS DRY AS POSSIBLE DURING BEDDING, LAYING, AND JOINTING AND FOR AS LONG A PERIOD AS REQUIRED. AS SOON AS POSSIBLE AFTER THE JOINT IS MADE, SUFFICIENT BEDDING SHALL BE PLACED AND COMPACTED ALONG EACH SIDE OF THE PIPE TO OFFSET CONDITIONS THAT MIGHT TEND TO MOVE THE PIPE OFF LINE AND GRADE.
   C. ALL CATCH BASINS, SUMPS, AND/OR RETENTION BASINS ARE TO BE CLEANED AT THE END OF THE PROJECT PRIOR TO FINAL ACCEPTANCE. CLEANING MAY ALSO BE REQUIRED DURING THE COURSE OF THE CONSTRUCTION OF THE PROJECT IF IT IS DETERMINED THAT THE SILT AND DEBRIS TRAPS ARE NOT FUNCTIONING PROPERLY.
   D. THE CONTRACTOR SHALL REPORT TO THE ENGINEER THE DISCOVERY OF ALL FIELD TILES AND SHALL CONFER WITH ENGINEER REGARDING THE METHOD OF RELOCATION OR CONNECTION TO THE PROPOSED STORM WATER COLLECTION SYSTEM.

4. WATER MAIN
   A. CONSTRUCTION MATERIALS: THE FOLLOWING SPECIFICATIONS SHALL APPLY TO MATERIALS GENERALLY USED IN WATER MAIN CONSTRUCTION. THE MATERIALS SPECIFICALLY PERMITTED BY THE LOCAL JURISDICTION ARE IDENTIFIED ON THE "CONSTRUCTION STANDARDS" SHEETS OF THE PLANS.
      1) DUCTILE IRON PIPE CONFORMING TO ANSI A-21.51 OR AWWA C-151. GASKETS AND CAST IRON FITTINGS SHALL CONFORM TO ANSI A21.51 OR AWWA C-110 AND C-111. PIPE SHALL BE CEMENT-LINED ACCORDING TO ANSI A21.4 OR AWWA C-104. THICKNESS CLASS SHALL BE AS SPECIFIED IN THE CONSTRUCTION STANDARDS SHEETS.
      2) POLYVINYL CHLORIDE (PVC) AND CHLORINATED POLYVINYL CHLORIDE (CPVC) SHALL CONFORM TO NSF STANDARD 14 AND ASTM STANDARD B-1787 OR AWWA STANDARD C-909. PIPING MATERIALS DESIGNATED CLASS 12454B (PVC 1120), CLASS 12454C (PVC 1220) AND CLASS 23447B (CPVC 4120) ARE ACCEPTABLE IN THE FOLLOWING PRESSURE RATINGS: SCHEDULE RATINGS SHALL BE IN ACCORDANCE WITH ASTM STANDARDS B1785 (PVC) AND F441 (CPVC); STANDARD DIMENSION RATIO PRESSURE RATED (SDR-PR) SHALL BE IN ACCORDANCE WITH ASTM STANDARDS B2241 (PVC) AND ASTM F442 (CPVC).
      3) PORTLAND CEMENT CONCRETE PRECAST STRUCTURES IN ACCORDANCE WITH THE DETAILS DEPICTED IN THE CONSTRUCTION STANDARDS SHEETS. LIDS SHALL BE IMPRINTED WITH "WATER" IN TWO (2) INCH HIGH LETTERS.
      4) CAST IRON PIPE JOINTS SHALL BE MECHANICAL JOINT OR PUSH-ON JOINT AS SPECIFIED, AND SHALL CONFORM TO APPLICABLE SECTIONS OF AMERICAN STANDARDS ASSOCIATION SPECIFICATIONS A21-11-64 (AWWA C111-77). PIPE SHALL BE FURNISHED WITH SUFFICIENT CAST IRON GLANDS, GASKETS, AND HIGH STRENGTH CASH IRON TEE HEAD BOLTS AND HEXAGON NUTS TO PROVIDE FOR EACH SOCKET OPENING. ALL GASKETS SHALL BE OF THE PLAIN RUBBER TYPE AND MADE TO ACCURATE DIMENSIONS. ALL GLANDS SHALL BE MADE OF HIGH STRENGTH CAST IRON. CAST IRON TEE HEAD BOLTS SHALL HAVE A MINIMUM TENSILE STRENGTH OF 50,000 POUNDS PER SQUARE INCH. ALL FITTINGS SHALL BE SMOOTH, FREE FROM SCALES, LUMPS, BLISTERS, SAND HOLES, BLOW HOLES, AND DEFECTS FROM EVERY NATURE WHICH MAKE THEM UNFIT FOR USE. NO PLUGGING, FILLING, BURNING-IN, OR WELDING WILL BE ALLOWED. ALL FITTINGS SHALL BE OF THE PROPER DIMENSION, WEIGHTS, AND QUALITY TO MEET THE REQUIREMENTS OF ASA A-21-10-64 (AWWA C110-77). SAID FITTINGS SHALL BE DESIGNED FOR A MAXIMUM WORKING PRESSURE OF TWO HUNDRED FIFTY (250) POUNDS PER SQUARE INCH AND SHALL BE CEMENT LINED AND ASPHALT COATED.
      5) PVC JOINTS SHALL BE ELASTOMETRIC SEALS USED FOR PUSH-ON JOINTS CONFORMING TO ASTM F-477. PIPE LOK IS ACCEPTABLE
      6) RESILIENT SEAT GATE VALVES (6 INCHES – 12 INCHES, INCL.) SHALL BE MUELLER OR APPROVED EQUAL, CONFORMING TO AWWA C509-80. VALVES SHALL BE BRONZE STEMMED, MODIFIED WEDGE DISC PATTERN DESIGNED FOR 200 PSI WORKING PRESSURE. EACH VALVE SHALL BE TESTED TO FOUR HUNDRED (400) POUNDS HYDROSTATIC TEST PRESSURE AND SHALL BE FURNISHED WITH AN O-RING STEM SEAL. VALVES SHALL BE CLOSED BY TURNING THE STEM IN CLOCKWISE DIRECTION WITH TWO (2) SQUARE OPERATING NUTS.
      7) GATE VALVES (TAPPING SLEEVE AND HYDRANT VALVES ONLY) – THESE SPECIFICATIONS COVER GATE VALVES FROM FOUR (4) INCHES THROUGH TWELVE (12) INCHES IN SIZE. GATE VALVES SHALL BE OF THE CAST IRON BODY, BRONZE MOUNTED, BRONZE STEMMED, DOUBLE DISC PATTERN DESIGNED FOR TWO HUNDRED (200) POUNDS WORKING PRESSURE AND CONFORMING TO AWWA SPECIFICATIONS C500-80 WHERE APPLICABLE. EACH VALVE SHALL BE BESTED TO THREE HUNDRED FIFTY (350) POUNDS HYDROSTATIC TEST PRESSURE. ALL VALVES SHALL BE CLOSED BY TURNING THE STEM IN A CLOCKWISE DIRECTION. STEMS SHALL BE OF THE NON-RISING TYPE, AND SHALL BE FURNISHED WITH THE O-RING STEM SEAL AND TWO (2) INCH OPERATING NUT.
   B. WATER MAIN FITTINGS (BENDS, ELBOWS, TEES, INCREASERS, REDUCERS, ETC.) MAY OR MAY NOT BE SPECIFICALLY REFERENCED ON THE CONSTRUCTION PLANS. HOWEVER, THEY ARE TO BE CONSIDERED AS INCIDENTAL AND INCLUDED IN THE LINEAL FOOTAGE COST OF THE WATER MAIN.
   C. IF PROTECTIVE WRAPPING OF THE WATER MAIN IS SPECIFIED ON THE PLANS, THE PROTECTIVE WRAPPING SHALL BE A POLYETHYLENE TUBE SUCH AS FLOW TYPE F-191 OR EQUAL AND SHALL COMPLETELY ENCASE AND SEAL THE WATER MAIN AND FITTINGS AND ACCESSORIES IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS FOR THE USE OF ENCASEMENT TUBE.
   D. ALL WATER MAINS AND SERVICES SHALL BE LAID NOT LESS THAN 5.5 FEET, NOR DEEPER THAN 9.0 FEET BELOW FINISH GRADE.
   E. THRUST BLOCKING SHALL BE INSTALLED ON WATER MAINS AT ALL BENDS, TEES, ELBOWS, ETC. COST OF SAME SHALL BE MERGED WITH UNIT PRICE FOR PIPE INSTALLED. REFER TO DETAILS IN THE CONSTRUCTION STANDARDS SHEET.
   F. ALL WATER MAINS SHALL HAVE COMPACTED CA-6 GRANULAR BEDDING. A MINIMUM OF FOUR (4) INCHES BELOW THE BOTTOM OF THE PIPE FOR THE FULL LENGTH. COST OF BEDDING SHALL BE MERGED WITH THE UNIT PRICE BID FOR THE WATER MAIN.
   G. WATER MAINS AND WATER SERVICE LINES SHALL BE PROTECTED FROM SANITARY SEWERS, STORM SEWERS, COMBINED SEWERS, HOUSE SEWER SERVICE CONNECTIONS AND DRAINS AS FOLLOW

   1) HORIZONTAL SEPARATION
   a. WATER MAINS SHALL BE LAID AT LEAST ELEVEN FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED DRAIN, STORM SEWER, SANITARY SEWER, COMBINED SEWER OR SEWER SERVICE CONNECTION.
   b. WATER MAINS MAY BE LAID CLOSER THAN TEN FEET TO A SEWER WHEN:
      1. LOCAL CONDITIONS PREVENT A LATERAL SEPARATION OF TEN FEET,
      2. THE WATER MAIN INVERT IS AT LEAST 18 INCHES ABOVE THE AND CROWN OF THE SEWER, AND
      3. THE WATER MAIN IS EITHER IN A SEPARATE TRENCH OR IN THE SAME TRENCH ON AN UNDISTURBED EARTH SHELF LOCATED TO ONE SIDE OF THE SEWER.
      4. THE INSTALLATION COMPLIES WITH ALL APPLICABLE SECTIONS OF THE STATE OF ILLINOIS PLUMBING CODE, LATEST EDITION.
   c. BOTH THE WATER MAIN AND DRAIN OR SEWER SHALL BE CONSTRUCTED OF SLIP-ON OF MECHANICAL JOINT CAST OR DUCTILE IRON PIPE, ASBESTOS CEMENT PRESSURE PIPE, PRESTRESSED CONCRETE PIPE, OR PVC PIPE EQUIVALENT TO WATER MAIN STANDARDS OF CONSTRUCTION. WHEN IT IS IMPOSSIBLE TO MEET (a) OR (b) ABOVE THE DRAIN OR SEWER SHALL BE PRESSURE TESTED TO THE MAXIMUM EXPECTED SURCHARGE HEAD BEFORE BACKFILLING. ALSO:
      1. THE INSTALLATION SHALL COMPLY WITH ALL APPLICABLE SECTIONS OF THE STATE OF ILLINOIS PLUMBING CODE, LATEST EDITION.
      2. THE CONDITION IS APPROVED BY THE LOCAL AUTHORITY HAVING JURISDICTION OVER THE WORK.

   2) VERTICAL SEPARATION
   a. WATER MAIN SHALL BE LAID SO THAT ITS INVERT IS 18 INCHES ABOVE THE CROWN OF THE DRAIN OR SEWER WHENEVER WATER MAINS CROSS STORM SEWERS, SANITARY SEWERS, OR SEWER SERVICE CONNECTIONS. THE VERTICAL SEPARATION SHALL BE MAINTAINED FOR THAT PORTION OF THE WATER MAIN LOCATED WITHIN TEN FEET HORIZONTALLY OF ANY SEWER OR DRAIN CROSSED. A LENGTH OF WATER MAIN PIPE SHALL BE CENTERED OVER THE SEWER TO BE CROSSED WITH JOINTS EQUIDISTANT FROM THE SEWER OR DRAIN.
   b. BOTH THE WATER MAIN AND SEWER SHALL BE CONSTRUCTED OF SLIP-ON OR MECHANICAL JOINTCAST OR DUCTILE IRON PIPE, ASBESTOS CEMENT PRESSURE PIPE, PRESTRESSED CONCRETE PIPE, OR PVC PIPE EQUIVALENT TO WATER MAIN STANDARDS OF CONSTRUCTION WHEN:
      1. IT IS IMPOSSIBLE TO OBTAIN THE PROPER VERTICAL SEPARATION AS DESCRIBED IN (a) ABOVE; OR
      2. THE WATER MAIN PASSES UNDER A SEWER OR DRAIN.
   c. A VERTICAL SEPARATION OF 18 INCHES BETWEEN THE INVERT OF THE SEWER OR DRAIN AND THE CROWN OF THE WATER MAIN SHALL BE MAINTAINED WHERE A WATER MAIN CROSSES A SEWER. SUPPORT THE SEWER OR DRAIN LINES TO PREVENT SETTLING AND BREAKING THE WATER MAIN.
   d. CONSTRUCTION SHALL EXTEND ON EACH SIDE OF THE CROSSING UNTIL THE PERPENDICULAR DISTANCE FROM THE WATER MAIN TO THE SEWER OR DRAIN LINE IS AT LEAST TEN FEET.
   e. THE INSTALLATION SHALL COMPLY WITH ALL APPLICABLE SECTIONS OF THE STATE OF ILLINOIS PLUMBING CODE, LATEST EDITION.

   3) WATER SERVICE LINES:
   a. THE HORIZONTAL AND VERTICAL SEPARATION BETWEEN WATER SERVICE LINES AND ALL STORM SEWER, SANITARY SEWERS, COMBINED SEWER OR ANY DRAIN OR SEWER SERVICE CONNECTION SHALL BE THE SAME AS WATER MAIN SEPARATION DESCRIBED IN (1) AND (2) ABOVE. (SEE DETAIL)
   b. WATER PIPE DESCRIBED IN (1) ABOVE SHALL BE USED FOR SEWER SERVICE LINES WHEN MINIMUM HORIZONTAL AND VERTICAL SEPARATION CANNOT BE MAINTAINED.
   c. THE INSTALLATION SHALL COMPLY WITH ALL APPLICABLE SECTIONS OF THE STATE OF ILLINOIS PLUMBING CODE, LATEST EDITION.
   5) WATER MAINS SHALL BE SEPARATED FROM SEPTIC TANKS, DISPOSAL FIELDS AND, SEEPAGE BEDS BY A MINIMUM OF 25 FEET.
   6) WATER MAINS AND WATER SERVICE LINES SHALL BE PROTECTED AGAINST ENTRANCE OF HYDROCARBONS THROUGH DIFFUSION THROUGH ANY MATERIAL USED IN CONSTRUCTION OF THE LINE.

   H. WATER MAIN TESTING
      1) ALL WATER MAINS SHALL BE SUBJECTED TO A PRESSURE TEST BY THE CONTRACTOR. HYDROSTATIC PRESSURE TEST AND LEAKAGE SHALL BE BASED ON THE REQUIREMENTS IN THE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS, LATEST EDITION OR OTHERWISE REQUIRED BY THE LOCAL JURISDICTION. GLENCOE REQUIRES 125 PSI PRESSURE AND 120 PSI LEAKAGE. TESTING SHALL BE PERFORMED A MINIMUM OF 3 FT. FROM JOINTS OR ANY OTHER TAP.
      2) THE UNDERGROUND CONTRACTOR SHALL CONSIDER INCIDENTAL TO THE CONTRACT THE CHLORINATION AND TESTING OF EXISTING WATER MAIN WHERE CONNECTIONS TO AND INCLUSION OF SUCH MAINS IS INDICATED ON THE DRAWINGS. IN THE EVENT THAT THE PRESSURE TESTS INVOLVING EXISTING MAINS FAIL, AND SUCH FAILURES ARE ATTRIBUTABLE TO DEFECTIVE ORIGINAL WORKMANSHIP AND MATERIAL, THEN THE CONTRACTOR SHALL BE ENTITLED TO ADDITIONAL PAYMENT FOR CORRECTING THE DEFICIENCIES.
      3) CONTRACTOR SHALL SUBMIT SPECIFICATIONS FOR MATERIAL TRACER WIRE TO MUNICIPALITY FOR APPROVAL.

# PAVEMENTS, CURBS, AND WALKS

1. WORK UNDER THIS SECTION SHALL INCLUDE FINAL SUBGRADE SHAPING AND PREPARATION; FORMING, JOINTING, PLACEMENT OF ROADWAY AND PAVEMENT BASE COURSE MATERIALS, AND SUBSEQUENT BINDER AND/OR SURFACE COURSES; PLACEMENT, FINISHING AND CURING OF CONCRETE; FINAL CLEAN-UP; AND ALL RELATED WORK.

2. ALL PAVING, SIDEWALK, AND CURB AND GUTTER WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS (I.D.O.T.) AND PER THE REQUIREMENTS OF THE LOCAL JURISDICTIONS.

3. SUBGRADE FOR PROPOSED PAVEMENT SHALL BE FINISHED BY THE EXCAVATION CONTRACTOR TO WITHIN 0.1 FOOT, PLUS OR MINUS, OF PLAN ELEVATION. THE PAVING CONTRACTOR SHALL SATISFY HIMSELF THAT THE SUBGRADE HAS BEEN PROPERLY PREPARED AND THAT THE FINISH TOP SUBGRADE ELEVATION HAS BEEN GRADED WITHIN TOLERANCES ALLOWED IN THESE SPECIFICATIONS. UNLESS THE PAVING CONTRACTOR ADVISES THE OWNER AND ENGINEER IN WRITING PRIOR TO FINE GRADING FOR BASE COURSE CONSTRUCTION, IT IS UNDERSTOOD THAT HE HAS APPROVED AND ACCEPTS THE RESPONSIBILITY FOR THE SUBGRADE. PRIOR TO PLACEMENT OF PAVEMENT BASE MATERIALS, THE PAVING CONTRACTOR SHALL FINE GRADE THE SUBGRADE SO AS TO INSURE THE PROPER THICKNESS OF PAVEMENT COURSES. NO CLAIMS FOR EXCESS TONNAGE OF BASE MATERIALS DUE TO IMPROPER SUBGRADE PREPARATION WILL BE HONORED.

4. THE PROPOSED PAVEMENT SHALL CONSIST OF THE SUB-BASE COURSE; BASE COURSE; BITUMINOUS CONCRETE BINDER COURSE; AND BITUMINOUS SURFACE COURSE, CLASS I, OF THE THICKNESS AND MATERIALS AS SPECIFIED ON THE CONSTRUCTION PLANS. A BITUMINOUS MATERIAL PRIME COAT OF THE TYPE AND AT THE RATE SPECIFIED ON THE CONSTRUCTION PLANS SHALL BE APPLIED TO THE SUB-BASE COURSE, UNLESS SHOWN AS A BID ITEM. PRIME COAT SHALL BE CONSIDERED AS INCIDENTAL TO THE COST OF THE CONTRACT. ALL PAVEMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, CURRENT EDITION.

5. THE MAXIMUM SIZE AGGREGATE FOR THE BITUMINOUS CONCRETE SURFACE COURSE MIXTURE SHALL BE THREE-EIGHTS (3/8) INCH. THE BITUMINOUS CONCRETE BINDER COURSE SHALL BE BINDER MIXTURE B AS SPECIFIED IN ARTICLE 406.13 OF THE I.D.O.T. STANDARD SPECIFICATIONS. THE CONTRACTOR SHALL SUBMIT A BITUMINOUS MIX DESIGN TO THE ENGINEER PRIOR TO THE INSTALLATION OF THE BITUMINOUS MIX.

6. BITUMINOUS CONCRETE BINDER COURSE SHALL BE PLACED ONLY WHEN THE AMBIENT AIR TEMPERATURE IS AT LEAST FORTY (40) DEGREES FAHRENHEIT, AND THE FORECAST CALLS FOR RISING TEMPERATURES. BITUMINOUS CONCRETE SURFACE COURSE SHALL BE PLACED ONLY WHEN THE AMBIENT AIR TEMPERATURE IS AT LEAST FORTY-FIVE (45) DEGREES FAHRENHEIT, AND THE FORECAST CALLS FOR RISING TEMPERATURES.

7. WHEN PLACING THE BASE MATERIAL BETWEEN CURBS, THE CONTRACTOR SHALL EITHER MARK (WITH PAINT) ON THE FACE OF THE CURB FLAG THE SURFACE LEVEL OF THE BASE MATERIAL AT FIFTY (50) FOOT INTERVALS OR USE A GUIDE ON THE GRADER. THE PURPOSE FOR THIS IS TO PROVIDE A CONTROLLABLE GUIDE FOR THE SURFACE ELEVATION OF THE BASE MATERIAL AND TO INSURE SUFFICIENT DEPTH ALONG FACE OF CURB FLAG FOR THE REQUIRED WEARING SURFACE THICKNESS.

8. AFTER THE INSTALLATION OF THE BASE COURSE, ALL TRAFFIC SHALL BE KEPT OFF THE BASE UNTIL THE BINDER COURSE IS LAID. AFTER INSTALLATION OF THE BINDER COURSE (AND FOR PUBLIC IMPROVEMENTS AFTER THE BINDER COURSE HAS BEEN IN PLACE FOR ONE WINTER), AND UPON THE COMPLETION OF INSPECTION OF SAME AND APPROVAL BY THE LOCAL JURISDICTION AND OWNER, THE PAVEMENT SHALL BE CLEANED, PRIMED AND SURFACE COURSE LAID. ALL DAMAGED AREAS IN THE BINDER, BASE, OR CURB AND GUTTER SHALL BE REPAIRED TO THE SATISFACTION OF THE LOCAL JURISDICTION AND OWNER. PRIOR TO LAYING THE SURFACE COURSE, THE PAVING CONTRACTOR SHALL PROVIDE WHATEVER EQUIPMENT AND MANPOWER IS NECESSARY, INCLUDING THE USE OF POWER BROOMS, TO PREPARE THE PAVEMENT FOR APPLICATION OF THE SURFACE COURSE. EQUIPMENT AND MANPOWER FOR CLEANING SHALL BE CONSIDERED AS INCIDENTAL TO THE COST OF THE CONTRACT. PRIME COAT FOR THE BINDER COURSE SHALL ALSO BE CONSIDERED AS INCIDENTAL TO THE COST OF THE CONTRACT, AND SHALL BE APPLIED TO THE BINDER AT A RATE OF 0.05 GALLONS PER SQUARE YARD.

9. PRIOR TO THE INSTALLATION OF THE BITUMINOUS SURFACE COURSE, BUT AFTER INSTALLATION OF THE BINDER COURSE, THE CONTRACTOR SHALL FURNISH THE DESIGN ENGINEER AND THE MUNICIPAL ENGINEER WITH A COPY OF A PAVEMENT EVALUATION PROGRAM REPORT OF THE COMPLETED PAVEMENT IMPROVEMENTS. THE PAVEMENT EVALUATION PROGRAM SHALL BE PERFORMED ACCORDING TO THE SPECIFICATIONS ON FILE IN THE OFFICE OF THE MUNICIPAL ENGINEER.

10. COMBINATION CURB AND GUTTER (WHEN REQUIRED) SHALL BE OF THE TYPE AS DETAILED IN THE CONSTRUCTION PLANS. THE CONCRETE SHALL HAVE AN AIR CONTENT OF NOT LESS THAN FIVE (5) PERCENT NOR MORE THAN EIGHT (8) PERCENT OF THE VOLUME OF CONCRETE. CONCRETE SHALL BE A MINIMUM SIX (6) BAG MIX AND SHALL DEVELOP A MINIMUM OF 3,500 PSI COMPRESSIVE STRENGTH AT FOURTEEN (14) DAYS. ALL CURB AND GUTTER SHALL BE BROOM FINISHED. THE CONTRACTOR IS CAUTIONED TO REFER TO THE CONSTRUCTION STANDARDS AND THE PAVEMENT CROSS-SECTION TO DETERMINE THE GUTTER FLAG THICKNESS AND THE AGGREGATE BASE COURSE THICKNESS BENEATH THE CURB AND GUTTER. THE AGGREGATE BENEATH THE CURB AND GUTTER SHALL BE INCLUDED IN THE UNIT PRICE OF THE CURB AND GUTTER.

11. THREE-QUARTER (3/4) INCH PERMITTED FIBER EXPANSION JOINTS WITH 3/4" X 18" PLAIN ROUND STEEL DOWEL BARS SHALL BE INSTALLED AT SIXTY (60) FOOT INTERVALS AND AT ALL P.C.'S, P.T.'S, CURB RETURNS, AND AT THE END OF EACH POUR. ALTERNATE ENDS OF THE DOWEL BARS SHALL BE GREASED AND FITTED WITH METAL EXPANSION TUBES. THREE-QUARTER (3/4) INCH THICK FIBER EXPANSION JOINTS SHALL BE USED IN EVERY CASE WHERE THE SIDEWALK CONNECTS WITH THE CURB AND GUTTER. CONTRACTION JOINTS SHALL BE PROVIDED AT TWENTY (20) FOOT (MAXIMUM) INTERVALS IN THE CURB. THE COST OF THESE JOINTS SHALL BE CONSIDERED AS INCIDENTAL TO THE COST OF THE CONTRACT. ALL POURED IN PLACE CONCRETE CURB AND GUTTER SHALL INCORPORATE TWO (2) NO. 4 REINFORCING BARS TEN (10) FEET LONG INSTALLED WHEREVER THE CURB AND GUTTER CROSSES UTILITY SERVICES LINES. THE COST OF WHICH SHALL BE CONSIDERED INCIDENTAL TO THE COST OF CONCRETE CURB AND GUTTER.

12. CURBING AND PROTECTION OF ALL EXPOSED CONCRETE SURFACES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. NO HONEY-COMBING OF THE CURB AND GUTTER WILL BE ACCEPTED.

13. CURBS SHALL BE DEPRESSED AT LOCATIONS WHERE PUBLIC WALKS/PEDESTRIAN PATHS INTERSECT, CURB LINES AT STREET INTERSECTIONS, AND OTHER LOCATIONS AS DIRECTED FOR THE PURPOSE OF PROVIDING ACCESS BY THE HANDICAPPED. (SEE CONSTRUCTION STANDARDS FOR DETAIL.)

14. SIDEWALKS (WHERE REQUIRED) SHALL BE OF THE THICKNESS AND DIMENSIONS AS SHOWN IN THE CONSTRUCTION PLANS. PORTLAND CEMENT CONCRETE SIDEWALK SHALL BE A MINIMUM OF SIX (6) BAG MIX WITH AIR ENTRAINMENT TO SIX (6) PERCENT, AND SHALL DEVELOP A MINIMUM OF 3,500 PSI COMPRESSIVE STRENGTH AT TWENTY-EIGHT (28) DAYS. CONTRACTION JOINTS SHALL BE SET AT FIVE (5) FOOT CENTERS AND ONE-HALF (1/2) INCH PERMITTED FIBER EXPANSION JOINTS AT FIFTY (50) FOOT CENTERS AND WHERE THE SIDEWALK MEETS THE CURB, A BUILDING, OR ANOTHER SIDEWALK, OR AT THE END OF EACH POUR. ALL SIDEWALKS CONSTRUCTED OVER UTILITY TRENCHES SHALL BE REINFORCED WITH THREE (3) NO. 4 REINFORCING BARS (TEN FOOT MINIMUM LENGTH). ALL SIDEWALKS CROSSING DRIVEWAYS SHALL BE REINFORCED WITH 6 X 6 NO. 6 WELDED WIRE MESH. ALL SIDEWALK SHALL BE BROOM FINISHED. BITUMINOUS CONCRETE SIDEWALK SHALL BE CONSTRUCTED OF CLAY SUBGRADE PREPARED AS DESCRIBED IN PARAGRAPH THREE ABOVE. THE BASE AND SURFACE COURSE MATERIAL AND CONSTRUCTION SPECIFICATIONS SHALL BE IN ACCORDANCE WITH PARAGRAPHS FOUR AND FIVE, EXCEPT THAT A "DRIVEWAY MIX" BITUMINOUS SURFACE COURSE SHALL BE USED.

15. BACKFILLING OF CURBS OR PAVEMENT SHALL BE THE RESPONSIBILITY OF THE EARTHWORK CONTRACTOR.

16. IT SHALL BE THE RESPONSIBILITY OF THE PAVING CONTRACTOR TO REMOVE FROM THE SITE ANY AND ALL MATERIALS AND DEBRIS WHICH RESULT FROM HIS CONSTRUCTION OPERATIONS AT NO ADDITIONAL EXPENSE TO THE OWNER.

17. TESTING OF THE SUB-BASE, BASE COURSE, BINDER COURSE, SURFACE COURSE, AND CONCRETE WORK SHALL BE REQUIRED IN ACCORDANCE WITH THE I.D.O.T. STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, CURRENT EDITION, AND IN ACCORDANCE WITH THE SPECIFIC REQUIREMENTS OF THE MUNICIPALITY. A QUALIFIED TESTING FIRM SHALL BE EMPLOYED BY THE DEVELOPER TO PERFORM THE REQUIRED TESTS AND PROVIDE THE RESULTS TO THE CONSULTING ENGINEER AND THE MUNICIPALITY, INCLUDING A PROOF ROLL OF THE BASE COURSE PRIOR BINDER INSTALLATION.

18. ALL PAVEMENT MARKING SHALL BE THERMOPLASTIC. PAVEMENT MARKINGS AND SYMBOLS OF THE TYPE AND COLOR AS NOTED ON THE CONSTRUCTION PLANS SHALL BE INSTALLED IN ACCORDANCE WITH SECTION T-502 OF SAME SPECIFICATIONS WITHIN THE PARKING LOTS, PRIVATE DRIVES, CURBS, AND WHEREVER ELSE SHOWN ON-SITE ON THE PLANS. PAVEMENT MARKINGS AND SYMBOLS SHALL BE INSTALLED ONLY WHEN THE AMBIENT AIR TEMPERATURE IS FORTY (40) DEGREES FAHRENHEIT, AND THE FORECAST CALLS FOR RISING TEMPERATURES.

# MWRD NOTES

A. REFERENCED SPECIFICATIONS

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE FOLLOWING, EXCEPT AS MODIFIED HEREIN OR ON THE PLANS:
   * STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (LATEST EDITION), BY THE ILLINOIS DEPARTMENT OF TRANSPORTATION (IDOT SS) FOR ALL IMPROVEMENTS EXCEPT SANITARY SEWER AND WATER MAIN CONSTRUCTION;
   * STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS, LATEST EDITION (SSWS) FOR SANITARY SEWER AND WATER MAIN CONSTRUCTION;
   * VILLAGE OF GLENCOE MUNICIPAL CODE;
   * THE METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO (MWRD) WATERSHED MANAGEMENT ORDINANCE AND TECHNICAL GUIDANCE MANUAL;
   * IN CASE OF CONFLICT BETWEEN THE APPLICABLE ORDINANCES NOTED, THE MORE STRINGENT SHALL TAKE PRECEDENCE AND SHALL CONTROL ALL CONSTRUCTION.

B. NOTIFICATIONS

1. THE MWRD LOCAL SEWER SYSTEMS SECTION FIELD OFFICE MUST BE NOTIFIED AT LEAST TWO (2) WORKING DAYS PRIOR TO THE COMMENCEMENT OF ANY WORK (CALL 708-588-4055).
2. THE VILLAGE OF GLENCOE ENGINEERING DEPARTMENT AND PUBLIC MUST BE NOTIFIED AT LEAST 24 HOURS PRIOR TO THE START OF CONSTRUCTION AND PRIOR TO EACH PHASE OF WORK. CONTRACTOR SHALL DETERMINE ITEMS REQUIRING INSPECTION PRIOR TO START OF CONSTRUCTION OR EACH WORK PHASE.
3. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES PRIOR TO BEGINNING CONSTRUCTION FOR THE EXACT LOCATIONS OF UTILITIES AND FOR THEIR PROTECTION DURING CONSTRUCTION. IF EXISTING UTILITIES ARE ENCOUNTERED THAT CONFLICT IN LOCATION WITH NEW CONSTRUCTION, IMMEDIATELY NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED. CALL J.U.L.I.E. AT 1-800-892-0123.

C. GENERAL NOTES

1. ALL ELEVATIONS SHOWN ON PLANS REFERENCE THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
2. MWRD, THE MUNICIPALITY AND THE OWNER OR OWNER'S REPRESENTATIVE SHALL HAVE THE AUTHORITY TO INSPECT, APPROVE, AND REJECT THE CONSTRUCTION IMPROVEMENTS.
3. THE CONTRACTOR(S) SHALL INDEMNIFY THE OWNER, ENGINEER, MUNICIPALITY, MWRD, AND THEIR AGENTS, ETC., FROM ALL LIABILITY INVOLVED WITH THE CONSTRUCTION, INSTALLATION, OR TESTING OF THIS WORK ON THE PROJECT.
4. THE PROPOSED IMPROVEMENTS MUST BE CONSTRUCTED IN ACCORDANCE WITH THE ENGINEERING PLANS AS APPROVED BY MWRD AND THE MUNICIPALITY UNLESS CHANGES ARE APPROVED BY MWRD, THE MUNICIPALITY, OR AUTHORIZED AGENT. THE CONSTRUCTION DETAILS, AS PRESENTED ON THE PLANS, MUST BE FOLLOWED. PROPER CONSTRUCTION TECHNIQUES MUST BE FOLLOWED ON THE IMPROVEMENTS INDICATED ON THE PLANS.
5. THE LOCATION OF VARIOUS UNDERGROUND UTILITIES WHICH ARE SHOWN ON THE PLANS ARE FOR INFORMATION ONLY AND REPRESENT THE BEST KNOWLEDGE OF THE ENGINEER. VERIFY LOCATIONS AND ELEVATIONS PRIOR TO BEGINNING THE CONSTRUCTION OPERATIONS.
6. ANY EXISTING PAVEMENT, SIDEWALK, DRIVEWAY, ETC., DAMAGED DURING CONSTRUCTION OPERATIONS AND NOT CALLED FOR TO BE REMOVED SHALL BE REPLACED AT THE EXPENSE OF THE CONTRACTOR.
7. MATERIAL AND COMPACTION TESTING SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE MUNICIPALITY, MWRD, AND OWNER.
8. THE UNDERGROUND CONTRACTOR SHALL MAKE ALL NECESSARY ARRANGEMENTS TO NOTIFY ALL INSPECTION AGENCIES.
9. ALL NEW AND EXISTING UTILITY STRUCTURES ON SITE AND IN AREAS DISTURBED DURING CONSTRUCTION SHALL BE ADJUSTED TO FINISH GRADE PRIOR TO FINAL INSPECTION.
10. RECORD DRAWINGS SHALL BE KEPT BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER AS SOON AS UNDERGROUND IMPROVEMENTS ARE COMPLETED. FINAL PAYMENTS TO THE CONTRACTOR SHALL BE HELD UNTIL THEY ARE RECEIVED. ANY CHANGES IN LENGTH, LOCATION OR ALIGNMENT SHALL BE SHOWN IN RED. ALL WYES OR BENDS SHALL BE LOCATED FROM THE DOWNSTREAM MANHOLE. ALL VALVES, B-BOXES, TEES OR BENDS SHALL BE TIED TO A FIRE HYDRANT.

D. SANITARY SEWER

1. THE CONTRACTOR SHALL TAKE MEASURES TO PREVENT ANY POLLUTED WATER, SUCH AS GROUND AND SURFACE WATER, FROM ENTERING THE EXISTING SANITARY SEWERS.
2. A WATER-TIGHT PLUG SHALL BE INSTALLED IN THE DOWNSTREAM SEWER PIPE AT THE POINT OF SEWER CONNECTION PRIOR TO COMMENCING ANY SEWER CONSTRUCTION. THE PLUG SHALL REMAIN IN PLACE UNTIL REMOVAL IS AUTHORIZED BY THE MUNICIPALITY AND/OR MWRD AFTER THE SEWERS HAVE BEEN TESTED AND ACCEPTED.
3. DISCHARGING ANY UNPOLLUTED WATER INTO THE SANITARY SEWER SYSTEM FOR THE PURPOSE OF SEWER FLUSHING OF LINES FOR THE DEFLECTION TEST SHALL BE PROHIBITED WITHOUT PRIOR APPROVAL FROM THE MUNICIPALITY OR MWRD.
4. ALL SANITARY SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS (LATEST EDITION).
5. ALL FLOOR DRAINS SHALL DISCHARGE TO THE SANITARY SEWER SYSTEM.
6. ALL DOWNSPOUTS AND FOOTING DRAINS SHALL DISCHARGE TO THE STORM SEWER SYSTEM.
7. ALL SANITARY SEWER PIPE MATERIALS AND JOINTS (AND STORM SEWER PIPE MATERIALS AND JOINTS IN A COMBINED SEWER AREA) SHALL CONFORM TO THE FOLLOWING:

| PIPE MATERIAL | PIPE SPECIFICATIONS | JOINT SPECIFICATIONS |
|---|---|---|
| VITRIFIED CLAY PIPE | ASTM C-700 | ASTM C-425 |
| REINFORCED CONCRETE SEWER PIPE | ASTM C-76 | ASTM C-443 |
| CAST IRON SOIL PIPE | ASTM A-74 | ASTM C-564 |
| DUCTILE IRON PIPE | ANSI A21.51 | ANSI A21.11 |
| POLYVINYL CHLORIDE (PVC) PIPE | | |
| 6-INCH TO 15-INCH DIAMETER SDR 26 | ASTM D-3034 | ASTM D-3212 |
| 18-INCH TO 27-INCH DIAMETER F/DY=46 | ASTM F-679 | ASTM D-3212 |
| HIGH DENSITY POLYETHYLENE (HDPE) | ASTM D-3350<br>ASTM D-3035 | ASTM D-3261, F-2620 (HEAT FUSION)<br>ASTM D-3212, F-477 (GASKETED) |
| WATER MAIN QUALITY PVC | | |
| 4-INCH TO 36-INCH | ASTM D-2241 | ASTM D-3139 |
| 4-INCH TO 12-INCH | AWWA C900 | ASTM D-3139 |
| 14-INCH TO 48-INCH | AWWA C905 | ASTM D-3139 |

THE FOLLOWING MATERIALS ARE ALLOWED ON A QUALIFIED BASIS SUBJECT TO DISTRICT REVIEW AND APPROVAL PRIOR TO PERMIT ISSUANCE. A SPECIAL CONDITION WILL BE ADDED TO THE PERMIT WHEN THE PIPE MATERIAL BELOW IS USED FOR SEWER CONSTRUCTION OR A CONNECTION IS MADE.

| PIPE MATERIAL | PIPE SPECIFICATIONS | JOINT SPECIFICATIONS |
|---|---|---|
| POLYPROPYLENE (PP) PIPE | | |
| 12-INCH TO 24-INCH DOUBLE WALL | ASTM F-2736 | D-3212, F-477 |
| 30-INCH TO 60-INCH TRIPLE WALL | ASTM F-2764 | D-3212, F-477 |

8. ALL SANITARY SEWER CONSTRUCTION (AND STORM SEWER CONSTRUCTION IN COMBINED SEWER AREAS), REQUIRES STONE BEDDING WITH STONE ¼ " TO 1" IN SIZE, WITH MINIMUM BEDDING THICKNESS EQUAL TO ¼ THE OUTSIDE DIAMETER OF THE SEWER PIPE, BUT NOT LESS THAN FOUR (4) INCHES NOR MORE THAN EIGHT (8) INCHES. MATERIAL SHALL BE CA-7, CA-11 OR CA-13 AND SHALL BE EXTENDED AT LEAST 12" ABOVE THE TOP OF THE PIPE WHEN USING PVC.
9. NON-SHEAR FLEXIBLE-TYPE COUPLINGS SHALL BE USED IN THE CONNECTION OF SEWER PIPES OF DISSIMILAR PIPE MATERIALS.
10. ALL MANHOLES SHALL BE PROVIDED WITH BOLTED, WATERTIGHT COVERS. SANITARY LIDS SHALL BE CONSTRUCTED WITH A CONCEALED PICKHOLE AND WATERTIGHT GASKET WITH THE WORD "SANITARY" CAST INTO THE LID.
11. WHEN CONNECTING TO AN EXISTING SEWER MAIN BY MEANS OTHER THAN AN EXISTING WYE, TEE, OR AN EXISTING MANHOLE, ONE OF THE FOLLOWING METHODS SHALL BE USED:
    a) A CIRCULAR SAW-CUT OF SEWER MAIN BY PROPER TOOLS ("SHEWER-TAP" MACHINE OR SIMILAR) AND PROPER INSTALLATION OF HUBWYE SADDLE OR HUB-TEE SADDLE.
    b) REMOVE AN ENTIRE SECTION OF PIPE (BREAKING ONLY THE TOP OF ONE BELL) AND REPLACE WITH A WYE OR TEE BRANCH SECTION.
    c) WITH PIPE CUTTER, NEATLY AND ACCURATELY CUT OUT DESIRED LENGTH OF PIPE FOR INSERTION OF PROPER FITTING, USING "BAND SEAL" OR SIMILAR COUPLINGS TO HOLD IT FIRMLY IN PLACE.
12. WHENEVER A SANITARY/COMBINED SEWER CROSSES UNDER A WATERMAIN, THE MINIMUM VERTICAL DISTANCE FROM THE TOP OF THE SEWER TO THE BOTTOM OF THE WATERMAIN SHALL BE 18 INCHES. FURTHERMORE, A MINIMUM HORIZONTAL DISTANCE OF 10 FEET BETWEEN SANITARY/COMBINED SEWERS AND WATERMAINS SHALL BE MAINTAINED UNLESS: THE SEWER IS LAID IN A SEPARATE TRENCH, KEEPING A MINIMUM 18" VERTICAL SEPARATION; OR THE SEWER IS LAID IN THE SAME TRENCH WITH THE WATERMAIN LOCATED AT THE OPPOSITE SIDE ON A BENCH OF UNDISTURBED EARTH, KEEPING A MINIMUM 18" VERTICAL SEPARATION. IF EITHER THE VERTICAL OR HORIZONTAL DISTANCES DESCRIBED CANNOT BE MAINTAINED, OR THE SEWER CROSSES ABOVE THE WATER MAIN, THE SEWER SHALL BE CONSTRUCTED TO WATER MAIN STANDARDS OR IT SHALL BE ENCASED WITH A WATER MAIN QUALITY CARRIER PIPE WITH THE ENDS SEALED.
13. ALL EXISTING SEPTIC SYSTEMS SHALL BE ABANDONED. ABANDONED TANKS SHALL BE FILLED WITH GRANULAR MATERIAL OR REMOVED.
14. ALL SANITARY MANHOLES, (AND STORM MANHOLES IN COMBINED SEWER AREAS), SHALL HAVE A MINIMUM INSIDE DIAMETER OF 48 INCHES, AND SHALL BE CAST IN PLACE OR PRE-CAST REINFORCED CONCRETE.
15. ALL SANITARY MANHOLES, (AND STORM MANHOLES IN COMBINED SEWER AREAS), SHALL HAVE PRECAST "RUBBER BOOTS" THAT CONFORM TO ASTM C-923 FOR ALL PIPE CONNECTIONS. PRECAST SECTIONS SHALL CONSIST OF MODIFIED GROOVE TONGUE AND RUBBER GASKET TYPE JOINTS.
16. ALL ABANDONED SANITARY SEWERS SHALL BE PLUGGED AT BOTH ENDS WITH AT LEAST 2 FEET LONG NON-SHRINK CONCRETE OR MORTAR PLUG.
17. EXCEPT FOR FOUNDATION/FOOTING DRAINS PROVIDED TO PROTECT BUILDINGS, OR PERFORATED PIPES ASSOCIATED WITH VOLUME CONTROL FACILITIES, DRAIN TILES/FIELD TILES/UNDERDRAINS/PERFORATED PIPES ARE NOT ALLOWED TO BE CONNECTED TO OR TRIBUTARY TO COMBINED SEWERS, SANITARY SEWERS, OR STORM SEWERS TRIBUTARY TO COMBINED SEWERS IN COMBINED SEWER AREAS. CONSTRUCTION OF NEW FACILITIES OF THIS TYPE IS PROHIBITED; AND ALL EXISTING DRAIN TILES AND PERFORATED PIPES ENCOUNTERED WITHIN THE PROJECT AREA SHALL BE PLUGGED OR REMOVED, AND SHALL NOT BE CONNECTED TO COMBINED SEWERS, SANITARY SEWERS, OR STORM SEWERS TRIBUTARY TO COMBINED SEWERS.
18. A BACKFLOW PREVENTER IS REQUIRED FOR ALL DETENTION BASINS TRIBUTARY TO COMBINED SEWERS. REQUIRED BACKFLOW PREVENTERS SHALL BE INSPECTED AND EXERCISED ANNUALLY BY THE PROPERTY OWNER TO ENSURE PROPER OPERATION, AND ANY NECESSARY MAINTENANCES SHALL BE PERFORMED TO ENSURE FUNCTIONALITY. IN THE EVENT OF A SEWER SURCHARGE INTO AN OPEN DETENTION BASIN TRIBUTARY TO COMBINED SEWERS, THE PERMITTEE SHALL ENSURE THAT CLEAN UP AND WASH OUT OFSEWAGE TAKES PLACE WITHIN 48 HOURS OF THE STORM EVENT.

E. EROSION AND SEDIMENT CONTROL

1. THE CONTRACTOR SHALL INSTALL THE EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
2. EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE FUNCTIONAL PRIOR TO HYDROLOGIC DISTURBANCE OF THE SITE.
3. ALL DESIGN CRITERIA, SPECIFICATIONS, AND INSTALLATION OF EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE IN ACCORDANCE WITH THE ILLINOIS URBAN MANUAL.
4. A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN SHALL BE MAINTAINED ON THE SITE AT ALL TIMES.
5. INSPECTIONS AND DOCUMENTATION SHALL BE PERFORMED, AT A MINIMUM:
   a) UPON COMPLETION OF INITIAL EROSION AND SEDIMENT CONTROL MEASURES, PRIOR TO ANY SOIL DISTURBANCE.
   b) ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT WITH GREATER THAN 0.5 INCH OF RAINFALL OR LIQUID EQUIVALENT PRECIPITATION.
6. SOIL DISTURBANCE SHALL BE CONDUCTED IN SUCH A MANNER AS TO MINIMIZE EROSION. IF STRIPPING, CLEARING, GRADING, OR LANDSCAPING ARE TO BE DONE IN PHASES, THE CO-PERMITTEE SHALL PLAN FOR APPROPRIATE SOIL EROSION AND SEDIMENT CONTROL MEASURES.
7. A STABILIZED MAT OF CRUSHED STONE MEETING THE STANDARDS OF THE ILLINOIS URBAN MANUAL SHALL BE INSTALLED AT ANY POINT WHERE TRAFFIC WILL BE ENTERING OR LEAVING A CONSTRUCTION SITE. SEDIMENT OR SOIL REACHING AN IMPROVED PUBLIC RIGHT-OF-WAY, STREET, ALLEY OR PARKING AREA SHALL BE REMOVED BY SCRAPING OR STREET CLEANING AS ACCUMULATIONS WARRANT AND TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL AREA.
8. CONCRETE WASHOUT FACILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE ILLINOIS URBAN MANUAL AND SHALL BE INSTALLED PRIOR TO ANY ON SITE CONSTRUCTION ACTIVITIES INVOLVING CONCRETE.
9. MORTAR WASHOUT FACILITIES SHALL BE CONSTRUCTED IN ADDITION TO CONCRETE WASHOUT FACILITIES FOR ANY BRICK AND MORTAR BUILDING ENVELOPE CONSTRUCTION ACTIVITIES.
10. TEMPORARY DIVERSIONS SHALL BE CONSTRUCTED AS NECESSARY TO DIRECT ALL RUNOFF FROM HYDROLOGICALLY DISTURBED AREAS TO AN APPROPRIATE SEDIMENT TRAP OR BASIN. VOLUME CONTROL FACILITIES SHALL NOT BE USED AS TEMPORARY SEDIMENT BASINS.
11. DISTURBED AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT MEASURES WITHIN SEVEN (7) DAYS.
13. ALL FLOOD PROTECTION AREAS AND VOLUME CONTROL FACILITIES SHALL, AT A MINIMUM, BE PROTECTED WITH A DOUBLE-ROW OF SILT FENCE (OR EQUIVALENT).
14. VOLUME CONTROL FACILITIES SHALL NOT BE CONSTRUCTED UNTIL ALL OF THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.
15. SOIL STOCKPILES SHALL, AT A MINIMUM, BE PROTECTED WITH PERIMETER SEDIMENT CONTROLS. SOIL STOCKPILES SHALL NOT BE PLACED IN FLOOD PROTECTION AREAS OR THEIR BUFFERS.
16. EARTHEN EMBANKMENT SIDE SLOPES SHALL BE STABILIZED WITH APPROPRIATE EROSION CONTROL BLANKET.
17. STORM SEWERS THAT ARE OR WILL BE FUNCTIONING DURING CONSTRUCTION SHALL BE PROTECTED BY APPROPRIATE SEDIMENT CONTROL MEASURES.
18. THE CONTRACTOR SHALL EITHER REMOVE OR REPLACE ANY EXISTING DRAIN TILES AND INCORPORATE THEM INTO THE DRAINAGE PLAN FOR THE DEVELOPMENT. DRAIN TILES CANNOT BE TRIBUTARY TO A SANITARY OR COMBINED SEWER. DRAIN TILES ALLOWED IN COMBINED SEWER AREA FOR GREEN INFRASTRUCTURE PRACTICES.
19. IF DEWATERING SERVICES ARE USED, ADJOINING PROPERTIES AND DISCHARGE LOCATIONS SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION. DEWATERING SYSTEMS SHOULD BE INSPECTED DAILY DURING OPERATIONAL PERIODS. THE SITE INSPECTOR MUST BE PRESENT AT THE COMMENCEMENT OF DEWATERING ACTIVITIES.
20. THE CONTRCTOR SHALL BE RESPONSIBLE FOR TRENCH DEWATERING AND EXCAVATION FOR THE INSTALLATION OF SANITARY SEWERS, STORM SEWERS, WATERMAINS AS WELL AS THEIR SERVICES AND OTHER APPURTENANCES. ANY TRENCH DEWATERING, WHICH CONTAINS SEDIMENT SHALL PASS THROUGH A SEDIMENT SETTLING POND OR EQUALLY EFFECTIVE SEDIMENT CONTROL DEVICE. ALTERNATIVES MAY INCLUDE DEWATERING INTO A SUMP PIT, FILTER BAG OR EXISTING VEGETATED UPSLOPE AREA. SEDIMENT LADEN WATERS SHALL NOT BE DISCHARGE TO WATERWAYS, FLOOD PROTECTION AREAS OR THE COMBINED SEWER SYSTEM.
21. ALL PERMANENT EROSION CONTROL PRACTICES SHALL BE INITIATED WITHIN SEVEN (7) DAYS FOLLOWING THE COMPLETION OF SOIL DISTURBING ACTIVITIES.
22. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED AND REPAIRED AS NEEDED ON A YEAR-ROUND BASIS DURING CONSTRUCTION AND ANY PERIODS OF CONSTRUCTION SHUTDOWN UNTIL PERMANENT STABILIZATION IS ACHIEVED.
23. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN THIRTY (30) DAYS AFTER PERMANENT SITE STABILIZATION.
24. THE EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON THE PLANS ARE THE MINIMUM REQUIREMENTS. ADDITIONAL MEASURES MAY BE REQUIRED, AS DIRECTED BY THE ENGINEER, SITE INSPECTOR, OR MWRD.

REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 12/06/19 | FOR SUBMITTAL | S.R.M. |
| 01/17/20 | FOR SUBMITTAL | S.R.M. |
| 02/20/20 | FOR SUBMITTAL | S.R.M. |
| 04/17/20 | PER VILLAGE COMMENTS | S.R.M. |

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PROJECT NOTES & SPECIFICATIONS

DESIGN: K.C.L. | DRAFTING: S.R.M
SCALE: NONE | DATE: 10/28/19

FIRM NO. 184-001330

1801 GREEN BAY ROAD SUBDIVISION
1801 GREEN BAY ROAD
GLENCOE, ILLINOIS

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PROJECT No. 18557

## SECTION 2: WATER MAIN

2.1 DESCRIPTION
This work shall consist of furnishing and installing water mains of the required material, size and class together with the necessary fittings, jointing materials and blocking, complete as specified herein and in conformance with the detailed plans.

2.2 MATERIALS
Unless otherwise specified, all materials shall conform to the current AWWA Standards listed below.

a) C–105 Polyethylene Encasement for Ductile Iron Piping.
b) C–153 Ductile Iron Fittings
c) C–151 Ductile Iron Pipe, Centrifugally Cast in Metal Molds or Sand Lined Molds
d) C–909 Class 150 molecularly oriented polyvinyl chloride pipe

Water mains shall be constructed of the materials shown on the plans or specified. Where alternate materials are provided, water mains shall be constructed of the pipe materials selected by the Village at the time of Contract award.

2.3 DUCTILE IRON FITTINGS
Unless otherwise specified, all fittings shall be mechanical joint at all openings. Fittings shall be designed for a minimum working pressure of 250 psi. The cost of all fittings shall be incidental to the Water Main unit price.

Fittings set forth on the plans are for guidance purposes only and are considered a minimum requirement. The Contractor shall provide all fittings required to make a completed installation.

2.4 DUCTILE IRON PIPE
All ductile iron pipes, unless otherwise specified, shall be designed for a maximum working pressure of 350 psi and of a thickness class as specified. All pipes shall be made in standard 18–foot or 20–foot lengths and shall have standard thickness cement lining on the inside.

2.5 STEEL RODS, TURNBUCKLES, BOLTS AND WASHERS
Steel rods shall be S.A.E. 1020 or other steel meeting the approval of the Engineer. Turnbuckles shall be drop forged and conform in dimensions and weights to the latest "Manual of the American Institute of Steel Construction."
Bolts shall be U.S. Standard. Washers may be cast, malleable, or cut steel.

2.6 EXCAVATION AND FOUNDATION
Unless otherwise specified, the trench shall be excavated to a depth which will provide 5.5 feet minimum of cover between the top of the water main and the established finished roadway grade or natural ground, whichever is deeper. The trench for the water main shall be excavated with vertical walls and be a minimum of 24 inches.

Pipe bedding for both Paved Areas and Non–Paved Areas shall be as follows and specified on plans and/or bidding document:

The water main pipe shall be laid on a bedding of compacted ?–inch washed stone with no fines extending the full width of the trench bottom. The bedding shall be placed to a minimum depth of four (4) inches. The bedding stone shall be installed around the water main pipe and full trench width to a thickness above the top of pipe of four (4) inches minimum. The remaining backfill shall be selected materials tamped in place as specified under Section 2.9 or as directed by the Village.

Prior to laying pipe, the bedding materials shall be shaped to provide continuous support for the pipe barrel. Under no circumstances will the pipe be laid on blocks or wedges. Where pipe with a bell or coupling is used, cross trenches shall be excavated to prevent non–uniform loading at joints. The cross trenches shall not be more than two (2) inches wider than the width of the bell or hub.

2.7 LAYING WATER MAIN
All pipe and fittings shall be carefully examined for cracks and other defects just prior to lowering into the trench for installation in final position. Defective pipe or fittings shall be marked and laid aside so as to not be mistakenly used in the improvements. All defective materials shall be removed from the project site upon conclusion of the work day on which they are discovered.

All ductile iron pipes shall be Class 52, cement–lined with push–on joints. The ductile iron water main shall be encased with a polyethylene tube in accordance with AWWA C–105, Method A.

All PVC water mains shall be M.O.P.V.C. Type C 909, Class 150, with push– on joints. A nominal 5' minimum cover is to be provided between the top of the water main and the proposed surface. A tracer wire shall be installed and attached to the PVC main consisting of #10 AWG solid copper THNN. Tracer wire shall have access points in all line valve vaults and hydrant auxiliary valve boxes.

All ductile iron water main shall be installed with serrated bronze wedges in the joints to provide a means of tracing and/or for electrical thawing. Two wedges per joint shall be utilized for 12" or less pipe size.

Bedding shall be in accordance with Section 2.5 of the Specifications, a nominal 5' minimum cover is to be provided between the top of the water main and the proposed surface.
All fittings shall be short–body ductile iron. Bedding, wedges, nominal cover, etc., required for water main shall also apply to fittings.

Before lowering pipe and fittings into the trench, all dirt and foreign matter shall be removed from the pipe interior. After lowering the pipe into the trench and prior to joining the pipe, the bottom worker shall check the joint being made to assure both ends are free of foreign materials picked up during the lowering operation.

As each length of pipe is placed in the trench, the spigot end shall be centered in the bell of the previously installed pipe and forced home. The pipe shall then be installed to the line and grade established by the Village. A tolerance of two
(2) inches in both horizontal and vertical alignment shall be allowed per pipe length on straight runs. The pipe shall be secured in place by tamping approved backfill material around the pipe except at the bell end. Every precaution shall be taken to prevent foreign material from entering the open end of the installed pipe prior to installing the next pipe.
If, for any reason there is a stoppage in the pipe–laying operation, the open end of the last installed pipe shall be sealed by means of a watertight plug. If, upon commencement of work there is water in the trench, the plug shall remain in place until the trench is completely de–watered.

Proper implements, tools and facilities satisfactory to the Village shall be provided and used by the Contractor for efficient execution of work. All pipe, fittings and accessories shall be handled by suitable equipment in a manner to prevent damage to the materials. Under no circumstances shall pipe or accessories be dropped or dumped into the trench.

2.8 BACKFILLING
All trenches and excavation shall be backfilled to finished grade as soon as conditions will permit. The backfill material shall consist of either approved trench backfill aggregate materials if located in Paved Areas or excavated clean material if located in Non–Paved Areas, except that no materials will be allowed that may have any detrimental effect on the pipe, fittings or other appurtenances.
Backfill shall be placed above the bedding stone with clean earthen materials free of clumps and unsuitable materials, except at locations where trench backfill is required. In the event this material is not readily available at all locations, the Contractor shall provide suitable conditioned soil or an approved material for this purpose. Select material shall be placed in the trench and compacted in maximum 2 foot lifts. All select materials shall be compacted to the satisfaction of the Village. No frozen material shall be used as selected backfill. Backfill so placed shall be deposited in the trench in a manner to avoid impact and uneven loading of the water main. After settlement has taken place, the trenches shall be refilled and graded to a finished condition acceptable to the Village.

2.9 TRENCHED BACKFILL PAVED AREAS
Backfill for trenches within the limits of paved areas above the bedding material shall be with aggregate meeting IDOT specifications for Trench Backfill CA–6 or crushed aggregate meeting the gradation requirements for trench backfill material.

2.10 MECHANICAL RESTRAINT JOINTS
Mechanical restraint joints shall be installed according to the manufacturer's specifications. The pipe bells, spigot ends of pipe and pipe gaskets shall be clean and free from particles of sand, dirt or other objectionable matter during jointing. Pipe bolts shall be drawn up uniformly by turning diametrically opposite bolt nuts simultaneously in a manner that the joint gland and rubber gasket are brought to bearing and final seating without warp or eccentricity. All mechanical joints shall be installed with "Mega–Lug" type joint restraint series 1000 as manufactured by Ebba Iron Corp, as specified for ductile iron main or PVC main.

2.11 PUSH–ON JOINTS
Push–on joints shall be installed according to the manufacturer's specifications. The pipe bells, spigot ends of pipe and pipe gaskets shall be clean and free from particles of sand, dirt or other objectionable matter during jointing. Pipe shall be assembled by means of a ratchet jack type tool or other approved method. Jointing by the so–called "stabbing" of the pipe spigot into the coupling will not be permitted.

2.12 THRUST BLOCKING AND ANCHORAGE
All tees and bends shall be mechanically restrained and anchored with concrete blocks or poured concrete thrust blocks as specified by the Village and shall be keyed into solid ground under the respective fittings to a depth of not less than three (3) inches and shall extend to solid ground backing in the direction of the thrust, unless otherwise shown or specified on the plans.

Concrete blocking shall extend to a point above the horizontal pipe diameter and in a manner to secure the pipelines from lateral thrust displacement and insure ability to caulk or tighten all the joints. Concrete blocking shall consist of Class X concrete with minimum moisture content to enable tamping in place and molding. Blocking dimensions will be as shown on the plans or as determined in the field by the Village. Fittings at ends of pipelines shall be blocked or harnessed with suitable ties to the pipeline in a manner to permanently anchor the same in place. Plugs shall be blocked in a manner that will facilitate their removal and subsequent extension of the water mains.

Metal harnesses of adequate strength to prevent movement may be used instead of concrete blocking, if permitted by the Village. Steel rods or clamps shall be galvanized or otherwise rustproof treated, as approved by the Village. The cost of metal harnesses shall be incidental to the construction.

2.13 CONNECTIONS TO EXISTING WATER MAINS
Before making any connection to existing water mains, the Contractor shall have all necessary tools, materials, pipe and fittings on hand and sufficient experienced workers available to preclude any unnecessary delay in making the connection due to adverse conditions or mishap. The actual work of cutting into a main or removal of a fitting shall not be done until all measurements, necessary pipe assembly and other specified provisions have been completed. If the connection required shutting down the existing main, the Contractor shall make the necessary arrangements with the Village to accomplish same. In addition, all users to be affected shall be notified 24 hours in advance of water main shutdown by the Village. At no time shall Contractor shut down any water main without the knowledge and consent of the Village.

Temporary blocking capable of withstanding the service pressure shall be provided for all existing valves, fittings and pipe that could be affected by the new construction.

The cost of making connections to existing water mains shall be paid for at the contract unit price per each CUT–IN CONNECTION.

2.14 PRESSURE CONNECTIONS

Pressure connections shall be performed in accordance with Section 46 of the Standard Specifications. The required equipment, labor and material shall be paid for at the contract unit price per each PRESSURE CONNECTION.

2.15 HOUSE SANITARY SEWER AND WATER SERVICES
At all locations where the water main crosses house services, adequate precautions shall be taken by the Contractor to prevent unnecessary and lengthy shutdown of the service. Wherever possible, the water main shall be constructed so as to not damage the services or interfere with their future operation. Any service that is damaged shall be repaired with new material in such a manner that future operation will not be impaired. All work in connection with house services shall conform to the ordinances and requirements of the Village.

Change or adjustment in the line or grade of the pipeline to clear obstructions shall be approved by the Village. All materials required for this purpose shall be furnished by the Village with the work performed by the Contractor and shall be incidental to and included in the contract unit price for water main, unless otherwise specified.

In those instances where house services require adjustment, the work shall be done under the requirements of the Standard Specifications and paid for at the contract unit price per linear foot of SANITARY SERVICE TO BE ADJUSTED.

2.16 HYDROSTATIC TEST
All newly laid water main, fittings, valves and hydrants shall meet the requirements of the following hydrostatic tests before being accepted by the Village.

a) Pressure Test
After completion of the water main, as previously outlines, the main shall be filled with water and the air allowed to escape through hydrants, air release valves, and blow–offs, etc. When the main is free of air, the water pressure shall be raised to 125 pounds per square inch by the addition of water through a force pump and other apparatus. The test pressure shall be maintained for a one–hour period by the addition of water through the pump.

The pipeline, all valves, fittings and hydrants shall be carefully examined during the pressure test to determine if there are any defective pipe, fittings, hydrants or leaking joints. All defective material shall be removed and replaced with sound material and all leaks repaired. The test shall then be repeated until the required results are achieved.

b) Leaking Test
After satisfactory completion of the pressure test, a leakage test shall be conducted. The water pressure in the main shall be raised to minimum pressure of 120 pounds per square inch, unless otherwise specified, by the addition of water to the main. The test pressure shall be maintained in the main for a two (2) hour period. The allowable amount of make–up water to maintain the specified test pressure shall not exceed the following rates for each 1000 feet of pipe.

| LEAKAGE IN GPH FOR EACH 1000 FEET OF PIPE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| PSI | 6" | 8" | 10" | 12" | 14" | 16" | 18" | 20" | 24" |
| 100 | 0.45 | 0.60 | 0.75 | 0.90 | 1.05 | 1.20 | 1.35 | 1.50 | 1.80 |
| 110 | 047 | 0.63 | 0.79 | 0.94 | 1.10 | 1.26 | 1.41 | 1.57 | 1.89 |
| 120 | 0.49 | 0.66 | 0.82 | 0.99 | 1.15 | 1.31 | 1.48 | 1.64 | 1.97 |
| 130 | 0.51 | 0.68 | 0.85 | 1.03 | 1.20 | 1.37 | 1.54 | 1.71 | 2.05 |
| 140 | 0.53 | 0.71 | 0.89 | 1.06 | 1.24 | 1.42 | 1.60 | 1.78 | 2.13 |
| 150 | 0.55 | 0.74 | 0.92 | 1.10 | 1.29 | 1.47 | 1.65 | 1.84 | 2.21 |

In order to make the above tests, the Contractor shall furnish all apparatus, piping, hose, pump and pressure tank, gauges properly calibrated, a clean barrel or drum to hold water and a five (5) gallon graduated container into tenths of a gallon or into one–half (½) pints. The Village reserves the right to use Village owned tanks and gauges when considered necessary to check the Contractor's equipment for accuracy.

The above specified tests shall be made on sections not exceeding 2,000 feet in length. Mains which fail to meet the requirements of the initial test shall be repaired and retested until all the requirements have been met. All tests shall be made through one–inch corporation cocks trapped into the main.

2.17 WATER MAIN DISINFECTION
Prior to chlorination and after completion of the pressure test, each pipeline construction section shall be flushed at a minimum water velocity of 2.5 fps in manner and for such length of time as the Village may require to effectively clear the mains, valves, hydrant lead and fittings. Temporary flushing risers shall be provided at the termination of all water mains to assure flushing of the dead ends, All mains and accessories shall be chlorinated under the supervision of the Village by the use of chlorine gas as directed. A proper chlorine concentration shall be introduced into the section of main to be chlorinated by means of one–inch corporation cocks inserted in the top of the new main. In order that the sterilization solution will make proper contact with all interior surfaces, corporation cocks shall be inserted in the top of the new main at the beginning of each pipeline extension and at the ends of any such extension where means of bleeding off water is not available.

The valve controlling water flow from the existing distribution system into the new work shall be opened sufficiently to assure a slow rate of flow into the new pipeline. After regulating the flow from observations at the bleed–off point, the chlorine shall be introduced into the new main at a uniformly proportionate rate until the water in the pipeline has a chlorine content of 50 to 100 ppm and until a heavy chlorine concentration at the bleed–off point is evident.

The Contractor shall exercise every precaution to prevent the chlorine solution from backing up or flowing beyond the limits of the new pipeline extension into the existing distribution system. All valves and hydrants within the limits of the section being chlorinated shall be operated during the application of the chlorine solution. All terminal valves except the feed–in valve shall be kept closed.

On completion of the chlorination process, the feed–in valve shall be tightly shut off and the treated water retained in the line at least 24 hours or longer as may be directed by the Village. After the 24–hour retention period, the pipeline will be checked under the supervision of the Village to make sure the residual chlorine at the extremities of the section shall be not less than 25 ppm.

Following chlorination, all treated water shall be thoroughly flushed from the newly laid pipelines as directed by the Village until the replacement water has normal chlorine content and then samples for testing and analysis shall be taken from a sterile metal pipe connection with sampling cock attached to the 1" corporation cocks in the new line. Quality of water shall meet the requirements of the Illinois Environmental Protection Agency for drinking water for at least two (2) consecutive days, with a minimum of 24 hours between samples, before placing the new pipeline or section in service. Water quality testing and sampling shall be performed by the Village.

Should the initial chlorine treatment fail the approved laboratory analysis of the sampled water, chlorination shall be repeated until approved water quality is obtained from the new pipeline extensions or sections.

If a subcontractor is used for disinfection and/or pressure testing of the new main, they must be approved by the Village prior to testing.

The cost of all labor, materials and equipment necessary to flush and chlorinate the water main shall be incidental to and included in the contract unit price for Water Main.

2.18 ABANDON EXISTING WATER MAIN
The existing water main is to be abandoned after the new main is complete and all services have been transferred. Where the existing main is disconnected from its live sources the ends shall be plugged and the main left in place. Where shown on the plans, the existing tee shall be removed, a cut–in sleeve, of the appropriate size and type, shall be installed in its place. Existing valve vaults shall have their frames removed and filled with backfill material as specified. This work shall be considered included in the contract. The pavement will be repaired with the Class C or D patching item as required by existing street construction or requested by the Engineer.

2.19 RELATION TO SEWERS
Insofar as applicable, the provisions set forth in paragraph 212F of the Technical Policy Statement of the Division of Public Water Supplies, Illinois Environmental Protection Agency, are made a part hereof by reference and shall be adhered to in maintaining horizontal and vertical clearances with sewers paralleling or crossing the pipelines to be installed under this contract. The following horizontal and vertical separations are to be maintained.

a) Horizontal Separation
Whenever possible, a water main must be laid at least ten feet horizontally from any existing or proposed drain or sewer line.

Should local conditions exist which would prevent a lateral separation of ten feet, a water main may be laid closer than ten feet to a storm or sanitary sewer provided that the water main invert is at least 18 inches above the crown of the sewer and is either in a separate trench or in the same trench on an undisturbed earth shelf located to one side of the sewer.

If it is impossible to obtain proper horizontal and vertical separation as described above, both the water main and sewer must be constructed of slip–on or mechanical joint cast or ductile iron pipe, pre–stressed concrete pipe or PVC pipe meeting water main standards and, before backfilling, be pressure tested to the maximum possible expected surcharge head to assure water–tightness.

b) Vertical Separation
Whenever water mains must cross house sewers, storm sewers or sanitary sewers, the water main shall be laid at such an elevation that the invert of the water main is 18 inches above the crown of the sewer measured as the normal distance between the two pipes.

The vertical separation must be maintained for that portion of the water main located within ten feet horizontally of any sewer crossed. It if is impossible to obtain the proper vertical separation as described above or if it is necessary for the water main to pass under a sewer both the water main and sewer must be constructed of slip–on or mechanical joint cast iron pipe, pre–stressed concrete pipe or PVC pipe meeting water main standards. All pipe must extend on each side of the crossing until the normal distance from the water main to the sewer is at least ten feet.

In making such crossings, center a length of water main pipe over the sewer to be crossed so the joints will be equidistant from the sewer and as remote as possible. Where a water main must cross under a sewer, a minimum vertical separation of 18 inches between the invert of the sewer and the crown of the water main shall be maintained, along with means to support the larger–sized sewer lines to prevent their settling and breaking the water main.

b) Water Service Lines
The horizontal and vertical separation between water services lines and all sanitary sewers, storm sewers or any drain must be the same as for water main, as detailed in A. and B. above, except that when minimum horizontal and vertical separation cannot be maintained, water pipe of the types described in A. and B. above must be used for both water and sewer service lines.

2.20 METHOD OF MEASUREMENT
Water main shall be measured for payment in lineal feet along the centerline of the completed water main from center to center of fittings.

2.21 BASIS OF PAYMENT
The work as outlined in Section 2 will be paid for at the contract unit price per lineal foot for WATER MAIN of the diameter and class specified, measured in place unless otherwise specified. This price shall include the cost of all materials, pipe, fittings, adapters, joint materials, blocking and all work and equipment necessary to make a complete and finished installation.

## SECTION 3: WATER MAIN INSTALLED BY DIRECTIONAL DRILLING

3.1 DESCRIPTION
This work shall consist of directionally drilling a hole of sufficient size to install the proposed water main as shown on the plans or authorized by the Village.

3.2 DRILLING

A steerable system shall be used to drill a pilot bore hole through the soils in a shallow arc. The pilot hole should be stabilized by filling it with a bentonite based fluid. The pilot hole should then be enlarged by pulling back a reaming tool and carrier pipe to the drill rig location.

If an obstruction is encountered and the obstruction prevents the forward progress of the installation, the Contractor shall promptly advise the Engineer of the condition.

3.3 METHOD OF MEASUREMENT
Directional drilling shall be measured in lineal feet along the centerline and from end–to–end of completed boring.

3.4 BASIS OF PAYMENT
The work will be paid for at the contract unit price per lineal foot for WATER MAIN BY DIRECTIONAL DRILLING for water main of the size specified. This price shall include the cost of all materials, equipment and the work necessary to make a complete and finished installation.

Payment will be made only for the boring that is utilized. Inaccurate bores will be at the Contractor's expense.

If an obstruction prevents forward progress of the installation, and it is determined that extra work such as hand labor and/or special equipment will be required to remove the obstruction, and the contract does not contain a pay item for removal of obstruction, then payment for this extra work will be according to Article 9–4 of the Standard Specifications.

## SECTION 4: VALVES

4.1 DESCRIPTION
This work shall consist of furnishing and installing valves of the required material, size and class together with the necessary fittings, jointing materials and blocking completed as specified herein and in conformance with the detailed plans.

4.2 MATERIALS
All materials shall conform to the current AWWA Standards as set forth below, unless otherwise specified.

(a) C–504 – Rubber–Seated Butterfly Valves.

(b) C–509 – Resilient Seated Gate Valves for Water Systems

4.3 BUTTERFLY VALVE
Butterfly valves shall be class 150 B. Valve bodies shall be either cast iron or cast steel or fabricated steel. Valve shafts shall be solid one piece 18–8 stainless steel, Type 302, 303, 304 or 316. Valves shall be 90 degree seating with valve seats of natural gum rubber compound and shall be provided with adjustable mechanical stop to prevent over travel of the valve disc in the open and closed position. Disc materials shall be as called for in the Special Provisions.

Valves shall be equipped with totally enclosed worm gear reducer and bevel gear attachment with 2" square operating nut. Operators shall be capable of seating and unseating the valves under the most adverse conditions (opening against the full design pressure and velocity as specified into a dry system downstream). Operators shall be equipped with a device to hold the valve in a fixed position for an extended period of time.

Where shown or specified on the plans, butterfly valves shall be furnished with hand wheel operators and right–hand or left–hand reducers as indicated so that the operators are in the position shown. Valves which are constructed with segmental retainers or means of adjusting the valve seat for tightness shall be installed so that such retainers or adjusting means is in the position as indicated on the drawings. All valve operators shall close the valve by turning in a clockwise direction. Valves shall be manufactured by The Henry Pratt Company or pre– approved equal.

4.4 RESILIENT SEATED GATE VALVES
All materials shall conform to the current AWWA Standard C–509, Resilient Seated Gate Valves for Water Systems. All gate valves shall be designed for a
200 psi working pressure and tested to a minimum 350 psi hydrostatic pressure. All valves shall have bronze non–rising stems with "O" ring seals. The valves shall close by turning a 2" square operating nut in a clockwise direction. All valves shall be furnished with mechanical joints. Valves shall be manufactured by Mueller or Waterous or pre–approved equal.

4.5 INSERTING VALVES
Inserting valves shall be Mueller or approved equal. The valve shall be installed under pressure, without interruption of service and consist of a two–part cast iron sleeve and valve body. Valve mechanism shall conform to AWWA Standard Specifications for Gate Valves and shall be cast iron body, resilient wedge. Valve stems shall be non–rising type with 2" square operating nut and have packing gland or "O" seal as specified. Valves shall close by turning the stem in a clockwise direction and be designed for maximum working pressure of 150 psi.

4.6 TAPPING SLEEVES AND VALVE
Tapping sleeves shall be all stainless manufactured by Cascade, Type CST–Ex or pre–approved equal and tapping valves shall be Mueller or Waterous or pre– approved equal and have mechanical joints sized for the existing pipe. Tapping valves shall conform to AWWA Standard Specification for Gate Valves, insofar as applicable, and shall be of the standard cast iron or ductile iron body, resilient wedge gate type. Valve stems shall be non–rising type with 2" square operating nut and "O" ring seal as specified. Valves shall close by turning the stems in a clockwise direction. The valve shall have an American Standard 125–pound flange on the inlet end and a standard mechanical joint hub on the outlet end. Valve seat opening shall permit full diameter cuts to be made.

4.7 AIR RELEASE VALVES
Air release valves shall be "APCO 200A" or approved equal. Valves shall be furnished with 1" threaded inlet connection and ½" threaded outlet.

4.8 VALVE BOXES
Valve boxes shall be cast iron manufactured by Tyler, 6850 series or equal. The valve boxes shall be two piece screw type 51–71 inches or approved equal, and lid marked water or approved equal.

4.9 MAIN LINE VALVE INSTALLATION
Mechanical joint valves shall be restrained as specified in Section 2.9 and installed in the pipelines at the locations shown on the plans.

Valves shall be housed in the diameter pre–cast concrete valve vaults in accordance with the requirements shown on the plans and proposal.

4.10 VALVE VAULTS
This work shall be done in accordance with Section 6 of the Standard Specifications insofar as applicable and the following provisions. For valves 4 through 8 inch, a 48" diameter valve vault will be required.

All valve vaults shall be constructed of precast concrete sections. Adjusting rings and cast iron frames shall be sealed with butyl rope. On valve vaults containing gate valves, a concentric cone or flat slab top may be provided. The cone or top shall be placed on the vault so as to place the center of the 24" hole directly over the valve operating nut of the gate valve.

All valves shall be supported by a minimum 8" x 8" x 8" concrete brick or solid block support placed between the valve flange and the vault concrete base.

Each valve vault shall be provided with a 2' deep by 24" diameter drainage sump filled to the invert of the vault with ?" size washed stone.

Where vaults are provided with valve vaults, the valves shall be centered in the vaults. On pipelines of 8" or less in diameter, the connecting pipe nipples shall be not over 6' in length for ductile iron mains. A minimum of 12" clearance will be maintained between the floor and bottom of the pipe. Frame and covers shall be East Jordan Iron Works, Model 1550 or approved equal. Valve vault covers shall have the word "water" cast into the top surface.

4.11 ABANDON EXISTING VALVE VAULT
Abandonment of existing valve vaults shall be performed by removing and disposing of the top cone section or minimum top 2 feet of structure, filling the vault with Class CA–7 aggregate, and restoring the ground over the vault. If the existing vault is made of other materials than precast concrete, the vault walls shall be removed to a point 2 feet below the existing surface. If a valve vault exists in the parkway, the ground above the filled vault shall be filled with native material or CONTRACTOR shall furnish earth. If the valve vault is within pavement, the ground above the filled vault shall be filled with Class CA–7 aggregate to a point at the bottom of the aggregate base for pavement restoration.

4.12 BASIS OF PAYMENT

The cost of labor and material for installation of each valve and vault including trench backfill and frames and lids will be paid for at the contract unit price per each VALVE VAULT.

## SECTION 5: FIRE HYDRANTS

5.1 DESCRIPTION
This work shall consist of furnishing and installing fir hydrants as specified herein and in conformance with the detailed plans.

5.2 MATERIALS
All fire hydrants shall conform to AWWA Standard C–502 unless otherwise specified. Hydrants shall be Waterous, Model WB–67 six–inch with 2–2½ inch nozzles, 1– 4–inch Waterous manufactured integral "Storz" nozzle, 5¼" valve opening, 1½" operating nut pentagon, open clockwise.

5.3 INSTALLATION
Fire hydrants shall be connected with the water mains by means of ductile iron or PVC pipe having an internal diameter of six (6) inches as specified by the Village. The joint at the hydrant shall be a mechanical restraint joint (Mega–Lug type) or a flanged bolted connection in conformity with the standard adopted and in use by the Village.

Each hydrant shall rest in a substantial concrete block foundation with a surface area sufficient to prevent settlement of said hydrant.

There shall be placed for a depth of at least 15 inches below the drip valve to a plan 12 inches above the drip valve, crushed stone conforming to gradation CA–3. Approximately one–third (a) cubic yards of crushed stone shall be placed for each hydrant. On top of said crushed stone shall be placed a sheet of 6 mil thickness VisQueen (polyethylene) to prevent infiltration of the earth backfill into the crushed stone. Hardwood or masonry blocking shall be placed between each hydrant and the undisturbed earth end of the trench to prevent the hydrant from being blown off of the connection pipe during testing and until the backfill is sufficiently compacted to serve such purposes. Each hydrant shall be set in a true vertical position and at such height so that the center of the hose or steamer connection will be 18 to 21 inches above finished grade at the hydrant or a shown on the plan. Minimum length of hydrants shall be for 6 foot depth of trench. The top of the valve box for the auxiliary hydrant valve shall be set ½ inch above finished grade of the parkway where the hydrant is located. Inspection and pressure testing of each hydrant will be made by the Village prior to backfilling.
Care shall be used where hydrant connections are to be made to be sure that the trench depth is such that the hydrant will be at the proper grade when connected to said main without the use of special offset fittings.

If hydrant extension sections are required to achieve the specified hydrant exposure, their cost shall be incidental to and include in the contract unit price for fire hydrants.

5.4 BASIS OF PAYMENT
The work as outlined in Section 7 will be paid for at the contract unit price each for FIRE HYDRANTS as specified. This price shall include the cost of fittings, joint materials, blocking, drainage bed and all materials, work and equipment necessary to make a complete and finished installation.

Six–inch auxiliary gate valves and cast iron boxes are required for all hydrants, the cost for furnishing and installing same shall be incidental to and included in the contract unit price for fire hydrants. Auxiliary gate valves and cast iron valve boxes shall be in accordance with Section 6 of this Supplemental Specifications, insofar as applicable.

Hydrant leads shall be paid for at the contract unit price for 6" water main of the class specified.

5.5 REMOVE EXISTING FIRE HYDRANTS
This work shall consist of the removal of existing fire hydrants, as shown on the plans, along with all associated hardware such as auxiliary valves, valve vaults or boxes, pipe and fittings necessary to completely eliminate the appurtenance from the water main.

This work shall be paid for at the contract unit price per each REMOVE EXISTING FIRE HYDRANT, which price shall include the cost of all labor and materials required to complete this item.

## SECTION 6: COPPER WATER SERVICE STUBS

6.1 DESCRIPTION
This work shall consist of furnishing and installing copper water tubing, corporation stops, curb stops and curb boxes of the size specified and in conformance with the detailed plans.

6.2 MATERIALS
All materials shall conform to the following standards unless so otherwise specified.

a) Copper Water Tubing, Type K, AWWA Specifications 7S–CR

| Nominal Pipe Size | Outside Diameter | Weight Per Foot |
|---|---|---|
| ¾" | 0.875" | 0.641# |
| 1" | 1.125" | 0.839# |
| 1¼" | 1.375" | 1.040# |
| 1½" | 1.625" | 1.360# |
| 2" | 2.125" | 2.060# |

b) Corporation stops shall be Mueller B–25000 with 90 degree bend coupling.

c) Curb stops shall be Mueller #H–15154 Mark II Oriseal inverted key, round way.

d) Curb boxes shall be Mueller adjustable cast iron type; Mueller #H–10302 for ?" through 1¼" curb stops, and Mueller #H–10304 for 1½" and 2" curb stops.

e) Terminal markers, 2" x 2" post 4' long with white painted top.

6.3 INSTALLATION
Copper services shall be installed by directional bore or in open cut trenches minimum 5 feet below the centerline elevation of the proposed roadway and shall extend at right angles from the street main to the terminal point. Maximum trench width for installation of the copper services shall be 24 inches.

All taps shall be made after completion of the hydrostatic test and disinfection of the water main and shall be at an angle of 90 degrees above the horizontal diameter of the water main. All ?" and 1" taps to be made on ductile iron main shall be tapped directly into the main (no saddles). Taps larger than 1" made on ductile iron main shall be nylon coated Smith Blair Type 317 or pre–approved equal. All taps made on PVC main shall be Smith Blair Type 325 tapping saddles.
From the connection with the corporation stop, the service line shall be bent in a manner to form a curve from the top of the stop to the bottom of the service trench and in a manner to provide a reasonable amount of slack or extra length in the service line. The corporation stop and service shall then be blocked up in a manner to relieved all stress in the connection with the water main. No splicing of the water service beneath the roadway will be allowed. All copper connections shall be flared. The minimum separation between taps shall be 12 inches.

A cast iron adjustable curb box shall be screwed on and set vertically over the curb stop at the terminal end of each service with the cover of said box set flush with the finished surface. Next to the cast iron box shall be set a 4' long 2" x 2" post with one foot painted white and exposed above the ground.

6.4 REPLACE WATER SERVICE LINE
The water service line size shall be 1 ½ inch diameter from the corporation stop on the new main to a minimum of 6" beyond existing water service box, and shall include new 1 ½ inch curb stop and box and connection to the existing service.

This work shall be paid for at the contract unit price per each, for NEAR SIDE WATER SERVICE or FAR SIDE WATER SERVICE, which price shall include the cost of all labor, materials, and equipment necessary to complete this item.

6.5 CONNECT EXISTING 1 ½ INCH OR 2 INCH COPPER WATER SERVICE LINE
This item shall be in accordance with the requirements of Section 8 of the Supplemental Specifications, with the following addition:

The water service shall be connected to the new corporation stop on the new main at the point of crossing. This work shall be included in the price for each NEAR SIDE WATER SERVICE or FAR SIDE WATER SERVICE.

Corporation Stops shall be in accordance with Section 8 of the Supplemental Specifications with the following addition. No size shall be

specified. Each stop shall be 1 ½ or 2 inch size to match the line being replaced or connected.

Curb stops and boxes; this item shall be in accordance with Section 8 of the Supplemental Specifications.

All work in connection with the house water services shall conform to the ordinances and regulation of the Village.

6.6 RECORD OF LOCATIONS
The Contractor shall reference and provide an accurate record of the location of the service tap, box location and service size. Complete record shall be given to the Engineer upon completion of the work.

6.7 METHOD OF MEASUREMENT
House water services shall be measured for payment by each complete replacement of water service line from the point of connection with the main to the curb stop.

6.8 BASIS OF PAYMENT
The work as outlined in Section 8 will be paid for at the contract unit price per each for NEAR SIDE WATER SERVICE or FAR SIDE WATER SERVICE. These prices shall include the cost of all copper tubing, fittings, corporation stop, curb stop, cast iron curb box, service saddles, if necessary, tapping, blocking and all materials, work and equipment necessary to make a complete and finished installation.

REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 12/06/19 | FOR SUBMITTAL | S.R.M. |
| 01/17/20 | FOR SUBMITTAL | S.R.M. |
| 02/20/20 | FOR SUBMITTAL | S.R.M. |
| 04/17/20 | PER VILLAGE COMMENTS | S.R.M. |

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1129 MAIN STREET UNION GROVE, WISCONSIN 53182 PH. (262) 878–6200 | ig@igconsulting.net

GLENCOE WATER MAIN SPECIFICATIONS

DESIGN: K.C.L. DRAFTING: S.R.M
SCALE: NONE DATE: 10/28/19
FIRM NO. 184–001330

# 1801 GREEN BAY ROAD SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS

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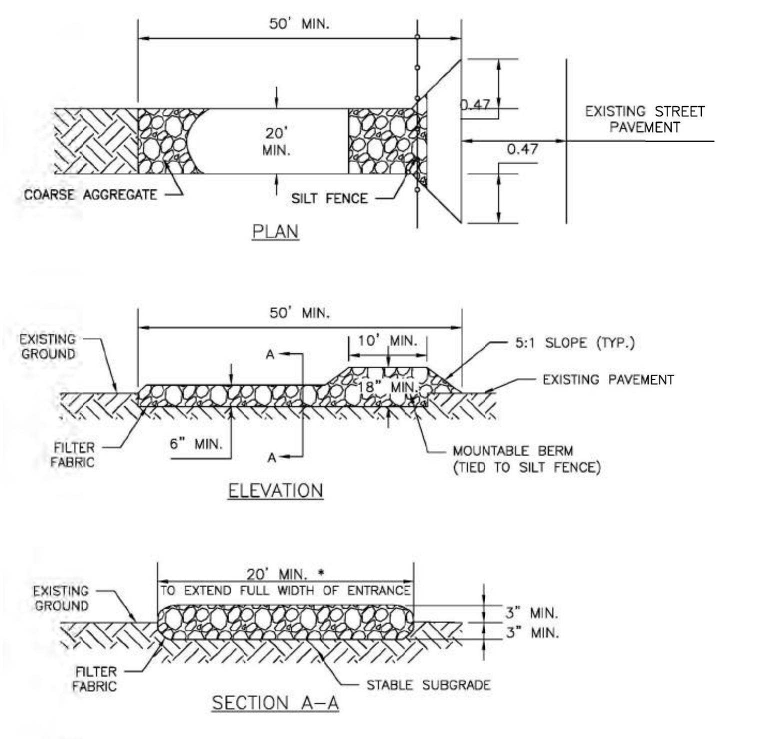
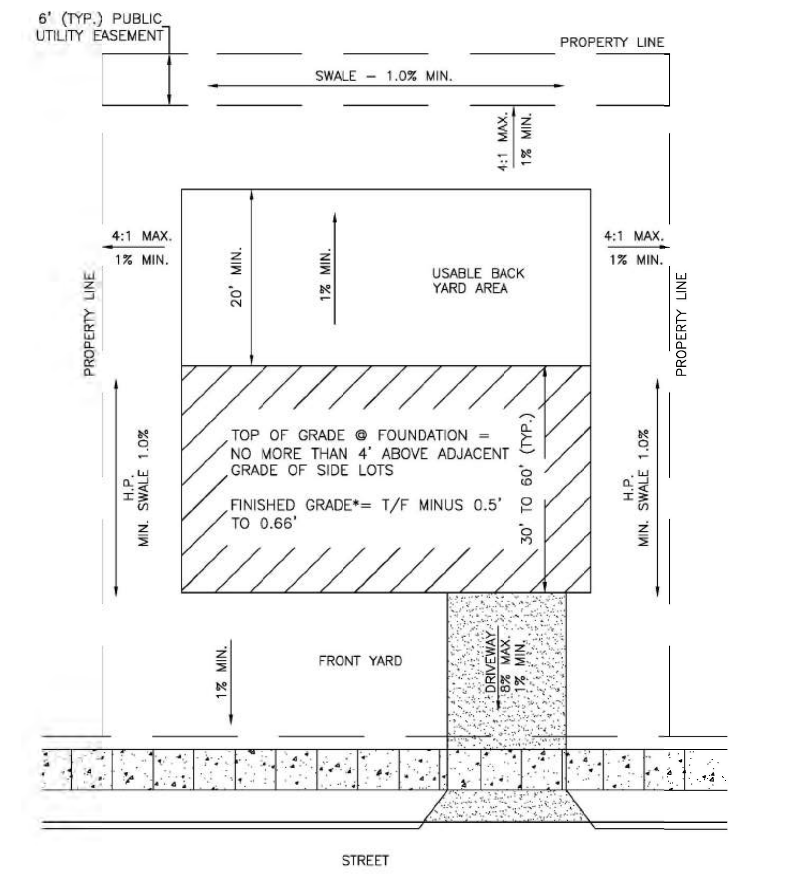
PROJECT No. 18557




NOTES:
1) GEOTEXTILE FILTER FABRIC SHALL BE PLACED OVER THE CLEARED AREA PRIOR TO PLACING COARSE AGGREGATE.
2) COARSE AGGREGATE (OR CRUSHED CONCRETE) SHALL MEET IDOT GRADATION FOR CA-1 CRUSHED AGGREGATE.
3) STABILIZED CONSTRUCTION ENTRANCE SHALL BE INSTALLED, PRIOR TO ONSET OF CONSTRUCTION OPERATIONS AND SHALL BE MAINTAINED THROUGH THE PROJECT.
4) CONSTRUCTION ENTRANCE SHALL BE REMOVED UPON COMPLETION OF CONSTRUCTION AND ONLY WHEN DIRECTED BY VILLAGE ENGINEER.

* OR TO BUILDING LINE

ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018
CONSTRUCTION ENTRANCE | SHEET 1 OF 1 | NOT TO SCALE




* IF THE BUILDING IS MULTI-LEVEL OR HAS A STEP FOUNDATION, SHOW PROPOSED TOP OF FOUNDATION AND FINISHED GRADE AT ALL LEVELS.

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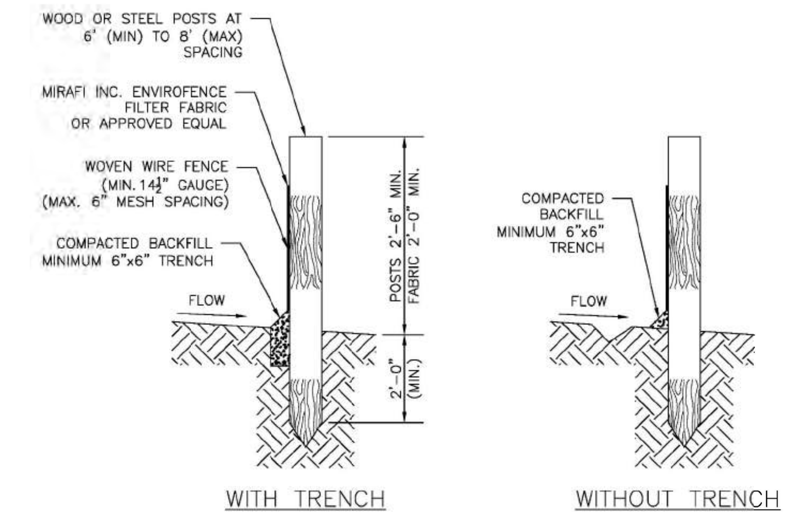
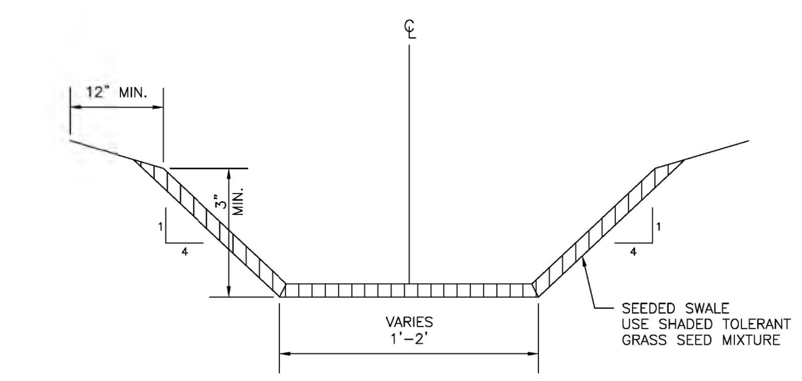
LOT GRADING | SHEET 1 OF 1 | NOT TO SCALE




NOTES:
WITH TRENCH
1) FILTER BARRIERS SHALL BE PLACED AT THOSE LOCATIONS SHOWN ON THE PLANS INCLUDING STOCK PILE AREAS AND WERE INDICATED BY THE ENGINEERING DIVISION.
2) ATTACH FABRIC TO WIRE MESH WITH HOG RINGS, TO WOOD POSTS WITH NAILS, AND TO STEEL POSTS WITH TIE-WIRES AT TOP AND MID-SECTION.
3) OVERLAP FILTER FABRIC BY 6" AND FOLD AROUND EACH POST ONE FULL TURN WHERE 2 SECTIONS ADJOIN.
4) DRIVE POSTS TIGHTLY TOGETHER AND SECURE TOPS OF POSTS BY TYING OFF WITH CORD OR WIRE TO PREVENT FLOW-THROUGH OF BUILD-UP SEDIMENT AT JOINT.
5) INSPECTION OF SILT FENCES SHALL BE MADE AT LEAST ONE PER WEEK AND AFTER RAIN EVENTS IN EXCESS OF ½". REPAIR OF REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
6) SEDIMENT TRAPPED BY THE FENCE SHALL BE REMOVED (AND PROMPTLY DISPOSED OF) WHENEVER SIGNIFICANT ACCUMULATION OCCURS.
7) BARRIERS SHALL BE MAINTAINED IN PLACE UNTIL COMPLETION OF CONSTRUCTION AND THE UPSLOPE AREA HAS BEEN STABILIZED, AND SHALL BE REMOVED ONLY WHEN DIRECTED BY THE VILLAGE ENGINEER.

WITHOUT TRENCH
1) TOE-IN CAN ALSO BE ACCOMPLISHED BY LAYING THE FABRIC FLAP ON UNTRENCHED GROUND AND PILING AND TAMPING SOIL OVER FLAP AT THE BASE OF STRUCTURE.

ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018
SILT FENCE | SHEET 1 OF 1 | NOT TO SCALE

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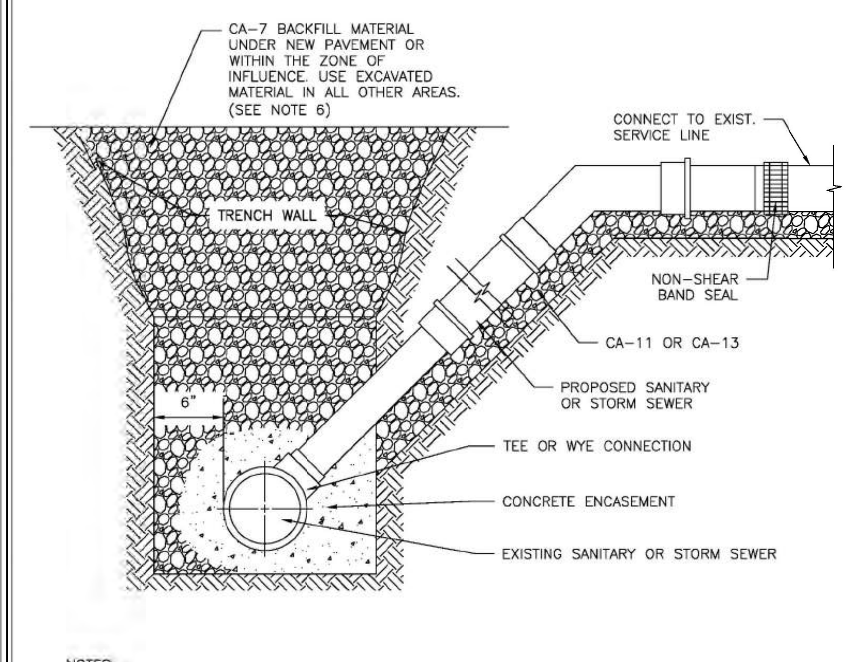
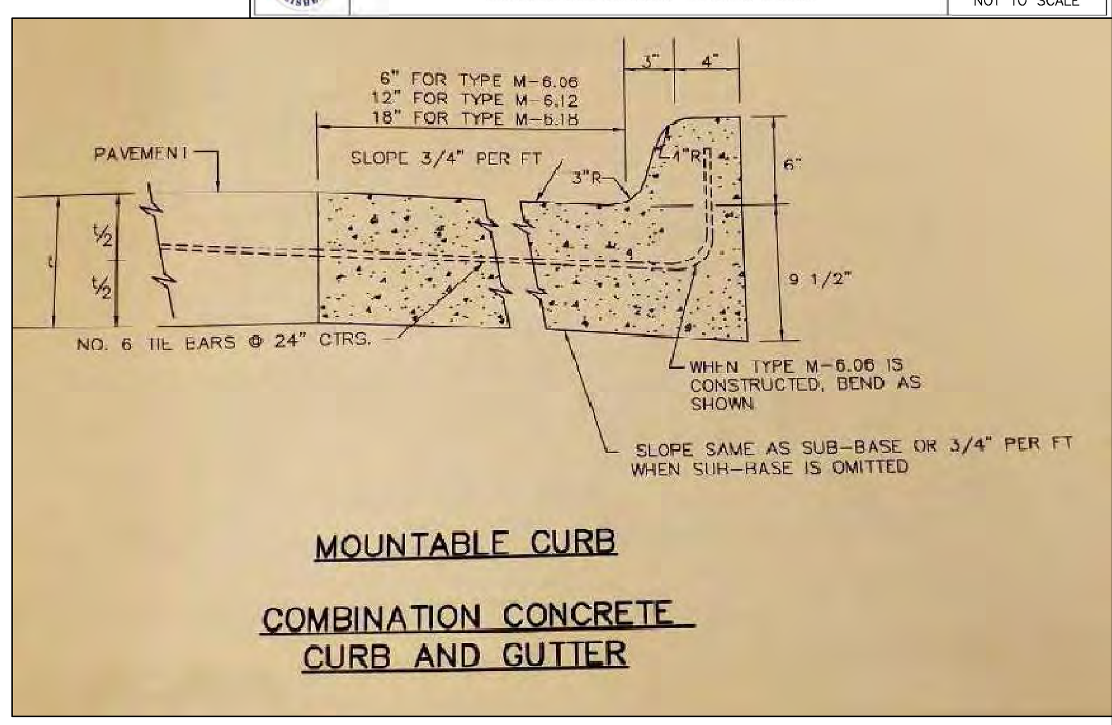
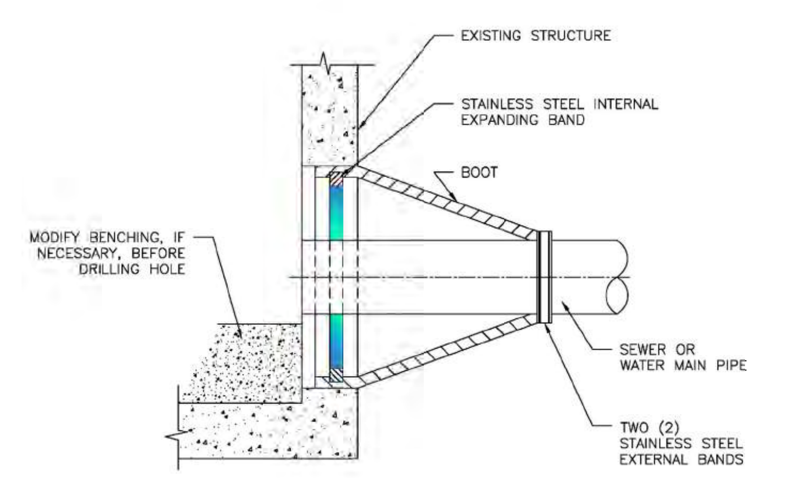
SWALE | SHEET 1 OF 1 | NOT TO SCALE




NOTES:
1) FOR PROPOSED STORM SEWER SERVICE ≤ 6", CORE THE PIPE AND USE A BOOT CONNECTION.
2) FOR PROPOSED STORM SEWER SERVICE ≥ 8", A MANHOLE MUST BE INSTALLED.
3) FOR CONNECTING SANITARY SANITARY SERVICE TO AN EXISTING SANITARY SEWER ≤ 12", REMOVE A SECTION OF PIPE AND INSTALL A TEE OR WYE CONNECTION.
4) FOR CONNECTING SANITARY SEWER SERVICE TO AN EXISTING SANITARY SEWER ≥ 15", CIRCULAR SAW-CUT AND USE A HUB WYE OR TEE SADDLE CONNECTION.
5) FOR PROPOSED STORM OR SANITARY SEWER SERVICES, ENCASE ALL CONNECTIONS IN LOW STRENGTH CONCRETE TO PREVENT THE FITTINGS FROM ROTATING.
6) FOR TRENCHES WITHIN AN EXISTING PAVED SURFACE AREA, FLOWABLE FILL BACKFILL MEETING IDOT'S SPECIFICATIONS CONTROLLED LOW STRENGTH MATERIAL (CLSM) MIX 1 SHALL BE USED.

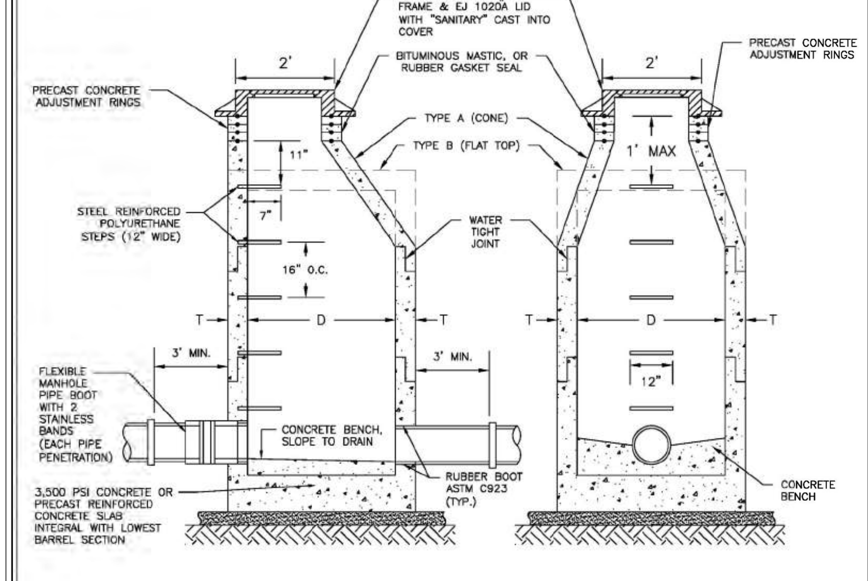
ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018
SANITARY & STORM SERVICE DETAIL | SHEET 1 OF 1 | NOT TO SCALE




NOTES:
1) CORE-DRILL CIRCULAR OPENING IN STRUCTURE WALL OF DIAMETER TO FIT THE REQUIRED BOOT SIZE.
2) KOR-N SEAL FLEXIBLE RUBBER BOOT (MANUFACTURED BY NATIONAL POLLUTION CONTROL SYSTEMS, INC. OR AS APPROVED BY VILLAGE ENGINEER SHALL BE USED FOR WATERTIGHT CONNECTION.
3) CUT, SHAPE AND SLOPE NEW INVERT CHANNEL IN THE EXISTING CONCRETE BENCH FOR SMOOTH FLOW FROM NEW CONNECTION.
4) CLEAN EXISTING STRUCTURE AND SEWER PIPE OF ANY DIRT, CONCRETE OR DEBRIS WHICH MAY ACCUMULATE DURING THE CONSTRUCTION PROCESS.

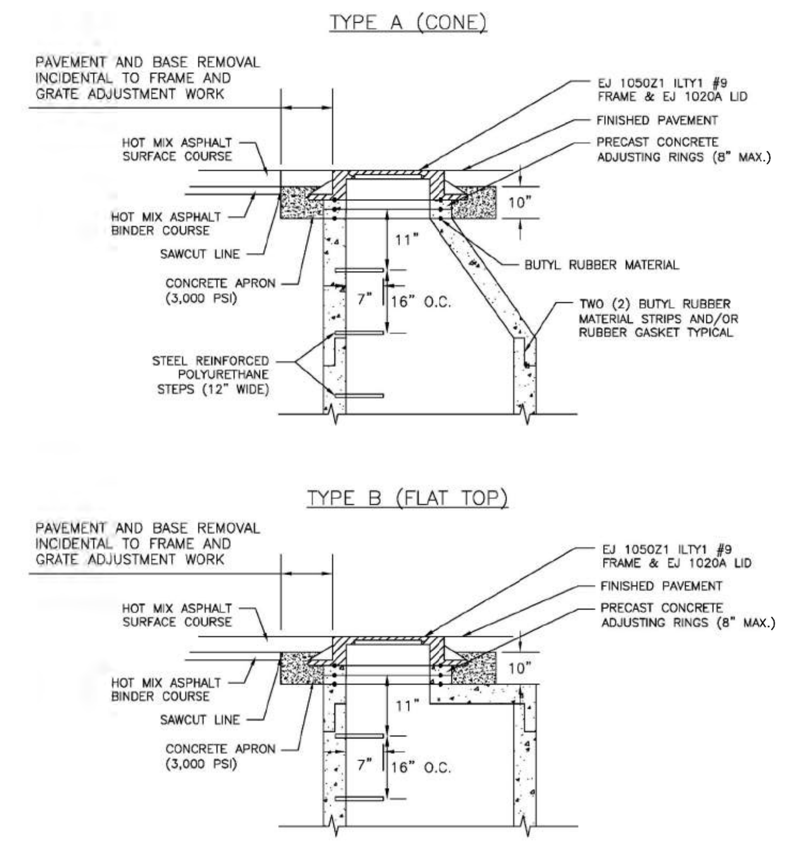
ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018
PIPE CONNECTION TO STRUCTURE | SHEET 1 OF 1 | NOT TO SCALE




NOTES:
1) MANHOLES MUST CONFORM TO ASTM C-478.
2) MANHOLE SECTIONS TO BE TONGUE AND GROOVE.
3) BENCHES MUST BE PROVIDED IN ALL STORM SEWER MANHOLES.
4) ALL PIPE PENETRATIONS OCCURRING WITHIN (OR BELOW) GROUNDWATER TABLE AND ALL NON-PRECAST OPENINGS SHALL BE CORED, RUBBER BOOTED, AND INTERIOR MORTARED AROUND PIPE. SEE PIPE CONNECTION TO STRUCTURE DETAIL.
5) MASTIC SEALANT OR RUBBER GASKET SEAL MUST BE APPLIED BETWEEN CONCRETE & FLANGE OF FRAME BEFORE LID BOLTS ARE TIGHTENED.
6) INSTALL EXTERNAL CHIMNEY SEAL.

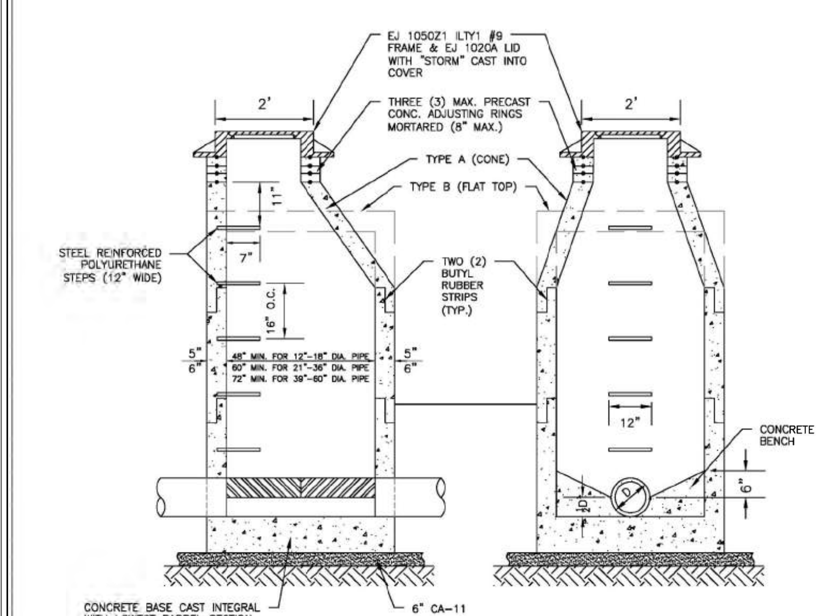
| PIPE SIZE (IN.) | DIAMETER "D" (FT.) | THICKNESS "T" (IN.) |
|---|---|---|
| 12-18 | 4 | 4 |
| 21-36 | 5 | 5 |
| 39-60 | 6 | 6 |

ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018
SANITARY MANHOLE | SHEET 1 OF 1 | NOT TO SCALE



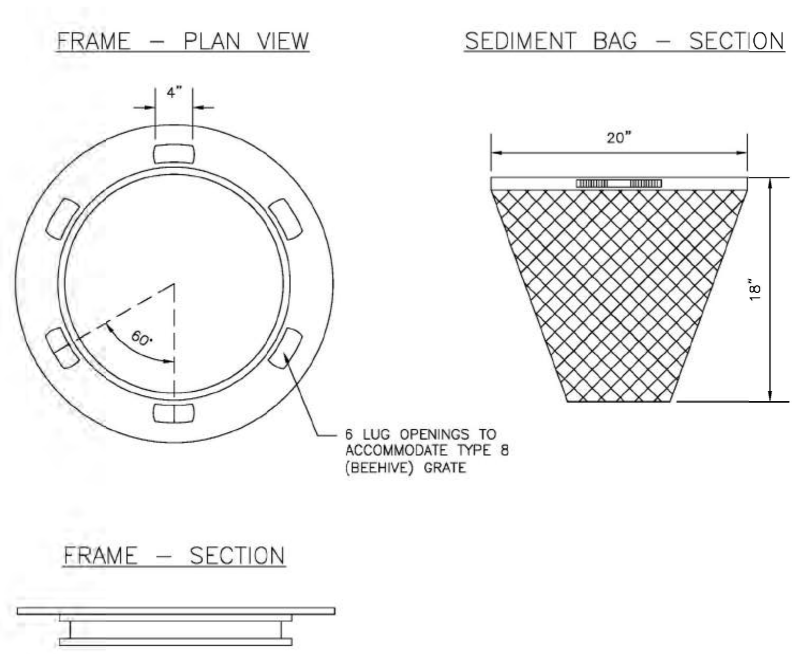

NOTE:
THE REQUIRED MANHOLE FRAME AND GRATE ADJUSTMENTS, INCLUDING POURING OF CONCRETE APRON, SHALL BE PERFORMED BEFORE PLACING HOT-MIX ASPHALT SURFACE COURSE.

ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018
STRUCTURE FRAME & GRATE ADJUSTMENT | SHEET 1 OF 1 | NOT TO SCALE



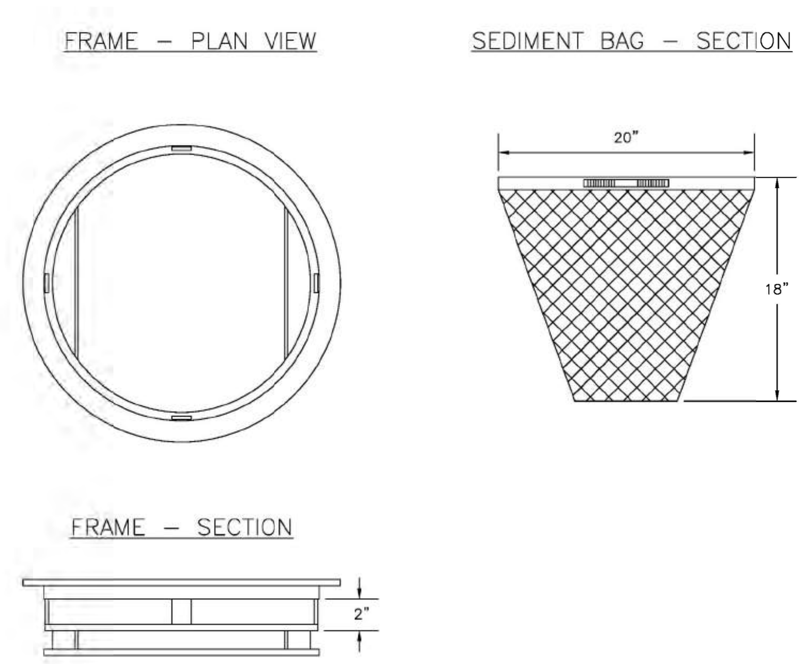

NOTES:
1) MANHOLES MUST CONFORM TO ASTM C-478.
2) MANHOLE SECTIONS TO BE TONGUE AND GROOVED.
3) BENCHES MUST BE PROVIDED IN ALL STORM SEWER MANHOLES.
4) ALL PIPE PENETRATIONS OCCURRING WITHIN (OR BELOW) GROUNDWATER TABLE AND ALL NON-PRECAST OPENINGS SHALL BE CORED, RUBBER BOOTED, AND INTERIOR MORTARED AROUND PIPE. SEE PIPE CONNECTION TO STRUCTURE DETAIL.
5) MASTIC SEALANT OR RUBBER GASKET SEAL MUST BE APPLIED BETWEEN CONCRETE & FLANGE OF FRAME BEFORE LID BOLTS ARE TIGHTENED.

ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018
STORM MANHOLE | SHEET 1 OF 1 | NOT TO SCALE



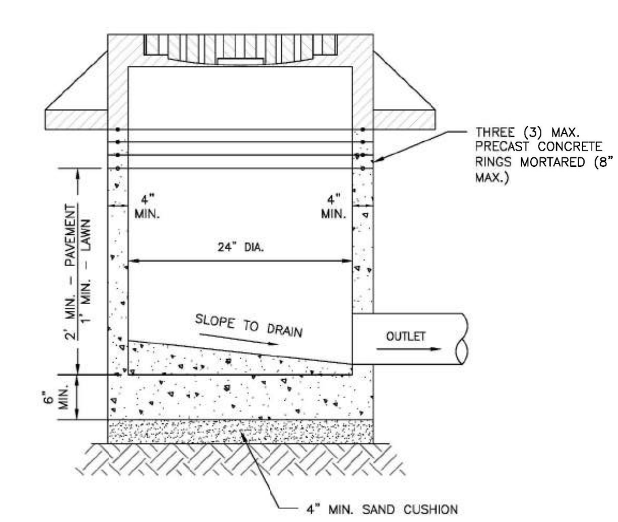

NOTES:
1) FRAME: TOP FLANGE FABRICATED FROM ¼" FLAT STOCK. BASE RIM FABRICATED FROM 1 ½" X ½" X ⅛" CHANNEL. ALL STEEL CONFORMING TO ASTM-A36.
2) SEDIMENT BAG: BAG FABRICATED FROM 4 OZ./ SQ.YD. NON-WOVEN POLYPROPYLENE GEOTEXTILE REINFORCED WITH POLYESTER MESH. BAG SECURED TO BASE RIM WITH A STAINLESS STEEL STRAP AND LOCK.

ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018
FILTER FOR BEEHIVE (TYPE 8) GRATE & FRAME | SHEET 1 OF 1 | NOT TO SCALE



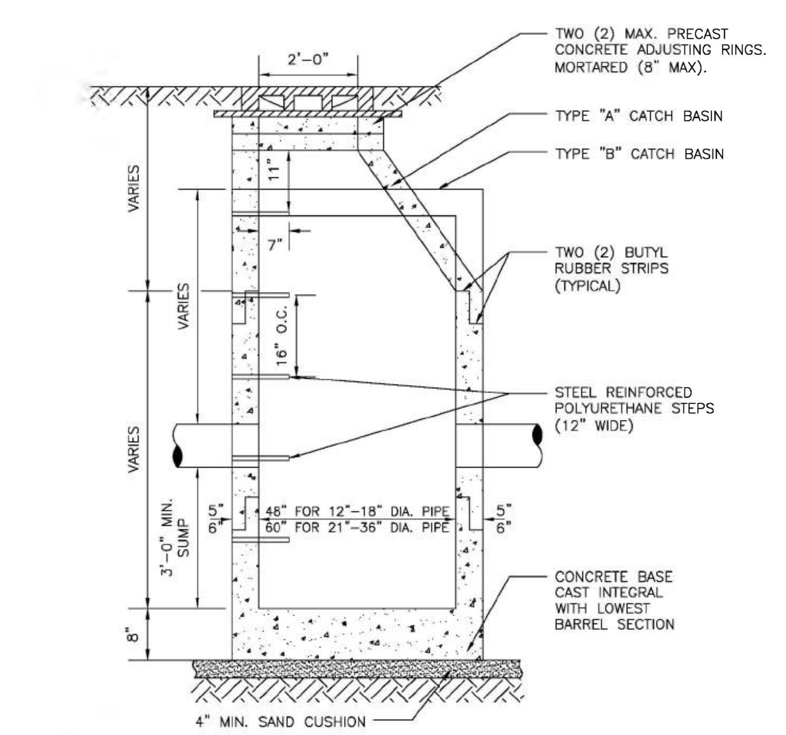

NOTES:
1) FRAME: TOP FLANGE FABRICATED 1½"X1½"X¼" ANGLE. BASE RIM FABRICATED FROM 1½"X½"X⅛" CHANNEL. HANDLES AND SUSPENSION BRACKETS FABRICATED FROM 1½"X¼" FLAT STOCK. ALL STEEL CONFORMING TO ASTM-A36.
2) SEDIMENT BAG: BAG FABRICATED FROM 4 OZ./ SQ.YD. NON-WOVEN POLYPROPYLENE GEOTEXTILE REINFORCED WITH POLYESTER MESH. BAG SECURED TO BASE RIM WITH A STAINLESS STEEL STRAP AND LOCK.
3) FILTER FOR OTHER SHAPE GRATES SHALL BE APPROVED IN ADVANCE OF PLACEMENT BY THE VILLAGE ENGINEER.

ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018
FILTER FOR ROUND OPEN (TYPE 1) GRATE & FRAME | SHEET 1 OF 1 | NOT TO SCALE




NOTES:
1) INLET MUST CONFORM TO ASTM C-478.
2) NON-PRECAST OPENINGS SHALL BE CORED, RUBBED BOOTED, AND INTERIOR MORTARED AROUND PIPE. SEE PIPE CONNECTION TO STRUCTURE DETAIL.
3) MAXIMUM DEPTH FROM INVERT OF OUTLET PIPE TO TOP OF FRAME SHALL NOT EXCEED 42 INCHES. IF DESIGN OR CONSTRUCTION REQUIRES DEPTH BEYOND 42 INCHES, STRUCTURE SHALL BE REVISED TO A 48 INCH DIAMETER MANHOLE.
4) BENCHES MUST BE PROVIDED IN ALL INLETS.

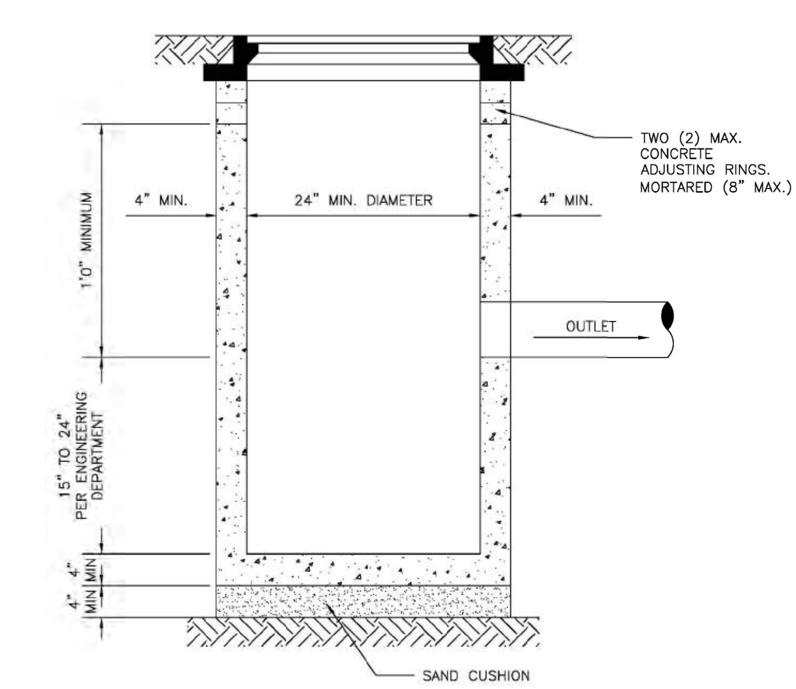
ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018
INLET TYPE "C" | SHEET 1 OF 1 | NOT TO SCALE




NOTES:
1) MANHOLES MUST CONFORM TO ASTM C-478.
2) MANHOLE SECTIONS TO BE TONGUE AND GROOVED.
3) NON-PRECAST OPENINGS SHALL BE CORED AND RUBBER BOOTED. *
4) MORTAR ALL PIPE PENETRATIONS INSIDE AND OUTSIDE OF STRUCTURE.
5) ALL PIPE PENETRATIONS TO BE CORED, RUBBER BOOTED AND INTERIOR MORTARED. *

* SEE SEWER CONNECTION TO EXISTING MANHOLE DETAIL.

ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018
STORM CATCH BASIN DETAIL TYPE "A" AND TYPE "B" | SHEET 1 OF 1 | NOT TO SCALE




NOTES:
1) CATCH BASIN TO BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE.
2) CATCH BASIN MUST CONFORM TO ASTM C-478.
3) ALL PIPE PENETRATIONS TO BE CORED, RUBBER BOOTED AND INTERIOR MORTARED.
4) MAXIMUM DEPTH FROM INVERT OF OUTLET PIPE TO TOP OF FRAME SHALL NOT EXCEED 42 INCHES. IF DESIGN OR CONSTRUCTION REQUIRES DEPTH BEYOND 42 INCHES, STRUCTURE SHALL BE REVISED TO A 48 INCH DIAMETER TYPE "A" CATCH BASIN.

ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018
STORM CATCH BASIN DETAIL TYPE "C" | SHEET 1 OF 1 | NOT TO SCALE

## REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 12/06/19 | FOR SUBMITTAL | S.R.M. |
| 01/17/20 | FOR SUBMITTAL | S.R.M. |
| 02/20/20 | FOR SUBMITTAL | S.R.M. |
| 04/17/20 | PER VILLAGE COMMENTS | S.R.M. |


IG CONSULTING, INC.
CONSULTING CIVIL ENGINEERS, PLANNERS & LAND SURVEYORS
300 MARQUARDT DRIVE WHEELING, ILLINOIS 60090 PH. (847) 215-1133 | FAX (847) 215-1177
1129 MAIN STREET UNION GROVE, WISCONSIN 53182 PH. (262) 878-6200 | ig@igconsulting.net


CONSTRUCTION STANDARDS
DESIGN: K.C.L. | DRAFTING: S.R.M
SCALE: NONE | DATE: 10/28/19
FIRM NO. 184-001330

# 1801 GREEN BAY ROAD SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS

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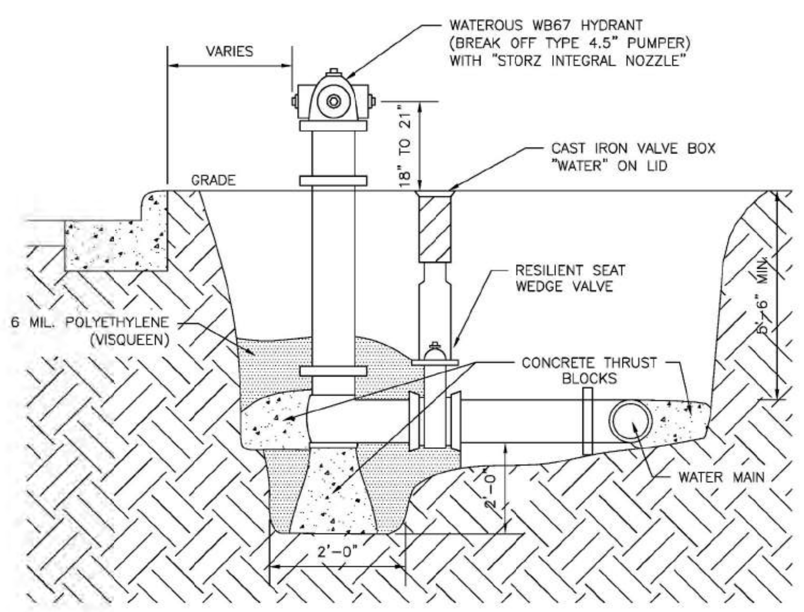
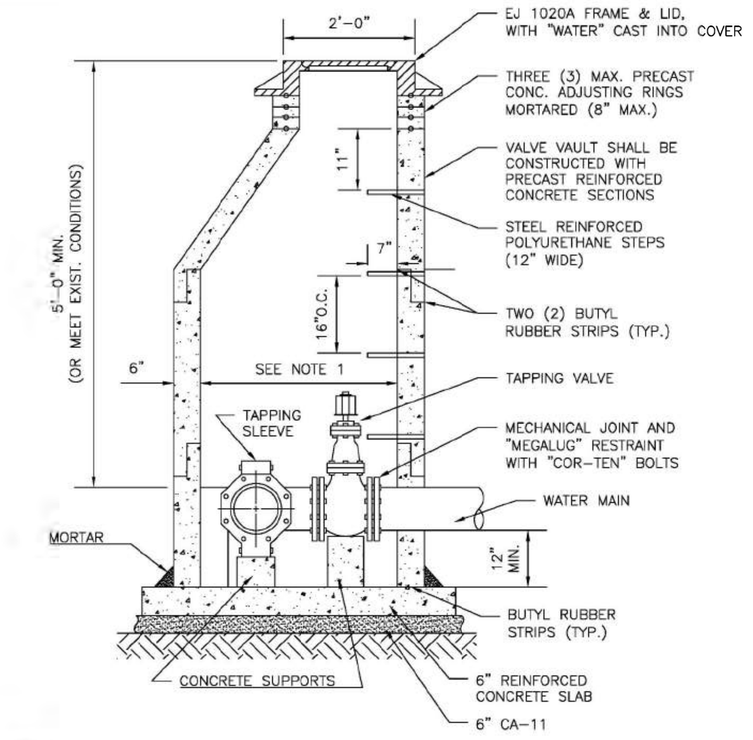
PROJECT No. 18557




NOTES:
1) ALL MAINS TO HAVE MINIMUM 5'-6" COVER.
2) ALL HYDRANTS TO FACE STREET.
3) DO NOT OBSTRUCT DRAIN HOLES

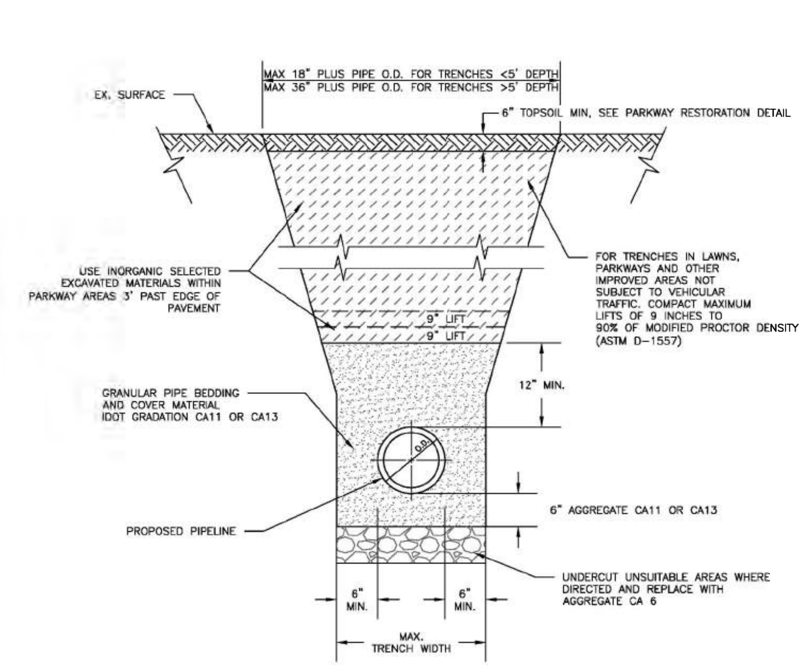
| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| FIRE HYDRANT DETAIL | SHEET 1 OF 1 |
| | NOT TO SCALE |




NOTES:
1) 60" (MIN.) INSIDE DIAMETER FOR ALL PRESSURE CONNECTION VALVES.
2) BACKFILL MATERIAL SHALL BE IDOT CA-7 STONE.
3) TAPPING SLEEVE SHALL BE MUELLER STAINLESS STEEL H-304.
4) BOLTS FOR FITTINGS
4)1. MECHANICAL JOINT BOLTS & NUTS SHALL BE COMPOSED OF "COR-TEN".
4)2. ALL OTHER HEXAGONAL BOLTS & NUTS SHALL BE COMPOSED OF STAINLESS STEEL.
5) VALVE VAULT MUST CONFORM TO ASTM C-478.
6) ALL SECTIONS TO BE TONGUE AND GROOVED.
7) NON-PRECAST OPENINGS SHALL BE CORED AND RUBBER BOOTED.*

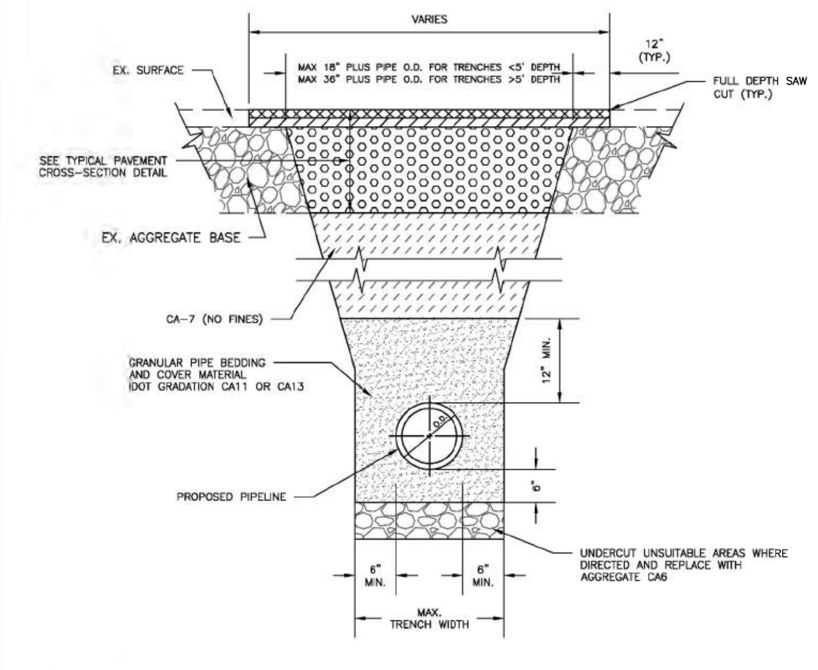
*SEE PIPE CONNECTIONS TO STRUCTURE DETAIL.

| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| PRESSURE CONNECTION | SHEET 1 OF 1 |
| | NOT TO SCALE |



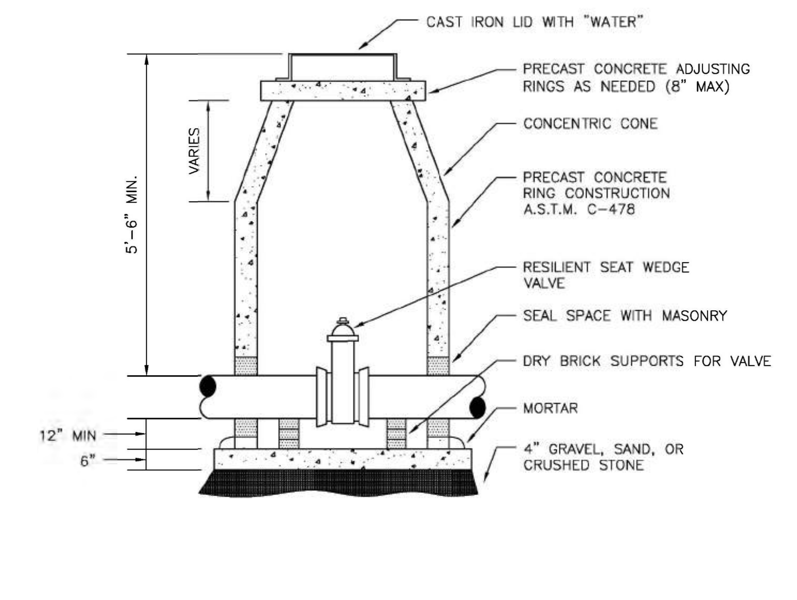

NOTES:
1) ALL BACKFULL MATERIALS SHALL BE PROPERLY COMPACTED.
2) ALL TRENCH EXCAVATIONS SHALL MEET OSHA REQUIREMENTS.
3) BEDDING MATERIAL FOR PVC PIPE INSTALLATION SHALL COMPLY WITH ASTM D-2321.

| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| TRENCH DETAIL FOR NON-PAVED AREAS | SHEET 1 OF 1 |
| | NOT TO SCALE |




1) TRENCH BACKFILL UNDER A PACED SURFACE OR WITHIN THE ZONE OF INFLUENCE (3' FROM EDGE OF PAVEMENT) SHALL CONSIST OF IDOT CA-7, NO FINES, CRUSHED STONE, GRAVEL, OR CRUSHED GRAVEL. CRUSHED CONCRETE IS NOT ALLOWED.
2) ALL MATERIALS SHALL BE PROPERLY COMPACTED PER SPECIFICATIONS.
3) ALL TRENCH EXCAVATIONS SHALL MEET OSHA REQUIREMENTS.
4) BEDDING MATERIAL FOR PVC PIPE INSTALLATION SHALL COMPLY WITH MWRD STANDARDS, CA11 AND CA13.
5) THE PLACEMENT OF PAVEMENTS SHALL NOT BE ALLOWED WITHOUT PRIOR INSPECTION BY VILLAGE ENGINEERING.

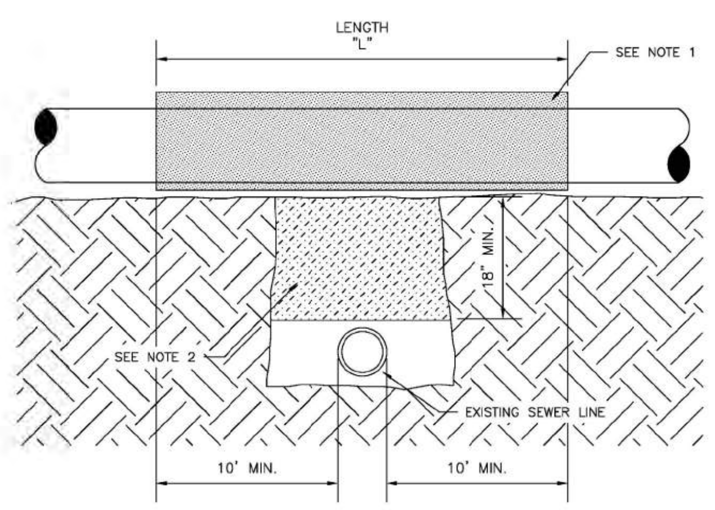
| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| TRENCH DETAIL FOR PAVED AREAS | SHEET 1 OF 1 |
| | NOT TO SCALE |




NOTES:
1) PIPE OPENINGS CAST INTO WALL.
2) PRECAST SECTIONS TO BE JOINTED WITH TONGUE AND GROOVE JOINTS SEALED WITH MASTIC TYPE BITUMINOUS JOINTING COMPOUND.
3) 4' DIA. STRUCTURES FOR UP TO 8" VALVES, 5' DIA. STRUCTURES FOR 10" VALVES AND ABOVE.

| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| VALVE VAULT DETAIL | SHEET 1 OF 1 |
| | NOT TO SCALE |

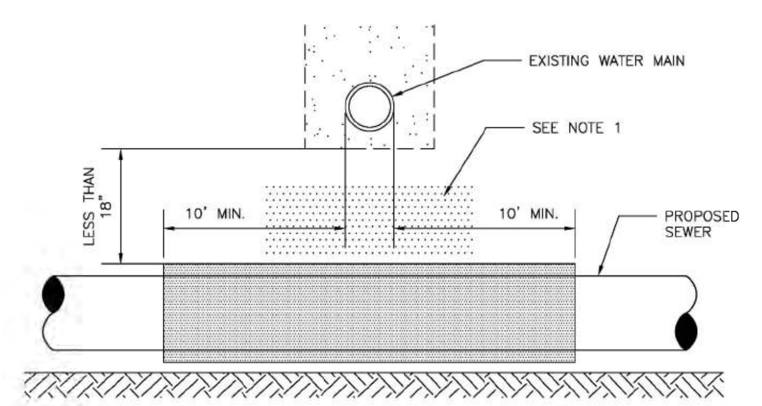
PROPOSED WATER MAIN ABOVE EXISTING SEWER LINE WITH 18" MINIMUM VERTICAL SEPARATION




NOTES:
1) OMIT SELECT GRANULAR CRADLE AND GRANULAR BACKFILL TO ONE (1) FOOT OVER TOP OF PIPE AND USE SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT FOR 10' ON EITHER SIDE OF SEWER LINE.
2) IF SELECT GRANULAR BACKFILL EXISTS, REMOVE WITHIN WIDTH OF EXISTING SEWER LINE TRENCH AND REPLACE WITH SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT.
3) CLASS IV MATERIAL SHALL BE COMPACTED TO 95% OF STANDARD PROCTOR MAXIMUM DENSITY.
4) CONSTRUCT "L" FEET OF PROPOSED SEWER OF WATER MAIN MATERIAL AND PRESSURE TEST, OR USE "L" FEET OF WATER MAIN MATERIAL FOR CASING OF PROPOSED SEWER AND SEAL ENDS OF CASING.

| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| WATER AND SEWER SEPARATION | SHEET 1 OF 5 |
| | NOT TO SCALE |

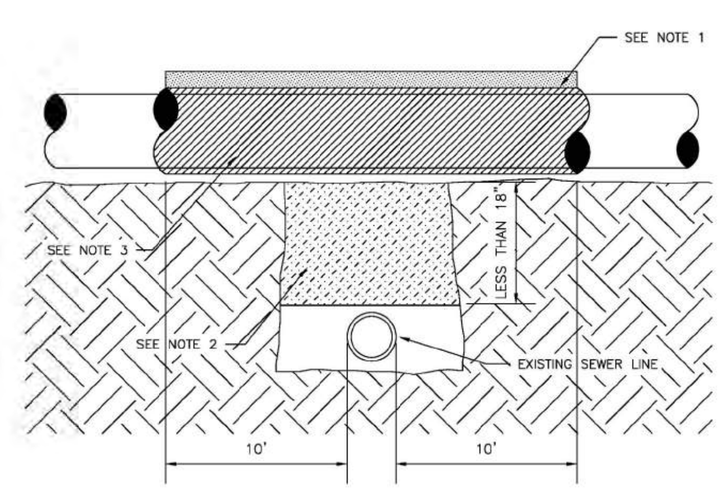
PROPOSED SEWER LINE BELOW EXISTING WATER MAIN WITH LESS THAN 18" MINIMUM VERTICAL SEPARATION




NOTES:
1) OMIT SELECT GRANULAR CRADLE AND GRANULAR BACKFILL TO ONE (1) FOOT OVER TOP OF PIPE AND USE SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT FOR 10' MIN. ON EITHER SIDE OF SEWER LINE.
2) IF SELECT GRANULAR BACKFILL EXISTS, REMOVE WITHIN WIDTH OF EXISTING SEWER LINE TRENCH AND REPLACE WITH SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT.
3) CLASS IV MATERIAL SHALL BE COMPACTED TO 95% OF STANDARD PROCTOR MAXIMUM DENSITY.
4) CONSTRUCT "L" FEET OF PROPOSED SEWER OF WATER MAIN MATERIAL AND PRESSURE TEST, OR USE "L" FEET OF WATER MAIN MATERIAL FOR CASING OF PROPOSED SEWER AND SEAL ENDS OF CASING.
5) PROVIDE ADEQUATE SUPPORT FOR EXISTING WATER MAIN TO PREVENT DAMAGE DUE TO SETTLEMENT OF SEWER TRENCH.

| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| WATER AND SEWER SEPARATION | SHEET 2 OF 5 |
| | NOT TO SCALE |

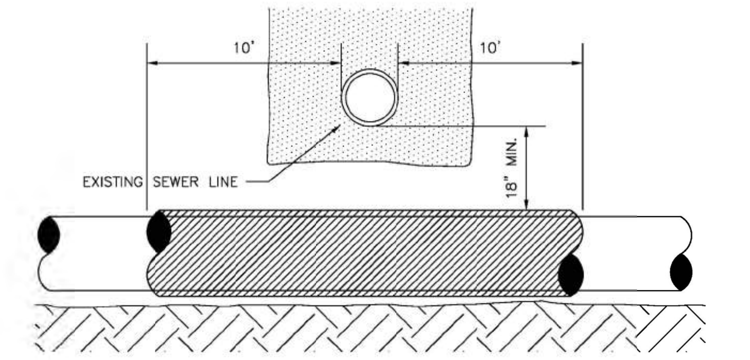
PROPOSED WATER MAIN ABOVE EXISTING SEWER LINE WITH LESS THAN 18" MINIMUM VERTICAL SEPARATION




NOTES:
1) OMIT SELECT GRANULAR CRADLE AND GRANULAR BACKFILL TO ONE (1) FOOT OVER TOP OF PIPE AND USE SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT FOR 10' ON EITHER SIDE OF SEWER LINE.
2) IF SELECT GRANULAR BACKFILL EXISTS, REMOVE WITHIN WIDTH OF EXISTING SEWER LINE TRENCH AND REPLACE WITH SELECT EXCAVATED MATERIAL (CLASS IV) AND COMPACT.
3) USE CASING FOR PROPOSED WATER MAIN AND SEAL ENDS OF CASING.
4) POINT LOADS SHALL NOT BE ALLOWED BETWEEN WATER MAIN OR WATER MAIN CASING AND SEWER.
5) CLASS IV MATERIAL SHALL BE COMPACTED TO 95% OF STANDARD PROCTOR MAXIMUM DENSITY.

| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| WATER AND SEWER SEPARATION | SHEET 3 OF 5 |
| | NOT TO SCALE |

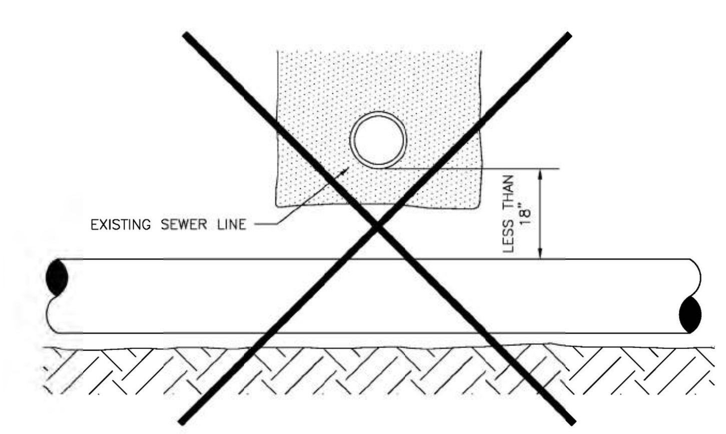
PROPOSED WATER MAIN BELOW EXISTING SEWER LINE WITH 18" MINIMUM VERTICAL SEPARATION




NOTES:
1) PROVIDE ADEQUATE SUPPORT FOR EXISTING SEWER LINE TO PREVENT DAMAGE DUE TO SETTLEMENT OF TRENCH.
2) MAINTAIN 18" MINIMUM VERTICAL SEPARATION FOR 10' HORIZONTALLY.
3) USE CASING FOR PROPOSED WATER MAIN AND SEAL ENDS OF CASING. THE CASING PIPE MUST BE A MATERIAL THAT IS APPROVED FOR USE AS WATER MAIN.
4) POINT LOADS SHALL NOT BE ALLOWED BETWEEN WATER MAIN OR WATER MAIN CASING AND SEWER.

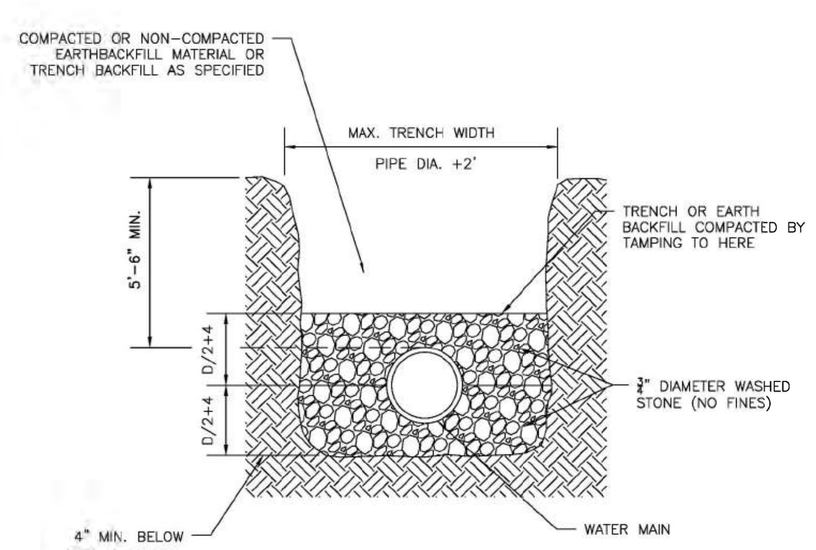
| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| WATER AND SEWER SEPARATION | SHEET 4 OF 5 |
| | NOT TO SCALE |

PROPOSED WATER MAIN BELOW EXISTING SEWER LINE WITH LESS THAN 18" MINIMUM VERTICAL SEPARATION



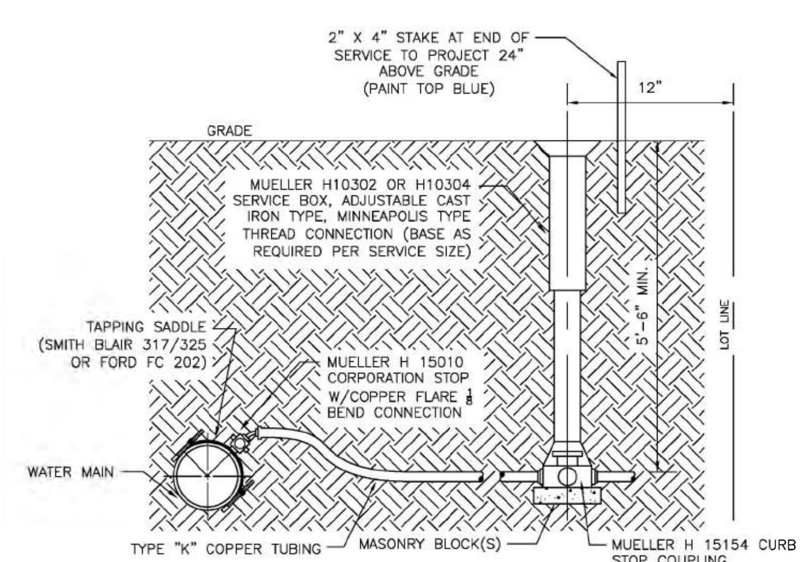

NOT ALLOWED
MUST MAINTAIN 18" OF VERTICAL SEPARATION

| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| WATER AND SEWER SEPARATION | SHEET 5 OF 5 |
| | NOT TO SCALE |




NOTES:
1) MAKE EXCAVATION FOR PIPE BELL SO THAT ALL LOADS ARE CARRIED BY PIPE BARREL ONLY.
2) WHERE BOTTOM OF TRENCH IS NOT STABLE, LARGE SIZE CRUSHED STONE OR GRAVEL AS APPROVED BY THE ENGINEER SHALL BE PROVIDED.

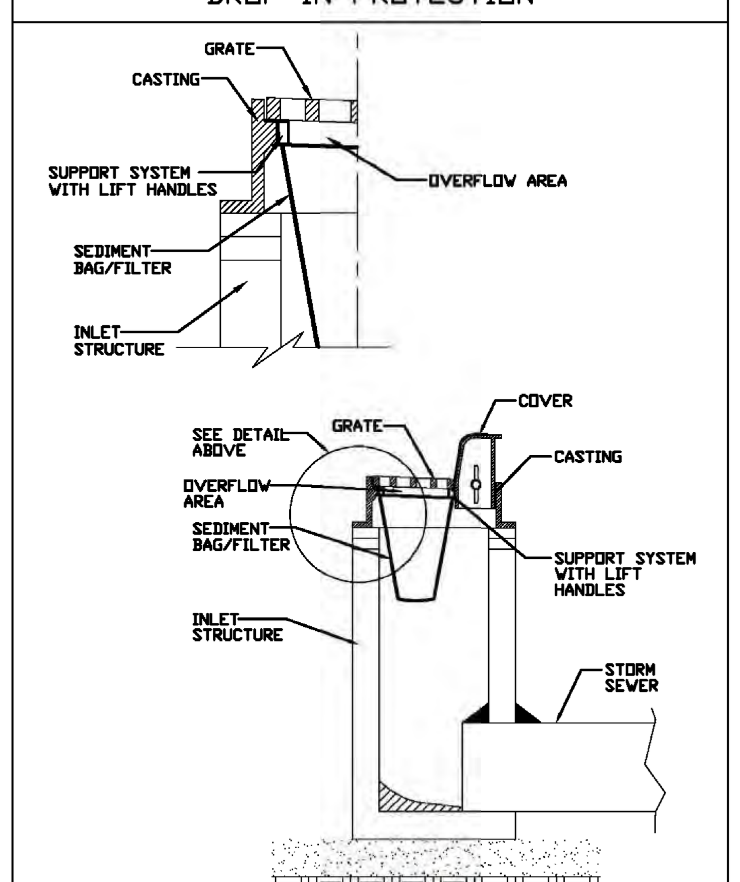
| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| WATER MAIN TRENCH DETAIL | SHEET 1 OF 1 |
| | NOT TO SCALE |




NOTES:
1) SERVICE PIPE TO BE WEAVED IN TRENCH TO ALLOW AT LEAST ONE (1) FOOT EXTRA LENGTH IN ITS LENGTH.
2) UPON COMPLETION OF WATER SERVICE CONSTRUCTION ALL BOXES ARE TO BE EXTENDED AND LEFT PROTRUDING 12" ABOVE THE PROPOSED GRADE.
3) SERVICE TAP TO BE MADE AT 45° TO TOP VERTICAL CENTER LINE OF WATER MAIN.
4) GRANULAR BACKFILL TO BE PLACED UNDER PAVEMENT AS SPECIFIED
5) COMPACT ALL TRENCHES.

| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| WATER SERVICE DETAIL | SHEET 1 OF 1 |
| | NOT TO SCALE |

## INLET PROTECTION - PAVED AREAS DROP-IN PROTECTION

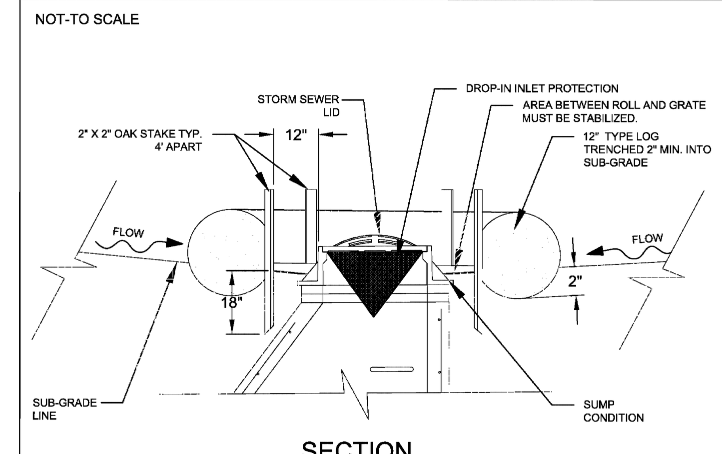



REFERENCE
Project
Designed ____ Date ____
Checked ____ Date ____
Approved ____ Date ____

STANDARD DWG. NO. IUM-561D
SHEET 1 OF 1

## INLET PROTECTION LOG TYPE

NOT-TO SCALE



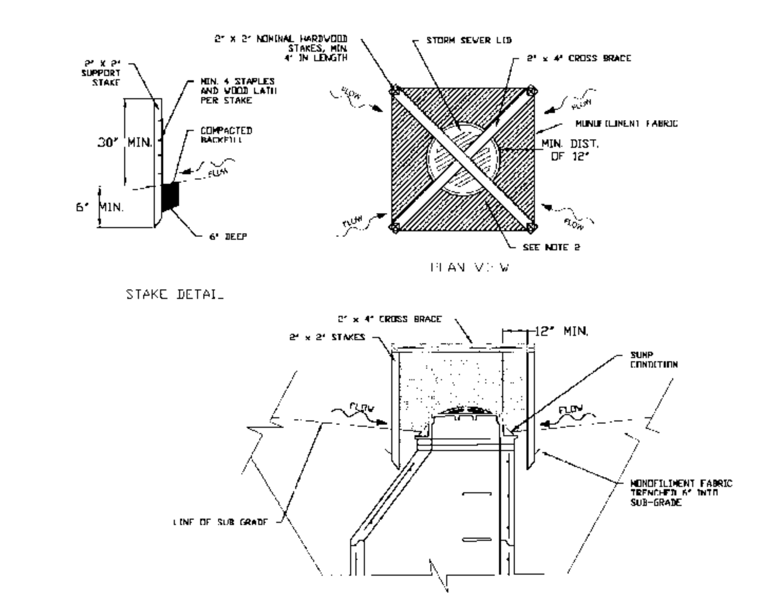

SECTION

**NOTES:**
**0.5 Fence shall be used in combination with drop in filter for inlet protection.**
1. 2" x 2" nominal hardwood stakes, 4 foot minimum length, driven into ground approximately 18 inches, stakes driven a minimum width of 12 inches away from the drop inlet.
2. Area inside the log, from edge of fabric to structure, must be stabilized with Erosion Control Blanket, Turf Reinforcement Mat, Geotextile 592 Table 2 Class 2 or CA-7 stone
3. The maximum distance between the stakes should be 4 feet.
4. A maintenance schedule must maintain a sediment accumulation of less than 50% of the height of the log.

REFERENCE
Project ____
Designed ____ Date ____
Checked ____ Date ____
Approved ____ Date ____

STANDARD DWG. NO. IUM-562
SHEET 1 OF 1
DATE 11-30-15

## INLET PROTECTION MONOFILAMENT FABRIC BARRIER FENCE




NOTES:
1. 2 x 2 nominal hardwood stakes, 4 foot minimum length, driven into ground approximately 18 inches, stakes driven a minimum width of 12 inches away from the drop inlet.
2. Area inside the fence, from edge of fabric to structure, must be stabilized with Erosion Control Blanket, Turf Reinforcement Mat, Geotextile 592 Table 2 Class 2 or CA-7 stone
3. Maximum height of the fabric above the crest of the drop inlet shall be 30". Place the bottom 6 inches of the fabric in a trench and backfill with 6 inches of 95% compacted soil.
4. Stakes must be a maximum of 4 feet apart.
5. A maintenance schedule must maintain a sediment accumulation of less than 50% of the height of the monofilment fabric.
6. Monofilment fabric shall meet the requirement of Material Specification 592 Geotextile Table 1, Class 4.
7. Monofiliment fabric shall be secured to each 2" x 2" nominal hardwood stake with a minimum of 4 steel staple fasteners and wood lath. Wood lath shall be a minimum length of 10 inches. Wire fasteners should be used if metal T-Posts are installed in place of hardwood stakes.

REFERENCE
Project
Designed Date
Checked Date
Approved Date

STANDARD DWG. NO. IUM-531
SHEET 1 OF 1
DATE 04-6-15

REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 12/06/19 | FOR SUBMITTAL | S.R.M. |
| 01/17/19 | FOR SUBMITTAL | S.R.M. |
| 02/20/20 | FOR SUBMITTAL | S.R.M. |
| 04/17/20 | PER VILLAGE COMMENTS | S.R.M. |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1129 MAIN STREET UNION GROVE, WISCONSIN 53182 PH. (262) 878-6200 | ig@igconsulting.net


CONSTRUCTION STANDARDS

DESIGN: K.C.L. | DRAFTING: S.R.M
SCALE: NONE | DATE: 10/28/19

FIRM NO. 184-001330

# 1801 GREEN BAY ROAD SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS

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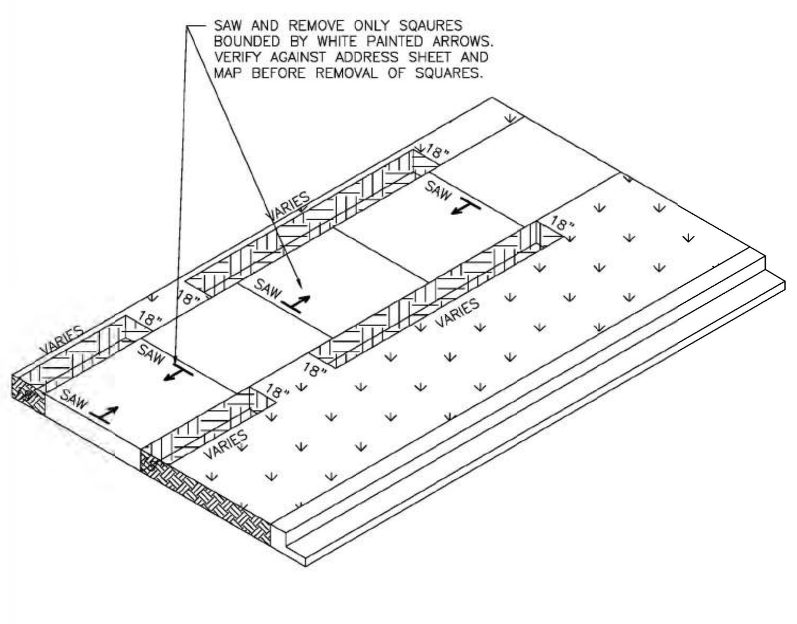
PROJECT No. 18557

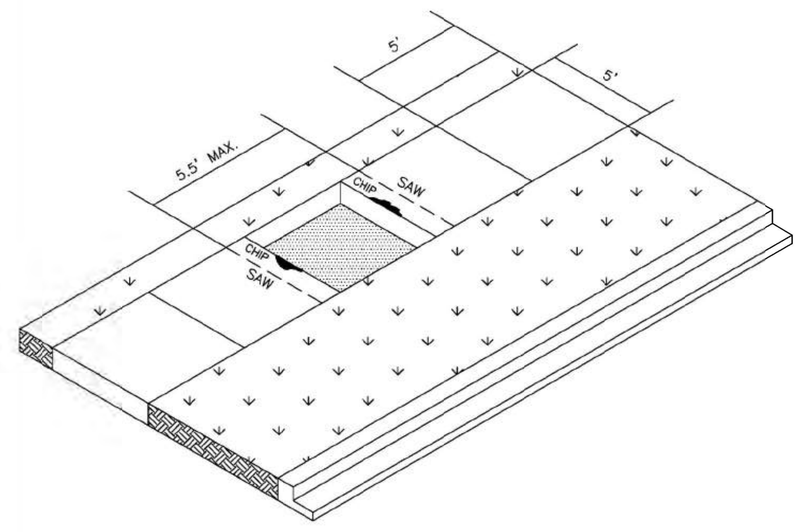
## SQUARES MARKED FOR REMOVAL




NOTE:
RESTORATION IS INCIDENTAL TO CONTRACTORS COST AND DISTURBED AREAS SHOULD BE LIMITED TO AN 18" WIDE STRIP.

| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| SIDEWALK SQUARE DETAILS | SHEET 1 OF 9 / NOT TO SCALE |

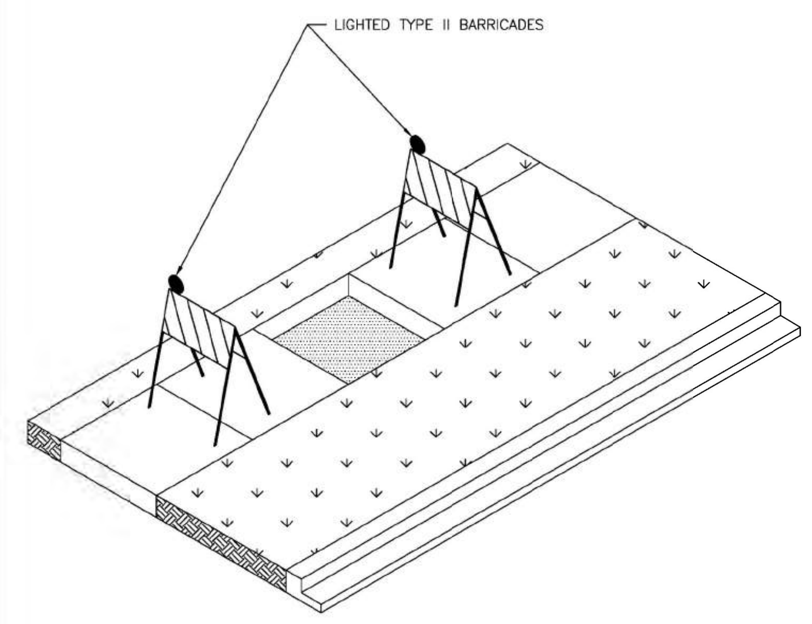
## CONTRACTOR DAMAGED ADJACENT SQUARE




NOTES:
1) SAW-CUT AND REMOVE UP TO HALF OF A FOOT TOTAL LARGER WHEN CHIPPED BY CONTRACTOR AT CONTRACTORS COST.
2) REPLACE ADJACENT SQUARE WHEN OVER HALF OF A FOOT LARGER AT CONTRACTORS COST.

| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| SIDEWALK SQUARE DETAILS | SHEET 2 OF 9 / NOT TO SCALE |

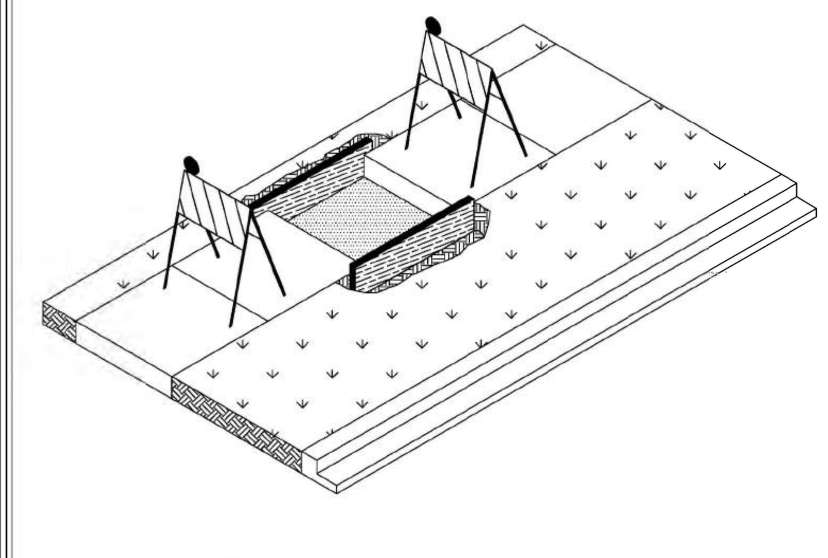
## SAFETY




NOTES:
1) LIGHTED TYPE II BARRICADES MUST BE INSTALLED IMMEDIATELY AFTER A BLOCK IS REMOVED.
2) IT IS THE CONTRACTORS RESPONSIBILITY TO KEEP ALL WORKSITES SAFELY BARRICADED AND CLEAN.
3) ALL BARRICADES MUST BE CLEAN, IN GOOD CONDITION, AND LIGHTS MUST BE OPERABLE.

| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| SIDEWALK SQUARE DETAILS | SHEET 3 OF 9 / NOT TO SCALE |

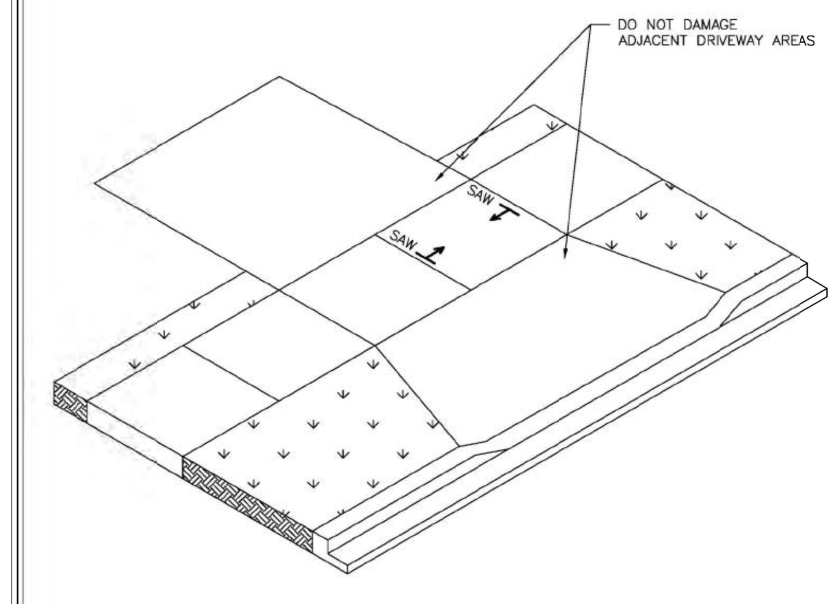
## SITE PREPARATION



NOTES:
1) FORMS SHOULD BE SET TO ENSURE PROPER DRAINAGE AND SAFE SLOPES.
2) FELT EXPANSION JOINT MATERIAL SHALL BE USED AS PRESCRIBED.
3) SIDEWALK SHALL BE PLACED ON LEVEL COURSE OF GRAVEL. THICKNESS MUST BE MAINTAINED.
4) BACKFILL AND RESTORATION SHOULD BE DONE WITHIN 24 HOURS OF POURING CONCRETE. ALL RESTORED AREAS MUST HAVE MOWABLE SLOPES.

| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| SIDEWALK SQUARE DETAILS | SHEET 4 OF 9 / NOT TO SCALE |

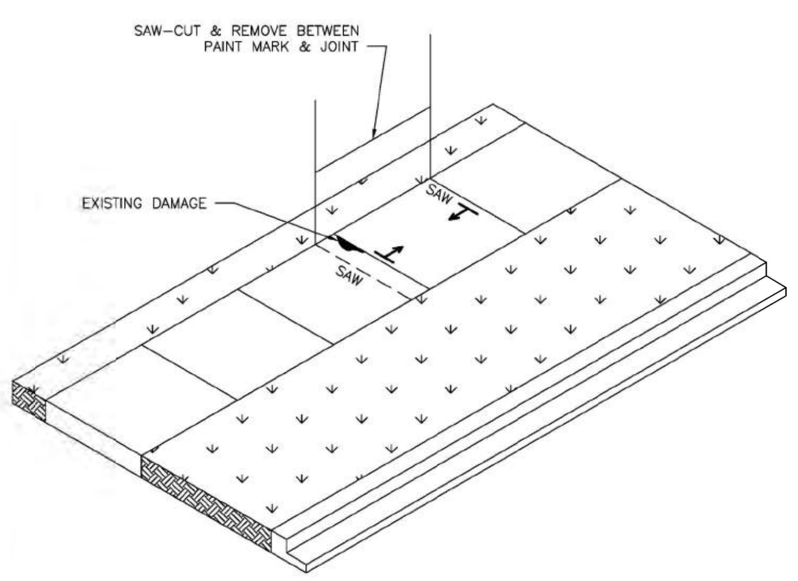
## DRIVEWAY SQUARES




NOTES:
1) USE CAUTION WHEN REMOVING SQUARES ADJACENT TO DRIVEWAYS OR OTHER PRIVATE IMPROVEMENTS.
2) MAKE SURE NO VEHICLES WILL BE TRAPPED IF SQUARE IS REMOVED.
3) ATTEMPT TO CONTACT RESIDENT BEFORE REMOVAL.

| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| SIDEWALK SQUARE DETAILS | SHEET 5 OF 9 / NOT TO SCALE |

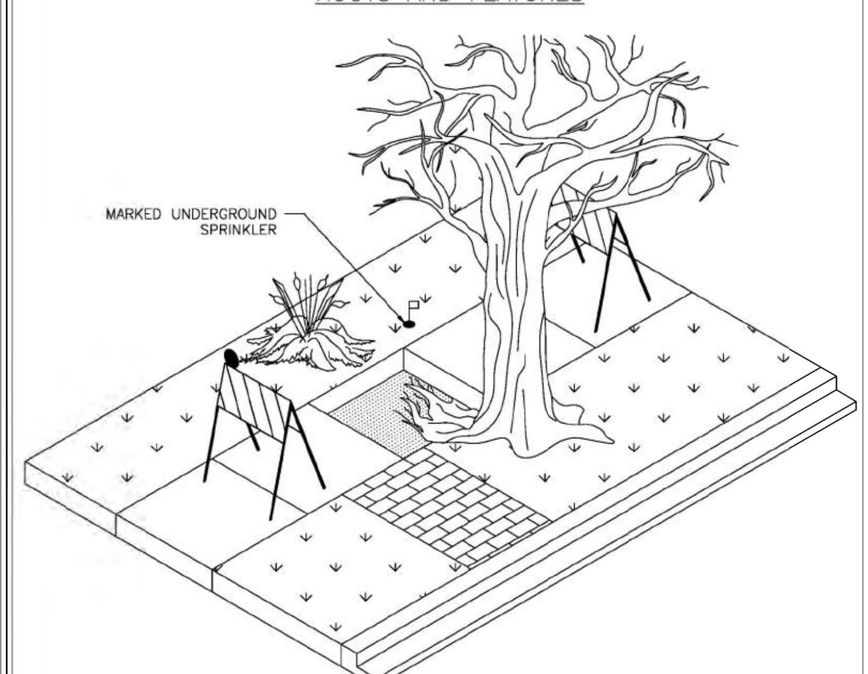
## ADJACENT SQUARES WITH EXISTING DAMAGE




NOTE:
NOTIFY INSPECTOR OF ALL UNMARKED EXISTING DAMAGE BEFORE PROCEEDING WITH ANY SAW-CUTTING OR REMOVALS.

| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| SIDEWALK SQUARE DETAILS | SHEET 6 OF 9 / NOT TO SCALE |

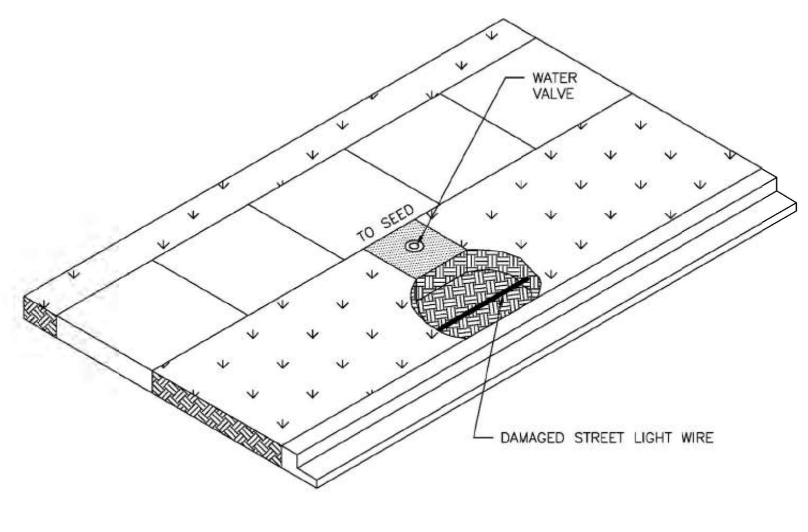
## ROOTS AND FEATURES




NOTES:
1) APPARENT PLANTINGS, BRICKS, SPRINKLERS, OR OTHER FEATURES IN OR ADJACENT TO THE RIGHT OF WAY SHALL BE PROTECTED FROM DAMAGE OR RESTORED IN KIND.
2) TREE ROOTS OVER 3" SHALL BE CUT OR GROUND UNLESS APPROVED BY THE VILLAGE. SMALLER ROOTS SHALL BE CLEAN CUT OR GROUND.
3) DO NOT DAMAGE OVERHEAD BRANCHES.

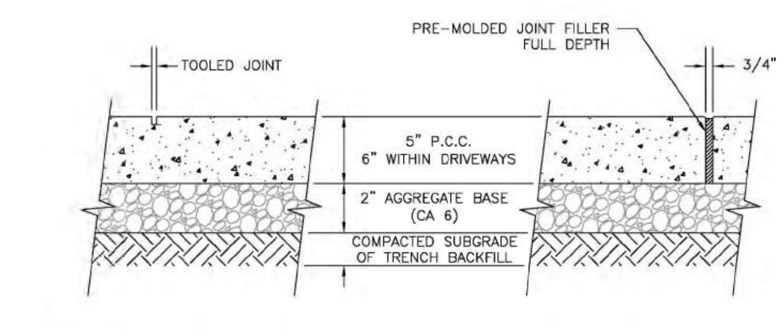
| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| SIDEWALK SQUARE DETAILS | SHEET 7 OF 9 / NOT TO SCALE |

## UTILITIES




NOTE:
CONTRACTOR SHALL CONTACT J.U.L.I.E. AT 811
CONTRACTOR SHALL NOTIFY THE VILLAGE OF ANY DAMAGE.

| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| SIDEWALK SQUARE DETAILS | SHEET 8 OF 9 / NOT TO SCALE |

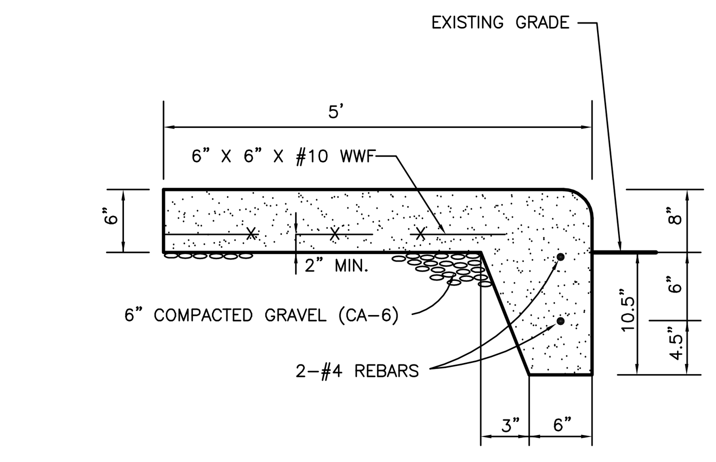



CONTRACTION JOINT DETAIL

EXPANSION JOINT DETAIL

NOTES:
1) UNLESS OTHERWISE NOTED ON PLANS, CONTRACTION JOINTS TO BE AT 5'-0"
2) EXPANSION JOINTS TO BE 50'-0" O.C. MAX. OR AT BACK OF CURB, CHANGE OF DIRECTION, OTHER WALK, UTILITY APPURTENANCE, OR FACE OF STRUCTURE.
3) PORTLAND CEMENT CONCRETE SHALL CONFORM TO IDOT CLASS SI, MIN. 3,500 PSI (6.1 BAG MIX) AT 14 DAYS, WITH 5% TO 8% AIR ENTRAINMENT. (FLY ASH NOT ALLOWED).
4) A PROTECTIVE COAT OR CONCRETE SEALER WILL BE APPLIED TO ALL NEW CONCRETE SIDEWALKS AND CURB AND GUTTERS IN ACCORDANCE WITH SECTION 420 OF THE IDOT STANDARD SPECIFICATIONS.

| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| SIDEWALK SQUARE DETAILS | SHEET 9 OF 9 / NOT TO SCALE |

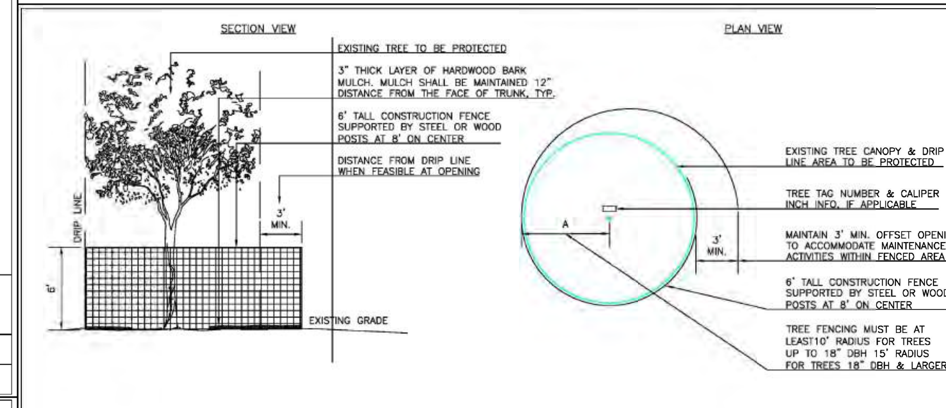



## TURN DOWN EDGE SIDEWALK

N.T.S.

NOTE: PROVIDE CONTROL JOINTS AT 5' O.C. AND EXPANSION JOINTS AT 25' O.C.

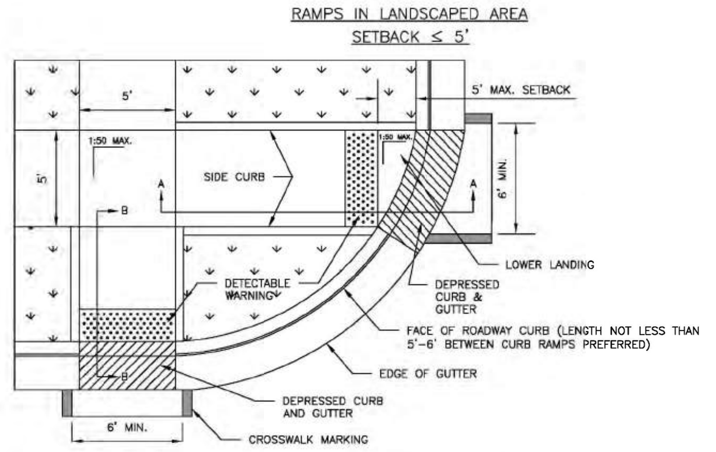
PVMT39



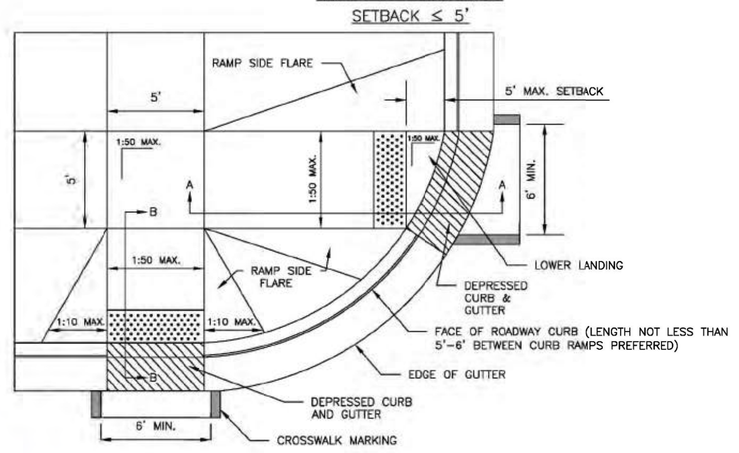

NOTES:
1) THE PURPOSE OF TREE PROTECTION FENCING IS TO MINIMIZE CONSTRUCTION ACTIVITIES WITHIN CRITICAL ROOT ZONES OF EXISTING TREES TO REMAIN.
2) PROTECTIVE TREE FENCING MUST BE WIRE MESH OR WELDED WIRE FENCING (CHAIN LINK), 6' HIGH WITH STEEL OR WOODEN POSTS INSTALLED AND SPACED NOT MORE THAN 8' APART.
3) PROTECTIVE TREE FENCING MUST EXTEND TO THE DRIP LINE OF THE TREE (WHICH CAN BE ESTIMATED AT 1 FOOT FOR EVERY 1 INCH OF DBH) BUT IN NO CASE SHALL FENCING BE:
   LESS OF A RADIUS OF 10' FROM TREES UP TO 18" DBH
   LESS OF A RADIUS OF 15' FROM TREES 18" IN DBH OR LARGER
4) PROTECTIVE TREE FENCING MUST REMAIN INTACT FOR THE ENTIRE DURATION OF THE CONSTRUCTION PROJECT AND MAY NOT BE MOVED OR REMOVED FOR ANY REASON WITHOUT VILLAGE APPROVAL ONLY.

| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| PROTECTIVE TREE FENCING | SHEET 1 OF 1 / NOT TO SCALE |

## RAMPS IN LANDSCAPED AREA SETBACK ≤ 5'

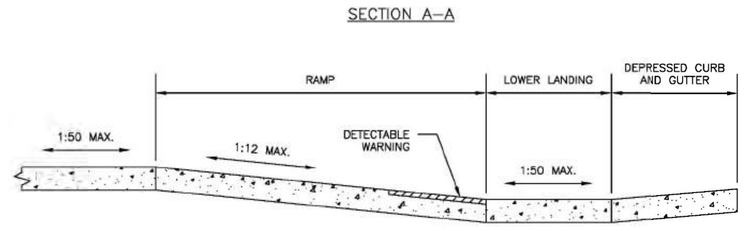



## RAMPS IN PAVED AREA SETBACK ≤ 5'

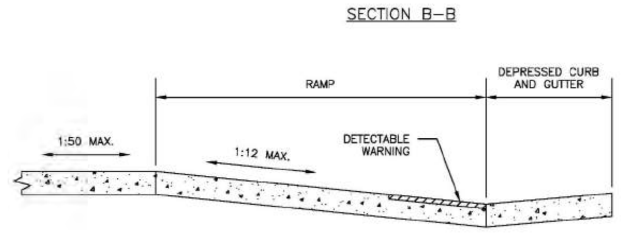



| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| PERPENDICULAR CURB RAMPS FOR SIDEWALKS | SHEET 1 OF 4 / NOT TO SCALE |

## SECTION A-A



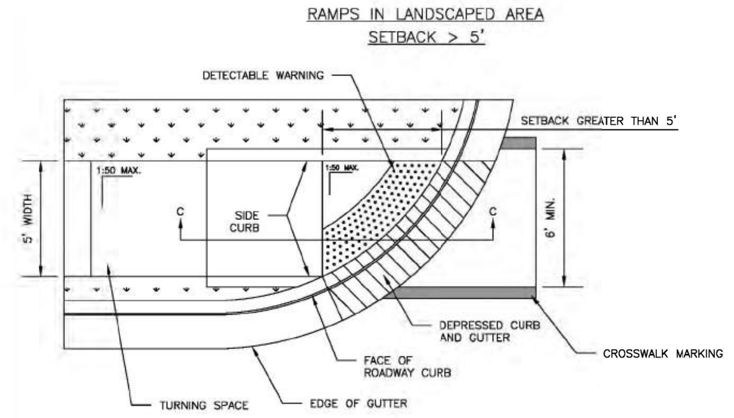

## SECTION B-B



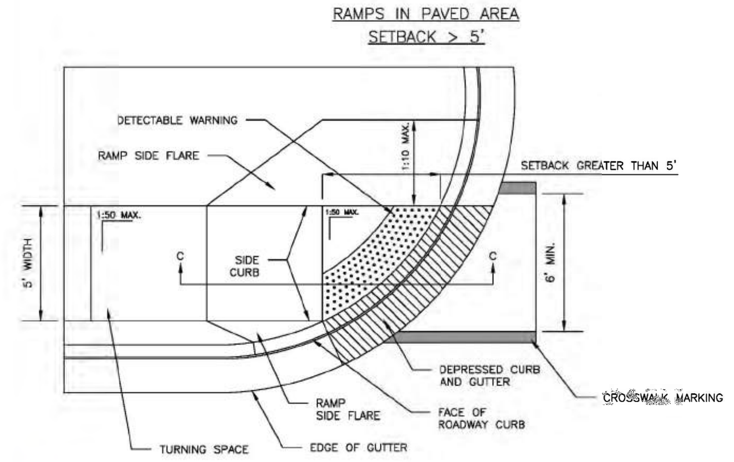

NOTE:
THE RUNNING SLOPE OF THE CURB RAMP SHALL NOT REQUIRE THE RAMP LENGTH TO EXCEED 15'.

| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| PERPENDICULAR CURB RAMPS FOR SIDEWALKS | SHEET 2 OF 4 / NOT TO SCALE |

## RAMPS IN LANDSCAPED AREA SETBACK > 5'

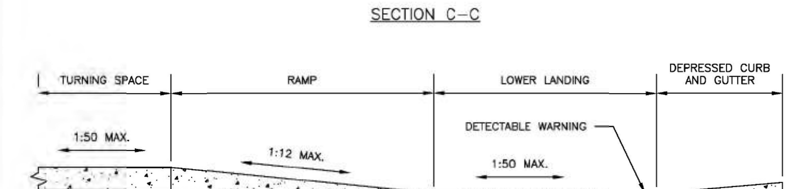



## RAMPS IN PAVED AREA SETBACK > 5'



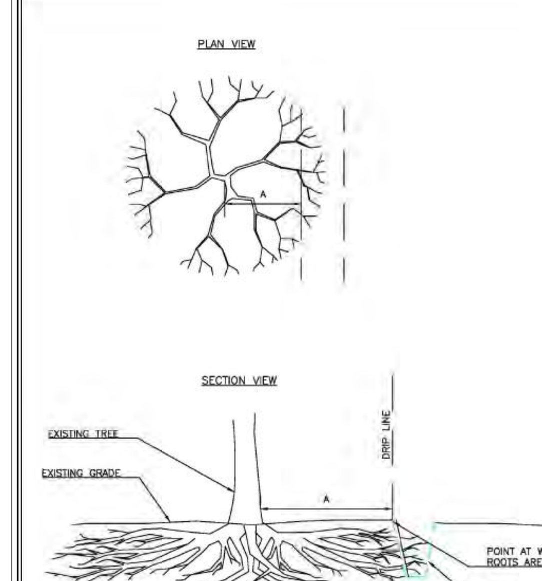

| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| PERPENDICULAR CURB RAMPS FOR SIDEWALKS | SHEET 3 OF 4 / NOT TO SCALE |

## SECTION C-C




NOTES:
1) THE RUNNING SLOPE OF THE CURB RAMP SHALL NOT REQUIRE THE RAMP LENGTH TO EXCEED 15'.
2) TURNING SPACE NOT REQUIRED FOR RAMP SLOPES FLATTER THAN 1:20.

| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| PERPENDICULAR CURB RAMPS FOR SIDEWALKS | SHEET 4 OF 4 / NOT TO SCALE |




NOTES:
1) THE PURPOSE OF ROOT PRUNING IS TO MAXIMIZE TREE HEALTH FOR TREE WHICH MAY BE IMPACTED BY CONSTRUCTION EQUIPMENT.
2) ROOT PRUNING MUST BE PERFORMED BY A CERTIFIED ARBORIST PRIOR TO EXCAVATION ACTIVITIES.
3) ROOT PRUNING MUST BE PERFORMED AS FAR FROM THE PROTECTED TREE AS POSSIBLE BUT STILL BE EFFECTIVE IN PROTECTING FROM EXCAVATION ACTIVITIES.
4) INSTALL ORANGE PLASTIC MESH TREE BARRIER WITH REBAR SUPPORTS AT POINT OF PRUNING AND CONTINUE COMPLETELY AROUND TREE, PROTECTING THE AREA WITHIN THE DRIP LINE (EXTENT OF OUTER BRANCHES)
5) CUTS ARE TO BE MADE CLEANLY WITH A SHARP ROOT PRUNING TOOL SUCH AS A DOSCO OR VERMEER ROOT PRUNER. CUTTING OR PRUNING OF ROOTS 2" IN DIAMETER OR LARGER IS PROHIBITED.
6) ROOT PRUNING MUST BE TO A DEPTH OF 18-24 INCHES BELOW GRADE.
7) HAND DIGGING IS REQUIRED IF EXCAVATION OCCURS WITHIN THE DRIP LINE OF THE TREE.
8) IF EXCAVATION CAUSED PRUNED ROOTS OVER 1.5" IN DIAMETER TO REMAIN EXPOSED FOR MORE THAN 24 HOURS, ROOTS ON THE TREE SIDE MUST BE KEPT MOIST.
9) TREE DIAMETER IS MEASURED AT BREAST HEIGHT (DBH).

FOR TREES < 6" DBH:
TRENCHING SHALL BE NO CLOSER TO THE TREE THAN THE DRIP LINE.
FOR TREES > 6" DBH:

| TREE DIAMETER | DISTANCE "A" |
|---|---|
| 6"-9" | 5' MIN. |
| 10"-14" | 10' MIN. |
| 15"-19" | 12' MIN. |
| > 19" | 15' MIN. |

| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 |
|---|---|
| ROOT PRUNING DETAIL | SHEET 1 OF 1 / NOT TO SCALE |

REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 12/06/19 | FOR SUBMITTAL | S.R.M. |
| 01/17/20 | FOR SUBMITTAL | S.R..M. |
| 02/20/20 | FOR SUBMITTAL | S.R.M. |
| 04/17/20 | PER VILLAGE COMMENTS | S.R.M. |
| 05/08/20 | PER VILLAGE COMMENTS | S.R.M. |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CONSTRUCTION STANDARDS

DESIGN: K.C.L. | DRAFTING: S.R.M
SCALE: NONE | DATE: 10/28/19

FIRM NO. 184-001330

# 1801 GREEN BAY ROAD SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS


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PROJECT No. 18557

## CULTEC Recharger® 902HD Stormwater Chamber

The Recharger® 902HD is a 48" (1219 mm) tall, high capacity chamber. Typically when using this model, fewer chambers are required resulting in less labor and a smaller installation area. The Recharger® 902HD has the side portal internal manifold feature, HVLV® FC-48 Feed Connectors are inserted into the side portals to create the internal manifold.

Recharger 902HD End Cap

| Recharger 902HD Chamber | |
|---|---|
| Size (L x W x H) | 4.25' x 28" x 48"<br>1.30 m x 1991 mm x 1219 mm |
| Installed Length | 3.67'<br>1.12 m |
| Length Adjustment per Row - with two end caps installed | 1.03'<br>0.31 m |
| Length Adjustment per Row - when not using end caps | 0.58'<br>0.18 m |
| Chamber Storage | 17.31 ft³/ft<br>1.61 m³/m<br>63.47 ft³/unit<br>1.80 m³/unit |
| Min. Installed Storage | 27.06 ft³/ft<br>2.52 m³/m<br>99.25 ft³/unit<br>2.81 m³/unit |
| Min. Area Required | 26.58 ft²<br>2.47 m² |
| Chamber Weight | 83.2 lbs<br>37.65 kg |
| Shipping | 15 chambers/skid<br>1,370 lbs/skid<br>14 skids/48' flatbed |
| Min. Center-to-Center Spacing | 7.25'<br>2.21 m |
| Max. Allowable Cover | 8.2'<br>2.53 m |
| Max. Allowable O.D. in Side Portal | 10" HDPE, 12" PVC<br>250 mm HDPE, 300 mm PVC |
| Compatible Feed Connector | HVLV FC-48 Feed Connector |

Calculations are based on installed chamber length.
All above values are nominal.
Includes 12" (305 mm) stone above crown of chamber and typical stone surround at 12" (305 mm) center-to-center spacing and stone foundation depth as listed in table. Stone void calculated as 40%.

| Stone Foundation Depth | | | |
|---|---|---|---|
| | 6" 229 mm | 12" 305 mm | 18" 457 mm |
| Chamber and Stone Storage Per Chamber | 99.28 ft³<br>2.81 m³ | 101.94 ft³<br>2.89 m³ | 107.26 ft³<br>3.04 m³ |
| Min. Effective Depth | 5.75'<br>1.75 m | 6.00'<br>1.83 m | 6.5'<br>1.98 m |
| Stone Required Per Chamber | 3.32 yd³<br>2.54 m³ | 3.56 yd³<br>2.72 m³ | 4.05 yd³<br>3.06 m³ |

| Recharger 902HD End Cap | |
|---|---|
| Size (L x W x H) | 9.7" x 78" x 48.5"<br>246 mm x 1982 mm x 1231 mm |
| Installed Length | 6.2'<br>157 mm |
| End Cap Storage | 5.34 ft³/ft<br>0.50 m³/m<br>2.76 ft³/unit<br>0.08 m³/unit |
| Min. Installed Storage | 19.88 ft³/ft<br>1.85 m³/m<br>10.28 ft³/unit<br>0.29 m³/unit |
| End Cap Weight | 52.0 lbs<br>23.58 kg |
| Shipping | 15 end caps/skid<br>905 lbs/skid<br>14 skids/48' flatbed |
| Max. Inlet Opening in End Cap | 30" HDPE, 36" PVC<br>750 mm HDPE, 900 mm PVC |

Calculations are based on installed chamber length.
All above values are nominal.

For more information, contact CULTEC at (203) 775-4416 or visit www.cultec.com.

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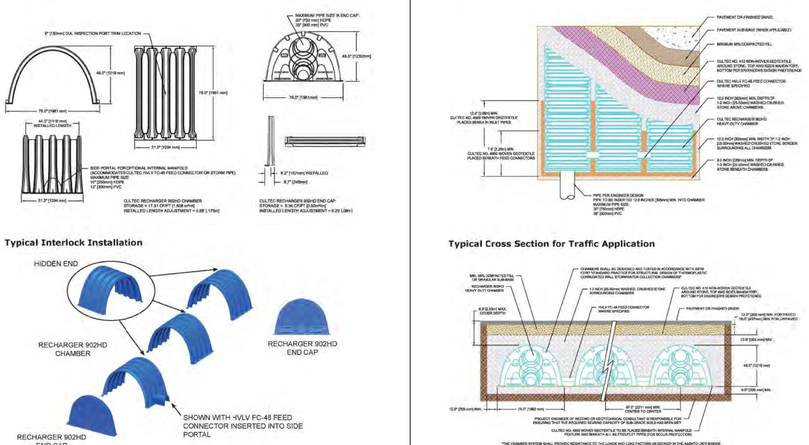
## CULTEC Recharger® 902HD Stormwater Chamber

### Three View Drawing




### Typical Interlock Installation




For more information, contact CULTEC at (203) 775-4416 or visit www.cultec.com.

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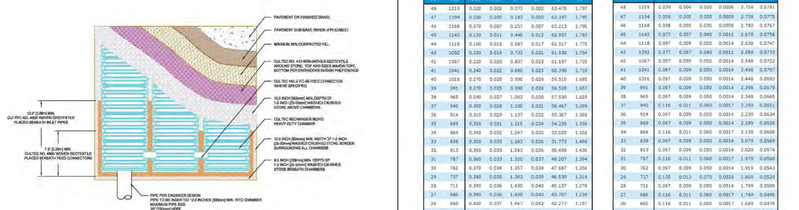
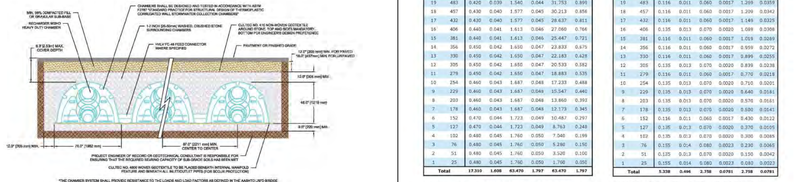
## CULTEC Recharger® 902HD Stormwater Chamber

### Plan View Drawing




### Typical Cross Section for Traffic Application




For more information, contact CULTEC at (203) 775-4416 or visit www.cultec.com.

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## CULTEC Recharger® 902HD Stormwater Chamber

**Recharger® 902HD Bare Chamber Storage Volumes**

| Elevation | | Incremental Storage Volume | | | | Cumulative Storage | |
|---|---|---|---|---|---|---|---|
| in. | mm | ft³/in | in³/in | ft³ | m³ | ft³ | m³ |
| 48 | 1219 | 0.028 | 0.002 | 0.073 | 0.002 | 63.470 | 1.797 |
| 47 | 1194 | 0.030 | 0.005 | 0.183 | 0.005 | 63.397 | 1.795 |
| 46 | 1168 | 0.070 | 0.007 | 0.237 | 0.007 | 63.213 | 1.790 |
| 45 | 1143 | 0.120 | 0.011 | 0.446 | 0.012 | 62.976 | 1.783 |
| 44 | 1118 | 0.160 | 0.015 | 0.587 | 0.017 | 62.317 | 1.770 |
| 43 | 1092 | 0.190 | 0.019 | 0.730 | 0.021 | 61.730 | 1.754 |
| 42 | 1067 | 0.220 | 0.020 | 0.807 | 0.023 | 61.197 | 1.732 |
| 41 | 1041 | 0.240 | 0.022 | 0.880 | 0.025 | 60.390 | 1.710 |
| 40 | 1016 | 0.270 | 0.025 | 0.990 | 0.028 | 59.510 | 1.685 |
| 39 | 991 | 0.270 | 0.025 | 0.990 | 0.028 | 58.520 | 1.657 |
| 38 | 965 | 0.290 | 0.027 | 1.063 | 0.030 | 57.530 | 1.629 |
| 37 | 940 | 0.300 | 0.028 | 1.100 | 0.031 | 56.467 | 1.599 |
| 36 | 914 | 0.310 | 0.029 | 1.137 | 0.032 | 55.367 | 1.568 |
| 35 | 889 | 0.330 | 0.031 | 1.210 | 0.034 | 54.230 | 1.536 |
| 34 | 864 | 0.340 | 0.032 | 1.247 | 0.035 | 53.020 | 1.502 |
| 33 | 838 | 0.350 | 0.033 | 1.283 | 0.036 | 51.773 | 1.466 |
| 32 | 813 | 0.350 | 0.033 | 1.283 | 0.036 | 50.490 | 1.430 |
| 31 | 787 | 0.360 | 0.033 | 1.320 | 0.037 | 49.207 | 1.394 |
| 30 | 762 | 0.370 | 0.034 | 1.357 | 0.038 | 47.887 | 1.356 |
| 29 | 737 | 0.390 | 0.035 | 1.393 | 0.039 | 46.530 | 1.318 |
| 28 | 711 | 0.390 | 0.036 | 1.430 | 0.040 | 45.137 | 1.278 |
| 27 | 686 | 0.390 | 0.036 | 1.430 | 0.040 | 43.707 | 1.238 |
| 26 | 660 | 0.400 | 0.037 | 1.467 | 0.042 | 42.277 | 1.197 |
| 25 | 635 | 0.400 | 0.037 | 1.467 | 0.042 | 40.810 | 1.156 |
| 24 | 610 | 0.410 | 0.038 | 1.503 | 0.043 | 39.343 | 1.114 |
| 23 | 584 | 0.410 | 0.038 | 1.503 | 0.043 | 37.840 | 1.072 |
| 22 | 559 | 0.410 | 0.038 | 1.503 | 0.043 | 36.337 | 1.029 |
| 21 | 533 | 0.420 | 0.039 | 1.540 | 0.044 | 34.833 | 0.986 |
| 20 | 508 | 0.420 | 0.039 | 1.540 | 0.044 | 33.293 | 0.943 |
| 19 | 483 | 0.420 | 0.039 | 1.540 | 0.044 | 31.753 | 0.899 |
| 18 | 457 | 0.430 | 0.040 | 1.577 | 0.045 | 30.213 | 0.856 |
| 17 | 432 | 0.430 | 0.040 | 1.577 | 0.045 | 28.637 | 0.811 |
| 16 | 406 | 0.440 | 0.041 | 1.613 | 0.046 | 27.060 | 0.766 |
| 15 | 381 | 0.440 | 0.041 | 1.613 | 0.046 | 25.447 | 0.721 |
| 14 | 356 | 0.450 | 0.042 | 1.650 | 0.047 | 23.833 | 0.675 |
| 13 | 330 | 0.450 | 0.042 | 1.650 | 0.047 | 22.183 | 0.628 |
| 12 | 305 | 0.450 | 0.042 | 1.650 | 0.047 | 20.533 | 0.582 |
| 11 | 279 | 0.450 | 0.042 | 1.650 | 0.047 | 18.883 | 0.535 |
| 10 | 254 | 0.460 | 0.043 | 1.687 | 0.048 | 17.233 | 0.488 |
| 9 | 229 | 0.460 | 0.043 | 1.687 | 0.048 | 15.547 | 0.440 |
| 8 | 203 | 0.460 | 0.043 | 1.687 | 0.048 | 13.860 | 0.392 |
| 7 | 178 | 0.460 | 0.043 | 1.687 | 0.048 | 12.173 | 0.345 |
| 6 | 152 | 0.470 | 0.044 | 1.723 | 0.049 | 10.487 | 0.297 |
| 5 | 127 | 0.470 | 0.044 | 1.723 | 0.049 | 8.763 | 0.248 |
| 4 | 102 | 0.480 | 0.045 | 1.760 | 0.050 | 7.040 | 0.199 |
| 3 | 76 | 0.480 | 0.045 | 1.760 | 0.050 | 5.280 | 0.150 |
| 2 | 51 | 0.480 | 0.045 | 1.760 | 0.050 | 3.520 | 0.100 |
| 1 | 25 | 0.480 | 0.045 | 1.760 | 0.050 | 1.760 | 0.050 |
| Total | | 17.310 | 1.608 | 63.470 | 1.797 | 63.470 | 1.797 |

Calculations are based on installed chamber length of 3.67' (1.12 m).

**Recharger® 902HD Bare End Cap Storage Volumes**

| Elevation | | Incremental Storage Volume | | | | Cumulative Storage | |
|---|---|---|---|---|---|---|---|
| in. | mm | ft³/in | in³/in | ft³ | m³ | ft³ | m³ |
| 48 | 1219 | 0.039 | 0.004 | 0.105 | 0.0006 | 2.758 | 0.0781 |
| 47 | 1194 | 0.056 | 0.005 | 0.030 | 0.0008 | 2.730 | 0.0775 |
| 46 | 1168 | 0.058 | 0.005 | 0.030 | 0.0008 | 2.760 | 0.0767 |
| 45 | 1143 | 0.077 | 0.040 | 0.051 | 0.0011 | 2.673 | 0.0759 |
| 44 | 1118 | 0.097 | 0.009 | 0.050 | 0.0014 | 2.638 | 0.0747 |
| 43 | 1092 | 0.077 | 0.007 | 0.040 | 0.0011 | 2.588 | 0.0733 |
| 42 | 1067 | 0.097 | 0.009 | 0.050 | 0.0014 | 2.548 | 0.0722 |
| 41 | 1041 | 0.097 | 0.009 | 0.050 | 0.0014 | 2.498 | 0.0707 |
| 40 | 1016 | 0.097 | 0.009 | 0.050 | 0.0014 | 2.448 | 0.0693 |
| 39 | 991 | 0.097 | 0.009 | 0.050 | 0.0014 | 2.398 | 0.0679 |
| 38 | 965 | 0.097 | 0.009 | 0.050 | 0.0014 | 2.348 | 0.0665 |
| 37 | 940 | 0.116 | 0.011 | 0.060 | 0.0017 | 2.299 | 0.0651 |
| 36 | 914 | 0.097 | 0.009 | 0.050 | 0.0014 | 2.239 | 0.0634 |
| 35 | 889 | 0.097 | 0.009 | 0.050 | 0.0014 | 2.189 | 0.0620 |
| 34 | 864 | 0.116 | 0.011 | 0.060 | 0.0017 | 2.139 | 0.0606 |
| 33 | 838 | 0.097 | 0.009 | 0.050 | 0.0014 | 2.079 | 0.0589 |
| 32 | 813 | 0.097 | 0.009 | 0.050 | 0.0014 | 2.029 | 0.0574 |
| 31 | 787 | 0.116 | 0.011 | 0.060 | 0.0017 | 1.979 | 0.0560 |
| 30 | 762 | 0.097 | 0.009 | 0.050 | 0.0014 | 1.919 | 0.0543 |
| 29 | 737 | 0.135 | 0.013 | 0.070 | 0.0020 | 1.869 | 0.0529 |
| 28 | 711 | 0.097 | 0.009 | 0.050 | 0.0014 | 1.799 | 0.0509 |
| 27 | 686 | 0.116 | 0.011 | 0.060 | 0.0017 | 1.749 | 0.0495 |
| 26 | 660 | 0.116 | 0.011 | 0.060 | 0.0017 | 1.689 | 0.0478 |
| 25 | 635 | 0.097 | 0.009 | 0.050 | 0.0014 | 1.629 | 0.0461 |
| 24 | 610 | 0.116 | 0.011 | 0.060 | 0.0017 | 1.579 | 0.0447 |
| 23 | 584 | 0.116 | 0.011 | 0.060 | 0.0017 | 1.519 | 0.0430 |
| 22 | 559 | 0.135 | 0.013 | 0.070 | 0.0020 | 1.459 | 0.0413 |
| 21 | 533 | 0.116 | 0.011 | 0.060 | 0.0017 | 1.389 | 0.0393 |
| 20 | 508 | 0.116 | 0.011 | 0.060 | 0.0017 | 1.329 | 0.0376 |
| 19 | 483 | 0.116 | 0.011 | 0.060 | 0.0017 | 1.269 | 0.0359 |
| 18 | 457 | 0.116 | 0.011 | 0.060 | 0.0017 | 1.209 | 0.0342 |
| 17 | 432 | 0.116 | 0.011 | 0.060 | 0.0017 | 1.149 | 0.0325 |
| 16 | 406 | 0.135 | 0.013 | 0.070 | 0.0020 | 1.089 | 0.0308 |
| 15 | 381 | 0.116 | 0.011 | 0.060 | 0.0017 | 1.019 | 0.0289 |
| 14 | 356 | 0.116 | 0.011 | 0.060 | 0.0017 | 0.959 | 0.0272 |
| 13 | 330 | 0.116 | 0.011 | 0.060 | 0.0017 | 0.899 | 0.0255 |
| 12 | 305 | 0.135 | 0.013 | 0.070 | 0.0020 | 0.839 | 0.0238 |
| 11 | 279 | 0.116 | 0.011 | 0.060 | 0.0017 | 0.779 | 0.0219 |
| 10 | 254 | 0.135 | 0.013 | 0.070 | 0.0020 | 0.719 | 0.0203 |
| 9 | 229 | 0.116 | 0.011 | 0.060 | 0.0017 | 0.649 | 0.0184 |
| 8 | 203 | 0.135 | 0.013 | 0.070 | 0.0020 | 0.589 | 0.0167 |
| 7 | 178 | 0.135 | 0.013 | 0.070 | 0.0020 | 0.519 | 0.0147 |
| 6 | 152 | 0.116 | 0.011 | 0.060 | 0.0017 | 0.450 | 0.0122 |
| 5 | 127 | 0.135 | 0.013 | 0.070 | 0.0020 | 0.390 | 0.0105 |
| 4 | 102 | 0.135 | 0.013 | 0.070 | 0.0020 | 0.320 | 0.0087 |
| 3 | 76 | 0.135 | 0.014 | 0.080 | 0.0023 | 0.250 | 0.0068 |
| 2 | 51 | 0.135 | 0.013 | 0.070 | 0.0020 | 0.170 | 0.0050 |
| 1 | 25 | 0.135 | 0.014 | 0.080 | 0.0023 | 0.080 | 0.0023 |
| Total | | 3.330 | 0.444 | 2.750 | 0.0781 | 2.750 | 0.0781 |

Calculations are based on installed chamber length of 6.2' (1.57 m).

For more information, contact CULTEC at (203) 775-4416 or visit www.cultec.com.

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## CULTEC Recharger® 902HD Stormwater Chamber

### CULTEC Recharger® 902HD Specifications

**GENERAL**

CULTEC Recharger® 902HD chambers are designed for underground stormwater management. The chambers may be used for retention, recharging, detention or controlling the flow of on-site stormwater runoff.

**CHAMBER PARAMETERS**

1. The chambers shall be manufactured in the U.S.A. or Canada by CULTEC, Inc. of Brookfield, CT (cultec.com, 203-775-4416).
2. Chambers shall be designed and tested in accordance with ASTM F2787 "Standard Practice for Structural Design of Thermoplastic Corrugated Wall Stormwater Collection Chambers".
3. The chamber shall be designed to withstand the AASHTO design truck load and live and dead load factors as defined by AASHTO LRFD Section 12.12 when installed according to CULTEC's recommended installation instructions.
4. The chamber shall be structural foam injection molded of blue virgin high molecular weight impact-modified polypropylene.
5. The chamber shall be arched in shape.
6. The chamber shall be open-bottomed.
7. The chamber shall be joined using an interlocking overlapping rib method. Connections must be fully shouldered overlapping ribs, having no separate couplings.
8. The nominal chamber dimensions of the CULTEC Recharger® 902HD shall be 48 inches (1219 mm) tall, 78 inches (1981 mm) wide and 4.25 feet (1.30m) long. The installed length of a joined Recharger 902HD shall be 3.67 feet (1.12 m).
9. Multiple chambers may be connected to form different length rows. Each row shall begin and end with a separately formed CULTEC Recharger® 902HD End Cap. Maximum inlet opening on the end cap is 30 inches (750 mm) HDPE or 36 inches (900 mm) PVC.
10. The chamber shall have two side portals to accept CULTEC HVLV® FC-48 Field Connectors to create an internal manifold. Maximum allowable pipe size in the side portal is 10 inches (250 mm) HDPE or 12 inches (300 mm) PVC.
11. The nominal chamber dimensions of the CULTEC HVLV™ FC-48 Feed Connector shall be 12 inches (305 mm) tall, 16 inches (406 mm) wide and 49 inches (1245 mm) long.
12. The nominal storage volume of the Recharger 902HD chamber shall be 17.31 ft³ / ft (1.61 m³ / m) - without stone. The nominal storage volume of a joined Recharger 902HD shall be 63.47 ft³ / unit (1.80 m³ / unit) - without stone.
13. The nominal storage volume of the HVLV™ FC-48 Feed Connector shall be 0.913 ft³ / ft (0.085 m³ / m) - without stone.
14. The Recharger 902HD chamber shall have 5 corrugations.
15. The chamber shall be capable of accepting a 6 inch (150 mm) inspection port opening at the top center of each chamber, centered on the corrugation crest.
16. The units may be trimmed to custom lengths by cutting back to any corrugation.
17. The chamber shall be manufactured in a facility employing CULTEC's Quality Control and Assurance Procedures.
18. Maximum allowable cover over the top of the chamber shall be 8.3 feet (2.53 m).

**END CAP PARAMETERS**

1. The CULTEC Recharger® 902HD End Cap (referred to as 'end cap') shall be manufactured in the U.S.A. by CULTEC, Inc. of Brookfield, CT (cultec.com, 203-775-4416).
2. The end cap shall be twin-sheet thermoformed of virgin high molecular weight polyethylene.
3. The end cap shall be joined at the beginning and end of each row of chambers using an interlocking overlapping rib method. Connections must be fully shouldered overlapping ribs, having no separate couplings.
4. The nominal dimensions of the end cap shall be 48.5 inches (1231 mm) tall, 78 inches (1982 mm) wide and 9.7 inches (246 mm) long. When joined with a Recharger 902HD Chamber, the installed length of the end cap shall be 6.2 inches (157 mm).
5. The nominal storage volume of the end cap shall be 5.34 ft³ / ft (0.50 m³ / m) - without stone. The nominal storage volume of an interlocked end cap shall be 2.76 ft³ / unit (0.08 m³ / unit) - without stone.
6. Maximum inlet opening on the end cap is 30 inches (750 mm) HDPE or 36 inches (900 mm) PVC.
7. The end cap shall provide resistance to the loads and load factors as defined in the AASHTO LRFD Bridge Design Specifications Section 12.12.

For more information, contact CULTEC at (203) 775-4416 or visit www.cultec.com.

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## CULTEC Recharger® 280HD Stormwater Chamber

The Recharger® 280HD is a 26.5" (673 mm) tall, mid-size chamber and is typically used for installations with depth restrictions or when a larger infiltrative area is required. The Recharger® 280HD has the side portal internal manifold feature, HVLV® FC-24 Feed Connectors are inserted into the side portals to create the internal manifold.

Recharger® 280HD Bare Chamber Storage Volumes

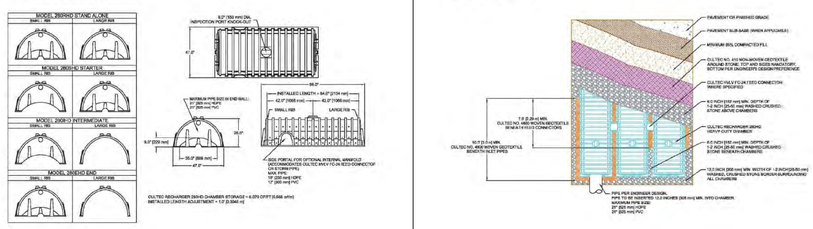
| Elevation | | Incremental Storage Volume | | | | Cumulative Storage | |
|---|---|---|---|---|---|---|---|
| in. | mm | ft³/in | in³/in | ft³ | m³ | ft³ | m³ |
| 26.5 | 686 | 0.029 | 0.002 | 0.058 | 0.002 | 42.533 | 1.205 |
| 26 | 660 | 0.029 | 0.002 | 0.126 | 0.004 | 42.533 | 1.205 |
| 25 | 635 | 0.047 | 0.004 | 0.129 | 0.004 | 42.427 | 1.202 |
| 24 | 609 | 0.050 | 0.003 | 0.136 | 0.003 | 42.298 | 1.197 |
| 23 | 584 | 0.154 | 0.012 | 0.038 | 0.027 | 41.398 | 1.172 |
| 22 | 559 | 0.159 | 0.013 | 0.113 | 0.032 | 40.460 | 1.146 |
| 21 | 533 | 0.179 | 0.017 | 1.153 | 0.035 | 39.347 | 1.114 |
| 20 | 508 | 0.180 | 0.015 | 0.360 | 0.038 | 38.194 | 1.078 |
| 19 | 483 | 0.229 | 0.019 | 1.463 | 0.041 | 36.729 | 1.040 |
| 18 | 457 | 0.231 | 0.021 | 1.547 | 0.044 | 35.266 | 0.998 |
| 17 | 432 | 0.252 | 0.023 | 1.624 | 0.048 | 33.719 | 0.955 |
| 16 | 406 | 0.241 | 0.022 | 1.687 | 0.048 | 32.095 | 0.908 |
| 15 | 381 | 0.249 | 0.023 | 1.743 | 0.049 | 30.408 | 0.864 |
| 14 | 356 | 0.263 | 0.024 | 1.847 | 0.052 | 28.665 | 0.812 |
| 13 | 330 | 0.287 | 0.025 | 1.869 | 0.053 | 26.824 | 0.760 |
| 12 | 305 | 0.271 | 0.025 | 1.897 | 0.054 | 24.955 | 0.707 |
| 11 | 279 | 0.275 | 0.024 | 1.925 | 0.055 | 23.058 | 0.653 |
| 10 | 254 | 0.279 | 0.024 | 1.953 | 0.055 | 21.133 | 0.598 |
| 9 | 229 | 0.287 | 0.027 | 2.009 | 0.057 | 19.180 | 0.543 |
| 8 | 203 | 0.292 | 0.027 | 2.044 | 0.058 | 17.171 | 0.486 |
| 7 | 178 | 0.294 | 0.027 | 2.056 | 0.058 | 15.127 | 0.428 |
| 6 | 152 | 0.303 | 0.028 | 2.121 | 0.060 | 13.065 | 0.370 |
| 5 | 127 | 0.306 | 0.028 | 2.142 | 0.061 | 10.944 | 0.310 |
| 4 | 102 | 0.318 | 0.029 | 2.226 | 0.063 | 8.792 | 0.249 |
| 3 | 76 | 0.318 | 0.029 | 2.226 | 0.063 | 6.566 | 0.186 |
| 2 | 51 | 0.312 | 0.029 | 2.184 | 0.062 | 4.464 | 0.126 |
| 1 | 25 | 0.336 | 0.030 | 2.282 | 0.065 | 2.282 | 0.065 |
| Total | | 6.979 | 0.363 | 45.919 | 1.300 | 42.533 | 1.205 |

Calculations are based on installed chamber length.

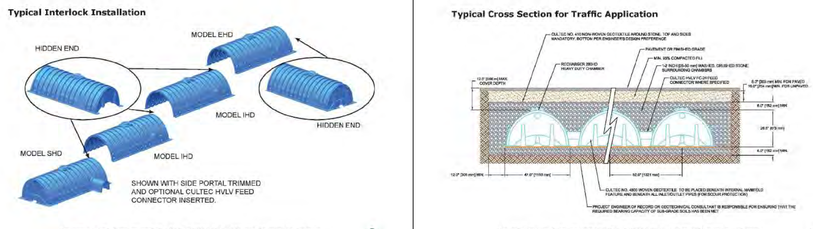
Visit www.cultec.com/downloads.html for Product Downloads and CAD details.

## CULTEC Recharger® 280HD Stormwater Chamber

### Three View Drawing




### Typical Interlock Installation




For more information, contact CULTEC at (203) 775-4416 or visit www.cultec.com.

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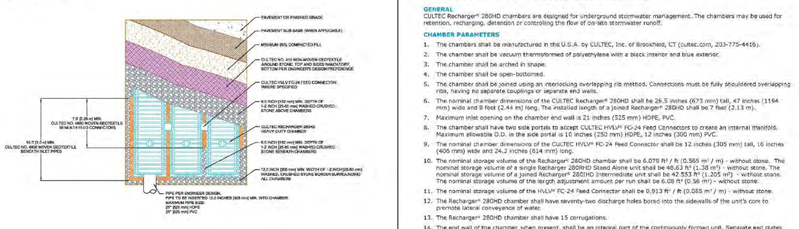
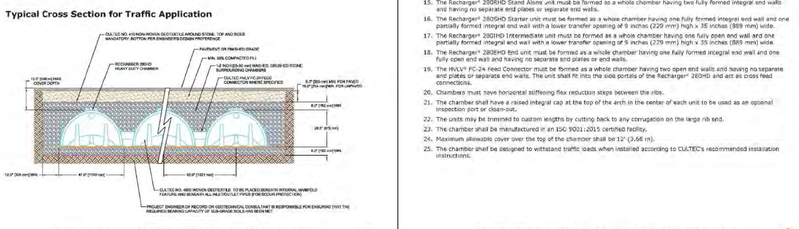
## CULTEC Recharger® 280HD Stormwater Chamber

### Plan View Drawing




### Typical Cross Section for Traffic Application

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## CULTEC Recharger® 280HD Stormwater Chamber

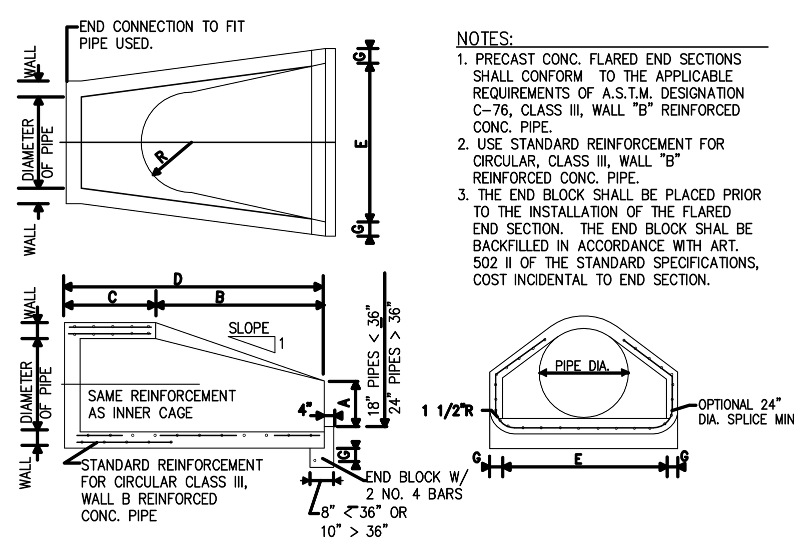
### CULTEC Recharger® 280HD Specifications

**GENERAL**

CULTEC Recharger® 280HD chambers are designed for underground stormwater management. The chambers may be used for retention, recharging, detention or controlling the flow of on-site stormwater runoff.

**CHAMBER PARAMETERS**

1. The chambers shall be manufactured in the U.S.A. by CULTEC, Inc. of Brookfield, CT (cultec.com, 203-775-4416).
2. The chamber shall be vacuum thermoformed of polyethylene with a black interior and blue exterior.
3. The chamber shall be arched in shape.
4. The chamber shall be open-bottomed.
5. The chamber shall be joined using an interlocking overlapping rib method. Connections must be fully shouldered overlapping ribs, having no separate couplings or separate end walls.
6. The nominal chamber dimensions of the CULTEC Recharger® 280HD shall be 26.5 inches (673 mm) tall, 47 inches (1194 mm) wide and 8 feet (2.44 m) long. The installed length of a joined Recharger® 280HD shall be 7 feet (2.13 m).
7. Maximum inlet opening on the chamber end wall is 21 inches (525 mm) HDPE, PVC.
8. The chamber shall have two side portals to accept CULTEC HVLV® FC-24 Feed Connectors to create an internal manifold. Maximum allowable O.D. in the side portal is 10 inches (250 mm) HDPE, 12 inches (300 mm) PVC.
9. The nominal chamber dimensions of the CULTEC HVLV® FC-24 Feed Connector shall be 12 inches (305 mm) tall, 16 inches (406 mm) wide and 24.2 inches (614 mm) long.
10. The nominal storage volume of the Recharger® 280HD chamber shall be 6.079 ft³ / ft (0.565 m³ / m) - without stone. The nominal storage volume of a single Recharger 280HD Stand Alone unit shall be 46.63 ft³ (1.38 m³) - without stone. The nominal storage volume of a joined Recharger® 280HD Intermediate unit shall be 42.533 ft³ (1.205 m³) - without stone. The nominal storage volume of the length adjustment amount per run shall be 6.08 ft³ (0.56 m³) - without stone.
11. The nominal storage volume of the HVLV® FC-24 Feed Connector shall be 0.913 ft³ / ft (0.085 m³ / m) - without stone.
12. The Recharger® 280HD chamber shall have seventy-two discharge holes bored into the sidewalls of the unit's core to promote lateral conveyance of water.
13. The Recharger® 280HD chamber shall have 15 corrugations.
14. The end wall of the chamber, when present, shall be an integral part of the continuously formed unit. Separate end plates cannot be used with this unit.
15. The Recharger® 280HD Stand Alone unit must be formed as a whole chamber having two fully formed integral end walls and having no separate end plates or separate end walls.
16. The Recharger® 280HD Starter unit must be formed as a whole chamber having one fully formed integral end wall and one partially formed integral end wall with a lower transfer opening of 9 inches (229 mm) high x 35 inches (889 mm) wide.
17. The Recharger® 280HD Intermediate unit must be formed as a whole chamber having one fully open end wall and one partially formed integral end wall with a lower transfer opening of 9 inches (229 mm) high x 35 inches (889 mm) wide.
18. The Recharger® 280HD End unit must be formed as a whole chamber having one fully formed integral end wall and one fully open end wall and having no separate end plates or end walls.
19. The HVLV® FC-24 Feed Connector must be formed as a whole chamber having two open end walls and having no separate end plates or separate end walls. The unit shall fit into the side portals of the Recharger® 280HD and act as cross feed connections.
20. Chambers must have horizontal stiffening flex reduction steps between the ribs.
21. The chamber shall have a raised integral cap at the top of the arch in the center of each unit to be used as an optional inspection port or clean-out.
22. The units



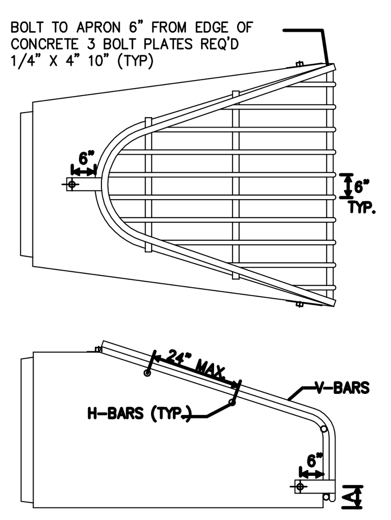

NOTES:
1. PRECAST CONC. FLARED END SECTIONS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF A.S.T.M. DESIGNATION C-76, CLASS III, WALL "B" REINFORCED CONC. PIPE.
2. USE STANDARD REINFORCEMENT FOR CIRCULAR, CLASS III, WALL "B" REINFORCED CONC. PIPE.
3. THE END BLOCK SHALL BE PLACED PRIOR TO THE INSTALLATION OF THE FLARED END SECTION. THE END BLOCK SHAL BE BACKFILLED IN ACCORDANCE WITH ART. 502 II OF THE STANDARD SPECIFICATIONS, COST INCIDENTAL TO END SECTION.

DIMENSION CHART

| PIPE DIA. | WALL | A | B | C | D | E | G | R | SLOPE |
|---|---|---|---|---|---|---|---|---|---|
| 12" | 2" | 4" | 4'0" | 2'7/8" | 6'7/8" | 2'0" | 2" | 9" | 3:1 |
| 15" | 2 1/4" | 6" | 2'3" | 3'10" | 6'1" | 2'6" | 2 1/4" | 11" | 3:1 |
| 18" | 2 1/2" | 9" | 2'3" | 3'10" | 6'1" | 3'0" | 2 1/2" | 12" | 3:1 |
| 21" | 2 3/4" | 9" | 2'11" | 3'2" | 6'1" | 3'6" | 2 3/4" | 13" | 3:1 |
| 24" | 3" | 9 1/2" | 3'7 1/2" | 2'6" | 6' 1 1/2" | 4'0" | 3" | 14" | 3:1 |
| 27" | 3 1/4" | 10 1/2" | 4'0" | 2' 1 1/2" | 6' 1 1/2" | 4'6" | 3 1/4" | 14 1/2" | 3:1 |
| 30" | 3 1/2" | 1'0" | 4'6" | 1' 7 3/4" | 6' 1 3/4" | 5'0" | 3 1/2" | 15" | 3:1 |
| 33" | 3 3/4" | 1' 1 1/2" | 4'10 1/2" | 3' 3 1/4" | 8' 1 3/4" | 5'6" | 3 3/4" | 17 1/2" | 3:1 |
| 36" | 4" | 1'3" | 5'3" | 2' 10 3/4" | 8' 1 3/4" | 6'0" | 4" | 20" | 3:1 |
| 42" | 4 1/2" | 1'9" | 5'3" | 2'11" | 8'2" | 6'6" | 4 1/2" | 22" | 3:1 |
| 48" | 5" | 2'0" | 6'0" | 2'2" | 8'2" | 7'0" | 5" | 22" | 3:1 |
| 54" | 5 1/2" | 2'3" | 5'5" | 2'11" | 8'4" | 7'6" | 5 1/2" | 24" | 2.4:1 |

# PRECAST REINFORCED CONCRETE FLARED END SECTION

ST58.DWG




| | APRON SIZE | V-BAR ø | H-BAR SIZE | NO. H BARS | BOLT DIA. | "A" DIM. |
|---|---|---|---|---|---|---|
| | INCHES | | | | INCHES | |
| ARCH PIPE APRONS | 18 | 1/2 | 5/8 ø | 3 | 1/2 | 5 |
| | 24 | 5/8 | 3/4 ø | 4 | 1/2 | 7 |
| | 30 | 5/8 | 3/4 ø | 4 | 1/2 | 7 1/2 |
| | 36 | 3/4 | 1 ø | 4 | 1/2 | 10 1/2 |
| | 42 | 3/4 | 1 ø | 4 | 3/4 | 11 |
| | 48 | 3/4 | 1.5 PIPE | 4 | 3/4 | 12 |
| | 54 | 3/4 | 1.5 PIPE | 4 | 3/4 | 12 |
| | 60 | 3/4 | 1.5 PIPE | 5 | 3/4 | 14 |
| | 72 | 3/4 | 1.5 PIPE | 5 | 3/4 | 14 |
| | 84 | 3/4 | 1.5 PIPE | 6 | 3/4 | 15 |
| ROUND PIPE APRONS | 12 | 1/2 | 5/8 ø | 3 | 1/2 | 4 |
| | 15 | 1/2 | 5/8 ø | 3 | 1/2 | 4 1/2 |
| | 18 | 1/2 | 5/8 ø | 4 | 1/2 | 4 1/2 |
| | 21 | 1/2 | 5/8 ø | 4 | 1/2 | 5 |
| | 24 | 5/8 | 3/4 ø | 4 | 1/2 | 5 |
| | 27 | 5/8 | 3/4 ø | 4 | 1/2 | 5 1/2 |
| | 30 | 5/8 | 3/4 ø | 4 | 1/2 | 5 1/2 |
| | 36 | 3/4 | 1 ø | 4 | 3/4 | 8 |
| | 42 | 3/4 | 1 ø | 4 | 3/4 | 8 |
| | 48 | 3/4 | 1 ø | 5 | 3/4 | 8 |
| | 54 | 3/4 | 1.5 PIPE | 5 | 3/4 | 8 |
| | 60 | 3/4 | 1.5 PIPE | 5 | 3/4 | 8 |
| | 66 | 3/4 | 1.5 PIPE | 6 | 3/4 | 8 |
| | 72 | 3/4 | 1.5 PIPE | 6 | 3/4 | 9 |
| | 84 | 3/4 | 1.5 PIPE | 7 | 3/4 | 10 |
| | 90 | 3/4 | 1.5 PIPE | 7 | 3/4 | 14 |

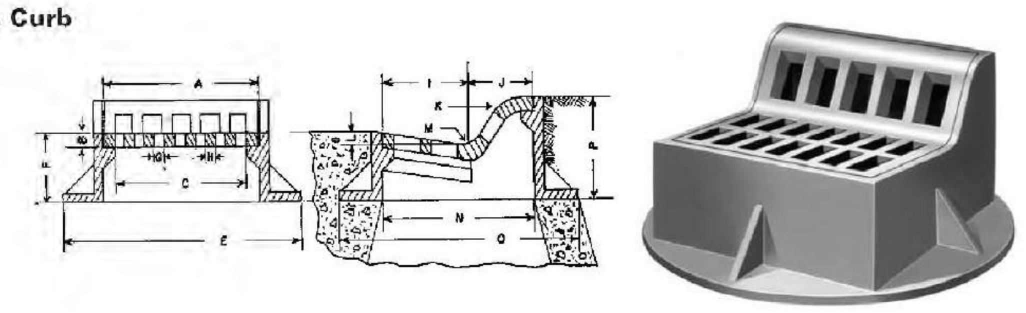
NOTES:
1. BARS & PLATES ARE HOT-ROLLED STEEL.
2. BARS, PLATES & PIPE ARE FINISHED WITH 2 COATS OF ALUMINUM PAINT.
3. BOLTS ARE GALVANIZED
4. SEE STD. PLATES A-10 & A-11 FOR APRON DIMENSIONS.
5. TRASH GUARDS WIHT DIFFERENT DIAMETER BARS ARE AVAILABLE, SPECIAL ORDER.

# TRASH GUARDS FOR F.E.S.

ST59.DWG

## R-3502 Series
### Inlet for Roll Type Curb

**Heavy Duty**



Dimensions in inches

| Catalog No. | A | B | C | E | F | G | H | I | J | K | L | M | N | O | P |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R-3502-A * | 22 | 1 3/4 | 20 1/4 | 36 | 10 | 1 7/8 | 1 | 13 7/8 | 8 7/8 | 4 | 1 3/4 | 3 | 23 | 36 | 15 5/8 |
| R-3502-B | 21 1/2 | 1 3/4 | 20 1/4 | 36 | 10 | 1 7/8 | 1 | 14 | 8 | 4 | 2 3/4 | 3 | 22 | 36 | 13 5/8 |

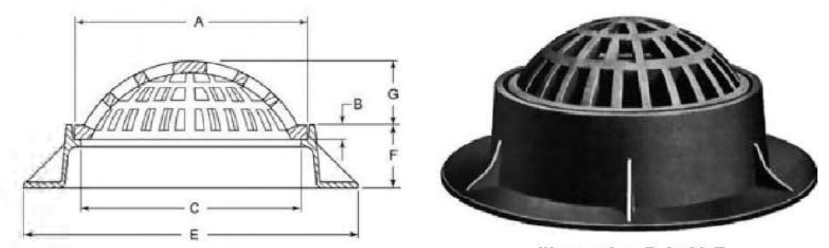
* Frame furnished in two pieces as shown on *R-3502-D2*.

| CATALOG NUMBER | GRATE TYPE | SQ. FT. OPEN | WEIR PERIMETER LINEAL FEET |
|---|---|---|---|
| R-3502-A | A | 1.4 | 4.1 |
| R-3502-B | A | 1.4 | 4.2 |

■ Note. When specifying/ordering grates, refer to "Choosing the Proper Inlet Grate" on pages 125-126.
For a complete listing of FREE OPEN AREAS and WEIR PERIMETERS of all NEENAH grates, refer to pages 327-332.

## R-2560 Series
### Inlet Frame, Beehive Grate

Suitable for drainage in circumstances where clogging of a flat grating is a problem. Excellent for roadside or earth ditch inlets.



*Illustrating R-2560-E*

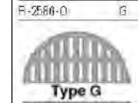
| CATALOG NUMBER | GRATE TYPE | SQ. FT. OPEN | WEIR PERIMETER LINEAL FEET |
|---|---|---|---|
| R-2560-A | Beehive | 0.3 | 3.1 |
| R-2560-C | Beehive | 0.7 | 4.7 |
| R-2560-C1 | Beehive | 0.7 | 5.8 |
| R-2560-C2 | Beehive | 0.7 | 5.8 |
| R-2560-D | Beehive | 1.0 | 5.1 |
| R-2560-D1 | Beehive | 1.2 | 5.8 |
| R-2560-D2 | Beehive | 1.2 | 5.8 |
| R-2560-D3 | Beehive | 1.2 | 5.8 |
| R-2560-D5 | Beehive | 1.0 | 5.1 |
| R-2560-D6 | Beehive | 1.0 | 5.1 |
| R-2560-D7 | Beehive | 1.3 | 5.3 |
| R-2560-D8 | Beehive | 1.3 | 5.3 |
| R-2560-E | Beehive | 1.2 | 6.0 |
| R-2560-EA | Beehive | 1.2 | 6.7 |
| R-2560-EB | Beehive | 1.8 | 6.7 |
| R-2560-E1 | Beehive | 1.4 | 6.7 |
| R-2560-E2 | Beehive | 2.0 | 6.7 |
| R-2560-E5 | Beehive | 1.2 | 6.7 |
| R-2560-E6 | Beehive | 1.8 | 6.7 |
| R-2560-E7 | Beehive | 1.2 | 6.7 |
| R-2560-E8 | Beehive | 1.8 | 6.7 |
| R-2560-E9 | Beehive | 1.2 | 6.7 |
| R-2560-E10 | Beehive | 1.8 | 6.7 |
| R-2560-G | Beehive | 1.5 | 8.4 |

Dimensions in inches

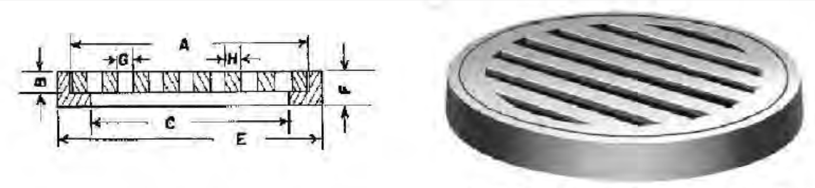
| Catalog No. | A | B | C | E | F | G | Frame/Lid |
|---|---|---|---|---|---|---|---|
| R-2560-A | 12 | 1 | 11 | 19 | 4 | 3 1/4 | R-1791-A |
| R-2560-C | 18 1/4 | 1 1/4 | 16 3/4 | 30 | 8 | 4 | R-1900-A |
| R-2560-C1 | 22 | 1 1/2 | 20 15/32 | 27 9/16 | 3 15/16 | 4 1/2 | R-1690 |
| R-2560-C2 | 22 | 1 1/2 | 20 1/2 | 28 1/4 | 6 | 4 1/2 | R-1761 |
| R-2560-D | 22 | 1 1/2 | 20 | 35 | 9 | 4 1/2 | R-1710 |
| R-2560-D1 | 22 | 1 1/2 | 20 15/32 | 27 9/16 | 3 15/16 | 7 | R-1690 |
| R-2560-D2 | 22 | 1 1/2 | 20 1/2 | 28 1/4 | 6 | 7 | R-1761 |
| R-2560-D3 | 22 | 1 1/2 | 20 | 35 | 9 | 7 | R-1710 |
| R-2560-D5 | 22 3/4 | 1 1/2 | 21 1/4 | 34 | 4 | 4 1/2 | R-1647-A |
| R-2560-D6 | 22 3/4 | 1 1/2 | 21 | 34 | 9 | 4 1/2 | R-1713 |
| R-2560-D7 | 22 3/4 | 1 1/2 | 21 1/4 | 34 | 4 | 7 | R-1647-A |
| R-2560-D8 | 22 3/4 | 1 1/2 | 21 | 34 | 9 | 7 | R-1713 |
| R-2560-E | 23 | 1 1/2 | 21 1/16 | 35 7/16 | 8 7/8 | 7 | R-1550-A |
| R-2560-E1 | 25 3/4 | 7/8 | 24 | 35 7/16 | 7 | 6 | R-1733 |
| R-2560-E2 | 25 3/4 | 7/8 | 24 | 35 7/16 | 7 | 9 | R-1733 |
| R-2560-E5 | 25 3/4 | 7/8 | 24 1/8 | 35 1/2 | 8 | 6 | R-1733-A |
| R-2560-E6 | 25 3/4 | 7/8 | 24 1/8 | 35 1/2 | 8 | 9 | R-1733-A |
| R-2560-E7 | 25 3/4 | 7/8 | 24 1/8 | 35 1/2 | 9 | 6 | R-1733-B |
| R-2560-E8 | 25 3/4 | 7/8 | 24 1/8 | 35 1/2 | 9 | 9 | R-1733-B |
| R-2560-E9 | 25 3/4 | 7/8 | 24 1/8 | 35 1/2 | 10 | 6 | R-1733-C |
| R-2560-E10 | 25 3/4 | 7/8 | 24 1/8 | 35 1/2 | 10 | 9 | R-1733-C |
| R-2560-EA | 25 3/4 | 7/8 | 24 1/8 | 35 7/16 | 4 | 6 | R-1733-1 |
| R-2560-EB | 25 3/4 | 7/8 | 24 1/8 | 35 7/16 | 4 | 9 | R-1733-1 |
| R-2560-G | 32 | 1 1/2 | 30 | 46 | 7 | 4 | R-1740-B |

## R-2586 Series
### Angle Frame, Grate

| CATALOG NUMBER | GRATE TYPE | SQ. FT. OPEN | WEIR PERIMETER LINEAL FEET |
|---|---|---|---|
| R-2586-A | E | 0.4 | 3.8 |
| R-2586-B | G | 0.5 | 4.2 |
| R-2586-C | E | 0.6 | 4.7 |
| R-2586-D | G | 0.8 | 5.2 |
| R-2586-E | G | 0.8 | 5.1 |
| R-2586-F | G | 0.8 | 5.4 |
| R-2586-G | G | 1.0 | 5.8 |
| R-2586-H | E | 1.3 | 6.0 |
| R-2586-K | G | 1.3 | 6.3 |
| R-2586-M | G | 1.8 | 7.0 |
| R-2586-N | G | 1.7 | 7.9 |
| R-2586-O | G | 1.9 | 8.4 |



Type G



*Illustrating R-2586-A with Type E Grate*

Dimensions in inches

| Catalog No. | A | B | C | E | F | G | H | Type | Duty |
|---|---|---|---|---|---|---|---|---|---|
| R-2586-A | 14 1/4 | 3/4 | 13 | 16 | 1 1/2 | 3/4 | 1 | E | Light |
| R-2586-B * | 16 | 1 | 13 1/2 | 18 1/4 | 1 5/8 | 1 1/8 | 1 | G | Heavy |
| R-2586-C ** | 18 | 3/4 | 16 | 19 1/4 | 1 1/4 | 7/8 | 3/4 | E | Light |
| R-2586-D * ** | 19 3/4 | 1 | 17 1/2 | 21 3/4 | 1 5/8 | 1 | 3/4 | G | Light |
| R-2586-E ** | 19 1/2 | 1 1/2 | 18 | 21 1/4 | 2 | 3/4 | 3/4 | G | Light |
| R-2586-F * | 20 1/2 | 3/4 | 18 3/4 | 23 | 1 1/4 | 1 | 1 | G | Light |
| R-2586-G ** | 22 1/4 | 1 1/2 | 20 3/8 | 24 3/8 | 2 1/4 | 1 1/4 | 1 | G | Heavy |
| R-2586-H * | 22 3/4 | 1 3/4 | 20 1/2 | 25 1/2 | 3 | 1 1/2 | 1 | E | Heavy |
| R-2586-K | 24 | 3/4 | 21 3/4 | 26 | 1 1/4 | 1/2 | 1/2 | G | Light |
| R-2586-M | 26 5/8 | 3/4 | 24 | 28 1/4 | 1 3/8 | 7/8 | 11/16 | G | Light |
| R-2586-N | 30 | 1 | 27 1/2 | 33 | 1 3/4 | 1 1/4 | 1 | G | Light |
| R-2586-O | 32 | 1 | 30 | 34 | 2 1/4 | 1 1/4 | 1 | G | Light |

* Furnished standard with machined horizontal bearing surfaces. All others have as-cast surfaces.
** Cast integral frame anchors available if specified.

## Eco-Optiloc™

NATURAL

RIVER BLEND

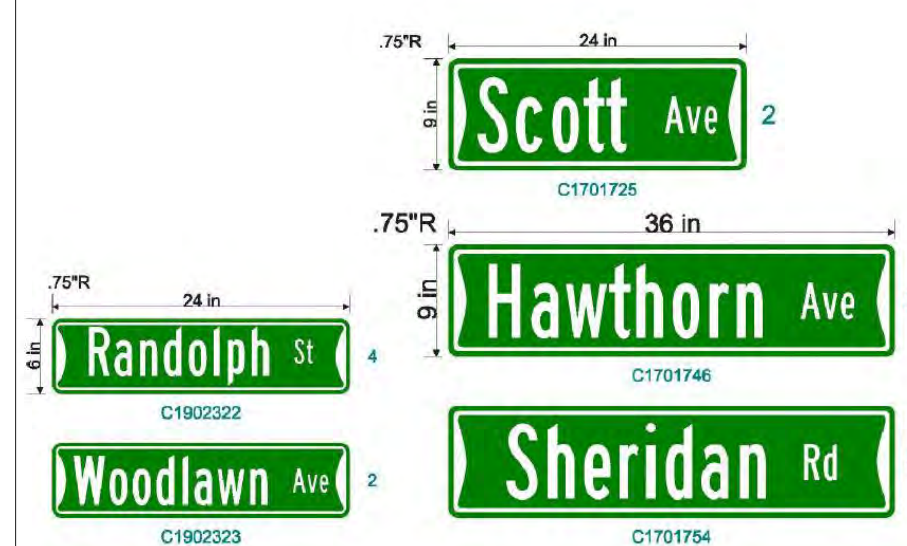
STANDARD
10¼" x 10¼" x 3⅛"
26cm x 26cm x 8cm
SPECIAL ORDER

| Stones & Bundling | Unit Thickness | SqFt/ Bundle | SqFt/ Section | SqFt/ Stone | Sections/ Bundle | LnFt/Sec (Soldier) | SqFt/LnFt (Soldier) | LnFt/Bdl (Soldier) | Units/ SqFt | Lbs/ Bundle | Lbs/ Section | Units/ Bundle |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Standard | 3⅛" (8cm) | 84.4 | - | - | - | - | - | - | - | 2868 | - | - |

Notes: Most standard colors are available but are special order only and subject to minimum quantities. Contact your representative for details. This product is optimized for mechanical installation. Product is available in full bundles only. All measurements are nominal. Contact Unilock for information.

TAPCO Safe travels. Custom Sign Proof for Production Date 7/18/2019

current sign design version A




Customer: Village of Glencoe
Customer #: C9622
Sales order #: SO Q1912781
Sales person: Richard B
File name: Q1912781 .fs

By checking "Approves for Production" and signing below, customer agrees to purchase sign as it appears on this artwork proof. Once this approval is received by TAPCO production will begin and any changes and/or cancellations will not be possible.

Customer... date & signature
... approves for production x 7/18/19 Ray Irby
... requests changes / additions (please describe below)

P 262.814.7000 | F 414.354.5480 | www.tapconet.com | 5100 W. Brown Deer Road, Brown Deer, WI 53223

NOTE:
1. STREET NAME SIGNS CAN BE MOUNTED ON TOP OF STOP SIGN OR NO OUTLET SIGN.
2. ALL STOP SIGNS ANN STREET NAME POSTS SHOULD BE 2-3/8" GALVANIZED STEEL ROUND POSTS, SCHEDULE 5 WITH BLACK POWDER COATING. NO PARKING SIGNS ARE TO BE U-CHANNEL POSTS.
3. CONTRACTOR SHALL CONTACT TAPCO AND PROVIDE A PROOF FOR STAFF REVIEW PRIOR TO ORDERING.

REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 12/06/19 | FOR SUBMITTAL | S.R.M. |
| 01/17/20 | FOR SUBMITTAL | S.R.M. |
| 02/20/20 | FOR SUBMITTAL | S.R.M. |
| 04/17/20 | PER VILLAGE COMMENTS | S.R.M. |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1129 MAIN STREET UNION GROVE, WISCONSIN 53182 PH. (262) 878-6200 | ig@igconsulting.net


CONSTRUCTION STANDARDS

DESIGN: K.C.L. DRAFTING: S.R.M.
SCALE: NONE DATE: 10/28/19
FIRM NO. 184-001330

# 1801 GREEN BAY ROAD SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS

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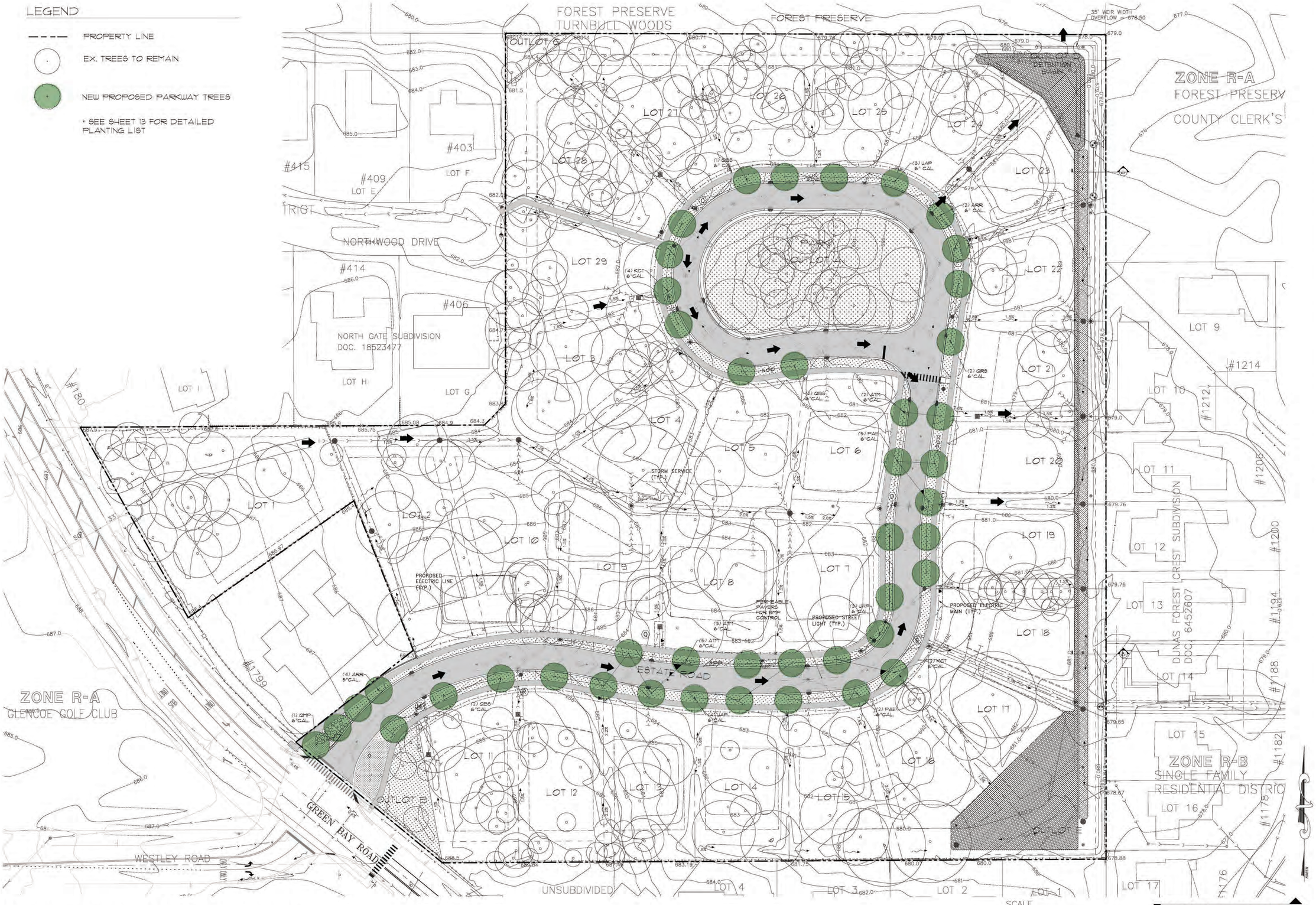
PROJECT No. 18557

LEGEND

- PROPERTY LINE
- EX. TREES TO REMAIN
- NEW PROPOSED PARKWAY TREES

* SEE SHEET 13 FOR DETAILED PLANTING LIST




# LANDSCAPE PLANS

SCALE

( IN FEET )
1 inch = 40 ft.

Jacobs/Ryan Associates
Landscape Architects

1527 North Sandburg Terrace Chicago, Illinois 60610 (312) 664-3217

REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 2-21-20 | ISSUE FOR REVIEW | DO |
| 4-17-20 | PER VILLAGE COMMENTS | DO |
| 6-8-20 | PER VILLAGE COMMENTS | DO |

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1129 MAIN STREET UNION GROVE, WISCONSIN 53182 PH. (262) 878-6200 | ig@igconsulting.net

PROPOSED STREET TREES

DESIGN: B.J. DRAFTING: D.O.
SCALE: 1"=40' DATE: 02-21-2020
FIRM NO. 184-001330

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS

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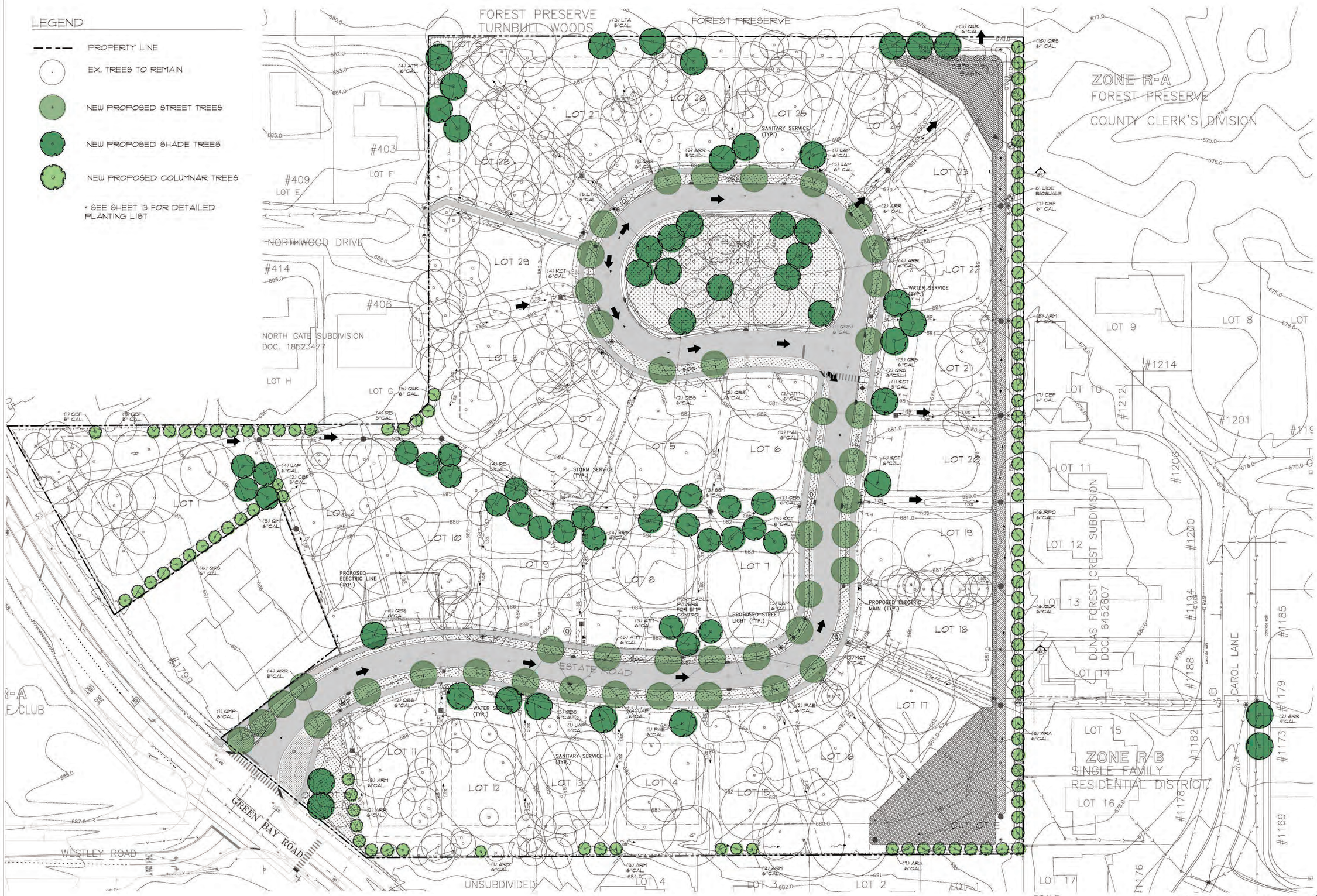
S:\IRA — CAD\2019\1913 — Hoover Estate\Master Plan\Sheets\L1.00 Proposed Street Trees.dwg

PROJECT No. 18557

## LEGEND

- PROPERTY LINE
- EX. TREES TO REMAIN
- NEW PROPOSED STREET TREES
- NEW PROPOSED SHADE TREES
- NEW PROPOSED COLUMNAR TREES

* SEE SHEET 13 FOR DETAILED PLANTING LIST




Jacobs/Ryan Associates
Landscape Architects

1527 North Sandburg Terrace Chicago, Illinois 60610 (312) 664-3217

## REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 2-21-20 | ISSUE FOR REVIEW | DO |
| 4-17-20 | PER VILLAGE COMMENTS | DO |
| 6-8-20 | PER VILLAGE COMMENTS | DO |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PROPOSED SITE TREES

DESIGN: B.J. DRAFTING: D.O.
SCALE: 1"=40' DATE: 02-21-2020

FIRM NO. 184-001330

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## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS


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PROJECT No. 18557

## LEGEND

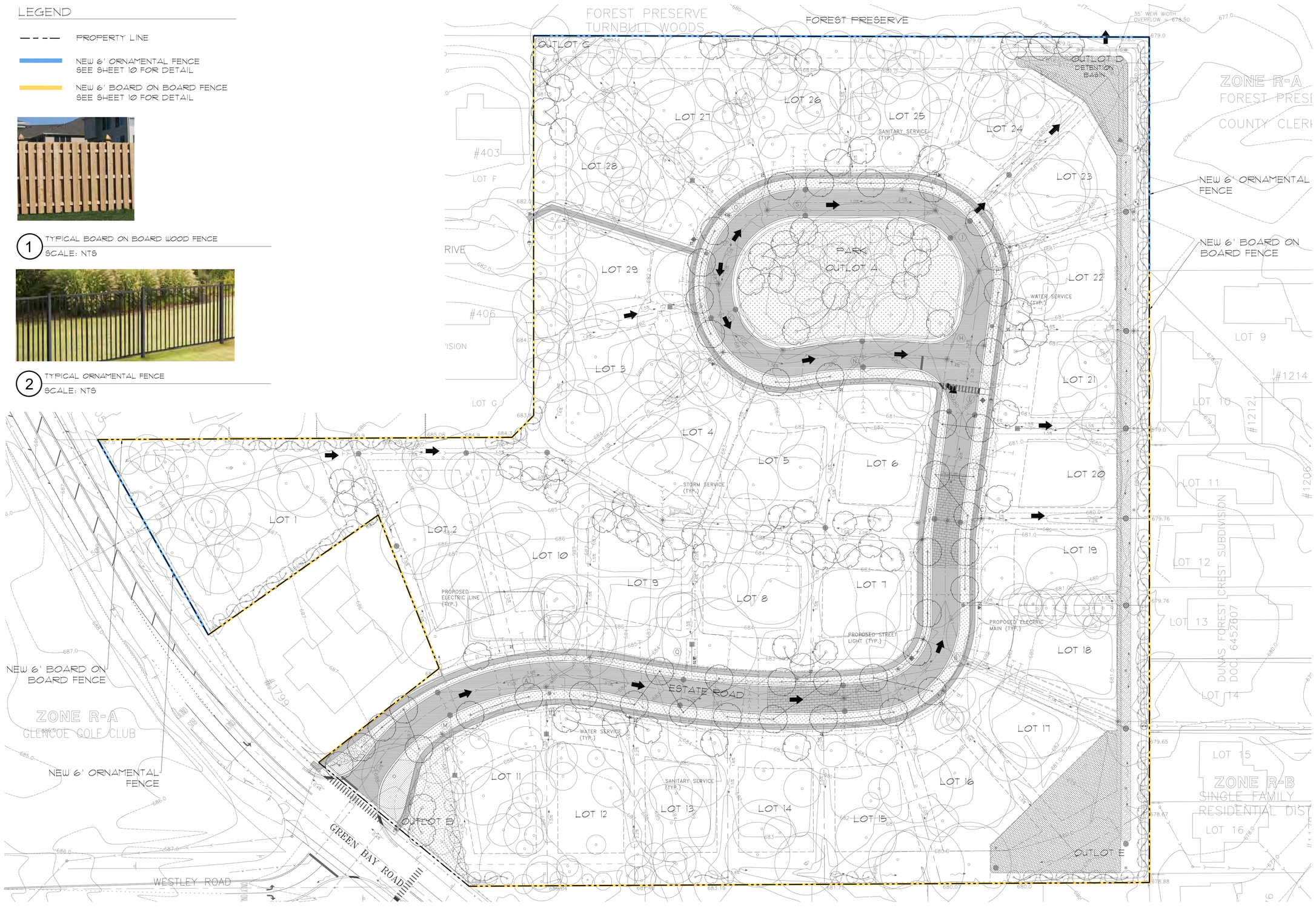
- PROPERTY LINE
- NEW 6' ORNAMENTAL FENCE SEE SHEET 10 FOR DETAIL
- NEW 6' BOARD ON BOARD FENCE SEE SHEET 10 FOR DETAIL



1 TYPICAL BOARD ON BOARD WOOD FENCE
SCALE: NTS



2 TYPICAL ORNAMENTAL FENCE
SCALE: NTS




SCALE
40 0 20 40 80 160
( IN FEET )
1 inch = 40 ft.

Jacobs/Ryan Associates
Landscape Architects
1527 North Sandburg Terrace Chicago, Illinois 60610 (312) 664-3217

REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 2-21-20 | ISSUE FOR REVIEW | DO |
| 4-17-20 | PER VILLAGE COMMENTS | DO |
| 6-8-20 | PER VILLAGE COMMENTS | DO |

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PERIMETER FENCING

DESIGN: B.J. DRAFTING: D.O.
SCALE: 1"=40' DATE: 02-21-2020
FIRM NO. 184-001330

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS

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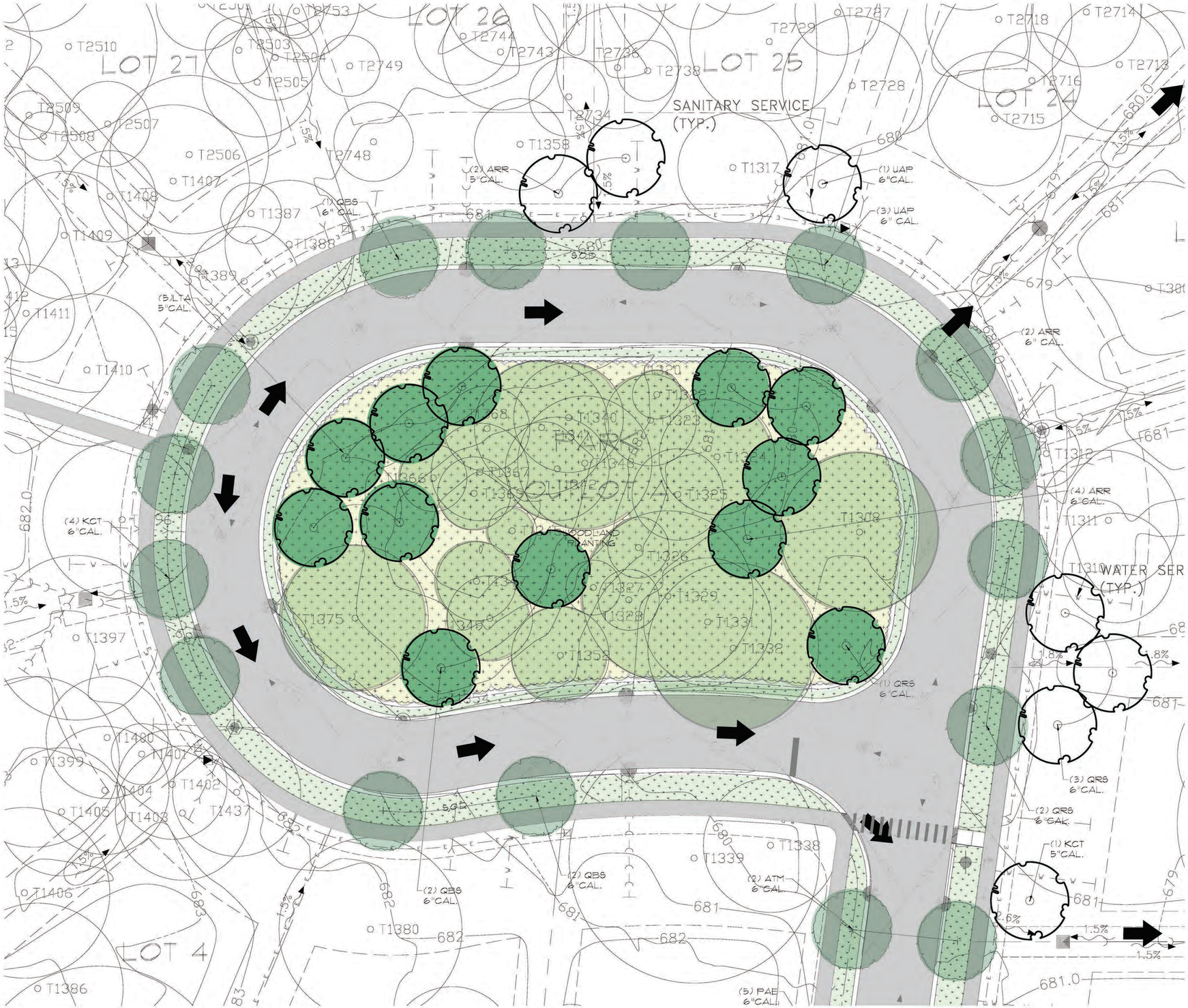
PROJECT No. 18557




## LEGEND

- PROPERTY LINE
- EXISTING TREES TO REMAIN WITH TAG NUMBER
- PROPOSED STREET TREES
- PROPOSED SHADE TREES
- WOODLAND PLANTING
- SOD
- PROPOSED CONTOUR LINES
- PROPOSED STREET LIGHTS

* SEE SHEET 13 FOR DETAILED PLANTING LIST

## PLANT MATERIAL

### WOODLAND PLANTING

VIRGINIA BLUESTEM

WHITE TRILLIUM

BLOOD ROOT PLANT

HIPATICA

YELLOW TRILLIUM

MAYFLOWER PLANT

SOLOMAN'S SEAL

MAYAPPLE PLANT

TROUT LILY

NARCISS MIX

### SHADE TREES

PRINCETON ELM

RED POINT MAPLE

KENTUCKY COFFEE TREE

SCALE

1/16" 0 8' 16' 32' 64'

1/16 inch = 1 ft

Jacobs/Ryan Associates
Landscape Architects

1527 North Sandburg Terrace Chicago, Illinois 60610 (312) 664-3217

REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 2-21-20 | ISSUE FOR REVIEW | DO |
| 4-17-20 | PER VILLAGE COMMENTS | DO |
| 6-8-20 | PER VILLAGE COMMENTS | DO |

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ENLARGEMENT PLAN
OUTLOT A

DESIGN: B.J. DRAFTING: D.O.
SCALE: 1"=40' DATE: 02-21-2020

FIRM NO. 184-001330

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS

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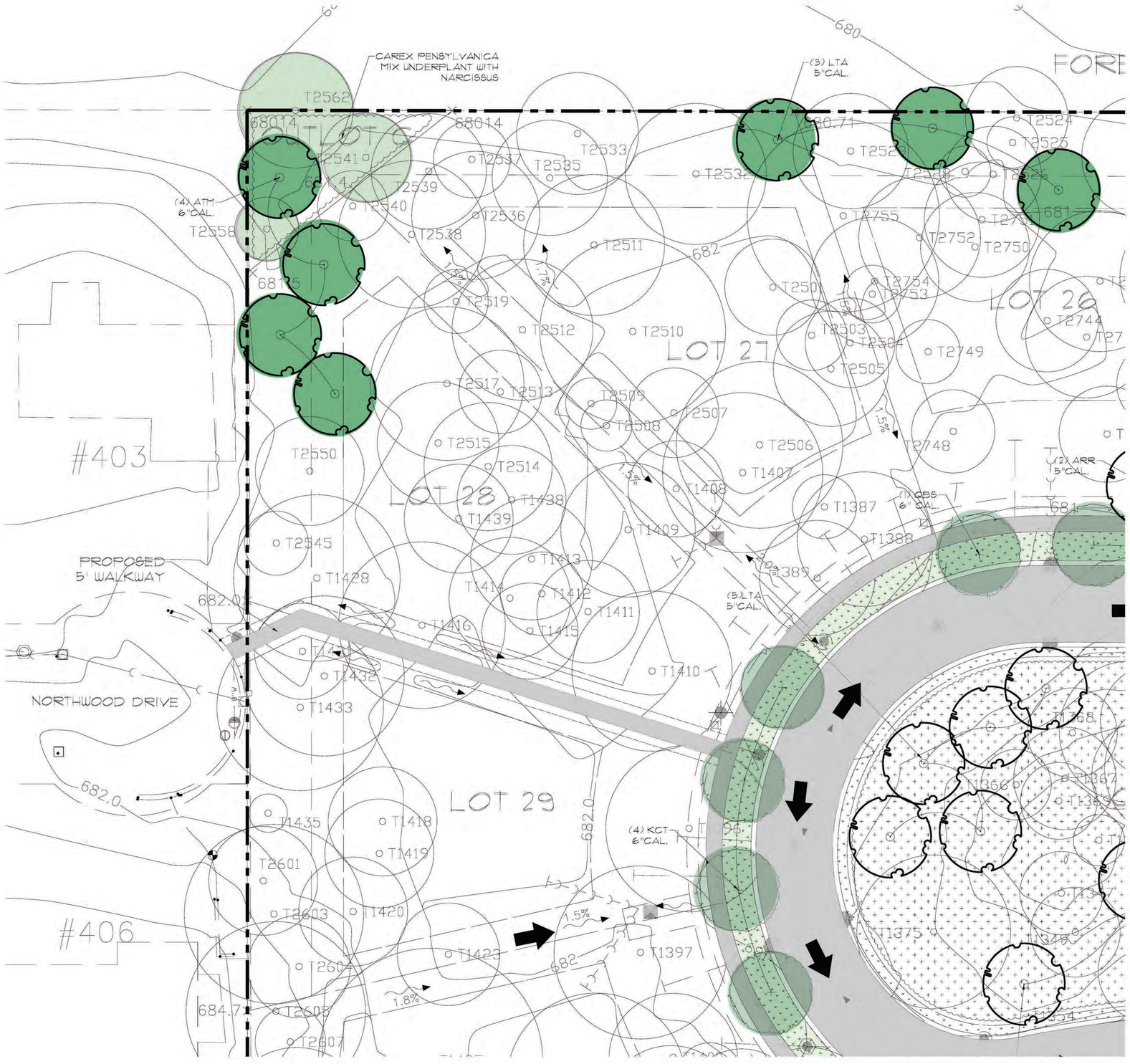
S:\JRA — CAD\2019\19-13 — Hoover Estate\Master Plan\Sheets\L1.03 Enlargement Plan Outlot A.dwg

PROJECT No. 18557




## LEGEND

- PROPERTY LINE
- EXISTING TREE TO REMAIN WITH TAG NUMBER
- PROPOSED STREET TREES
- PROPOSED SHADE TREE
- SOD
- PROPOSED CONTOUR LINES
- PROPOSED STREET LIGHTS

* SEE SHEET 13 FOR DETAILED PLANTING LIST

## PLANT MATERIAL

CAREX PENSYLVANICA

NARCISSUS

AMERICAN SENTRY LINDEN

TULIP TREE

SCALE

1/16" 0 8' 16' 32' 64'

1/16 inch = 1 ft

Jacobs/Ryan Associates
Landscape Architects

1527 North Sandburg Terrace Chicago, Illinois 60610 (312) 664-3217

REVISIONS

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|---|---|---|
| 2-21-20 | ISSUE FOR REVIEW | DO |
| 4-17-20 | PER VILLAGE COMMENTS | DO |
| 6-8-20 | PER VILLAGE COMMENTS | DO |

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1129 MAIN STREET UNION GROVE, WISCONSIN 53182 PH. (262) 878-6200 | ig@gcconsulting.net

ENLARGEMENT PLAN
OUTLOT C

DESIGN: B.J. DRAFTING: D.O.
SCALE: 1"=40' DATE: 02-21-2020
FIRM NO. 184-001330

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS

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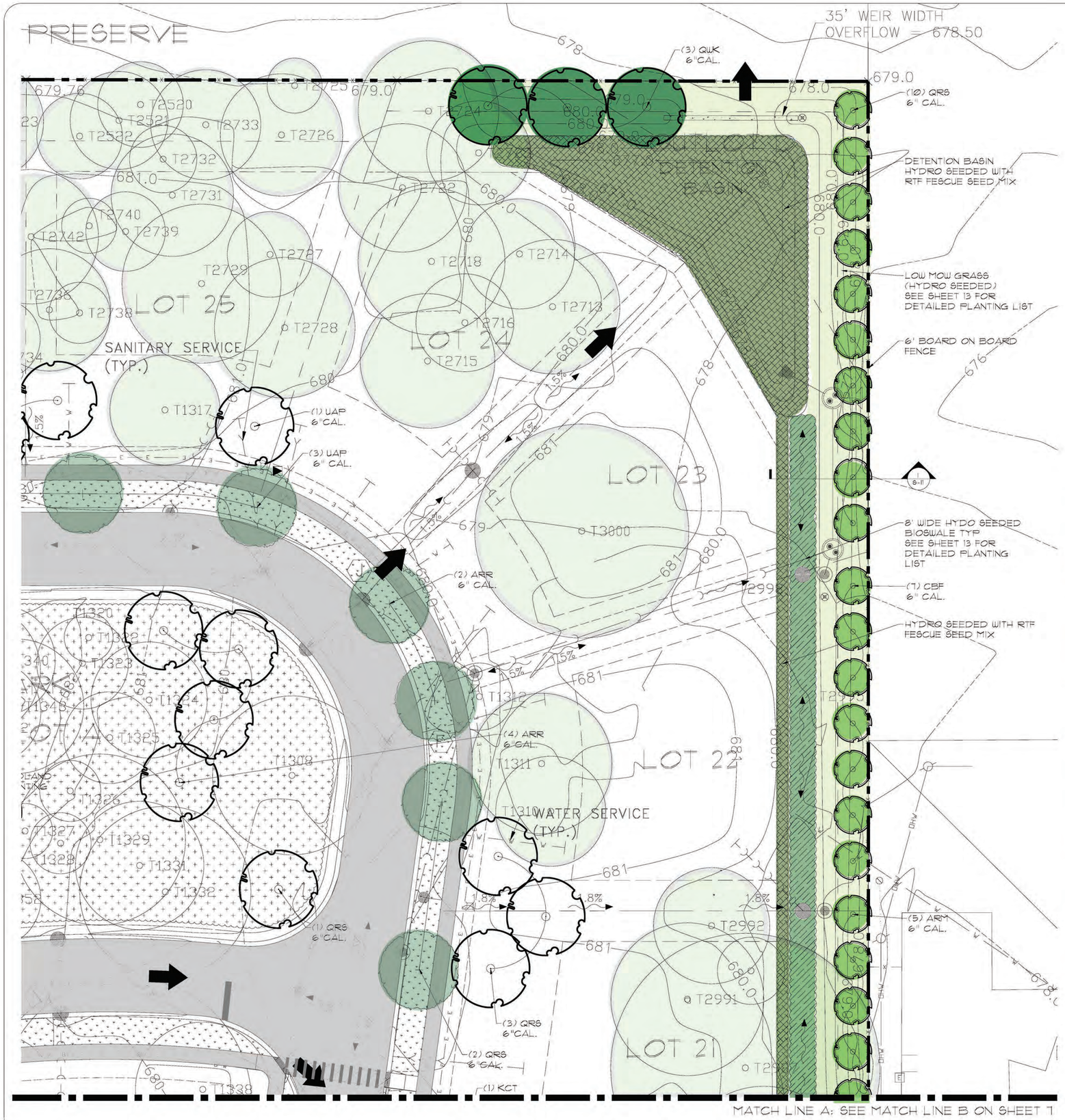
PROJECT No. 18557




## LEGEND

- PROPERTY LINE
- EXISTING TREE TO REMAIN WITH TAG NUMBER
- PROPOSED STREET TREES
- PROPOSED COLUMNAR TREES
- PROPOSED SHADE TREE
- HYDRO SEEDED BIOSWALE TYPICAL
- LOW MOW GRASS (HYDRO SEEDED)
- HYDRO SEEDED WITH RTF FESCUE SEED MIX
- S.O.D
- PROPOSED CONTOUR LINES
- PROPOSED STREET LIGHTS

*SEE SHEET 13 FOR DETAIL PLANTING LIST

## PLANT MATERIAL

### BIOSWALE PLANTING TYPICAL

HELIANTHUS GROSSESERRATUS

ASTER WOODS LIGHT BLUE

ELYMUS CANADENSIS

CAREX STIPATA

SCHIZACHYRIUM SCOPARIUM

LIATRIS SPICATATTT

### COLUMNAR TREES

URBAN PINNACLE OAK

ARMSTRONG GOLD MAPLE

CARPINUS BETULUS 'FRANS FONTAINE'

STREET SPIRE OAK

SCALE

1/16" 0 8' 16' 32' 64'

1/16 inch = 1 ft

Jacobs/Ryan Associates
Landscape Architects

1527 North Sandburg Terrace Chicago, Illinois 60610 (312) 664-3217

REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 2-21-20 | ISSUE FOR REVIEW | DO |
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| 6-8-20 | PER VILLAGE COMMENTS | DO |

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ENLARGEMENT PLAN
OUTLOT D

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SCALE: 1"=40' DATE: 02-21-2020
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# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS

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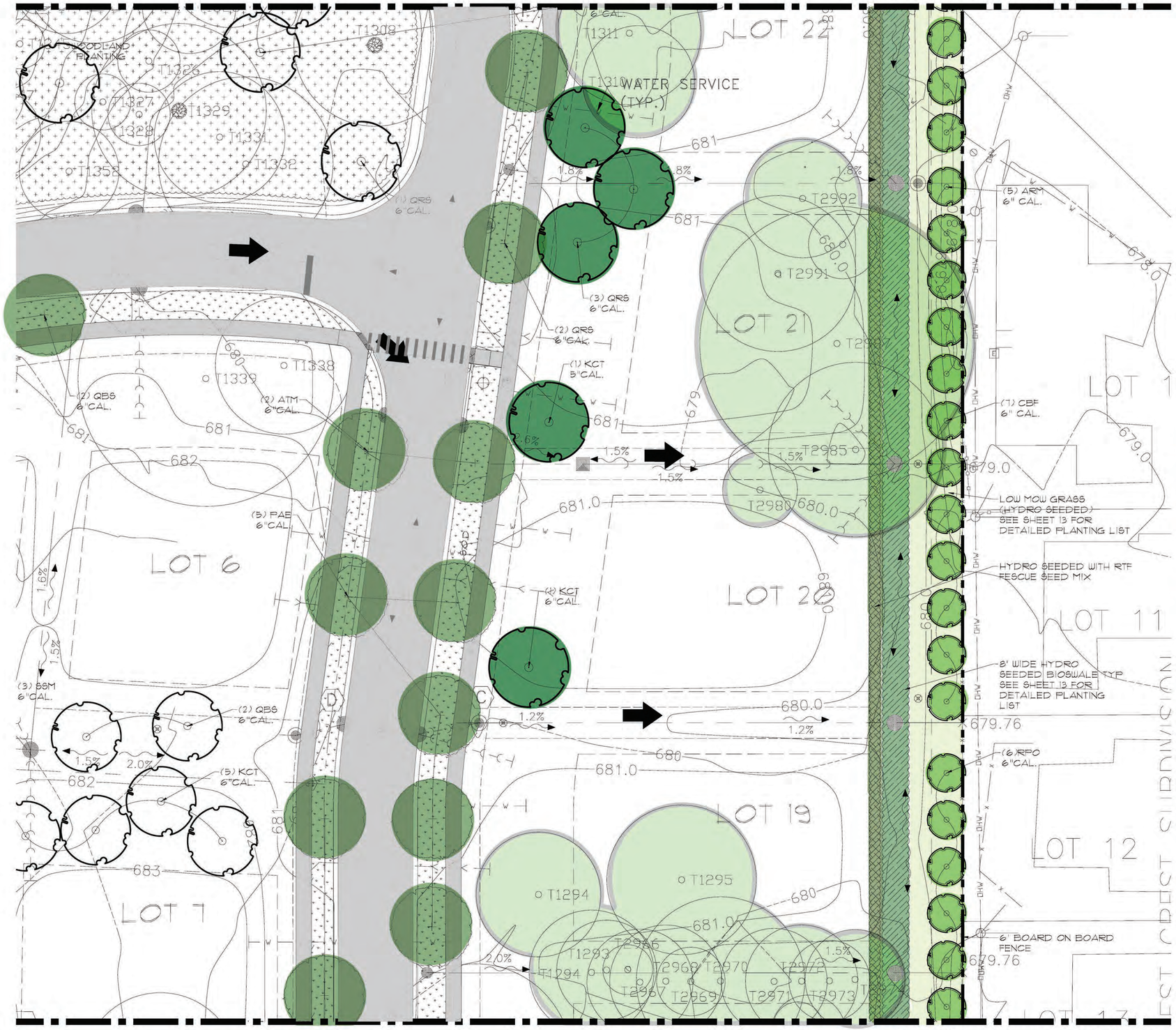
PROJECT No. 18557

MATCH LINE B: SEE MATCH LINE A SHEET 6




MATCH LINE C: SEE MATCH LINE D ON SHEET 8

## LEGEND

- PROPERTY LINE
- EXISTING TREE TO REMAIN WITH TAG NUMBER
- PROPOSED STREET TREES
- PROPOSED COLUMNAR TREES
- PROPOSED SHADE TREE
- HYDRO SEEDED BIOSWALE TYPICAL
- LOW MOW GRASS (HYDRO SEEDED)
- HYDRO SEEDED WITH RTF FESCUE SEED MIX
- S.O.D
- PROPOSED CONTOUR LINES
- PROPOSED STREET LIGHTS

*SEE SHEET 13 FOR DETAIL PLANTING LIST

## PLANT MATERIAL

BIOSWALE PLANTING TYPICAL

HELIANTHUS GROSSESERRATUS

ASTER WOODS LIGHT BLUE

ELYMUS CANADENSIS

CAREX STIPATA

SCHIZACHYRIUM SCOPARIUM

LIATRIS SPICATATTT

COLUMNAR TREES

URBAN PINNACLE OAK

ARMSTRONG GOLD MAPLE

REGAL PRINCE OAK

SCALE

1/16" 0 8' 16' 32' 64'

1/16 inch = 1 ft


Jacobs/Ryan Associates
Landscape Architects
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ENLARGEMENT PLAN
OUTLOT F

DESIGN: B.J. DRAFTING: D.O.
SCALE: 1"=40' DATE: 02-21-2020
FIRM NO. 184-001330

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS


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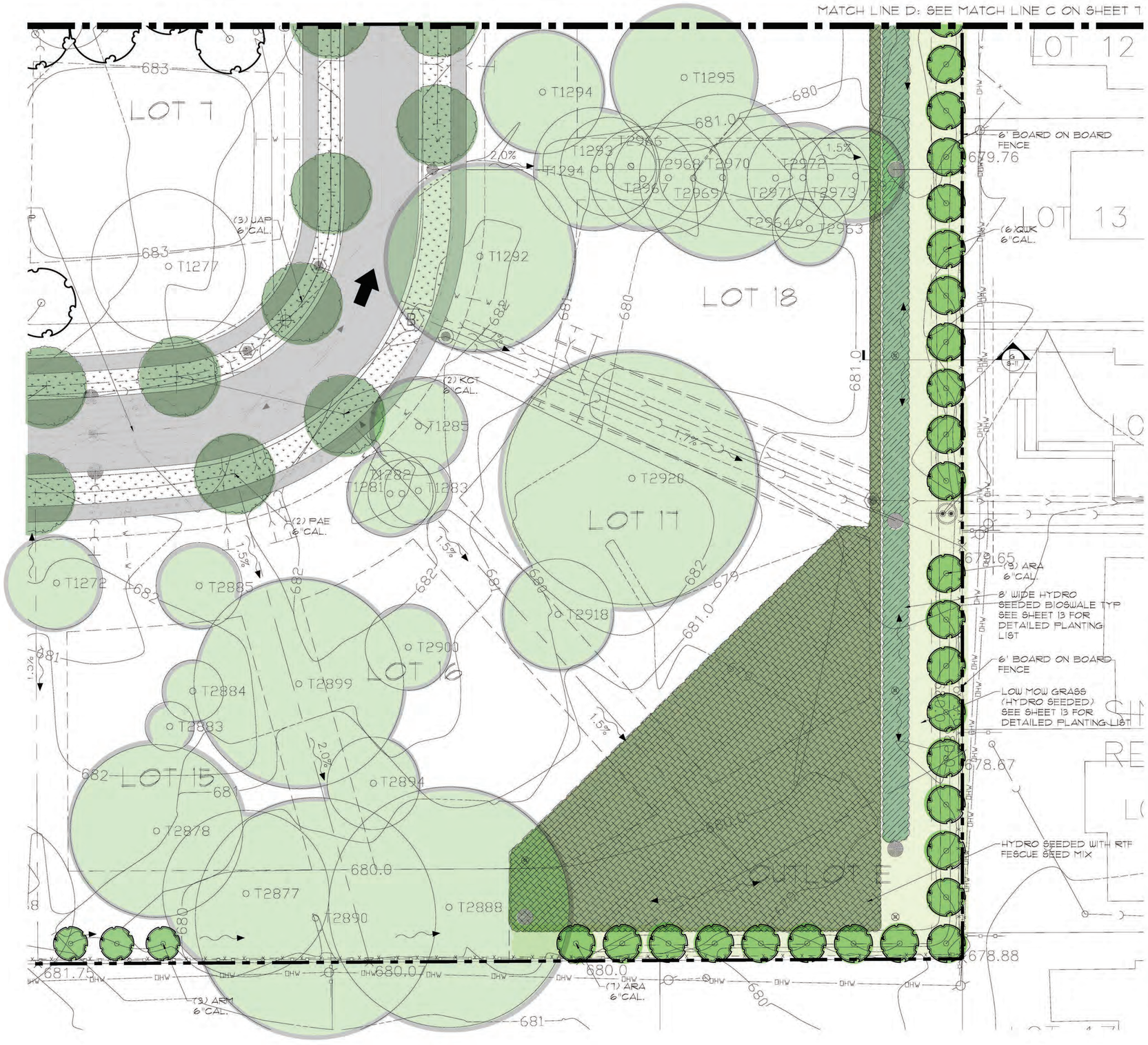
MATCH LINE D: SEE MATCH LINE C ON SHEET 7




## LEGEND

- PROPERTY LINE
- EXISTING TREE TO REMAIN WITH TAG NUMBER
- PROPOSED STREET TREES
- PROPOSED COLUMNAR TREES
- PROPOSED SHADE TREES
- HYDRO SEEDED BIOSWALE TYPICAL
- LOW MOW GRASS (HYDRO SEEDED)
- HYDRO SEEDED WITH RTF FESCUE SEED MIX
- S.O.D
- PROPOSED CONTOUR LINES
- PROPOSED STREET LIGHTS

*SEE SHEET 13 FOR DETAIL PLANTING LIST

## PLANT MATERIAL

BIOSWALE PLANTING TYPICAL

HELIANTHUS GROSSESERRATUS

ASTER WOODS LIGHT BLUE

CAREX STIPATA

ELYMUS CANADENSIS

SCHIZACHYRIUM SCOPARIUM

LIATRIS SPICATATTT

COLUMNAR TREES

URBAN PINNACLE OAK

ARMSTRONG GOLD MAPLE

KINDRED SPIRIT OAK

REGAL PRINCE OAK

SCALE

1/16" 0 8' 16' 32' 64'

1/16 inch = 1 ft

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ENLARGEMENT PLAN
OUTLOT E

DESIGN: B.J. DRAFTING: D.O.
SCALE: 1"=40' DATE: 02-21-2020
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## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS


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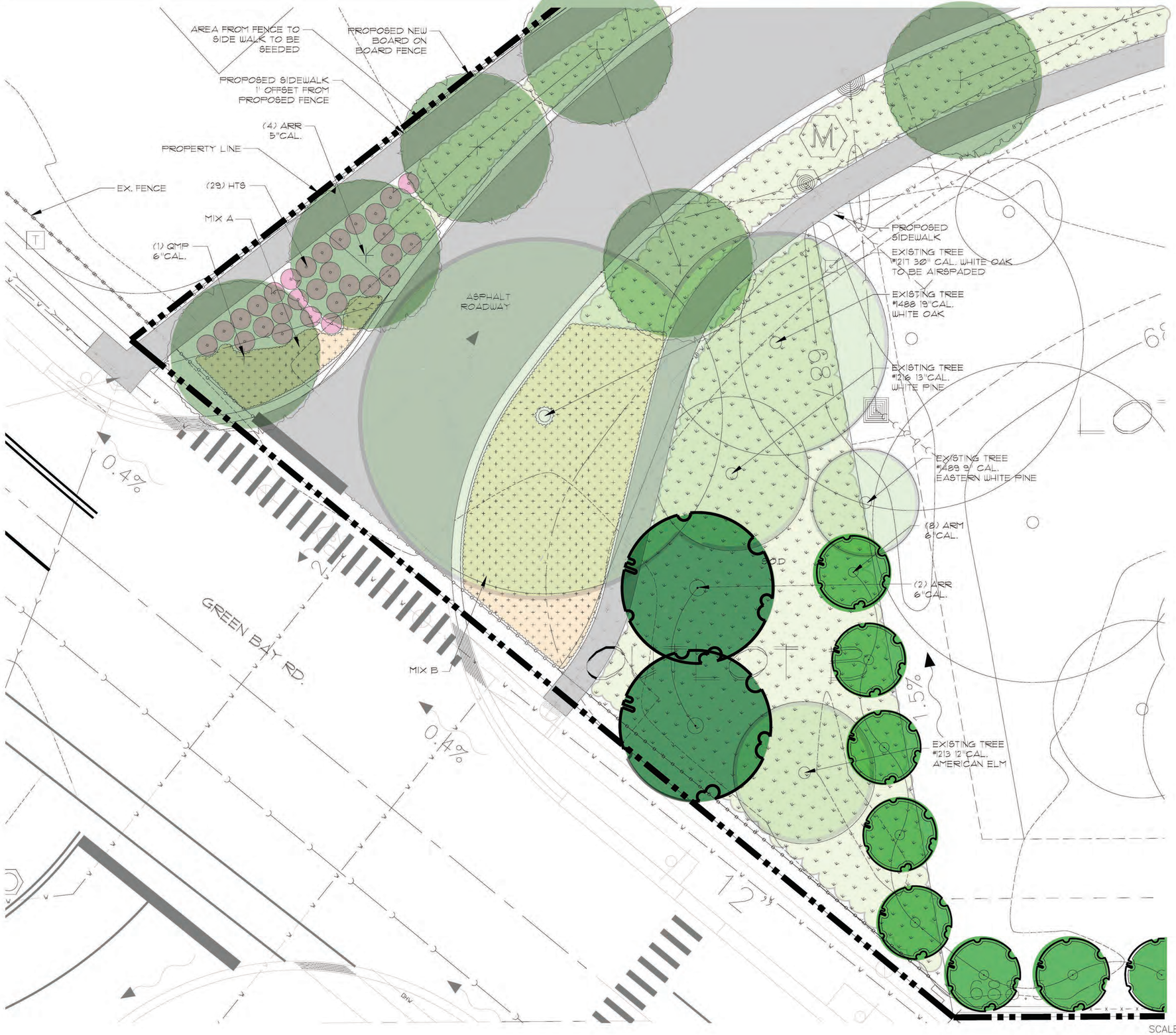


## LEGEND

- PROPERTY LINE
- EXISTING TREE TO REMAIN WITH TAG NUMBER
- PROPOSED STREET TREES
- PROPOSED SHADE TREES
- PROPOSED COLUMNAR TREES
- PLANTING MIX
- S.O.D
- PROPOSED CONTOUR LINES

*SEE SHEET 13 FOR DETAIL PLANTING LIST

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Landscape Architects
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ENTRANCE ENLARGEMENT PLAN

DESIGN: B.J. DRAFTING: D.O.
SCALE: 1"=40' DATE: 02-21-2020
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# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS

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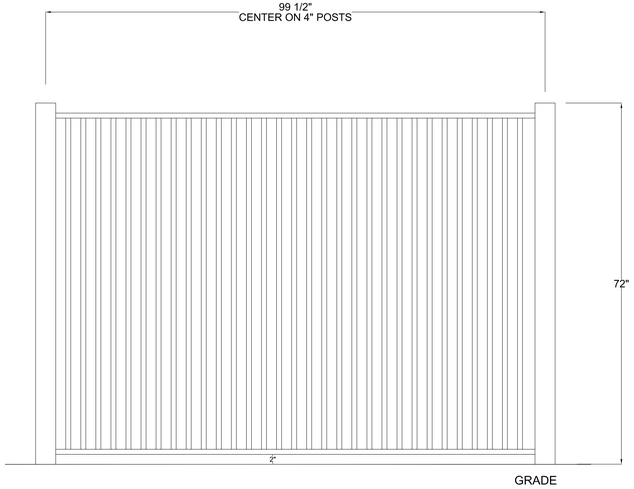
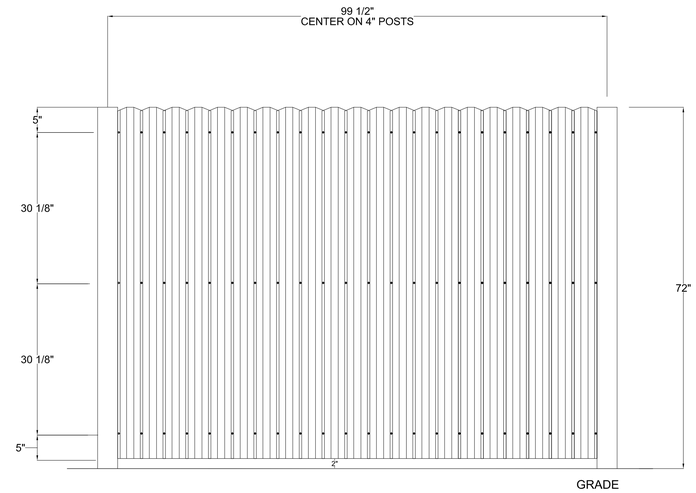
PROJECT No. 18557

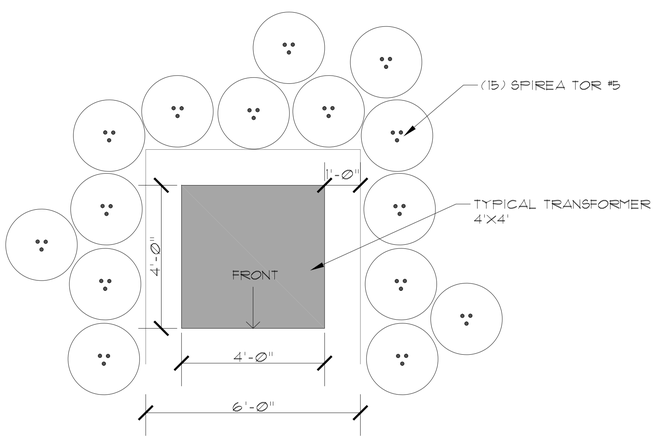



1 TYPICAL METAL ORNAMENTAL FENCE
SCALE: NTS




2 TYPICAL BOARD ON BOARD FENCE
SCALE: NTS

NOTE: SEE CIVIL PLANS FOR
TRANSFORMER LOCATIONS




3 TYPICAL TRANSFORMER LANDSCAPE PLANTING
SCALE: NTS

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SITE DETAILS

DESIGN: B.J. DRAFTING: D.O.
SCALE: 1"=40' DATE: 02-21-2020
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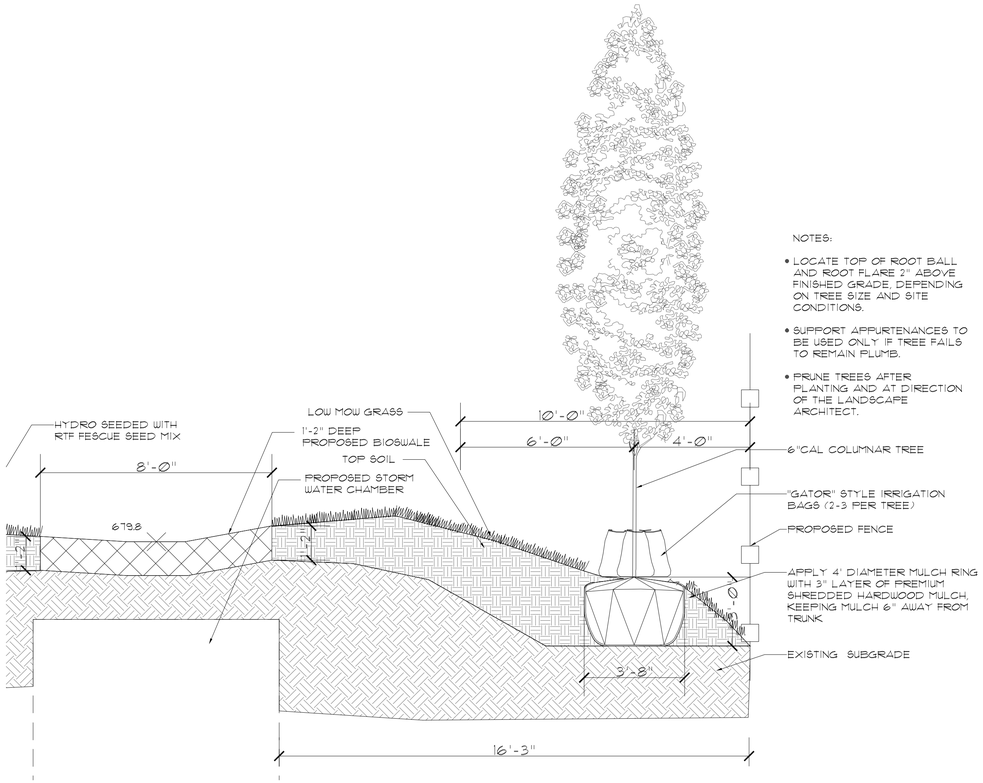
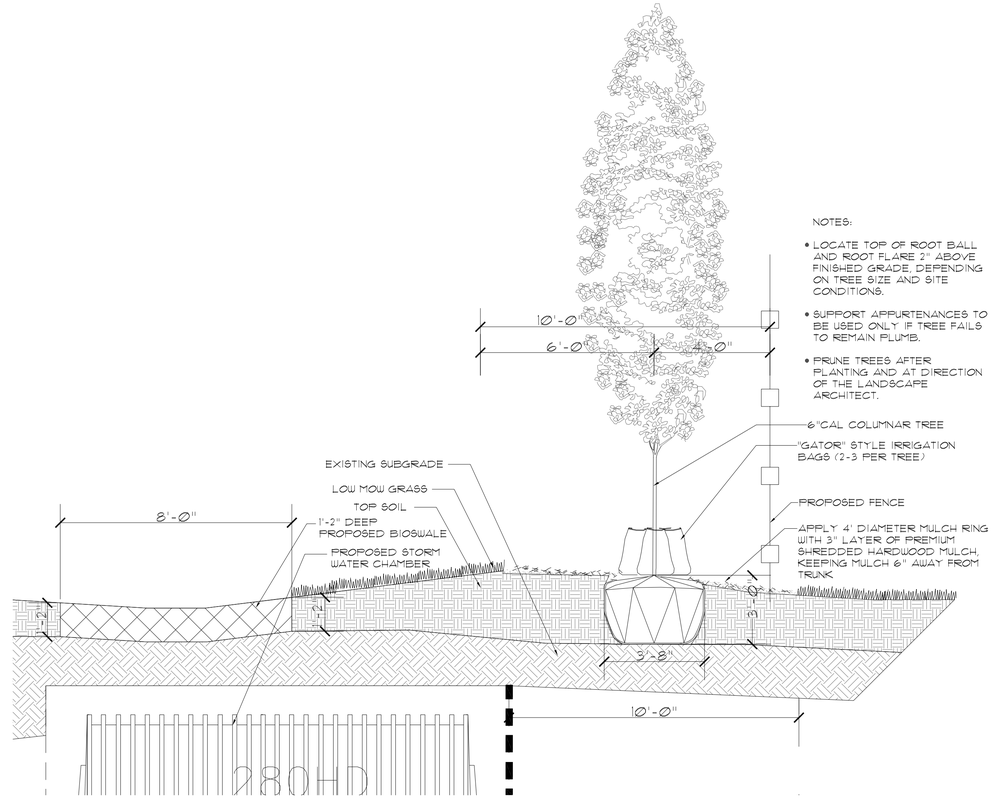



NOTES:

- LOCATE TOP OF ROOT BALL AND ROOT FLARE 2" ABOVE FINISHED GRADE, DEPENDING ON TREE SIZE AND SITE CONDITIONS.
- SUPPORT APPURTENANCES TO BE USED ONLY IF TREE FAILS TO REMAIN PLUMB.
- PRUNE TREES AFTER PLANTING AND AT DIRECTION OF THE LANDSCAPE ARCHITECT.

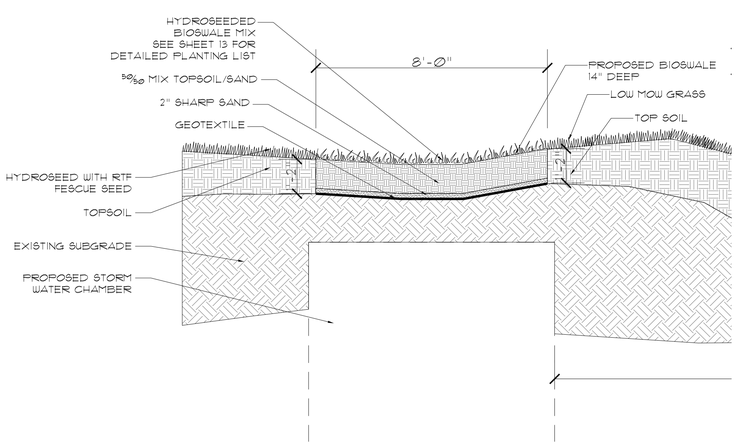
1 COLUMNAR TREE PLANTING DETAIL SECTION I
SCALE: 1/4" = 1'-0"



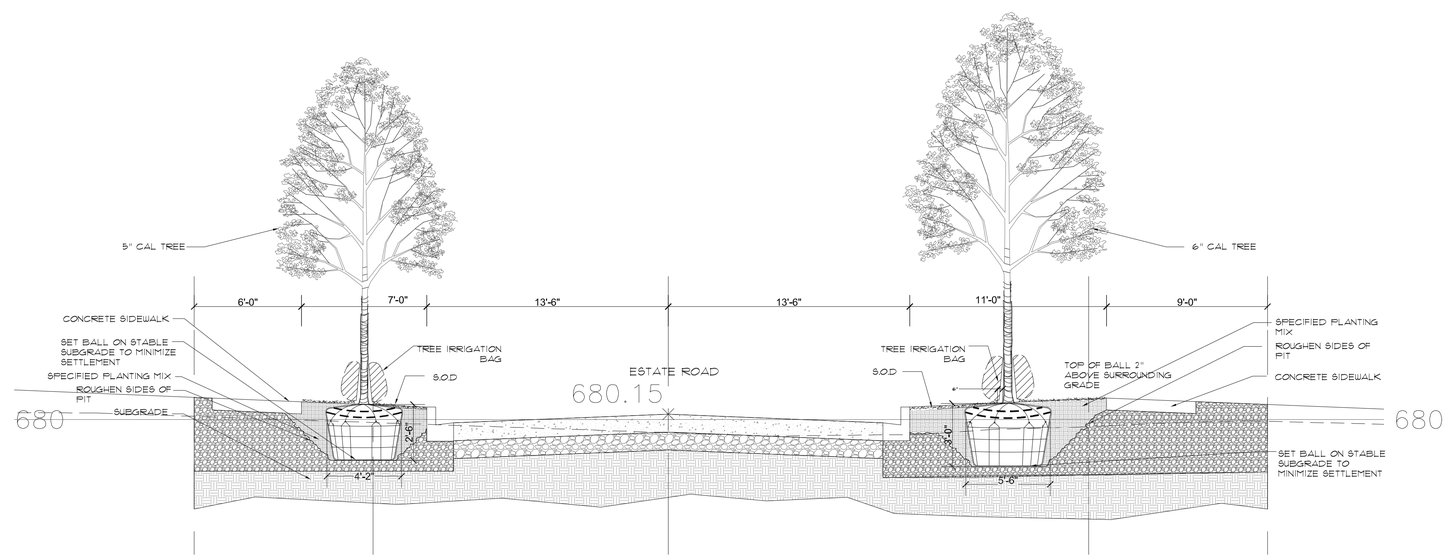

NOTES:

- LOCATE TOP OF ROOT BALL AND ROOT FLARE 2" ABOVE FINISHED GRADE, DEPENDING ON TREE SIZE AND SITE CONDITIONS.
- SUPPORT APPURTENANCES TO BE USED ONLY IF TREE FAILS TO REMAIN PLUMB.
- PRUNE TREES AFTER PLANTING AND AT DIRECTION OF THE LANDSCAPE ARCHITECT.

2 COLUMNAR TREE PLANTING DETAIL SCECTION G
SCALE: 1/4" = 1'-0"




3 SECTION THROUGH BIOSWALE @ SECTION I
SCALE: 1/4" = 1'-0"




4 SECTION THROUGH PARKWAY TYP.
SCALE: 1/4" = 1'-0"

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SITE SECTIONS

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## 1801 GREEN BAY ROAD
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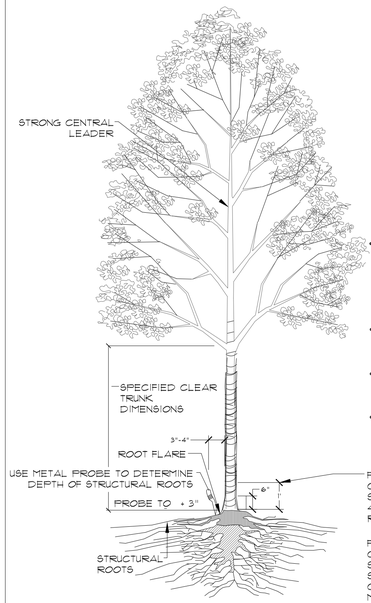


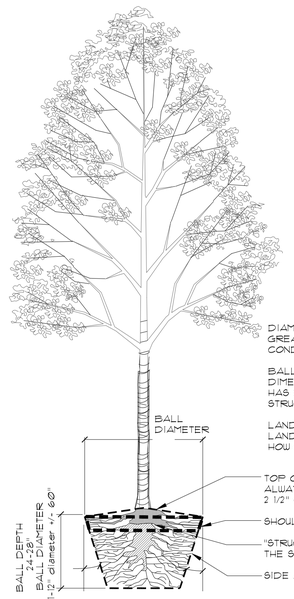

NOTES:

- PRIOR TO MEASURING CALIPER OF NURSERY GROWN TREES, SCRAPE BACK SOIL WHICH MAY BE ON STRUCTURAL ROOTS. EXPOSE ROOT FLARE IF POSSIBLE. TREES UNDER 3" IN CALIPER MAY NOT HAVE EVIDENT ROOT FLARE.
- DEPTH OF ROOT FLARE OR STRUCTURAL ROOTS MAY BE LOCATED USING A METAL PROBE.
- TREE SHALL EXHIBIT A WELL BALANCED HEAD W/ STRONG LATERAL BRANCHING REPRESENTATIVE OF THE SPECIES.
- LATERAL BRANCHING TO BE STRONG AND 360° AROUND.

FOR TREES UP TO AND INCLUDING 4" CALIPER, MEASURE 6" ABOVE TOPMOST STRUCTURAL ROOTS. FOR TREES ABOVE 4" CALIPER, MEASURE 12" ABOVE THE ROOT FLARE.

FINISHED BALL DIAMETER SHALL CONFORM TO MINIMUM ANSI Z60.1 STANDARDS OR GREATER DUE TO SPECIFIC WEATHER OR GROWING CONDITIONS. TYPICAL 11"/CALIPER INCH MINIMUM.

## 1 TREE PLANTING DETAIL
SCALE: 3/8" = 1'-0"




DIAMETER OF BALL SHALL BE 11"/CAL OR GREATER, DUE TO SOIL OR SEASONAL CONDITIONS.

BALL DIAMETER IS MEASURED AT WIDEST DIMENSION OF BALL AFTER EXCESS SOIL HAS BEEN REMOVED FROM ABOVE STRUCTURAL ROOTS.

LANDSCAPE ARCHITECT AND/ OR LANDSCAPE CONTRACTOR SHALL VERIFY HOW OR IF TREES HAVE BEEN ROOT PRUNED.

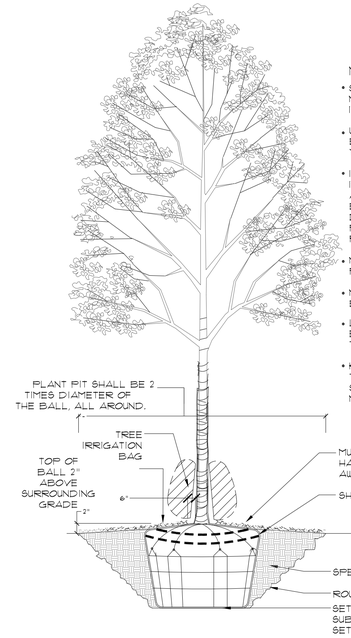
TOP OF ROOT BALL / ROOT FLARE NOT ALWAYS PRESENT ON TREES LESS THAN 2 1/2" CAL.

SHOULDER OF ROOT BALL

"STRUCTURAL ROOTS" - ROOTS WITHIN THE SHOULDER OF THE ROOT BALL

SIDE ANGLE OF BALL BETWEEN 21°-30°

## 2 SECTION THROUGH ROOT BALL
SCALE: 3/8" = 1'-0"




NOTES:

- SPECIFIED TURN BUCKLE, GUY CABLE, AND WIRE. NOTE SUPPORT APPURTENANCES TO BE USED ONLY IF TREE FAILS TO REMAIN PLUMB.
- USE OF LOW PROFILE BASKET WILL PERMIT BASKET BURLAP AND TWINE TO REMAIN INTACT THROUGH 1 YR GUARANTEE PERIOD.
- IT SHALL BE THE RESPONSIBILITY OF THE INSTALLING LANDSCAPE CONTRACTOR TO CONFIRM AND ATTEST THAT THE BURLAP ON THE TOP OF THE BALL AND TWINE HAS BEEN REMOVED AND/OR DETERIORATED AT THE END OF THE GUARANTEE PERIOD. IF BURLAP AND TWINE REMAIN, IT SHALL BE REMOVED.
- NO SYNTHETIC BURLAP OR TWINE SHALL BE PERMITTED.
- NO MULTIPLE LAYERS OF BURLAP OR TWINE SHALL BE PERMITTED OUTSIDE TREE BASKET.
- LIFT TREE FROM BOTTOM OF ROOT BALL USING EITHER BALL CHAIN AND/OR STRAPS. DO NOT LIFT TREE BY WIRES OF BASKET OR TRUNK.
- KEEP TREE IN A PLUMB AND STRAIGHT POSITION THROUGHOUT ESTABLISHMENT PERIOD. ADD SPECIFIED CABLE SUPPORTS ONLY IF TREE DOES NOT REMAIN PLUMB.

MULCH ENTIRE PLANT PIT WITH 3" OF TRIPLE GROUND HARDWOOD BARK. KEEP MULCH A MINIMUM OF 6" AWAY FROM TRUNK AND ROOT FLARE.

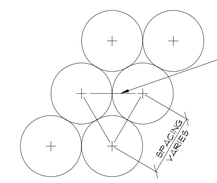
SHOULDER OF ROOT BALL

SPECIFIED PLANTING MIX

ROUGHEN SIDES OF PIT

SET BALL ON STABLE SUBGRADE TO MINIMIZE SETTLEMENT

## 3 SHADE TREE PLANTING WITH LOW PROFILE BRACKET
SCALE: 3/8" = 1'-0"

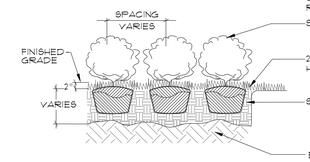



FOR CONTAINER SHRUBS: GENTLY REMOVE PLASTIC CONTAINER BEFORE PLANTING BEING CAREFUL TO KEEP ROOT SYSTEN INTACT.

TRIANGULATE SHRUBS IN MASS PLANTING UNLESS OTHERWISE DIRECTED BY LANDSCAPE ARCHITECT

IF DIRECTED BY LANDSCAPE ARCHITECT, PRUNE SHRUBS AFTER PLANTING. RETAIN NATURAL CHARACTER AND GENERAL SHAPE OF SHRUB.

SET CROWN OF SHRUBS SO AFTER SETTLEMENT OF SOIL AROUND BALL THE TOP OF THE BALL IS 1" ABOVE THE ADJACENT FINISHED GRADE. DO NOT PILE EXCESS SOIL FROM PLANTING OPERATIONS AROUND AND UP ON ROOT ZONE.



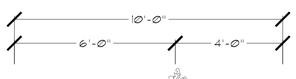

SET SHRUBS PLUMB AND STRAIGHT

2" DEPTH LAYER TRIPLE GROUND HARDWOOD BARK MULCH

SPECIFIED SOIL MIX, SEE NOTES

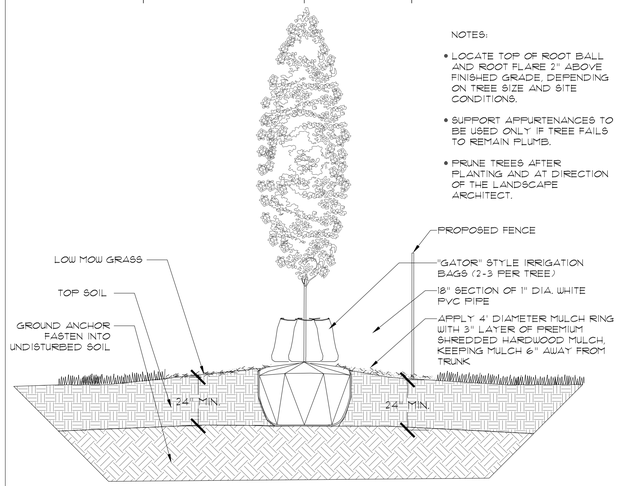
EXISTING SUBGRADE

## 4 SHRUB PLANTING DETAIL
SCALE: 1" = 1'-0"




NOTES:

- LOCATE TOP OF ROOT BALL AND ROOT FLARE 2" ABOVE FINISHED GRADE, DEPENDING ON TREE SIZE AND SITE CONDITIONS.
- SUPPORT APPURTENANCES TO BE USED ONLY IF TREE FAILS TO REMAIN PLUMB.
- PRUNE TREES AFTER PLANTING AND AT DIRECTION OF THE LANDSCAPE ARCHITECT.



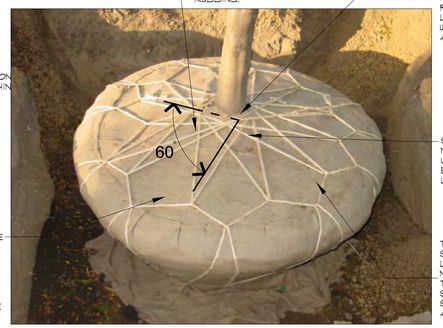

## 5 COLUMNAR TREE PLANTING DETAIL TYPICAL
SCALE: 3/8" = 1'-0"

BURLAP SHALL NOT BE BUNCHED UP UNDER ENCIRCLING SISAL TWINE.

BURLAP EXTENDS UP PAST SISAL TWINE TO PROTECT TRUNK FROM RUBBING.

DRUM LACING SHALL EXTEND FROM EDGE OF BALL TO TRUNK AND AROUND AT A MINIMUM OF 60° TO RETIB. DRUM LACING SHALL NOT WRAP COMPLETELY AROUND TRUNK.

INSTALLING CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL BURLAP AND TWINE REMAINING ON TOP OF BALL WITHIN ONE YEAR OF PLANTING.




SISAL TWINE SHALL NOT BE BUNCHED UP AND UNDER ENCIRCLING DRUM LACING.

BURLAP WITHIN THE BASKET SHALL BE SINGLE LAYER TREATED OR UNTREATED 12 OZ. OR LESS. NO SYNTHETIC BURLAP SHALL BE ACCEPTED.

TWINE BINDING SHALL BE 3 PLY OR LESS UNTREATED NATURAL OR TREATED SISAL. NO SYNTHETIC TWINE SHALL BE ACCEPTED.

## 6 DRUM LACING DETAIL
SCALE: 1/2" = 1'-0"

CONTRACTOR SHALL NOT LIFT "PACKAGE" BY WIRE BASKET OR TRUNK.

NO MULTIPLE LAYERS OF BURLAP OR TWINE SHALL BE PERMITTED OUTSIDE TREE BASKET.

LANDSCAPE ARCHITECT AND/ OR LANDSCAPE CONTRACTOR SHALL VERIFY THAT THE TREES HAVE BEEN ROOT PRUNED INCLUDING BUT LIMITED TO WHEN, HOW AND AT WHAT SIZE.

NO SYNTHETIC BURLAP OR TWINE SHALL BE PERMITTED. SEE DRUM LACING DETAIL.

TRUNK PROTECTION FOR SHIPPING
REMOVE AFTER PLANTING AND MAKING TREE PLUMB IN THE PLANT PIT.

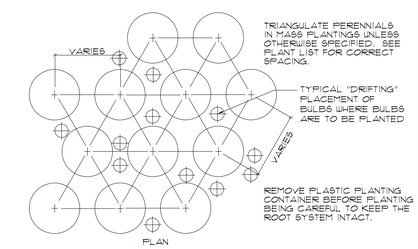
USE OF LOW PROFILE BASKET BURLAP WRAP AND TYING WILL PERMIT ITS BEING LEFT INTACT THROUGH 1 YR. GUARANTEE PERIOD.

INSTALLING CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL BURLAP AND TWINE REMAINING ON TOP OF BALL AFTER ONE GROWING SEASON.

SHOULDER OF BALL

4" TOP OF THE LOOP SHALL BE AT LEAST 4" BELOW SHOULDER OF THE TREE BALL BUT NO GREATER THAN 10" BELOW THE SHOULDER OF THE TREE BALL.

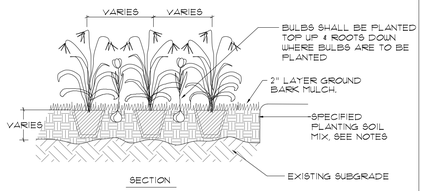
## 7 LOW PROFILE PACKAGE
SCALE: 1/2" = 1'-0"




TRIANGULATE PERENNIALS IN MASS PLANTINGS UNLESS OTHERWISE SPECIFIED. SEE PLANT LIST FOR CORRECT SPACING.

TYPICAL "DRIFTING" PLACEMENT OF BULBS WHERE BULBS ARE TO BE PLANTED

REMOVE PLASTIC PLANTING CONTAINER BEFORE PLANTING BEING CAREFUL TO KEEP THE ROOT SYSTEM INTACT.




BULBS SHALL BE PLANTED TOP UP 4 ROOTS DOWN WHERE BULBS ARE TO BE PLANTED

2" LAYER GROUND BARK MULCH.

SPECIFIED PLANTING SOIL MIX, SEE NOTES

EXISTING SUBGRADE

## 8 PERENNIAL PLANTING DETAIL
SCALE: 1" = 1'-0"

Jacobs/Ryan Associates
Landscape Architects
1527 North Sandburg Terrace Chicago, Illinois 60610 (312) 664-3217

REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 2-21-20 | ISSUE FOR REVIEW | DO |
| 4-17-20 | PER VILLAGE COMMENTS | DO |
| 6-8-20 | PER VILLAGE COMMENTS | DO |

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300 MARQUARDT DRIVE, WHEELING, ILLINOIS 60090 PH. (847) 215-1133 | FAX (847) 215-1177
1129 MAIN STREET UNION GROVE, WISCONSIN 53182 PH. (262) 878-6200 | ig@igconsulting.net

PLANTING DETAILS

DESIGN: B.J. DRAFTING: D.O.
SCALE: 1"=40' DATE: 02-21-2020
FIRM NO. 184-001330

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS

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PROJECT No. 18557

## PLANTING GENERAL NOTES:

1. PROVIDE ALL SHADE TREES AS SPECIMEN QUALITY, WELL MATCHED, WELL SHAPED, LIMBED UP 7'-0" MIN. ABOVE GROUND UNLESS NOTED OTHERWISE ON DRAWINGS.
2. ALL DEPOSITS AND DOWN PAYMENTS FOR PLANT MATERIAL SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR.
3. PRIOR TO MEASURING CALIPER AND CLEAR TRUNK HEIGHT, NURSERY MUST REMOVE ANY EXCESS SOIL, WHICH MIGHT BE PLACED UPON THE TOP OF THE STRUCTURAL ROOTS.
4. BALL SIZE SHALL FOLLOW, AT A MINIMUM, THE ANSI 2010 SPECIFICATIONS BUT PREFERABLY 11" WIDTH FOR EVERY 1" OF CALIPER AND 2/3 DEPTH OF THE BALL DIAMETER. SEASONAL DIGGING AND SPECIFIC WEATHER CONDITIONS MAY REQUIRE UNIQUE DIGGING PROCEDURES. LANDSCAPE CONTRACTOR IS TO COORDINATE DIGGING AND HANDLING OF TREES BASED ON SEASONAL REQUIREMENTS.
5. IF TREES ARE MECHANICALLY DUG, "LOW PROFILE" BASKETS MUST BE USED. TREES MAY BE SUPPLIED IN "HIGH PROFILE" BASKETS IF THE FOLLOWING TASKS ARE PREFORMED AFTER SETTING TREE IN THE PLANTING PIT. ALL TOP LOOPS AND RINGS EXTENDING OVER THE SHOULDER OF THE BALL SHALL REMOVED AND THE TOP OF BALL ROPES SHALL BE RETIED TO THE BASKET.
6. ALL TREES LABELED "SPRING DIG ONLY" SHALL BE DUG IN THE NURSERY AT THE MOST HORTICULTURALLY APPROPRIATE TIME (I.E. PRIOR TO LEAF OUT) AND HELD AT THE NURSERY UNTIL DELIVERY TO THE SITE FOR PLANTING. IF THE SITE IS NOT READY FOR "SPRING ONLY" PLANTS,
7. NOTIFY LANDSCAPE ARCHITECT IF PRE-DUG TREES AND OTHER PLANTING MATERIAL CANNOT BE PLANTED IN SEASONAL CONDITIONS AS OUTLINED IN SPECIFICATIONS. LANDSCAPE CONTRACTOR WILL PAY ALL ASSOCIATED COSTS TO HOLD AND MAINTAIN TREES AT THE NURSERY UNTIL SEASONAL CONDITIONS PERMIT. PLANTS HELD AT THE NURSERY WILL REQUIRE MAINTENANCE INCLUDING, BUT NOT LIMITED TO, WATERING, SPRAYING FOR INSECTS, MULCHING, AND IF REQUIRED, REWRAPPING OF THE BALL. HOLDING YARD NURSERY WILL KEEP LANDSCAPE ARCHITECT INFORMED AS TO MAINTENANCE TASKS PERFORMED.
8. QUANTITIES OF PLANTS INDICATED ON THE PLANT LIST ARE INCLUDED FOR CONVENIENCE ONLY. IN THE EVENT THAT DISCREPANCIES OCCUR, THE ACTUAL PLANT DESIGNATIONS AS SHOWN ON THE DRAWINGS SHALL GOVERN.
9. TREES SHALL BE SET STRAIGHT AND PLUMB IN THE PLANTING PIT. THE TOP OF THE BALL SHALL BE TWO INCHES (2") ABOVE SURROUNDING FINISHED GRADE. NO STAKING OR GUYING IS ANTICIPATED, HOWEVER IF THE TREE IS UNABLE TO MAINTAIN PLUMB DURING THE GUARANTEE PERIOD THE LANDSCAPE CONTRACTOR SHALL STAKE AND OR GUY THE TREE AS SPECIFIED.
10. LANDSCAPE CONTRACTOR SHALL NOT PLACE PLANTING SOIL ON THE TOP OF THE BALL DURING BACKFILLING OPERATIONS. SISAL TWINE ON THE TOP OF THE BALL SHALL BE LEFT IN PLACE DURING THE GUARANTEE PERIOD. IF NOT FULLY ROTTED SHALL BE REMOVED PRIOR TO FINAL ACCEPTANCE. IT IS THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR TO CUT AND REMOVE ALL BURLAP AND TWINE REMAINING ON TOP OF ROOT BALL AT THE END OF THE GUARANTEE PERIOD.
11. LANDSCAPE CONTRACTOR SHALL KEEP GATOR BAGS FILLED THROUGHOUT PERIODS OF DROUGHT. BAGS SHALL BE REMOVED AT THE END OF GUARANTEE PERIOD.
12. NURSERIES SHALL PROVIDE CERTIFICATION THAT ALL PLANT MATERIAL SUPPLIED FOR THE PROJECT HAVE BEEN GROWN, HARVESTED, SHIPPED, AND HELD PER SPECIFICATIONS.
13. GENERAL CONTRACTOR SHALL PROVIDE INFORMATION ON THE NURSERY OF ORIGIN FOR ALL TREES AND SHRUBS.
14. TREE WRAP TAPE IS TO BE BURLAP SEAMED ALONG BOTH OUTSIDE EDGES, AT LEAST 10 OZ. IN WEIGHT, MINIMUM OF 6" WIDTH, AS SUPPLIED BY GEMPLER'S (800.382.8473). ALL PURPOSE BURLAP IS NOT ACCEPTABLE. BURLAP WRAP TO BE PROVIDED ON FALL INSTALLED TREES.
15. ALL INVASIVE WEEDS OR GRASSES SHALL BE REMOVED FROM TOP OF ROOT BALL PRIOR TO BACKFILLING.

## SOIL NOTES:

1. EXCAVATE FILL AND DISPOSE OF EXCESS FILL MATERIAL LEGALLY OFF SITE FOR ALL PLANTERS.
2. REMOVE ALL CONCRETE CHUNKS, STONES, GARBAGE, WOOD, AND OTHER DEBRIS AND CONFIRM THAT SUBGRADE ELEVATIONS HAVE BEEN MET PRIOR TO INSTALLING PLANTING SOIL MIX.
3. SOIL MIX AT CENTER OF PARKWAY PLANTINGS SHALL BE MOUNDED 4" ABOVE CURB AT CENTER OF PARKWAY. SOIL MIX DEPTH FOR TREES SHALL BE TO BOTTOM OF ROOTBALL WHICH MAY BE 30-36" TOTAL DEPTH, DEPENDING ON ACTUAL SIZE OF ROOTBALL.
4. PLANTING SOIL MIX FOR SODDED AREAS SHALL BE THREE PARTS TOPSOIL, ONE PART SAND AND ONE PART PINE BARK FINES. TOP SOIL MIX DEPTH SHALL BE 6" FOR SOD.
5. ENHANCED PLANTING SOIL MIX FOR TREE PITS AND PLANTERS: 'TERRAVIVA CHATEAU SOIL MIX'. MIXTURE OF SHALE, SAND AND BARK FINES WILL BE PREMIXED BEFORE FINAL MIXTURE WITH TOPSOIL DONE ON SITE.

## GENERAL PLANTED BIOSWALE MAINTENANCE AND CARE

1. WATERING: FOR THE FIRST THREE WEEKS AFTER PLANTING, WATER THE BIOSWALE ONCE PER WEEK. IT IS NOT NECESSARY TO WATER DURING A GIVEN WEEK IF ONE INCH OF RAIN ACCUMULATES.
2. WATER THE BIOSWALE DURING PERIODS OF DROUGHT IN MID-SUMMER, IF NEEDED.
3. WEEDING: USING A FIELD GUIDE, IDENTIFY WHAT IS A WEED VERSUS WHAT IS A BIOSWALE PLANT. REMOVE IDENTIFIED WEEDS. TIP: YOU MAY WANT TO MARK BIOSWALE PLANTS WITH A SMALL PLANTING STAKES UNTIL THEY ARE ESTABLISHED.
4. MULCH: UNTIL THE BIOSWALE PLANTS ARE ESTABLISHED, MULCHING THE EDGE / SLOPE OF THE BIOSWALE INTERIOR WILL DISCOURAGE WEED GROWTH AND SOIL EROSION.
5. SEDIMENTATION: IT IS ALWAYS BEST TO PROTECT THE BIOSWALE FROM THE POSSIBILITY OF SILT ENTERING THE BIOSWALE BE DILIGENT, CONDITIONS CHANGE. IF BIOSWALE DOES HAVE SEDIMENT BUILD UP, AN EASY REMEDY IS TO DIG SMALL PITS IN THE SWALE AND REMOVE THE SOIL. OVER TIME THESE WILL NATURALLY FILL IN AND THE PLANTS GROW OVER. THIS IS LESS INVASIVE THAN TRYING TO SKIM OFF LARGER AREAS AND DISTURBS THE PLANT COMMUNITY LESS. IN SEVERE CASE IT MAY BE NECESSARY TO RE-DIG THE ENTIRE BASIN.

## LIST OF PRE-APPROVED NURSERIES:

SHADE AND ORNAMENTAL TREES:
1) Doty Nurseries (630) 365-9063
2) Gro Horticultural Enterprises (847) 669-8658
3) Hinsdale Nurseries (630) 323-1411
4) Johnson's Nursery, Inc. (262) 252-4980
5) Kaneville Tree Farms, Inc. (630) 557-2793
6) Mariani Plants (262) 857-6529
7) Spring Grove Nursery (815) 448-2097
8) Wilson Nurseries (847) 683-3700

SHRUBS:
1) Hinsdale Nurseries (630) 323-1411
2) Johnson's Nursery, Inc. (262) 252-4980
3) Mariani Plants (866) 627-4264
4) Midwest Groundcovers (847) 742-1790
5) Wilson Nurseries (847) 683-3700

PERENNIALS & BULBS:
1) Hinsdale Nurseries (630) 323-1411
2) Hoffie Nursery (815) 923-2518
3) Johnson's Nursery, Inc. (262) 252-4980
4) Klehm's Song Sparrow Farm and Nursery (608) 883-2356
5) Mariani Plants (866) 627-4264
6) Midwest Groundcovers (847) 742-1790
7) Possibility Place Nursery (708) 534-3988
8) Twixwood Nursery (269) 471-7408

## WATER DISTRIBUTION GENERAL NOTES:

1. FIELD LOCATE ALL UTILITIES A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. FOR UTILITY LOCATION CALL DIGGER AT (1-312-744-7000). ANY DISCREPANCIES WITH THE DRAWING SHALL BE REPORTED TO THE ARCHITECT OF RECORD IMMEDIATELY.
2. HOSE BIBS SHALL BE LOCATED TO ENSURE ALL LANDSCAPE AREAS HAVE ADEQUATE WATER SUPPLY FOR PLANT ESTABLISHMENT. WATER TRUCK IS ACCEPTABLE DURING CONSTRUCTION.
3. THE IRRIGATION SYSTEM SHOULD HAVE 55 TO 60 LBS OF STATIC PRESSURE PRIOR TO ANY IRRIGATION EQUIPMENT AND BACKFLOW PREVENTOR BEING INSTALLED. 40 PSI IS THE MINIMUM WATER SUPPLY REQUIRED AT THE POINT OF CONNECTION AT THE DOWNSTREAM SIDE OF THE BACKFLOW PREVENTOR. CONTRACTOR TO PROVIDE A BOOSTER PUMP ASSEMBLY IF NEEDED TO MAINTAIN PRESSURE AND PROVIDE PROPER OPERATION.

## TREE PROTECTION NOTES:

1. CONSTRUCTION FENCING IS TO BE INSTALLED AS SHOWN ON DOCUMENTS SO AS TO PROTECT TREES DURING CONSTRUCTION. FENCING SHALL NOT BE REMOVED DURING CONSTRUCTION NOR SHALL CONSTRUCTION MATERIALS BE LOCATED WITHIN THE PROTECTION FENCING ENCLOSURE.
2. EXISTING CONDITIONS SHOWN OF THE DRAWINGS MAY NOT BE AN EXACT REPRESENTATION OF THE CONDITIONS THE CONTRACTOR MAY ENCOUNTER. THE OWNER, ENGINEER AND LANDSCAPE ARCHITECT SHALL NOT BE RESPONSIBLE FOR INTERPRETATIONS AND CONCLUSIONS DRAWN THEREFROM.
3. CONTRACTOR SHALL COMPLETELY REMOVE AND LEGALLY DISPOSE, OFF SITE, OF ALL VEGETATION LABELED TO BE REMOVED. ALL GREEN ASH TREES SHALL BE REMOVED AND DISPOSED ACCORDING TO ILLINOIS CODES.
4. IF CONSTRUCTION IS TO OCCUR WITHIN THE ROOT ZONE TREES LABELED "TO REMAIN", CONTRACTOR SHALL PERFORM PLANT CARE, AND CROWN REDUCTION PRUNING TO COMPENSATE FOR LOSS OF ROOTS. CONSTRUCTION WITHIN THE ROOT ZONE OF TREES "TO REMAIN" SHALL BE ADDRESSED BY ROOT PRUNING, AUGURING OR AIR SPADING, AS NEEDED. ALL SUCH WORK TO BE DONE WITH THE CONSULTATION/SUPERVISION OF A CERTIFIED ARBORIST.
5. CONTRACTOR SHALL REPLACE ALL PLANTS "TO REMAIN" INCLUDING THOSE WITH MAJOR BRANCHES BROKEN± TRUNKS DAMAGED, OR HAVE DIED AS A RESULT OF CONSTRUCTION TAKING PLACE IN THEIR ROOT ZONES.

VILLAGE CODE
PRIORITY ONE TREES
FOR EACH PRIORITY ONE TREE, THE VILLAGE ARBORIST SHALL DETERMINE WHETHER THE CUTTING OR DESTRUCTION OF THE PRIORITY ONE TREE CAN BE AVOIDED BY A REASONABLE MODIFICATION TO THE TREE IMPACT ACTIVITY.

**1801 Green Bay Road : Plant Schedule**

| Key | Totals | Botanical Name | Common Name | Size and Root | Spacing | Comments |
|---|---|---|---|---|---|---|
| | | | | | | |
| **SHADE TREES** | | | | | | |
| ATM | 14 | Tilia americana 'McKSentry' | American Sentry® linden | 6" cal. | on plans | spring dig only, specimen selected |
| QBS | 13 | Quercus bicolor | Swamp White Oak | 6" cal. | on plans | spring dig only, specimen selected |
| ARR | 8 | Acer rubrum 'Redpointe' | Redpointe' Red Maple | 6" cal. | on plans | spring dig only, specimen selected |
| ARR | 6 | Acer rubrum 'Redpointe' | Redpointe' Red Maple | 5" cal. | on plans | spring dig only, specimen selected |
| ARR | 2 | Acer rubrum 'Redpointe' | Redpointe' Red Maple | 4" cal. | on plans | spring dig only, specimen selected |
| KCT | 12 | Gymnocladus dioicus 'espresso' | Kentucky Coffee tree | 6" cal. | on plans | spring dig only, specimen selected |
| KCT | 1 | Gymnocladus dioicus 'espresso' | Kentucky Coffee tree | 5" cal. | on plans | spring dig only, specimen selected |
| UAP | 15 | Ulmus americana 'Princeton' | Princeton Elm | 6" cal. | on plans | spring dig only, specimen selected |
| UAP | 1 | Ulmus americana 'Princeton' | Princeton Elm | 5" cal. | on plans | spring dig only, specimen selected |
| ARM | 20 | Acer x freemanii 'Armstrong Gold' | Armstrong Gold Maple | 6" cal. | on plans | spring dig only, specimen selected |
| RPO | 6 | Quercus × warei 'Long' | Regal Prince Oak | 6" cal. | on plans | spring dig only, specimen selected |
| QWK | 14 | Quercus x warei 'Nadler' | Kindred Spirit Hybrid Oak | 6" cal. | on plans | spring dig only, specimen selected |
| QMP | 6 | Quercus macrocarpa 'JFS-KW3' PP 22815 | Urban Pinnacle® Bur Oak | 6" cal. | on plans | spring dig only, specimen selected |
| CBF | 14 | Carpinus betulus 'Frans Fontaine' | Columnar Hornbeam | 6" cal. | on plans | spring dig only, specimen selected |
| CBF | 14 | Carpinus betulus 'Frans Fontaine' | Columnar Hornbeam | 5" cal. | on plans | spring dig only, specimen selected |
| QRS | 17 | Quercus robur x alba 'JFS-KW1QX' | Streetspire Oak | 6" cal. | on plans | spring dig only, specimen selected |
| PAE | 8 | Platanus acerifolia 'Morton Circle' | Exclamation London Planetree | 6" cal. | on plans | spring dig only, specimen selected |
| RB | 4 | Betula nigra 'Fargo" | River Birch Fargo Multi stem | 5" cal. | on plans | spring dig only, specimen selected |
| LTA | 8 | Liriodendron tulipifera 'Arnold' | Tulip Tree | 5" cal. | on plans | spring dig only, specimen selected |
| SSM | 6 | Acer miyabei 'Morton' | State Street Miyabe's maple | 6" cal. | on plans | spring dig only, specimen selected |
| | | | | | | |
| **SHRUBS** | | | | | | |
| HTS | 29 | Hydrangea serrata 'Mak20' | Hydrangea tuff stuff | #5/ 36"x36" | on plans | specimen quality |
| SBT | on plan | Spiraea betulifolia 'Tor' | Tor Spirea | #5/ 36"x36" | on plans | plant 15 /trasformer |
| | | | | | | |
| **PLANTING MIX** | | | | | | |
| **Mix A (205 sft)** | | | | | | |
| Spring | | Actaea racemosa | Black cohosh | | | |
| | | Narcissus 'King Alfred' | Trumpet daffodil | | | |
| Summer | | Begonia Dragon Wing® Pink | Begonia Pink | # 4.5 | 12" oc. | |
| Fall | | Chrysanthemum yellow | Yellow Daisy Mums | #1 gal | 12"oc. | |
| Winter | | Evergreen Boughes | | | | |
| | | | | | | |
| **Mix B (1205 sft)** | | Allium 'Chivette' | Chives | #1qt | | |
| | | Rudbeckia 'American Gold Rush' | Black-eyed Susan | #1qt | | |
| | | Pennisetum alopecuroides 'Ginger Love' | Fountain grass | #1qt | | |
| | | Lobelia siphilitica | blue cardinal flower | #1qt | | |
| | | Amsonia 'blue star' | | #1qt | | |
| | | Hosta Thread grass | | #1qt | | |
| | | | | | | |

NOTE: 189 TREES PLANTED TOTALING TO 1,096 CALIPER INCHES

NOTE: "SPECIES OF TREES MAY BE SUBSTITUTED AS AVAILABILITY ALLOWS"
"ALL VARIETIES SHALL BE TREES ON THE APPROVED VILLAGE LIST"

**1801 Green Bay Road : Plant Schedule**

| | |
|---|---|
| **BIOSWALE (5315 SQF)** | |
| Botanical Name | Common Name |
| Agropyron elongatum | Tall Wheatgrass |
| Alisma subcordatum | American Water Plantain |
| Symphyotrichum lanceolatum | Aster lanceolatus |
| Bidens cernua | Nodding Beggarticks |
| Bouteloua hirsuta | Hairy Grama |
| Carex stipata | Awlfruit Sedge |
| Carex vulpinoidea | Fox sedge |
| Eleocharis obtusa | Blunt spikerush |
| Elymus canadensis | Canada Wild Rye |
| Pascopyrum smithii | Western Wheatgrass |
| Helianthus grosseserratus | Sawtooth Sunflower |
| Panicum virgatum | Switchgrass |
| Schizachyrium scoparium | Little Bluestem |
| Bolboschoenus fluviatilis | River Bulrush |
| Schoenoplectus tabernaemontani | Softstem Bulrush |
| Spartina pectinata | Prairie Cordgrass |
| Verbena hastata | American blue vervain |
| Eleocharis erythropoda | Bald Spikerush |
| Solidago sempervirens | Seaside Goldenrod |
| Juncus effusus | Common Rush |
| | |

**1801 Green Bay Road : Plant Schedule**

| |
|---|
| **LOW MOW GRASS (SEED TYPE)** |
| Common Name |
| |
| Janeston Chewing Fescne |
| Quatro Sheep Fescue |
| Sealink Slender Fescue |
| Sword Hard Fescue |
| Aurora Fescue |
| Kent Creeping Red Fescue |
| |
| *plant in early spring at the rate of 10 lbs/1000sf |
| |


Jacobs/Ryan Associates
Landscape Architects
1527 North Sandburg Terrace Chicago, Illinois 60610 (312) 664-3217


REVISIONS

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PLANTING DETAILS

DESIGN: B.J. DRAFTING: D.O.
SCALE: 1"=40' DATE: 02-21-2020
FIRM NO. 184-001330

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS


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PROJECT No. 18557

# TREE REMOVAL & PRESERVATION PLAN

## 1801 GREEN BAY ROAD

GLENCOE, ILLINOIS

**2019**

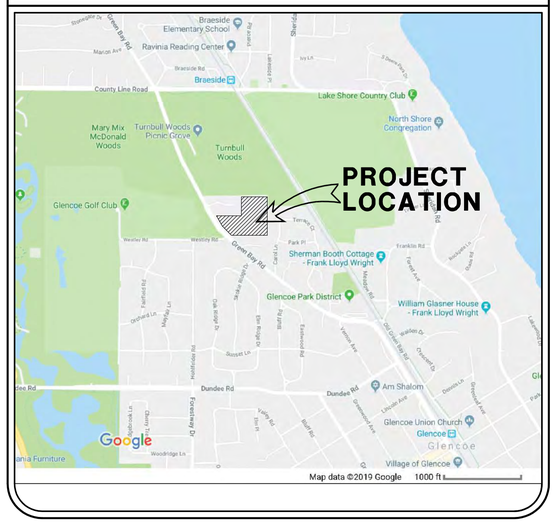
## LEGEND

| EXISTING | | PROPOSED |
|---|---|---|
| | STORM SEWER | |
| | SANITARY SEWER | |
| | WATER MAIN | |
| | GAS MAIN | |
| | ELECTRIC LINE (BURIED) | |
| | OVERHEAD ELECTRIC, | |
| | SANITARY MANHOLE | |
| | STORM MANHOLE | |
| | STORM CATCH BASIN | |
| | UTILITY MANHOLE | |
| | TELEPHONE/UTILITY PEDESTAL | |
| | STORM INLET | |
| | UTILITY POLE | |
| | FIRE HYDRANT | |
| | VALVE VAULT | |
| | STREET LIGHT | |
| | TRANSFORMER | |
| | ELECTRIC PEDESTAL | |
| | EDGE OF PAVEMENT | |
| | CURB & GUTTER | |
| | DRAINAGE FLOW | |
| | EMERGENCY OVERLAND FLOW ROUTE | |
| × 691.18 | SPOT GRADE | |
| | TOP OF CURB ELEVATION | |
| | TOP OF PAVEMENT ELEVATION | |
| | TOP OF FOUNDATION ELEVATION | |
| | ROOT PRUNING | |
| | STAKED SILT FENCE | |
| | TREE PROTECTION FENCE | |
| | CONSTRUCTION FENCE | |

**THE CONTRACTOR MUST CALL J.U.L.I.E FOR THE LOCATION AND STAKING OF EXISTING UNDERGROUND UTILITIES (GAS, ELECTRIC, TELEPHONE, ETC.) AT 1-800-892-0123 48 HOURS PRIOR TO DIGGING.**

VILLAGE CONSTRUCTION HOURS OF 7AM-6PM M-F, 9AM-6PM SATURDAY AND NO WORK ON SUNDAYS OR HOLIDAYS.

## LOCATION MAP




SECTION 1, TOWNSHIP 42 N, RANGE 12 E

**NOTE:**
EXISTING WATER, SANITARY SEWER AND STORM SEWER INFORMATION IS BASED ON RECORDS PROVIDED BY THE MUNICIPALITY AND SURVEY DATA DETERMINED BY IG CONSULTING, INC. CONTRACTOR MUST VERIFY LOCATIONS, DEPTHS, MATERIALS AND POTENTIAL CONFLICTS PRIOR TO BIDDING AND CONSTRUCTING THE PROPOSED IMPROVEMENTS. SUCH VERIFICATION SHALL ALSO INCLUDE FACILITIES OWNED AND OPERATED BY VARIOUS UTILITY COMPANIES. ENGINEER MAKES NO REPRESENTATION AS TO THE ACCURACY OR EXISTENCE OF PLAN INFORMATION PROVIDED BY OTHERS.

## INDEX


1 – COVER SHEET
2 – EXISTING CONDITIONS
3 – TREE INVENTORY & SPECIFICATIONS
4 – TREE INVENTORY & SPECIFICATIONS
5 – TREE REMOVAL PLAN
6 – TREE PRESERVATION PLAN
7 – CONSTRUCTION STANDARDS


ALL ROADWAY CONSTRUCTION SHALL CONFORM TO THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AND ALL AMENDMENTS THERETO AS ADOPTED BY THE STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION (I.D.O.T.).

STORM SEWER, SANITARY SEWER AND WATER MAIN CONSTRUCTION SHALL CONFORM TO THE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS, LATEST ISSUE, AND THE VILLAGE OF GLENCOE SUBDIVISION AND ENGINEERING GUIDE, INCLUDING THE LATEST CONSTRUCTION DETAILS, WHICHEVER IS MORE STRINGENT.

VILLAGE BENCHMARK #296:
NORTHWEST BOLT OF FIRE HYDRANT AT SOUTHWEST CORNER OF WESTLEY ROAD AND FAIRFIELD ROAD, 200'± WEST OF GREENBAY ROAD.
ELEVATION= 646.11

SITE BENCHMARK:
NORTHEAST BONNET BOLT OF FIRE HYDRANT AT THE NORTHEASTERLY CORNER OF #1799 GREENBAY ROAD
ELEVATION = 690.27 NAVD 88 (GEOID12B)

REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 12/06/19 | FOR SUBMITTAL | S.R.M. |
| 01/17/20 | FOR SUBMITTAL | S.R.M. |
| 02/20/20 | FOR SUBMITTAL | S.R.M. |
| 04/17/20 | PER VILLAGE COMMENTS | S.R.M. |
| 05/08/20 | PER VILLAGE COMMENTS | S.R.M. |


IG CONSULTING, INC.
CONSULTING CIVIL ENGINEERS, PLANNERS & LAND SURVEYORS
300 MARQUARDT DRIVE WHEELING, ILLINOIS 60090 PH. (847) 215-1133 | FAX (847) 215-1177
1129 MAIN STREET UNION GROVE, WISCONSIN 53182 PH. (262) 878-6200 | ig@igconsulting.net


COVER SHEET

DESIGN: K.C.L. | DRAFTING: S.R.M
SCALE: NONE | DATE: 10/28/19

FIRM NO. 184-001330

FOREST EDGE SUBDIVISION
1801 GREEN BAY ROAD
GLENCOE, ILLINOIS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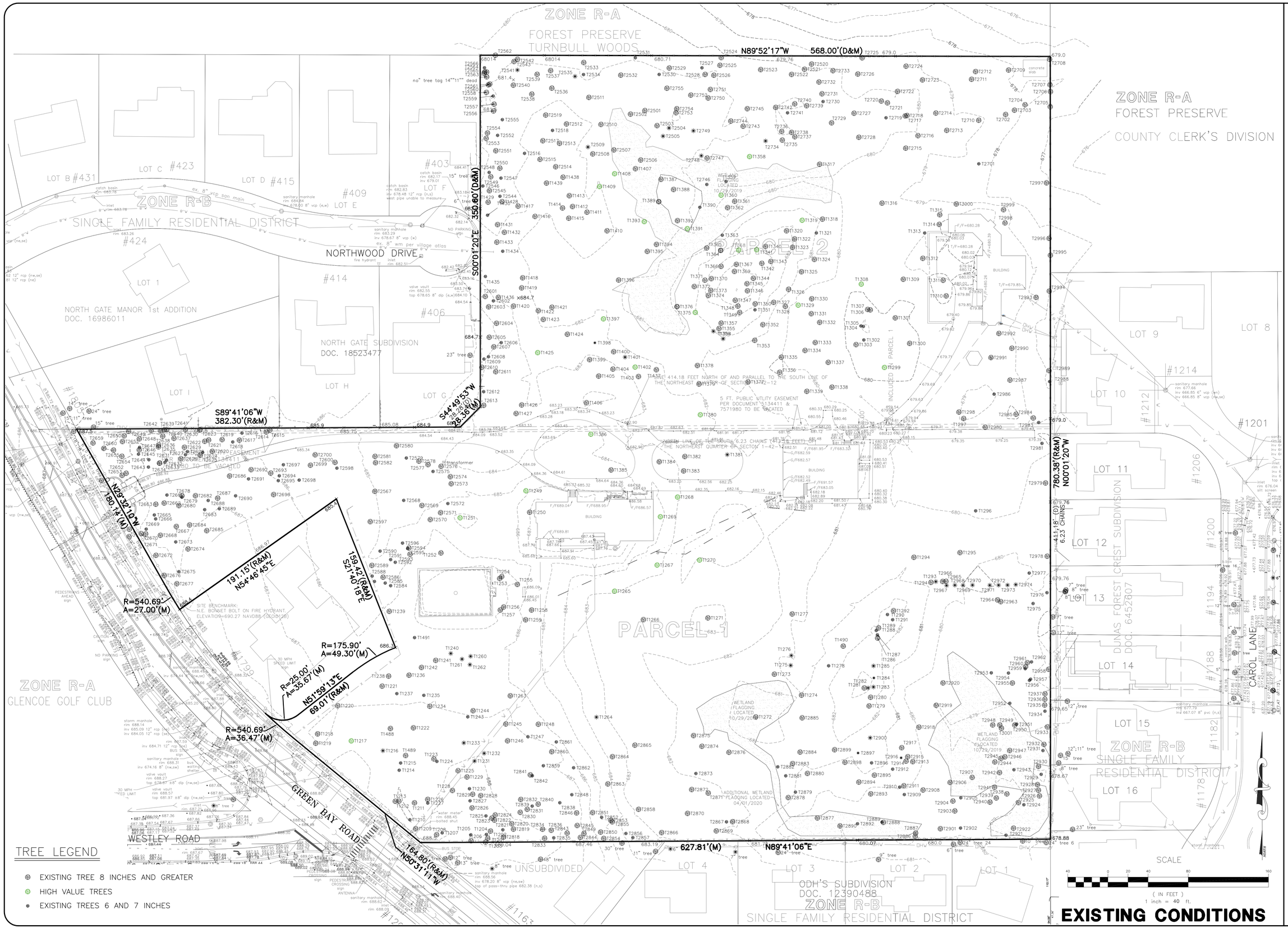
PROJECT No. 18557




## TREE LEGEND

- EXISTING TREE 8 INCHES AND GREATER
- HIGH VALUE TREES
- EXISTING TREES 6 AND 7 INCHES

# EXISTING CONDITIONS

## REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 12/20/19 | FOR SUBMITTAL | S.R.M. |
| 01/17/20 | FOR SUBMITTAL | S.R.M. |
| 02/05/20 | FOR SUBMITTAL | S.R.M. |
| 02/19/20 | FOR SUBMITTAL | S.R.M. |
| 04/17/20 | PER VILLAGE COMMENTS | S.R.M. |
| 05/08/20 | PER VILLAGE COMMENTS | S.R.M. |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1129 MAIN STREET UNION GROVE, WISCONSIN 53182 PH. (262) 878-6200 | ig@igconsulting.net


EXISTING CONDITIONS | DESIGN: K.C.L. | DRAFTING: S.R.M. | SCALE: 1"=40' | DATE: 10/28/19

FIRM NO. 184-001330

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
### GLENCOE, ILLINOIS


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PROJECT No. 18557

| Tag No. | Size (") | Common Name | Village Code classification | Cond | Form | Action Code | Notes |
|---|---|---|---|---|---|---|---|
| 1201 | 18 | Black Locust | | 3 | 2 | | |
| 1202 | 7 | Black Cherry | R | 6 | 6 | X | Dead |
| 1203 | 18 | Ash | R | 6 | 6 | X | Topped at 10' |
| 1204 | 17 | Black Locust | | 2 | 2 | | |
| 1205 | 6 | Buckthorn | R | 3 | 3 | X | |
| 1206 | 9 | Black Locust | | 2 | 3 | | |
| 1207 | 7 | Buckthorn | R | 3 | 3 | X | |
| 1208 | 18 | Shagbark Hickory | HR | 4 | 4 | X | Trunk Rot |
| 1209 | 20 | Siberian Elm | | 4 | 3 | X | Encroaching onto nearby tree |
| 1210 | 7 | Ash | R | 6 | 6 | X | Dead |
| 1211 | 8 | Ash | R | 6 | 6 | X | Dead |
| 1212 | 9 | Ash | R | 6 | 6 | X | Dead |
| 1213 | 12 | American Elm | H | 2 | 3 | | |
| 1214 | 7 | American Elm | | 2 | 3 | | |
| 1215 | 7 | Ash | R | 6 | 6 | X | Dead |
| 1216 | 13 | Eastern White Pine | H | 2 | 2 | RP | |
| 1217 | 30 | White Oak | H | 1 | 1 | RP | |
| 1218 | 14 | Ash | R | 6 | 6 | X | Dead |
| 1219 | 14 | Buckthorn | R | 3 | 3 | X | Multi stem trunk: 7,7 |
| 1220 | 9 | Buckthorn | R | 4 | 3 | X | Trunk Rot |
| 1221 | 10 | Ash | R | 6 | 6 | X | Dead |
| 1222 | 29 | White Oak | H | 2 | 3 | RP | |
| 1223 | 27 | White Oak | H | 2 | 2 | | Trunk rot, basal rot |
| 1224 | 6 | Black Locust | | 3 | 4 | | |
| 1225 | 15 | Linden | HR | 5 | 3 | X | Trunk rot, basal rot |
| 1226 | 9 | Buckthorn | R | 3 | 4 | X | |
| 1227 | 6 | Buckthorn | R | 5 | 5 | X | Girdled roots |
| 1228 | 15 | Black Locust | | 2 | 2 | | |
| 1229 | 12 | Black Locust | | 2 | 2 | | |
| 1230 | 7 | Black Locust | | 3 | 3 | | |
| 1231 | 14 | Eastern White Pine | H | 2 | 2 | | |
| 1232 | 17 | Eastern White Pine | H | 3 | 3 | | |
| 1233 | 10 | Eastern White Pine | H | 3 | 4 | X | Lean |
| 1234 | 9 | Shagbark Hickory | H | 2 | 2 | | |
| 1235 | 6 | Hawthorne | | 5 | 5 | R | |
| 1236 | 17 | Shagbark Hickory | H | 2 | 3 | R | |
| 1237 | 7 | Ash | R | 6 | 6 | X | Dead |
| 1238 | 18 | Buckthorn | R | 3 | 3 | X | Multi stem trunk: 18" at base |
| 1239 | 31 | White Oak | H | 3 | 2 | | |
| 1240 | 16 | Eastern White Pine | HR | 3 | 5 | R | Lean > 40° |
| 1241 | 25 | Ash | R | 6 | 6 | X | Topped at 15' dead |
| 1242 | 19 | Northern Red Oak | HR | 4 | 4 | R | Multi stem trunk: 10,9 Dead |
| 1243 | 7 | Buckthorn | R | 3 | 3 | X | |
| 1244 | 16 | Black Locust | | 2 | 2 | | |
| 1245 | 15 | Black Locust | | 3 | 3 | | |
| 1246 | 13 | American Elm | H | 3 | 3 | | |
| 1247 | 7 | Walnut | | 1 | 1 | | |
| 1248 | 8 | Shagbark Hickory | H | 1 | 2 | | |
| 1249 | 21 | Shagbark Hickory | H | 1 | 1 | | |
| 1250 | 12 | Dogwood | | 2 | 2 | | Multi stem trunk: 6,6 |
| 1251 | 31 | White Oak | H | 1 | 1 | | |
| 1252 | 38 | White Oak | H | 2 | 2 | | |
| 1253 | 22 | White Oak | H | 2 | 2 | | |
| 1254 | 23 | White Oak | H | 2 | 3 | | |
| 1255 | 30 | Northern Red Oak | H | 1 | 3 | | |
| 1256 | 20 | White Oak | H | 2 | 2 | | |
| 1257 | 19 | White Oak | H | 2 | 2 | | |
| 1258 | 26 | White Oak | H | 2 | 2 | | |
| 1259 | 31 | White Oak | H | 2 | 2 | | |
| 1260 | 19 | Red Pine | | 2 | 2 | R | |
| 1261 | 16 | Red Pine | | 2 | 3 | R | |
| 1262 | 17 | Eastern White Pine | H | 3 | 3 | R | |
| 1263 | 37 | Burr Oak | HR | 3 | 3 | X | Trunk Rot |
| 1264 | 8 | Fir | | 3 | 3 | | |
| 1265 | 21 | Shagbark Hickory | H | 1 | 1 | | |
| 1266 | 44 | Swamp White Oak | H | 3 | 2 | RP | Old lightning strike |
| 1267 | 22 | Shagbark Hickory | H | 1 | 1 | | |
| 1268 | 18 | Shagbark Hickory | H | 1 | 1 | RP | |
| 1269 | 18 | Shagbark Hickory | H | 1 | 1 | | |
| 1270 | 40 | Swamp White Oak | H | 1 | 1 | | |
| 1271 | 38 | White Oak | HR | 3 | 2 | X | Fruiting bodies along root zone |
| 1272 | 15 | White Poplar | R | 2 | 3 | | |
| 1273 | 40 | Swamp White Oak | HR | 4 | 3 | R | Basal rot |
| 1274 | 34 | White Poplar | R | 2 | 3 | R | |
| 1275 | 17 | Eastern White Pine | H | 2 | 3 | R | |
| 1276 | 21 | Eastern White Pine | H | 2 | 2 | R | |
| 1277 | 13 | Crabapple | | 3 | 3 | | Multi stem trunk: 10,9,6 |
| 1278 | 7 | Magnolia | | 2 | 3 | R | |
| 1279 | 14 | Dead/Dying | R | 6 | 6 | X | |
| 1280 | 13 | Dead/Dying | R | 6 | 6 | X | |
| 1281 | 14 | Sugar Maple | H | 2 | 3 | | |
| 1282 | 11 | Eastern Red Cedar | | 3 | 3 | | |
| 1283 | 11 | Eastern Red Cedar | | 3 | 3 | | |
| 1284 | 7 | Eastern Red Cedar | | 3 | 3 | | |
| 1285 | 16 | Eastern Red Cedar | | 3 | 3 | | Multi stem trunk: 6,9 |
| 1286 | 12 | Sugar Maple | H | 2 | 3 | R | |
| 1287 | 7 | American Elm | | 3 | 4 | R | |
| 1288 | 7 | Sugar Maple | | 2 | 3 | R | |
| 1289 | 14 | Sugar Maple | H | 2 | 2 | R | |
| 1290 | 7 | Sugar Maple | | 2 | 3 | R | |
| 1291 | 7 | Sugar Maple | | 3 | 3 | R | |
| 1292 | 32 | White Oak | H | 5 | 3 | RP | |
| 1293 | 16 | Norway Spruce | | 2 | 3 | | |
| 1294 | 20 | Shagbark Hickory | H | 2 | 2 | | |
| 1295 | 24 | Shagbark Hickory | H | 2 | 2 | | |
| 1296 | 6 | Ornamental Cherry | | 1 | 1 | | |
| 1297 | 18 | Buckthorn | R | 3 | 3 | X | Multi stem trunk: 18" at base |
| 1298 | 10 | Buckthorn | R | 3 | 3 | X | |
| 1299 | 32 | White Oak | H | 1 | 2 | R | |
| 1300 | 31 | Northern Red Oak | H | 2 | 2 | R | |
| 1301 | 25 | Sugar Maple | H | 2 | 2 | R | |
| 1302 | 7 | Sugar Maple | | 2 | 3 | R | |
| 1303 | 10 | Sugar Maple | H | 2 | 4 | R | Trunk Damage |
| 1304 | 7 | Sugar Maple | | 2 | 3 | R | |
| 1305 | 7 | Sugar Maple | | 3 | 3 | R | |
| 1306 | 11 | Sugar Maple | H | 3 | 3 | RP | |
| 1307 | 54 | American Elm | H | 2 | 3 | RP | Multi stem trunk: 20,19,15 Included Bark |
| 1308 | 26 | Swamp White Oak | H | 1 | 1 | RP | |
| 1309 | 25 | Sugar Maple | H | 3 | 3 | R | Multi stem trunk: 25" at base |
| 1310 | 18 | Shagbark Hickory | H | 2 | 3 | | |
| 1311 | 23 | White Oak | H | 2 | 2 | | |
| 1312 | 11 | Sugar Maple | H | 3 | 3 | RP | |

| Tag No. | Size (") | Common Name | Village Code classification | Cond | Form | Action Code | Notes |
|---|---|---|---|---|---|---|---|
| 1313 | 7 | Birch | | 3 | 3 | | |
| 1314 | 10 | Sugar Maple | H | 3 | 4 | | |
| 1315 | 9 | Sugar Maple | H | 3 | 4 | | |
| 1316 | 33 | Swamp White Oak | H | 2 | 2 | R | |
| 1317 | 18 | White Oak | H | 2 | 2 | | |
| 1318 | 21 | White Oak | H | 2 | 3 | R | |
| 1319 | 24 | White Oak | H | 1 | 1 | R | |
| 1320 | 19 | Swamp White Oak | H | 2 | 2 | RP | |
| 1321 | 7 | Sugar Maple | | 2 | 2 | | |
| 1322 | 8 | Northern Red Oak | H | 2 | 3 | | |
| 1323 | 15 | White Oak | H | 2 | 1 | | |
| 1324 | 19 | Northern Red Oak | H | 2 | 3 | | |
| 1325 | 15 | White Oak | H | 2 | 3 | | |
| 1326 | 10 | Northern Red Oak | H | 3 | 2 | | |
| 1327 | 9 | Northern Red Oak | H | 1 | 1 | | |
| 1328 | 10 | Northern Red Oak | H | 2 | 3 | | |
| 1329 | 28 | Swamp White Oak | H | 1 | 1 | | |
| 1330 | 9 | American Elm | H | 3 | 3 | | |
| 1331 | 21 | Swamp White Oak | H | 2 | 2 | | |
| 1332 | 28 | Swamp White Oak | H | 2 | 2 | RP | |
| 1333 | 13 | Swamp White Oak | H | 5 | 5 | R | Canopy damage |
| 1334 | 31 | Swamp White Oak | H | 4 | 2 | R | |
| 1335 | 42 | Swamp White Oak | H | 2 | 2 | R | |
| 1336 | 14 | Swamp White Oak | H | 2 | 3 | R | |
| 1337 | 29 | Swamp White Oak | H | 2 | 2 | R | |
| 1338 | 22 | Swamp White Oak | H | 2 | 3 | RP | |
| 1339 | 41 | Swamp White Oak | H | 2 | 3 | RP | |
| 1340 | 18 | White Oak | H | 2 | 3 | | |
| 1341 | 22 | White Oak | H | 1 | 2 | | |
| 1342 | 17 | White Oak | H | 2 | 2 | | |
| 1343 | 22 | White Oak | H | 2 | 3 | | |
| 1344 | 10 | Northern Red Oak | H | 3 | 3 | | |
| 1345 | 8 | Northern Red Oak | H | 3 | 3 | | |
| 1346 | 10 | Northern Red Oak | H | 3 | 3 | | |
| 1347 | 13 | Northern Red Oak | H | 3 | 3 | | |
| 1348 | 17 | Northern Red Oak | H | 3 | 3 | | |
| 1349 | 14 | Northern Red Oak | H | 2 | 3 | | |
| 1350 | 13 | Northern Red Oak | H | 3 | 3 | | |
| 1351 | 7 | Sugar Maple | | 3 | 4 | | |
| 1352 | 16 | Shagbark Hickory | H | 2 | 3 | RP | |
| 1353 | 12 | Swamp White Oak | H | 2 | 4 | R | |
| 1354 | 24 | Norway Spruce | | 2 | 3 | R | Multi stem trunk: 13,11 |
| 1355 | 16 | Northern Red Oak | H | 3 | 3 | | |
| 1356 | 13 | Norway Spruce | | 2 | 2 | | |
| 1357 | 12 | Northern Red Oak | H | 3 | 3 | | |
| 1358 | 15 | Pin Oak | H | 2 | 1 | | |
| 1359 | 6 | Swamp White Oak | | 2 | 3 | R | |
| 1360 | 30 | Swamp White Oak | H | 1 | 1 | R | |
| 1361 | 26 | Swamp White Oak | HR | 5 | 3 | R | Trunk split, trunk rot |
| 1362 | 21 | Swamp White Oak | H | 2 | 3 | R | |
| 1363 | 7 | Northern Red Oak | | 2 | 3 | | |
| 1364 | 24 | White Oak | H | 1 | 1 | | |
| 1365 | 10 | Black Locust | | 3 | 4 | | |
| 1366 | 11 | Swamp White Oak | H | 2 | 3 | | |
| 1367 | 16 | White Oak | H | 2 | 2 | | |
| 1368 | 14 | Swamp White Oak | H | 1 | 1 | | |
| 1369 | 12 | Northern Red Oak | H | 2 | 3 | | |
| 1370 | 9 | Northern Red Oak | H | 2 | 3 | | |
| 1371 | 15 | Northern Red Oak | H | 2 | 3 | | |
| 1372 | 9 | Northern Red Oak | H | 2 | 3 | | |
| 1373 | 8 | Northern Red Oak | H | 2 | 3 | | |
| 1374 | 10 | Black Cherry | | 5 | 5 | X | Lean, basal rot, root zone failure |
| 1375 | 24 | White Oak | H | 1 | 1 | RP | |
| 1376 | 29 | Swamp White Oak | H | 2 | 1 | RP | |
| 1377 | 19 | Sugar Maple | HR | 2 | 4 | R | Lean, girdled roots |
| 1378 | 16 | Northern Red Oak | H | 2 | 2 | R | |
| 1379 | 9 | Sugar Maple | H | 2 | 2 | R | Root zone failure |
| 1380 | 30 | White Oak | H | 1 | 2 | | |
| 1381 | 21 | Eastern White Pine | H | 2 | 3 | | |
| 1382 | 17 | Sgbgark Hickory | H | 2 | 3 | X | Trunk Damage |
| 1383 | 24 | Shagbark Hickory | H | 2 | 3 | | |
| 1384 | 26 | Norway Maple | | 4 | 5 | X | Trunk Rot |
| 1385 | 43 | White Oak | H | 2 | 3 | RP | |
| 1386 | 28 | White Oak | H | 1 | 1 | | |
| 1387 | 10 | Northern Red Oak | H | 2 | 3 | | |
| 1388 | 21 | White Oak | H | 2 | 2 | RP | |
| 1389 | 18 | White Oak | H | 1 | 1 | RP | |
| 1390 | 6 | Sugar Maple | | 2 | 3 | R | |
| 1391 | 23 | Swamp White Oak | H | 1 | 1 | R | |
| 1392 | 22 | White Oak | H | 2 | 3 | R | |
| 1393 | 13 | White Oak | H | 2 | 1 | R | |
| 1394 | 34 | Northern Red Oak | H | 2 | 2 | R | |
| 1395 | 16 | White Oak | H | 3 | 3 | R | |
| 1396 | 26 | Northern Red Oak | H | 2 | 2 | RP | |
| 1397 | 27 | White Oak | H | 1 | 2 | RP | |
| 1398 | 7 | Eastern White Cedar | | 3 | 3 | | |
| 1399 | 28 | White Oak | H | 2 | 2 | | |
| 1400 | 20 | White Oak | H | 2 | 2 | | |
| 1401 | 10 | Eastern White Pine | H | 2 | 2 | | |
| 1402 | 18 | White Oak | H | 1 | 1 | | |
| 1403 | 22 | White Oak | H | 2 | 3 | | |
| 1404 | 21 | White Oak | H | 2 | 2 | | |
| 1405 | 21 | White Oak | H | 2 | 3 | | |
| 1406 | 28 | White Oak | H | 3 | 3 | | |
| 1407 | 25 | Swamp White Oak | H | 2 | 2 | | |
| 1408 | 15 | White Oak | H | 1 | 1 | | |
| 1409 | 21 | White Oak | H | 1 | 1 | | |
| 1410 | 25 | Northern Red Oak | H | 2 | 3 | | |
| 1411 | 16 | White Oak | H | 2 | 2 | | |
| 1412 | 13 | White Oak | H | 3 | 3 | | |
| 1413 | 19 | White Oak | H | 2 | 2 | | |
| 1414 | 19 | White Oak | H | 2 | 2 | | |
| 1415 | 15 | White Oak | H | 2 | 3 | | |
| 1416 | 26 | White Oak | H | 2 | 2 | | |
| 1417 | 13 | Norway Maple | | 3 | 3 | | Multi stem trunk: 8.5 |
| 1418 | 17 | White Oak | H | 3 | 3 | | |
| 1419 | 17 | White Oak | H | 2 | 2 | | |
| 1420 | 17 | White Oak | H | 2 | 3 | | |
| 1421 | 18 | Catalpa | H | 3 | 3 | | |
| 1422 | 14 | Northern Red Oak | H | 2 | 3 | | |
| 1423 | 16 | Northern Red Oak | H | 2 | 3 | | |
| 1424 | 23 | Norway Maple | | 2 | 1 | | |
| 1425 | 35 | Swamp White Oak | H | 2 | 1 | | |
| 1426 | 31 | Swamp White Oak | H | 2 | 2 | | |
| 1427 | 30 | Swamp White Oak | H | 2 | 2 | | |
| 1428 | 26 | Swamp White Oak | H | 2 | 3 | | |

| Tag No. | Size (") | Common Name | Village Code classification | Cond | Form | Action Code | Notes |
|---|---|---|---|---|---|---|---|
| 1429 | 27 | Swamp White Oak | HR | 5 | 3 | X | Trunk Rot |
| 1430 | 7 | Shagbark Hickory | | 2 | 2 | * | |
| 1431 | 15 | Swamp White Oak | H | 3 | 3 | | |
| 1432 | 25 | Swamp White Oak | H | 2 | 2 | | |
| 1433 | 26 | Swamp White Oak | H | 2 | 3 | | |
| 1434 | 6 | Dead | R | 6 | 6 | X | |
| 1435 | 6 | Norway Maple | | 2 | 3 | | |
| 1436 | 10 | Norway Maple | | 3 | 3 | | |
| 1437 | 21 | White Oak | H | 2 | 2 | RP | |
| 1438 | 17 | White Oak | H | 2 | 2 | | |
| 1439 | 17 | White Oak | H | 2 | 2 | | |
| 1488 | 19 | White Oak | H | 2 | 2 | RP | |
| 1489 | 9 | Eastern White Pine | H | 2 | 2 | | |
| 1490 | 19 | Shagbark Hickory | H | 2 | 2 | R | |
| 1491 | 7 | Buckthorn | R | 3 | 3 | X | |
| 2501 | 15 | White Oak | H | 2 | 2 | | |
| 2502 | 26 | White Oak | HR | 5 | 3 | X | Trunk Rot |
| 2503 | 11 | Northern Red Oak | H | 3 | 3 | | |
| 2504 | 14 | Black Spruce | | 1 | 2 | | |
| 2505 | 18 | Black Spruce | | 1 | 1 | | |
| 2506 | 26 | White Oak | H | 2 | 2 | | |
| 2507 | 14 | White Oak | H | 2 | 2 | | |
| 2508 | 8 | Northern Red Oak | H | 3 | 2 | | |
| 2509 | 8 | Norway Spruce | | 2 | 2 | | |
| 2510 | 29 | White Oak | H | 2 | 2 | | |
| 2511 | 22 | White Oak | H | 2 | 3 | | |
| 2512 | 22 | White Oak | H | 2 | 2 | | |
| 2513 | 13 | Swamp White Oak | H | 3 | 3 | | |
| 2514 | 20 | White Oak | H | 2 | 2 | | |
| 2515 | 19 | White Oak | H | 2 | 2 | | |
| 2516 | 6 | White Oak | | 3 | 3 | | |
| 2517 | 24 | White Oak | H | 2 | 3 | | |
| 2518 | 7 | Northern Red Oak | | 2 | 3 | | |
| 2519 | 10 | Northern Red Oak | H | 3 | 3 | | |
| 2520 | 14 | Northern Red Oak | H | 2 | 2 | | |
| 2521 | 16 | Northern Red Oak | H | 2 | 2 | | |
| 2522 | 14 | Northern Red Oak | H | 3 | 3 | | |
| 2523 | 19 | White Oak | H | 3 | 2 | | |
| 2524 | 16 | White Oak | H | 3 | 3 | | |
| 2525 | 8 | Northern Red Oak | H | 3 | 3 | | |
| 2526 | 15 | White Oak | H | 3 | 3 | | |
| 2527 | 7 | Northern Red Oak | | 3 | 3 | | |
| 2528 | 8 | Northern Red Oak | H | 2 | 3 | | |
| 2529 | 18 | White Oak | H | 2 | 3 | | |
| 2530 | 6 | Northern Red Oak | | 2 | 2 | | |
| 2531 | 6 | Northern Red Oak | | 2 | 2 | | |
| 2532 | 22 | White Oak | H | 2 | 3 | | |
| 2533 | 19 | Northern Red Oak | H | 3 | 3 | | |
| 2534 | 6 | Northern Red Oak | | 3 | 3 | | |
| 2535 | 18 | Black Spruce | | 1 | 1 | | |
| 2536 | 20 | White Oak | H | 2 | 2 | | |
| 2537 | 12 | Northern Red Oak | H | 2 | 3 | | |
| 2538 | 23 | White Oak | H | 2 | 2 | | |
| 2539 | 18 | White Oak | H | 3 | 3 | | |
| 2540 | 11 | Northern Red Oak | H | 2 | 3 | | |
| 2541 | 14 | Black Spruce | | 2 | 1 | | |
| 2542 | 10 | Dead/Dying | R | 6 | 6 | X | |
| 2543 | 9 | Dead | R | 6 | 6 | X | High risk tree, overhanging adjacent back yard |
| 2544 | 6 | Buckthorn | R | 3 | 3 | X | |
| 2545 | 10 | American Elm | H | 3 | 3 | | |
| 2546 | 6 | Dead | R | 6 | 6 | X | |
| 2547 | 7 | Sugar Maple | | 2 | 3 | | |
| 2548 | 8 | Dead | R | 6 | 6 | X | |
| 2549 | 11 | Dead | R | 6 | 6 | X | High Risk Tree, Leaning over adjacent front yar |
| 2550 | 17 | Northern Red Oak | H | 3 | 3 | | |
| 2551 | 8 | Dead | R | 6 | 6 | X | |
| 2552 | 6 | Dead | R | 6 | 6 | X | |
| 2553 | 10 | Dead | R | 6 | 6 | X | |
| 2554 | 9 | Buckthorn | R | 3 | 3 | X | |
| 2555 | 7 | Buckthorn | R | 3 | 3 | X | |
| 2556 | 12 | Dead | R | 6 | 6 | X | High risk, imminent fall barber |
| 2557 | 8 | Dead | R | 6 | 6 | X | |
| 2558 | 10 | American Elm | H | 3 | 2 | | |
| 2559 | 7 | Buckthorn | R | 4 | 5 | X | |
| 2560 | 11 | Dead | R | 6 | 6 | X | |
| 2561 | 12 | Dead | R | 6 | 6 | X | |
| 2562 | 18 | American Elm | H | 4 | 4 | | Growing into fence |
| 2563 | 9 | Buckthorn | R | 3 | 3 | X | |
| 2564 | 10 | Dead/Dying | R | 6 | 6 | X | Barber char high risk to property |
| 2565 | 12 | Dead/Dying | R | 6 | 6 | X | |
| 2566 | 7 | White Walnut | | 2 | 2 | | |
| 2567 | 18 | Shagbark Hickory | H | 2 | 3 | | |
| 2568 | 7 | Hawthorne | | 4 | 4 | | Fruiting Bodies on Trunk |
| 2569 | 8 | Shagbark Hickory | H | 1 | 1 | | |
| 2570 | 13 | Norway Maple | | 3 | 3 | | |
| 2571 | 11 | Norway Maple | | 3 | 3 | | |
| 2572 | 7 | Shagbark Hickory | | 2 | 1 | | |
| 2573 | 18 | Norway Maple | | 3 | 3 | | Multi stem trunk: 10,8 |
| 2574 | 9 | Norway Maple | | 3 | 3 | | |
| 2575 | 7 | Norway Maple | | 3 | 3 | | |
| 2576 | 10 | Norway Maple | | 3 | 3 | | |
| 2577 | 24 | Swamp White Oak | H | 2 | 2 | | |
| 2578 | 21 | Swamp White Oak | H | 2 | 2 | | |
| 2579 | 6 | Shagbark Hickory | | 1 | 1 | | |
| 2580 | 29 | Swamp White Oak | H | 2 | 2 | RP | |
| 2581 | 11 | Black Locust | | 3 | 4 | | |
| 2582 | 8 | Black Locust | | 3 | 3 | | |
| 2583 | 6 | Buckthorn | R | 3 | 3 | X | |
| 2584 | 7 | Dead/Dying | R | 6 | 6 | X | |
| 2585 | 7 | Dead/Dying | R | 6 | 6 | X | |
| 2586 | 8 | Buckthorn | R | 6 | 6 | X | Fallen |
| 2587 | 7 | Buckthorn | R | 4 | 3 | X | |
| 2588 | 6 | Buckthorn | R | 5 | 3 | X | Leainig >30° |
| 2589 | 8 | Dead/Dying | R | 6 | 6 | X | |
| 2590 | 6 | Dead/Dying | R | 6 | 6 | X | |
| 2591 | 7 | Dead/Dying | R | 6 | 6 | X | |
| 2592 | 6 | Buckthorn | R | 3 | 3 | X | |
| 2593 | 8 | Buckthorn | R | 3 | 3 | X | |
| 2594 | 11 | Buckthorn | R | 5 | 5 | X | Trunk Rot |
| 2595 | 6 | Buckthorn | R | 4 | 3 | X | |
| 2596 | 6 | Dead/Dying | R | 6 | 6 | X | |
| 2597 | 32 | White Oak | H | 2 | 1 | RP | |
| 2598 | 7 | Buckthorn | R | 3 | 3 | X | |
| 2599 | 10 | Buckthorn | R | 4 | 4 | X | Gone |
| 2600 | 9 | Buckthorn | R | 4 | 5 | X | Fallen |
| 2601 | 17 | White Oak | H | 2 | 3 | | |

REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 12/06/19 | FOR SUBMITTAL | S.R.M. |
| 01/17/19 | FOR SUBMITTAL | S.R.M. |
| 02/05/20 | FOR SUBMITTAL | S.R.M. |
| 04/17/20 | PER VILLAGE COMMENTS | S.R.M. |
| 05/08/20 | PER VILLAGE COMMENTS | S.R.M. |


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1129 MAIN STREET UNION GROVE, WISCONSIN 53182 PH: (262) 878-6200 | ig@igconsulting.net


TREE INVENTORY & SPECIFICATIONS

DESIGN: K.C.L.
DRAFTING: S.R.M
SCALE: NONE
DATE: 10/28/19

FIRM NO. 184-001330

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
### GLENCOE, ILLINOIS


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PROJECT No. 18557

| Tag No. | Size (") | Common Name | Village Code classification | Cond | Form | Action Code | Notes |
|---|---|---|---|---|---|---|---|
| 2602 | 6 | Boxelder | R | 3 | 3 | | |
| 2603 | 28 | White Oak | H | 2 | 3 | | |
| 2604 | 16 | White Oak | H | 2 | 3 | | |
| 2605 | 28 | Swamp White Oak | H | 2 | 2 | | |
| 2606 | 6 | Buckthorn | R | 3 | 3 | X | |
| 2607 | 11 | Black Locust | | 3 | 4 | | |
| 2608 | 7 | Black Locust | | 5 | 5 | | Trunk rot/leaning |
| 2609 | 6 | Buckthorn | R | 3 | 3 | X | |
| 2610 | 14 | White Oak | H | 2 | 2 | | |
| 2611 | 23 | Swamp White Oak | H | 2 | 3 | | |
| 2612 | 7 | Buckthorn | R | 3 | 3 | X | |
| 2613 | 10 | Norway Maple | | 2 | 2 | | |
| 2614 | 11 | Buckthorn | R | 4 | 4 | X | Trimmed to single |
| 2615 | 8 | Buckthorn | R | 4 | 4 | X | |
| 2616 | 7 | Buckthorn | R | 5 | 5 | X | Topped @ 5' |
| 2617 | 9 | Buckthorn | R | 5 | 5 | X | Topped @ 7' |
| 2618 | 6 | Buckthorn | R | 3 | 3 | X | |
| 2619 | 10 | Buckthorn | R | 4 | 4 | X | |
| 2620 | 9 | Buckthorn | R | 4 | 3 | X | |
| 2621 | 8 | Buckthorn | R | 3 | 3 | X | |
| 2622 | 9 | Buckthorn | R | 4 | 4 | X | |
| 2623 | 16 | Black Locust | | 4 | 3 | X | Trunk Rot |
| 2624 | 6 | Buckthorn | R | 5 | 5 | X | |
| 2625 | 22 | White Oak | H | 2 | 2 | | |
| 2626 | 12 | Buckthorn | R | 4 | 3 | X | Multi stem trunk: 6,6 |
| 2627 | 6 | Buckthorn | R | 4 | 3 | X | |
| 2628 | 6 | Buckthorn | R | 4 | 3 | X | |
| 2629 | 8 | Buckthorn | R | 4 | 3 | X | |
| 2630 | 16 | Black Locust | | 2 | 2 | | |
| 2631 | 6 | Buckthorn | R | 3 | 3 | X | |
| 2632 | 6 | Buckthorn | R | 4 | 3 | X | |
| 2633 | 18 | White Oak | H | 2 | 3 | | |
| 2634 | 9 | Buckthorn | R | 4 | 3 | X | |
| 2635 | 10 | Black Locust | | 5 | 4 | X | Fruiting bodies at +/- 20' |
| 2636 | 9 | Buckthorn | R | 3 | 3 | X | |
| 2637 | 10 | Buckthorn | R | 4 | 3 | X | |
| 2638 | 9 | Buckthorn | R | 4 | 3 | X | |
| 2639 | 12 | Black Locust | R | 6 | 6 | X | Dead, leaning against nearby tree, high risk tree |
| 2640 | 12 | Black Locust | R | 6 | 6 | X | Dead/Dying |
| 2641 | 15 | Black Locust | | 4 | 3 | X | Fruiting Bodies on trunk at 30 |
| 2642 | 11 | Black Locust | | 4 | 4 | X | Trunk Rot |
| 2643 | 6 | Buckthorn | R | 3 | 3 | X | |
| 2644 | 6 | Buckthorn | R | 4 | 3 | X | |
| 2645 | 7 | Buckthorn | R | 3 | 3 | X | |
| 2646 | 20 | Black Locust | | 2 | 2 | | |
| 2647 | 7 | Buckthorn | R | 4 | 3 | X | |
| 2648 | 8 | Buckthorn | R | 4 | 4 | X | |
| 2649 | 11 | Buckthorn | R | 4 | 4 | X | Multi stem trunk: 6,5 |
| 2650 | 12 | Buckthorn | R | 4 | 4 | X | Multi stem trunk: 8,4 |
| 2651 | 17 | Black Locust | | 4 | 3 | | |
| 2652 | 30 | White Oak | H | 2 | 3 | | |
| 2653 | 9 | Buckthorn | R | 4 | 3 | X | |
| 2654 | 13 | Dead | R | 6 | 6 | X | High risk tree, leaning tree over entrance |
| 2655 | 13 | Dead | R | 6 | 6 | X | |
| 2656 | 6 | Buckthorn | R | 3 | 3 | X | |
| 2657 | 7 | Buckthorn | R | 3 | 3 | X | |
| 2658 | 6 | Dead | R | 6 | 6 | X | |
| 2659 | 21 | Norway Maple | | 3 | 3 | | |
| 2660 | 13 | Black Locust | | 4 | 3 | | |
| 2661 | 7 | Buckthorn | R | 3 | 3 | X | |
| 2662 | 22 | Swamp White Oak | H | 2 | 2 | | |
| 2663 | 9 | Buckthorn | R | 3 | 3 | X | |
| 2665 | 6 | Buckthorn | R | 3 | 3 | X | |
| 2666 | 7 | Buckthorn | R | 3 | 3 | X | |
| 2667 | 7 | Buckthorn | R | 5 | 4 | X | Leaning/trunk rot |
| 2668 | 8 | Buckthorn | R | 4 | 3 | X | |
| 2669 | 6 | Buckthorn | R | 4 | 4 | X | |
| 2670 | 23 | Swamp White Oak | H | 2 | 2 | | |
| 2671 | 11 | Dead/Dying | R | 6 | 6 | X | |
| 2672 | 14 | Buckthorn | R | 6 | 6 | X | Multi stem trunk: 9,5 Fallen |
| 2673 | 7 | Buckthorn | R | 3 | 3 | X | |
| 2674 | 23 | White Oak | H | 3 | 3 | | |
| 2675 | 6 | Buckthorn | R | 4 | 3 | X | |
| 2676 | 22 | Dead/Dying | R | 6 | 6 | X | Multi stem trunk: 12,10 |
| 2677 | 20 | Buckthorn | R | 3 | 3 | X | Multi stem trunk: 10,6,4 |
| 2678 | 15 | White Oak | H | 2 | 2 | | |
| 2679 | 7 | Buckthorn | R | 4 | 3 | X | |
| 2680 | 22 | White Oak | H | 2 | 2 | | |
| 2681 | 9 | Buckthorn | R | 3 | 3 | X | Gone |
| 2682 | 23 | White Oak | H | 3 | 2 | | |
| 2683 | 7 | Buckthorn | R | 3 | 3 | X | |
| 2684 | 13 | Linden | R | 2 | 1 | | |
| 2685 | 22 | White Oak | H | 2 | 2 | | |
| 2686 | 14 | Norway Maple | | 2 | 2 | | |
| 2687 | 24 | White Oak | H | 2 | 2 | | |
| 2688 | 7 | Buckthorn | R | 3 | 3 | X | |
| 2689 | 7 | Buckthorn | R | 4 | 3 | X | |
| 2690 | 7 | Buckthorn | R | 3 | 3 | X | |
| 2691 | 7 | Siberian Elm | | 2 | 3 | | |
| 2692 | 26 | White Oak | H | 2 | 2 | | |
| 2693 | 28 | White Oak | H | 3 | 3 | | |
| 2694 | 6 | Buckthorn | R | 3 | 3 | X | |
| 2695 | 6 | Buckthorn | R | 4 | 3 | X | |
| 2696 | 12 | Buckthorn | R | 3 | 3 | X | Multi stem trunk: 7,5 |
| 2697 | 7 | Buckthorn | R | 3 | 3 | X | |
| 2698 | 7 | Buckthorn | R | 3 | 4 | X | |
| 2699 | 9 | Buckthorn | R | 3 | 3 | X | |
| 2700 | 11 | Shagbark Hickory | H | 1 | 1 | RP | |
| 2701 | 7 | Walnut | | 2 | 2 | | |
| 2702 | 18 | White Oak | H | 3 | 2 | * | |
| 2703 | 23 | Swamp White Oak | H | 3 | 3 | * | |
| 2704 | 17 | White Oak | H | 3 | 3 | * | |
| 2705 | 12 | Dead/Dying | R | 6 | 6 | X | |
| 2706 | 14 | Norway Maple | | 3 | 4 | | Growing into fence |
| 2707 | 11 | Norway Maple | | 3 | 3 | | |
| 2708 | 9 | Norway Maple | | 3 | 4 | | |
| 2709 | 22 | Norway Maple | | 3 | 3 | * | Multi stem trunk: 13,9 |
| 2710 | 20 | White Oak | H | 2 | 2 | * | |
| 2711 | 17 | Dead/Dying | R | 6 | 6 | X | |
| 2712 | 22 | Sugar Maple | H | 4 | 4 | * | Multi stem trunk: 8,6,6 |
| 2713 | 22 | White Oak | H | 2 | 2 | | |
| 2714 | 18 | White Oak | H | 2 | 2 | | |
| 2715 | 22 | White Oak | H | 2 | 2 | | |
| 2716 | 16 | White Oak | H | 2 | 2 | | |
| 2717 | 10 | Norway Maple | | 4 | 4 | X | Encroaching onto nearby tree |
| 2718 | 24 | White Oak | H | 2 | 2 | | |

| Tag No. | Size (") | Common Name | Village Code classification | Cond | Form | Action Code | Notes |
|---|---|---|---|---|---|---|---|
| 2719 | 6 | Shagbark Hickory | | 2 | 2 | | |
| 2720 | 10 | Black Locust | | 3 | 3 | | |
| 2721 | 16 | White Oak | H | 3 | 3 | | |
| 2722 | 21 | White Oak | H | 2 | 2 | | |
| 2723 | 17 | White Oak | H | 2 | 3 | | |
| 2724 | 23 | White Oak | H | 1 | 1 | | |
| 2725 | 9 | Black Locust | | 3 | 3 | | |
| 2726 | 20 | White Oak | H | 2 | 2 | | |
| 2727 | 14 | Black Locust | | 3 | 3 | | |
| 2728 | 23 | Black Locust | | 3 | 3 | | |
| 2729 | 26 | Swamp White Oak | H | 2 | 3 | | |
| 2730 | 7 | Northern Red Oak | | 2 | 2 | | |
| 2731 | 20 | White Oak | H | 2 | 2 | | |
| 2732 | 11 | Northern Red Oak | H | 3 | 3 | | |
| 2733 | 18 | White Oak | H | 3 | 3 | | |
| 2734 | 13 | Norway Spruce | | 2 | 3 | | |
| 2735 | 9 | Northern Red Oak | H | 2 | 3 | | |
| 2736 | 20 | White Oak | H | 1 | 1 | | |
| 2737 | 8 | Northern Red Oak | HR | 4 | 5 | X | Leaning |
| 2738 | 10 | Northern Red Oak | H | 3 | 3 | | |
| 2739 | 13 | Northern Red Oak | H | 3 | 3 | | |
| 2740 | 9 | Northern Red Oak | H | 3 | 3 | | |
| 2741 | 6 | Northern Red Oak | | 3 | 3 | | |
| 2742 | 22 | White Oak | H | 3 | 3 | | |
| 2743 | 19 | White Oak | H | 2 | 2 | | |
| 2744 | 16 | White Oak | H | 2 | 2 | | |
| 2745 | 22 | White Oak | H | 3 | 2 | | |
| 2746 | 7 | Shagbark Hickory | | 2 | 2 | R | |
| 2747 | 16 | Buckthorn | R | 3 | 3 | X | Multi stem trunk: 8,8 |
| 2748 | 13 | Black Spruce | | 3 | 3 | | |
| 2749 | 10 | Norway Spruce | | 2 | 4 | | |
| 2750 | 17 | White Oak | H | 2 | 2 | | |
| 2751 | 17 | White Oak | H | 2 | 2 | | |
| 2752 | 19 | White Oak | H | 2 | 2 | | |
| 2753 | 9 | Northern Red Oak | H | 3 | 3 | | |
| 2754 | 20 | Northern Red Oak | H | 3 | 3 | | |
| 2755 | 30 | Northern Red Oak | H | 3 | 2 | | |
| 2818 | 8 | Norway Maple | | 3 | 3 | | |
| 2819 | 12 | Black Locust | | 4 | 4 | | |
| 2820 | 10 | Black Locust | | 4 | 4 | | |
| 2821 | 6 | Dead | R | 6 | 6 | X | |
| 2822 | 18 | Black Locust | | 5 | 4 | X | Trunk Damage |
| 2823 | 15 | Black Locust | | 5 | 4 | X | Trunk Damage, Basal Rot |
| 2824 | 18 | Black Locust | | 5 | 4 | X | Trunk Damage |
| 2825 | 7 | Buckthorn | R | 4 | 4 | X | |
| 2826 | 8 | Black Locust | | 3 | 3 | | |
| 2827 | 6 | Buckthorn | R | 3 | 3 | X | |
| 2828 | 9 | Black Locust | | 3 | 3 | | |
| 2829 | 10 | Black Locust | | 3 | 2 | | |
| 2830 | 8 | Dead/Dying | R | 6 | 6 | X | |
| 2831 | 9 | Dead | R | 6 | 6 | X | |
| 2832 | 15 | Dead/Dying | R | 6 | 6 | X | |
| 2833 | 8 | Norway Maple | | 3 | 3 | | |
| 2834 | 12 | Dead | R | 6 | 6 | X | |
| 2835 | 6 | Norway Maple | | 3 | 4 | | |
| 2836 | 8 | Dead | R | 6 | 6 | X | |
| 2837 | 15 | Eastern White Pine | H | 3 | 3 | | |
| 2838 | 7 | Black Locust | R | 3 | 3 | X | |
| 2839 | 8 | Dead | R | 5 | 5 | X | |
| 2840 | 9 | Eastern White Pine | H | 3 | 3 | | |
| 2841 | 20 | Dead | R | 6 | 6 | X | |
| 2842 | 7 | American Elm | H | 3 | 3 | | |
| 2843 | 10 | Norway Maple | | 3 | 2 | | |
| 2844 | 13 | Norway Maple | | 3 | 3 | | |
| 2845 | 12 | Norway Maple | | 3 | 3 | | |
| 2846 | 12 | Black Locust | | 3 | 3 | | |
| 2847 | 7 | Black Locust | R | 3 | 3 | X | |
| 2848 | 7 | Black Locust | R | 3 | 4 | X | |
| 2849 | 10 | Eastern White Pine | H | 3 | 3 | | |
| 2850 | 10 | Dead | R | 6 | 6 | X | |
| 2851 | 10 | Eastern White Pine | H | 2 | 3 | | |
| 2852 | 7 | Eastern White Pine | H | 4 | 4 | X | |
| 2853 | 20 | Eastern White Pine | H | 3 | 3 | | |
| 2854 | 15 | Norway Maple | | 3 | 3 | | |
| 2855 | 10 | Norway Maple | | 3 | 3 | | |
| 2856 | 7 | Norway Maple | | 3 | 3 | | |
| 2857 | 7 | Norway Maple | | 3 | 3 | | |
| 2858 | 13 | Dead | R | 6 | 6 | X | |
| 2859 | 8 | Shagbark Hickory | H | 3 | 3 | X | |
| 2860 | 18 | Eastern White Pine | H | 2 | 2 | | |
| 2861 | 6 | Shagbark Hickory | H | 2 | 3 | X | |
| 2862 | 7 | Buckthorn | R | 3 | 4 | X | |
| 2863 | 36 | White Oak | H | 2 | 2 | | |
| 2864 | 25 | White Oak | H | 2 | 2 | | |
| 2865 | 24 | White Oak | H | 3 | 2 | | |
| 2866 | 18 | Dead | R | 6 | 6 | X | High risk tree, leaning over adjacent property |
| 2867 | 6 | Sugar Maple | | 3 | 3 | | |
| 2868 | 29 | White Oak | H | 2 | 2 | | |
| 2869 | 8 | Buckthorn | R | 5 | 4 | X | Trunk rot |
| 2870 | 30 | White Oak | H | 3 | 2 | | |
| 2871 | 15 | Shagbark Hickory | H | 2 | 2 | | |
| 2872 | 27 | White Oak | H | 3 | 3 | | |
| 2873 | 7 | Buckthorn | R | 3 | 3 | X | |
| 2874 | 17 | Shagbark Hickory | HR | 6 | 6 | X | Major Trunk Damage |
| 2875 | 9 | Northern Red Oak | H | 2 | 3 | | |
| 2876 | 17 | Shagbark Hickory | H | 2 | 3 | | |
| 2877 | 27 | Swamp White Oak | H | 2 | 2 | | |
| 2878 | 28 | White Oak | H | 3 | 2 | | |
| 2879 | 7 | Buckthorn | R | 3 | 4 | X | |
| 2880 | 8 | Dead | R | 6 | 6 | X | |
| 2881 | 6 | Dead | R | 6 | 6 | X | |
| 2882 | 7 | Shagbark Hickory | | 2 | 2 | | |
| 2883 | 8 | Shagbark Hickory | H | 2 | 3 | | |
| 2884 | 10 | Norway Maple | | 3 | 4 | | |
| 2885 | 28 | White Poplar | R | 3 | 3 | | |
| 2886 | 13 | Dead | R | 6 | 6 | X | |
| 2887 | 8 | Boxelder | R | 4 | 5 | X | Poor form |
| 2888 | 39 | Swamp White Oak | H | 2 | 2 | | |
| 2889 | 7 | American Elm | | 4 | 4 | | |
| 2890 | 39 | Swamp White Oak | H | 3 | 3 | | |
| 2891 | 6 | American Elm | | 3 | 3 | | |
| 2892 | 7 | American Elm | | 3 | 4 | | |
| 2893 | 9 | Dead/Dying | R | 6 | 6 | X | High risk tree to fence |
| 2894 | 15 | Shagbark Hickory | H | 2 | 2 | | |
| 2895 | 17 | Dead/Dying | R | 6 | 6 | X | |
| 2896 | 7 | Dead/Dying | R | 6 | 6 | X | |

| Tag No. | Size (") | Common Name | Village Code classification | Cond | Form | Action Code | Notes |
|---|---|---|---|---|---|---|---|
| 2897 | 6 | Eastern White Pine | | 3 | 4 | | |
| 2898 | 13 | Buckthorn | R | 3 | 4 | X | Multi stem trunk: 7,6 |
| 2899 | 34 | White Oak | H | 3 | 2 | | |
| 2900 | 14 | Eastern White Pine | H | 3 | 3 | | |
| 2901 | 12 | Black Locust | | 4 | 3 | * | |
| 2902 | 7 | Dead/Dying | R | 6 | 6 | X | Topped at 20' |
| 2903 | 8 | Dead/Dying | R | 6 | 6 | X | |
| 2904 | 12 | Dead/Dying | R | 6 | 6 | X | |
| 2905 | 7 | Dead/Dying | R | 6 | 6 | X | |
| 2906 | 18 | Dead/Dying | R | 6 | 6 | X | |
| 2907 | 18 | Dead/Dying | R | 6 | 6 | X | |
| 2908 | 17 | Shagbark Hickory | H | 2 | 2 | * | |
| 2909 | 6 | Buckthorn | R | 3 | 4 | X | |
| 2910 | 7 | Dead | R | 6 | 6 | X | |
| 2911 | 12 | Dead | R | 6 | 6 | X | |
| 2912 | 7 | Buckthorn | R | 4 | 4 | X | |
| 2913 | 16 | Dead/Dying | R | 6 | 6 | X | |
| 2914 | 13 | Dead/Dying | R | 6 | 6 | X | |
| 2915 | 11 | Dead/Dying | R | 6 | 6 | X | |
| 2916 | 6 | Eastern White Pine | | 3 | 3 | | |
| 2917 | 10 | Buckthorn | R | 3 | 4 | X | |
| 2918 | 18 | Shagbark Hickory | H | 2 | 2 | | |
| 2919 | 12 | Boxelder | R | 3 | 4 | | |
| 2920 | 41 | White Oak | H | 2 | 2 | | |
| 2921 | 7 | Black Locust | | 3 | 2 | * | |
| 2922 | 17 | Boxelder | R | 5 | 4 | * | Multi stem trunk: 11,6 |
| 2923 | 7 | Buckthorn | R | 3 | 4 | X | |
| 2924 | 6 | Dead | R | 6 | 6 | X | |
| 2925 | 14 | Black Locust | | 2 | 2 | * | |
| 2926 | 11 | Shagbark Hickory | H | 2 | 2 | * | |
| 2927 | 8 | Dead/Dying | R | 6 | 6 | X | High risk tree, leaning over adjacent property |
| 2928 | 9 | Buckthorn | R | 3 | 4 | X | |
| 2929 | 7 | Boxelder | R | 4 | 4 | * | |
| 2930 | 9 | Buckthorn | R | 3 | 3 | X | |
| 2931 | 7 | Buckthorn | R | 3 | 3 | X | |
| 2932 | 14 | Boxelder | R | 3 | 3 | * | |
| 2933 | 8 | Dead/Dying | R | 6 | 6 | X | |
| 2934 | 6 | Buckthorn | R | 3 | 4 | X | |
| 2935 | 12 | Dead/Dying | R | 6 | 6 | X | |
| 2936 | 15 | Buckthorn | R | 3 | 4 | X | Multi stem trunk: 8,7 |
| 2937 | 10 | Buckthorn | R | 3 | 4 | X | |
| 2938 | 8 | Black Locust | | 3 | 3 | * | |
| 2939 | 14 | Black Locust | | 3 | 3 | * | |
| 2940 | 10 | Boxelder | R | 5 | 5 | X | |
| 2941 | 8 | Dead | R | 6 | 6 | X | |
| 2942 | 10 | Dead | R | 6 | 6 | X | |
| 2943 | 7 | Dead | R | 6 | 6 | X | |
| 2944 | 14 | Dead | R | 6 | 6 | X | |
| 2945 | 14 | Dead/Dying | R | 6 | 6 | X | |
| 2946 | 14 | Dead/Dying | R | 6 | 6 | X | |
| 2947 | 13 | Dead | R | 6 | 6 | X | |
| 2948 | 8 | Dead | R | 6 | 6 | X | |
| 2949 | 9 | Dead | R | 6 | 6 | X | |
| 2950 | 8 | American Elm | H | 3 | 3 | * | |
| 2951 | 6 | Dead/Dying | R | 6 | 6 | X | |
| 2952 | 6 | Boxelder | R | 3 | 3 | * | |
| 2953 | 7 | Sugar Maple | | 3 | 3 | | |
| 2954 | 7 | Boxelder | R | 3 | 4 | | |
| 2955 | 33 | White Oak | H | 3 | 2 | * | |
| 2956 | 7 | Boxelder | R | 3 | 3 | * | |
| 2957 | 7 | Boxelder | R | 3 | 3 | * | |
| 2958 | 15 | Northern Red Oak | H | 2 | 3 | RP | |
| 2959 | 7 | Boxelder | R | 3 | 4 | * | |
| 2960 | 9 | Dead | R | 6 | 6 | X | |
| 2961 | 9 | Dead | R | 6 | 6 | X | |
| 2962 | 6 | Shagbark Hickory | | 3 | 3 | * | |
| 2963 | 12 | American Elm | H | 3 | 3 | | |
| 2964 | 8 | American Elm | H | 3 | 4 | | |
| 2965 | 16 | Boxelder | R | 3 | 4 | | |
| 2966 | 8 | White Spruce | | 4 | 4 | | |
| 2967 | 17 | Norway Spruce | | 1 | 2 | | |
| 2968 | 18 | Norway Spruce | | 1 | 1 | | |
| 2969 | 11 | Norway Spruce | | 1 | 1 | | |
| 2970 | 27 | Norway Spruce | | 1 | 1 | | |
| 2971 | 17 | Norway Spruce | | 1 | 1 | | |
| 2972 | 18 | Norway Spruce | | 1 | 1 | | |
| 2973 | 13 | Norway Spruce | | 1 | 1 | | |
| 2974 | 16 | Norway Spruce | | 1 | 1 | RP | |
| 2975 | 6 | Buckthorn | R | 3 | 3 | X | |
| 2976 | 7 | Buckthorn | R | 4 | 4 | X | |
| 2977 | 6 | Buckthorn | R | 3 | 4 | X | |
| 2978 | 18 | Norway Maple | | 3 | 3 | RP | |
| 2979 | 17 | Norway Maple | | 2 | 2 | RP | |
| 2980 | 12 | Siberian Elm | | 4 | 4 | | |
| 2981 | 5 | Norway Maple | | 3 | 3 | * | |
| 2982 | 42 | Cottonwood | R | 5 | 2 | X | Gone |
| 2983 | 6 | Boxelder | R | 3 | 3 | * | |
| 2984 | 12 | Shagbark Hickory | H | 3 | 3 | * | |
| 2985 | 28 | Swamp White Oak | H | 3 | 3 | RP | |
| 2986 | 7 | Boxelder | R | 3 | 3 | | |
| 2987 | 44 | Swamp White Oak | H | 3 | 2 | RP | |
| 2988 | 6 | Dead | R | 6 | 6 | X | |
| 2989 | 8 | Dead | R | 6 | 6 | X | |
| 2990 | 11 | Norway Maple | | 3 | 3 | | |
| 2991 | 25 | White Oak | H | 2 | 2 | | |
| 2992 | 19 | Shagbark Hickory | H | 2 | 2 | | |
| 2993 | 37 | White Oak | H | 2 | 2 | * | |
| 2994 | 13 | Norway Maple | | 3 | 3 | | |
| 2995 | 23 | Dead | R | 6 | 6 | X | Multi stem trunk: 13,10 |
| 2996 | 11 | Norway Maple | | 3 | 3 | | |
| 2997 | 10 | Norway Maple | | 4 | 4 | | |
| 2998 | 25 | Norway Maple | | 3 | 3 | X | Multi stem trunk: 16,9 |
| 2999 | 26 | Black Locust | | 5 | 4 | X | Trunk Rot |
| 3000 | 35 | Swamp White Oak | H | 2 | 2 | | |
| 3001 | 8 | Dead | R | 6 | 6 | X | Fallen |

| Code | Description |
|---|---|
| 1 | Specimen |
| 2 | Good |
| 3 | Average |
| 4 | Fair |
| 5 | Poor |
| 6 | Dead |

The condition of the trees shall be basi on a six (6) point scale with one (1) being the best and six (6) being the wo

| Action Code |
|---|
| X |
| R |
| * |
| |
| RP |

| Classification Code |
|---|
| H |
| HR |
| R |
| |

Removal Description
Inch diameter to be removed based on condition &/or species
Inch diameter to be removed based on road alignment option
Inch diameter to be removed based on subdivision improvements
Tree to remain
Root Prune

Village Classification Description
Heritage Tree
Heritage Tree to be removed due to Poor or Hazardous Condition
Removable Tree
Non-Heritage Tree

REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 12/06/19 | FOR SUBMITTAL | S.R.M. |
| 01/17/19 | FOR SUBMITTAL | S.R.M. |
| 02/05/20 | FOR SUBMITTAL | S.R.M. |
| 04/17/20 | PER VILLAGE COMMENTS | S.R.M. |
| 05/08/20 | PER VILLAGE COMMENTS | S.R.M. |


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1129 MAIN STREET UNION GROVE, WISCONSIN 53182 PH: (262) 878-6200 | ig@igconsulting.net


TREE INVENTORY & SPECIFICATIONS

DESIGN: K.C.L.
DRAFTING: S.R.M
SCALE: NONE
DATE: 10/28/19

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
### GLENCOE, ILLINOIS


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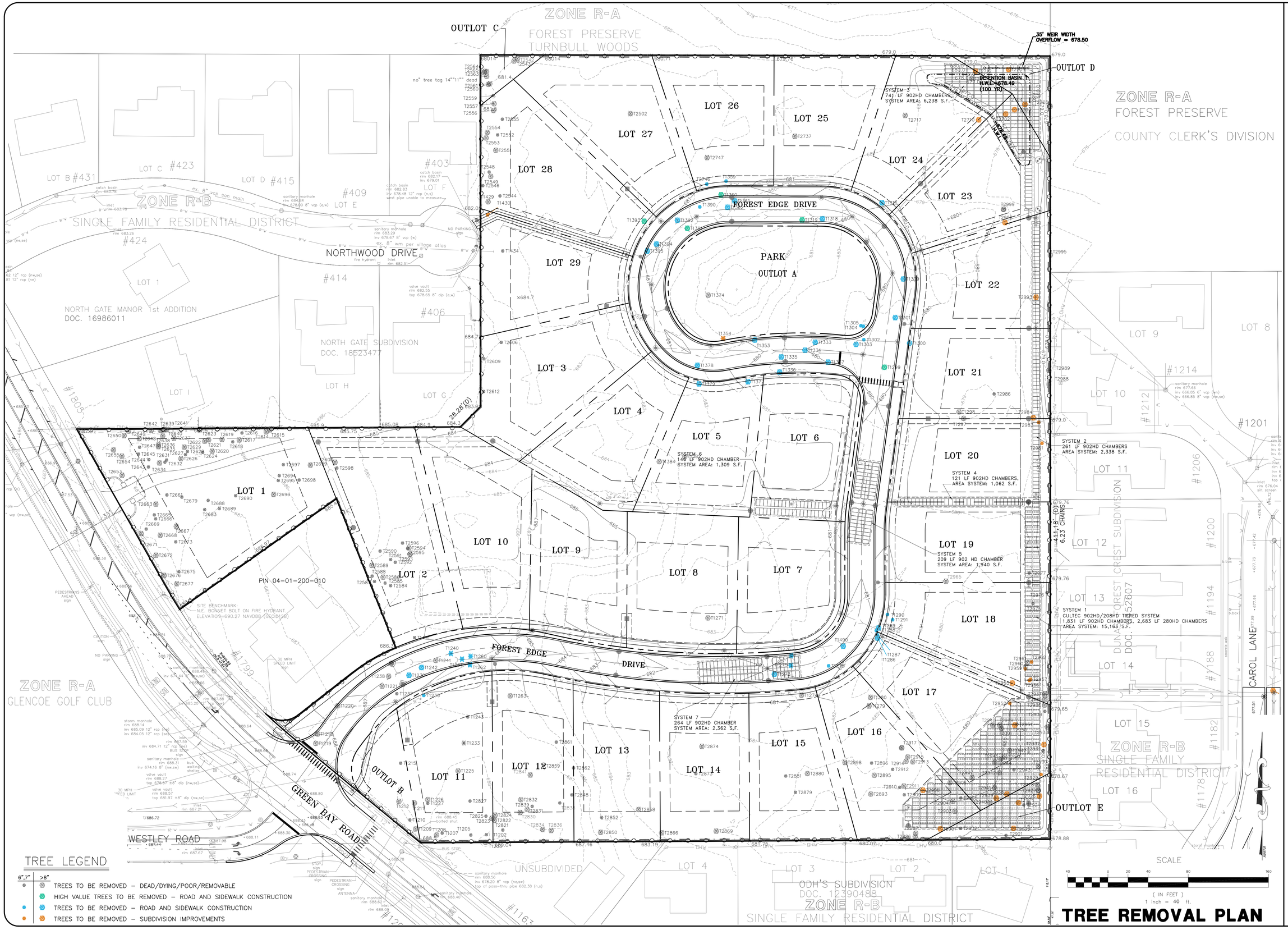
FIRM NO. 184-001330

PROJECT No. 18557




## TREE LEGEND

| 6"-7" | >8" | |
|---|---|---|
| | | TREES TO BE REMOVED – DEAD/DYING/POOR/REMOVABLE |
| | | HIGH VALUE TREES TO BE REMOVED – ROAD AND SIDEWALK CONSTRUCTION |
| | | TREES TO BE REMOVED – ROAD AND SIDEWALK CONSTRUCTION |
| | | TREES TO BE REMOVED – SUBDIVISION IMPROVEMENTS |

# TREE REMOVAL PLAN

## REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 12/20/19 | FOR SUBMITTAL | S.R.M. |
| 01/17/20 | FOR SUBMITTAL | S.R.M. |
| 02/04/20 | FOR SUBMITTAL | S.R.M. |
| 02/20/20 | FOR SUBMITTAL | S.R.M. |
| 03/20/20 | FOR SUBMITTAL | S.R.M. |
| 04/17/20 | PER VILLAGE COMMENTS | S.R.M. |
| 05/08/20 | PER VILLAGE COMMENTS | S.R.M. |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TREE REMOVAL PLAN

DESIGN: K.C.L. | DRAFTING: S.R.M.

SCALE: 1"=40' | DATE: 10/28/19

FIRM NO. 184-001330

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS


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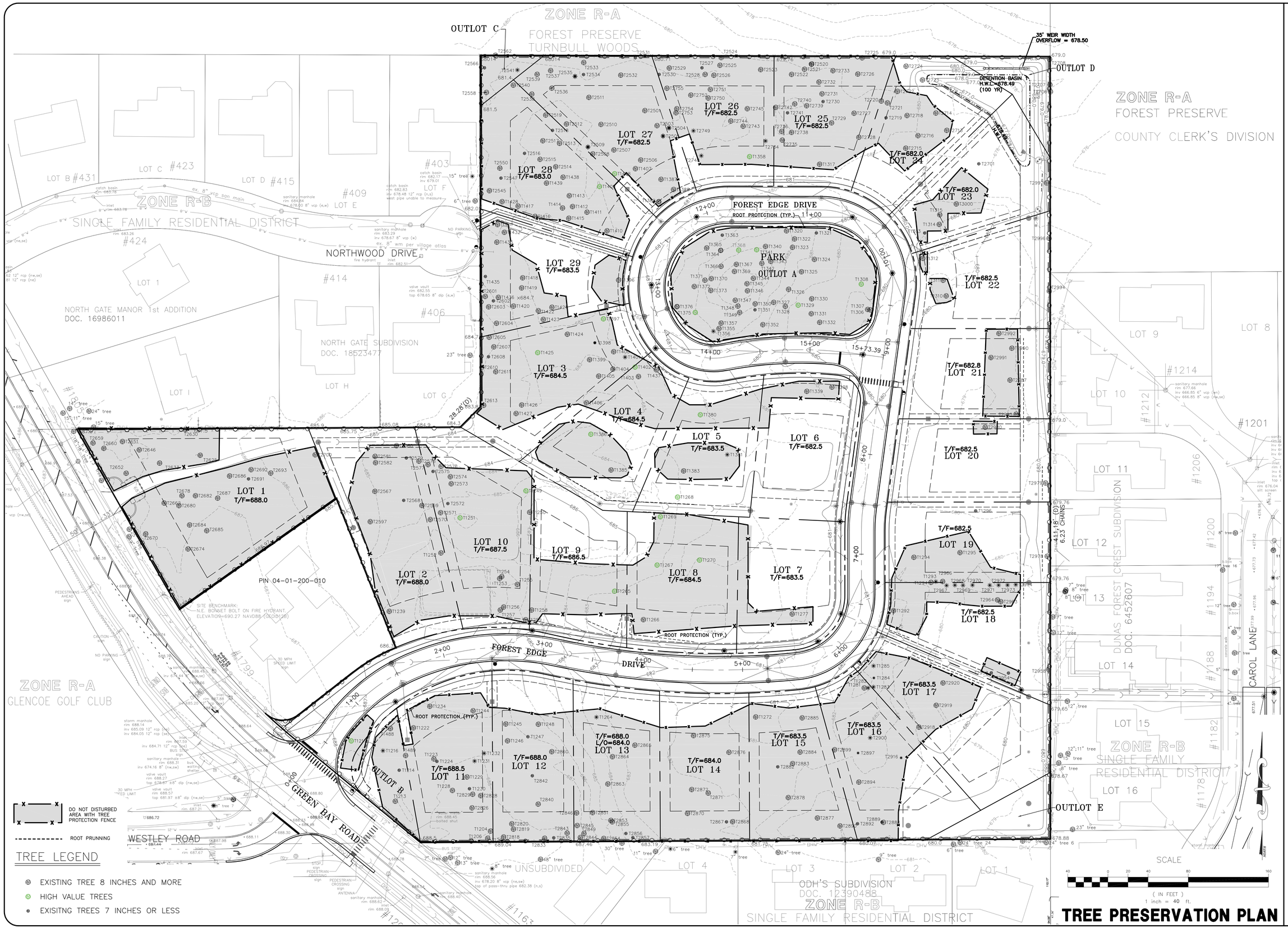
PROJECT No. 18557




DO NOT DISTURBED AREA WITH TREE PROTECTION FENCE

ROOT PRUNNING

## TREE LEGEND

- EXISTING TREE 8 INCHES AND MORE
- HIGH VALUE TREES
- EXISITNG TREES 7 INCHES OR LESS

## REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 12/20/19 | FOR SUBMITTAL | S.R.M. |
| 01/17/20 | FOR SUBMITTAL | S.R.M. |
| 02/04/20 | FOR SUBMITTAL | S.R.M. |
| 02/20/20 | FOR SUBMITTAL | S.R.M. |
| 04/17/20 | PER VILLAGE COMMENTS | S.R.M. |
| 05/08/20 | PER VILLAGE COMMENTS | S.R.M. |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TREE PRESERVATION PLAN | DESIGN: K.C.L. | DRAFTING: S.R.M. | SCALE: 1"=40' | DATE: 10/28/19

FIRM NO. 184-001330

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
### GLENCOE, ILLINOIS


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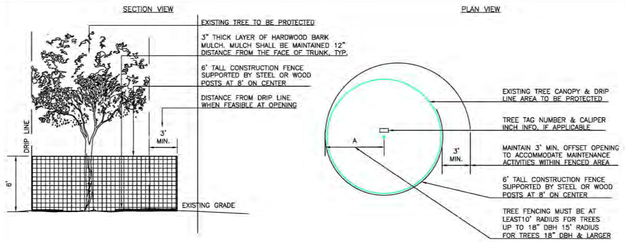
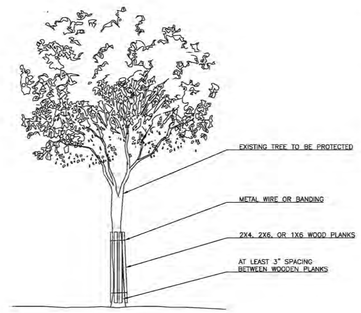
PROJECT No. 18557



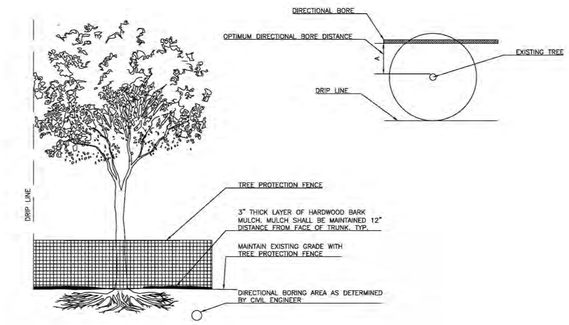

NOTES:
1) THE PURPOSE OF TREE PROTECTION FENCING IS TO MINIMIZE CONSTRUCTION ACTIVITIES WITHIN CRITICAL ROOT ZONES OF EXISTING TREES TO REMAIN.
2) PROTECTIVE TREE FENCING MUST BE WIRE MESH OR WELDED WIRE FENCING (CHAIN LINK), 6' HIGH WITH STEEL OR WOODEN POSTS INSTALLED AND SPACED NOT MORE THAN 8' APART.
3) PROTECTIVE TREE FENCING MUST EXTEND TO THE DRIP LINE OF THE TREE (WHICH CAN BE ESTIMATED AT 1 FOOT FOR EVERY 1 INCH OF DBH) BUT IN NO CASE SHALL FENCING BE:
   LESS OF A RADIUS OF 10' FROM TREES UP TO 18" DBH
   LESS OF A RADIUS OF 15' FROM TREES 18" IN DBH OR LARGER
4) PROTECTIVE TREE FENCING MUST REMAIN INTACT FOR THE ENTIRE DURATION OF THE CONSTRUCTION PROJECT AND MAY NOT BE MOVED OR REMOVED FOR ANY REASON WITHOUT VILLAGE APPROVAL ONLY.

| | | |
|---|---|---|
| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 | |
| PROTECTIVE TREE FENCING | SHEET 1 OF 1 | |
| | NOT TO SCALE | |

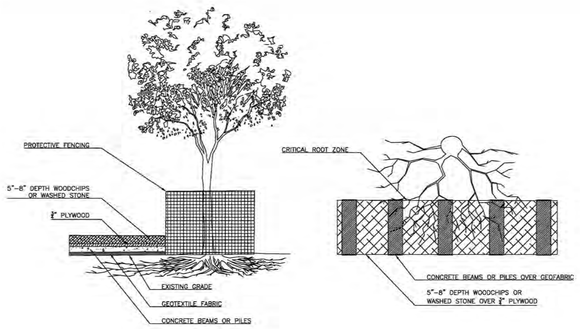



NOTES:
1) THE PURPOSE OF TREE BANDING AND BOARDING IS TO PROTECT TREE TRUNKS WHICH MAY BE EXPOSED TO CONSTRUCTION EQUIPMENT, SUCH AS AT DRIVEWAYS AND PARKWAYS.
2) EXISTING VEGETATION WHICH IS TO REMAIN IN PLACE SHALL BE PROTECTED AGAINST UNNECESSARY CUTTING, BREAKING, OR SKINNING OF ROOTS, SKINNING AND BRUISING OF BARK, SMOTHERING BY STOCKPILING OF CONSTRUCTION MATERIALS OR EXCAVATED MATERIALS WITHIN THE DRIP LINE, EXCESS FOOT OR VEHICULAR TRAFFIC OR PARKING OF VEHICLES WITHIN THE DRIP LINE.
3) BANDING IS USED TO PROTECT TREE TRUNKS ONLY.
4) 2X4, 2X6, OR 1X6 WOOD PLANKS MUST BE ERECTED VERTICALLY AND CONTINUOUSLY AROUND THE TRUNK, FASTENED WITH METAL WIRE OR BINDING.
5) NO NAILS MAY BE USED ON THE TREE.
6) EXISTING VEGETATION WHICH IS TO REMAIN IN PLACE SHALL BE WATERED AS REQUIRED TO MAINTAIN ITS HEALTH DURING THE COURSE OF CONSTRUCTION OPERATIONS.

| | | |
|---|---|---|
| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 | |
| TREE BANDING AND BOARDING DETAIL | SHEET 1 OF 1 | |
| | NOT TO SCALE | |

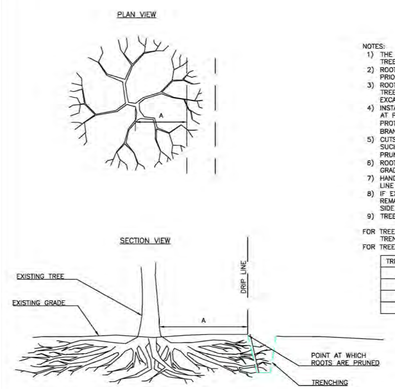



| | | |
|---|---|---|
| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 | |
| DIRECTIONAL BORING DETAIL AT EXISTING TREE | SHEET 1 OF 1 | |
| | NOT TO SCALE | |




NOTE:
BRIDGING CONSISTS OF 5"-8" MULCH OR WASHED STONE OVER SHEETS OF EXTERIOR PLYWOOD, CONCRETE BEAMS, AND GEOTEXTILE FABRIC THAT COVERS THE CRITICAL ROOT ZONE.

| | | |
|---|---|---|
| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 | |
| TREE ROOT BRIDGING DETAIL | SHEET 1 OF 1 | |
| | NOT TO SCALE | |




NOTES:
1) THE PURPOSE OF ROOT PRUNING IS TO MAXIMIZE TREE HEALTH FOR TREE WHICH MAY BE IMPACTED BY CONSTRUCTION EQUIPMENT.
2) ROOT PRUNING MUST BE PERFORMED BY A CERTIFIED ARBORIST PRIOR TO EXCAVATION ACTIVITIES.
3) ROOT PRUNING MUST BE PERFORMED AS FAR FROM THE PROTECTED TREE AS POSSIBLE BUT STILL BE EFFECTIVE IN PROTECTING FROM EXCAVATION ACTIVITIES.
4) INSTALL ORANGE PLASTIC MESH TREE BARRIER WITH REBAR SUPPORTS AT POINT OF PRUNING AND CONTINUE COMPLETELY AROUND TREE, PROTECTING THE AREA WITHIN THE DRIP LINE (EXTENT OF OUTER BRANCHES)
5) CUTS ARE TO BE MADE CLEANLY WITH A SHARP ROOT PRUNING TOOL SUCH AS A DOSCO OR VERMEER ROOT PRUNER. CUTTING OR PRUNING OF ROOTS 2" IN DIAMETER OR LARGER IS PROHIBITED.
6) ROOT PRUNING MUST BE TO A DEPTH OF 18-24 INCHES BELOW GRADE.
7) HAND DIGGING IS REQUIRED IF EXCAVATION OCCURS WITHIN THE DRIP LINE OF THE TREE.
8) IF EXCAVATION CAUSED PRUNED ROOTS OVER 1.5" IN DIAMETER TO REMAIN EXPOSED FOR MORE THAN 24 HOURS, ROOTS ON THE TREE SIDE MUST BE KEPT MOIST.
9) TREE DIAMETER IS MEASURED AT BREAST HEIGHT (DBH).

FOR TREES < 6" DBH:
TRENCHING SHALL BE NO CLOSER TO THE TREE THAN THE DRIP LINE.
FOR TREES > 6" DBH:

| TREE DIAMETER | DISTANCE "A" |
|---|---|
| 6"-9" | 5' MIN. |
| 10"-14" | 10' MIN. |
| 15"-19" | 12' MIN. |
| > 19" | 15' MIN. |

| | | |
|---|---|---|
| ENGINEERING AND SPECIFICATIONS MANUAL | JULY 2018 | |
| ROOT PRUNING DETAIL | SHEET 1 OF 1 | |
| | NOT TO SCALE | |

REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 12/06/19 | FOR SUBMITTAL | S.R.M. |
| 01/17/20 | FOR SUBMITTAL | S.R.M. |
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| 04/17/20 | PER VILLAGE COMMENTS | S.R.M. |
| 05/08/20 | PER VILLAGE COMMENTS | S.R.M. |

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1129 MAIN STREET UNION GROVE, WISCONSIN 53182 PH. (262) 878-6200 | ig@igconsulting.net

CONSTRUCTION STANDARDS | DESIGN: K.C.L. | DRAFTING: S.R.M | SCALE: NONE | DATE: 10/28/19

FIRM NO. 184-001330

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS

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PROJECT No. 18557

# STORMWATER MANAGEMENT REPORT

# FOREST EDGE SUBDIVISION
# 1801 GREEN BAY ROAD,
# GLENCOE, IL
# (IG #18557)

Prepared for:
Glencoe Developers, LLC
707 Skokie Blvd, Suite 100
Northbrook, IL 60062

Prepared by:
IG Consulting, Inc.
300 Marquardt Drive
Wheeling, Il 60090

May 8, 2020

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# SUMMARY

IG Consulting, Inc. was engaged by Glencoe Developers, LLC to evaluate the existing and proposed storm water conditions for the property situated at 1801 Green Bay Road in Glencoe, Illinois and to prepare a stormwater management plan for a 29-unit residential community the developer intends to construct on the property. A copy of the proposed subdivision plan is attached as Exhibit "A".

## EXISTING CONDITIONS

The property is situated in the northeast corner of Cook County Illinois. The surface of the property gently slopes to the east and is tributary to Lake Michigan. The highest ground on the property is along Green Bay Road. Water flows across the surface in two general directions. The northerly watersheds discharge toward the Turnbull Woods Forest Preserve property, along the north property line and at a point near the north end of the east property line. The southerly watershed drains toward Carol Lane at the east property line. The watersheds and these drainage flows are depicted on Exhibit "B".

IG Consulting performed a Critical Duration Analysis of various storm events, including events having a 1% chance (commonly called 100 year storm) of occurring, as requested by the Village staff. Exhibit B shows the 1-hour event generated the highest discharge rate for each sub-watershed the property. Sub-watershed A discharges 3.56 CFS, sub-watershed B discharges 8.77 CFS, and sub-watershed C discharges 11.49 CFS, as shown in Appendix "D". A summary of the Critical Duration Analysis is included as Table 1.

The Village of Glencoe initiated a study of the Terrace Court Basin area in 2014 and installed a storm sewer in Park Place in 2016 to help alleviate stormwater concerns raised by residents in the area. The existing watershed contributing to the Terrace Court basin area, and factored into the storm sewer design and installation, included the southerly 5.2 acres of the subject property flowing into the storm sewer at the intersection of Carol Lane and Park Place unrestricted in any way.

## PROPOSED CONDITIONS/STORM WATER DETENTION

The proposed development will follow the current local, county, state and federal guidelines regarding storm water management and discharge from the subject property. Accordingly, we are proposing two storm water discharge points from the subject property that would collect proportional areas of the property in drainage swales and roadway gutters and direct the water into private and public storm sewer pipes. Those pipes would then discharge into a below grade chamber system embedded in stone and a surface basin that would temporarily hold the water and release it at a restricted rate. The basins would be sized to limit the overall discharge from the site to 3.30 CFS (approximately 19% of the current peak discharge). The proposed watersheds are depicted on Exhibit "C". The detention system will be a combination of an above ground detention basin in the northeast corner and a prefabricated, below ground chamber system in the northeast and southeast corners of the site, including the use of the prefabricated chamber system in select areas throughout the site.

Area "D" is a 1.04-acre sub-watershed that drains north to Turnbull Woods. A portion of the area will remain undeveloped and considered a preservation area. Areas in "D" that will be *developed* and unrestricted (not tributary to storm water detention), will be part of a swap of on-site property that will remain undeveloped. By MWRD regulation, if the unrestricted area is planted with deep rooted vegetation and in an easement to remain undisturbed, it can be considered unrestricted area that will not impact the total allowable release rate for the site.

Also, a proposed berm constructed along the east property line will be unrestricted on the east side of the berm. The berm will be planted and placed in an easement as protected area from development, to avoid impact to the allowable release rate. The release rate for the development was calculated as follows:

**Site Area:** 527,076 SF (12.10 Acres)
**Undetained Developed Area:** 27,150 SF**
**Undetained Undeveloped Area:** Planted with native planting (West Berm) and area to remain undeveloped (undisturbed) in a Preservation Easement (Rear yards of Lots 16 thru 29): 20,956 SF

**MWRD will allow on-site, undetained, developed areas to be swapped for on-site, undisturbed areas tributary to proposed detention.
On-Site Undisturbed Areas tributary to detention for Swap: The park area and two areas at the entrance into the subdivision: 27,363 SF. See exhibit for details.

527,076 **Total Site Area**
– 20, 956 **Undetained Undeveloped Area**
– 27, 150 **Undetained Developed Area in Swap**
= 478, 970 SF (11.00 Acres)

Therefore, the stormwater detention calculations are based on a net 11.00-acre development.
11.00 (0.30 cfs/Acre (North Branch Watershed)) = 3.30 CFS (Total Allowable Release Rate)

DESIGNED STORAGE VOLUME:
The proposed conditions were modeled using HydroCad Software, and Custom Prizmatic Storage for rock void volumes, including stormwater modeling with the Cultec arch pipe system. 2019 Bulletin 70 Rainfall data was used to detain sufficient storm water on site, while limiting the combined release rate to 3.30 cfs (11.00 acres x 0.30 cfs/acre).

In order to establish the required detention volume for the proposed project, the site was first modeled to provide the required detention for the 100-year storm event at the allowable release rate for just the subject property. Then, the offsite tributary area flowing from Northwood Drive, the existing residence on Green Bay Road and the northerly rear yards of Kelling Lane were incorporated creating a second model. In the second model, the internal weir to Turnbull Woods was lowered to allow the offsite bypass flow over the weir, while maintaining the required storage volume. The internal weir draining to Carol Lane was raised to direct the Kelling Lane bypass flow to drain through the detention system and discharge into Turnbull Woods, further reducing the flow to the Carol Lane storm sewer system. Please see Table 2, Page 17 for the specific flow rates in both iterations.

The resulting storage volume **required** for the development is **140,242 cubic feet**. The system as shown in Appendix A utilized a north surface basin containing 4,446 cf, of required storage and the below ground chamber system providing 135,796 cubic feet of required storage. A calculation was provided from HydroCad's technical reference manual for custom Prizmatic volume modeling.

The underground detention system is comprised of 2,683 LF of 280 HD chamber, 3,505 LF of 902 HD chamber within 45,407 sf of gravel bedding. The total amount of stone provided for the chamber system is 174,027 cubic feet. With a 36% void ratio, the total available storage is 62,650 cubic feet. Total storage in chambers is 78,172 cubic feet. The total provided detention storage in the chamber system is 140,821 cubic feet. Total provided storage for the North Basin is 5,071 cubic feet, with a total combined storage **provided** of **145,892 cubic feet**.

Release rate to the Northeast (Turnbull Woods): 1.40 cfs @ HWL of 678.36 and release rate to southeast (Carol Lane): 1.52 cfs @ HWL of 678.34, at the 18$^{th}$ hour. Total allowable release rate is 2.92 cfs. With ByPass, the release rate to Turnbull Woods is 8.39 cfs @ HWL of 678.49 and to Carol Lane 1.53 cfs @ HWL 678.50, at the 18$^{th}$ hour. Drain down time is 23 hours for the north detention basin and 82 hours for the below ground detention chamber system. Drain down calculations are provided in the Appendix A of this report.

BYPASS

Storm water entering the site from Northwood Drive and 1799 Green Bay Road will bypass through the development to the proposed detention system. To manage the bypass flow through the detention system and out to Turnbull Woods, the restrictor will remain a 6.5-inch diameter orifice and the 6 foot wide internal weir plate will be set to elevation 678.00, allowing bypass overflow. See tables 1 and 2 for information. To the south, existing flow from ODH Subdivision occurs at the 1-hour event at 2.31 cfs, for a combined total of 5.87 cfs to Carol Lane. At the 1-hour event, a proposed combined bypass/restrictor flow is 1.08cfs to Carol Lane.

At the 18-hour event, the existing runoff discharge to Carol lane is 2.08cfs. Proposed combined discharge at the 18-hour event will be 1.53cfs, to the Carol Lane storm sewer. An internal plate will be installed with a 4.5-inch diameter orifice and the top of the plate will be set at elevation 678.60 to control bypass flow to Turnbull Woods. Bypass flows are shown in Tables 1 and 2.

VOLUME CONTROL

The storm water chambers are designed to meet water quality discharge Retention-Volume Control (Initial 1" flow of water is filtered or treated to remove sediment and debris). The Prefabricated chamber system will provide the necessary volume control and detention for the development. Storm water captured throughout the site will pass through the chamber system, prior to release to the public sewer system. According to Section 5.3.3, *Volume Control Practices, in the MWRD's Watershed Management Ordinance, Technical Guidance Manual,* volume control practices provide water quality enhancements through filtration of pollutants such as fine sediment, nutrients, bacteria and organic materials from initial (first flush) storm water runoff. Furthermore, the manual states when detention is required for development, credit for retention-based practices may be applied toward the detention requirements. Flows through Contech's Separator Rows within the chamber system and filtration through open graded stone below the chambers will provide necessary volume control and detention for the development. The storm water chamber system will be constructed in the rear lots, from the northeast to the southeast corner of the site, including select areas. The system would be accessed via easements along the side yards of the lots within the subdivision. In addition, chambers will be constructed underneath low points in the street with permeable pavers, providing water quality/volume control and storm water detention. Total Impervious Area for the Site: 5.57 Ac. (242,629 s.f.)
242,629 * 0.083 = 20,138.00 cubic feet (0.462 Acre Feet) of Volume Control.

DISCHARGE DESIGN:
Two primary discharge restrictors from the detention system are proposed along the east line of the property. The southerly restrictor will be a 4.5" diameter hole in an internal weir plate of a storm manhole. It will discharge into a 12 " diameter pipe to a proposed manhole in Carol Lane and then continue in a 12" diameter pipe to the 30" storm sewer at Park Place. The northerly restrictor consists of a plate with a 6.5" diameter orifice, The plate is an internal wall of the restrictor manhole flowing into a 18" pipe and an energy dissipater on the surface at the property line.

OVERFLOW CONDITIONS:
In the event a storm event exceeds the capacity of the detention storage, two overflow weirs have been incorporated into the design. A six foot wide internal overflow weir at elevation 678.60 will be installed in the storm manhole with the southerly restrictor. A six foot wide internal overflow weir at elevation 678.00 will be installed in the manhole for the northerly restrictor.

A 35-foot wide weir at elevation 678.50 is incorporated into the berm of the north surface basin.

In addition, an internal weir will be placed inside a manhole at elevation 677.80, with a 1.50-inch orifice at invert elevation 673.50 to regulate flow between the above ground basin to the northeast and the chamber system, including flows to the two northeast and southeast restrictor manholes.

EROSION CONTROL
Soil erosion control will be managed during construction activities, with the use of perimeter silt fence, at the start of construction. The north detention basin will be stabilized with topsoil, blanket and seed, immediately following the completion of earthwork. Temporary filter baskets will be installed in catch basins. Combination silt fence surrounding catch basins with filter baskets will be installed in grass areas, Filter logs will be placed around inlet structures with temporary filter baskets, in paver brick locations. An energy dissipator with down-stream rip-rap will be installed at the northeast restrictor catch basin. Site and off-site bypass discharges enter the northeast restrictor catch basin, then into the Turnbull Woods Forest Preserve.

SANITARY SEWER
8-inch and 6-inch PVC, SDR 26 sanitary sewer will be installed to service the 29 lots. State requirements for sewer separation, material types and crossings are met, for protection of surrounding utilities. Two connections will be made to service the development. The proposed 8-inch sewer will discharge to an existing 8-inch sewer in Green Bay Road. Another proposed 8-inch sewer will discharge east, between lots 17 and 18 and between lots 14 and 15 on Carol Lane. The 8-inch sewer will connect to an existing 8-inch sewer in Carol Lane.

CONCLUSION:
The design proposes to collect the storm water and release it to both the northeast (Turnbull Woods) and southeast (Park Place). This plan will maintain flow to Turnbull Woods and will reduce the

primary flow to the Park Place sewer by over 60%. The design directs the majority of the overland flow from the site away from the existing neighboring residential properties.

While there will be an increase in impervious area on the subject property as a result of its development, the overall peak rate of stormwater runoff will actually decrease to less than 20% of the existing peak flow due to the temporary detention of stormwater in the basins the developer will be constructing on the property. Storm water will be released at a controlled and restricted rate into the Village's Terrace Court Basin storm sewer system. Storm sewer and swale sizing calculations are found in Appendix A of this report.

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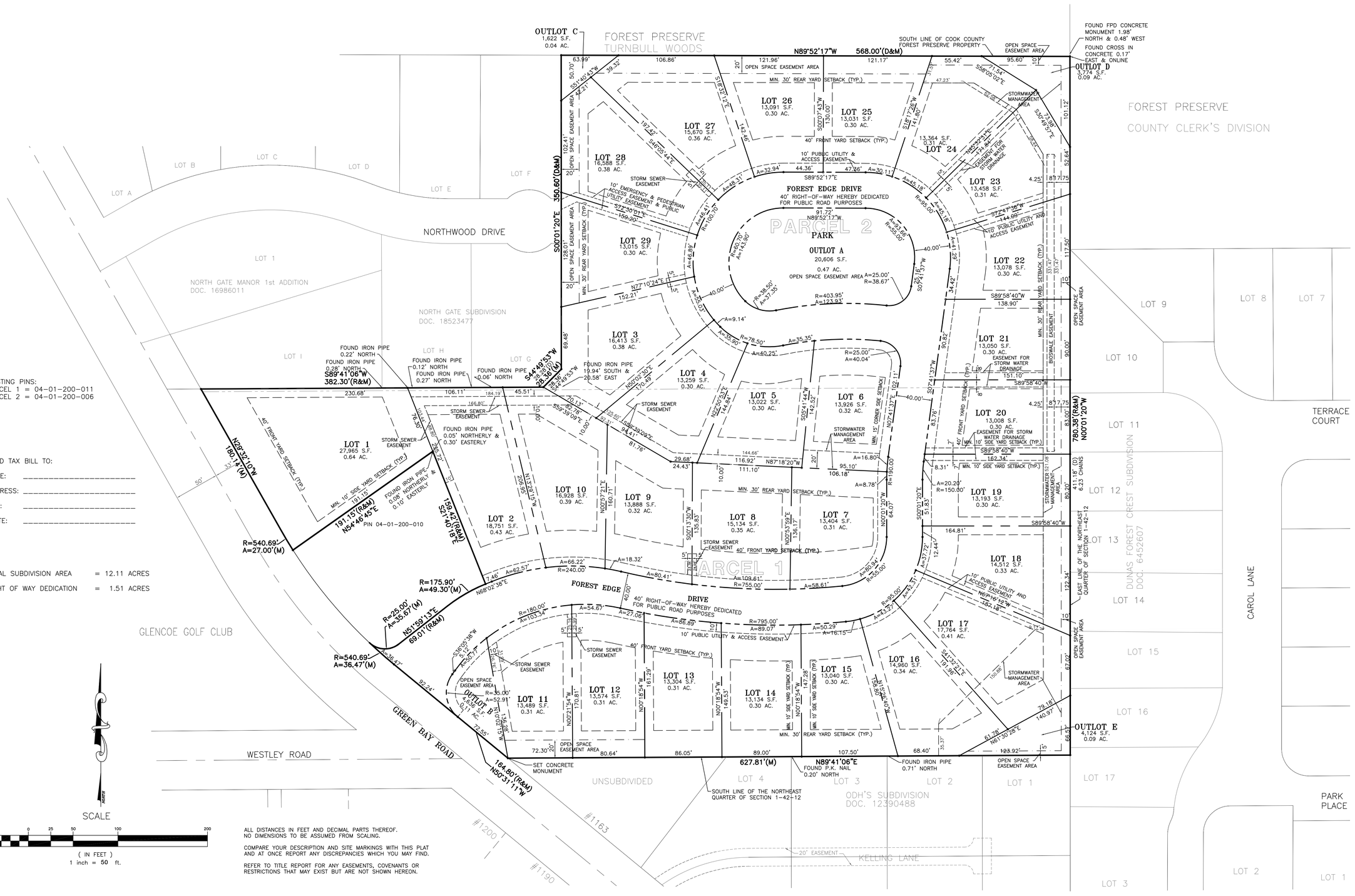
# EXHIBIT A

# FINAL PLAT OF SUBDIVISION

# FOREST EDGE SUBDIVISION

OF

BEING A SUBDIVISION IN THE NORTH QUARTER OF SECTION 1, TOWNSHIP 42 NORTH, RANGE 12 EAST OF THE THIRD PRINCIPAL MERIDIAN, COOK COUNTY, ILLINOIS.




EXISTING PINS:
PARCEL 1 = 04-01-200-011
PARCEL 2 = 04-01-200-006

SEND TAX BILL TO:

NAME: _____

ADDRESS: _____

CITY: _____

STATE: _____

TOTAL SUBDIVISION AREA = 12.11 ACRES

RIGHT OF WAY DEDICATION = 1.51 ACRES

ALL DISTANCES IN FEET AND DECIMAL PARTS THEREOF.
NO DIMENSIONS TO BE ASSUMED FROM SCALING.

COMPARE YOUR DESCRIPTION AND SITE MARKINGS WITH THIS PLAT AND AT ONCE REPORT ANY DISCREPANCIES WHICH YOU MAY FIND.

REFER TO TITLE REPORT FOR ANY EASEMENTS, COVENANTS OR RESTRICTIONS THAT MAY EXIST BUT ARE NOT SHOWN HEREON.

SHEET 1 OF 2

REVISED: 06/08/20
REVISED: 04/17/20
REVISED: 02/20/20
REVISED: 02/19/20
PREPARED: 01/17/20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1129 MAIN STREET UNION GROVE, WISCONSIN 53182 PH. (262) 878-6200 | ig@igconsulting.net


| | | | |
|---|---|---|---|
| PREPARED FOR: | GLENCOE DEVELOPERS LLC | DRAFTED BY: S.R.M. | SCALE: 1"=50' |
| FIELD CREW: D.J. | FIELD WORK:2018 | CHECKED BY: | FIRM NO. 184-001330 |

FINAL PLAT OF SUBDIVISION
FOREST EDGE SUBDIVISION
1801 GREEN BAY ROAD
GLENCOE, ILLINOIS

PROJECT NUMBER
18557


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# FINAL PLAT OF SUBDIVISION

# FOREST EDGE SUBDIVISION

OF

BEING A SUBDIVISION IN THE NORTH QUARTER OF SECTION 1, TOWNSHIP 42 NORTH, RANGE 12 EAST OF THE THIRD PRINCIPAL MERIDIAN, COOK COUNTY, ILLINOIS.



PRESIDENT AND BOARD OF TRUSTEES CERTIFICATE
STATE OF ILLINOIS}
}S.S.
COUNTY OF COOK}

APPROVED AND RIGHT OF WAY DEDICATION HEREBY ACCEPTED, BY THE PRESIDENT AND BOARD OF TRUSTEES OF THE VILLAGE OF GLENCOE, COOK COUNTY, ILLINOIS

THIS _____ DAY OF _____ A.D., 20__.

_____
VILLAGE PRESIDENT

_____
ATTEST: VILLAGE TREASURER

VILLAGE ENGINEER CERTIFICATE
STATE OF ILLINOIS}
}S.S.
COUNTY OF COOK}

APPROVED BY THE VILLAGE ENGINEER OF THE VILLAGE OF GLENCOE, COOK COUNTY, ILLINOIS

THIS _____ DAY OF _____ A.D., 20__.

_____
VILLAGE ENGINEER

PLAN COMMISSION CERTIFICATE
STATE OF ILLINOIS}
}S.S.
COUNTY OF COOK}

RECOMMENDED BY THE PLAN COMMISSION OF THE VILLAGE OF GLENCOE, ILLINOIS

THIS _____ DAY OF _____ A.D., 20__.

_____
CHAIRMAN

_____
SECRETARY

EASEMENT FOR STORM SEWER

A PERMANENT AND PERPETUAL NON-EXCLUSIVE EASEMENT IS HEREBY GRANTED TO THE VILLAGE OF GLENCOE, COOK COUNTY, ILLINOIS ("VILLAGE"), TO SURVEY, CONSTRUCT, RECONSTRUCT, USE, OPERATE, MAINTAIN, TEST, INSPECT, REPAIR, REPLACE, ALTER, REMOVE OR ABANDON IN PLACE STORM SEWER MAINS, TOGETHER WITH RELATED ATTACHMENTS, EQUIPMENT AND APPURTENANCES THERETO, IN, UPON, UNDER, ALONG AND ACROSS THE AREAS DESIGNATED "STORM SEWER EASEMENT" ON THIS SUBDIVISION PLAT. THE OWNERS OF THE PROPERTY SUBDIVIDED ON THIS PLAT OR ANY PART THEREOF HEREBY RESERVE THE RIGHT TO USE THE AREAS DESIGNATED "STORM SEWER EASEMENT" AND THE ADJACENT PROPERTY IN ANY MANNER THAT WILL NOT PREVENT OR INTERFERE WITH THE EXERCISE BY THE VILLAGE OF THE RIGHTS HEREBY GRANTED; PROVIDED, HOWEVER, THAT THE OWNERS SHALL NOT IN ANY MANNER DISTURB, DAMAGE, DESTROY, INJURE, OBSTRUCT OR PERMIT TO BE OBSTRUCTED THE "STORM SEWER EASEMENT" AT ANY TIME WHATSOEVER WITHOUT THE EXPRESS PRIOR WRITTEN CONSENT OF THE VILLAGE'S VILLAGE MANAGER.

PUBLIC UTILITY & ACCESS EASEMENT

A PERMANENT AND PERPETUAL NON-EXCLUSIVE EASEMENT IS HEREBY GRANTED TO THE VILLAGE, NORTH SHORE GAS COMPANY, COMCAST CABLE, COMMONWEALTH EDISON COMPANY, AT&T AND WIDE OPEN WEST, THEIR SUCCESSORS AND ASSIGNS, IN ALL AREAS DESIGNATED "PUBLIC UTILITY & ACCESS EASEMENT ON THIS SUBDIVISION PLAT. SAID EASEMENTS SHALL BE FOR THE INSTALLATION, MAINTENANCE, RELOCATION, RENEWAL AND REMOVAL OF PUBLIC UTILITIES, DRAINAGE FACILITIES AND RELATED APPURTENANCES, IN, UNDER, ACROSS, ALONG AND/OR UPON THE SO DESIGNATED PROPERTY. IT SHALL INCLUDE THE RIGHT TO ENTER THE SUBDIVIDED PROPERTY AND SUCH AREAS FOR ALL SUCH PURPOSES, AND THE RIGHT, WITHOUT LIABILITY, TO CUT, TRIM, ALTER AND/OR REMOVE ANY VEGETATION, ROOTS, STRUCTURES OR DEVICES WITHIN THE DESIGNATED EASEMENT PROPERTY AS MAY BE REASONABLY REQUIRED INCIDENT TO THE RIGHT HEREIN GIVEN.

WITHOUT PRIOR WRITTEN CONSENT OF THE GRANTEES, NO BUILDINGS, STRUCTURES OR OTHER OBSTRUCTION SHALL BE CONSTRUCTED, PLANTED OR PLACED IN ANY SUCH EASEMENT AREAS, NOR SHALL ANY OTHER USES BE MADE THEREOF WHICH WILL INTERFERE WITH THE EASEMENTS GRANTED HEREBY. SUCH EASEMENTS SHALL FURTHER BE FOR THE PURPOSE OF SERVING ALL AREAS SHOWN ON THIS PLAT AS WELL AS OTHER PROPERTY, WHETHER OR NOT CONTIGUOUS THERETO, WITH GAS, ELECTRIC, TELEPHONE, FIBER-OPTIC AND/OR CABLE TV, WATERMAINS, SANITARY AND STORM SEWERS.

SUCH EASEMENTS SHALL SURVIVE THE VACATION BY PROPER AUTHORITY OF ANY STREET AND OTHER PUBLIC WAY AND PLACE SHOWN ON THIS PLAT, UNLESS OTHERWISE EXPRESSLY MENTIONED IN AN ORDINANCE OF VACATION.

EMERGENCY & PEDESTRIAN ACCESS EASEMENT

A PERMANENT AND PERPETUAL NON-EXCLUSIVE EASEMENT IS HEREBY RESERVED FOR AND GRANTED TO THE VILLAGE ON, OVER, UPON AND ACROSS, THOSE AREAS DEPICTED ON THE PLAT AS "EMERGENCY & PEDESTRIAN EASEMENT" FOR MUNICIPAL EMERGENCY VEHICULAR USE AND PUBLIC PEDESTRIAN USE, BICYCLE USE (NON-MOTORIZED VEHICLES), AND ACCESS, AND FOR THE VILLAGE TO IMPROVE, INSTALL, CONSTRUCT, RENEW, CLEAR, RECONSTRUCT, REPLACE, REMOVE, REPAIR, ALTER, INSPECT, OPERATE, AND MAINTAIN SAME.

RESTRICTIVE COVENANTS AND EASEMENT FOR STORM WATER MANAGEMENT AREA

1. THE AREA OF THE PROPERTY DESIGNATED ON THIS PLAT AS "STORM WATER MANAGEMENT AREA" SHALL BE CONTINUOUSLY MAINTAINED IN A FIRST RATE MANNER BY FOREST EDGE SUBDIVISION HOMEOWNERS' ASSOCIATION (THE "ASSOCIATION") AND AN EASEMENT ON, UNDER AND ABOVE THE STORM WATER MANAGEMENT AREA IS HEREBY GRANTED TO, AND FOR THE USE AND BENEFIT OF, ALL OF THE LOTS IN THIS SUBDIVISION AND THE HOMEOWNERS' ASSOCIATION FOR THE SOLE PURPOSE OF STORM WATER DETENTION AND DRAINAGE.

2. NO CHANGE SHALL BE MADE IN THE FINISHED GRADE OF THE LAND WITHIN THE STORM WATER MANAGEMENT AREA, NOR SHALL ANY CONSTRUCTION OF ANY KIND WHATSOEVER BE ERECTED OR PERMITTED TO EXIST WITHIN THE STORM WATER MANAGEMENT AREA THAT MIGHT MATERIALLY IMPEDE STORM WATER DRAINAGE THEREIN OR MATERIALLY REDUCE THE STORM WATER DETENTION CAPACITY THEREOF. TREES, SHRUBS, FENCES AND NORMAL LANDSCAPE PLANTING ASIDE FROM THOSE DEPICTED IN THE FINAL ENGINEERING AND LANDSCAPE PLANS FOR THE FOREST EDGE SUBDIVISION SHALL BE PERMITTED WITHIN THE STORM WATER MANAGEMENT AREA ONLY WITH THE PRIOR WRITTEN APPROVAL OF THE VILLAGE MANAGER OF THE VILLAGE OF GLENCOE, COOK COUNTY, ILLINOIS (THE "VILLAGE").

3. IN THE EVENT THE VILLAGE DETERMINES, IN ITS SOLE AND ABSOLUTE DISCRETION, THAT PRIOR MAINTENANCE OF THE STORM WATER MANAGEMENT AREA, AS REQUIRED BY THE DECLARATION FOR THE FOREST EDGE SUBDIVISION, IS NOT PERFORMED AT ANY TIME, THE VILLAGE, AFTER TEN (10) DAYS PRIOR WRITTEN NOTICE TO THE ASSOCIATION, MAY, BUT SHALL NOT BE OBLIGATED TO, ENTER UPON THE STORM WATER MANAGEMENT AREA FOR THE PURPOSE OF PERFORMING MAINTENANCE WORK ON AND TO THE STORM WATER MANAGEMENT AREA.

4. IN THE EVENT THAT THE VILLAGE SHALL CAUSE TO BE PERFORMED ANY WORK PURSUANT TO THESE PARAGRAPHS, THE VILLAGE SHALL HAVE THE RIGHT TO CHARGE THE ASSOCIATION AN AMOUNT SUFFICIENT TO DEFRAY THE ENTIRE COST OF SUCH WORK OR ACTION, INCLUDING ADMINISTRATIVE COSTS, EITHER BEFORE OR AFTER SUCH COST IS INCURRED. IF THE AMOUNT SO CHARGED IS NOT PAID BY THE ASSOCIATION WITHIN THIRTY (30) DAYS FOLLOWING A DEMAND IN WRITING BY THE VILLAGE FOR SUCH PAYMENT, SUCH CHARGE, TOGETHER WITH INTEREST AND COSTS OF COLLECTION, SHALL BECOME A LIEN UPON THE STORM WATER MANAGEMENT AREA AND LOTS 1-29 IN THIS SUBDIVISION AND THE VILLAGE SHALL HAVE THE RIGHT TO COLLECT SUCH CHARGE, WITH INTEREST AND COSTS, AND TO ENFORCE SUCH LIEN AS IN FORECLOSURE PROCEEDINGS AS PERMITTED BY LAW.

5. NOTHING IN THESE PARAGRAPHS SHALL BE CONSTRUED TO CONSTITUTE A DEDICATION OF ANY PORTION OF THE STORM WATER MANAGEMENT AREA TO, OR AN ACCEPTANCE THEREOF BY, THE VILLAGE.

6. THE VILLAGE SHALL BE UNDER NO OBLIGATION TO EXERCISE THE RIGHTS GRANTED IN THESE PARAGRAPHS EXCEPT AS IT SHALL DETERMINE TO BE IN ITS BEST INTEREST. NO FAILURE TO EXERCISE AT ANY TIME ANY RIGHT HEREIN GRANTED TO THE VILLAGE SHALL BE CONSTRUED AS A WAIVER OF THAT OR ANY OTHER RIGHTS.

7. THESE COVENANTS SHALL RUN WITH THE LAND IN THE SUBDIVISION SHOWN ON THIS PLAT, AND SHALL BE BINDING UPON AND INURE TO THE BENEFIT OF THE OWNERS OF ALL LOTS OF RECORD THEREIN, THEIR RESPECTIVE SUCCESSORS, ASSIGNS AND GRANTEES AND ALL PARTIES CLAIMING BY, THROUGH AND UNDER THEM. ENFORCEMENT OF THESE COVENANTS MAY BE SOUGHT BY THE OWNERS OF ANY LOTS OF RECORD IN THIS SUBDIVISION, ANY PERSON WITH AN INTEREST IN ANY OF SAID LOTS OF RECORD, OR THE VILLAGE OF GLENCOE BY ANY PROCEEDING AT LAW OR IN EQUITY AGAINST ANY PERSON OR PERSONS VIOLATING OR ATTEMPTING TO VIOLATE ANY COVENANT, EITHER TO RESTRAIN VIOLATION, TO COMPEL AFFIRMATIVE ACTION, OR TO RECOVER DAMAGES, AND AGAINST THE LAND TO ENFORCE ANY LIEN CREATED BY THESE COVENANTS.

OPEN SPACE COVENANT AND EASEMENT

THE AREA OF THE PROPERTY DESIGNATED ON THIS PLAT AS "OPEN SPACE EASEMENT AREA" SHALL BE CONTINUOUSLY MAINTAINED AS OPEN SPACE IN ITS NATURAL CONDITION BY FOREST EDGE SUBDIVISION HOMEOWNERS' ASSOCIATION (THE "ASSOCIATION"). NO MANMADE STRUCTURE OF ANY KIND SHALL BE CONSTRUCTED THEREON NOR SHALL ANY GRADING BE PERMITTED EXCEPT FOR THOSE IMPROVEMENTS WHICH ARE INCLUDED IN THE APPROVED PLANS AND SPECIFICATIONS FOR THE SUBDIVISION.

EASEMENT FOR STORM WATER DRAINAGE:

A PERMANENT AND PERPETUAL NON-INCLUSIVE EASEMENT IS HEREBY GRANTED TO THE VILLAGE OF GLENCOE, COOK COUNTY, ILLINOIS ("VILLAGE"), ITS SUCCESSORS AND ASSIGNS, AND TO, AND FOR THE USE AND BENEFIT OF, THE OWNERS OF ALL OF THE LOTS IN THIS SUBDIVISION, FOR THE SOLE PURPOSE OF OVERLAND STORM WATER DRAINAGE, IN, UPON, ALONG AND ACROSS THE AREAS DESIGNATED "EASEMENT FOR STORM WATER DRAINAGE" ON THIS SUBDIVISION PLAT. NO CHANGE SHALL BE MADE IN THE FINISHED GRADE OF THE LAND WITHIN ANY "EASEMENT FOR STORM WATER DRAINAGE," AND NO CONSTRUCTION OF ANY KIND WHATSOEVER SHALL BE ERECTED OR PERMITTED TO EXIST WITHIN ANY "EASEMENT FOR STORM WATER DRAINAGE" THAT MIGHT MATERIALLY REDUCE THE STORM WATER DRAINAGE CAPACITY THEREOF. TREES, SHRUBS, FENCES, AND NORMAL LANDSCAPE PLANTING SHALL BE PERMITTED WITHIN ANY "EASEMENT FOR STORM WATER DRAINAGE" ONLY WITH THE PRIOR WRITTEN APPROVAL OF THE VILLAGE MANAGER OF THE VILLAGE OF GLENCOE. EACH OWNER OF A LOT WITH ANY "EASEMENT FOR STORM WATER DRAINAGE" LOCATED ON IT SHALL MAINTAIN A GRASS COVER ON THE SURFACE OF THAT PORTION OF SUCH LOT LOCATED WITHIN THE "EASEMENT FOR STORM WATER DRAINAGE," AND SHALL KEEP SUCH GRASS AND LANDSCAPING IN A FIRST-CLASS AND TRIMMED CONDITION. THE OWNERS OF LOTS ON WHICH ANY "EASEMENT FOR STORM WATER DRAINAGE" IS LOCATED SHALL NOT IN ANY MANNER DAMAGE, DESTROY, INJURE, OBSTRUCT, OR PERMIT TO BE OBSTRUCTED THE "EASEMENT FOR STORM WATER DRAINAGE" AT ANY TIME WHATSOEVER WITHOUT THE EXPRESS PRIOR WRITTEN CONSENT OF THE VILLAGE MANAGER OF THE VILLAGE OF GLENCOE.

BIOSWALE EASEMENT:

THE AREA OF THE PROPERTY DESIGNATED ON THIS PLAT AS "BIOSWALE EASEMENT" SHALL BE CONTINUOUSLY MAINTAINED IN A FIRST RATE MANNER BY FOREST EDGE SUBDIVISION HOMEOWNERS' ASSOCIATION (THE "ASSOCIATION") AND AN EASEMENT ON, UNDER AND ABOVE THE STORM WATER MANAGEMENT AREA IS HEREBY GRANTED TO, AND FOR THE USE AND BENEFIT OF, ALL OF THE LOTS IN THIS SUBDIVISION AND THE HOMEOWNERS' ASSOCIATION FOR THE SOLE PURPOSE OF STORM WATER DRAINAGE. NO CHANGE SHALL BE MADE IN THE FINISHED GRADE OF THE LAND WITHIN THE BIOSWALE EASEMENT, NOR SHALL ANY CONSTRUCTION OF ANY KIND WHATSOEVER BE ERECTED OR PERMITTED TO EXIST WITHIN THE BIOSWQALE EASEMENT THAT MIGHT MATERIALLY IMPEDE STORM WATER DRAINAGE THEREIN. TREES, SHRUBS, FENCES AND NORMAL LANDSCAPE PLANTING ASIDE FROM THOSE DEPICTED IN THE FINAL ENGINEERING AND LANDSCAPE PLANS FOR THE FOREST EDGE SUBDIVISION SHALL BE PERMITTED WITHIN THE BIOSWALE EASEMENT ONLY WITH THE PRIOR WRITTEN APPROVAL OF THE VILLAGE MANAGER OF THE VILLAGE OF GLENCOE, COOK COUNTY, ILLINOIS.

OWNER'S CERTIFICATE
STATE OF ILLINOIS}
COUNTY OF COOK}S.S.

THIS IS TO CERTIFY THAT HOOVER OWNER, LLC, A DELAWARE LIMITED LIABILITY COMPANY, IS THE OWNER OF THE LAND DESCRIBED IN THE ANNEXED PLAT, AND THAT IT HAS CAUSED THE SAME TO BE SURVEYED AND SUBDIVIDED AS INDICATED THEREON, FOR THE USES AND PURPOSES THEREIN SET FORTH, AND DOES HEREBY ACKNOWLEDGE AND ADOPT THE SAME UNDER THE STYLE AND TITLE THEREON INDICATED.

THIS IS TO FURTHER CERTIFY THAT HOOVER OWNER, LLC, HAS DETERMINED, TO THE BEST OF ITS, KNOWLEDGE, THAT EACH OF THE LOTS DEPICTED ON THE ANNEXED PLAT LIES IN THE FOLLOWING SCHOOL DISTRICT:

ELEMENTARY SCHOOL DISTRICT 35 — HIGH SCHOOL DISTRICT 203

DATED THIS ___ DAY OF _____, A.D., 20_____.

HOOVER OWNER, LLC

BY: _____
MANAGING MEMBER

NOTARY PUBLIC CERTIFICATE
STATE OF ILLINOIS}
}S.S.
COUNTY OF COOK}

I, _____, A NOTARY PUBLIC, DO HEREBY CERTIFY THAT _____, APPEARED BEFORE ME THIS DAY IN PERSON AND ACKNOWLEDGED THE EXECUTION OF THIS STATEMENT AS HIS FREE AND VOLUNTARY ACT.

GIVEN UNDER MY HAND AND NOTARIAL SEAL THIS __ DAY OF _____ A.D., 20__.

_____
NOTARY PUBLIC

DRAINAGE CERTIFICATE
TO THE BEST OF OUR KNOWLEDGE AND BELIEF, THE DRAINAGE OF SURFACE WATERS WILL NOT BE CHANGED BY THE CONSTRUCTION OF THIS SUBDIVISION OR ANY PART THEREOF, OR, IF SUCH SURFACE WATER DRAINAGE WILL BE CHANGED, REASONABLE PROVISION HAS BEEN MADE FOR COLLECTION AND DIVERSION OF SUCH SURFACE WATERS INTO PUBLIC AREAS, OR DRAINS WHICH THE OWNER HAS A RIGHT TO USE, AND THAT SUCH SURFACE WATERS WILL BE PLANNED FOR IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRACTICES SO AS TO REDUCE THE LIKELIHOOD OF DAMAGE TO THE ADJOINING PROPERTY BECAUSE OF THE CONSTRUCTION OF THIS SUBDIVISION.

_____ HOOVER OWNER LLC _____
OWNER

ITS MANAGER: _____ NAME: _____ KEVIN C. LEWIS _____

SIGNED: _____ FIRM: _____ IG CONSULTING, INC. _____

DATED: _____ DATED: _____

SURVEYOR CERTIFICATE
STATE OF ILLINOIS}
}S.S.
COUNTY OF COOK}

THIS IS TO CERTIFY THAT I, KEVIN C. LEWIS, AN ILLINOIS PROFESSIONAL LAND SURVEYOR NUMBER 3681, HAVE SURVEYED AND SUBDIVIDED THE FOLLOWING DESCRIBED PROPERTY.

PARCEL 1:
THAT PART OF THE SOUTH 6 CHAINS AND 23 LINKS OF THE NORTHEAST QUARTER OF SECTION 1, TOWNSHIP 42 NORTH, RANGE 12 EAST OF THE THIRD PRINCIPAL MERIDIAN, WHICH LIES EAST OF THE CENTER LINE OF THE GREEN BAY ROAD (EXCEPTING THAT PORTION AS BEING MORE PARTICULARLY DESCRIBED IN DEED RECORDED AUGUST 22, 2016 AS DOCUMENT NUMBER 1623529020), ALSO THAT PART OF THE NORTHEAST QUARTER OF SECTION 1, TOWNSHIP 42 NORTH, RANGE 12 EAST OF THE THIRD PRINCIPAL MERIDIAN, BOUNDED AND DESCRIBED AS FOLLOWS: COMMENCING AT THE INTERSECTION OF THE EAST LINE OF SAID NORTHEAST QUARTER WITH THE NORTH LINE OF THE SOUTH 6.23 CHAINS OF SAID NORTHEAST QUARTER; RUNNING THENCE NORTH ON SAID EAST LINE 3 FEET; THENCE WESTERLY, PARALLEL WITH THE NORTH LINE OF SAID SOUTH 6.23 CHAINS, TO THE CENTER LINE OF GREEN BAY ROAD; THENCE SOUTHEASTERLY, ALONG THE CENTER LINE OF GREEN BAY ROAD, TO THE NORTH LINE OF SAID SOUTH 6.23 CHAINS; THENCE EASTERLY , ALONG THE NORTH LINE OF SAID SOUTH 6.23 CHAINS TO THE PLACE OF BEGINNING, ALL IN COOK COUNTY, ILLINOIS.

PARCEL 2:
THAT PART OF THE NORTHEAST QUARTER OF SECTION 1, TOWNSHIP 42 NORTH, RANGE 12 EAST OF THE THIRD PRINCIPAL MERIDIAN, DESCRIBED AS FOLLOWS: BEGINNING AT A POINT IN THE EAST LINE OF SAID NORTHEAST QUARTER, 414.18 FEET NORTH OF THE SOUTHEAST CORNER OF SAID NORTHEAST QUARTER; THENCE NORTH, ALONG THE EAST LINE OF SAID NORTHEAST QUARTER, 366.2 FEET TO THE SOUTH LINE OF THE PROPERTY OF THE FOREST PRESERVE OF COOK COUNTY; THENCE WEST, ALONG THE SOUTH LINE OF THE SAID FOREST PRESERVE OF COOK COUNTY, 568 FEET; THENCE SOUTH, ALONG A LINE 568 FEET WEST OF AND PARALLEL WITH THE SAID EAST LINE OF THE NORTHEAST QUARTER, 350.6 FEET; THENCE SOUTHWESTERLY, ALONG A STRAIGHT LINE, 28.28 FEET TO A POINT ON A LINE 414.18 FEET NORTH OF AND PARALLEL WITH THE SOUTH LINE OF SAID NORTHEAST QUARTER AND 588 FEET WEST OF THE EAST LINE OF SAID NORTHEAST QUARTER; THENCE EAST, ALONG SAID LINE 414.18 FEET NORTH OF THE SOUTH LINE OF SAID NORTHEAST QUARTER, 588 FEET TO THE PLACE OF BEGINNING, IN COOK COUNTY, ILLINOIS.

I ALSO CERTIFY THAT THE PROPERTY IS WITHIN THE CORPORATE LIMITS OF THE VILLAGE GLENCOE, WHICH HAS ADOPTED AN OFFICIAL COMPREHENSIVE PLAN.

I FURTHER CERTIFY THAT BY SCALED MAP LOCATION AND GRAPHIC PLOTTING ONLY, THE PARCELS INCLUDED IN THIS SUBDIVISION ARE LOCATED IN THE "UNSHADED ZONE X" PER FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP 17031C0094J EFFECTIVE DATE OF AUGUST 19, 2008.

GIVEN UNDER MY HAND AND SEAL THIS _____ DAY OF _____, A.D. 20___.

BY
ILLINOIS PROFESSIONAL LAND SURVEYOR NO. 3681
LICENSE EXPIRES NOVEMBER 30, 2020

REVISED: 06/08/20
REVISED: 04/17/20
REVISED: 02/20/20
REVISED: 02/19/20
PREPARED: 01/17/20

IG CONSULTING, INC.
CONSULTING CIVIL ENGINEERS & LAND SURVEYORS
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| | | |
|---|---|---|
| PREPARED FOR: GLENCOE DEVELOPERS LLC | | SCALE: 1"=50' |
| FIELD CREW: D.J. | FIELD WORK:2018 | DRAFTED BY: S.R.M. CHECKED BY: |

FIRM NO. 184-001330

FINAL PLAT OF SUBDIVISION
FOREST EDGE SUBDIVISION
1801 GREEN BAY ROAD
GLENCOE, ILLINOIS

PROJECT NUMBER
18557

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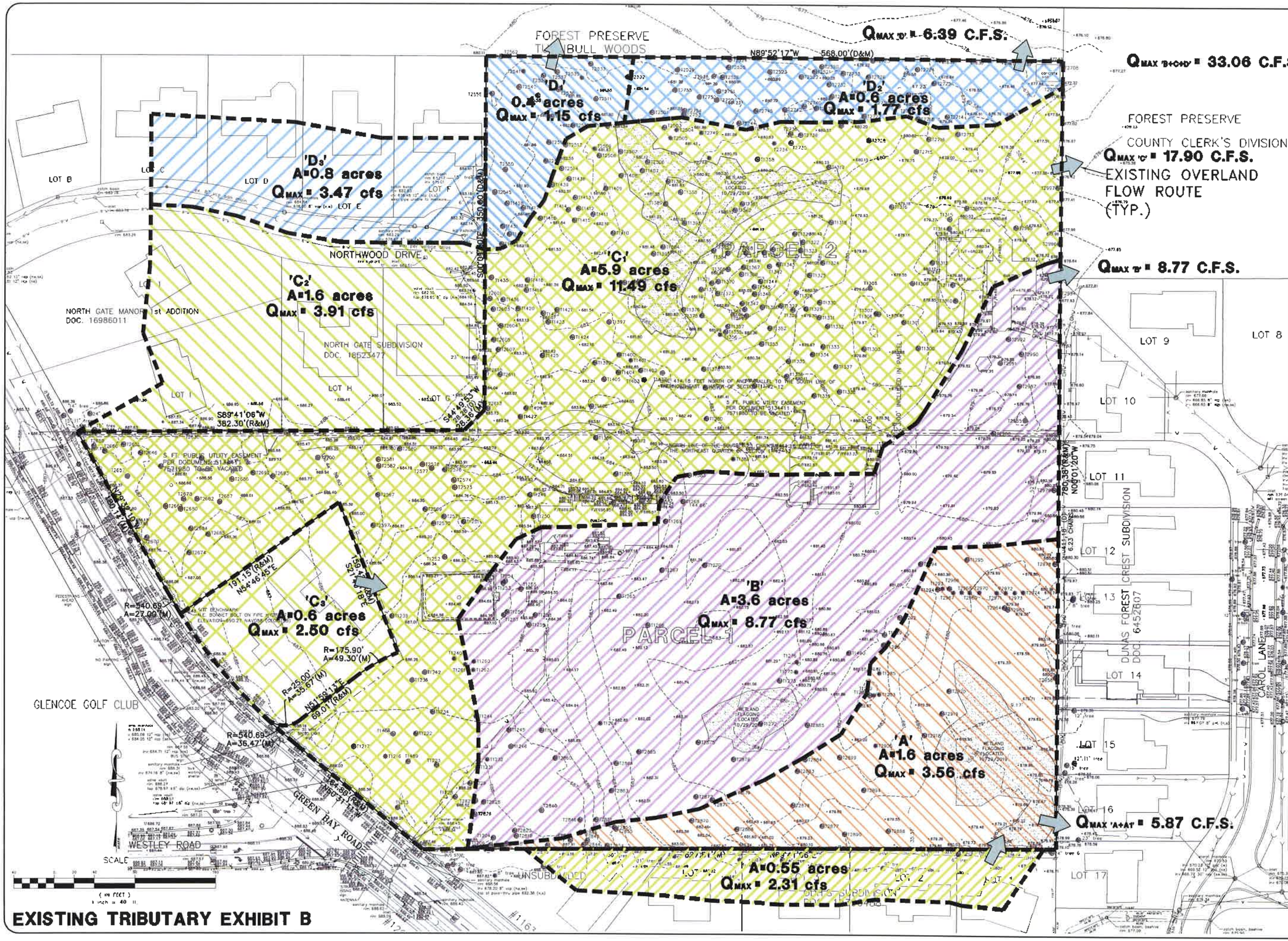
# EXHIBIT B




**EXISTING TRIBUTARY EXHIBIT B**

REVISIONS

| DATE | DESCRIPTION | DRAWN BY |
|---|---|---|
| 06/03/19 | VILLAGE REVIEW | S.R.M. |
| 07/22/19 | REVISED ENTRANCE | S.R.M. |
| 07/29/19 | FOR SUBMITTAL | S.R.M. |
| 12/06/19 | FOR SUBMITTAL | S.R.M. |
| 01/17/20 | FOR SUBMITTAL | S.R.M. |
| 02/20/20 | FOR SUBMITTAL | S.R.M. |

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CONSULTING CIVIL ENGINEERS, PLANNERS & LAND SURVEYORS
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1129 MAIN STREET UNION GROVE, WISCONSIN 53182 PH. (262) 878-6200 | ig@igconsulting.net

EXISTING TRIBUTARY EXHIBIT

DESIGN: K.C.L. DRAFTING: S.R.M.
SCALE: 1"=40' DATE: 05/06/2019

# 1801 GREEN BAY ROAD SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS

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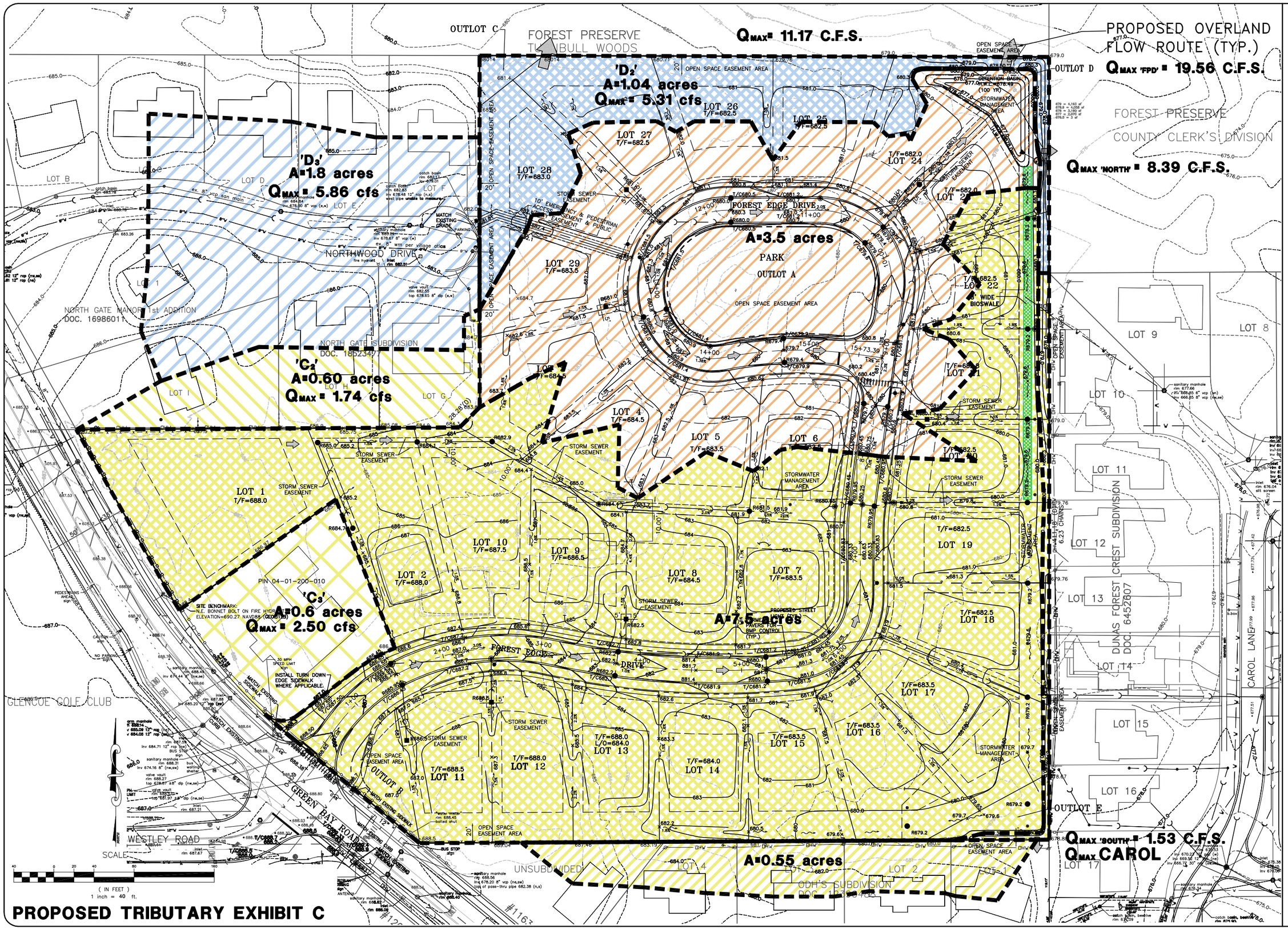
FIRM NO. 184-001330

PROJECT No. 18557

# TABLE 1

| 100 Year Critical Duration Analysis Existing Conditions Table 1 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 100 Year Event Storm Duration | Existing Discharge Rate Area "A" (1.60 Ac.) CFS | Existing Discharge Rate Area "B" (3.60 Ac.) CFS | Existing Discharge Rate Area "C" (5.90 Ac.) CFS | Existing Runoff Total 11.10 Acres (ABC) CFS | Existing Discharge Rate Area "D" (1.00 Ac.) CFS | Existing Runoff Total offsite (2.20 Ac.) & Area "C" (5.90 Ac.) CFS | Offsite Bypass 2.20 Acres (0.60 Ac+1.60 Ac) CFS | Turnbull North Runoff (1.80 Ac) CFS | ODH Subdivision Bypass Runoff (0.55 Ac) CFS |
| 1 Hr | 3.56 | 8.77 | 11.49 | 23.82 | 2.92 | 17.90 | 6.41 | 6.39 | 2.31 |
| 2 Hr | 3.33 | 8.03 | 11.30 | 22.66 | 2.41 | 16.88 | 5.58 | 5.12 | 1.76 |
| 3 Hr | 2.90 | 6.90 | 10.19 | 19.99 | 1.95 | 15.04 | 4.85 | 4.26 | 1.50 |
| 6Hr | 2.01 | 4.73 | 7.51 | 14.25 | 1.38 | 10.93 | 3.42 | 3.05 | 1.07 |
| 12Hr | 1.67 | 3.85 | 6.21 | 11.73 | 1.05 | 8.74 | 2.53 | 2.06 | 0.67 |
| 18Hr | 1.50 | 3.44 | 5.54 | 10.48 | 0.95 | 7.74 | 2.20 | 1.81 | 0.58 |
| 24Hr** | 1.23 | 2.80 | 4.55 | 8.58 | 0.77 | 6.34 | 1.79 | 1.46 | 0.47 |
| 48Hr | 0.72 | 1.63 | 2.66 | 5.01 | 0.45 | 3.70 | 1.04 | 0.84 | 0.27 |
| 72Hr | 0.51 | 1.17 | 1.91 | 3.59 | 0.32 | 2.66 | 0.75 | 0.60 | 0.19 |
| 120Hr | 0.34 | 0.77 | 1.26 | 2.37 | 0.22 | 1.74 | 0.48 | 0.40 | 0.12 |
| 240Hr | 0.21 | 0.47 | 0.77 | 1.45 | 0.13 | 1.06 | 0.29 | 0.24 | 0.08 |

# EXHIBIT C




# PROPOSED TRIBUTARY EXHIBIT C

| REVISIONS | | |
|---|---|---|
| DATE | DESCRIPTION | DRAWN BY |
| 06/03/19 | VILLAGE REVIEW | S.R.M. |
| 07/22/19 | REVISED ENTRANCE | S.R.M. |
| 07/29/19 | FOR SUBMITTAL | S.R.M. |
| 12/06/19 | FOR SUBMITTAL | S.R.M. |
| 01/17/20 | FOR SUBMITTAL | S.R.M. |
| 02/20/20 | FOR SUBMITTAL | S.R.M. |
| 04/17/20 | FOR SUBMITTAL | S.R.M. |

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1129 MAIN STREET UNION GROVE, WISCONSIN 53182 PH. (262) 878-6200 | ig@igconsulting.net

PROPOSED TRIBUTARY EXHIBIT C

DESIGN: K.C.L. | DRAFTING: S.R.M.
SCALE: 1"=40' | DATE: 05/06/2019

FIRM NO. 184-001330

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS

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PROJECT No. 18557

# TABLE 2

| 100 Year Critical Duration Analysis For Proposed Development and Bypass Flows | | | | | 100-Year Critical Duration Analysis For Proposed Development | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 100 Year Event Storm Duration | Prop. Development 100Yr HWL North Elevation | Prop. Development 100 Yr HWL South Elevation | Prop. Development Release Rate CFS Turnbull Woods | Prop. Development Release Rate CFS Carol Lane | Prop Development Release Rate North CFS | Prop development Release Rate South CFS | Prop. Development Release Rate 11.00 Acres CFS | Prop. Development 100 Yr HWL North Elevation | Prop Development 100 Yr HWL South Elevation |
| 1 Hr | 678.38 | 674.34 | 6.18 | 1.08 | 1.45 | 1.05 | 2.50 | 678.48 | 674.10 |
| 2 Hr** | 678.34 | 676.50 | 5.35 | 1.34 | 1.42 | 1.28 | 2.70 | 678.40 | 675.98 |
| 3 Hr | 678.28 | 677.53 | 4.41 | 1.44 | 1.38 | 1.36 | 2.74 | 678.32 | 676.73 |
| 6Hr | 678.23 | 678.24 | 3.54 | 1.51 | 1.33 | 1.44 | 2.77 | 678.22 | 677.56 |
| 12Hr | 678.33 | 678.35 | 5.24 | 1.52 | 1.35 | 1.51 | 2.86 | 678.24 | 678.23 |
| 18Hr* | 678.49 | 678.50 | 8.39 | 1.53 | 1.40 | 1.52 | 2.92 | 678.36 | 678.34 |
| 24Hr | 678.42 | 678.42 | 6.91 | 1.53 | 1.26 | 1.49 | 2.75 | 678.07 | 678.07 |
| 48Hr | 678.20 | 678.19 | 3.05 | 1.50 | 1.17 | 1.39 | 2.56 | 677.88 | 677.04 |
| 72Hr | 677.87 | 676.67 | 1.16 | 1.35 | 1.06 | 1.26 | 2.32 | 677.69 | 675.76 |
| 120Hr | 677.48 | 674.55 | 0.94 | 1.11 | 0.68 | 1.05 | 1.73 | 677.15 | 674.08 |
| 240Hr | 677.00 | 673.01 | 0.54 | 0.89 | 0.37 | 0.85 | 1.22 | 676.89 | 672.74 |

# 2-YEAR AND 10-YEAR EVENT CALCULATIONS

| 2-Year Critical Duration Analysis For Proposed Development and Bypass Flows | | | | | 10-Year Critical Duration Analysis For Proposed Development and Bypass Flows | | | |
|---|---|---|---|---|---|---|---|---|
| 100 Year Event Storm Duration | Prop. Development 2 Yr HWL North Elevation | Prop. Development 2 Yr HWL South Elevation | Prop. Development Release Rate CFS Turnbull Woods | Prop. Development Release Rate CFS Carol Lane | Prop Development 10-Yr HWL North Elevation | Prop development 10 Yr HWL South Elevation CFS | Prop. Development Release Rate CFS Turnbull Woods | Prop. Development Release Rate CFS Carol Lane |
| 1 Hr | 677.86 | 670.95 | 1.16 | 0.46 | 678.13 | 671.97 | 2.20 | 0.71 |
| 2 Hr** | 677.90 | 671.24 | 1.18 | 0.55 | 678.12 | 672.66 | 2.09 | 0.83 |
| 3 Hr | 677.89 | 671.36 | 1.17 | 0.58 | 678.09 | 672.87 | 1.81 | 0.87 |
| 6Hr | 677.82 | 671.49 | 1.14 | 0.61 | 678.02 | 673.16 | 1.30 | 0.92 |
| 12Hr | 677.78 | 671.67 | 1.12 | 0.65 | 677.98 | 673.51 | 1.22 | 0.97 |
| 18Hr | 677.74 | 671.79 | 1.09 | 0.67 | 677.96 | 673.64 | 1.21 | 0.99 |
| 24Hr* | 677.52 | 671.77 | 0.96 | 0.67 | 677.92 | 673.51 | 1.19 | 0.97 |
| 48Hr | 677.07 | 671.78 | 0.61 | 0.67 | 677.76 | 673.18 | 1.10 | 0.92 |
| 72Hr | 676.93 | 671.59 | 0.43 | 0.63 | 677.29 | 672.83 | 0.80 | 0.87 |
| 120Hr | 676.82 | 671.28 | 0.27 | 0.56 | 676.99 | 672.26 | 0.52 | 0.77 |
| 240Hr | 676.73 | 671.01 | 0.15 | 0.48 | 676.84 | 671.66 | 0.30 | 0.64 |

# APPENDIX A

# STORMWATER CALCULATIONS

DRAW DOWN TIME



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 1.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | 0.20 | 117 | 676.62 | 0.15 | 0.05 | 0.10 | 0.00 |
| 4.00 | 0.42 | 291 | 676.81 | 0.37 | 0.26 | 0.11 | 0.00 |
| 5.00 | 0.63 | 473 | 676.93 | 0.55 | 0.44 | 0.11 | 0.00 |
| 6.00 | 0.96 | 948 | 677.16 | 0.80 | 0.69 | 0.11 | 0.00 |
| 7.00 | 1.11 | 1,459 | 677.37 | 0.98 | 0.86 | 0.12 | 0.00 |
| 8.00 | 1.39 | 2,052 | 677.60 | 1.13 | 1.01 | 0.12 | 0.00 |
| 9.00 | 1.87 | 2,888 | 677.89 | 1.82 | 1.17 | 0.65 | 0.00 |
| 10.00 | 2.38 | 3,040 | 677.94 | 2.34 | 1.20 | 1.14 | 0.00 |
| 11.00 | 4.21 | 3,398 | 678.05 | 4.13 | 1.48 | 2.65 | 0.00 |
| 12.00 | 4.92 | 3,511 | 678.09 | 4.94 | 1.77 | 3.17 | 0.00 |
| 13.00 | **3.50** | **3,354** | **678.04** | **3.07** | **1.39** | **1.68** | 0.00 |
| 14.00 | **5.30** | **4,554** | **678.39** | **7.84** | **6.38** | **1.46** | 0.00 |
| 15.00 | 3.54 | 3,955 | 678.22 | 3.39 | 3.39 | 0.00 | 0.00 |
| 16.00 | 1.23 | 3,511 | 678.09 | 1.77 | 1.77 | 0.00 | 0.00 |
| 17.00 | 2.58 | 3,466 | 678.07 | 1.65 | 1.65 | 0.00 | 0.00 |
| 18.00 | 1.09 | 3,215 | 677.99 | 1.23 | 1.23 | 0.00 | 0.00 |
| 19.00 | 0.05 | 1,289 | 677.30 | 0.81 | 0.81 | 0.00 | 0.00 |
| 20.00 | 0.04 | 133 | 676.65 | 0.07 | 0.07 | 0.00 | 0.00 |
| 21.00 | 0.03 | 105 | 676.60 | 0.03 | 0.03 | 0.00 | 0.00 |
| 22.00 | 0.00 | 87 | 676.54 | 0.01 | 0.01 | 0.01 | 0.00 |
| → 23.00 | 0.00 | 76 | 676.20 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24.00 | 0.00 | 72 | 675.90 | 0.00 | 0.00 | 0.00 | 0.00 |

DRAW DOWN TIME

**D_ByPass_Detention 11.00 Ac_Cultec_4-19-20_6R** *Huff 0-10sm 3Q 18.00 hrs Rainfall=8.06"*
Prepared by {enter your company name here} Printed 4/20/2020
HydroCAD® 10.00-25 s/n 00783 © 2019 HydroCAD Software Solutions LLC

## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.84 | 2,667 | 670.30 | 0.18 | 0.18 | 0.00 | 0.00 |
| 6.00 | 1.77 | 9,285 | 670.85 | 0.43 | 0.43 | 0.00 | 0.00 |
| 8.00 | 2.49 | 20,426 | 671.37 | 0.58 | 0.58 | 0.00 | 0.00 |
| 10.00 | **5.22** | 42,795 | 672.36 | 0.78 | 0.78 | 0.00 | 0.00 |
| 12.00 | **11.67** | **101,118** | **675.67** | **1.24** | **1.24** | **0.00** | **0.00** |
| 14.00 | 5.42 | **135,970** | **678.36** | **4.55** | **1.52** | **3.03** | **0.00** |
| 16.00 | 2.11 | 133,889 | 678.13 | 1.50 | 1.50 | 0.00 | 0.00 |
| 18.00 | 1.84 | 132,782 | 678.01 | 1.49 | 1.49 | 0.00 | 0.00 |
| 20.00 | 0.00 | 123,905 | 677.23 | 1.46 | 1.41 | 0.04 | 0.00 |
| 22.00 | 0.01 | 113,812 | 676.52 | 1.34 | 1.34 | 0.00 | 0.00 |
| 24.00 | 0.00 | 104,431 | 675.90 | 1.27 | 1.27 | 0.00 | 0.00 |
| 26.00 | 0.00 | 95,564 | 675.20 | 1.19 | 1.19 | 0.00 | 0.00 |
| 28.00 | 0.00 | 87,300 | 674.54 | 1.11 | 1.11 | 0.00 | 0.00 |
| 30.00 | 0.00 | 79,540 | 674.08 | 1.05 | 1.05 | 0.00 | 0.00 |
| 32.00 | 0.00 | 72,176 | 673.71 | 1.00 | 1.00 | 0.01 | 0.00 |
| 34.00 | 0.00 | 65,170 | 673.37 | 0.95 | 0.95 | 0.00 | 0.00 |
| 36.00 | 0.00 | 58,507 | 673.06 | 0.90 | 0.90 | 0.00 | 0.00 |
| 38.00 | 0.00 | 52,178 | 672.78 | 0.86 | 0.86 | 0.00 | 0.00 |
| 40.00 | 0.00 | 46,177 | 672.51 | 0.81 | 0.81 | 0.00 | 0.00 |
| 42.00 | 0.00 | 40,498 | 672.26 | 0.77 | 0.77 | 0.00 | 0.00 |
| 44.00 | 0.00 | 35,141 | 672.03 | 0.72 | 0.72 | 0.00 | 0.00 |
| 46.00 | 0.00 | 30,111 | 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 48.00 | 0.00 | 25,408 | 671.59 | 0.63 | 0.63 | 0.00 | 0.00 |
| 50.00 | 0.00 | 21,030 | 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 52.00 | 0.00 | 16,979 | 671.22 | 0.54 | 0.54 | 0.00 | 0.00 |
| 54.00 | 0.00 | 13,264 | 671.04 | 0.49 | 0.49 | 0.00 | 0.00 |
| 56.00 | 0.00 | 9,897 | 670.88 | 0.44 | 0.44 | 0.00 | 0.00 |
| 58.00 | 0.00 | 6,884 | 670.72 | 0.39 | 0.39 | 0.00 | 0.00 |
| 60.00 | 0.00 | 4,441 | 670.48 | 0.29 | 0.29 | 0.00 | 0.00 |
| 62.00 | 0.00 | 2,729 | 670.31 | 0.18 | 0.18 | 0.00 | 0.00 |
| 64.00 | 0.00 | 1,786 | 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 66.00 | 0.00 | 1,292 | 670.14 | 0.05 | 0.05 | 0.00 | 0.00 |
| 68.00 | 0.00 | 1,002 | 670.11 | 0.03 | 0.03 | 0.00 | 0.00 |
| 70.00 | 0.00 | 814 | 670.09 | 0.02 | 0.02 | 0.00 | 0.00 |
| 72.00 | 0.00 | 684 | 670.08 | 0.02 | 0.02 | 0.00 | 0.00 |
| 74.00 | 0.00 | 589 | 670.07 | 0.01 | 0.01 | 0.00 | 0.00 |
| 76.00 | 0.00 | 516 | 670.06 | 0.01 | 0.01 | 0.00 | 0.00 |
| 78.00 | 0.00 | 459 | 670.05 | 0.01 | 0.01 | 0.00 | 0.00 |
| 80.00 | 0.00 | 414 | 670.05 | 0.01 | 0.01 | 0.00 | 0.00 |
| → 82.00 | 0.00 | 376 | 670.04 | 0.00 | 0.00 | 0.00 | 0.00 |
| 84.00 | 0.00 | 345 | 670.04 | 0.00 | 0.00 | 0.00 | 0.00 |
| 86.00 | 0.00 | 318 | 670.04 | 0.00 | 0.00 | 0.00 | 0.00 |
| 88.00 | 0.00 | 295 | 670.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| 90.00 | 0.00 | 275 | 670.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| 92.00 | 0.00 | 258 | 670.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| 94.00 | 0.00 | 242 | 670.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| 96.00 | 0.00 | 229 | 670.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| 98.00 | 0.00 | 217 | 670.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| 100.00 | 0.00 | 206 | 670.02 | 0.00 | 0.00 | 0.00 | 0.00 |

# STORM SEWER CALCUATION - 1801 Green Bay Road

FREQUENCY: 10 & 100

RUNOFF COEFF "C": 0.73

SEWER ROUGH. COEFF. RCP 0.013 PVC 0.009

| STATION FROM | STATION TO | DRAINAGE AREA INCREMENT FT2 | DRAINAGE AREA INCREMENT AC | DRAINAGE AREA TOTAL AC | A X C INCREMENT | A X C TOTAL | FLOW TIME TO UPPER END MIN | FLOW TIME INSECTION MIN | FLOW TIME T/C MIN | RAINFALL INTENSITY I IN/HR | TOTAL RUNOFF Q = C.I.A. CFS | SEWER LENGTH FT | PIPE DIA IN | PIPE Material RCP | MANNING'S COFF. | PIPE SLOPE % | VEL FPS | CAP CFS | Design Sewer Capacity (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SOUTH | | | | | | | | | | | | | | | | | | | |
| Y.D. #12A | C.B. #12 | 8,761 | 0.20 | 0.20 | 0.15 | 0.15 | 11.53 | 0.00 | 11.53 | 10.53 | 1.55 | 54 | 10 | PVC | 0.009 | 1.00 | 5.80 | 3.16 | 48.85% |
| C.B. #12 | C.B. #11 | 12,812 | 0.29 | 0.50 | 0.21 | 0.36 | 11.53 | 0.16 | 11.69 | 10.44 | 3.77 | 22 | 12 | RCP | 0.013 | 1.20 | 4.97 | 3.90 | 96.71% |
| C.B. #11 | C.B. #9B | 8,996 | 0.21 | 0.70 | 0.15 | 0.51 | 11.69 | 0.07 | 11.76 | 10.41 | 5.33 | 100 | 15 | RCP | 0.013 | 1.00 | 5.26 | 6.46 | 82.56% |
| Y.D. #9C | STM MH #9B | 6,893 | 0.16 | 0.16 | 0.12 | 0.12 | 10.30 | 0.00 | 10.30 | 11.16 | 1.29 | 0 | 10 | PVC | 0.009 | 1.00 | 5.80 | 3.16 | 40.73% |
| STM MH #9B | C.B. #9 | 0 | 0.00 | 0.86 | 0.00 | 0.63 | 11.64 | 0.32 | 11.96 | 10.30 | 6.47 | 125 | 15 | RCP | 0.013 | 1.00 | 5.27 | 6.47 | 99.90% |
| C.B. #10 | C.B. #9 | 17,376 | 0.40 | 0.40 | 0.29 | 0.29 | 10.30 | 0.00 | 10.30 | 11.16 | 3.25 | 22 | 15 | RCP | 0.013 | 1.00 | 5.26 | 6.46 | 50.31% |
| Y.D. #9A | C.B. #9 | 5,604 | 0.13 | 0.13 | 0.09 | 0.09 | 5.46 | 0.00 | 5.46 | 12.18 | 1.14 | 30 | 10 | PVC | 0.009 | 1.00 | 5.80 | 3.16 | 36.14% |
| C.B. #9 | C.B. #7 | 13,783 | 0.32 | 1.70 | 0.23 | 1.24 | 12.08 | 0.39 | 12.47 | 10.08 | 12.54 | 145 | 21 | RCP | 0.013 | 1.00 | 6.59 | 15.85 | 79.13% |
| C.B. #8 | SYSTEM 5 | 17,960 | 0.41 | 0.41 | 0.30 | 0.30 | 6.00 | 0.00 | 6.00 | 12.00 | 3.61 | N/A | N/A | - | - | - | - | - | - |
| C.B. #7 | C.B. #6 | 16,976 | 0.39 | 2.51 | 0.28 | 1.83 | 12.47 | 0.36 | 12.83 | 9.94 | 18.18 | 117 | 24 | RCP | 0.013 | 0.75 | 6.24 | 19.59 | 92.82% |
| C.B. #6 | C.B. #3 | 0 | 0.00 | 2.51 | 0.00 | 1.83 | 12.83 | 0.31 | 13.14 | 9.64 | 18.00 | 155 | 24 | RCP | 0.013 | 0.75 | 6.24 | 19.59 | 91.88% |
| C.B. #3 | SYSTEM 4 | 0 | 0.00 | 2.51 | 0.00 | 1.83 | 13.14 | 0.41 | 13.55 | 9.69 | 17.75 | 4 | 24 | RCP | 0.013 | 0.75 | 6.24 | 19.59 | 90.63% |
| NORTH A | | | | | | | | | | | | | | | | | | | |
| Y.D. #35A | C.B. #35 | 5,349 | 0.12 | 0.12 | 0.09 | 0.09 | 10.19 | 0.00 | 10.19 | 6.69 | 0.60 | 102 | 10 | PVC | 0.009 | 1.00 | 5.80 | 3.16 | 18.95% |
| C.B. #36 | C.B. #35 | 7,038 | 0.16 | 0.16 | 0.12 | 0.12 | 5.00 | 0.00 | 5.00 | 7.44 | 0.88 | 22 | 12 | RCP | 0.013 | 0.50 | 3.21 | 2.52 | 34.83% |
| C.B. #35 | C.B. #34 | 18,561 | 0.43 | 0.71 | 0.31 | 0.43 | 10.19 | 0.29 | 10.48 | 6.61 | 2.83 | 87 | 12 | RCP | 0.013 | 1.25 | 5.07 | 3.98 | 71.14% |
| C.B. #34 | C.B. #33 | 0 | 0.00 | 0.71 | 0.00 | 0.43 | 10.48 | 0.25 | 10.73 | 6.52 | 2.80 | 67 | 12 | RCP | 0.013 | 1.25 | 5.07 | 3.98 | 70.22% |
| C.B. #33A | C.B. #33 | 10,821 | 0.25 | 0.25 | 0.18 | 0.18 | 6.36 | 0.00 | 6.36 | 7.30 | 1.32 | 22 | 12 | RCP | 0.013 | 1.00 | 4.54 | 3.56 | 37.16% |
| C.B. #33 | C.B. #32 | 20,781 | 0.48 | 1.44 | 0.35 | 1.05 | 10.73 | 0.22 | 10.95 | 6.43 | 6.74 | 56 | 15 | RCP | 0.013 | 1.50 | 6.45 | 7.91 | 85.19% |
| C.B. #32 | MH #31 | 2,406 | 0.06 | 1.49 | 0.04 | 1.09 | 5.99 | 0.31 | 6.30 | 7.15 | 7.78 | 88 | 15 | RCP | 0.013 | 1.50 | 6.45 | 7.91 | 98.38% |
| NORTH B | | | | | | | | | | | | | | | | | | | |
| Y.D. #45A | C.B. #45 | 13,039 | 0.30 | 0.30 | 0.22 | 0.22 | 9.50 | 0.00 | 9.50 | 6.83 | 1.49 | 40 | 10 | PVC | 0.009 | 1.00 | 5.80 | 3.16 | 47.16% |
| C.B. #45 | C.B. #44 | 19,709 | 0.45 | 0.75 | 0.33 | 0.55 | 9.50 | 0.11 | 9.61 | 6.81 | 3.74 | 22 | 12 | RCP | 0.013 | 1.25 | 5.07 | 3.98 | 93.83% |
| C.B. #44 | C.B. #43 | 4,491 | 0.10 | 0.85 | 0.08 | 0.62 | 9.61 | 0.09 | 9.70 | 6.80 | 4.24 | 55 | 15 | RCP | 0.013 | 1.00 | 5.26 | 6.46 | 65.69% |
| C.B. #43 | C.B. #42 | 0 | 0.00 | 0.85 | 0.00 | 0.62 | 9.70 | 0.17 | 9.87 | 6.79 | 4.24 | 72 | 15 | RCP | 0.013 | 1.00 | 5.26 | 6.46 | 65.60% |
| C.B. #41 | C.B. #42 | 17,513 | 0.40 | 0.40 | 0.29 | 0.29 | 9.77 | 0.00 | 9.77 | 6.80 | 2.00 | 22 | 12 | RCP | 0.013 | 0.50 | 3.21 | 2.52 | 79.22% |
| C.B. #42 | C.B. #38 | 8,624 | 0.20 | 1.45 | 0.14 | 1.06 | 9.87 | 0.23 | 10.10 | 6.74 | 7.16 | 112 | 15 | RCP | 0.013 | 1.25 | 5.89 | 7.22 | 99.12% |
| C.B. #40 | C.B. #39 | 3,602 | 0.08 | 0.08 | 0.06 | 0.06 | 5.00 | 0.00 | 5.00 | 7.44 | 0.45 | 22 | 12 | RCP | 0.013 | 0.50 | 3.21 | 2.52 | 17.83% |
| C.B. #39 | C.B. #38 | 7,295 | 0.17 | 0.25 | 0.12 | 0.18 | 5.00 | 0.09 | 5.09 | 7.40 | 1.35 | 76 | 12 | RCP | 0.013 | 1.00 | 4.54 | 3.56 | 37.93% |
| C.B. #38 | C.B. #16 | 0 | 0.00 | 1.71 | 0.00 | 1.24 | 10.10 | 0.32 | 10.42 | 6.63 | 8.25 | 135 | 18 | RCP | 0.013 | 1.00 | 5.94 | 10.50 | 78.56% |
| NORTH C | | | | | | | | | | | | | | | | | | | |
| C.B. #30 | C.B. #29 | 29,092 | 0.67 | 0.67 | 0.49 | 0.49 | 12.27 | 0.00 | 12.27 | 10.14 | 4.94 | 90 | 12 | RCP | 0.013 | 2.00 | 6.42 | 5.04 | 98.12% |
| C.B. #29 | C.B. #28 | 29,734 | 0.68 | 1.35 | 0.50 | 0.99 | 12.27 | 0.23 | 12.50 | 10.04 | 9.90 | 94 | 18 | RCP | 0.013 | 1.00 | 5.94 | 10.50 | 94.23% |
| C.B. #28 | C.B. #27 | 14,209 | 0.33 | 1.68 | 0.24 | 1.22 | 12.79 | 0.26 | 13.05 | 9.86 | 12.07 | 70 | 18 | RCP | 0.013 | 1.50 | 7.28 | 12.87 | 93.81% |
| C.B. #27 | C.B. #26 | 17,904 | 0.41 | 2.09 | 0.30 | 1.52 | 13.33 | 0.16 | 13.49 | 9.71 | 14.60 | 120 | 21 | RCP | 0.013 | 1.50 | 8.07 | 19.41 | 76.25% |
| C.B. #26 | C.B. #25 | 0 | 0.00 | 2.09 | 0.00 | 1.52 | 13.74 | 0.25 | 13.99 | 9.55 | 14.55 | 150 | 21 | RCP | 0.013 | 1.50 | 8.07 | 19.41 | 75.00% |
| C.B. #25 | SYSTEM 6 | 19,976 | 0.46 | 2.55 | 0.33 | 1.86 | 14.28 | 0.31 | 14.59 | 9.39 | 17.45 | 3 | 21 | RCP | 0.013 | 1.25 | 7.37 | 17.72 | 98.52% |
| C.B. #23 | SYSTEM 6 | 152,724 | 3.51 | 3.51 | 2.56 | 2.56 | 21.48 | 0.00 | 21.48 | 7.50 | 19.20 | N/A | 24 | RCP | 0.013 | 0.75 | 6.24 | 19.59 | 97.98% |
| C.B. #22 | SYSTEM 6 | 152,724 | 3.51 | 3.51 | 2.56 | 2.56 | 21.48 | 0.00 | 21.48 | 7.50 | 19.20 | N/A | 24 | RCP | 0.013 | 0.75 | 6.24 | 19.59 | 97.98% |
| EAST INLETS | | | | | | | | | | | MAX INLET CAP. | | | | | | | | |
| C.B. #3 | SYSTEM 4 | - | - | - | - | - | - | - | - | - | 6.23 | N/A | 24 | RCP | 0.013 | 1.00 | 7.20 | 22.62 | 27.54% |
| C.B. #13 | SYSTEM 4 | - | - | - | - | - | - | - | - | - | 6.23 | N/A | 24 | RCP | 0.013 | 1.00 | 7.20 | 22.62 | 27.54% |
| C.B. #14 | SYSTEM 4 | - | - | - | - | - | - | - | - | - | 6.23 | N/A | 24 | RCP | 0.013 | 1.00 | 7.20 | 22.62 | 27.54% |
| Y.D. #15 | SYSTEM 4 | - | - | - | - | - | - | - | - | - | 2.08 | N/A | 10 | PVC | 0.009 | 1.00 | 5.80 | 3.16 | 65.72% |
| Y.D. #16A | SYSTEM 4 | - | - | - | - | - | - | - | - | - | 2.08 | N/A | 10 | PVC | 0.009 | 1.00 | 5.80 | 3.16 | 65.72% |
| C.B. #18 | SYSTEM 4 | - | - | - | - | - | - | - | - | - | 6.23 | N/A | 24 | RCP | 0.013 | 1.00 | 7.20 | 22.62 | 27.54% |

# INLET CAPACITY CALCULATION - 1800 Green Bay Road

| Selected Inlets | | |
|---|---|---|
| Model | Inlet Area (S.F.) | |
| R-2540 | 1.10 | Circular C.B. |
| R-2560-EB | 1.80 | Beehive |
| R-2560-D8 | 1.30 | Beehive |
| R-3038-A | 1.50 | Gutter/Curb |
| R-3502-D2 | 1.90 | Gutter/Curb barrier? |
| R-3503-A | 1.30 | Gutter/Curb |
| R-3502 | 1.40 | ROAD |
| R-2586-H | 1.30 | Y.D. |
| R-3337-A | 1.10 | Gutter |

| | |
|---|---|
| RUNOFF COEFF "C": | 0.73 |
| INLET COEFF "C": | 0.61 |
| GRAV. CONSTANT "G": | 32.2 |
| MAX. HEAD "H": | 0.5 |

| RAIN EVENT | STRUCTURE | AREA FT2 | AREA AC | TIME OF CONCENTRATION MIN | RAINFALL INTENSITY (I) IN/HR | RUNOFF (Q) CFS | INLET AREA (A) FT2 | MAX. POSSIBLE FLOW CFS | INLET FLOW CHECK OK/NOT OK | HEAD @ FLOW USED H (FT) | CHECK OK/NOT OK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 100 | C.B. #30 | 29,092 | 0.67 | 10.70 | 10.82 | 5.28 | 1.80 | 6.23 | OK | 0.36 | OK |
| 100 | C.B. #29 | 29,734 | 0.68 | 13.37 | 9.7 | 4.83 | 1.80 | 6.23 | OK | 0.30 | OK |
| 100 | C.B. #28 | 14,209 | 0.33 | 10.70 | 10.82 | 2.58 | 1.80 | 6.23 | OK | 0.09 | OK |
| 100 | C.B. #27 | 15,242 | 0.35 | 8.15 | 11.6 | 2.96 | 1.80 | 6.23 | OK | 0.11 | OK |
| 100 | C.B. #25 | 25,608 | 0.59 | 10.57 | 11 | 4.72 | 1.80 | 6.23 | OK | 0.29 | OK |
| 100 | C.B. #23 | 13,135 | 0.30 | 5.00 | 12.36 | 2.72 | 1.40 | 4.85 | OK | 0.16 | OK |
| 100 | C.B. #22 | 15,444 | 0.35 | 5.00 | 12.36 | 3.20 | 1.40 | 4.85 | OK | 0.22 | OK |
| 100 | Y.D. #12A | 8,761 | 0.20 | 11.53 | 10.53 | 1.55 | 1.30 | 4.50 | OK | 0.06 | OK |
| 100 | C.B. #12 | 12,812 | 0.29 | 14.78 | 9.35 | 2.01 | 1.40 | 4.85 | OK | 0.09 | OK |
| 100 | C.B. #11 | 8,996 | 0.21 | 7.50 | 7 | 1.06 | 1.40 | 4.85 | OK | 0.02 | OK |
| 100 | Y.D. #9C | 6,893 | 0.16 | 11.06 | 10.74 | 1.24 | 1.30 | 4.50 | OK | 0.04 | OK |
| 100 | Y.D. #9A | 5,604 | 0.13 | 5.46 | 12.18 | 1.14 | 1.30 | 4.50 | OK | 0.03 | OK |
| 100 | C.B. #9 | 13,818 | 0.32 | 11.64 | 10.46 | 2.42 | 1.40 | 4.85 | OK | 0.12 | OK |
| 100 | C.B. #8 | 17,960 | 0.41 | 6.00 | 12 | 3.61 | 1.40 | 4.85 | OK | 0.28 | OK |
| 100 | C.B. #7 | 16,940 | 0.39 | 7.85 | 11.65 | 3.31 | 1.40 | 4.85 | OK | 0.23 | OK |
| 100 | C.B. #10 | 17,376 | 0.40 | 10.30 | 11.16 | 3.25 | 1.40 | 4.85 | OK | 0.22 | OK |
| 100 | C.B. #5 | 32,330 | 0.74 | 8.78 | 11.5 | 6.23 | 1.80 | 6.23 | NOT OK | 0.50 | NOT OK |
| 100 | C.B. #4 | 15,605 | 0.36 | 13.15 | 9.85 | 2.58 | 1.80 | 6.23 | OK | 0.09 | OK |
| 10 | Y.D. #45A | 13,039 | 0.30 | 9.50 | 6.83 | 1.49 | 1.30 | 4.50 | OK | 0.06 | OK |
| 10 | C.B. #45 | 19,495 | 0.45 | 11.42 | 6.31 | 2.06 | 1.40 | 4.85 | OK | 0.09 | OK |
| 10 | C.B. #44 | 4,491 | 0.10 | 5.00 | 7.44 | 0.56 | 1.40 | 4.85 | OK | 0.01 | OK |
| 10 | C.B. #42 | 8,624 | 0.20 | 7.43 | 7.03 | 1.02 | 1.40 | 4.85 | OK | 0.02 | OK |
| 10 | C.B. #41 | 14,931 | 0.34 | 9.77 | 6.75 | 1.69 | 1.40 | 4.85 | OK | 0.06 | OK |
| 10 | C.B. #40 | 3,602 | 0.08 | 5.00 | 7.44 | 0.45 | 1.40 | 4.85 | OK | 0.00 | OK |
| 10 | C.B. #39 | 7,295 | 0.17 | 5.00 | 7.44 | 0.91 | 1.40 | 4.85 | OK | 0.02 | OK |
| 10 | C.B. #36 | 7,038 | 0.16 | 5.00 | 7.44 | 0.88 | 1.40 | 4.85 | OK | 0.02 | OK |
| 10 | Y.D. #35A | 5,349 | 0.12 | 10.19 | 6.71 | 0.60 | 1.30 | 4.50 | OK | 0.01 | OK |
| 10 | C.B. #35 | 18,561 | 0.43 | 15.13 | 5.55 | 1.73 | 1.40 | 4.85 | OK | 0.06 | OK |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | C.B. #33 | 20,781 | 0.48 | 5.00 | 7.44 | 2.59 | 1.40 | 4.85 | OK | 0.14 | OK |
| 10 | C.B. #32 | 2,406 | 0.06 | 5.00 | 7.44 | 0.30 | 1.40 | 4.85 | OK | 0.00 | OK |
| 10 | C.B. #33A | 10,821 | 0.25 | 6.36 | 7.15 | 1.30 | 1.40 | 4.85 | OK | 0.04 | OK |
| 100 | C.B. #3 | | | | | | 1.80 | 6.23 | OK | 0.00 | OK |
| 100 | C.B. #13 | | | | | | 1.80 | 6.23 | OK | 0.00 | OK |
| 100 | C.B. #14 | | | | | | 1.80 | 6.23 | OK | 0.00 | OK |
| 100 | Y.D. #? | | | | | | 1.30 | 4.50 | OK | 0.00 | OK |
| 100 | Y.D. #? | | | | | | 1.30 | 4.50 | OK | 0.00 | OK |
| 100 | C.B. #18 | | | | | | 1.80 | 6.23 | OK | 0.00 | OK |
| 100 | TRIB TOTAL | 242,070 | 5.56 | 24.00 | 7.07 | 28.68 | | 33.92 | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 100 Q | C.B. #39/#40 | | 1.81 | 14.28 | 9.47 | 12.53 | | | | | |
| | | 78,977 | | | | | | | | | |
| 10 | C.B. #13 | | 0.25 | 10.65 | 6.48 | 1.20 | | | | | |
| 10 | C.B. #14 | 11,058 | 0.20 | 10.47 | 6.605 | 0.95 | | | | | |
| 10 | C.B. #15 | 8,625 | 0.18 | 12.68 | 6.29 | 0.82 | | | | | |
| 10 | C.B. #16 | 7,752 | 0.17 | 9.62 | 6.81 | 0.84 | | | | | |
| | | 7,390 | | | | | | | | | |
| 10/100 | Y.D. EAST | | 0.25 | 10.65 | 10.95 | 2.03 | 0.6 | 2.08 | OK | 0.48 | OK |
| Y.D. #s | 13, 14, 15, 16 | 11,058 | | | | | | | | | |

## Custom Storage

Custom storage may be defined in three ways:

1) Direct entry of *cumulative* (total) storage at various elevations, which requires no further calculations.

2) Entry of *incremental* storage, that is, the volume of horizontal sections across the pond. These sections are summed by the program to produce the cumulative storage.

3) Entry of *surface areas* at various elevations, from which HydroCAD determines the incremental (and cumulative) storage at each elevation.

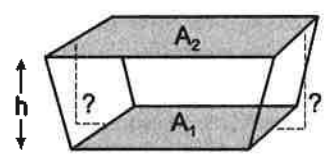
The third option is often the most convenient, since it uses readily available data, such as the surface area at each contour elevation. The actual storage calculation is based on the selected *pond shape*, as described below.

### Custom Prismatic Storage

Each stage is taken as a horizontal section of a prism. This provides accurate volumes for four-sided ponds when zero, one or two (opposing) sides of the pond are sloping, and the other sides are vertical. The traditional "average area" method accurately determines the volume of these shapes.

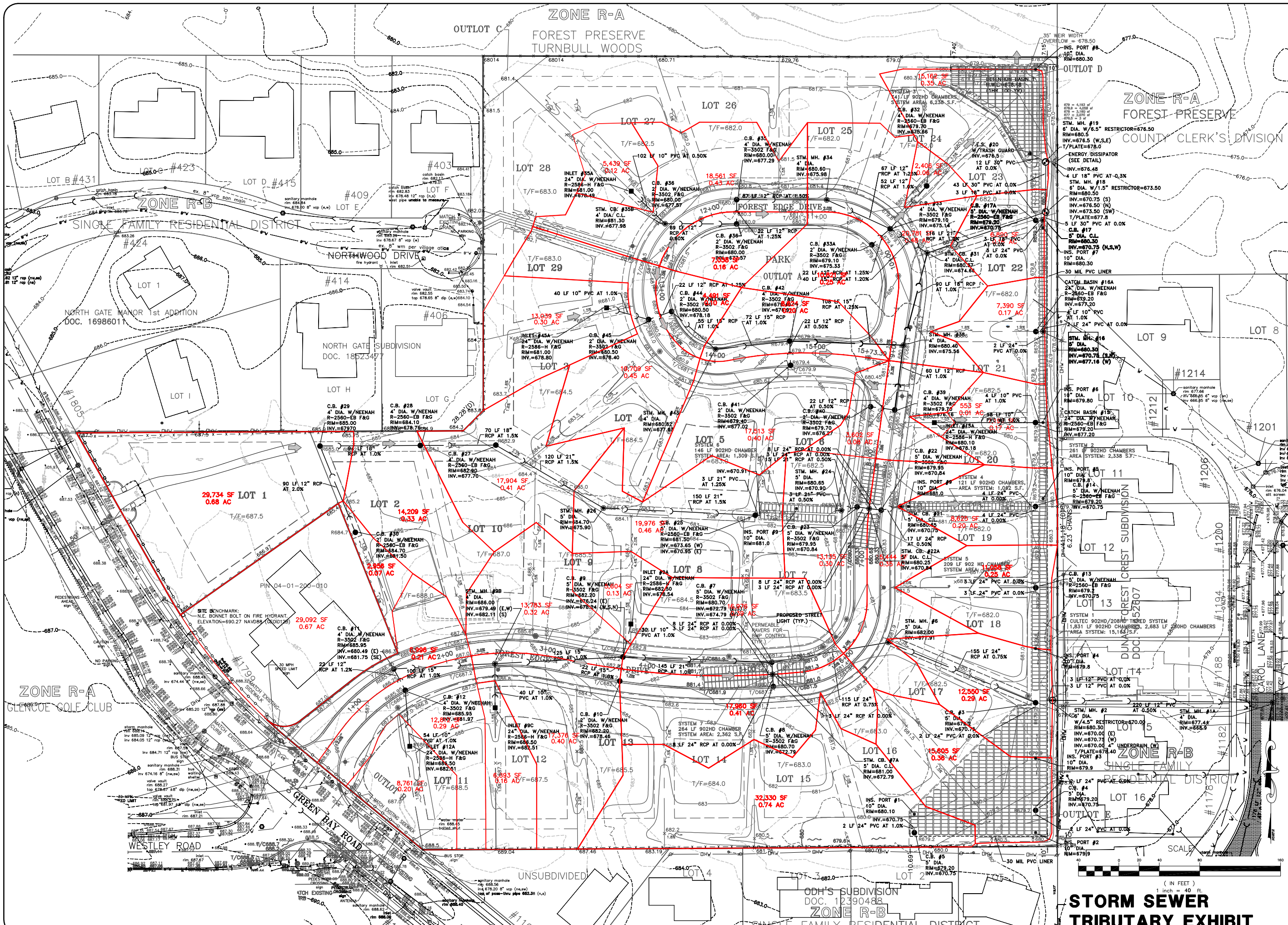
$$V = h \frac{A_1 + A_2}{2} \qquad \text{Eq. 30}$$

V=Volume of section
h=Height of section
$A_1$=Area of bottom of section
$A_2$=Area of top of section




Since the aspect ratio of prismatic shapes is undefined, the wetted area cannot be determined, making this shape incompatible with exfiltration calculations. One of the other shapes should be selected when wetted area is required.

| PROVIDED CHAMBER SYSTEM STORAGE VOLUMES | | | | | REQUIRED STORAGE VOLUMES |
|---|---|---|---|---|---|
| CHAMBER SYSTEM NO. | STONE QUANTITY CUBIC FEET | STORAGE IN STONE (36%) CUBIC FEET | CHAMBER STORAGE CUBIC FEET | TOTAL VOLUME CUBIC FEET | |
| 1 (902HD) | 49,023 | 17,648 | 31,708 | 49,356 | |
| 1 (280 HD) | 39,054 | 14,060 | 16,291 | 30,351 | |
| 2 | 17,557 | 6,320 | 4,520 | 10,840 | |
| 3 | 23,634 | 8,508 | 12,835 | 21,343 | |
| 4 | 7,907 | 2,847 | 2,101 | 4,948 | |
| 5 | 13,458 | 4,845 | 3,619 | 8,464 | |
| 6 | 9,005 | 3,242 | 2,525 | 5,767 | |
| 7 | 14,388 | 5,180 | 4,573 | 9,752 | |
| | | | | | |
| SUB–TOTAL | | | | 140,821 | 135,796 |
| DETENTION BASIN 1 | | | | 5,071 | 4,446 |
| TOTAL | | | | **145,892** | **140,242** |




# STORM SEWER TRIBUTARY EXHIBIT

| REVISIONS | | | |
|---|---|---|---|
| DATE | DESCRIPTION | DRAWN BY | |
| 04/17/20 | PER VILLAGE COMMENTS | S.R.M. | |


IG CONSULTING, INC.
CONSULTING CIVIL ENGINEERS, PLANNERS & LAND SURVEYORS
300 MARQUARDT DRIVE WHEELING, ILLINOIS 60090 PH. (847) 215-1133 | FAX (847) 215-1177
1129 MAIN STREET UNION GROVE, WISCONSIN 53182 PH. (262) 878-6200 | ig@igconsulting.net


STORM SEWER
TRIBUTARY EXHIBIT

DESIGN: K.C.L. | DRAFTING: S.R.M.
SCALE: 1"=40' | DATE: 02/20/20

FIRM NO. 184-001330

# FOREST EDGE SUBDIVISION
## 1801 GREEN BAY ROAD
## GLENCOE, ILLINOIS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G:\IG\18\18557\Eng\18557-SP.dwg

PROJECT No.
18557

CAPACITY CALCULATION FOR SWALE-M

100yr FLOW - ONSITE TRIBUTARY AREA

A = 1.49 (acres)

C = 0.73

$i_{100}$ = 8.23 in/hr BASED ON A 18.3min $T_C$

$Q_{100}$ = CiA
= 8.97 cfs to swale

$Q_{swale}$ = VA

where A = 6.0 sf

$$V = \frac{1.49\,(R^{2/3})(S^{1/2})}{n}$$

$$\text{where } R = \frac{A}{P}$$

slope, S= 1.5 %
wetted perimeter P= 10.25 ft.
Manning's $n_{grass}$= 0.080

V= 1.60 f/s

$Q_{swale}$ = VA
= 9.58 cfs > 8.97 cfs OK

Mannings Formula

$Q = (1.486/n)AR_h^{2/3}S^{1/2}$

R = A/P

A = cross sectional area

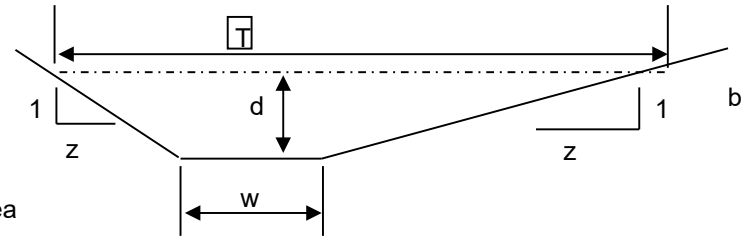
P= wetted perimeter

S = slope of channel

n = Manning's roughness coefficie

$V = (1.49/n)R_h^{2/3}S^{1/2}$

Q = V x A




| | INPUT |
|---|---|
| z (sideslope)= | 4 |
| z (sideslope)= | 4 |
| b (btm width, ft)= | 2 |
| d (depth, ft)= | 1 |
| S (slope, ft/ft) | 0.015 |
| $n_{low}$ = | 0.08 |
| $n_{high}$ = | 0.08 |

Clear Data Entry Cells

| Depth, ft | Area, sf | Wetted | Hydrauli | Velocity, | Low N Flow, cfs | High N Velocity, fps | Flow, cfs |
|---|---|---|---|---|---|---|---|
| 1 | 6.0 | 10.25 | 0.59 | 1.59 | 9.55 | 1.59 | 9.55 |

T = 10
Dm = 0.600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300 Marquardt Drive, Wheeling, IL 60090 847-215-1133


**SWALE CAPACITY CALCULATION (SWALE-M)**
1801 GREENBAY
**Project:** 1801 GREENBAY RD
GLENCOE **Date:** 17-Apr-20
**IG No.** 18557

CAPACITY CALCULATION FOR SWALE-N

100yr FLOW - ONSITE TRIBUTARY AREA

A = 3.95 (acres)

C = 0.73

$i_{100}$ = 7.07 in/hr BASED ON A 24min $T_C$

$Q_{100}$ = CiA
= 20.37 cfs to swale

$Q_{swale}$ = VA

where A = 12.0 sf

$$V = \frac{1.49\,(R^{2/3})(S^{1/2})}{n}$$

$$\text{where } R = \frac{A}{P}$$

slope, S= 1.5 %
wetted perimeter P= 16.25 ft.
Manning's $n_{grass}$= 0.080

V= 1.86 f/s

$Q_{swale}$ = VA
= 22.37 cfs > 20.37 cfs OK

Mannings Formula

$Q = (1.486/n)AR_h^{2/3}S^{1/2}$

R = A/P

A = cross sectional area

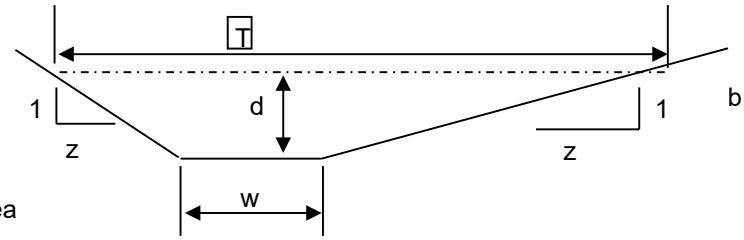
P= wetted perimeter

S = slope of channel

n = Manning's roughness coefficie

$V = (1.49/n)R_h^{2/3}S^{1/2}$

Q = V x A




| | INPUT |
|---|---|
| z (sideslope)= | 4 |
| z (sideslope)= | 4 |
| b (btm width, ft)= | 8 |
| d (depth, ft)= | 1 |
| S (slope, ft/ft) | 0.015 |
| $n_{low}$ = | 0.08 |
| $n_{high}$ = | 0.08 |

Clear Data Entry Cells

| Depth, ft | Area, sf | Wetted | Hydrauli | Velocity, | Low N Flow, cfs | High N Velocity, fps | Flow, cfs | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 12.0 | 16.25 | 0.74 | 1.86 | 22.31 | 1.86 | 22.31 | T = | 16 |
| | | | | | | | | Dm = | 0.750 |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**SWALE CAPACITY CALCULATION (SWALE-N)**
1801 GREENBAY
**Project:** 1801 GREENBAY RD
GLENCOE **Date:** 17-Apr-20
**IG No.** 18557

CAPACITY CALCULATION FOR SWALE-P

100yr FLOW - ONSITE TRIBUTARY AREA

A = 3.00 (acres)

C = 0.73

$i_{100}$ = 7.07 in/hr BASED ON A 24min $T_C$

$Q_{100}$ = CiA
= 15.50 cfs to swale

$Q_{swale}$ = VA

where A = 10.0 sf

$$V = \frac{1.49\,(R^{2/3})(S^{1/2})}{n}$$

$$\text{where } R = \frac{A}{P}$$

slope, S= 1.2 %
wetted perimeter P= 14.25 ft.
Manning's $n_{grass}$= 0.080

V= 1.61 f/s

$Q_{swale}$ = VA
= 16.11 cfs > 15.50 cfs OK

Mannings Formula

$Q = (1.486/n)AR_h^{2/3}S^{1/2}$

R = A/P

A = cross sectional area

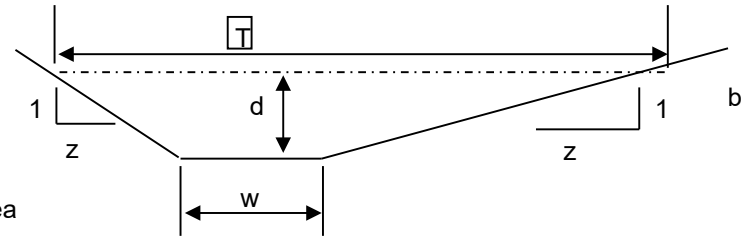
P= wetted perimeter

S = slope of channel

n = Manning's roughness coefficie

$V = (1.49/n)R_h^{2/3}S^{1/2}$

Q = V x A




| | INPUT |
|---|---|
| z (sideslope)= | 4 |
| z (sideslope)= | 4 |
| b (btm width, ft)= | 6 |
| d (depth, ft)= | 1 |
| S (slope, ft/ft) | 0.012 |
| $n_{low}$ = | 0.08 |
| $n_{high}$ = | 0.08 |

Clear Data Entry Cells

| Depth, ft | Area, sf | Wetted | Hydrauli | Velocity, | Low N Flow, cfs | High N Velocity, fps | Flow, cfs |
|---|---|---|---|---|---|---|---|
| 1 | 10.0 | 14.25 | 0.70 | 1.61 | 16.07 | 1.61 | 16.07 |

T = 14
Dm = 0.714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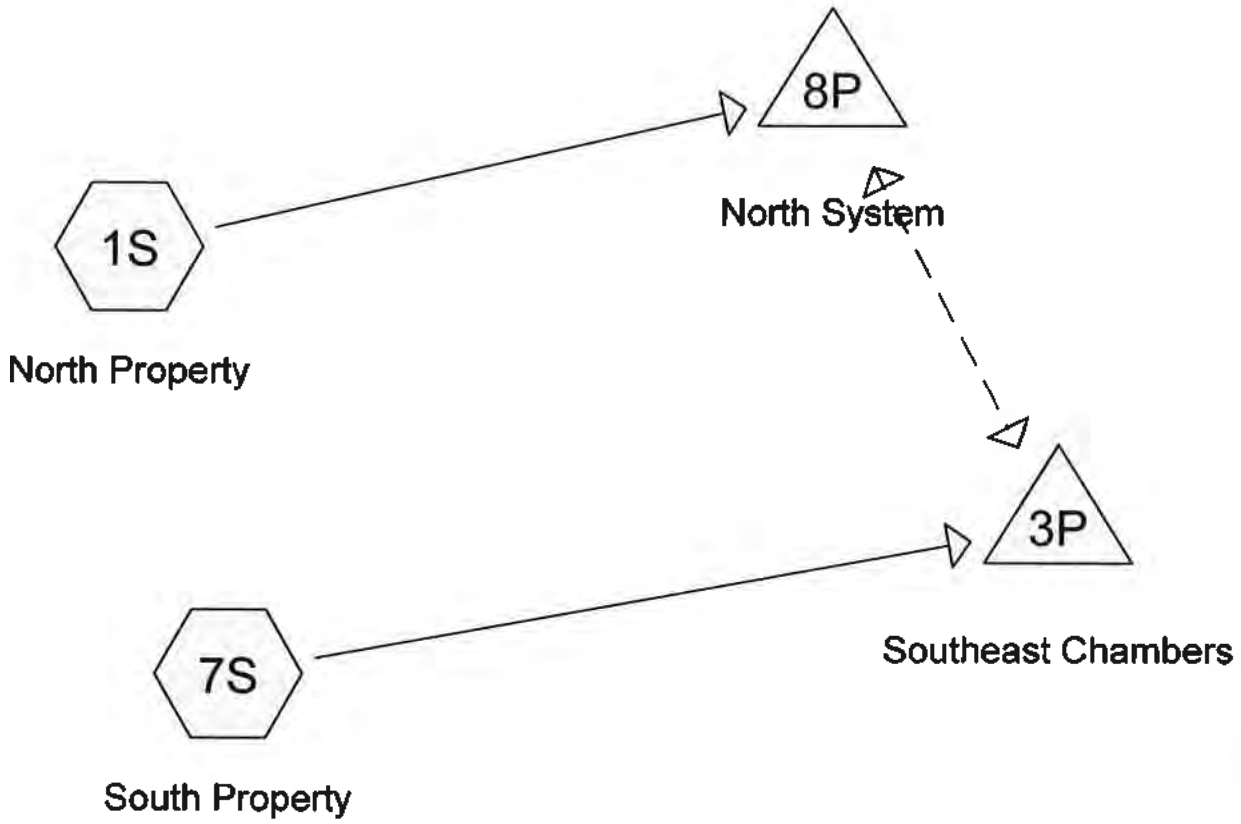
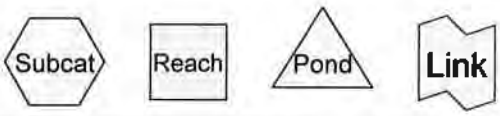
**SWALE CAPACITY CALCULATION (SWALE-P)**
1801 GREENBAY
**Project:** 1801 GREENBAY RD
GLENCOE **Date:** 17-Apr-20
**IG No.** 18557




**Routing Diagram for D_Detention 11.00 Ac_Cultec_4-19-20_6REV**
Prepared by {enter your company name here}, Printed 4/21/2020
HydroCAD® 10.00-25 s/n 00783 © 2019 HydroCAD Software Solutions LLC

## Summary for Subcatchment 1S: North Property

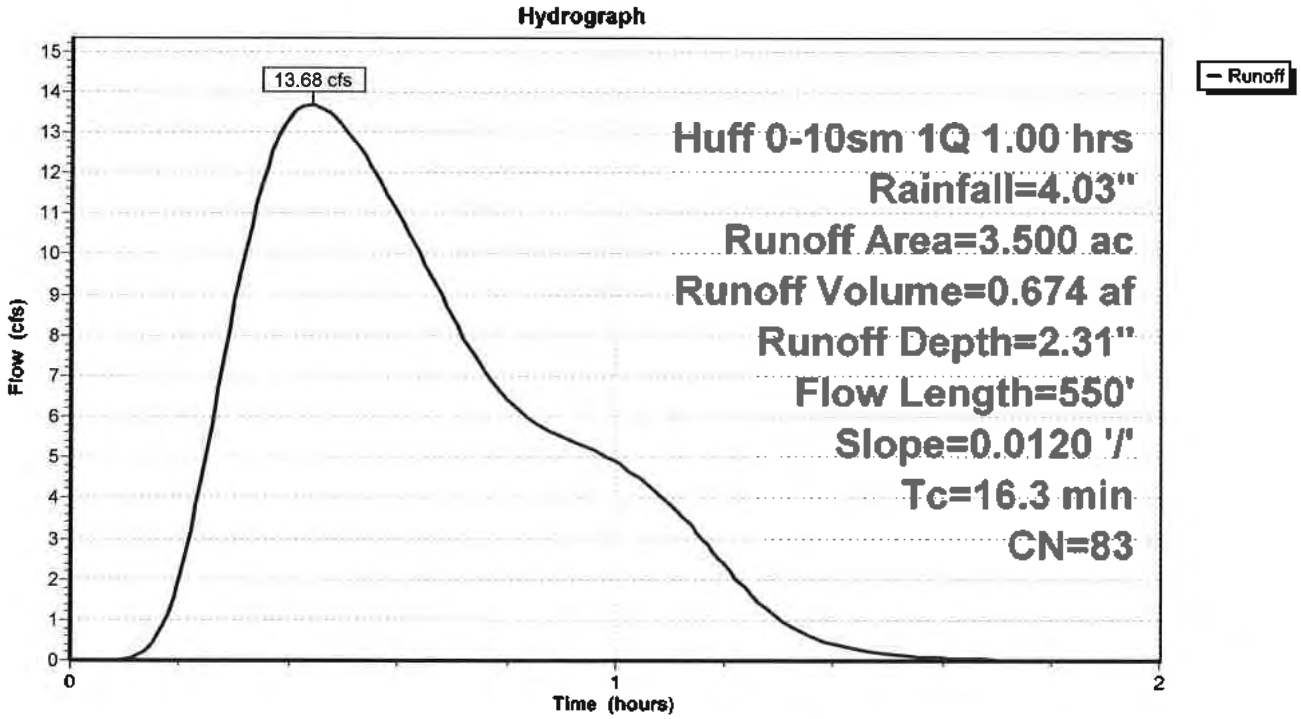
Runoff = 13.68 cfs @ 0.44 hrs, Volume= 0.674 af, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=4.03"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

## Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 1.04 | 4.03 | 2.31 | 4.53 |
| 0.02 | 0.05 | 0.00 | 0.00 | 1.06 | 4.03 | 2.31 | 4.32 |
| 0.04 | 0.21 | 0.00 | 0.00 | 1.08 | 4.03 | 2.31 | 4.09 |
| 0.06 | 0.46 | 0.00 | 0.00 | 1.10 | 4.03 | 2.31 | 3.86 |
| 0.08 | 0.72 | 0.04 | 0.00 | 1.12 | 4.03 | 2.31 | 3.60 |
| 0.10 | 1.00 | 0.13 | 0.02 | 1.14 | 4.03 | 2.31 | 3.32 |
| 0.12 | 1.25 | 0.25 | 0.09 | 1.16 | 4.03 | 2.31 | 3.00 |
| 0.14 | 1.46 | 0.36 | 0.27 | 1.18 | 4.03 | 2.31 | 2.68 |
| 0.16 | 1.63 | 0.45 | 0.61 | 1.20 | 4.03 | 2.31 | 2.36 |
| 0.18 | 1.78 | 0.55 | 1.19 | 1.22 | 4.03 | 2.31 | 2.05 |
| 0.20 | 1.93 | 0.65 | 2.03 | 1.24 | 4.03 | 2.31 | 1.76 |
| 0.22 | 2.08 | 0.75 | 3.15 | 1.26 | 4.03 | 2.31 | 1.49 |
| 0.24 | 2.21 | 0.84 | 4.48 | 1.28 | 4.03 | 2.31 | 1.25 |
| 0.26 | 2.34 | 0.94 | 5.93 | 1.30 | 4.03 | 2.31 | 1.03 |
| 0.28 | 2.46 | 1.03 | 7.39 | 1.32 | 4.03 | 2.31 | 0.85 |
| 0.30 | 2.56 | 1.10 | 8.80 | 1.34 | 4.03 | 2.31 | 0.71 |
| 0.32 | 2.66 | 1.18 | 10.09 | 1.36 | 4.03 | 2.31 | 0.59 |
| 0.34 | 2.75 | 1.25 | 11.24 | 1.38 | 4.03 | 2.31 | 0.49 |
| 0.36 | 2.83 | 1.31 | 12.18 | 1.40 | 4.03 | 2.31 | 0.41 |
| 0.38 | 2.90 | 1.37 | 12.91 | 1.42 | 4.03 | 2.31 | 0.34 |
| 0.40 | 2.97 | 1.42 | 13.36 | 1.44 | 4.03 | 2.31 | 0.29 |
| 0.42 | 3.04 | 1.48 | 13.63 | 1.46 | 4.03 | 2.31 | 0.24 |
| 0.44 | 3.10 | 1.53 | **13.68** | 1.48 | 4.03 | 2.31 | 0.20 |
| 0.46 | 3.17 | 1.58 | 13.61 | 1.50 | 4.03 | 2.31 | 0.16 |
| 0.48 | 3.22 | 1.63 | 13.42 | 1.52 | 4.03 | 2.31 | 0.14 |
| 0.50 | 3.28 | 1.67 | 13.14 | 1.54 | 4.03 | 2.31 | 0.11 |
| 0.52 | 3.32 | 1.71 | 12.79 | 1.56 | 4.03 | 2.31 | 0.09 |
| 0.54 | 3.36 | 1.74 | 12.37 | 1.58 | 4.03 | 2.31 | 0.08 |
| 0.56 | 3.39 | 1.77 | 11.95 | 1.60 | 4.03 | 2.31 | 0.06 |
| 0.58 | 3.43 | 1.80 | 11.48 | 1.62 | 4.03 | 2.31 | 0.05 |
| 0.60 | 3.46 | 1.83 | 11.02 | 1.64 | 4.03 | 2.31 | 0.04 |
| 0.62 | 3.49 | 1.85 | 10.52 | 1.66 | 4.03 | 2.31 | 0.03 |
| 0.64 | 3.53 | 1.88 | 10.01 | 1.68 | 4.03 | 2.31 | 0.03 |
| 0.66 | 3.56 | 1.91 | 9.49 | 1.70 | 4.03 | 2.31 | 0.02 |
| 0.68 | 3.59 | 1.93 | 8.96 | 1.72 | 4.03 | 2.31 | 0.02 |
| 0.70 | 3.62 | 1.96 | 8.45 | 1.74 | 4.03 | 2.31 | 0.01 |
| 0.72 | 3.66 | 1.99 | 7.96 | 1.76 | 4.03 | 2.31 | 0.01 |
| 0.74 | 3.69 | 2.02 | 7.52 | 1.78 | 4.03 | 2.31 | 0.01 |
| 0.76 | 3.72 | 2.05 | 7.10 | 1.80 | 4.03 | 2.31 | 0.01 |
| 0.78 | 3.75 | 2.07 | 6.75 | 1.82 | 4.03 | 2.31 | 0.00 |
| 0.80 | 3.79 | 2.10 | 6.43 | 1.84 | 4.03 | 2.31 | 0.00 |
| 0.82 | 3.82 | 2.13 | 6.18 | 1.86 | 4.03 | 2.31 | 0.00 |
| 0.84 | 3.85 | 2.16 | 5.96 | 1.88 | 4.03 | 2.31 | 0.00 |
| 0.86 | 3.88 | 2.18 | 5.78 | 1.90 | 4.03 | 2.31 | 0.00 |
| 0.88 | 3.91 | 2.21 | 5.64 | 1.92 | 4.03 | 2.31 | 0.00 |
| 0.90 | 3.93 | 2.22 | 5.51 | 1.94 | 4.03 | 2.31 | 0.00 |
| 0.92 | 3.94 | 2.24 | 5.41 | 1.96 | 4.03 | 2.31 | 0.00 |
| 0.94 | 3.96 | 2.25 | 5.30 | 1.98 | 4.03 | 2.31 | 0.00 |
| 0.96 | 3.98 | 2.27 | 5.19 | 2.00 | 4.03 | 2.31 | 0.00 |
| 0.98 | 4.00 | 2.29 | 5.05 | | | | |
| 1.00 | **4.03** | **2.31** | 4.90 | | | | |
| 1.02 | 4.03 | 2.31 | 4.72 | | | | |

## Summary for Subcatchment 7S: South Property

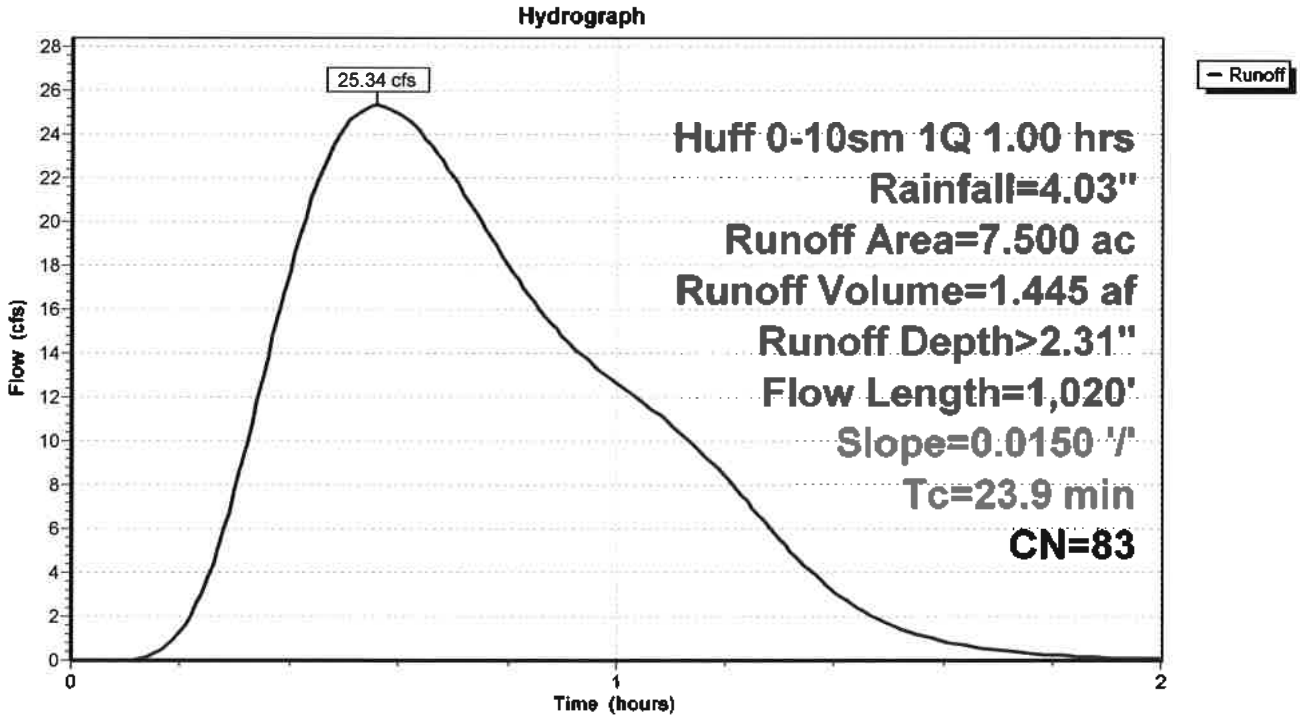
Runoff = 25.34 cfs @ 0.56 hrs, Volume= 1.445 af, Depth> 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=4.03"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

## Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 1.04 | 4.03 | 2.31 | 11.94 |
| 0.02 | 0.05 | 0.00 | 0.00 | 1.06 | 4.03 | 2.31 | 11.56 |
| 0.04 | 0.21 | 0.00 | 0.00 | 1.08 | 4.03 | 2.31 | 11.19 |
| 0.06 | 0.46 | 0.00 | 0.00 | 1.10 | 4.03 | 2.31 | 10.78 |
| 0.08 | 0.72 | 0.04 | 0.00 | 1.12 | 4.03 | 2.31 | 10.34 |
| 0.10 | 1.00 | 0.13 | 0.00 | 1.14 | 4.03 | 2.31 | 9.91 |
| 0.12 | 1.25 | 0.25 | 0.06 | 1.16 | 4.03 | 2.31 | 9.42 |
| 0.14 | 1.46 | 0.36 | 0.17 | 1.18 | 4.03 | 2.31 | 8.92 |
| 0.16 | 1.63 | 0.45 | 0.38 | 1.20 | 4.03 | 2.31 | 8.40 |
| 0.18 | 1.78 | 0.55 | 0.74 | 1.22 | 4.03 | 2.31 | 7.82 |
| 0.20 | 1.93 | 0.65 | 1.31 | 1.24 | 4.03 | 2.31 | 7.25 |
| 0.22 | 2.08 | 0.75 | 2.07 | 1.26 | 4.03 | 2.31 | 6.66 |
| 0.24 | 2.21 | 0.84 | 3.07 | 1.28 | 4.03 | 2.31 | 6.08 |
| 0.26 | 2.34 | 0.94 | 4.40 | 1.30 | 4.03 | 2.31 | 5.53 |
| 0.28 | 2.46 | 1.03 | 5.97 | 1.32 | 4.03 | 2.31 | 4.99 |
| 0.30 | 2.56 | 1.10 | 7.74 | 1.34 | 4.03 | 2.31 | 4.48 |
| 0.32 | 2.66 | 1.18 | 9.70 | 1.36 | 4.03 | 2.31 | 4.00 |
| 0.34 | 2.75 | 1.25 | 11.73 | 1.38 | 4.03 | 2.31 | 3.56 |
| 0.36 | 2.83 | 1.31 | 13.77 | 1.40 | 4.03 | 2.31 | 3.16 |
| 0.38 | 2.90 | 1.37 | 15.78 | 1.42 | 4.03 | 2.31 | 2.79 |
| 0.40 | 2.97 | 1.42 | 17.70 | 1.44 | 4.03 | 2.31 | 2.44 |
| 0.42 | 3.04 | 1.48 | 19.42 | 1.46 | 4.03 | 2.31 | 2.14 |
| 0.44 | 3.10 | 1.53 | 20.99 | 1.48 | 4.03 | 2.31 | 1.89 |
| 0.46 | 3.17 | 1.58 | 22.35 | 1.50 | 4.03 | 2.31 | 1.67 |
| 0.48 | 3.22 | 1.63 | 23.45 | 1.52 | 4.03 | 2.31 | 1.47 |
| 0.50 | 3.28 | 1.67 | 24.32 | 1.54 | 4.03 | 2.31 | 1.29 |
| 0.52 | 3.32 | 1.71 | 24.85 | 1.56 | 4.03 | 2.31 | 1.14 |
| 0.54 | 3.36 | 1.74 | 25.18 | 1.58 | 4.03 | 2.31 | 1.01 |
| 0.56 | 3.39 | 1.77 | **25.34** | 1.60 | 4.03 | 2.31 | 0.89 |
| 0.58 | 3.43 | 1.80 | 25.19 | 1.62 | 4.03 | 2.31 | 0.78 |
| 0.60 | 3.46 | 1.83 | 24.93 | 1.64 | 4.03 | 2.31 | 0.68 |
| 0.62 | 3.49 | 1.85 | 24.55 | 1.66 | 4.03 | 2.31 | 0.60 |
| 0.64 | 3.53 | 1.88 | 24.04 | 1.68 | 4.03 | 2.31 | 0.53 |
| 0.66 | 3.56 | 1.91 | 23.47 | 1.70 | 4.03 | 2.31 | 0.46 |
| 0.68 | 3.59 | 1.93 | 22.78 | 1.72 | 4.03 | 2.31 | 0.41 |
| 0.70 | 3.62 | 1.96 | 22.04 | 1.74 | 4.03 | 2.31 | 0.36 |
| 0.72 | 3.66 | 1.99 | 21.28 | 1.76 | 4.03 | 2.31 | 0.31 |
| 0.74 | 3.69 | 2.02 | 20.45 | 1.78 | 4.03 | 2.31 | 0.28 |
| 0.76 | 3.72 | 2.05 | 19.65 | 1.80 | 4.03 | 2.31 | 0.24 |
| 0.78 | 3.75 | 2.07 | 18.86 | 1.82 | 4.03 | 2.31 | 0.21 |
| 0.80 | 3.79 | 2.10 | 18.06 | 1.84 | 4.03 | 2.31 | 0.18 |
| 0.82 | 3.82 | 2.13 | 17.33 | 1.86 | 4.03 | 2.31 | 0.16 |
| 0.84 | 3.85 | 2.16 | 16.63 | 1.88 | 4.03 | 2.31 | 0.14 |
| 0.86 | 3.88 | 2.18 | 15.97 | 1.90 | 4.03 | 2.31 | 0.12 |
| 0.88 | 3.91 | 2.21 | 15.37 | 1.92 | 4.03 | 2.31 | 0.11 |
| 0.90 | 3.93 | 2.22 | 14.80 | 1.94 | 4.03 | 2.31 | 0.09 |
| 0.92 | 3.94 | 2.24 | 14.30 | 1.96 | 4.03 | 2.31 | 0.08 |
| 0.94 | 3.96 | 2.25 | 13.84 | 1.98 | 4.03 | 2.31 | 0.07 |
| 0.96 | 3.98 | 2.27 | 13.40 | 2.00 | 4.03 | 2.31 | 0.06 |
| 0.98 | 4.00 | 2.29 | 13.03 | | | | |
| 1.00 | **4.03** | **2.31** | 12.64 | | | | |
| 1.02 | 4.03 | 2.31 | 12.29 | | | | |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 36.70 cfs @ | 0.53 hrs, | Volume= | 1.937 af |
| Outflow | = | 1.05 cfs @ | 1.60 hrs, | Volume= | 0.125 af, Atten= 97%, Lag= 63.6 min |
| Primary | = | 1.05 cfs @ | 1.60 hrs, | Volume= | 0.125 af |
| Secondary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Peak Elev= 674.10' @ 1.60 hrs Surf.Area= 31,290 sf Storage= 79,881 cf

Plug-Flow detention time= 56.5 min calculated for 0.125 af (6% of inflow)
Center-of-Mass det. time= 31.3 min ( 75.7 - 44.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

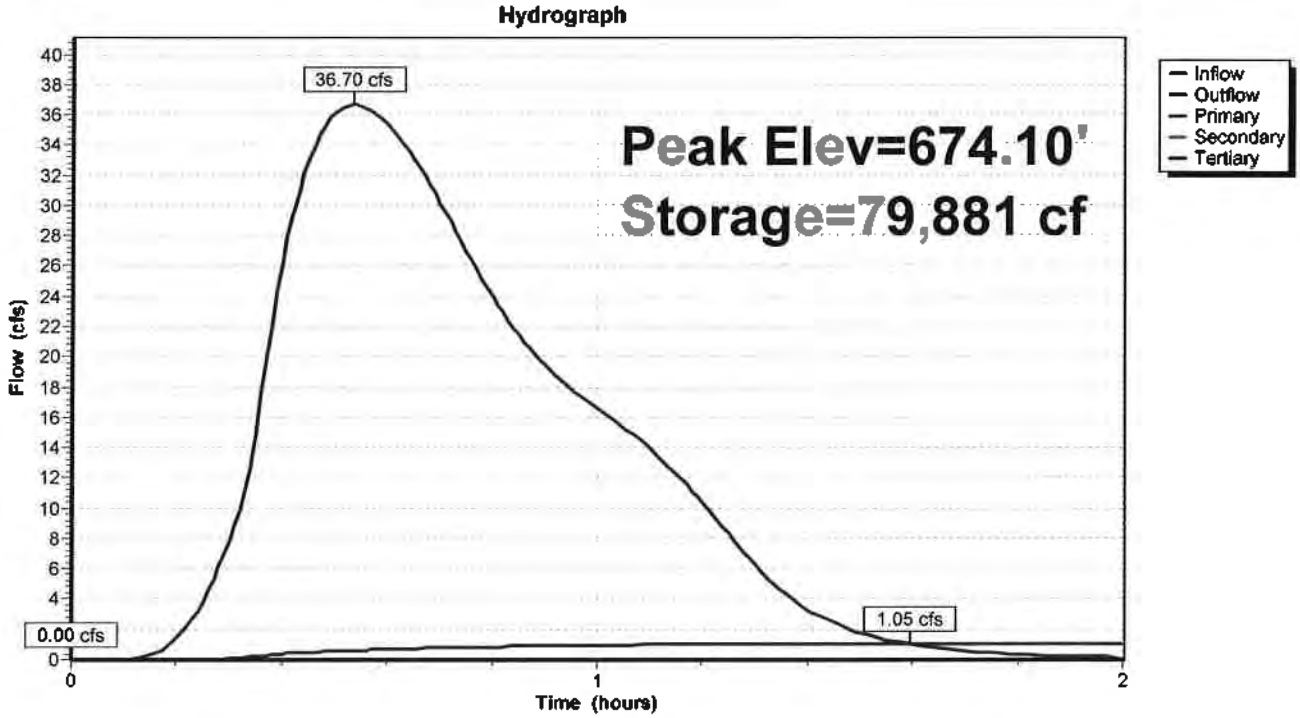
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=1.05 cfs @ 1.60 hrs HW=674.10' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.05 cfs @ 9.53 fps)

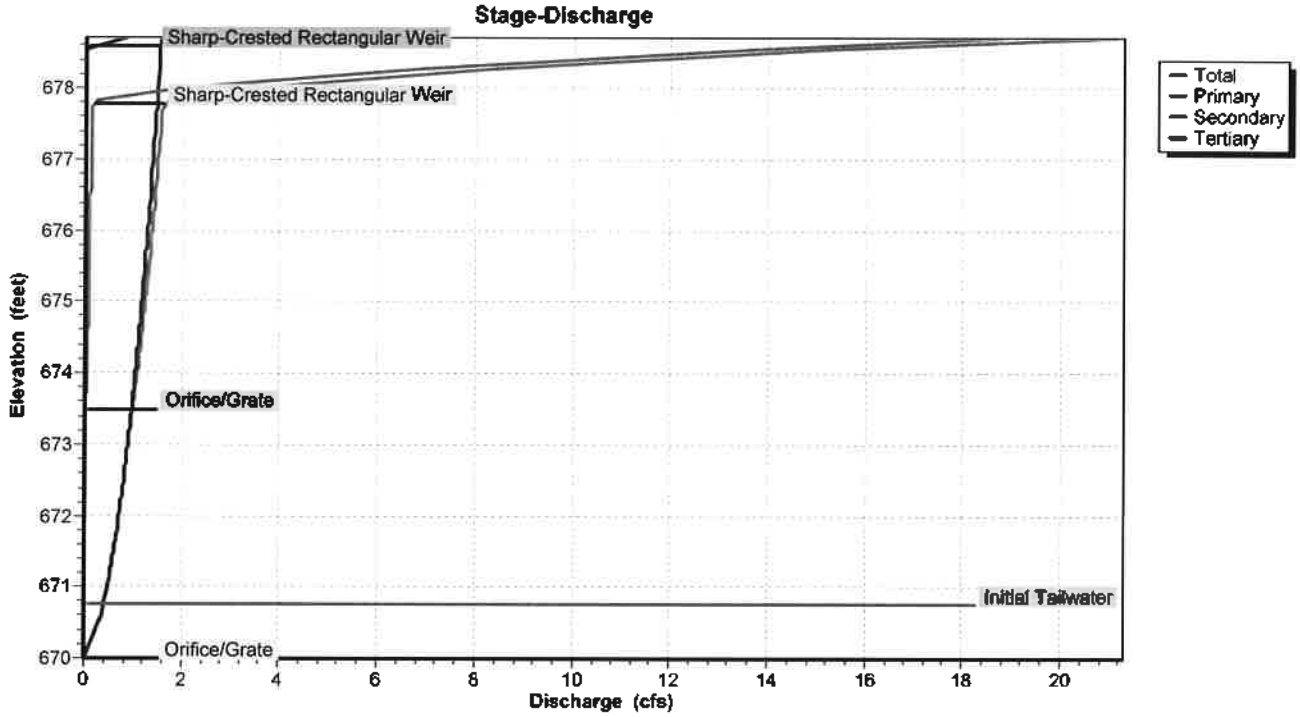
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

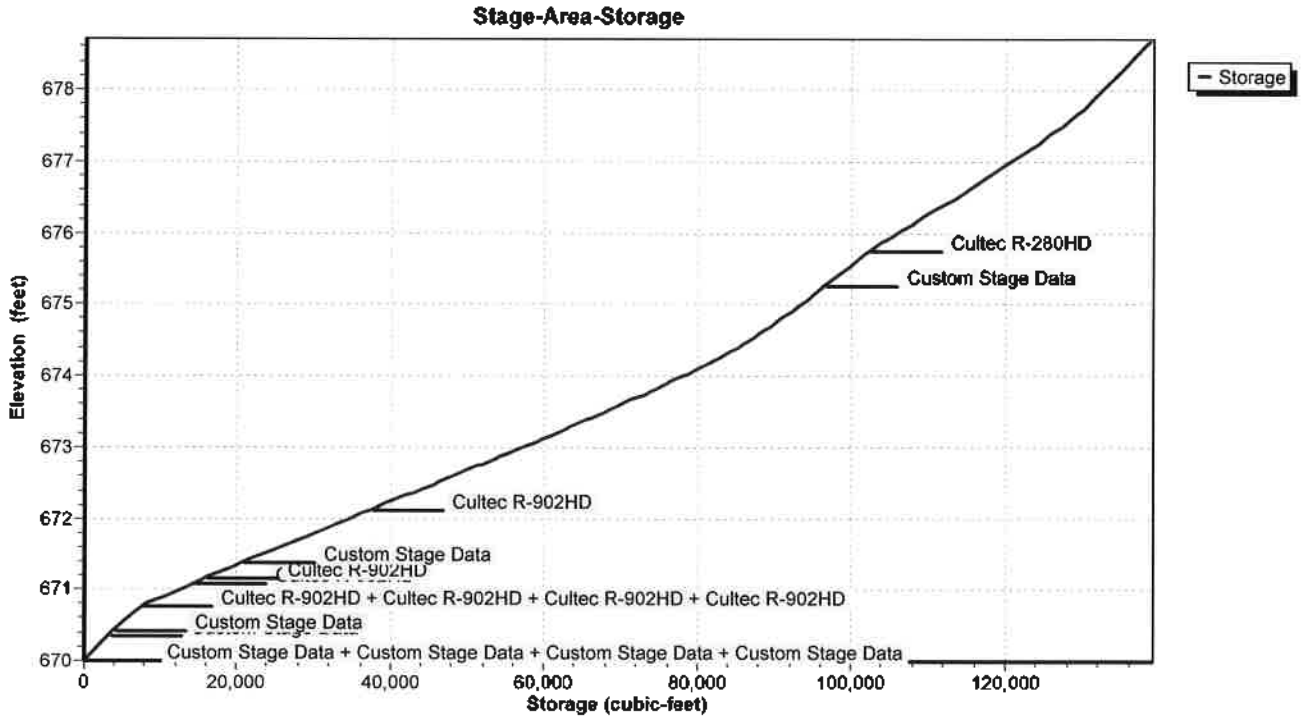
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 0.05 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.10 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.15 | 0.27 | 12 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 1.41 | 128 | 670.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.25 | 3.84 | 529 | 670.06 | 0.01 | 0.01 | 0.00 | 0.00 |
| 0.30 | 7.86 | 1,482 | 670.17 | 0.07 | 0.07 | 0.00 | 0.00 |
| 0.35 | 14.94 | 3,260 | 670.36 | 0.22 | 0.22 | 0.00 | 0.00 |
| 0.40 | 26.28 | 6,763 | 670.71 | 0.38 | 0.38 | 0.00 | 0.00 |
| 0.45 | 33.09 | 11,966 | 670.98 | 0.47 | 0.47 | 0.00 | 0.00 |
| 0.50 | **36.18** | 18,092 | 671.27 | 0.55 | 0.55 | 0.00 | 0.00 |
| 0.55 | **36.64** | 24,560 | 671.55 | 0.62 | 0.62 | 0.00 | 0.00 |
| 0.60 | 35.35 | 30,965 | 671.84 | 0.68 | 0.68 | 0.00 | 0.00 |
| 0.65 | 33.06 | 37,049 | 672.11 | 0.74 | 0.74 | 0.00 | 0.00 |
| 0.70 | 30.14 | 42,662 | 672.36 | 0.78 | 0.78 | 0.00 | 0.00 |
| 0.75 | 26.97 | 47,715 | 672.58 | 0.82 | 0.82 | 0.00 | 0.00 |
| 0.80 | 23.96 | 52,199 | 672.78 | 0.86 | 0.86 | 0.00 | 0.00 |
| 0.85 | 21.42 | 56,167 | 672.96 | 0.89 | 0.89 | 0.00 | 0.00 |
| 0.90 | 19.41 | 59,711 | 673.12 | 0.91 | 0.91 | 0.00 | 0.00 |
| 0.95 | 17.86 | 62,923 | 673.27 | 0.93 | 0.93 | 0.00 | 0.00 |
| 1.00 | 16.59 | 65,876 | 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 1.05 | 15.34 | 68,601 | 673.53 | 0.97 | 0.97 | 0.00 | 0.00 |
| 1.10 | 13.92 | 71,086 | 673.65 | 0.99 | 0.99 | 0.00 | 0.00 |
| 1.15 | 12.28 | 73,297 | 673.76 | 1.01 | 1.01 | 0.00 | 0.00 |
| 1.20 | 10.38 | 75,191 | 673.86 | 1.02 | 1.02 | 0.00 | 0.00 |
| 1.25 | 8.29 | 76,724 | 673.94 | 1.03 | 1.03 | 0.00 | 0.00 |
| 1.30 | 6.28 | 77,882 | 674.00 | 1.04 | 1.04 | 0.00 | 0.00 |
| 1.35 | 4.57 | 78,697 | 674.04 | 1.04 | 1.04 | 0.00 | 0.00 |
| 1.40 | 3.27 | 79,230 | 674.07 | 1.05 | 1.05 | 0.00 | 0.00 |
| 1.45 | 2.41 | 79,565 | 674.09 | 1.05 | 1.05 | 0.00 | 0.00 |
| 1.50 | 1.78 | 79,760 | 674.10 | 1.05 | 1.05 | 0.00 | 0.00 |
| 1.55 | 1.33 | 79,856 | 674.10 | 1.05 | 1.05 | 0.00 | 0.00 |
| 1.60 | 0.99 | **79,880** | **674.10** | **1.05** | **1.05** | 0.00 | 0.00 |
| 1.65 | 0.75 | 79,851 | 674.10 | 1.05 | 1.05 | 0.00 | 0.00 |
| 1.70 | 0.57 | 79,784 | 674.10 | 1.05 | 1.05 | 0.00 | 0.00 |
| 1.75 | 0.44 | 79,687 | 674.09 | 1.05 | 1.05 | 0.00 | 0.00 |
| 1.80 | 0.35 | 79,571 | 674.09 | 1.05 | 1.05 | 0.00 | 0.00 |
| 1.85 | 0.28 | 79,439 | 674.08 | 1.05 | 1.05 | 0.00 | 0.00 |
| 1.90 | 0.23 | 79,296 | 674.07 | 1.05 | 1.05 | 0.00 | 0.00 |
| 1.95 | 0.19 | 79,145 | 674.06 | 1.05 | 1.05 | 0.00 | 0.00 |
| 2.00 | 0.00 | 78,989 | 674.05 | 1.05 | 1.05 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 16.68 | 1.54 | 15.13 | 0.00 |
| 678.80 | **24.77** | **1.56** | **21.42** | **1.79** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 13.68 cfs @ | 0.44 hrs, | Volume= | 0.674 af |
| Outflow | = | 13.32 cfs @ | 0.49 hrs, | Volume= | 0.660 af, Atten= 3%, Lag= 3.2 min |
| Primary | = | 1.45 cfs @ | 0.49 hrs, | Volume= | 0.167 af |
| Secondary | = | 11.86 cfs @ | 0.49 hrs, | Volume= | 0.493 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Peak Elev= 678.48' @ 0.49 hrs Surf.Area= 3,656 sf Storage= 4,884 cf

Plug-Flow detention time= 10.0 min calculated for 0.660 af (98% of inflow)
Center-of-Mass det. time= 9.1 min ( 47.3 - 38.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

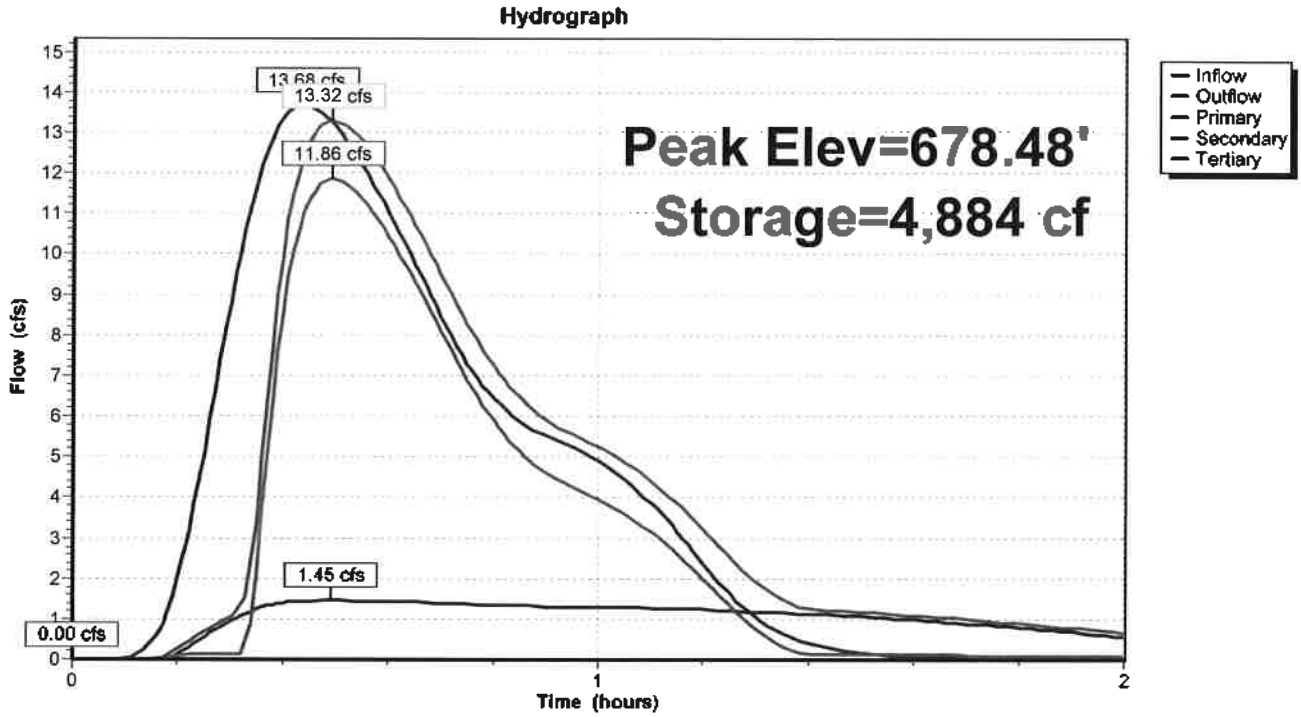
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=1.45 cfs @ 0.49 hrs HW=678.48' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.45 cfs @ 6.30 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

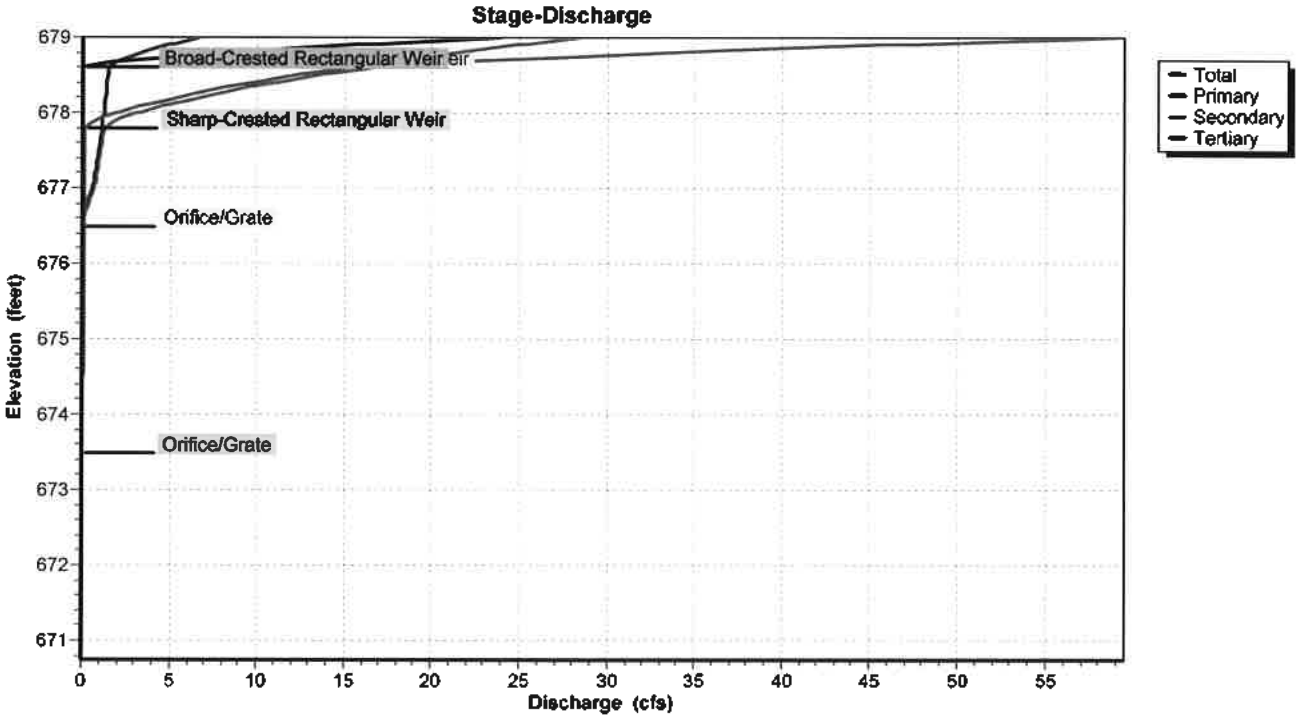
**Secondary OutFlow** Max=11.86 cfs @ 0.49 hrs HW=678.48' TW=671.23' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.13 cfs @ 10.68 fps)
└─**5=Sharp-Crested Rectangular Weir** (Weir Controls 11.73 cfs @ 2.93 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

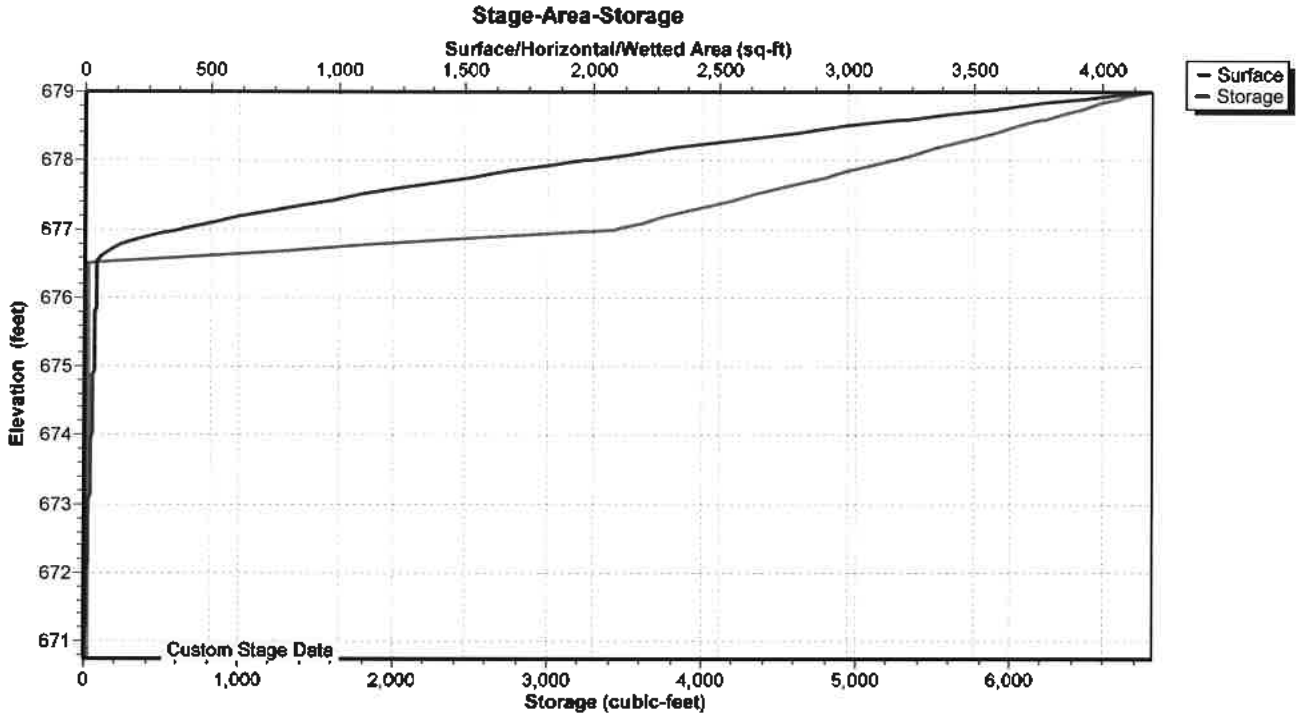
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.05 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.10 | 0.02 | 0 | 670.78 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.15 | 0.42 | 21 | 672.27 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 2.03 | 178 | 676.71 | 0.23 | 0.13 | 0.10 | 0.00 |
| 0.25 | 5.20 | 680 | 677.04 | 0.68 | 0.57 | 0.11 | 0.00 |
| 0.30 | 8.80 | 1,729 | 677.48 | 1.05 | 0.93 | 0.12 | 0.00 |
| 0.35 | 11.74 | 3,298 | 678.02 | 3.43 | 1.24 | 2.19 | 0.00 |
| 0.40 | **13.36** | 4,416 | 678.35 | 9.98 | 1.40 | 8.58 | 0.00 |
| 0.45 | **13.68** | **4,814** | **678.46** | **12.79** | **1.44** | **11.35** | 0.00 |
| 0.50 | 13.14 | **4,884** | **678.48** | **13.31** | **1.45** | **11.86** | 0.00 |
| 0.55 | 12.16 | 4,815 | 678.46 | 12.80 | 1.44 | 11.35 | 0.00 |
| 0.60 | 11.02 | 4,684 | 678.43 | 11.85 | 1.43 | 10.42 | 0.00 |
| 0.65 | 9.74 | 4,524 | 678.38 | 10.71 | 1.41 | 9.31 | 0.00 |
| 0.70 | 8.45 | 4,343 | 678.33 | 9.48 | 1.39 | 8.10 | 0.00 |
| 0.75 | 7.31 | 4,161 | 678.28 | 8.28 | 1.36 | 6.92 | 0.00 |
| 0.80 | 6.43 | 3,996 | 678.23 | 7.24 | 1.34 | 5.90 | 0.00 |
| 0.85 | 5.87 | 3,867 | 678.19 | 6.46 | 1.32 | 5.13 | 0.00 |
| 0.90 | 5.51 | 3,775 | 678.17 | 5.92 | 1.31 | 4.61 | 0.00 |
| 0.95 | 5.24 | 3,710 | 678.15 | 5.55 | 1.30 | 4.25 | 0.00 |
| 1.00 | 4.90 | 3,655 | 678.13 | 5.24 | 1.29 | 3.95 | 0.00 |
| 1.05 | 4.42 | 3,586 | 678.11 | 4.87 | 1.28 | 3.59 | 0.00 |
| 1.10 | 3.86 | 3,498 | 678.08 | 4.41 | 1.27 | 3.14 | 0.00 |
| 1.15 | 3.16 | 3,390 | 678.05 | 3.86 | 1.25 | 2.61 | 0.00 |
| 1.20 | 2.36 | 3,251 | 678.01 | 3.21 | 1.23 | 1.98 | 0.00 |
| 1.25 | 1.62 | 3,092 | 677.95 | 2.54 | 1.21 | 1.33 | 0.00 |
| 1.30 | 1.03 | 2,927 | 677.90 | 1.94 | 1.18 | 0.76 | 0.00 |
| 1.35 | 0.65 | 2,769 | 677.85 | 1.49 | 1.15 | 0.33 | 0.00 |
| 1.40 | 0.41 | 2,621 | 677.80 | 1.24 | 1.13 | 0.11 | 0.00 |
| 1.45 | 0.26 | 2,462 | 677.75 | 1.21 | 1.10 | 0.11 | 0.00 |
| 1.50 | 0.16 | 2,287 | 677.68 | 1.17 | 1.06 | 0.11 | 0.00 |
| 1.55 | 0.10 | 2,103 | 677.62 | 1.13 | 1.02 | 0.11 | 0.00 |
| 1.60 | 0.06 | 1,918 | 677.55 | 1.09 | 0.98 | 0.11 | 0.00 |
| 1.65 | 0.04 | 1,734 | 677.48 | 1.04 | 0.93 | 0.11 | 0.00 |
| 1.70 | 0.02 | 1,555 | 677.41 | 1.00 | 0.89 | 0.11 | 0.00 |
| 1.75 | 0.01 | 1,383 | 677.34 | 0.95 | 0.84 | 0.11 | 0.00 |
| 1.80 | 0.01 | 1,218 | 677.27 | 0.89 | 0.79 | 0.11 | 0.00 |
| 1.85 | 0.00 | 1,062 | 677.21 | 0.84 | 0.73 | 0.10 | 0.00 |
| 1.90 | 0.00 | 916 | 677.14 | 0.78 | 0.68 | 0.10 | 0.00 |
| 1.95 | 0.00 | 779 | 677.08 | 0.72 | 0.62 | 0.10 | 0.00 |
| 2.00 | 0.00 | 654 | 677.02 | 0.66 | 0.56 | 0.10 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 5.62 | 1.30 | 4.31 | 0.00 |
| 678.35 | 9.91 | 1.39 | 8.51 | 0.00 |
| 678.55 | 15.18 | 1.48 | 13.70 | 0.00 |
| 678.75 | 27.96 | 2.72 | 19.77 | 5.47 |
| 678.95 | **52.16** | **5.83** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

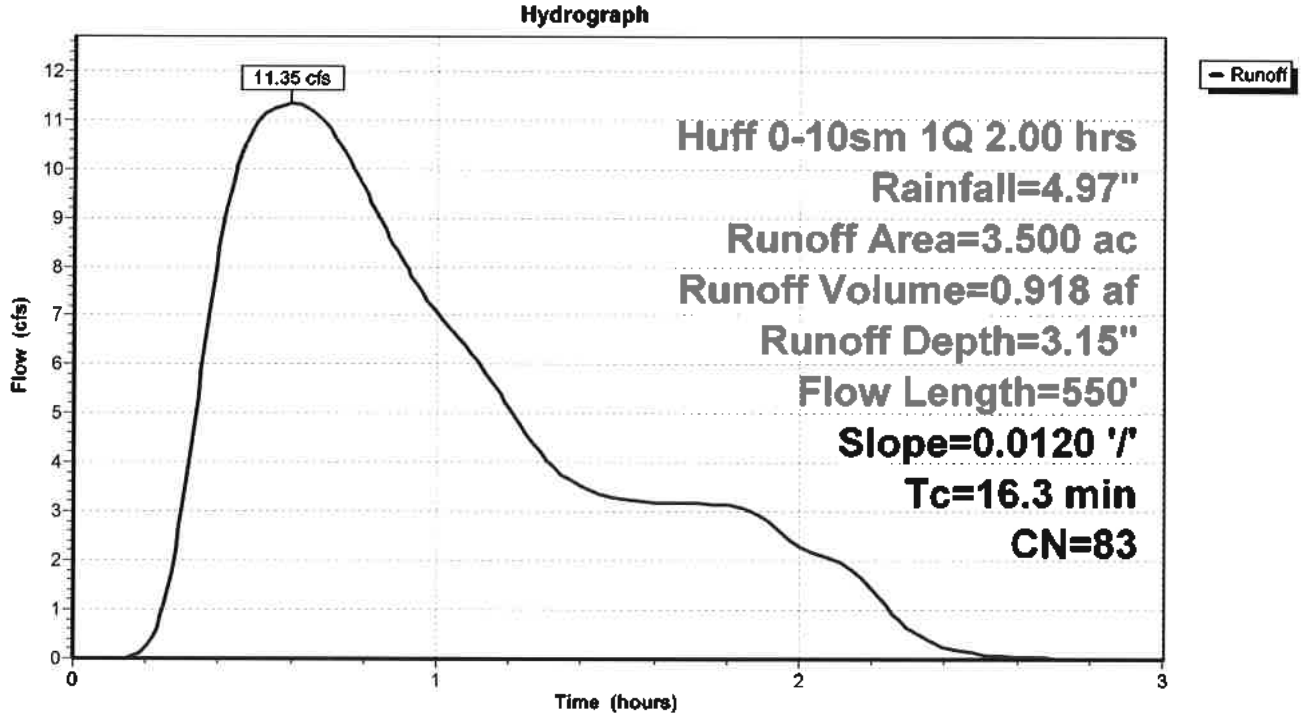
Runoff = 11.35 cfs @ 0.60 hrs, Volume= 0.918 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=4.97"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

## Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 2.60 | 4.97 | 3.15 | 0.04 |
| 0.05 | 0.10 | 0.00 | 0.00 | 2.65 | 4.97 | 3.15 | 0.02 |
| 0.10 | 0.40 | 0.00 | 0.00 | 2.70 | 4.97 | 3.15 | 0.01 |
| 0.15 | 0.81 | 0.07 | 0.01 | 2.75 | 4.97 | 3.15 | 0.01 |
| 0.20 | 1.23 | 0.23 | 0.22 | 2.80 | 4.97 | 3.15 | 0.00 |
| 0.25 | 1.61 | 0.45 | 1.13 | 2.85 | 4.97 | 3.15 | 0.00 |
| 0.30 | 1.91 | 0.63 | 3.16 | 2.90 | 4.97 | 3.15 | 0.00 |
| 0.35 | 2.15 | 0.80 | 5.88 | 2.95 | 4.97 | 3.15 | 0.00 |
| 0.40 | 2.38 | 0.97 | 8.39 | 3.00 | 4.97 | 3.15 | 0.00 |
| 0.45 | 2.60 | 1.14 | 10.07 | | | | |
| 0.50 | 2.81 | 1.30 | 10.90 | | | | |
| 0.55 | 3.00 | 1.45 | 11.25 | | | | |
| 0.60 | 3.16 | 1.58 | **11.36** | | | | |
| 0.65 | 3.31 | 1.70 | 11.22 | | | | |
| 0.70 | 3.44 | 1.81 | 10.86 | | | | |
| 0.75 | 3.56 | 1.91 | 10.28 | | | | |
| 0.80 | 3.66 | 2.00 | 9.59 | | | | |
| 0.85 | 3.77 | 2.08 | 8.89 | | | | |
| 0.90 | 3.87 | 2.17 | 8.19 | | | | |
| 0.95 | 3.96 | 2.25 | 7.57 | | | | |
| 1.00 | 4.04 | 2.32 | 7.06 | | | | |
| 1.05 | 4.11 | 2.38 | 6.62 | | | | |
| 1.10 | 4.17 | 2.43 | 6.19 | | | | |
| 1.15 | 4.22 | 2.48 | 5.69 | | | | |
| 1.20 | 4.27 | 2.52 | 5.12 | | | | |
| 1.25 | 4.32 | 2.56 | 4.56 | | | | |
| 1.30 | 4.37 | 2.61 | 4.08 | | | | |
| 1.35 | 4.42 | 2.65 | 3.74 | | | | |
| 1.40 | 4.47 | 2.70 | 3.51 | | | | |
| 1.45 | 4.52 | 2.74 | 3.37 | | | | |
| 1.50 | 4.57 | 2.79 | 3.28 | | | | |
| 1.55 | 4.62 | 2.83 | 3.23 | | | | |
| 1.60 | 4.67 | 2.88 | 3.20 | | | | |
| 1.65 | 4.72 | 2.92 | 3.18 | | | | |
| 1.70 | 4.77 | 2.97 | 3.17 | | | | |
| 1.75 | 4.81 | 3.01 | 3.17 | | | | |
| 1.80 | 4.84 | 3.03 | 3.15 | | | | |
| 1.85 | 4.87 | 3.06 | 3.07 | | | | |
| 1.90 | 4.89 | 3.08 | 2.87 | | | | |
| 1.95 | 4.93 | 3.11 | 2.58 | | | | |
| 2.00 | **4.97** | **3.15** | 2.30 | | | | |
| 2.05 | 4.97 | 3.15 | 2.13 | | | | |
| 2.10 | 4.97 | 3.15 | 2.02 | | | | |
| 2.15 | 4.97 | 3.15 | 1.80 | | | | |
| 2.20 | 4.97 | 3.15 | 1.41 | | | | |
| 2.25 | 4.97 | 3.15 | 0.98 | | | | |
| 2.30 | 4.97 | 3.15 | 0.63 | | | | |
| 2.35 | 4.97 | 3.15 | 0.39 | | | | |
| 2.40 | 4.97 | 3.15 | 0.25 | | | | |
| 2.45 | 4.97 | 3.15 | 0.16 | | | | |
| 2.50 | 4.97 | 3.15 | 0.10 | | | | |
| 2.55 | 4.97 | 3.15 | 0.06 | | | | |

## Summary for Subcatchment 7S: South Property

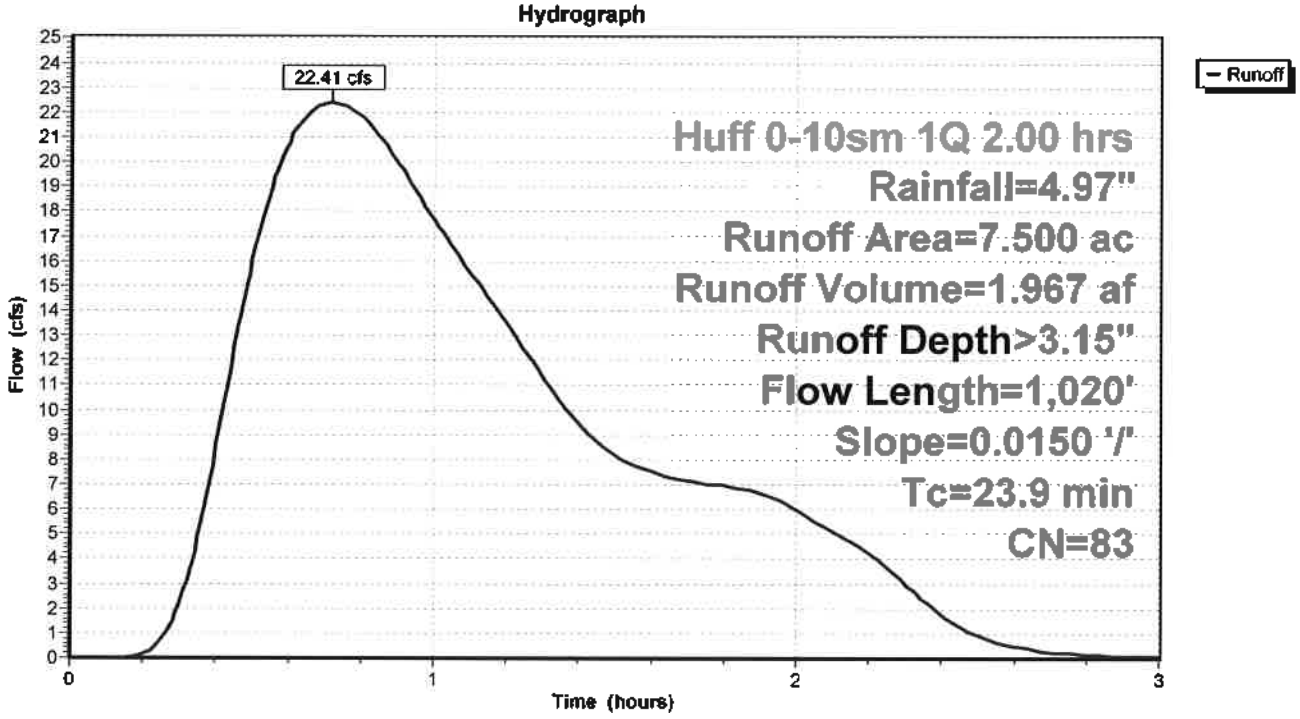
Runoff = 22.41 cfs @ 0.72 hrs, Volume= 1.967 af, Depth> 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=4.97"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.05 | 0.10 | 0.00 | 0.00 |
| 0.10 | 0.40 | 0.00 | 0.00 |
| 0.15 | 0.81 | 0.07 | 0.00 |
| 0.20 | 1.23 | 0.23 | 0.13 |
| 0.25 | 1.61 | 0.45 | 0.71 |
| 0.30 | 1.91 | 0.63 | 2.21 |
| 0.35 | 2.15 | 0.80 | 4.90 |
| 0.40 | 2.38 | 0.97 | 8.57 |
| 0.45 | 2.60 | 1.14 | 12.52 |
| 0.50 | 2.81 | 1.30 | 16.07 |
| 0.55 | 3.00 | 1.45 | 18.87 |
| 0.60 | 3.16 | 1.58 | 20.80 |
| 0.65 | 3.31 | 1.70 | 21.90 |
| 0.70 | 3.44 | 1.81 | **22.35** |
| 0.75 | 3.56 | 1.91 | **22.30** |
| 0.80 | 3.66 | 2.00 | 21.82 |
| 0.85 | 3.77 | 2.08 | 21.01 |
| 0.90 | 3.87 | 2.17 | 19.96 |
| 0.95 | 3.96 | 2.25 | 18.81 |
| 1.00 | 4.04 | 2.32 | 17.65 |
| 1.05 | 4.11 | 2.38 | 16.56 |
| 1.10 | 4.17 | 2.43 | 15.55 |
| 1.15 | 4.22 | 2.48 | 14.55 |
| 1.20 | 4.27 | 2.52 | 13.52 |
| 1.25 | 4.32 | 2.56 | 12.44 |
| 1.30 | 4.37 | 2.61 | 11.36 |
| 1.35 | 4.42 | 2.65 | 10.34 |
| 1.40 | 4.47 | 2.70 | 9.45 |
| 1.45 | 4.52 | 2.74 | 8.74 |
| 1.50 | 4.57 | 2.79 | 8.19 |
| 1.55 | 4.62 | 2.83 | 7.79 |
| 1.60 | 4.67 | 2.88 | 7.50 |
| 1.65 | 4.72 | 2.92 | 7.29 |
| 1.70 | 4.77 | 2.97 | 7.14 |
| 1.75 | 4.81 | 3.01 | 7.04 |
| 1.80 | 4.84 | 3.03 | 6.95 |
| 1.85 | 4.87 | 3.06 | 6.85 |
| 1.90 | 4.89 | 3.08 | 6.67 |
| 1.95 | 4.93 | 3.11 | 6.37 |
| 2.00 | **4.97** | **3.15** | 5.97 |
| 2.05 | 4.97 | 3.15 | 5.54 |
| 2.10 | 4.97 | 3.15 | 5.14 |
| 2.15 | 4.97 | 3.15 | 4.73 |
| 2.20 | 4.97 | 3.15 | 4.25 |
| 2.25 | 4.97 | 3.15 | 3.65 |
| 2.30 | 4.97 | 3.15 | 2.99 |
| 2.35 | 4.97 | 3.15 | 2.34 |
| 2.40 | 4.97 | 3.15 | 1.76 |
| 2.45 | 4.97 | 3.15 | 1.28 |
| 2.50 | 4.97 | 3.15 | 0.93 |
| 2.55 | 4.97 | 3.15 | 0.68 |
| 2.60 | 4.97 | 3.15 | 0.50 |
| 2.65 | 4.97 | 3.15 | 0.37 |
| 2.70 | 4.97 | 3.15 | 0.27 |
| 2.75 | 4.97 | 3.15 | 0.20 |
| 2.80 | 4.97 | 3.15 | 0.14 |
| 2.85 | 4.97 | 3.15 | 0.10 |
| 2.90 | 4.97 | 3.15 | 0.07 |
| 2.95 | 4.97 | 3.15 | 0.05 |
| 3.00 | 4.97 | 3.15 | 0.04 |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 32.04 cfs @ | 0.69 hrs, | Volume= | 2.613 af |
| Outflow | = | 1.28 cfs @ | 2.46 hrs, | Volume= | 0.227 af, Atten= 96%, Lag= 106.3 min |
| Primary | = | 1.28 cfs @ | 2.46 hrs, | Volume= | 0.227 af |
| Secondary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 675.98' @ 2.46 hrs Surf.Area= 46,816 sf Storage= 105,647 cf

Plug-Flow detention time= 85.6 min calculated for 0.226 af (9% of inflow)
Center-of-Mass det. time= 47.1 min ( 112.5 - 65.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

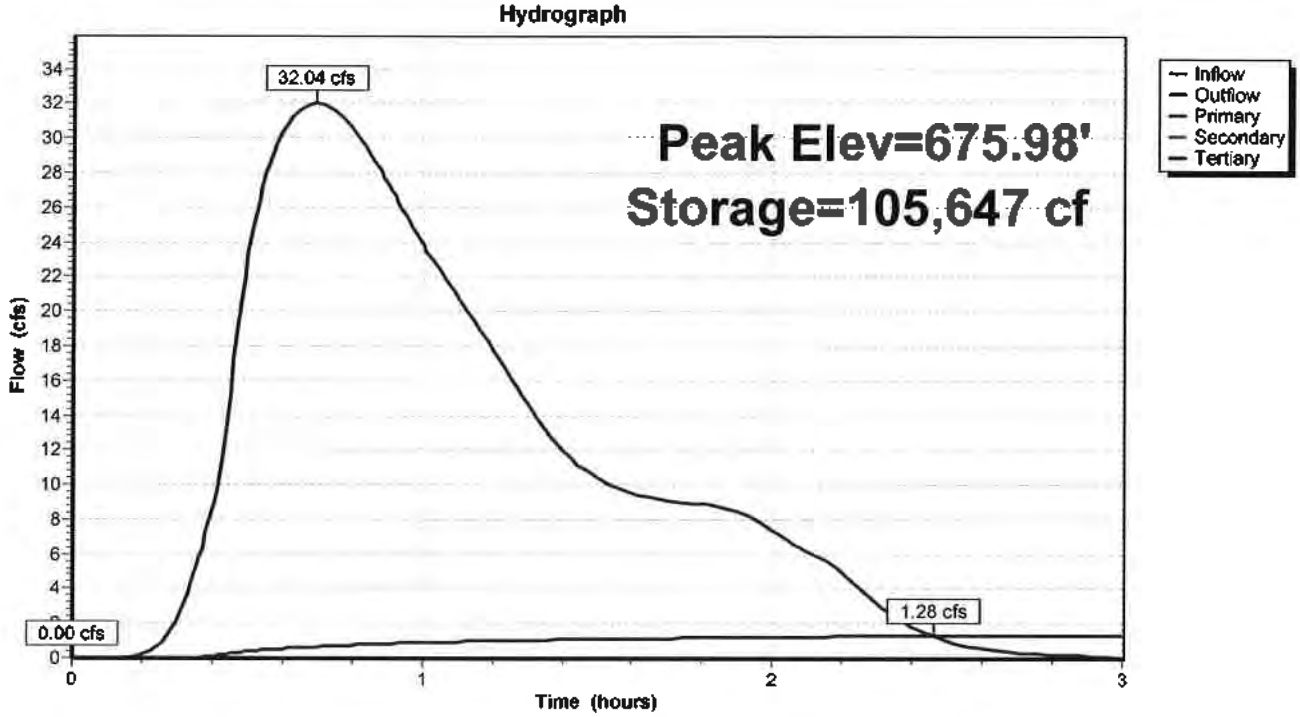
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=1.28 cfs @ 2.46 hrs HW=675.98' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.28 cfs @ 11.59 fps)

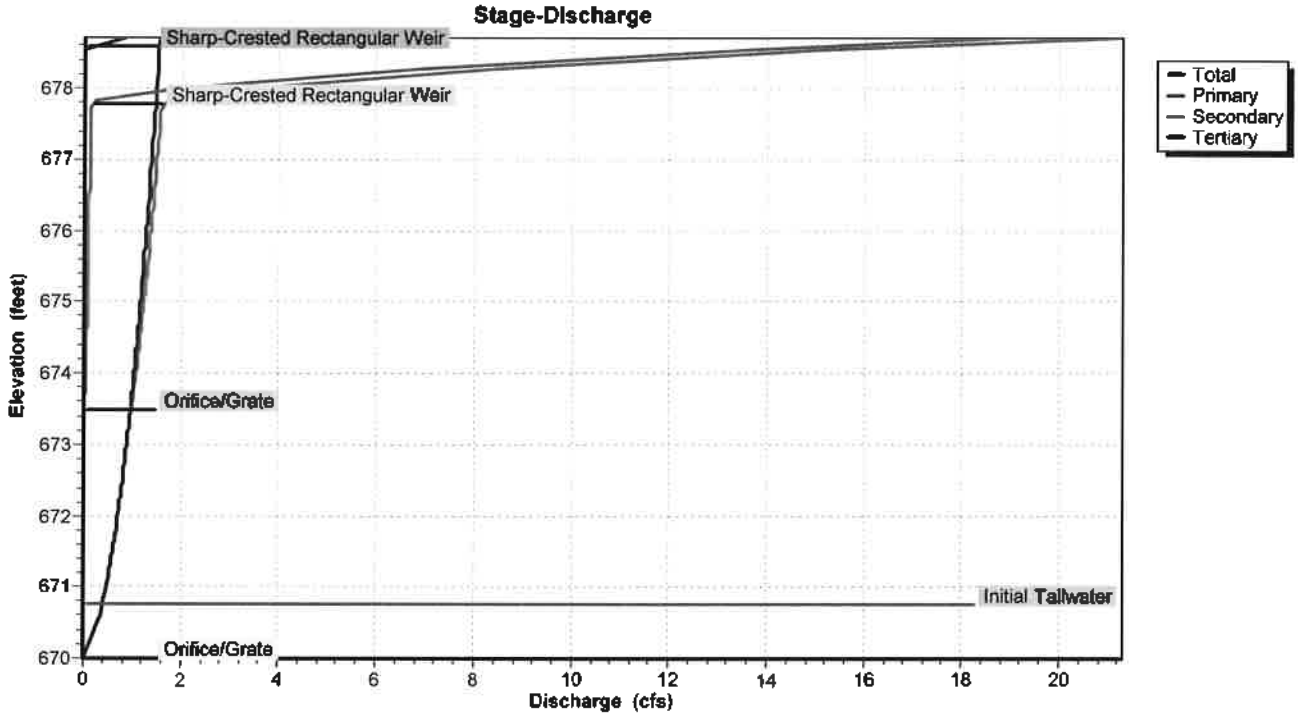
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

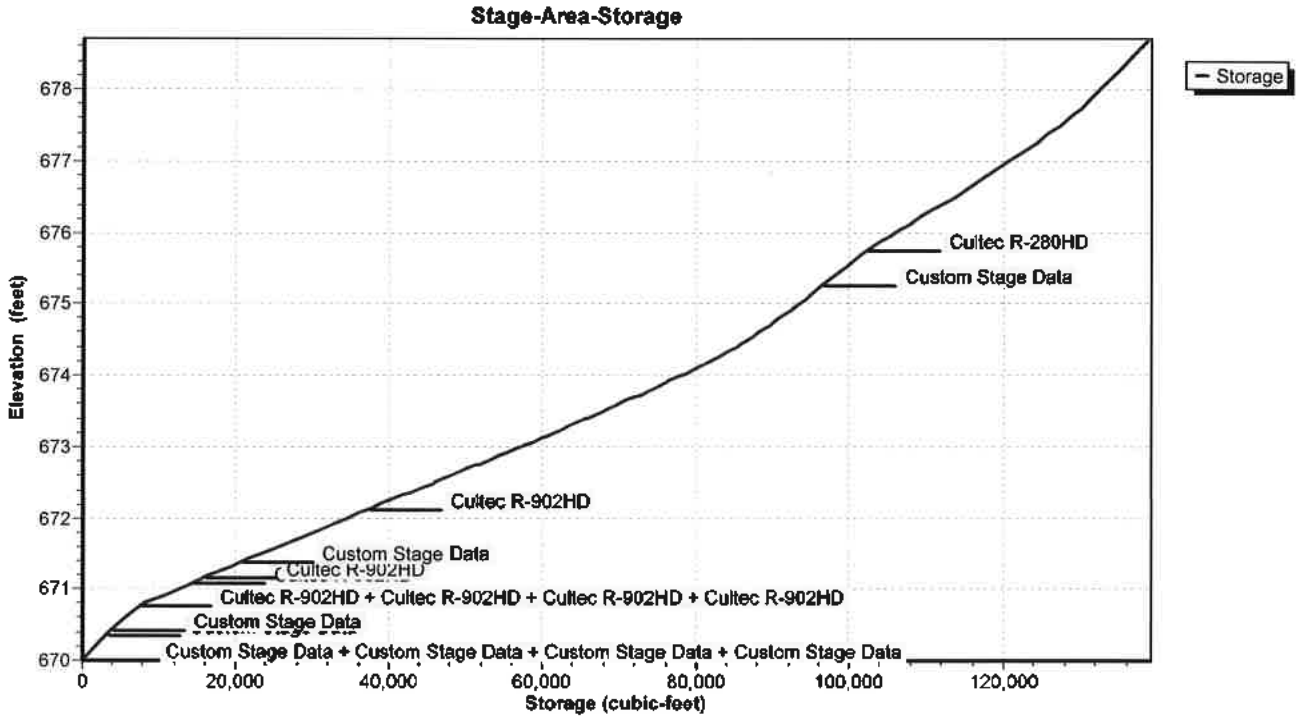
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 0.10 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.13 | 6 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.30 | 2.31 | 302 | 670.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 8.69 | 2,045 | 670.23 | 0.12 | 0.12 | 0.00 | 0.00 |
| 0.50 | 23.34 | 7,281 | 670.76 | 0.40 | 0.40 | 0.00 | 0.00 |
| 0.60 | **30.51** | 16,924 | 671.21 | 0.54 | 0.54 | 0.00 | 0.00 |
| 0.70 | **32.04** | 28,057 | 671.71 | 0.66 | 0.66 | 0.00 | 0.00 |
| 0.80 | 30.54 | 39,170 | 672.21 | 0.76 | 0.76 | 0.00 | 0.00 |
| 0.90 | 27.35 | 49,397 | 672.65 | 0.84 | 0.84 | 0.00 | 0.00 |
| 1.00 | 23.83 | 58,357 | 673.06 | 0.90 | 0.90 | 0.00 | 0.00 |
| 1.10 | 20.82 | 66,100 | 673.41 | 0.96 | 0.96 | 0.00 | 0.00 |
| 1.20 | 17.86 | 72,771 | 673.74 | 1.00 | 1.00 | 0.00 | 0.00 |
| 1.30 | 14.67 | 78,311 | 674.02 | 1.04 | 1.04 | 0.00 | 0.00 |
| 1.40 | 12.02 | 82,753 | 674.26 | 1.07 | 1.07 | 0.00 | 0.00 |
| 1.50 | 10.38 | 86,393 | 674.48 | 1.10 | 1.10 | 0.00 | 0.00 |
| 1.60 | 9.52 | 89,573 | 674.71 | 1.13 | 1.13 | 0.00 | 0.00 |
| 1.70 | 9.10 | 92,514 | 674.94 | 1.16 | 1.16 | 0.00 | 0.00 |
| 1.80 | 8.89 | 95,333 | 675.18 | 1.19 | 1.19 | 0.00 | 0.00 |
| 1.90 | 8.49 | 98,053 | 675.41 | 1.21 | 1.21 | 0.00 | 0.00 |
| 2.00 | 7.39 | 100,508 | 675.62 | 1.24 | 1.24 | 0.00 | 0.00 |
| 2.10 | 6.18 | 102,512 | 675.78 | 1.26 | 1.26 | 0.00 | 0.00 |
| 2.20 | 4.94 | 104,095 | 675.88 | 1.27 | 1.27 | 0.00 | 0.00 |
| 2.30 | 3.17 | 105,134 | 675.95 | 1.28 | 1.28 | 0.00 | 0.00 |
| 2.40 | 1.84 | **105,679** | **675.97** | **1.28** | **1.28** | 0.00 | 0.00 |
| 2.50 | 1.01 | **105,630** | **675.98** | **1.28** | **1.28** | 0.00 | 0.00 |
| 2.60 | 0.58 | 105,455 | 675.97 | 1.28 | 1.28 | 0.00 | 0.00 |
| 2.70 | 0.34 | 105,160 | 675.95 | 1.28 | 1.28 | 0.00 | 0.00 |
| 2.80 | 0.21 | 104,799 | 675.92 | 1.27 | 1.27 | 0.00 | 0.00 |
| 2.90 | 0.14 | 104,403 | 675.90 | 1.27 | 1.27 | 0.00 | 0.00 |
| 3.00 | 0.00 | 103,989 | 675.87 | 1.27 | 1.27 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 16.68 | 1.54 | 15.13 | 0.00 |
| 678.80 | **24.77** | **1.56** | **21.42** | **1.79** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 11.35 cfs @ | 0.60 hrs, | Volume= | 0.918 af |
| Outflow | = | 11.26 cfs @ | 0.65 hrs, | Volume= | 0.905 af, Atten= 1%, Lag= 2.9 min |
| Primary | = | 1.42 cfs @ | 0.65 hrs, | Volume= | 0.258 af |
| Secondary | = | 9.85 cfs @ | 0.65 hrs, | Volume= | 0.647 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 678.40' @ 0.65 hrs Surf.Area= 3,578 sf Storage= 4,601 cf

Plug-Flow detention time= 11.8 min calculated for 0.905 af (99% of inflow)
Center-of-Mass det. time= 10.6 min ( 70.3 - 59.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

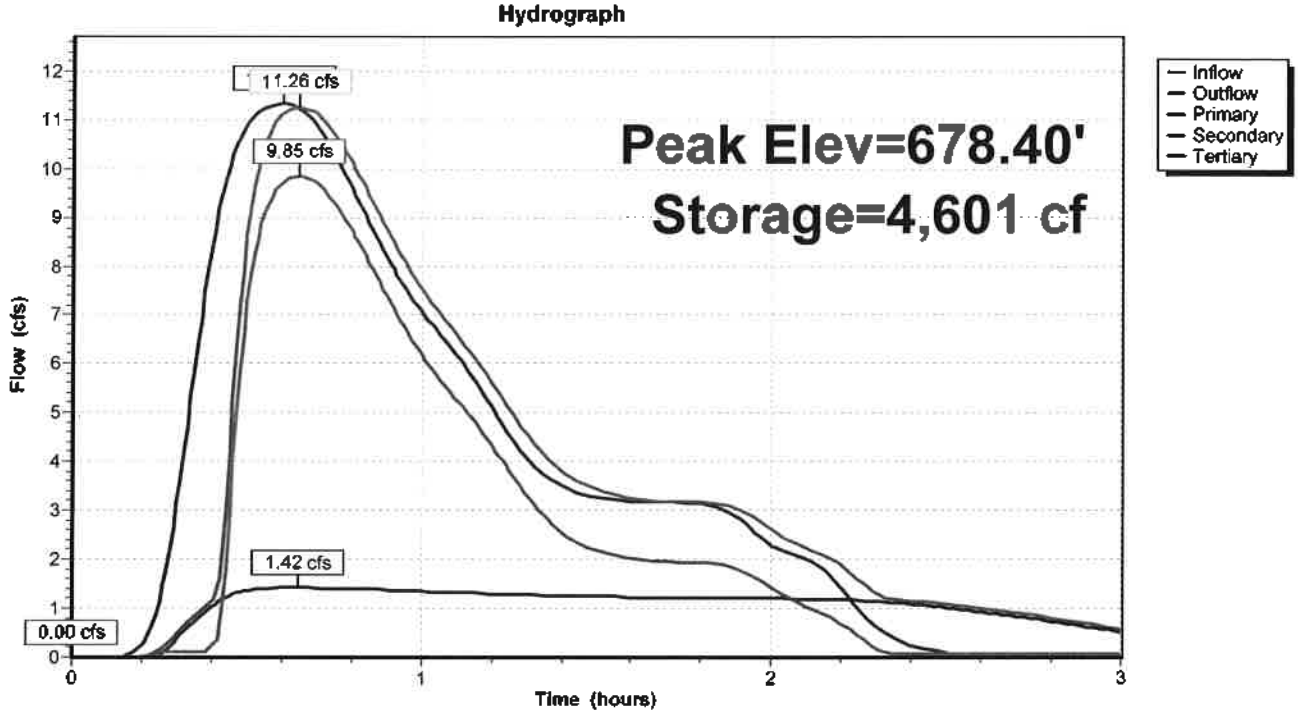
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=1.42 cfs @ 0.65 hrs HW=678.40' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.42 cfs @ 6.16 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

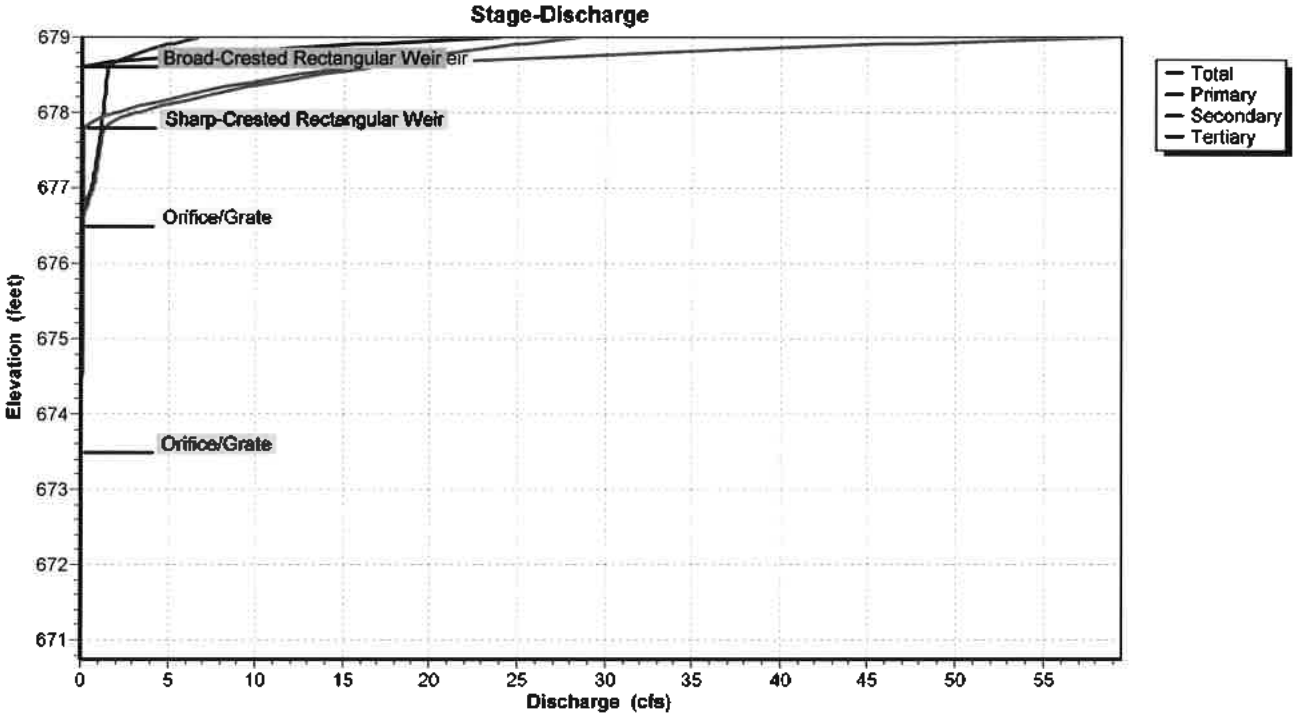
**Secondary OutFlow** Max=9.84 cfs @ 0.65 hrs HW=678.40' TW=671.44' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.13 cfs @ 10.60 fps)
└─**5=Sharp-Crested Rectangular Weir** (Weir Controls 9.71 cfs @ 2.73 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

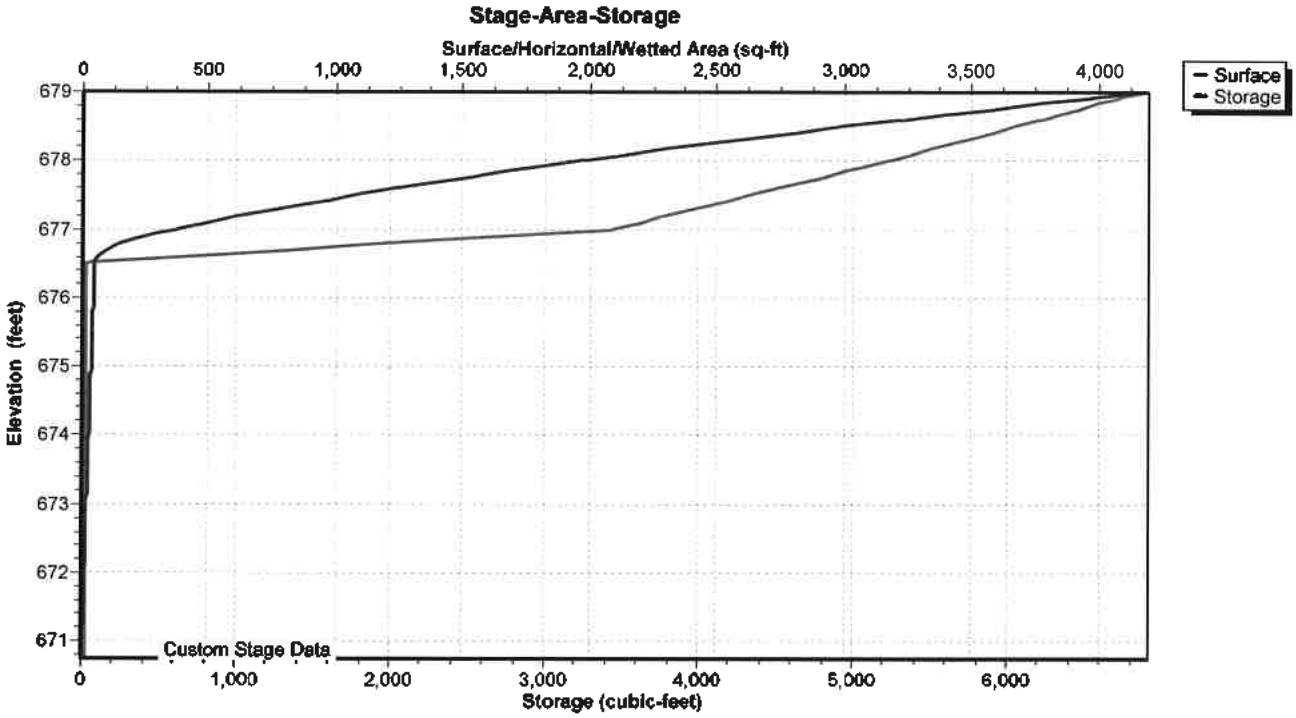
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.10 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.22 | 11 | 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.30 | 3.16 | 386 | 676.88 | 0.47 | 0.36 | 0.11 | 0.00 |
| 0.40 | 8.39 | 2,109 | 677.62 | 1.14 | 1.02 | 0.12 | 0.00 |
| 0.50 | 10.90 | 4,216 | 678.30 | 8.63 | 1.37 | 7.26 | 0.00 |
| 0.60 | **11.35** | **4,582** | **678.40** | **11.12** | **1.42** | **9.71** | 0.00 |
| 0.70 | 10.86 | **4,579** | **678.40** | **11.10** | **1.42** | **9.69** | 0.00 |
| 0.80 | 9.59 | 4,438 | 678.36 | 10.12 | 1.40 | 8.72 | 0.00 |
| 0.90 | 8.19 | 4,236 | 678.30 | 8.77 | 1.37 | 7.39 | 0.00 |
| 1.00 | 7.06 | 4,043 | 678.25 | 7.53 | 1.35 | 6.18 | 0.00 |
| 1.10 | 6.19 | 3,891 | 678.20 | 6.60 | 1.33 | 5.27 | 0.00 |
| 1.20 | 5.12 | 3,727 | 678.15 | 5.64 | 1.30 | 4.34 | 0.00 |
| 1.30 | 4.08 | 3,535 | 678.09 | 4.59 | 1.28 | 3.32 | 0.00 |
| 1.40 | 3.51 | 3,383 | 678.05 | 3.82 | 1.25 | 2.56 | 0.00 |
| 1.50 | 3.28 | 3,301 | 678.02 | 3.43 | 1.24 | 2.19 | 0.00 |
| 1.60 | 3.20 | 3,264 | 678.01 | 3.26 | 1.23 | 2.02 | 0.00 |
| 1.70 | 3.17 | 3,250 | 678.01 | 3.19 | 1.23 | 1.96 | 0.00 |
| 1.80 | 3.15 | 3,246 | 678.00 | 3.17 | 1.23 | 1.94 | 0.00 |
| 1.90 | 2.87 | 3,219 | 678.00 | 3.05 | 1.23 | 1.82 | 0.00 |
| 2.00 | 2.30 | 3,122 | 677.96 | 2.63 | 1.21 | 1.42 | 0.00 |
| 2.10 | 2.02 | 3,021 | 677.93 | 2.24 | 1.20 | 1.04 | 0.00 |
| 2.20 | 1.41 | 2,916 | 677.90 | 1.87 | 1.18 | 0.69 | 0.00 |
| 2.30 | 0.63 | 2,707 | 677.83 | 1.32 | 1.14 | 0.18 | 0.00 |
| 2.40 | 0.25 | 2,423 | 677.73 | 1.17 | 1.09 | 0.08 | 0.00 |
| 2.50 | 0.10 | 2,077 | 677.61 | 1.09 | 1.02 | 0.08 | 0.00 |
| 2.60 | 0.04 | 1,722 | 677.48 | 1.00 | 0.93 | 0.07 | 0.00 |
| 2.70 | 0.01 | 1,385 | 677.34 | 0.91 | 0.84 | 0.07 | 0.00 |
| 2.80 | 0.00 | 1,077 | 677.21 | 0.81 | 0.74 | 0.07 | 0.00 |
| 2.90 | 0.00 | 805 | 677.09 | 0.70 | 0.63 | 0.06 | 0.00 |
| 3.00 | 0.00 | 574 | 676.98 | 0.58 | 0.51 | 0.06 | 0.00 |

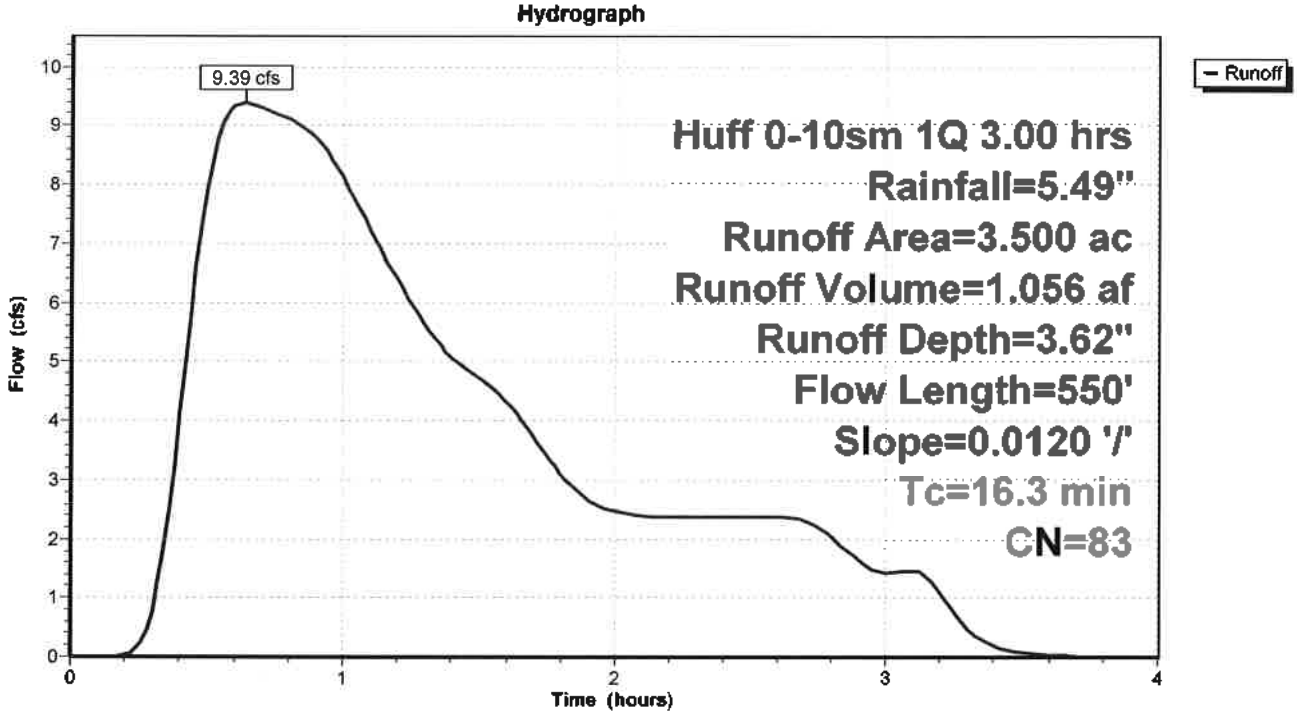
## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 5.62 | 1.30 | 4.31 | 0.00 |
| 678.35 | 9.91 | 1.39 | 8.51 | 0.00 |
| 678.55 | 15.18 | 1.48 | 13.70 | 0.00 |
| 678.75 | 27.96 | 2.72 | 19.77 | 5.47 |
| 678.95 | **52.16** | **5.83** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

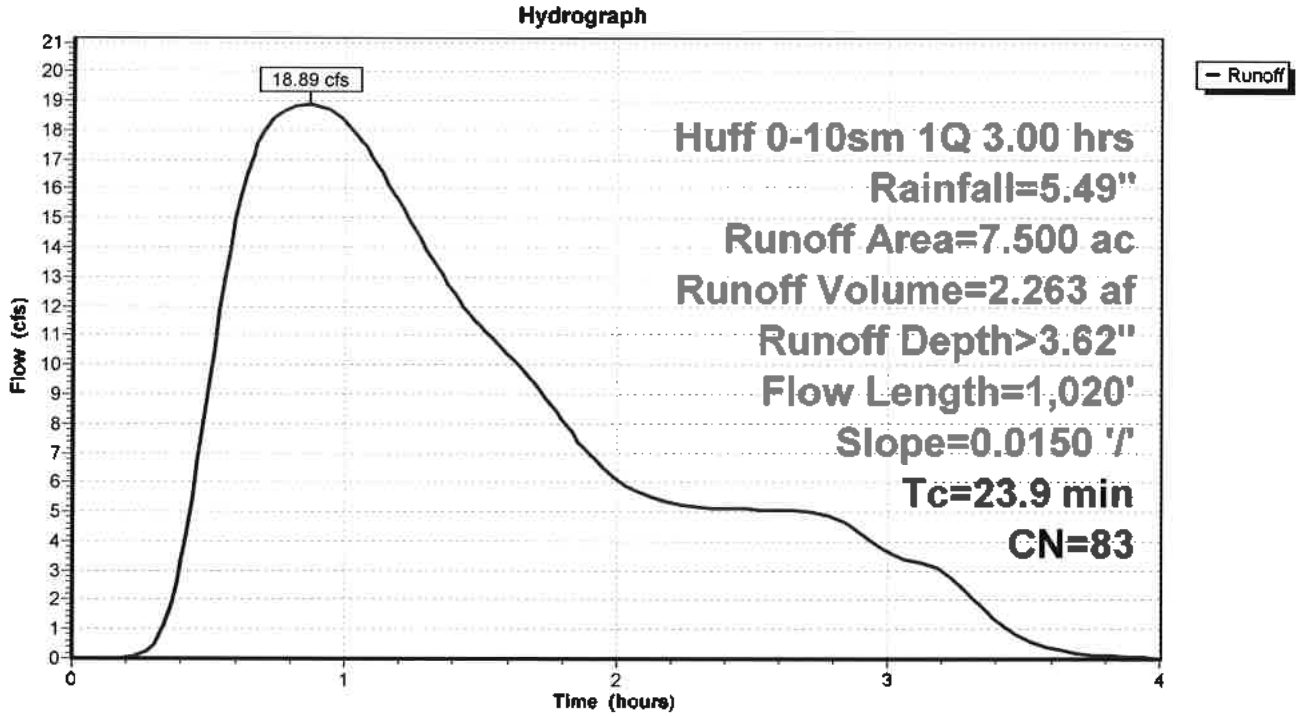
## Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 2.08 | 4.92 | 3.10 | 2.40 |
| 0.04 | 0.03 | 0.00 | 0.00 | 2.12 | 4.95 | 3.13 | 2.39 |
| 0.08 | 0.13 | 0.00 | 0.00 | 2.16 | 4.98 | 3.16 | 2.38 |
| 0.12 | 0.28 | 0.00 | 0.00 | 2.20 | 5.01 | 3.18 | 2.37 |
| 0.16 | 0.50 | 0.00 | 0.00 | 2.24 | 5.04 | 3.21 | 2.36 |
| 0.20 | 0.74 | 0.05 | 0.01 | 2.28 | 5.07 | 3.24 | 2.36 |
| 0.24 | 0.99 | 0.13 | 0.11 | 2.32 | 5.10 | 3.26 | 2.36 |
| 0.28 | 1.23 | 0.24 | 0.45 | 2.36 | 5.13 | 3.29 | 2.36 |
| 0.32 | 1.48 | 0.37 | 1.21 | 2.40 | 5.16 | 3.32 | 2.36 |
| 0.36 | 1.70 | 0.50 | 2.46 | 2.44 | 5.19 | 3.34 | 2.36 |
| 0.40 | 1.90 | 0.63 | 4.06 | 2.48 | 5.22 | 3.37 | 2.36 |
| 0.44 | 2.07 | 0.74 | 5.77 | 2.52 | 5.25 | 3.40 | 2.37 |
| 0.48 | 2.22 | 0.85 | 7.29 | 2.56 | 5.28 | 3.42 | 2.37 |
| 0.52 | 2.36 | 0.95 | 8.41 | 2.60 | 5.30 | 3.45 | 2.37 |
| 0.56 | 2.50 | 1.06 | 9.06 | 2.64 | 5.32 | 3.47 | 2.36 |
| 0.60 | 2.63 | 1.16 | 9.34 | 2.68 | 5.34 | 3.49 | 2.34 |
| 0.64 | 2.77 | 1.26 | **9.39** | 2.72 | 5.36 | 3.50 | 2.29 |
| 0.68 | 2.89 | 1.36 | 9.35 | 2.76 | 5.37 | 3.51 | 2.18 |
| 0.72 | 3.02 | 1.46 | 9.27 | 2.80 | 5.39 | 3.53 | 2.04 |
| 0.76 | 3.13 | 1.56 | 9.19 | 2.84 | 5.40 | 3.54 | 1.86 |
| 0.80 | 3.25 | 1.65 | 9.11 | 2.88 | 5.42 | 3.56 | 1.70 |
| 0.84 | 3.35 | 1.73 | 9.01 | 2.92 | 5.44 | 3.57 | 1.56 |
| 0.88 | 3.45 | 1.82 | 8.87 | 2.96 | 5.46 | 3.60 | 1.46 |
| 0.92 | 3.54 | 1.89 | 8.68 | 3.00 | **5.49** | **3.62** | 1.42 |
| 0.96 | 3.62 | 1.96 | 8.43 | 3.04 | 5.49 | 3.62 | 1.44 |
| 1.00 | 3.70 | 2.03 | 8.12 | 3.08 | 5.49 | 3.62 | 1.48 |
| 1.04 | 3.78 | 2.10 | 7.77 | 3.12 | 5.49 | 3.62 | 1.46 |
| 1.08 | 3.85 | 2.16 | 7.40 | 3.16 | 5.49 | 3.62 | 1.32 |
| 1.12 | 3.92 | 2.22 | 7.04 | 3.20 | 5.49 | 3.62 | 1.09 |
| 1.16 | 3.99 | 2.27 | 6.71 | 3.24 | 5.49 | 3.62 | 0.82 |
| 1.20 | 4.05 | 2.33 | 6.39 | 3.28 | 5.49 | 3.62 | 0.58 |
| 1.24 | 4.11 | 2.38 | 6.09 | 3.32 | 5.49 | 3.62 | 0.40 |
| 1.28 | 4.17 | 2.43 | 5.79 | 3.36 | 5.49 | 3.62 | 0.28 |
| 1.32 | 4.23 | 2.48 | 5.52 | 3.40 | 5.49 | 3.62 | 0.19 |
| 1.36 | 4.28 | 2.54 | 5.28 | 3.44 | 5.49 | 3.62 | 0.13 |
| 1.40 | 4.34 | 2.58 | 5.07 | 3.48 | 5.49 | 3.62 | 0.09 |
| 1.44 | 4.39 | 2.63 | 4.92 | 3.52 | 5.49 | 3.62 | 0.06 |
| 1.48 | 4.44 | 2.67 | 4.79 | 3.56 | 5.49 | 3.62 | 0.04 |
| 1.52 | 4.49 | 2.71 | 4.66 | 3.60 | 5.49 | 3.62 | 0.03 |
| 1.56 | 4.53 | 2.75 | 4.51 | 3.64 | 5.49 | 3.62 | 0.02 |
| 1.60 | 4.56 | 2.78 | 4.33 | 3.68 | 5.49 | 3.62 | 0.01 |
| 1.64 | 4.60 | 2.81 | 4.12 | 3.72 | 5.49 | 3.62 | 0.01 |
| 1.68 | 4.62 | 2.84 | 3.88 | 3.76 | 5.49 | 3.62 | 0.01 |
| 1.72 | 4.65 | 2.86 | 3.62 | 3.80 | 5.49 | 3.62 | 0.00 |
| 1.76 | 4.68 | 2.89 | 3.36 | 3.84 | 5.49 | 3.62 | 0.00 |
| 1.80 | 4.71 | 2.92 | 3.11 | 3.88 | 5.49 | 3.62 | 0.00 |
| 1.84 | 4.74 | 2.94 | 2.90 | 3.92 | 5.49 | 3.62 | 0.00 |
| 1.88 | 4.77 | 2.97 | 2.73 | 3.96 | 5.49 | 3.62 | 0.00 |
| 1.92 | 4.80 | 3.00 | 2.61 | 4.00 | 5.49 | 3.62 | 0.00 |
| 1.96 | 4.83 | 3.02 | 2.53 | | | | |
| 2.00 | 4.86 | 3.05 | 2.47 | | | | |
| 2.04 | 4.89 | 3.08 | 2.43 | | | | |

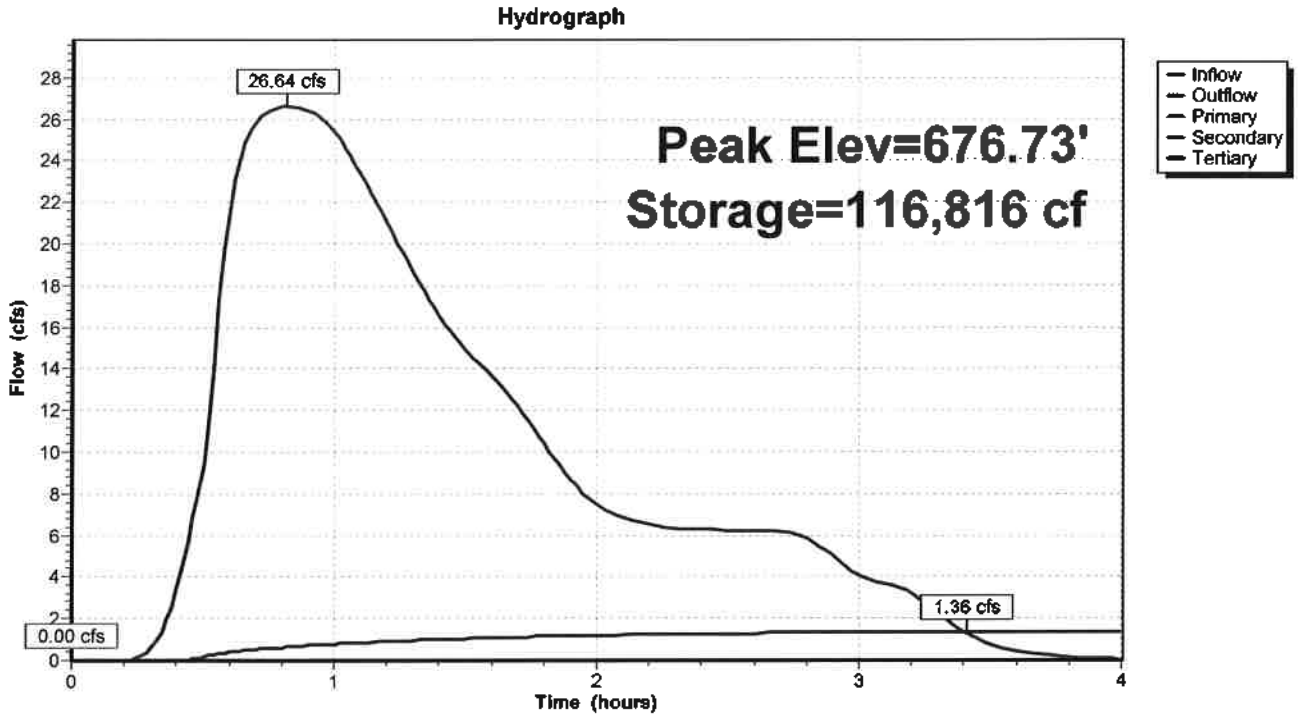
## Subcatchment 7S: South Property



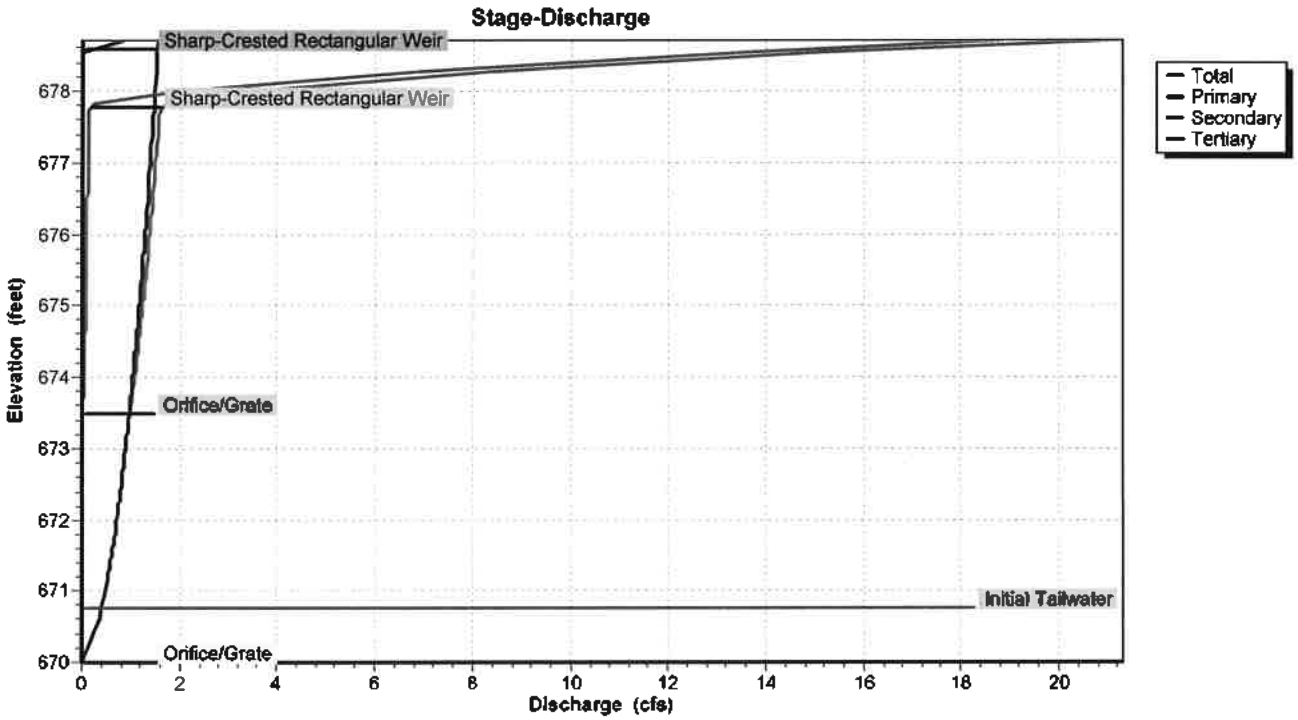
## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 2.08 | 4.92 | 3.10 | 5.67 |
| 0.04 | 0.03 | 0.00 | 0.00 | 2.12 | 4.95 | 3.13 | 5.52 |
| 0.08 | 0.13 | 0.00 | 0.00 | 2.16 | 4.98 | 3.16 | 5.42 |
| 0.12 | 0.28 | 0.00 | 0.00 | 2.20 | 5.01 | 3.18 | 5.33 |
| 0.16 | 0.50 | 0.00 | 0.00 | 2.24 | 5.04 | 3.21 | 5.26 |
| 0.20 | 0.74 | 0.05 | 0.01 | 2.28 | 5.07 | 3.24 | 5.21 |
| 0.24 | 0.99 | 0.13 | 0.06 | 2.32 | 5.10 | 3.26 | 5.18 |
| 0.28 | 1.23 | 0.24 | 0.28 | 2.36 | 5.13 | 3.29 | 5.15 |
| 0.32 | 1.48 | 0.37 | 0.79 | 2.40 | 5.16 | 3.32 | 5.12 |
| 0.36 | 1.70 | 0.50 | 1.80 | 2.44 | 5.19 | 3.34 | 5.11 |
| 0.40 | 1.90 | 0.63 | 3.37 | 2.48 | 5.22 | 3.37 | 5.10 |
| 0.44 | 2.07 | 0.74 | 5.49 | 2.52 | 5.25 | 3.40 | 5.09 |
| 0.48 | 2.22 | 0.85 | 7.97 | 2.56 | 5.28 | 3.42 | 5.09 |
| 0.52 | 2.36 | 0.95 | 10.54 | 2.60 | 5.30 | 3.45 | 5.08 |
| 0.56 | 2.50 | 1.06 | 12.95 | 2.64 | 5.32 | 3.47 | 5.08 |
| 0.60 | 2.63 | 1.16 | 14.97 | 2.68 | 5.34 | 3.49 | 5.07 |
| 0.64 | 2.77 | 1.26 | 16.49 | 2.72 | 5.36 | 3.50 | 5.03 |
| 0.68 | 2.89 | 1.36 | 17.55 | 2.76 | 5.37 | 3.51 | 4.95 |
| 0.72 | 3.02 | 1.46 | 18.24 | 2.80 | 5.39 | 3.53 | 4.82 |
| 0.76 | 3.13 | 1.56 | 18.61 | 2.84 | 5.40 | 3.54 | 4.63 |
| 0.80 | 3.25 | 1.65 | 18.80 | 2.88 | 5.42 | 3.56 | 4.38 |
| 0.84 | 3.35 | 1.73 | **18.88** | 2.92 | 5.44 | 3.57 | 4.12 |
| 0.88 | 3.45 | 1.82 | **18.89** | 2.96 | 5.46 | 3.60 | 3.86 |
| 0.92 | 3.54 | 1.89 | 18.79 | 3.00 | **5.49** | **3.62** | 3.64 |
| 0.96 | 3.62 | 1.96 | 18.59 | 3.04 | 5.49 | 3.62 | 3.47 |
| 1.00 | 3.70 | 2.03 | 18.29 | 3.08 | 5.49 | 3.62 | 3.36 |
| 1.04 | 3.78 | 2.10 | 17.90 | 3.12 | 5.49 | 3.62 | 3.28 |
| 1.08 | 3.85 | 2.16 | 17.39 | 3.16 | 5.49 | 3.62 | 3.18 |
| 1.12 | 3.92 | 2.22 | 16.80 | 3.20 | 5.49 | 3.62 | 3.00 |
| 1.16 | 3.99 | 2.27 | 16.18 | 3.24 | 5.49 | 3.62 | 2.72 |
| 1.20 | 4.05 | 2.33 | 15.55 | 3.28 | 5.49 | 3.62 | 2.38 |
| 1.24 | 4.11 | 2.38 | 14.90 | 3.32 | 5.49 | 3.62 | 2.01 |
| 1.28 | 4.17 | 2.43 | 14.25 | 3.36 | 5.49 | 3.62 | 1.64 |
| 1.32 | 4.23 | 2.48 | 13.63 | 3.40 | 5.49 | 3.62 | 1.30 |
| 1.36 | 4.28 | 2.54 | 13.04 | 3.44 | 5.49 | 3.62 | 1.01 |
| 1.40 | 4.34 | 2.58 | 12.49 | 3.48 | 5.49 | 3.62 | 0.78 |
| 1.44 | 4.39 | 2.63 | 11.98 | 3.52 | 5.49 | 3.62 | 0.61 |
| 1.48 | 4.44 | 2.67 | 11.53 | 3.56 | 5.49 | 3.62 | 0.48 |
| 1.52 | 4.49 | 2.71 | 11.14 | 3.60 | 5.49 | 3.62 | 0.37 |
| 1.56 | 4.53 | 2.75 | 10.76 | 3.64 | 5.49 | 3.62 | 0.29 |
| 1.60 | 4.56 | 2.78 | 10.39 | 3.68 | 5.49 | 3.62 | 0.23 |
| 1.64 | 4.60 | 2.81 | 10.00 | 3.72 | 5.49 | 3.62 | 0.17 |
| 1.68 | 4.62 | 2.84 | 9.60 | 3.76 | 5.49 | 3.62 | 0.14 |
| 1.72 | 4.65 | 2.86 | 9.15 | 3.80 | 5.49 | 3.62 | 0.10 |
| 1.76 | 4.68 | 2.89 | 8.66 | 3.84 | 5.49 | 3.62 | 0.08 |
| 1.80 | 4.71 | 2.92 | 8.16 | 3.88 | 5.49 | 3.62 | 0.06 |
| 1.84 | 4.74 | 2.94 | 7.66 | 3.92 | 5.49 | 3.62 | 0.05 |
| 1.88 | 4.77 | 2.97 | 7.19 | 3.96 | 5.49 | 3.62 | 0.04 |
| 1.92 | 4.80 | 3.00 | 6.76 | 4.00 | 5.49 | 3.62 | 0.03 |
| 1.96 | 4.83 | 3.02 | 6.40 | | | | |
| 2.00 | 4.86 | 3.05 | 6.10 | | | | |
| 2.04 | 4.89 | 3.08 | 5.86 | | | | |

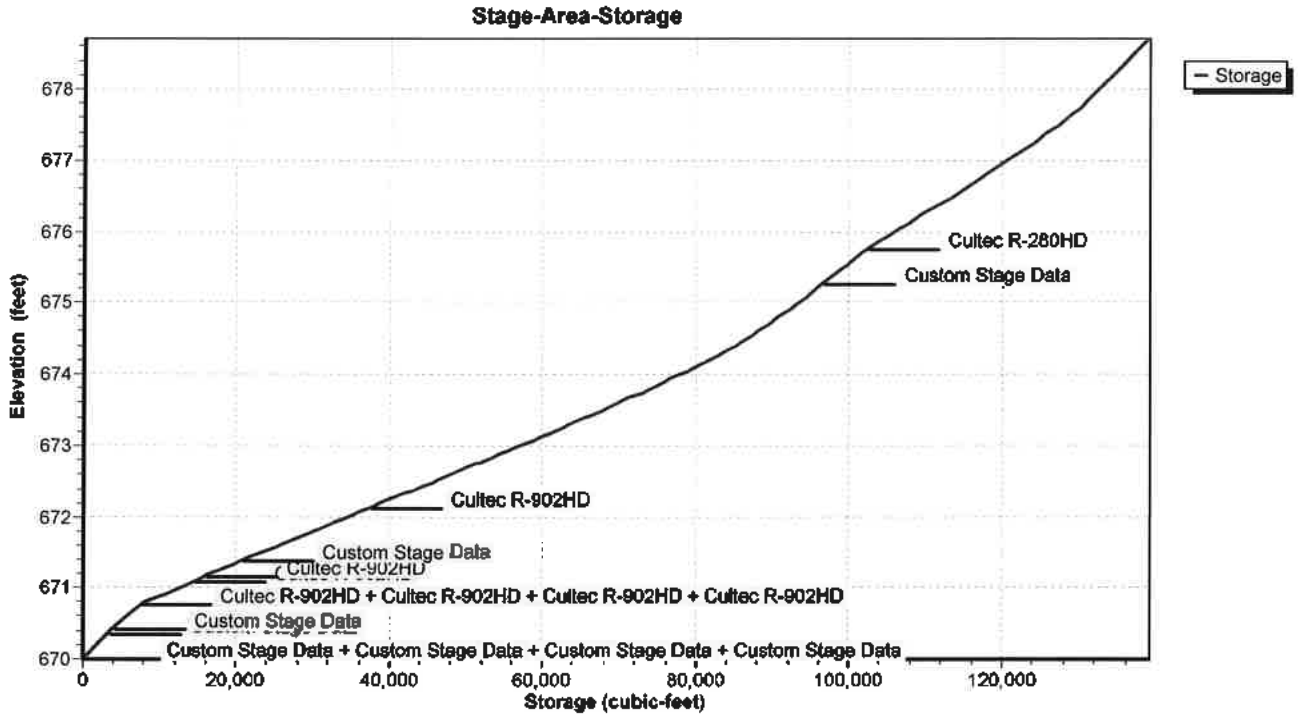
## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 0.10 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.01 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.30 | 0.56 | 37 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 3.48 | 562 | 670.06 | 0.01 | 0.01 | 0.00 | 0.00 |
| 0.50 | 9.39 | 2,594 | 670.29 | 0.17 | 0.17 | 0.00 | 0.00 |
| 0.60 | 21.64 | 7,653 | 670.77 | 0.41 | 0.41 | 0.00 | 0.00 |
| 0.70 | 25.86 | 16,068 | 671.17 | 0.53 | 0.53 | 0.00 | 0.00 |
| 0.80 | **26.61** | 25,327 | 671.59 | 0.63 | 0.63 | 0.00 | 0.00 |
| 0.90 | **26.40** | 34,659 | 672.01 | 0.72 | 0.72 | 0.00 | 0.00 |
| 1.00 | 25.35 | 43,775 | 672.41 | 0.79 | 0.79 | 0.00 | 0.00 |
| 1.10 | 23.36 | 52,344 | 672.79 | 0.86 | 0.86 | 0.00 | 0.00 |
| 1.20 | 20.98 | 60,095 | 673.14 | 0.91 | 0.91 | 0.00 | 0.00 |
| 1.30 | 18.63 | 66,966 | 673.46 | 0.96 | 0.96 | 0.00 | 0.00 |
| 1.40 | 16.53 | 73,004 | 673.75 | 1.00 | 1.00 | 0.00 | 0.00 |
| 1.50 | 14.94 | 78,343 | 674.02 | 1.04 | 1.04 | 0.00 | 0.00 |
| 1.60 | 13.67 | 83,159 | 674.28 | 1.08 | 1.08 | 0.00 | 0.00 |
| 1.70 | 12.18 | 87,484 | 674.55 | 1.11 | 1.11 | 0.00 | 0.00 |
| 1.80 | 10.38 | 91,211 | 674.84 | 1.15 | 1.15 | 0.00 | 0.00 |
| 1.90 | 8.68 | 94,276 | 675.09 | 1.18 | 1.18 | 0.00 | 0.00 |
| 2.00 | 7.50 | 96,785 | 675.30 | 1.20 | 1.20 | 0.00 | 0.00 |
| 2.10 | 6.85 | 98,942 | 675.48 | 1.22 | 1.22 | 0.00 | 0.00 |
| 2.20 | 6.52 | 100,909 | 675.65 | 1.24 | 1.24 | 0.00 | 0.00 |
| 2.30 | 6.36 | 102,779 | 675.79 | 1.26 | 1.26 | 0.00 | 0.00 |
| 2.40 | 6.28 | 104,601 | 675.91 | 1.27 | 1.27 | 0.00 | 0.00 |
| 2.50 | 6.25 | 106,398 | 676.03 | 1.29 | 1.29 | 0.00 | 0.00 |
| 2.60 | 6.24 | 108,183 | 676.14 | 1.30 | 1.30 | 0.00 | 0.00 |
| 2.70 | 6.20 | 109,961 | 676.26 | 1.31 | 1.31 | 0.00 | 0.00 |
| 2.80 | 5.85 | 111,685 | 676.38 | 1.32 | 1.32 | 0.00 | 0.00 |
| 2.90 | 4.99 | 113,199 | 676.48 | 1.33 | 1.33 | 0.00 | 0.00 |
| 3.00 | 4.09 | 114,374 | 676.56 | 1.34 | 1.34 | 0.00 | 0.00 |
| 3.10 | 3.67 | 115,287 | 676.62 | 1.35 | 1.35 | 0.00 | 0.00 |
| 3.20 | 3.26 | 116,080 | 676.67 | 1.35 | 1.35 | 0.00 | 0.00 |
| 3.30 | 2.26 | 116,624 | 676.71 | 1.36 | 1.36 | 0.00 | 0.00 |
| 3.40 | 1.36 | **116,814** | **676.72** | **1.36** | **1.36** | 0.00 | 0.00 |
| 3.50 | 0.74 | 116,714 | 676.72 | 1.36 | 1.36 | 0.00 | 0.00 |
| 3.60 | 0.42 | 116,441 | 676.70 | 1.36 | 1.36 | 0.00 | 0.00 |
| 3.70 | 0.25 | 116,077 | 676.67 | 1.35 | 1.35 | 0.00 | 0.00 |
| 3.80 | 0.15 | 115,662 | 676.65 | 1.35 | 1.35 | 0.00 | 0.00 |
| 3.90 | 0.09 | 115,221 | 676.62 | 1.35 | 1.35 | 0.00 | 0.00 |
| 4.00 | 0.00 | 114,764 | 676.58 | 1.35 | 1.35 | 0.00 | 0.00 |

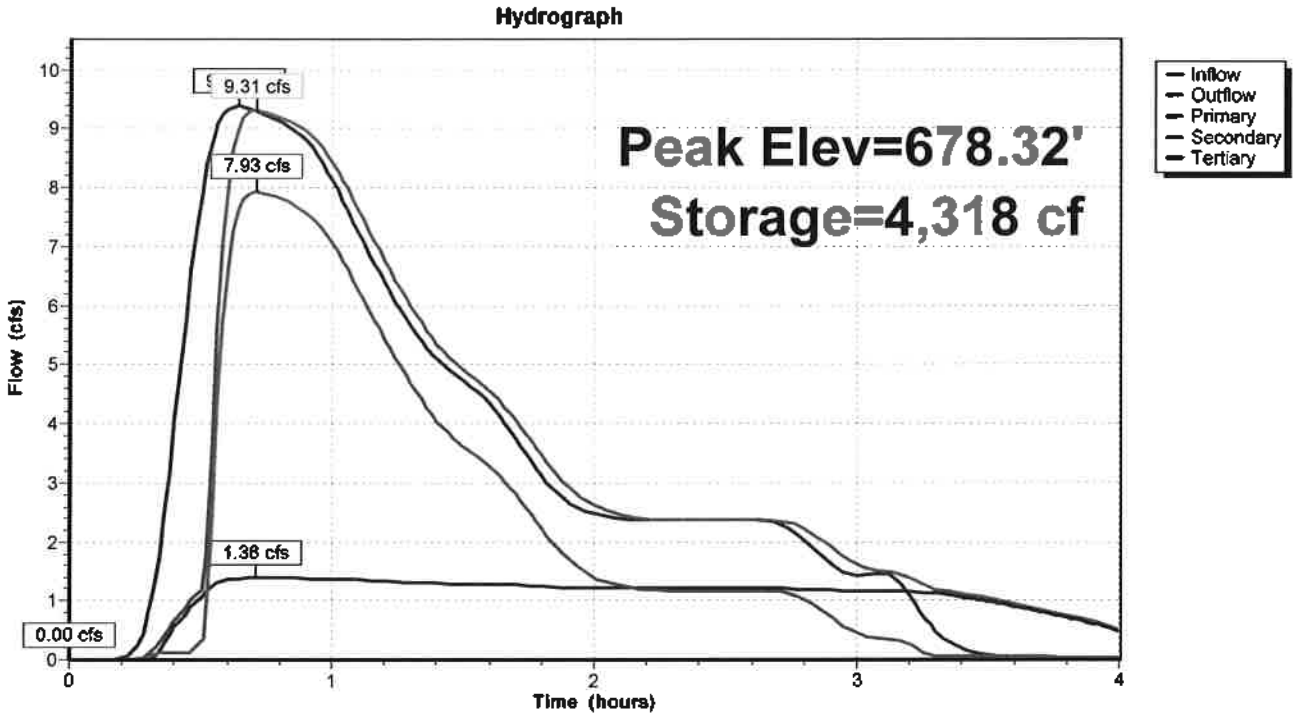
## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 16.68 | 1.54 | 15.13 | 0.00 |
| 678.80 | **24.77** | **1.56** | **21.42** | **1.79** |

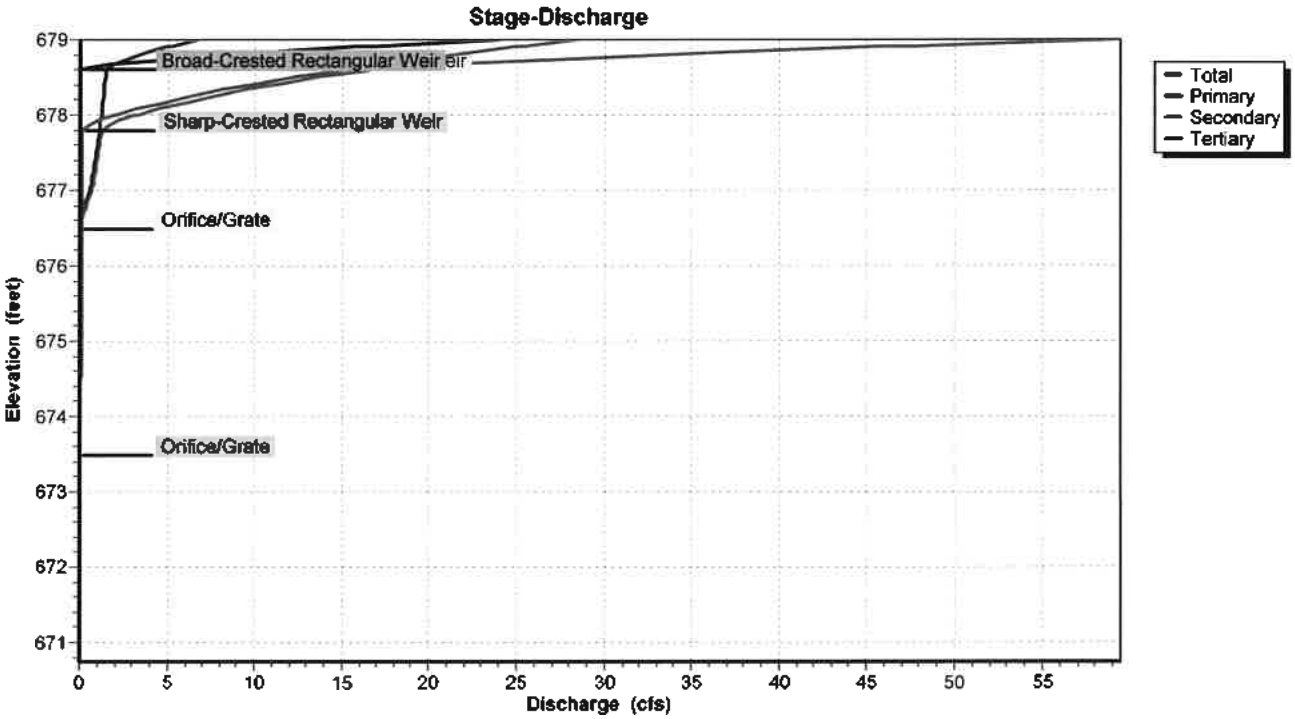
## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

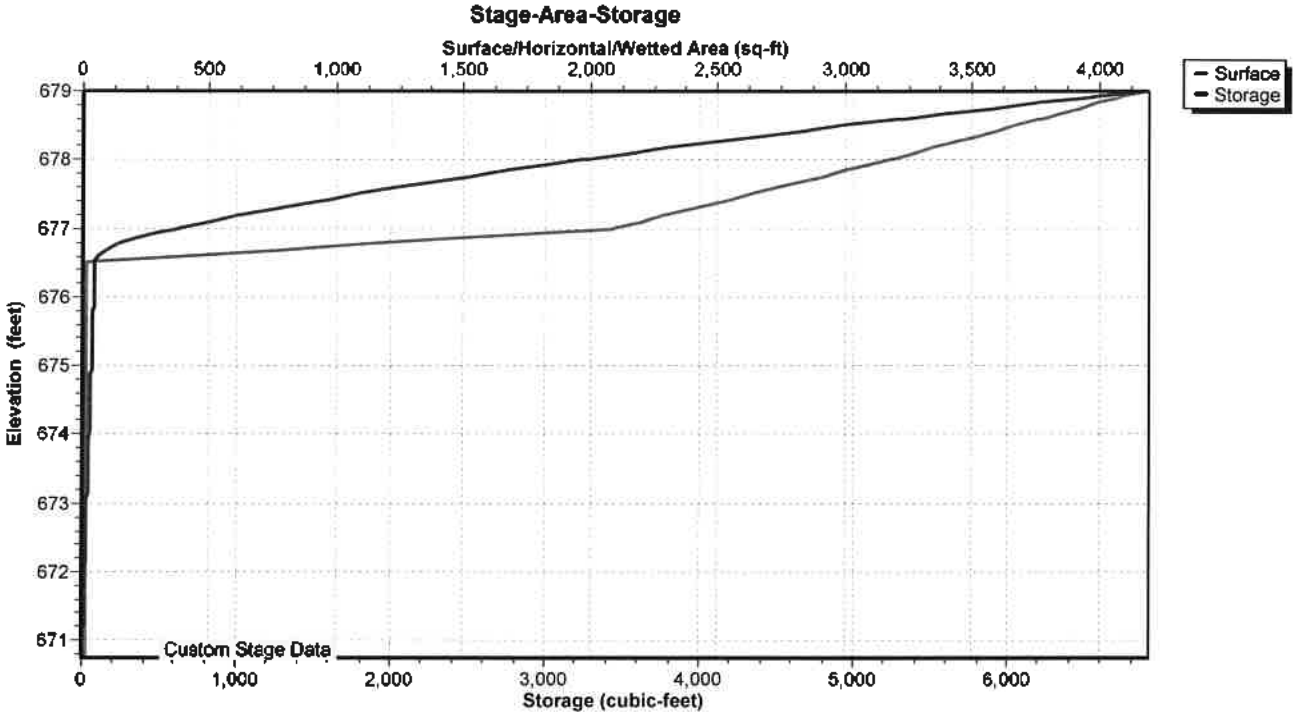
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.10 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.01 | 0 | 670.76 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.30 | 0.77 | 61 | 675.11 | 0.07 | 0.00 | 0.07 | 0.00 |
| 0.40 | 4.06 | 643 | 677.02 | 0.67 | 0.56 | 0.11 | 0.00 |
| 0.50 | 7.90 | 2,383 | 677.72 | 1.20 | 1.08 | 0.12 | 0.00 |
| 0.60 | **9.34** | 4,123 | 678.27 | 8.04 | 1.36 | 6.68 | 0.00 |
| 0.70 | **9.31** | **4,318** | **678.32** | **9.31** | **1.38** | **7.93** | 0.00 |
| 0.80 | 9.11 | **4,301** | **678.32** | **9.20** | **1.38** | **7.82** | 0.00 |
| 0.90 | 8.78 | 4,262 | 678.31 | 8.94 | 1.38 | 7.56 | 0.00 |
| 1.00 | 8.12 | 4,184 | 678.29 | 8.42 | 1.37 | 7.06 | 0.00 |
| 1.10 | 7.22 | 4,056 | 678.25 | 7.61 | 1.35 | 6.26 | 0.00 |
| 1.20 | 6.39 | 3,918 | 678.21 | 6.76 | 1.33 | 5.43 | 0.00 |
| 1.30 | 5.65 | 3,788 | 678.17 | 6.00 | 1.31 | 4.69 | 0.00 |
| 1.40 | 5.07 | 3,673 | 678.14 | 5.34 | 1.30 | 4.04 | 0.00 |
| 1.50 | 4.73 | 3,593 | 678.11 | 4.90 | 1.28 | 3.62 | 0.00 |
| 1.60 | 4.33 | 3,528 | 678.09 | 4.55 | 1.27 | 3.28 | 0.00 |
| 1.70 | 3.75 | 3,434 | 678.06 | 4.07 | 1.26 | 2.81 | 0.00 |
| 1.80 | 3.11 | 3,311 | 678.02 | 3.47 | 1.24 | 2.23 | 0.00 |
| 1.90 | 2.67 | 3,192 | 677.99 | 2.93 | 1.22 | 1.71 | 0.00 |
| 2.00 | 2.47 | 3,116 | 677.96 | 2.61 | 1.21 | 1.40 | 0.00 |
| 2.10 | 2.39 | 3,078 | 677.95 | 2.46 | 1.20 | 1.25 | 0.00 |
| 2.20 | 2.37 | 3,062 | 677.95 | 2.39 | 1.20 | 1.19 | 0.00 |
| 2.30 | 2.36 | 3,056 | 677.94 | 2.37 | 1.20 | 1.16 | 0.00 |
| 2.40 | 2.36 | 3,055 | 677.94 | 2.36 | 1.20 | 1.16 | 0.00 |
| 2.50 | 2.36 | 3,056 | 677.94 | 2.36 | 1.20 | 1.16 | 0.00 |
| 2.60 | 2.37 | 3,058 | 677.94 | 2.36 | 1.20 | 1.16 | 0.00 |
| 2.70 | 2.32 | 3,056 | 677.94 | 2.36 | 1.20 | 1.16 | 0.00 |
| 2.80 | 2.04 | 3,023 | 677.93 | 2.23 | 1.20 | 1.03 | 0.00 |
| 2.90 | 1.62 | 2,934 | 677.90 | 1.91 | 1.18 | 0.73 | 0.00 |
| 3.00 | 1.42 | 2,837 | 677.87 | 1.61 | 1.16 | 0.45 | 0.00 |
| 3.10 | 1.49 | 2,799 | 677.86 | 1.51 | 1.16 | 0.35 | 0.00 |
| 3.20 | 1.09 | 2,759 | 677.85 | 1.41 | 1.15 | 0.26 | 0.00 |
| 3.30 | 0.48 | 2,588 | 677.79 | 1.18 | 1.12 | 0.06 | 0.00 |
| 3.40 | 0.19 | 2,295 | 677.69 | 1.12 | 1.06 | 0.06 | 0.00 |
| 3.50 | 0.08 | 1,952 | 677.56 | 1.04 | 0.99 | 0.05 | 0.00 |
| 3.60 | 0.03 | 1,609 | 677.43 | 0.95 | 0.90 | 0.05 | 0.00 |
| 3.70 | 0.01 | 1,288 | 677.30 | 0.86 | 0.81 | 0.05 | 0.00 |
| 3.80 | 0.00 | 997 | 677.18 | 0.75 | 0.71 | 0.04 | 0.00 |
| 3.90 | 0.00 | 743 | 677.06 | 0.64 | 0.60 | 0.04 | 0.00 |
| 4.00 | 0.00 | 528 | 676.96 | 0.52 | 0.48 | 0.04 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 5.62 | 1.30 | 4.31 | 0.00 |
| 678.35 | 9.91 | 1.39 | 8.51 | 0.00 |
| 678.55 | 15.18 | 1.48 | 13.70 | 0.00 |
| 678.75 | 27.96 | 2.72 | 19.77 | 5.47 |
| 678.95 | **52.16** | **5.83** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

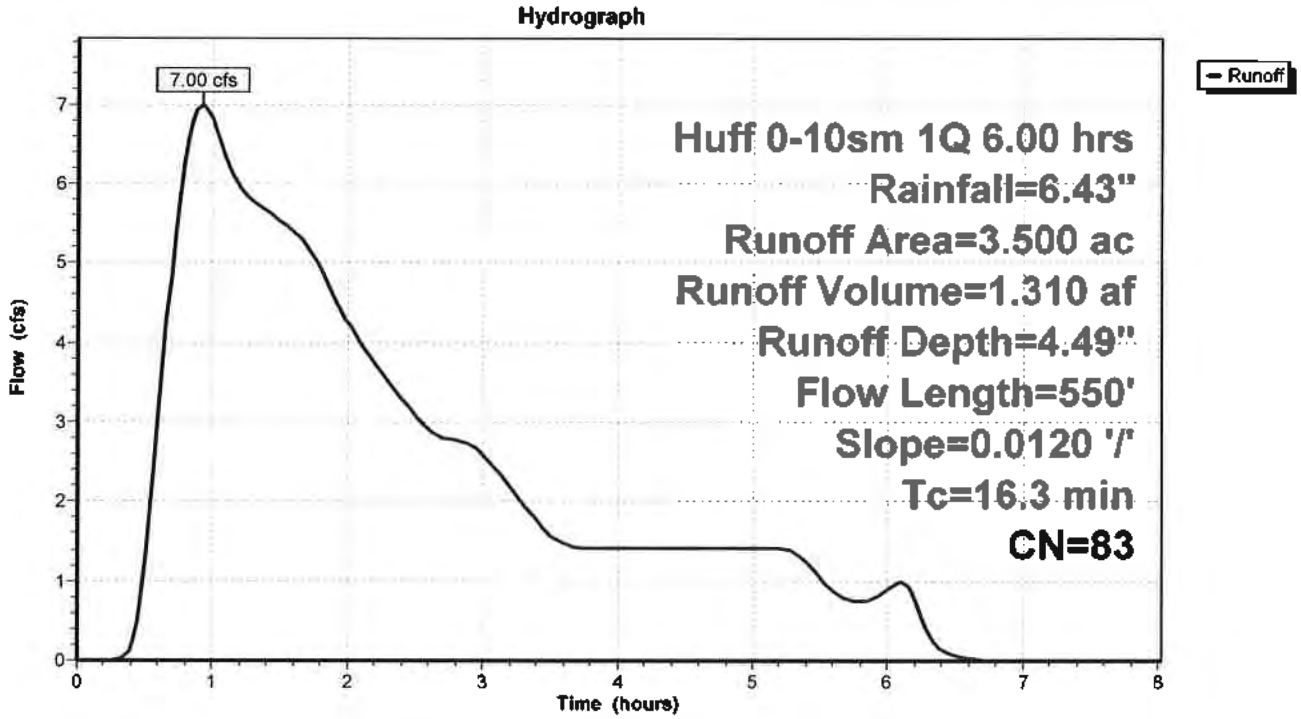
Runoff = 7.00 cfs @ 0.91 hrs, Volume= 1.310 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=6.43"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

## Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 7.80 | 6.43 | 4.49 | 0.00 |
| 0.15 | 0.13 | 0.00 | 0.00 | 7.95 | 6.43 | 4.49 | 0.00 |
| 0.30 | 0.52 | 0.01 | 0.00 | | | | |
| 0.45 | 1.05 | 0.15 | 0.51 | | | | |
| 0.60 | 1.59 | 0.43 | 3.07 | | | | |
| 0.75 | 2.09 | 0.75 | 5.85 | | | | |
| 0.90 | 2.47 | 1.03 | **6.99** | | | | |
| 1.05 | 2.78 | 1.28 | 6.52 | | | | |
| 1.20 | 3.09 | 1.52 | 5.95 | | | | |
| 1.35 | 3.37 | 1.75 | 5.71 | | | | |
| 1.50 | 3.64 | 1.97 | 5.53 | | | | |
| 1.65 | 3.88 | 2.18 | 5.32 | | | | |
| 1.80 | 4.09 | 2.37 | 4.93 | | | | |
| 1.95 | 4.28 | 2.53 | 4.41 | | | | |
| 2.10 | 4.45 | 2.68 | 3.96 | | | | |
| 2.25 | 4.60 | 2.82 | 3.61 | | | | |
| 2.40 | 4.74 | 2.94 | 3.29 | | | | |
| 2.55 | 4.87 | 3.06 | 2.98 | | | | |
| 2.70 | 5.00 | 3.18 | 2.81 | | | | |
| 2.85 | 5.12 | 3.29 | 2.76 | | | | |
| 3.00 | 5.23 | 3.38 | 2.59 | | | | |
| 3.15 | 5.32 | 3.46 | 2.30 | | | | |
| 3.30 | 5.39 | 3.53 | 1.97 | | | | |
| 3.45 | 5.46 | 3.59 | 1.65 | | | | |
| 3.60 | 5.52 | 3.65 | 1.47 | | | | |
| 3.75 | 5.59 | 3.71 | 1.42 | | | | |
| 3.90 | 5.65 | 3.77 | 1.41 | | | | |
| 4.05 | 5.72 | 3.83 | 1.41 | | | | |
| 4.20 | 5.78 | 3.89 | 1.41 | | | | |
| 4.35 | 5.85 | 3.95 | 1.41 | | | | |
| 4.50 | 5.91 | 4.01 | 1.41 | | | | |
| 4.65 | 5.98 | 4.07 | 1.41 | | | | |
| 4.80 | 6.04 | 4.13 | 1.42 | | | | |
| 4.95 | 6.11 | 4.19 | 1.42 | | | | |
| 5.10 | 6.17 | 4.25 | 1.42 | | | | |
| 5.25 | 6.23 | 4.30 | 1.41 | | | | |
| 5.40 | 6.27 | 4.34 | 1.24 | | | | |
| 5.55 | 6.30 | 4.37 | 0.95 | | | | |
| 5.70 | 6.33 | 4.40 | 0.78 | | | | |
| 5.85 | 6.37 | 4.44 | 0.75 | | | | |
| 6.00 | **6.43** | **4.49** | 0.90 | | | | |
| 6.15 | 6.43 | 4.49 | 0.93 | | | | |
| 6.30 | 6.43 | 4.49 | 0.32 | | | | |
| 6.45 | 6.43 | 4.49 | 0.08 | | | | |
| 6.60 | 6.43 | 4.49 | 0.02 | | | | |
| 6.75 | 6.43 | 4.49 | 0.00 | | | | |
| 6.90 | 6.43 | 4.49 | 0.00 | | | | |
| 7.05 | 6.43 | 4.49 | 0.00 | | | | |
| 7.20 | 6.43 | 4.49 | 0.00 | | | | |
| 7.35 | 6.43 | 4.49 | 0.00 | | | | |
| 7.50 | 6.43 | 4.49 | 0.00 | | | | |
| 7.65 | 6.43 | 4.49 | 0.00 | | | | |

## Summary for Subcatchment 7S: South Property

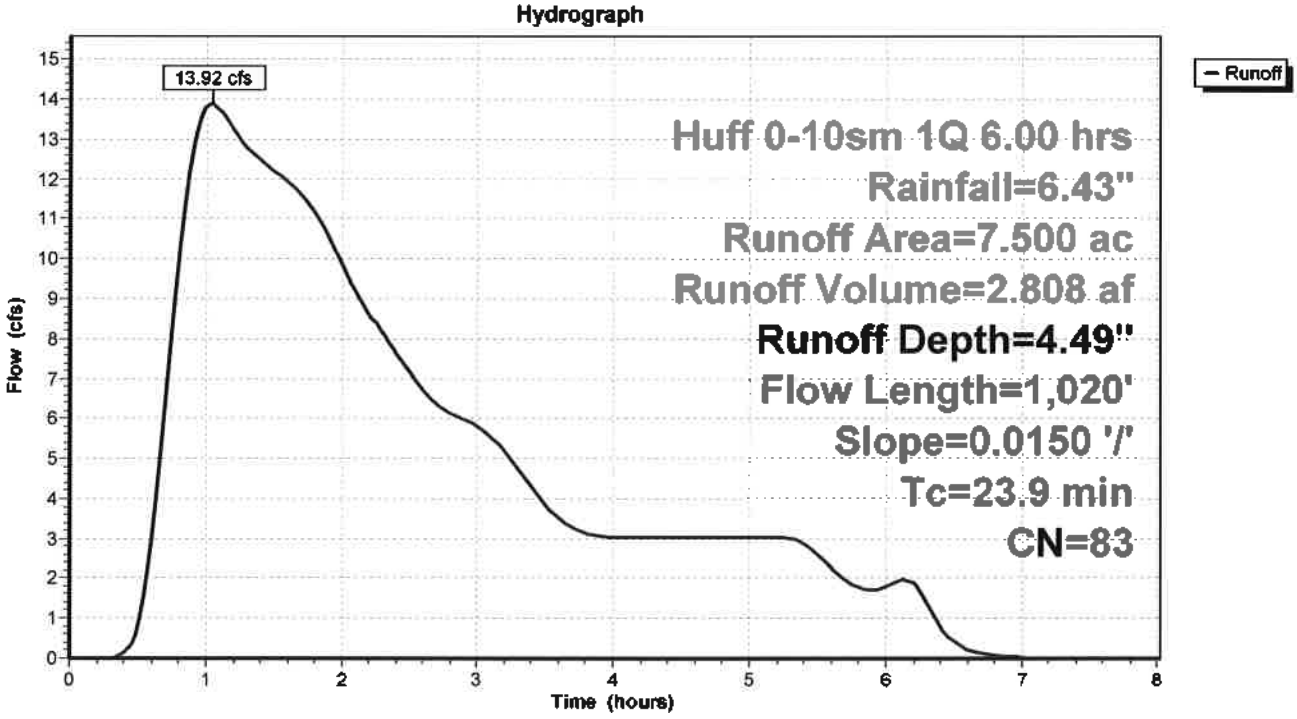
Runoff = 13.92 cfs @ 1.04 hrs, Volume= 2.808 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=6.43"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

## Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.15 | 0.13 | 0.00 | 0.00 |
| 0.30 | 0.52 | 0.01 | 0.00 |
| 0.45 | 1.05 | 0.15 | 0.34 |
| 0.60 | 1.59 | 0.43 | 3.16 |
| 0.75 | 2.09 | 0.75 | 8.41 |
| 0.90 | 2.47 | 1.03 | 12.68 |
| 1.05 | 2.78 | 1.28 | **13.91** |
| 1.20 | 3.09 | 1.52 | 13.27 |
| 1.35 | 3.37 | 1.75 | 12.61 |
| 1.50 | 3.64 | 1.97 | 12.18 |
| 1.65 | 3.88 | 2.18 | 11.76 |
| 1.80 | 4.09 | 2.37 | 11.16 |
| 1.95 | 4.28 | 2.53 | 10.24 |
| 2.10 | 4.45 | 2.68 | 9.23 |
| 2.25 | 4.60 | 2.82 | 8.36 |
| 2.40 | 4.74 | 2.94 | 7.61 |
| 2.55 | 4.87 | 3.06 | 6.91 |
| 2.70 | 5.00 | 3.18 | 6.36 |
| 2.85 | 5.12 | 3.29 | 6.07 |
| 3.00 | 5.23 | 3.38 | 5.83 |
| 3.15 | 5.32 | 3.46 | 5.36 |
| 3.30 | 5.39 | 3.53 | 4.74 |
| 3.45 | 5.46 | 3.59 | 4.06 |
| 3.60 | 5.52 | 3.65 | 3.49 |
| 3.75 | 5.59 | 3.71 | 3.20 |
| 3.90 | 5.65 | 3.77 | 3.08 |
| 4.05 | 5.72 | 3.83 | 3.04 |
| 4.20 | 5.78 | 3.89 | 3.02 |
| 4.35 | 5.85 | 3.95 | 3.02 |
| 4.50 | 5.91 | 4.01 | 3.02 |
| 4.65 | 5.98 | 4.07 | 3.03 |
| 4.80 | 6.04 | 4.13 | 3.03 |
| 4.95 | 6.11 | 4.19 | 3.04 |
| 5.10 | 6.17 | 4.25 | 3.04 |
| 5.25 | 6.23 | 4.30 | 3.03 |
| 5.40 | 6.27 | 4.34 | 2.88 |
| 5.55 | 6.30 | 4.37 | 2.45 |
| 5.70 | 6.33 | 4.40 | 1.97 |
| 5.85 | 6.37 | 4.44 | 1.71 |
| 6.00 | **6.43** | **4.49** | 1.76 |
| 6.15 | 6.43 | 4.49 | 2.00 |
| 6.30 | 6.43 | 4.49 | 1.41 |
| 6.45 | 6.43 | 4.49 | 0.60 |
| 6.60 | 6.43 | 4.49 | 0.24 |
| 6.75 | 6.43 | 4.49 | 0.09 |
| 6.90 | 6.43 | 4.49 | 0.04 |
| 7.05 | 6.43 | 4.49 | 0.01 |
| 7.20 | 6.43 | 4.49 | 0.00 |
| 7.35 | 6.43 | 4.49 | 0.00 |
| 7.50 | 6.43 | 4.49 | 0.00 |
| 7.65 | 6.43 | 4.49 | 0.00 |
| 7.80 | 6.43 | 4.49 | 0.00 |
| 7.95 | 6.43 | 4.49 | 0.00 |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 19.42 cfs @ | 1.01 hrs, Volume= | 3.512 af | |
| Outflow | = | 1.47 cfs @ | 6.69 hrs, Volume= | 0.756 af, Atten= 92%, Lag= 340.8 min | |
| Primary | = | 1.44 cfs @ | 6.31 hrs, Volume= | 0.751 af | |
| Secondary | = | 0.04 cfs @ | 7.27 hrs, Volume= | 0.005 af | |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, Volume= | 0.000 af | |

Routing by Sim-Route method, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Peak Elev= 677.56' @ 6.31 hrs Surf.Area= 46,993 sf Storage= 128,202 cf

Plug-Flow detention time= 227.6 min calculated for 0.753 af (21% of inflow)
Center-of-Mass det. time= 141.8 min ( 285.7 - 143.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

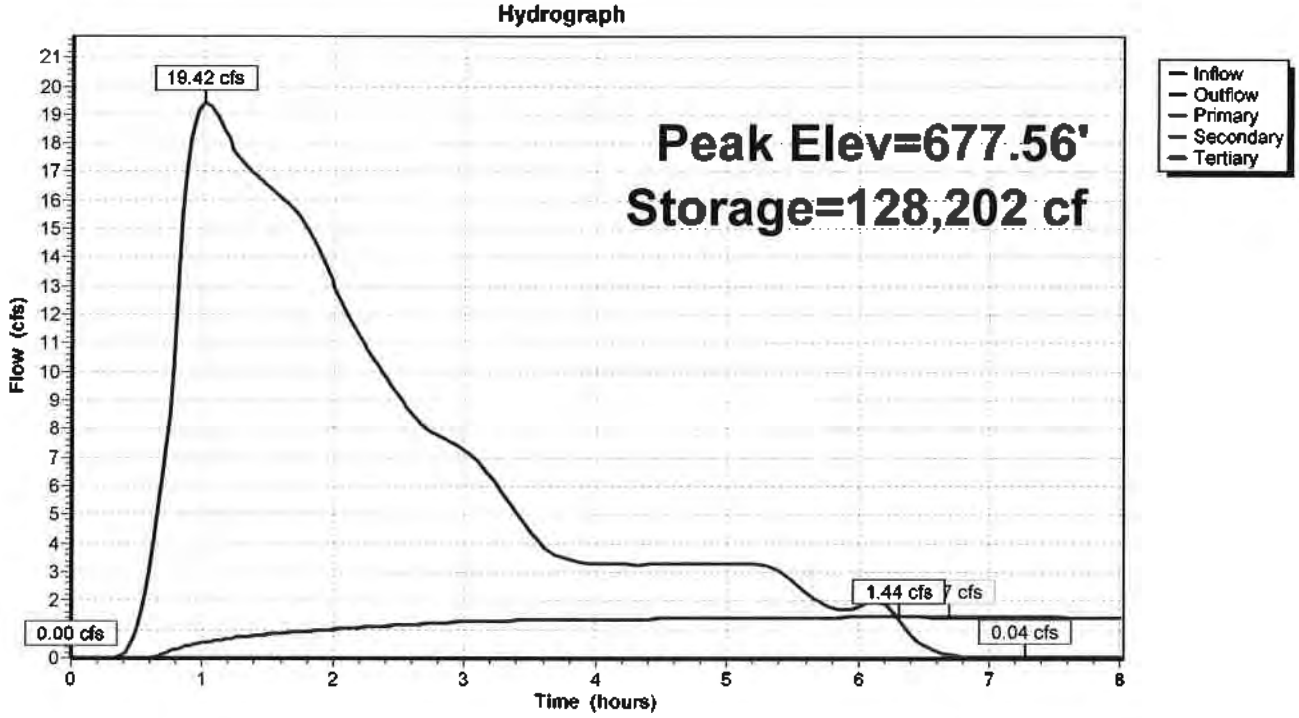
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=1.44 cfs @ 6.31 hrs HW=677.56' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.44 cfs @ 13.08 fps)

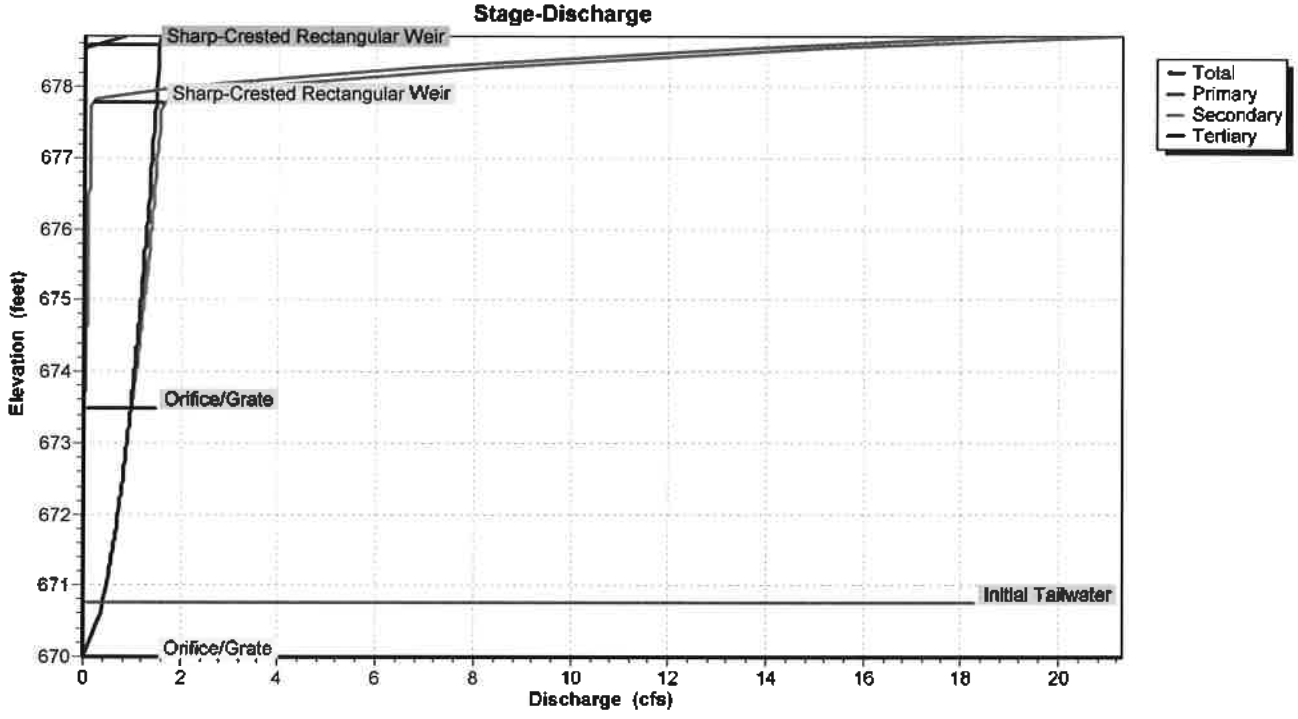
**Secondary OutFlow** Max=0.04 cfs @ 7.27 hrs HW=677.24' TW=676.71' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** (Orifice Controls 0.04 cfs @ 3.50 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

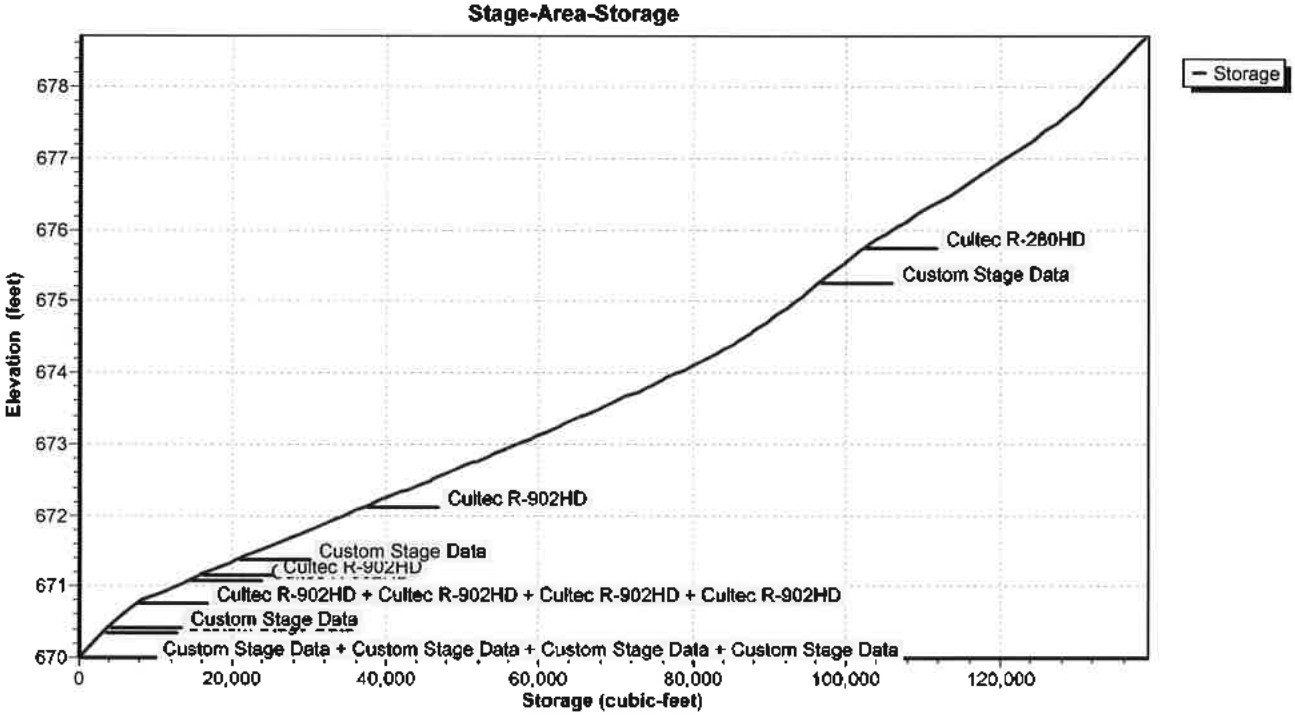
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.30 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.60 | 3.27 | 718 | 670.08 | 0.02 | 0.02 | 0.00 | 0.00 |
| 0.90 | **18.05** | 10,330 | 670.90 | 0.45 | 0.45 | 0.00 | 0.00 |
| 1.20 | **18.04** | 30,128 | 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 1.50 | 16.47 | 47,914 | 672.59 | 0.82 | 0.82 | 0.00 | 0.00 |
| 1.80 | 14.95 | 64,122 | 673.32 | 0.94 | 0.94 | 0.00 | 0.00 |
| 2.10 | 12.07 | 77,840 | 673.99 | 1.04 | 1.04 | 0.00 | 0.00 |
| 2.40 | 9.79 | 88,550 | 674.63 | 1.12 | 1.12 | 0.00 | 0.00 |
| 2.70 | 8.00 | 96,920 | 675.31 | 1.20 | 1.20 | 0.00 | 0.00 |
| 3.00 | 7.29 | 103,875 | 675.86 | 1.27 | 1.27 | 0.00 | 0.00 |
| 3.30 | 5.69 | 109,659 | 676.24 | 1.31 | 1.31 | 0.00 | 0.00 |
| 3.60 | 3.91 | 113,441 | 676.49 | 1.34 | 1.34 | 0.00 | 0.00 |
| 3.90 | 3.35 | 115,849 | 676.66 | 1.35 | 1.35 | 0.00 | 0.00 |
| 4.20 | 3.28 | 117,951 | 676.80 | 1.37 | 1.37 | 0.00 | 0.00 |
| 4.50 | 3.28 | 120,007 | 676.95 | 1.38 | 1.38 | 0.00 | 0.00 |
| 4.80 | 3.29 | 122,056 | 677.09 | 1.40 | 1.40 | 0.00 | 0.00 |
| 5.10 | 3.30 | 124,100 | 677.24 | 1.41 | 1.41 | 0.00 | 0.00 |
| 5.40 | 3.09 | 126,103 | 677.40 | 1.43 | 1.43 | 0.00 | 0.00 |
| 5.70 | 2.00 | 127,341 | 677.49 | 1.44 | 1.44 | 0.00 | 0.00 |
| 6.00 | 1.78 | 127,731 | 677.52 | 1.44 | 1.44 | 0.00 | 0.00 |
| 6.30 | 1.41 | **128,200** | **677.56** | 1.44 | **1.44** | 0.00 | 0.00 |
| 6.60 | 0.24 | 127,425 | 677.50 | **1.47** | 1.44 | 0.03 | 0.00 |
| 6.90 | 0.04 | 125,967 | 677.39 | **1.47** | 1.43 | 0.04 | 0.00 |
| 7.20 | 0.00 | 124,407 | 677.27 | 1.46 | 1.41 | **0.04** | 0.00 |
| 7.50 | 0.00 | 122,839 | 677.15 | 1.44 | 1.40 | **0.04** | 0.00 |
| 7.80 | 0.00 | 121,286 | 677.04 | 1.43 | 1.39 | 0.04 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 16.68 | 1.54 | 15.13 | 0.00 |
| 678.80 | **24.77** | **1.56** | **21.42** | **1.79** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 7.00 cfs @ | 0.91 hrs, | Volume= | 1.315 af |
| Outflow | = | 6.95 cfs @ | 0.97 hrs, | Volume= | 1.313 af, Atten= 1%, Lag= 3.3 min |
| Primary | = | 1.33 cfs @ | 0.97 hrs, | Volume= | 0.608 af |
| Secondary | = | 5.62 cfs @ | 0.97 hrs, | Volume= | 0.704 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Peak Elev= 678.22' @ 0.97 hrs Surf.Area= 3,391 sf Storage= 3,949 cf

Plug-Flow detention time= 18.8 min calculated for 1.313 af (100% of inflow)
Center-of-Mass det. time= 18.2 min ( 163.2 - 145.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

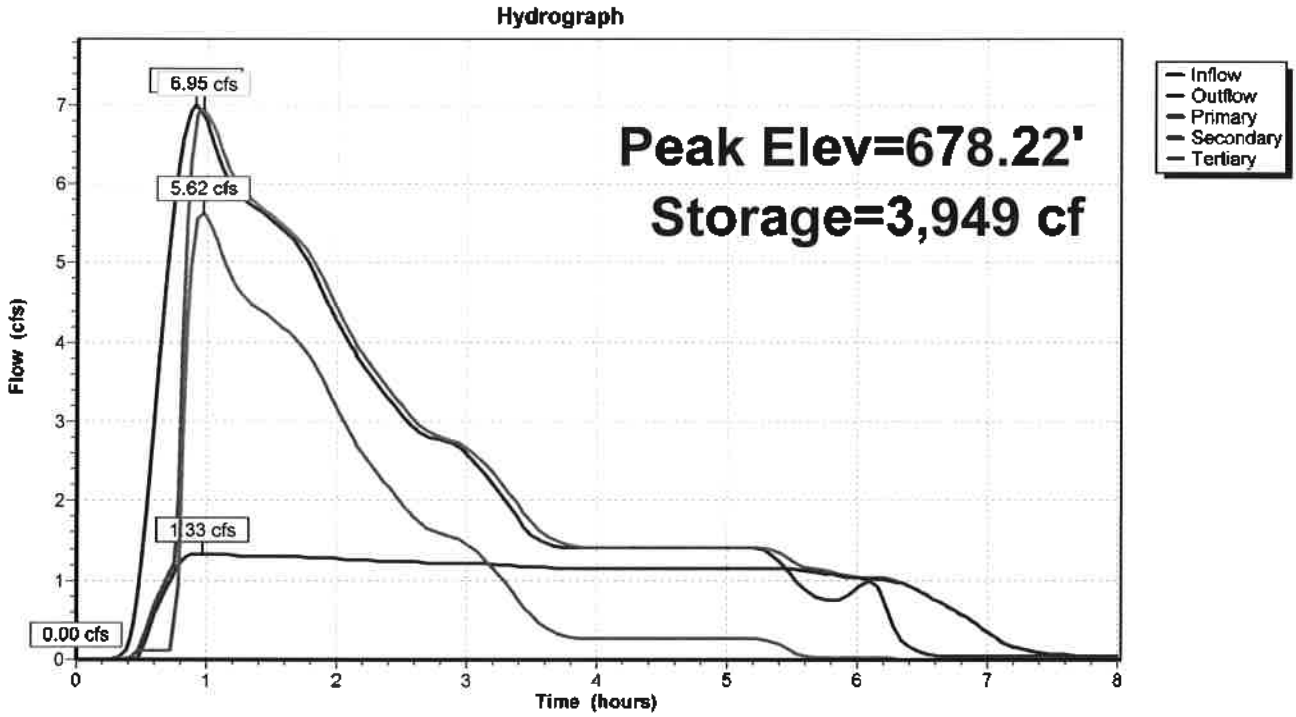
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=1.33 cfs @ 0.97 hrs HW=678.22' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.33 cfs @ 5.79 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

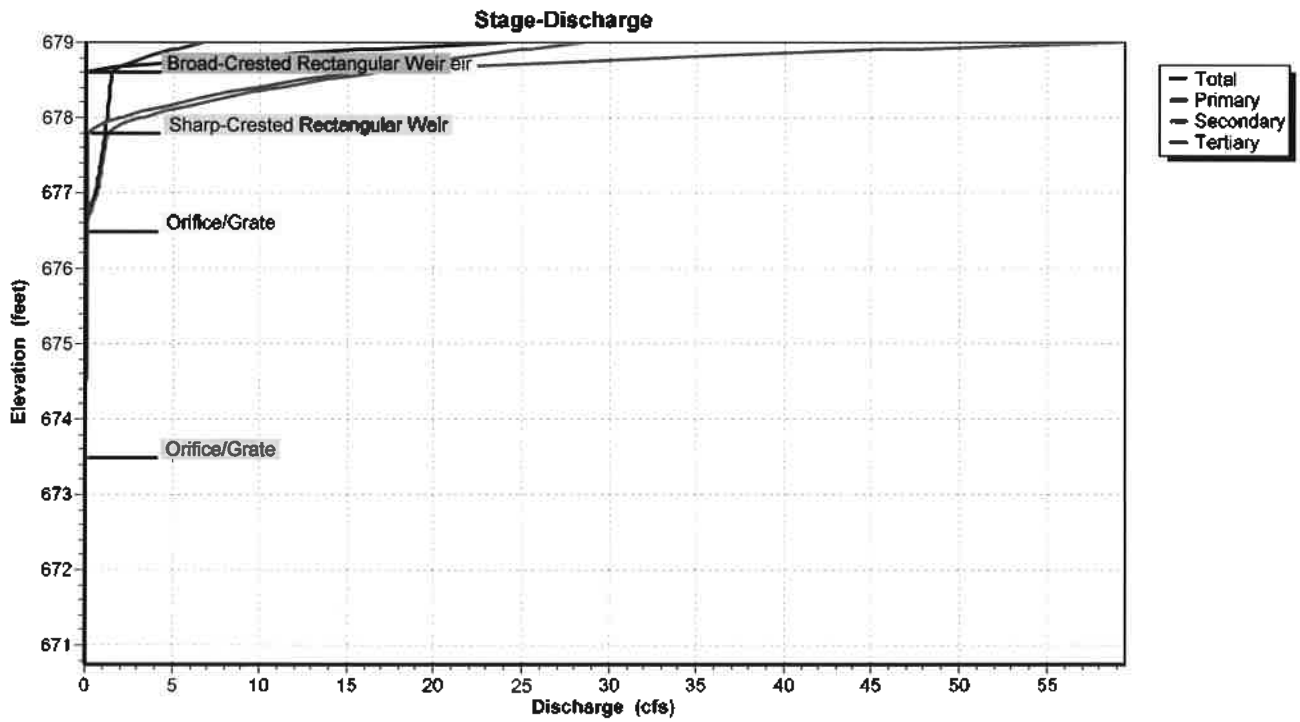
**Secondary OutFlow** Max=5.61 cfs @ 0.97 hrs HW=678.22' TW=671.11' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.13 cfs @ 10.39 fps)
└─**5=Sharp-Crested Rectangular Weir** (Weir Controls 5.48 cfs @ 2.22 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

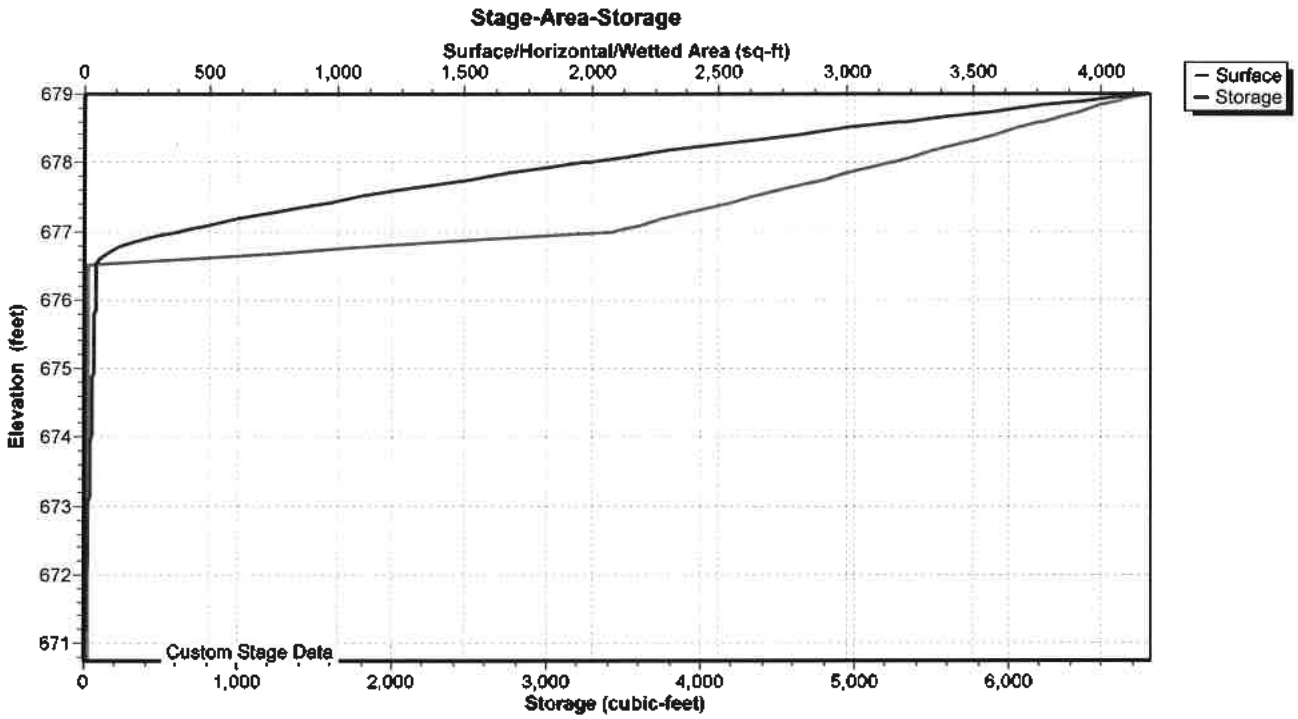
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.30 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.60 | 3.07 | 665 | 677.03 | 0.68 | 0.57 | 0.11 | 0.00 |
| 0.90 | **6.99** | **3,907** | **678.21** | **6.70** | **1.33** | **5.37** | 0.00 |
| 1.20 | 5.95 | **3,803** | **678.17** | **6.09** | **1.31** | **4.77** | 0.00 |
| 1.50 | 5.53 | 3,717 | 678.15 | 5.59 | 1.30 | 4.29 | 0.00 |
| 1.80 | 4.93 | 3,626 | 678.12 | 5.08 | 1.29 | 3.79 | 0.00 |
| 2.10 | 3.96 | 3,440 | 678.06 | 4.11 | 1.26 | 2.85 | 0.00 |
| 2.40 | 3.29 | 3,298 | 678.02 | 3.41 | 1.24 | 2.17 | 0.00 |
| 2.70 | 2.81 | 3,177 | 677.98 | 2.87 | 1.22 | 1.64 | 0.00 |
| 3.00 | 2.59 | 3,135 | 677.97 | 2.68 | 1.21 | 1.46 | 0.00 |
| 3.30 | 1.97 | 2,997 | 677.92 | 2.14 | 1.19 | 0.95 | 0.00 |
| 3.60 | 1.47 | 2,823 | 677.87 | 1.58 | 1.16 | 0.41 | 0.00 |
| 3.90 | 1.41 | 2,763 | 677.85 | 1.42 | 1.15 | 0.27 | 0.00 |
| 4.20 | 1.41 | 2,759 | 677.85 | 1.41 | 1.15 | 0.26 | 0.00 |
| 4.50 | 1.41 | 2,762 | 677.85 | 1.41 | 1.15 | 0.26 | 0.00 |
| 4.80 | 1.42 | 2,765 | 677.85 | 1.41 | 1.15 | 0.26 | 0.00 |
| 5.10 | 1.42 | 2,769 | 677.85 | 1.42 | 1.15 | 0.26 | 0.00 |
| 5.40 | 1.24 | 2,745 | 677.84 | 1.36 | 1.15 | 0.21 | 0.00 |
| 5.70 | 0.78 | 2,498 | 677.76 | 1.13 | 1.10 | 0.03 | 0.00 |
| 6.00 | 0.90 | 2,151 | 677.64 | 1.05 | 1.03 | 0.02 | 0.00 |
| 6.30 | 0.32 | 1,924 | 677.55 | 0.98 | 0.98 | 0.00 | 0.00 |
| 6.60 | 0.05 | 1,120 | 677.23 | 0.75 | 0.75 | 0.00 | 0.00 |
| 6.90 | 0.04 | 488 | 676.94 | 0.45 | 0.45 | 0.00 | 0.00 |
| 7.20 | 0.04 | 204 | 676.74 | 0.16 | 0.16 | 0.00 | 0.00 |
| 7.50 | 0.04 | 132 | 676.65 | 0.07 | 0.07 | 0.00 | 0.00 |
| 7.80 | 0.04 | 115 | 676.62 | 0.05 | 0.05 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 5.62 | 1.30 | 4.31 | 0.00 |
| 678.35 | 9.91 | 1.39 | 8.51 | 0.00 |
| 678.55 | 15.18 | 1.48 | 13.70 | 0.00 |
| 678.75 | 27.96 | 2.72 | 19.77 | 5.47 |
| 678.95 | **52.16** | **5.83** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

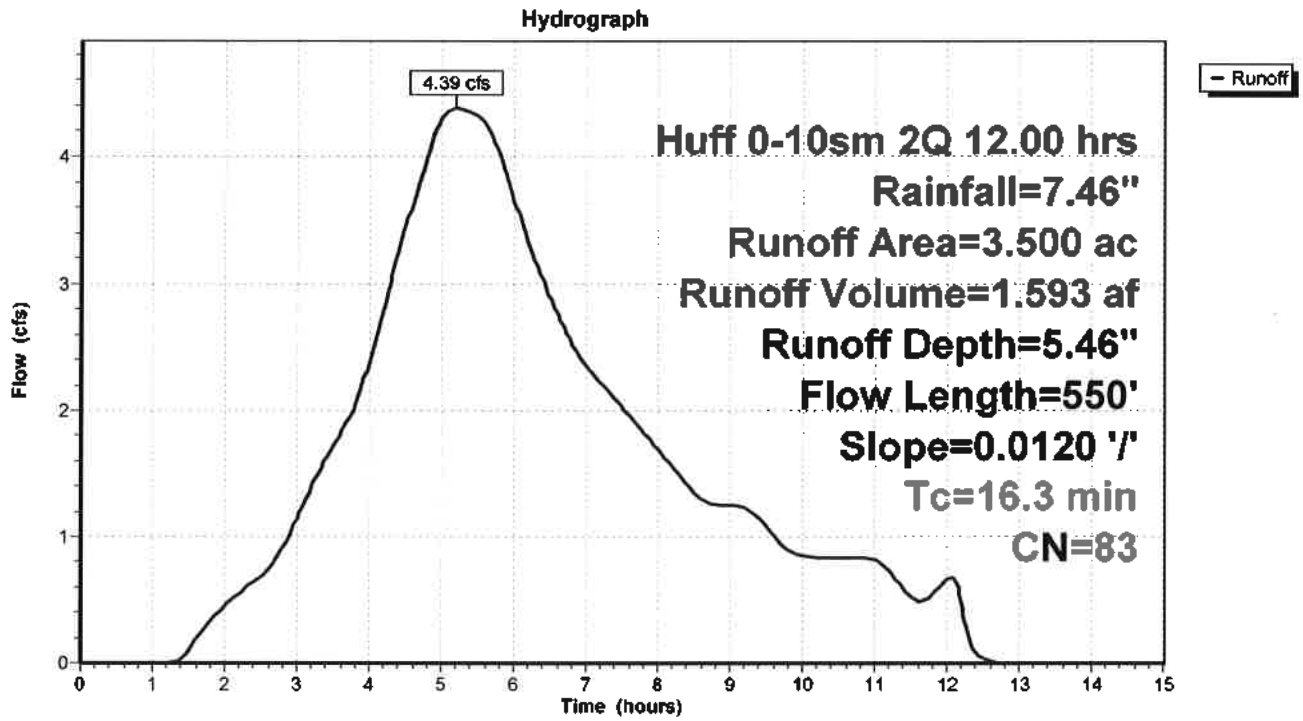
Runoff = 4.39 cfs @ 5.20 hrs, Volume= 1.593 af, Depth= 5.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.01 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=7.46"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.01 | 0.00 | 0.00 |
| 0.40 | 0.05 | 0.00 | 0.00 |
| 0.60 | 0.11 | 0.00 | 0.00 |
| 0.80 | 0.20 | 0.00 | 0.00 |
| 1.00 | 0.30 | 0.00 | 0.00 |
| 1.20 | 0.41 | 0.00 | 0.00 |
| 1.40 | 0.54 | 0.01 | 0.03 |
| 1.60 | 0.65 | 0.03 | 0.18 |
| 1.80 | 0.75 | 0.05 | 0.34 |
| 2.00 | 0.85 | 0.08 | 0.45 |
| 2.20 | 0.95 | 0.11 | 0.55 |
| 2.40 | 1.05 | 0.15 | 0.64 |
| 2.60 | 1.16 | 0.20 | 0.74 |
| 2.80 | 1.29 | 0.26 | 0.92 |
| 3.00 | 1.43 | 0.34 | 1.15 |
| 3.20 | 1.59 | 0.43 | 1.40 |
| 3.40 | 1.75 | 0.53 | 1.62 |
| 3.60 | 1.92 | 0.64 | 1.82 |
| 3.80 | 2.11 | 0.77 | 2.04 |
| 4.00 | 2.32 | 0.92 | 2.39 |
| 4.20 | 2.56 | 1.10 | 2.81 |
| 4.40 | 2.82 | 1.30 | 3.25 |
| 4.60 | 3.10 | 1.53 | 3.63 |
| 4.80 | 3.39 | 1.77 | 3.99 |
| 5.00 | 3.69 | 2.02 | 4.30 |
| 5.20 | 3.98 | 2.27 | **4.39** |
| 5.40 | 4.26 | 2.51 | 4.36 |
| 5.60 | 4.52 | 2.74 | 4.28 |
| 5.80 | 4.76 | 2.96 | 4.01 |
| 6.00 | 4.97 | 3.15 | 3.67 |
| 6.20 | 5.17 | 3.32 | 3.31 |
| 6.40 | 5.34 | 3.48 | 3.03 |
| 6.60 | 5.50 | 3.63 | 2.77 |
| 6.80 | 5.65 | 3.77 | 2.52 |
| 7.00 | 5.79 | 3.89 | 2.35 |
| 7.20 | 5.92 | 4.01 | 2.22 |
| 7.40 | 6.04 | 4.13 | 2.09 |
| 7.60 | 6.15 | 4.23 | 1.95 |
| 7.80 | 6.25 | 4.33 | 1.82 |
| 8.00 | 6.35 | 4.42 | 1.69 |
| 8.20 | 6.44 | 4.50 | 1.55 |
| 8.40 | 6.52 | 4.57 | 1.42 |
| 8.60 | 6.59 | 4.65 | 1.30 |
| 8.80 | 6.67 | 4.72 | 1.25 |
| 9.00 | 6.74 | 4.79 | 1.25 |
| 9.20 | 6.82 | 4.85 | 1.23 |
| 9.40 | 6.88 | 4.91 | 1.14 |
| 9.60 | 6.93 | 4.96 | 1.01 |
| 9.80 | 6.98 | 5.01 | 0.89 |
| 10.00 | 7.03 | 5.06 | 0.84 |
| 10.20 | 7.08 | 5.11 | 0.84 |
| 10.40 | 7.13 | 5.15 | 0.84 |
| 10.60 | 7.18 | 5.20 | 0.84 |
| 10.80 | 7.23 | 5.25 | 0.84 |
| 11.00 | 7.28 | 5.29 | 0.82 |
| 11.20 | 7.32 | 5.33 | 0.73 |
| 11.40 | 7.35 | 5.36 | 0.60 |
| 11.60 | 7.38 | 5.38 | 0.49 |
| 11.80 | 7.41 | 5.42 | 0.54 |
| 12.00 | **7.46** | **5.46** | 0.67 |
| 12.20 | 7.46 | 5.46 | 0.47 |
| 12.40 | 7.46 | 5.46 | 0.08 |
| 12.60 | 7.46 | 5.46 | 0.01 |
| 12.80 | 7.46 | 5.46 | 0.00 |
| 13.00 | 7.46 | 5.46 | 0.00 |
| 13.20 | 7.46 | 5.46 | 0.00 |
| 13.40 | 7.46 | 5.46 | 0.00 |
| 13.60 | 7.46 | 5.46 | 0.00 |
| 13.80 | 7.46 | 5.46 | 0.00 |
| 14.00 | 7.46 | 5.46 | 0.00 |
| 14.20 | 7.46 | 5.46 | 0.00 |
| 14.40 | 7.46 | 5.46 | 0.00 |
| 14.60 | 7.46 | 5.46 | 0.00 |
| 14.80 | 7.46 | 5.46 | 0.00 |
| 15.00 | 7.46 | 5.46 | 0.00 |

## Summary for Subcatchment 7S: South Property

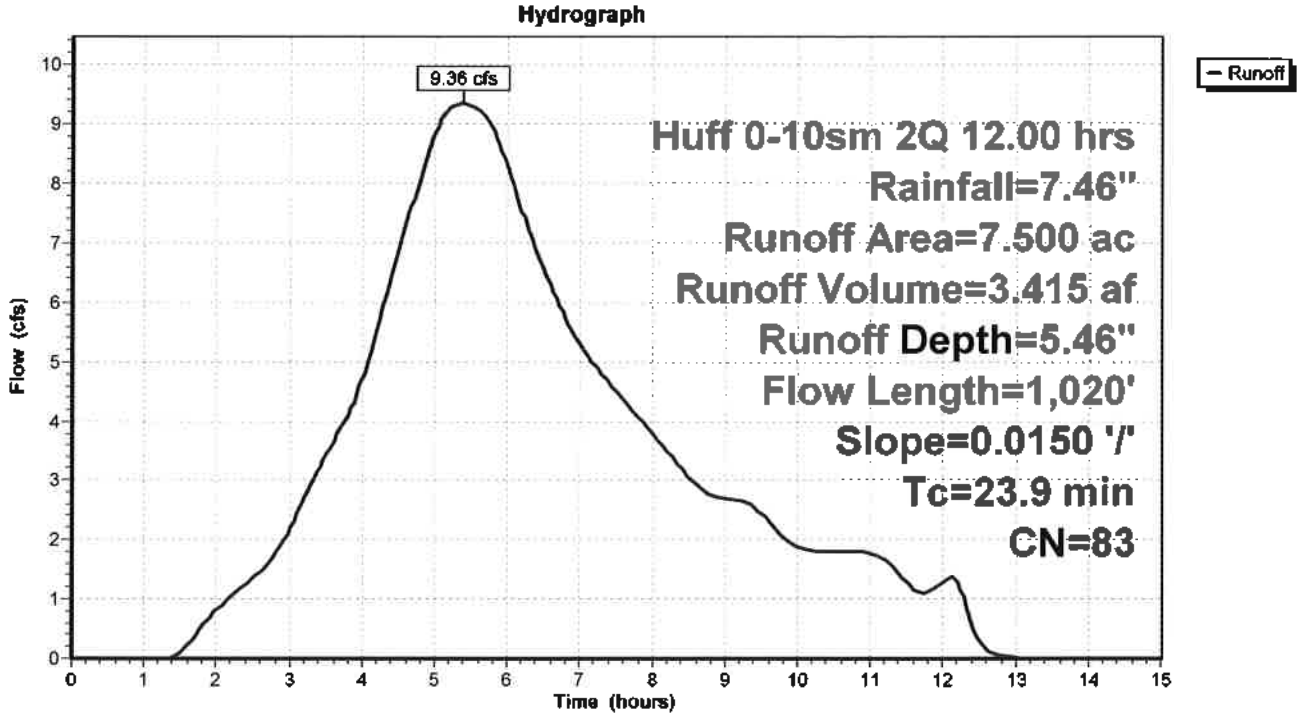
Runoff = 9.36 cfs @ 5.39 hrs, Volume= 3.415 af, Depth= 5.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.01 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=7.46"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 10.40 | 7.13 | 5.15 | 1.80 |
| 0.20 | 0.01 | 0.00 | 0.00 | 10.60 | 7.18 | 5.20 | 1.80 |
| 0.40 | 0.05 | 0.00 | 0.00 | 10.80 | 7.23 | 5.25 | 1.80 |
| 0.60 | 0.11 | 0.00 | 0.00 | 11.00 | 7.28 | 5.29 | 1.79 |
| 0.80 | 0.20 | 0.00 | 0.00 | 11.20 | 7.32 | 5.33 | 1.67 |
| 1.00 | 0.30 | 0.00 | 0.00 | 11.40 | 7.35 | 5.36 | 1.43 |
| 1.20 | 0.41 | 0.00 | 0.00 | 11.60 | 7.38 | 5.38 | 1.17 |
| 1.40 | 0.54 | 0.01 | 0.02 | 11.80 | 7.41 | 5.42 | 1.11 |
| 1.60 | 0.65 | 0.03 | 0.22 | 12.00 | **7.46** | **5.46** | 1.29 |
| 1.80 | 0.75 | 0.05 | 0.55 | 12.20 | 7.46 | 5.46 | 1.31 |
| 2.00 | 0.85 | 0.08 | 0.82 | 12.40 | 7.46 | 5.46 | 0.54 |
| 2.20 | 0.95 | 0.11 | 1.05 | 12.60 | 7.46 | 5.46 | 0.16 |
| 2.40 | 1.05 | 0.15 | 1.26 | 12.80 | 7.46 | 5.46 | 0.04 |
| 2.60 | 1.16 | 0.20 | 1.46 | 13.00 | 7.46 | 5.46 | 0.01 |
| 2.80 | 1.29 | 0.26 | 1.75 | 13.20 | 7.46 | 5.46 | 0.00 |
| 3.00 | 1.43 | 0.34 | 2.18 | 13.40 | 7.46 | 5.46 | 0.00 |
| 3.20 | 1.59 | 0.43 | 2.69 | 13.60 | 7.46 | 5.46 | 0.00 |
| 3.40 | 1.75 | 0.53 | 3.19 | 13.80 | 7.46 | 5.46 | 0.00 |
| 3.60 | 1.92 | 0.64 | 3.64 | 14.00 | 7.46 | 5.46 | 0.00 |
| 3.80 | 2.11 | 0.77 | 4.10 | 14.20 | 7.46 | 5.46 | 0.00 |
| 4.00 | 2.32 | 0.92 | 4.71 | 14.40 | 7.46 | 5.46 | 0.00 |
| 4.20 | 2.56 | 1.10 | 5.52 | 14.60 | 7.46 | 5.46 | 0.00 |
| 4.40 | 2.82 | 1.30 | 6.43 | 14.80 | 7.46 | 5.46 | 0.00 |
| 4.60 | 3.10 | 1.53 | 7.30 | 15.00 | 7.46 | 5.46 | 0.00 |
| 4.80 | 3.39 | 1.77 | 8.10 | | | | |
| 5.00 | 3.69 | 2.02 | 8.83 | | | | |
| 5.20 | 3.98 | 2.27 | **9.27** | | | | |
| 5.40 | 4.26 | 2.51 | **9.35** | | | | |
| 5.60 | 4.52 | 2.74 | 9.27 | | | | |
| 5.80 | 4.76 | 2.96 | 8.90 | | | | |
| 6.00 | 4.97 | 3.15 | 8.27 | | | | |
| 6.20 | 5.17 | 3.32 | 7.54 | | | | |
| 6.40 | 5.34 | 3.48 | 6.86 | | | | |
| 6.60 | 5.50 | 3.63 | 6.27 | | | | |
| 6.80 | 5.65 | 3.77 | 5.71 | | | | |
| 7.00 | 5.79 | 3.89 | 5.27 | | | | |
| 7.20 | 5.92 | 4.01 | 4.94 | | | | |
| 7.40 | 6.04 | 4.13 | 4.64 | | | | |
| 7.60 | 6.15 | 4.23 | 4.35 | | | | |
| 7.80 | 6.25 | 4.33 | 4.07 | | | | |
| 8.00 | 6.35 | 4.42 | 3.79 | | | | |
| 8.20 | 6.44 | 4.50 | 3.50 | | | | |
| 8.40 | 6.52 | 4.57 | 3.21 | | | | |
| 8.60 | 6.59 | 4.65 | 2.93 | | | | |
| 8.80 | 6.67 | 4.72 | 2.75 | | | | |
| 9.00 | 6.74 | 4.79 | 2.70 | | | | |
| 9.20 | 6.82 | 4.85 | 2.67 | | | | |
| 9.40 | 6.88 | 4.91 | 2.55 | | | | |
| 9.60 | 6.93 | 4.96 | 2.32 | | | | |
| 9.80 | 6.98 | 5.01 | 2.05 | | | | |
| 10.00 | 7.03 | 5.06 | 1.87 | | | | |
| 10.20 | 7.08 | 5.11 | 1.81 | | | | |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 12.47 cfs @ | 5.34 hrs, | Volume= | 4.184 af |
| Outflow | = | 3.67 cfs @ | 9.68 hrs, | Volume= | 1.478 af, Atten= 71%, Lag= 260.6 min |
| Primary | = | 1.51 cfs @ | 9.88 hrs, | Volume= | 1.251 af |
| Secondary | = | 2.16 cfs @ | 9.68 hrs, | Volume= | 0.227 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-15.00 hrs, dt= 0.01 hrs
Peak Elev= 678.23' @ 9.88 hrs Surf.Area= 47,068 sf Storage= 134,811 cf

Plug-Flow detention time= 330.8 min calculated for 1.477 af (35% of inflow)
Center-of-Mass det. time= 206.4 min ( 587.1 - 380.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

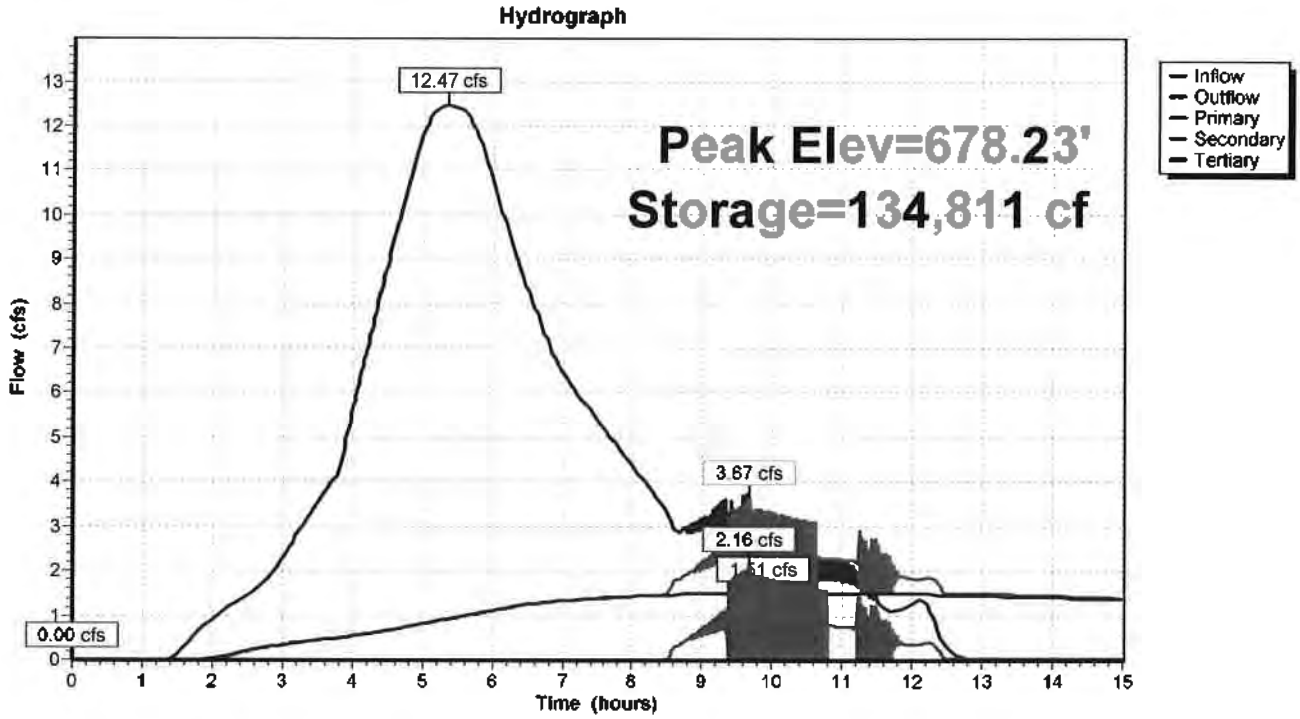
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=1.51 cfs @ 9.88 hrs HW=678.23' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.51 cfs @ 13.66 fps)

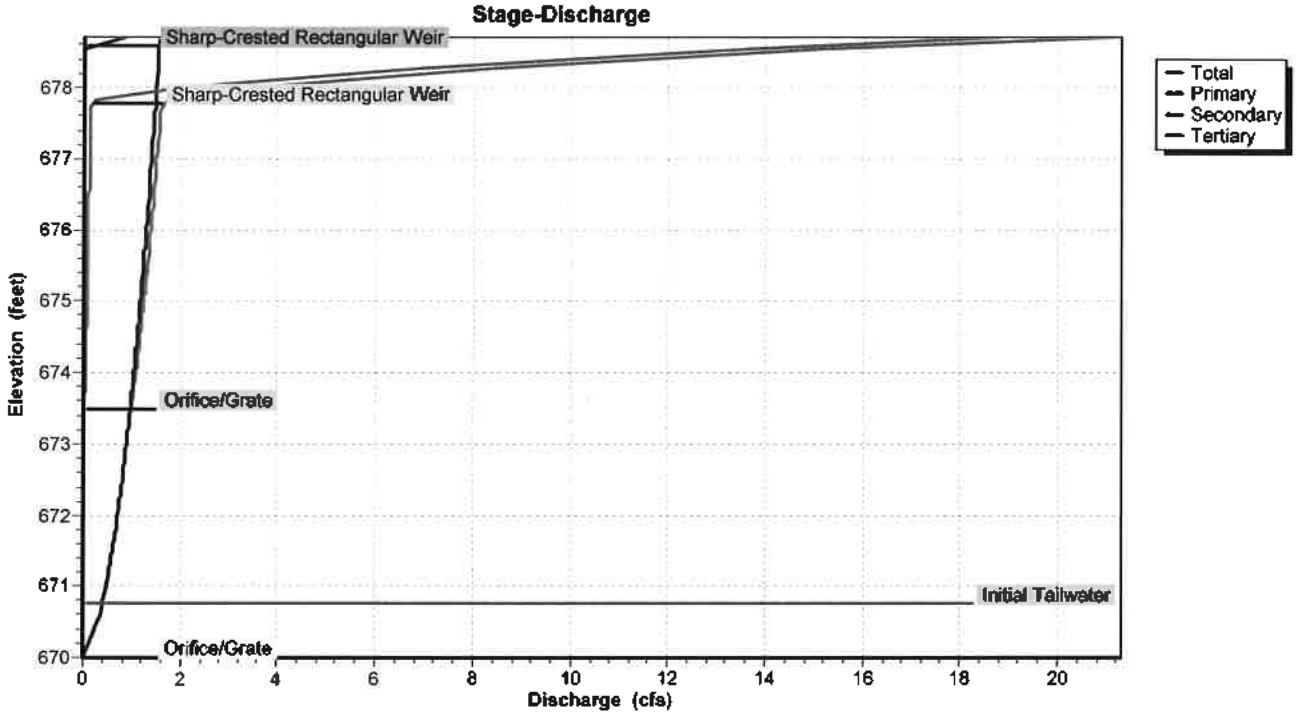
**Secondary OutFlow** Max=1.65 cfs @ 9.68 hrs HW=678.22' TW=678.21' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** (Weir Controls 1.64 cfs @ 0.66 fps)
└─**4=Orifice/Grate** (Orifice Controls 0.01 cfs @ 0.52 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

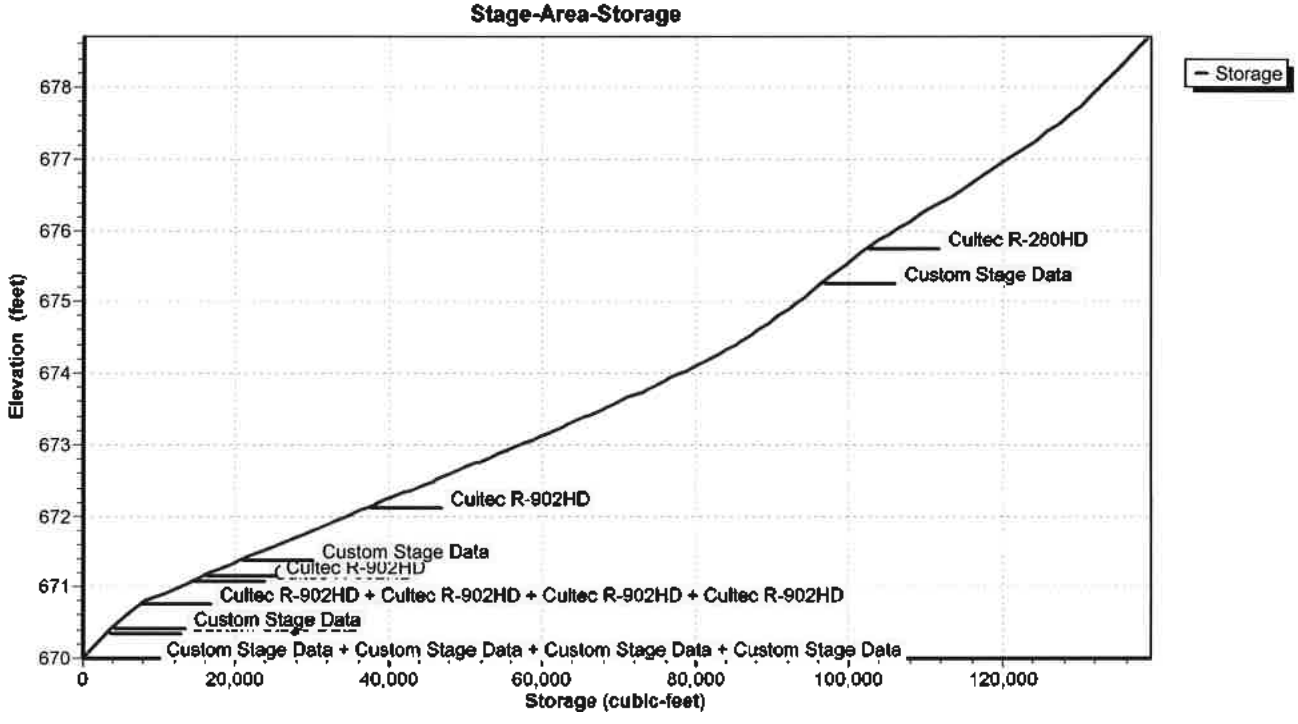
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.50 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.50 | 0.09 | 20 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.93 | 980 | 670.11 | 0.03 | 0.03 | 0.00 | 0.00 |
| 2.50 | 1.46 | 2,951 | 670.33 | 0.20 | 0.20 | 0.00 | 0.00 |
| 3.00 | 2.29 | 5,702 | 670.61 | 0.34 | 0.34 | 0.00 | 0.00 |
| 3.50 | 3.54 | 10,224 | 670.90 | 0.45 | 0.45 | 0.00 | 0.00 |
| 4.00 | 5.65 | 17,013 | 671.22 | 0.54 | 0.54 | 0.00 | 0.00 |
| 4.50 | 8.96 | 29,027 | 671.75 | 0.67 | 0.67 | 0.00 | 0.00 |
| 5.00 | **11.80** | 46,422 | 672.52 | 0.81 | 0.81 | 0.00 | 0.00 |
| 5.50 | **12.42** | 67,001 | 673.46 | 0.96 | 0.96 | 0.00 | 0.00 |
| 6.00 | 10.79 | 86,437 | 674.48 | 1.10 | 1.10 | 0.00 | 0.00 |
| 6.50 | 8.31 | 101,446 | 675.70 | 1.25 | 1.25 | 0.00 | 0.00 |
| 7.00 | 6.47 | 112,339 | 676.42 | 1.33 | 1.33 | 0.00 | 0.00 |
| 7.50 | 5.38 | 120,543 | 676.99 | 1.39 | 1.39 | 0.00 | 0.00 |
| 8.00 | 4.36 | 126,786 | 677.45 | 1.43 | 1.43 | 0.00 | 0.00 |
| 8.50 | 3.30 | 131,104 | 677.83 | 1.47 | 1.47 | 0.00 | 0.00 |
| 9.00 | 3.17 | 133,067 | 678.04 | 2.20 | 1.49 | 0.71 | 0.00 |
| 9.50 | 3.73 | **134,431** | **678.19** | **1.50** | **1.50** | **0.00** | 0.00 |
| 10.00 | 1.87 | **134,782** | **678.23** | **3.38** | **1.51** | **1.87** | 0.00 |
| 10.50 | 3.37 | 134,453 | 678.19 | 1.50 | 1.50 | 0.00 | 0.00 |
| 11.00 | 1.79 | 134,292 | 678.18 | 3.02 | 1.50 | 1.51 | 0.00 |
| 11.50 | 1.29 | 133,600 | 678.10 | 1.50 | 1.50 | 0.00 | 0.00 |
| 12.00 | 1.29 | 132,238 | 677.95 | 1.83 | 1.48 | 0.35 | 0.00 |
| 12.50 | 0.29 | 130,858 | 677.80 | 1.49 | 1.47 | 0.02 | 0.00 |
| 13.00 | 0.01 | 128,342 | 677.57 | 1.49 | 1.45 | 0.04 | 0.00 |
| 13.50 | 0.00 | 125,682 | 677.36 | 1.47 | 1.42 | 0.05 | 0.00 |
| 14.00 | 0.00 | 123,053 | 677.17 | 1.45 | 1.40 | 0.04 | 0.00 |
| 14.50 | 0.00 | 120,470 | 676.98 | 1.42 | 1.39 | 0.04 | 0.00 |
| 15.00 | 0.00 | 117,935 | 676.80 | 1.39 | 1.37 | 0.03 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 16.68 | 1.54 | 15.13 | 0.00 |
| 678.80 | **24.77** | **1.56** | **21.42** | **1.79** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 4.39 cfs @ | 5.20 hrs, | Volume= | 1.820 af |
| Outflow | = | 4.39 cfs @ | 5.28 hrs, | Volume= | 1.818 af, Atten= 0%, Lag= 4.9 min |
| Primary | = | 1.35 cfs @ | 9.86 hrs, | Volume= | 1.048 af |
| Secondary | = | 3.12 cfs @ | 5.28 hrs, | Volume= | 0.770 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-15.00 hrs, dt= 0.01 hrs
Peak Elev= 678.24' @ 9.86 hrs Surf.Area= 3,417 sf Storage= 4,035 cf

Plug-Flow detention time= 24.2 min calculated for 1.818 af (100% of inflow)
Center-of-Mass det. time= 23.6 min ( 431.0 - 407.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

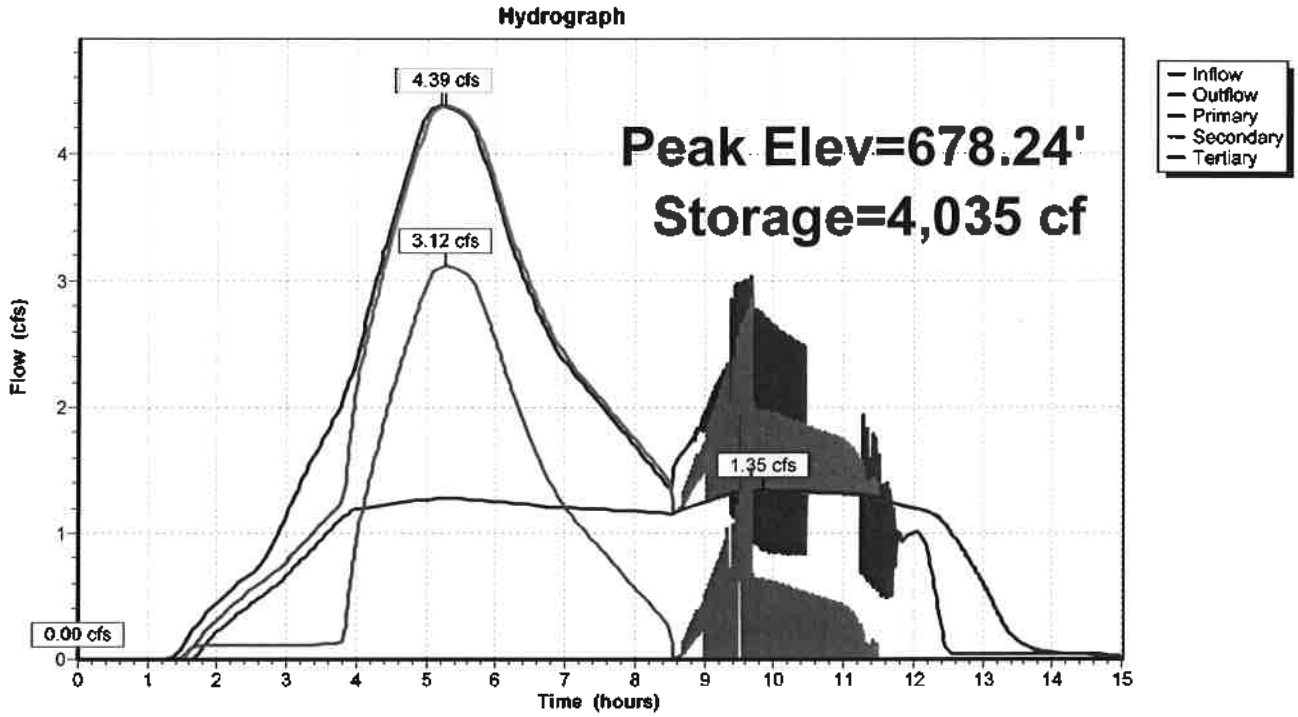
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=1.35 cfs @ 9.86 hrs HW=678.24' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.35 cfs @ 5.84 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

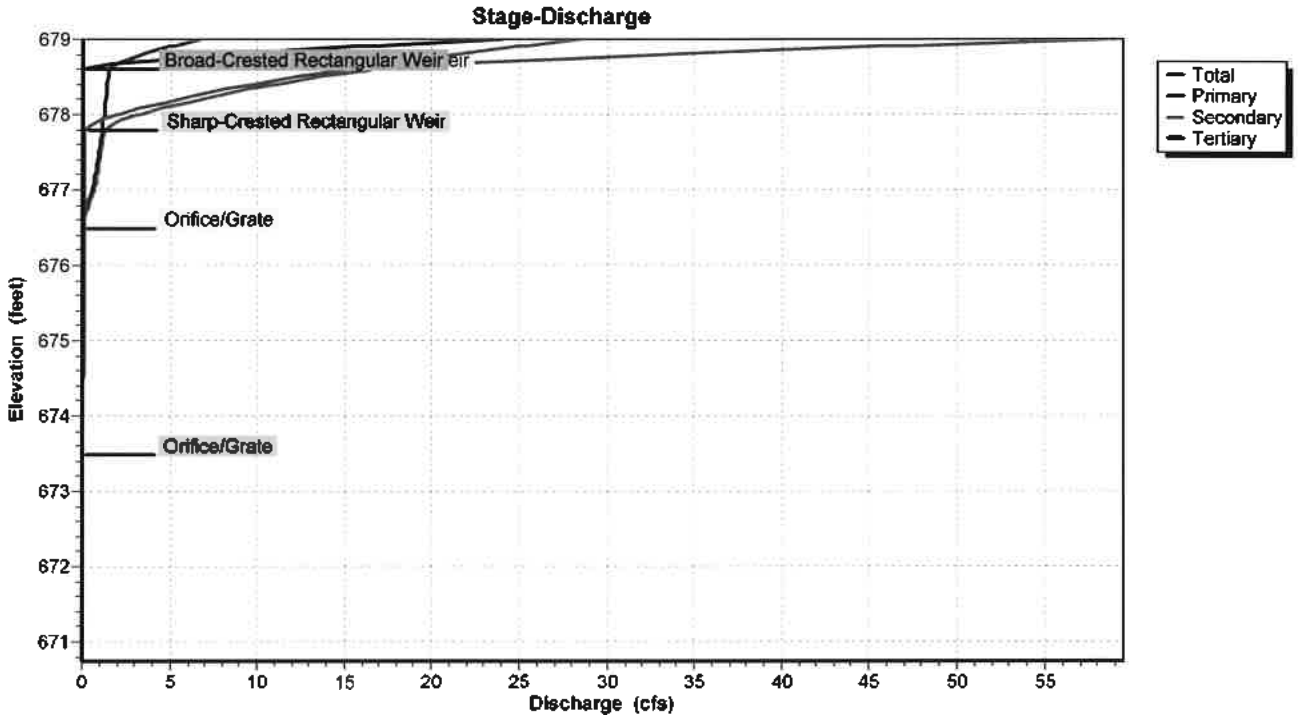
**Secondary OutFlow** Max=3.12 cfs @ 5.28 hrs HW=678.08' TW=673.04' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.13 cfs @ 10.23 fps)
└─**5=Sharp-Crested Rectangular Weir** (Weir Controls 2.99 cfs @ 1.79 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

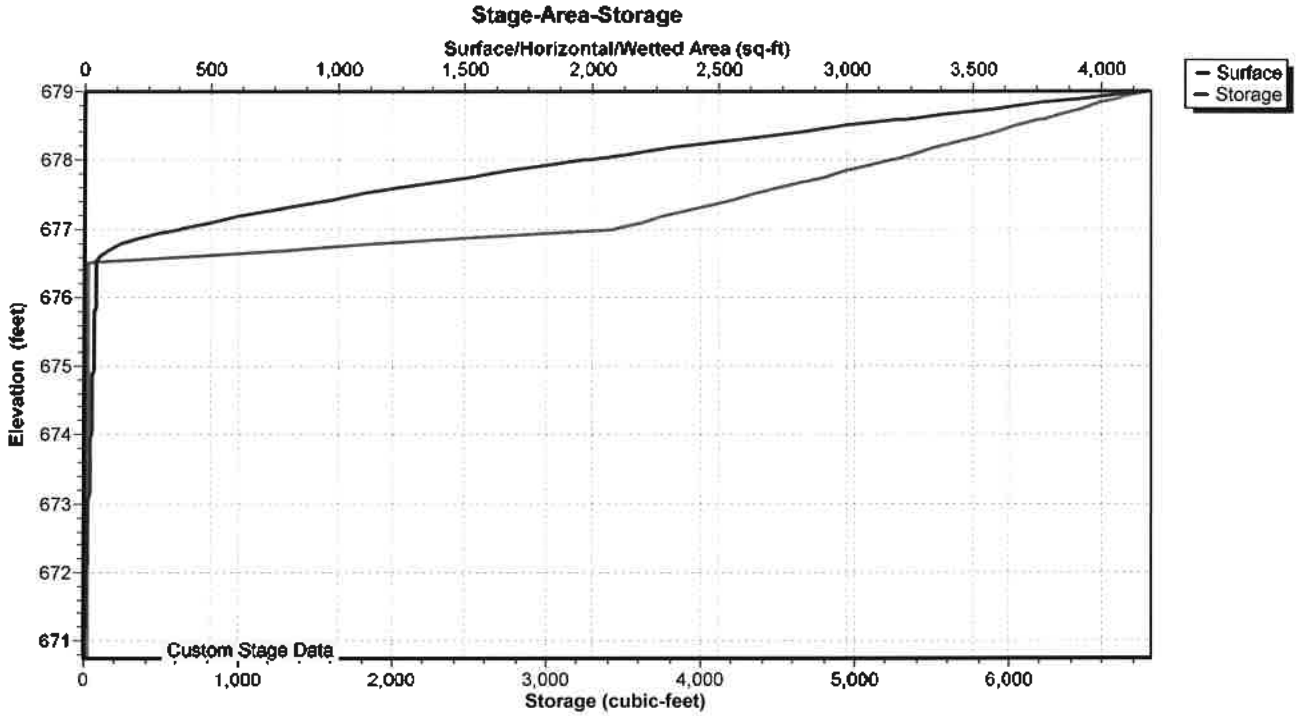
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.50 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.50 | 0.10 | 25 | 672.53 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.45 | 249 | 676.78 | 0.32 | 0.22 | 0.11 | 0.00 |
| 2.50 | 0.69 | 480 | 676.94 | 0.55 | 0.45 | 0.11 | 0.00 |
| 3.00 | 1.15 | 881 | 677.13 | 0.77 | 0.66 | 0.11 | 0.00 |
| 3.50 | 1.72 | 1,820 | 677.51 | 1.07 | 0.96 | 0.12 | 0.00 |
| 4.00 | 2.39 | 2,983 | 677.92 | 2.13 | 1.19 | 0.94 | 0.00 |
| 4.50 | 3.45 | 3,275 | 678.01 | 3.32 | 1.24 | 2.09 | 0.00 |
| 5.00 | **4.30** | 3,464 | 678.07 | **4.23** | 1.27 | **2.97** | 0.00 |
| 5.50 | **4.33** | 3,487 | 678.08 | **4.35** | 1.27 | **3.08** | 0.00 |
| 6.00 | 3.67 | 3,373 | 678.04 | 3.77 | 1.25 | 2.52 | 0.00 |
| 6.50 | 2.90 | 3,205 | 677.99 | 2.98 | 1.23 | 1.75 | 0.00 |
| 7.00 | 2.35 | 3,071 | 677.95 | 2.41 | 1.20 | 1.20 | 0.00 |
| 7.50 | 2.02 | 2,983 | 677.92 | 2.07 | 1.19 | 0.88 | 0.00 |
| 8.00 | 1.69 | 2,891 | 677.89 | 1.74 | 1.17 | 0.57 | 0.00 |
| 8.50 | 1.35 | 2,784 | 677.85 | 1.39 | 1.15 | 0.24 | 0.00 |
| 9.00 | 1.96 | 3,364 | 678.04 | 1.72 | 1.25 | 0.47 | 0.00 |
| 9.50 | 1.08 | **3,873** | **678.20** | 2.61 | **1.32** | 1.29 | 0.00 |
| 10.00 | 2.71 | **3,924** | **678.21** | 1.33 | **1.33** | 0.00 | 0.00 |
| 10.50 | 0.84 | 3,926 | 678.21 | 2.90 | 1.33 | 1.57 | 0.00 |
| 11.00 | 2.34 | 3,748 | 678.16 | 1.31 | 1.31 | 0.00 | 0.00 |
| 11.50 | 0.53 | 3,523 | 678.09 | 1.27 | 1.27 | 0.00 | 0.00 |
| 12.00 | 1.01 | 3,051 | 677.94 | 1.20 | 1.20 | 0.00 | 0.00 |
| 12.50 | 0.06 | 2,185 | 677.65 | 1.04 | 1.04 | 0.00 | 0.00 |
| 13.00 | 0.04 | 753 | 677.07 | 0.61 | 0.61 | 0.00 | 0.00 |
| 13.50 | 0.05 | 192 | 676.73 | 0.15 | 0.15 | 0.00 | 0.00 |
| 14.00 | 0.04 | 121 | 676.63 | 0.05 | 0.05 | 0.00 | 0.00 |
| 14.50 | 0.04 | 110 | 676.61 | 0.04 | 0.04 | 0.00 | 0.00 |
| 15.00 | 0.00 | 103 | 676.60 | 0.03 | 0.03 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 5.62 | 1.30 | 4.31 | 0.00 |
| 678.35 | 9.91 | 1.39 | 8.51 | 0.00 |
| 678.55 | 15.18 | 1.48 | 13.70 | 0.00 |
| 678.75 | 27.96 | 2.72 | 19.77 | 5.47 |
| 678.95 | **52.16** | **5.83** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

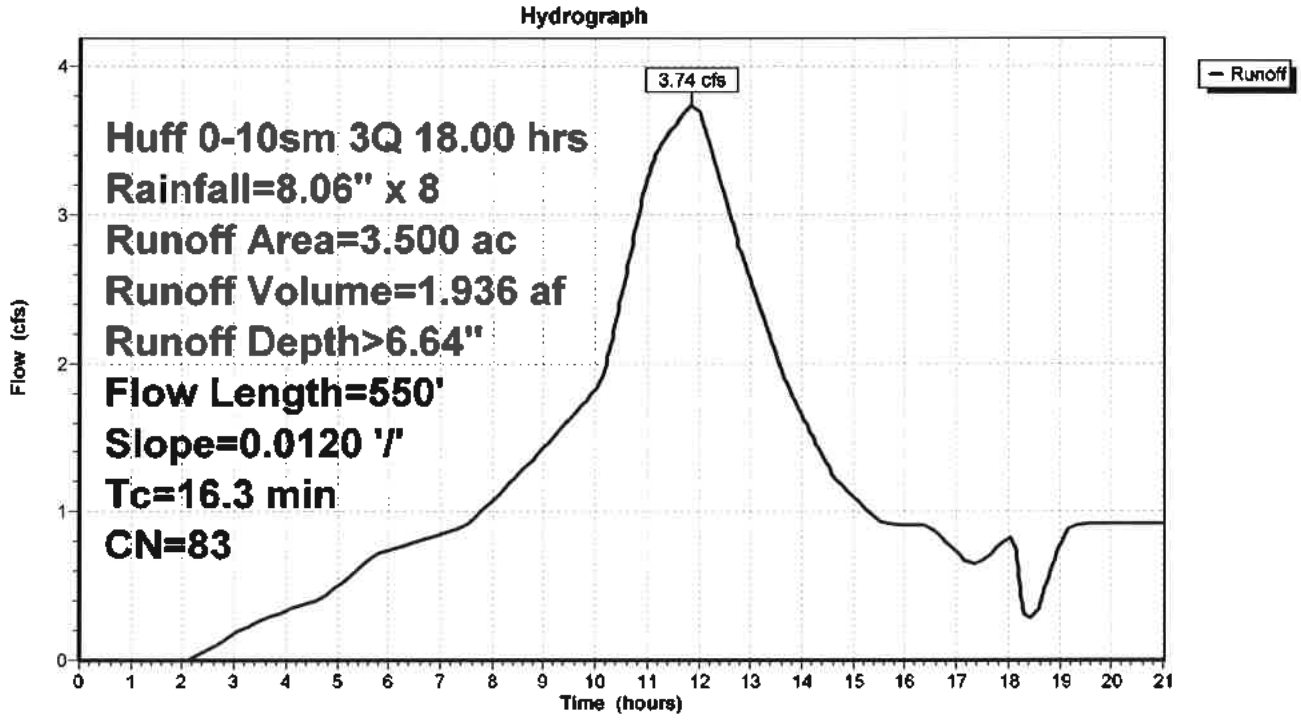
Runoff = 3.74 cfs @ 11.86 hrs, Volume= 1.936 af, Depth> 6.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.01 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=8.06" x 8

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.50 | 0.04 | 0.00 | 0.00 |
| 1.00 | 0.15 | 0.00 | 0.00 |
| 1.50 | 0.29 | 0.00 | 0.00 |
| 2.00 | 0.42 | 0.00 | 0.00 |
| 2.50 | 0.56 | 0.01 | 0.07 |
| 3.00 | 0.70 | 0.04 | 0.18 |
| 3.50 | 0.83 | 0.07 | 0.26 |
| 4.00 | 0.97 | 0.12 | 0.34 |
| 4.50 | 1.10 | 0.18 | 0.40 |
| 5.00 | 1.25 | 0.25 | 0.50 |
| 5.50 | 1.43 | 0.34 | 0.65 |
| 6.00 | 1.61 | 0.44 | 0.74 |
| 6.50 | 1.79 | 0.56 | 0.80 |
| 7.00 | 1.97 | 0.68 | 0.85 |
| 7.50 | 2.16 | 0.81 | 0.91 |
| 8.00 | 2.37 | 0.96 | 1.07 |
| 8.50 | 2.60 | 1.13 | 1.25 |
| 9.00 | 2.86 | 1.34 | 1.43 |
| 9.50 | 3.15 | 1.57 | 1.62 |
| 10.00 | 3.46 | 1.83 | 1.82 |
| 10.50 | 3.87 | 2.17 | 2.44 |
| 11.00 | 4.39 | 2.63 | 3.26 |
| 11.50 | 4.96 | 3.14 | **3.59** |
| 12.00 | 5.53 | 3.66 | **3.69** |
| 12.50 | 6.01 | 4.10 | 3.13 |
| 13.00 | 6.40 | 4.46 | 2.55 |
| 13.50 | 6.71 | 4.75 | 2.06 |
| 14.00 | 6.96 | 4.99 | 1.65 |
| 14.50 | 7.15 | 5.17 | 1.32 |
| 15.00 | 7.32 | 5.33 | 1.10 |
| 15.50 | 7.46 | 5.46 | 0.94 |
| 16.00 | 7.60 | 5.59 | 0.91 |
| 16.50 | 7.73 | 5.72 | 0.89 |
| 17.00 | 7.84 | 5.82 | 0.73 |
| 17.50 | 7.94 | 5.92 | 0.67 |
| 18.00 | 8.06 | 6.03 | 0.83 |
| 18.50 | 8.10 | 6.07 | 0.30 |
| 19.00 | 8.21 | 6.18 | 0.76 |
| 19.50 | 8.35 | 6.31 | 0.92 |
| 20.00 | 8.48 | 6.44 | 0.92 |
| 20.50 | 8.62 | 6.57 | 0.92 |
| 21.00 | **8.76** | **6.70** | 0.92 |

## Summary for Subcatchment 7S: South Property

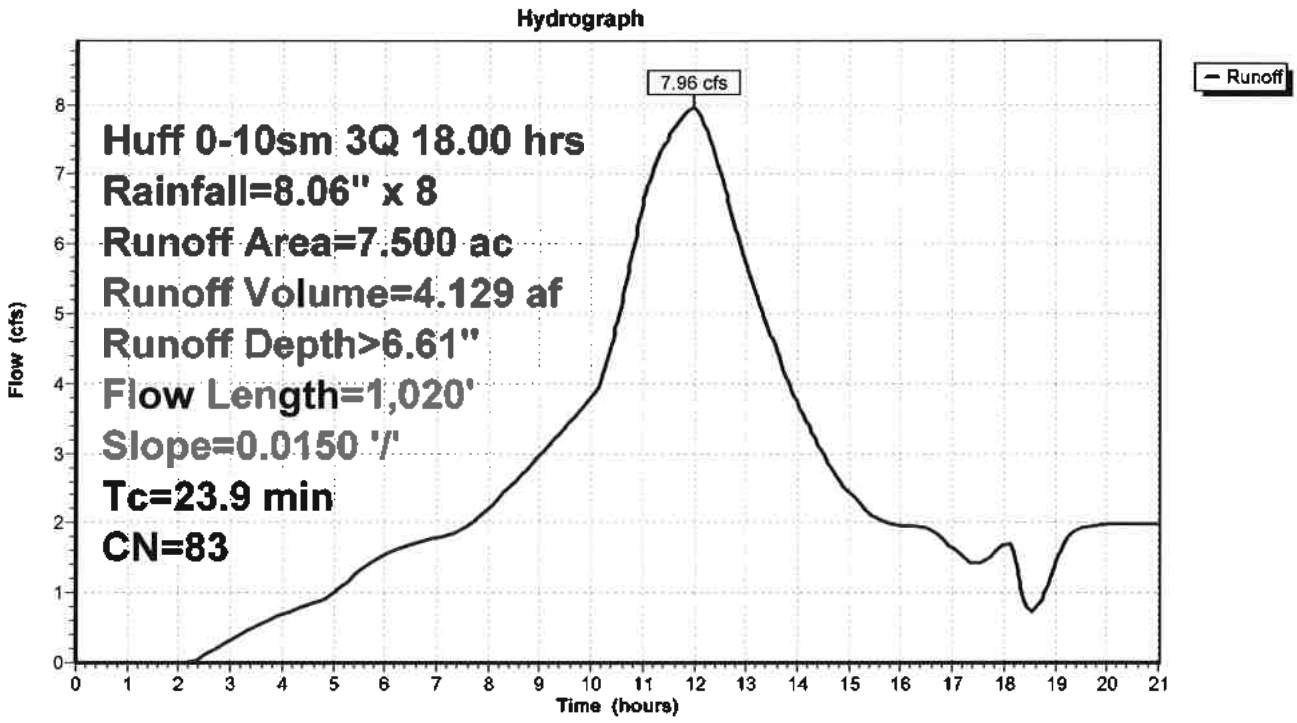
Runoff = 7.96 cfs @ 11.98 hrs, Volume= 4.129 af, Depth> 6.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.01 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=8.06" x 8

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.50 | 0.04 | 0.00 | 0.00 |
| 1.00 | 0.15 | 0.00 | 0.00 |
| 1.50 | 0.29 | 0.00 | 0.00 |
| 2.00 | 0.42 | 0.00 | 0.00 |
| 2.50 | 0.56 | 0.01 | 0.10 |
| 3.00 | 0.70 | 0.04 | 0.33 |
| 3.50 | 0.83 | 0.07 | 0.52 |
| 4.00 | 0.97 | 0.12 | 0.68 |
| 4.50 | 1.10 | 0.18 | 0.82 |
| 5.00 | 1.25 | 0.25 | 1.00 |
| 5.50 | 1.43 | 0.34 | 1.31 |
| 6.00 | 1.61 | 0.44 | 1.55 |
| 6.50 | 1.79 | 0.56 | 1.69 |
| 7.00 | 1.97 | 0.68 | 1.79 |
| 7.50 | 2.16 | 0.81 | 1.91 |
| 8.00 | 2.37 | 0.96 | 2.21 |
| 8.50 | 2.60 | 1.13 | 2.58 |
| 9.00 | 2.86 | 1.34 | 2.98 |
| 9.50 | 3.15 | 1.57 | 3.38 |
| 10.00 | 3.46 | 1.83 | 3.79 |
| 10.50 | 3.87 | 2.17 | 4.85 |
| 11.00 | 4.39 | 2.63 | 6.58 |
| 11.50 | 4.96 | 3.14 | **7.55** |
| 12.00 | 5.53 | 3.66 | **7.95** |
| 12.50 | 6.01 | 4.10 | 7.01 |
| 13.00 | 6.40 | 4.46 | 5.73 |
| 13.50 | 6.71 | 4.75 | 4.66 |
| 14.00 | 6.96 | 4.99 | 3.72 |
| 14.50 | 7.15 | 5.17 | 2.98 |
| 15.00 | 7.32 | 5.33 | 2.45 |
| 15.50 | 7.46 | 5.46 | 2.08 |
| 16.00 | 7.60 | 5.59 | 1.96 |
| 16.50 | 7.73 | 5.72 | 1.94 |
| 17.00 | 7.84 | 5.82 | 1.65 |
| 17.50 | 7.94 | 5.92 | 1.41 |
| 18.00 | 8.06 | 6.03 | 1.70 |
| 18.50 | 8.10 | 6.07 | 0.69 |
| 19.00 | 8.21 | 6.18 | 1.40 |
| 19.50 | 8.35 | 6.31 | 1.94 |
| 20.00 | 8.48 | 6.44 | 1.98 |
| 20.50 | 8.62 | 6.57 | 1.98 |
| 21.00 | **8.76** | **6.70** | 1.98 |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 10.44 cfs @ | 11.93 hrs, | Volume= | 4.940 af |
| Outflow | = | 4.35 cfs @ | 15.15 hrs, | Volume= | 1.908 af, Atten= 58%, Lag= 193.2 min |
| Primary | = | 1.52 cfs @ | 15.74 hrs, | Volume= | 1.481 af |
| Secondary | = | 2.83 cfs @ | 15.15 hrs, | Volume= | 0.427 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-21.00 hrs, dt= 0.01 hrs
Peak Elev= 678.34' @ 15.74 hrs Surf.Area= 47,080 sf Storage= 135,796 cf

Plug-Flow detention time= 366.5 min calculated for 1.907 af (39% of inflow)
Center-of-Mass det. time= 161.5 min ( 899.3 - 737.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

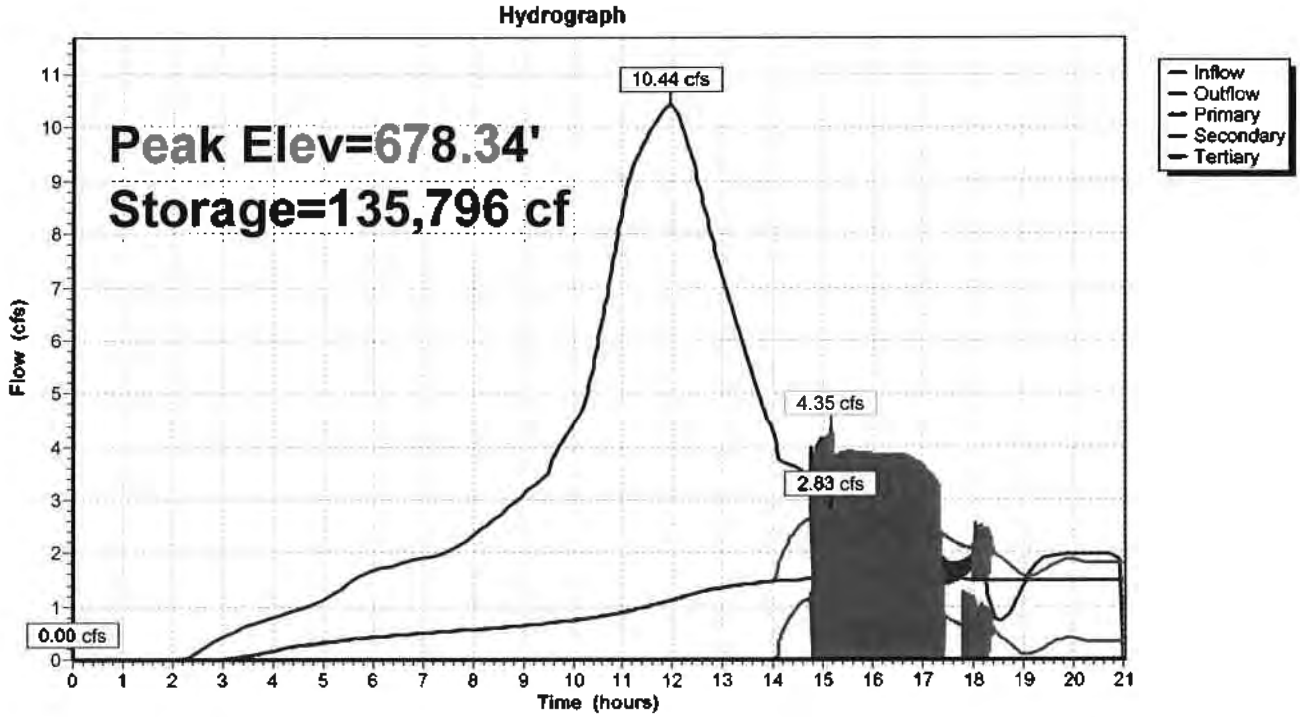
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=1.52 cfs @ 15.74 hrs HW=678.34' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.52 cfs @ 13.75 fps)

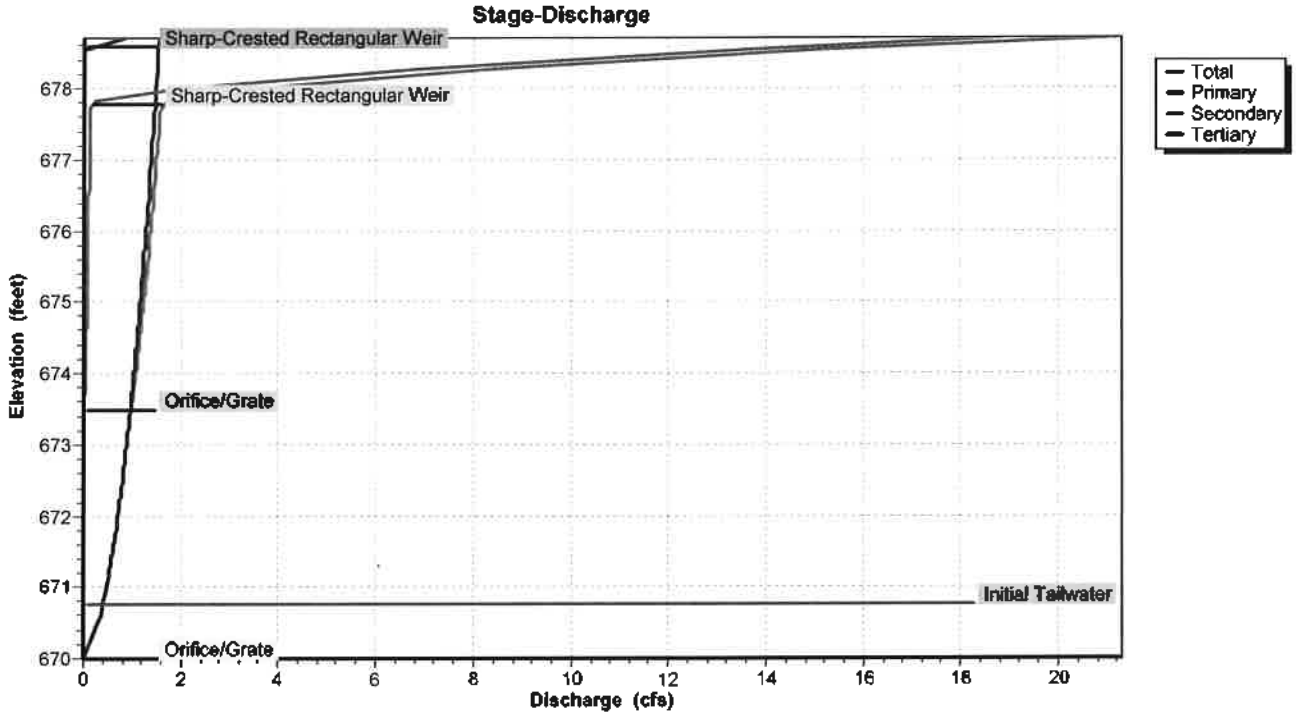
**Secondary OutFlow** Max=2.17 cfs @ 15.15 hrs HW=678.31' TW=678.29' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** (Weir Controls 2.16 cfs @ 0.72 fps)
└─**4=Orifice/Grate** (Orifice Controls 0.01 cfs @ 0.57 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

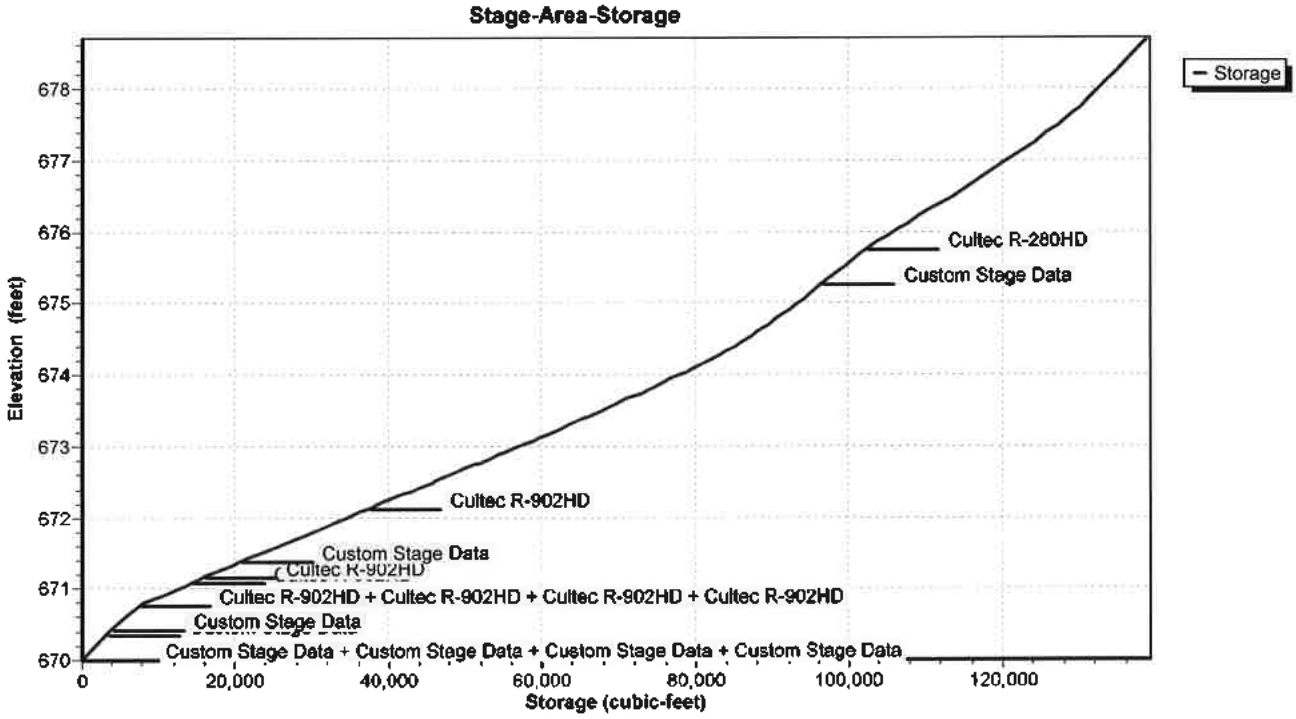
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.50 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.50 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.50 | 0.13 | 53 | 670.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | 0.43 | 580 | 670.06 | 0.01 | 0.01 | 0.00 | 0.00 |
| 3.50 | 0.62 | 1,471 | 670.16 | 0.06 | 0.06 | 0.00 | 0.00 |
| 4.00 | 0.79 | 2,545 | 670.28 | 0.16 | 0.16 | 0.00 | 0.00 |
| 4.50 | 0.93 | 3,713 | 670.41 | 0.25 | 0.25 | 0.00 | 0.00 |
| 5.00 | 1.11 | 5,009 | 670.54 | 0.31 | 0.31 | 0.00 | 0.00 |
| 5.50 | 1.42 | 6,642 | 670.70 | 0.38 | 0.38 | 0.00 | 0.00 |
| 6.00 | 1.66 | 8,711 | 670.82 | 0.42 | 0.42 | 0.00 | 0.00 |
| 6.50 | 1.80 | 11,032 | 670.94 | 0.46 | 0.46 | 0.00 | 0.00 |
| 7.00 | 1.91 | 13,508 | 671.05 | 0.50 | 0.50 | 0.00 | 0.00 |
| 7.50 | 2.02 | 16,107 | 671.18 | 0.53 | 0.53 | 0.00 | 0.00 |
| 8.00 | 2.33 | 19,005 | 671.31 | 0.56 | 0.56 | 0.00 | 0.00 |
| 8.50 | 2.70 | 22,472 | 671.46 | 0.60 | 0.60 | 0.00 | 0.00 |
| 9.00 | 3.10 | 26,561 | 671.64 | 0.64 | 0.64 | 0.00 | 0.00 |
| 9.50 | 3.54 | 31,295 | 671.85 | 0.69 | 0.69 | 0.00 | 0.00 |
| 10.00 | 4.40 | 37,253 | 672.12 | 0.74 | 0.74 | 0.00 | 0.00 |
| 10.50 | 5.97 | 44,869 | 672.45 | 0.80 | 0.80 | 0.00 | 0.00 |
| 11.00 | 8.52 | 56,338 | 672.96 | 0.89 | 0.89 | 0.00 | 0.00 |
| 11.50 | **9.86** | 71,404 | 673.67 | 0.99 | 0.99 | 0.00 | 0.00 |
| 12.00 | **10.41** | 87,896 | 674.58 | 1.11 | 1.11 | 0.00 | 0.00 |
| 12.50 | 8.98 | 103,426 | 675.84 | 1.26 | 1.26 | 0.00 | 0.00 |
| 13.00 | 7.13 | 115,561 | 676.64 | 1.35 | 1.35 | 0.00 | 0.00 |
| 13.50 | 5.59 | 124,532 | 677.28 | 1.42 | 1.42 | 0.00 | 0.00 |
| 14.00 | 4.25 | 130,740 | 677.79 | 1.47 | 1.47 | 0.00 | 0.00 |
| 14.50 | 3.60 | 133,828 | 678.12 | 2.50 | 1.50 | 1.00 | 0.00 |
| 15.00 | 4.50 | 135,148 | 678.27 | **2.76** | 1.51 | **1.25** | 0.00 |
| 15.50 | 2.08 | **135,763** | **678.34** | **4.16** | **1.52** | **2.64** | 0.00 |
| 16.00 | 5.07 | **135,634** | **678.33** | 1.52 | **1.52** | 0.00 | 0.00 |
| 16.50 | 1.94 | 135,736 | 678.34 | 4.10 | 1.52 | 2.58 | 0.00 |
| 17.00 | 4.07 | 135,263 | 678.28 | 1.51 | 1.51 | 0.00 | 0.00 |
| 17.50 | 1.41 | 134,472 | 678.20 | 3.02 | 1.50 | 1.52 | 0.00 |
| 18.00 | 2.49 | 133,730 | 678.11 | 1.68 | 1.50 | 0.19 | 0.00 |
| 18.50 | 0.69 | 132,547 | 677.98 | 1.95 | 1.48 | 0.46 | 0.00 |
| 19.00 | 1.40 | 131,098 | 677.83 | 1.57 | 1.47 | 0.10 | 0.00 |
| 19.50 | 1.94 | 131,353 | 677.85 | 1.73 | 1.47 | 0.26 | 0.00 |
| 20.00 | 1.98 | 131,588 | 677.88 | 1.88 | 1.47 | 0.41 | 0.00 |
| 20.50 | 1.98 | 131,852 | 677.91 | 1.80 | 1.48 | 0.33 | 0.00 |
| 21.00 | 0.00 | 132,160 | 677.94 | 1.82 | 1.48 | 0.34 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 16.68 | 1.54 | 15.13 | 0.00 |
| 678.80 | **24.77** | **1.56** | **21.42** | **1.79** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 3.88 cfs @ | 15.15 hrs, | Volume= | 2.362 af |
| Outflow | = | 4.52 cfs @ | 15.68 hrs, | Volume= | 2.293 af, Atten= 0%, Lag= 31.9 min |
| Primary | = | 1.40 cfs @ | 15.72 hrs, | Volume= | 1.480 af |
| Secondary | = | 3.12 cfs @ | 15.68 hrs, | Volume= | 0.813 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-21.00 hrs, dt= 0.01 hrs
Peak Elev= 678.36' @ 15.72 hrs Surf.Area= 3,535 sf Storage= 4,446 cf

Plug-Flow detention time= 25.9 min calculated for 2.292 af (97% of inflow)
Center-of-Mass det. time= 12.2 min ( 792.2 - 780.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

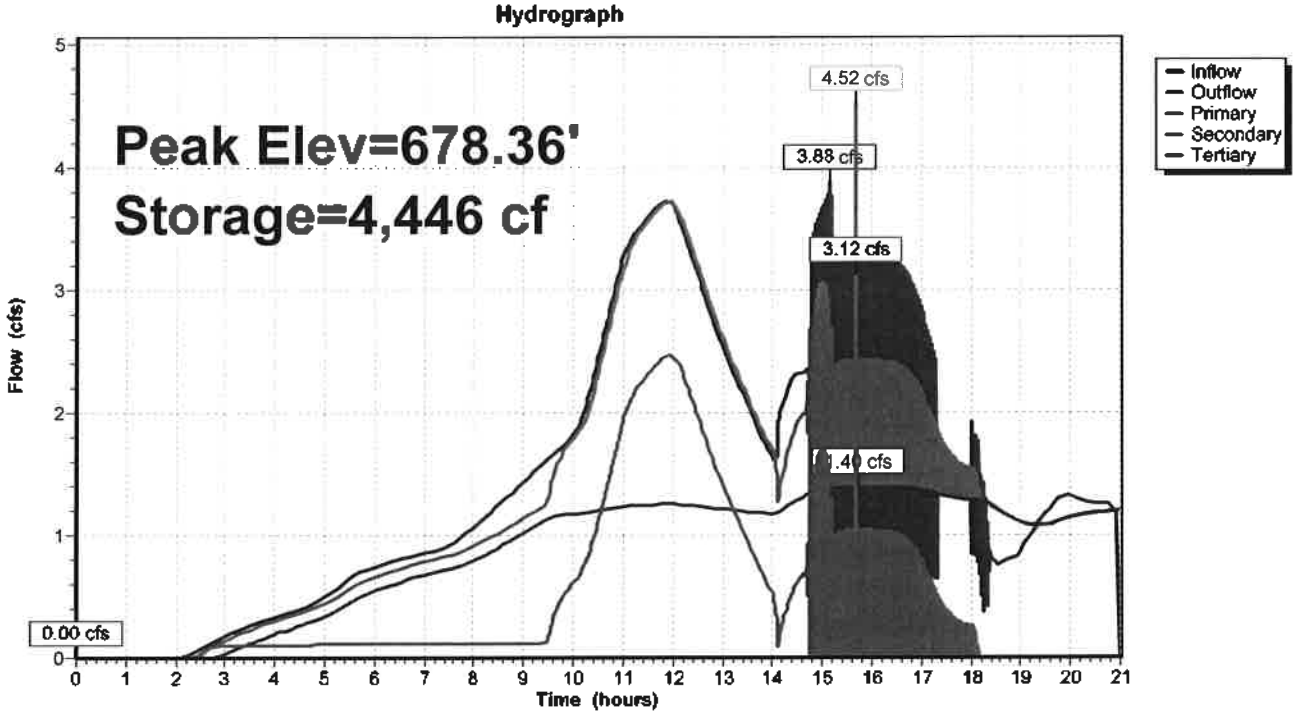
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=1.40 cfs @ 15.72 hrs HW=678.36' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.40 cfs @ 6.07 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

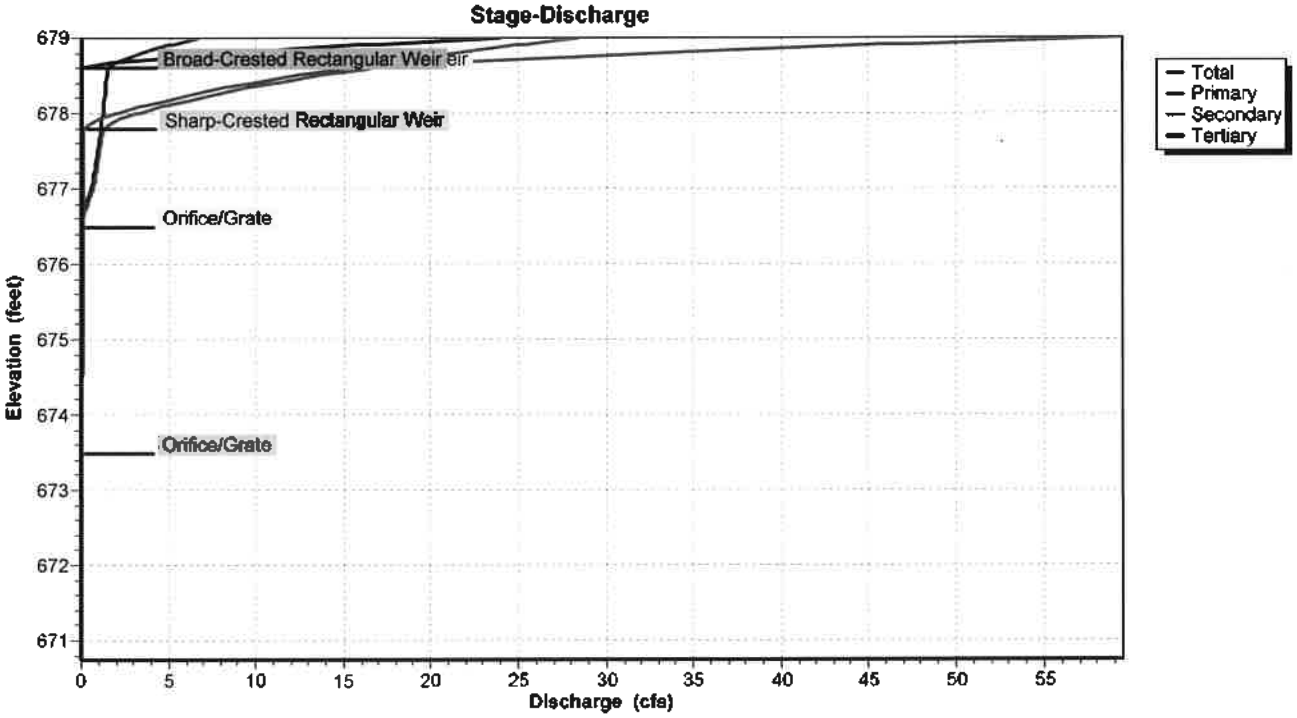
**Secondary OutFlow** Max=3.43 cfs @ 15.68 hrs HW=678.36' TW=678.33' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.01 cfs @ 0.89 fps)
└─**5=Sharp-Crested Rectangular Weir** (Weir Controls 3.42 cfs @ 1.04 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

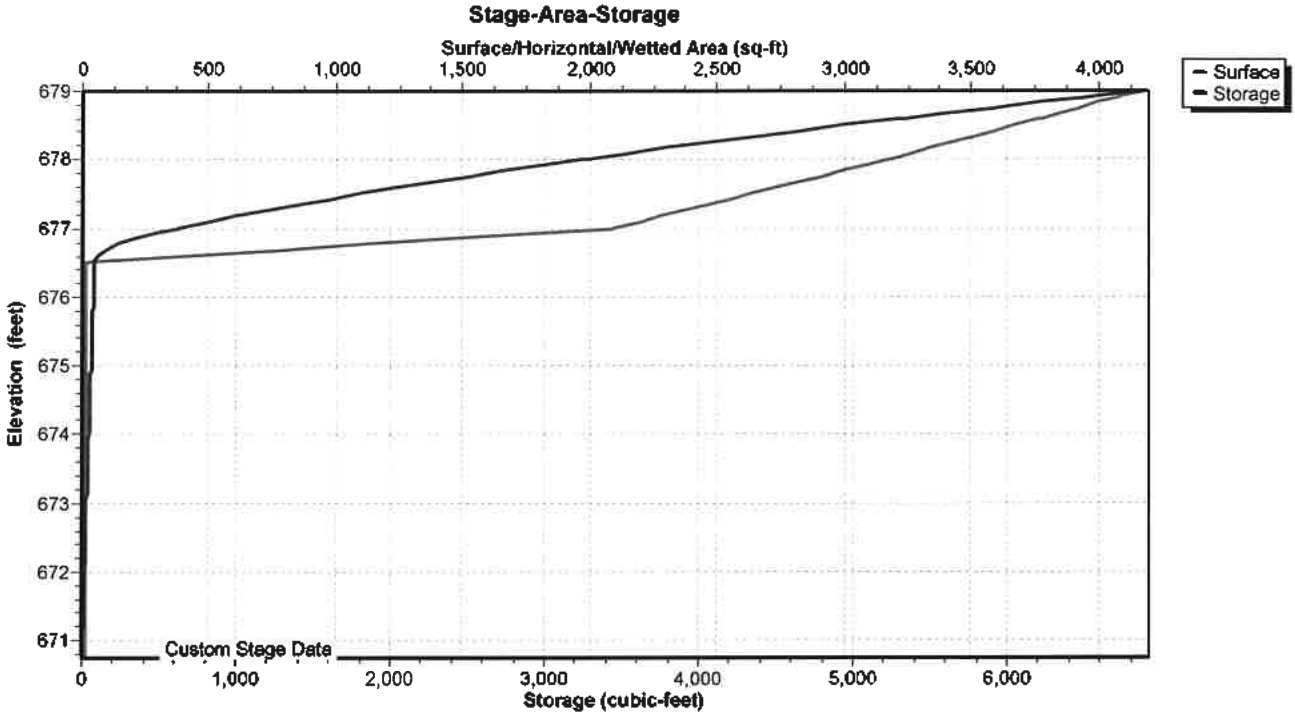
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.50 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.50 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.50 | 0.07 | 43 | 673.81 | 0.03 | 0.00 | 0.03 | 0.00 |
| 3.00 | 0.18 | 107 | 676.61 | 0.14 | 0.04 | 0.10 | 0.00 |
| 3.50 | 0.26 | 172 | 676.70 | 0.23 | 0.12 | 0.10 | 0.00 |
| 4.00 | 0.34 | 233 | 676.77 | 0.30 | 0.20 | 0.11 | 0.00 |
| 4.50 | 0.40 | 289 | 676.81 | 0.37 | 0.26 | 0.11 | 0.00 |
| 5.00 | 0.50 | 356 | 676.86 | 0.44 | 0.33 | 0.11 | 0.00 |
| 5.50 | 0.65 | 487 | 676.94 | 0.56 | 0.45 | 0.11 | 0.00 |
| 6.00 | 0.74 | 641 | 677.02 | 0.66 | 0.56 | 0.11 | 0.00 |
| 6.50 | 0.80 | 777 | 677.08 | 0.73 | 0.62 | 0.11 | 0.00 |
| 7.00 | 0.85 | 900 | 677.14 | 0.78 | 0.67 | 0.11 | 0.00 |
| 7.50 | 0.91 | 1,020 | 677.19 | 0.83 | 0.72 | 0.11 | 0.00 |
| 8.00 | 1.07 | 1,238 | 677.28 | 0.91 | 0.79 | 0.11 | 0.00 |
| 8.50 | 1.25 | 1,595 | 677.43 | 1.02 | 0.90 | 0.12 | 0.00 |
| 9.00 | 1.43 | 2,072 | 677.61 | 1.13 | 1.01 | 0.12 | 0.00 |
| 9.50 | 1.62 | 2,667 | 677.82 | 1.29 | 1.13 | 0.16 | 0.00 |
| 10.00 | 1.82 | 2,875 | 677.88 | 1.78 | 1.17 | 0.61 | 0.00 |
| 10.50 | 2.44 | 3,034 | 677.94 | 2.32 | 1.20 | 1.12 | 0.00 |
| 11.00 | 3.26 | 3,239 | 678.00 | 3.16 | 1.23 | 1.93 | 0.00 |
| 11.50 | 3.59 | 3,326 | 678.03 | 3.56 | 1.24 | 2.31 | 0.00 |
| 12.00 | 3.69 | 3,363 | 678.04 | 3.72 | 1.25 | 2.47 | 0.00 |
| 12.50 | 3.13 | 3,257 | 678.01 | 3.20 | 1.23 | 1.97 | 0.00 |
| 13.00 | 2.55 | 3,124 | 677.96 | 2.61 | 1.21 | 1.40 | 0.00 |
| 13.50 | 2.06 | 3,002 | 677.93 | 2.13 | 1.19 | 0.94 | 0.00 |
| 14.00 | 1.65 | 2,884 | 677.89 | 1.70 | 1.17 | 0.53 | 0.00 |
| 14.50 | 2.32 | 3,631 | 678.12 | 1.90 | 1.29 | 0.61 | 0.00 |
| 15.00 | **2.34** | 4,201 | 678.29 | 3.42 | 1.37 | 2.05 | 0.00 |
| 15.50 | **3.58** | **4,286** | **678.32** | **1.38** | **1.38** | **0.00** | 0.00 |
| 16.00 | 0.91 | **4,440** | **678.36** | **4.50** | **1.40** | **3.10** | 0.00 |
| 16.50 | 3.47 | 4,277 | 678.31 | 1.38 | 1.38 | 0.00 | 0.00 |
| 17.00 | 0.73 | 4,268 | 678.31 | 3.79 | 1.38 | 2.42 | 0.00 |
| 17.50 | 2.19 | 3,815 | 678.18 | 1.32 | 1.32 | 0.00 | 0.00 |
| 18.00 | 1.02 | 3,629 | 678.12 | 2.08 | 1.29 | 0.79 | 0.00 |
| 18.50 | 0.76 | 3,147 | 677.97 | 1.22 | 1.22 | 0.00 | 0.00 |
| 19.00 | 0.86 | 2,493 | 677.76 | 1.10 | 1.10 | 0.00 | 0.00 |
| 19.50 | 1.18 | 2,387 | 677.72 | 1.08 | 1.08 | 0.00 | 0.00 |
| 20.00 | 1.33 | 2,703 | 677.83 | 1.14 | 1.14 | 0.00 | 0.00 |
| 20.50 | 1.25 | 2,912 | 677.90 | 1.18 | 1.18 | 0.00 | 0.00 |
| 21.00 | 0.00 | 3,032 | 677.94 | 1.20 | 1.20 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 5.62 | 1.30 | 4.31 | 0.00 |
| 678.35 | 9.91 | 1.39 | 8.51 | 0.00 |
| 678.55 | 15.18 | 1.48 | 13.70 | 0.00 |
| 678.75 | 27.96 | 2.72 | 19.77 | 5.47 |
| 678.95 | **52.16** | **5.83** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

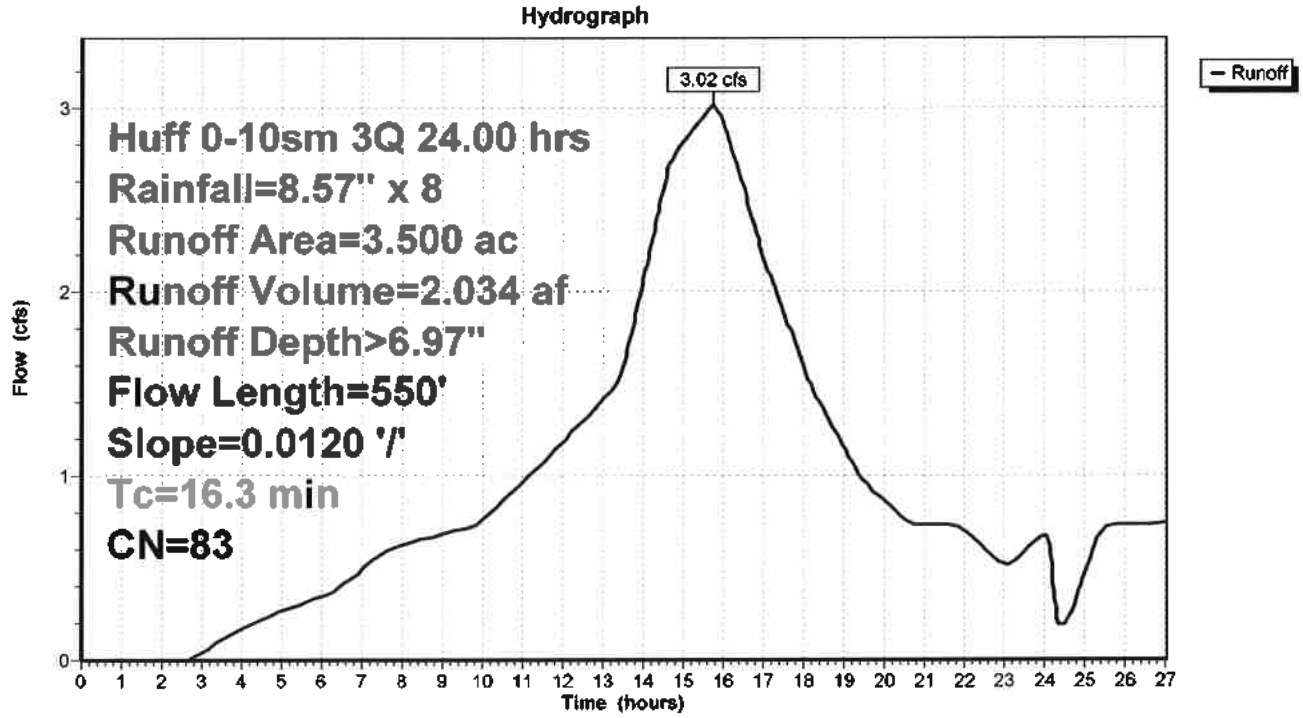
Runoff = 3.02 cfs @ 15.77 hrs, Volume= 2.034 af, Depth> 6.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=8.57" x 8

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.50 | 0.02 | 0.00 | 0.00 |
| 1.00 | 0.09 | 0.00 | 0.00 |
| 1.50 | 0.20 | 0.00 | 0.00 |
| 2.00 | 0.30 | 0.00 | 0.00 |
| 2.50 | 0.41 | 0.00 | 0.00 |
| 3.00 | 0.52 | 0.01 | 0.04 |
| 3.50 | 0.63 | 0.02 | 0.11 |
| 4.00 | 0.74 | 0.05 | 0.17 |
| 4.50 | 0.85 | 0.08 | 0.22 |
| 5.00 | 0.96 | 0.12 | 0.27 |
| 5.50 | 1.07 | 0.16 | 0.31 |
| 6.00 | 1.17 | 0.21 | 0.34 |
| 6.50 | 1.29 | 0.27 | 0.40 |
| 7.00 | 1.42 | 0.34 | 0.49 |
| 7.50 | 1.57 | 0.42 | 0.58 |
| 8.00 | 1.71 | 0.51 | 0.62 |
| 8.50 | 1.86 | 0.60 | 0.66 |
| 9.00 | 2.00 | 0.70 | 0.69 |
| 9.50 | 2.15 | 0.80 | 0.71 |
| 10.00 | 2.30 | 0.90 | 0.76 |
| 10.50 | 2.46 | 1.03 | 0.86 |
| 11.00 | 2.64 | 1.16 | 0.97 |
| 11.50 | 2.84 | 1.32 | 1.07 |
| 12.00 | 3.05 | 1.48 | 1.18 |
| 12.50 | 3.27 | 1.67 | 1.30 |
| 13.00 | 3.51 | 1.87 | 1.41 |
| 13.50 | 3.78 | 2.09 | 1.59 |
| 14.00 | 4.11 | 2.38 | 2.06 |
| 14.50 | 4.52 | 2.75 | 2.56 |
| 15.00 | 4.97 | 3.15 | 2.82 |
| 15.50 | 5.43 | 3.57 | **2.96** |
| 16.00 | 5.88 | 3.98 | **2.94** |
| 16.50 | 6.28 | 4.35 | 2.58 |
| 17.00 | 6.61 | 4.66 | 2.20 |
| 17.50 | 6.89 | 4.93 | 1.90 |
| 18.00 | 7.13 | 5.15 | 1.60 |
| 18.50 | 7.34 | 5.35 | 1.35 |
| 19.00 | 7.51 | 5.51 | 1.15 |
| 19.50 | 7.65 | 5.65 | 0.97 |
| 20.00 | 7.78 | 5.77 | 0.86 |
| 20.50 | 7.90 | 5.88 | 0.76 |
| 21.00 | 8.00 | 5.98 | 0.73 |
| 21.50 | 8.11 | 6.09 | 0.73 |
| 22.00 | 8.22 | 6.18 | 0.70 |
| 22.50 | 8.31 | 6.27 | 0.60 |
| 23.00 | 8.38 | 6.34 | 0.51 |
| 23.50 | 8.47 | 6.43 | 0.58 |
| 24.00 | 8.57 | 6.52 | 0.69 |
| 24.50 | 8.59 | 6.54 | 0.19 |
| 25.00 | 8.66 | 6.61 | 0.46 |
| 25.50 | 8.77 | 6.71 | 0.72 |
| 26.00 | 8.87 | 6.82 | 0.74 |
| 26.50 | 8.98 | 6.92 | 0.74 |
| 27.00 | **9.09** | **7.03** | 0.74 |

## Summary for Subcatchment 7S: South Property

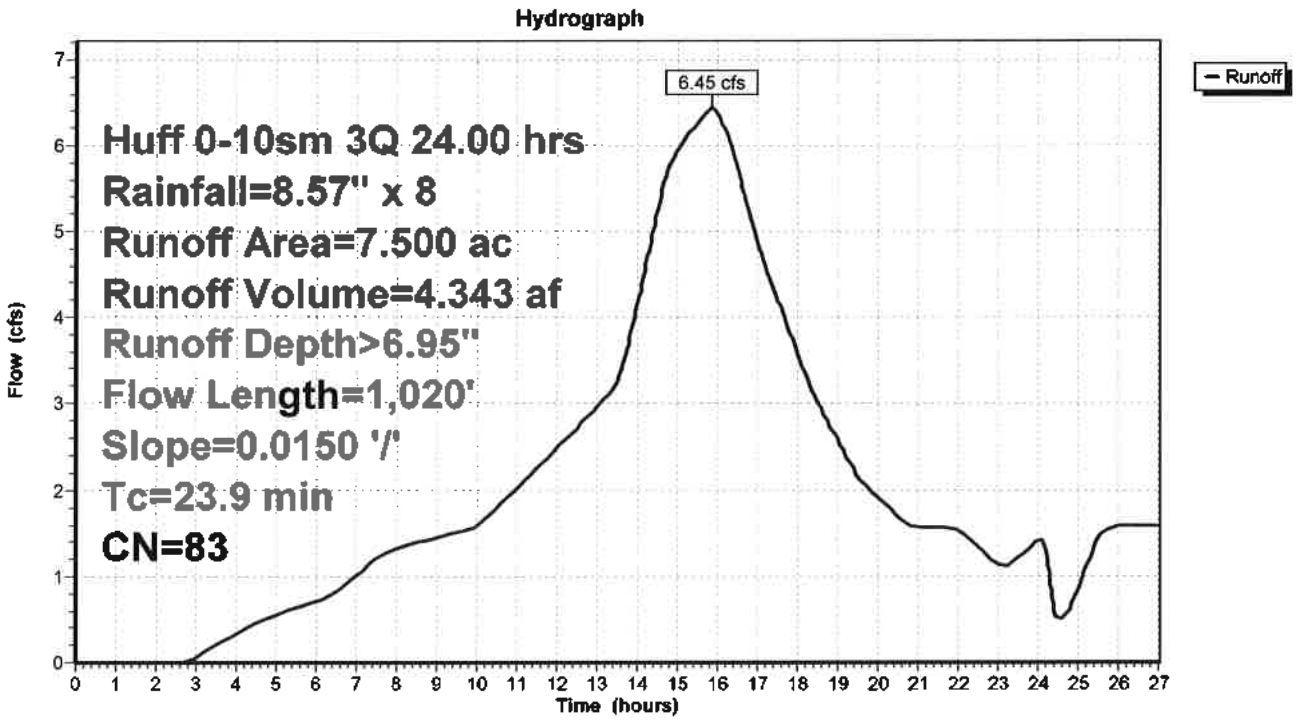
Runoff = 6.45 cfs @ 15.85 hrs, Volume= 4.343 af, Depth> 6.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=8.57" x 8

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.50 | 0.02 | 0.00 | 0.00 |
| 1.00 | 0.09 | 0.00 | 0.00 |
| 1.50 | 0.20 | 0.00 | 0.00 |
| 2.00 | 0.30 | 0.00 | 0.00 |
| 2.50 | 0.41 | 0.00 | 0.00 |
| 3.00 | 0.52 | 0.01 | 0.06 |
| 3.50 | 0.63 | 0.02 | 0.20 |
| 4.00 | 0.74 | 0.05 | 0.34 |
| 4.50 | 0.85 | 0.08 | 0.45 |
| 5.00 | 0.96 | 0.12 | 0.55 |
| 5.50 | 1.07 | 0.16 | 0.64 |
| 6.00 | 1.17 | 0.21 | 0.72 |
| 6.50 | 1.29 | 0.27 | 0.83 |
| 7.00 | 1.42 | 0.34 | 1.01 |
| 7.50 | 1.57 | 0.42 | 1.21 |
| 8.00 | 1.71 | 0.51 | 1.32 |
| 8.50 | 1.86 | 0.60 | 1.39 |
| 9.00 | 2.00 | 0.70 | 1.46 |
| 9.50 | 2.15 | 0.80 | 1.51 |
| 10.00 | 2.30 | 0.90 | 1.59 |
| 10.50 | 2.46 | 1.03 | 1.79 |
| 11.00 | 2.64 | 1.16 | 2.01 |
| 11.50 | 2.84 | 1.32 | 2.25 |
| 12.00 | 3.05 | 1.48 | 2.48 |
| 12.50 | 3.27 | 1.67 | 2.73 |
| 13.00 | 3.51 | 1.87 | 2.97 |
| 13.50 | 3.78 | 2.09 | 3.27 |
| 14.00 | 4.11 | 2.38 | 4.16 |
| 14.50 | 4.52 | 2.75 | 5.23 |
| 15.00 | 4.97 | 3.15 | 5.95 |
| 15.50 | 5.43 | 3.57 | **6.27** |
| 16.00 | 5.88 | 3.98 | **6.38** |
| 16.50 | 6.28 | 4.35 | 5.71 |
| 17.00 | 6.61 | 4.66 | 4.90 |
| 17.50 | 6.89 | 4.93 | 4.22 |
| 18.00 | 7.13 | 5.15 | 3.58 |
| 18.50 | 7.34 | 5.35 | 3.01 |
| 19.00 | 7.51 | 5.51 | 2.57 |
| 19.50 | 7.65 | 5.65 | 2.16 |
| 20.00 | 7.78 | 5.77 | 1.90 |
| 20.50 | 7.90 | 5.88 | 1.68 |
| 21.00 | 8.00 | 5.98 | 1.58 |
| 21.50 | 8.11 | 6.09 | 1.57 |
| 22.00 | 8.22 | 6.18 | 1.54 |
| 22.50 | 8.31 | 6.27 | 1.34 |
| 23.00 | 8.38 | 6.34 | 1.13 |
| 23.50 | 8.47 | 6.43 | 1.20 |
| 24.00 | 8.57 | 6.52 | 1.42 |
| 24.50 | 8.59 | 6.54 | 0.49 |
| 25.00 | 8.66 | 6.61 | 0.84 |
| 25.50 | 8.77 | 6.71 | 1.45 |
| 26.00 | 8.87 | 6.82 | 1.58 |
| 26.50 | 8.98 | 6.92 | 1.58 |
| 27.00 | **9.09** | **7.03** | 1.58 |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 8.23 cfs @ | 15.85 hrs, | Volume= | 4.913 af |
| Outflow | = | 2.55 cfs @ | 19.97 hrs, | Volume= | 1.994 af, Atten= 69%, Lag= 246.9 min |
| Primary | = | 1.49 cfs @ | 20.01 hrs, | Volume= | 1.858 af |
| Secondary | = | 1.06 cfs @ | 19.97 hrs, | Volume= | 0.136 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
Peak Elev= 678.07' @ 20.01 hrs Surf.Area= 47,049 sf Storage= 133,290 cf

Plug-Flow detention time= 436.6 min calculated for 1.994 af (41% of inflow)
Center-of-Mass det. time= 181.5 min ( 1,125.9 - 944.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

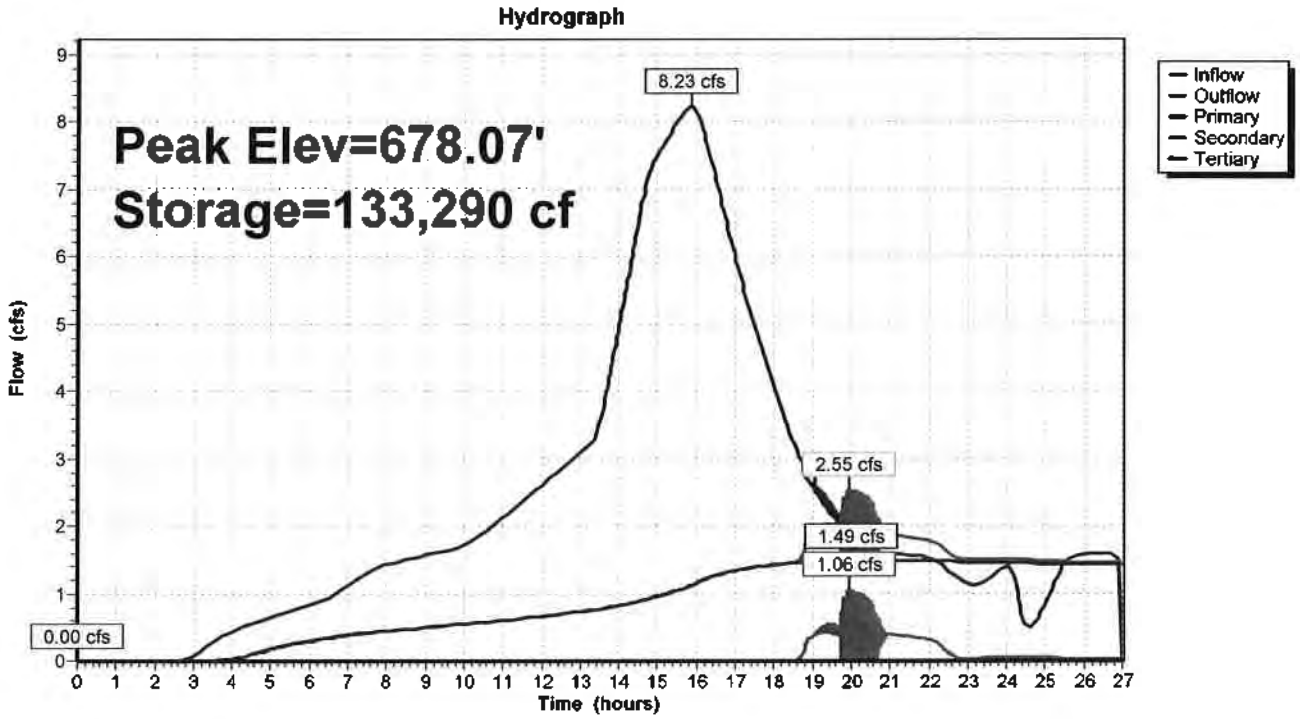
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=1.49 cfs @ 20.01 hrs HW=678.07' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 1.49 cfs @ 13.51 fps)

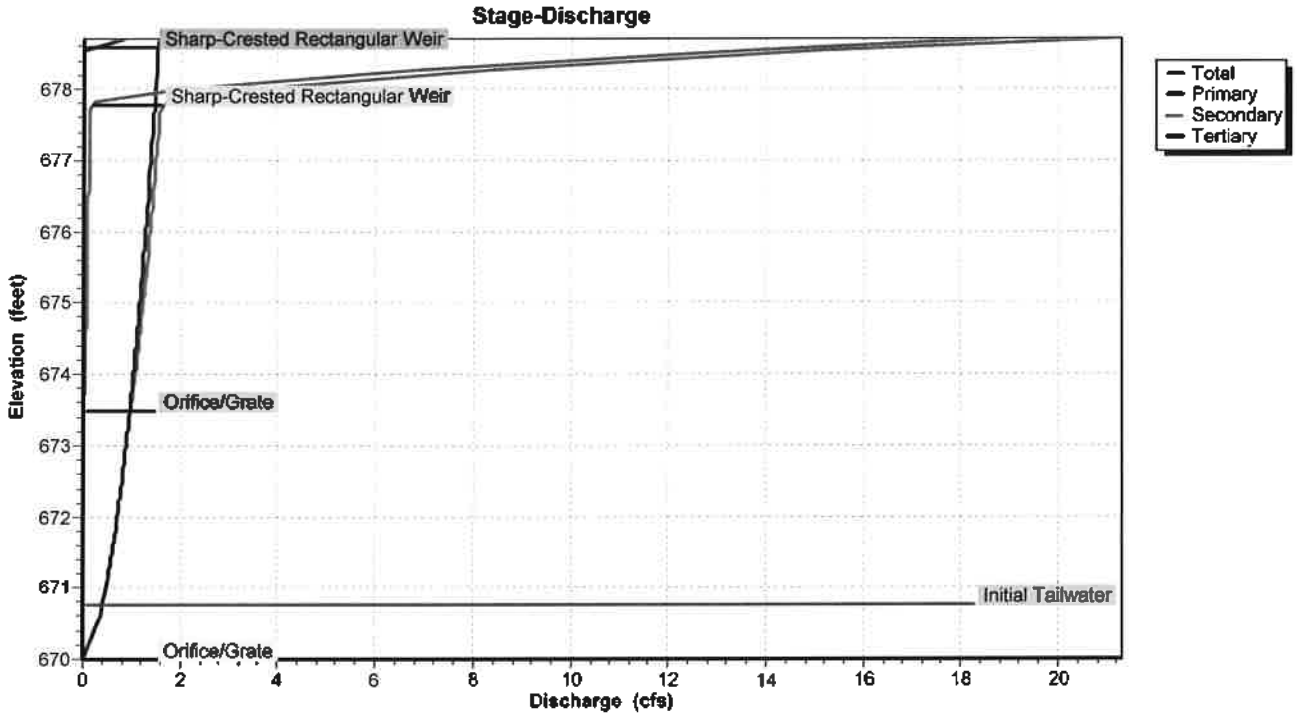
**Secondary OutFlow** Max=0.93 cfs @ 19.97 hrs HW=678.06' TW=678.05' (Dynamic Tailwater)
├**3=Sharp-Crested Rectangular Weir** (Weir Controls 0.93 cfs @ 0.59 fps)
└**4=Orifice/Grate** (Orifice Controls 0.01 cfs @ 0.50 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

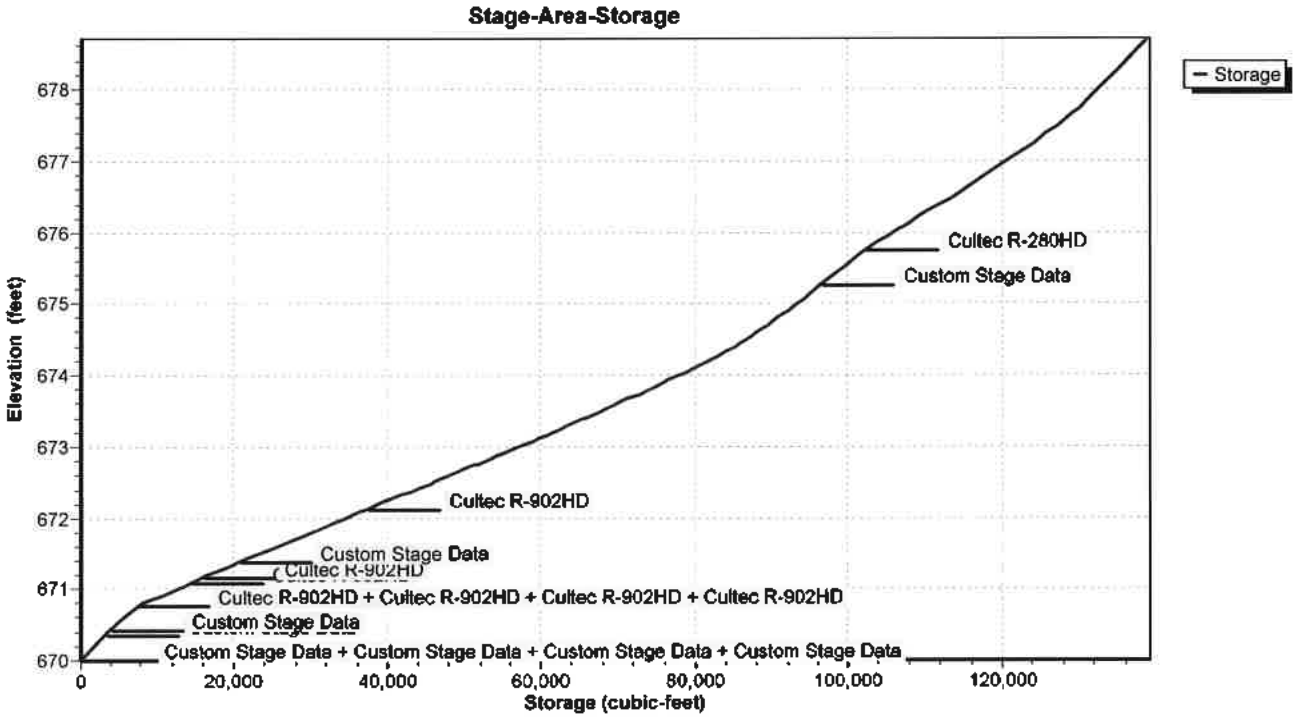
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | **0.00** |
| 1.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | 0.06 | 27 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.44 | 989 | 670.11 | 0.03 | 0.03 | 0.00 | 0.00 |
| 5.00 | 0.66 | 2,642 | 670.30 | 0.17 | 0.17 | 0.00 | 0.00 |
| 6.00 | 0.83 | 4,471 | 670.48 | 0.29 | 0.29 | 0.00 | 0.00 |
| 7.00 | 1.12 | 6,669 | 670.70 | 0.38 | 0.38 | 0.00 | 0.00 |
| 8.00 | 1.43 | 9,845 | 670.88 | 0.44 | 0.44 | 0.00 | 0.00 |
| 9.00 | 1.57 | 13,550 | 671.06 | 0.50 | 0.50 | 0.00 | 0.00 |
| 10.00 | 1.70 | 17,520 | 671.24 | 0.55 | 0.55 | 0.00 | 0.00 |
| 11.00 | 2.13 | 22,315 | 671.46 | 0.60 | 0.60 | 0.00 | 0.00 |
| 12.00 | 2.60 | 28,541 | 671.73 | 0.66 | 0.66 | 0.00 | 0.00 |
| 13.00 | 3.09 | 36,267 | 672.08 | 0.73 | 0.73 | 0.00 | 0.00 |
| 14.00 | 4.95 | 46,875 | 672.54 | 0.82 | 0.82 | 0.00 | 0.00 |
| 15.00 | **7.53** | 66,791 | 673.45 | 0.96 | 0.96 | 0.00 | 0.00 |
| 16.00 | **8.12** | 91,658 | 674.87 | 1.15 | 1.15 | 0.00 | 0.00 |
| 17.00 | 5.96 | 112,748 | 676.45 | 1.33 | 1.33 | 0.00 | 0.00 |
| 18.00 | 4.06 | 125,744 | 677.37 | 1.43 | 1.43 | 0.00 | 0.00 |
| 19.00 | 2.57 | 132,049 | 677.93 | **1.82** | 1.48 | **0.34** | 0.00 |
| 20.00 | 1.90 | **133,275** | **678.06** | **1.49** | **1.49** | **0.00** | 0.00 |
| 21.00 | 1.58 | **132,585** | **677.99** | 1.87 | **1.49** | 0.38 | 0.00 |
| 22.00 | 1.54 | 131,627 | 677.88 | 1.80 | 1.48 | 0.32 | 0.00 |
| 23.00 | 1.13 | 130,625 | 677.78 | 1.50 | 1.47 | 0.03 | 0.00 |
| 24.00 | 1.42 | 129,624 | 677.69 | 1.50 | 1.46 | 0.04 | 0.00 |
| 25.00 | 0.84 | 127,238 | 677.48 | 1.48 | 1.44 | 0.04 | 0.00 |
| 26.00 | 1.58 | 126,784 | 677.45 | 1.47 | 1.43 | 0.03 | 0.00 |
| 27.00 | 0.00 | 127,205 | 677.48 | 1.47 | 1.44 | 0.03 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 16.68 | 1.54 | 15.13 | 0.00 |
| 678.80 | **24.77** | **1.56** | **21.42** | **1.79** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 3.02 cfs @ | 15.77 hrs, | Volume= | 2.170 af |
| Outflow | = | 3.02 cfs @ | 15.83 hrs, | Volume= | 2.145 af, Atten= 0%, Lag= 3.1 min |
| Primary | = | 1.26 cfs @ | 20.04 hrs, | Volume= | 1.573 af |
| Secondary | = | 1.79 cfs @ | 15.83 hrs, | Volume= | 0.572 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-27.00 hrs, dt= 0.01 hrs
Peak Elev= 678.07' @ 20.04 hrs Surf.Area= 3,240 sf Storage= 3,446 cf

Plug-Flow detention time= 25.6 min calculated for 2.145 af (99% of inflow)
Center-of-Mass det. time= 18.2 min ( 985.2 - 967.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

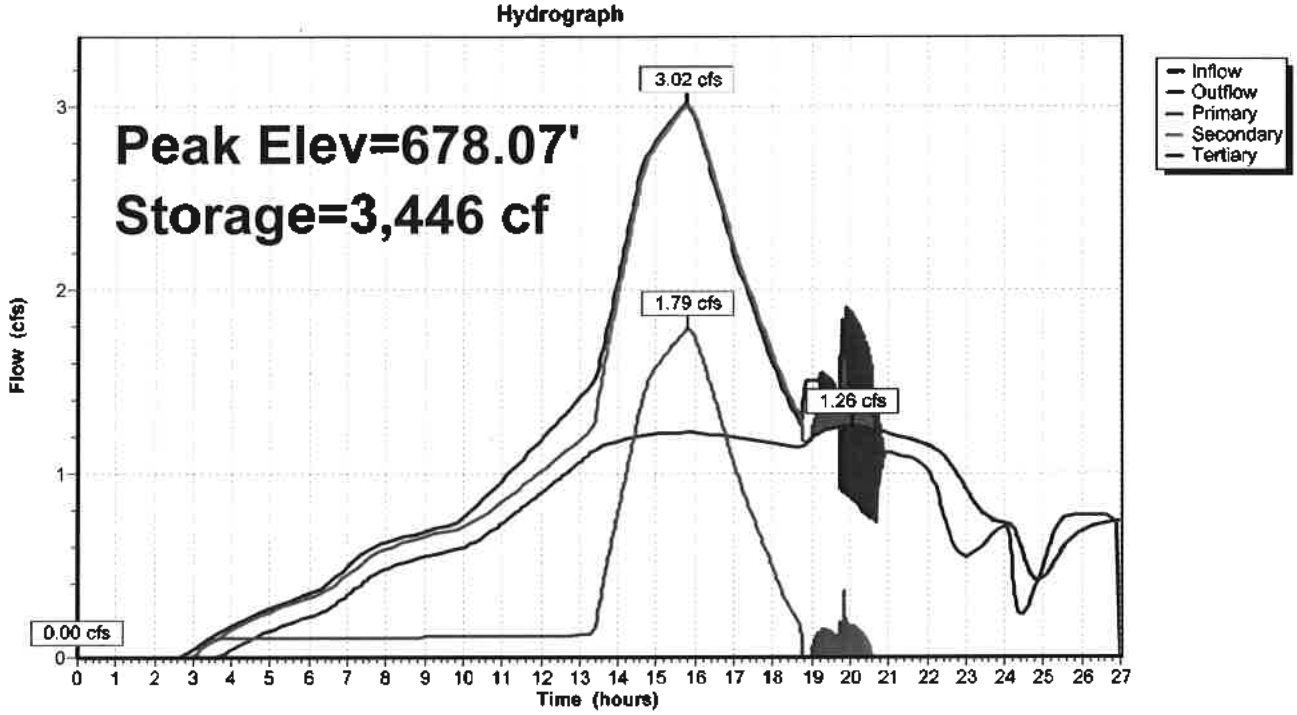
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=1.26 cfs @ 20.04 hrs HW=678.06' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.26 cfs @ 5.48 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

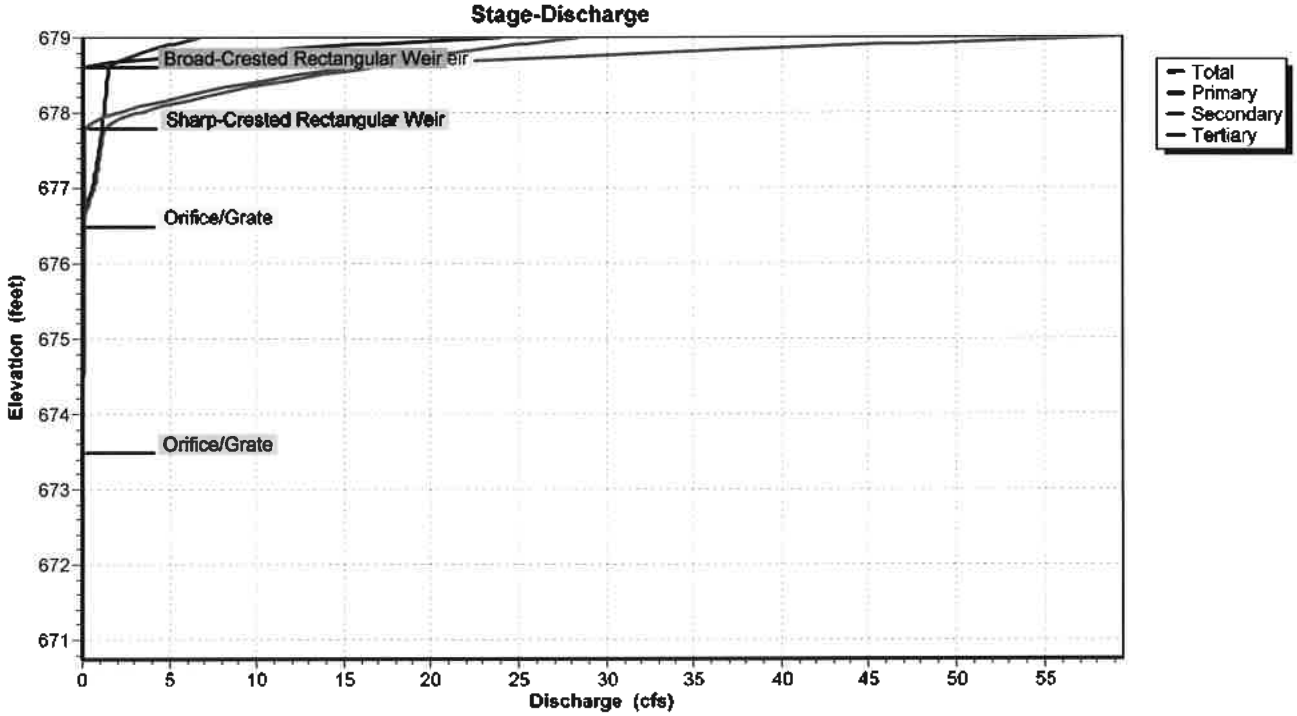
**Secondary OutFlow** Max=1.79 cfs @ 15.83 hrs HW=677.99' TW=674.53' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.11 cfs @ 8.95 fps)
└─**5=Sharp-Crested Rectangular Weir** (Weir Controls 1.68 cfs @ 1.47 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

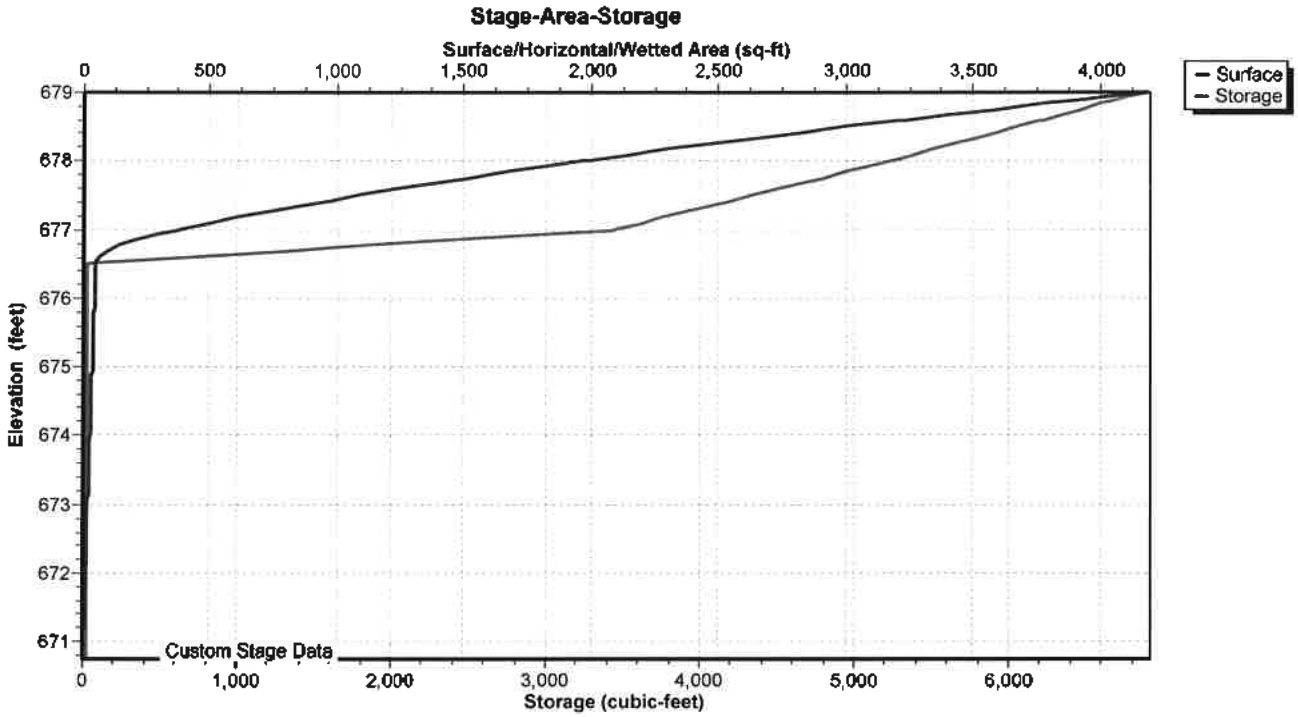
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 1.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | 0.04 | 23 | 672.40 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.17 | 114 | 676.62 | 0.15 | 0.04 | 0.10 | 0.00 |
| 5.00 | 0.27 | 189 | 676.72 | 0.25 | 0.14 | 0.11 | 0.00 |
| 6.00 | 0.34 | 252 | 676.78 | 0.33 | 0.22 | 0.11 | 0.00 |
| 7.00 | 0.49 | 363 | 676.86 | 0.45 | 0.34 | 0.11 | 0.00 |
| 8.00 | 0.62 | 526 | 676.96 | 0.59 | 0.48 | 0.11 | 0.00 |
| 9.00 | 0.69 | 630 | 677.01 | 0.66 | 0.55 | 0.11 | 0.00 |
| 10.00 | 0.76 | 740 | 677.06 | 0.71 | 0.60 | 0.11 | 0.00 |
| 11.00 | 0.97 | 1,058 | 677.21 | 0.84 | 0.73 | 0.11 | 0.00 |
| 12.00 | 1.18 | 1,584 | 677.42 | 1.01 | 0.90 | 0.12 | 0.00 |
| 13.00 | 1.41 | 2,305 | 677.69 | 1.18 | 1.06 | 0.12 | 0.00 |
| 14.00 | 2.06 | 2,935 | 677.90 | 1.97 | 1.18 | 0.79 | 0.00 |
| 15.00 | **2.82** | 3,155 | 677.97 | **2.80** | 1.22 | **1.58** | 0.00 |
| 16.00 | **2.94** | 3,199 | 677.99 | **2.97** | 1.22 | **1.74** | 0.00 |
| 17.00 | 2.20 | 3,030 | 677.93 | 2.25 | 1.20 | 1.06 | 0.00 |
| 18.00 | 1.60 | 2,860 | 677.88 | 1.65 | 1.17 | 0.48 | 0.00 |
| 19.00 | 1.49 | 2,995 | 677.92 | 1.19 | 1.19 | 0.00 | 0.00 |
| 20.00 | 0.86 | **3,404** | **678.05** | 1.26 | **1.26** | 0.00 | 0.00 |
| 21.00 | 1.12 | **3,180** | **677.98** | 1.22 | **1.22** | 0.00 | 0.00 |
| 22.00 | 1.02 | 2,799 | 677.86 | 1.16 | 1.16 | 0.00 | 0.00 |
| 23.00 | 0.54 | 1,669 | 677.46 | 0.92 | 0.92 | 0.00 | 0.00 |
| 24.00 | 0.73 | 1,054 | 677.20 | 0.73 | 0.73 | 0.00 | 0.00 |
| 25.00 | 0.50 | 463 | 676.93 | 0.43 | 0.43 | 0.00 | 0.00 |
| 26.00 | 0.77 | 938 | 677.15 | 0.69 | 0.69 | 0.00 | 0.00 |
| 27.00 | 0.00 | 1,102 | 677.22 | 0.75 | 0.75 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 5.62 | 1.30 | 4.31 | 0.00 |
| 678.35 | 9.91 | 1.39 | 8.51 | 0.00 |
| 678.55 | 15.18 | 1.48 | 13.70 | 0.00 |
| 678.75 | 27.96 | 2.72 | 19.77 | 5.47 |
| 678.95 | **52.16** | **5.83** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

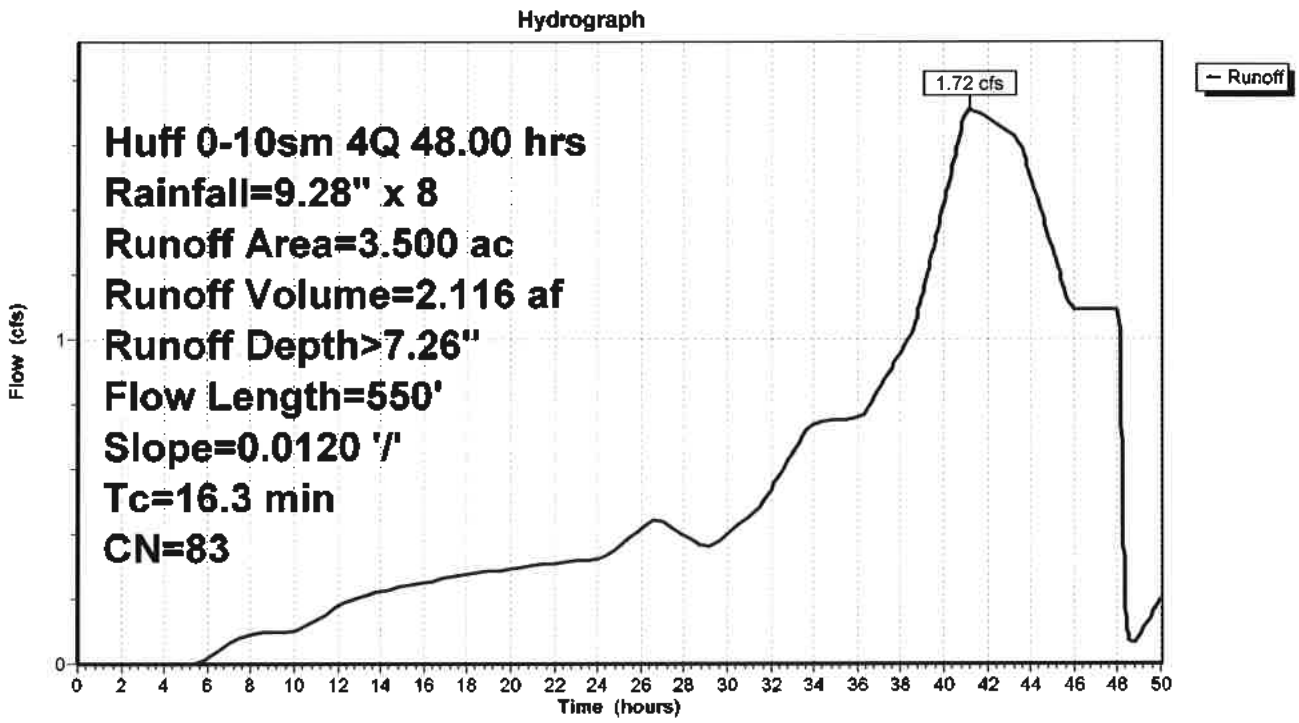
Runoff = 1.72 cfs @ 41.20 hrs, Volume= 2.116 af, Depth> 7.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=9.28" x 8

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 26.00 | 2.84 | 1.32 | 0.42 |
| 0.50 | 0.00 | 0.00 | 0.00 | 26.50 | 2.92 | 1.38 | 0.44 |
| 1.00 | 0.02 | 0.00 | 0.00 | 27.00 | 2.99 | 1.44 | 0.44 |
| 1.50 | 0.04 | 0.00 | 0.00 | 27.50 | 3.07 | 1.50 | 0.42 |
| 2.00 | 0.07 | 0.00 | 0.00 | 28.00 | 3.14 | 1.56 | 0.40 |
| 2.50 | 0.10 | 0.00 | 0.00 | 28.50 | 3.20 | 1.61 | 0.38 |
| 3.00 | 0.15 | 0.00 | 0.00 | 29.00 | 3.26 | 1.66 | 0.36 |
| 3.50 | 0.20 | 0.00 | 0.00 | 29.50 | 3.33 | 1.71 | 0.38 |
| 4.00 | 0.25 | 0.00 | 0.00 | 30.00 | 3.40 | 1.77 | 0.40 |
| 4.50 | 0.30 | 0.00 | 0.00 | 30.50 | 3.47 | 1.83 | 0.43 |
| 5.00 | 0.36 | 0.00 | 0.00 | 31.00 | 3.54 | 1.90 | 0.46 |
| 5.50 | 0.42 | 0.00 | 0.00 | 31.50 | 3.63 | 1.97 | 0.49 |
| 6.00 | 0.48 | 0.00 | 0.02 | 32.00 | 3.72 | 2.04 | 0.54 |
| 6.50 | 0.54 | 0.01 | 0.04 | 32.50 | 3.81 | 2.13 | 0.59 |
| 7.00 | 0.60 | 0.02 | 0.06 | 33.00 | 3.92 | 2.22 | 0.65 |
| 7.50 | 0.66 | 0.03 | 0.08 | 33.50 | 4.04 | 2.32 | 0.70 |
| 8.00 | 0.72 | 0.04 | 0.09 | 34.00 | 4.16 | 2.42 | 0.74 |
| 8.50 | 0.77 | 0.05 | 0.10 | 34.50 | 4.28 | 2.53 | 0.75 |
| 9.00 | 0.82 | 0.07 | 0.10 | 35.00 | 4.40 | 2.64 | 0.75 |
| 9.50 | 0.86 | 0.08 | 0.10 | 35.50 | 4.52 | 2.74 | 0.76 |
| 10.00 | 0.90 | 0.10 | 0.10 | 36.00 | 4.64 | 2.85 | 0.76 |
| 10.50 | 0.95 | 0.11 | 0.12 | 36.50 | 4.77 | 2.96 | 0.79 |
| 11.00 | 1.00 | 0.13 | 0.14 | 37.00 | 4.90 | 3.08 | 0.85 |
| 11.50 | 1.05 | 0.15 | 0.16 | 37.50 | 5.04 | 3.21 | 0.90 |
| 12.00 | 1.11 | 0.18 | 0.18 | 38.00 | 5.19 | 3.35 | 0.96 |
| 12.50 | 1.17 | 0.21 | 0.19 | 38.50 | 5.35 | 3.49 | 1.02 |
| 13.00 | 1.23 | 0.24 | 0.20 | 39.00 | 5.53 | 3.65 | 1.14 |
| 13.50 | 1.29 | 0.27 | 0.21 | 39.50 | 5.72 | 3.83 | 1.28 |
| 14.00 | 1.35 | 0.30 | 0.22 | 40.00 | 5.94 | 4.04 | 1.42 |
| 14.50 | 1.41 | 0.33 | 0.23 | 40.50 | 6.18 | 4.26 | 1.56 |
| 15.00 | 1.47 | 0.36 | 0.24 | 41.00 | 6.44 | 4.50 | **1.70** |
| 15.50 | 1.53 | 0.40 | 0.25 | 41.50 | 6.69 | 4.74 | **1.71** |
| 16.00 | 1.60 | 0.43 | 0.25 | 42.00 | 6.95 | 4.98 | 1.69 |
| 16.50 | 1.66 | 0.47 | 0.26 | 42.50 | 7.20 | 5.21 | 1.67 |
| 17.00 | 1.72 | 0.51 | 0.26 | 43.00 | 7.44 | 5.45 | 1.64 |
| 17.50 | 1.78 | 0.55 | 0.27 | 43.50 | 7.68 | 5.67 | 1.60 |
| 18.00 | 1.84 | 0.59 | 0.28 | 44.00 | 7.91 | 5.89 | 1.50 |
| 18.50 | 1.90 | 0.63 | 0.28 | 44.50 | 8.11 | 6.08 | 1.39 |
| 19.00 | 1.96 | 0.67 | 0.29 | 45.00 | 8.30 | 6.27 | 1.28 |
| 19.50 | 2.02 | 0.71 | 0.29 | 45.50 | 8.47 | 6.43 | 1.17 |
| 20.00 | 2.08 | 0.75 | 0.29 | 46.00 | 8.64 | 6.59 | 1.09 |
| 20.50 | 2.14 | 0.79 | 0.30 | 46.50 | 8.80 | 6.74 | 1.09 |
| 21.00 | 2.20 | 0.83 | 0.30 | 47.00 | 8.96 | 6.90 | 1.09 |
| 21.50 | 2.26 | 0.88 | 0.31 | 47.50 | 9.12 | 7.05 | 1.10 |
| 22.00 | 2.32 | 0.92 | 0.31 | 48.00 | 9.28 | 7.21 | 1.10 |
| 22.50 | 2.38 | 0.97 | 0.31 | 48.50 | 9.28 | 7.21 | 0.08 |
| 23.00 | 2.44 | 1.01 | 0.32 | 49.00 | 9.30 | 7.22 | 0.09 |
| 23.50 | 2.50 | 1.06 | 0.32 | 49.50 | 9.32 | 7.24 | 0.14 |
| 24.00 | 2.56 | 1.10 | 0.32 | 50.00 | **9.35** | **7.27** | 0.20 |
| 24.50 | 2.62 | 1.15 | 0.34 | | | | |
| 25.00 | 2.69 | 1.20 | 0.36 | | | | |
| 25.50 | 2.76 | 1.26 | 0.39 | | | | |

## Summary for Subcatchment 7S: South Property

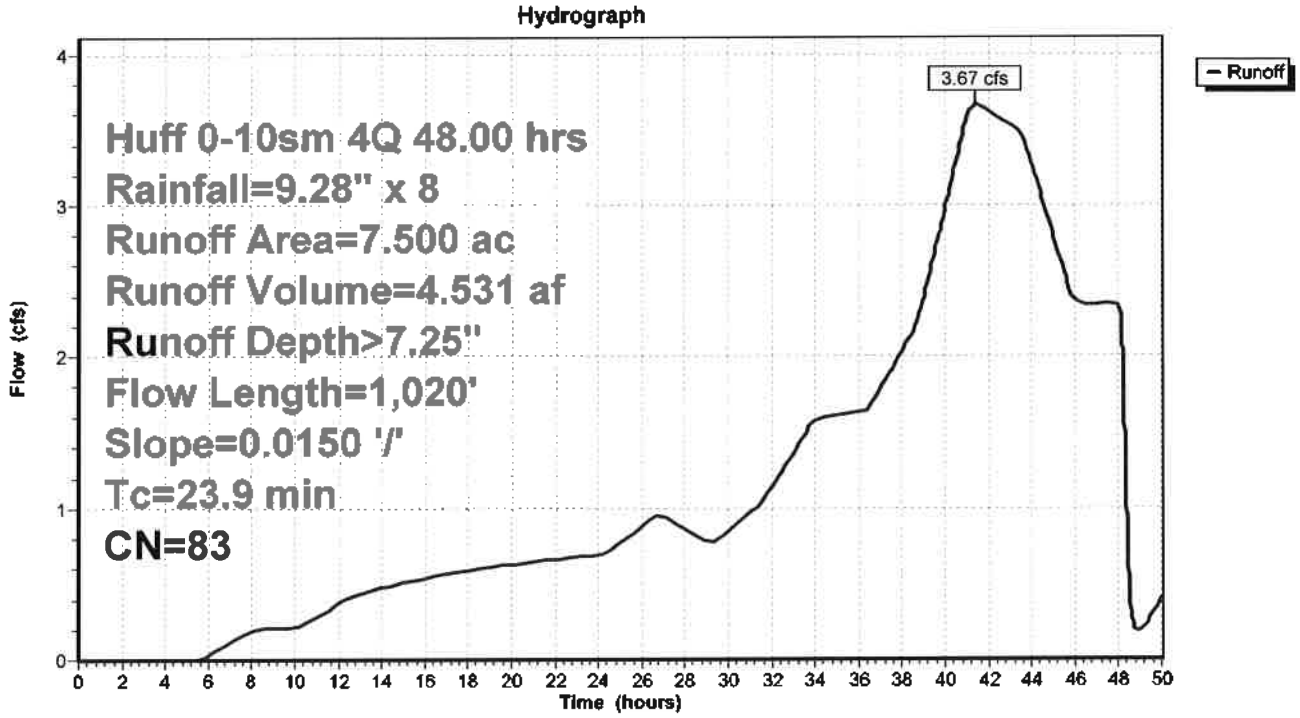
Runoff = 3.67 cfs @ 41.40 hrs, Volume= 4.531 af, Depth> 7.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=9.28" x 8

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

## Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 26.00 | 2.84 | 1.32 | 0.88 |
| 0.50 | 0.00 | 0.00 | 0.00 | 26.50 | 2.92 | 1.38 | 0.94 |
| 1.00 | 0.02 | 0.00 | 0.00 | 27.00 | 2.99 | 1.44 | 0.95 |
| 1.50 | 0.04 | 0.00 | 0.00 | 27.50 | 3.07 | 1.50 | 0.91 |
| 2.00 | 0.07 | 0.00 | 0.00 | 28.00 | 3.14 | 1.56 | 0.86 |
| 2.50 | 0.10 | 0.00 | 0.00 | 28.50 | 3.20 | 1.61 | 0.82 |
| 3.00 | 0.15 | 0.00 | 0.00 | 29.00 | 3.26 | 1.66 | 0.77 |
| 3.50 | 0.20 | 0.00 | 0.00 | 29.50 | 3.33 | 1.71 | 0.79 |
| 4.00 | 0.25 | 0.00 | 0.00 | 30.00 | 3.40 | 1.77 | 0.85 |
| 4.50 | 0.30 | 0.00 | 0.00 | 30.50 | 3.47 | 1.83 | 0.90 |
| 5.00 | 0.36 | 0.00 | 0.00 | 31.00 | 3.54 | 1.90 | 0.96 |
| 5.50 | 0.42 | 0.00 | 0.00 | 31.50 | 3.63 | 1.97 | 1.03 |
| 6.00 | 0.48 | 0.00 | 0.03 | 32.00 | 3.72 | 2.04 | 1.13 |
| 6.50 | 0.54 | 0.01 | 0.07 | 32.50 | 3.81 | 2.13 | 1.24 |
| 7.00 | 0.60 | 0.02 | 0.12 | 33.00 | 3.92 | 2.22 | 1.36 |
| 7.50 | 0.66 | 0.03 | 0.16 | 33.50 | 4.04 | 2.32 | 1.48 |
| 8.00 | 0.72 | 0.04 | 0.19 | 34.00 | 4.16 | 2.42 | 1.58 |
| 8.50 | 0.77 | 0.05 | 0.20 | 34.50 | 4.28 | 2.53 | 1.60 |
| 9.00 | 0.82 | 0.07 | 0.21 | 35.00 | 4.40 | 2.64 | 1.61 |
| 9.50 | 0.86 | 0.08 | 0.21 | 35.50 | 4.52 | 2.74 | 1.62 |
| 10.00 | 0.90 | 0.10 | 0.21 | 36.00 | 4.64 | 2.85 | 1.63 |
| 10.50 | 0.95 | 0.11 | 0.24 | 36.50 | 4.77 | 2.96 | 1.67 |
| 11.00 | 1.00 | 0.13 | 0.28 | 37.00 | 4.90 | 3.08 | 1.79 |
| 11.50 | 1.05 | 0.15 | 0.32 | 37.50 | 5.04 | 3.21 | 1.91 |
| 12.00 | 1.11 | 0.18 | 0.37 | 38.00 | 5.19 | 3.35 | 2.03 |
| 12.50 | 1.17 | 0.21 | 0.41 | 38.50 | 5.35 | 3.49 | 2.16 |
| 13.00 | 1.23 | 0.24 | 0.43 | 39.00 | 5.53 | 3.65 | 2.37 |
| 13.50 | 1.29 | 0.27 | 0.45 | 39.50 | 5.72 | 3.83 | 2.67 |
| 14.00 | 1.35 | 0.30 | 0.47 | 40.00 | 5.94 | 4.04 | 2.97 |
| 14.50 | 1.41 | 0.33 | 0.49 | 40.50 | 6.18 | 4.26 | 3.28 |
| 15.00 | 1.47 | 0.36 | 0.51 | 41.00 | 6.44 | 4.50 | **3.59** |
| 15.50 | 1.53 | 0.40 | 0.52 | 41.50 | 6.69 | 4.74 | **3.67** |
| 16.00 | 1.60 | 0.43 | 0.54 | 42.00 | 6.95 | 4.98 | 3.62 |
| 16.50 | 1.66 | 0.47 | 0.55 | 42.50 | 7.20 | 5.21 | 3.58 |
| 17.00 | 1.72 | 0.51 | 0.56 | 43.00 | 7.44 | 5.45 | 3.53 |
| 17.50 | 1.78 | 0.55 | 0.58 | 43.50 | 7.68 | 5.67 | 3.47 |
| 18.00 | 1.84 | 0.59 | 0.59 | 44.00 | 7.91 | 5.89 | 3.27 |
| 18.50 | 1.90 | 0.63 | 0.60 | 44.50 | 8.11 | 6.08 | 3.04 |
| 19.00 | 1.96 | 0.67 | 0.61 | 45.00 | 8.30 | 6.27 | 2.80 |
| 19.50 | 2.02 | 0.71 | 0.62 | 45.50 | 8.47 | 6.43 | 2.56 |
| 20.00 | 2.08 | 0.75 | 0.63 | 46.00 | 8.64 | 6.59 | 2.36 |
| 20.50 | 2.14 | 0.79 | 0.64 | 46.50 | 8.80 | 6.74 | 2.34 |
| 21.00 | 2.20 | 0.83 | 0.65 | 47.00 | 8.96 | 6.90 | 2.34 |
| 21.50 | 2.26 | 0.88 | 0.66 | 47.50 | 9.12 | 7.05 | 2.35 |
| 22.00 | 2.32 | 0.92 | 0.66 | 48.00 | 9.28 | 7.21 | 2.35 |
| 22.50 | 2.38 | 0.97 | 0.67 | 48.50 | 9.28 | 7.21 | 0.47 |
| 23.00 | 2.44 | 1.01 | 0.68 | 49.00 | 9.30 | 7.22 | 0.17 |
| 23.50 | 2.50 | 1.06 | 0.69 | 49.50 | 9.32 | 7.24 | 0.28 |
| 24.00 | 2.56 | 1.10 | 0.69 | 50.00 | **9.35** | **7.27** | 0.40 |
| 24.50 | 2.62 | 1.15 | 0.71 | | | | |
| 25.00 | 2.69 | 1.20 | 0.77 | | | | |
| 25.50 | 2.76 | 1.26 | 0.82 | | | | |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 4.22 cfs @ | 41.35 hrs, | Volume= | 5.009 af |
| Outflow | = | 1.39 cfs @ | 48.32 hrs, | Volume= | 2.370 af, Atten= 67%, Lag= 418.1 min |
| Primary | = | 1.39 cfs @ | 48.32 hrs, | Volume= | 2.370 af |
| Secondary | = | 0.01 cfs @ | 49.20 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 677.04' @ 48.32 hrs Surf.Area= 46,934 sf Storage= 121,254 cf

Plug-Flow detention time= 484.1 min calculated for 2.369 af (47% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

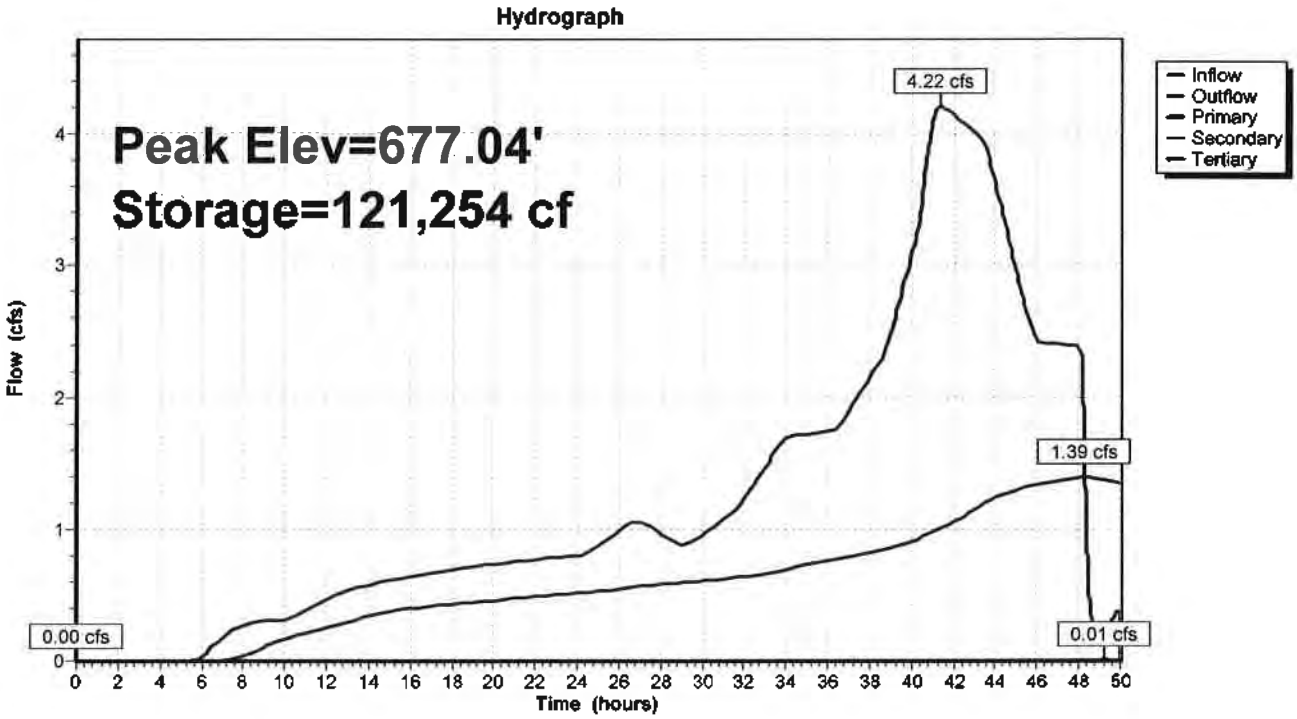
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=1.39 cfs @ 48.32 hrs HW=677.04' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 1.39 cfs @ 12.60 fps)

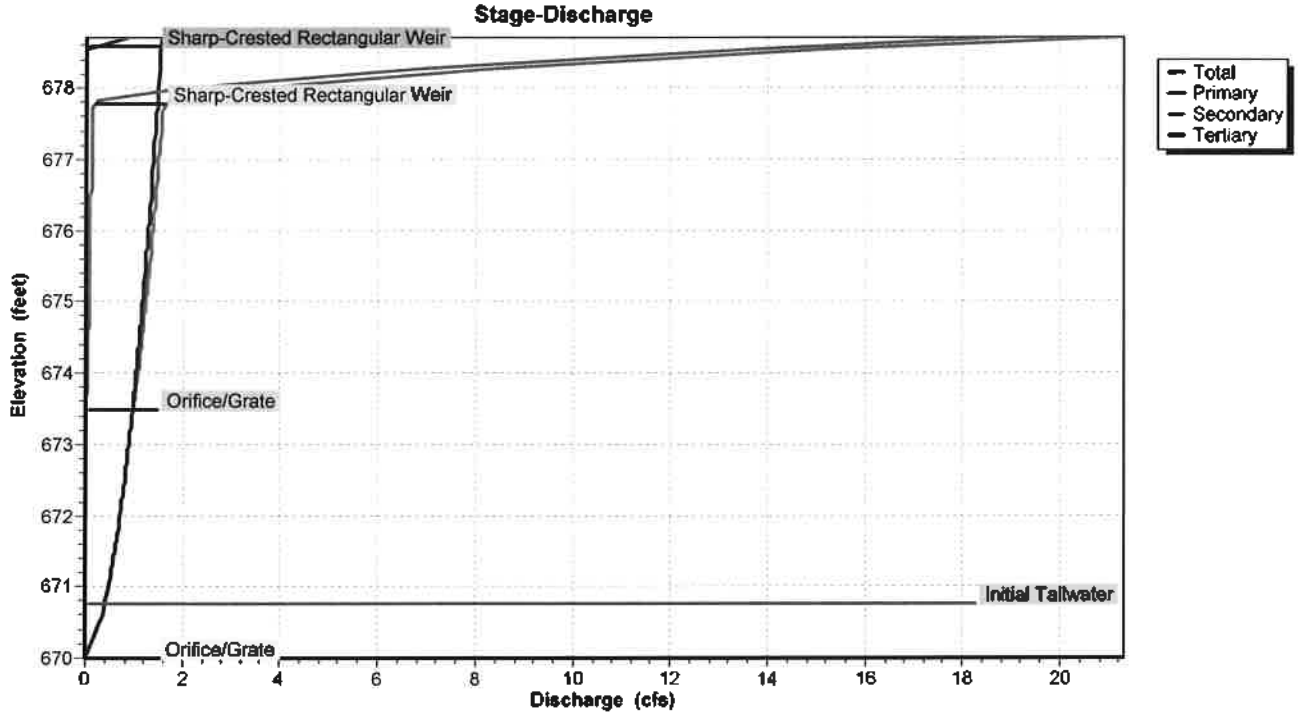
**Secondary OutFlow** Max=0.01 cfs @ 49.20 hrs HW=676.81' TW=676.78' (Dynamic Tailwater)
├**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└**4=Orifice/Grate** (Orifice Controls 0.01 cfs @ 0.81 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

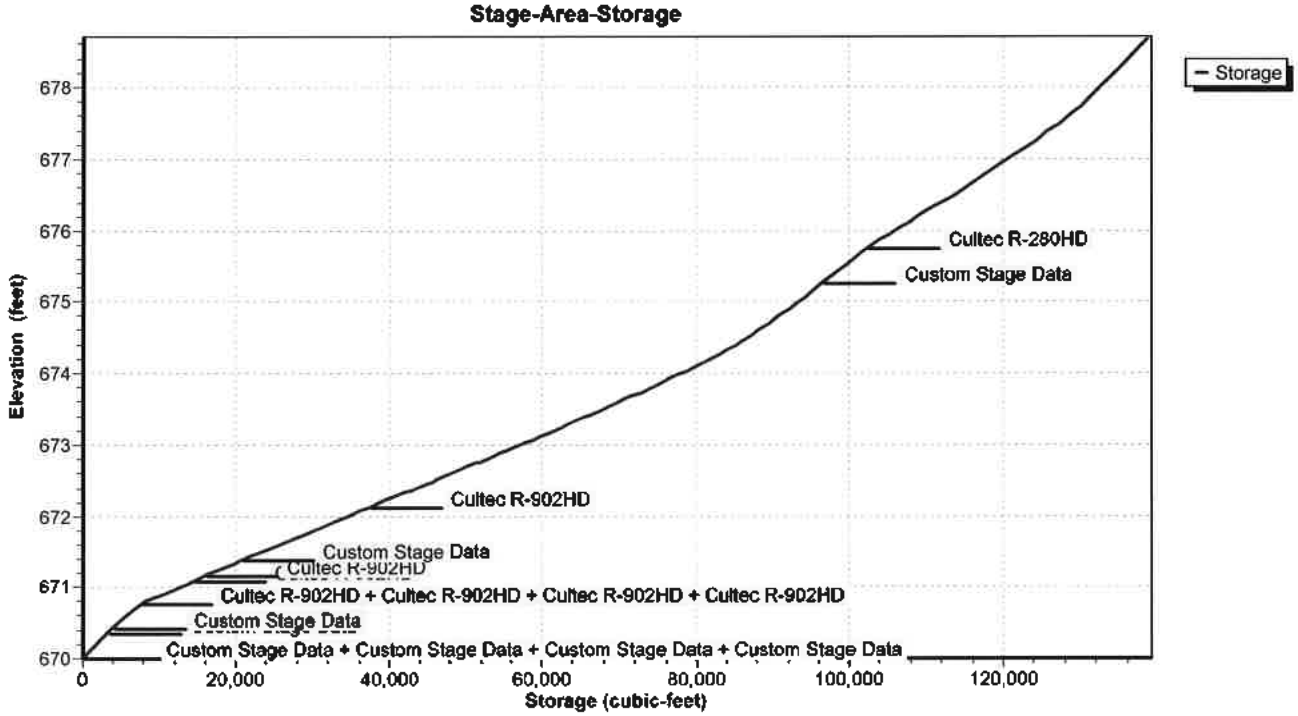
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | **0.00** |
| 1.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.03 | 16 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7.00 | 0.18 | 380 | 670.04 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8.00 | 0.27 | 1,142 | 670.13 | 0.04 | 0.04 | 0.00 | 0.00 |
| 9.00 | 0.31 | 1,940 | 670.22 | 0.11 | 0.11 | 0.00 | 0.00 |
| 10.00 | 0.31 | 2,548 | 670.29 | 0.16 | 0.16 | 0.00 | 0.00 |
| 11.00 | 0.38 | 3,106 | 670.35 | 0.21 | 0.21 | 0.00 | 0.00 |
| 12.00 | 0.47 | 3,802 | 670.42 | 0.26 | 0.26 | 0.00 | 0.00 |
| 13.00 | 0.54 | 4,647 | 670.50 | 0.30 | 0.30 | 0.00 | 0.00 |
| 14.00 | 0.58 | 5,513 | 670.59 | 0.34 | 0.34 | 0.00 | 0.00 |
| 15.00 | 0.61 | 6,379 | 670.67 | 0.37 | 0.37 | 0.00 | 0.00 |
| 16.00 | 0.64 | 7,245 | 670.75 | 0.40 | 0.40 | 0.00 | 0.00 |
| 17.00 | 0.67 | 8,138 | 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 18.00 | 0.69 | 9,069 | 670.84 | 0.43 | 0.43 | 0.00 | 0.00 |
| 19.00 | 0.72 | 10,031 | 670.89 | 0.44 | 0.44 | 0.00 | 0.00 |
| 20.00 | 0.74 | 11,013 | 670.93 | 0.46 | 0.46 | 0.00 | 0.00 |
| 21.00 | 0.75 | 12,012 | 670.98 | 0.47 | 0.47 | 0.00 | 0.00 |
| 22.00 | 0.77 | 13,020 | 671.03 | 0.49 | 0.49 | 0.00 | 0.00 |
| 23.00 | 0.78 | 14,033 | 671.08 | 0.50 | 0.50 | 0.00 | 0.00 |
| 24.00 | 0.80 | 15,049 | 671.13 | 0.52 | 0.52 | 0.00 | 0.00 |
| 25.00 | 0.87 | 16,139 | 671.18 | 0.53 | 0.53 | 0.00 | 0.00 |
| 26.00 | 0.99 | 17,549 | 671.24 | 0.55 | 0.55 | 0.00 | 0.00 |
| 27.00 | 1.06 | 19,283 | 671.32 | 0.57 | 0.57 | 0.00 | 0.00 |
| 28.00 | 0.97 | 20,863 | 671.39 | 0.58 | 0.58 | 0.00 | 0.00 |
| 29.00 | 0.88 | 22,062 | 671.44 | 0.60 | 0.60 | 0.00 | 0.00 |
| 30.00 | 0.95 | 23,146 | 671.49 | 0.61 | 0.61 | 0.00 | 0.00 |
| 31.00 | 1.07 | 24,575 | 671.56 | 0.62 | 0.62 | 0.00 | 0.00 |
| 32.00 | 1.24 | 26,412 | 671.64 | 0.64 | 0.64 | 0.00 | 0.00 |
| 33.00 | 1.47 | 28,931 | 671.75 | 0.66 | 0.66 | 0.00 | 0.00 |
| 34.00 | 1.69 | 32,197 | 671.89 | 0.69 | 0.69 | 0.00 | 0.00 |
| 35.00 | 1.72 | 35,795 | 672.06 | 0.73 | 0.73 | 0.00 | 0.00 |
| 36.00 | 1.74 | 39,353 | 672.21 | 0.76 | 0.76 | 0.00 | 0.00 |
| 37.00 | 1.90 | 43,037 | 672.37 | 0.79 | 0.79 | 0.00 | 0.00 |
| 38.00 | 2.15 | 47,423 | 672.57 | 0.82 | 0.82 | 0.00 | 0.00 |
| 39.00 | 2.49 | 52,627 | 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 40.00 | 3.09 | 59,467 | 673.11 | 0.91 | 0.91 | 0.00 | 0.00 |
| 41.00 | **4.10** | 68,856 | 673.55 | 0.97 | 0.97 | 0.00 | 0.00 |
| 42.00 | **4.15** | 80,269 | 674.12 | 1.05 | 1.05 | 0.00 | 0.00 |
| 43.00 | 4.01 | 91,013 | 674.82 | 1.14 | 1.14 | 0.00 | 0.00 |
| 44.00 | 3.64 | 100,697 | 675.63 | 1.24 | 1.24 | 0.00 | 0.00 |
| 45.00 | 2.97 | 108,028 | 676.13 | 1.30 | 1.30 | 0.00 | 0.00 |
| 46.00 | 2.43 | 112,893 | 676.46 | 1.33 | 1.33 | 0.00 | 0.00 |
| 47.00 | 2.40 | 116,719 | 676.72 | 1.36 | 1.36 | 0.00 | 0.00 |
| 48.00 | 2.40 | **120,421** | **676.98** | **1.39** | **1.39** | 0.00 | 0.00 |
| 49.00 | 0.17 | **118,894** | **676.87** | **1.37** | **1.37** | **0.00** | 0.00 |
| 50.00 | 0.00 | 115,011 | 676.60 | 1.35 | 1.35 | **0.00** | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 16.68 | 1.54 | 15.13 | 0.00 |
| 678.80 | **24.77** | **1.56** | **21.42** | **1.79** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 1.72 cfs @ | 41.20 hrs, | Volume= | 2.117 af |
| Outflow | = | 1.71 cfs @ | 41.33 hrs, | Volume= | 2.112 af, Atten= 0%, Lag= 7.4 min |
| Primary | = | 1.17 cfs @ | 41.36 hrs, | Volume= | 1.634 af |
| Secondary | = | 0.55 cfs @ | 41.33 hrs, | Volume= | 0.478 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-50.00 hrs, dt= 0.01 hrs
Peak Elev= 677.88' @ 41.36 hrs Surf.Area= 3,040 sf Storage= 2,853 cf

Plug-Flow detention time= 23.5 min calculated for 2.112 af (100% of inflow)
Center-of-Mass det. time= 21.7 min ( 2,177.2 - 2,155.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

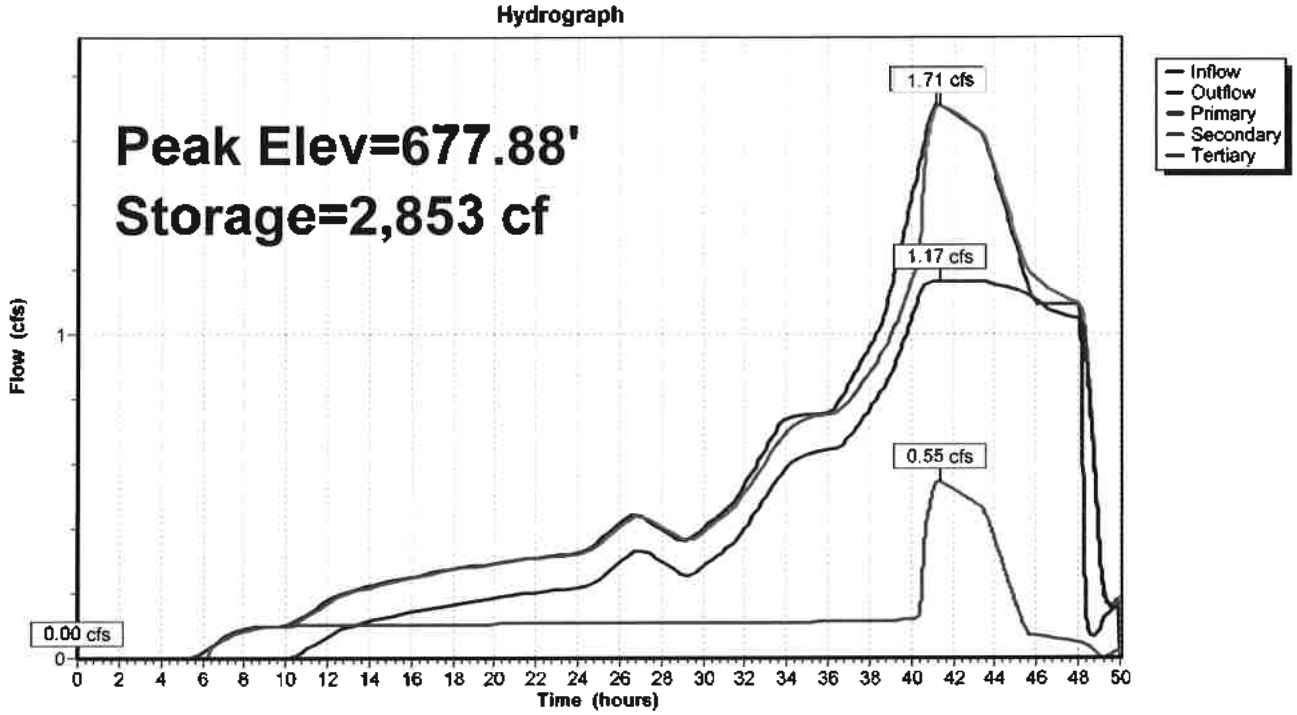
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.0' Crest Height |

**Primary OutFlow** Max=1.17 cfs @ 41.36 hrs HW=677.88' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.17 cfs @ 5.07 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

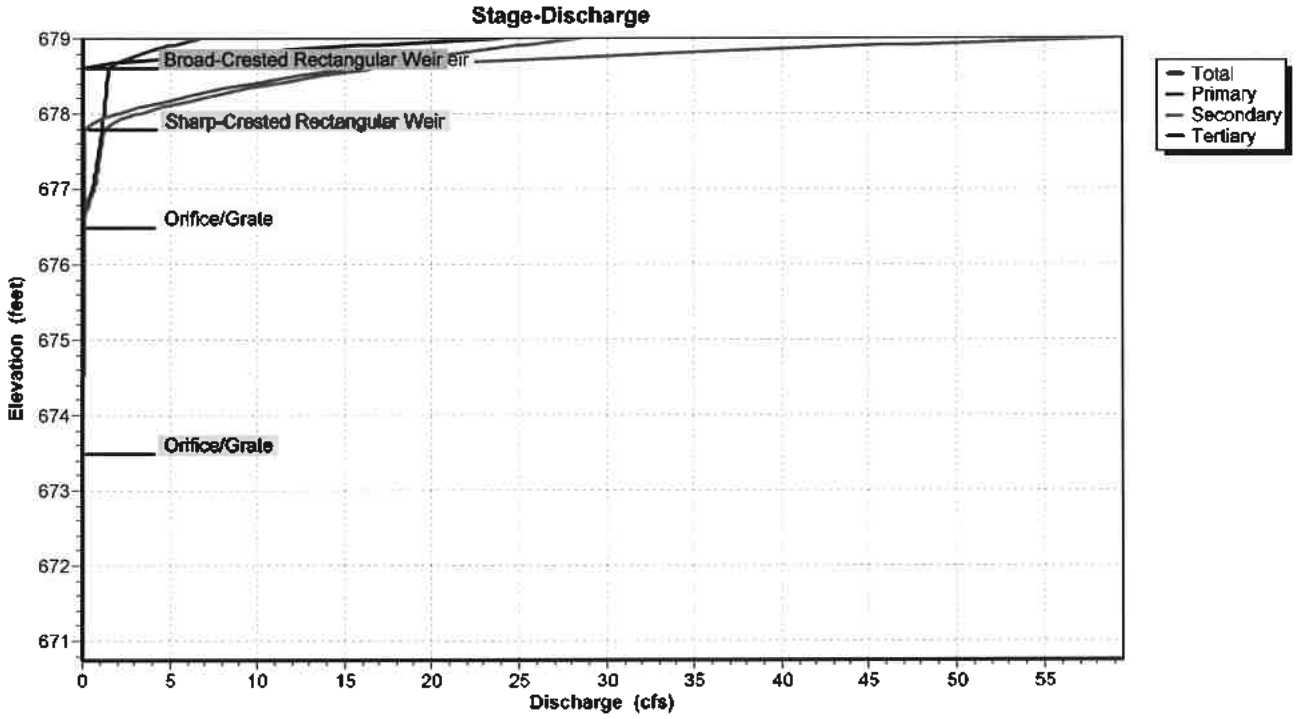
**Secondary OutFlow** Max=0.55 cfs @ 41.33 hrs HW=677.88' TW=673.73' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.12 cfs @ 9.81 fps)
└─**5=Sharp-Crested Rectangular Weir** (Weir Controls 0.43 cfs @ 0.92 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

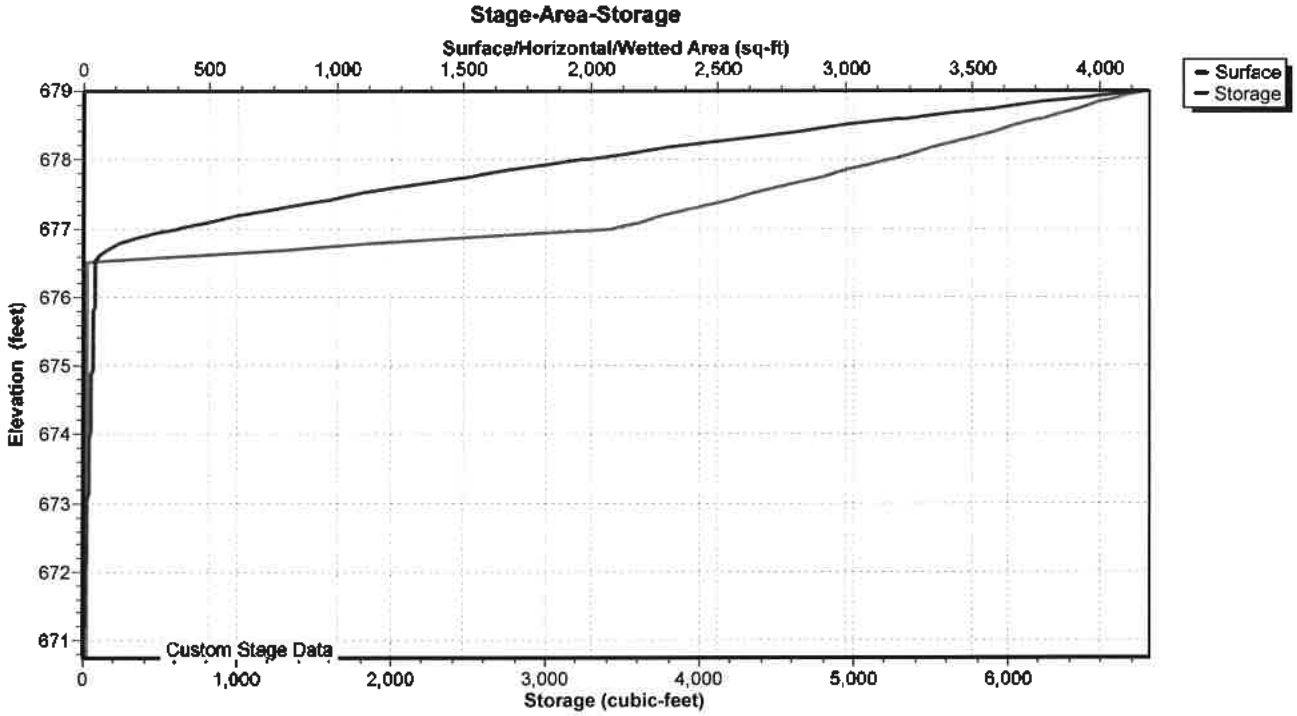
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 1.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.02 | 12 | 671.63 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7.00 | 0.06 | 52 | 674.47 | 0.06 | 0.00 | 0.06 | 0.00 |
| 8.00 | 0.09 | 69 | 675.68 | 0.09 | 0.00 | 0.09 | 0.00 |
| 9.00 | 0.10 | 77 | 676.24 | 0.10 | 0.00 | 0.10 | 0.00 |
| 10.00 | 0.10 | 77 | 676.27 | 0.10 | 0.00 | 0.10 | 0.00 |
| 11.00 | 0.14 | 101 | 676.59 | 0.13 | 0.03 | 0.10 | 0.00 |
| 12.00 | 0.18 | 130 | 676.65 | 0.17 | 0.07 | 0.10 | 0.00 |
| 13.00 | 0.20 | 152 | 676.68 | 0.20 | 0.10 | 0.10 | 0.00 |
| 14.00 | 0.22 | 164 | 676.70 | 0.22 | 0.11 | 0.10 | 0.00 |
| 15.00 | 0.24 | 178 | 676.71 | 0.23 | 0.13 | 0.10 | 0.00 |
| 16.00 | 0.25 | 190 | 676.72 | 0.25 | 0.14 | 0.11 | 0.00 |
| 17.00 | 0.26 | 200 | 676.73 | 0.26 | 0.16 | 0.11 | 0.00 |
| 18.00 | 0.28 | 209 | 676.74 | 0.27 | 0.17 | 0.11 | 0.00 |
| 19.00 | 0.29 | 217 | 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 20.00 | 0.29 | 224 | 676.76 | 0.29 | 0.19 | 0.11 | 0.00 |
| 21.00 | 0.30 | 230 | 676.76 | 0.30 | 0.20 | 0.11 | 0.00 |
| 22.00 | 0.31 | 236 | 676.77 | 0.31 | 0.20 | 0.11 | 0.00 |
| 23.00 | 0.32 | 241 | 676.77 | 0.32 | 0.21 | 0.11 | 0.00 |
| 24.00 | 0.32 | 247 | 676.78 | 0.32 | 0.22 | 0.11 | 0.00 |
| 25.00 | 0.36 | 275 | 676.80 | 0.35 | 0.24 | 0.11 | 0.00 |
| 26.00 | 0.42 | 322 | 676.84 | 0.40 | 0.30 | 0.11 | 0.00 |
| 27.00 | 0.44 | 357 | 676.86 | 0.44 | 0.33 | 0.11 | 0.00 |
| 28.00 | 0.40 | 325 | 676.84 | 0.41 | 0.30 | 0.11 | 0.00 |
| 29.00 | 0.36 | 287 | 676.81 | 0.36 | 0.26 | 0.11 | 0.00 |
| 30.00 | 0.40 | 309 | 676.83 | 0.39 | 0.28 | 0.11 | 0.00 |
| 31.00 | 0.46 | 356 | 676.86 | 0.44 | 0.33 | 0.11 | 0.00 |
| 32.00 | 0.54 | 431 | 676.91 | 0.51 | 0.40 | 0.11 | 0.00 |
| 33.00 | 0.65 | 552 | 676.97 | 0.61 | 0.50 | 0.11 | 0.00 |
| 34.00 | 0.74 | 716 | 677.05 | 0.70 | 0.59 | 0.11 | 0.00 |
| 35.00 | 0.75 | 803 | 677.09 | 0.74 | 0.63 | 0.11 | 0.00 |
| 36.00 | 0.76 | 833 | 677.11 | 0.75 | 0.64 | 0.11 | 0.00 |
| 37.00 | 0.85 | 929 | 677.15 | 0.79 | 0.68 | 0.11 | 0.00 |
| 38.00 | 0.96 | 1,169 | 677.25 | 0.88 | 0.77 | 0.11 | 0.00 |
| 39.00 | 1.14 | 1,517 | 677.40 | 0.99 | 0.88 | 0.12 | 0.00 |
| 40.00 | 1.42 | 2,236 | 677.67 | 1.17 | 1.05 | 0.12 | 0.00 |
| **41.00** | **1.70** | **2,841** | **677.87** | **1.68** | **1.16** | **0.51** | 0.00 |
| **42.00** | **1.69** | **2,848** | **677.88** | **1.69** | **1.17** | **0.52** | 0.00 |
| 43.00 | 1.64 | 2,836 | 677.87 | 1.65 | 1.16 | 0.48 | 0.00 |
| 44.00 | 1.50 | 2,796 | 677.86 | 1.52 | 1.16 | 0.37 | 0.00 |
| 45.00 | 1.28 | 2,705 | 677.83 | 1.31 | 1.14 | 0.17 | 0.00 |
| 46.00 | 1.09 | 2,518 | 677.77 | 1.17 | 1.11 | 0.07 | 0.00 |
| 47.00 | 1.09 | 2,322 | 677.70 | 1.13 | 1.07 | 0.06 | 0.00 |
| 48.00 | 1.10 | 2,256 | 677.67 | 1.10 | 1.05 | 0.05 | 0.00 |
| 49.00 | 0.09 | 376 | 676.87 | 0.35 | 0.35 | 0.00 | 0.00 |
| 50.00 | 0.00 | 205 | 676.74 | 0.18 | 0.16 | 0.02 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 5.62 | 1.30 | 4.31 | 0.00 |
| 678.35 | 9.91 | 1.39 | 8.51 | 0.00 |
| 678.55 | 15.18 | 1.48 | 13.70 | 0.00 |
| 678.75 | 27.96 | 2.72 | 19.77 | 5.47 |
| 678.95 | **52.16** | **5.83** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

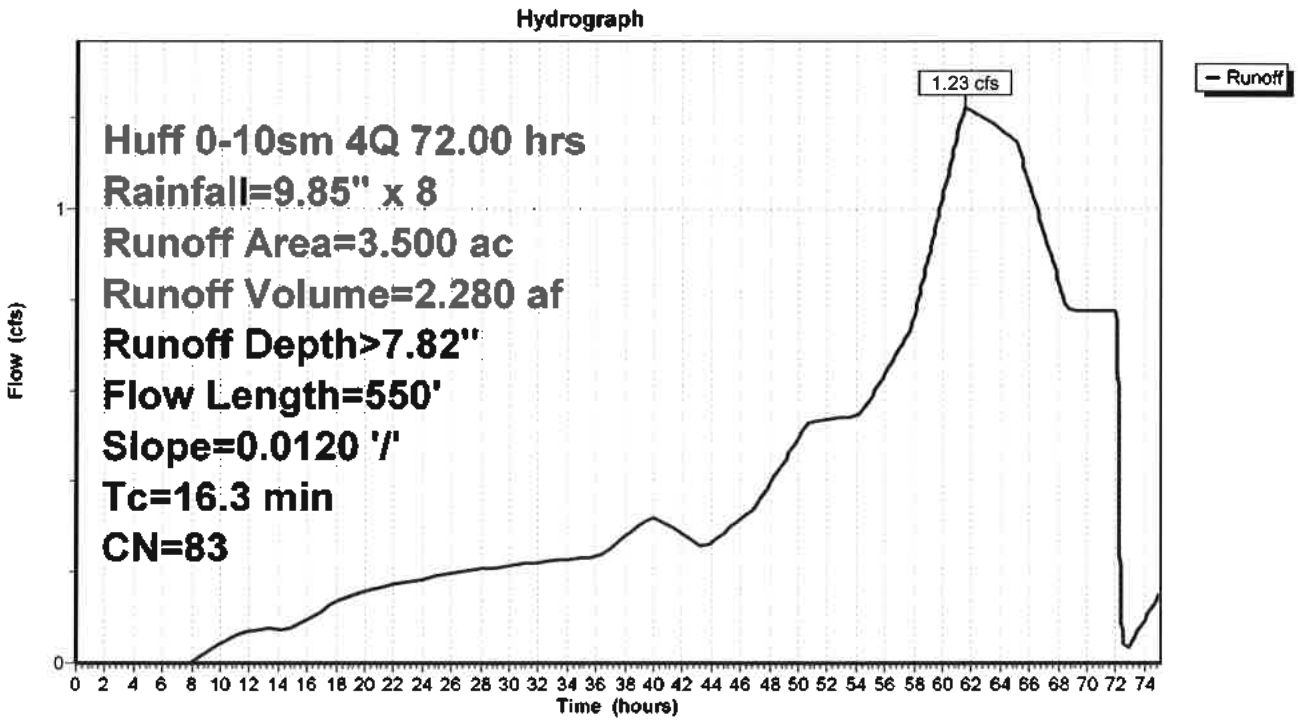
Runoff = 1.23 cfs @ 61.56 hrs, Volume= 2.280 af, Depth> 7.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.01 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=9.85" x 8

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 52.00 | 4.58 | 2.80 | 0.54 |
| 1.00 | 0.01 | 0.00 | 0.00 | 53.00 | 4.75 | 2.95 | 0.54 |
| 2.00 | 0.03 | 0.00 | 0.00 | 54.00 | 4.93 | 3.11 | 0.54 |
| 3.00 | 0.07 | 0.00 | 0.00 | 55.00 | 5.10 | 3.27 | 0.59 |
| 4.00 | 0.13 | 0.00 | 0.00 | 56.00 | 5.30 | 3.45 | 0.64 |
| 5.00 | 0.19 | 0.00 | 0.00 | 57.00 | 5.51 | 3.64 | 0.69 |
| 6.00 | 0.26 | 0.00 | 0.00 | 58.00 | 5.74 | 3.85 | 0.76 |
| 7.00 | 0.34 | 0.00 | 0.00 | 59.00 | 6.00 | 4.09 | 0.89 |
| 8.00 | 0.43 | 0.00 | 0.00 | 60.00 | 6.30 | 4.37 | 1.03 |
| 9.00 | 0.51 | 0.00 | 0.02 | 61.00 | 6.65 | 4.70 | **1.17** |
| 10.00 | 0.60 | 0.02 | 0.04 | 62.00 | 7.01 | 5.04 | **1.22** |
| 11.00 | 0.68 | 0.03 | 0.06 | 63.00 | 7.37 | 5.38 | 1.20 |
| 12.00 | 0.76 | 0.05 | 0.07 | 64.00 | 7.73 | 5.72 | 1.18 |
| 13.00 | 0.84 | 0.07 | 0.08 | 65.00 | 8.07 | 6.05 | 1.15 |
| 14.00 | 0.90 | 0.09 | 0.07 | 66.00 | 8.39 | 6.35 | 1.05 |
| 15.00 | 0.96 | 0.12 | 0.08 | 67.00 | 8.68 | 6.63 | 0.95 |
| 16.00 | 1.02 | 0.14 | 0.10 | 68.00 | 8.94 | 6.87 | 0.84 |
| 17.00 | 1.10 | 0.17 | 0.12 | 69.00 | 9.17 | 7.10 | 0.78 |
| 18.00 | 1.18 | 0.21 | 0.14 | 70.00 | 9.39 | 7.32 | 0.78 |
| 19.00 | 1.27 | 0.25 | 0.15 | 71.00 | 9.62 | 7.54 | 0.78 |
| 20.00 | 1.35 | 0.30 | 0.16 | 72.00 | 9.85 | 7.76 | 0.78 |
| 21.00 | 1.44 | 0.34 | 0.17 | 73.00 | 9.86 | 7.76 | 0.04 |
| 22.00 | 1.52 | 0.39 | 0.17 | 74.00 | 9.88 | 7.79 | 0.09 |
| 23.00 | 1.61 | 0.44 | 0.18 | 75.00 | **9.92** | **7.83** | 0.15 |
| 24.00 | 1.69 | 0.49 | 0.19 | | | | |
| 25.00 | 1.78 | 0.55 | 0.19 | | | | |
| 26.00 | 1.86 | 0.60 | 0.20 | | | | |
| 27.00 | 1.95 | 0.66 | 0.20 | | | | |
| 28.00 | 2.03 | 0.72 | 0.21 | | | | |
| 29.00 | 2.12 | 0.78 | 0.21 | | | | |
| 30.00 | 2.21 | 0.84 | 0.22 | | | | |
| 31.00 | 2.29 | 0.90 | 0.22 | | | | |
| 32.00 | 2.38 | 0.96 | 0.22 | | | | |
| 33.00 | 2.46 | 1.03 | 0.23 | | | | |
| 34.00 | 2.55 | 1.09 | 0.23 | | | | |
| 35.00 | 2.63 | 1.16 | 0.23 | | | | |
| 36.00 | 2.72 | 1.22 | 0.23 | | | | |
| 37.00 | 2.81 | 1.29 | 0.25 | | | | |
| 38.00 | 2.91 | 1.37 | 0.28 | | | | |
| 39.00 | 3.01 | 1.46 | 0.30 | | | | |
| 40.00 | 3.12 | 1.55 | 0.32 | | | | |
| 41.00 | 3.23 | 1.63 | 0.30 | | | | |
| 42.00 | 3.33 | 1.72 | 0.28 | | | | |
| 43.00 | 3.42 | 1.79 | 0.26 | | | | |
| 44.00 | 3.51 | 1.87 | 0.27 | | | | |
| 45.00 | 3.60 | 1.95 | 0.29 | | | | |
| 46.00 | 3.71 | 2.03 | 0.32 | | | | |
| 47.00 | 3.82 | 2.13 | 0.34 | | | | |
| 48.00 | 3.94 | 2.24 | 0.39 | | | | |
| 49.00 | 4.09 | 2.36 | 0.44 | | | | |
| 50.00 | 4.24 | 2.50 | 0.50 | | | | |
| 51.00 | 4.41 | 2.65 | 0.53 | | | | |

## Summary for Subcatchment 7S: South Property

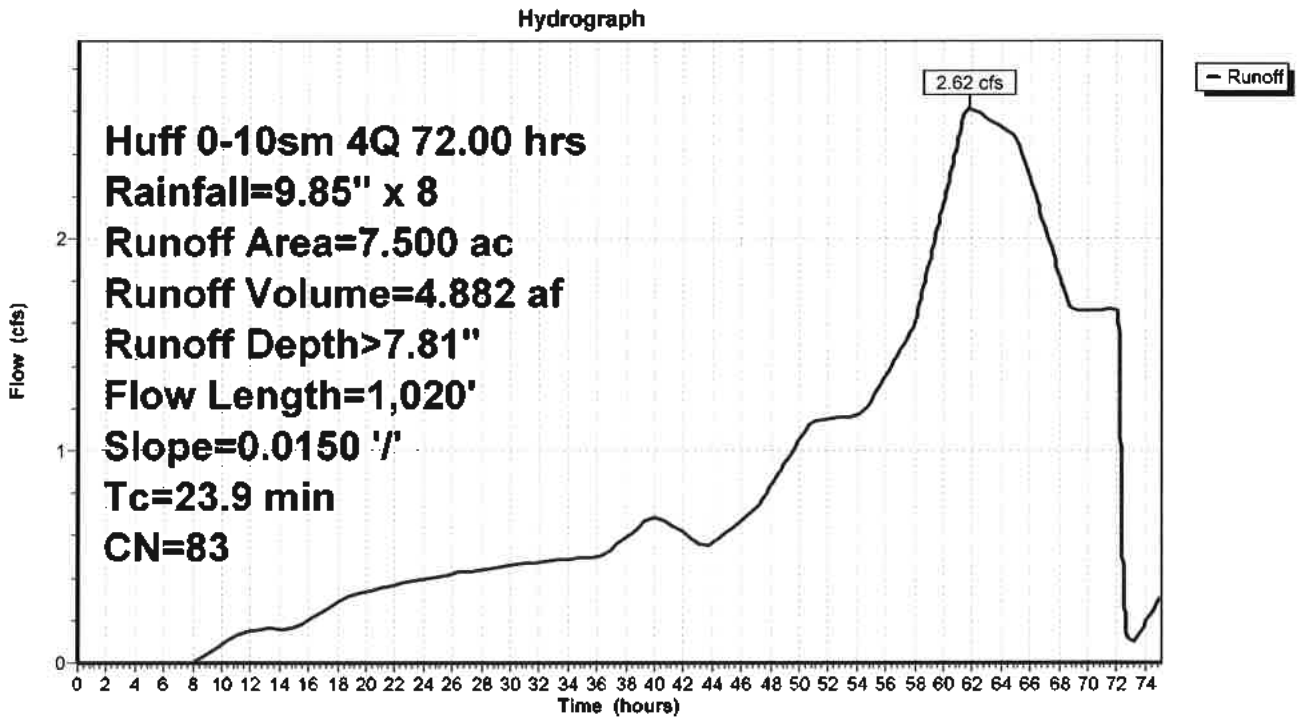
Runoff = 2.62 cfs @ 61.74 hrs, Volume= 4.882 af, Depth> 7.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.01 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=9.85" x 8

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 52.00 | 4.58 | 2.80 | 1.15 |
| 1.00 | 0.01 | 0.00 | 0.00 | 53.00 | 4.75 | 2.95 | 1.16 |
| 2.00 | 0.03 | 0.00 | 0.00 | 54.00 | 4.93 | 3.11 | 1.16 |
| 3.00 | 0.07 | 0.00 | 0.00 | 55.00 | 5.10 | 3.27 | 1.24 |
| 4.00 | 0.13 | 0.00 | 0.00 | 56.00 | 5.30 | 3.45 | 1.36 |
| 5.00 | 0.19 | 0.00 | 0.00 | 57.00 | 5.51 | 3.64 | 1.47 |
| 6.00 | 0.26 | 0.00 | 0.00 | 58.00 | 5.74 | 3.85 | 1.60 |
| 7.00 | 0.34 | 0.00 | 0.00 | 59.00 | 6.00 | 4.09 | 1.88 |
| 8.00 | 0.43 | 0.00 | 0.00 | 60.00 | 6.30 | 4.37 | 2.17 |
| 9.00 | 0.51 | 0.00 | 0.04 | 61.00 | 6.65 | 4.70 | **2.47** |
| 10.00 | 0.60 | 0.02 | 0.09 | 62.00 | 7.01 | 5.04 | **2.62** |
| 11.00 | 0.68 | 0.03 | 0.13 | 63.00 | 7.37 | 5.38 | 2.57 |
| 12.00 | 0.76 | 0.05 | 0.15 | 64.00 | 7.73 | 5.72 | 2.52 |
| 13.00 | 0.84 | 0.07 | 0.16 | 65.00 | 8.07 | 6.05 | 2.48 |
| 14.00 | 0.90 | 0.09 | 0.16 | 66.00 | 8.39 | 6.35 | 2.29 |
| 15.00 | 0.96 | 0.12 | 0.16 | 67.00 | 8.68 | 6.63 | 2.06 |
| 16.00 | 1.02 | 0.14 | 0.20 | 68.00 | 8.94 | 6.87 | 1.84 |
| 17.00 | 1.10 | 0.17 | 0.24 | 69.00 | 9.17 | 7.10 | 1.66 |
| 18.00 | 1.18 | 0.21 | 0.29 | 70.00 | 9.39 | 7.32 | 1.66 |
| 19.00 | 1.27 | 0.25 | 0.32 | 71.00 | 9.62 | 7.54 | 1.67 |
| 20.00 | 1.35 | 0.30 | 0.34 | 72.00 | 9.85 | 7.76 | 1.67 |
| 21.00 | 1.44 | 0.34 | 0.35 | 73.00 | 9.86 | 7.76 | 0.09 |
| 22.00 | 1.52 | 0.39 | 0.37 | 74.00 | 9.88 | 7.79 | 0.19 |
| 23.00 | 1.61 | 0.44 | 0.38 | 75.00 | **9.92** | **7.83** | 0.30 |
| 24.00 | 1.69 | 0.49 | 0.40 | | | | |
| 25.00 | 1.78 | 0.55 | 0.41 | | | | |
| 26.00 | 1.86 | 0.60 | 0.42 | | | | |
| 27.00 | 1.95 | 0.66 | 0.43 | | | | |
| 28.00 | 2.03 | 0.72 | 0.44 | | | | |
| 29.00 | 2.12 | 0.78 | 0.45 | | | | |
| 30.00 | 2.21 | 0.84 | 0.46 | | | | |
| 31.00 | 2.29 | 0.90 | 0.47 | | | | |
| 32.00 | 2.38 | 0.96 | 0.48 | | | | |
| 33.00 | 2.46 | 1.03 | 0.48 | | | | |
| 34.00 | 2.55 | 1.09 | 0.49 | | | | |
| 35.00 | 2.63 | 1.16 | 0.50 | | | | |
| 36.00 | 2.72 | 1.22 | 0.50 | | | | |
| 37.00 | 2.81 | 1.29 | 0.54 | | | | |
| 38.00 | 2.91 | 1.37 | 0.59 | | | | |
| 39.00 | 3.01 | 1.46 | 0.65 | | | | |
| 40.00 | 3.12 | 1.55 | 0.69 | | | | |
| 41.00 | 3.23 | 1.63 | 0.66 | | | | |
| 42.00 | 3.33 | 1.72 | 0.61 | | | | |
| 43.00 | 3.42 | 1.79 | 0.57 | | | | |
| 44.00 | 3.51 | 1.87 | 0.57 | | | | |
| 45.00 | 3.60 | 1.95 | 0.62 | | | | |
| 46.00 | 3.71 | 2.03 | 0.67 | | | | |
| 47.00 | 3.82 | 2.13 | 0.73 | | | | |
| 48.00 | 3.94 | 2.24 | 0.83 | | | | |
| 49.00 | 4.09 | 2.36 | 0.94 | | | | |
| 50.00 | 4.24 | 2.50 | 1.05 | | | | |
| 51.00 | 4.41 | 2.65 | 1.14 | | | | |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 2.74 cfs @ | 61.74 hrs, | Volume= | 5.420 af |
| Outflow | = | 1.26 cfs @ | 72.27 hrs, | Volume= | 3.282 af, Atten= 54%, Lag= 631.5 min |
| Primary | = | 1.26 cfs @ | 72.27 hrs, | Volume= | 3.282 af |
| Secondary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-75.00 hrs, dt= 0.01 hrs
Peak Elev= 675.76' @ 72.27 hrs Surf.Area= 46,791 sf Storage= 102,225 cf

Plug-Flow detention time= 517.7 min calculated for 3.281 af (61% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

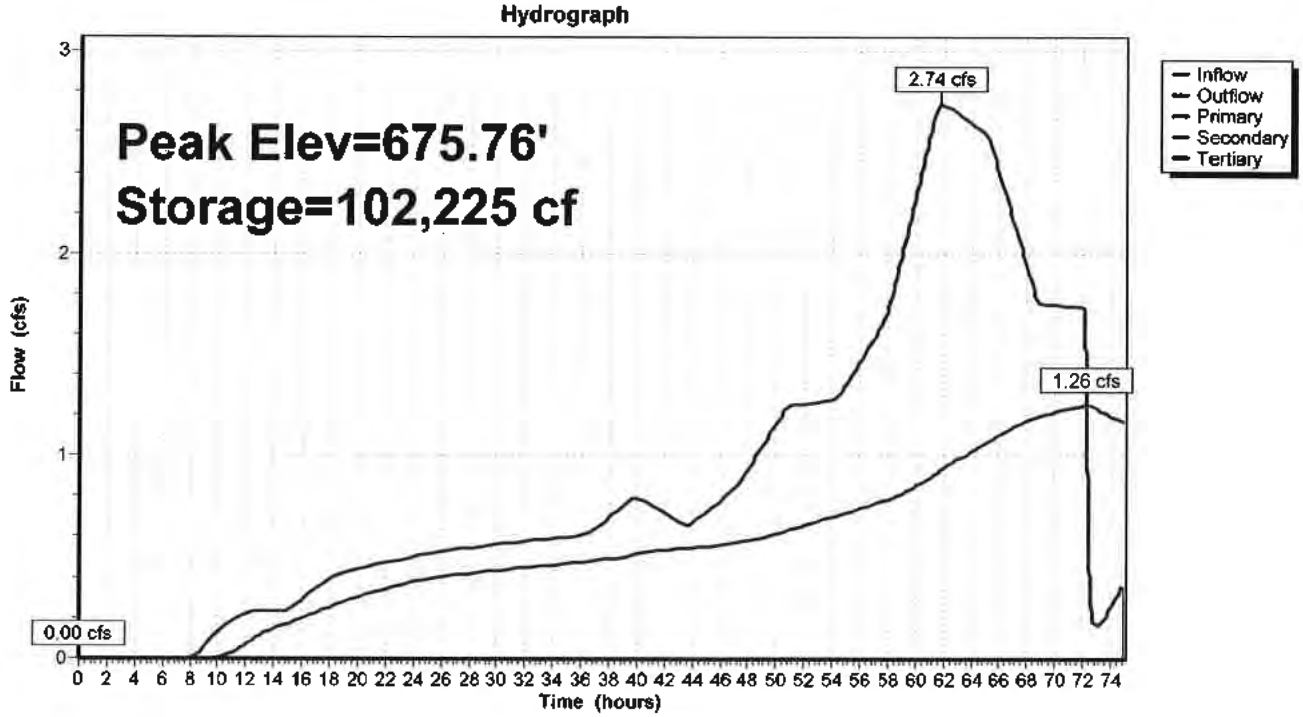
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=1.26 cfs @ 72.27 hrs HW=675.76' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.26 cfs @ 11.37 fps)

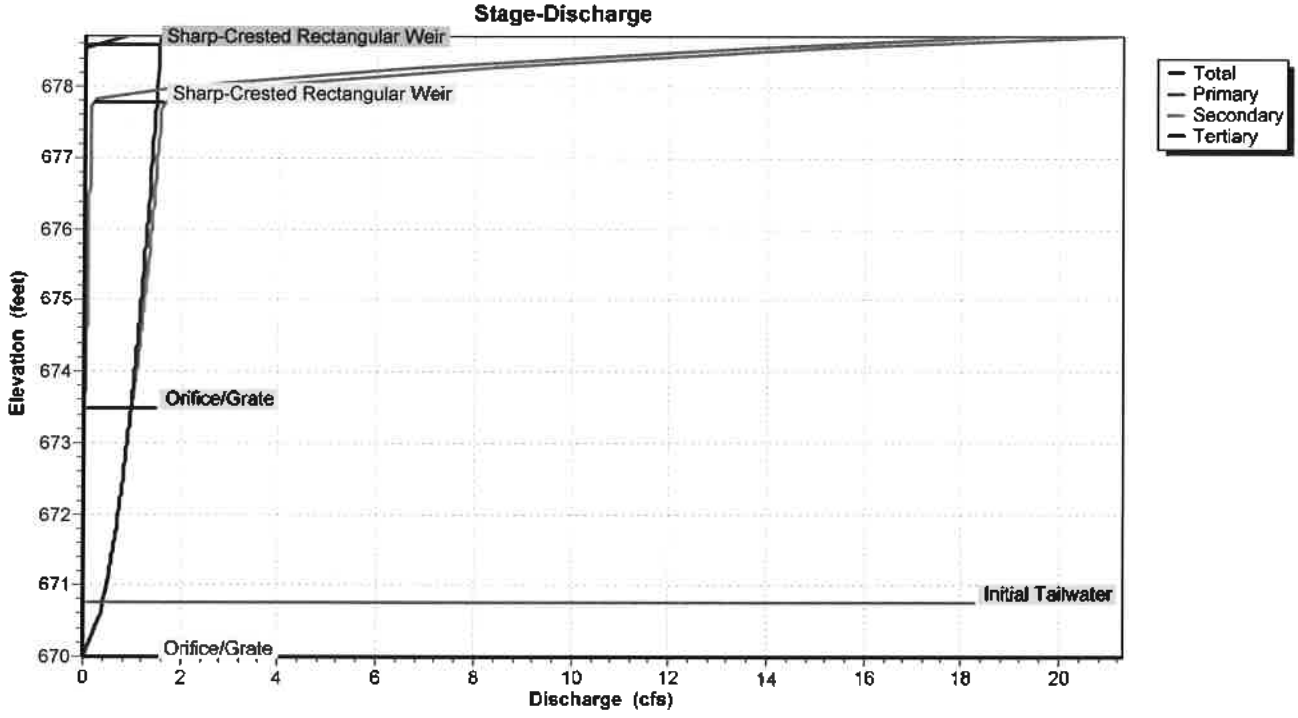
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

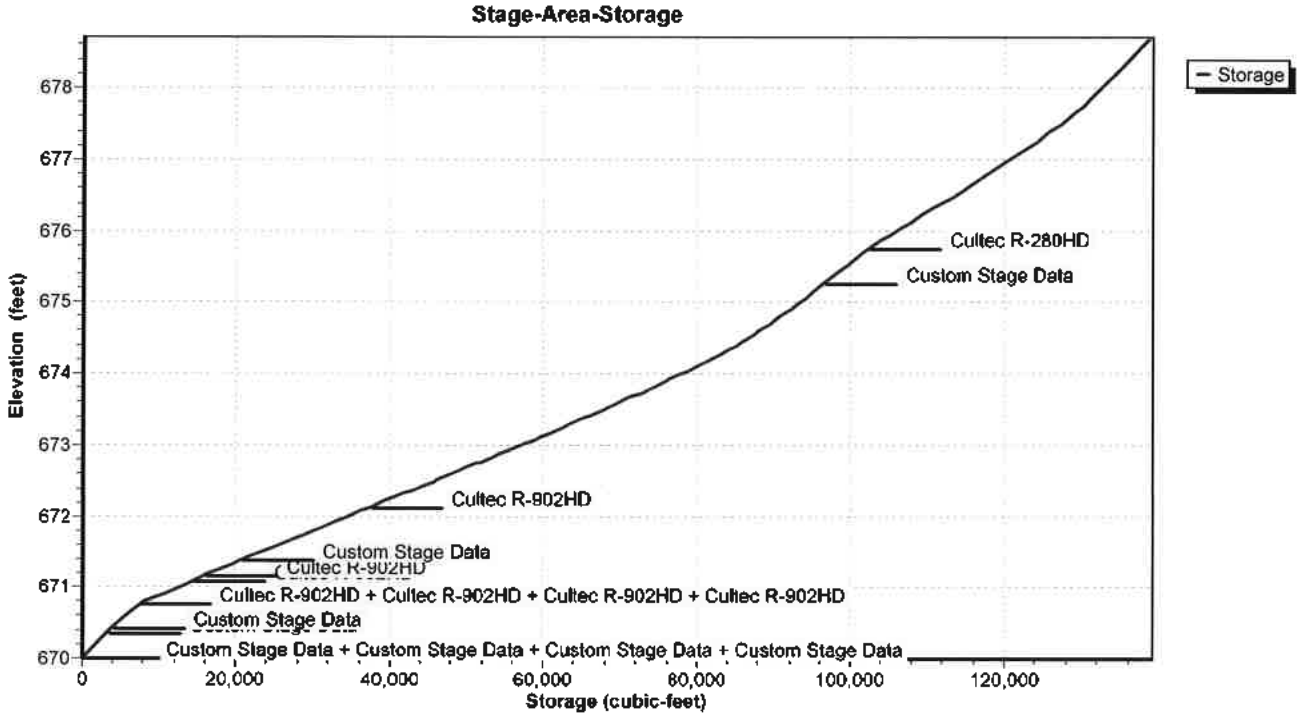
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 2.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10.00 | 0.13 | 413 | 670.05 | 0.01 | 0.01 | 0.00 | 0.00 |
| 12.00 | 0.22 | 1,521 | 670.17 | 0.07 | 0.07 | 0.00 | 0.00 |
| 14.00 | 0.24 | 2,403 | 670.27 | 0.15 | 0.15 | 0.00 | 0.00 |
| 16.00 | 0.29 | 2,941 | 670.33 | 0.20 | 0.20 | 0.00 | 0.00 |
| 18.00 | 0.39 | 3,774 | 670.42 | 0.25 | 0.25 | 0.00 | 0.00 |
| 20.00 | 0.44 | 4,779 | 670.52 | 0.30 | 0.30 | 0.00 | 0.00 |
| 22.00 | 0.47 | 5,728 | 670.61 | 0.35 | 0.35 | 0.00 | 0.00 |
| 24.00 | 0.50 | 6,627 | 670.70 | 0.38 | 0.38 | 0.00 | 0.00 |
| 26.00 | 0.53 | 7,490 | 670.77 | 0.40 | 0.40 | 0.00 | 0.00 |
| 28.00 | 0.55 | 8,387 | 670.81 | 0.42 | 0.42 | 0.00 | 0.00 |
| 30.00 | 0.56 | 9,317 | 670.85 | 0.43 | 0.43 | 0.00 | 0.00 |
| 32.00 | 0.58 | 10,262 | 670.90 | 0.45 | 0.45 | 0.00 | 0.00 |
| 34.00 | 0.59 | 11,212 | 670.94 | 0.46 | 0.46 | 0.00 | 0.00 |
| 36.00 | 0.61 | 12,155 | 670.99 | 0.48 | 0.48 | 0.00 | 0.00 |
| 38.00 | 0.70 | 13,310 | 671.04 | 0.49 | 0.49 | 0.00 | 0.00 |
| 40.00 | 0.80 | 15,088 | 671.13 | 0.52 | 0.52 | 0.00 | 0.00 |
| 42.00 | 0.72 | 16,777 | 671.21 | 0.54 | 0.54 | 0.00 | 0.00 |
| 44.00 | 0.67 | 17,750 | 671.25 | 0.55 | 0.55 | 0.00 | 0.00 |
| 46.00 | 0.78 | 18,971 | 671.31 | 0.56 | 0.56 | 0.00 | 0.00 |
| 48.00 | 0.94 | 20,935 | 671.40 | 0.58 | 0.58 | 0.00 | 0.00 |
| 50.00 | 1.16 | 24,156 | 671.54 | 0.62 | 0.62 | 0.00 | 0.00 |
| 52.00 | 1.26 | 28,438 | 671.73 | 0.66 | 0.66 | 0.00 | 0.00 |
| 54.00 | 1.27 | 32,660 | 671.92 | 0.70 | 0.70 | 0.00 | 0.00 |
| 56.00 | 1.47 | 37,227 | 672.12 | 0.74 | 0.74 | 0.00 | 0.00 |
| 58.00 | 1.72 | 43,137 | 672.38 | 0.79 | 0.79 | 0.00 | 0.00 |
| 60.00 | **2.29** | 51,617 | 672.75 | 0.85 | 0.85 | 0.00 | 0.00 |
| 62.00 | **2.73** | 63,642 | 673.30 | 0.94 | 0.94 | 0.00 | 0.00 |
| 64.00 | 2.64 | 75,943 | 673.90 | 1.02 | 1.02 | 0.00 | 0.00 |
| 66.00 | 2.39 | 86,694 | 674.50 | 1.10 | 1.10 | 0.00 | 0.00 |
| 68.00 | 1.93 | 94,024 | 675.07 | 1.17 | 1.17 | 0.00 | 0.00 |
| 70.00 | 1.74 | 98,231 | 675.42 | 1.22 | 1.22 | 0.00 | 0.00 |
| 72.00 | 1.74 | **101,877** | **675.73** | **1.25** | **1.25** | 0.00 | 0.00 |
| 74.00 | 0.26 | **96,273** | **675.25** | **1.20** | **1.20** | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 16.68 | 1.54 | 15.13 | 0.00 |
| 678.80 | **24.77** | **1.56** | **21.42** | **1.79** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 1.23 cfs @ | 61.56 hrs, | Volume= | 2.279 af |
| Outflow | = | 1.18 cfs @ | 63.56 hrs, | Volume= | 2.277 af, Atten= 4%, Lag= 120.3 min |
| Primary | = | 1.06 cfs @ | 63.86 hrs, | Volume= | 1.738 af |
| Secondary | = | 0.12 cfs @ | 62.88 hrs, | Volume= | 0.538 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-75.00 hrs, dt= 0.01 hrs
Peak Elev= 677.69' @ 63.86 hrs Surf.Area= 2,836 sf Storage= 2,301 cf

Plug-Flow detention time= 20.4 min calculated for 2.276 af (100% of inflow)
Center-of-Mass det. time= 18.8 min ( 3,231.9 - 3,213.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

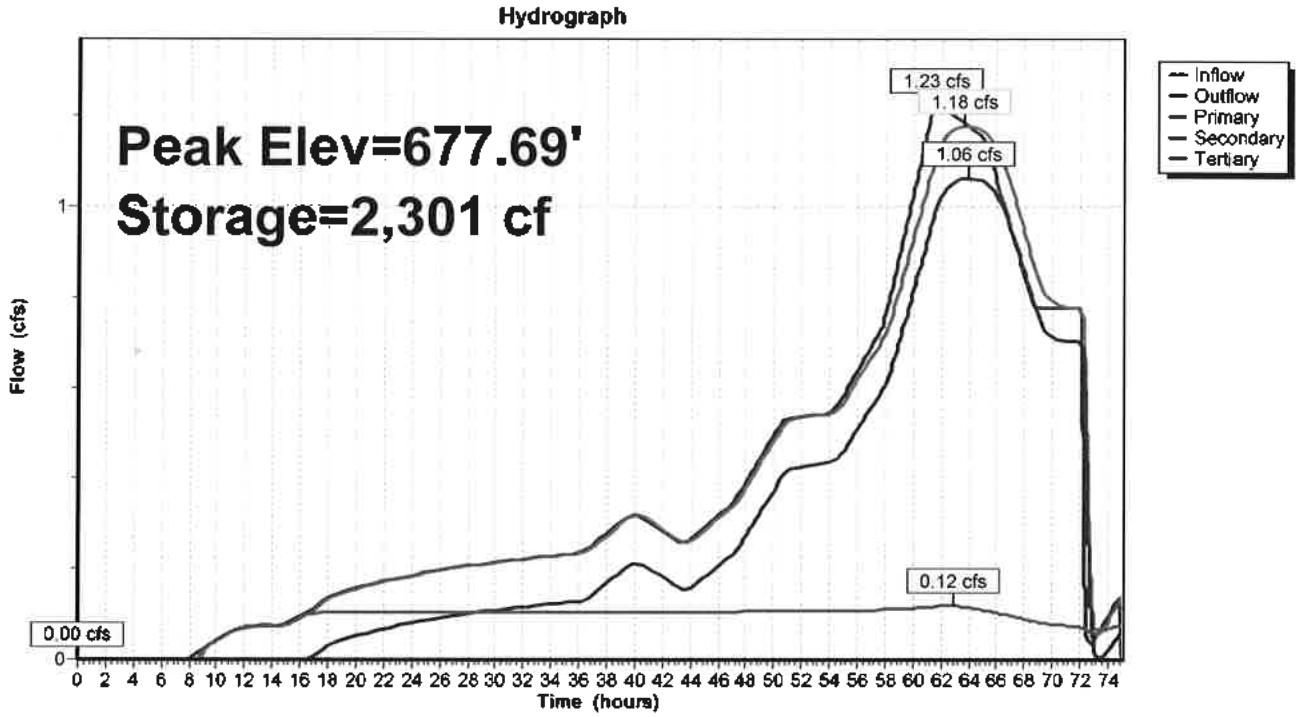
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=1.06 cfs @ 63.86 hrs HW=677.69' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.06 cfs @ 4.62 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

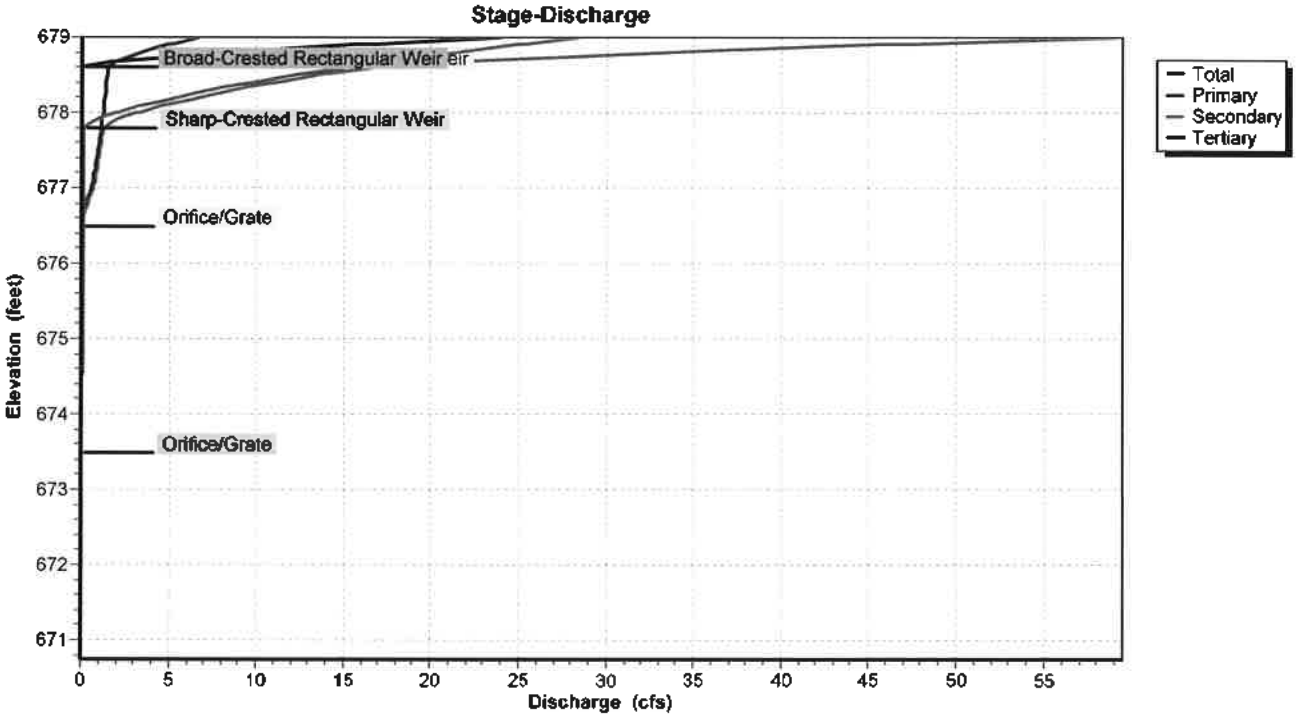
**Secondary OutFlow** Max=0.12 cfs @ 62.88 hrs HW=677.68' TW=673.56' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.12 cfs @ 9.76 fps)
└─**5=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

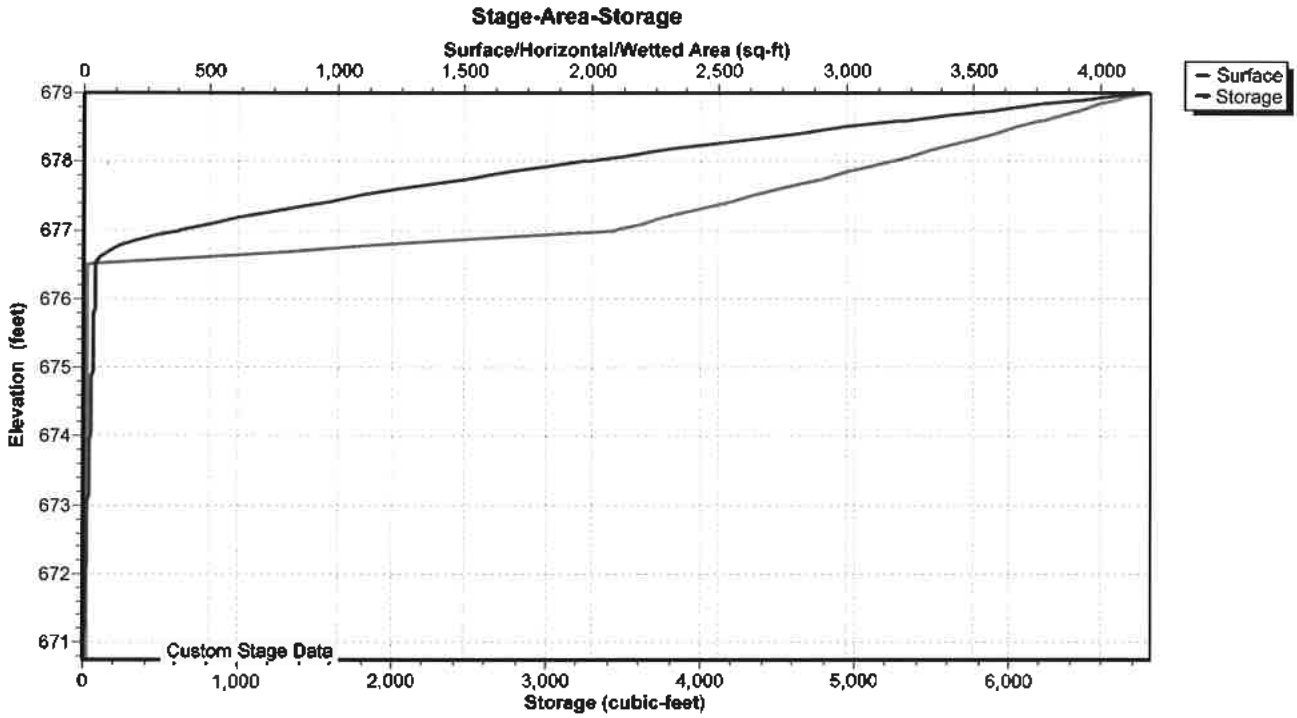
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 2.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8.00 | 0.00 | 0 | 670.76 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10.00 | 0.04 | 46 | 674.07 | 0.04 | 0.00 | 0.04 | 0.00 |
| 12.00 | 0.07 | 59 | 675.00 | 0.07 | 0.00 | 0.07 | 0.00 |
| 14.00 | 0.07 | 62 | 675.18 | 0.08 | 0.00 | 0.08 | 0.00 |
| 16.00 | 0.10 | 73 | 676.00 | 0.09 | 0.00 | 0.09 | 0.00 |
| 18.00 | 0.14 | 103 | 676.60 | 0.13 | 0.03 | 0.10 | 0.00 |
| 20.00 | 0.16 | 120 | 676.63 | 0.16 | 0.05 | 0.10 | 0.00 |
| 22.00 | 0.17 | 132 | 676.65 | 0.17 | 0.07 | 0.10 | 0.00 |
| 24.00 | 0.19 | 141 | 676.66 | 0.19 | 0.08 | 0.10 | 0.00 |
| 26.00 | 0.20 | 149 | 676.68 | 0.20 | 0.09 | 0.10 | 0.00 |
| 28.00 | 0.21 | 155 | 676.68 | 0.21 | 0.10 | 0.10 | 0.00 |
| 30.00 | 0.22 | 160 | 676.69 | 0.21 | 0.11 | 0.10 | 0.00 |
| 32.00 | 0.22 | 167 | 676.70 | 0.22 | 0.12 | 0.10 | 0.00 |
| 34.00 | 0.23 | 173 | 676.71 | 0.23 | 0.12 | 0.10 | 0.00 |
| 36.00 | 0.23 | 177 | 676.71 | 0.23 | 0.13 | 0.10 | 0.00 |
| 38.00 | 0.28 | 209 | 676.74 | 0.27 | 0.17 | 0.11 | 0.00 |
| 40.00 | 0.32 | 247 | 676.78 | 0.32 | 0.22 | 0.11 | 0.00 |
| 42.00 | 0.28 | 220 | 676.75 | 0.29 | 0.18 | 0.11 | 0.00 |
| 44.00 | 0.27 | 200 | 676.73 | 0.26 | 0.16 | 0.11 | 0.00 |
| 46.00 | 0.32 | 238 | 676.77 | 0.31 | 0.21 | 0.11 | 0.00 |
| 48.00 | 0.39 | 301 | 676.82 | 0.38 | 0.27 | 0.11 | 0.00 |
| 50.00 | 0.50 | 400 | 676.89 | 0.48 | 0.37 | 0.11 | 0.00 |
| 52.00 | 0.54 | 459 | 676.92 | 0.54 | 0.43 | 0.11 | 0.00 |
| 54.00 | 0.54 | 467 | 676.93 | 0.54 | 0.43 | 0.11 | 0.00 |
| 56.00 | 0.64 | 566 | 676.98 | 0.62 | 0.51 | 0.11 | 0.00 |
| 58.00 | 0.76 | 759 | 677.07 | 0.72 | 0.61 | 0.11 | 0.00 |
| 60.00 | **1.03** | 1,305 | 677.31 | 0.93 | 0.81 | 0.11 | 0.00 |
| 62.00 | **1.22** | **2,111** | **677.62** | **1.14** | **1.02** | **0.12** | 0.00 |
| 64.00 | 1.18 | **2,301** | **677.69** | **1.18** | **1.06** | **0.12** | 0.00 |
| 66.00 | 1.05 | 2,107 | 677.62 | 1.13 | 1.02 | 0.10 | 0.00 |
| 68.00 | 0.84 | 1,435 | 677.36 | 0.94 | 0.85 | 0.09 | 0.00 |
| 70.00 | 0.78 | 1,001 | 677.18 | 0.79 | 0.71 | 0.08 | 0.00 |
| 72.00 | 0.78 | 987 | 677.18 | 0.78 | 0.71 | 0.07 | 0.00 |
| 74.00 | 0.09 | 96 | 676.57 | 0.09 | 0.02 | 0.07 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 5.62 | 1.30 | 4.31 | 0.00 |
| 678.35 | 9.91 | 1.39 | 8.51 | 0.00 |
| 678.55 | 15.18 | 1.48 | 13.70 | 0.00 |
| 678.75 | 27.96 | 2.72 | 19.77 | 5.47 |
| 678.95 | **52.16** | **5.83** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

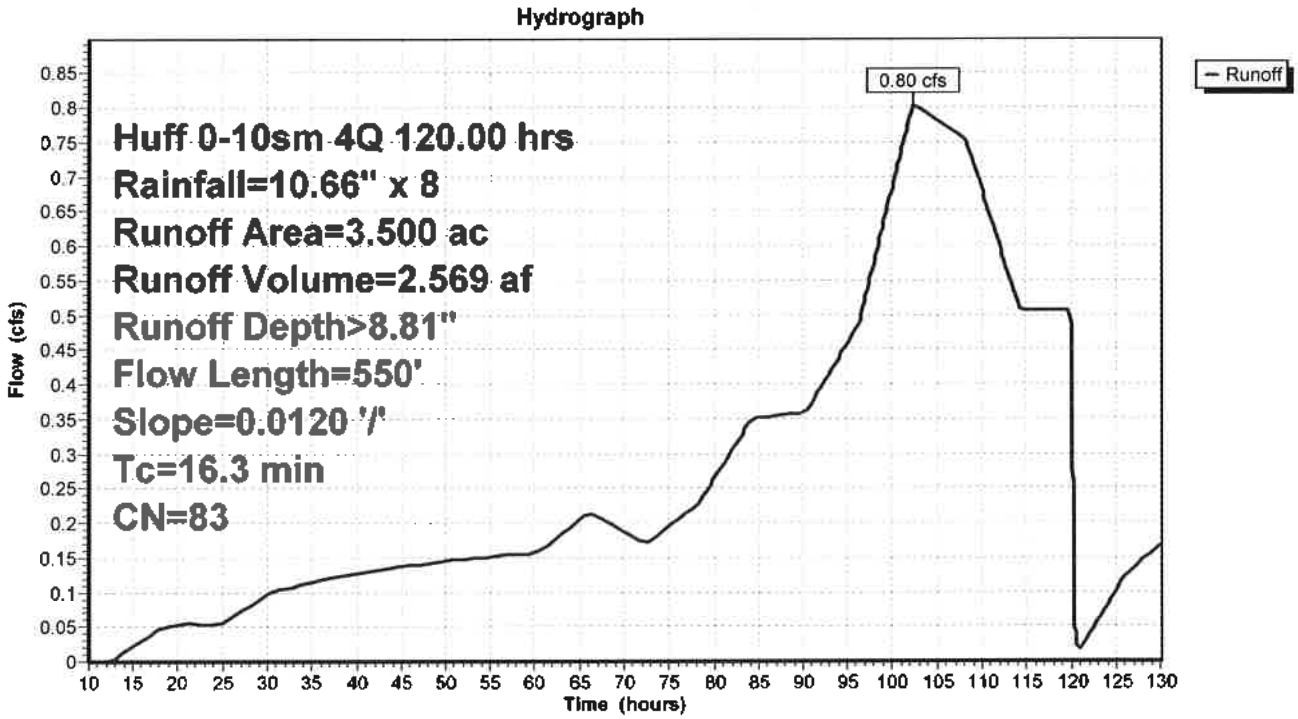
Runoff = 0.80 cfs @ 102.38 hrs, Volume= 2.569 af, Depth> 8.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.01 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=10.66" x 8

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 10.00 | 0.28 | 0.00 | 0.00 |
| 12.00 | 0.39 | 0.00 | 0.00 |
| 14.00 | 0.50 | 0.00 | 0.01 |
| 16.00 | 0.61 | 0.02 | 0.03 |
| 18.00 | 0.72 | 0.04 | 0.05 |
| 20.00 | 0.83 | 0.07 | 0.05 |
| 22.00 | 0.92 | 0.10 | 0.05 |
| 24.00 | 1.00 | 0.13 | 0.05 |
| 26.00 | 1.08 | 0.17 | 0.06 |
| 28.00 | 1.17 | 0.21 | 0.08 |
| 30.00 | 1.28 | 0.26 | 0.10 |
| 32.00 | 1.39 | 0.32 | 0.11 |
| 34.00 | 1.50 | 0.38 | 0.11 |
| 36.00 | 1.61 | 0.44 | 0.12 |
| 38.00 | 1.72 | 0.51 | 0.12 |
| 40.00 | 1.83 | 0.58 | 0.13 |
| 42.00 | 1.94 | 0.66 | 0.13 |
| 44.00 | 2.05 | 0.73 | 0.14 |
| 46.00 | 2.17 | 0.81 | 0.14 |
| 48.00 | 2.28 | 0.89 | 0.14 |
| 50.00 | 2.39 | 0.97 | 0.14 |
| 52.00 | 2.50 | 1.05 | 0.15 |
| 54.00 | 2.61 | 1.14 | 0.15 |
| 56.00 | 2.72 | 1.23 | 0.15 |
| 58.00 | 2.83 | 1.31 | 0.15 |
| 60.00 | 2.94 | 1.40 | 0.16 |
| 62.00 | 3.06 | 1.49 | 0.17 |
| 64.00 | 3.19 | 1.60 | 0.19 |
| 66.00 | 3.33 | 1.72 | 0.21 |
| 68.00 | 3.47 | 1.84 | 0.20 |
| 70.00 | 3.60 | 1.95 | 0.19 |
| 72.00 | 3.72 | 2.04 | 0.17 |
| 74.00 | 3.84 | 2.15 | 0.18 |
| 76.00 | 3.97 | 2.26 | 0.20 |
| 78.00 | 4.11 | 2.38 | 0.23 |
| 80.00 | 4.27 | 2.52 | 0.26 |
| 82.00 | 4.45 | 2.68 | 0.30 |
| 84.00 | 4.66 | 2.87 | 0.35 |
| 86.00 | 4.89 | 3.07 | 0.35 |
| 88.00 | 5.11 | 3.27 | 0.36 |
| 90.00 | 5.33 | 3.47 | 0.36 |
| 92.00 | 5.56 | 3.69 | 0.39 |
| 94.00 | 5.82 | 3.93 | 0.44 |
| 96.00 | 6.11 | 4.19 | 0.48 |
| 98.00 | 6.43 | 4.50 | 0.58 |
| 100.00 | 6.82 | 4.86 | 0.68 |
| 102.00 | 7.27 | 5.29 | **0.79** |
| 104.00 | 7.75 | 5.74 | **0.79** |
| 106.00 | 8.21 | 6.18 | 0.77 |
| 108.00 | 8.66 | 6.61 | 0.76 |
| 110.00 | 9.08 | 7.01 | 0.68 |
| 112.00 | 9.45 | 7.37 | 0.60 |
| 114.00 | 9.77 | 7.68 | 0.52 |
| 116.00 | 10.07 | 7.97 | 0.51 |
| 118.00 | 10.36 | 8.26 | 0.51 |
| 120.00 | 10.66 | 8.54 | 0.51 |
| 122.00 | 10.67 | 8.56 | 0.04 |
| 124.00 | 10.71 | 8.59 | 0.08 |
| 126.00 | 10.77 | 8.65 | 0.12 |
| 128.00 | 10.85 | 8.73 | 0.15 |
| 130.00 | **10.94** | **8.82** | 0.17 |

## Summary for Subcatchment 7S: South Property

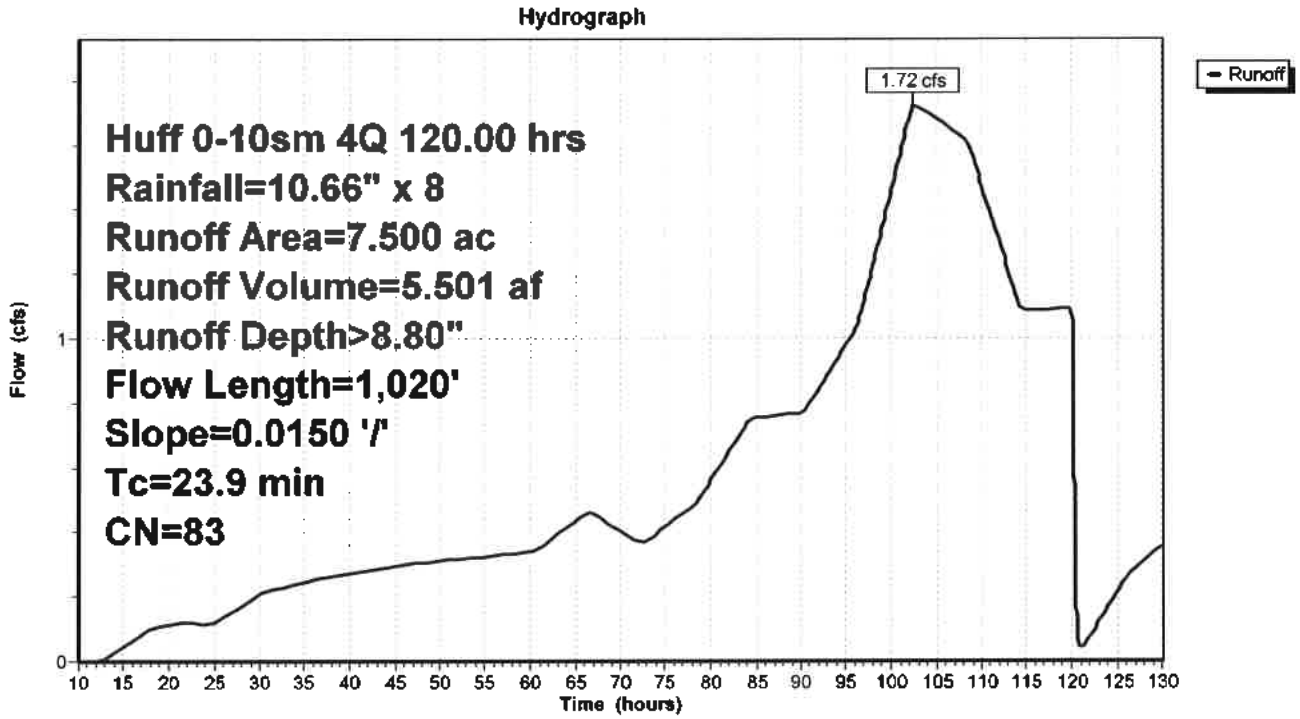
Runoff = 1.72 cfs @ 102.53 hrs, Volume= 5.501 af, Depth> 8.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.01 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=10.66" x 8

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

## Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 10.00 | 0.28 | 0.00 | 0.00 |
| 12.00 | 0.39 | 0.00 | 0.00 |
| 14.00 | 0.50 | 0.00 | 0.03 |
| 16.00 | 0.61 | 0.02 | 0.07 |
| 18.00 | 0.72 | 0.04 | 0.10 |
| 20.00 | 0.83 | 0.07 | 0.11 |
| 22.00 | 0.92 | 0.10 | 0.12 |
| 24.00 | 1.00 | 0.13 | 0.11 |
| 26.00 | 1.08 | 0.17 | 0.14 |
| 28.00 | 1.17 | 0.21 | 0.17 |
| 30.00 | 1.28 | 0.26 | 0.21 |
| 32.00 | 1.39 | 0.32 | 0.23 |
| 34.00 | 1.50 | 0.38 | 0.24 |
| 36.00 | 1.61 | 0.44 | 0.25 |
| 38.00 | 1.72 | 0.51 | 0.26 |
| 40.00 | 1.83 | 0.58 | 0.27 |
| 42.00 | 1.94 | 0.66 | 0.28 |
| 44.00 | 2.05 | 0.73 | 0.29 |
| 46.00 | 2.17 | 0.81 | 0.30 |
| 48.00 | 2.28 | 0.89 | 0.30 |
| 50.00 | 2.39 | 0.97 | 0.31 |
| 52.00 | 2.50 | 1.05 | 0.32 |
| 54.00 | 2.61 | 1.14 | 0.32 |
| 56.00 | 2.72 | 1.23 | 0.33 |
| 58.00 | 2.83 | 1.31 | 0.33 |
| 60.00 | 2.94 | 1.40 | 0.34 |
| 62.00 | 3.06 | 1.49 | 0.37 |
| 64.00 | 3.19 | 1.60 | 0.41 |
| 66.00 | 3.33 | 1.72 | 0.46 |
| 68.00 | 3.47 | 1.84 | 0.44 |
| 70.00 | 3.60 | 1.95 | 0.40 |
| 72.00 | 3.72 | 2.04 | 0.37 |
| 74.00 | 3.84 | 2.15 | 0.39 |
| 76.00 | 3.97 | 2.26 | 0.44 |
| 78.00 | 4.11 | 2.38 | 0.48 |
| 80.00 | 4.27 | 2.52 | 0.56 |
| 82.00 | 4.45 | 2.68 | 0.65 |
| 84.00 | 4.66 | 2.87 | 0.73 |
| 86.00 | 4.89 | 3.07 | 0.76 |
| 88.00 | 5.11 | 3.27 | 0.76 |
| 90.00 | 5.33 | 3.47 | 0.77 |
| 92.00 | 5.56 | 3.69 | 0.84 |
| 94.00 | 5.82 | 3.93 | 0.93 |
| 96.00 | 6.11 | 4.19 | 1.02 |
| 98.00 | 6.43 | 4.50 | 1.22 |
| 100.00 | 6.82 | 4.86 | 1.45 |
| 102.00 | 7.27 | 5.29 | **1.68** |
| 104.00 | 7.75 | 5.74 | **1.69** |
| 106.00 | 8.21 | 6.18 | 1.66 |
| 108.00 | 8.66 | 6.61 | 1.62 |
| 110.00 | 9.08 | 7.01 | 1.47 |
| 112.00 | 9.45 | 7.37 | 1.29 |
| 114.00 | 9.77 | 7.68 | 1.12 |
| 116.00 | 10.07 | 7.97 | 1.08 |
| 118.00 | 10.36 | 8.26 | 1.09 |
| 120.00 | 10.66 | 8.54 | 1.09 |
| 122.00 | 10.67 | 8.56 | 0.07 |
| 124.00 | 10.71 | 8.59 | 0.16 |
| 126.00 | 10.77 | 8.65 | 0.26 |
| 128.00 | 10.85 | 8.73 | 0.31 |
| 130.00 | **10.94** | **8.82** | 0.35 |

## Summary for Pond 3P: Southeast Chambers

| | | | | |
|---|---|---|---|---|
| Inflow | = | 1.83 cfs @ 102.53 hrs, | Volume= | 6.421 af |
| Outflow | = | 1.05 cfs @ 120.20 hrs, | Volume= | 5.130 af, Atten= 43%, Lag= 1,060.1 min |
| Primary | = | 1.05 cfs @ 120.20 hrs, | Volume= | 5.130 af |
| Secondary | = | 0.00 cfs @ 10.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ 10.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 10.00-130.00 hrs, dt= 0.01 hrs
Peak Elev= 674.08' @ 120.20 hrs Surf.Area= 31,284 sf Storage= 79,413 cf

Plug-Flow detention time= 576.4 min calculated for 5.130 af (80% of inflow)
Center-of-Mass det. time= 130.6 min ( 5,381.3 - 5,250.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

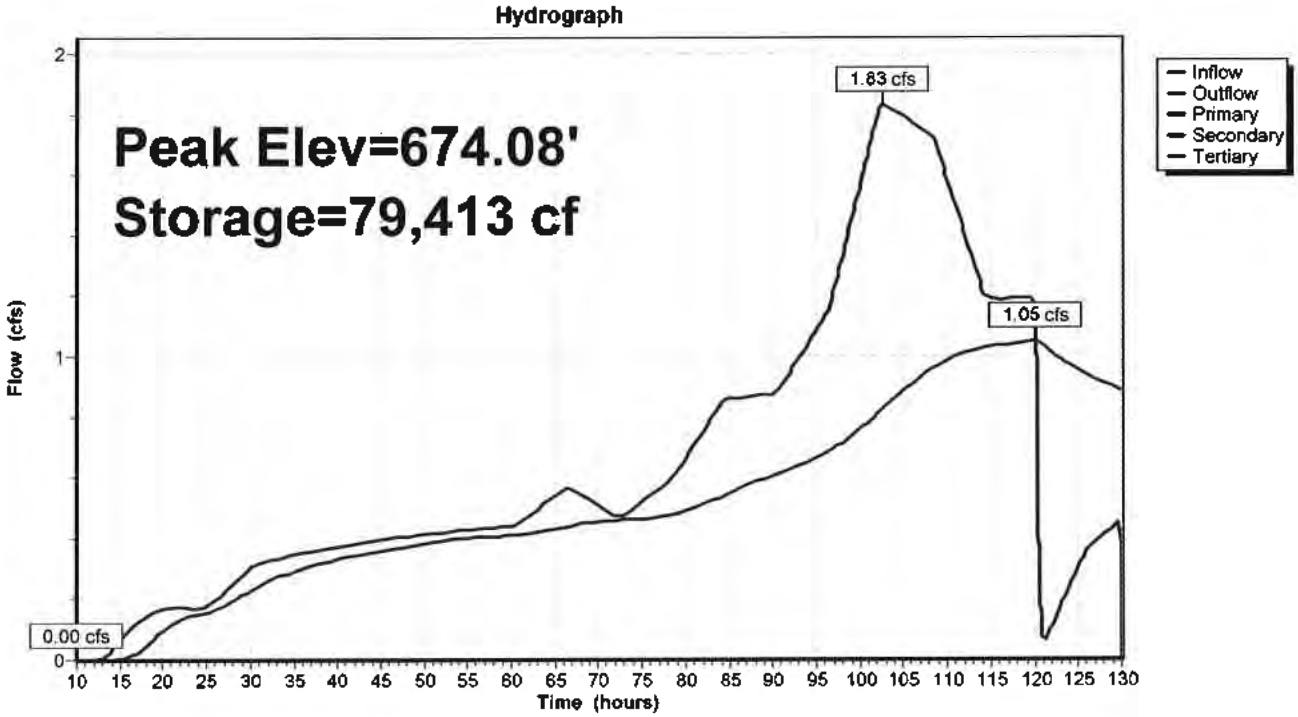
#4 Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=1.05 cfs @ 120.20 hrs HW=674.08' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.05 cfs @ 9.50 fps)

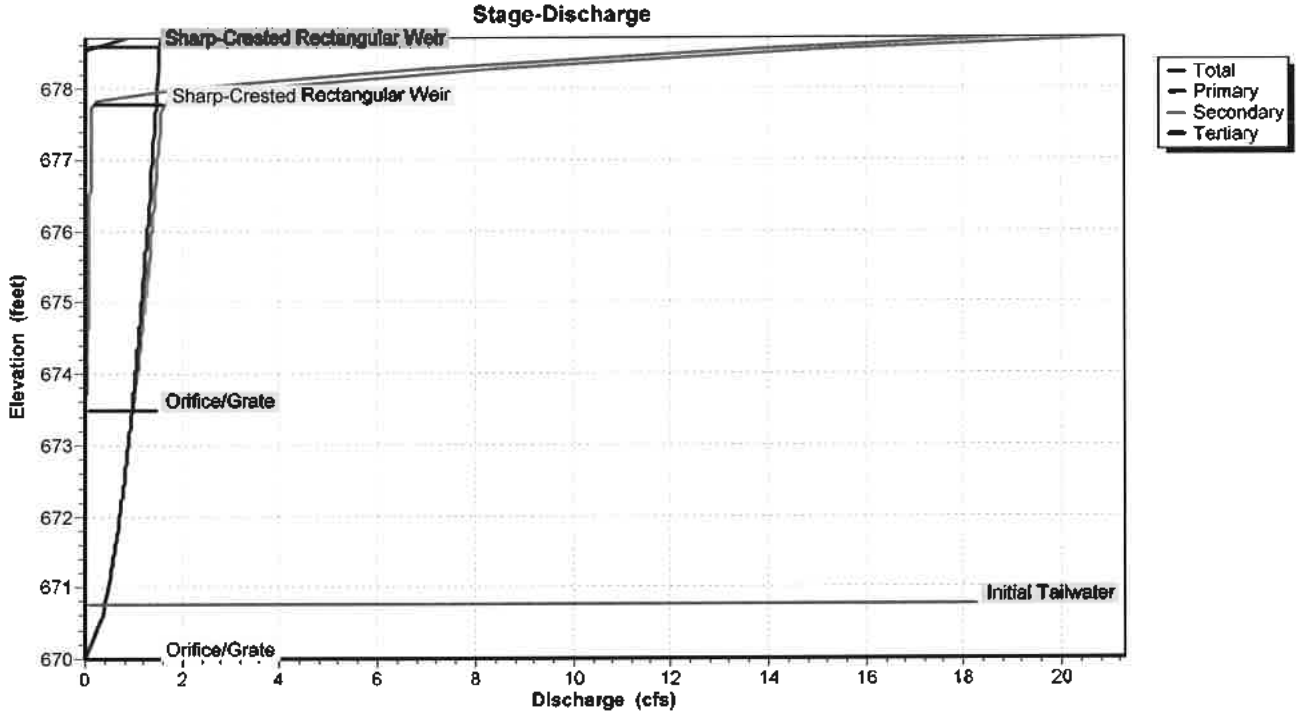
**Secondary OutFlow** Max=0.00 cfs @ 10.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 10.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

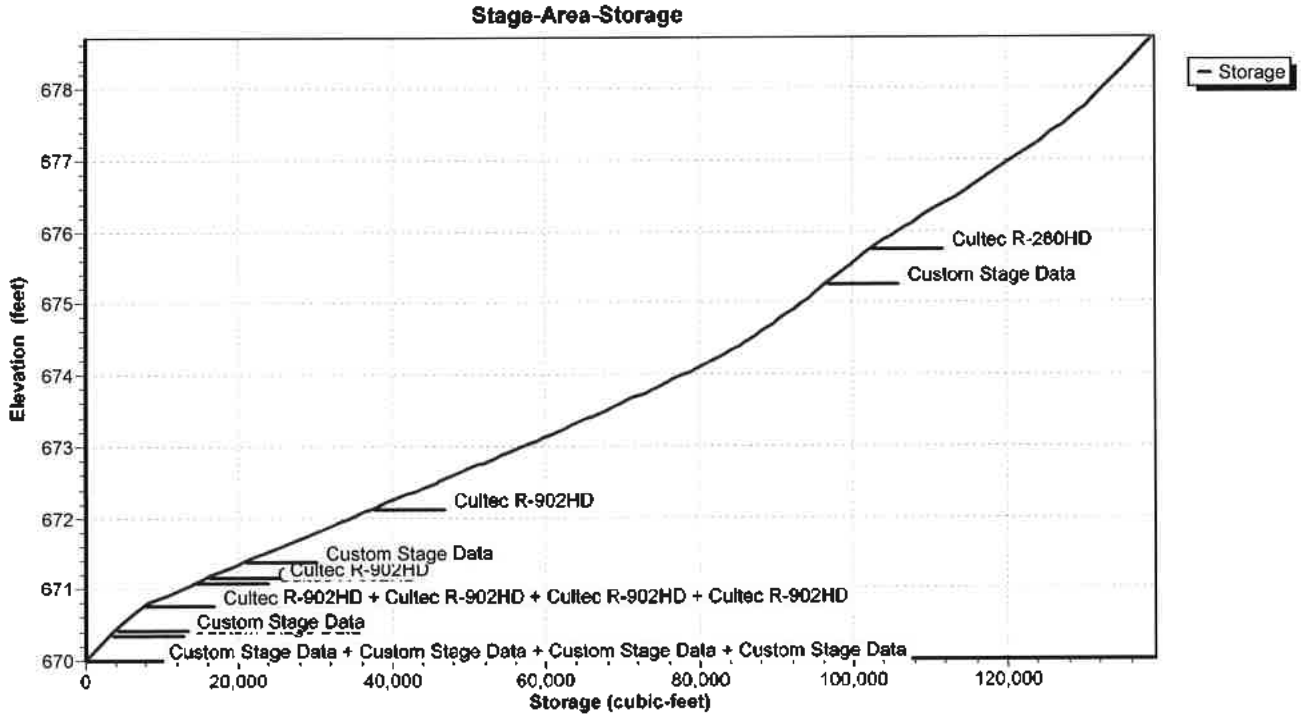
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 15.00 | 0.07 | 252 | 670.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20.00 | 0.17 | 1,846 | 670.21 | 0.10 | 0.10 | 0.00 | 0.00 |
| 25.00 | 0.18 | 2,474 | 670.28 | 0.16 | 0.16 | 0.00 | 0.00 |
| 30.00 | 0.30 | 3,318 | 670.37 | 0.23 | 0.23 | 0.00 | 0.00 |
| 35.00 | 0.35 | 4,511 | 670.49 | 0.29 | 0.29 | 0.00 | 0.00 |
| 40.00 | 0.37 | 5,390 | 670.58 | 0.33 | 0.33 | 0.00 | 0.00 |
| 45.00 | 0.40 | 6,103 | 670.65 | 0.36 | 0.36 | 0.00 | 0.00 |
| 50.00 | 0.41 | 6,703 | 670.70 | 0.38 | 0.38 | 0.00 | 0.00 |
| 55.00 | 0.43 | 7,218 | 670.75 | 0.40 | 0.40 | 0.00 | 0.00 |
| 60.00 | 0.44 | 7,740 | 670.78 | 0.41 | 0.41 | 0.00 | 0.00 |
| 65.00 | 0.54 | 8,972 | 670.84 | 0.43 | 0.43 | 0.00 | 0.00 |
| 70.00 | 0.51 | 10,743 | 670.92 | 0.46 | 0.46 | 0.00 | 0.00 |
| 75.00 | 0.52 | 11,255 | 670.95 | 0.46 | 0.46 | 0.00 | 0.00 |
| 80.00 | 0.66 | 13,150 | 671.04 | 0.49 | 0.49 | 0.00 | 0.00 |
| 85.00 | 0.86 | 17,739 | 671.25 | 0.55 | 0.55 | 0.00 | 0.00 |
| 90.00 | 0.87 | 22,927 | 671.48 | 0.61 | 0.61 | 0.00 | 0.00 |
| 95.00 | 1.09 | 29,012 | 671.75 | 0.67 | 0.67 | 0.00 | 0.00 |
| 100.00 | **1.56** | 39,483 | 672.22 | 0.76 | 0.76 | 0.00 | 0.00 |
| 105.00 | **1.79** | 56,316 | 672.96 | 0.89 | 0.89 | 0.00 | 0.00 |
| 110.00 | 1.58 | 70,428 | 673.62 | 0.99 | 0.99 | 0.00 | 0.00 |
| 115.00 | 1.19 | 76,670 | 673.93 | 1.03 | 1.03 | 0.00 | 0.00 |
| 120.00 | 1.19 | **79,337** | **674.07** | **1.05** | **1.05** | 0.00 | 0.00 |
| 125.00 | 0.31 | **65,628** | **673.39** | **0.95** | **0.95** | 0.00 | 0.00 |
| 130.00 | 0.00 | 56,257 | 672.96 | 0.89 | 0.89 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 16.68 | 1.54 | 15.13 | 0.00 |
| 678.80 | **24.77** | **1.56** | **21.42** | **1.79** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | |
|---|---|---|---|---|
| Inflow | = | 0.80 cfs @ 102.38 hrs, | Volume= | 2.569 af |
| Outflow | = | 0.79 cfs @ 103.59 hrs, | Volume= | 2.566 af, Atten= 1%, Lag= 72.5 min |
| Primary | = | 0.68 cfs @ 103.59 hrs, | Volume= | 1.646 af |
| Secondary | = | 0.11 cfs @ 103.59 hrs, | Volume= | 0.920 af |
| Tertiary | = | 0.00 cfs @ 10.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 10.00-130.00 hrs, dt= 0.01 hrs
Peak Elev= 677.15' @ 103.59 hrs Surf.Area= 2,246 sf Storage= 926 cf

Plug-Flow detention time= 14.9 min calculated for 2.566 af (100% of inflow)
Center-of-Mass det. time= 12.3 min ( 5,382.3 - 5,370.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

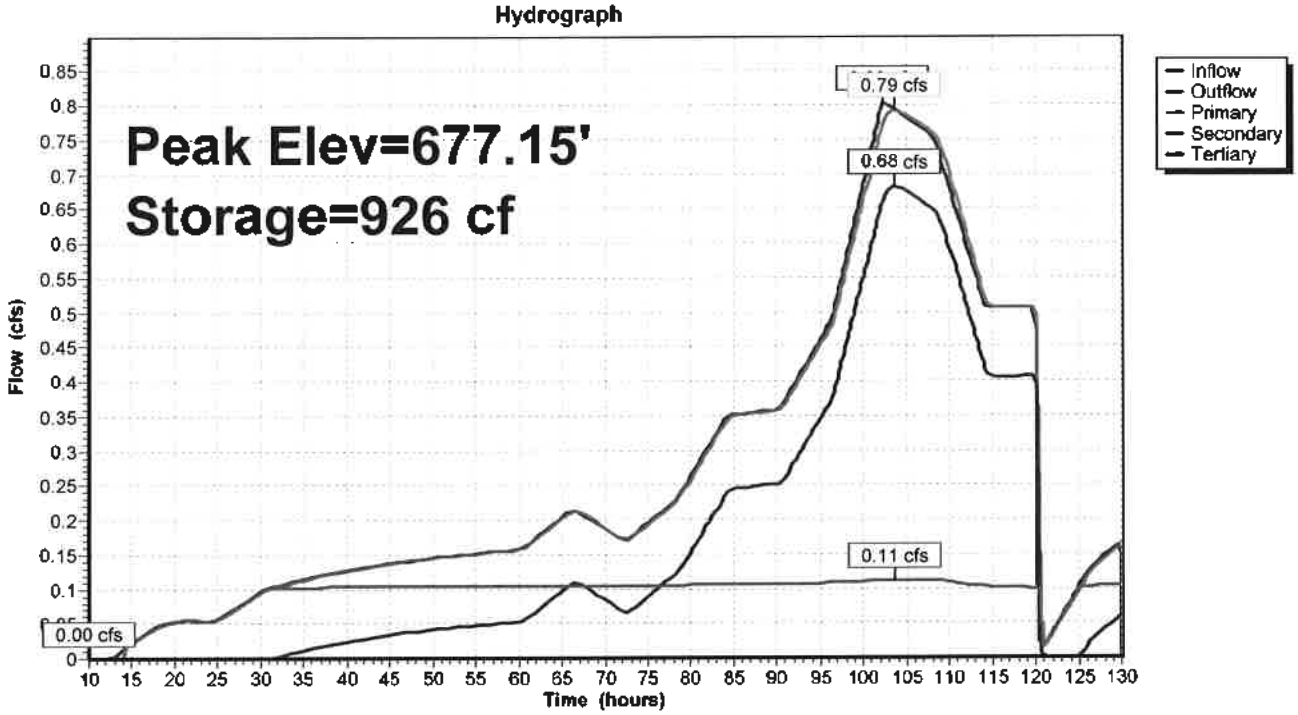
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=0.68 cfs @ 103.59 hrs HW=677.15' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.68 cfs @ 2.96 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

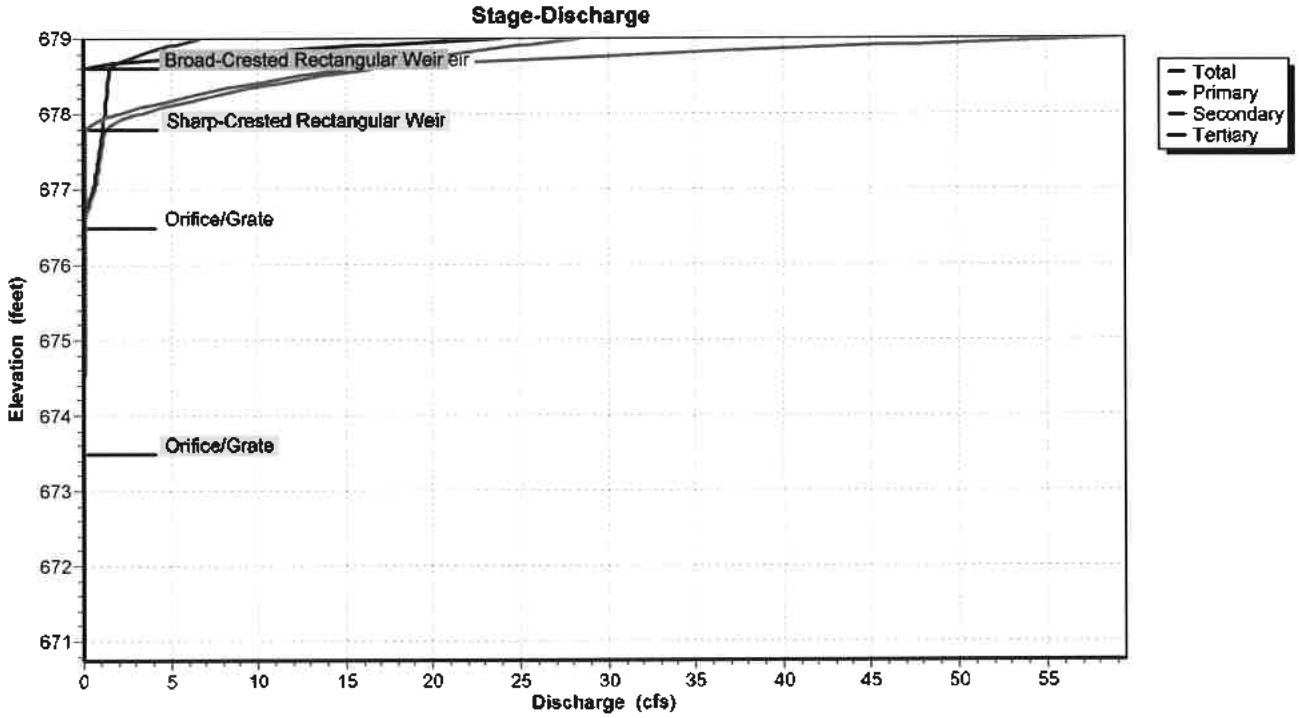
**Secondary OutFlow** Max=0.11 cfs @ 103.59 hrs HW=677.15' TW=672.75' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.11 cfs @ 9.12 fps)
└─**5=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 10.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

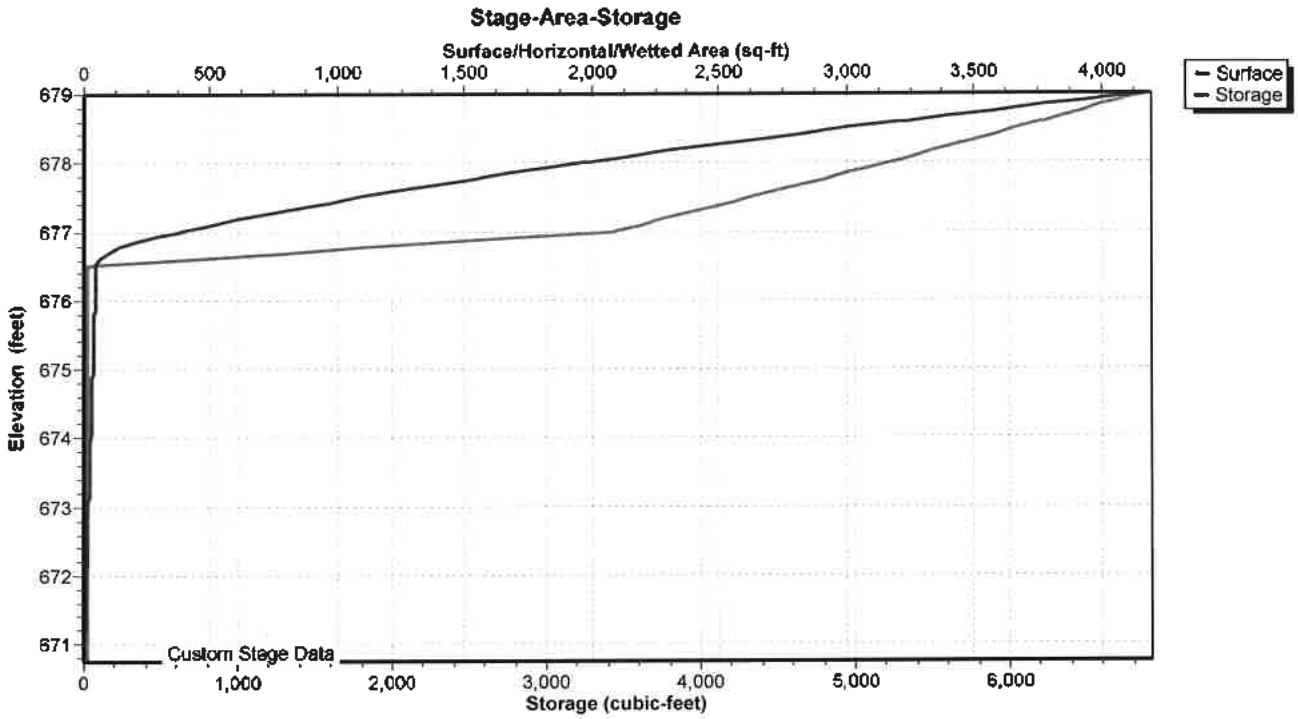
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 15.00 | 0.02 | 41 | 673.71 | 0.02 | 0.00 | 0.02 | 0.00 |
| 20.00 | 0.05 | 51 | 674.38 | 0.05 | 0.00 | 0.05 | 0.00 |
| 25.00 | 0.06 | 52 | 674.46 | 0.06 | 0.00 | 0.06 | 0.00 |
| 30.00 | 0.10 | 76 | 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 35.00 | 0.11 | 92 | 676.56 | 0.11 | 0.01 | 0.10 | 0.00 |
| 40.00 | 0.13 | 100 | 676.59 | 0.13 | 0.02 | 0.10 | 0.00 |
| 45.00 | 0.14 | 105 | 676.60 | 0.14 | 0.03 | 0.10 | 0.00 |
| 50.00 | 0.14 | 111 | 676.62 | 0.14 | 0.04 | 0.10 | 0.00 |
| 55.00 | 0.15 | 116 | 676.62 | 0.15 | 0.05 | 0.10 | 0.00 |
| 60.00 | 0.16 | 121 | 676.63 | 0.16 | 0.05 | 0.10 | 0.00 |
| 65.00 | 0.20 | 152 | 676.68 | 0.20 | 0.10 | 0.10 | 0.00 |
| 70.00 | 0.19 | 143 | 676.67 | 0.19 | 0.08 | 0.10 | 0.00 |
| 75.00 | 0.19 | 147 | 676.67 | 0.19 | 0.09 | 0.10 | 0.00 |
| 80.00 | 0.26 | 198 | 676.73 | 0.26 | 0.15 | 0.11 | 0.00 |
| 85.00 | 0.35 | 274 | 676.80 | 0.35 | 0.24 | 0.11 | 0.00 |
| 90.00 | 0.36 | 280 | 676.80 | 0.36 | 0.25 | 0.11 | 0.00 |
| 95.00 | 0.46 | 369 | 676.87 | 0.45 | 0.35 | 0.11 | 0.00 |
| 100.00 | **0.68** | **631** | **677.01** | **0.66** | **0.55** | **0.11** | 0.00 |
| 105.00 | **0.78** | **910** | **677.14** | **0.79** | **0.67** | **0.11** | 0.00 |
| 110.00 | 0.68 | 728 | 677.06 | 0.70 | 0.59 | 0.11 | 0.00 |
| 115.00 | 0.51 | 434 | 676.91 | 0.51 | 0.40 | 0.10 | 0.00 |
| 120.00 | 0.51 | 438 | 676.91 | 0.51 | 0.41 | 0.10 | 0.00 |
| 125.00 | 0.10 | 76 | 676.21 | 0.10 | 0.00 | 0.10 | 0.00 |
| 130.00 | 0.00 | 127 | 676.64 | 0.16 | 0.06 | 0.10 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 5.62 | 1.30 | 4.31 | 0.00 |
| 678.35 | 9.91 | 1.39 | 8.51 | 0.00 |
| 678.55 | 15.18 | 1.48 | 13.70 | 0.00 |
| 678.75 | 27.96 | 2.72 | 19.77 | 5.47 |
| 678.95 | **52.16** | **5.83** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

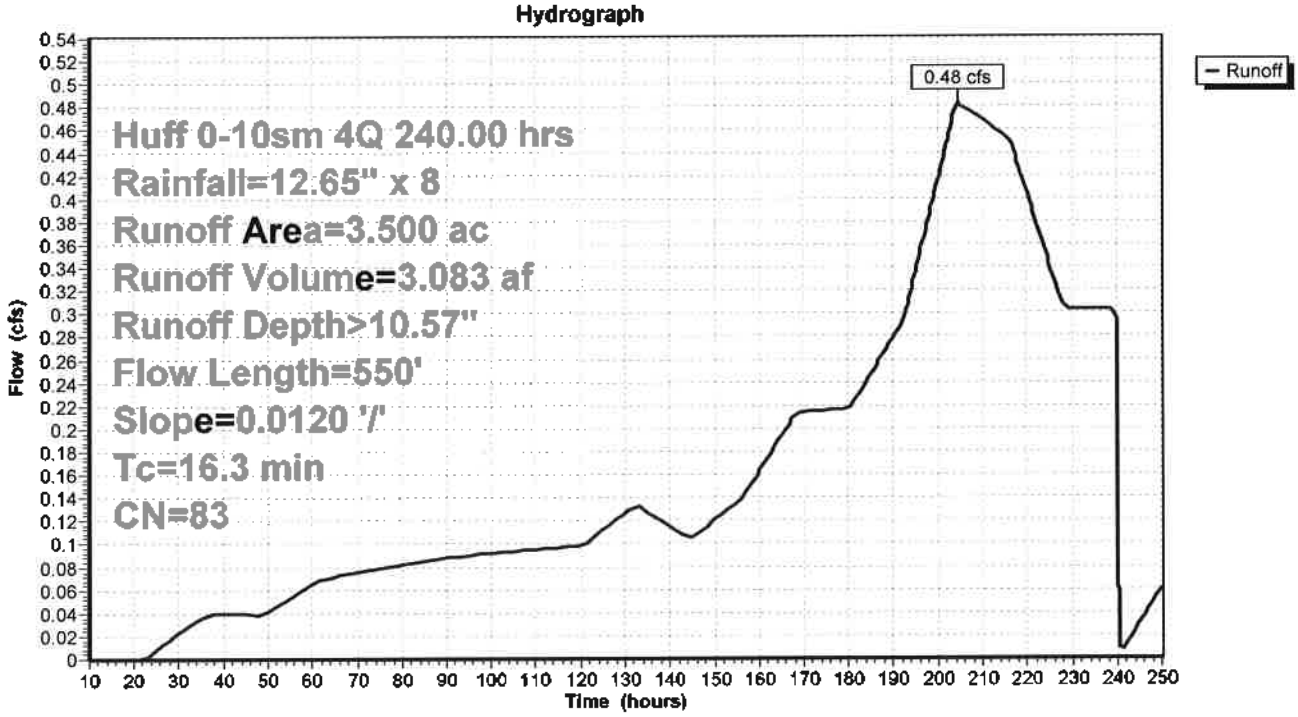
Runoff = 0.48 cfs @ 204.42 hrs, Volume= 3.083 af, Depth>10.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.01 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=12.65" x 8

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 10.00 | 0.09 | 0.00 | 0.00 |
| 15.00 | 0.20 | 0.00 | 0.00 |
| 20.00 | 0.34 | 0.00 | 0.00 |
| 25.00 | 0.49 | 0.00 | 0.01 |
| 30.00 | 0.66 | 0.03 | 0.02 |
| 35.00 | 0.82 | 0.07 | 0.04 |
| 40.00 | 0.98 | 0.12 | 0.04 |
| 45.00 | 1.12 | 0.18 | 0.04 |
| 50.00 | 1.23 | 0.24 | 0.04 |
| 55.00 | 1.36 | 0.30 | 0.05 |
| 60.00 | 1.52 | 0.39 | 0.07 |
| 65.00 | 1.68 | 0.49 | 0.07 |
| 70.00 | 1.84 | 0.59 | 0.08 |
| 75.00 | 2.01 | 0.70 | 0.08 |
| 80.00 | 2.17 | 0.82 | 0.08 |
| 85.00 | 2.34 | 0.94 | 0.09 |
| 90.00 | 2.50 | 1.06 | 0.09 |
| 95.00 | 2.67 | 1.18 | 0.09 |
| 100.00 | 2.83 | 1.31 | 0.09 |
| 105.00 | 3.00 | 1.44 | 0.09 |
| 110.00 | 3.16 | 1.58 | 0.10 |
| 115.00 | 3.33 | 1.71 | 0.10 |
| 120.00 | 3.49 | 1.85 | 0.10 |
| 125.00 | 3.67 | 2.00 | 0.11 |
| 130.00 | 3.87 | 2.17 | 0.13 |
| 135.00 | 4.08 | 2.36 | 0.13 |
| 140.00 | 4.28 | 2.53 | 0.11 |
| 145.00 | 4.45 | 2.68 | 0.11 |
| 150.00 | 4.63 | 2.84 | 0.12 |
| 155.00 | 4.83 | 3.02 | 0.14 |
| 160.00 | 5.07 | 3.23 | 0.16 |
| 165.00 | 5.34 | 3.49 | 0.19 |
| 170.00 | 5.67 | 3.78 | 0.21 |
| 175.00 | 6.00 | 4.09 | 0.22 |
| 180.00 | 6.33 | 4.39 | 0.22 |
| 185.00 | 6.68 | 4.72 | 0.25 |
| 190.00 | 7.08 | 5.10 | 0.28 |
| 195.00 | 7.53 | 5.53 | 0.34 |
| 200.00 | 8.10 | 6.07 | **0.42** |
| 205.00 | 8.77 | 6.72 | **0.48** |
| 210.00 | 9.47 | 7.39 | 0.47 |
| 215.00 | 10.15 | 8.04 | 0.46 |
| 220.00 | 10.78 | 8.66 | 0.41 |
| 225.00 | 11.32 | 9.18 | 0.34 |
| 230.00 | 11.77 | 9.63 | 0.30 |
| 235.00 | 12.21 | 10.06 | 0.30 |
| 240.00 | 12.65 | 10.49 | 0.30 |
| 245.00 | 12.67 | 10.51 | 0.03 |
| 250.00 | **12.74** | **10.58** | 0.06 |

## Summary for Subcatchment 7S: South Property

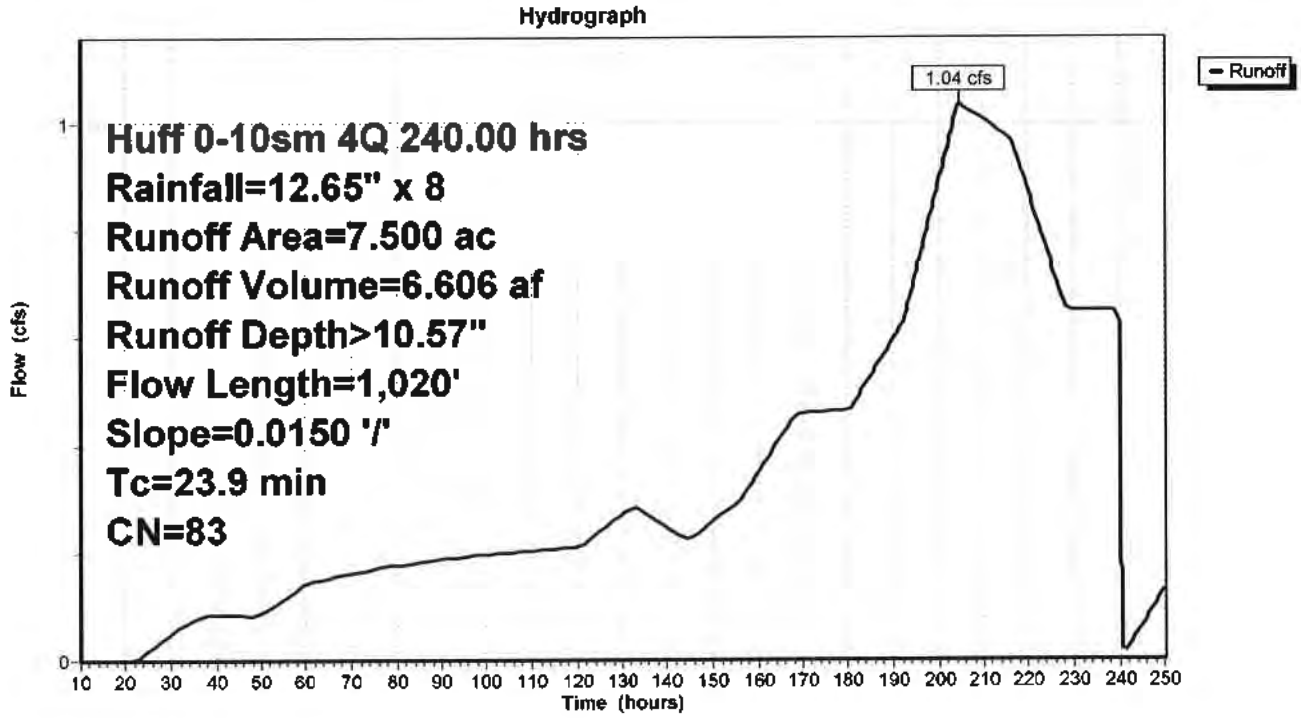
Runoff = 1.04 cfs @ 204.56 hrs, Volume= 6.606 af, Depth>10.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.01 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=12.65" x 8

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 10.00 | 0.09 | 0.00 | 0.00 |
| 15.00 | 0.20 | 0.00 | 0.00 |
| 20.00 | 0.34 | 0.00 | 0.00 |
| 25.00 | 0.49 | 0.00 | 0.02 |
| 30.00 | 0.66 | 0.03 | 0.05 |
| 35.00 | 0.82 | 0.07 | 0.07 |
| 40.00 | 0.98 | 0.12 | 0.09 |
| 45.00 | 1.12 | 0.18 | 0.08 |
| 50.00 | 1.23 | 0.24 | 0.09 |
| 55.00 | 1.36 | 0.30 | 0.11 |
| 60.00 | 1.52 | 0.39 | 0.14 |
| 65.00 | 1.68 | 0.49 | 0.15 |
| 70.00 | 1.84 | 0.59 | 0.16 |
| 75.00 | 2.01 | 0.70 | 0.17 |
| 80.00 | 2.17 | 0.82 | 0.18 |
| 85.00 | 2.34 | 0.94 | 0.18 |
| 90.00 | 2.50 | 1.06 | 0.19 |
| 95.00 | 2.67 | 1.18 | 0.19 |
| 100.00 | 2.83 | 1.31 | 0.20 |
| 105.00 | 3.00 | 1.44 | 0.20 |
| 110.00 | 3.16 | 1.58 | 0.20 |
| 115.00 | 3.33 | 1.71 | 0.21 |
| 120.00 | 3.49 | 1.85 | 0.21 |
| 125.00 | 3.67 | 2.00 | 0.24 |
| 130.00 | 3.87 | 2.17 | 0.27 |
| 135.00 | 4.08 | 2.36 | 0.27 |
| 140.00 | 4.28 | 2.53 | 0.25 |
| 145.00 | 4.45 | 2.68 | 0.22 |
| 150.00 | 4.63 | 2.84 | 0.26 |
| 155.00 | 4.83 | 3.02 | 0.29 |
| 160.00 | 5.07 | 3.23 | 0.35 |
| 165.00 | 5.34 | 3.49 | 0.41 |
| 170.00 | 5.67 | 3.78 | 0.46 |
| 175.00 | 6.00 | 4.09 | 0.46 |
| 180.00 | 6.33 | 4.39 | 0.46 |
| 185.00 | 6.68 | 4.72 | 0.53 |
| 190.00 | 7.08 | 5.10 | 0.60 |
| 195.00 | 7.53 | 5.53 | 0.72 |
| 200.00 | 8.10 | 6.07 | **0.89** |
| 205.00 | 8.77 | 6.72 | **1.03** |
| 210.00 | 9.47 | 7.39 | 1.00 |
| 215.00 | 10.15 | 8.04 | 0.97 |
| 220.00 | 10.78 | 8.66 | 0.87 |
| 225.00 | 11.32 | 9.18 | 0.74 |
| 230.00 | 11.77 | 9.63 | 0.65 |
| 235.00 | 12.21 | 10.06 | 0.65 |
| 240.00 | 12.65 | 10.49 | 0.65 |
| 245.00 | 12.67 | 10.51 | 0.06 |
| 250.00 | **12.74** | **10.58** | 0.13 |

## Summary for Pond 3P: Southeast Chambers

| | | | | |
|---|---|---|---|---|
| Inflow | = | 1.14 cfs @ 204.56 hrs, | Volume= | 8.210 af |
| Outflow | = | 0.85 cfs @ 224.86 hrs, | Volume= | 7.619 af, Atten= 26%, Lag= 1,218.2 min |
| Primary | = | 0.85 cfs @ 224.86 hrs, | Volume= | 7.619 af |
| Secondary | = | 0.00 cfs @ 10.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ 10.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 10.00-250.00 hrs, dt= 0.01 hrs
Peak Elev= 672.74' @ 224.86 hrs Surf.Area= 30,976 sf Storage= 51,223 cf

Plug-Flow detention time= 530.9 min calculated for 7.619 af (93% of inflow)
Center-of-Mass det. time= 216.5 min ( 10,419.5 - 10,203.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L Inside #15**<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

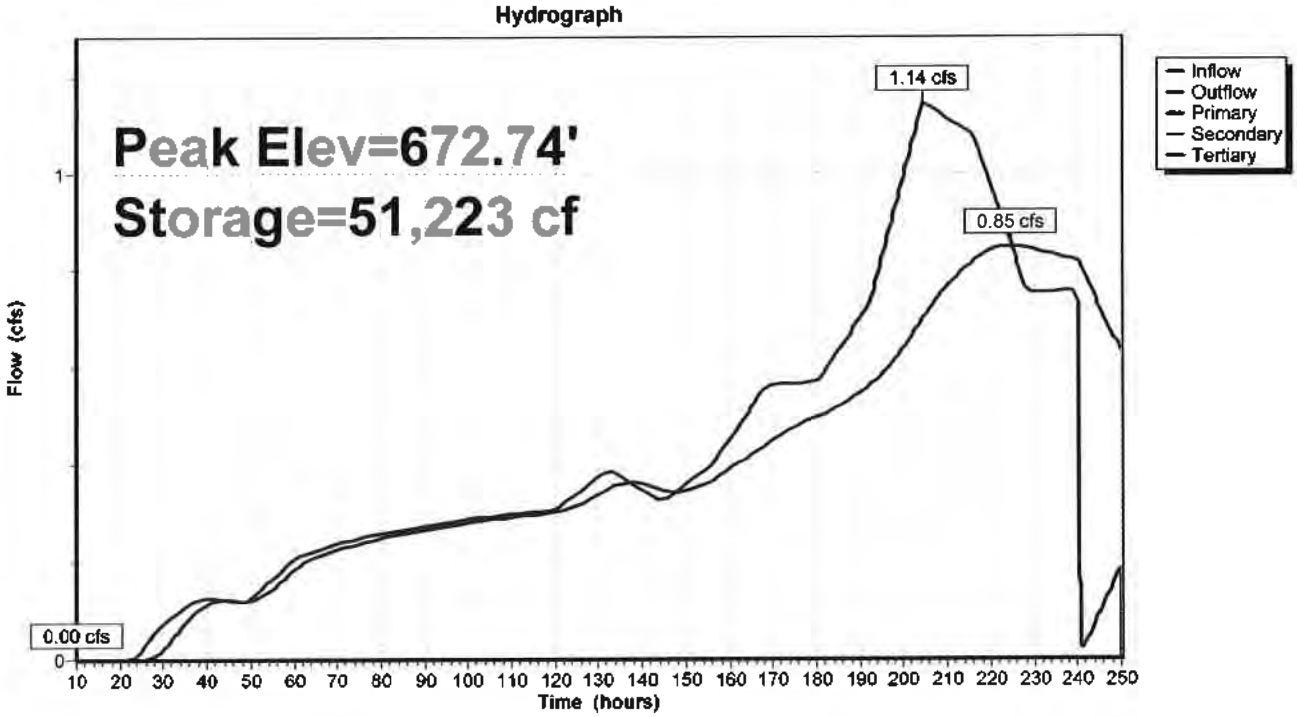
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=0.85 cfs @ 224.86 hrs HW=672.74' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.85 cfs @ 7.69 fps)

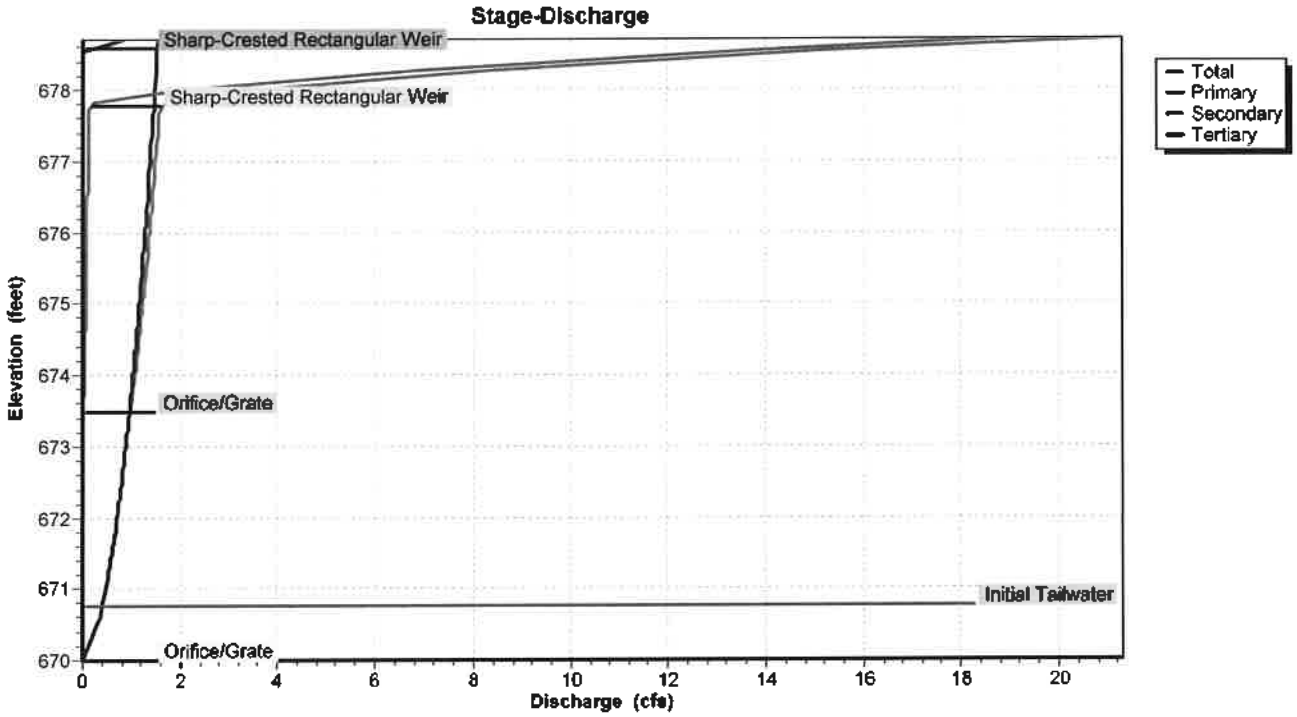
**Secondary OutFlow** Max=0.00 cfs @ 10.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 10.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

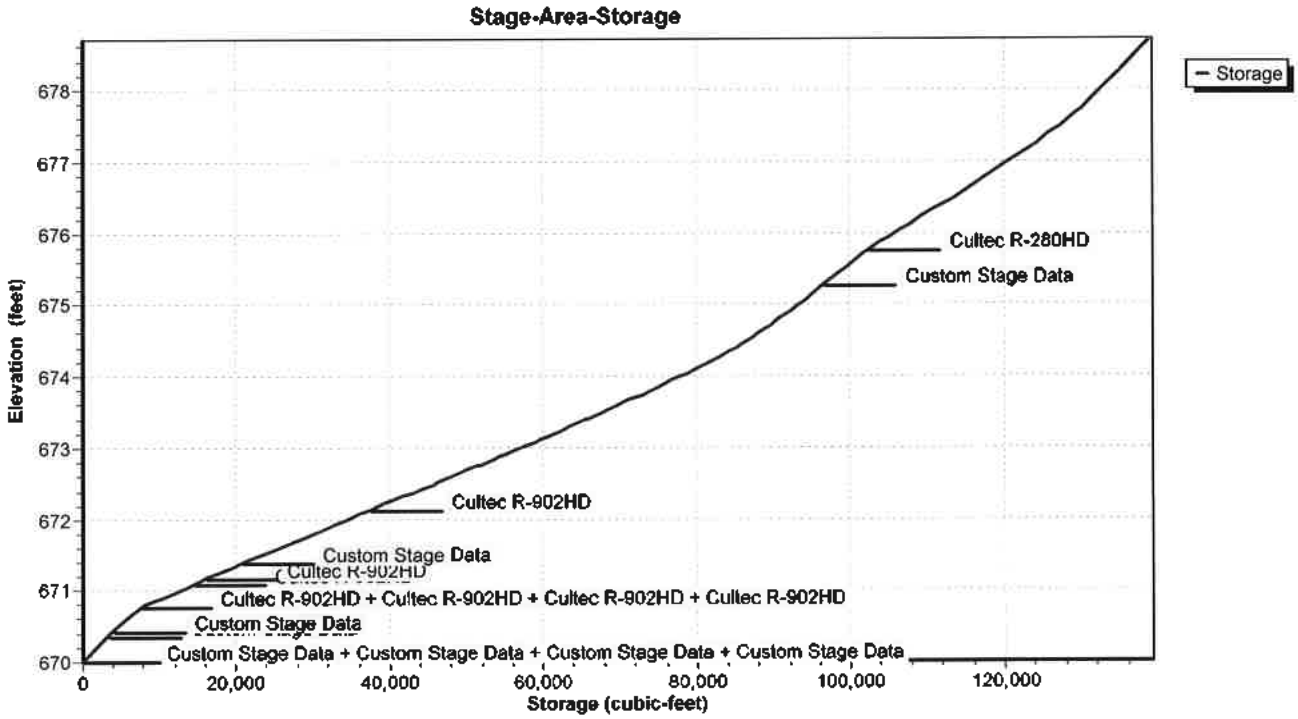
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 15.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25.00 | 0.02 | 67 | 670.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.07 | 823 | 670.09 | 0.02 | 0.02 | 0.00 | 0.00 |
| 35.00 | 0.11 | 1,606 | 670.18 | 0.08 | 0.08 | 0.00 | 0.00 |
| 40.00 | 0.13 | 2,030 | 670.23 | 0.11 | 0.11 | 0.00 | 0.00 |
| 45.00 | 0.12 | 2,129 | 670.24 | 0.12 | 0.12 | 0.00 | 0.00 |
| 50.00 | 0.13 | 2,107 | 670.24 | 0.12 | 0.12 | 0.00 | 0.00 |
| 55.00 | 0.17 | 2,362 | 670.26 | 0.15 | 0.15 | 0.00 | 0.00 |
| 60.00 | 0.21 | 2,756 | 670.31 | 0.18 | 0.18 | 0.00 | 0.00 |
| 65.00 | 0.23 | 3,078 | 670.34 | 0.21 | 0.21 | 0.00 | 0.00 |
| 70.00 | 0.24 | 3,296 | 670.37 | 0.23 | 0.23 | 0.00 | 0.00 |
| 75.00 | 0.25 | 3,507 | 670.39 | 0.24 | 0.24 | 0.00 | 0.00 |
| 80.00 | 0.26 | 3,692 | 670.41 | 0.25 | 0.25 | 0.00 | 0.00 |
| 85.00 | 0.27 | 3,860 | 670.42 | 0.26 | 0.26 | 0.00 | 0.00 |
| 90.00 | 0.28 | 4,017 | 670.44 | 0.27 | 0.27 | 0.00 | 0.00 |
| 95.00 | 0.28 | 4,161 | 670.45 | 0.27 | 0.27 | 0.00 | 0.00 |
| 100.00 | 0.29 | 4,293 | 670.47 | 0.28 | 0.28 | 0.00 | 0.00 |
| 105.00 | 0.29 | 4,415 | 670.48 | 0.29 | 0.29 | 0.00 | 0.00 |
| 110.00 | 0.30 | 4,527 | 670.49 | 0.29 | 0.29 | 0.00 | 0.00 |
| 115.00 | 0.30 | 4,629 | 670.50 | 0.30 | 0.30 | 0.00 | 0.00 |
| 120.00 | 0.31 | 4,723 | 670.51 | 0.30 | 0.30 | 0.00 | 0.00 |
| 125.00 | 0.34 | 5,025 | 670.54 | 0.32 | 0.32 | 0.00 | 0.00 |
| 130.00 | 0.37 | 5,583 | 670.59 | 0.34 | 0.34 | 0.00 | 0.00 |
| 135.00 | 0.38 | 6,144 | 670.65 | 0.36 | 0.36 | 0.00 | 0.00 |
| 140.00 | 0.35 | 6,132 | 670.65 | 0.36 | 0.36 | 0.00 | 0.00 |
| 145.00 | 0.33 | 5,761 | 670.61 | 0.35 | 0.35 | 0.00 | 0.00 |
| 150.00 | 0.36 | 5,742 | 670.61 | 0.35 | 0.35 | 0.00 | 0.00 |
| 155.00 | 0.39 | 6,162 | 670.65 | 0.36 | 0.36 | 0.00 | 0.00 |
| 160.00 | 0.45 | 6,941 | 670.73 | 0.39 | 0.39 | 0.00 | 0.00 |
| 165.00 | 0.52 | 8,342 | 670.81 | 0.42 | 0.42 | 0.00 | 0.00 |
| 170.00 | 0.56 | 10,374 | 670.90 | 0.45 | 0.45 | 0.00 | 0.00 |
| 175.00 | 0.57 | 12,193 | 670.99 | 0.48 | 0.48 | 0.00 | 0.00 |
| 180.00 | 0.57 | 13,649 | 671.06 | 0.50 | 0.50 | 0.00 | 0.00 |
| 185.00 | 0.63 | 15,303 | 671.14 | 0.52 | 0.52 | 0.00 | 0.00 |
| 190.00 | 0.70 | 17,724 | 671.25 | 0.55 | 0.55 | 0.00 | 0.00 |
| 195.00 | 0.82 | 21,046 | 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 200.00 | **0.99** | 26,392 | 671.64 | 0.64 | 0.64 | 0.00 | 0.00 |
| 205.00 | **1.14** | 33,678 | 671.96 | 0.71 | 0.71 | 0.00 | 0.00 |
| 210.00 | 1.11 | 40,651 | 672.27 | 0.77 | 0.77 | 0.00 | 0.00 |
| 215.00 | 1.08 | 46,189 | 672.51 | 0.81 | 0.81 | 0.00 | 0.00 |
| 220.00 | 0.98 | **50,036** | **672.68** | **0.84** | **0.84** | 0.00 | 0.00 |
| 225.00 | 0.85 | **51,221** | **672.74** | **0.85** | **0.85** | 0.00 | 0.00 |
| 230.00 | 0.75 | 50,127 | 672.69 | 0.84 | 0.84 | 0.00 | 0.00 |
| 235.00 | 0.76 | 48,684 | 672.62 | 0.83 | 0.83 | 0.00 | 0.00 |
| 240.00 | 0.76 | 47,440 | 672.57 | 0.82 | 0.82 | 0.00 | 0.00 |
| 245.00 | 0.09 | 35,384 | 672.04 | 0.72 | 0.72 | 0.00 | 0.00 |
| 250.00 | 0.00 | 25,753 | 671.61 | 0.63 | 0.63 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 16.68 | 1.54 | 15.13 | 0.00 |
| 678.80 | **24.77** | **1.56** | **21.42** | **1.79** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | |
|---|---|---|---|---|
| Inflow | = | 0.48 cfs @ 204.42 hrs, | Volume= | 3.083 af |
| Outflow | = | 0.48 cfs @ 204.87 hrs, | Volume= | 3.082 af, Atten= 0%, Lag= 26.9 min |
| Primary | = | 0.37 cfs @ 204.87 hrs, | Volume= | 1.477 af |
| Secondary | = | 0.11 cfs @ 204.87 hrs, | Volume= | 1.605 af |
| Tertiary | = | 0.00 cfs @ 10.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 10.00-250.00 hrs, dt= 0.01 hrs
Peak Elev= 676.89' @ 204.87 hrs Surf.Area= 1,620 sf Storage= 397 cf

Plug-Flow detention time= 13.5 min calculated for 3.082 af (100% of inflow)
Center-of-Mass det. time= 11.8 min ( 10,516.6 - 10,504.8 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

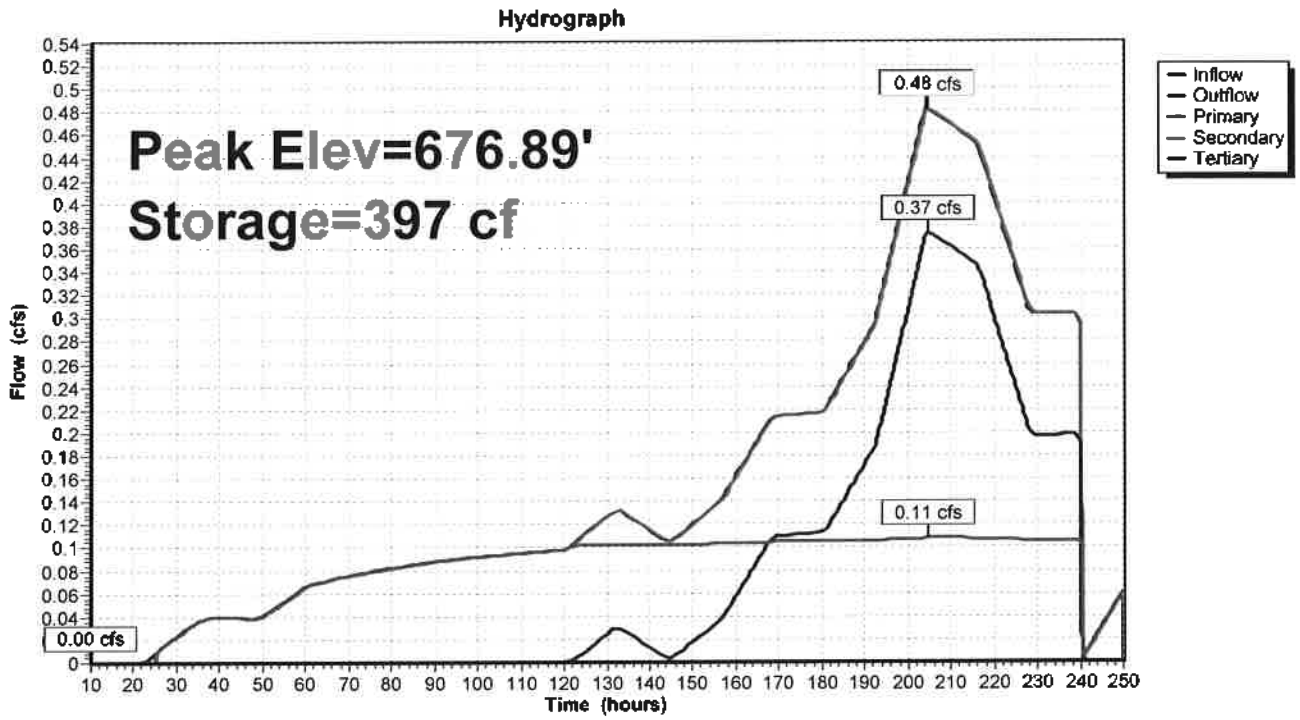
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.0' Crest Height |

**Primary OutFlow** Max=0.37 cfs @ 204.87 hrs HW=676.89' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.37 cfs @ 2.12 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

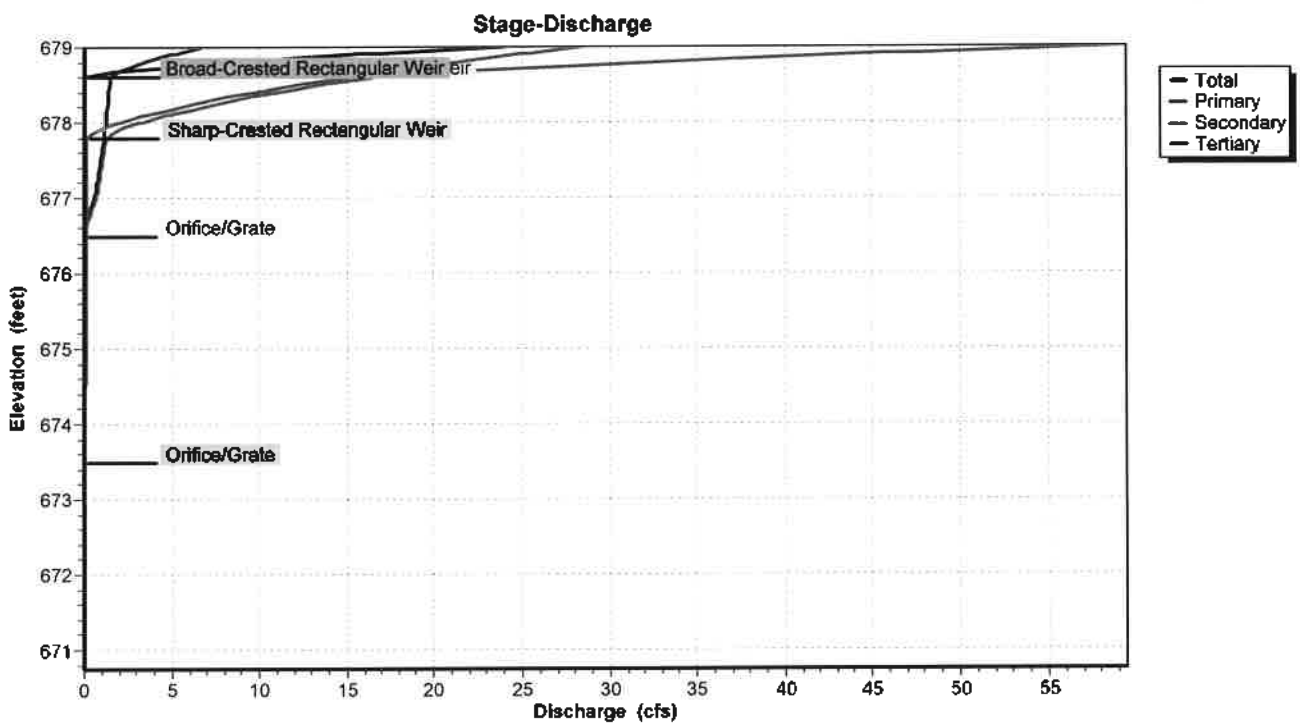
**Secondary OutFlow** Max=0.11 cfs @ 204.87 hrs HW=676.89' TW=671.95' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.11 cfs @ 8.78 fps)
└─**5=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 10.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

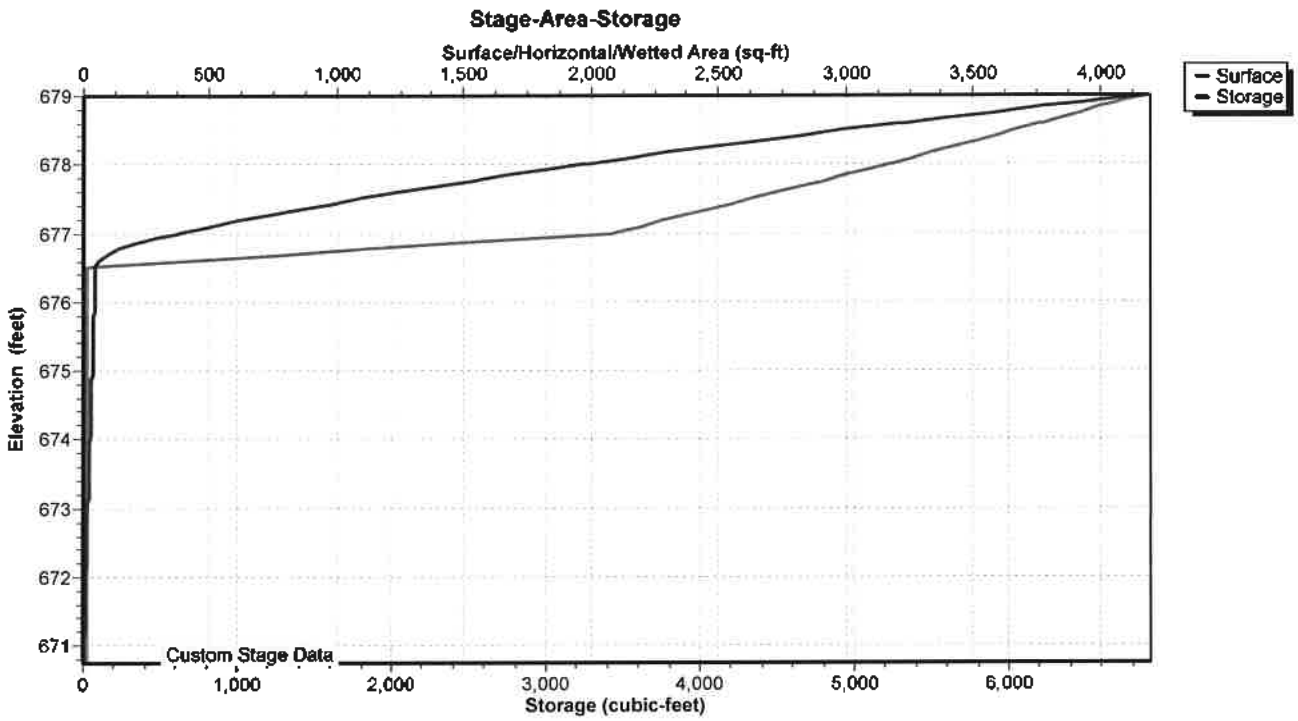
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 15.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25.00 | 0.01 | 35 | 673.23 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.02 | 42 | 673.71 | 0.02 | 0.00 | 0.02 | 0.00 |
| 35.00 | 0.04 | 44 | 673.92 | 0.04 | 0.00 | 0.04 | 0.00 |
| 40.00 | 0.04 | 46 | 674.02 | 0.04 | 0.00 | 0.04 | 0.00 |
| 45.00 | 0.04 | 46 | 674.00 | 0.04 | 0.00 | 0.04 | 0.00 |
| 50.00 | 0.04 | 46 | 674.03 | 0.04 | 0.00 | 0.04 | 0.00 |
| 55.00 | 0.05 | 50 | 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 60.00 | 0.07 | 57 | 674.81 | 0.07 | 0.00 | 0.07 | 0.00 |
| 65.00 | 0.07 | 60 | 675.03 | 0.07 | 0.00 | 0.07 | 0.00 |
| 70.00 | 0.08 | 62 | 675.21 | 0.08 | 0.00 | 0.08 | 0.00 |
| 75.00 | 0.08 | 65 | 675.36 | 0.08 | 0.00 | 0.08 | 0.00 |
| 80.00 | 0.08 | 67 | 675.51 | 0.08 | 0.00 | 0.08 | 0.00 |
| 85.00 | 0.09 | 68 | 675.64 | 0.09 | 0.00 | 0.09 | 0.00 |
| 90.00 | 0.09 | 70 | 675.76 | 0.09 | 0.00 | 0.09 | 0.00 |
| 95.00 | 0.09 | 72 | 675.87 | 0.09 | 0.00 | 0.09 | 0.00 |
| 100.00 | 0.09 | 73 | 675.97 | 0.09 | 0.00 | 0.09 | 0.00 |
| 105.00 | 0.09 | 74 | 676.06 | 0.09 | 0.00 | 0.09 | 0.00 |
| 110.00 | 0.10 | 76 | 676.15 | 0.09 | 0.00 | 0.09 | 0.00 |
| 115.00 | 0.10 | 77 | 676.22 | 0.10 | 0.00 | 0.10 | 0.00 |
| 120.00 | 0.10 | 78 | 676.29 | 0.10 | 0.00 | 0.10 | 0.00 |
| 125.00 | 0.11 | 90 | 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 130.00 | 0.13 | 100 | 676.59 | 0.13 | 0.02 | 0.10 | 0.00 |
| 135.00 | 0.13 | 100 | 676.59 | 0.13 | 0.02 | 0.10 | 0.00 |
| 140.00 | 0.11 | 93 | 676.56 | 0.11 | 0.01 | 0.10 | 0.00 |
| 145.00 | 0.11 | 83 | 676.53 | 0.10 | 0.00 | 0.10 | 0.00 |
| 150.00 | 0.12 | 96 | 676.57 | 0.12 | 0.02 | 0.10 | 0.00 |
| 155.00 | 0.14 | 104 | 676.60 | 0.14 | 0.03 | 0.10 | 0.00 |
| 160.00 | 0.16 | 124 | 676.64 | 0.16 | 0.06 | 0.10 | 0.00 |
| 165.00 | 0.19 | 146 | 676.67 | 0.19 | 0.09 | 0.10 | 0.00 |
| 170.00 | 0.21 | 160 | 676.69 | 0.21 | 0.11 | 0.10 | 0.00 |
| 175.00 | 0.22 | 162 | 676.69 | 0.22 | 0.11 | 0.10 | 0.00 |
| 180.00 | 0.22 | 163 | 676.70 | 0.22 | 0.11 | 0.10 | 0.00 |
| 185.00 | 0.25 | 187 | 676.72 | 0.25 | 0.14 | 0.11 | 0.00 |
| 190.00 | 0.28 | 213 | 676.75 | 0.28 | 0.17 | 0.11 | 0.00 |
| 195.00 | 0.34 | 257 | 676.79 | 0.33 | 0.23 | 0.11 | 0.00 |
| 200.00 | **0.42** | **329** | **676.84** | **0.41** | **0.30** | **0.11** | 0.00 |
| 205.00 | **0.48** | **401** | **676.89** | **0.48** | **0.37** | **0.11** | 0.00 |
| 210.00 | 0.47 | 387 | 676.88 | 0.47 | 0.36 | 0.11 | 0.00 |
| 215.00 | 0.46 | 372 | 676.87 | 0.46 | 0.35 | 0.11 | 0.00 |
| 220.00 | 0.41 | 326 | 676.84 | 0.41 | 0.30 | 0.11 | 0.00 |
| 225.00 | 0.34 | 270 | 676.80 | 0.35 | 0.24 | 0.11 | 0.00 |
| 230.00 | 0.30 | 231 | 676.77 | 0.30 | 0.20 | 0.11 | 0.00 |
| 235.00 | 0.30 | 232 | 676.77 | 0.30 | 0.20 | 0.11 | 0.00 |
| 240.00 | 0.30 | 232 | 676.77 | 0.30 | 0.20 | 0.11 | 0.00 |
| 245.00 | 0.03 | 43 | 673.81 | 0.03 | 0.00 | 0.03 | 0.00 |
| 250.00 | 0.00 | 54 | 674.62 | 0.06 | 0.00 | 0.06 | 0.00 |

## Stage-Discharge for Pond 8P: North System

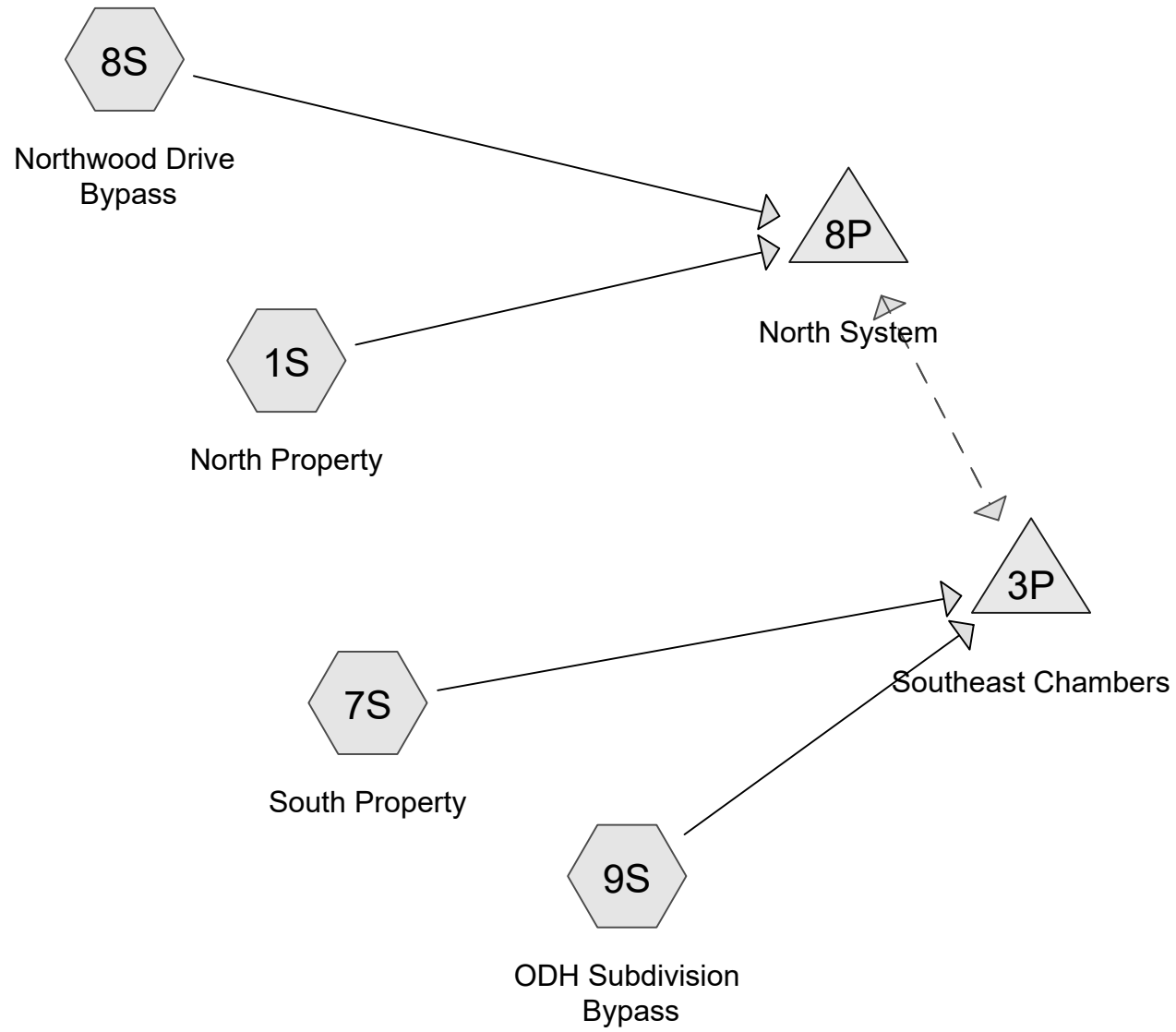
| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 5.62 | 1.30 | 4.31 | 0.00 |
| 678.35 | 9.91 | 1.39 | 8.51 | 0.00 |
| 678.55 | 15.18 | 1.48 | 13.70 | 0.00 |
| 678.75 | 27.96 | 2.72 | 19.77 | 5.47 |
| 678.95 | **52.16** | **5.83** | **26.68** | **19.66** |

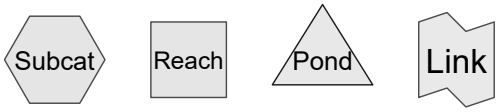
## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

# APPENDIX B

# BYPASS CALCULATIONS




**Routing Diagram for D_ByPass_Detention 11.00 Ac_Cultec_5-7-20_6AREV**
Prepared by {enter your company name here}, Printed 5/13/2020
HydroCAD® 10.00-25 s/n 00783 © 2019 HydroCAD Software Solutions LLC

## Summary for Subcatchment 1S: North Property

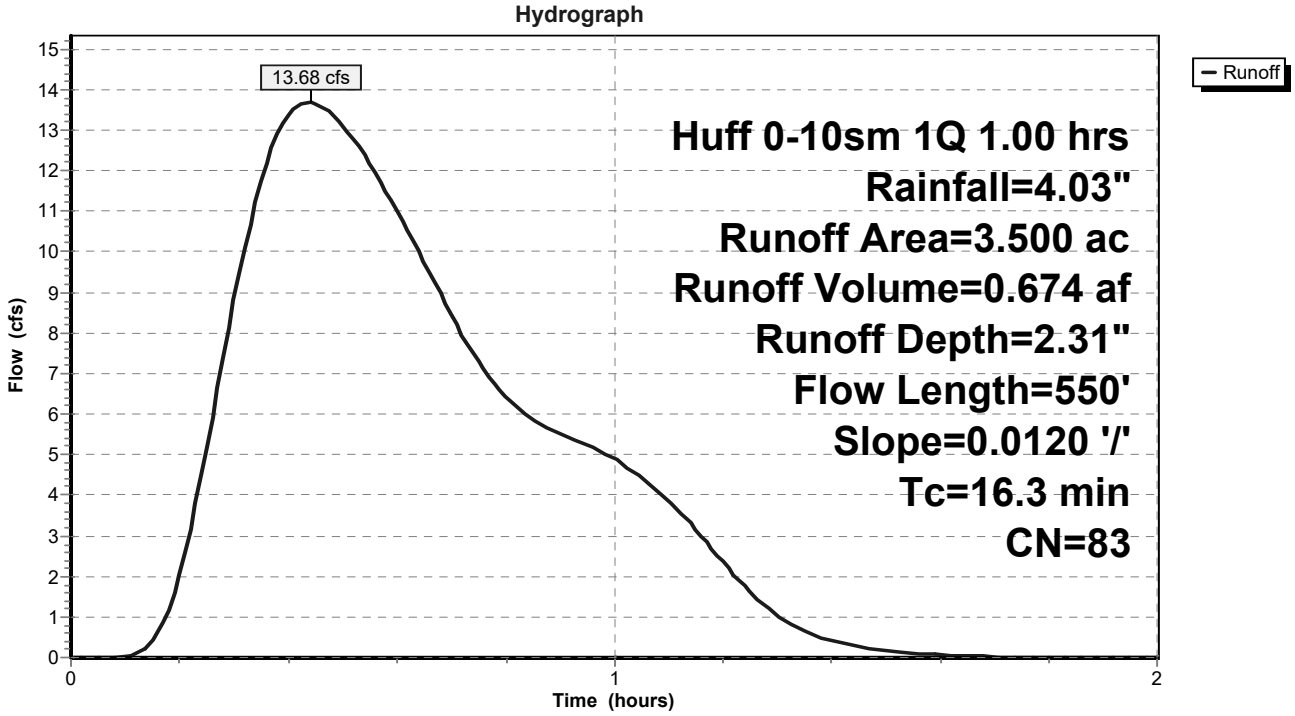
Runoff = 13.68 cfs @ 0.44 hrs, Volume= 0.674 af, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=4.03"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.02 | 0.05 | 0.00 | 0.00 |
| 0.04 | 0.21 | 0.00 | 0.00 |
| 0.06 | 0.46 | 0.00 | 0.00 |
| 0.08 | 0.72 | 0.04 | 0.00 |
| 0.10 | 1.00 | 0.13 | 0.02 |
| 0.12 | 1.25 | 0.25 | 0.09 |
| 0.14 | 1.46 | 0.36 | 0.27 |
| 0.16 | 1.63 | 0.45 | 0.61 |
| 0.18 | 1.78 | 0.55 | 1.19 |
| 0.20 | 1.93 | 0.65 | 2.03 |
| 0.22 | 2.08 | 0.75 | 3.15 |
| 0.24 | 2.21 | 0.84 | 4.48 |
| 0.26 | 2.34 | 0.94 | 5.93 |
| 0.28 | 2.46 | 1.03 | 7.39 |
| 0.30 | 2.56 | 1.10 | 8.80 |
| 0.32 | 2.66 | 1.18 | 10.09 |
| 0.34 | 2.75 | 1.25 | 11.24 |
| 0.36 | 2.83 | 1.31 | 12.18 |
| 0.38 | 2.90 | 1.37 | 12.91 |
| 0.40 | 2.97 | 1.42 | 13.36 |
| 0.42 | 3.04 | 1.48 | 13.63 |
| 0.44 | 3.10 | 1.53 | **13.68** |
| 0.46 | 3.17 | 1.58 | 13.61 |
| 0.48 | 3.22 | 1.63 | 13.42 |
| 0.50 | 3.28 | 1.67 | 13.14 |
| 0.52 | 3.32 | 1.71 | 12.79 |
| 0.54 | 3.36 | 1.74 | 12.37 |
| 0.56 | 3.39 | 1.77 | 11.95 |
| 0.58 | 3.43 | 1.80 | 11.48 |
| 0.60 | 3.46 | 1.83 | 11.02 |
| 0.62 | 3.49 | 1.85 | 10.52 |
| 0.64 | 3.53 | 1.88 | 10.01 |
| 0.66 | 3.56 | 1.91 | 9.49 |
| 0.68 | 3.59 | 1.93 | 8.96 |
| 0.70 | 3.62 | 1.96 | 8.45 |
| 0.72 | 3.66 | 1.99 | 7.96 |
| 0.74 | 3.69 | 2.02 | 7.52 |
| 0.76 | 3.72 | 2.05 | 7.10 |
| 0.78 | 3.75 | 2.07 | 6.75 |
| 0.80 | 3.79 | 2.10 | 6.43 |
| 0.82 | 3.82 | 2.13 | 6.18 |
| 0.84 | 3.85 | 2.16 | 5.96 |
| 0.86 | 3.88 | 2.18 | 5.78 |
| 0.88 | 3.91 | 2.21 | 5.64 |
| 0.90 | 3.93 | 2.22 | 5.51 |
| 0.92 | 3.94 | 2.24 | 5.41 |
| 0.94 | 3.96 | 2.25 | 5.30 |
| 0.96 | 3.98 | 2.27 | 5.19 |
| 0.98 | 4.00 | 2.29 | 5.05 |
| 1.00 | **4.03** | **2.31** | 4.90 |
| 1.02 | 4.03 | 2.31 | 4.72 |
| 1.04 | 4.03 | 2.31 | 4.53 |
| 1.06 | 4.03 | 2.31 | 4.32 |
| 1.08 | 4.03 | 2.31 | 4.09 |
| 1.10 | 4.03 | 2.31 | 3.86 |
| 1.12 | 4.03 | 2.31 | 3.60 |
| 1.14 | 4.03 | 2.31 | 3.32 |
| 1.16 | 4.03 | 2.31 | 3.00 |
| 1.18 | 4.03 | 2.31 | 2.68 |
| 1.20 | 4.03 | 2.31 | 2.36 |
| 1.22 | 4.03 | 2.31 | 2.05 |
| 1.24 | 4.03 | 2.31 | 1.76 |
| 1.26 | 4.03 | 2.31 | 1.49 |
| 1.28 | 4.03 | 2.31 | 1.25 |
| 1.30 | 4.03 | 2.31 | 1.03 |
| 1.32 | 4.03 | 2.31 | 0.85 |
| 1.34 | 4.03 | 2.31 | 0.71 |
| 1.36 | 4.03 | 2.31 | 0.59 |
| 1.38 | 4.03 | 2.31 | 0.49 |
| 1.40 | 4.03 | 2.31 | 0.41 |
| 1.42 | 4.03 | 2.31 | 0.34 |
| 1.44 | 4.03 | 2.31 | 0.29 |
| 1.46 | 4.03 | 2.31 | 0.24 |
| 1.48 | 4.03 | 2.31 | 0.20 |
| 1.50 | 4.03 | 2.31 | 0.16 |
| 1.52 | 4.03 | 2.31 | 0.14 |
| 1.54 | 4.03 | 2.31 | 0.11 |
| 1.56 | 4.03 | 2.31 | 0.09 |
| 1.58 | 4.03 | 2.31 | 0.08 |
| 1.60 | 4.03 | 2.31 | 0.06 |
| 1.62 | 4.03 | 2.31 | 0.05 |
| 1.64 | 4.03 | 2.31 | 0.04 |
| 1.66 | 4.03 | 2.31 | 0.03 |
| 1.68 | 4.03 | 2.31 | 0.03 |
| 1.70 | 4.03 | 2.31 | 0.02 |
| 1.72 | 4.03 | 2.31 | 0.02 |
| 1.74 | 4.03 | 2.31 | 0.01 |
| 1.76 | 4.03 | 2.31 | 0.01 |
| 1.78 | 4.03 | 2.31 | 0.01 |
| 1.80 | 4.03 | 2.31 | 0.01 |
| 1.82 | 4.03 | 2.31 | 0.00 |
| 1.84 | 4.03 | 2.31 | 0.00 |
| 1.86 | 4.03 | 2.31 | 0.00 |
| 1.88 | 4.03 | 2.31 | 0.00 |
| 1.90 | 4.03 | 2.31 | 0.00 |
| 1.92 | 4.03 | 2.31 | 0.00 |
| 1.94 | 4.03 | 2.31 | 0.00 |
| 1.96 | 4.03 | 2.31 | 0.00 |
| 1.98 | 4.03 | 2.31 | 0.00 |
| 2.00 | 4.03 | 2.31 | 0.00 |

## Summary for Subcatchment 7S: South Property

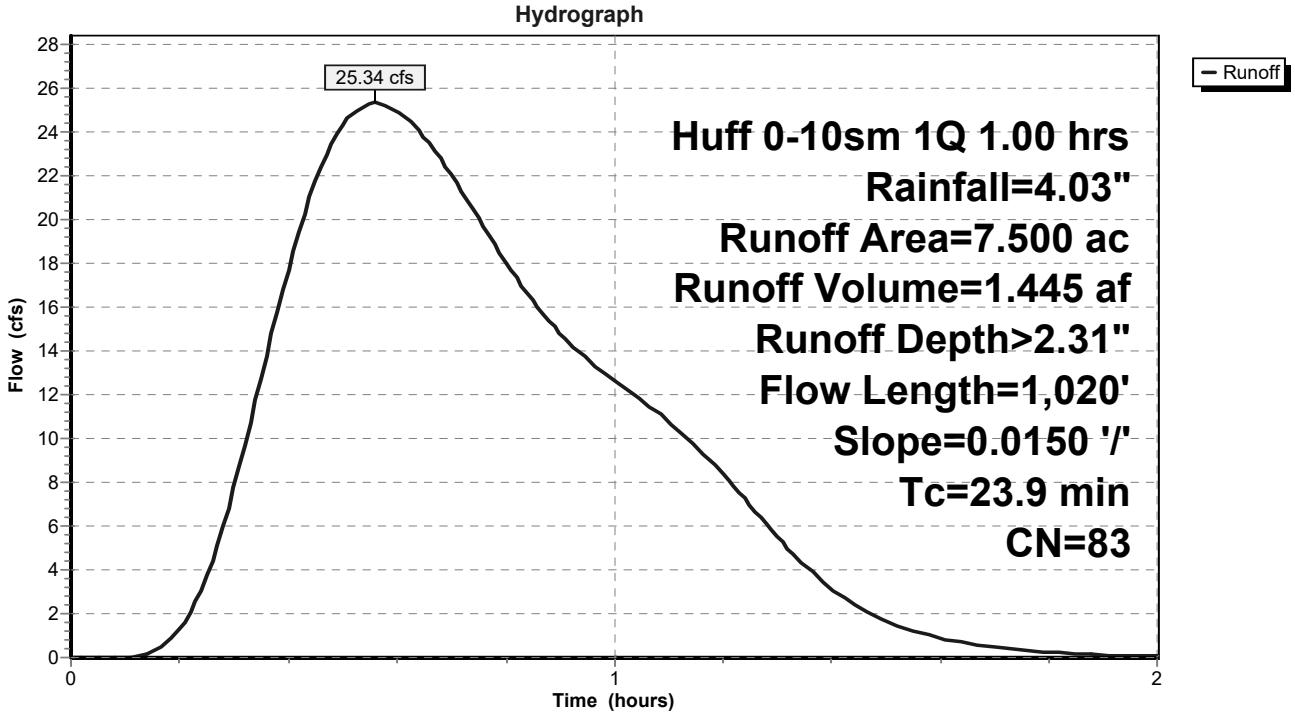
Runoff = 25.34 cfs @ 0.56 hrs, Volume= 1.445 af, Depth> 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=4.03"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.02 | 0.05 | 0.00 | 0.00 |
| 0.04 | 0.21 | 0.00 | 0.00 |
| 0.06 | 0.46 | 0.00 | 0.00 |
| 0.08 | 0.72 | 0.04 | 0.00 |
| 0.10 | 1.00 | 0.13 | 0.00 |
| 0.12 | 1.25 | 0.25 | 0.06 |
| 0.14 | 1.46 | 0.36 | 0.17 |
| 0.16 | 1.63 | 0.45 | 0.38 |
| 0.18 | 1.78 | 0.55 | 0.74 |
| 0.20 | 1.93 | 0.65 | 1.31 |
| 0.22 | 2.08 | 0.75 | 2.07 |
| 0.24 | 2.21 | 0.84 | 3.07 |
| 0.26 | 2.34 | 0.94 | 4.40 |
| 0.28 | 2.46 | 1.03 | 5.97 |
| 0.30 | 2.56 | 1.10 | 7.74 |
| 0.32 | 2.66 | 1.18 | 9.70 |
| 0.34 | 2.75 | 1.25 | 11.73 |
| 0.36 | 2.83 | 1.31 | 13.77 |
| 0.38 | 2.90 | 1.37 | 15.78 |
| 0.40 | 2.97 | 1.42 | 17.70 |
| 0.42 | 3.04 | 1.48 | 19.42 |
| 0.44 | 3.10 | 1.53 | 20.99 |
| 0.46 | 3.17 | 1.58 | 22.35 |
| 0.48 | 3.22 | 1.63 | 23.45 |
| 0.50 | 3.28 | 1.67 | 24.32 |
| 0.52 | 3.32 | 1.71 | 24.85 |
| 0.54 | 3.36 | 1.74 | 25.18 |
| 0.56 | 3.39 | 1.77 | **25.34** |
| 0.58 | 3.43 | 1.80 | 25.19 |
| 0.60 | 3.46 | 1.83 | 24.93 |
| 0.62 | 3.49 | 1.85 | 24.55 |
| 0.64 | 3.53 | 1.88 | 24.04 |
| 0.66 | 3.56 | 1.91 | 23.47 |
| 0.68 | 3.59 | 1.93 | 22.78 |
| 0.70 | 3.62 | 1.96 | 22.04 |
| 0.72 | 3.66 | 1.99 | 21.28 |
| 0.74 | 3.69 | 2.02 | 20.45 |
| 0.76 | 3.72 | 2.05 | 19.65 |
| 0.78 | 3.75 | 2.07 | 18.86 |
| 0.80 | 3.79 | 2.10 | 18.06 |
| 0.82 | 3.82 | 2.13 | 17.33 |
| 0.84 | 3.85 | 2.16 | 16.63 |
| 0.86 | 3.88 | 2.18 | 15.97 |
| 0.88 | 3.91 | 2.21 | 15.37 |
| 0.90 | 3.93 | 2.22 | 14.80 |
| 0.92 | 3.94 | 2.24 | 14.30 |
| 0.94 | 3.96 | 2.25 | 13.84 |
| 0.96 | 3.98 | 2.27 | 13.40 |
| 0.98 | 4.00 | 2.29 | 13.03 |
| 1.00 | **4.03** | **2.31** | 12.64 |
| 1.02 | 4.03 | 2.31 | 12.29 |
| 1.04 | 4.03 | 2.31 | 11.94 |
| 1.06 | 4.03 | 2.31 | 11.56 |
| 1.08 | 4.03 | 2.31 | 11.19 |
| 1.10 | 4.03 | 2.31 | 10.78 |
| 1.12 | 4.03 | 2.31 | 10.34 |
| 1.14 | 4.03 | 2.31 | 9.91 |
| 1.16 | 4.03 | 2.31 | 9.42 |
| 1.18 | 4.03 | 2.31 | 8.92 |
| 1.20 | 4.03 | 2.31 | 8.40 |
| 1.22 | 4.03 | 2.31 | 7.82 |
| 1.24 | 4.03 | 2.31 | 7.25 |
| 1.26 | 4.03 | 2.31 | 6.66 |
| 1.28 | 4.03 | 2.31 | 6.08 |
| 1.30 | 4.03 | 2.31 | 5.53 |
| 1.32 | 4.03 | 2.31 | 4.99 |
| 1.34 | 4.03 | 2.31 | 4.48 |
| 1.36 | 4.03 | 2.31 | 4.00 |
| 1.38 | 4.03 | 2.31 | 3.56 |
| 1.40 | 4.03 | 2.31 | 3.16 |
| 1.42 | 4.03 | 2.31 | 2.79 |
| 1.44 | 4.03 | 2.31 | 2.44 |
| 1.46 | 4.03 | 2.31 | 2.14 |
| 1.48 | 4.03 | 2.31 | 1.89 |
| 1.50 | 4.03 | 2.31 | 1.67 |
| 1.52 | 4.03 | 2.31 | 1.47 |
| 1.54 | 4.03 | 2.31 | 1.29 |
| 1.56 | 4.03 | 2.31 | 1.14 |
| 1.58 | 4.03 | 2.31 | 1.01 |
| 1.60 | 4.03 | 2.31 | 0.89 |
| 1.62 | 4.03 | 2.31 | 0.78 |
| 1.64 | 4.03 | 2.31 | 0.68 |
| 1.66 | 4.03 | 2.31 | 0.60 |
| 1.68 | 4.03 | 2.31 | 0.53 |
| 1.70 | 4.03 | 2.31 | 0.46 |
| 1.72 | 4.03 | 2.31 | 0.41 |
| 1.74 | 4.03 | 2.31 | 0.36 |
| 1.76 | 4.03 | 2.31 | 0.31 |
| 1.78 | 4.03 | 2.31 | 0.28 |
| 1.80 | 4.03 | 2.31 | 0.24 |
| 1.82 | 4.03 | 2.31 | 0.21 |
| 1.84 | 4.03 | 2.31 | 0.18 |
| 1.86 | 4.03 | 2.31 | 0.16 |
| 1.88 | 4.03 | 2.31 | 0.14 |
| 1.90 | 4.03 | 2.31 | 0.12 |
| 1.92 | 4.03 | 2.31 | 0.11 |
| 1.94 | 4.03 | 2.31 | 0.09 |
| 1.96 | 4.03 | 2.31 | 0.08 |
| 1.98 | 4.03 | 2.31 | 0.07 |
| 2.00 | 4.03 | 2.31 | 0.06 |

## Summary for Subcatchment 8S: Northwood Drive Bypass

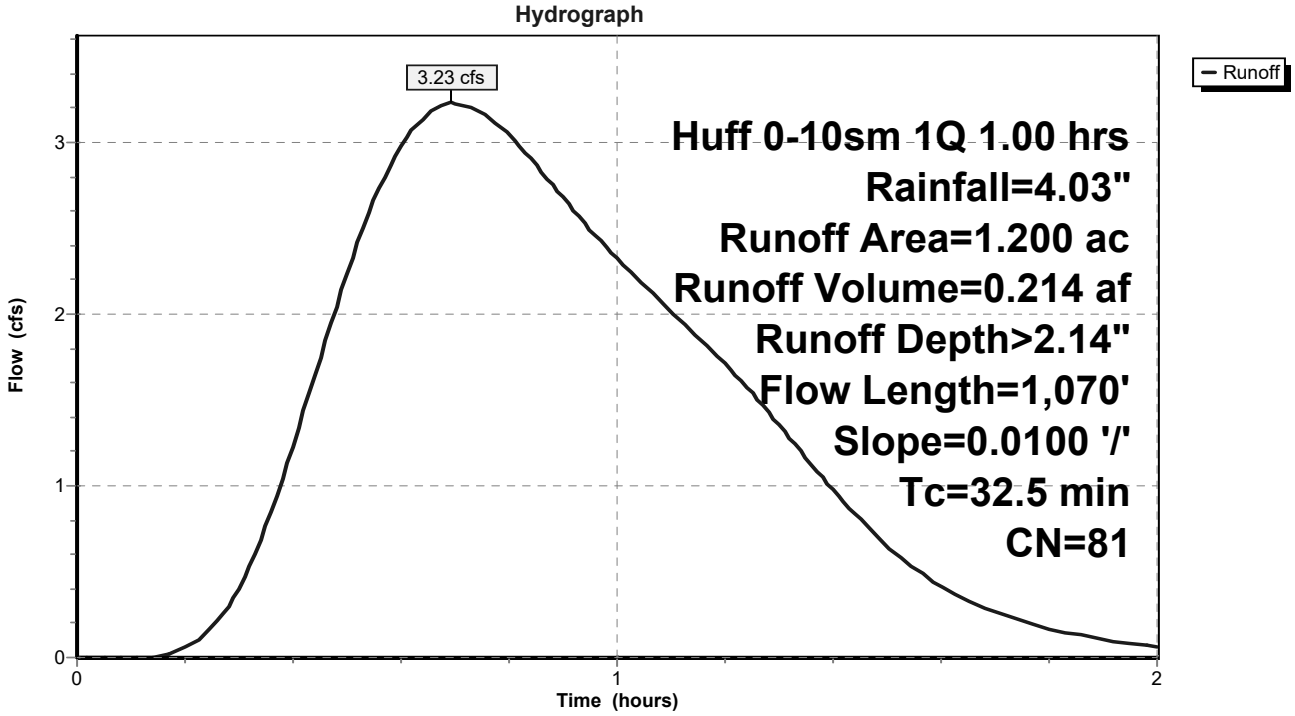
Runoff = 3.23 cfs @ 0.69 hrs, Volume= 0.214 af, Depth> 2.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=4.03"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.02 | 0.05 | 0.00 | 0.00 |
| 0.04 | 0.21 | 0.00 | 0.00 |
| 0.06 | 0.46 | 0.00 | 0.00 |
| 0.08 | 0.72 | 0.02 | 0.00 |
| 0.10 | 1.00 | 0.10 | 0.00 |
| 0.12 | 1.25 | 0.20 | 0.00 |
| 0.14 | 1.46 | 0.29 | 0.00 |
| 0.16 | 1.63 | 0.38 | 0.01 |
| 0.18 | 1.78 | 0.47 | 0.03 |
| 0.20 | 1.93 | 0.56 | 0.06 |
| 0.22 | 2.08 | 0.65 | 0.09 |
| 0.24 | 2.21 | 0.74 | 0.15 |
| 0.26 | 2.34 | 0.83 | 0.21 |
| 0.28 | 2.46 | 0.91 | 0.30 |
| 0.30 | 2.56 | 0.99 | 0.40 |
| 0.32 | 2.66 | 1.06 | 0.53 |
| 0.34 | 2.75 | 1.12 | 0.68 |
| 0.36 | 2.83 | 1.18 | 0.85 |
| 0.38 | 2.90 | 1.24 | 1.04 |
| 0.40 | 2.97 | 1.29 | 1.23 |
| 0.42 | 3.04 | 1.34 | 1.44 |
| 0.44 | 3.10 | 1.39 | 1.64 |
| 0.46 | 3.17 | 1.44 | 1.85 |
| 0.48 | 3.22 | 1.49 | 2.04 |
| 0.50 | 3.28 | 1.53 | 2.24 |
| 0.52 | 3.32 | 1.57 | 2.42 |
| 0.54 | 3.36 | 1.60 | 2.59 |
| 0.56 | 3.39 | 1.62 | 2.73 |
| 0.58 | 3.43 | 1.65 | 2.86 |
| 0.60 | 3.46 | 1.68 | 2.97 |
| 0.62 | 3.49 | 1.70 | 3.07 |
| 0.64 | 3.53 | 1.73 | 3.14 |
| 0.66 | 3.56 | 1.76 | 3.19 |
| 0.68 | 3.59 | 1.78 | **3.22** |
| 0.70 | 3.62 | 1.81 | **3.23** |
| 0.72 | 3.66 | 1.84 | 3.22 |
| 0.74 | 3.69 | 1.86 | 3.19 |
| 0.76 | 3.72 | 1.89 | 3.16 |
| 0.78 | 3.75 | 1.92 | 3.10 |
| 0.80 | 3.79 | 1.94 | 3.04 |
| 0.82 | 3.82 | 1.97 | 2.97 |
| 0.84 | 3.85 | 2.00 | 2.90 |
| 0.86 | 3.88 | 2.02 | 2.83 |
| 0.88 | 3.91 | 2.04 | 2.75 |
| 0.90 | 3.93 | 2.06 | 2.68 |
| 0.92 | 3.94 | 2.07 | 2.60 |
| 0.94 | 3.96 | 2.09 | 2.53 |
| 0.96 | 3.98 | 2.10 | 2.46 |
| 0.98 | 4.00 | 2.12 | 2.39 |
| 1.00 | **4.03** | **2.15** | 2.32 |
| 1.02 | 4.03 | 2.15 | 2.26 |
| 1.04 | 4.03 | 2.15 | 2.20 |
| 1.06 | 4.03 | 2.15 | 2.14 |
| 1.08 | 4.03 | 2.15 | 2.07 |
| 1.10 | 4.03 | 2.15 | 2.02 |
| 1.12 | 4.03 | 2.15 | 1.96 |
| 1.14 | 4.03 | 2.15 | 1.90 |
| 1.16 | 4.03 | 2.15 | 1.83 |
| 1.18 | 4.03 | 2.15 | 1.77 |
| 1.20 | 4.03 | 2.15 | 1.71 |
| 1.22 | 4.03 | 2.15 | 1.64 |
| 1.24 | 4.03 | 2.15 | 1.57 |
| 1.26 | 4.03 | 2.15 | 1.50 |
| 1.28 | 4.03 | 2.15 | 1.43 |
| 1.30 | 4.03 | 2.15 | 1.35 |
| 1.32 | 4.03 | 2.15 | 1.28 |
| 1.34 | 4.03 | 2.15 | 1.20 |
| 1.36 | 4.03 | 2.15 | 1.12 |
| 1.38 | 4.03 | 2.15 | 1.05 |
| 1.40 | 4.03 | 2.15 | 0.98 |
| 1.42 | 4.03 | 2.15 | 0.91 |
| 1.44 | 4.03 | 2.15 | 0.84 |
| 1.46 | 4.03 | 2.15 | 0.77 |
| 1.48 | 4.03 | 2.15 | 0.71 |
| 1.50 | 4.03 | 2.15 | 0.65 |
| 1.52 | 4.03 | 2.15 | 0.60 |
| 1.54 | 4.03 | 2.15 | 0.55 |
| 1.56 | 4.03 | 2.15 | 0.50 |
| 1.58 | 4.03 | 2.15 | 0.45 |
| 1.60 | 4.03 | 2.15 | 0.41 |
| 1.62 | 4.03 | 2.15 | 0.38 |
| 1.64 | 4.03 | 2.15 | 0.34 |
| 1.66 | 4.03 | 2.15 | 0.31 |
| 1.68 | 4.03 | 2.15 | 0.29 |
| 1.70 | 4.03 | 2.15 | 0.26 |
| 1.72 | 4.03 | 2.15 | 0.24 |
| 1.74 | 4.03 | 2.15 | 0.22 |
| 1.76 | 4.03 | 2.15 | 0.20 |
| 1.78 | 4.03 | 2.15 | 0.18 |
| 1.80 | 4.03 | 2.15 | 0.17 |
| 1.82 | 4.03 | 2.15 | 0.15 |
| 1.84 | 4.03 | 2.15 | 0.14 |
| 1.86 | 4.03 | 2.15 | 0.13 |
| 1.88 | 4.03 | 2.15 | 0.12 |
| 1.90 | 4.03 | 2.15 | 0.11 |
| 1.92 | 4.03 | 2.15 | 0.10 |
| 1.94 | 4.03 | 2.15 | 0.09 |
| 1.96 | 4.03 | 2.15 | 0.08 |
| 1.98 | 4.03 | 2.15 | 0.07 |
| 2.00 | 4.03 | 2.15 | 0.06 |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

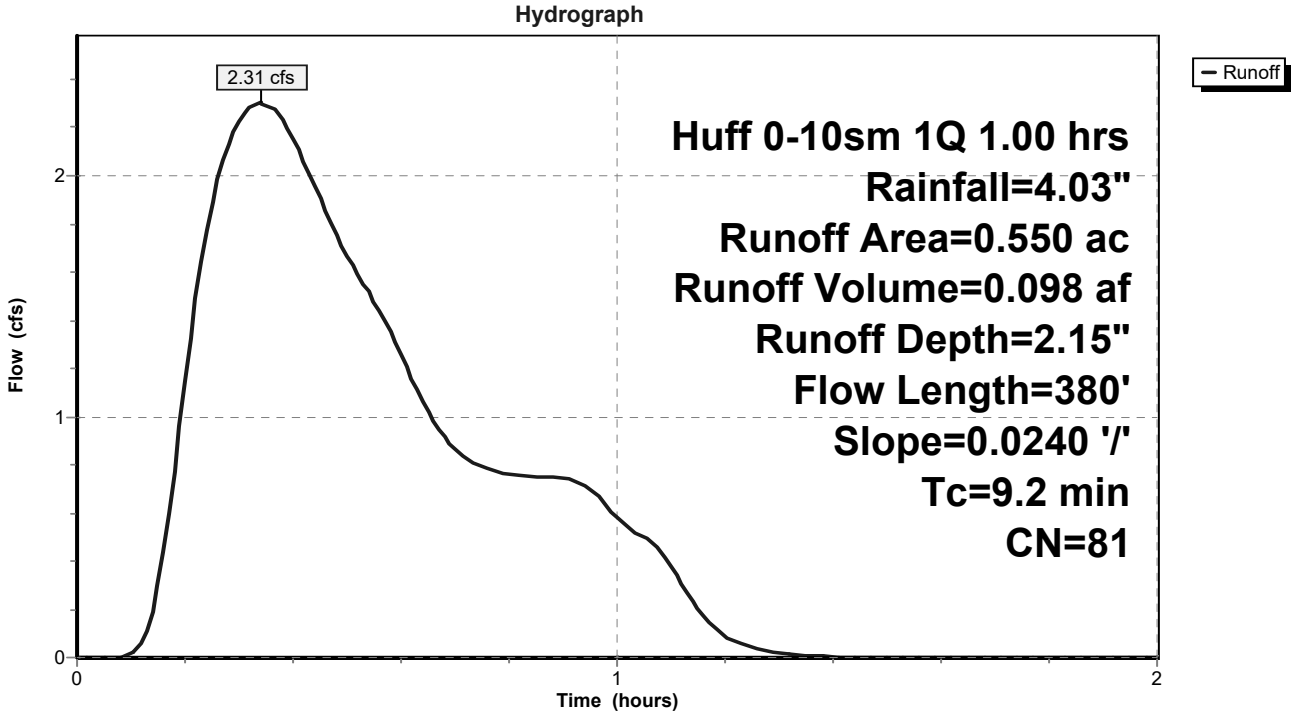
Runoff = 2.31 cfs @ 0.34 hrs, Volume= 0.098 af, Depth= 2.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=4.03"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 1.06 | 4.03 | 2.15 | 0.49 |
| 0.02 | 0.05 | 0.00 | 0.00 | 1.08 | 4.03 | 2.15 | 0.44 |
| 0.04 | 0.21 | 0.00 | 0.00 | 1.10 | 4.03 | 2.15 | 0.38 |
| 0.06 | 0.46 | 0.00 | 0.00 | 1.12 | 4.03 | 2.15 | 0.31 |
| 0.08 | 0.72 | 0.02 | 0.00 | 1.14 | 4.03 | 2.15 | 0.24 |
| 0.10 | 1.00 | 0.10 | 0.01 | 1.16 | 4.03 | 2.15 | 0.17 |
| 0.12 | 1.25 | 0.20 | 0.06 | 1.18 | 4.03 | 2.15 | 0.12 |
| 0.14 | 1.46 | 0.29 | 0.19 | 1.20 | 4.03 | 2.15 | 0.09 |
| 0.16 | 1.63 | 0.38 | 0.44 | 1.22 | 4.03 | 2.15 | 0.07 |
| 0.18 | 1.78 | 0.47 | 0.78 | 1.24 | 4.03 | 2.15 | 0.05 |
| 0.20 | 1.93 | 0.56 | 1.15 | 1.26 | 4.03 | 2.15 | 0.03 |
| 0.22 | 2.08 | 0.65 | 1.50 | 1.28 | 4.03 | 2.15 | 0.02 |
| 0.24 | 2.21 | 0.74 | 1.78 | 1.30 | 4.03 | 2.15 | 0.02 |
| 0.26 | 2.34 | 0.83 | 1.99 | 1.32 | 4.03 | 2.15 | 0.01 |
| 0.28 | 2.46 | 0.91 | 2.13 | 1.34 | 4.03 | 2.15 | 0.01 |
| 0.30 | 2.56 | 0.99 | 2.23 | 1.36 | 4.03 | 2.15 | 0.01 |
| 0.32 | 2.66 | 1.06 | 2.29 | 1.38 | 4.03 | 2.15 | 0.00 |
| 0.34 | 2.75 | 1.12 | **2.31** | 1.40 | 4.03 | 2.15 | 0.00 |
| 0.36 | 2.83 | 1.18 | 2.29 | 1.42 | 4.03 | 2.15 | 0.00 |
| 0.38 | 2.90 | 1.24 | 2.23 | 1.44 | 4.03 | 2.15 | 0.00 |
| 0.40 | 2.97 | 1.29 | 2.16 | 1.46 | 4.03 | 2.15 | 0.00 |
| 0.42 | 3.04 | 1.34 | 2.06 | 1.48 | 4.03 | 2.15 | 0.00 |
| 0.44 | 3.10 | 1.39 | 1.96 | 1.50 | 4.03 | 2.15 | 0.00 |
| 0.46 | 3.17 | 1.44 | 1.86 | 1.52 | 4.03 | 2.15 | 0.00 |
| 0.48 | 3.22 | 1.49 | 1.76 | 1.54 | 4.03 | 2.15 | 0.00 |
| 0.50 | 3.28 | 1.53 | 1.67 | 1.56 | 4.03 | 2.15 | 0.00 |
| 0.52 | 3.32 | 1.57 | 1.59 | 1.58 | 4.03 | 2.15 | 0.00 |
| 0.54 | 3.36 | 1.60 | 1.52 | 1.60 | 4.03 | 2.15 | 0.00 |
| 0.56 | 3.39 | 1.62 | 1.44 | 1.62 | 4.03 | 2.15 | 0.00 |
| 0.58 | 3.43 | 1.65 | 1.36 | 1.64 | 4.03 | 2.15 | 0.00 |
| 0.60 | 3.46 | 1.68 | 1.26 | 1.66 | 4.03 | 2.15 | 0.00 |
| 0.62 | 3.49 | 1.70 | 1.16 | 1.68 | 4.03 | 2.15 | 0.00 |
| 0.64 | 3.53 | 1.73 | 1.07 | 1.70 | 4.03 | 2.15 | 0.00 |
| 0.66 | 3.56 | 1.76 | 0.98 | 1.72 | 4.03 | 2.15 | 0.00 |
| 0.68 | 3.59 | 1.78 | 0.91 | 1.74 | 4.03 | 2.15 | 0.00 |
| 0.70 | 3.62 | 1.81 | 0.86 | 1.76 | 4.03 | 2.15 | 0.00 |
| 0.72 | 3.66 | 1.84 | 0.83 | 1.78 | 4.03 | 2.15 | 0.00 |
| 0.74 | 3.69 | 1.86 | 0.80 | 1.80 | 4.03 | 2.15 | 0.00 |
| 0.76 | 3.72 | 1.89 | 0.78 | 1.82 | 4.03 | 2.15 | 0.00 |
| 0.78 | 3.75 | 1.92 | 0.77 | 1.84 | 4.03 | 2.15 | 0.00 |
| 0.80 | 3.79 | 1.94 | 0.76 | 1.86 | 4.03 | 2.15 | 0.00 |
| 0.82 | 3.82 | 1.97 | 0.76 | 1.88 | 4.03 | 2.15 | 0.00 |
| 0.84 | 3.85 | 2.00 | 0.75 | 1.90 | 4.03 | 2.15 | 0.00 |
| 0.86 | 3.88 | 2.02 | 0.75 | 1.92 | 4.03 | 2.15 | 0.00 |
| 0.88 | 3.91 | 2.04 | 0.75 | 1.94 | 4.03 | 2.15 | 0.00 |
| 0.90 | 3.93 | 2.06 | 0.75 | 1.96 | 4.03 | 2.15 | 0.00 |
| 0.92 | 3.94 | 2.07 | 0.74 | 1.98 | 4.03 | 2.15 | 0.00 |
| 0.94 | 3.96 | 2.09 | 0.71 | 2.00 | 4.03 | 2.15 | 0.00 |
| 0.96 | 3.98 | 2.10 | 0.68 | | | | |
| 0.98 | 4.00 | 2.12 | 0.63 | | | | |
| 1.00 | **4.03** | **2.15** | 0.58 | | | | |
| 1.02 | 4.03 | 2.15 | 0.54 | | | | |
| 1.04 | 4.03 | 2.15 | 0.51 | | | | |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 35.84 cfs @ | 0.55 hrs, | Volume= | 2.038 af |
| Outflow | = | 1.08 cfs @ | 1.59 hrs, | Volume= | 0.129 af, Atten= 97%, Lag= 62.7 min |
| Primary | = | 1.08 cfs @ | 1.59 hrs, | Volume= | 0.129 af |
| Secondary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Peak Elev= 674.34' @ 1.59 hrs Surf.Area= 31,344 sf Storage= 84,157 cf

Plug-Flow detention time= 57.4 min calculated for 0.128 af (6% of inflow)
Center-of-Mass det. time= 30.8 min ( 75.5 - 44.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

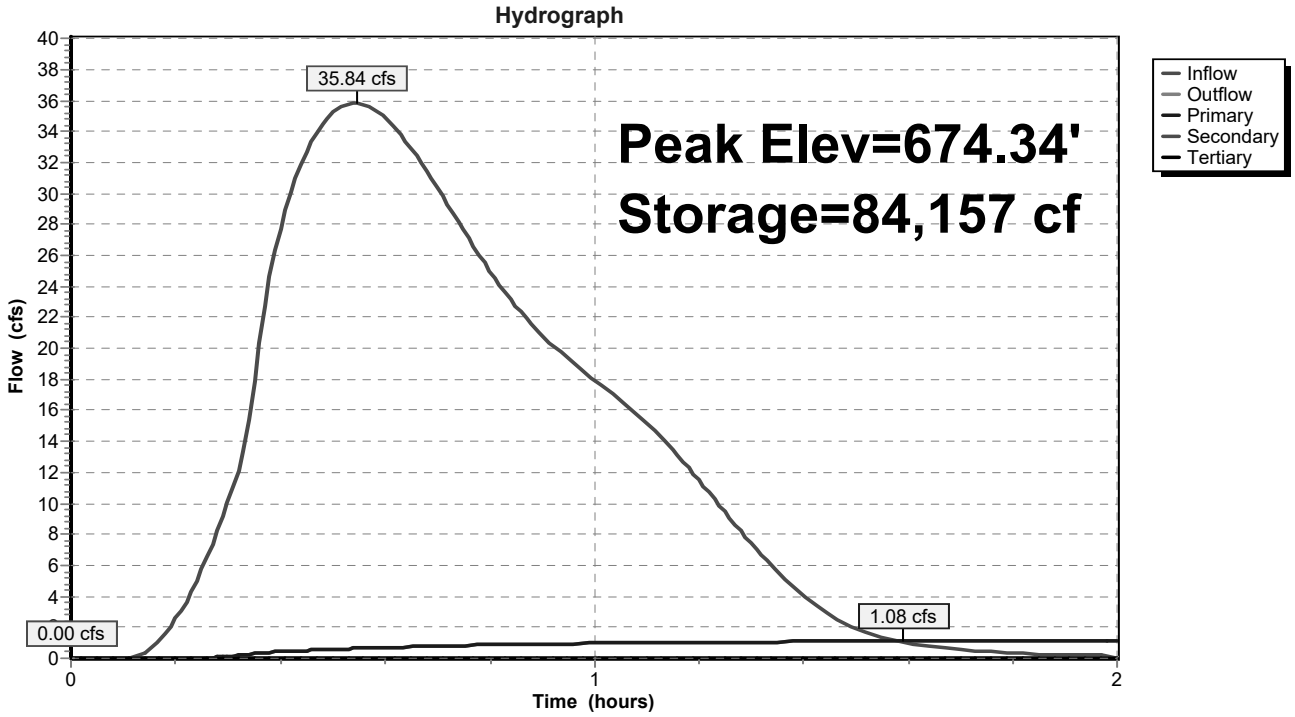
#4 Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=1.08 cfs @ 1.59 hrs HW=674.34' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.08 cfs @ 9.81 fps)

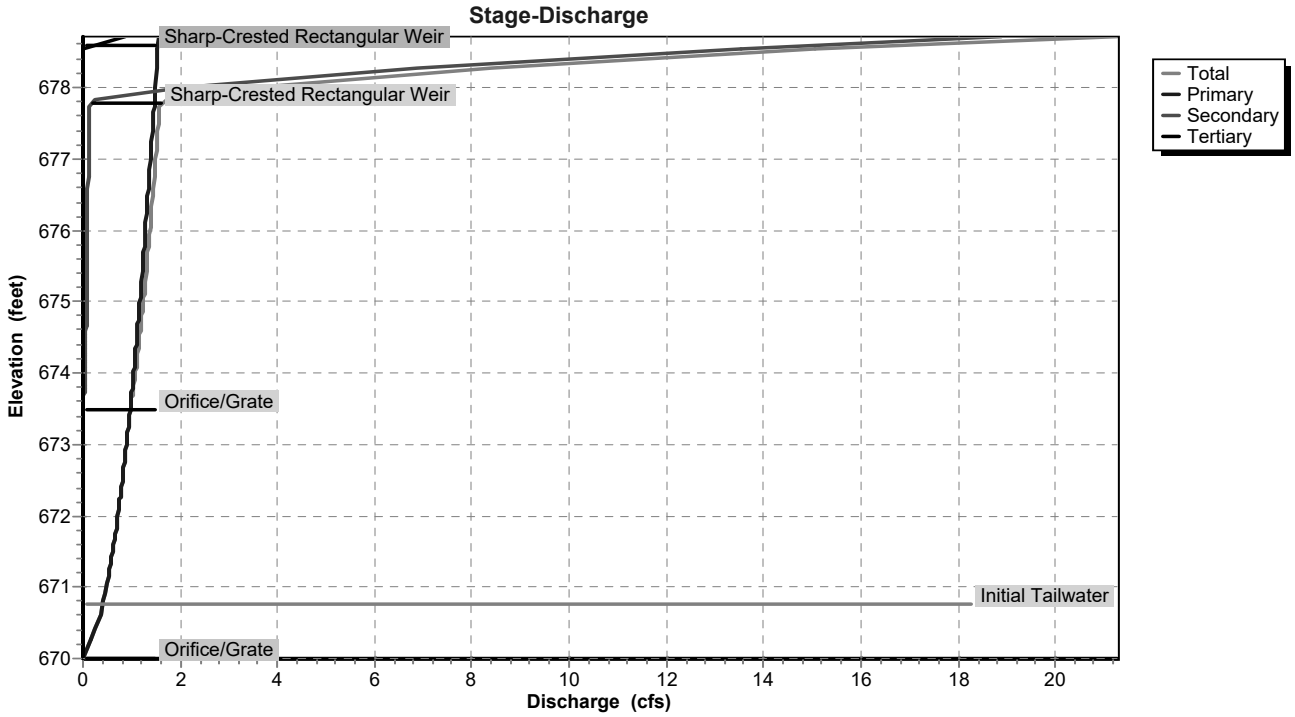
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

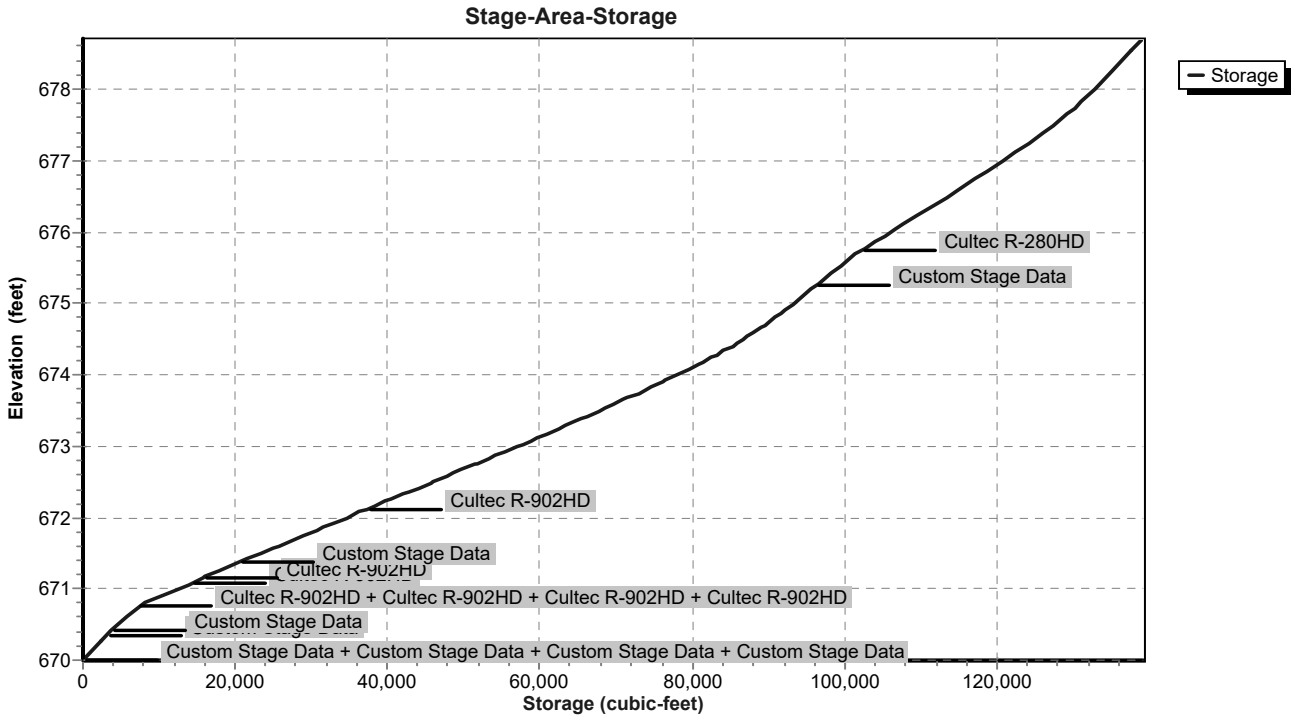
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 0.05 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.10 | 0.01 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.15 | 0.57 | 27 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 2.56 | 253 | 670.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.25 | 5.73 | 919 | 670.10 | 0.03 | 0.03 | 0.00 | 0.00 |
| 0.30 | 10.09 | 2,237 | 670.25 | 0.13 | 0.13 | 0.00 | 0.00 |
| 0.35 | 17.86 | 4,432 | 670.48 | 0.29 | 0.29 | 0.00 | 0.00 |
| 0.40 | 27.74 | 8,396 | 670.81 | 0.42 | 0.42 | 0.00 | 0.00 |
| 0.45 | 32.69 | 13,701 | 671.06 | 0.50 | 0.50 | 0.00 | 0.00 |
| 0.50 | 35.25 | 19,699 | 671.34 | 0.57 | 0.57 | 0.00 | 0.00 |
| 0.55 | **35.83** | 26,000 | 671.62 | 0.64 | 0.64 | 0.00 | 0.00 |
| 0.60 | 34.87 | 32,280 | 671.90 | 0.70 | 0.70 | 0.00 | 0.00 |
| 0.65 | 32.92 | 38,299 | 672.17 | 0.75 | 0.75 | 0.00 | 0.00 |
| 0.70 | 30.40 | 43,912 | 672.41 | 0.79 | 0.79 | 0.00 | 0.00 |
| 0.75 | 27.65 | 49,042 | 672.64 | 0.83 | 0.83 | 0.00 | 0.00 |
| 0.80 | 25.01 | 53,675 | 672.84 | 0.87 | 0.87 | 0.00 | 0.00 |
| 0.85 | 22.73 | 57,850 | 673.03 | 0.90 | 0.90 | 0.00 | 0.00 |
| 0.90 | 20.87 | 61,640 | 673.21 | 0.92 | 0.92 | 0.00 | 0.00 |
| 0.95 | 19.35 | 65,117 | 673.37 | 0.95 | 0.95 | 0.00 | 0.00 |
| 1.00 | 17.99 | 68,330 | 673.52 | 0.97 | 0.97 | 0.00 | 0.00 |
| 1.05 | 16.68 | 71,298 | 673.66 | 0.99 | 0.99 | 0.00 | 0.00 |
| 1.10 | 15.19 | 74,018 | 673.80 | 1.01 | 1.01 | 0.00 | 0.00 |
| 1.15 | 13.45 | 76,446 | 673.92 | 1.03 | 1.03 | 0.00 | 0.00 |
| 1.20 | 11.52 | 78,545 | 674.03 | 1.04 | 1.04 | 0.00 | 0.00 |
| 1.25 | 9.45 | 80,280 | 674.12 | 1.06 | 1.06 | 0.00 | 0.00 |
| 1.30 | 7.43 | 81,643 | 674.20 | 1.06 | 1.06 | 0.00 | 0.00 |
| 1.35 | 5.58 | 82,652 | 674.25 | 1.07 | 1.07 | 0.00 | 0.00 |
| 1.40 | 4.04 | 83,348 | 674.29 | 1.08 | 1.08 | 0.00 | 0.00 |
| 1.45 | 2.82 | 83,788 | 674.32 | 1.08 | 1.08 | 0.00 | 0.00 |
| 1.50 | 1.93 | 84,032 | 674.33 | 1.08 | 1.08 | 0.00 | 0.00 |
| 1.55 | 1.33 | **84,137** | **674.34** | **1.08** | **1.08** | 0.00 | 0.00 |
| 1.60 | 0.99 | **84,156** | **674.34** | **1.08** | **1.08** | 0.00 | 0.00 |
| 1.65 | 0.75 | 84,121 | 674.34 | 1.08 | 1.08 | 0.00 | 0.00 |
| 1.70 | 0.57 | 84,048 | 674.33 | 1.08 | 1.08 | 0.00 | 0.00 |
| 1.75 | 0.44 | 83,946 | 674.33 | 1.08 | 1.08 | 0.00 | 0.00 |
| 1.80 | 0.35 | 83,823 | 674.32 | 1.08 | 1.08 | 0.00 | 0.00 |
| 1.85 | 0.28 | 83,686 | 674.31 | 1.08 | 1.08 | 0.00 | 0.00 |
| 1.90 | 0.23 | 83,538 | 674.30 | 1.08 | 1.08 | 0.00 | 0.00 |
| 1.95 | 0.19 | 83,382 | 674.30 | 1.08 | 1.08 | 0.00 | 0.00 |
| 2.00 | 0.00 | 83,220 | 674.29 | 1.08 | 1.08 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 16.68 | 1.54 | 15.13 | 0.00 |
| 678.80 | **24.77** | **1.56** | **21.42** | **1.79** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) |
|---|---|
| 670.00 | 0 |
| 670.10 | 893 |
| 670.20 | 1,787 |
| 670.30 | 2,681 |
| 670.40 | 3,618 |
| 670.50 | 4,626 |
| 670.60 | 5,639 |
| 670.70 | 6,653 |
| 670.80 | 8,202 |
| 670.90 | 10,288 |
| 671.00 | 12,379 |
| 671.10 | 14,465 |
| 671.20 | 16,635 |
| 671.30 | 18,830 |
| 671.40 | 21,049 |
| 671.50 | 23,322 |
| 671.60 | 25,582 |
| 671.70 | 27,830 |
| 671.80 | 30,075 |
| 671.90 | 32,317 |
| 672.00 | 34,546 |
| 672.10 | 36,761 |
| 672.20 | 39,047 |
| 672.30 | 41,344 |
| 672.40 | 43,628 |
| 672.50 | 45,906 |
| 672.60 | 48,170 |
| 672.70 | 50,428 |
| 672.80 | 52,674 |
| 672.90 | 54,899 |
| 673.00 | 57,117 |
| 673.10 | 59,314 |
| 673.20 | 61,492 |
| 673.30 | 63,654 |
| 673.40 | 65,789 |
| 673.50 | 67,899 |
| 673.60 | 69,981 |
| 673.70 | 72,030 |
| 673.80 | 74,047 |
| 673.90 | 76,023 |
| 674.00 | 77,955 |
| 674.10 | 79,844 |
| 674.20 | 81,679 |
| 674.30 | 83,453 |
| 674.40 | 85,139 |
| 674.50 | 86,709 |
| 674.60 | 88,153 |
| 674.70 | 89,496 |
| 674.80 | 90,763 |
| 674.90 | 91,997 |
| 675.00 | 93,215 |
| 675.10 | 94,422 |
| 675.20 | 95,621 |
| 675.30 | 96,808 |
| 675.40 | 97,984 |
| 675.50 | 99,158 |
| 675.60 | 100,327 |
| 675.70 | 101,491 |
| 675.80 | 102,865 |
| 675.90 | 104,433 |
| 676.00 | 105,977 |
| 676.10 | 107,509 |
| 676.20 | 109,032 |
| 676.30 | 110,542 |
| 676.40 | 112,038 |
| 676.50 | 113,523 |
| 676.60 | 114,993 |
| 676.70 | 116,452 |
| 676.80 | 117,901 |
| 676.90 | 119,339 |
| 677.00 | 120,753 |
| 677.10 | 122,143 |
| 677.20 | 123,511 |
| 677.30 | 124,850 |
| 677.40 | 126,157 |
| 677.50 | 127,426 |
| 677.60 | 128,644 |
| 677.70 | 129,794 |
| 677.80 | 130,846 |
| 677.90 | 131,802 |
| 678.00 | 132,704 |
| 678.10 | 133,604 |
| 678.20 | 134,505 |
| 678.30 | 135,406 |
| 678.40 | 136,307 |
| 678.50 | 137,209 |
| 678.60 | 138,112 |
| 678.70 | 139,014 |
| 678.80 | 139,917 |
| 678.90 | **140,821** |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 15.47 cfs @ | 0.47 hrs, | Volume= | 0.888 af |
| Outflow | = | 15.43 cfs @ | 0.50 hrs, | Volume= | 0.860 af, Atten= 0%, Lag= 1.6 min |
| Primary | = | 6.18 cfs @ | 0.50 hrs, | Volume= | 0.364 af |
| Secondary | = | 9.26 cfs @ | 0.50 hrs, | Volume= | 0.495 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Peak Elev= 678.38' @ 0.50 hrs Surf.Area= 3,554 sf Storage= 4,516 cf

Plug-Flow detention time= 7.9 min calculated for 0.856 af (96% of inflow)
Center-of-Mass det. time= 6.5 min ( 48.3 - 41.8 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

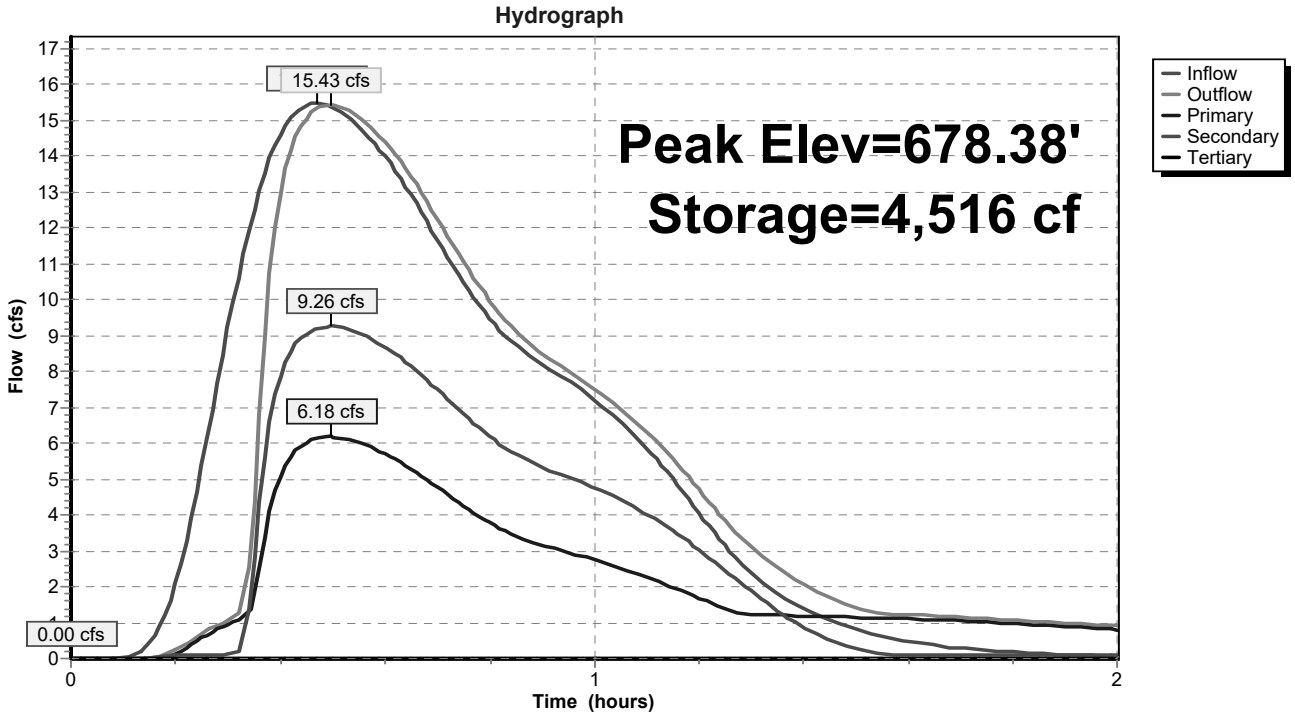
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.50' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=6.17 cfs @ 0.50 hrs HW=678.38' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 1.41 cfs @ 6.11 fps)
- **2=Sharp-Crested Rectangular Weir** (Weir Controls 4.77 cfs @ 2.11 fps)

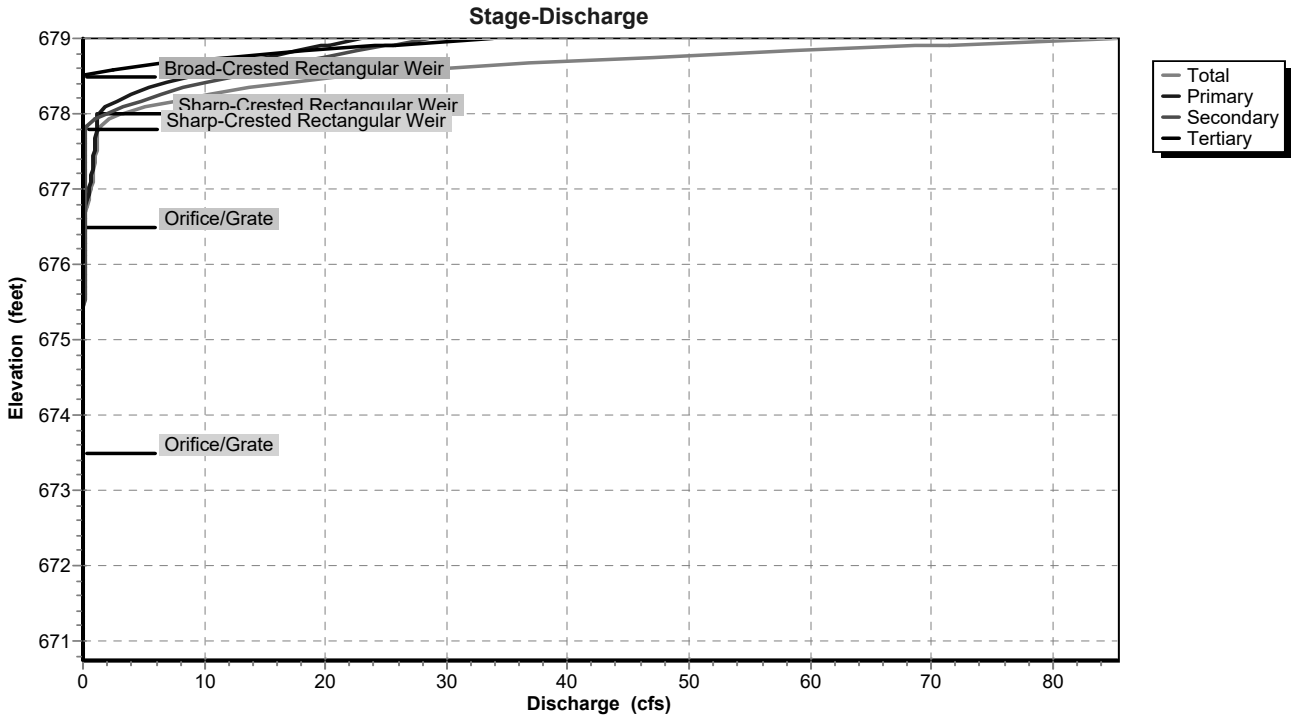
**Secondary OutFlow** Max=9.25 cfs @ 0.50 hrs HW=678.38' TW=671.33' (Dynamic Tailwater)
- **4=Orifice/Grate** (Orifice Controls 0.13 cfs @ 10.57 fps)
- **5=Sharp-Crested Rectangular Weir** (Weir Controls 9.12 cfs @ 2.67 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
- **3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

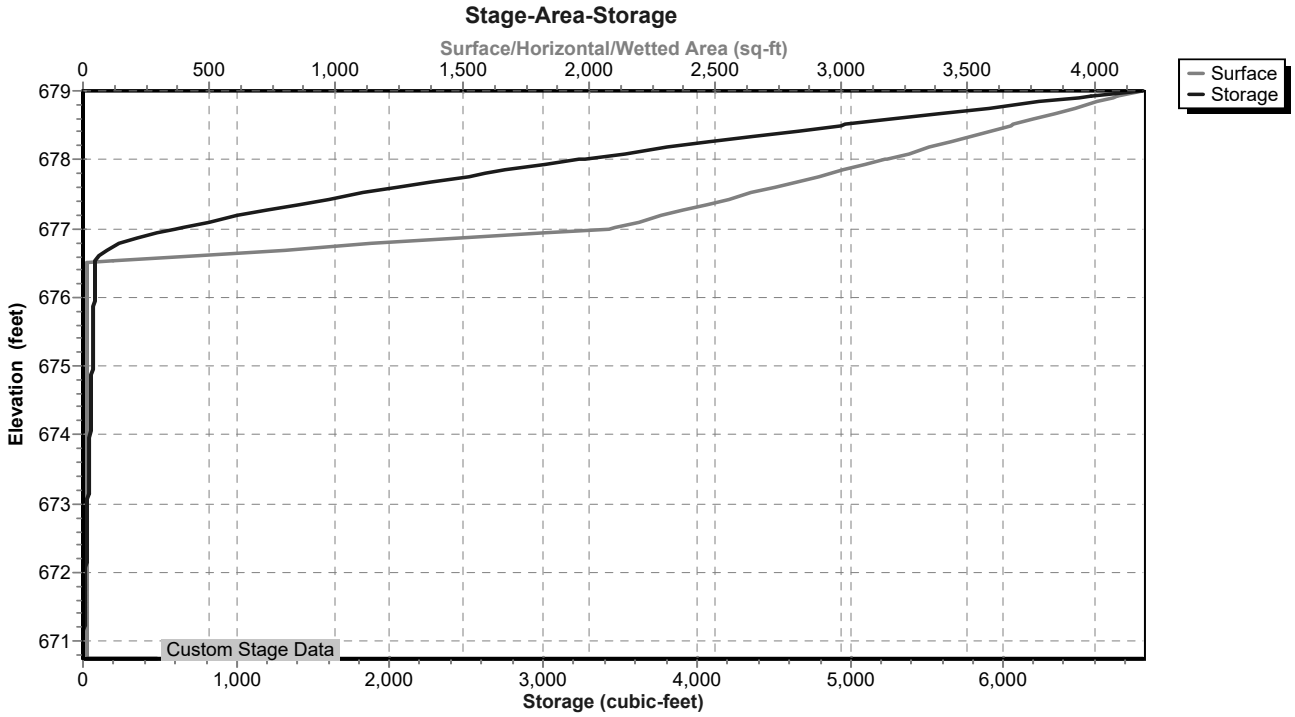
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.05 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.10 | 0.02 | 0 | 670.78 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.15 | 0.43 | 22 | 672.29 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 2.08 | 181 | 676.71 | 0.24 | 0.13 | 0.10 | 0.00 |
| 0.25 | 5.37 | 700 | 677.04 | 0.69 | 0.58 | 0.11 | 0.00 |
| 0.30 | 9.20 | 1,793 | 677.50 | 1.07 | 0.95 | 0.12 | 0.00 |
| 0.35 | 12.50 | 3,433 | 678.06 | 4.38 | 1.56 | 2.81 | 0.00 |
| 0.40 | 14.59 | 4,311 | 678.32 | 12.96 | 5.08 | 7.88 | 0.00 |
| 0.45 | **15.42** | 4,486 | 678.37 | 15.05 | 6.01 | 9.05 | 0.00 |
| 0.50 | **15.37** | **4,516** | **678.38** | **15.43** | **6.17** | **9.25** | 0.00 |
| 0.55 | 14.82 | 4,489 | 678.37 | 15.10 | 6.03 | 9.07 | 0.00 |
| 0.60 | 13.99 | 4,430 | 678.36 | 14.38 | 5.71 | 8.67 | 0.00 |
| 0.65 | 12.91 | 4,350 | 678.33 | 13.43 | 5.29 | 8.14 | 0.00 |
| 0.70 | 11.68 | 4,252 | 678.31 | 12.27 | 4.78 | 7.49 | 0.00 |
| 0.75 | 10.48 | 4,144 | 678.27 | 11.06 | 4.25 | 6.81 | 0.00 |
| 0.80 | 9.47 | 4,044 | 678.25 | 9.98 | 3.79 | 6.19 | 0.00 |
| 0.85 | 8.73 | 3,962 | 678.22 | 9.12 | 3.42 | 5.69 | 0.00 |
| 0.90 | 8.19 | 3,900 | 678.20 | 8.48 | 3.16 | 5.33 | 0.00 |
| 0.95 | 7.74 | 3,851 | 678.19 | 8.00 | 2.95 | 5.04 | 0.00 |
| 1.00 | 7.23 | 3,802 | 678.17 | 7.53 | 2.76 | 4.76 | 0.00 |
| 1.05 | 6.59 | 3,743 | 678.16 | 6.96 | 2.53 | 4.43 | 0.00 |
| 1.10 | 5.87 | 3,671 | 678.13 | 6.31 | 2.28 | 4.03 | 0.00 |
| 1.15 | 5.02 | 3,586 | 678.11 | 5.57 | 1.99 | 3.58 | 0.00 |
| 1.20 | 4.06 | 3,479 | 678.08 | 4.71 | 1.68 | 3.03 | 0.00 |
| 1.25 | 3.16 | 3,358 | 678.04 | 3.85 | 1.40 | 2.45 | 0.00 |
| 1.30 | 2.38 | 3,231 | 678.00 | 3.12 | 1.23 | 1.89 | 0.00 |
| 1.35 | 1.81 | 3,097 | 677.96 | 2.55 | 1.21 | 1.34 | 0.00 |
| 1.40 | 1.39 | 2,968 | 677.91 | 2.07 | 1.19 | 0.88 | 0.00 |
| 1.45 | 1.06 | 2,849 | 677.88 | 1.69 | 1.17 | 0.52 | 0.00 |
| 1.50 | 0.82 | 2,739 | 677.84 | 1.41 | 1.15 | 0.27 | 0.00 |
| 1.55 | 0.62 | 2,631 | 677.80 | 1.24 | 1.13 | 0.11 | 0.00 |
| 1.60 | 0.48 | 2,511 | 677.76 | 1.21 | 1.10 | 0.11 | 0.00 |
| 1.65 | 0.37 | 2,372 | 677.71 | 1.19 | 1.08 | 0.11 | 0.00 |
| 1.70 | 0.28 | 2,220 | 677.66 | 1.15 | 1.05 | 0.11 | 0.00 |
| 1.75 | 0.22 | 2,061 | 677.60 | 1.12 | 1.01 | 0.11 | 0.00 |
| 1.80 | 0.17 | 1,899 | 677.54 | 1.08 | 0.98 | 0.11 | 0.00 |
| 1.85 | 0.14 | 1,736 | 677.48 | 1.04 | 0.94 | 0.11 | 0.00 |
| 1.90 | 0.11 | 1,574 | 677.42 | 1.00 | 0.89 | 0.10 | 0.00 |
| 1.95 | 0.08 | 1,415 | 677.36 | 0.95 | 0.85 | 0.10 | 0.00 |
| 2.00 | 0.00 | 1,260 | 677.29 | 0.90 | 0.80 | 0.10 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 24.61 | 9.86 | 13.70 | 1.05 |
| 678.75 | 46.70 | 15.13 | 19.77 | 11.80 |
| 678.95 | **76.77** | **21.27** | **26.68** | **28.82** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

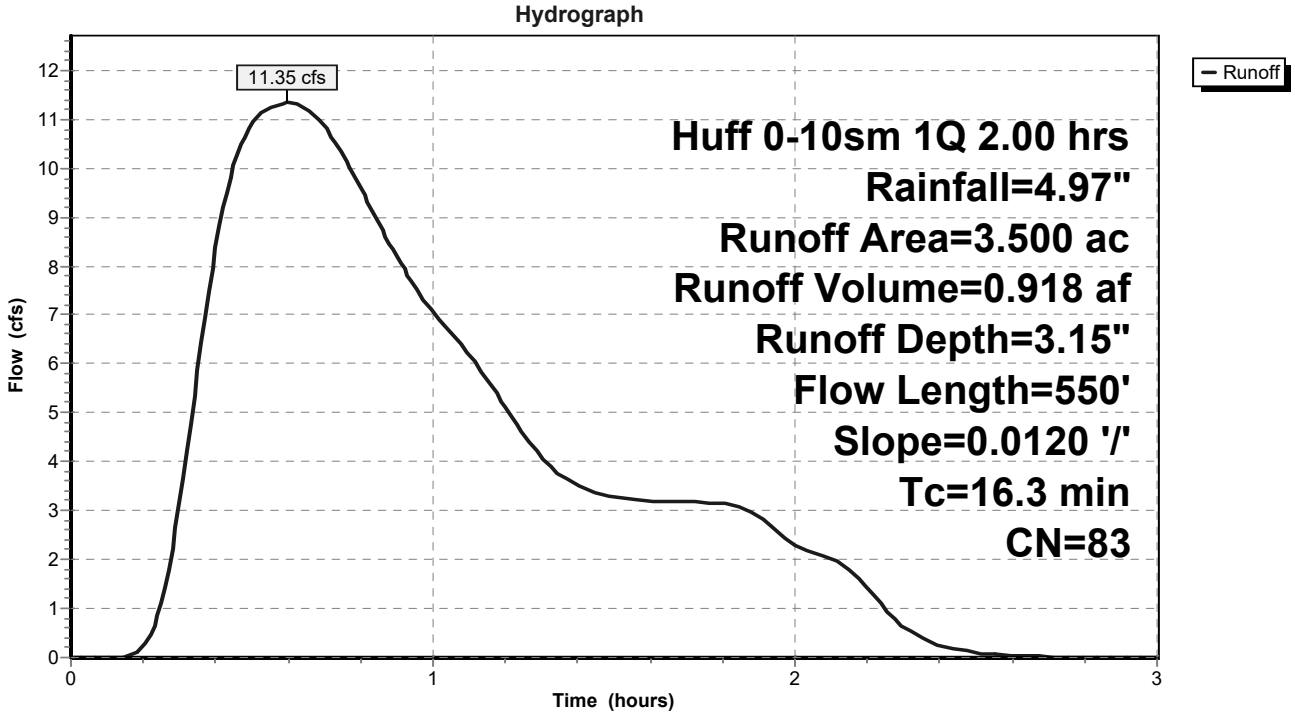
Runoff = 11.35 cfs @ 0.60 hrs, Volume= 0.918 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=4.97"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.05 | 0.10 | 0.00 | 0.00 |
| 0.10 | 0.40 | 0.00 | 0.00 |
| 0.15 | 0.81 | 0.07 | 0.01 |
| 0.20 | 1.23 | 0.23 | 0.22 |
| 0.25 | 1.61 | 0.45 | 1.13 |
| 0.30 | 1.91 | 0.63 | 3.16 |
| 0.35 | 2.15 | 0.80 | 5.88 |
| 0.40 | 2.38 | 0.97 | 8.39 |
| 0.45 | 2.60 | 1.14 | 10.07 |
| 0.50 | 2.81 | 1.30 | 10.90 |
| 0.55 | 3.00 | 1.45 | 11.25 |
| 0.60 | 3.16 | 1.58 | **11.35** |
| 0.65 | 3.31 | 1.70 | 11.22 |
| 0.70 | 3.44 | 1.81 | 10.86 |
| 0.75 | 3.56 | 1.91 | 10.28 |
| 0.80 | 3.66 | 2.00 | 9.59 |
| 0.85 | 3.77 | 2.08 | 8.89 |
| 0.90 | 3.87 | 2.17 | 8.19 |
| 0.95 | 3.96 | 2.25 | 7.57 |
| 1.00 | 4.04 | 2.32 | 7.06 |
| 1.05 | 4.11 | 2.38 | 6.62 |
| 1.10 | 4.17 | 2.43 | 6.19 |
| 1.15 | 4.22 | 2.48 | 5.69 |
| 1.20 | 4.27 | 2.52 | 5.12 |
| 1.25 | 4.32 | 2.56 | 4.56 |
| 1.30 | 4.37 | 2.61 | 4.08 |
| 1.35 | 4.42 | 2.65 | 3.74 |
| 1.40 | 4.47 | 2.70 | 3.51 |
| 1.45 | 4.52 | 2.74 | 3.37 |
| 1.50 | 4.57 | 2.79 | 3.28 |
| 1.55 | 4.62 | 2.83 | 3.23 |
| 1.60 | 4.67 | 2.88 | 3.20 |
| 1.65 | 4.72 | 2.92 | 3.18 |
| 1.70 | 4.77 | 2.97 | 3.17 |
| 1.75 | 4.81 | 3.01 | 3.17 |
| 1.80 | 4.84 | 3.03 | 3.15 |
| 1.85 | 4.87 | 3.06 | 3.07 |
| 1.90 | 4.89 | 3.08 | 2.87 |
| 1.95 | 4.93 | 3.11 | 2.58 |
| 2.00 | **4.97** | **3.15** | 2.30 |
| 2.05 | 4.97 | 3.15 | 2.13 |
| 2.10 | 4.97 | 3.15 | 2.02 |
| 2.15 | 4.97 | 3.15 | 1.80 |
| 2.20 | 4.97 | 3.15 | 1.41 |
| 2.25 | 4.97 | 3.15 | 0.98 |
| 2.30 | 4.97 | 3.15 | 0.63 |
| 2.35 | 4.97 | 3.15 | 0.39 |
| 2.40 | 4.97 | 3.15 | 0.25 |
| 2.45 | 4.97 | 3.15 | 0.16 |
| 2.50 | 4.97 | 3.15 | 0.10 |
| 2.55 | 4.97 | 3.15 | 0.06 |
| 2.60 | 4.97 | 3.15 | 0.04 |
| 2.65 | 4.97 | 3.15 | 0.02 |
| 2.70 | 4.97 | 3.15 | 0.01 |
| 2.75 | 4.97 | 3.15 | 0.01 |
| 2.80 | 4.97 | 3.15 | 0.00 |
| 2.85 | 4.97 | 3.15 | 0.00 |
| 2.90 | 4.97 | 3.15 | 0.00 |
| 2.95 | 4.97 | 3.15 | 0.00 |
| 3.00 | 4.97 | 3.15 | 0.00 |

## Summary for Subcatchment 7S: South Property

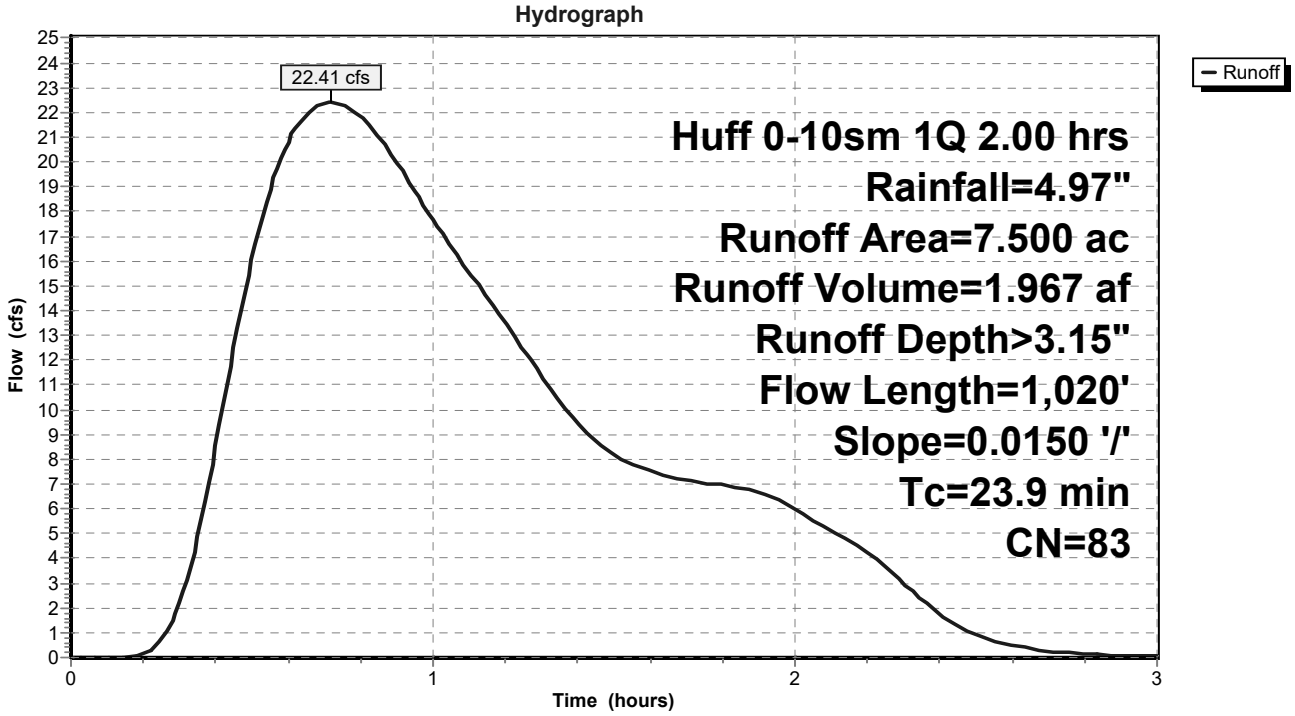
Runoff = 22.41 cfs @ 0.72 hrs, Volume= 1.967 af, Depth> 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=4.97"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

## Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.05 | 0.10 | 0.00 | 0.00 |
| 0.10 | 0.40 | 0.00 | 0.00 |
| 0.15 | 0.81 | 0.07 | 0.00 |
| 0.20 | 1.23 | 0.23 | 0.13 |
| 0.25 | 1.61 | 0.45 | 0.71 |
| 0.30 | 1.91 | 0.63 | 2.21 |
| 0.35 | 2.15 | 0.80 | 4.90 |
| 0.40 | 2.38 | 0.97 | 8.57 |
| 0.45 | 2.60 | 1.14 | 12.52 |
| 0.50 | 2.81 | 1.30 | 16.07 |
| 0.55 | 3.00 | 1.45 | 18.87 |
| 0.60 | 3.16 | 1.58 | 20.80 |
| 0.65 | 3.31 | 1.70 | 21.90 |
| 0.70 | 3.44 | 1.81 | **22.35** |
| 0.75 | 3.56 | 1.91 | **22.30** |
| 0.80 | 3.66 | 2.00 | 21.82 |
| 0.85 | 3.77 | 2.08 | 21.01 |
| 0.90 | 3.87 | 2.17 | 19.96 |
| 0.95 | 3.96 | 2.25 | 18.81 |
| 1.00 | 4.04 | 2.32 | 17.65 |
| 1.05 | 4.11 | 2.38 | 16.56 |
| 1.10 | 4.17 | 2.43 | 15.55 |
| 1.15 | 4.22 | 2.48 | 14.55 |
| 1.20 | 4.27 | 2.52 | 13.52 |
| 1.25 | 4.32 | 2.56 | 12.44 |
| 1.30 | 4.37 | 2.61 | 11.36 |
| 1.35 | 4.42 | 2.65 | 10.34 |
| 1.40 | 4.47 | 2.70 | 9.45 |
| 1.45 | 4.52 | 2.74 | 8.74 |
| 1.50 | 4.57 | 2.79 | 8.19 |
| 1.55 | 4.62 | 2.83 | 7.79 |
| 1.60 | 4.67 | 2.88 | 7.50 |
| 1.65 | 4.72 | 2.92 | 7.29 |
| 1.70 | 4.77 | 2.97 | 7.14 |
| 1.75 | 4.81 | 3.01 | 7.04 |
| 1.80 | 4.84 | 3.03 | 6.95 |
| 1.85 | 4.87 | 3.06 | 6.85 |
| 1.90 | 4.89 | 3.08 | 6.67 |
| 1.95 | 4.93 | 3.11 | 6.37 |
| 2.00 | **4.97** | **3.15** | 5.97 |
| 2.05 | 4.97 | 3.15 | 5.54 |
| 2.10 | 4.97 | 3.15 | 5.14 |
| 2.15 | 4.97 | 3.15 | 4.73 |
| 2.20 | 4.97 | 3.15 | 4.25 |
| 2.25 | 4.97 | 3.15 | 3.65 |
| 2.30 | 4.97 | 3.15 | 2.99 |
| 2.35 | 4.97 | 3.15 | 2.34 |
| 2.40 | 4.97 | 3.15 | 1.76 |
| 2.45 | 4.97 | 3.15 | 1.28 |
| 2.50 | 4.97 | 3.15 | 0.93 |
| 2.55 | 4.97 | 3.15 | 0.68 |
| 2.60 | 4.97 | 3.15 | 0.50 |
| 2.65 | 4.97 | 3.15 | 0.37 |
| 2.70 | 4.97 | 3.15 | 0.27 |
| 2.75 | 4.97 | 3.15 | 0.20 |
| 2.80 | 4.97 | 3.15 | 0.14 |
| 2.85 | 4.97 | 3.15 | 0.10 |
| 2.90 | 4.97 | 3.15 | 0.07 |
| 2.95 | 4.97 | 3.15 | 0.05 |
| 3.00 | 4.97 | 3.15 | 0.04 |

## Summary for Subcatchment 8S: Northwood Drive Bypass

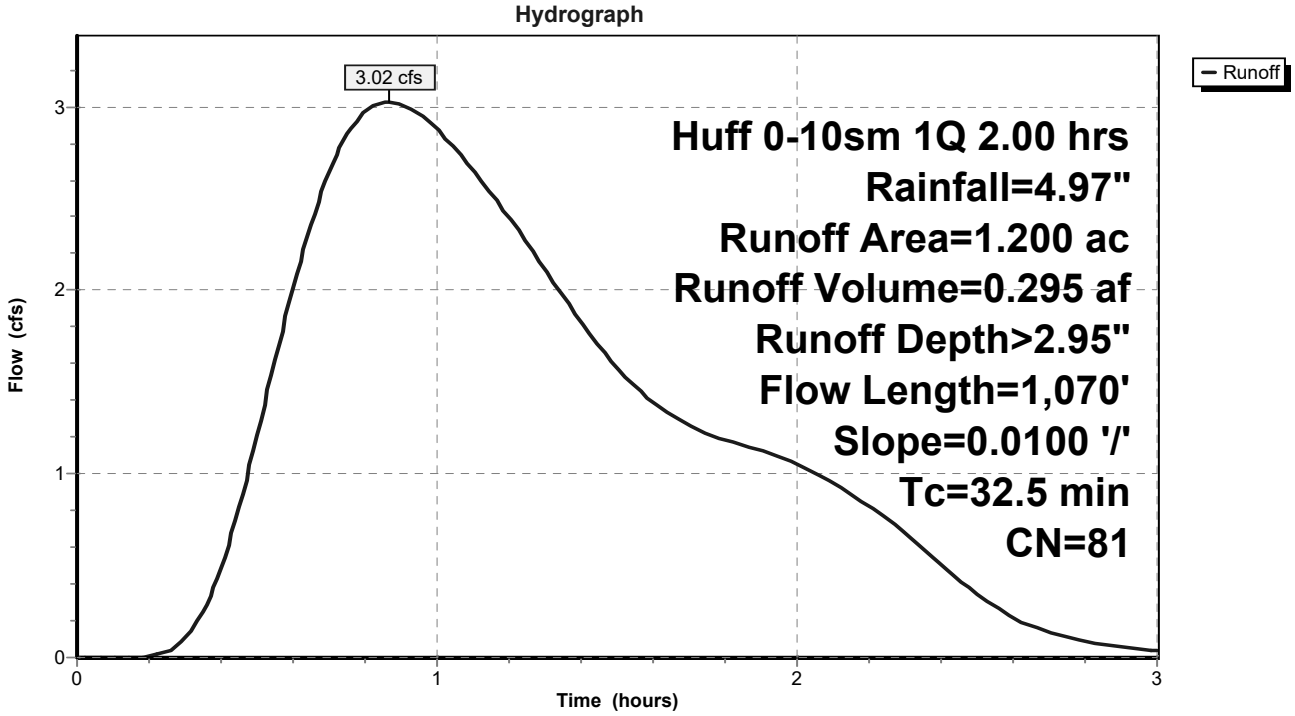
Runoff = 3.02 cfs @ 0.87 hrs, Volume= 0.295 af, Depth> 2.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=4.97"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.05 | 0.10 | 0.00 | 0.00 |
| 0.10 | 0.40 | 0.00 | 0.00 |
| 0.15 | 0.81 | 0.04 | 0.00 |
| 0.20 | 1.23 | 0.19 | 0.01 |
| 0.25 | 1.61 | 0.37 | 0.03 |
| 0.30 | 1.91 | 0.55 | 0.10 |
| 0.35 | 2.15 | 0.70 | 0.25 |
| 0.40 | 2.38 | 0.86 | 0.48 |
| 0.45 | 2.60 | 1.02 | 0.82 |
| 0.50 | 2.81 | 1.17 | 1.21 |
| 0.55 | 3.00 | 1.31 | 1.62 |
| 0.60 | 3.16 | 1.44 | 2.01 |
| 0.65 | 3.31 | 1.55 | 2.36 |
| 0.70 | 3.44 | 1.66 | 2.64 |
| 0.75 | 3.56 | 1.76 | 2.85 |
| 0.80 | 3.66 | 1.84 | 2.97 |
| 0.85 | 3.77 | 1.93 | **3.02** |
| 0.90 | 3.87 | 2.01 | **3.02** |
| 0.95 | 3.96 | 2.09 | 2.96 |
| 1.00 | 4.04 | 2.16 | 2.88 |
| 1.05 | 4.11 | 2.21 | 2.78 |
| 1.10 | 4.17 | 2.26 | 2.65 |
| 1.15 | 4.22 | 2.31 | 2.53 |
| 1.20 | 4.27 | 2.35 | 2.40 |
| 1.25 | 4.32 | 2.39 | 2.26 |
| 1.30 | 4.37 | 2.43 | 2.11 |
| 1.35 | 4.42 | 2.48 | 1.97 |
| 1.40 | 4.47 | 2.52 | 1.83 |
| 1.45 | 4.52 | 2.56 | 1.70 |
| 1.50 | 4.57 | 2.61 | 1.58 |
| 1.55 | 4.62 | 2.65 | 1.47 |
| 1.60 | 4.67 | 2.69 | 1.39 |
| 1.65 | 4.72 | 2.74 | 1.32 |
| 1.70 | 4.77 | 2.78 | 1.26 |
| 1.75 | 4.81 | 2.82 | 1.22 |
| 1.80 | 4.84 | 2.85 | 1.19 |
| 1.85 | 4.87 | 2.87 | 1.16 |
| 1.90 | 4.89 | 2.89 | 1.13 |
| 1.95 | 4.93 | 2.92 | 1.09 |
| 2.00 | **4.97** | **2.96** | 1.05 |
| 2.05 | 4.97 | 2.96 | 1.00 |
| 2.10 | 4.97 | 2.96 | 0.95 |
| 2.15 | 4.97 | 2.96 | 0.89 |
| 2.20 | 4.97 | 2.96 | 0.83 |
| 2.25 | 4.97 | 2.96 | 0.76 |
| 2.30 | 4.97 | 2.96 | 0.68 |
| 2.35 | 4.97 | 2.96 | 0.59 |
| 2.40 | 4.97 | 2.96 | 0.50 |
| 2.45 | 4.97 | 2.96 | 0.42 |
| 2.50 | 4.97 | 2.96 | 0.35 |
| 2.55 | 4.97 | 2.96 | 0.28 |
| 2.60 | 4.97 | 2.96 | 0.22 |
| 2.65 | 4.97 | 2.96 | 0.17 |
| 2.70 | 4.97 | 2.96 | 0.14 |
| 2.75 | 4.97 | 2.96 | 0.11 |
| 2.80 | 4.97 | 2.96 | 0.09 |
| 2.85 | 4.97 | 2.96 | 0.07 |
| 2.90 | 4.97 | 2.96 | 0.05 |
| 2.95 | 4.97 | 2.96 | 0.04 |
| 3.00 | 4.97 | 2.96 | 0.03 |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

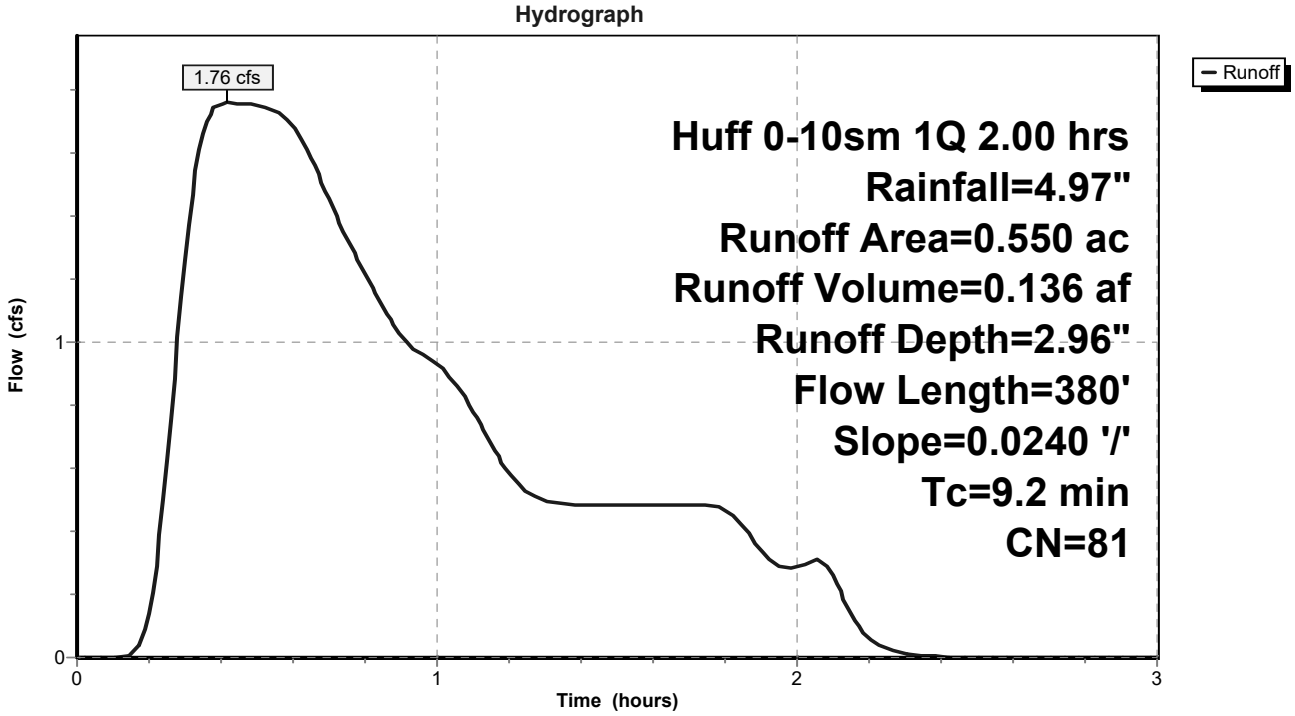
Runoff = 1.76 cfs @ 0.42 hrs, Volume= 0.136 af, Depth= 2.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=4.97"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.05 | 0.10 | 0.00 | 0.00 |
| 0.10 | 0.40 | 0.00 | 0.00 |
| 0.15 | 0.81 | 0.04 | 0.01 |
| 0.20 | 1.23 | 0.19 | 0.14 |
| 0.25 | 1.61 | 0.37 | 0.62 |
| 0.30 | 1.91 | 0.55 | 1.26 |
| 0.35 | 2.15 | 0.70 | 1.66 |
| 0.40 | 2.38 | 0.86 | **1.75** |
| 0.45 | 2.60 | 1.02 | **1.75** |
| 0.50 | 2.81 | 1.17 | 1.75 |
| 0.55 | 3.00 | 1.31 | 1.73 |
| 0.60 | 3.16 | 1.44 | 1.68 |
| 0.65 | 3.31 | 1.55 | 1.58 |
| 0.70 | 3.44 | 1.66 | 1.45 |
| 0.75 | 3.56 | 1.76 | 1.32 |
| 0.80 | 3.66 | 1.84 | 1.21 |
| 0.85 | 3.77 | 1.93 | 1.11 |
| 0.90 | 3.87 | 2.01 | 1.02 |
| 0.95 | 3.96 | 2.09 | 0.97 |
| 1.00 | 4.04 | 2.16 | 0.93 |
| 1.05 | 4.11 | 2.21 | 0.87 |
| 1.10 | 4.17 | 2.26 | 0.78 |
| 1.15 | 4.22 | 2.31 | 0.68 |
| 1.20 | 4.27 | 2.35 | 0.58 |
| 1.25 | 4.32 | 2.39 | 0.52 |
| 1.30 | 4.37 | 2.43 | 0.50 |
| 1.35 | 4.42 | 2.48 | 0.49 |
| 1.40 | 4.47 | 2.52 | 0.48 |
| 1.45 | 4.52 | 2.56 | 0.48 |
| 1.50 | 4.57 | 2.61 | 0.48 |
| 1.55 | 4.62 | 2.65 | 0.48 |
| 1.60 | 4.67 | 2.69 | 0.48 |
| 1.65 | 4.72 | 2.74 | 0.48 |
| 1.70 | 4.77 | 2.78 | 0.48 |
| 1.75 | 4.81 | 2.82 | 0.48 |
| 1.80 | 4.84 | 2.85 | 0.47 |
| 1.85 | 4.87 | 2.87 | 0.41 |
| 1.90 | 4.89 | 2.89 | 0.34 |
| 1.95 | 4.93 | 2.92 | 0.29 |
| 2.00 | **4.97** | **2.96** | 0.28 |
| 2.05 | 4.97 | 2.96 | 0.31 |
| 2.10 | 4.97 | 2.96 | 0.26 |
| 2.15 | 4.97 | 2.96 | 0.14 |
| 2.20 | 4.97 | 2.96 | 0.06 |
| 2.25 | 4.97 | 2.96 | 0.03 |
| 2.30 | 4.97 | 2.96 | 0.01 |
| 2.35 | 4.97 | 2.96 | 0.01 |
| 2.40 | 4.97 | 2.96 | 0.00 |
| 2.45 | 4.97 | 2.96 | 0.00 |
| 2.50 | 4.97 | 2.96 | 0.00 |
| 2.55 | 4.97 | 2.96 | 0.00 |
| 2.60 | 4.97 | 2.96 | 0.00 |
| 2.65 | 4.97 | 2.96 | 0.00 |
| 2.70 | 4.97 | 2.96 | 0.00 |
| 2.75 | 4.97 | 2.96 | 0.00 |
| 2.80 | 4.97 | 2.96 | 0.00 |
| 2.85 | 4.97 | 2.96 | 0.00 |
| 2.90 | 4.97 | 2.96 | 0.00 |
| 2.95 | 4.97 | 2.96 | 0.00 |
| 3.00 | 4.97 | 2.96 | 0.00 |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 32.02 cfs @ | 0.71 hrs, | Volume= | 2.801 af |
| Outflow | = | 1.34 cfs @ | 2.46 hrs, | Volume= | 0.236 af, Atten= 96%, Lag= 105.0 min |
| Primary | = | 1.34 cfs @ | 2.46 hrs, | Volume= | 0.236 af |
| Secondary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 676.50' @ 2.46 hrs Surf.Area= 46,874 sf Storage= 113,551 cf

Plug-Flow detention time= 86.7 min calculated for 0.235 af (8% of inflow)
Center-of-Mass det. time= 46.2 min ( 112.5 - 66.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

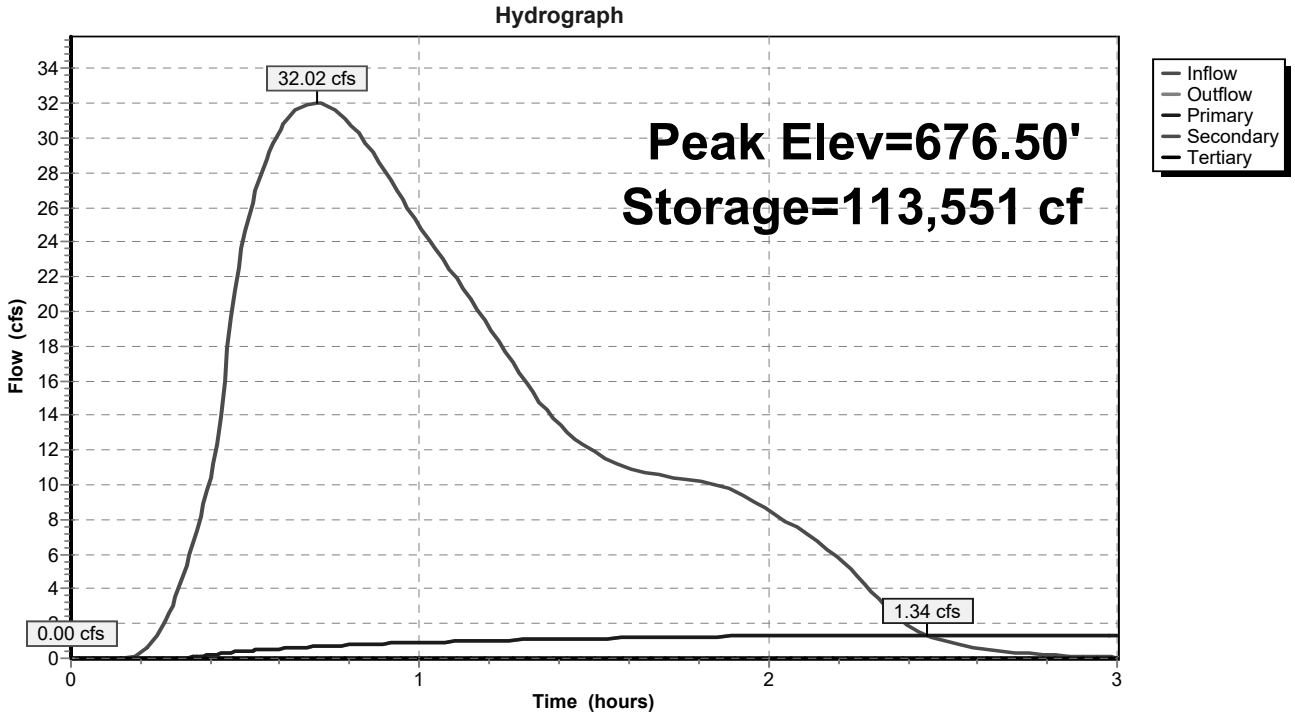
#4 Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=1.34 cfs @ 2.46 hrs HW=676.50' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.34 cfs @ 12.10 fps)

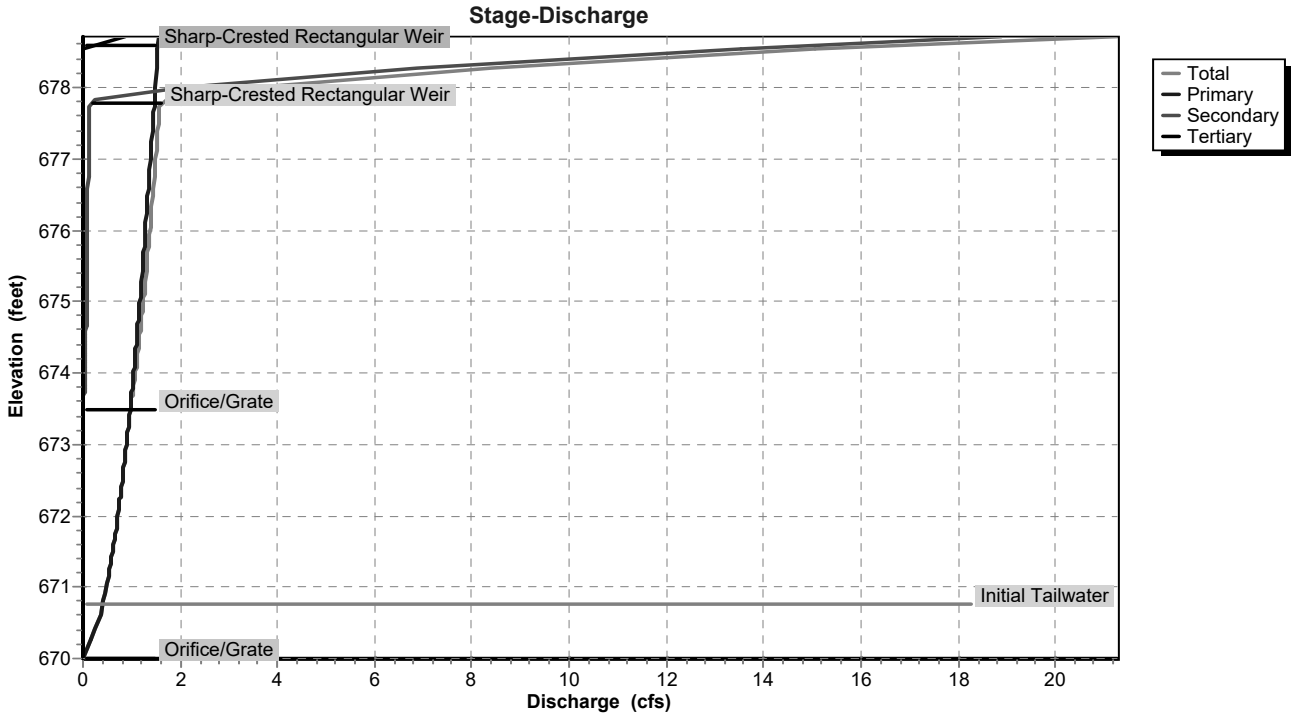
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

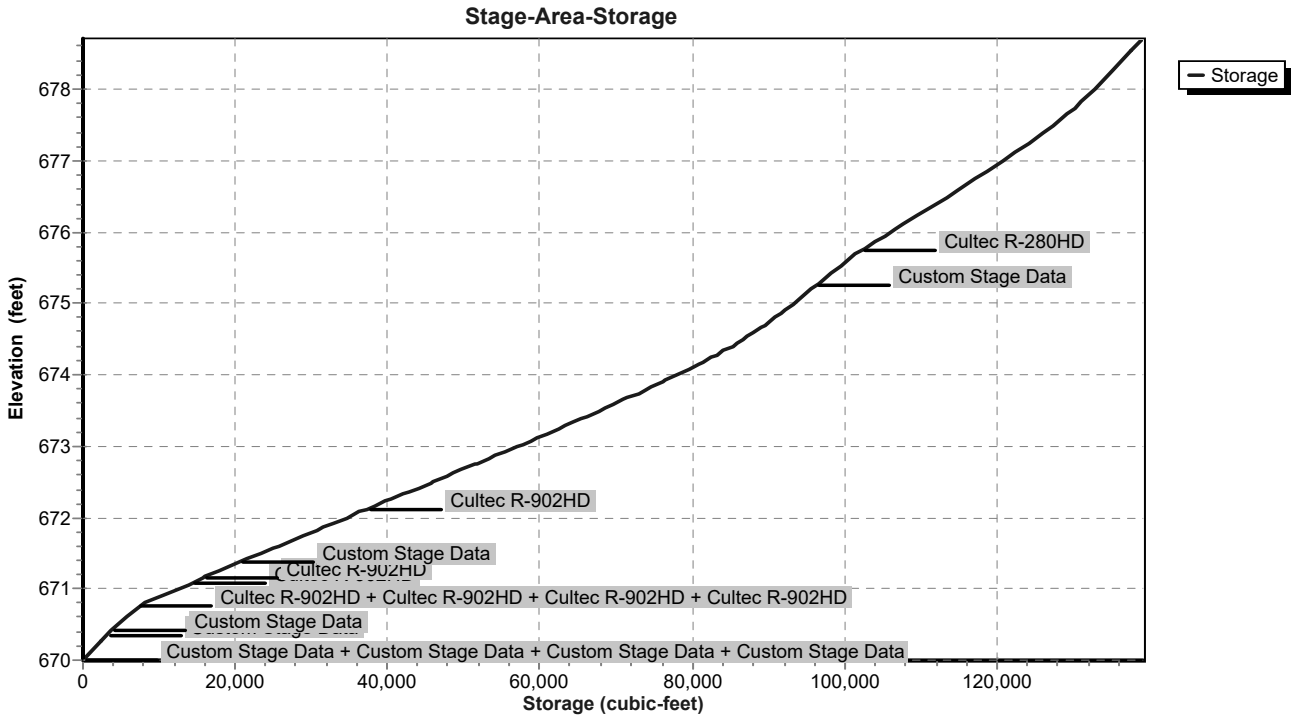
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 0.10 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.27 | 13 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.30 | 3.57 | 522 | 670.06 | 0.01 | 0.01 | 0.00 | 0.00 |
| 0.40 | 10.45 | 2,823 | 670.32 | 0.19 | 0.19 | 0.00 | 0.00 |
| 0.50 | 24.62 | 8,787 | 670.83 | 0.43 | 0.43 | 0.00 | 0.00 |
| 0.60 | 30.46 | 18,580 | 671.29 | 0.56 | 0.56 | 0.00 | 0.00 |
| 0.70 | **32.01** | 29,682 | 671.78 | 0.67 | 0.67 | 0.00 | 0.00 |
| 0.80 | **30.85** | 40,827 | 672.28 | 0.77 | 0.77 | 0.00 | 0.00 |
| 0.90 | 28.07 | 51,225 | 672.74 | 0.85 | 0.85 | 0.00 | 0.00 |
| 1.00 | 24.92 | 60,501 | 673.15 | 0.92 | 0.92 | 0.00 | 0.00 |
| 1.10 | 22.03 | 68,659 | 673.54 | 0.97 | 0.97 | 0.00 | 0.00 |
| 1.20 | 19.09 | 75,762 | 673.89 | 1.02 | 1.02 | 0.00 | 0.00 |
| 1.30 | 16.04 | 81,756 | 674.20 | 1.07 | 1.07 | 0.00 | 0.00 |
| 1.40 | 13.52 | 86,704 | 674.50 | 1.10 | 1.10 | 0.00 | 0.00 |
| 1.50 | 11.89 | 90,876 | 674.81 | 1.14 | 1.14 | 0.00 | 0.00 |
| 1.60 | 10.98 | 94,575 | 675.11 | 1.18 | 1.18 | 0.00 | 0.00 |
| 1.70 | 10.50 | 98,013 | 675.40 | 1.21 | 1.21 | 0.00 | 0.00 |
| 1.80 | 10.22 | 101,306 | 675.68 | 1.25 | 1.25 | 0.00 | 0.00 |
| 1.90 | 9.66 | 104,461 | 675.90 | 1.27 | 1.27 | 0.00 | 0.00 |
| 2.00 | 8.53 | 107,307 | 676.09 | 1.29 | 1.29 | 0.00 | 0.00 |
| 2.10 | 7.31 | 109,713 | 676.24 | 1.31 | 1.31 | 0.00 | 0.00 |
| 2.20 | 5.80 | 111,640 | 676.37 | 1.32 | 1.32 | 0.00 | 0.00 |
| 2.30 | 3.76 | 112,926 | 676.46 | 1.33 | 1.33 | 0.00 | 0.00 |
| 2.40 | 1.95 | **113,487** | **676.50** | **1.34** | **1.34** | 0.00 | 0.00 |
| 2.50 | 1.00 | **113,525** | **676.50** | **1.34** | **1.34** | 0.00 | 0.00 |
| 2.60 | 0.57 | 113,326 | 676.49 | 1.33 | 1.33 | 0.00 | 0.00 |
| 2.70 | 0.33 | 113,008 | 676.47 | 1.33 | 1.33 | 0.00 | 0.00 |
| 2.80 | 0.20 | 112,624 | 676.44 | 1.33 | 1.33 | 0.00 | 0.00 |
| 2.90 | 0.13 | 112,205 | 676.41 | 1.33 | 1.33 | 0.00 | 0.00 |
| 3.00 | 0.00 | 111,767 | 676.38 | 1.32 | 1.32 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 16.68 | 1.54 | 15.13 | 0.00 |
| 678.80 | **24.77** | **1.56** | **21.42** | **1.79** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) |
|---|---|
| 670.00 | 0 |
| 670.10 | 893 |
| 670.20 | 1,787 |
| 670.30 | 2,681 |
| 670.40 | 3,618 |
| 670.50 | 4,626 |
| 670.60 | 5,639 |
| 670.70 | 6,653 |
| 670.80 | 8,202 |
| 670.90 | 10,288 |
| 671.00 | 12,379 |
| 671.10 | 14,465 |
| 671.20 | 16,635 |
| 671.30 | 18,830 |
| 671.40 | 21,049 |
| 671.50 | 23,322 |
| 671.60 | 25,582 |
| 671.70 | 27,830 |
| 671.80 | 30,075 |
| 671.90 | 32,317 |
| 672.00 | 34,546 |
| 672.10 | 36,761 |
| 672.20 | 39,047 |
| 672.30 | 41,344 |
| 672.40 | 43,628 |
| 672.50 | 45,906 |
| 672.60 | 48,170 |
| 672.70 | 50,428 |
| 672.80 | 52,674 |
| 672.90 | 54,899 |
| 673.00 | 57,117 |
| 673.10 | 59,314 |
| 673.20 | 61,492 |
| 673.30 | 63,654 |
| 673.40 | 65,789 |
| 673.50 | 67,899 |
| 673.60 | 69,981 |
| 673.70 | 72,030 |
| 673.80 | 74,047 |
| 673.90 | 76,023 |
| 674.00 | 77,955 |
| 674.10 | 79,844 |
| 674.20 | 81,679 |
| 674.30 | 83,453 |
| 674.40 | 85,139 |
| 674.50 | 86,709 |
| 674.60 | 88,153 |
| 674.70 | 89,496 |
| 674.80 | 90,763 |
| 674.90 | 91,997 |
| 675.00 | 93,215 |
| 675.10 | 94,422 |
| 675.20 | 95,621 |
| 675.30 | 96,808 |
| 675.40 | 97,984 |
| 675.50 | 99,158 |
| 675.60 | 100,327 |
| 675.70 | 101,491 |
| 675.80 | 102,865 |
| 675.90 | 104,433 |
| 676.00 | 105,977 |
| 676.10 | 107,509 |
| 676.20 | 109,032 |
| 676.30 | 110,542 |
| 676.40 | 112,038 |
| 676.50 | 113,523 |
| 676.60 | 114,993 |
| 676.70 | 116,452 |
| 676.80 | 117,901 |
| 676.90 | 119,339 |
| 677.00 | 120,753 |
| 677.10 | 122,143 |
| 677.20 | 123,511 |
| 677.30 | 124,850 |
| 677.40 | 126,157 |
| 677.50 | 127,426 |
| 677.60 | 128,644 |
| 677.70 | 129,794 |
| 677.80 | 130,846 |
| 677.90 | 131,802 |
| 678.00 | 132,704 |
| 678.10 | 133,604 |
| 678.20 | 134,505 |
| 678.30 | 135,406 |
| 678.40 | 136,307 |
| 678.50 | 137,209 |
| 678.60 | 138,112 |
| 678.70 | 139,014 |
| 678.80 | 139,917 |
| 678.90 | **140,821** |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 13.59 cfs @ | 0.67 hrs, | Volume= | 1.213 af |
| Outflow | = | 13.57 cfs @ | 0.68 hrs, | Volume= | 1.191 af, Atten= 0%, Lag= 1.1 min |
| Primary | = | 5.35 cfs @ | 0.68 hrs, | Volume= | 0.492 af |
| Secondary | = | 8.22 cfs @ | 0.68 hrs, | Volume= | 0.699 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 678.34' @ 0.68 hrs Surf.Area= 3,511 sf Storage= 4,362 cf

Plug-Flow detention time= 9.3 min calculated for 1.191 af (98% of inflow)
Center-of-Mass det. time= 7.7 min ( 71.2 - 63.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

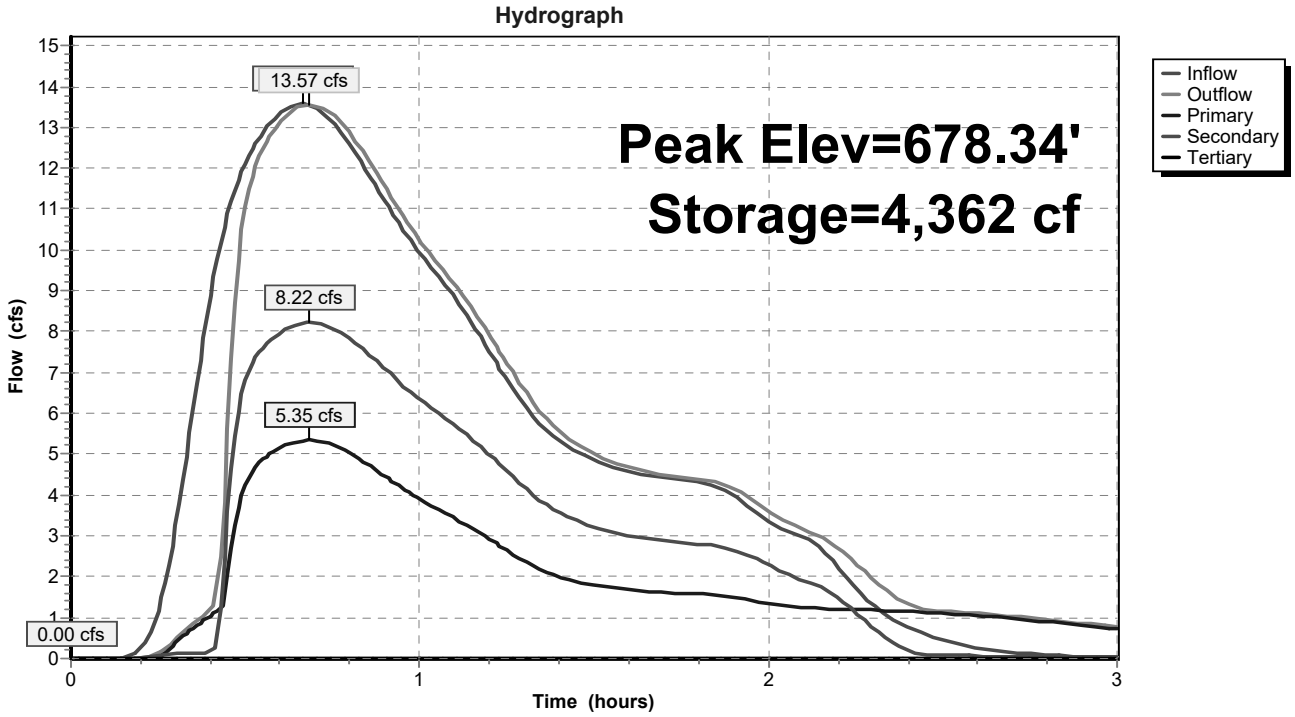
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.50' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=5.35 cfs @ 0.68 hrs HW=678.34' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 1.39 cfs @ 6.03 fps)
- **2=Sharp-Crested Rectangular Weir** (Weir Controls 3.96 cfs @ 1.98 fps)

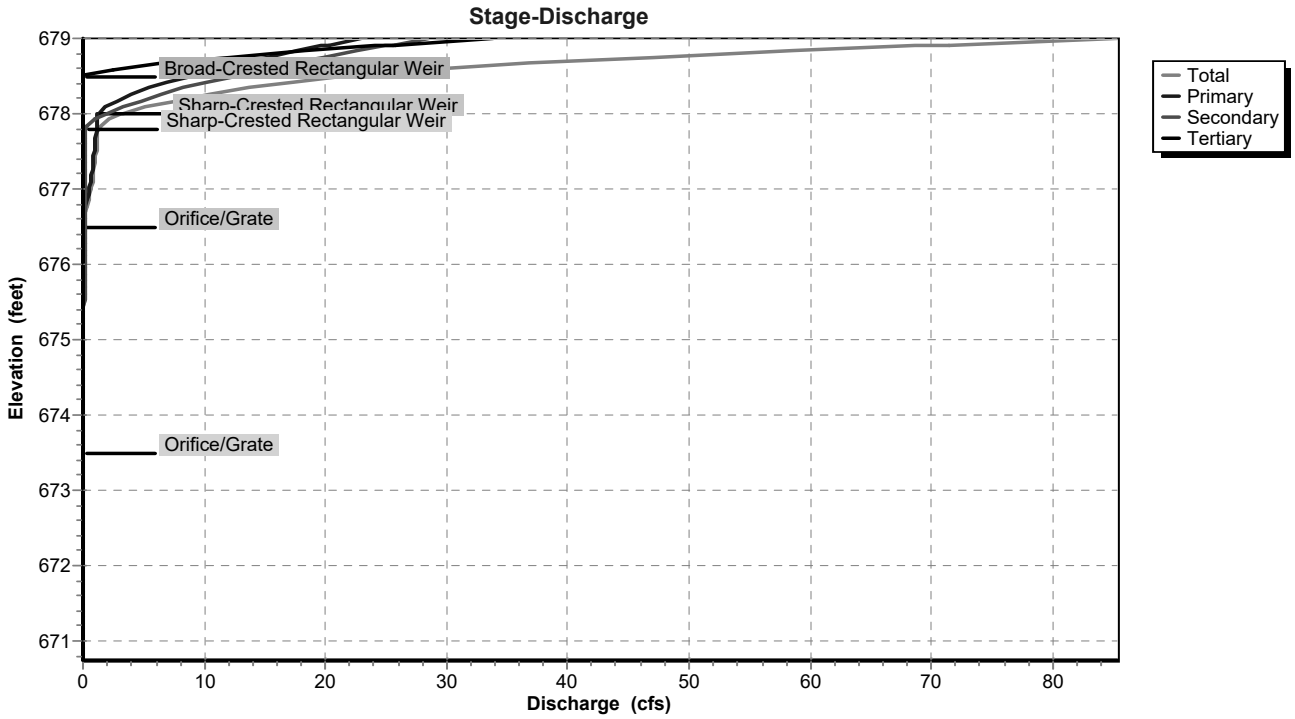
**Secondary OutFlow** Max=8.22 cfs @ 0.68 hrs HW=678.34' TW=671.71' (Dynamic Tailwater)
- **4=Orifice/Grate** (Orifice Controls 0.13 cfs @ 10.52 fps)
- **5=Sharp-Crested Rectangular Weir** (Weir Controls 8.09 cfs @ 2.55 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
- **3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

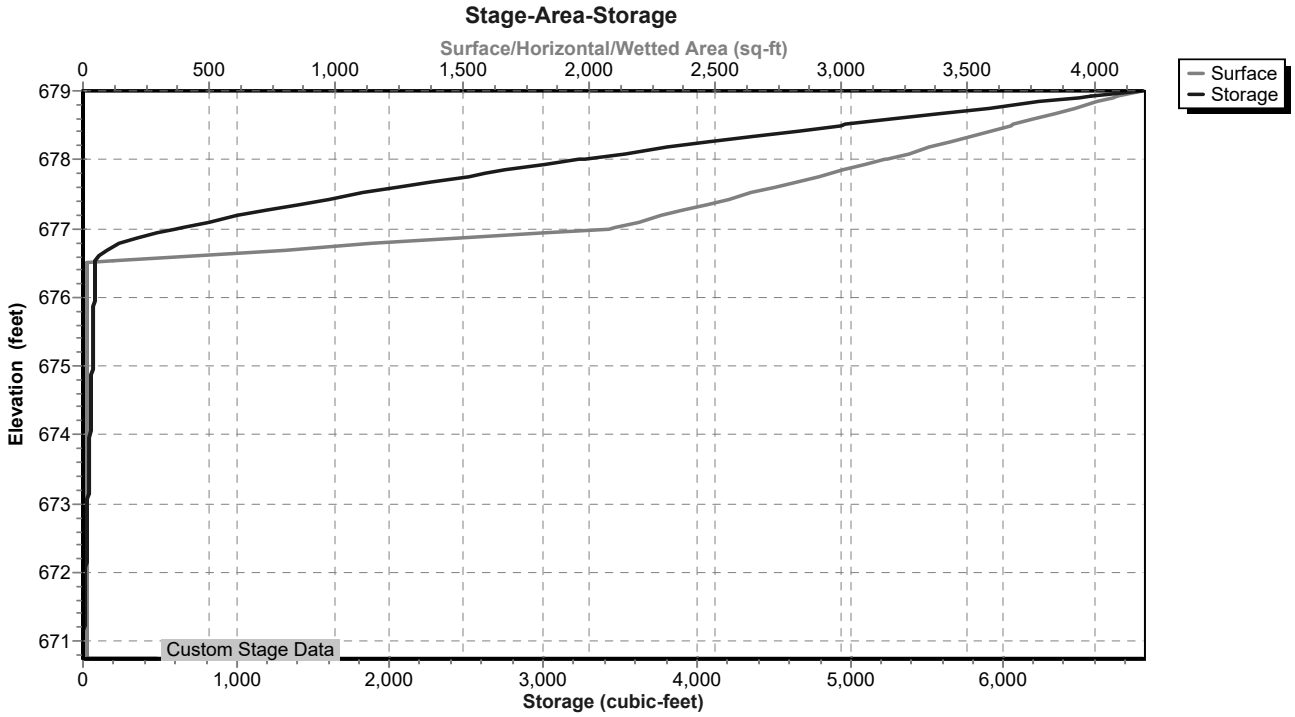
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.10 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.22 | 12 | 671.57 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.30 | 3.26 | 397 | 676.89 | 0.48 | 0.37 | 0.11 | 0.00 |
| 0.40 | 8.87 | 2,204 | 677.65 | 1.16 | 1.04 | 0.12 | 0.00 |
| 0.50 | 12.11 | 4,143 | 678.27 | 11.05 | 4.25 | 6.80 | 0.00 |
| 0.60 | **13.36** | **4,325** | **678.33** | **13.13** | **5.16** | **7.98** | 0.00 |
| 0.70 | **13.50** | **4,361** | **678.34** | **13.56** | **5.34** | **8.21** | 0.00 |
| 0.80 | 12.56 | 4,301 | 678.32 | 12.84 | 5.03 | 7.81 | 0.00 |
| 0.90 | 11.21 | 4,188 | 678.29 | 11.55 | 4.46 | 7.09 | 0.00 |
| 1.00 | 9.94 | 4,069 | 678.25 | 10.24 | 3.90 | 6.34 | 0.00 |
| 1.10 | 8.85 | 3,965 | 678.22 | 9.14 | 3.43 | 5.71 | 0.00 |
| 1.20 | 7.52 | 3,843 | 678.19 | 7.91 | 2.92 | 4.99 | 0.00 |
| 1.30 | 6.20 | 3,700 | 678.14 | 6.57 | 2.38 | 4.19 | 0.00 |
| 1.40 | 5.34 | 3,588 | 678.11 | 5.58 | 2.00 | 3.58 | 0.00 |
| 1.50 | 4.86 | 3,517 | 678.09 | 5.00 | 1.79 | 3.22 | 0.00 |
| 1.60 | 4.58 | 3,475 | 678.07 | 4.67 | 1.67 | 3.00 | 0.00 |
| 1.70 | 4.43 | 3,451 | 678.07 | 4.48 | 1.61 | 2.87 | 0.00 |
| 1.80 | 4.34 | 3,437 | 678.06 | 4.38 | 1.57 | 2.80 | 0.00 |
| 1.90 | 4.00 | 3,408 | 678.05 | 4.16 | 1.50 | 2.65 | 0.00 |
| 2.00 | 3.35 | 3,326 | 678.03 | 3.61 | 1.34 | 2.27 | 0.00 |
| 2.10 | 2.97 | 3,246 | 678.00 | 3.15 | 1.24 | 1.92 | 0.00 |
| 2.20 | 2.24 | 3,143 | 677.97 | 2.70 | 1.22 | 1.48 | 0.00 |
| 2.30 | 1.30 | 2,940 | 677.91 | 1.93 | 1.18 | 0.75 | 0.00 |
| 2.40 | 0.76 | 2,721 | 677.83 | 1.33 | 1.14 | 0.19 | 0.00 |
| 2.50 | 0.44 | 2,498 | 677.76 | 1.17 | 1.10 | 0.07 | 0.00 |
| 2.60 | 0.26 | 2,213 | 677.66 | 1.11 | 1.05 | 0.06 | 0.00 |
| 2.70 | 0.15 | 1,899 | 677.54 | 1.04 | 0.98 | 0.06 | 0.00 |
| 2.80 | 0.09 | 1,583 | 677.42 | 0.95 | 0.90 | 0.06 | 0.00 |
| 2.90 | 0.06 | 1,281 | 677.30 | 0.86 | 0.81 | 0.06 | 0.00 |
| 3.00 | 0.00 | 1,002 | 677.18 | 0.76 | 0.71 | 0.05 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 24.61 | 9.86 | 13.70 | 1.05 |
| 678.75 | 46.70 | 15.13 | 19.77 | 11.80 |
| 678.95 | **76.77** | **21.27** | **26.68** | **28.82** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

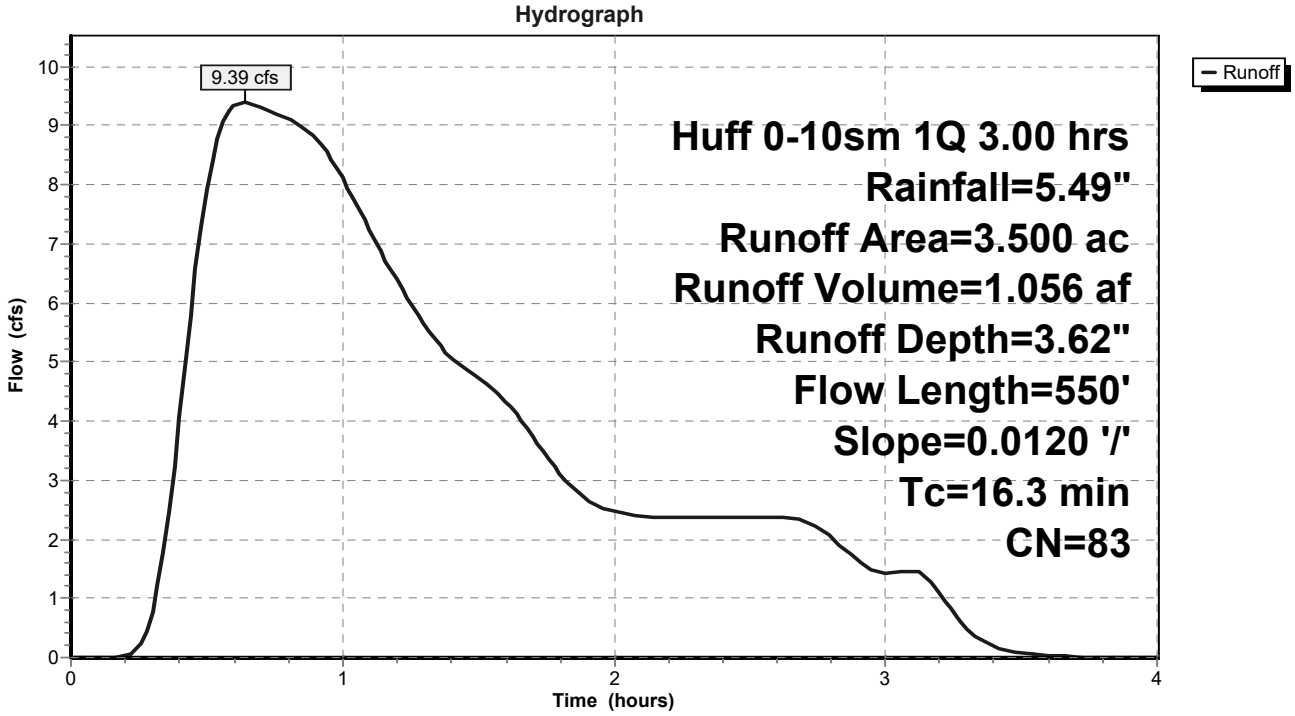
Runoff = 9.39 cfs @ 0.64 hrs, Volume= 1.056 af, Depth= 3.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=5.49"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 2.12 | 4.95 | 3.13 | 2.39 |
| 0.04 | 0.03 | 0.00 | 0.00 | 2.16 | 4.98 | 3.16 | 2.38 |
| 0.08 | 0.13 | 0.00 | 0.00 | 2.20 | 5.01 | 3.18 | 2.37 |
| 0.12 | 0.28 | 0.00 | 0.00 | 2.24 | 5.04 | 3.21 | 2.36 |
| 0.16 | 0.50 | 0.00 | 0.00 | 2.28 | 5.07 | 3.24 | 2.36 |
| 0.20 | 0.74 | 0.05 | 0.01 | 2.32 | 5.10 | 3.26 | 2.36 |
| 0.24 | 0.99 | 0.13 | 0.11 | 2.36 | 5.13 | 3.29 | 2.36 |
| 0.28 | 1.23 | 0.24 | 0.45 | 2.40 | 5.16 | 3.32 | 2.36 |
| 0.32 | 1.48 | 0.37 | 1.21 | 2.44 | 5.19 | 3.34 | 2.36 |
| 0.36 | 1.70 | 0.50 | 2.46 | 2.48 | 5.22 | 3.37 | 2.36 |
| 0.40 | 1.90 | 0.63 | 4.06 | 2.52 | 5.25 | 3.40 | 2.37 |
| 0.44 | 2.07 | 0.74 | 5.77 | 2.56 | 5.28 | 3.42 | 2.37 |
| 0.48 | 2.22 | 0.85 | 7.29 | 2.60 | 5.30 | 3.45 | 2.37 |
| 0.52 | 2.36 | 0.95 | 8.41 | 2.64 | 5.32 | 3.47 | 2.36 |
| 0.56 | 2.50 | 1.06 | 9.06 | 2.68 | 5.34 | 3.49 | 2.34 |
| 0.60 | 2.63 | 1.16 | 9.34 | 2.72 | 5.36 | 3.50 | 2.29 |
| 0.64 | 2.77 | 1.26 | **9.39** | 2.76 | 5.37 | 3.51 | 2.18 |
| 0.68 | 2.89 | 1.36 | 9.35 | 2.80 | 5.39 | 3.53 | 2.04 |
| 0.72 | 3.02 | 1.46 | 9.27 | 2.84 | 5.40 | 3.54 | 1.86 |
| 0.76 | 3.13 | 1.56 | 9.19 | 2.88 | 5.42 | 3.56 | 1.70 |
| 0.80 | 3.25 | 1.65 | 9.11 | 2.92 | 5.44 | 3.57 | 1.56 |
| 0.84 | 3.35 | 1.73 | 9.01 | 2.96 | 5.46 | 3.60 | 1.46 |
| 0.88 | 3.45 | 1.82 | 8.87 | 3.00 | **5.49** | **3.62** | 1.42 |
| 0.92 | 3.54 | 1.89 | 8.68 | 3.04 | 5.49 | 3.62 | 1.44 |
| 0.96 | 3.62 | 1.96 | 8.43 | 3.08 | 5.49 | 3.62 | 1.48 |
| 1.00 | 3.70 | 2.03 | 8.12 | 3.12 | 5.49 | 3.62 | 1.46 |
| 1.04 | 3.78 | 2.10 | 7.77 | 3.16 | 5.49 | 3.62 | 1.32 |
| 1.08 | 3.85 | 2.16 | 7.40 | 3.20 | 5.49 | 3.62 | 1.09 |
| 1.12 | 3.92 | 2.22 | 7.04 | 3.24 | 5.49 | 3.62 | 0.82 |
| 1.16 | 3.99 | 2.27 | 6.71 | 3.28 | 5.49 | 3.62 | 0.58 |
| 1.20 | 4.05 | 2.33 | 6.39 | 3.32 | 5.49 | 3.62 | 0.40 |
| 1.24 | 4.11 | 2.38 | 6.09 | 3.36 | 5.49 | 3.62 | 0.28 |
| 1.28 | 4.17 | 2.43 | 5.79 | 3.40 | 5.49 | 3.62 | 0.19 |
| 1.32 | 4.23 | 2.48 | 5.52 | 3.44 | 5.49 | 3.62 | 0.13 |
| 1.36 | 4.28 | 2.54 | 5.28 | 3.48 | 5.49 | 3.62 | 0.09 |
| 1.40 | 4.34 | 2.58 | 5.07 | 3.52 | 5.49 | 3.62 | 0.06 |
| 1.44 | 4.39 | 2.63 | 4.92 | 3.56 | 5.49 | 3.62 | 0.04 |
| 1.48 | 4.44 | 2.67 | 4.79 | 3.60 | 5.49 | 3.62 | 0.03 |
| 1.52 | 4.49 | 2.71 | 4.66 | 3.64 | 5.49 | 3.62 | 0.02 |
| 1.56 | 4.53 | 2.75 | 4.51 | 3.68 | 5.49 | 3.62 | 0.01 |
| 1.60 | 4.56 | 2.78 | 4.33 | 3.72 | 5.49 | 3.62 | 0.01 |
| 1.64 | 4.60 | 2.81 | 4.12 | 3.76 | 5.49 | 3.62 | 0.01 |
| 1.68 | 4.62 | 2.84 | 3.88 | 3.80 | 5.49 | 3.62 | 0.00 |
| 1.72 | 4.65 | 2.86 | 3.62 | 3.84 | 5.49 | 3.62 | 0.00 |
| 1.76 | 4.68 | 2.89 | 3.36 | 3.88 | 5.49 | 3.62 | 0.00 |
| 1.80 | 4.71 | 2.92 | 3.11 | 3.92 | 5.49 | 3.62 | 0.00 |
| 1.84 | 4.74 | 2.94 | 2.90 | 3.96 | 5.49 | 3.62 | 0.00 |
| 1.88 | 4.77 | 2.97 | 2.73 | 4.00 | 5.49 | 3.62 | 0.00 |
| 1.92 | 4.80 | 3.00 | 2.61 | | | | |
| 1.96 | 4.83 | 3.02 | 2.53 | | | | |
| 2.00 | 4.86 | 3.05 | 2.47 | | | | |
| 2.04 | 4.89 | 3.08 | 2.43 | | | | |
| 2.08 | 4.92 | 3.10 | 2.40 | | | | |

## Summary for Subcatchment 7S: South Property

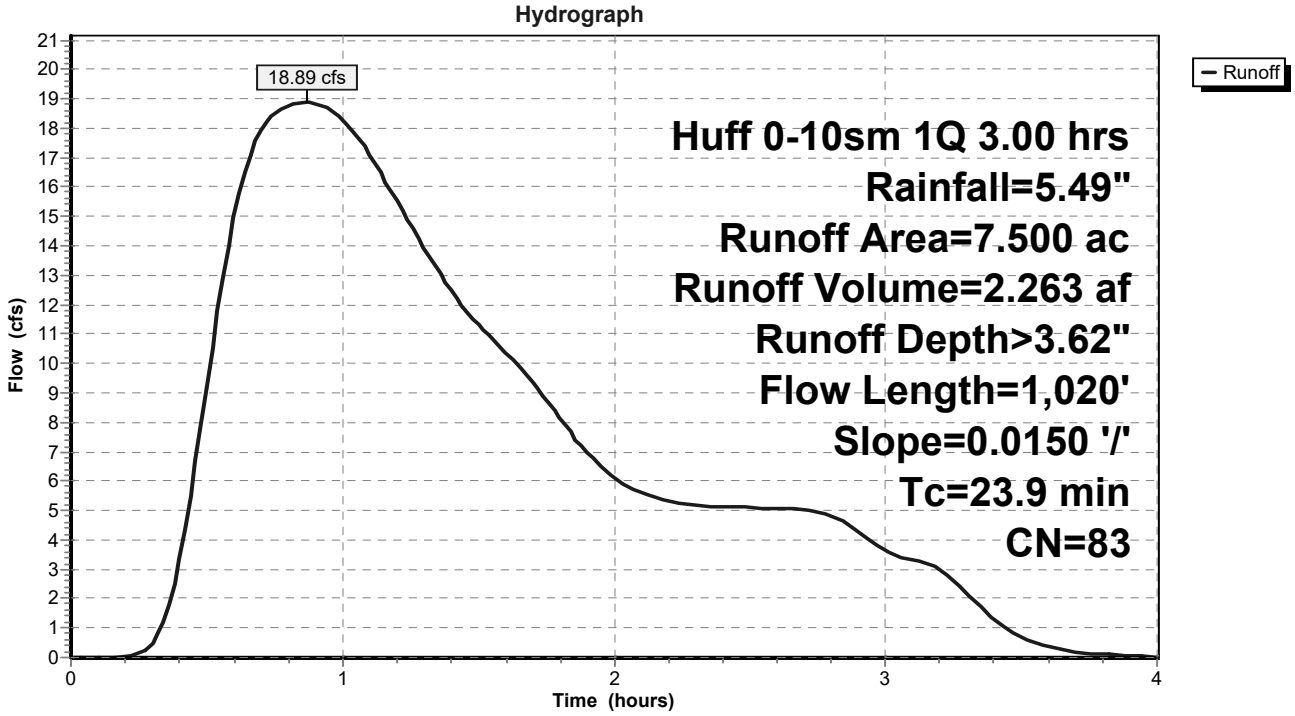
Runoff = 18.89 cfs @ 0.87 hrs, Volume= 2.263 af, Depth> 3.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=5.49"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

## Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.04 | 0.03 | 0.00 | 0.00 |
| 0.08 | 0.13 | 0.00 | 0.00 |
| 0.12 | 0.28 | 0.00 | 0.00 |
| 0.16 | 0.50 | 0.00 | 0.00 |
| 0.20 | 0.74 | 0.05 | 0.01 |
| 0.24 | 0.99 | 0.13 | 0.06 |
| 0.28 | 1.23 | 0.24 | 0.28 |
| 0.32 | 1.48 | 0.37 | 0.79 |
| 0.36 | 1.70 | 0.50 | 1.80 |
| 0.40 | 1.90 | 0.63 | 3.37 |
| 0.44 | 2.07 | 0.74 | 5.49 |
| 0.48 | 2.22 | 0.85 | 7.97 |
| 0.52 | 2.36 | 0.95 | 10.54 |
| 0.56 | 2.50 | 1.06 | 12.95 |
| 0.60 | 2.63 | 1.16 | 14.97 |
| 0.64 | 2.77 | 1.26 | 16.49 |
| 0.68 | 2.89 | 1.36 | 17.55 |
| 0.72 | 3.02 | 1.46 | 18.24 |
| 0.76 | 3.13 | 1.56 | 18.61 |
| 0.80 | 3.25 | 1.65 | 18.80 |
| 0.84 | 3.35 | 1.73 | **18.88** |
| 0.88 | 3.45 | 1.82 | **18.89** |
| 0.92 | 3.54 | 1.89 | 18.79 |
| 0.96 | 3.62 | 1.96 | 18.59 |
| 1.00 | 3.70 | 2.03 | 18.29 |
| 1.04 | 3.78 | 2.10 | 17.90 |
| 1.08 | 3.85 | 2.16 | 17.39 |
| 1.12 | 3.92 | 2.22 | 16.80 |
| 1.16 | 3.99 | 2.27 | 16.18 |
| 1.20 | 4.05 | 2.33 | 15.55 |
| 1.24 | 4.11 | 2.38 | 14.90 |
| 1.28 | 4.17 | 2.43 | 14.25 |
| 1.32 | 4.23 | 2.48 | 13.63 |
| 1.36 | 4.28 | 2.54 | 13.04 |
| 1.40 | 4.34 | 2.58 | 12.49 |
| 1.44 | 4.39 | 2.63 | 11.98 |
| 1.48 | 4.44 | 2.67 | 11.53 |
| 1.52 | 4.49 | 2.71 | 11.14 |
| 1.56 | 4.53 | 2.75 | 10.76 |
| 1.60 | 4.56 | 2.78 | 10.39 |
| 1.64 | 4.60 | 2.81 | 10.00 |
| 1.68 | 4.62 | 2.84 | 9.60 |
| 1.72 | 4.65 | 2.86 | 9.15 |
| 1.76 | 4.68 | 2.89 | 8.66 |
| 1.80 | 4.71 | 2.92 | 8.16 |
| 1.84 | 4.74 | 2.94 | 7.66 |
| 1.88 | 4.77 | 2.97 | 7.19 |
| 1.92 | 4.80 | 3.00 | 6.76 |
| 1.96 | 4.83 | 3.02 | 6.40 |
| 2.00 | 4.86 | 3.05 | 6.10 |
| 2.04 | 4.89 | 3.08 | 5.86 |
| 2.08 | 4.92 | 3.10 | 5.67 |
| 2.12 | 4.95 | 3.13 | 5.52 |
| 2.16 | 4.98 | 3.16 | 5.42 |
| 2.20 | 5.01 | 3.18 | 5.33 |
| 2.24 | 5.04 | 3.21 | 5.26 |
| 2.28 | 5.07 | 3.24 | 5.21 |
| 2.32 | 5.10 | 3.26 | 5.18 |
| 2.36 | 5.13 | 3.29 | 5.15 |
| 2.40 | 5.16 | 3.32 | 5.12 |
| 2.44 | 5.19 | 3.34 | 5.11 |
| 2.48 | 5.22 | 3.37 | 5.10 |
| 2.52 | 5.25 | 3.40 | 5.09 |
| 2.56 | 5.28 | 3.42 | 5.09 |
| 2.60 | 5.30 | 3.45 | 5.08 |
| 2.64 | 5.32 | 3.47 | 5.08 |
| 2.68 | 5.34 | 3.49 | 5.07 |
| 2.72 | 5.36 | 3.50 | 5.03 |
| 2.76 | 5.37 | 3.51 | 4.95 |
| 2.80 | 5.39 | 3.53 | 4.82 |
| 2.84 | 5.40 | 3.54 | 4.63 |
| 2.88 | 5.42 | 3.56 | 4.38 |
| 2.92 | 5.44 | 3.57 | 4.12 |
| 2.96 | 5.46 | 3.60 | 3.86 |
| 3.00 | **5.49** | **3.62** | 3.64 |
| 3.04 | 5.49 | 3.62 | 3.47 |
| 3.08 | 5.49 | 3.62 | 3.36 |
| 3.12 | 5.49 | 3.62 | 3.28 |
| 3.16 | 5.49 | 3.62 | 3.18 |
| 3.20 | 5.49 | 3.62 | 3.00 |
| 3.24 | 5.49 | 3.62 | 2.72 |
| 3.28 | 5.49 | 3.62 | 2.38 |
| 3.32 | 5.49 | 3.62 | 2.01 |
| 3.36 | 5.49 | 3.62 | 1.64 |
| 3.40 | 5.49 | 3.62 | 1.30 |
| 3.44 | 5.49 | 3.62 | 1.01 |
| 3.48 | 5.49 | 3.62 | 0.78 |
| 3.52 | 5.49 | 3.62 | 0.61 |
| 3.56 | 5.49 | 3.62 | 0.48 |
| 3.60 | 5.49 | 3.62 | 0.37 |
| 3.64 | 5.49 | 3.62 | 0.29 |
| 3.68 | 5.49 | 3.62 | 0.23 |
| 3.72 | 5.49 | 3.62 | 0.17 |
| 3.76 | 5.49 | 3.62 | 0.14 |
| 3.80 | 5.49 | 3.62 | 0.10 |
| 3.84 | 5.49 | 3.62 | 0.08 |
| 3.88 | 5.49 | 3.62 | 0.06 |
| 3.92 | 5.49 | 3.62 | 0.05 |
| 3.96 | 5.49 | 3.62 | 0.04 |
| 4.00 | 5.49 | 3.62 | 0.03 |

## Summary for Subcatchment 8S: Northwood Drive Bypass

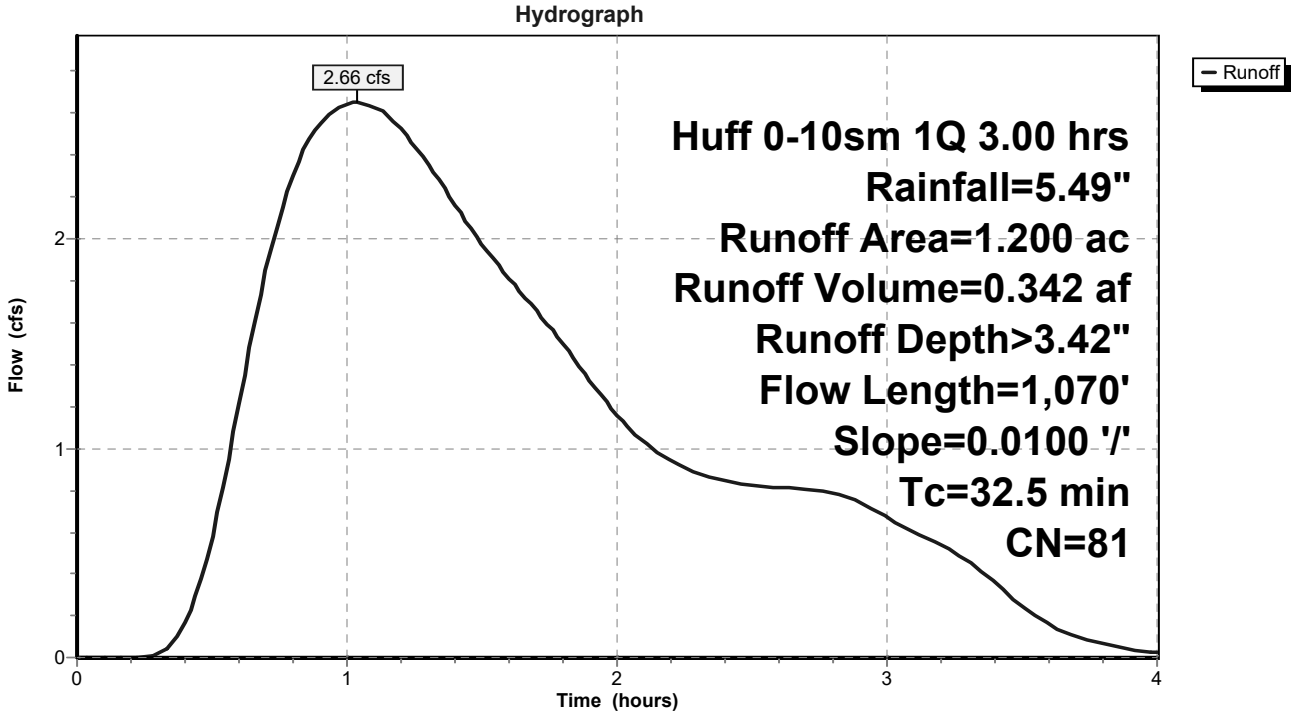
Runoff = 2.66 cfs @ 1.04 hrs, Volume= 0.342 af, Depth> 3.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=5.49"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.04 | 0.03 | 0.00 | 0.00 |
| 0.08 | 0.13 | 0.00 | 0.00 |
| 0.12 | 0.28 | 0.00 | 0.00 |
| 0.16 | 0.50 | 0.00 | 0.00 |
| 0.20 | 0.74 | 0.03 | 0.00 |
| 0.24 | 0.99 | 0.09 | 0.00 |
| 0.28 | 1.23 | 0.19 | 0.01 |
| 0.32 | 1.48 | 0.30 | 0.03 |
| 0.36 | 1.70 | 0.43 | 0.08 |
| 0.40 | 1.90 | 0.54 | 0.16 |
| 0.44 | 2.07 | 0.65 | 0.29 |
| 0.48 | 2.22 | 0.75 | 0.47 |
| 0.52 | 2.36 | 0.84 | 0.69 |
| 0.56 | 2.50 | 0.94 | 0.95 |
| 0.60 | 2.63 | 1.04 | 1.22 |
| 0.64 | 2.77 | 1.14 | 1.48 |
| 0.68 | 2.89 | 1.23 | 1.73 |
| 0.72 | 3.02 | 1.33 | 1.96 |
| 0.76 | 3.13 | 1.42 | 2.15 |
| 0.80 | 3.25 | 1.51 | 2.30 |
| 0.84 | 3.35 | 1.59 | 2.43 |
| 0.88 | 3.45 | 1.67 | 2.52 |
| 0.92 | 3.54 | 1.74 | 2.58 |
| 0.96 | 3.62 | 1.81 | 2.63 |
| 1.00 | 3.70 | 1.87 | 2.65 |
| 1.04 | 3.78 | 1.94 | **2.66** |
| 1.08 | 3.85 | 2.00 | 2.64 |
| 1.12 | 3.92 | 2.06 | 2.62 |
| 1.16 | 3.99 | 2.11 | 2.58 |
| 1.20 | 4.05 | 2.16 | 2.53 |
| 1.24 | 4.11 | 2.21 | 2.46 |
| 1.28 | 4.17 | 2.26 | 2.40 |
| 1.32 | 4.23 | 2.31 | 2.32 |
| 1.36 | 4.28 | 2.36 | 2.24 |
| 1.40 | 4.34 | 2.41 | 2.17 |
| 1.44 | 4.39 | 2.46 | 2.09 |
| 1.48 | 4.44 | 2.50 | 2.01 |
| 1.52 | 4.49 | 2.54 | 1.94 |
| 1.56 | 4.53 | 2.57 | 1.88 |
| 1.60 | 4.56 | 2.60 | 1.81 |
| 1.64 | 4.60 | 2.63 | 1.75 |
| 1.68 | 4.62 | 2.66 | 1.69 |
| 1.72 | 4.65 | 2.68 | 1.63 |
| 1.76 | 4.68 | 2.71 | 1.56 |
| 1.80 | 4.71 | 2.73 | 1.50 |
| 1.84 | 4.74 | 2.76 | 1.43 |
| 1.88 | 4.77 | 2.79 | 1.36 |
| 1.92 | 4.80 | 2.81 | 1.29 |
| 1.96 | 4.83 | 2.84 | 1.22 |
| 2.00 | 4.86 | 2.86 | 1.16 |
| 2.04 | 4.89 | 2.89 | 1.10 |
| 2.08 | 4.92 | 2.92 | 1.05 |
| 2.12 | 4.95 | 2.94 | 1.01 |
| 2.16 | 4.98 | 2.97 | 0.97 |
| 2.20 | 5.01 | 2.99 | 0.94 |
| 2.24 | 5.04 | 3.02 | 0.91 |
| 2.28 | 5.07 | 3.05 | 0.89 |
| 2.32 | 5.10 | 3.07 | 0.87 |
| 2.36 | 5.13 | 3.10 | 0.86 |
| 2.40 | 5.16 | 3.12 | 0.85 |
| 2.44 | 5.19 | 3.15 | 0.84 |
| 2.48 | 5.22 | 3.18 | 0.83 |
| 2.52 | 5.25 | 3.20 | 0.82 |
| 2.56 | 5.28 | 3.23 | 0.82 |
| 2.60 | 5.30 | 3.25 | 0.81 |
| 2.64 | 5.32 | 3.27 | 0.81 |
| 2.68 | 5.34 | 3.29 | 0.80 |
| 2.72 | 5.36 | 3.30 | 0.80 |
| 2.76 | 5.37 | 3.32 | 0.79 |
| 2.80 | 5.39 | 3.33 | 0.78 |
| 2.84 | 5.40 | 3.34 | 0.77 |
| 2.88 | 5.42 | 3.36 | 0.75 |
| 2.92 | 5.44 | 3.38 | 0.73 |
| 2.96 | 5.46 | 3.40 | 0.70 |
| 3.00 | **5.49** | **3.42** | 0.67 |
| 3.04 | 5.49 | 3.42 | 0.64 |
| 3.08 | 5.49 | 3.42 | 0.61 |
| 3.12 | 5.49 | 3.42 | 0.59 |
| 3.16 | 5.49 | 3.42 | 0.56 |
| 3.20 | 5.49 | 3.42 | 0.54 |
| 3.24 | 5.49 | 3.42 | 0.51 |
| 3.28 | 5.49 | 3.42 | 0.48 |
| 3.32 | 5.49 | 3.42 | 0.44 |
| 3.36 | 5.49 | 3.42 | 0.40 |
| 3.40 | 5.49 | 3.42 | 0.36 |
| 3.44 | 5.49 | 3.42 | 0.31 |
| 3.48 | 5.49 | 3.42 | 0.27 |
| 3.52 | 5.49 | 3.42 | 0.23 |
| 3.56 | 5.49 | 3.42 | 0.19 |
| 3.60 | 5.49 | 3.42 | 0.16 |
| 3.64 | 5.49 | 3.42 | 0.13 |
| 3.68 | 5.49 | 3.42 | 0.11 |
| 3.72 | 5.49 | 3.42 | 0.09 |
| 3.76 | 5.49 | 3.42 | 0.08 |
| 3.80 | 5.49 | 3.42 | 0.06 |
| 3.84 | 5.49 | 3.42 | 0.05 |
| 3.88 | 5.49 | 3.42 | 0.04 |
| 3.92 | 5.49 | 3.42 | 0.04 |
| 3.96 | 5.49 | 3.42 | 0.03 |
| 4.00 | 5.49 | 3.42 | 0.03 |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

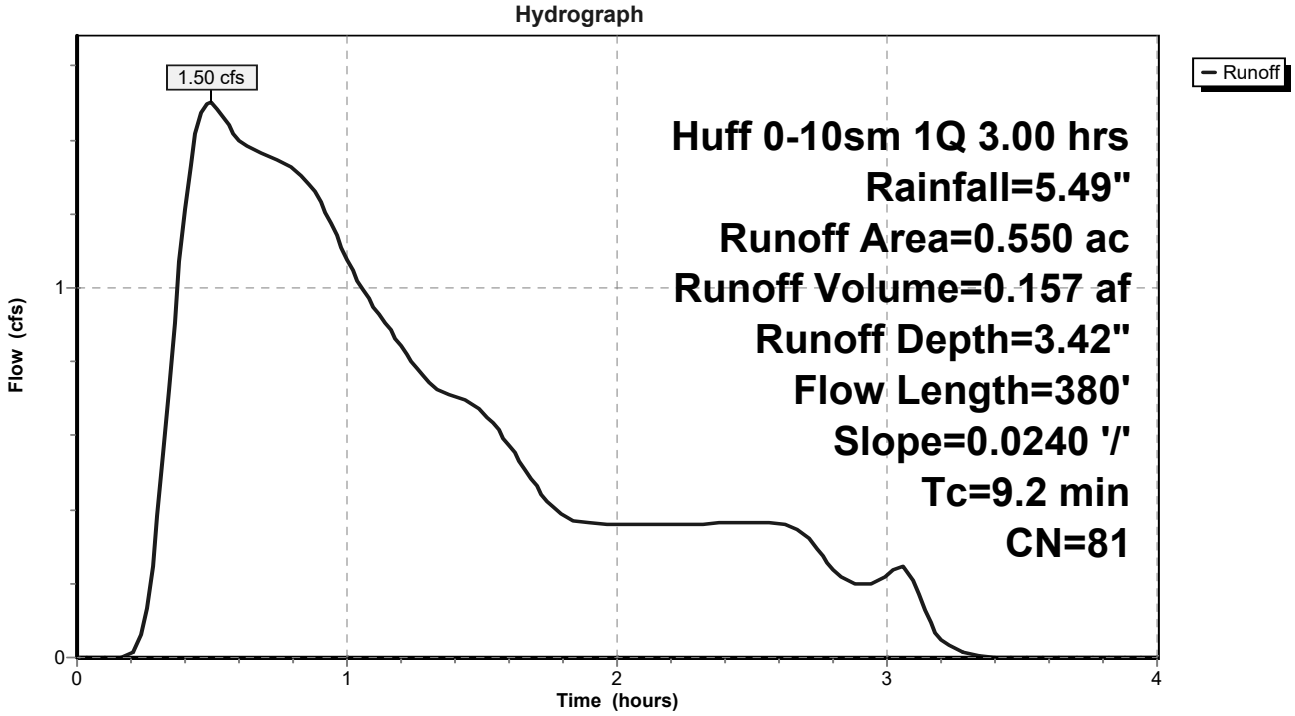
Runoff = 1.50 cfs @ 0.49 hrs, Volume= 0.157 af, Depth= 3.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=5.49"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.04 | 0.03 | 0.00 | 0.00 |
| 0.08 | 0.13 | 0.00 | 0.00 |
| 0.12 | 0.28 | 0.00 | 0.00 |
| 0.16 | 0.50 | 0.00 | 0.00 |
| 0.20 | 0.74 | 0.03 | 0.00 |
| 0.24 | 0.99 | 0.09 | 0.06 |
| 0.28 | 1.23 | 0.19 | 0.24 |
| 0.32 | 1.48 | 0.30 | 0.55 |
| 0.36 | 1.70 | 0.43 | 0.90 |
| 0.40 | 1.90 | 0.54 | 1.21 |
| 0.44 | 2.07 | 0.65 | 1.42 |
| 0.48 | 2.22 | 0.75 | **1.50** |
| 0.52 | 2.36 | 0.84 | **1.49** |
| 0.56 | 2.50 | 0.94 | 1.44 |
| 0.60 | 2.63 | 1.04 | 1.40 |
| 0.64 | 2.77 | 1.14 | 1.38 |
| 0.68 | 2.89 | 1.23 | 1.37 |
| 0.72 | 3.02 | 1.33 | 1.35 |
| 0.76 | 3.13 | 1.42 | 1.34 |
| 0.80 | 3.25 | 1.51 | 1.32 |
| 0.84 | 3.35 | 1.59 | 1.30 |
| 0.88 | 3.45 | 1.67 | 1.26 |
| 0.92 | 3.54 | 1.74 | 1.21 |
| 0.96 | 3.62 | 1.81 | 1.14 |
| 1.00 | 3.70 | 1.87 | 1.08 |
| 1.04 | 3.78 | 1.94 | 1.02 |
| 1.08 | 3.85 | 2.00 | 0.97 |
| 1.12 | 3.92 | 2.06 | 0.93 |
| 1.16 | 3.99 | 2.11 | 0.88 |
| 1.20 | 4.05 | 2.16 | 0.84 |
| 1.24 | 4.11 | 2.21 | 0.80 |
| 1.28 | 4.17 | 2.26 | 0.76 |
| 1.32 | 4.23 | 2.31 | 0.73 |
| 1.36 | 4.28 | 2.36 | 0.71 |
| 1.40 | 4.34 | 2.41 | 0.71 |
| 1.44 | 4.39 | 2.46 | 0.70 |
| 1.48 | 4.44 | 2.50 | 0.68 |
| 1.52 | 4.49 | 2.54 | 0.65 |
| 1.56 | 4.53 | 2.57 | 0.61 |
| 1.60 | 4.56 | 2.60 | 0.57 |
| 1.64 | 4.60 | 2.63 | 0.53 |
| 1.68 | 4.62 | 2.66 | 0.49 |
| 1.72 | 4.65 | 2.68 | 0.44 |
| 1.76 | 4.68 | 2.71 | 0.41 |
| 1.80 | 4.71 | 2.73 | 0.38 |
| 1.84 | 4.74 | 2.76 | 0.37 |
| 1.88 | 4.77 | 2.79 | 0.36 |
| 1.92 | 4.80 | 2.81 | 0.36 |
| 1.96 | 4.83 | 2.84 | 0.36 |
| 2.00 | 4.86 | 2.86 | 0.36 |
| 2.04 | 4.89 | 2.89 | 0.36 |
| 2.08 | 4.92 | 2.92 | 0.36 |
| 2.12 | 4.95 | 2.94 | 0.36 |
| 2.16 | 4.98 | 2.97 | 0.36 |
| 2.20 | 5.01 | 2.99 | 0.36 |
| 2.24 | 5.04 | 3.02 | 0.36 |
| 2.28 | 5.07 | 3.05 | 0.36 |
| 2.32 | 5.10 | 3.07 | 0.36 |
| 2.36 | 5.13 | 3.10 | 0.36 |
| 2.40 | 5.16 | 3.12 | 0.36 |
| 2.44 | 5.19 | 3.15 | 0.36 |
| 2.48 | 5.22 | 3.18 | 0.36 |
| 2.52 | 5.25 | 3.20 | 0.36 |
| 2.56 | 5.28 | 3.23 | 0.36 |
| 2.60 | 5.30 | 3.25 | 0.36 |
| 2.64 | 5.32 | 3.27 | 0.36 |
| 2.68 | 5.34 | 3.29 | 0.34 |
| 2.72 | 5.36 | 3.30 | 0.31 |
| 2.76 | 5.37 | 3.32 | 0.27 |
| 2.80 | 5.39 | 3.33 | 0.24 |
| 2.84 | 5.40 | 3.34 | 0.21 |
| 2.88 | 5.42 | 3.36 | 0.20 |
| 2.92 | 5.44 | 3.38 | 0.19 |
| 2.96 | 5.46 | 3.40 | 0.20 |
| 3.00 | **5.49** | **3.42** | 0.22 |
| 3.04 | 5.49 | 3.42 | 0.25 |
| 3.08 | 5.49 | 3.42 | 0.24 |
| 3.12 | 5.49 | 3.42 | 0.17 |
| 3.16 | 5.49 | 3.42 | 0.09 |
| 3.20 | 5.49 | 3.42 | 0.05 |
| 3.24 | 5.49 | 3.42 | 0.03 |
| 3.28 | 5.49 | 3.42 | 0.01 |
| 3.32 | 5.49 | 3.42 | 0.01 |
| 3.36 | 5.49 | 3.42 | 0.00 |
| 3.40 | 5.49 | 3.42 | 0.00 |
| 3.44 | 5.49 | 3.42 | 0.00 |
| 3.48 | 5.49 | 3.42 | 0.00 |
| 3.52 | 5.49 | 3.42 | 0.00 |
| 3.56 | 5.49 | 3.42 | 0.00 |
| 3.60 | 5.49 | 3.42 | 0.00 |
| 3.64 | 5.49 | 3.42 | 0.00 |
| 3.68 | 5.49 | 3.42 | 0.00 |
| 3.72 | 5.49 | 3.42 | 0.00 |
| 3.76 | 5.49 | 3.42 | 0.00 |
| 3.80 | 5.49 | 3.42 | 0.00 |
| 3.84 | 5.49 | 3.42 | 0.00 |
| 3.88 | 5.49 | 3.42 | 0.00 |
| 3.92 | 5.49 | 3.42 | 0.00 |
| 3.96 | 5.49 | 3.42 | 0.00 |
| 4.00 | 5.49 | 3.42 | 0.00 |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 27.20 cfs @ | 0.84 hrs, | Volume= | 3.223 af |
| Outflow | = | 1.45 cfs @ | 4.00 hrs, | Volume= | 0.344 af, Atten= 95%, Lag= 189.4 min |
| Primary | = | 1.44 cfs @ | 3.40 hrs, | Volume= | 0.344 af |
| Secondary | = | 0.02 cfs @ | 4.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Peak Elev= 677.53' @ 3.40 hrs Surf.Area= 46,989 sf Storage= 127,835 cf

Plug-Flow detention time= 116.1 min calculated for 0.344 af (11% of inflow)
Center-of-Mass det. time= 61.7 min ( 149.0 - 87.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

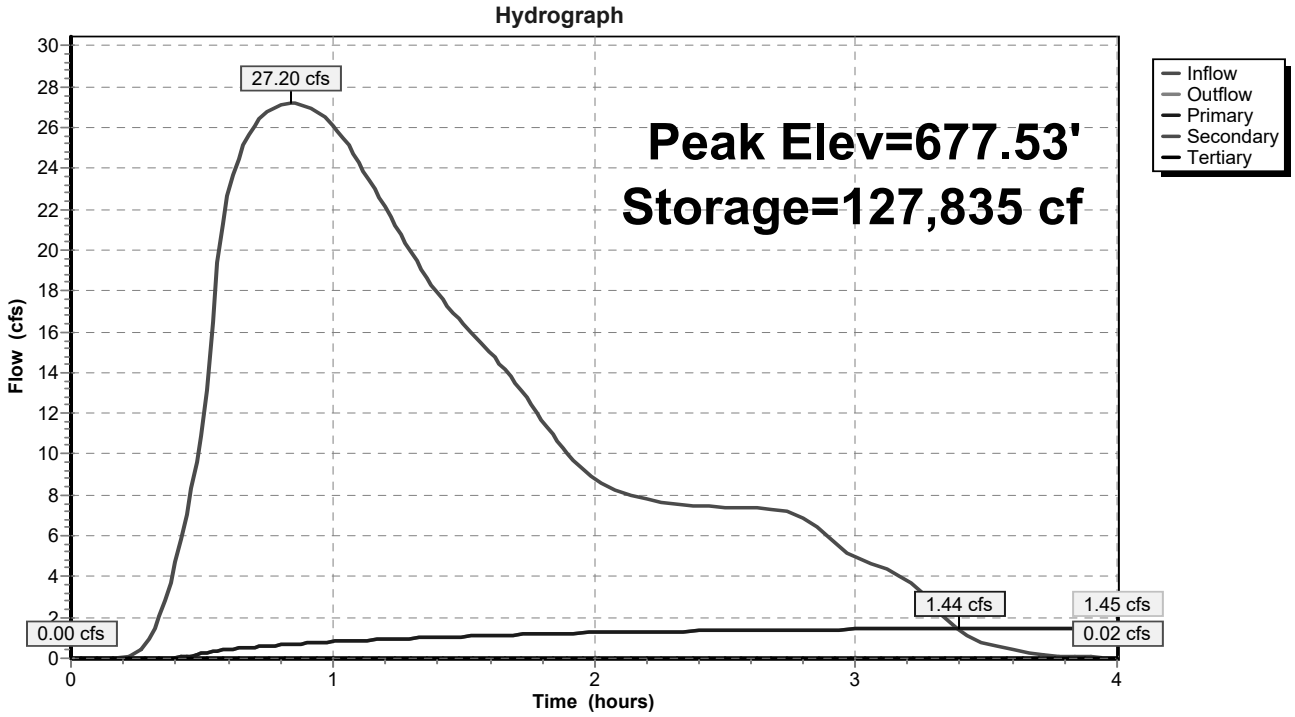
#4 Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=1.44 cfs @ 3.40 hrs HW=677.53' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.44 cfs @ 13.05 fps)

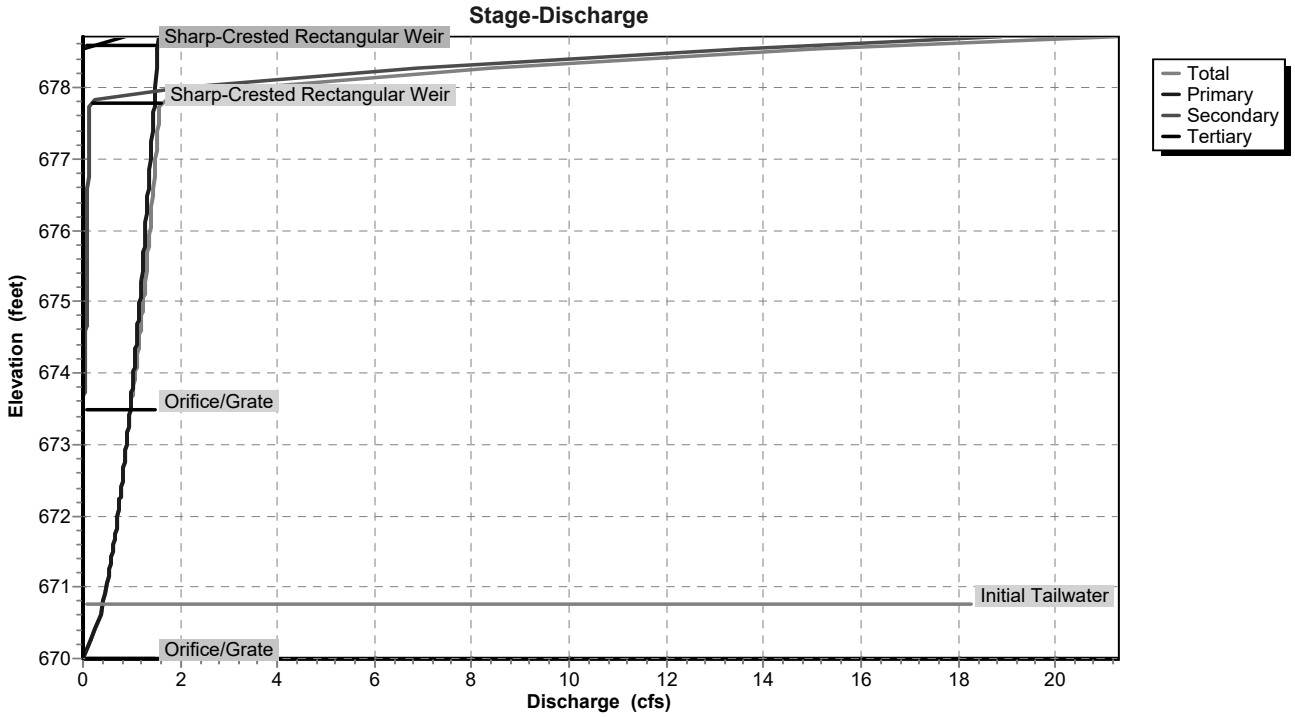
**Secondary OutFlow** Max=0.12 cfs @ 4.00 hrs HW=677.35' TW=0.00' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** (Orifice Controls 0.12 cfs @ 9.37 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

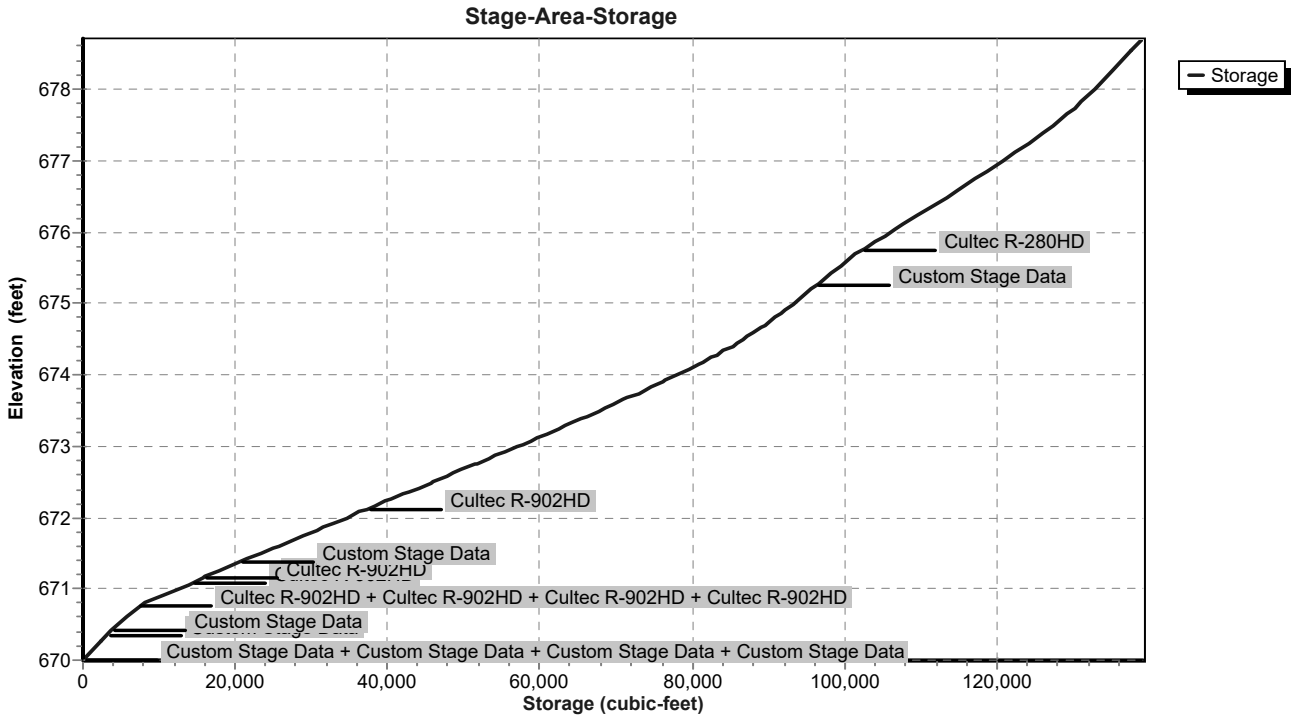
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.10 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.01 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.30 | 0.95 | 71 | 670.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 4.69 | 857 | 670.10 | 0.02 | 0.02 | 0.00 | 0.00 |
| 0.50 | 10.89 | 3,374 | 670.37 | 0.23 | 0.23 | 0.00 | 0.00 |
| 0.60 | 22.64 | 9,107 | 670.84 | 0.43 | 0.43 | 0.00 | 0.00 |
| 0.70 | 26.09 | 17,687 | 671.25 | 0.55 | 0.55 | 0.00 | 0.00 |
| 0.80 | **27.11** | 27,059 | 671.67 | 0.65 | 0.65 | 0.00 | 0.00 |
| 0.90 | **27.07** | 36,593 | 672.09 | 0.73 | 0.73 | 0.00 | 0.00 |
| 1.00 | 26.12 | 45,957 | 672.50 | 0.81 | 0.81 | 0.00 | 0.00 |
| 1.10 | 24.31 | 54,818 | 672.90 | 0.88 | 0.88 | 0.00 | 0.00 |
| 1.20 | 22.11 | 62,931 | 673.27 | 0.93 | 0.93 | 0.00 | 0.00 |
| 1.30 | 19.89 | 70,222 | 673.61 | 0.98 | 0.98 | 0.00 | 0.00 |
| 1.40 | 17.90 | 76,721 | 673.94 | 1.03 | 1.03 | 0.00 | 0.00 |
| 1.50 | 16.35 | 82,553 | 674.25 | 1.07 | 1.07 | 0.00 | 0.00 |
| 1.60 | 15.00 | 87,855 | 674.58 | 1.11 | 1.11 | 0.00 | 0.00 |
| 1.70 | 13.46 | 92,638 | 674.95 | 1.16 | 1.16 | 0.00 | 0.00 |
| 1.80 | 11.67 | 96,806 | 675.30 | 1.20 | 1.20 | 0.00 | 0.00 |
| 1.90 | 10.02 | 100,322 | 675.60 | 1.24 | 1.24 | 0.00 | 0.00 |
| 2.00 | 8.84 | 103,293 | 675.83 | 1.26 | 1.26 | 0.00 | 0.00 |
| 2.10 | 8.15 | 105,908 | 676.00 | 1.28 | 1.28 | 0.00 | 0.00 |
| 2.20 | 7.77 | 108,316 | 676.15 | 1.30 | 1.30 | 0.00 | 0.00 |
| 2.30 | 7.57 | 110,611 | 676.30 | 1.32 | 1.32 | 0.00 | 0.00 |
| 2.40 | 7.46 | 112,842 | 676.45 | 1.33 | 1.33 | 0.00 | 0.00 |
| 2.50 | 7.41 | 115,038 | 676.60 | 1.35 | 1.35 | 0.00 | 0.00 |
| 2.60 | 7.39 | 117,216 | 676.75 | 1.36 | 1.36 | 0.00 | 0.00 |
| 2.70 | 7.30 | 119,376 | 676.90 | 1.38 | 1.38 | 0.00 | 0.00 |
| 2.80 | 6.83 | 121,454 | 677.05 | 1.39 | 1.39 | 0.00 | 0.00 |
| 2.90 | 5.88 | 123,282 | 677.18 | 1.41 | 1.41 | 0.00 | 0.00 |
| 3.00 | 4.94 | 124,742 | 677.29 | 1.42 | 1.42 | 0.00 | 0.00 |
| 3.10 | 4.46 | 125,932 | 677.38 | 1.43 | 1.43 | 0.00 | 0.00 |
| 3.20 | 3.82 | 126,947 | 677.46 | 1.43 | 1.43 | 0.00 | 0.00 |
| 3.30 | 2.53 | 127,630 | 677.52 | 1.44 | 1.44 | 0.00 | 0.00 |
| 3.40 | 1.33 | **127,832** | **677.53** | 1.44 | **1.44** | 0.00 | 0.00 |
| 3.50 | 0.72 | 127,693 | 677.52 | 1.44 | 1.44 | 0.00 | 0.00 |
| 3.60 | 0.39 | 127,381 | 677.50 | 1.44 | 1.44 | 0.00 | 0.00 |
| 3.70 | 0.21 | 126,975 | 677.46 | 1.43 | 1.43 | 0.00 | 0.00 |
| 3.80 | 0.10 | 126,516 | 677.43 | 1.44 | 1.43 | 0.01 | 0.00 |
| 3.90 | 0.05 | 126,025 | 677.39 | 1.45 | 1.43 | 0.02 | 0.00 |
| 4.00 | 0.00 | 125,519 | 677.35 | **1.45** | 1.42 | **0.02** | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 16.68 | 1.54 | 15.13 | 0.00 |
| 678.80 | **24.77** | **1.56** | **21.42** | **1.79** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) |
|---|---|
| 670.00 | 0 |
| 670.10 | 893 |
| 670.20 | 1,787 |
| 670.30 | 2,681 |
| 670.40 | 3,618 |
| 670.50 | 4,626 |
| 670.60 | 5,639 |
| 670.70 | 6,653 |
| 670.80 | 8,202 |
| 670.90 | 10,288 |
| 671.00 | 12,379 |
| 671.10 | 14,465 |
| 671.20 | 16,635 |
| 671.30 | 18,830 |
| 671.40 | 21,049 |
| 671.50 | 23,322 |
| 671.60 | 25,582 |
| 671.70 | 27,830 |
| 671.80 | 30,075 |
| 671.90 | 32,317 |
| 672.00 | 34,546 |
| 672.10 | 36,761 |
| 672.20 | 39,047 |
| 672.30 | 41,344 |
| 672.40 | 43,628 |
| 672.50 | 45,906 |
| 672.60 | 48,170 |
| 672.70 | 50,428 |
| 672.80 | 52,674 |
| 672.90 | 54,899 |
| 673.00 | 57,117 |
| 673.10 | 59,314 |
| 673.20 | 61,492 |
| 673.30 | 63,654 |
| 673.40 | 65,789 |
| 673.50 | 67,899 |
| 673.60 | 69,981 |
| 673.70 | 72,030 |
| 673.80 | 74,047 |
| 673.90 | 76,023 |
| 674.00 | 77,955 |
| 674.10 | 79,844 |
| 674.20 | 81,679 |
| 674.30 | 83,453 |
| 674.40 | 85,139 |
| 674.50 | 86,709 |
| 674.60 | 88,153 |
| 674.70 | 89,496 |
| 674.80 | 90,763 |
| 674.90 | 91,997 |
| 675.00 | 93,215 |
| 675.10 | 94,422 |
| 675.20 | 95,621 |
| 675.30 | 96,808 |
| 675.40 | 97,984 |
| 675.50 | 99,158 |
| 675.60 | 100,327 |
| 675.70 | 101,491 |
| 675.80 | 102,865 |
| 675.90 | 104,433 |
| 676.00 | 105,977 |
| 676.10 | 107,509 |
| 676.20 | 109,032 |
| 676.30 | 110,542 |
| 676.40 | 112,038 |
| 676.50 | 113,523 |
| 676.60 | 114,993 |
| 676.70 | 116,452 |
| 676.80 | 117,901 |
| 676.90 | 119,339 |
| 677.00 | 120,753 |
| 677.10 | 122,143 |
| 677.20 | 123,511 |
| 677.30 | 124,850 |
| 677.40 | 126,157 |
| 677.50 | 127,426 |
| 677.60 | 128,644 |
| 677.70 | 129,794 |
| 677.80 | 130,846 |
| 677.90 | 131,802 |
| 678.00 | 132,704 |
| 678.10 | 133,604 |
| 678.20 | 134,505 |
| 678.30 | 135,406 |
| 678.40 | 136,307 |
| 678.50 | 137,209 |
| 678.60 | 138,112 |
| 678.70 | 139,014 |
| 678.80 | 139,917 |
| 678.90 | **140,821** |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 11.44 cfs @ | 0.83 hrs, | Volume= | 1.398 af |
| Outflow | = | 11.44 cfs @ | 0.85 hrs, | Volume= | 1.378 af, Atten= 0%, Lag= 1.6 min |
| Primary | = | 4.41 cfs @ | 0.85 hrs, | Volume= | 0.574 af |
| Secondary | = | 7.02 cfs @ | 0.85 hrs, | Volume= | 0.804 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Peak Elev= 678.28' @ 0.85 hrs Surf.Area= 3,458 sf Storage= 4,177 cf

Plug-Flow detention time= 10.9 min calculated for 1.378 af (99% of inflow)
Center-of-Mass det. time= 9.1 min ( 94.0 - 84.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

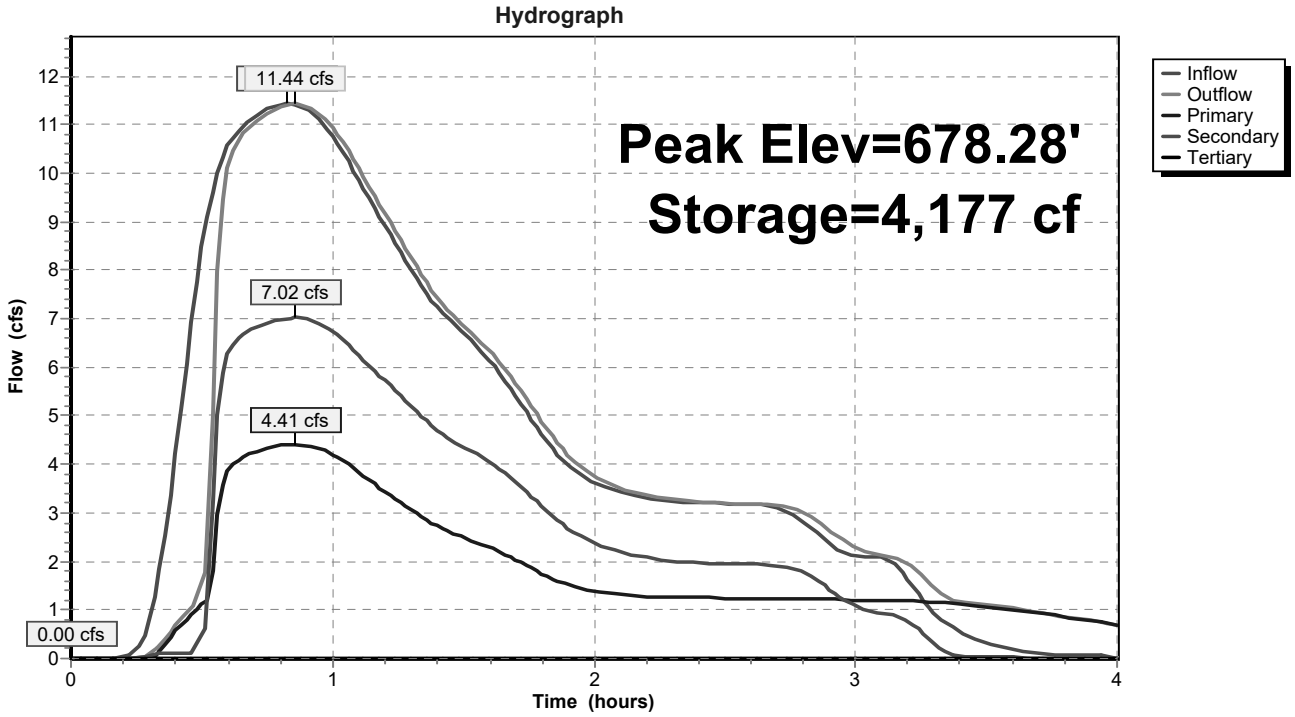
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.50' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=4.41 cfs @ 0.85 hrs HW=678.28' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 1.37 cfs @ 5.92 fps)
- **2=Sharp-Crested Rectangular Weir** (Weir Controls 3.05 cfs @ 1.80 fps)

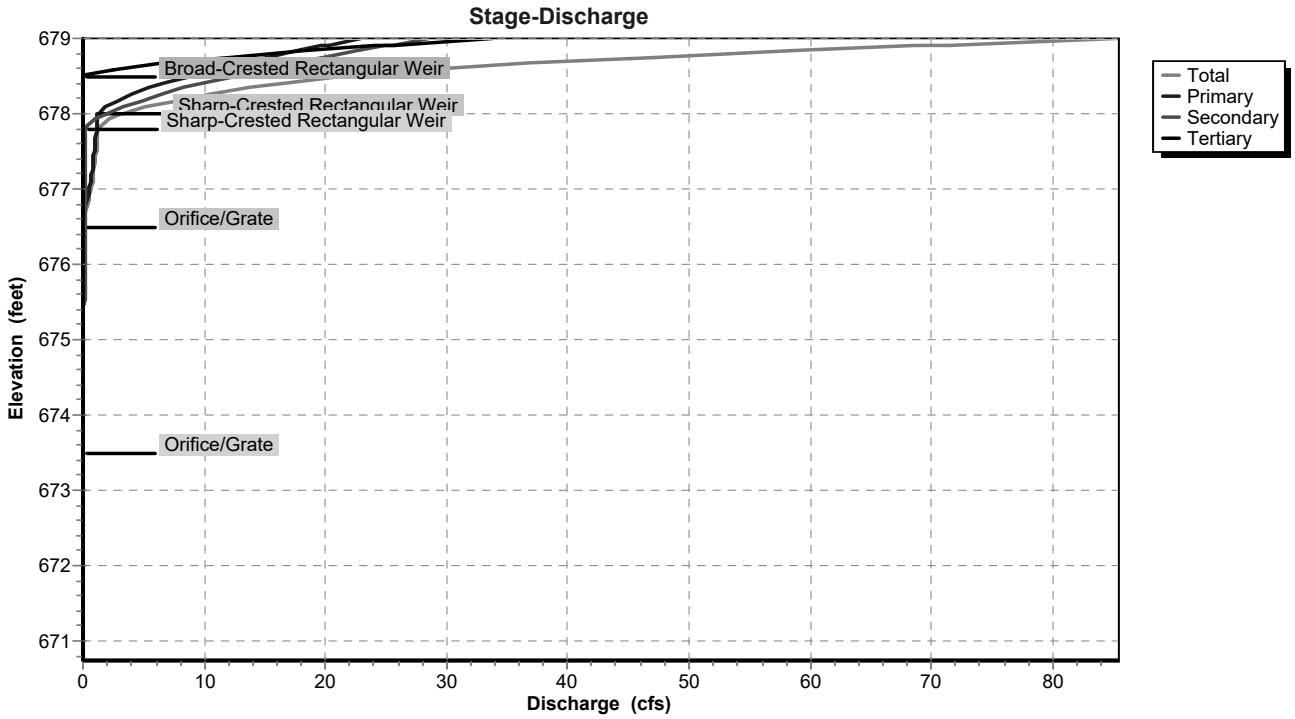
**Secondary OutFlow** Max=7.02 cfs @ 0.85 hrs HW=678.28' TW=671.90' (Dynamic Tailwater)
- **4=Orifice/Grate** (Orifice Controls 0.13 cfs @ 10.46 fps)
- **5=Sharp-Crested Rectangular Weir** (Weir Controls 6.89 cfs @ 2.41 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
- **3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

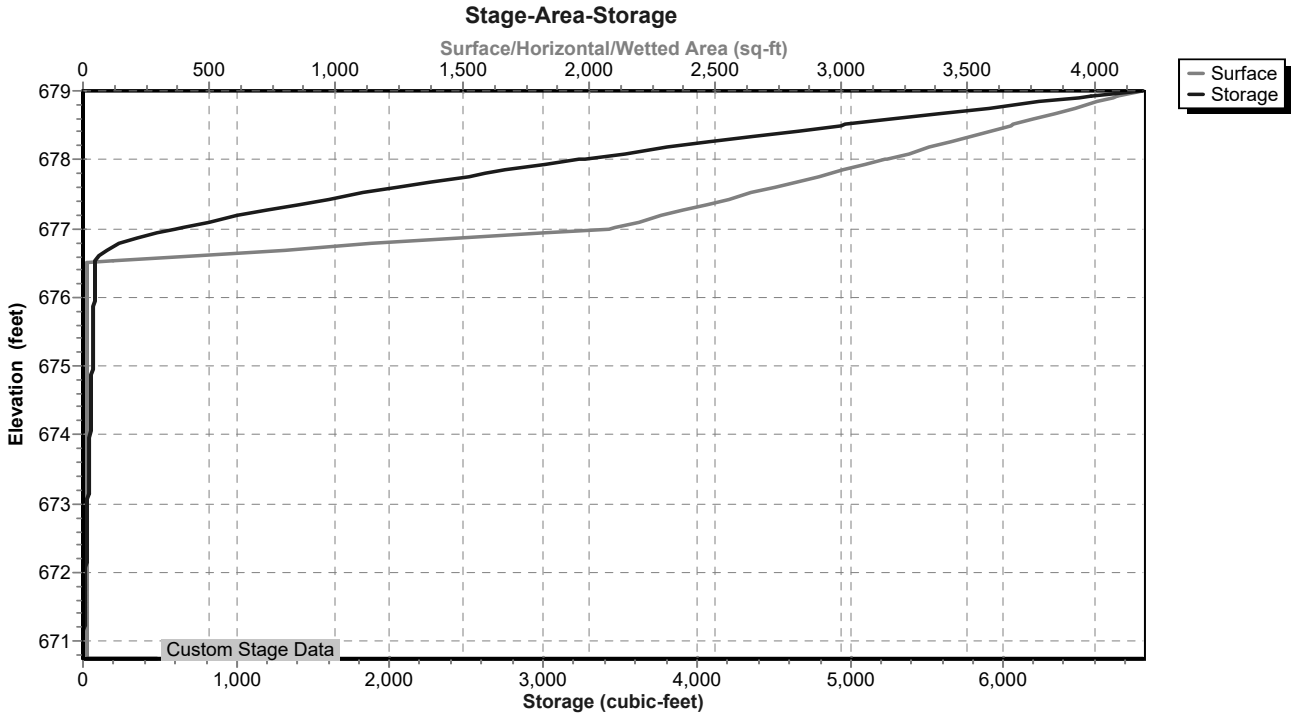
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.10 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.01 | 0 | 670.76 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.30 | 0.79 | 62 | 675.21 | 0.08 | 0.00 | 0.08 | 0.00 |
| 0.40 | 4.22 | 664 | 677.03 | 0.68 | 0.57 | 0.11 | 0.00 |
| 0.50 | 8.48 | 2,508 | 677.76 | 1.23 | 1.10 | 0.12 | 0.00 |
| 0.60 | 10.56 | 4,057 | 678.25 | 10.12 | 3.85 | 6.27 | 0.00 |
| 0.70 | 11.16 | 4,143 | 678.27 | 11.05 | 4.25 | 6.80 | 0.00 |
| 0.80 | **11.41** | **4,172** | **678.28** | **11.38** | **4.39** | **6.99** | 0.00 |
| 0.90 | **11.33** | **4,174** | **678.28** | **11.39** | **4.40** | **7.00** | 0.00 |
| 1.00 | 10.76 | 4,134 | 678.27 | 10.95 | 4.20 | 6.74 | 0.00 |
| 1.10 | 9.86 | 4,055 | 678.25 | 10.10 | 3.84 | 6.26 | 0.00 |
| 1.20 | 8.92 | 3,967 | 678.22 | 9.16 | 3.44 | 5.72 | 0.00 |
| 1.30 | 8.01 | 3,878 | 678.20 | 8.26 | 3.06 | 5.20 | 0.00 |
| 1.40 | 7.24 | 3,793 | 678.17 | 7.43 | 2.73 | 4.71 | 0.00 |
| 1.50 | 6.71 | 3,732 | 678.15 | 6.85 | 2.49 | 4.36 | 0.00 |
| 1.60 | 6.15 | 3,675 | 678.14 | 6.33 | 2.29 | 4.04 | 0.00 |
| 1.70 | 5.41 | 3,598 | 678.11 | 5.66 | 2.03 | 3.63 | 0.00 |
| 1.80 | 4.61 | 3,502 | 678.08 | 4.88 | 1.75 | 3.13 | 0.00 |
| 1.90 | 3.99 | 3,412 | 678.06 | 4.20 | 1.51 | 2.68 | 0.00 |
| 2.00 | 3.63 | 3,349 | 678.04 | 3.76 | 1.38 | 2.38 | 0.00 |
| 2.10 | 3.42 | 3,309 | 678.02 | 3.51 | 1.31 | 2.20 | 0.00 |
| 2.20 | 3.31 | 3,283 | 678.02 | 3.36 | 1.28 | 2.08 | 0.00 |
| 2.30 | 3.24 | 3,268 | 678.01 | 3.27 | 1.26 | 2.01 | 0.00 |
| 2.40 | 3.21 | 3,260 | 678.01 | 3.22 | 1.25 | 1.97 | 0.00 |
| 2.50 | 3.19 | 3,256 | 678.01 | 3.20 | 1.25 | 1.95 | 0.00 |
| 2.60 | 3.18 | 3,254 | 678.01 | 3.18 | 1.24 | 1.94 | 0.00 |
| 2.70 | 3.13 | 3,251 | 678.01 | 3.16 | 1.24 | 1.92 | 0.00 |
| 2.80 | 2.82 | 3,219 | 678.00 | 3.01 | 1.23 | 1.78 | 0.00 |
| 2.90 | 2.36 | 3,134 | 677.97 | 2.64 | 1.21 | 1.42 | 0.00 |
| 3.00 | 2.09 | 3,042 | 677.94 | 2.27 | 1.20 | 1.07 | 0.00 |
| 3.10 | 2.09 | 3,003 | 677.93 | 2.13 | 1.19 | 0.94 | 0.00 |
| 3.20 | 1.62 | 2,956 | 677.91 | 1.95 | 1.18 | 0.77 | 0.00 |
| 3.30 | 0.94 | 2,799 | 677.86 | 1.48 | 1.16 | 0.32 | 0.00 |
| 3.40 | 0.55 | 2,602 | 677.79 | 1.15 | 1.12 | 0.03 | 0.00 |
| 3.50 | 0.32 | 2,356 | 677.71 | 1.10 | 1.07 | 0.03 | 0.00 |
| 3.60 | 0.19 | 2,065 | 677.60 | 1.03 | 1.01 | 0.02 | 0.00 |
| 3.70 | 0.11 | 1,760 | 677.49 | 0.95 | 0.94 | 0.01 | 0.00 |
| 3.80 | 0.08 | 1,464 | 677.38 | 0.86 | 0.86 | 0.00 | 0.00 |
| 3.90 | 0.06 | 1,191 | 677.26 | 0.78 | 0.78 | 0.00 | 0.00 |
| 4.00 | 0.00 | 943 | 677.16 | 0.69 | 0.69 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 24.61 | 9.86 | 13.70 | 1.05 |
| 678.75 | 46.70 | 15.13 | 19.77 | 11.80 |
| 678.95 | **76.77** | **21.27** | **26.68** | **28.82** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

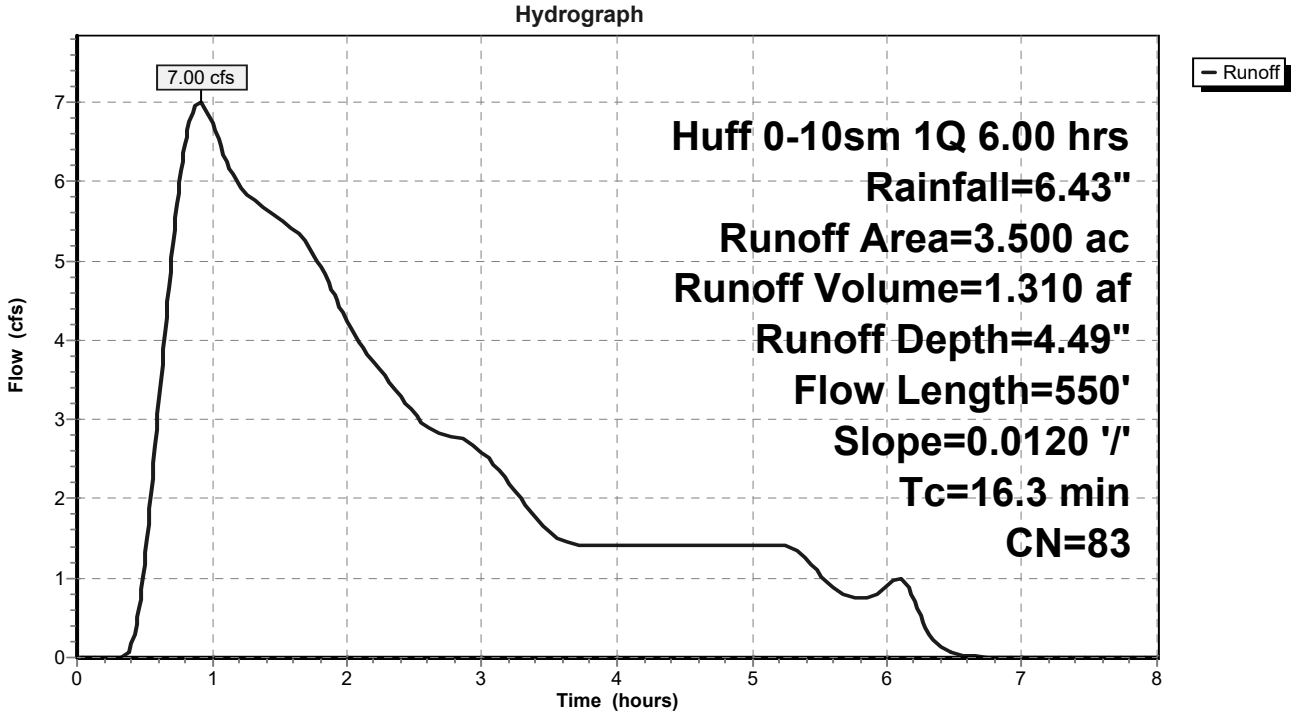
Runoff = 7.00 cfs @ 0.92 hrs, Volume= 1.310 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=6.43"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.10 | 0.06 | 0.00 | 0.00 |
| 0.20 | 0.23 | 0.00 | 0.00 |
| 0.30 | 0.52 | 0.01 | 0.00 |
| 0.40 | 0.87 | 0.08 | 0.14 |
| 0.50 | 1.23 | 0.23 | 1.17 |
| 0.60 | 1.59 | 0.43 | 3.07 |
| 0.70 | 1.93 | 0.65 | 5.04 |
| 0.80 | 2.23 | 0.85 | 6.47 |
| 0.90 | 2.47 | 1.03 | **6.99** |
| 1.00 | 2.68 | 1.19 | **6.77** |
| 1.10 | 2.89 | 1.36 | 6.28 |
| 1.20 | 3.09 | 1.52 | 5.94 |
| 1.30 | 3.28 | 1.67 | 5.77 |
| 1.40 | 3.46 | 1.83 | 5.65 |
| 1.50 | 3.64 | 1.97 | 5.53 |
| 1.60 | 3.80 | 2.12 | 5.40 |
| 1.70 | 3.95 | 2.25 | 5.21 |
| 1.80 | 4.09 | 2.37 | 4.93 |
| 1.90 | 4.22 | 2.48 | 4.59 |
| 2.00 | 4.34 | 2.58 | 4.24 |
| 2.10 | 4.45 | 2.68 | 3.96 |
| 2.20 | 4.55 | 2.77 | 3.72 |
| 2.30 | 4.65 | 2.86 | 3.50 |
| 2.40 | 4.74 | 2.94 | 3.29 |
| 2.50 | 4.83 | 3.02 | 3.07 |
| 2.60 | 4.91 | 3.10 | 2.90 |
| 2.70 | 5.00 | 3.18 | 2.81 |
| 2.80 | 5.08 | 3.25 | 2.78 |
| 2.90 | 5.16 | 3.32 | 2.72 |
| 3.00 | 5.23 | 3.38 | 2.59 |
| 3.10 | 5.29 | 3.44 | 2.41 |
| 3.20 | 5.34 | 3.49 | 2.20 |
| 3.30 | 5.39 | 3.53 | 1.97 |
| 3.40 | 5.43 | 3.57 | 1.75 |
| 3.50 | 5.48 | 3.61 | 1.57 |
| 3.60 | 5.52 | 3.65 | 1.47 |
| 3.70 | 5.56 | 3.69 | 1.43 |
| 3.80 | 5.61 | 3.73 | 1.41 |
| 3.90 | 5.65 | 3.77 | 1.41 |
| 4.00 | 5.69 | 3.81 | 1.41 |
| 4.10 | 5.74 | 3.85 | 1.41 |
| 4.20 | 5.78 | 3.89 | 1.41 |
| 4.30 | 5.82 | 3.93 | 1.41 |
| 4.40 | 5.87 | 3.97 | 1.41 |
| 4.50 | 5.91 | 4.01 | 1.41 |
| 4.60 | 5.95 | 4.05 | 1.41 |
| 4.70 | 6.00 | 4.09 | 1.41 |
| 4.80 | 6.04 | 4.13 | 1.42 |
| 4.90 | 6.08 | 4.17 | 1.42 |
| 5.00 | 6.13 | 4.21 | 1.42 |
| 5.10 | 6.17 | 4.25 | 1.42 |
| 5.20 | 6.21 | 4.29 | 1.42 |
| 5.30 | 6.24 | 4.32 | 1.37 |
| 5.40 | 6.27 | 4.34 | 1.24 |
| 5.50 | 6.29 | 4.36 | 1.05 |
| 5.60 | 6.31 | 4.38 | 0.87 |
| 5.70 | 6.33 | 4.40 | 0.78 |
| 5.80 | 6.36 | 4.42 | 0.74 |
| 5.90 | 6.39 | 4.45 | 0.77 |
| 6.00 | **6.43** | **4.49** | 0.90 |
| 6.10 | 6.43 | 4.49 | 1.02 |
| 6.20 | 6.43 | 4.49 | 0.73 |
| 6.30 | 6.43 | 4.49 | 0.32 |
| 6.40 | 6.43 | 4.49 | 0.13 |
| 6.50 | 6.43 | 4.49 | 0.05 |
| 6.60 | 6.43 | 4.49 | 0.02 |
| 6.70 | 6.43 | 4.49 | 0.01 |
| 6.80 | 6.43 | 4.49 | 0.00 |
| 6.90 | 6.43 | 4.49 | 0.00 |
| 7.00 | 6.43 | 4.49 | 0.00 |
| 7.10 | 6.43 | 4.49 | 0.00 |
| 7.20 | 6.43 | 4.49 | 0.00 |
| 7.30 | 6.43 | 4.49 | 0.00 |
| 7.40 | 6.43 | 4.49 | 0.00 |
| 7.50 | 6.43 | 4.49 | 0.00 |
| 7.60 | 6.43 | 4.49 | 0.00 |
| 7.70 | 6.43 | 4.49 | 0.00 |
| 7.80 | 6.43 | 4.49 | 0.00 |
| 7.90 | 6.43 | 4.49 | 0.00 |
| 8.00 | 6.43 | 4.49 | 0.00 |

## Summary for Subcatchment 7S: South Property

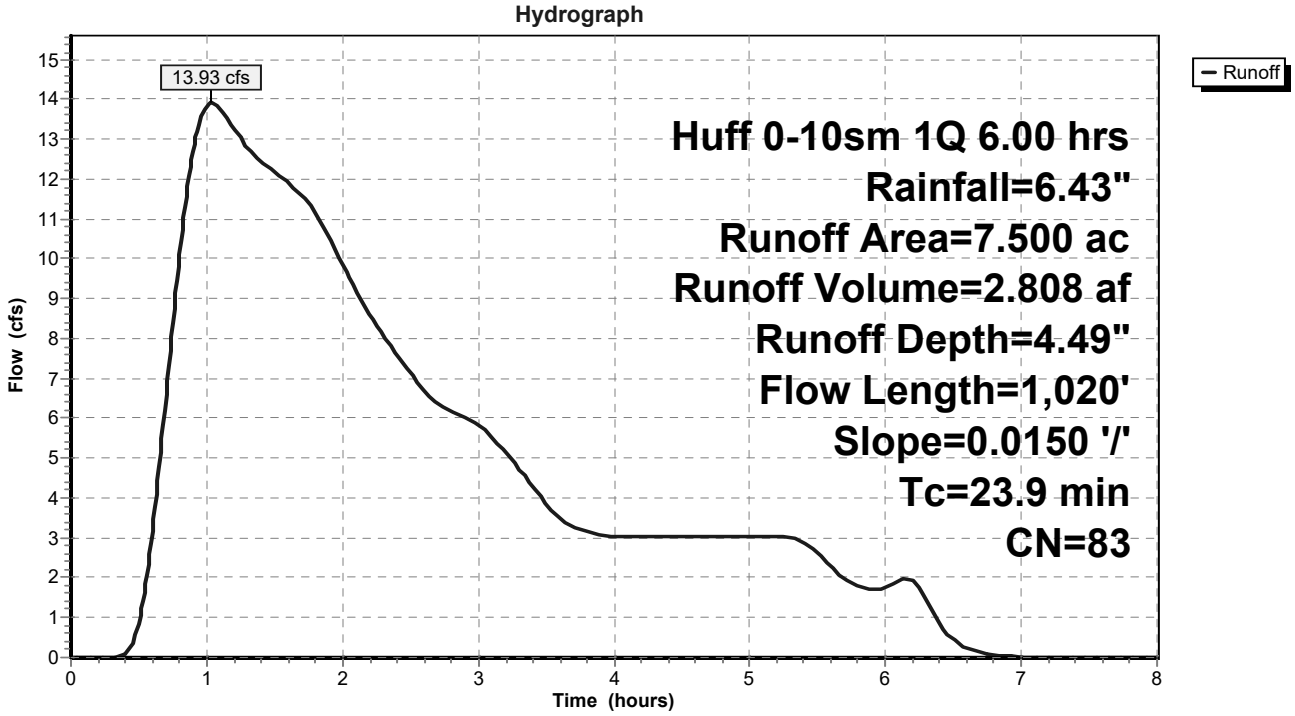
Runoff = 13.93 cfs @ 1.04 hrs, Volume= 2.808 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=6.43"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

## Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.10 | 0.06 | 0.00 | 0.00 |
| 0.20 | 0.23 | 0.00 | 0.00 |
| 0.30 | 0.52 | 0.01 | 0.00 |
| 0.40 | 0.87 | 0.08 | 0.09 |
| 0.50 | 1.23 | 0.23 | 0.88 |
| 0.60 | 1.59 | 0.43 | 3.16 |
| 0.70 | 1.93 | 0.65 | 6.58 |
| 0.80 | 2.23 | 0.85 | 10.11 |
| 0.90 | 2.47 | 1.03 | 12.69 |
| 1.00 | 2.68 | 1.19 | **13.83** |
| 1.10 | 2.89 | 1.36 | **13.79** |
| 1.20 | 3.09 | 1.52 | 13.27 |
| 1.30 | 3.28 | 1.67 | 12.80 |
| 1.40 | 3.46 | 1.83 | 12.46 |
| 1.50 | 3.64 | 1.97 | 12.18 |
| 1.60 | 3.80 | 2.12 | 11.91 |
| 1.70 | 3.95 | 2.25 | 11.59 |
| 1.80 | 4.09 | 2.37 | 11.16 |
| 1.90 | 4.22 | 2.48 | 10.58 |
| 2.00 | 4.34 | 2.58 | 9.90 |
| 2.10 | 4.45 | 2.68 | 9.23 |
| 2.20 | 4.55 | 2.77 | 8.64 |
| 2.30 | 4.65 | 2.86 | 8.11 |
| 2.40 | 4.74 | 2.94 | 7.61 |
| 2.50 | 4.83 | 3.02 | 7.14 |
| 2.60 | 4.91 | 3.10 | 6.70 |
| 2.70 | 5.00 | 3.18 | 6.36 |
| 2.80 | 5.08 | 3.25 | 6.15 |
| 2.90 | 5.16 | 3.32 | 6.01 |
| 3.00 | 5.23 | 3.38 | 5.83 |
| 3.10 | 5.29 | 3.44 | 5.54 |
| 3.20 | 5.34 | 3.49 | 5.17 |
| 3.30 | 5.39 | 3.53 | 4.74 |
| 3.40 | 5.43 | 3.57 | 4.28 |
| 3.50 | 5.48 | 3.61 | 3.84 |
| 3.60 | 5.52 | 3.65 | 3.49 |
| 3.70 | 5.56 | 3.69 | 3.27 |
| 3.80 | 5.61 | 3.73 | 3.15 |
| 3.90 | 5.65 | 3.77 | 3.08 |
| 4.00 | 5.69 | 3.81 | 3.05 |
| 4.10 | 5.74 | 3.85 | 3.03 |
| 4.20 | 5.78 | 3.89 | 3.02 |
| 4.30 | 5.82 | 3.93 | 3.02 |
| 4.40 | 5.87 | 3.97 | 3.02 |
| 4.50 | 5.91 | 4.01 | 3.02 |
| 4.60 | 5.95 | 4.05 | 3.03 |
| 4.70 | 6.00 | 4.09 | 3.03 |
| 4.80 | 6.04 | 4.13 | 3.03 |
| 4.90 | 6.08 | 4.17 | 3.03 |
| 5.00 | 6.13 | 4.21 | 3.04 |
| 5.10 | 6.17 | 4.25 | 3.04 |
| 5.20 | 6.21 | 4.29 | 3.04 |
| 5.30 | 6.24 | 4.32 | 3.01 |
| 5.40 | 6.27 | 4.34 | 2.88 |
| 5.50 | 6.29 | 4.36 | 2.62 |
| 5.60 | 6.31 | 4.38 | 2.27 |
| 5.70 | 6.33 | 4.40 | 1.97 |
| 5.80 | 6.36 | 4.42 | 1.77 |
| 5.90 | 6.39 | 4.45 | 1.69 |
| 6.00 | **6.43** | **4.49** | 1.76 |
| 6.10 | 6.43 | 4.49 | 1.96 |
| 6.20 | 6.43 | 4.49 | 1.92 |
| 6.30 | 6.43 | 4.49 | 1.42 |
| 6.40 | 6.43 | 4.49 | 0.82 |
| 6.50 | 6.43 | 4.49 | 0.44 |
| 6.60 | 6.43 | 4.49 | 0.24 |
| 6.70 | 6.43 | 4.49 | 0.13 |
| 6.80 | 6.43 | 4.49 | 0.07 |
| 6.90 | 6.43 | 4.49 | 0.04 |
| 7.00 | 6.43 | 4.49 | 0.02 |
| 7.10 | 6.43 | 4.49 | 0.01 |
| 7.20 | 6.43 | 4.49 | 0.00 |
| 7.30 | 6.43 | 4.49 | 0.00 |
| 7.40 | 6.43 | 4.49 | 0.00 |
| 7.50 | 6.43 | 4.49 | 0.00 |
| 7.60 | 6.43 | 4.49 | 0.00 |
| 7.70 | 6.43 | 4.49 | 0.00 |
| 7.80 | 6.43 | 4.49 | 0.00 |
| 7.90 | 6.43 | 4.49 | 0.00 |
| 8.00 | 6.43 | 4.49 | 0.00 |

## Summary for Subcatchment 8S: Northwood Drive Bypass

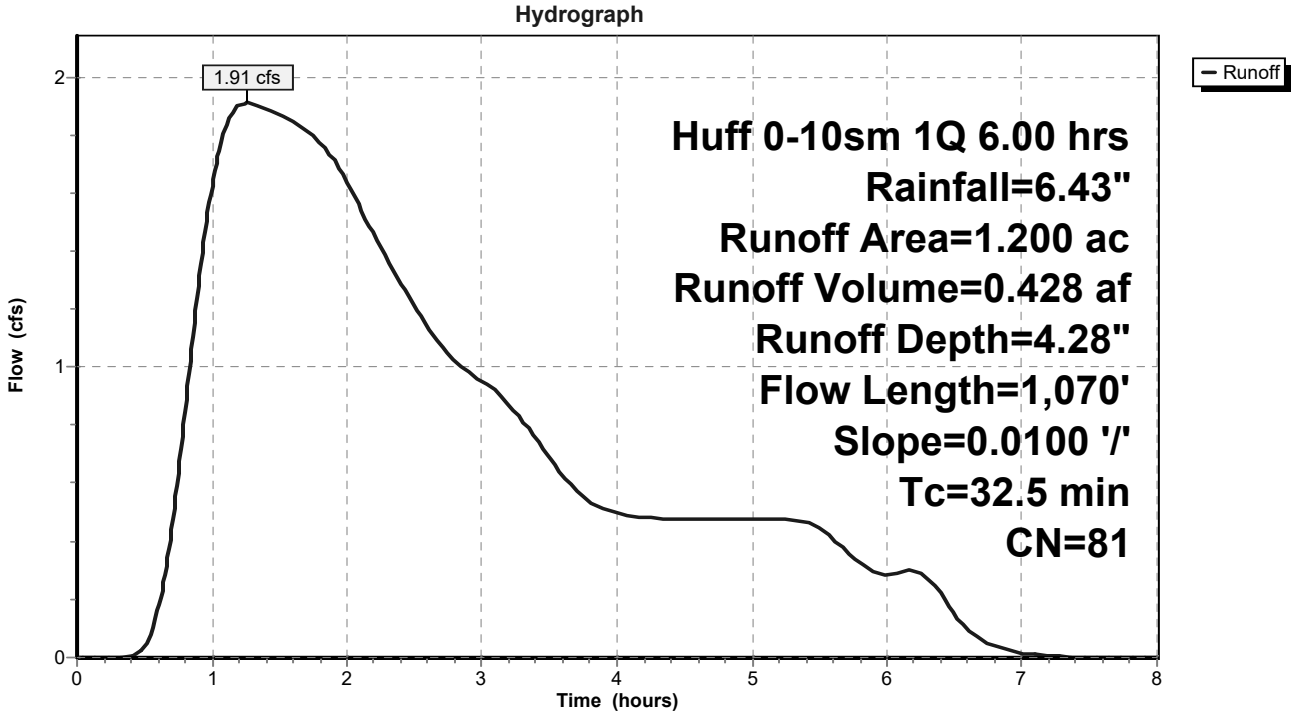
Runoff = 1.91 cfs @ 1.26 hrs, Volume= 0.428 af, Depth= 4.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=6.43"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.10 | 0.06 | 0.00 | 0.00 |
| 0.20 | 0.23 | 0.00 | 0.00 |
| 0.30 | 0.52 | 0.00 | 0.00 |
| 0.40 | 0.87 | 0.06 | 0.00 |
| 0.50 | 1.23 | 0.18 | 0.03 |
| 0.60 | 1.59 | 0.36 | 0.16 |
| 0.70 | 1.93 | 0.56 | 0.44 |
| 0.80 | 2.23 | 0.75 | 0.85 |
| 0.90 | 2.47 | 0.92 | 1.28 |
| 1.00 | 2.68 | 1.07 | 1.62 |
| 1.10 | 2.89 | 1.23 | 1.83 |
| 1.20 | 3.09 | 1.38 | **1.91** |
| 1.30 | 3.28 | 1.53 | **1.91** |
| 1.40 | 3.46 | 1.68 | 1.89 |
| 1.50 | 3.64 | 1.82 | 1.87 |
| 1.60 | 3.80 | 1.96 | 1.85 |
| 1.70 | 3.95 | 2.08 | 1.82 |
| 1.80 | 4.09 | 2.20 | 1.78 |
| 1.90 | 4.22 | 2.31 | 1.72 |
| 2.00 | 4.34 | 2.41 | 1.64 |
| 2.10 | 4.45 | 2.50 | 1.55 |
| 2.20 | 4.55 | 2.59 | 1.46 |
| 2.30 | 4.65 | 2.68 | 1.37 |
| 2.40 | 4.74 | 2.76 | 1.29 |
| 2.50 | 4.83 | 2.83 | 1.21 |
| 2.60 | 4.91 | 2.91 | 1.14 |
| 2.70 | 5.00 | 2.99 | 1.08 |
| 2.80 | 5.08 | 3.06 | 1.02 |
| 2.90 | 5.16 | 3.13 | 0.98 |
| 3.00 | 5.23 | 3.19 | 0.95 |
| 3.10 | 5.29 | 3.24 | 0.92 |
| 3.20 | 5.34 | 3.29 | 0.87 |
| 3.30 | 5.39 | 3.33 | 0.82 |
| 3.40 | 5.43 | 3.37 | 0.75 |
| 3.50 | 5.48 | 3.41 | 0.69 |
| 3.60 | 5.52 | 3.45 | 0.63 |
| 3.70 | 5.56 | 3.49 | 0.57 |
| 3.80 | 5.61 | 3.53 | 0.54 |
| 3.90 | 5.65 | 3.57 | 0.51 |
| 4.00 | 5.69 | 3.61 | 0.50 |
| 4.10 | 5.74 | 3.65 | 0.49 |
| 4.20 | 5.78 | 3.68 | 0.48 |
| 4.30 | 5.82 | 3.72 | 0.48 |
| 4.40 | 5.87 | 3.76 | 0.48 |
| 4.50 | 5.91 | 3.80 | 0.48 |
| 4.60 | 5.95 | 3.84 | 0.48 |
| 4.70 | 6.00 | 3.88 | 0.48 |
| 4.80 | 6.04 | 3.92 | 0.48 |
| 4.90 | 6.08 | 3.96 | 0.48 |
| 5.00 | 6.13 | 4.00 | 0.48 |
| 5.10 | 6.17 | 4.04 | 0.48 |
| 5.20 | 6.21 | 4.08 | 0.48 |
| 5.30 | 6.24 | 4.11 | 0.48 |
| 5.40 | 6.27 | 4.13 | 0.47 |
| 5.50 | 6.29 | 4.15 | 0.45 |
| 5.60 | 6.31 | 4.17 | 0.41 |
| 5.70 | 6.33 | 4.19 | 0.37 |
| 5.80 | 6.36 | 4.21 | 0.33 |
| 5.90 | 6.39 | 4.24 | 0.30 |
| 6.00 | **6.43** | **4.28** | 0.29 |
| 6.10 | 6.43 | 4.28 | 0.29 |
| 6.20 | 6.43 | 4.28 | 0.30 |
| 6.30 | 6.43 | 4.28 | 0.28 |
| 6.40 | 6.43 | 4.28 | 0.22 |
| 6.50 | 6.43 | 4.28 | 0.15 |
| 6.60 | 6.43 | 4.28 | 0.10 |
| 6.70 | 6.43 | 4.28 | 0.06 |
| 6.80 | 6.43 | 4.28 | 0.04 |
| 6.90 | 6.43 | 4.28 | 0.02 |
| 7.00 | 6.43 | 4.28 | 0.02 |
| 7.10 | 6.43 | 4.28 | 0.01 |
| 7.20 | 6.43 | 4.28 | 0.01 |
| 7.30 | 6.43 | 4.28 | 0.00 |
| 7.40 | 6.43 | 4.28 | 0.00 |
| 7.50 | 6.43 | 4.28 | 0.00 |
| 7.60 | 6.43 | 4.28 | 0.00 |
| 7.70 | 6.43 | 4.28 | 0.00 |
| 7.80 | 6.43 | 4.28 | 0.00 |
| 7.90 | 6.43 | 4.28 | 0.00 |
| 8.00 | 6.43 | 4.28 | 0.00 |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

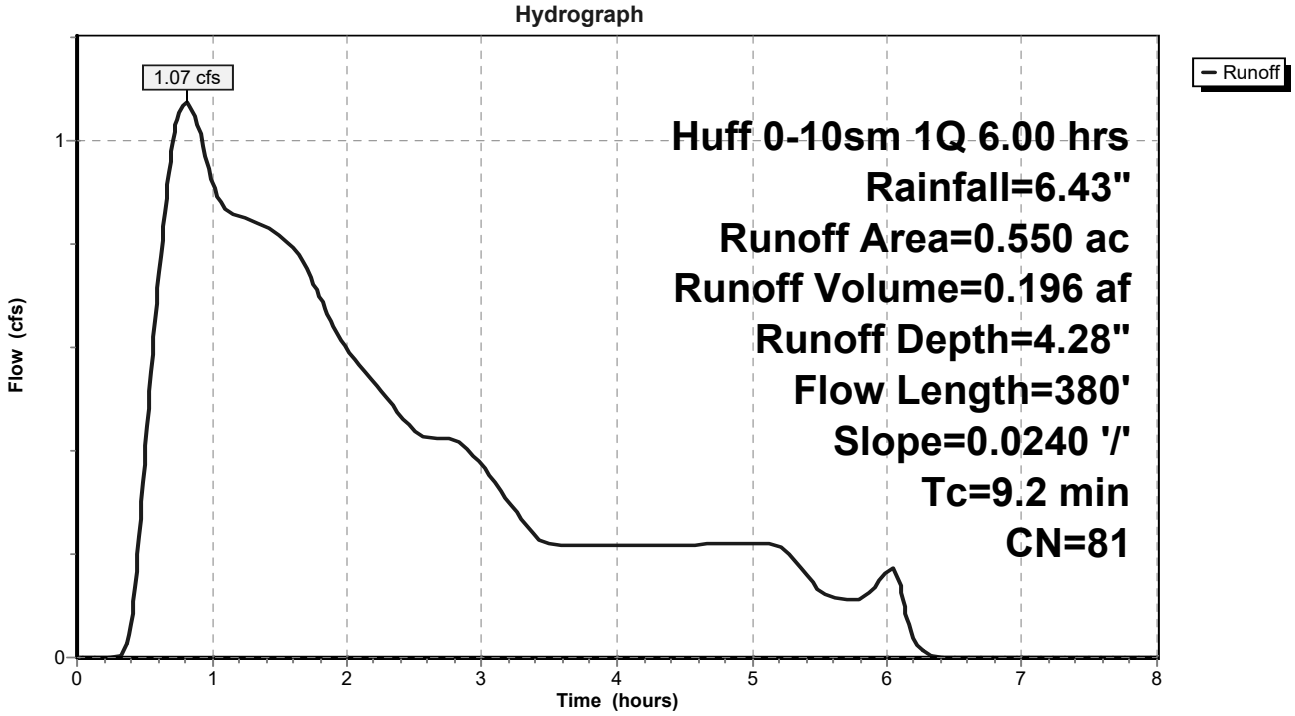
Runoff = 1.07 cfs @ 0.81 hrs, Volume= 0.196 af, Depth= 4.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=6.43"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.10 | 0.06 | 0.00 | 0.00 |
| 0.20 | 0.23 | 0.00 | 0.00 |
| 0.30 | 0.52 | 0.00 | 0.00 |
| 0.40 | 0.87 | 0.06 | 0.06 |
| 0.50 | 1.23 | 0.18 | 0.37 |
| 0.60 | 1.59 | 0.36 | 0.72 |
| 0.70 | 1.93 | 0.56 | 0.98 |
| 0.80 | 2.23 | 0.75 | **1.07** |
| 0.90 | 2.47 | 0.92 | **1.03** |
| 1.00 | 2.68 | 1.07 | 0.92 |
| 1.10 | 2.89 | 1.23 | 0.87 |
| 1.20 | 3.09 | 1.38 | 0.85 |
| 1.30 | 3.28 | 1.53 | 0.84 |
| 1.40 | 3.46 | 1.68 | 0.83 |
| 1.50 | 3.64 | 1.82 | 0.81 |
| 1.60 | 3.80 | 1.96 | 0.79 |
| 1.70 | 3.95 | 2.08 | 0.75 |
| 1.80 | 4.09 | 2.20 | 0.69 |
| 1.90 | 4.22 | 2.31 | 0.64 |
| 2.00 | 4.34 | 2.41 | 0.60 |
| 2.10 | 4.45 | 2.50 | 0.56 |
| 2.20 | 4.55 | 2.59 | 0.53 |
| 2.30 | 4.65 | 2.68 | 0.50 |
| 2.40 | 4.74 | 2.76 | 0.47 |
| 2.50 | 4.83 | 2.83 | 0.44 |
| 2.60 | 4.91 | 2.91 | 0.42 |
| 2.70 | 5.00 | 2.99 | 0.42 |
| 2.80 | 5.08 | 3.06 | 0.42 |
| 2.90 | 5.16 | 3.13 | 0.40 |
| 3.00 | 5.23 | 3.19 | 0.37 |
| 3.10 | 5.29 | 3.24 | 0.34 |
| 3.20 | 5.34 | 3.29 | 0.30 |
| 3.30 | 5.39 | 3.33 | 0.27 |
| 3.40 | 5.43 | 3.37 | 0.23 |
| 3.50 | 5.48 | 3.41 | 0.22 |
| 3.60 | 5.52 | 3.45 | 0.22 |
| 3.70 | 5.56 | 3.49 | 0.22 |
| 3.80 | 5.61 | 3.53 | 0.22 |
| 3.90 | 5.65 | 3.57 | 0.22 |
| 4.00 | 5.69 | 3.61 | 0.22 |
| 4.10 | 5.74 | 3.65 | 0.22 |
| 4.20 | 5.78 | 3.68 | 0.22 |
| 4.30 | 5.82 | 3.72 | 0.22 |
| 4.40 | 5.87 | 3.76 | 0.22 |
| 4.50 | 5.91 | 3.80 | 0.22 |
| 4.60 | 5.95 | 3.84 | 0.22 |
| 4.70 | 6.00 | 3.88 | 0.22 |
| 4.80 | 6.04 | 3.92 | 0.22 |
| 4.90 | 6.08 | 3.96 | 0.22 |
| 5.00 | 6.13 | 4.00 | 0.22 |
| 5.10 | 6.17 | 4.04 | 0.22 |
| 5.20 | 6.21 | 4.08 | 0.22 |
| 5.30 | 6.24 | 4.11 | 0.19 |
| 5.40 | 6.27 | 4.13 | 0.16 |
| 5.50 | 6.29 | 4.15 | 0.13 |
| 5.60 | 6.31 | 4.17 | 0.11 |
| 5.70 | 6.33 | 4.19 | 0.11 |
| 5.80 | 6.36 | 4.21 | 0.11 |
| 5.90 | 6.39 | 4.24 | 0.14 |
| 6.00 | **6.43** | **4.28** | 0.17 |
| 6.10 | 6.43 | 4.28 | 0.14 |
| 6.20 | 6.43 | 4.28 | 0.03 |
| 6.30 | 6.43 | 4.28 | 0.01 |
| 6.40 | 6.43 | 4.28 | 0.00 |
| 6.50 | 6.43 | 4.28 | 0.00 |
| 6.60 | 6.43 | 4.28 | 0.00 |
| 6.70 | 6.43 | 4.28 | 0.00 |
| 6.80 | 6.43 | 4.28 | 0.00 |
| 6.90 | 6.43 | 4.28 | 0.00 |
| 7.00 | 6.43 | 4.28 | 0.00 |
| 7.10 | 6.43 | 4.28 | 0.00 |
| 7.20 | 6.43 | 4.28 | 0.00 |
| 7.30 | 6.43 | 4.28 | 0.00 |
| 7.40 | 6.43 | 4.28 | 0.00 |
| 7.50 | 6.43 | 4.28 | 0.00 |
| 7.60 | 6.43 | 4.28 | 0.00 |
| 7.70 | 6.43 | 4.28 | 0.00 |
| 7.80 | 6.43 | 4.28 | 0.00 |
| 7.90 | 6.43 | 4.28 | 0.00 |
| 8.00 | 6.43 | 4.28 | 0.00 |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 20.08 cfs @ | 1.03 hrs, | Volume= | 3.863 af |
| Outflow | = | 3.21 cfs @ | 5.40 hrs, | Volume= | 1.006 af, Atten= 84%, Lag= 262.0 min |
| Primary | = | 1.51 cfs @ | 5.31 hrs, | Volume= | 0.787 af |
| Secondary | = | 1.70 cfs @ | 5.40 hrs, | Volume= | 0.219 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-8.00 hrs, dt= 0.01 hrs
Peak Elev= 678.24' @ 5.31 hrs Surf.Area= 47,068 sf Storage= 134,868 cf

Plug-Flow detention time= 230.8 min calculated for 1.006 af (26% of inflow)
Center-of-Mass det. time= 147.5 min ( 291.5 - 144.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

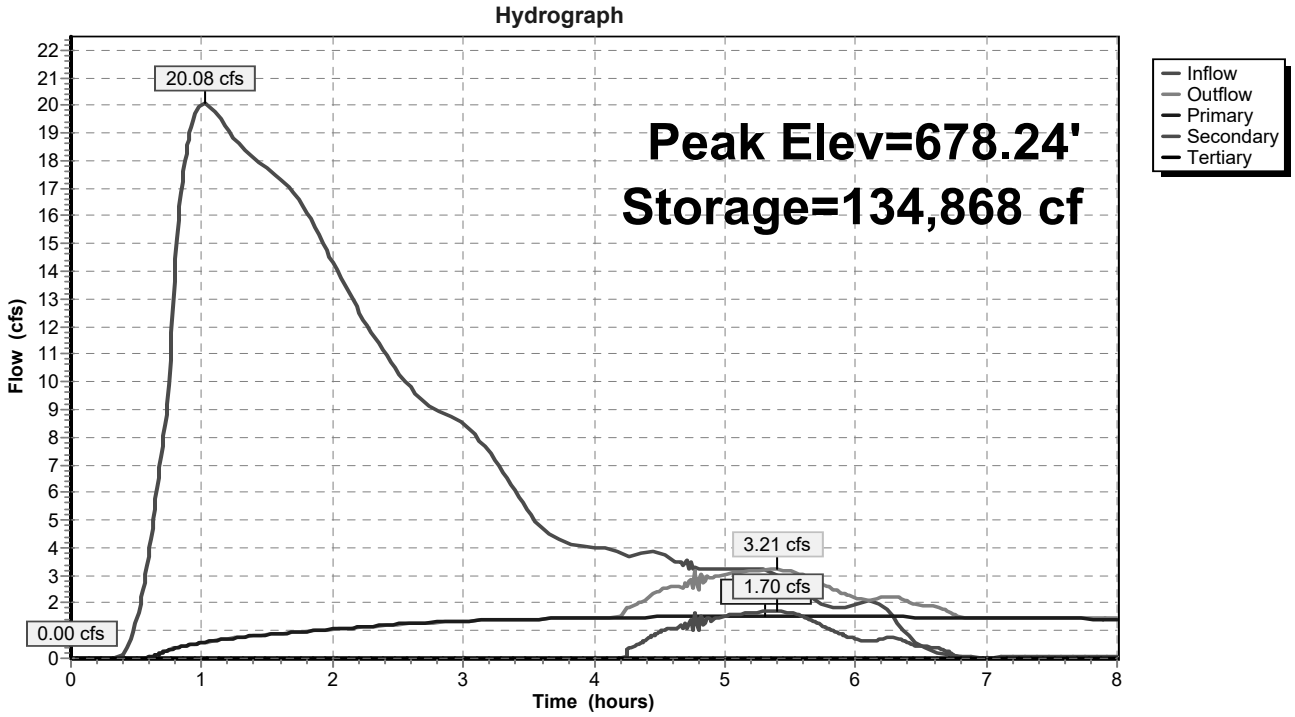
#4 Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=1.51 cfs @ 5.31 hrs HW=678.24' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.51 cfs @ 13.66 fps)

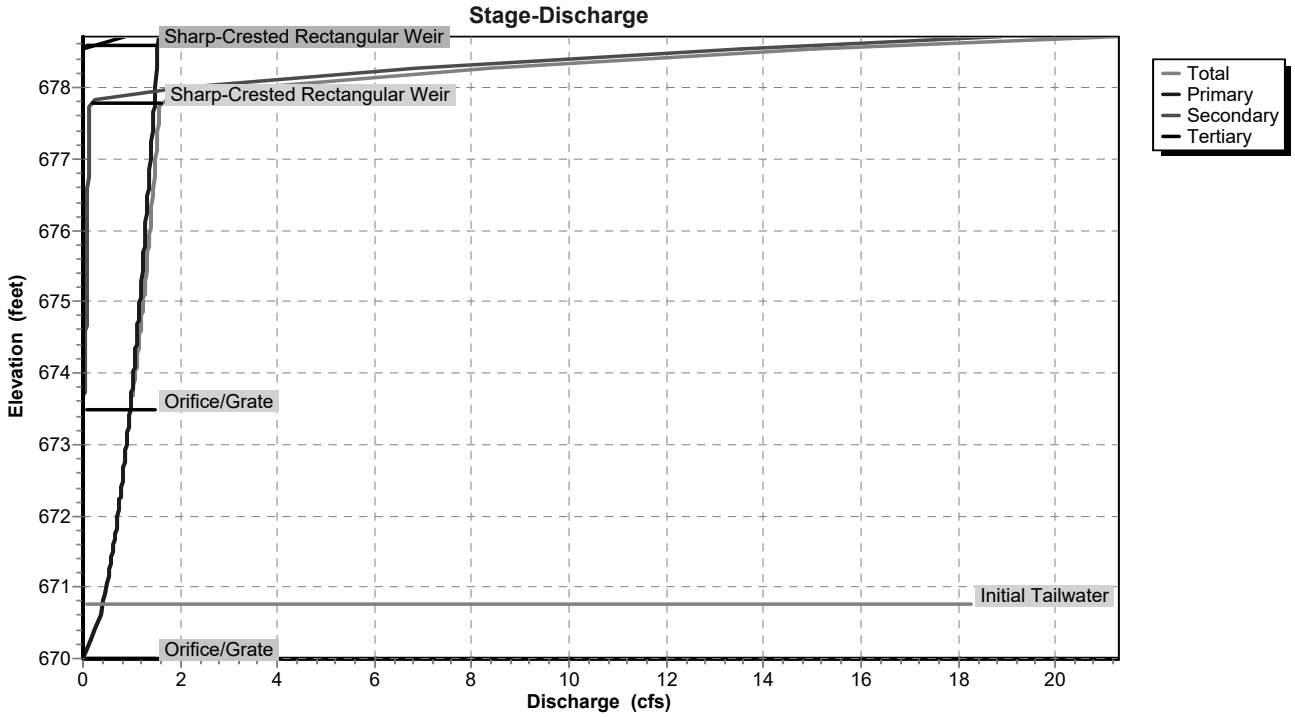
**Secondary OutFlow** Max=1.74 cfs @ 5.40 hrs HW=678.24' TW=678.23' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** (Weir Controls 1.73 cfs @ 0.67 fps)
└─**4=Orifice/Grate** (Orifice Controls 0.01 cfs @ 0.53 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

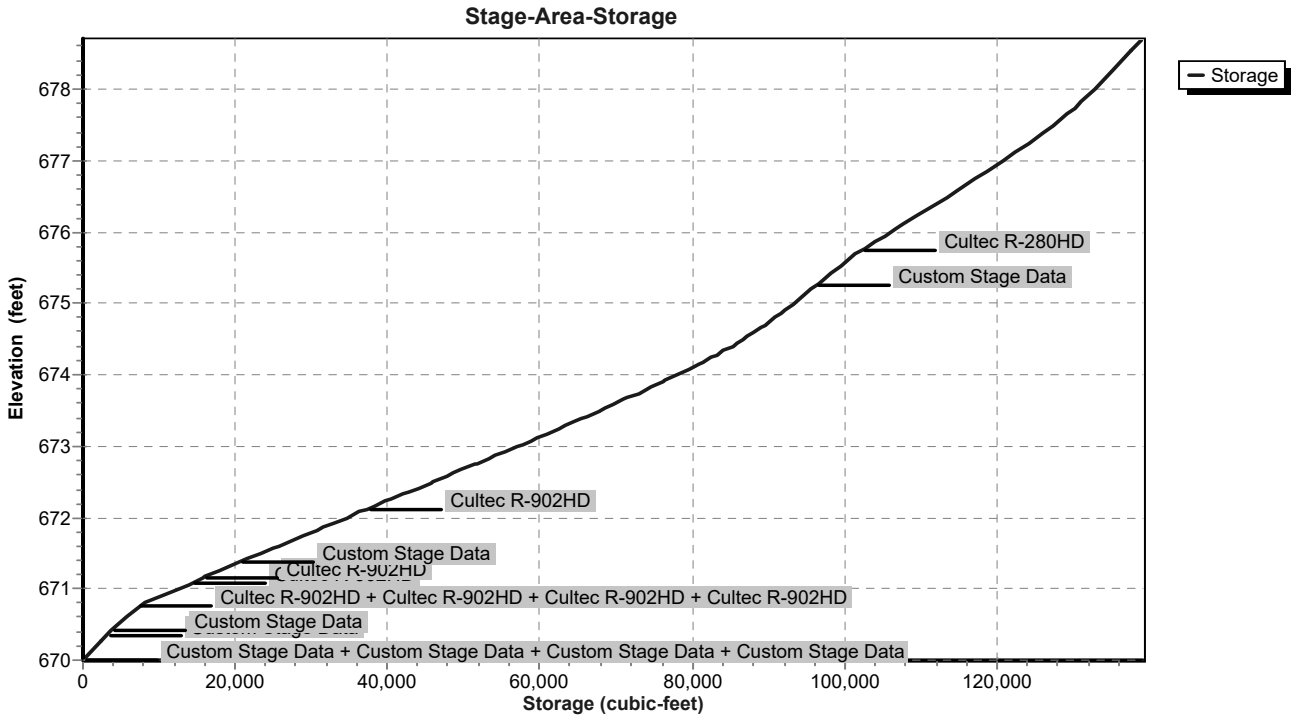
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.20 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 0.15 | 11 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.60 | 3.98 | 1,090 | 670.12 | 0.04 | 0.04 | 0.00 | 0.00 |
| 0.80 | 14.47 | 6,601 | 670.69 | 0.38 | 0.38 | 0.00 | 0.00 |
| 1.00 | **20.03** | 19,343 | 671.32 | 0.57 | 0.57 | 0.00 | 0.00 |
| 1.20 | **19.12** | 33,109 | 671.94 | 0.70 | 0.70 | 0.00 | 0.00 |
| 1.40 | 18.09 | 45,937 | 672.50 | 0.81 | 0.81 | 0.00 | 0.00 |
| 1.60 | 17.32 | 58,086 | 673.04 | 0.90 | 0.90 | 0.00 | 0.00 |
| 1.80 | 16.19 | 69,547 | 673.58 | 0.98 | 0.98 | 0.00 | 0.00 |
| 2.00 | 14.34 | 79,870 | 674.10 | 1.05 | 1.05 | 0.00 | 0.00 |
| 2.20 | 12.56 | 88,778 | 674.65 | 1.12 | 1.12 | 0.00 | 0.00 |
| 2.40 | 11.08 | 96,472 | 675.27 | 1.20 | 1.20 | 0.00 | 0.00 |
| 2.60 | 9.76 | 103,098 | 675.81 | 1.26 | 1.26 | 0.00 | 0.00 |
| 2.80 | 8.99 | 108,898 | 676.19 | 1.30 | 1.30 | 0.00 | 0.00 |
| 3.00 | 8.47 | 114,263 | 676.55 | 1.34 | 1.34 | 0.00 | 0.00 |
| 3.20 | 7.42 | 119,055 | 676.88 | 1.38 | 1.38 | 0.00 | 0.00 |
| 3.40 | 5.99 | 122,921 | 677.16 | 1.40 | 1.40 | 0.00 | 0.00 |
| 3.60 | 4.73 | 125,746 | 677.37 | 1.43 | 1.43 | 0.00 | 0.00 |
| 3.80 | 4.17 | 127,889 | 677.54 | 1.44 | 1.44 | 0.00 | 0.00 |
| 4.00 | 4.00 | 129,777 | 677.70 | 1.46 | 1.46 | 0.00 | 0.00 |
| 4.20 | 3.82 | 131,568 | 677.88 | 1.47 | 1.47 | 0.00 | 0.00 |
| 4.40 | 3.88 | 132,953 | 678.03 | 2.17 | 1.49 | 0.68 | 0.00 |
| 4.60 | 3.57 | 133,949 | 678.14 | 2.59 | 1.50 | 1.09 | 0.00 |
| 4.80 | 3.25 | 134,473 | 678.20 | 2.50 | 1.50 | 0.99 | 0.00 |
| 5.00 | 3.26 | 134,724 | 678.22 | 3.02 | 1.51 | 1.51 | 0.00 |
| 5.20 | 3.26 | **134,842** | **678.24** | 3.16 | **1.51** | 1.65 | 0.00 |
| 5.40 | 3.04 | **134,846** | **678.24** | **3.21** | **1.51** | **1.70** | 0.00 |
| 5.60 | 2.39 | 134,559 | 678.21 | 3.01 | 1.51 | 1.51 | 0.00 |
| 5.80 | 1.88 | 134,060 | 678.15 | 2.56 | 1.50 | 1.06 | 0.00 |
| 6.00 | 1.93 | 133,684 | 678.11 | 2.19 | 1.50 | 0.70 | 0.00 |
| 6.20 | 1.95 | 133,616 | 678.10 | 2.21 | 1.50 | 0.71 | 0.00 |
| 6.40 | 0.82 | 133,064 | 678.04 | 2.06 | 1.49 | 0.57 | 0.00 |
| 6.60 | 0.24 | 132,010 | 677.92 | 1.88 | 1.48 | 0.40 | 0.00 |
| 6.80 | 0.07 | 130,874 | 677.80 | 1.49 | 1.47 | 0.02 | 0.00 |
| 7.00 | 0.02 | 129,833 | 677.70 | 1.49 | 1.46 | 0.03 | 0.00 |
| 7.20 | 0.00 | 128,770 | 677.61 | 1.49 | 1.45 | 0.04 | 0.00 |
| 7.40 | 0.00 | 127,702 | 677.52 | 1.48 | 1.44 | 0.04 | 0.00 |
| 7.60 | 0.00 | 126,637 | 677.44 | 1.48 | 1.43 | 0.04 | 0.00 |
| 7.80 | 0.00 | 125,576 | 677.36 | 1.47 | 1.42 | 0.05 | 0.00 |
| 8.00 | 0.00 | 124,521 | 677.28 | 1.46 | 1.42 | 0.05 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 16.68 | 1.54 | 15.13 | 0.00 |
| 678.80 | **24.77** | **1.56** | **21.42** | **1.79** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) |
|---|---|
| 670.00 | 0 |
| 670.10 | 893 |
| 670.20 | 1,787 |
| 670.30 | 2,681 |
| 670.40 | 3,618 |
| 670.50 | 4,626 |
| 670.60 | 5,639 |
| 670.70 | 6,653 |
| 670.80 | 8,202 |
| 670.90 | 10,288 |
| 671.00 | 12,379 |
| 671.10 | 14,465 |
| 671.20 | 16,635 |
| 671.30 | 18,830 |
| 671.40 | 21,049 |
| 671.50 | 23,322 |
| 671.60 | 25,582 |
| 671.70 | 27,830 |
| 671.80 | 30,075 |
| 671.90 | 32,317 |
| 672.00 | 34,546 |
| 672.10 | 36,761 |
| 672.20 | 39,047 |
| 672.30 | 41,344 |
| 672.40 | 43,628 |
| 672.50 | 45,906 |
| 672.60 | 48,170 |
| 672.70 | 50,428 |
| 672.80 | 52,674 |
| 672.90 | 54,899 |
| 673.00 | 57,117 |
| 673.10 | 59,314 |
| 673.20 | 61,492 |
| 673.30 | 63,654 |
| 673.40 | 65,789 |
| 673.50 | 67,899 |
| 673.60 | 69,981 |
| 673.70 | 72,030 |
| 673.80 | 74,047 |
| 673.90 | 76,023 |
| 674.00 | 77,955 |
| 674.10 | 79,844 |
| 674.20 | 81,679 |
| 674.30 | 83,453 |
| 674.40 | 85,139 |
| 674.50 | 86,709 |
| 674.60 | 88,153 |
| 674.70 | 89,496 |
| 674.80 | 90,763 |
| 674.90 | 91,997 |
| 675.00 | 93,215 |
| 675.10 | 94,422 |
| 675.20 | 95,621 |
| 675.30 | 96,808 |
| 675.40 | 97,984 |
| 675.50 | 99,158 |
| 675.60 | 100,327 |
| 675.70 | 101,491 |
| 675.80 | 102,865 |
| 675.90 | 104,433 |
| 676.00 | 105,977 |
| 676.10 | 107,509 |
| 676.20 | 109,032 |
| 676.30 | 110,542 |
| 676.40 | 112,038 |
| 676.50 | 113,523 |
| 676.60 | 114,993 |
| 676.70 | 116,452 |
| 676.80 | 117,901 |
| 676.90 | 119,339 |
| 677.00 | 120,753 |
| 677.10 | 122,143 |
| 677.20 | 123,511 |
| 677.30 | 124,850 |
| 677.40 | 126,157 |
| 677.50 | 127,426 |
| 677.60 | 128,644 |
| 677.70 | 129,794 |
| 677.80 | 130,846 |
| 677.90 | 131,802 |
| 678.00 | 132,704 |
| 678.10 | 133,604 |
| 678.20 | 134,505 |
| 678.30 | 135,406 |
| 678.40 | 136,307 |
| 678.50 | 137,209 |
| 678.60 | 138,112 |
| 678.70 | 139,014 |
| 678.80 | 139,917 |
| 678.90 | **140,821** |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 8.43 cfs @ | 0.96 hrs, | Volume= | 1.957 af |
| Outflow | = | 8.41 cfs @ | 1.00 hrs, | Volume= | 1.953 af, Atten= 0%, Lag= 2.0 min |
| Primary | = | 3.54 cfs @ | 5.30 hrs, | Volume= | 1.093 af |
| Secondary | = | 5.28 cfs @ | 1.00 hrs, | Volume= | 0.860 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-8.00 hrs, dt= 0.01 hrs
Peak Elev= 678.23' @ 5.30 hrs Surf.Area= 3,403 sf Storage= 3,988 cf

Plug-Flow detention time= 15.8 min calculated for 1.953 af (100% of inflow)
Center-of-Mass det. time= 15.3 min ( 183.1 - 167.8 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

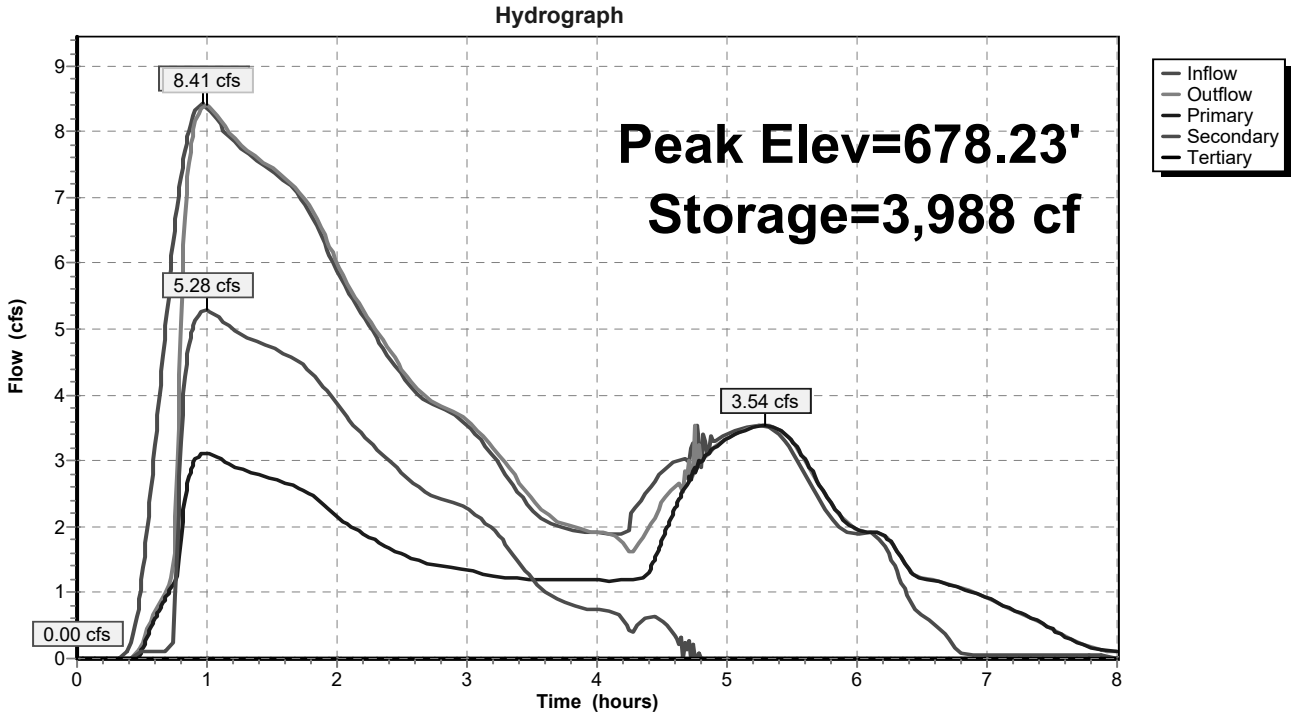
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.50' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=3.54 cfs @ 5.30 hrs HW=678.23' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 1.34 cfs @ 5.81 fps)
- **2=Sharp-Crested Rectangular Weir** (Weir Controls 2.20 cfs @ 1.61 fps)

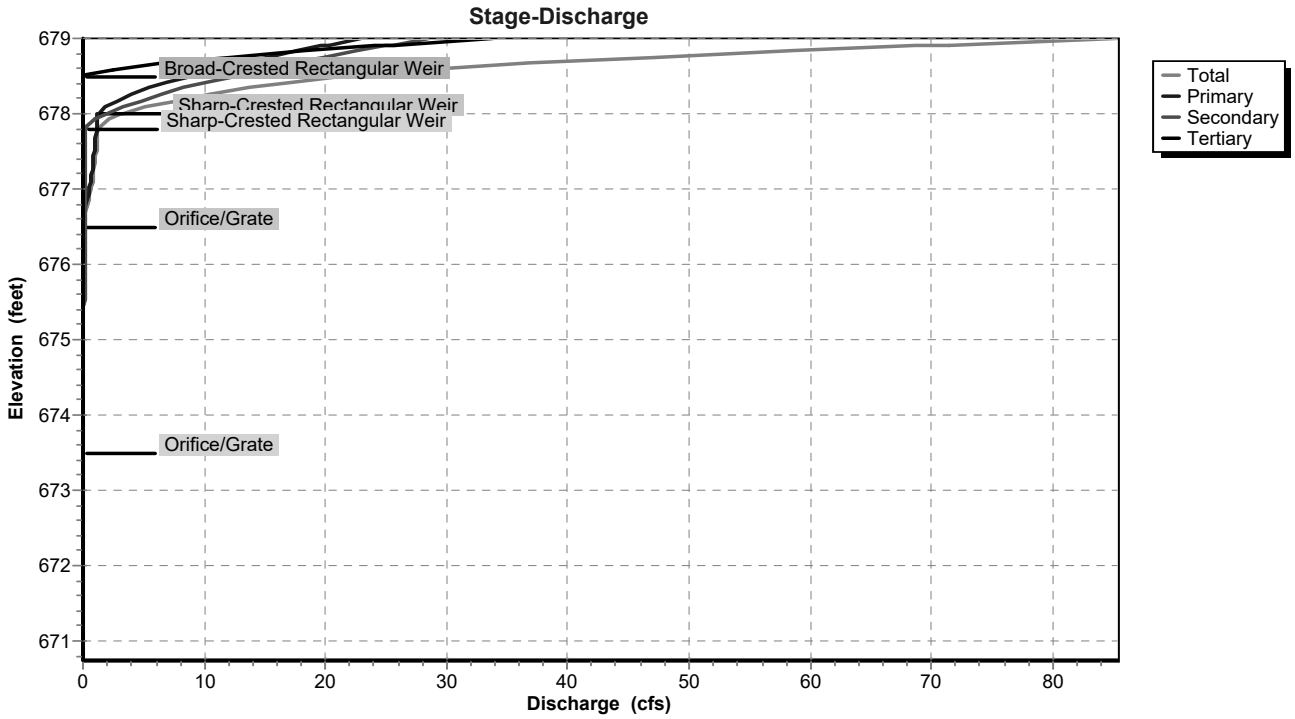
**Secondary OutFlow** Max=5.28 cfs @ 1.00 hrs HW=678.20' TW=671.31' (Dynamic Tailwater)
- **4=Orifice/Grate** (Orifice Controls 0.13 cfs @ 10.37 fps)
- **5=Sharp-Crested Rectangular Weir** (Weir Controls 5.15 cfs @ 2.17 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
- **3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

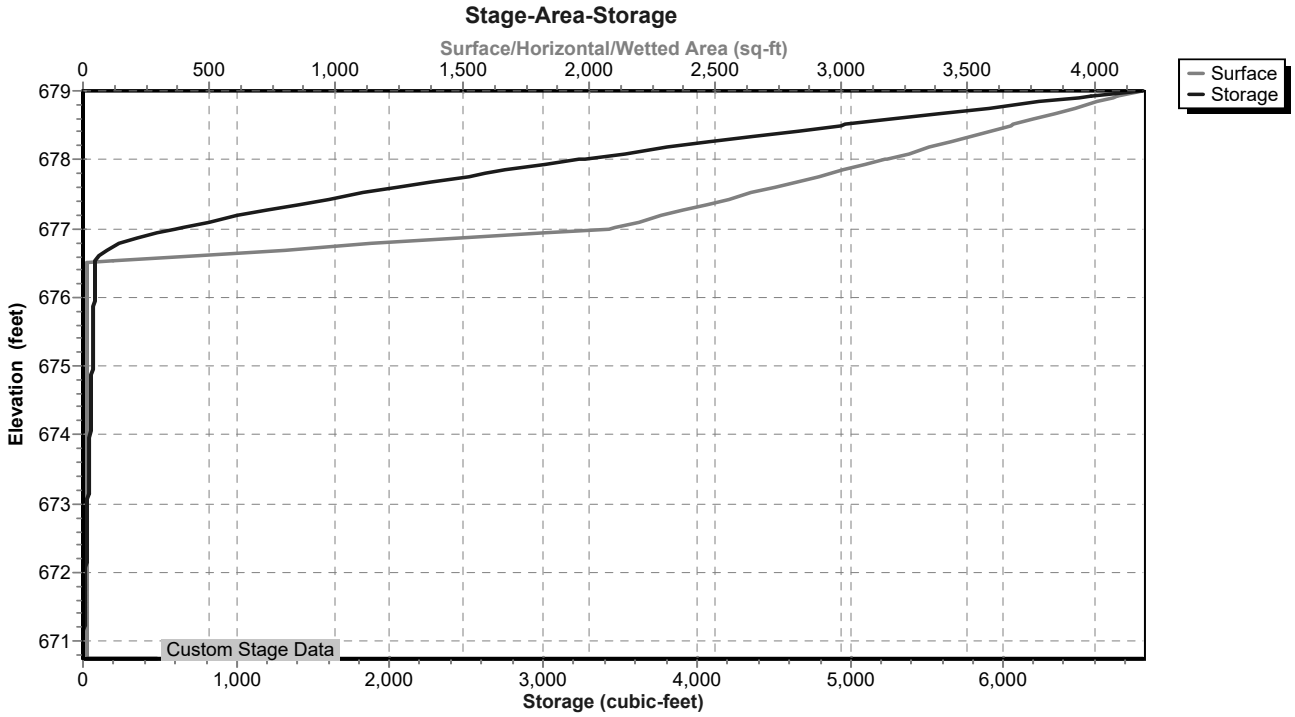
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.20 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 0.15 | 11 | 671.54 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.60 | 3.24 | 755 | 677.07 | 0.72 | 0.61 | 0.11 | 0.00 |
| 0.80 | **7.31** | 3,527 | 678.09 | 5.10 | 1.82 | 3.29 | 0.00 |
| 1.00 | **8.39** | 3,892 | 678.20 | **8.41** | 3.12 | **5.28** | 0.00 |
| 1.20 | 7.85 | 3,843 | 678.19 | 7.92 | 2.92 | 4.99 | 0.00 |
| 1.40 | 7.54 | 3,808 | 678.18 | 7.58 | 2.79 | 4.80 | 0.00 |
| 1.60 | 7.24 | 3,777 | 678.17 | 7.29 | 2.67 | 4.62 | 0.00 |
| 1.80 | 6.71 | 3,727 | 678.15 | 6.82 | 2.48 | 4.34 | 0.00 |
| 2.00 | 5.88 | 3,638 | 678.12 | 6.01 | 2.16 | 3.85 | 0.00 |
| 2.20 | 5.18 | 3,552 | 678.10 | 5.29 | 1.89 | 3.40 | 0.00 |
| 2.40 | 4.58 | 3,477 | 678.08 | 4.68 | 1.68 | 3.00 | 0.00 |
| 2.60 | 4.04 | 3,403 | 678.05 | 4.13 | 1.49 | 2.63 | 0.00 |
| 2.80 | 3.80 | 3,361 | 678.04 | 3.83 | 1.40 | 2.43 | 0.00 |
| 3.00 | 3.55 | 3,329 | 678.03 | 3.62 | 1.35 | 2.27 | 0.00 |
| 3.20 | 3.07 | 3,257 | 678.01 | 3.19 | 1.25 | 1.95 | 0.00 |
| 3.40 | 2.50 | 3,145 | 677.97 | 2.69 | 1.22 | 1.47 | 0.00 |
| 3.60 | 2.09 | 3,027 | 677.93 | 2.22 | 1.20 | 1.02 | 0.00 |
| 3.80 | 1.95 | 2,968 | 677.91 | 2.00 | 1.19 | 0.81 | 0.00 |
| 4.00 | 1.90 | 2,948 | 677.91 | 1.92 | 1.18 | 0.73 | 0.00 |
| 4.20 | 1.89 | 2,955 | 677.91 | 1.77 | 1.18 | 0.58 | 0.00 |
| 4.40 | 2.57 | 3,321 | 678.03 | 1.97 | 1.33 | 0.64 | 0.00 |
| 4.60 | 2.98 | 3,671 | 678.13 | 2.60 | 2.28 | 0.33 | 0.00 |
| 4.80 | 2.89 | 3,859 | 678.19 | 2.99 | 2.99 | 0.00 | 0.00 |
| 5.00 | 3.40 | 3,944 | 678.22 | 3.34 | 3.34 | 0.00 | 0.00 |
| 5.20 | 3.54 | **3,982** | **678.23** | 3.51 | **3.51** | 0.00 | 0.00 |
| 5.40 | 3.41 | **3,976** | **678.23** | 3.48 | **3.48** | 0.00 | 0.00 |
| 5.60 | 2.79 | 3,866 | 678.19 | 3.02 | 3.02 | 0.00 | 0.00 |
| 5.80 | 2.13 | 3,694 | 678.14 | 2.36 | 2.36 | 0.00 | 0.00 |
| 6.00 | 1.88 | 3,573 | 678.10 | 1.95 | 1.95 | 0.00 | 0.00 |
| 6.20 | 1.74 | 3,545 | 678.10 | 1.87 | 1.87 | 0.00 | 0.00 |
| 6.40 | 0.91 | 3,335 | 678.03 | 1.36 | 1.36 | 0.00 | 0.00 |
| 6.60 | 0.51 | 2,935 | 677.90 | 1.18 | 1.18 | 0.00 | 0.00 |
| 6.80 | 0.06 | 2,345 | 677.70 | 1.07 | 1.07 | 0.00 | 0.00 |
| 7.00 | 0.04 | 1,661 | 677.45 | 0.92 | 0.92 | 0.00 | 0.00 |
| 7.20 | 0.04 | 1,090 | 677.22 | 0.74 | 0.74 | 0.00 | 0.00 |
| 7.40 | 0.04 | 649 | 677.02 | 0.56 | 0.56 | 0.00 | 0.00 |
| 7.60 | 0.05 | 356 | 676.86 | 0.33 | 0.33 | 0.00 | 0.00 |
| 7.80 | 0.05 | 211 | 676.74 | 0.17 | 0.17 | 0.00 | 0.00 |
| 8.00 | 0.00 | 150 | 676.68 | 0.09 | 0.09 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 24.61 | 9.86 | 13.70 | 1.05 |
| 678.75 | 46.70 | 15.13 | 19.77 | 11.80 |
| 678.95 | **76.77** | **21.27** | **26.68** | **28.82** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

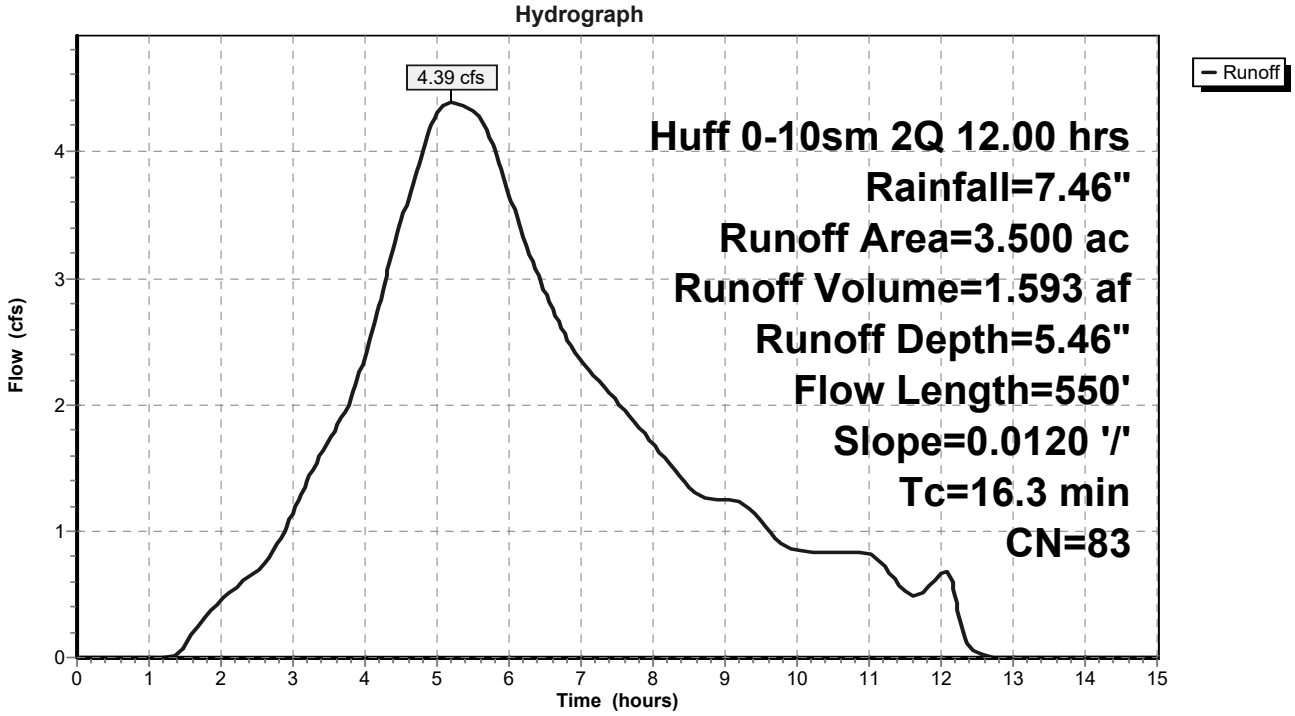
Runoff = 4.39 cfs @ 5.20 hrs, Volume= 1.593 af, Depth= 5.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.01 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=7.46"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.01 | 0.00 | 0.00 |
| 0.40 | 0.05 | 0.00 | 0.00 |
| 0.60 | 0.11 | 0.00 | 0.00 |
| 0.80 | 0.20 | 0.00 | 0.00 |
| 1.00 | 0.30 | 0.00 | 0.00 |
| 1.20 | 0.41 | 0.00 | 0.00 |
| 1.40 | 0.54 | 0.01 | 0.03 |
| 1.60 | 0.65 | 0.03 | 0.18 |
| 1.80 | 0.75 | 0.05 | 0.34 |
| 2.00 | 0.85 | 0.08 | 0.45 |
| 2.20 | 0.95 | 0.11 | 0.55 |
| 2.40 | 1.05 | 0.15 | 0.64 |
| 2.60 | 1.16 | 0.20 | 0.74 |
| 2.80 | 1.29 | 0.26 | 0.92 |
| 3.00 | 1.43 | 0.34 | 1.15 |
| 3.20 | 1.59 | 0.43 | 1.40 |
| 3.40 | 1.75 | 0.53 | 1.62 |
| 3.60 | 1.92 | 0.64 | 1.82 |
| 3.80 | 2.11 | 0.77 | 2.04 |
| 4.00 | 2.32 | 0.92 | 2.39 |
| 4.20 | 2.56 | 1.10 | 2.81 |
| 4.40 | 2.82 | 1.30 | 3.25 |
| 4.60 | 3.10 | 1.53 | 3.63 |
| 4.80 | 3.39 | 1.77 | 3.99 |
| 5.00 | 3.69 | 2.02 | 4.30 |
| 5.20 | 3.98 | 2.27 | **4.39** |
| 5.40 | 4.26 | 2.51 | 4.36 |
| 5.60 | 4.52 | 2.74 | 4.28 |
| 5.80 | 4.76 | 2.96 | 4.01 |
| 6.00 | 4.97 | 3.15 | 3.67 |
| 6.20 | 5.17 | 3.32 | 3.31 |
| 6.40 | 5.34 | 3.48 | 3.03 |
| 6.60 | 5.50 | 3.63 | 2.77 |
| 6.80 | 5.65 | 3.77 | 2.52 |
| 7.00 | 5.79 | 3.89 | 2.35 |
| 7.20 | 5.92 | 4.01 | 2.22 |
| 7.40 | 6.04 | 4.13 | 2.09 |
| 7.60 | 6.15 | 4.23 | 1.95 |
| 7.80 | 6.25 | 4.33 | 1.82 |
| 8.00 | 6.35 | 4.42 | 1.69 |
| 8.20 | 6.44 | 4.50 | 1.55 |
| 8.40 | 6.52 | 4.57 | 1.42 |
| 8.60 | 6.59 | 4.65 | 1.30 |
| 8.80 | 6.67 | 4.72 | 1.25 |
| 9.00 | 6.74 | 4.79 | 1.25 |
| 9.20 | 6.82 | 4.85 | 1.23 |
| 9.40 | 6.88 | 4.91 | 1.14 |
| 9.60 | 6.93 | 4.96 | 1.01 |
| 9.80 | 6.98 | 5.01 | 0.89 |
| 10.00 | 7.03 | 5.06 | 0.84 |
| 10.20 | 7.08 | 5.11 | 0.84 |
| 10.40 | 7.13 | 5.15 | 0.84 |
| 10.60 | 7.18 | 5.20 | 0.84 |
| 10.80 | 7.23 | 5.25 | 0.84 |
| 11.00 | 7.28 | 5.29 | 0.82 |
| 11.20 | 7.32 | 5.33 | 0.73 |
| 11.40 | 7.35 | 5.36 | 0.60 |
| 11.60 | 7.38 | 5.38 | 0.49 |
| 11.80 | 7.41 | 5.42 | 0.54 |
| 12.00 | **7.46** | **5.46** | 0.67 |
| 12.20 | 7.46 | 5.46 | 0.47 |
| 12.40 | 7.46 | 5.46 | 0.08 |
| 12.60 | 7.46 | 5.46 | 0.01 |
| 12.80 | 7.46 | 5.46 | 0.00 |
| 13.00 | 7.46 | 5.46 | 0.00 |
| 13.20 | 7.46 | 5.46 | 0.00 |
| 13.40 | 7.46 | 5.46 | 0.00 |
| 13.60 | 7.46 | 5.46 | 0.00 |
| 13.80 | 7.46 | 5.46 | 0.00 |
| 14.00 | 7.46 | 5.46 | 0.00 |
| 14.20 | 7.46 | 5.46 | 0.00 |
| 14.40 | 7.46 | 5.46 | 0.00 |
| 14.60 | 7.46 | 5.46 | 0.00 |
| 14.80 | 7.46 | 5.46 | 0.00 |
| 15.00 | 7.46 | 5.46 | 0.00 |

## Summary for Subcatchment 7S: South Property

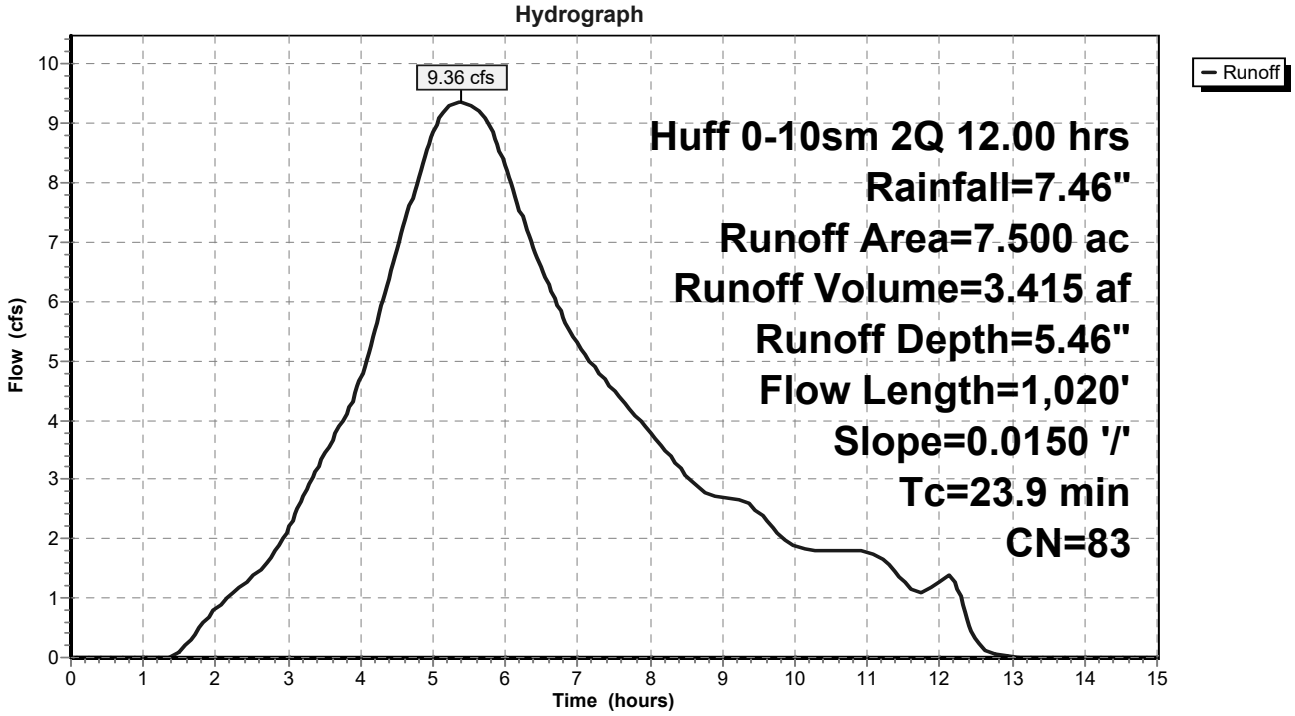
Runoff = 9.36 cfs @ 5.39 hrs, Volume= 3.415 af, Depth= 5.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.01 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=7.46"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

## Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.01 | 0.00 | 0.00 |
| 0.40 | 0.05 | 0.00 | 0.00 |
| 0.60 | 0.11 | 0.00 | 0.00 |
| 0.80 | 0.20 | 0.00 | 0.00 |
| 1.00 | 0.30 | 0.00 | 0.00 |
| 1.20 | 0.41 | 0.00 | 0.00 |
| 1.40 | 0.54 | 0.01 | 0.02 |
| 1.60 | 0.65 | 0.03 | 0.22 |
| 1.80 | 0.75 | 0.05 | 0.55 |
| 2.00 | 0.85 | 0.08 | 0.82 |
| 2.20 | 0.95 | 0.11 | 1.05 |
| 2.40 | 1.05 | 0.15 | 1.26 |
| 2.60 | 1.16 | 0.20 | 1.46 |
| 2.80 | 1.29 | 0.26 | 1.75 |
| 3.00 | 1.43 | 0.34 | 2.18 |
| 3.20 | 1.59 | 0.43 | 2.69 |
| 3.40 | 1.75 | 0.53 | 3.19 |
| 3.60 | 1.92 | 0.64 | 3.64 |
| 3.80 | 2.11 | 0.77 | 4.10 |
| 4.00 | 2.32 | 0.92 | 4.71 |
| 4.20 | 2.56 | 1.10 | 5.52 |
| 4.40 | 2.82 | 1.30 | 6.43 |
| 4.60 | 3.10 | 1.53 | 7.30 |
| 4.80 | 3.39 | 1.77 | 8.10 |
| 5.00 | 3.69 | 2.02 | 8.83 |
| 5.20 | 3.98 | 2.27 | **9.27** |
| 5.40 | 4.26 | 2.51 | **9.35** |
| 5.60 | 4.52 | 2.74 | 9.27 |
| 5.80 | 4.76 | 2.96 | 8.90 |
| 6.00 | 4.97 | 3.15 | 8.27 |
| 6.20 | 5.17 | 3.32 | 7.54 |
| 6.40 | 5.34 | 3.48 | 6.86 |
| 6.60 | 5.50 | 3.63 | 6.27 |
| 6.80 | 5.65 | 3.77 | 5.71 |
| 7.00 | 5.79 | 3.89 | 5.27 |
| 7.20 | 5.92 | 4.01 | 4.94 |
| 7.40 | 6.04 | 4.13 | 4.64 |
| 7.60 | 6.15 | 4.23 | 4.35 |
| 7.80 | 6.25 | 4.33 | 4.07 |
| 8.00 | 6.35 | 4.42 | 3.79 |
| 8.20 | 6.44 | 4.50 | 3.50 |
| 8.40 | 6.52 | 4.57 | 3.21 |
| 8.60 | 6.59 | 4.65 | 2.93 |
| 8.80 | 6.67 | 4.72 | 2.75 |
| 9.00 | 6.74 | 4.79 | 2.70 |
| 9.20 | 6.82 | 4.85 | 2.67 |
| 9.40 | 6.88 | 4.91 | 2.55 |
| 9.60 | 6.93 | 4.96 | 2.32 |
| 9.80 | 6.98 | 5.01 | 2.05 |
| 10.00 | 7.03 | 5.06 | 1.87 |
| 10.20 | 7.08 | 5.11 | 1.81 |
| 10.40 | 7.13 | 5.15 | 1.80 |
| 10.60 | 7.18 | 5.20 | 1.80 |
| 10.80 | 7.23 | 5.25 | 1.80 |
| 11.00 | 7.28 | 5.29 | 1.79 |
| 11.20 | 7.32 | 5.33 | 1.67 |
| 11.40 | 7.35 | 5.36 | 1.43 |
| 11.60 | 7.38 | 5.38 | 1.17 |
| 11.80 | 7.41 | 5.42 | 1.11 |
| 12.00 | **7.46** | **5.46** | 1.29 |
| 12.20 | 7.46 | 5.46 | 1.31 |
| 12.40 | 7.46 | 5.46 | 0.54 |
| 12.60 | 7.46 | 5.46 | 0.16 |
| 12.80 | 7.46 | 5.46 | 0.04 |
| 13.00 | 7.46 | 5.46 | 0.01 |
| 13.20 | 7.46 | 5.46 | 0.00 |
| 13.40 | 7.46 | 5.46 | 0.00 |
| 13.60 | 7.46 | 5.46 | 0.00 |
| 13.80 | 7.46 | 5.46 | 0.00 |
| 14.00 | 7.46 | 5.46 | 0.00 |
| 14.20 | 7.46 | 5.46 | 0.00 |
| 14.40 | 7.46 | 5.46 | 0.00 |
| 14.60 | 7.46 | 5.46 | 0.00 |
| 14.80 | 7.46 | 5.46 | 0.00 |
| 15.00 | 7.46 | 5.46 | 0.00 |

## Summary for Subcatchment 8S: Northwood Drive Bypass

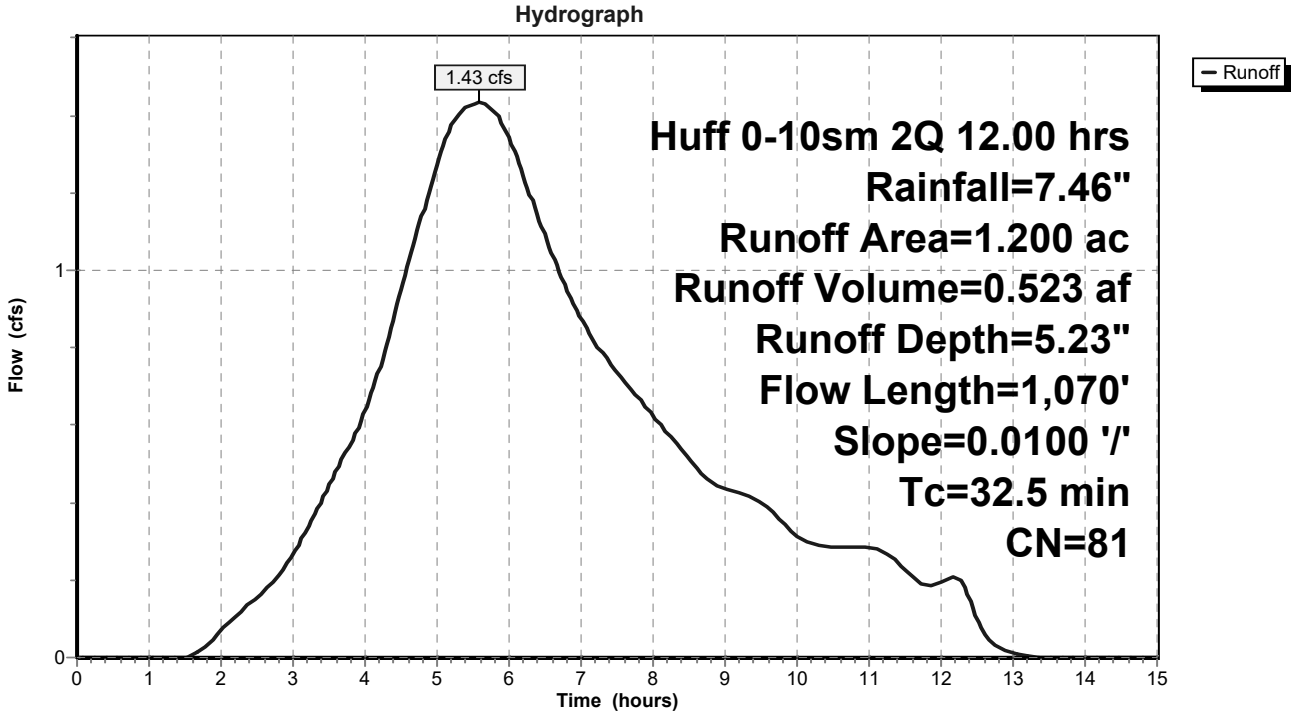
Runoff = 1.43 cfs @ 5.60 hrs, Volume= 0.523 af, Depth= 5.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.01 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=7.46"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.01 | 0.00 | 0.00 |
| 0.40 | 0.05 | 0.00 | 0.00 |
| 0.60 | 0.11 | 0.00 | 0.00 |
| 0.80 | 0.20 | 0.00 | 0.00 |
| 1.00 | 0.30 | 0.00 | 0.00 |
| 1.20 | 0.41 | 0.00 | 0.00 |
| 1.40 | 0.54 | 0.00 | 0.00 |
| 1.60 | 0.65 | 0.01 | 0.01 |
| 1.80 | 0.75 | 0.03 | 0.03 |
| 2.00 | 0.85 | 0.05 | 0.07 |
| 2.20 | 0.95 | 0.08 | 0.11 |
| 2.40 | 1.05 | 0.12 | 0.14 |
| 2.60 | 1.16 | 0.16 | 0.17 |
| 2.80 | 1.29 | 0.21 | 0.21 |
| 3.00 | 1.43 | 0.28 | 0.26 |
| 3.20 | 1.59 | 0.36 | 0.33 |
| 3.40 | 1.75 | 0.45 | 0.41 |
| 3.60 | 1.92 | 0.56 | 0.48 |
| 3.80 | 2.11 | 0.68 | 0.55 |
| 4.00 | 2.32 | 0.82 | 0.64 |
| 4.20 | 2.56 | 0.99 | 0.75 |
| 4.40 | 2.82 | 1.18 | 0.88 |
| 4.60 | 3.10 | 1.39 | 1.02 |
| 4.80 | 3.39 | 1.62 | 1.15 |
| 5.00 | 3.69 | 1.86 | 1.27 |
| 5.20 | 3.98 | 2.10 | 1.37 |
| 5.40 | 4.26 | 2.34 | 1.42 |
| 5.60 | 4.52 | 2.57 | **1.43** |
| 5.80 | 4.76 | 2.77 | 1.41 |
| 6.00 | 4.97 | 2.96 | 1.34 |
| 6.20 | 5.17 | 3.13 | 1.24 |
| 6.40 | 5.34 | 3.29 | 1.14 |
| 6.60 | 5.50 | 3.43 | 1.04 |
| 6.80 | 5.65 | 3.56 | 0.95 |
| 7.00 | 5.79 | 3.69 | 0.87 |
| 7.20 | 5.92 | 3.81 | 0.81 |
| 7.40 | 6.04 | 3.92 | 0.76 |
| 7.60 | 6.15 | 4.02 | 0.71 |
| 7.80 | 6.25 | 4.12 | 0.67 |
| 8.00 | 6.35 | 4.20 | 0.62 |
| 8.20 | 6.44 | 4.29 | 0.58 |
| 8.40 | 6.52 | 4.36 | 0.53 |
| 8.60 | 6.59 | 4.43 | 0.49 |
| 8.80 | 6.67 | 4.50 | 0.45 |
| 9.00 | 6.74 | 4.57 | 0.43 |
| 9.20 | 6.82 | 4.63 | 0.43 |
| 9.40 | 6.88 | 4.69 | 0.41 |
| 9.60 | 6.93 | 4.74 | 0.39 |
| 9.80 | 6.98 | 4.79 | 0.35 |
| 10.00 | 7.03 | 4.84 | 0.31 |
| 10.20 | 7.08 | 4.88 | 0.30 |
| 10.40 | 7.13 | 4.93 | 0.29 |
| 10.60 | 7.18 | 4.98 | 0.28 |
| 10.80 | 7.23 | 5.02 | 0.28 |
| 11.00 | 7.28 | 5.07 | 0.28 |
| 11.20 | 7.32 | 5.10 | 0.27 |
| 11.40 | 7.35 | 5.13 | 0.25 |
| 11.60 | 7.38 | 5.16 | 0.21 |
| 11.80 | 7.41 | 5.19 | 0.18 |
| 12.00 | **7.46** | **5.23** | 0.19 |
| 12.20 | 7.46 | 5.23 | 0.21 |
| 12.40 | 7.46 | 5.23 | 0.15 |
| 12.60 | 7.46 | 5.23 | 0.06 |
| 12.80 | 7.46 | 5.23 | 0.03 |
| 13.00 | 7.46 | 5.23 | 0.01 |
| 13.20 | 7.46 | 5.23 | 0.00 |
| 13.40 | 7.46 | 5.23 | 0.00 |
| 13.60 | 7.46 | 5.23 | 0.00 |
| 13.80 | 7.46 | 5.23 | 0.00 |
| 14.00 | 7.46 | 5.23 | 0.00 |
| 14.20 | 7.46 | 5.23 | 0.00 |
| 14.40 | 7.46 | 5.23 | 0.00 |
| 14.60 | 7.46 | 5.23 | 0.00 |
| 14.80 | 7.46 | 5.23 | 0.00 |
| 15.00 | 7.46 | 5.23 | 0.00 |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

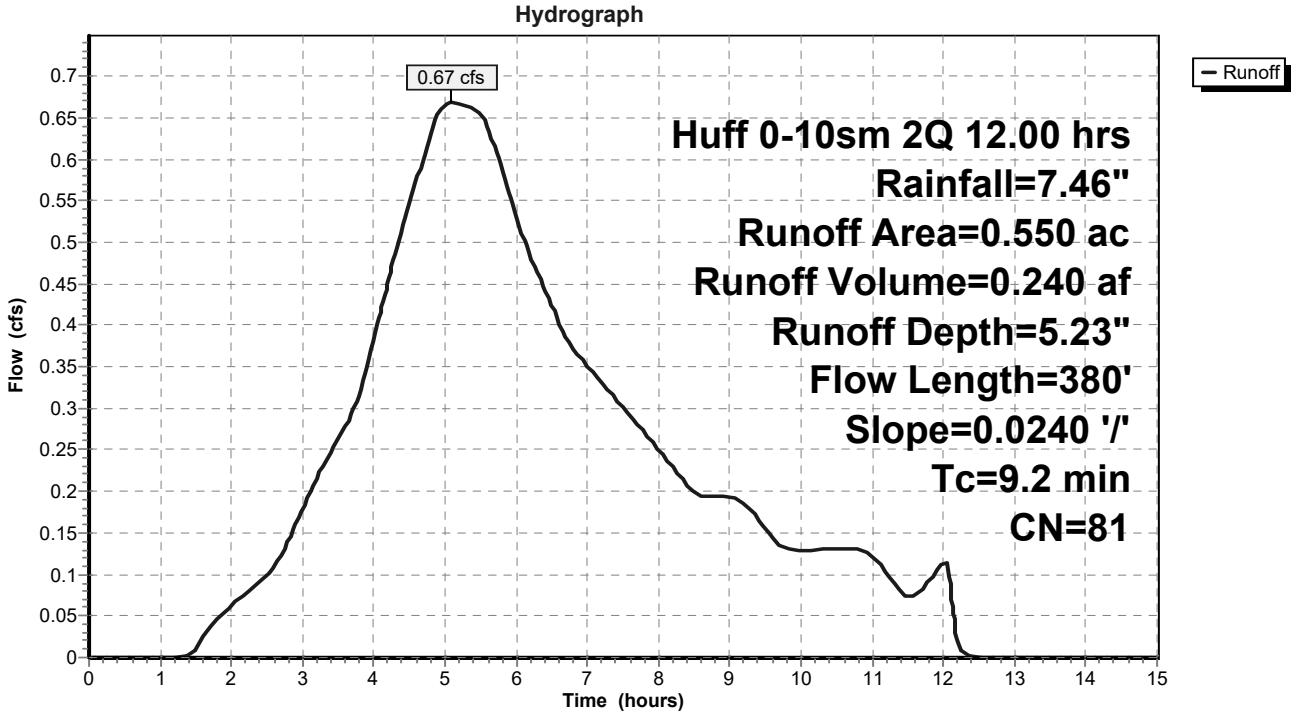
Runoff = 0.67 cfs @ 5.08 hrs, Volume= 0.240 af, Depth= 5.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.01 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=7.46"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.01 | 0.00 | 0.00 |
| 0.40 | 0.05 | 0.00 | 0.00 |
| 0.60 | 0.11 | 0.00 | 0.00 |
| 0.80 | 0.20 | 0.00 | 0.00 |
| 1.00 | 0.30 | 0.00 | 0.00 |
| 1.20 | 0.41 | 0.00 | 0.00 |
| 1.40 | 0.54 | 0.00 | 0.00 |
| 1.60 | 0.65 | 0.01 | 0.03 |
| 1.80 | 0.75 | 0.03 | 0.05 |
| 2.00 | 0.85 | 0.05 | 0.06 |
| 2.20 | 0.95 | 0.08 | 0.08 |
| 2.40 | 1.05 | 0.12 | 0.09 |
| 2.60 | 1.16 | 0.16 | 0.11 |
| 2.80 | 1.29 | 0.21 | 0.14 |
| 3.00 | 1.43 | 0.28 | 0.18 |
| 3.20 | 1.59 | 0.36 | 0.22 |
| 3.40 | 1.75 | 0.45 | 0.25 |
| 3.60 | 1.92 | 0.56 | 0.28 |
| 3.80 | 2.11 | 0.68 | 0.32 |
| 4.00 | 2.32 | 0.82 | 0.38 |
| 4.20 | 2.56 | 0.99 | 0.45 |
| 4.40 | 2.82 | 1.18 | 0.52 |
| 4.60 | 3.10 | 1.39 | 0.57 |
| 4.80 | 3.39 | 1.62 | 0.63 |
| 5.00 | 3.69 | 1.86 | **0.67** |
| 5.20 | 3.98 | 2.10 | **0.67** |
| 5.40 | 4.26 | 2.34 | 0.66 |
| 5.60 | 4.52 | 2.57 | 0.64 |
| 5.80 | 4.76 | 2.77 | 0.59 |
| 6.00 | 4.97 | 2.96 | 0.53 |
| 6.20 | 5.17 | 3.13 | 0.48 |
| 6.40 | 5.34 | 3.29 | 0.44 |
| 6.60 | 5.50 | 3.43 | 0.40 |
| 6.80 | 5.65 | 3.56 | 0.37 |
| 7.00 | 5.79 | 3.69 | 0.35 |
| 7.20 | 5.92 | 3.81 | 0.33 |
| 7.40 | 6.04 | 3.92 | 0.31 |
| 7.60 | 6.15 | 4.02 | 0.29 |
| 7.80 | 6.25 | 4.12 | 0.27 |
| 8.00 | 6.35 | 4.20 | 0.25 |
| 8.20 | 6.44 | 4.29 | 0.23 |
| 8.40 | 6.52 | 4.36 | 0.21 |
| 8.60 | 6.59 | 4.43 | 0.19 |
| 8.80 | 6.67 | 4.50 | 0.19 |
| 9.00 | 6.74 | 4.57 | 0.19 |
| 9.20 | 6.82 | 4.63 | 0.19 |
| 9.40 | 6.88 | 4.69 | 0.17 |
| 9.60 | 6.93 | 4.74 | 0.14 |
| 9.80 | 6.98 | 4.79 | 0.13 |
| 10.00 | 7.03 | 4.84 | 0.13 |
| 10.20 | 7.08 | 4.88 | 0.13 |
| 10.40 | 7.13 | 4.93 | 0.13 |
| 10.60 | 7.18 | 4.98 | 0.13 |
| 10.80 | 7.23 | 5.02 | 0.13 |
| 11.00 | 7.28 | 5.07 | 0.12 |
| 11.20 | 7.32 | 5.10 | 0.10 |
| 11.40 | 7.35 | 5.13 | 0.08 |
| 11.60 | 7.38 | 5.16 | 0.07 |
| 11.80 | 7.41 | 5.19 | 0.09 |
| 12.00 | **7.46** | **5.23** | 0.11 |
| 12.20 | 7.46 | 5.23 | 0.02 |
| 12.40 | 7.46 | 5.23 | 0.00 |
| 12.60 | 7.46 | 5.23 | 0.00 |
| 12.80 | 7.46 | 5.23 | 0.00 |
| 13.00 | 7.46 | 5.23 | 0.00 |
| 13.20 | 7.46 | 5.23 | 0.00 |
| 13.40 | 7.46 | 5.23 | 0.00 |
| 13.60 | 7.46 | 5.23 | 0.00 |
| 13.80 | 7.46 | 5.23 | 0.00 |
| 14.00 | 7.46 | 5.23 | 0.00 |
| 14.20 | 7.46 | 5.23 | 0.00 |
| 14.40 | 7.46 | 5.23 | 0.00 |
| 14.60 | 7.46 | 5.23 | 0.00 |
| 14.80 | 7.46 | 5.23 | 0.00 |
| 15.00 | 7.46 | 5.23 | 0.00 |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 13.73 cfs @ | 5.39 hrs, | Volume= | 4.504 af |
| Outflow | = | 4.29 cfs @ | 7.85 hrs, | Volume= | 1.799 af, Atten= 69%, Lag= 147.7 min |
| Primary | = | 1.52 cfs @ | 7.84 hrs, | Volume= | 1.283 af |
| Secondary | = | 2.77 cfs @ | 7.85 hrs, | Volume= | 0.515 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-15.00 hrs, dt= 0.01 hrs
Peak Elev= 678.35' @ 7.84 hrs Surf.Area= 47,081 sf Storage= 135,876 cf

Plug-Flow detention time= 303.0 min calculated for 1.797 af (40% of inflow)
Center-of-Mass det. time= 191.6 min ( 563.9 - 372.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

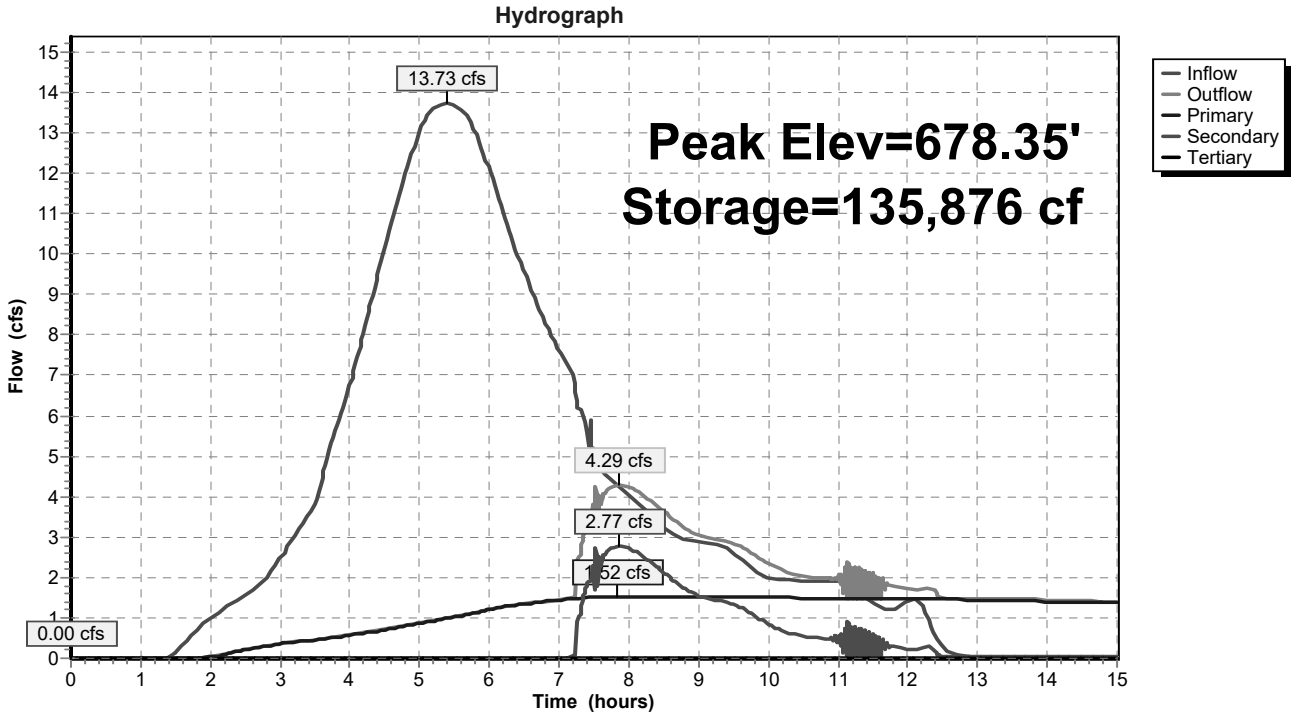
#4 Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=1.52 cfs @ 7.84 hrs HW=678.35' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.52 cfs @ 13.76 fps)

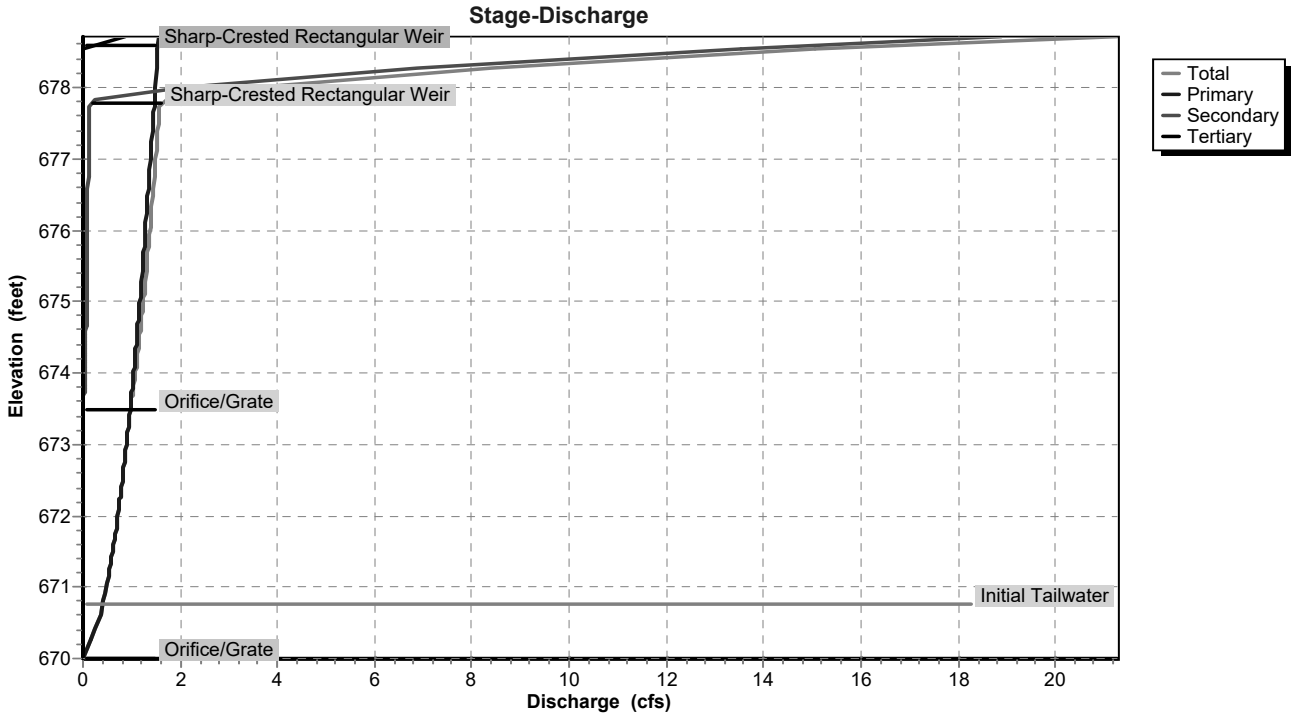
**Secondary OutFlow** Max=2.78 cfs @ 7.85 hrs HW=678.35' TW=678.33' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** (Weir Controls 2.77 cfs @ 0.85 fps)
└─**4=Orifice/Grate** (Orifice Controls 0.01 cfs @ 0.69 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

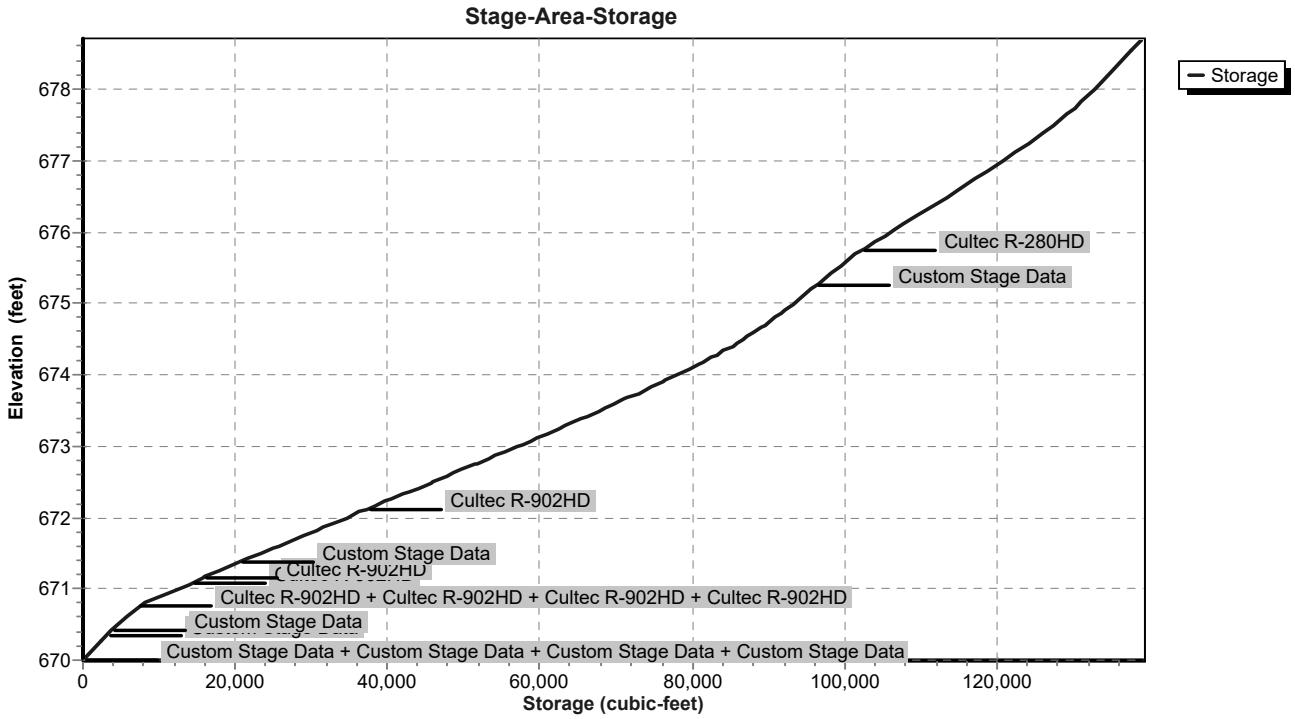
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.50 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.50 | 0.11 | 22 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.99 | 1,053 | 670.12 | 0.03 | 0.03 | 0.00 | 0.00 |
| 2.50 | 1.56 | 3,148 | 670.35 | 0.22 | 0.22 | 0.00 | 0.00 |
| 3.00 | 2.47 | 6,117 | 670.65 | 0.36 | 0.36 | 0.00 | 0.00 |
| 3.50 | 3.80 | 11,022 | 670.94 | 0.46 | 0.46 | 0.00 | 0.00 |
| 4.00 | 6.74 | 19,630 | 671.34 | 0.57 | 0.57 | 0.00 | 0.00 |
| 4.50 | 10.18 | 33,650 | 671.96 | 0.71 | 0.71 | 0.00 | 0.00 |
| 5.00 | **13.05** | 53,195 | 672.82 | 0.86 | 0.86 | 0.00 | 0.00 |
| 5.50 | **13.69** | 75,929 | 673.90 | 1.02 | 1.02 | 0.00 | 0.00 |
| 6.00 | 12.07 | 97,514 | 675.36 | 1.21 | 1.21 | 0.00 | 0.00 |
| 6.50 | 9.56 | 114,622 | 676.57 | 1.34 | 1.34 | 0.00 | 0.00 |
| 7.00 | 7.63 | 127,505 | 677.51 | 1.44 | 1.44 | 0.00 | 0.00 |
| 7.50 | 5.94 | **135,201** | **678.28** | **3.22** | **1.51** | **1.71** | 0.00 |
| 8.00 | 4.04 | **135,812** | **678.35** | **4.24** | **1.52** | **2.72** | 0.00 |
| 8.50 | 3.26 | 135,253 | 678.28 | 3.64 | 1.51 | 2.12 | 0.00 |
| 9.00 | 2.89 | 134,711 | 678.22 | 3.05 | 1.51 | 1.55 | 0.00 |
| 9.50 | 2.60 | 134,451 | 678.19 | 2.84 | 1.50 | 1.34 | 0.00 |
| 10.00 | 2.00 | 133,834 | 678.13 | 2.34 | 1.50 | 0.84 | 0.00 |
| 10.50 | 1.93 | 133,444 | 678.08 | 2.04 | 1.49 | 0.55 | 0.00 |
| 11.00 | 1.91 | 133,321 | 678.07 | 2.02 | 1.49 | 0.53 | 0.00 |
| 11.50 | 1.37 | 132,899 | 678.02 | 2.03 | 1.49 | 0.54 | 0.00 |
| 12.00 | 1.41 | 131,957 | 677.92 | 1.71 | 1.48 | 0.23 | 0.00 |
| 12.50 | 0.29 | 130,807 | 677.80 | 1.49 | 1.47 | 0.02 | 0.00 |
| 13.00 | 0.01 | 128,296 | 677.57 | 1.48 | 1.45 | 0.04 | 0.00 |
| 13.50 | 0.00 | 125,639 | 677.36 | 1.47 | 1.42 | 0.05 | 0.00 |
| 14.00 | 0.00 | 123,012 | 677.16 | 1.45 | 1.40 | 0.04 | 0.00 |
| 14.50 | 0.00 | 120,429 | 676.98 | 1.42 | 1.39 | 0.04 | 0.00 |
| 15.00 | 0.00 | 117,895 | 676.80 | 1.39 | 1.37 | 0.03 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 16.68 | 1.54 | 15.13 | 0.00 |
| 678.80 | **24.77** | **1.56** | **21.42** | **1.79** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) |
|---|---|
| 670.00 | 0 |
| 670.10 | 893 |
| 670.20 | 1,787 |
| 670.30 | 2,681 |
| 670.40 | 3,618 |
| 670.50 | 4,626 |
| 670.60 | 5,639 |
| 670.70 | 6,653 |
| 670.80 | 8,202 |
| 670.90 | 10,288 |
| 671.00 | 12,379 |
| 671.10 | 14,465 |
| 671.20 | 16,635 |
| 671.30 | 18,830 |
| 671.40 | 21,049 |
| 671.50 | 23,322 |
| 671.60 | 25,582 |
| 671.70 | 27,830 |
| 671.80 | 30,075 |
| 671.90 | 32,317 |
| 672.00 | 34,546 |
| 672.10 | 36,761 |
| 672.20 | 39,047 |
| 672.30 | 41,344 |
| 672.40 | 43,628 |
| 672.50 | 45,906 |
| 672.60 | 48,170 |
| 672.70 | 50,428 |
| 672.80 | 52,674 |
| 672.90 | 54,899 |
| 673.00 | 57,117 |
| 673.10 | 59,314 |
| 673.20 | 61,492 |
| 673.30 | 63,654 |
| 673.40 | 65,789 |
| 673.50 | 67,899 |
| 673.60 | 69,981 |
| 673.70 | 72,030 |
| 673.80 | 74,047 |
| 673.90 | 76,023 |
| 674.00 | 77,955 |
| 674.10 | 79,844 |
| 674.20 | 81,679 |
| 674.30 | 83,453 |
| 674.40 | 85,139 |
| 674.50 | 86,709 |
| 674.60 | 88,153 |
| 674.70 | 89,496 |
| 674.80 | 90,763 |
| 674.90 | 91,997 |
| 675.00 | 93,215 |
| 675.10 | 94,422 |
| 675.20 | 95,621 |
| 675.30 | 96,808 |
| 675.40 | 97,984 |
| 675.50 | 99,158 |
| 675.60 | 100,327 |
| 675.70 | 101,491 |
| 675.80 | 102,865 |
| 675.90 | 104,433 |
| 676.00 | 105,977 |
| 676.10 | 107,509 |
| 676.20 | 109,032 |
| 676.30 | 110,542 |
| 676.40 | 112,038 |
| 676.50 | 113,523 |
| 676.60 | 114,993 |
| 676.70 | 116,452 |
| 676.80 | 117,901 |
| 676.90 | 119,339 |
| 677.00 | 120,753 |
| 677.10 | 122,143 |
| 677.20 | 123,511 |
| 677.30 | 124,850 |
| 677.40 | 126,157 |
| 677.50 | 127,426 |
| 677.60 | 128,644 |
| 677.70 | 129,794 |
| 677.80 | 130,846 |
| 677.90 | 131,802 |
| 678.00 | 132,704 |
| 678.10 | 133,604 |
| 678.20 | 134,505 |
| 678.30 | 135,406 |
| 678.40 | 136,307 |
| 678.50 | 137,209 |
| 678.60 | 138,112 |
| 678.70 | 139,014 |
| 678.80 | 139,917 |
| 678.90 | **140,821** |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 5.79 cfs @ | 5.31 hrs, | Volume= | 2.632 af |
| Outflow | = | 5.79 cfs @ | 5.39 hrs, | Volume= | 2.630 af, Atten= 0%, Lag= 4.9 min |
| Primary | = | 5.24 cfs @ | 7.82 hrs, | Volume= | 1.780 af |
| Secondary | = | 3.71 cfs @ | 5.36 hrs, | Volume= | 0.850 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-15.00 hrs, dt= 0.01 hrs
Peak Elev= 678.33' @ 7.82 hrs Surf.Area= 3,505 sf Storage= 4,342 cf

Plug-Flow detention time= 18.1 min calculated for 2.628 af (100% of inflow)
Center-of-Mass det. time= 17.7 min ( 429.4 - 411.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

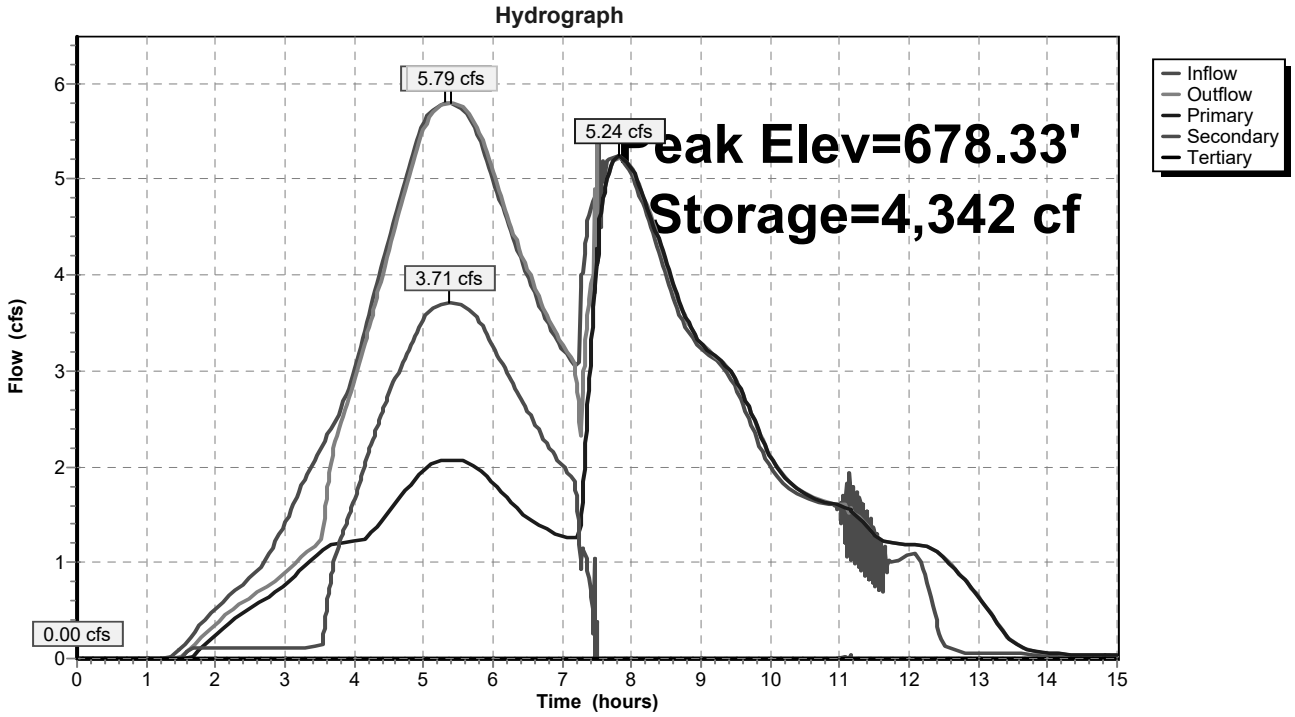
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.50' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=5.24 cfs @ 7.82 hrs HW=678.33' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 1.39 cfs @ 6.02 fps)
- **2=Sharp-Crested Rectangular Weir** (Weir Controls 3.86 cfs @ 1.96 fps)

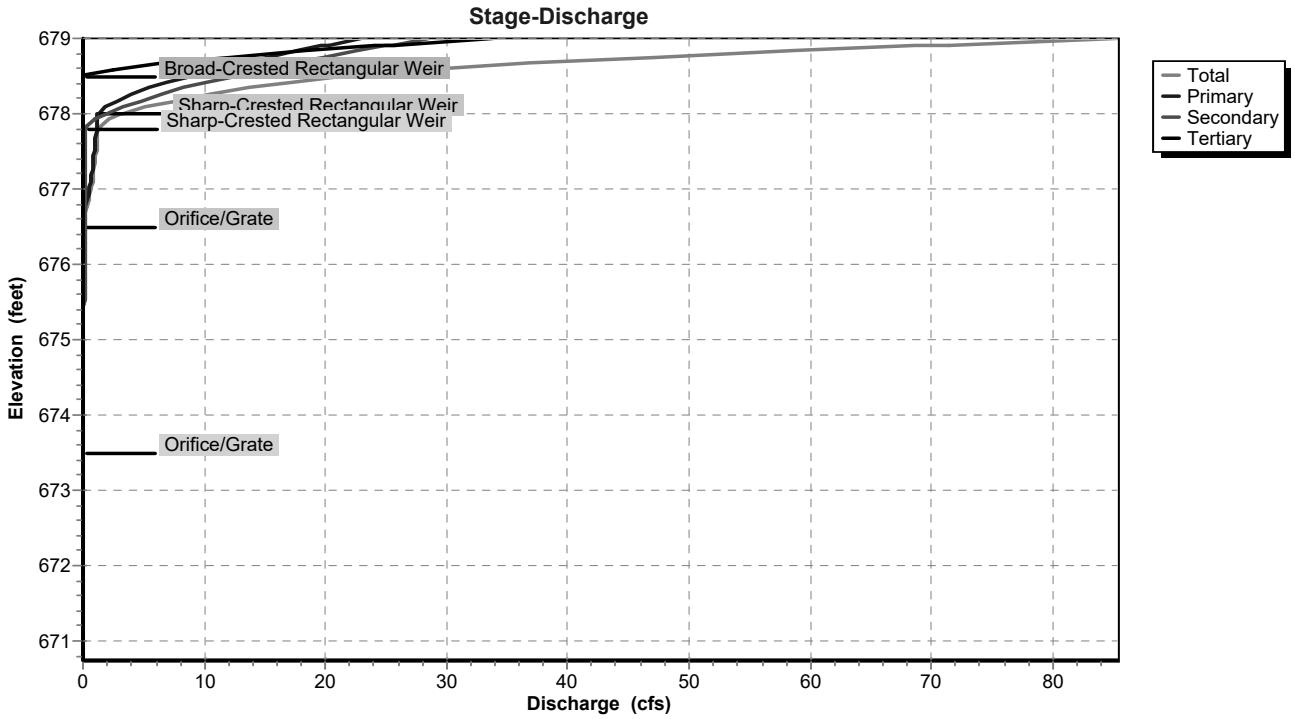
**Secondary OutFlow** Max=3.71 cfs @ 5.36 hrs HW=678.12' TW=673.57' (Dynamic Tailwater)
- **4=Orifice/Grate** (Orifice Controls 0.13 cfs @ 10.26 fps)
- **5=Sharp-Crested Rectangular Weir** (Weir Controls 3.59 cfs @ 1.91 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
- **3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

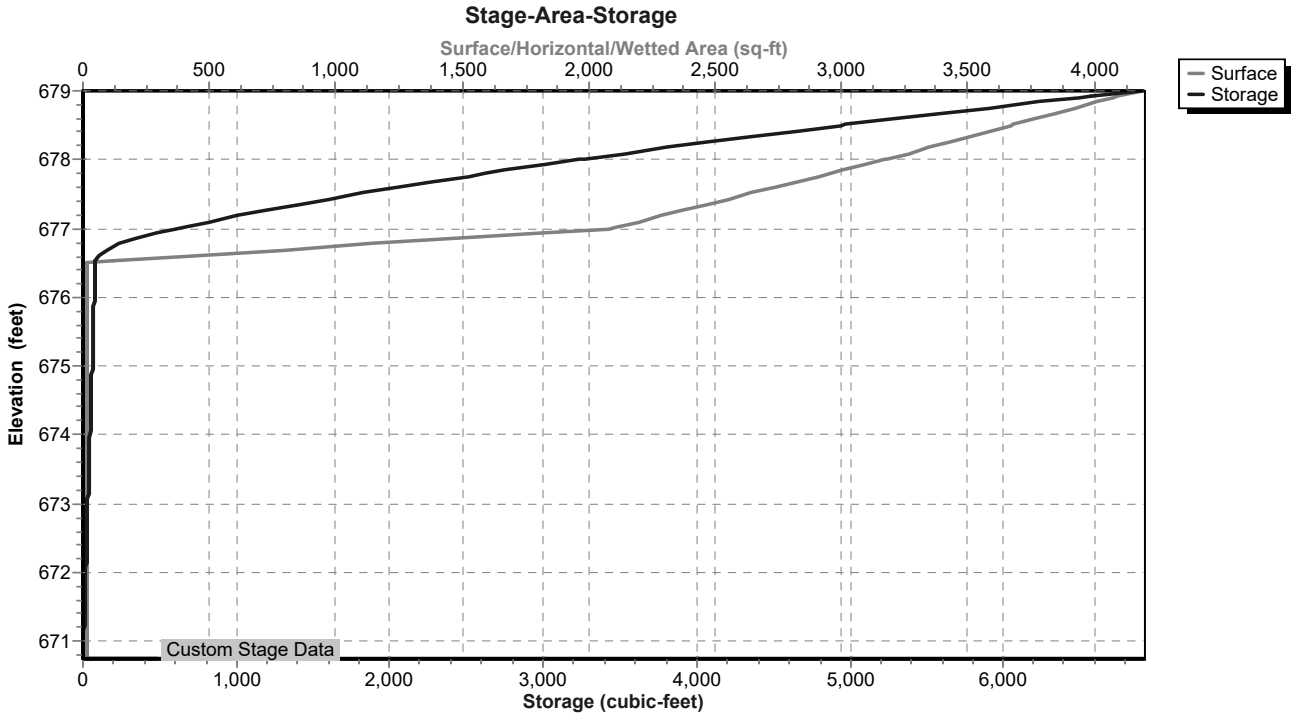
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.50 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.50 | 0.10 | 25 | 672.54 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.52 | 277 | 676.80 | 0.35 | 0.25 | 0.11 | 0.00 |
| 2.50 | 0.84 | 599 | 677.00 | 0.64 | 0.53 | 0.11 | 0.00 |
| 3.00 | 1.41 | 1,190 | 677.26 | 0.89 | 0.78 | 0.11 | 0.00 |
| 3.50 | 2.17 | 2,520 | 677.77 | 1.23 | 1.11 | 0.12 | 0.00 |
| 4.00 | 3.03 | 3,173 | 677.98 | 2.87 | 1.22 | 1.65 | 0.00 |
| 4.50 | 4.39 | 3,421 | 678.06 | 4.29 | 1.53 | 2.76 | 0.00 |
| 5.00 | **5.58** | 3,578 | 678.11 | **5.52** | 1.97 | **3.54** | 0.00 |
| 5.50 | **5.76** | 3,610 | 678.12 | **5.77** | 2.07 | **3.70** | 0.00 |
| 6.00 | 5.01 | 3,529 | 678.09 | 5.09 | 1.82 | 3.26 | 0.00 |
| 6.50 | 3.99 | 3,395 | 678.05 | 4.05 | 1.48 | 2.58 | 0.00 |
| 7.00 | 3.23 | 3,277 | 678.01 | 3.28 | 1.27 | 2.01 | 0.00 |
| 7.50 | 4.47 | **4,147** | **678.28** | 5.41 | **4.27** | 1.14 | 0.00 |
| 8.00 | 5.03 | **4,315** | **678.32** | 5.10 | **5.10** | 0.00 | 0.00 |
| 8.50 | 3.99 | 4,115 | 678.27 | 4.12 | 4.12 | 0.00 | 0.00 |
| 9.00 | 3.23 | 3,931 | 678.21 | 3.29 | 3.29 | 0.00 | 0.00 |
| 9.50 | 2.81 | 3,838 | 678.18 | 2.90 | 2.90 | 0.00 | 0.00 |
| 10.00 | 1.99 | 3,622 | 678.12 | 2.11 | 2.11 | 0.00 | 0.00 |
| 10.50 | 1.67 | 3,490 | 678.08 | 1.71 | 1.71 | 0.00 | 0.00 |
| 11.00 | 1.64 | 3,444 | 678.07 | 1.59 | 1.59 | 0.00 | 0.00 |
| 11.50 | 1.30 | 3,293 | 678.02 | 1.29 | 1.29 | 0.00 | 0.00 |
| 12.00 | 1.09 | 2,962 | 677.91 | 1.19 | 1.19 | 0.00 | 0.00 |
| 12.50 | 0.15 | 2,260 | 677.67 | 1.05 | 1.05 | 0.00 | 0.00 |
| 13.00 | 0.05 | 843 | 677.11 | 0.65 | 0.65 | 0.00 | 0.00 |
| 13.50 | 0.05 | 211 | 676.74 | 0.17 | 0.17 | 0.00 | 0.00 |
| 14.00 | 0.04 | 123 | 676.63 | 0.06 | 0.06 | 0.00 | 0.00 |
| 14.50 | 0.04 | 110 | 676.61 | 0.04 | 0.04 | 0.00 | 0.00 |
| 15.00 | 0.00 | 103 | 676.60 | 0.03 | 0.03 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 24.61 | 9.86 | 13.70 | 1.05 |
| 678.75 | 46.70 | 15.13 | 19.77 | 11.80 |
| 678.95 | **76.77** | **21.27** | **26.68** | **28.82** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

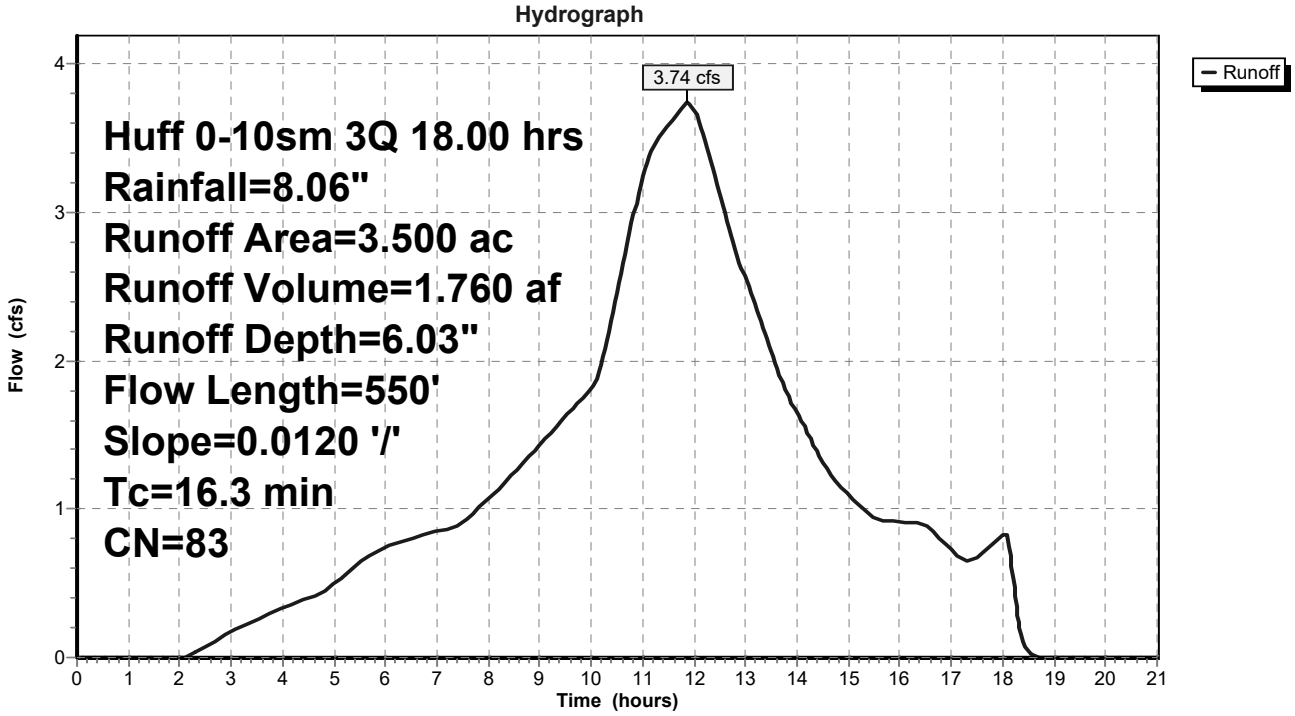
Runoff = 3.74 cfs @ 11.86 hrs, Volume= 1.760 af, Depth= 6.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.02 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=8.06"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 10.60 | 3.97 | 2.26 | 2.60 |
| 0.20 | 0.01 | 0.00 | 0.00 | 10.80 | 4.17 | 2.44 | 2.94 |
| 0.40 | 0.02 | 0.00 | 0.00 | 11.00 | 4.39 | 2.63 | 3.26 |
| 0.60 | 0.05 | 0.00 | 0.00 | 11.20 | 4.62 | 2.83 | 3.43 |
| 0.80 | 0.10 | 0.00 | 0.00 | 11.40 | 4.85 | 3.04 | 3.54 |
| 1.00 | 0.15 | 0.00 | 0.00 | 11.60 | 5.08 | 3.25 | 3.63 |
| 1.20 | 0.20 | 0.00 | 0.00 | 11.80 | 5.31 | 3.46 | **3.72** |
| 1.40 | 0.26 | 0.00 | 0.00 | 12.00 | 5.53 | 3.66 | **3.69** |
| 1.60 | 0.31 | 0.00 | 0.00 | 12.20 | 5.74 | 3.85 | 3.49 |
| 1.80 | 0.37 | 0.00 | 0.00 | 12.40 | 5.92 | 4.02 | 3.26 |
| 2.00 | 0.42 | 0.00 | 0.00 | 12.60 | 6.10 | 4.18 | 3.00 |
| 2.20 | 0.48 | 0.00 | 0.01 | 12.80 | 6.25 | 4.33 | 2.76 |
| 2.40 | 0.53 | 0.01 | 0.05 | 13.00 | 6.40 | 4.46 | 2.55 |
| 2.60 | 0.59 | 0.01 | 0.09 | 13.20 | 6.53 | 4.59 | 2.35 |
| 2.80 | 0.64 | 0.02 | 0.14 | 13.40 | 6.65 | 4.70 | 2.15 |
| 3.00 | 0.70 | 0.04 | 0.18 | 13.60 | 6.76 | 4.80 | 1.96 |
| 3.20 | 0.75 | 0.05 | 0.21 | 13.80 | 6.86 | 4.90 | 1.79 |
| 3.40 | 0.80 | 0.06 | 0.25 | 14.00 | 6.96 | 4.99 | 1.65 |
| 3.60 | 0.86 | 0.08 | 0.28 | 14.20 | 7.04 | 5.07 | 1.51 |
| 3.80 | 0.91 | 0.10 | 0.31 | 14.40 | 7.12 | 5.14 | 1.38 |
| 4.00 | 0.97 | 0.12 | 0.34 | 14.60 | 7.19 | 5.21 | 1.25 |
| 4.20 | 1.02 | 0.14 | 0.36 | 14.80 | 7.26 | 5.27 | 1.17 |
| 4.40 | 1.08 | 0.16 | 0.39 | 15.00 | 7.32 | 5.33 | 1.10 |
| 4.60 | 1.13 | 0.19 | 0.41 | 15.20 | 7.38 | 5.39 | 1.03 |
| 4.80 | 1.19 | 0.22 | 0.44 | 15.40 | 7.43 | 5.44 | 0.96 |
| 5.00 | 1.25 | 0.25 | 0.50 | 15.60 | 7.49 | 5.49 | 0.92 |
| 5.20 | 1.32 | 0.28 | 0.55 | 15.80 | 7.54 | 5.54 | 0.92 |
| 5.40 | 1.39 | 0.32 | 0.62 | 16.00 | 7.60 | 5.59 | 0.91 |
| 5.60 | 1.46 | 0.36 | 0.68 | 16.20 | 7.65 | 5.64 | 0.92 |
| 5.80 | 1.54 | 0.40 | 0.71 | 16.40 | 7.70 | 5.69 | 0.91 |
| 6.00 | 1.61 | 0.44 | 0.74 | 16.60 | 7.75 | 5.74 | 0.86 |
| 6.20 | 1.68 | 0.49 | 0.77 | 16.80 | 7.80 | 5.78 | 0.80 |
| 6.40 | 1.75 | 0.53 | 0.79 | 17.00 | 7.84 | 5.82 | 0.73 |
| 6.60 | 1.83 | 0.58 | 0.81 | 17.20 | 7.87 | 5.86 | 0.66 |
| 6.80 | 1.90 | 0.63 | 0.83 | 17.40 | 7.91 | 5.90 | 0.65 |
| 7.00 | 1.97 | 0.68 | 0.85 | 17.60 | 7.96 | 5.94 | 0.70 |
| 7.20 | 2.05 | 0.73 | 0.87 | 17.80 | 8.01 | 5.98 | 0.77 |
| 7.40 | 2.12 | 0.78 | 0.89 | 18.00 | **8.06** | **6.03** | 0.83 |
| 7.60 | 2.20 | 0.83 | 0.94 | 18.20 | 8.06 | 6.03 | 0.55 |
| 7.80 | 2.28 | 0.89 | 1.00 | 18.40 | 8.06 | 6.03 | 0.10 |
| 8.00 | 2.37 | 0.96 | 1.07 | 18.60 | 8.06 | 6.03 | 0.02 |
| 8.20 | 2.46 | 1.03 | 1.14 | 18.80 | 8.06 | 6.03 | 0.00 |
| 8.40 | 2.55 | 1.10 | 1.21 | 19.00 | 8.06 | 6.03 | 0.00 |
| 8.60 | 2.65 | 1.17 | 1.28 | 19.20 | 8.06 | 6.03 | 0.00 |
| 8.80 | 2.76 | 1.25 | 1.36 | 19.40 | 8.06 | 6.03 | 0.00 |
| 9.00 | 2.86 | 1.34 | 1.43 | 19.60 | 8.06 | 6.03 | 0.00 |
| 9.20 | 2.98 | 1.43 | 1.51 | 19.80 | 8.06 | 6.03 | 0.00 |
| 9.40 | 3.09 | 1.52 | 1.58 | 20.00 | 8.06 | 6.03 | 0.00 |
| 9.60 | 3.21 | 1.62 | 1.66 | 20.20 | 8.06 | 6.03 | 0.00 |
| 9.80 | 3.33 | 1.72 | 1.74 | 20.40 | 8.06 | 6.03 | 0.00 |
| 10.00 | 3.46 | 1.83 | 1.82 | 20.60 | 8.06 | 6.03 | 0.00 |
| 10.20 | 3.61 | 1.95 | 1.99 | 20.80 | 8.06 | 6.03 | 0.00 |
| 10.40 | 3.78 | 2.09 | 2.28 | 21.00 | 8.06 | 6.03 | 0.00 |

## Summary for Subcatchment 7S: South Property

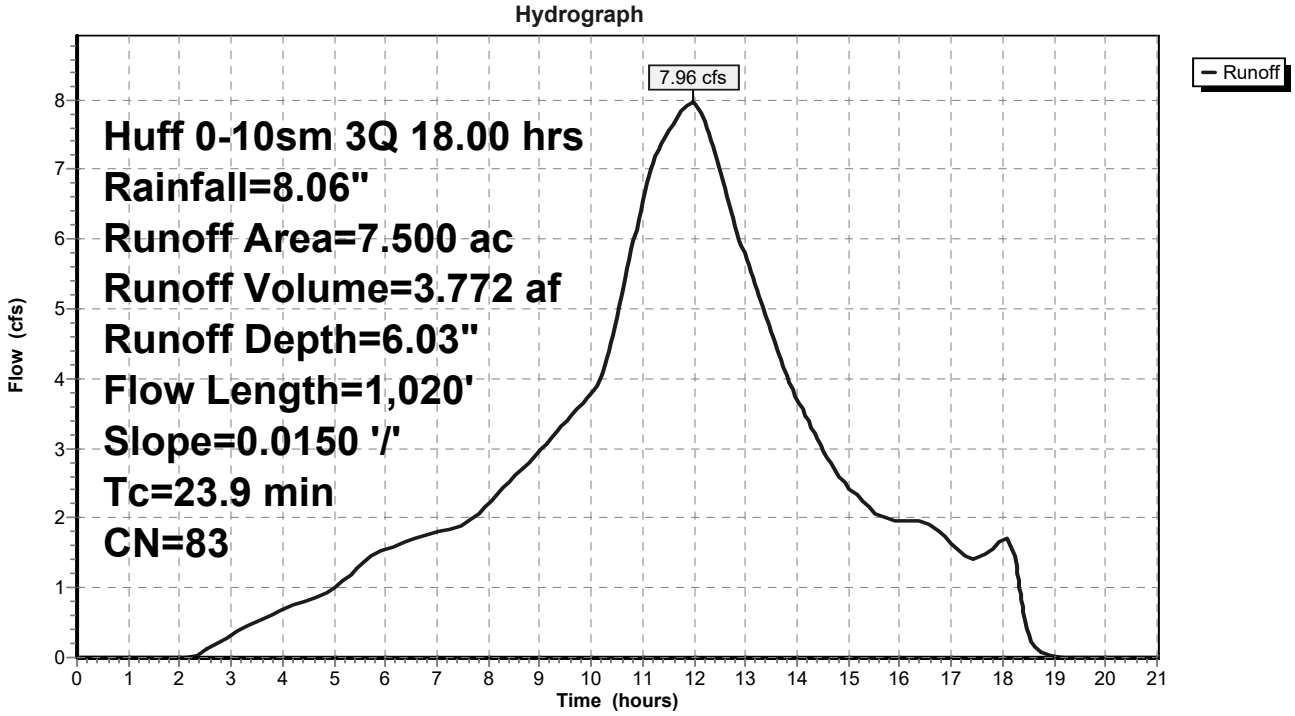
Runoff = 7.96 cfs @ 11.97 hrs, Volume= 3.772 af, Depth= 6.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.02 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=8.06"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 10.60 | 3.97 | 2.26 | 5.19 |
| 0.20 | 0.01 | 0.00 | 0.00 | 10.80 | 4.17 | 2.44 | 5.88 |
| 0.40 | 0.02 | 0.00 | 0.00 | 11.00 | 4.39 | 2.63 | 6.59 |
| 0.60 | 0.05 | 0.00 | 0.00 | 11.20 | 4.62 | 2.83 | 7.11 |
| 0.80 | 0.10 | 0.00 | 0.00 | 11.40 | 4.85 | 3.04 | 7.43 |
| 1.00 | 0.15 | 0.00 | 0.00 | 11.60 | 5.08 | 3.25 | 7.66 |
| 1.20 | 0.20 | 0.00 | 0.00 | 11.80 | 5.31 | 3.46 | **7.86** |
| 1.40 | 0.26 | 0.00 | 0.00 | 12.00 | 5.53 | 3.66 | **7.95** |
| 1.60 | 0.31 | 0.00 | 0.00 | 12.20 | 5.74 | 3.85 | 7.70 |
| 1.80 | 0.37 | 0.00 | 0.00 | 12.40 | 5.92 | 4.02 | 7.26 |
| 2.00 | 0.42 | 0.00 | 0.00 | 12.60 | 6.10 | 4.18 | 6.75 |
| 2.20 | 0.48 | 0.00 | 0.01 | 12.80 | 6.25 | 4.33 | 6.21 |
| 2.40 | 0.53 | 0.01 | 0.06 | 13.00 | 6.40 | 4.46 | 5.73 |
| 2.60 | 0.59 | 0.01 | 0.15 | 13.20 | 6.53 | 4.59 | 5.29 |
| 2.80 | 0.64 | 0.02 | 0.24 | 13.40 | 6.65 | 4.70 | 4.87 |
| 3.00 | 0.70 | 0.04 | 0.33 | 13.60 | 6.76 | 4.80 | 4.44 |
| 3.20 | 0.75 | 0.05 | 0.41 | 13.80 | 6.86 | 4.90 | 4.05 |
| 3.40 | 0.80 | 0.06 | 0.48 | 14.00 | 6.96 | 4.99 | 3.72 |
| 3.60 | 0.86 | 0.08 | 0.55 | 14.20 | 7.04 | 5.07 | 3.42 |
| 3.80 | 0.91 | 0.10 | 0.62 | 14.40 | 7.12 | 5.14 | 3.13 |
| 4.00 | 0.97 | 0.12 | 0.68 | 14.60 | 7.19 | 5.21 | 2.85 |
| 4.20 | 1.02 | 0.14 | 0.74 | 14.80 | 7.26 | 5.27 | 2.62 |
| 4.40 | 1.08 | 0.16 | 0.80 | 15.00 | 7.32 | 5.33 | 2.45 |
| 4.60 | 1.13 | 0.19 | 0.85 | 15.20 | 7.38 | 5.39 | 2.30 |
| 4.80 | 1.19 | 0.22 | 0.91 | 15.40 | 7.43 | 5.44 | 2.15 |
| 5.00 | 1.25 | 0.25 | 1.00 | 15.60 | 7.49 | 5.49 | 2.03 |
| 5.20 | 1.32 | 0.28 | 1.11 | 15.80 | 7.54 | 5.54 | 1.98 |
| 5.40 | 1.39 | 0.32 | 1.24 | 16.00 | 7.60 | 5.59 | 1.96 |
| 5.60 | 1.46 | 0.36 | 1.37 | 16.20 | 7.65 | 5.64 | 1.96 |
| 5.80 | 1.54 | 0.40 | 1.48 | 16.40 | 7.70 | 5.69 | 1.96 |
| 6.00 | 1.61 | 0.44 | 1.55 | 16.60 | 7.75 | 5.74 | 1.90 |
| 6.20 | 1.68 | 0.49 | 1.61 | 16.80 | 7.80 | 5.78 | 1.79 |
| 6.40 | 1.75 | 0.53 | 1.66 | 17.00 | 7.84 | 5.82 | 1.65 |
| 6.60 | 1.83 | 0.58 | 1.71 | 17.20 | 7.87 | 5.86 | 1.51 |
| 6.80 | 1.90 | 0.63 | 1.75 | 17.40 | 7.91 | 5.90 | 1.41 |
| 7.00 | 1.97 | 0.68 | 1.79 | 17.60 | 7.96 | 5.94 | 1.45 |
| 7.20 | 2.05 | 0.73 | 1.83 | 17.80 | 8.01 | 5.98 | 1.56 |
| 7.40 | 2.12 | 0.78 | 1.87 | 18.00 | **8.06** | **6.03** | 1.70 |
| 7.60 | 2.20 | 0.83 | 1.95 | 18.20 | 8.06 | 6.03 | 1.58 |
| 7.80 | 2.28 | 0.89 | 2.07 | 18.40 | 8.06 | 6.03 | 0.64 |
| 8.00 | 2.37 | 0.96 | 2.21 | 18.60 | 8.06 | 6.03 | 0.19 |
| 8.20 | 2.46 | 1.03 | 2.36 | 18.80 | 8.06 | 6.03 | 0.05 |
| 8.40 | 2.55 | 1.10 | 2.51 | 19.00 | 8.06 | 6.03 | 0.01 |
| 8.60 | 2.65 | 1.17 | 2.66 | 19.20 | 8.06 | 6.03 | 0.00 |
| 8.80 | 2.76 | 1.25 | 2.82 | 19.40 | 8.06 | 6.03 | 0.00 |
| 9.00 | 2.86 | 1.34 | 2.98 | 19.60 | 8.06 | 6.03 | 0.00 |
| 9.20 | 2.98 | 1.43 | 3.14 | 19.80 | 8.06 | 6.03 | 0.00 |
| 9.40 | 3.09 | 1.52 | 3.30 | 20.00 | 8.06 | 6.03 | 0.00 |
| 9.60 | 3.21 | 1.62 | 3.46 | 20.20 | 8.06 | 6.03 | 0.00 |
| 9.80 | 3.33 | 1.72 | 3.63 | 20.40 | 8.06 | 6.03 | 0.00 |
| 10.00 | 3.46 | 1.83 | 3.79 | 20.60 | 8.06 | 6.03 | 0.00 |
| 10.20 | 3.61 | 1.95 | 4.04 | 20.80 | 8.06 | 6.03 | 0.00 |
| 10.40 | 3.78 | 2.09 | 4.54 | 21.00 | 8.06 | 6.03 | 0.00 |

## Summary for Subcatchment 8S: Northwood Drive Bypass

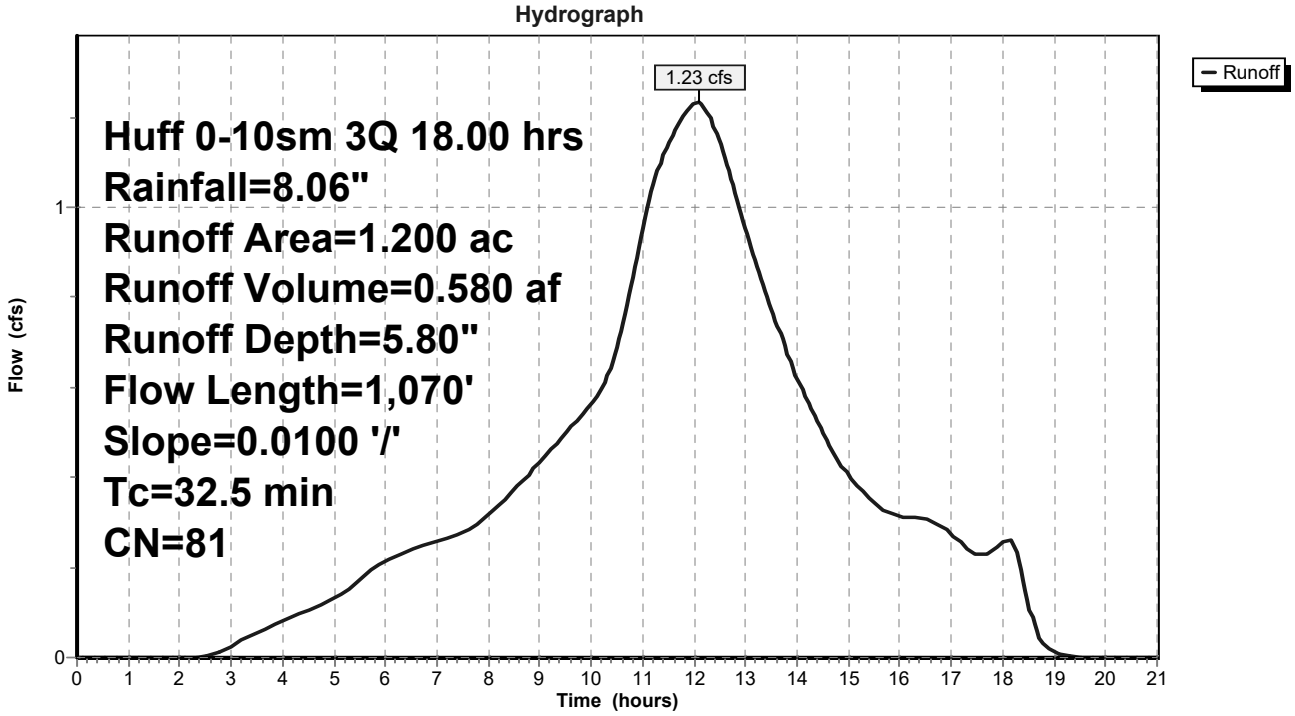
Runoff = 1.23 cfs @ 12.09 hrs, Volume= 0.580 af, Depth= 5.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.02 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=8.06"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 10.60 | 3.97 | 2.09 | 0.74 |
| 0.20 | 0.01 | 0.00 | 0.00 | 10.80 | 4.17 | 2.27 | 0.84 |
| 0.40 | 0.02 | 0.00 | 0.00 | 11.00 | 4.39 | 2.46 | 0.95 |
| 0.60 | 0.05 | 0.00 | 0.00 | 11.20 | 4.62 | 2.65 | 1.05 |
| 0.80 | 0.10 | 0.00 | 0.00 | 11.40 | 4.85 | 2.85 | 1.12 |
| 1.00 | 0.15 | 0.00 | 0.00 | 11.60 | 5.08 | 3.05 | 1.16 |
| 1.20 | 0.20 | 0.00 | 0.00 | 11.80 | 5.31 | 3.26 | 1.20 |
| 1.40 | 0.26 | 0.00 | 0.00 | 12.00 | 5.53 | 3.46 | **1.23** |
| 1.60 | 0.31 | 0.00 | 0.00 | 12.20 | 5.74 | 3.64 | **1.22** |
| 1.80 | 0.37 | 0.00 | 0.00 | 12.40 | 5.92 | 3.81 | 1.17 |
| 2.00 | 0.42 | 0.00 | 0.00 | 12.60 | 6.10 | 3.97 | 1.11 |
| 2.20 | 0.48 | 0.00 | 0.00 | 12.80 | 6.25 | 4.12 | 1.03 |
| 2.40 | 0.53 | 0.00 | 0.00 | 13.00 | 6.40 | 4.25 | 0.95 |
| 2.60 | 0.59 | 0.01 | 0.00 | 13.20 | 6.53 | 4.37 | 0.88 |
| 2.80 | 0.64 | 0.01 | 0.01 | 13.40 | 6.65 | 4.48 | 0.81 |
| 3.00 | 0.70 | 0.02 | 0.02 | 13.60 | 6.76 | 4.59 | 0.74 |
| 3.20 | 0.75 | 0.03 | 0.04 | 13.80 | 6.86 | 4.68 | 0.68 |
| 3.40 | 0.80 | 0.04 | 0.05 | 14.00 | 6.96 | 4.77 | 0.62 |
| 3.60 | 0.86 | 0.06 | 0.06 | 14.20 | 7.04 | 4.84 | 0.57 |
| 3.80 | 0.91 | 0.07 | 0.07 | 14.40 | 7.12 | 4.92 | 0.52 |
| 4.00 | 0.97 | 0.09 | 0.08 | 14.60 | 7.19 | 4.98 | 0.48 |
| 4.20 | 1.02 | 0.11 | 0.09 | 14.80 | 7.26 | 5.04 | 0.44 |
| 4.40 | 1.08 | 0.13 | 0.10 | 15.00 | 7.32 | 5.10 | 0.41 |
| 4.60 | 1.13 | 0.15 | 0.11 | 15.20 | 7.38 | 5.16 | 0.38 |
| 4.80 | 1.19 | 0.17 | 0.12 | 15.40 | 7.43 | 5.21 | 0.36 |
| 5.00 | 1.25 | 0.20 | 0.13 | 15.60 | 7.49 | 5.26 | 0.33 |
| 5.20 | 1.32 | 0.23 | 0.15 | 15.80 | 7.54 | 5.31 | 0.32 |
| 5.40 | 1.39 | 0.26 | 0.16 | 16.00 | 7.60 | 5.36 | 0.31 |
| 5.60 | 1.46 | 0.30 | 0.18 | 16.20 | 7.65 | 5.41 | 0.31 |
| 5.80 | 1.54 | 0.33 | 0.20 | 16.40 | 7.70 | 5.46 | 0.31 |
| 6.00 | 1.61 | 0.37 | 0.21 | 16.60 | 7.75 | 5.51 | 0.31 |
| 6.20 | 1.68 | 0.41 | 0.23 | 16.80 | 7.80 | 5.55 | 0.29 |
| 6.40 | 1.75 | 0.46 | 0.24 | 17.00 | 7.84 | 5.59 | 0.27 |
| 6.60 | 1.83 | 0.50 | 0.24 | 17.20 | 7.87 | 5.62 | 0.25 |
| 6.80 | 1.90 | 0.54 | 0.25 | 17.40 | 7.91 | 5.66 | 0.23 |
| 7.00 | 1.97 | 0.59 | 0.26 | 17.60 | 7.96 | 5.70 | 0.23 |
| 7.20 | 2.05 | 0.63 | 0.27 | 17.80 | 8.01 | 5.75 | 0.24 |
| 7.40 | 2.12 | 0.68 | 0.27 | 18.00 | **8.06** | **5.80** | 0.26 |
| 7.60 | 2.20 | 0.73 | 0.28 | 18.20 | 8.06 | 5.80 | 0.26 |
| 7.80 | 2.28 | 0.79 | 0.30 | 18.40 | 8.06 | 5.80 | 0.18 |
| 8.00 | 2.37 | 0.85 | 0.32 | 18.60 | 8.06 | 5.80 | 0.08 |
| 8.20 | 2.46 | 0.91 | 0.34 | 18.80 | 8.06 | 5.80 | 0.03 |
| 8.40 | 2.55 | 0.98 | 0.36 | 19.00 | 8.06 | 5.80 | 0.01 |
| 8.60 | 2.65 | 1.05 | 0.39 | 19.20 | 8.06 | 5.80 | 0.00 |
| 8.80 | 2.76 | 1.13 | 0.41 | 19.40 | 8.06 | 5.80 | 0.00 |
| 9.00 | 2.86 | 1.21 | 0.43 | 19.60 | 8.06 | 5.80 | 0.00 |
| 9.20 | 2.98 | 1.29 | 0.46 | 19.80 | 8.06 | 5.80 | 0.00 |
| 9.40 | 3.09 | 1.38 | 0.49 | 20.00 | 8.06 | 5.80 | 0.00 |
| 9.60 | 3.21 | 1.48 | 0.51 | 20.20 | 8.06 | 5.80 | 0.00 |
| 9.80 | 3.33 | 1.57 | 0.54 | 20.40 | 8.06 | 5.80 | 0.00 |
| 10.00 | 3.46 | 1.68 | 0.56 | 20.60 | 8.06 | 5.80 | 0.00 |
| 10.20 | 3.61 | 1.80 | 0.60 | 20.80 | 8.06 | 5.80 | 0.00 |
| 10.40 | 3.78 | 1.94 | 0.65 | 21.00 | 8.06 | 5.80 | 0.00 |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

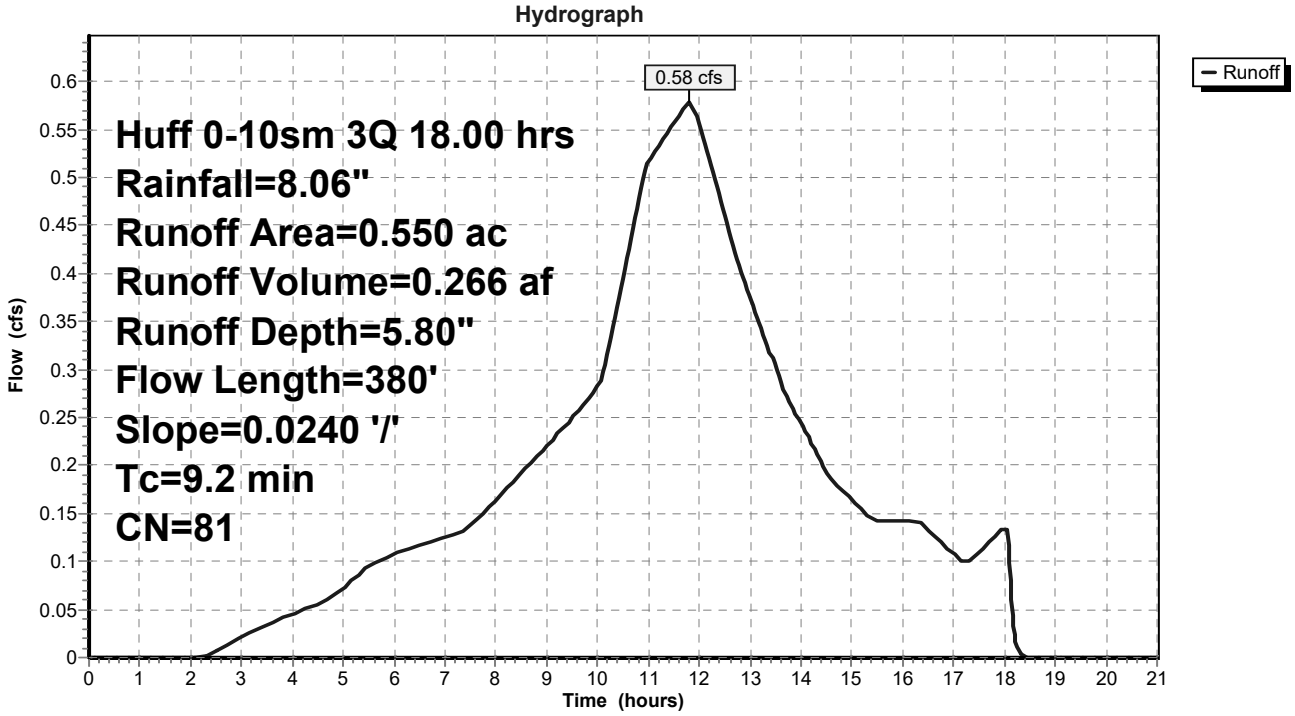
Runoff = 0.58 cfs @ 11.80 hrs, Volume= 0.266 af, Depth= 5.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.02 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=8.06"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 10.60 | 3.97 | 2.09 | 0.42 |
| 0.20 | 0.01 | 0.00 | 0.00 | 10.80 | 4.17 | 2.27 | 0.48 |
| 0.40 | 0.02 | 0.00 | 0.00 | 11.00 | 4.39 | 2.46 | 0.52 |
| 0.60 | 0.05 | 0.00 | 0.00 | 11.20 | 4.62 | 2.65 | 0.53 |
| 0.80 | 0.10 | 0.00 | 0.00 | 11.40 | 4.85 | 2.85 | 0.55 |
| 1.00 | 0.15 | 0.00 | 0.00 | 11.60 | 5.08 | 3.05 | 0.57 |
| 1.20 | 0.20 | 0.00 | 0.00 | 11.80 | 5.31 | 3.26 | **0.58** |
| 1.40 | 0.26 | 0.00 | 0.00 | 12.00 | 5.53 | 3.46 | 0.55 |
| 1.60 | 0.31 | 0.00 | 0.00 | 12.20 | 5.74 | 3.64 | 0.52 |
| 1.80 | 0.37 | 0.00 | 0.00 | 12.40 | 5.92 | 3.81 | 0.48 |
| 2.00 | 0.42 | 0.00 | 0.00 | 12.60 | 6.10 | 3.97 | 0.44 |
| 2.20 | 0.48 | 0.00 | 0.00 | 12.80 | 6.25 | 4.12 | 0.41 |
| 2.40 | 0.53 | 0.00 | 0.00 | 13.00 | 6.40 | 4.25 | 0.38 |
| 2.60 | 0.59 | 0.01 | 0.01 | 13.20 | 6.53 | 4.37 | 0.35 |
| 2.80 | 0.64 | 0.01 | 0.02 | 13.40 | 6.65 | 4.48 | 0.32 |
| 3.00 | 0.70 | 0.02 | 0.02 | 13.60 | 6.76 | 4.59 | 0.29 |
| 3.20 | 0.75 | 0.03 | 0.03 | 13.80 | 6.86 | 4.68 | 0.26 |
| 3.40 | 0.80 | 0.04 | 0.03 | 14.00 | 6.96 | 4.77 | 0.24 |
| 3.60 | 0.86 | 0.06 | 0.04 | 14.20 | 7.04 | 4.84 | 0.22 |
| 3.80 | 0.91 | 0.07 | 0.04 | 14.40 | 7.12 | 4.92 | 0.20 |
| 4.00 | 0.97 | 0.09 | 0.05 | 14.60 | 7.19 | 4.98 | 0.19 |
| 4.20 | 1.02 | 0.11 | 0.05 | 14.80 | 7.26 | 5.04 | 0.17 |
| 4.40 | 1.08 | 0.13 | 0.05 | 15.00 | 7.32 | 5.10 | 0.16 |
| 4.60 | 1.13 | 0.15 | 0.06 | 15.20 | 7.38 | 5.16 | 0.15 |
| 4.80 | 1.19 | 0.17 | 0.06 | 15.40 | 7.43 | 5.21 | 0.14 |
| 5.00 | 1.25 | 0.20 | 0.07 | 15.60 | 7.49 | 5.26 | 0.14 |
| 5.20 | 1.32 | 0.23 | 0.08 | 15.80 | 7.54 | 5.31 | 0.14 |
| 5.40 | 1.39 | 0.26 | 0.09 | 16.00 | 7.60 | 5.36 | 0.14 |
| 5.60 | 1.46 | 0.30 | 0.10 | 16.20 | 7.65 | 5.41 | 0.14 |
| 5.80 | 1.54 | 0.33 | 0.10 | 16.40 | 7.70 | 5.46 | 0.14 |
| 6.00 | 1.61 | 0.37 | 0.11 | 16.60 | 7.75 | 5.51 | 0.13 |
| 6.20 | 1.68 | 0.41 | 0.11 | 16.80 | 7.80 | 5.55 | 0.12 |
| 6.40 | 1.75 | 0.46 | 0.12 | 17.00 | 7.84 | 5.59 | 0.11 |
| 6.60 | 1.83 | 0.50 | 0.12 | 17.20 | 7.87 | 5.62 | 0.10 |
| 6.80 | 1.90 | 0.54 | 0.12 | 17.40 | 7.91 | 5.66 | 0.10 |
| 7.00 | 1.97 | 0.59 | 0.12 | 17.60 | 7.96 | 5.70 | 0.11 |
| 7.20 | 2.05 | 0.63 | 0.13 | 17.80 | 8.01 | 5.75 | 0.12 |
| 7.40 | 2.12 | 0.68 | 0.13 | 18.00 | **8.06** | **5.80** | 0.14 |
| 7.60 | 2.20 | 0.73 | 0.14 | 18.20 | 8.06 | 5.80 | 0.02 |
| 7.80 | 2.28 | 0.79 | 0.15 | 18.40 | 8.06 | 5.80 | 0.00 |
| 8.00 | 2.37 | 0.85 | 0.16 | 18.60 | 8.06 | 5.80 | 0.00 |
| 8.20 | 2.46 | 0.91 | 0.17 | 18.80 | 8.06 | 5.80 | 0.00 |
| 8.40 | 2.55 | 0.98 | 0.19 | 19.00 | 8.06 | 5.80 | 0.00 |
| 8.60 | 2.65 | 1.05 | 0.20 | 19.20 | 8.06 | 5.80 | 0.00 |
| 8.80 | 2.76 | 1.13 | 0.21 | 19.40 | 8.06 | 5.80 | 0.00 |
| 9.00 | 2.86 | 1.21 | 0.22 | 19.60 | 8.06 | 5.80 | 0.00 |
| 9.20 | 2.98 | 1.29 | 0.23 | 19.80 | 8.06 | 5.80 | 0.00 |
| 9.40 | 3.09 | 1.38 | 0.24 | 20.00 | 8.06 | 5.80 | 0.00 |
| 9.60 | 3.21 | 1.48 | 0.26 | 20.20 | 8.06 | 5.80 | 0.00 |
| 9.80 | 3.33 | 1.57 | 0.27 | 20.40 | 8.06 | 5.80 | 0.00 |
| 10.00 | 3.46 | 1.68 | 0.28 | 20.60 | 8.06 | 5.80 | 0.00 |
| 10.20 | 3.61 | 1.80 | 0.32 | 20.80 | 8.06 | 5.80 | 0.00 |
| 10.40 | 3.78 | 1.94 | 0.37 | 21.00 | 8.06 | 5.80 | 0.00 |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 11.71 cfs @ | 11.93 hrs, | Volume= | 5.001 af |
| Outflow | = | 11.15 cfs @ | 13.57 hrs, | Volume= | 2.277 af, Atten= 5%, Lag= 98.6 min |
| Primary | = | 1.53 cfs @ | 13.56 hrs, | Volume= | 1.507 af |
| Secondary | = | 9.62 cfs @ | 13.57 hrs, | Volume= | 0.770 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-21.00 hrs, dt= 0.02 hrs
Peak Elev= 678.50' @ 13.56 hrs Surf.Area= 47,097 sf Storage= 137,169 cf

Plug-Flow detention time= 326.5 min calculated for 2.275 af (45% of inflow)
Center-of-Mass det. time= 176.1 min ( 871.0 - 695.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

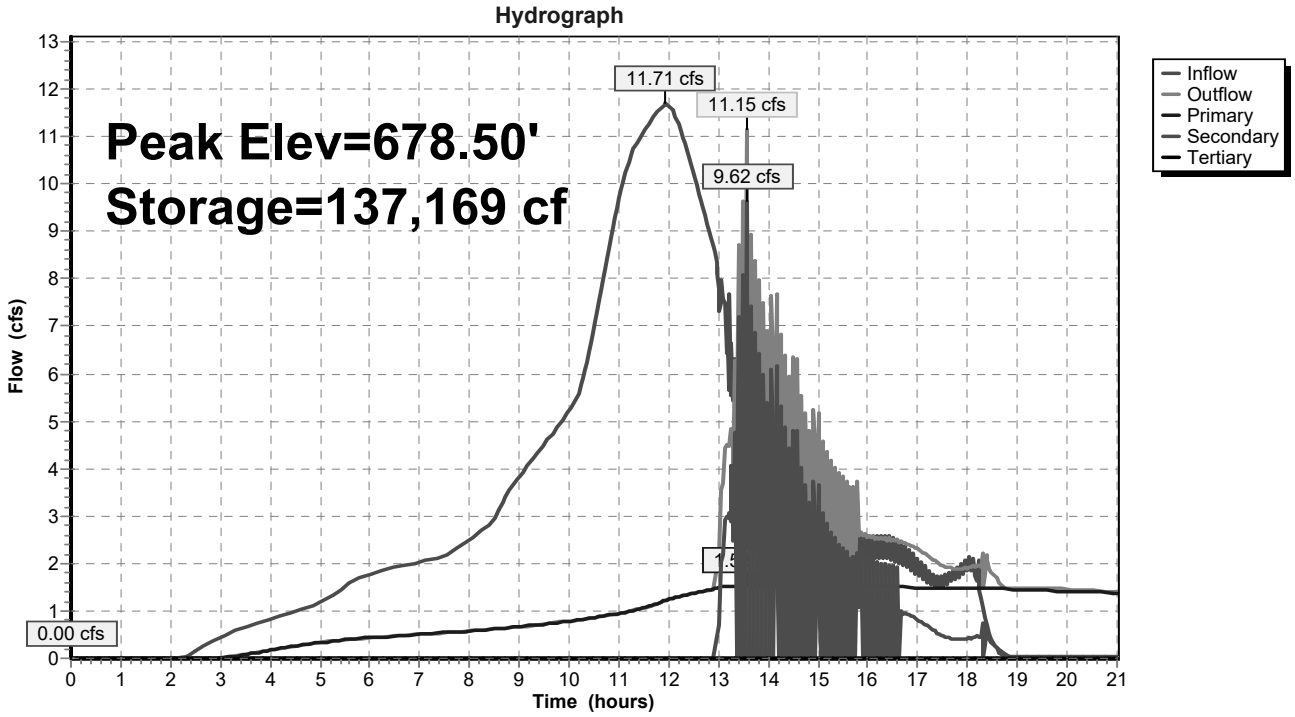
#4 Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=1.53 cfs @ 13.56 hrs HW=678.49' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.53 cfs @ 13.88 fps)

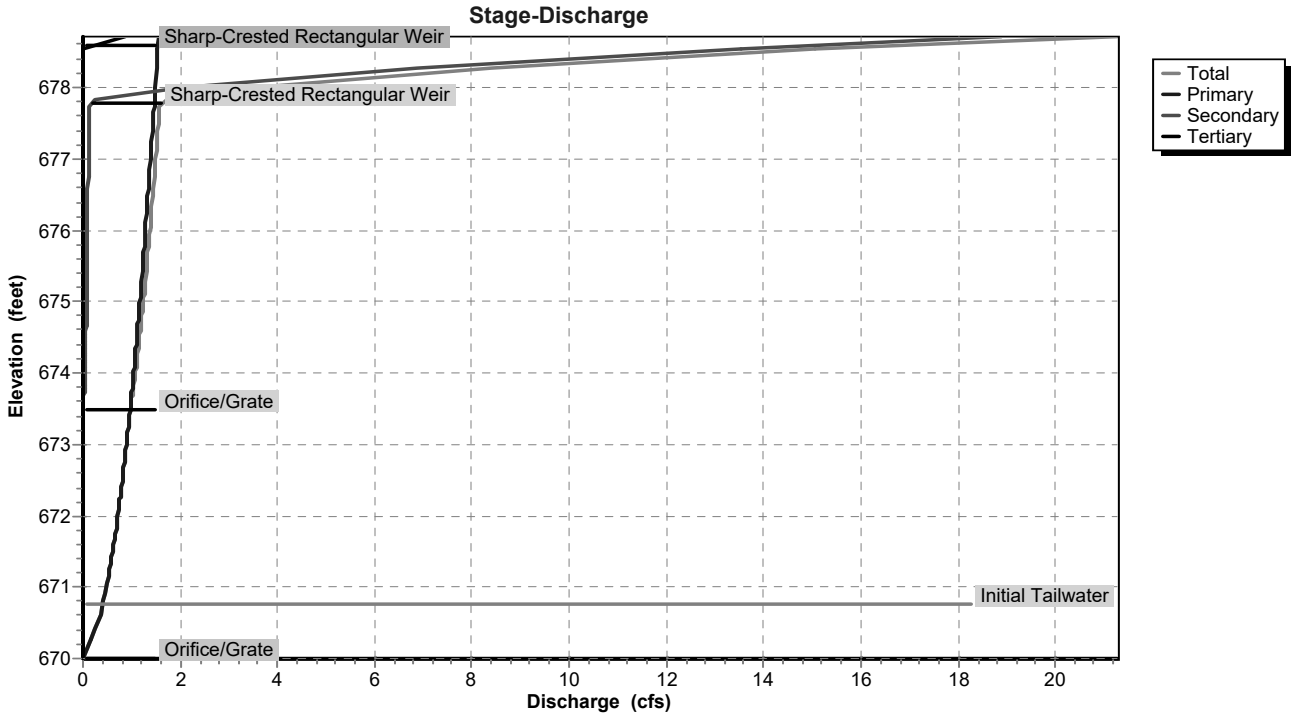
**Secondary OutFlow** Max=7.72 cfs @ 13.57 hrs HW=678.48' TW=678.31' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** (Weir Controls 7.70 cfs @ 1.94 fps)
└─**4=Orifice/Grate** (Orifice Controls 0.02 cfs @ 1.97 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

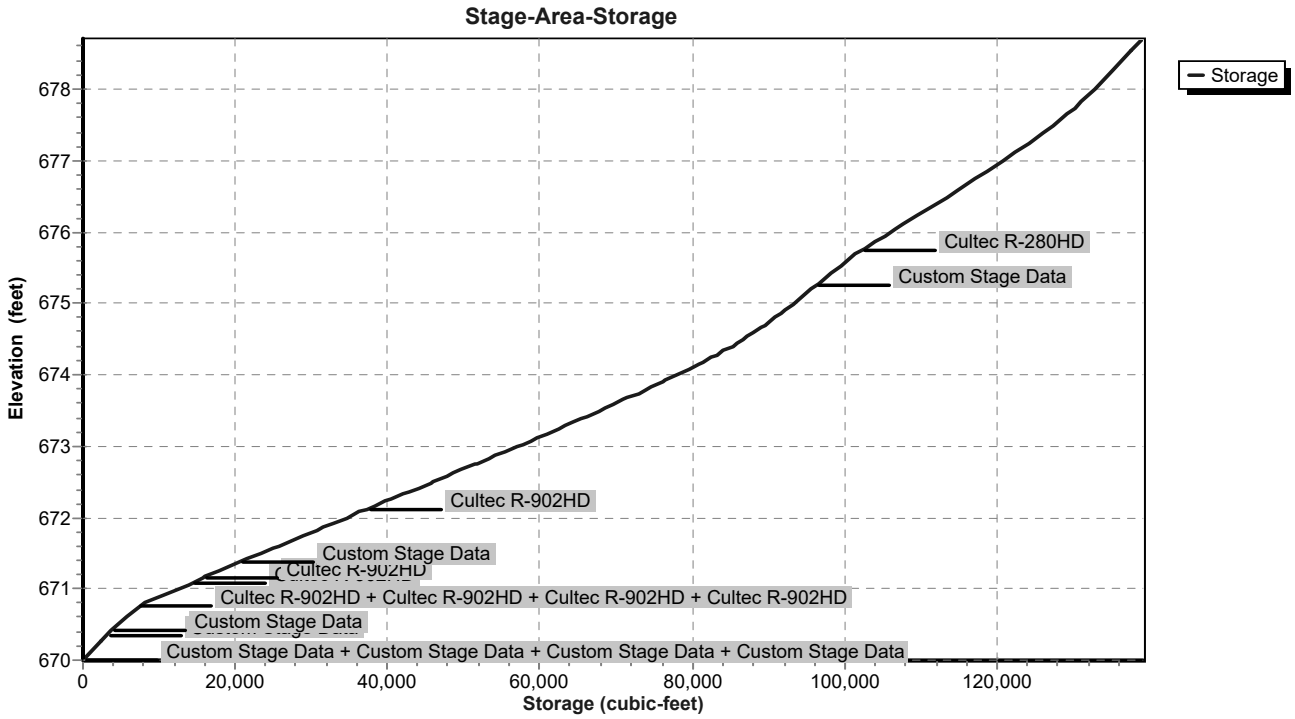
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.40 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.80 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.20 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.60 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.40 | 0.07 | 23 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.80 | 0.36 | 319 | 670.04 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.20 | 0.54 | 942 | 670.11 | 0.03 | 0.03 | 0.00 | 0.00 |
| 3.60 | 0.70 | 1,751 | 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 4.00 | 0.84 | 2,667 | 670.30 | 0.18 | 0.18 | 0.00 | 0.00 |
| 4.40 | 0.96 | 3,649 | 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 4.80 | 1.08 | 4,711 | 670.51 | 0.30 | 0.30 | 0.00 | 0.00 |
| 5.20 | 1.31 | 5,939 | 670.63 | 0.35 | 0.35 | 0.00 | 0.00 |
| 5.60 | 1.58 | 7,461 | 670.76 | 0.40 | 0.40 | 0.00 | 0.00 |
| 6.00 | 1.77 | 9,285 | 670.85 | 0.43 | 0.43 | 0.00 | 0.00 |
| 6.40 | 1.89 | 11,277 | 670.95 | 0.46 | 0.46 | 0.00 | 0.00 |
| 6.80 | 1.99 | 13,381 | 671.05 | 0.49 | 0.49 | 0.00 | 0.00 |
| 7.20 | 2.08 | 15,578 | 671.15 | 0.52 | 0.52 | 0.00 | 0.00 |
| 7.60 | 2.21 | 17,870 | 671.26 | 0.55 | 0.55 | 0.00 | 0.00 |
| 8.00 | 2.49 | 20,426 | 671.37 | 0.58 | 0.58 | 0.00 | 0.00 |
| 8.40 | 2.81 | 23,380 | 671.50 | 0.61 | 0.61 | 0.00 | 0.00 |
| 8.80 | 3.55 | 26,983 | 671.66 | 0.65 | 0.65 | 0.00 | 0.00 |
| 9.20 | 4.11 | 31,531 | 671.86 | 0.69 | 0.69 | 0.00 | 0.00 |
| 9.60 | 4.66 | 36,801 | 672.10 | 0.74 | 0.74 | 0.00 | 0.00 |
| 10.00 | 5.22 | 42,795 | 672.36 | 0.78 | 0.78 | 0.00 | 0.00 |
| 10.40 | 6.50 | 49,831 | 672.67 | 0.84 | 0.84 | 0.00 | 0.00 |
| 10.80 | 8.69 | 59,426 | 673.11 | 0.91 | 0.91 | 0.00 | 0.00 |
| 11.20 | 10.50 | 71,956 | 673.70 | 1.00 | 1.00 | 0.00 | 0.00 |
| 11.60 | **11.30** | 86,165 | 674.46 | 1.10 | 1.10 | 0.00 | 0.00 |
| 12.00 | **11.67** | 101,118 | 675.67 | 1.24 | 1.24 | 0.00 | 0.00 |
| 12.40 | 10.60 | 115,451 | 676.63 | 1.35 | 1.35 | 0.00 | 0.00 |
| 12.80 | 9.05 | 127,667 | 677.52 | 1.44 | 1.44 | 0.00 | 0.00 |
| 13.20 | 5.64 | **135,564** | **678.32** | **4.47** | **1.52** | **2.95** | 0.00 |
| 13.60 | 9.02 | **136,428** | **678.41** | **3.89** | **1.53** | **2.37** | 0.00 |
| 14.00 | 3.96 | 136,021 | 678.37 | 5.47 | 1.52 | 3.95 | 0.00 |
| 14.40 | 3.33 | 135,595 | 678.32 | 5.95 | 1.52 | 4.43 | 0.00 |
| 14.80 | 2.79 | 135,049 | 678.26 | 4.11 | 1.51 | 2.59 | 0.00 |
| 15.20 | 2.45 | 134,486 | 678.20 | 1.51 | 1.51 | 0.00 | 0.00 |
| 15.60 | 2.17 | 134,086 | 678.15 | 1.50 | 1.50 | 0.00 | 0.00 |
| 16.00 | 2.11 | 133,887 | 678.13 | 1.50 | 1.50 | 0.00 | 0.00 |
| 16.40 | 2.10 | 133,790 | 678.12 | 1.50 | 1.50 | 0.00 | 0.00 |
| 16.80 | 1.90 | 133,637 | 678.10 | 1.50 | 1.50 | 0.00 | 0.00 |
| 17.20 | 1.60 | 133,259 | 678.06 | 1.49 | 1.49 | 0.00 | 0.00 |
| 17.60 | 1.56 | 132,824 | 678.01 | 1.49 | 1.49 | 0.00 | 0.00 |
| 18.00 | 1.84 | 132,782 | 678.01 | 1.49 | 1.49 | 0.00 | 0.00 |
| 18.40 | 0.64 | 132,310 | 677.96 | 2.06 | 1.48 | 0.57 | 0.00 |
| 18.80 | 0.05 | 130,256 | 677.74 | 1.49 | 1.46 | 0.02 | 0.00 |
| 19.20 | 0.00 | 128,144 | 677.56 | 1.48 | 1.44 | 0.04 | 0.00 |
| 19.60 | 0.00 | 126,015 | 677.39 | 1.47 | 1.43 | 0.05 | 0.00 |
| 20.00 | 0.00 | 123,905 | 677.23 | 1.46 | 1.41 | 0.04 | 0.00 |
| 20.40 | 0.00 | 121,822 | 677.08 | 1.44 | 1.40 | 0.04 | 0.00 |
| 20.80 | 0.00 | 119,769 | 676.93 | 1.41 | 1.38 | 0.03 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 16.68 | 1.54 | 15.13 | 0.00 |
| 678.80 | **24.77** | **1.56** | **21.42** | **1.79** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) |
|---|---|
| 670.00 | 0 |
| 670.10 | 893 |
| 670.20 | 1,787 |
| 670.30 | 2,681 |
| 670.40 | 3,618 |
| 670.50 | 4,626 |
| 670.60 | 5,639 |
| 670.70 | 6,653 |
| 670.80 | 8,202 |
| 670.90 | 10,288 |
| 671.00 | 12,379 |
| 671.10 | 14,465 |
| 671.20 | 16,635 |
| 671.30 | 18,830 |
| 671.40 | 21,049 |
| 671.50 | 23,322 |
| 671.60 | 25,582 |
| 671.70 | 27,830 |
| 671.80 | 30,075 |
| 671.90 | 32,317 |
| 672.00 | 34,546 |
| 672.10 | 36,761 |
| 672.20 | 39,047 |
| 672.30 | 41,344 |
| 672.40 | 43,628 |
| 672.50 | 45,906 |
| 672.60 | 48,170 |
| 672.70 | 50,428 |
| 672.80 | 52,674 |
| 672.90 | 54,899 |
| 673.00 | 57,117 |
| 673.10 | 59,314 |
| 673.20 | 61,492 |
| 673.30 | 63,654 |
| 673.40 | 65,789 |
| 673.50 | 67,899 |
| 673.60 | 69,981 |
| 673.70 | 72,030 |
| 673.80 | 74,047 |
| 673.90 | 76,023 |
| 674.00 | 77,955 |
| 674.10 | 79,844 |
| 674.20 | 81,679 |
| 674.30 | 83,453 |
| 674.40 | 85,139 |
| 674.50 | 86,709 |
| 674.60 | 88,153 |
| 674.70 | 89,496 |
| 674.80 | 90,763 |
| 674.90 | 91,997 |
| 675.00 | 93,215 |
| 675.10 | 94,422 |
| 675.20 | 95,621 |
| 675.30 | 96,808 |
| 675.40 | 97,984 |
| 675.50 | 99,158 |
| 675.60 | 100,327 |
| 675.70 | 101,491 |
| 675.80 | 102,865 |
| 675.90 | 104,433 |
| 676.00 | 105,977 |
| 676.10 | 107,509 |
| 676.20 | 109,032 |
| 676.30 | 110,542 |
| 676.40 | 112,038 |
| 676.50 | 113,523 |
| 676.60 | 114,993 |
| 676.70 | 116,452 |
| 676.80 | 117,901 |
| 676.90 | 119,339 |
| 677.00 | 120,753 |
| 677.10 | 122,143 |
| 677.20 | 123,511 |
| 677.30 | 124,850 |
| 677.40 | 126,157 |
| 677.50 | 127,426 |
| 677.60 | 128,644 |
| 677.70 | 129,794 |
| 677.80 | 130,846 |
| 677.90 | 131,802 |
| 678.00 | 132,704 |
| 678.10 | 133,604 |
| 678.20 | 134,505 |
| 678.30 | 135,406 |
| 678.40 | 136,307 |
| 678.50 | 137,209 |
| 678.60 | 138,112 |
| 678.70 | 139,014 |
| 678.80 | 139,917 |
| 678.90 | **140,821** |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 12.37 cfs @ | 13.57 hrs, | Volume= | 3.110 af |
| Outflow | = | 12.66 cfs @ | 13.60 hrs, | Volume= | 3.108 af, Atten= 0%, Lag= 1.8 min |
| Primary | = | 8.40 cfs @ | 13.60 hrs, | Volume= | 2.144 af |
| Secondary | = | 4.53 cfs @ | 13.52 hrs, | Volume= | 0.964 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-21.00 hrs, dt= 0.02 hrs
Peak Elev= 678.49' @ 13.60 hrs Surf.Area= 3,660 sf Storage= 4,899 cf

Plug-Flow detention time= 18.6 min calculated for 3.108 af (100% of inflow)
Center-of-Mass det. time= 18.2 min ( 758.4 - 740.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

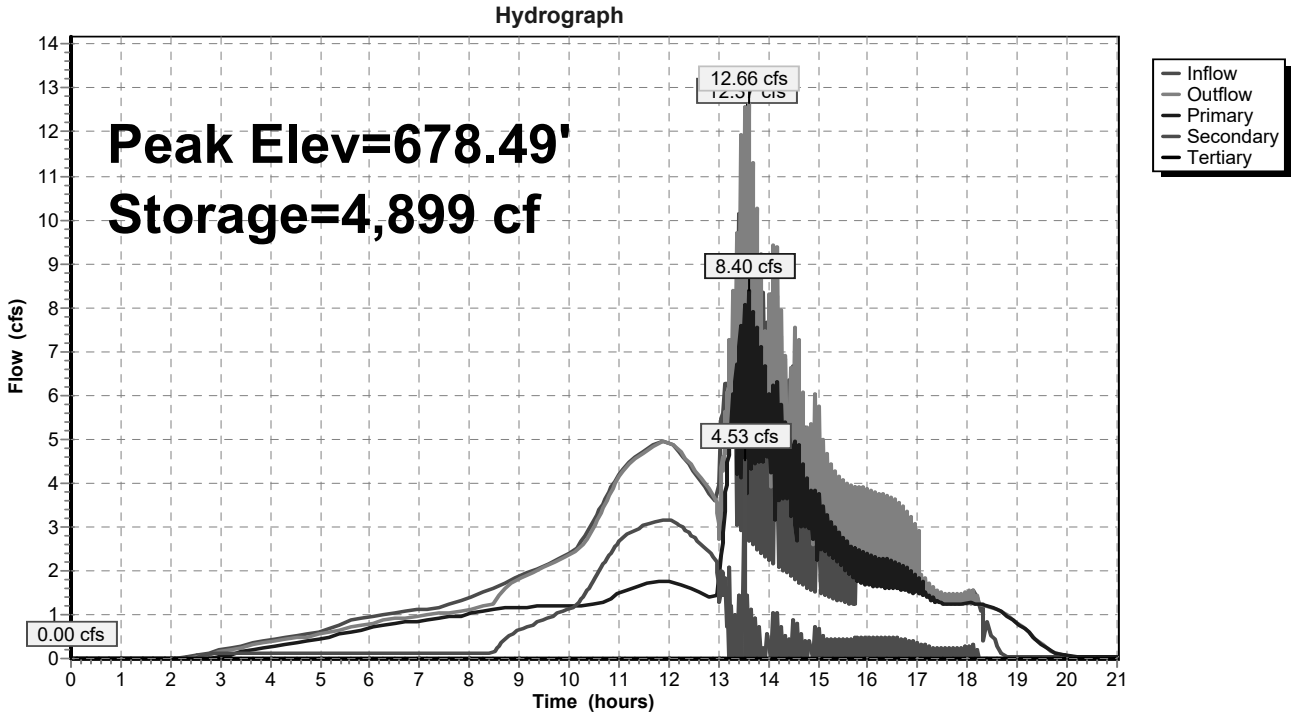
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.50' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=8.09 cfs @ 13.60 hrs HW=678.47' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 1.45 cfs @ 6.28 fps)
- **2=Sharp-Crested Rectangular Weir** (Weir Controls 6.64 cfs @ 2.38 fps)

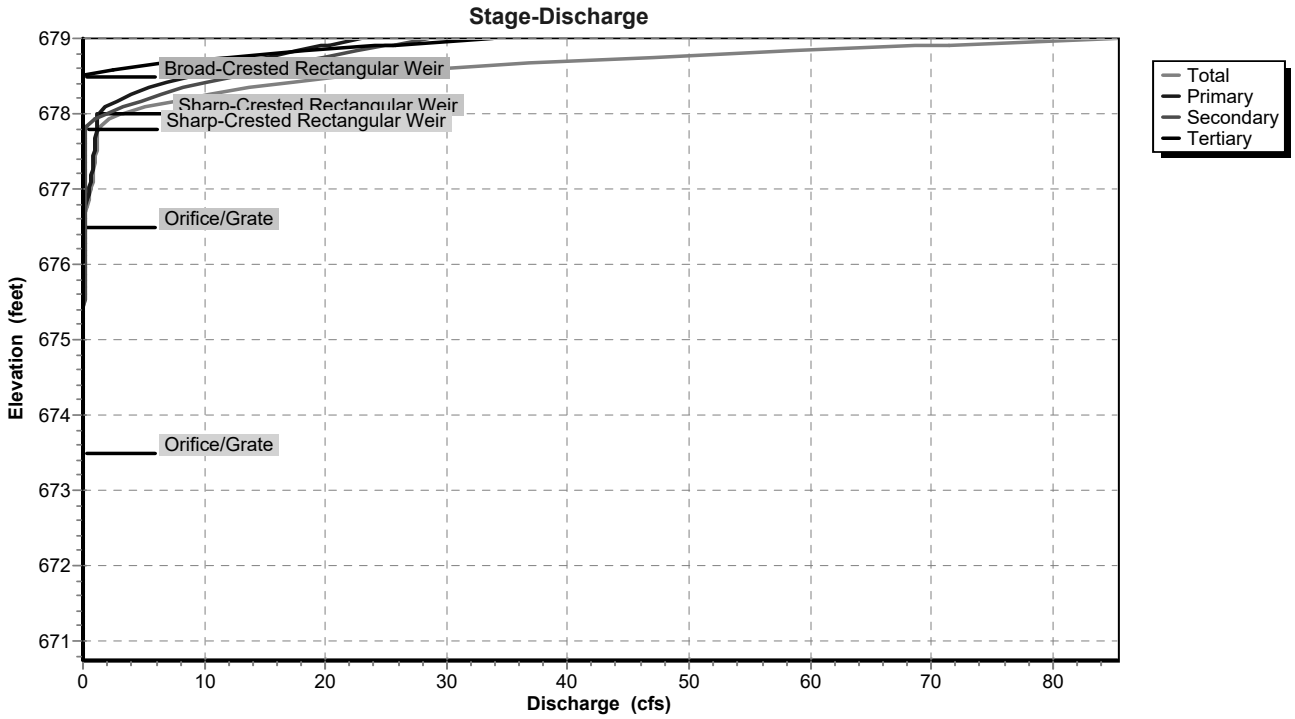
**Secondary OutFlow** Max=5.43 cfs @ 13.52 hrs HW=678.47' TW=678.41' (Dynamic Tailwater)
- **4=Orifice/Grate** (Orifice Controls 0.02 cfs @ 1.24 fps)
- **5=Sharp-Crested Rectangular Weir** (Weir Controls 5.41 cfs @ 1.37 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
- **3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

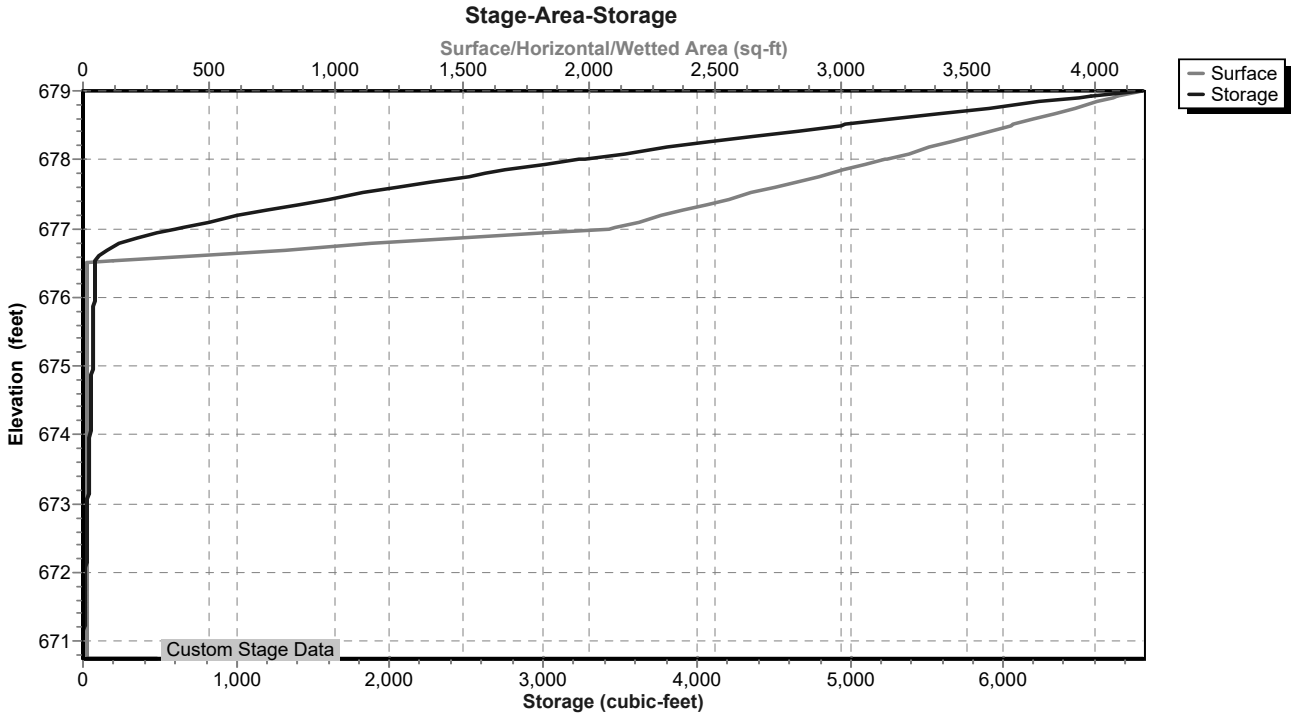
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.40 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.80 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.20 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.60 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.40 | 0.05 | 21 | 672.27 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.80 | 0.15 | 83 | 676.53 | 0.10 | 0.00 | 0.10 | 0.00 |
| 3.20 | 0.25 | 152 | 676.68 | 0.20 | 0.10 | 0.10 | 0.00 |
| 3.60 | 0.34 | 222 | 676.76 | 0.29 | 0.19 | 0.11 | 0.00 |
| 4.00 | 0.42 | 291 | 676.81 | 0.37 | 0.26 | 0.11 | 0.00 |
| 4.40 | 0.49 | 357 | 676.86 | 0.44 | 0.33 | 0.11 | 0.00 |
| 4.80 | 0.56 | 426 | 676.90 | 0.51 | 0.40 | 0.11 | 0.00 |
| 5.20 | 0.70 | 536 | 676.96 | 0.60 | 0.49 | 0.11 | 0.00 |
| 5.60 | 0.86 | 719 | 677.05 | 0.70 | 0.59 | 0.11 | 0.00 |
| 6.00 | 0.96 | 948 | 677.16 | 0.80 | 0.69 | 0.11 | 0.00 |
| 6.40 | 1.03 | 1,163 | 677.25 | 0.88 | 0.77 | 0.11 | 0.00 |
| 6.80 | 1.08 | 1,362 | 677.33 | 0.95 | 0.83 | 0.11 | 0.00 |
| 7.20 | 1.13 | 1,553 | 677.41 | 1.00 | 0.89 | 0.12 | 0.00 |
| 7.60 | 1.22 | 1,750 | 677.49 | 1.06 | 0.94 | 0.12 | 0.00 |
| 8.00 | 1.39 | 2,052 | 677.60 | 1.13 | 1.01 | 0.12 | 0.00 |
| 8.40 | 1.57 | 2,489 | 677.76 | 1.22 | 1.10 | 0.12 | 0.00 |
| 8.80 | 1.77 | 2,846 | 677.87 | 1.69 | 1.17 | 0.53 | 0.00 |
| 9.20 | 1.97 | 2,921 | 677.90 | 1.92 | 1.18 | 0.74 | 0.00 |
| 9.60 | 2.17 | 2,982 | 677.92 | 2.13 | 1.19 | 0.94 | 0.00 |
| 10.00 | 2.38 | 3,040 | 677.94 | 2.34 | 1.20 | 1.14 | 0.00 |
| 10.40 | 2.93 | 3,158 | 677.98 | 2.81 | 1.22 | 1.59 | 0.00 |
| 10.80 | 3.78 | 3,330 | 678.03 | 3.68 | 1.35 | 2.33 | 0.00 |
| 11.20 | 4.48 | 3,441 | 678.06 | 4.43 | 1.58 | 2.85 | 0.00 |
| 11.60 | 4.80 | 3,487 | 678.08 | 4.77 | 1.70 | 3.07 | 0.00 |
| 12.00 | 4.92 | 3,511 | 678.09 | 4.94 | 1.77 | 3.17 | 0.00 |
| 12.40 | 4.43 | 3,454 | 678.07 | 4.48 | 1.62 | 2.87 | 0.00 |
| 12.80 | 3.79 | 3,369 | 678.04 | 3.85 | 1.42 | 2.43 | 0.00 |
| 13.20 | **6.18** | 4,219 | 678.30 | 4.62 | 4.62 | **0.00** | 0.00 |
| 13.60 | **5.07** | **4,889** | **678.48** | **12.64** | **8.35** | **4.29** | 0.00 |
| 14.00 | 6.22 | 4,492 | 678.37 | 6.04 | 6.04 | 0.00 | 0.00 |
| 14.40 | 6.34 | 4,149 | 678.28 | 4.28 | 4.28 | 0.00 | 0.00 |
| 14.80 | 4.20 | 3,853 | 678.19 | 2.96 | 2.96 | 0.00 | 0.00 |
| 15.20 | 1.41 | 3,786 | 678.17 | 2.70 | 2.70 | 0.00 | 0.00 |
| 15.60 | 1.26 | 3,629 | 678.12 | 2.13 | 2.13 | 0.00 | 0.00 |
| 16.00 | 1.23 | 3,511 | 678.09 | 1.77 | 1.77 | 0.00 | 0.00 |
| 16.40 | 1.22 | 3,485 | 678.08 | 1.70 | 1.70 | 0.00 | 0.00 |
| 16.80 | 1.09 | 3,447 | 678.07 | 1.60 | 1.60 | 0.00 | 0.00 |
| 17.20 | 0.92 | 3,349 | 678.04 | 1.38 | 1.38 | 0.00 | 0.00 |
| 17.60 | 0.93 | 3,228 | 678.00 | 1.23 | 1.23 | 0.00 | 0.00 |
| 18.00 | 1.09 | 3,215 | 677.99 | 1.23 | 1.23 | 0.00 | 0.00 |
| 18.40 | 0.85 | 3,037 | 677.94 | 1.20 | 1.20 | 0.00 | 0.00 |
| 18.80 | 0.06 | 1,902 | 677.54 | 0.98 | 0.98 | 0.00 | 0.00 |
| 19.20 | 0.04 | 796 | 677.09 | 0.63 | 0.63 | 0.00 | 0.00 |
| 19.60 | 0.05 | 248 | 676.78 | 0.22 | 0.22 | 0.00 | 0.00 |
| 20.00 | 0.04 | 133 | 676.65 | 0.07 | 0.07 | 0.00 | 0.00 |
| 20.40 | 0.04 | 115 | 676.62 | 0.05 | 0.05 | 0.00 | 0.00 |
| 20.80 | 0.03 | 108 | 676.61 | 0.04 | 0.04 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 24.61 | 9.86 | 13.70 | 1.05 |
| 678.75 | 46.70 | 15.13 | 19.77 | 11.80 |
| 678.95 | **76.77** | **21.27** | **26.68** | **28.82** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

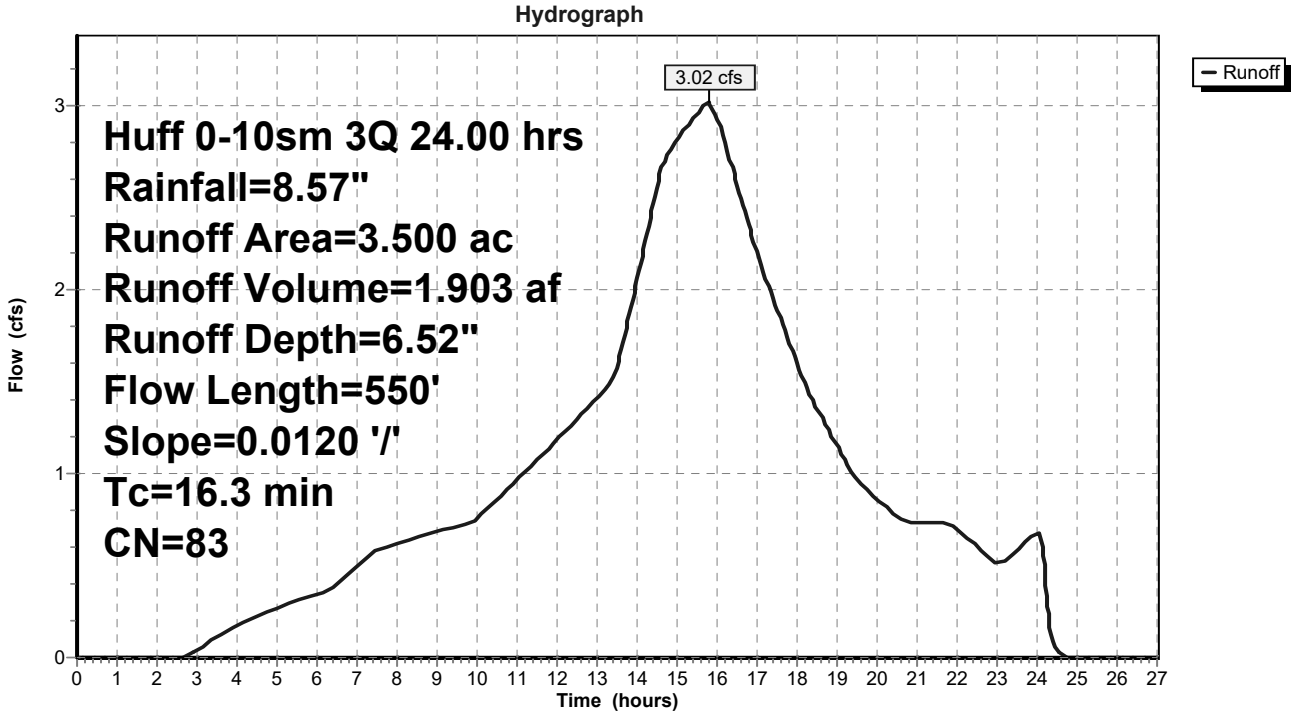
Runoff = 3.02 cfs @ 15.78 hrs, Volume= 1.903 af, Depth= 6.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.02 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=8.57"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 0.01 | 0.00 | 0.00 |
| 0.80 | 0.06 | 0.00 | 0.00 |
| 1.20 | 0.13 | 0.00 | 0.00 |
| 1.60 | 0.22 | 0.00 | 0.00 |
| 2.00 | 0.30 | 0.00 | 0.00 |
| 2.40 | 0.39 | 0.00 | 0.00 |
| 2.80 | 0.48 | 0.00 | 0.01 |
| 3.20 | 0.57 | 0.01 | 0.07 |
| 3.60 | 0.65 | 0.03 | 0.12 |
| 4.00 | 0.74 | 0.05 | 0.17 |
| 4.40 | 0.83 | 0.07 | 0.21 |
| 4.80 | 0.91 | 0.10 | 0.25 |
| 5.20 | 1.00 | 0.13 | 0.29 |
| 5.60 | 1.09 | 0.17 | 0.32 |
| 6.00 | 1.17 | 0.21 | 0.34 |
| 6.40 | 1.27 | 0.25 | 0.39 |
| 6.80 | 1.37 | 0.31 | 0.46 |
| 7.20 | 1.48 | 0.37 | 0.53 |
| 7.60 | 1.60 | 0.43 | 0.59 |
| 8.00 | 1.71 | 0.51 | 0.62 |
| 8.40 | 1.83 | 0.58 | 0.65 |
| 8.80 | 1.94 | 0.66 | 0.67 |
| 9.20 | 2.06 | 0.74 | 0.70 |
| 9.60 | 2.18 | 0.82 | 0.72 |
| 10.00 | 2.30 | 0.90 | 0.76 |
| 10.40 | 2.43 | 1.00 | 0.84 |
| 10.80 | 2.57 | 1.11 | 0.92 |
| 11.20 | 2.72 | 1.22 | 1.01 |
| 11.60 | 2.88 | 1.35 | 1.10 |
| 12.00 | 3.05 | 1.48 | 1.18 |
| 12.40 | 3.22 | 1.63 | 1.28 |
| 12.80 | 3.41 | 1.79 | 1.37 |
| 13.20 | 3.61 | 1.95 | 1.46 |
| 13.60 | 3.84 | 2.15 | 1.67 |
| 14.00 | 4.11 | 2.38 | 2.06 |
| 14.40 | 4.44 | 2.67 | 2.46 |
| 14.80 | 4.79 | 2.98 | 2.76 |
| 15.20 | 5.15 | 3.31 | 2.88 |
| 15.60 | 5.52 | 3.65 | **2.99** |
| 16.00 | 5.88 | 3.98 | **2.94** |
| 16.40 | 6.20 | 4.28 | 2.65 |
| 16.80 | 6.48 | 4.54 | 2.35 |
| 17.20 | 6.73 | 4.77 | 2.07 |
| 17.60 | 6.95 | 4.98 | 1.84 |
| 18.00 | 7.13 | 5.15 | 1.60 |
| 18.40 | 7.30 | 5.31 | 1.39 |
| 18.80 | 7.44 | 5.45 | 1.23 |
| 19.20 | 7.57 | 5.57 | 1.07 |
| 19.60 | 7.68 | 5.67 | 0.95 |
| 20.00 | 7.78 | 5.77 | 0.86 |
| 20.40 | 7.87 | 5.86 | 0.78 |
| 20.80 | 7.96 | 5.94 | 0.73 |
| 21.20 | 8.05 | 6.02 | 0.73 |
| 21.60 | 8.13 | 6.11 | 0.73 |
| 22.00 | 8.22 | 6.18 | 0.70 |
| 22.40 | 8.29 | 6.25 | 0.62 |
| 22.80 | 8.35 | 6.31 | 0.54 |
| 23.20 | 8.42 | 6.37 | 0.53 |
| 23.60 | 8.49 | 6.44 | 0.60 |
| 24.00 | **8.57** | **6.52** | 0.69 |
| 24.40 | 8.57 | 6.52 | 0.08 |
| 24.80 | 8.57 | 6.52 | 0.00 |
| 25.20 | 8.57 | 6.52 | 0.00 |
| 25.60 | 8.57 | 6.52 | 0.00 |
| 26.00 | 8.57 | 6.52 | 0.00 |
| 26.40 | 8.57 | 6.52 | 0.00 |
| 26.80 | 8.57 | 6.52 | 0.00 |

## Summary for Subcatchment 7S: South Property

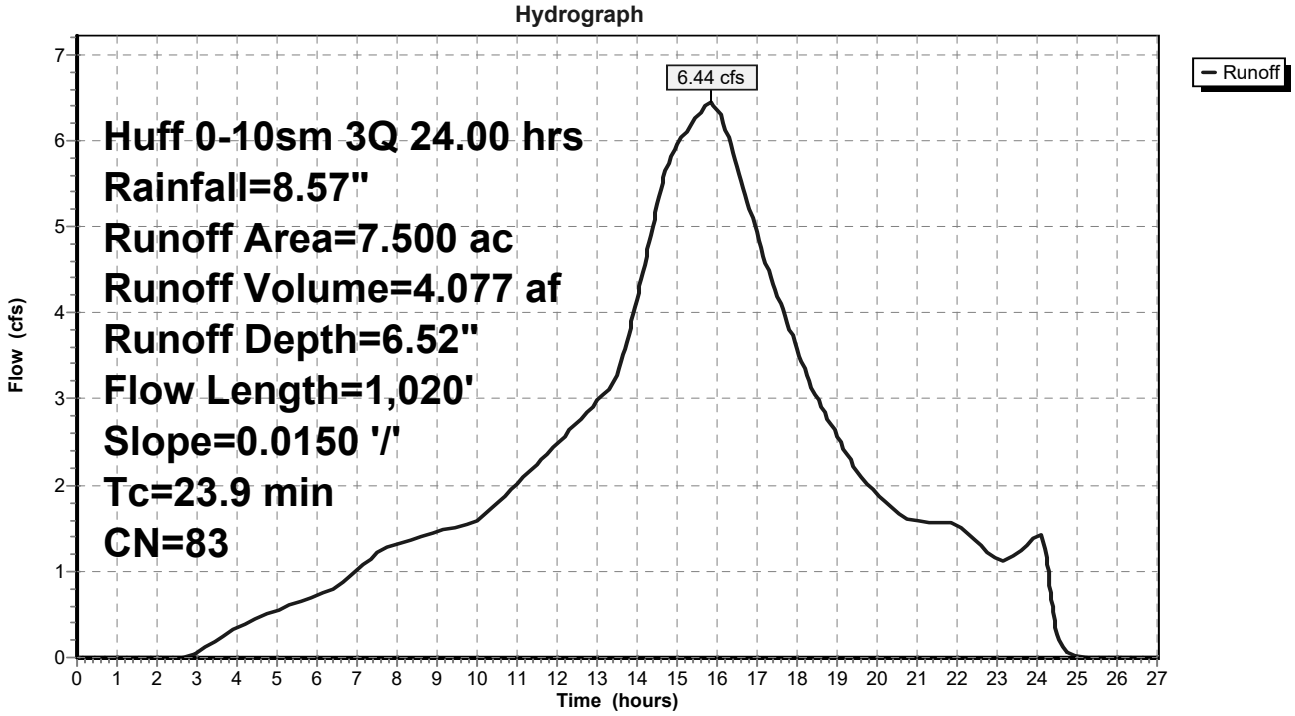
Runoff = 6.44 cfs @ 15.86 hrs, Volume= 4.077 af, Depth= 6.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.02 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=8.57"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

## Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 0.01 | 0.00 | 0.00 |
| 0.80 | 0.06 | 0.00 | 0.00 |
| 1.20 | 0.13 | 0.00 | 0.00 |
| 1.60 | 0.22 | 0.00 | 0.00 |
| 2.00 | 0.30 | 0.00 | 0.00 |
| 2.40 | 0.39 | 0.00 | 0.00 |
| 2.80 | 0.48 | 0.00 | 0.01 |
| 3.20 | 0.57 | 0.01 | 0.12 |
| 3.60 | 0.65 | 0.03 | 0.23 |
| 4.00 | 0.74 | 0.05 | 0.34 |
| 4.40 | 0.83 | 0.07 | 0.43 |
| 4.80 | 0.91 | 0.10 | 0.51 |
| 5.20 | 1.00 | 0.13 | 0.59 |
| 5.60 | 1.09 | 0.17 | 0.66 |
| 6.00 | 1.17 | 0.21 | 0.72 |
| 6.40 | 1.27 | 0.25 | 0.80 |
| 6.80 | 1.37 | 0.31 | 0.93 |
| 7.20 | 1.48 | 0.37 | 1.09 |
| 7.60 | 1.60 | 0.43 | 1.24 |
| 8.00 | 1.71 | 0.51 | 1.32 |
| 8.40 | 1.83 | 0.58 | 1.38 |
| 8.80 | 1.94 | 0.66 | 1.43 |
| 9.20 | 2.06 | 0.74 | 1.48 |
| 9.60 | 2.18 | 0.82 | 1.52 |
| 10.00 | 2.30 | 0.90 | 1.59 |
| 10.40 | 2.43 | 1.00 | 1.75 |
| 10.80 | 2.57 | 1.11 | 1.92 |
| 11.20 | 2.72 | 1.22 | 2.10 |
| 11.60 | 2.88 | 1.35 | 2.29 |
| 12.00 | 3.05 | 1.48 | 2.48 |
| 12.40 | 3.22 | 1.63 | 2.68 |
| 12.80 | 3.41 | 1.79 | 2.87 |
| 13.20 | 3.61 | 1.95 | 3.07 |
| 13.60 | 3.84 | 2.15 | 3.40 |
| 14.00 | 4.11 | 2.38 | 4.16 |
| 14.40 | 4.44 | 2.67 | 5.02 |
| 14.80 | 4.79 | 2.98 | 5.76 |
| 15.20 | 5.15 | 3.31 | 6.09 |
| 15.60 | 5.52 | 3.65 | **6.33** |
| 16.00 | 5.88 | 3.98 | **6.38** |
| 16.40 | 6.20 | 4.28 | 5.86 |
| 16.80 | 6.48 | 4.54 | 5.23 |
| 17.20 | 6.73 | 4.77 | 4.60 |
| 17.60 | 6.95 | 4.98 | 4.09 |
| 18.00 | 7.13 | 5.15 | 3.58 |
| 18.40 | 7.30 | 5.31 | 3.11 |
| 18.80 | 7.44 | 5.45 | 2.74 |
| 19.20 | 7.57 | 5.57 | 2.40 |
| 19.60 | 7.68 | 5.67 | 2.09 |
| 20.00 | 7.78 | 5.77 | 1.90 |
| 20.40 | 7.87 | 5.86 | 1.73 |
| 20.80 | 7.96 | 5.94 | 1.59 |
| 21.20 | 8.05 | 6.02 | 1.57 |
| 21.60 | 8.13 | 6.11 | 1.57 |
| 22.00 | 8.22 | 6.18 | 1.54 |
| 22.40 | 8.29 | 6.25 | 1.38 |
| 22.80 | 8.35 | 6.31 | 1.21 |
| 23.20 | 8.42 | 6.37 | 1.11 |
| 23.60 | 8.49 | 6.44 | 1.24 |
| 24.00 | **8.57** | **6.52** | 1.42 |
| 24.40 | 8.57 | 6.52 | 0.52 |
| 24.80 | 8.57 | 6.52 | 0.04 |
| 25.20 | 8.57 | 6.52 | 0.00 |
| 25.60 | 8.57 | 6.52 | 0.00 |
| 26.00 | 8.57 | 6.52 | 0.00 |
| 26.40 | 8.57 | 6.52 | 0.00 |
| 26.80 | 8.57 | 6.52 | 0.00 |

## Summary for Subcatchment 8S: Northwood Drive Bypass

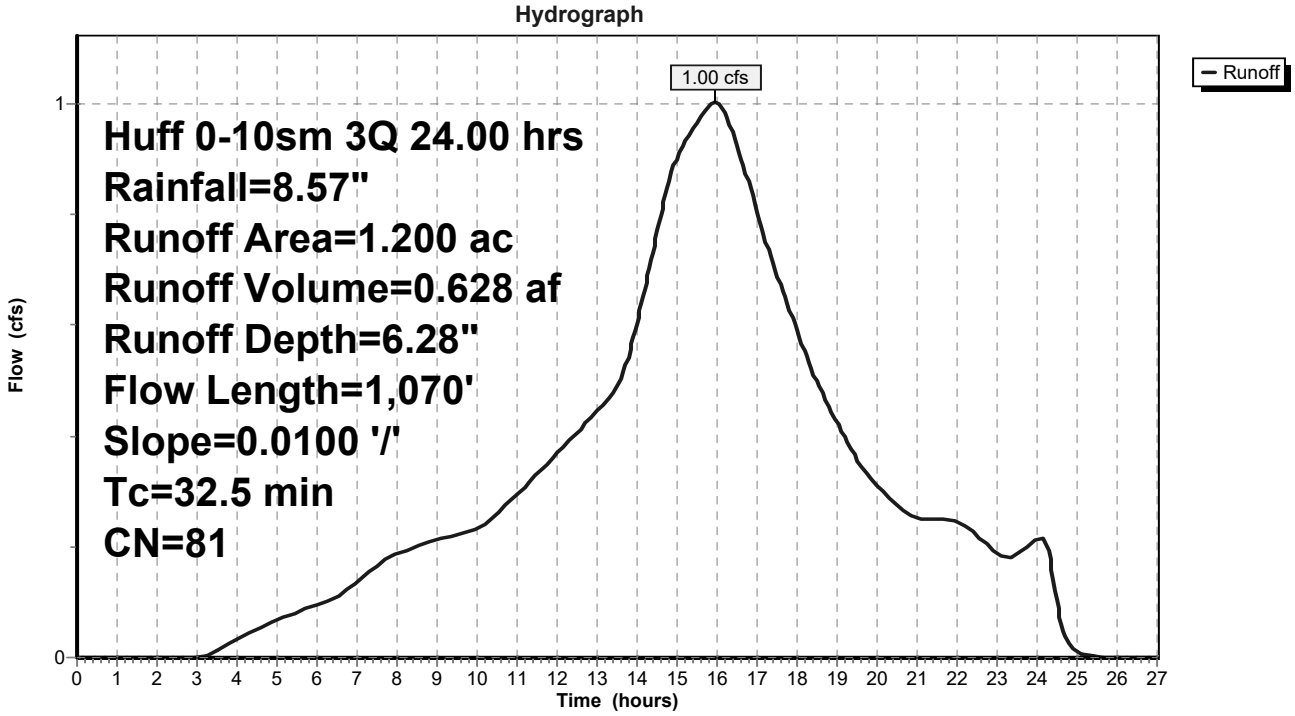
Runoff = 1.00 cfs @ 15.93 hrs, Volume= 0.628 af, Depth= 6.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.02 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=8.57"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

### Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 0.01 | 0.00 | 0.00 |
| 0.80 | 0.06 | 0.00 | 0.00 |
| 1.20 | 0.13 | 0.00 | 0.00 |
| 1.60 | 0.22 | 0.00 | 0.00 |
| 2.00 | 0.30 | 0.00 | 0.00 |
| 2.40 | 0.39 | 0.00 | 0.00 |
| 2.80 | 0.48 | 0.00 | 0.00 |
| 3.20 | 0.57 | 0.00 | 0.00 |
| 3.60 | 0.65 | 0.01 | 0.02 |
| 4.00 | 0.74 | 0.03 | 0.03 |
| 4.40 | 0.83 | 0.05 | 0.05 |
| 4.80 | 0.91 | 0.07 | 0.06 |
| 5.20 | 1.00 | 0.10 | 0.07 |
| 5.60 | 1.09 | 0.13 | 0.09 |
| 6.00 | 1.17 | 0.16 | 0.10 |
| 6.40 | 1.27 | 0.20 | 0.11 |
| 6.80 | 1.37 | 0.25 | 0.12 |
| 7.20 | 1.48 | 0.30 | 0.15 |
| 7.60 | 1.60 | 0.37 | 0.17 |
| 8.00 | 1.71 | 0.43 | 0.19 |
| 8.40 | 1.83 | 0.50 | 0.20 |
| 8.80 | 1.94 | 0.57 | 0.21 |
| 9.20 | 2.06 | 0.64 | 0.22 |
| 9.60 | 2.18 | 0.72 | 0.22 |
| 10.00 | 2.30 | 0.80 | 0.23 |
| 10.40 | 2.43 | 0.89 | 0.25 |
| 10.80 | 2.57 | 0.99 | 0.28 |
| 11.20 | 2.72 | 1.10 | 0.31 |
| 11.60 | 2.88 | 1.22 | 0.34 |
| 12.00 | 3.05 | 1.35 | 0.37 |
| 12.40 | 3.22 | 1.49 | 0.40 |
| 12.80 | 3.41 | 1.64 | 0.43 |
| 13.20 | 3.61 | 1.80 | 0.46 |
| 13.60 | 3.84 | 1.99 | 0.50 |
| 14.00 | 4.11 | 2.22 | 0.60 |
| 14.40 | 4.44 | 2.49 | 0.73 |
| 14.80 | 4.79 | 2.80 | 0.86 |
| 15.20 | 5.15 | 3.12 | 0.93 |
| 15.60 | 5.52 | 3.45 | **0.98** |
| 16.00 | 5.88 | 3.78 | **1.00** |
| 16.40 | 6.20 | 4.07 | 0.95 |
| 16.80 | 6.48 | 4.33 | 0.85 |
| 17.20 | 6.73 | 4.55 | 0.76 |
| 17.60 | 6.95 | 4.75 | 0.67 |
| 18.00 | 7.13 | 4.93 | 0.59 |
| 18.40 | 7.30 | 5.08 | 0.51 |
| 18.80 | 7.44 | 5.22 | 0.45 |
| 19.20 | 7.57 | 5.34 | 0.40 |
| 19.60 | 7.68 | 5.44 | 0.35 |
| 20.00 | 7.78 | 5.54 | 0.31 |
| 20.40 | 7.87 | 5.62 | 0.28 |
| 20.80 | 7.96 | 5.71 | 0.26 |
| 21.20 | 8.05 | 5.79 | 0.25 |
| 21.60 | 8.13 | 5.87 | 0.25 |
| 22.00 | 8.22 | 5.95 | 0.25 |
| 22.40 | 8.29 | 6.02 | 0.23 |
| 22.80 | 8.35 | 6.08 | 0.20 |
| 23.20 | 8.42 | 6.14 | 0.18 |
| 23.60 | 8.49 | 6.20 | 0.19 |
| 24.00 | **8.57** | **6.28** | 0.22 |
| 24.40 | 8.57 | 6.28 | 0.14 |
| 24.80 | 8.57 | 6.28 | 0.03 |
| 25.20 | 8.57 | 6.28 | 0.00 |
| 25.60 | 8.57 | 6.28 | 0.00 |
| 26.00 | 8.57 | 6.28 | 0.00 |
| 26.40 | 8.57 | 6.28 | 0.00 |
| 26.80 | 8.57 | 6.28 | 0.00 |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

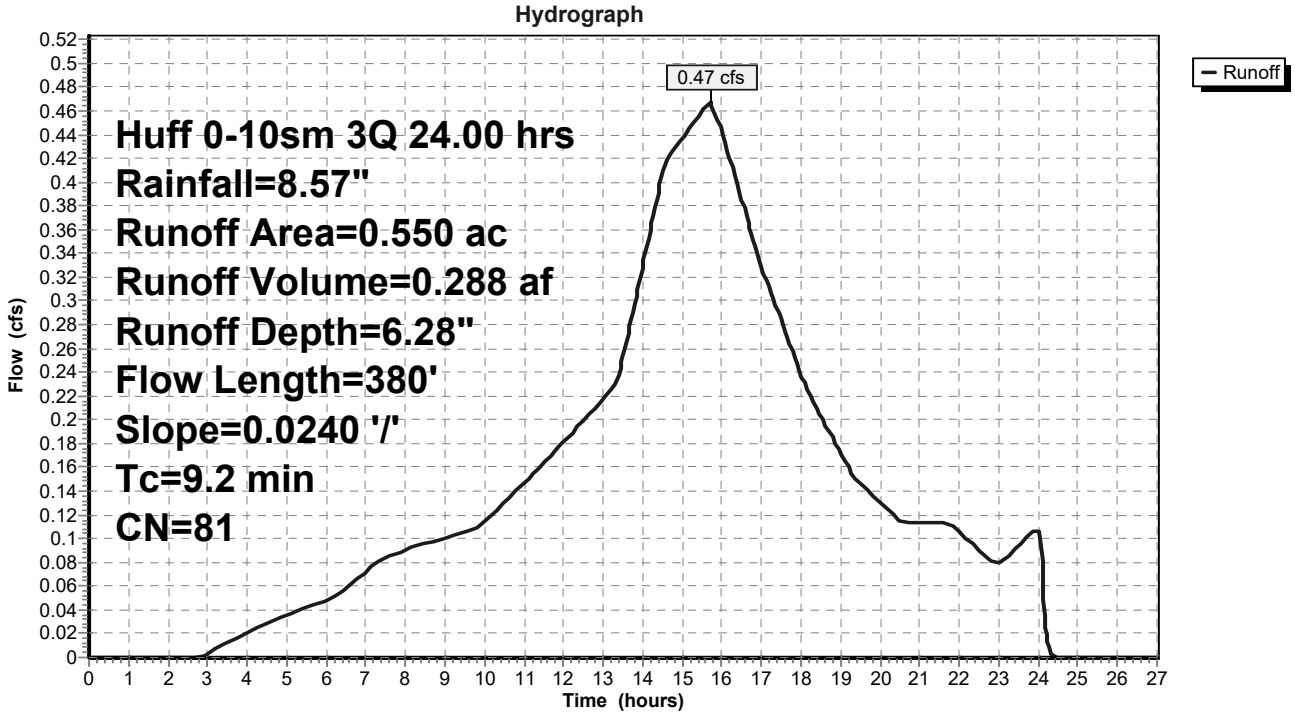
Runoff = 0.47 cfs @ 15.70 hrs, Volume= 0.288 af, Depth= 6.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.02 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=8.57"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 0.01 | 0.00 | 0.00 |
| 0.80 | 0.06 | 0.00 | 0.00 |
| 1.20 | 0.13 | 0.00 | 0.00 |
| 1.60 | 0.22 | 0.00 | 0.00 |
| 2.00 | 0.30 | 0.00 | 0.00 |
| 2.40 | 0.39 | 0.00 | 0.00 |
| 2.80 | 0.48 | 0.00 | 0.00 |
| 3.20 | 0.57 | 0.00 | 0.01 |
| 3.60 | 0.65 | 0.01 | 0.01 |
| 4.00 | 0.74 | 0.03 | 0.02 |
| 4.40 | 0.83 | 0.05 | 0.03 |
| 4.80 | 0.91 | 0.07 | 0.03 |
| 5.20 | 1.00 | 0.10 | 0.04 |
| 5.60 | 1.09 | 0.13 | 0.04 |
| 6.00 | 1.17 | 0.16 | 0.05 |
| 6.40 | 1.27 | 0.20 | 0.06 |
| 6.80 | 1.37 | 0.25 | 0.07 |
| 7.20 | 1.48 | 0.30 | 0.08 |
| 7.60 | 1.60 | 0.37 | 0.09 |
| 8.00 | 1.71 | 0.43 | 0.09 |
| 8.40 | 1.83 | 0.50 | 0.09 |
| 8.80 | 1.94 | 0.57 | 0.10 |
| 9.20 | 2.06 | 0.64 | 0.10 |
| 9.60 | 2.18 | 0.72 | 0.11 |
| 10.00 | 2.30 | 0.80 | 0.11 |
| 10.40 | 2.43 | 0.89 | 0.13 |
| 10.80 | 2.57 | 0.99 | 0.14 |
| 11.20 | 2.72 | 1.10 | 0.15 |
| 11.60 | 2.88 | 1.22 | 0.17 |
| 12.00 | 3.05 | 1.35 | 0.18 |
| 12.40 | 3.22 | 1.49 | 0.20 |
| 12.80 | 3.41 | 1.64 | 0.21 |
| 13.20 | 3.61 | 1.80 | 0.22 |
| 13.60 | 3.84 | 1.99 | 0.27 |
| 14.00 | 4.11 | 2.22 | 0.33 |
| 14.40 | 4.44 | 2.49 | 0.39 |
| 14.80 | 4.79 | 2.80 | 0.43 |
| 15.20 | 5.15 | 3.12 | 0.45 |
| 15.60 | 5.52 | 3.45 | **0.46** |
| 16.00 | 5.88 | 3.78 | **0.44** |
| 16.40 | 6.20 | 4.07 | 0.40 |
| 16.80 | 6.48 | 4.33 | 0.35 |
| 17.20 | 6.73 | 4.55 | 0.31 |
| 17.60 | 6.95 | 4.75 | 0.27 |
| 18.00 | 7.13 | 4.93 | 0.24 |
| 18.40 | 7.30 | 5.08 | 0.21 |
| 18.80 | 7.44 | 5.22 | 0.18 |
| 19.20 | 7.57 | 5.34 | 0.16 |
| 19.60 | 7.68 | 5.44 | 0.14 |
| 20.00 | 7.78 | 5.54 | 0.13 |
| 20.40 | 7.87 | 5.62 | 0.12 |
| 20.80 | 7.96 | 5.71 | 0.11 |
| 21.20 | 8.05 | 5.79 | 0.11 |
| 21.60 | 8.13 | 5.87 | 0.11 |
| 22.00 | 8.22 | 5.95 | 0.11 |
| 22.40 | 8.29 | 6.02 | 0.09 |
| 22.80 | 8.35 | 6.08 | 0.08 |
| 23.20 | 8.42 | 6.14 | 0.08 |
| 23.60 | 8.49 | 6.20 | 0.10 |
| 24.00 | **8.57** | **6.28** | 0.11 |
| 24.40 | 8.57 | 6.28 | 0.00 |
| 24.80 | 8.57 | 6.28 | 0.00 |
| 25.20 | 8.57 | 6.28 | 0.00 |
| 25.60 | 8.57 | 6.28 | 0.00 |
| 26.00 | 8.57 | 6.28 | 0.00 |
| 26.40 | 8.57 | 6.28 | 0.00 |
| 26.80 | 8.57 | 6.28 | 0.00 |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 9.46 cfs @ | 15.85 hrs, | Volume= | 5.294 af |
| Outflow | = | 9.37 cfs @ | 17.67 hrs, | Volume= | 2.608 af, Atten= 1%, Lag= 109.1 min |
| Primary | = | 1.53 cfs @ | 17.66 hrs, | Volume= | 1.912 af |
| Secondary | = | 7.84 cfs @ | 17.67 hrs, | Volume= | 0.696 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-27.00 hrs, dt= 0.02 hrs
Peak Elev= 678.42' @ 17.66 hrs Surf.Area= 47,088 sf Storage= 136,494 cf

Plug-Flow detention time= 391.4 min calculated for 2.606 af (49% of inflow)
Center-of-Mass det. time= 204.7 min ( 1,117.9 - 913.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

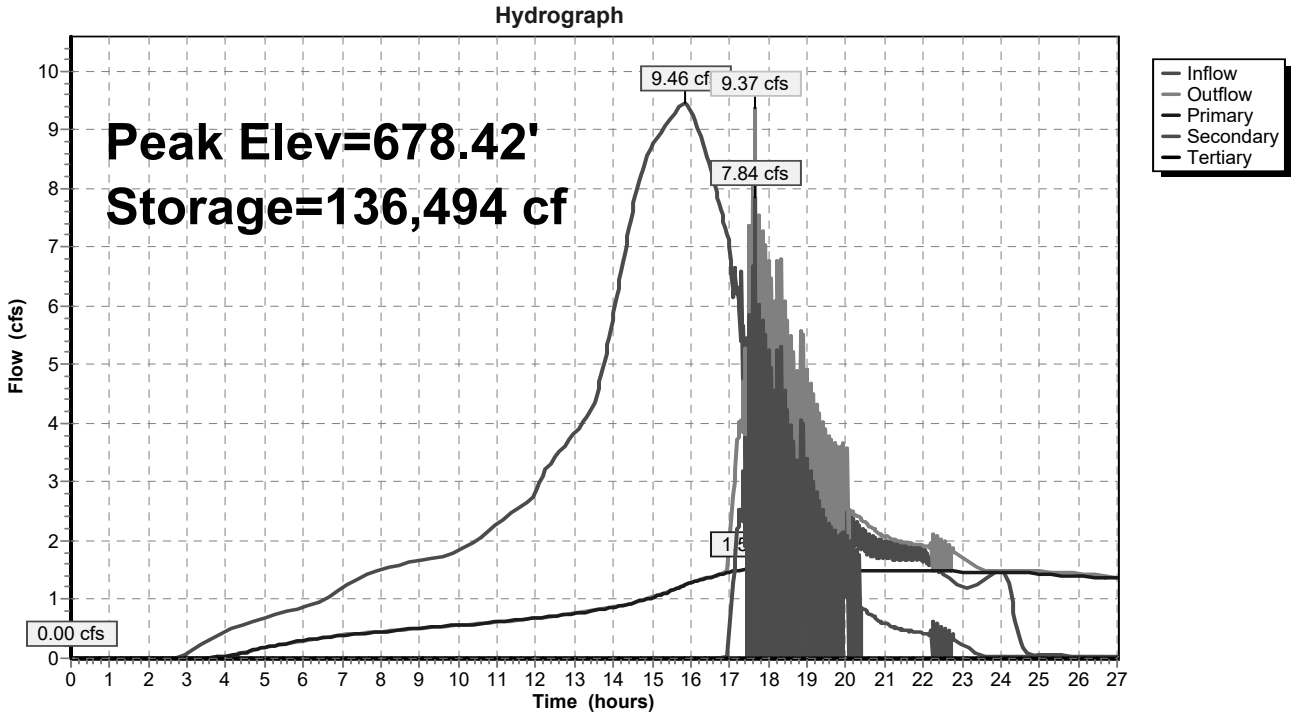
#4 Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=1.53 cfs @ 17.66 hrs HW=678.42' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.53 cfs @ 13.81 fps)

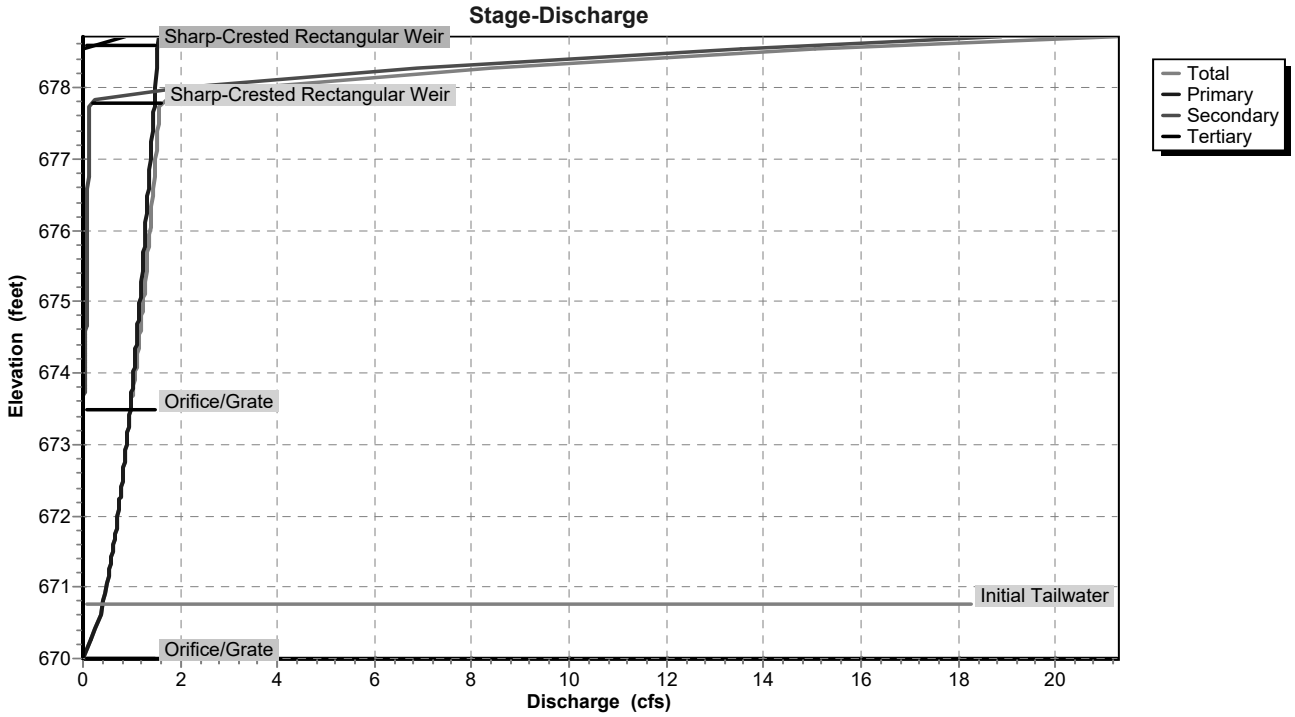
**Secondary OutFlow** Max=6.28 cfs @ 17.67 hrs HW=678.41' TW=678.27' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** (Weir Controls 6.26 cfs @ 1.76 fps)
└─**4=Orifice/Grate** (Orifice Controls 0.02 cfs @ 1.78 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

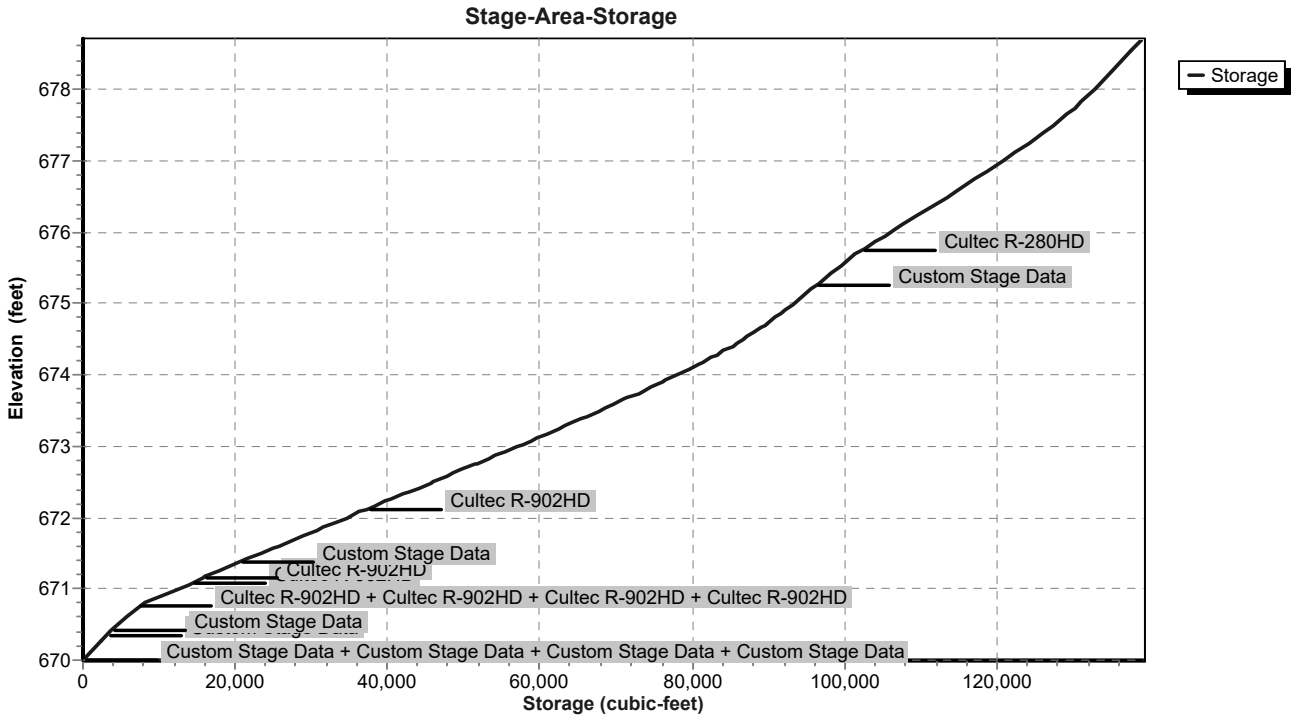
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | **0.00** |
| 1.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | 0.06 | 26 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.46 | 1,029 | 670.12 | 0.03 | 0.03 | 0.00 | 0.00 |
| 5.00 | 0.70 | 2,763 | 670.31 | 0.18 | 0.18 | 0.00 | 0.00 |
| 6.00 | 0.87 | 4,707 | 670.51 | 0.30 | 0.30 | 0.00 | 0.00 |
| 7.00 | 1.19 | 7,070 | 670.74 | 0.40 | 0.40 | 0.00 | 0.00 |
| 8.00 | 1.52 | 10,513 | 670.91 | 0.45 | 0.45 | 0.00 | 0.00 |
| 9.00 | 1.67 | 14,528 | 671.10 | 0.51 | 0.51 | 0.00 | 0.00 |
| 10.00 | 1.82 | 18,837 | 671.30 | 0.56 | 0.56 | 0.00 | 0.00 |
| 11.00 | 2.28 | 24,049 | 671.53 | 0.62 | 0.62 | 0.00 | 0.00 |
| 12.00 | 2.81 | 30,806 | 671.83 | 0.68 | 0.68 | 0.00 | 0.00 |
| 13.00 | 3.85 | 40,430 | 672.26 | 0.77 | 0.77 | 0.00 | 0.00 |
| 14.00 | 5.85 | 53,829 | 672.85 | 0.87 | 0.87 | 0.00 | 0.00 |
| 15.00 | **8.73** | 77,412 | 673.97 | 1.03 | 1.03 | 0.00 | 0.00 |
| 16.00 | **9.34** | 106,297 | 676.02 | 1.28 | 1.28 | 0.00 | 0.00 |
| 17.00 | 7.05 | **131,222** | **677.84** | **1.47** | **1.47** | **0.00** | 0.00 |
| 18.00 | 3.82 | **135,959** | **678.36** | **6.77** | **1.52** | **5.25** | 0.00 |
| 19.00 | 2.75 | 134,845 | 678.24 | 4.92 | 1.51 | 3.41 | 0.00 |
| 20.00 | 2.03 | 133,894 | 678.13 | 1.50 | 1.50 | 0.00 | 0.00 |
| 21.00 | 1.69 | 133,100 | 678.04 | 2.66 | 1.49 | 1.17 | 0.00 |
| 22.00 | 1.64 | 132,794 | 678.01 | 1.49 | 1.49 | 0.00 | 0.00 |
| 23.00 | 1.21 | 131,633 | 677.88 | 1.72 | 1.48 | 0.25 | 0.00 |
| 24.00 | 1.53 | 130,768 | 677.79 | 1.49 | 1.47 | 0.03 | 0.00 |
| 25.00 | 0.01 | 127,467 | 677.50 | 1.48 | 1.44 | 0.05 | 0.00 |
| 26.00 | 0.00 | 122,200 | 677.10 | 1.44 | 1.40 | 0.04 | 0.00 |
| 27.00 | 0.00 | 117,112 | 676.75 | 1.39 | 1.36 | 0.02 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 16.68 | 1.54 | 15.13 | 0.00 |
| 678.80 | **24.77** | **1.56** | **21.42** | **1.79** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) |
|---|---|
| 670.00 | 0 |
| 670.10 | 893 |
| 670.20 | 1,787 |
| 670.30 | 2,681 |
| 670.40 | 3,618 |
| 670.50 | 4,626 |
| 670.60 | 5,639 |
| 670.70 | 6,653 |
| 670.80 | 8,202 |
| 670.90 | 10,288 |
| 671.00 | 12,379 |
| 671.10 | 14,465 |
| 671.20 | 16,635 |
| 671.30 | 18,830 |
| 671.40 | 21,049 |
| 671.50 | 23,322 |
| 671.60 | 25,582 |
| 671.70 | 27,830 |
| 671.80 | 30,075 |
| 671.90 | 32,317 |
| 672.00 | 34,546 |
| 672.10 | 36,761 |
| 672.20 | 39,047 |
| 672.30 | 41,344 |
| 672.40 | 43,628 |
| 672.50 | 45,906 |
| 672.60 | 48,170 |
| 672.70 | 50,428 |
| 672.80 | 52,674 |
| 672.90 | 54,899 |
| 673.00 | 57,117 |
| 673.10 | 59,314 |
| 673.20 | 61,492 |
| 673.30 | 63,654 |
| 673.40 | 65,789 |
| 673.50 | 67,899 |
| 673.60 | 69,981 |
| 673.70 | 72,030 |
| 673.80 | 74,047 |
| 673.90 | 76,023 |
| 674.00 | 77,955 |
| 674.10 | 79,844 |
| 674.20 | 81,679 |
| 674.30 | 83,453 |
| 674.40 | 85,139 |
| 674.50 | 86,709 |
| 674.60 | 88,153 |
| 674.70 | 89,496 |
| 674.80 | 90,763 |
| 674.90 | 91,997 |
| 675.00 | 93,215 |
| 675.10 | 94,422 |
| 675.20 | 95,621 |
| 675.30 | 96,808 |
| 675.40 | 97,984 |
| 675.50 | 99,158 |
| 675.60 | 100,327 |
| 675.70 | 101,491 |
| 675.80 | 102,865 |
| 675.90 | 104,433 |
| 676.00 | 105,977 |
| 676.10 | 107,509 |
| 676.20 | 109,032 |
| 676.30 | 110,542 |
| 676.40 | 112,038 |
| 676.50 | 113,523 |
| 676.60 | 114,993 |
| 676.70 | 116,452 |
| 676.80 | 117,901 |
| 676.90 | 119,339 |
| 677.00 | 120,753 |
| 677.10 | 122,143 |
| 677.20 | 123,511 |
| 677.30 | 124,850 |
| 677.40 | 126,157 |
| 677.50 | 127,426 |
| 677.60 | 128,644 |
| 677.70 | 129,794 |
| 677.80 | 130,846 |
| 677.90 | 131,802 |
| 678.00 | 132,704 |
| 678.10 | 133,604 |
| 678.20 | 134,505 |
| 678.30 | 135,406 |
| 678.40 | 136,307 |
| 678.50 | 137,209 |
| 678.60 | 138,112 |
| 678.70 | 139,014 |
| 678.80 | 139,917 |
| 678.90 | **140,821** |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 10.30 cfs @ | 17.67 hrs, | Volume= | 3.227 af |
| Outflow | = | 10.57 cfs @ | 17.70 hrs, | Volume= | 3.225 af, Atten= 0%, Lag= 1.8 min |
| Primary | = | 6.91 cfs @ | 17.70 hrs, | Volume= | 2.295 af |
| Secondary | = | 3.89 cfs @ | 17.62 hrs, | Volume= | 0.930 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-27.00 hrs, dt= 0.02 hrs
Peak Elev= 678.42' @ 17.70 hrs Surf.Area= 3,591 sf Storage= 4,648 cf

Plug-Flow detention time= 20.7 min calculated for 3.222 af (100% of inflow)
Center-of-Mass det. time= 20.3 min ( 981.8 - 961.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

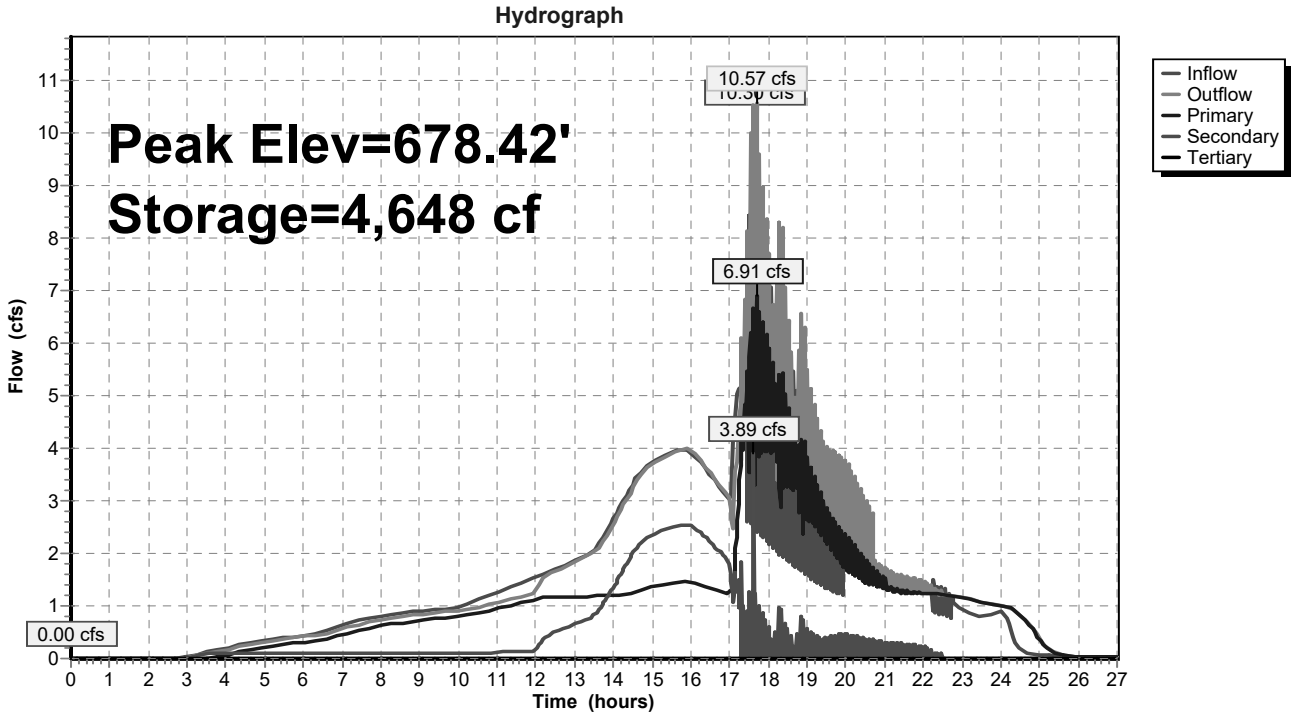
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.50' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=6.70 cfs @ 17.70 hrs HW=678.41' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 1.42 cfs @ 6.16 fps)
- **2=Sharp-Crested Rectangular Weir** (Weir Controls 5.28 cfs @ 2.19 fps)

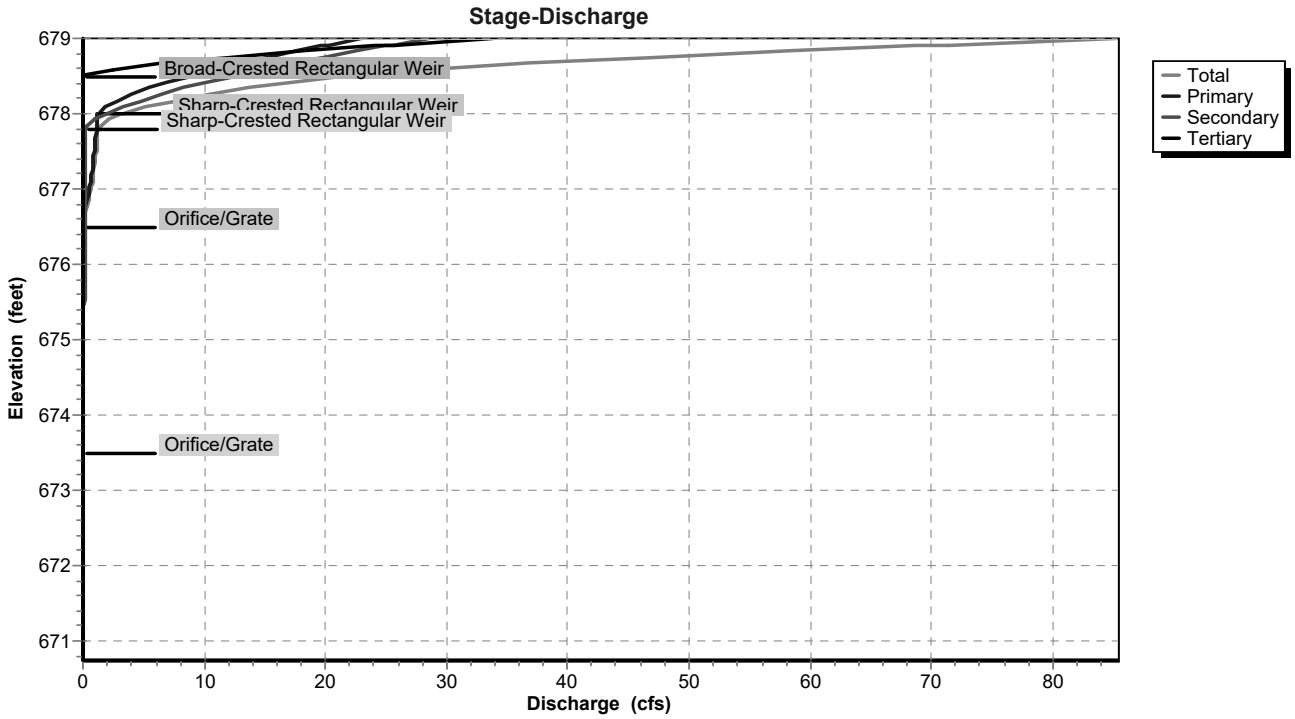
**Secondary OutFlow** Max=4.66 cfs @ 17.62 hrs HW=678.41' TW=678.34' (Dynamic Tailwater)
- **4=Orifice/Grate** (Orifice Controls 0.01 cfs @ 1.19 fps)
- **5=Sharp-Crested Rectangular Weir** (Weir Controls 4.64 cfs @ 1.30 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
- **3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

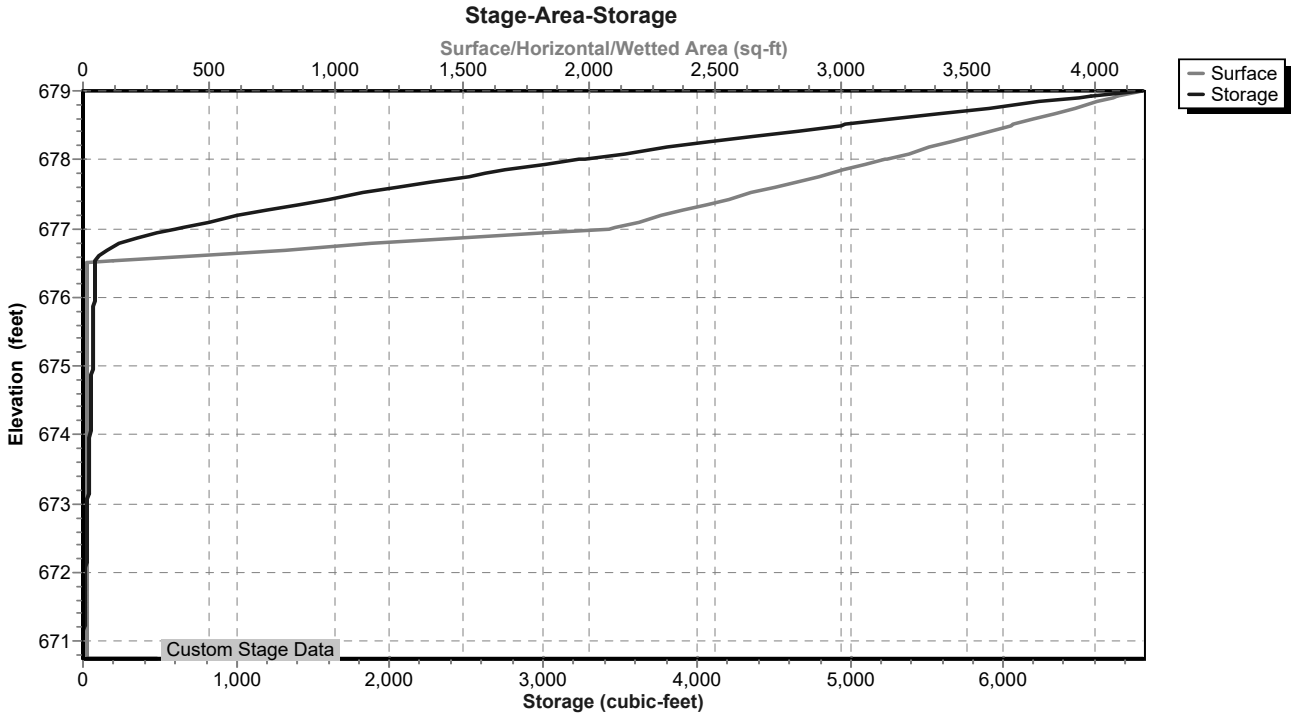
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 1.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | 0.04 | 22 | 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.20 | 132 | 676.65 | 0.17 | 0.07 | 0.10 | 0.00 |
| 5.00 | 0.34 | 237 | 676.77 | 0.31 | 0.21 | 0.11 | 0.00 |
| 6.00 | 0.44 | 333 | 676.84 | 0.42 | 0.31 | 0.11 | 0.00 |
| 7.00 | 0.63 | 488 | 676.94 | 0.56 | 0.45 | 0.11 | 0.00 |
| 8.00 | 0.81 | 785 | 677.08 | 0.73 | 0.62 | 0.11 | 0.00 |
| 9.00 | 0.90 | 1,033 | 677.20 | 0.84 | 0.72 | 0.11 | 0.00 |
| 10.00 | 0.99 | 1,254 | 677.29 | 0.91 | 0.80 | 0.11 | 0.00 |
| 11.00 | 1.26 | 1,765 | 677.49 | 1.06 | 0.94 | 0.12 | 0.00 |
| 12.00 | 1.55 | 2,659 | 677.81 | 1.28 | 1.13 | 0.15 | 0.00 |
| 13.00 | 1.86 | 2,893 | 677.89 | 1.83 | 1.17 | 0.66 | 0.00 |
| 14.00 | 2.66 | 3,099 | 677.96 | 2.57 | 1.21 | 1.36 | 0.00 |
| 15.00 | 3.72 | 3,334 | 678.03 | 3.70 | 1.35 | 2.35 | 0.00 |
| 16.00 | 3.94 | 3,379 | 678.05 | 3.96 | 1.44 | 2.52 | 0.00 |
| 17.00 | **3.01** | **3,236** | **678.00** | **3.05** | **1.23** | **1.82** | 0.00 |
| 18.00 | **7.45** | **4,290** | **678.32** | **4.98** | **4.98** | **0.00** | 0.00 |
| 19.00 | 4.99 | 3,931 | 678.21 | 3.29 | 3.29 | 0.00 | 0.00 |
| 20.00 | 1.17 | 3,513 | 678.09 | 1.78 | 1.78 | 0.00 | 0.00 |
| 21.00 | 2.15 | 3,361 | 678.04 | 1.41 | 1.41 | 0.00 | 0.00 |
| 22.00 | 0.95 | 3,216 | 677.99 | 1.23 | 1.23 | 0.00 | 0.00 |
| 23.00 | 0.95 | 2,822 | 677.87 | 1.16 | 1.16 | 0.00 | 0.00 |
| 24.00 | 0.93 | 2,027 | 677.59 | 1.00 | 1.00 | 0.00 | 0.00 |
| 25.00 | 0.06 | 388 | 676.88 | 0.36 | 0.36 | 0.00 | 0.00 |
| 26.00 | 0.04 | 116 | 676.62 | 0.05 | 0.05 | 0.00 | 0.00 |
| 27.00 | 0.00 | 101 | 676.59 | 0.03 | 0.03 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 24.61 | 9.86 | 13.70 | 1.05 |
| 678.75 | 46.70 | 15.13 | 19.77 | 11.80 |
| 678.95 | **76.77** | **21.27** | **26.68** | **28.82** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

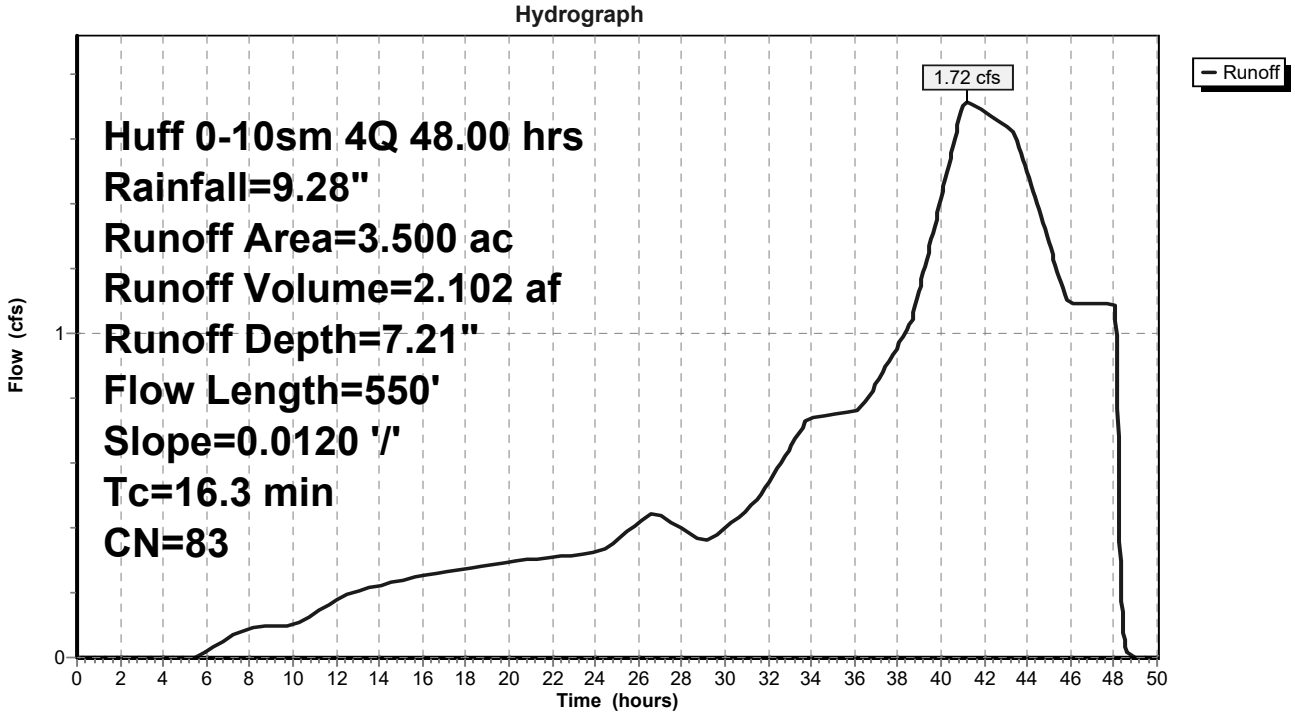
Runoff = 1.72 cfs @ 41.20 hrs, Volume= 2.102 af, Depth= 7.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=9.28"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | 0.02 | 0.00 | 0.00 |
| 2.00 | 0.07 | 0.00 | 0.00 |
| 3.00 | 0.15 | 0.00 | 0.00 |
| 4.00 | 0.25 | 0.00 | 0.00 |
| 5.00 | 0.36 | 0.00 | 0.00 |
| 6.00 | 0.48 | 0.00 | 0.02 |
| 7.00 | 0.60 | 0.02 | 0.06 |
| 8.00 | 0.72 | 0.04 | 0.09 |
| 9.00 | 0.82 | 0.07 | 0.10 |
| 10.00 | 0.90 | 0.10 | 0.10 |
| 11.00 | 1.00 | 0.13 | 0.14 |
| 12.00 | 1.11 | 0.18 | 0.18 |
| 13.00 | 1.23 | 0.24 | 0.20 |
| 14.00 | 1.35 | 0.30 | 0.22 |
| 15.00 | 1.47 | 0.36 | 0.24 |
| 16.00 | 1.60 | 0.43 | 0.25 |
| 17.00 | 1.72 | 0.51 | 0.26 |
| 18.00 | 1.84 | 0.59 | 0.28 |
| 19.00 | 1.96 | 0.67 | 0.29 |
| 20.00 | 2.08 | 0.75 | 0.29 |
| 21.00 | 2.20 | 0.83 | 0.30 |
| 22.00 | 2.32 | 0.92 | 0.31 |
| 23.00 | 2.44 | 1.01 | 0.32 |
| 24.00 | 2.56 | 1.10 | 0.32 |
| 25.00 | 2.69 | 1.20 | 0.36 |
| 26.00 | 2.84 | 1.32 | 0.42 |
| 27.00 | 2.99 | 1.44 | 0.44 |
| 28.00 | 3.14 | 1.56 | 0.40 |
| 29.00 | 3.26 | 1.66 | 0.36 |
| 30.00 | 3.40 | 1.77 | 0.40 |
| 31.00 | 3.54 | 1.90 | 0.46 |
| 32.00 | 3.72 | 2.04 | 0.54 |
| 33.00 | 3.92 | 2.22 | 0.65 |
| 34.00 | 4.16 | 2.42 | 0.74 |
| 35.00 | 4.40 | 2.64 | 0.75 |
| 36.00 | 4.64 | 2.85 | 0.76 |
| 37.00 | 4.90 | 3.08 | 0.85 |
| 38.00 | 5.19 | 3.35 | 0.96 |
| 39.00 | 5.53 | 3.65 | 1.14 |
| 40.00 | 5.94 | 4.04 | 1.42 |
| 41.00 | 6.44 | 4.50 | **1.70** |
| 42.00 | 6.95 | 4.98 | **1.69** |
| 43.00 | 7.44 | 5.45 | 1.64 |
| 44.00 | 7.91 | 5.89 | 1.50 |
| 45.00 | 8.30 | 6.27 | 1.28 |
| 46.00 | 8.64 | 6.59 | 1.09 |
| 47.00 | 8.96 | 6.90 | 1.09 |
| 48.00 | **9.28** | **7.21** | 1.10 |
| 49.00 | 9.28 | 7.21 | 0.00 |
| 50.00 | 9.28 | 7.21 | 0.00 |

## Summary for Subcatchment 7S: South Property

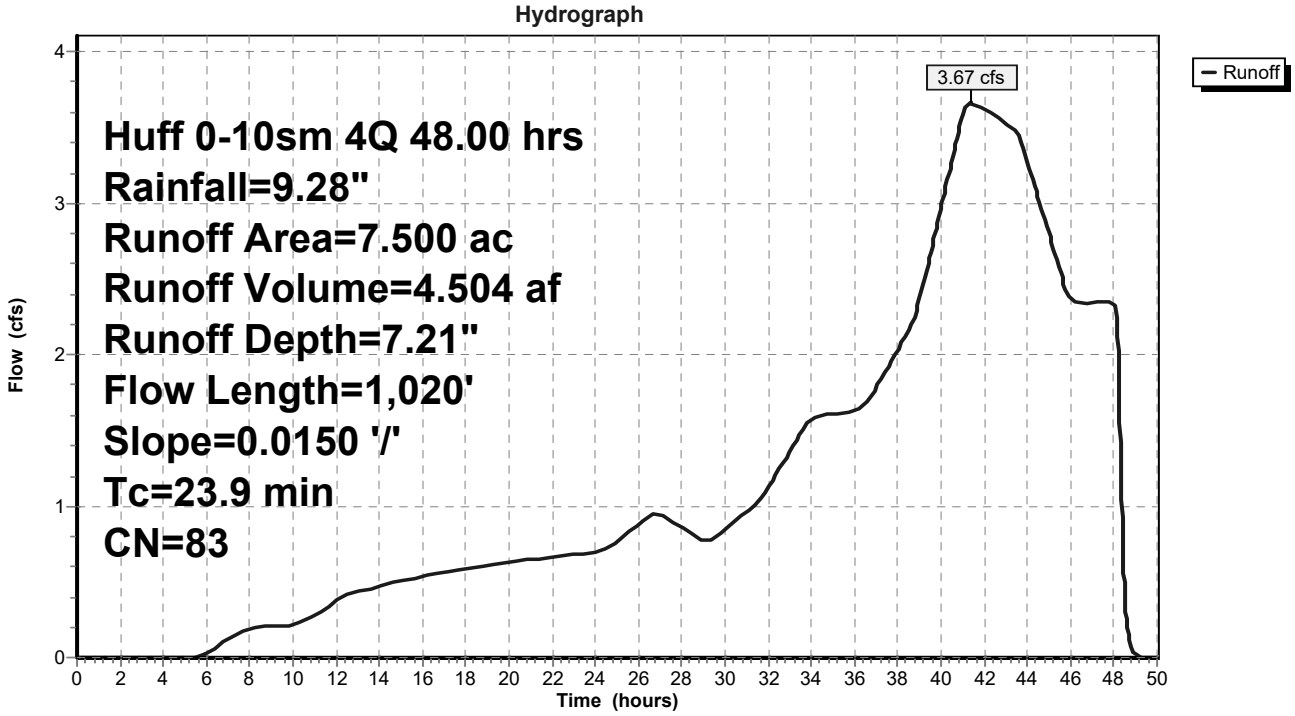
Runoff = 3.67 cfs @ 41.40 hrs, Volume= 4.504 af, Depth= 7.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=9.28"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

## Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | 0.02 | 0.00 | 0.00 |
| 2.00 | 0.07 | 0.00 | 0.00 |
| 3.00 | 0.15 | 0.00 | 0.00 |
| 4.00 | 0.25 | 0.00 | 0.00 |
| 5.00 | 0.36 | 0.00 | 0.00 |
| 6.00 | 0.48 | 0.00 | 0.03 |
| 7.00 | 0.60 | 0.02 | 0.12 |
| 8.00 | 0.72 | 0.04 | 0.19 |
| 9.00 | 0.82 | 0.07 | 0.21 |
| 10.00 | 0.90 | 0.10 | 0.21 |
| 11.00 | 1.00 | 0.13 | 0.28 |
| 12.00 | 1.11 | 0.18 | 0.37 |
| 13.00 | 1.23 | 0.24 | 0.43 |
| 14.00 | 1.35 | 0.30 | 0.47 |
| 15.00 | 1.47 | 0.36 | 0.51 |
| 16.00 | 1.60 | 0.43 | 0.54 |
| 17.00 | 1.72 | 0.51 | 0.56 |
| 18.00 | 1.84 | 0.59 | 0.59 |
| 19.00 | 1.96 | 0.67 | 0.61 |
| 20.00 | 2.08 | 0.75 | 0.63 |
| 21.00 | 2.20 | 0.83 | 0.65 |
| 22.00 | 2.32 | 0.92 | 0.66 |
| 23.00 | 2.44 | 1.01 | 0.68 |
| 24.00 | 2.56 | 1.10 | 0.69 |
| 25.00 | 2.69 | 1.20 | 0.77 |
| 26.00 | 2.84 | 1.32 | 0.88 |
| 27.00 | 2.99 | 1.44 | 0.95 |
| 28.00 | 3.14 | 1.56 | 0.86 |
| 29.00 | 3.26 | 1.66 | 0.77 |
| 30.00 | 3.40 | 1.77 | 0.85 |
| 31.00 | 3.54 | 1.90 | 0.96 |
| 32.00 | 3.72 | 2.04 | 1.13 |
| 33.00 | 3.92 | 2.22 | 1.36 |
| 34.00 | 4.16 | 2.42 | 1.58 |
| 35.00 | 4.40 | 2.64 | 1.61 |
| 36.00 | 4.64 | 2.85 | 1.63 |
| 37.00 | 4.90 | 3.08 | 1.79 |
| 38.00 | 5.19 | 3.35 | 2.03 |
| 39.00 | 5.53 | 3.65 | 2.37 |
| 40.00 | 5.94 | 4.04 | 2.97 |
| 41.00 | 6.44 | 4.50 | **3.59** |
| 42.00 | 6.95 | 4.98 | **3.62** |
| 43.00 | 7.44 | 5.45 | 3.53 |
| 44.00 | 7.91 | 5.89 | 3.27 |
| 45.00 | 8.30 | 6.27 | 2.80 |
| 46.00 | 8.64 | 6.59 | 2.36 |
| 47.00 | 8.96 | 6.90 | 2.34 |
| 48.00 | **9.28** | **7.21** | 2.35 |
| 49.00 | 9.28 | 7.21 | 0.02 |
| 50.00 | 9.28 | 7.21 | 0.00 |

## Summary for Subcatchment 8S: Northwood Drive Bypass

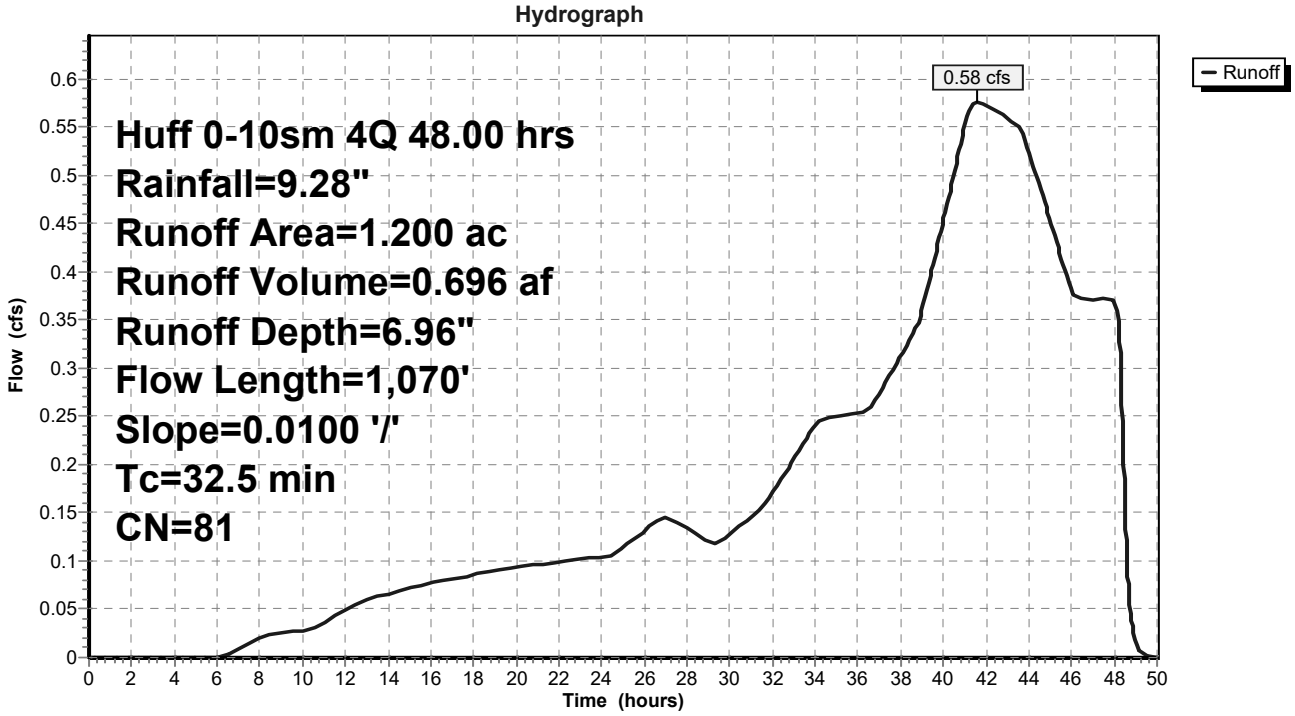
Runoff = 0.58 cfs @ 41.56 hrs, Volume= 0.696 af, Depth= 6.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=9.28"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | 0.02 | 0.00 | 0.00 |
| 2.00 | 0.07 | 0.00 | 0.00 |
| 3.00 | 0.15 | 0.00 | 0.00 |
| 4.00 | 0.25 | 0.00 | 0.00 |
| 5.00 | 0.36 | 0.00 | 0.00 |
| 6.00 | 0.48 | 0.00 | 0.00 |
| 7.00 | 0.60 | 0.01 | 0.01 |
| 8.00 | 0.72 | 0.02 | 0.02 |
| 9.00 | 0.82 | 0.05 | 0.03 |
| 10.00 | 0.90 | 0.07 | 0.03 |
| 11.00 | 1.00 | 0.10 | 0.04 |
| 12.00 | 1.11 | 0.14 | 0.05 |
| 13.00 | 1.23 | 0.19 | 0.06 |
| 14.00 | 1.35 | 0.24 | 0.07 |
| 15.00 | 1.47 | 0.30 | 0.07 |
| 16.00 | 1.60 | 0.37 | 0.08 |
| 17.00 | 1.72 | 0.43 | 0.08 |
| 18.00 | 1.84 | 0.50 | 0.09 |
| 19.00 | 1.96 | 0.58 | 0.09 |
| 20.00 | 2.08 | 0.65 | 0.09 |
| 21.00 | 2.20 | 0.73 | 0.10 |
| 22.00 | 2.32 | 0.82 | 0.10 |
| 23.00 | 2.44 | 0.90 | 0.10 |
| 24.00 | 2.56 | 0.99 | 0.10 |
| 25.00 | 2.69 | 1.08 | 0.11 |
| 26.00 | 2.84 | 1.19 | 0.13 |
| 27.00 | 2.99 | 1.31 | 0.14 |
| 28.00 | 3.14 | 1.42 | 0.13 |
| 29.00 | 3.26 | 1.52 | 0.12 |
| 30.00 | 3.40 | 1.62 | 0.13 |
| 31.00 | 3.54 | 1.74 | 0.15 |
| 32.00 | 3.72 | 1.89 | 0.17 |
| 33.00 | 3.92 | 2.06 | 0.21 |
| 34.00 | 4.16 | 2.25 | 0.24 |
| 35.00 | 4.40 | 2.46 | 0.25 |
| 36.00 | 4.64 | 2.67 | 0.25 |
| 37.00 | 4.90 | 2.90 | 0.27 |
| 38.00 | 5.19 | 3.15 | 0.31 |
| 39.00 | 5.53 | 3.45 | 0.36 |
| 40.00 | 5.94 | 3.83 | 0.45 |
| 41.00 | 6.44 | 4.28 | **0.55** |
| 42.00 | 6.95 | 4.76 | **0.57** |
| 43.00 | 7.44 | 5.22 | 0.56 |
| 44.00 | 7.91 | 5.65 | 0.53 |
| 45.00 | 8.30 | 6.03 | 0.45 |
| 46.00 | 8.64 | 6.34 | 0.38 |
| 47.00 | 8.96 | 6.65 | 0.37 |
| 48.00 | **9.28** | **6.96** | 0.37 |
| 49.00 | 9.28 | 6.96 | 0.02 |
| 50.00 | 9.28 | 6.96 | 0.00 |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

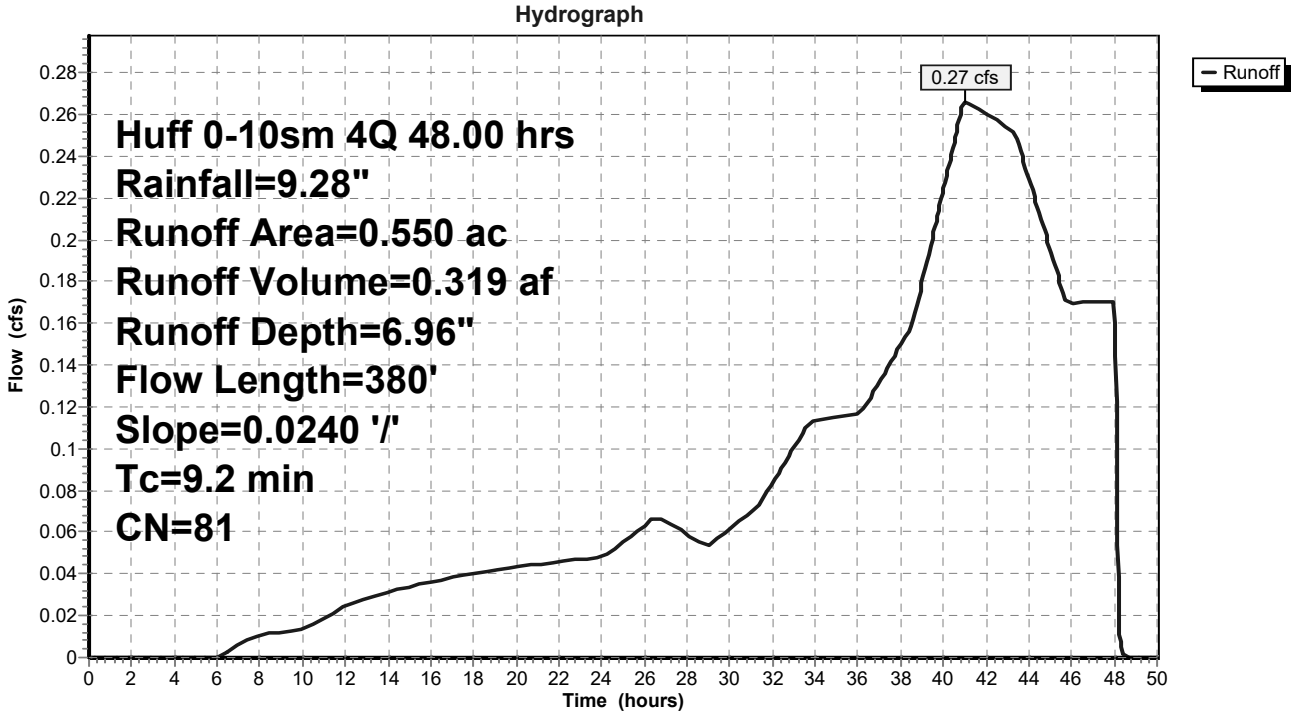
Runoff = 0.27 cfs @ 41.03 hrs, Volume= 0.319 af, Depth= 6.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=9.28"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | 0.02 | 0.00 | 0.00 |
| 2.00 | 0.07 | 0.00 | 0.00 |
| 3.00 | 0.15 | 0.00 | 0.00 |
| 4.00 | 0.25 | 0.00 | 0.00 |
| 5.00 | 0.36 | 0.00 | 0.00 |
| 6.00 | 0.48 | 0.00 | 0.00 |
| 7.00 | 0.60 | 0.01 | 0.01 |
| 8.00 | 0.72 | 0.02 | 0.01 |
| 9.00 | 0.82 | 0.05 | 0.01 |
| 10.00 | 0.90 | 0.07 | 0.01 |
| 11.00 | 1.00 | 0.10 | 0.02 |
| 12.00 | 1.11 | 0.14 | 0.02 |
| 13.00 | 1.23 | 0.19 | 0.03 |
| 14.00 | 1.35 | 0.24 | 0.03 |
| 15.00 | 1.47 | 0.30 | 0.03 |
| 16.00 | 1.60 | 0.37 | 0.04 |
| 17.00 | 1.72 | 0.43 | 0.04 |
| 18.00 | 1.84 | 0.50 | 0.04 |
| 19.00 | 1.96 | 0.58 | 0.04 |
| 20.00 | 2.08 | 0.65 | 0.04 |
| 21.00 | 2.20 | 0.73 | 0.04 |
| 22.00 | 2.32 | 0.82 | 0.05 |
| 23.00 | 2.44 | 0.90 | 0.05 |
| 24.00 | 2.56 | 0.99 | 0.05 |
| 25.00 | 2.69 | 1.08 | 0.06 |
| 26.00 | 2.84 | 1.19 | 0.06 |
| 27.00 | 2.99 | 1.31 | 0.07 |
| 28.00 | 3.14 | 1.42 | 0.06 |
| 29.00 | 3.26 | 1.52 | 0.05 |
| 30.00 | 3.40 | 1.62 | 0.06 |
| 31.00 | 3.54 | 1.74 | 0.07 |
| 32.00 | 3.72 | 1.89 | 0.08 |
| 33.00 | 3.92 | 2.06 | 0.10 |
| 34.00 | 4.16 | 2.25 | 0.11 |
| 35.00 | 4.40 | 2.46 | 0.12 |
| 36.00 | 4.64 | 2.67 | 0.12 |
| 37.00 | 4.90 | 2.90 | 0.13 |
| 38.00 | 5.19 | 3.15 | 0.15 |
| 39.00 | 5.53 | 3.45 | 0.18 |
| 40.00 | 5.94 | 3.83 | 0.22 |
| 41.00 | 6.44 | 4.28 | **0.27** |
| 42.00 | 6.95 | 4.76 | **0.26** |
| 43.00 | 7.44 | 5.22 | 0.25 |
| 44.00 | 7.91 | 5.65 | 0.23 |
| 45.00 | 8.30 | 6.03 | 0.20 |
| 46.00 | 8.64 | 6.34 | 0.17 |
| 47.00 | 8.96 | 6.65 | 0.17 |
| 48.00 | **9.28** | **6.96** | 0.17 |
| 49.00 | 9.28 | 6.96 | 0.00 |
| 50.00 | 9.28 | 6.96 | 0.00 |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 5.02 cfs @ | 41.40 hrs, | Volume= | 5.654 af |
| Outflow | = | 4.58 cfs @ | 47.01 hrs, | Volume= | 2.792 af, Atten= 9%, Lag= 336.6 min |
| Primary | = | 1.50 cfs @ | 48.04 hrs, | Volume= | 2.515 af |
| Secondary | = | 3.07 cfs @ | 47.01 hrs, | Volume= | 0.277 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs
Peak Elev= 678.19' @ 48.04 hrs Surf.Area= 47,063 sf Storage= 134,407 cf

Plug-Flow detention time= 498.1 min calculated for 2.792 af (49% of inflow)
Center-of-Mass det. time= 34.1 min ( 2,194.2 - 2,160.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

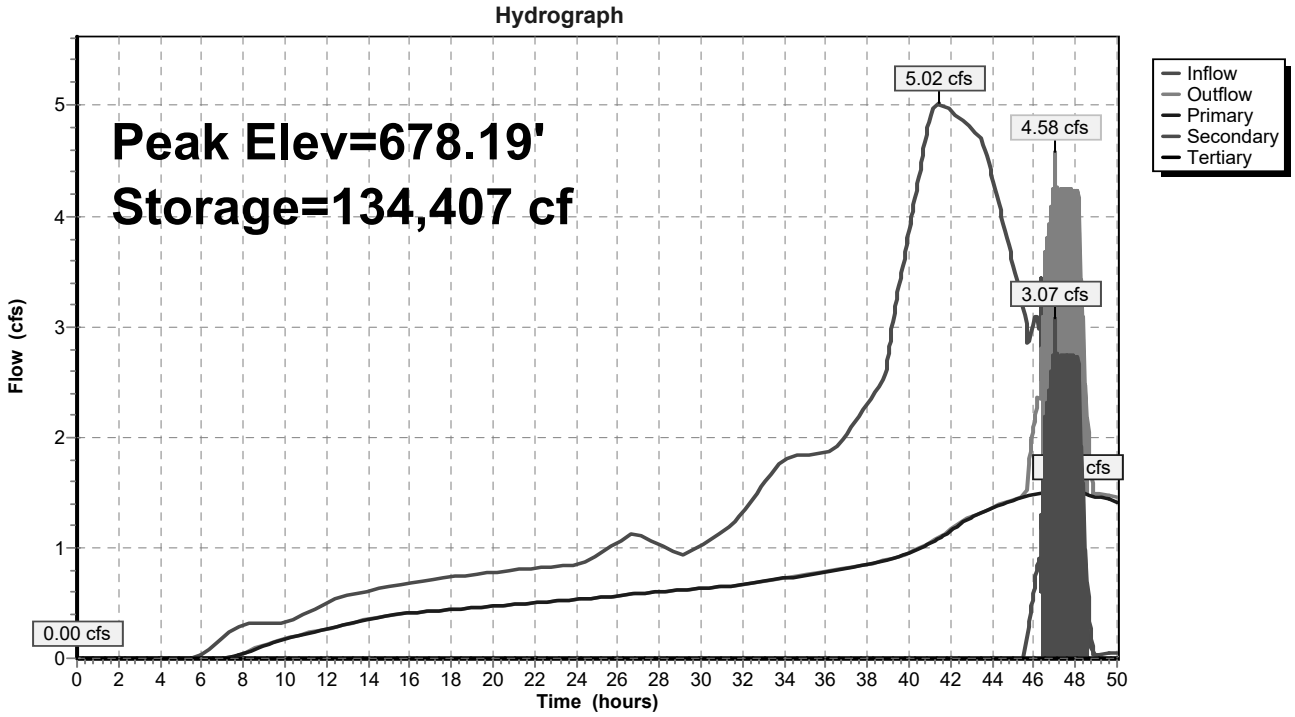
#4 Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=1.50 cfs @ 48.04 hrs HW=678.19' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.50 cfs @ 13.62 fps)

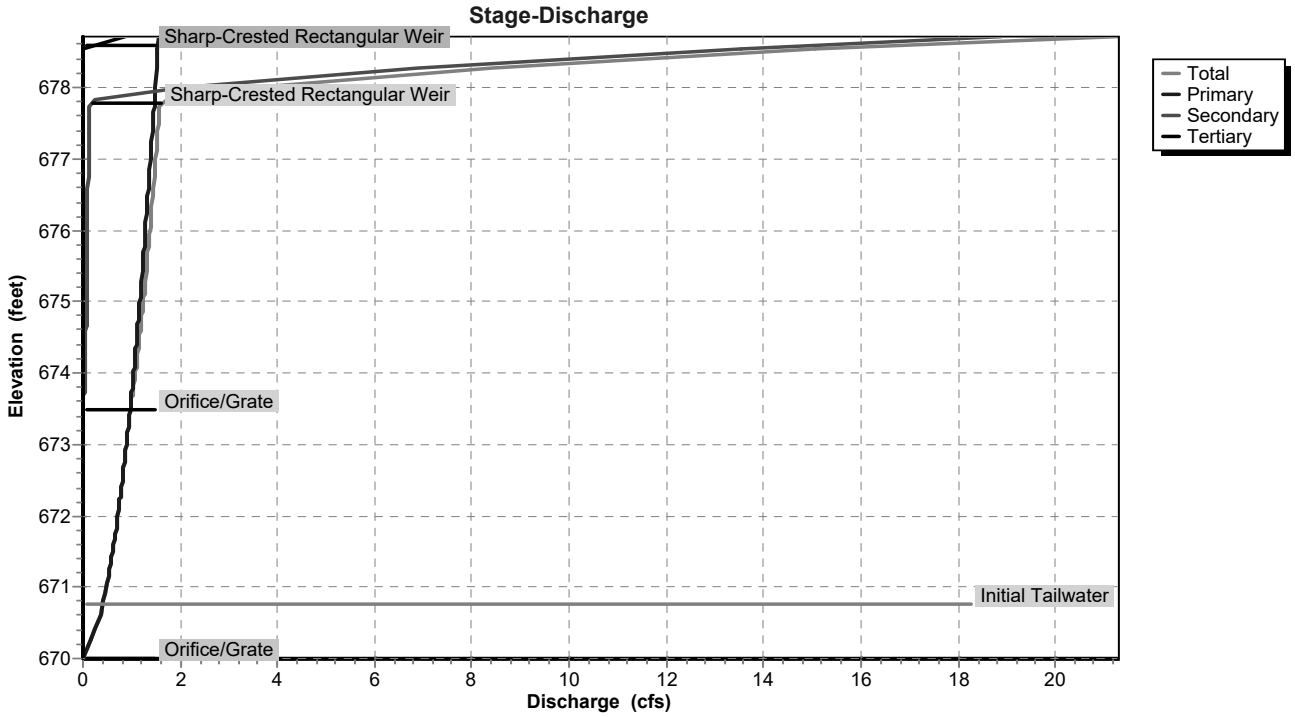
**Secondary OutFlow** Max=2.45 cfs @ 47.01 hrs HW=678.17' TW=678.13' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** (Weir Controls 2.43 cfs @ 1.10 fps)
└─**4=Orifice/Grate** (Orifice Controls 0.01 cfs @ 1.06 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

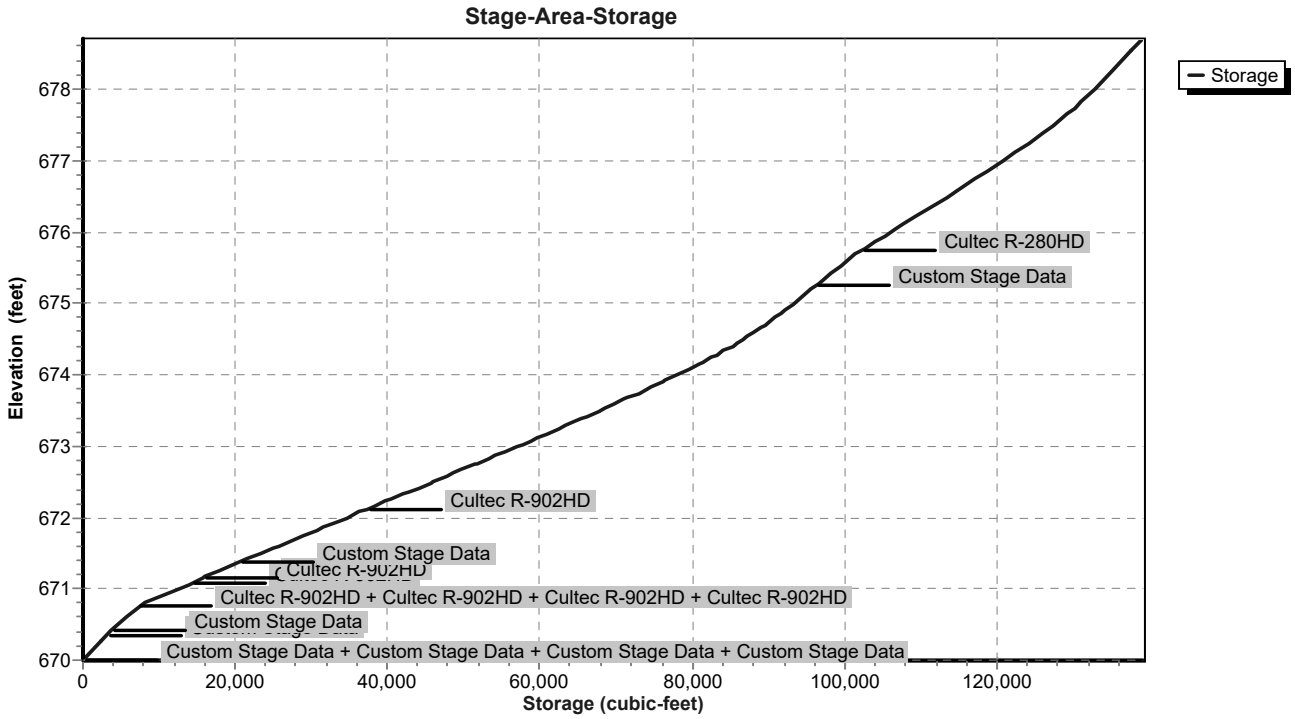
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | **0.00** |
| 1.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.03 | 15 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7.00 | 0.19 | 395 | 670.04 | 0.01 | 0.01 | 0.00 | 0.00 |
| 8.00 | 0.30 | 1,223 | 670.14 | 0.05 | 0.05 | 0.00 | 0.00 |
| 9.00 | 0.32 | 2,065 | 670.23 | 0.12 | 0.12 | 0.00 | 0.00 |
| 10.00 | 0.33 | 2,693 | 670.30 | 0.18 | 0.18 | 0.00 | 0.00 |
| 11.00 | 0.40 | 3,266 | 670.36 | 0.22 | 0.22 | 0.00 | 0.00 |
| 12.00 | 0.50 | 4,004 | 670.44 | 0.27 | 0.27 | 0.00 | 0.00 |
| 13.00 | 0.57 | 4,907 | 670.53 | 0.31 | 0.31 | 0.00 | 0.00 |
| 14.00 | 0.61 | 5,838 | 670.62 | 0.35 | 0.35 | 0.00 | 0.00 |
| 15.00 | 0.65 | 6,775 | 670.71 | 0.39 | 0.39 | 0.00 | 0.00 |
| 16.00 | 0.68 | 7,725 | 670.78 | 0.41 | 0.41 | 0.00 | 0.00 |
| 17.00 | 0.71 | 8,723 | 670.83 | 0.42 | 0.42 | 0.00 | 0.00 |
| 18.00 | 0.73 | 9,762 | 670.87 | 0.44 | 0.44 | 0.00 | 0.00 |
| 19.00 | 0.76 | 10,833 | 670.93 | 0.46 | 0.46 | 0.00 | 0.00 |
| 20.00 | 0.78 | 11,927 | 670.98 | 0.47 | 0.47 | 0.00 | 0.00 |
| 21.00 | 0.80 | 13,038 | 671.03 | 0.49 | 0.49 | 0.00 | 0.00 |
| 22.00 | 0.82 | 14,159 | 671.09 | 0.50 | 0.50 | 0.00 | 0.00 |
| 23.00 | 0.83 | 15,286 | 671.14 | 0.52 | 0.52 | 0.00 | 0.00 |
| 24.00 | 0.85 | 16,418 | 671.19 | 0.53 | 0.53 | 0.00 | 0.00 |
| 25.00 | 0.93 | 17,632 | 671.25 | 0.55 | 0.55 | 0.00 | 0.00 |
| 26.00 | 1.05 | 19,191 | 671.32 | 0.57 | 0.57 | 0.00 | 0.00 |
| 27.00 | 1.12 | 21,095 | 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 28.00 | 1.03 | 22,834 | 671.48 | 0.60 | 0.60 | 0.00 | 0.00 |
| 29.00 | 0.93 | 24,166 | 671.54 | 0.62 | 0.62 | 0.00 | 0.00 |
| 30.00 | 1.02 | 25,380 | 671.59 | 0.63 | 0.63 | 0.00 | 0.00 |
| 31.00 | 1.14 | 26,965 | 671.66 | 0.65 | 0.65 | 0.00 | 0.00 |
| 32.00 | 1.32 | 28,990 | 671.75 | 0.67 | 0.67 | 0.00 | 0.00 |
| 33.00 | 1.57 | 31,751 | 671.87 | 0.69 | 0.69 | 0.00 | 0.00 |
| 34.00 | 1.81 | 35,316 | 672.03 | 0.72 | 0.72 | 0.00 | 0.00 |
| 35.00 | 1.84 | 39,237 | 672.21 | 0.76 | 0.76 | 0.00 | 0.00 |
| 36.00 | 1.86 | 43,121 | 672.38 | 0.79 | 0.79 | 0.00 | 0.00 |
| 37.00 | 2.04 | 47,151 | 672.55 | 0.82 | 0.82 | 0.00 | 0.00 |
| 38.00 | 2.30 | 51,938 | 672.77 | 0.85 | 0.85 | 0.00 | 0.00 |
| 39.00 | 2.74 | 57,620 | 673.02 | 0.90 | 0.90 | 0.00 | 0.00 |
| 40.00 | 3.86 | 66,267 | 673.42 | 0.96 | 0.96 | 0.00 | 0.00 |
| 41.00 | **4.89** | 78,408 | 674.02 | 1.04 | 1.04 | 0.00 | 0.00 |
| 42.00 | **4.95** | 92,420 | 674.93 | 1.16 | 1.16 | 0.00 | 0.00 |
| 43.00 | 4.80 | 105,570 | 675.97 | 1.28 | 1.28 | 0.00 | 0.00 |
| 44.00 | 4.36 | 117,541 | 676.78 | 1.36 | 1.36 | 0.00 | 0.00 |
| 45.00 | 3.58 | 126,828 | 677.45 | 1.43 | 1.43 | 0.00 | 0.00 |
| 46.00 | 3.07 | 132,648 | 677.99 | 2.10 | 1.49 | 0.62 | 0.00 |
| 47.00 | 2.51 | 134,334 | 678.18 | **4.28** | 1.50 | **2.77** | 0.00 |
| 48.00 | 4.35 | **134,162** | **678.16** | 1.98 | **1.50** | 0.48 | 0.00 |
| 49.00 | 0.02 | **130,083** | **677.73** | 1.49 | **1.46** | 0.03 | 0.00 |
| 50.00 | 0.00 | 124,767 | 677.29 | 1.46 | 1.42 | 0.05 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 16.68 | 1.54 | 15.13 | 0.00 |
| 678.80 | **24.77** | **1.56** | **21.42** | **1.79** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) |
|---|---|
| 670.00 | 0 |
| 670.10 | 893 |
| 670.20 | 1,787 |
| 670.30 | 2,681 |
| 670.40 | 3,618 |
| 670.50 | 4,626 |
| 670.60 | 5,639 |
| 670.70 | 6,653 |
| 670.80 | 8,202 |
| 670.90 | 10,288 |
| 671.00 | 12,379 |
| 671.10 | 14,465 |
| 671.20 | 16,635 |
| 671.30 | 18,830 |
| 671.40 | 21,049 |
| 671.50 | 23,322 |
| 671.60 | 25,582 |
| 671.70 | 27,830 |
| 671.80 | 30,075 |
| 671.90 | 32,317 |
| 672.00 | 34,546 |
| 672.10 | 36,761 |
| 672.20 | 39,047 |
| 672.30 | 41,344 |
| 672.40 | 43,628 |
| 672.50 | 45,906 |
| 672.60 | 48,170 |
| 672.70 | 50,428 |
| 672.80 | 52,674 |
| 672.90 | 54,899 |
| 673.00 | 57,117 |
| 673.10 | 59,314 |
| 673.20 | 61,492 |
| 673.30 | 63,654 |
| 673.40 | 65,789 |
| 673.50 | 67,899 |
| 673.60 | 69,981 |
| 673.70 | 72,030 |
| 673.80 | 74,047 |
| 673.90 | 76,023 |
| 674.00 | 77,955 |
| 674.10 | 79,844 |
| 674.20 | 81,679 |
| 674.30 | 83,453 |
| 674.40 | 85,139 |
| 674.50 | 86,709 |
| 674.60 | 88,153 |
| 674.70 | 89,496 |
| 674.80 | 90,763 |
| 674.90 | 91,997 |
| 675.00 | 93,215 |
| 675.10 | 94,422 |
| 675.20 | 95,621 |
| 675.30 | 96,808 |
| 675.40 | 97,984 |
| 675.50 | 99,158 |
| 675.60 | 100,327 |
| 675.70 | 101,491 |
| 675.80 | 102,865 |
| 675.90 | 104,433 |
| 676.00 | 105,977 |
| 676.10 | 107,509 |
| 676.20 | 109,032 |
| 676.30 | 110,542 |
| 676.40 | 112,038 |
| 676.50 | 113,523 |
| 676.60 | 114,993 |
| 676.70 | 116,452 |
| 676.80 | 117,901 |
| 676.90 | 119,339 |
| 677.00 | 120,753 |
| 677.10 | 122,143 |
| 677.20 | 123,511 |
| 677.30 | 124,850 |
| 677.40 | 126,157 |
| 677.50 | 127,426 |
| 677.60 | 128,644 |
| 677.70 | 129,794 |
| 677.80 | 130,846 |
| 677.90 | 131,802 |
| 678.00 | 132,704 |
| 678.10 | 133,604 |
| 678.20 | 134,505 |
| 678.30 | 135,406 |
| 678.40 | 136,307 |
| 678.50 | 137,209 |
| 678.60 | 138,112 |
| 678.70 | 139,014 |
| 678.80 | 139,917 |
| 678.90 | **140,821** |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 4.54 cfs @ | 47.01 hrs, | Volume= | 3.075 af |
| Outflow | = | 4.87 cfs @ | 48.00 hrs, | Volume= | 3.072 af, Atten= 0%, Lag= 59.4 min |
| Primary | = | 3.05 cfs @ | 48.00 hrs, | Volume= | 2.241 af |
| Secondary | = | 1.89 cfs @ | 46.88 hrs, | Volume= | 0.831 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-50.00 hrs, dt= 0.02 hrs
Peak Elev= 678.20' @ 48.00 hrs Surf.Area= 3,369 sf Storage= 3,874 cf

Plug-Flow detention time= 22.2 min calculated for 3.070 af (100% of inflow)
Center-of-Mass det. time= 21.4 min ( 2,241.6 - 2,220.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

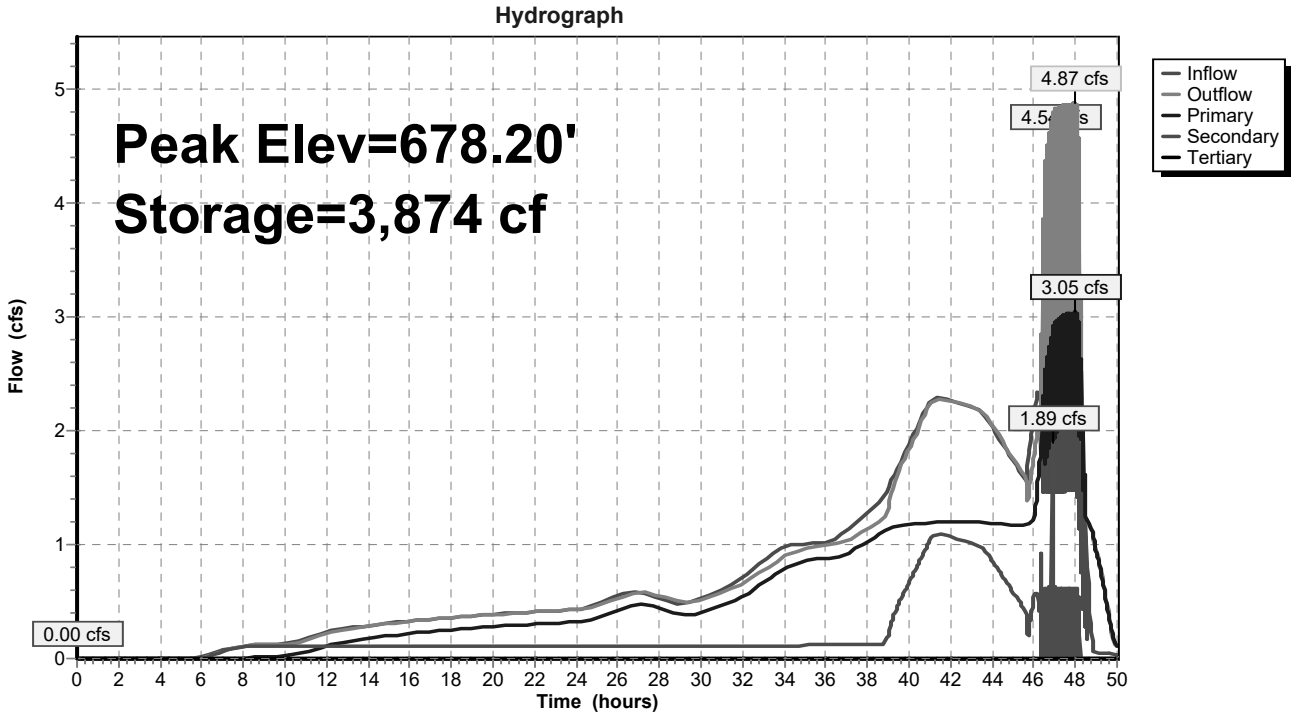
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.0' Crest Height |
| #3 | Tertiary | 678.50' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.0' Crest Height |

**Primary OutFlow** Max=2.97 cfs @ 48.00 hrs HW=678.19' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 1.32 cfs @ 5.74 fps)
- **2=Sharp-Crested Rectangular Weir** (Weir Controls 1.65 cfs @ 1.46 fps)

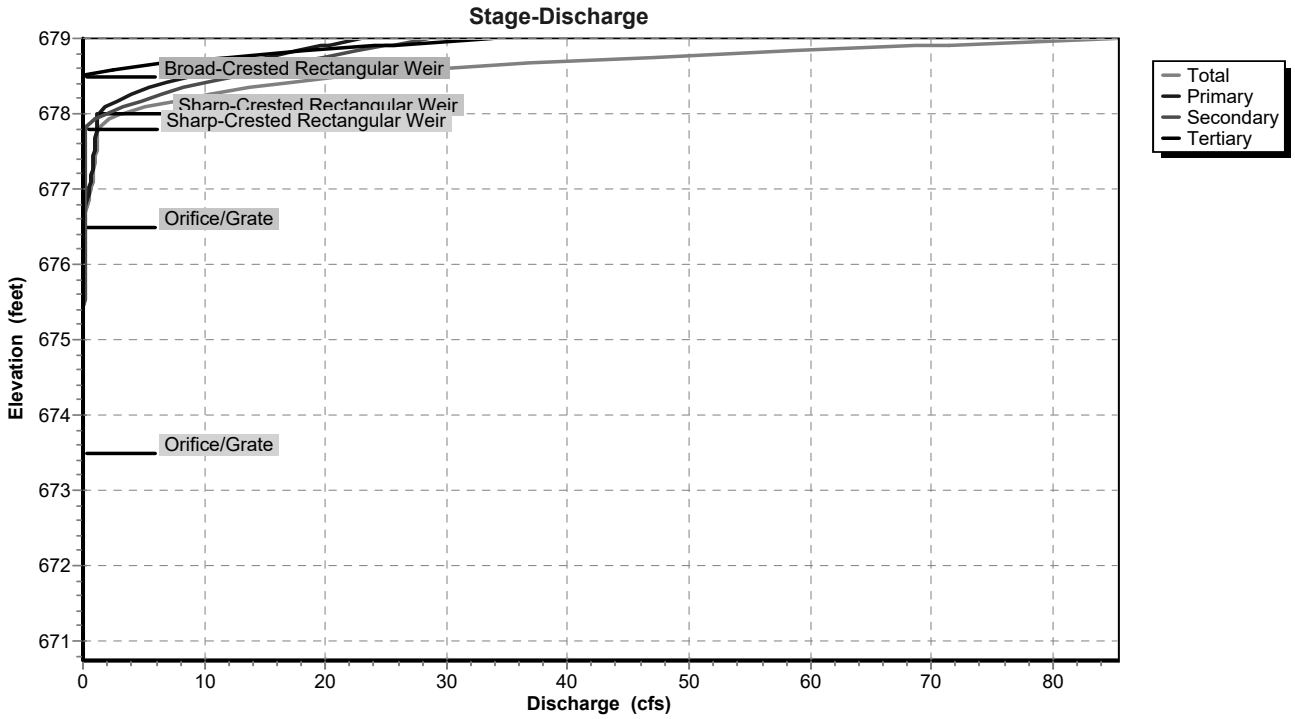
**Secondary OutFlow** Max=2.23 cfs @ 46.88 hrs HW=678.18' TW=678.15' (Dynamic Tailwater)
- **4=Orifice/Grate** (Orifice Controls 0.01 cfs @ 0.90 fps)
- **5=Sharp-Crested Rectangular Weir** (Weir Controls 2.22 cfs @ 0.98 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
- **3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

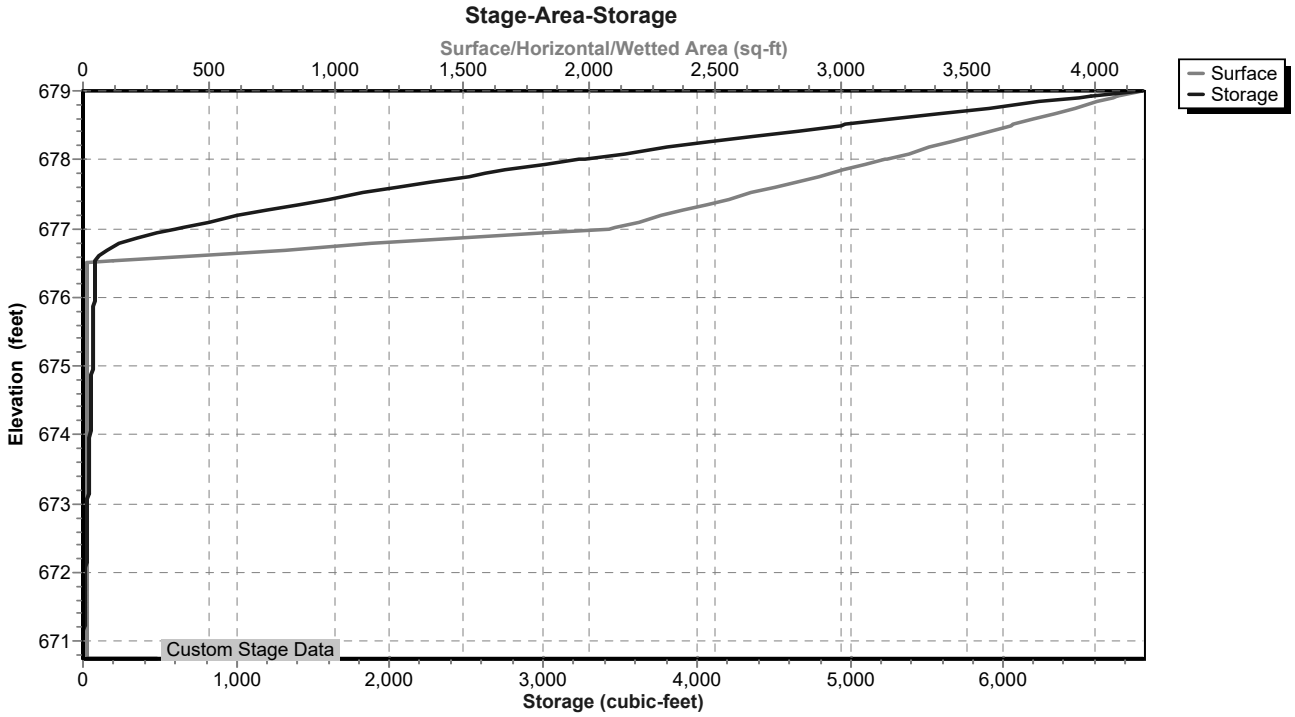
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 1.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.02 | 12 | 671.61 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7.00 | 0.07 | 55 | 674.69 | 0.06 | 0.00 | 0.06 | 0.00 |
| 8.00 | 0.11 | 82 | 676.53 | 0.10 | 0.00 | 0.10 | 0.00 |
| 9.00 | 0.12 | 97 | 676.58 | 0.12 | 0.02 | 0.10 | 0.00 |
| 10.00 | 0.13 | 99 | 676.58 | 0.12 | 0.02 | 0.10 | 0.00 |
| 11.00 | 0.17 | 124 | 676.64 | 0.16 | 0.06 | 0.10 | 0.00 |
| 12.00 | 0.23 | 162 | 676.69 | 0.22 | 0.11 | 0.10 | 0.00 |
| 13.00 | 0.26 | 197 | 676.73 | 0.26 | 0.15 | 0.11 | 0.00 |
| 14.00 | 0.29 | 217 | 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 15.00 | 0.31 | 233 | 676.77 | 0.31 | 0.20 | 0.11 | 0.00 |
| 16.00 | 0.33 | 250 | 676.78 | 0.32 | 0.22 | 0.11 | 0.00 |
| 17.00 | 0.35 | 266 | 676.79 | 0.34 | 0.24 | 0.11 | 0.00 |
| 18.00 | 0.36 | 281 | 676.81 | 0.36 | 0.25 | 0.11 | 0.00 |
| 19.00 | 0.38 | 294 | 676.81 | 0.37 | 0.27 | 0.11 | 0.00 |
| 20.00 | 0.39 | 305 | 676.82 | 0.38 | 0.28 | 0.11 | 0.00 |
| 21.00 | 0.40 | 316 | 676.83 | 0.40 | 0.29 | 0.11 | 0.00 |
| 22.00 | 0.41 | 325 | 676.84 | 0.41 | 0.30 | 0.11 | 0.00 |
| 23.00 | 0.42 | 333 | 676.85 | 0.42 | 0.31 | 0.11 | 0.00 |
| 24.00 | 0.43 | 341 | 676.85 | 0.43 | 0.32 | 0.11 | 0.00 |
| 25.00 | 0.48 | 376 | 676.87 | 0.46 | 0.35 | 0.11 | 0.00 |
| 26.00 | 0.55 | 449 | 676.92 | 0.53 | 0.42 | 0.11 | 0.00 |
| 27.00 | 0.58 | 515 | 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 28.00 | 0.53 | 473 | 676.93 | 0.55 | 0.44 | 0.11 | 0.00 |
| 29.00 | 0.48 | 410 | 676.89 | 0.49 | 0.38 | 0.11 | 0.00 |
| 30.00 | 0.53 | 431 | 676.91 | 0.51 | 0.40 | 0.11 | 0.00 |
| 31.00 | 0.60 | 509 | 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 32.00 | 0.71 | 629 | 677.01 | 0.66 | 0.55 | 0.11 | 0.00 |
| 33.00 | 0.85 | 875 | 677.13 | 0.77 | 0.66 | 0.11 | 0.00 |
| 34.00 | 0.98 | 1,203 | 677.27 | 0.90 | 0.78 | 0.11 | 0.00 |
| 35.00 | 1.00 | 1,419 | 677.36 | 0.96 | 0.85 | 0.12 | 0.00 |
| 36.00 | 1.01 | 1,518 | 677.40 | 0.99 | 0.88 | 0.12 | 0.00 |
| 37.00 | 1.12 | 1,677 | 677.46 | 1.04 | 0.92 | 0.12 | 0.00 |
| 38.00 | 1.27 | 2,084 | 677.61 | 1.14 | 1.02 | 0.12 | 0.00 |
| 39.00 | 1.50 | 2,687 | 677.82 | 1.32 | 1.14 | 0.19 | 0.00 |
| 40.00 | 1.87 | 2,895 | 677.89 | 1.84 | 1.17 | 0.67 | 0.00 |
| 41.00 | 2.25 | 3,011 | 677.93 | 2.23 | 1.19 | 1.04 | 0.00 |
| 42.00 | 2.26 | 3,024 | 677.93 | 2.26 | 1.20 | 1.07 | 0.00 |
| 43.00 | 2.20 | 3,014 | 677.93 | 2.20 | 1.19 | 1.01 | 0.00 |
| 44.00 | 2.03 | 2,975 | 677.92 | 2.05 | 1.19 | 0.86 | 0.00 |
| 45.00 | 1.73 | 2,896 | 677.89 | 1.76 | 1.17 | 0.58 | 0.00 |
| 46.00 | 2.09 | 3,210 | 677.99 | 1.76 | 1.23 | **0.53** | 0.00 |
| 47.00 | **4.24** | 3,569 | 678.10 | 1.94 | 1.94 | **0.00** | 0.00 |
| 48.00 | 1.95 | **3,870** | **678.19** | **4.87** | **3.03** | 1.83 | 0.00 |
| 49.00 | 0.04 | 1,801 | 677.51 | 0.95 | 0.95 | 0.00 | 0.00 |
| 50.00 | 0.00 | 156 | 676.69 | 0.10 | 0.10 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 24.61 | 9.86 | 13.70 | 1.05 |
| 678.75 | 46.70 | 15.13 | 19.77 | 11.80 |
| 678.95 | **76.77** | **21.27** | **26.68** | **28.82** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

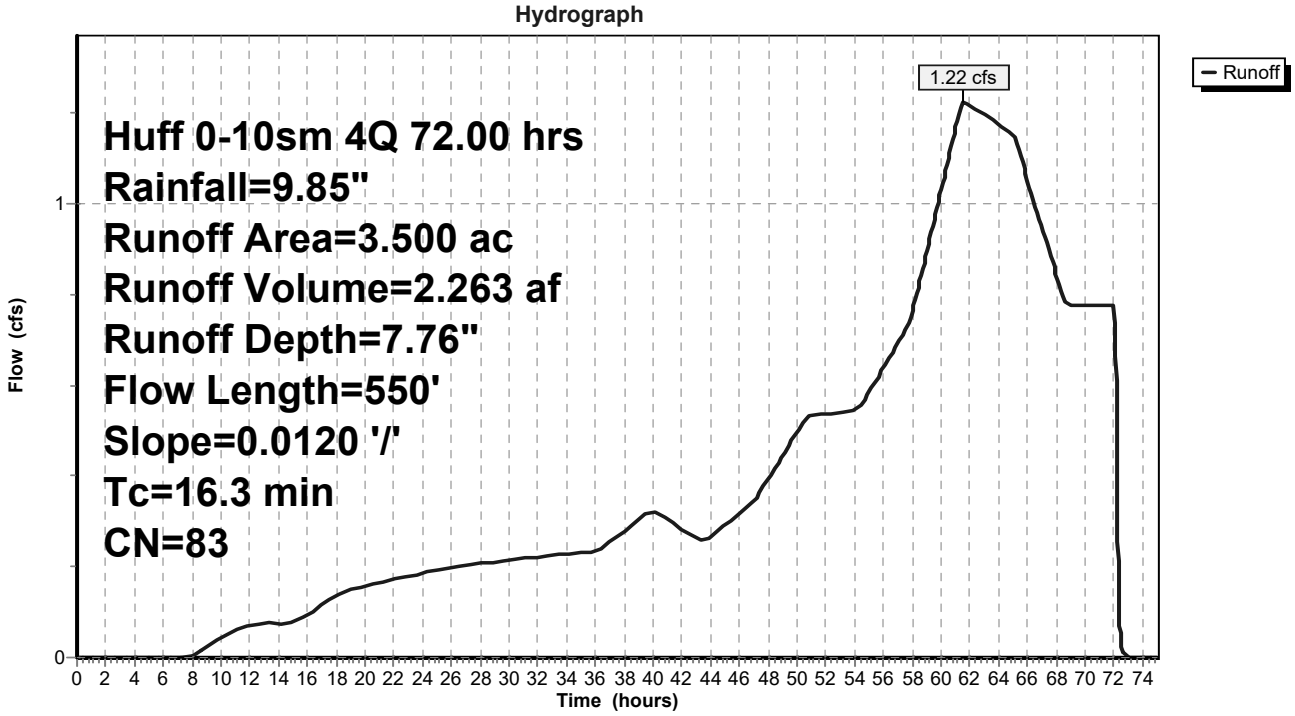
Runoff = 1.22 cfs @ 61.56 hrs, Volume= 2.263 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.02 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=9.85"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | 0.01 | 0.00 | 0.00 |
| 2.00 | 0.03 | 0.00 | 0.00 |
| 3.00 | 0.07 | 0.00 | 0.00 |
| 4.00 | 0.13 | 0.00 | 0.00 |
| 5.00 | 0.19 | 0.00 | 0.00 |
| 6.00 | 0.26 | 0.00 | 0.00 |
| 7.00 | 0.34 | 0.00 | 0.00 |
| 8.00 | 0.43 | 0.00 | 0.00 |
| 9.00 | 0.51 | 0.00 | 0.02 |
| 10.00 | 0.60 | 0.02 | 0.04 |
| 11.00 | 0.68 | 0.03 | 0.06 |
| 12.00 | 0.76 | 0.05 | 0.07 |
| 13.00 | 0.84 | 0.07 | 0.08 |
| 14.00 | 0.90 | 0.09 | 0.07 |
| 15.00 | 0.96 | 0.12 | 0.08 |
| 16.00 | 1.02 | 0.14 | 0.10 |
| 17.00 | 1.10 | 0.17 | 0.12 |
| 18.00 | 1.18 | 0.21 | 0.14 |
| 19.00 | 1.27 | 0.25 | 0.15 |
| 20.00 | 1.35 | 0.30 | 0.16 |
| 21.00 | 1.44 | 0.34 | 0.17 |
| 22.00 | 1.52 | 0.39 | 0.17 |
| 23.00 | 1.61 | 0.44 | 0.18 |
| 24.00 | 1.69 | 0.49 | 0.19 |
| 25.00 | 1.78 | 0.55 | 0.19 |
| 26.00 | 1.86 | 0.60 | 0.20 |
| 27.00 | 1.95 | 0.66 | 0.20 |
| 28.00 | 2.03 | 0.72 | 0.21 |
| 29.00 | 2.12 | 0.78 | 0.21 |
| 30.00 | 2.21 | 0.84 | 0.22 |
| 31.00 | 2.29 | 0.90 | 0.22 |
| 32.00 | 2.38 | 0.96 | 0.22 |
| 33.00 | 2.46 | 1.03 | 0.23 |
| 34.00 | 2.55 | 1.09 | 0.23 |
| 35.00 | 2.63 | 1.16 | 0.23 |
| 36.00 | 2.72 | 1.22 | 0.23 |
| 37.00 | 2.81 | 1.29 | 0.25 |
| 38.00 | 2.91 | 1.37 | 0.28 |
| 39.00 | 3.01 | 1.46 | 0.30 |
| 40.00 | 3.12 | 1.55 | 0.32 |
| 41.00 | 3.23 | 1.63 | 0.30 |
| 42.00 | 3.33 | 1.72 | 0.28 |
| 43.00 | 3.42 | 1.79 | 0.26 |
| 44.00 | 3.51 | 1.87 | 0.27 |
| 45.00 | 3.60 | 1.95 | 0.29 |
| 46.00 | 3.71 | 2.03 | 0.32 |
| 47.00 | 3.82 | 2.13 | 0.34 |
| 48.00 | 3.94 | 2.24 | 0.39 |
| 49.00 | 4.09 | 2.36 | 0.44 |
| 50.00 | 4.24 | 2.50 | 0.50 |
| 51.00 | 4.41 | 2.65 | 0.53 |
| 52.00 | 4.58 | 2.80 | 0.54 |
| 53.00 | 4.75 | 2.95 | 0.54 |
| 54.00 | 4.93 | 3.11 | 0.54 |
| 55.00 | 5.10 | 3.27 | 0.59 |
| 56.00 | 5.30 | 3.45 | 0.64 |
| 57.00 | 5.51 | 3.64 | 0.69 |
| 58.00 | 5.74 | 3.85 | 0.76 |
| 59.00 | 6.00 | 4.09 | 0.89 |
| 60.00 | 6.30 | 4.37 | 1.03 |
| 61.00 | 6.65 | 4.70 | **1.17** |
| 62.00 | 7.01 | 5.04 | **1.22** |
| 63.00 | 7.37 | 5.38 | 1.20 |
| 64.00 | 7.73 | 5.72 | 1.18 |
| 65.00 | 8.07 | 6.05 | 1.15 |
| 66.00 | 8.39 | 6.35 | 1.05 |
| 67.00 | 8.68 | 6.63 | 0.95 |
| 68.00 | 8.94 | 6.87 | 0.84 |
| 69.00 | 9.17 | 7.10 | 0.78 |
| 70.00 | 9.39 | 7.32 | 0.78 |
| 71.00 | 9.62 | 7.54 | 0.78 |
| 72.00 | **9.85** | **7.76** | 0.78 |
| 73.00 | 9.85 | 7.76 | 0.00 |
| 74.00 | 9.85 | 7.76 | 0.00 |
| 75.00 | 9.85 | 7.76 | 0.00 |

## Summary for Subcatchment 7S: South Property

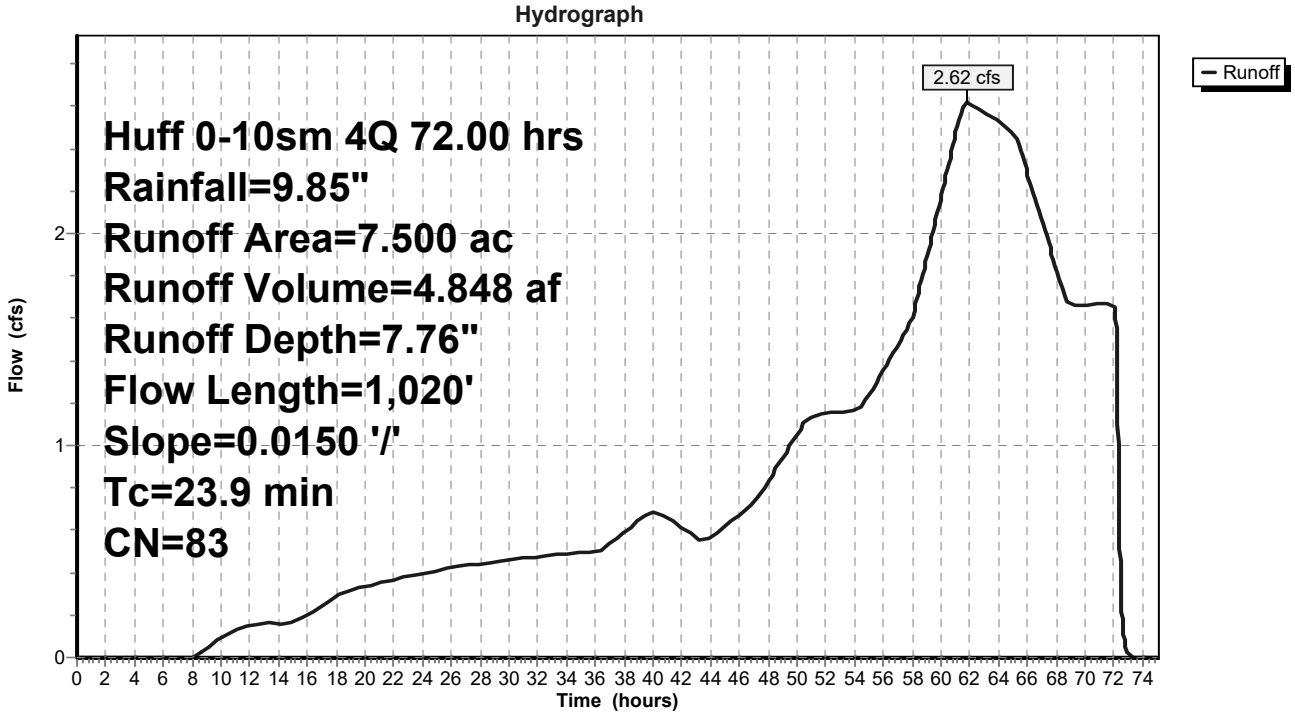
Runoff = 2.62 cfs @ 61.74 hrs, Volume= 4.848 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.02 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=9.85"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

## Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | 0.01 | 0.00 | 0.00 |
| 2.00 | 0.03 | 0.00 | 0.00 |
| 3.00 | 0.07 | 0.00 | 0.00 |
| 4.00 | 0.13 | 0.00 | 0.00 |
| 5.00 | 0.19 | 0.00 | 0.00 |
| 6.00 | 0.26 | 0.00 | 0.00 |
| 7.00 | 0.34 | 0.00 | 0.00 |
| 8.00 | 0.43 | 0.00 | 0.00 |
| 9.00 | 0.51 | 0.00 | 0.04 |
| 10.00 | 0.60 | 0.02 | 0.09 |
| 11.00 | 0.68 | 0.03 | 0.13 |
| 12.00 | 0.76 | 0.05 | 0.15 |
| 13.00 | 0.84 | 0.07 | 0.16 |
| 14.00 | 0.90 | 0.09 | 0.16 |
| 15.00 | 0.96 | 0.12 | 0.16 |
| 16.00 | 1.02 | 0.14 | 0.20 |
| 17.00 | 1.10 | 0.17 | 0.24 |
| 18.00 | 1.18 | 0.21 | 0.29 |
| 19.00 | 1.27 | 0.25 | 0.32 |
| 20.00 | 1.35 | 0.30 | 0.34 |
| 21.00 | 1.44 | 0.34 | 0.35 |
| 22.00 | 1.52 | 0.39 | 0.37 |
| 23.00 | 1.61 | 0.44 | 0.38 |
| 24.00 | 1.69 | 0.49 | 0.40 |
| 25.00 | 1.78 | 0.55 | 0.41 |
| 26.00 | 1.86 | 0.60 | 0.42 |
| 27.00 | 1.95 | 0.66 | 0.43 |
| 28.00 | 2.03 | 0.72 | 0.44 |
| 29.00 | 2.12 | 0.78 | 0.45 |
| 30.00 | 2.21 | 0.84 | 0.46 |
| 31.00 | 2.29 | 0.90 | 0.47 |
| 32.00 | 2.38 | 0.96 | 0.48 |
| 33.00 | 2.46 | 1.03 | 0.48 |
| 34.00 | 2.55 | 1.09 | 0.49 |
| 35.00 | 2.63 | 1.16 | 0.50 |
| 36.00 | 2.72 | 1.22 | 0.50 |
| 37.00 | 2.81 | 1.29 | 0.54 |
| 38.00 | 2.91 | 1.37 | 0.59 |
| 39.00 | 3.01 | 1.46 | 0.65 |
| 40.00 | 3.12 | 1.55 | 0.69 |
| 41.00 | 3.23 | 1.63 | 0.66 |
| 42.00 | 3.33 | 1.72 | 0.61 |
| 43.00 | 3.42 | 1.79 | 0.57 |
| 44.00 | 3.51 | 1.87 | 0.57 |
| 45.00 | 3.60 | 1.95 | 0.62 |
| 46.00 | 3.71 | 2.03 | 0.67 |
| 47.00 | 3.82 | 2.13 | 0.73 |
| 48.00 | 3.94 | 2.24 | 0.83 |
| 49.00 | 4.09 | 2.36 | 0.94 |
| 50.00 | 4.24 | 2.50 | 1.05 |
| 51.00 | 4.41 | 2.65 | 1.14 |
| 52.00 | 4.58 | 2.80 | 1.15 |
| 53.00 | 4.75 | 2.95 | 1.16 |
| 54.00 | 4.93 | 3.11 | 1.16 |
| 55.00 | 5.10 | 3.27 | 1.24 |
| 56.00 | 5.30 | 3.45 | 1.36 |
| 57.00 | 5.51 | 3.64 | 1.47 |
| 58.00 | 5.74 | 3.85 | 1.60 |
| 59.00 | 6.00 | 4.09 | 1.88 |
| 60.00 | 6.30 | 4.37 | 2.17 |
| 61.00 | 6.65 | 4.70 | **2.47** |
| 62.00 | 7.01 | 5.04 | **2.62** |
| 63.00 | 7.37 | 5.38 | 2.57 |
| 64.00 | 7.73 | 5.72 | 2.52 |
| 65.00 | 8.07 | 6.05 | 2.48 |
| 66.00 | 8.39 | 6.35 | 2.29 |
| 67.00 | 8.68 | 6.63 | 2.06 |
| 68.00 | 8.94 | 6.87 | 1.84 |
| 69.00 | 9.17 | 7.10 | 1.66 |
| 70.00 | 9.39 | 7.32 | 1.66 |
| 71.00 | 9.62 | 7.54 | 1.67 |
| 72.00 | **9.85** | **7.76** | 1.67 |
| 73.00 | 9.85 | 7.76 | 0.01 |
| 74.00 | 9.85 | 7.76 | 0.00 |
| 75.00 | 9.85 | 7.76 | 0.00 |

## Summary for Subcatchment 8S: Northwood Drive Bypass

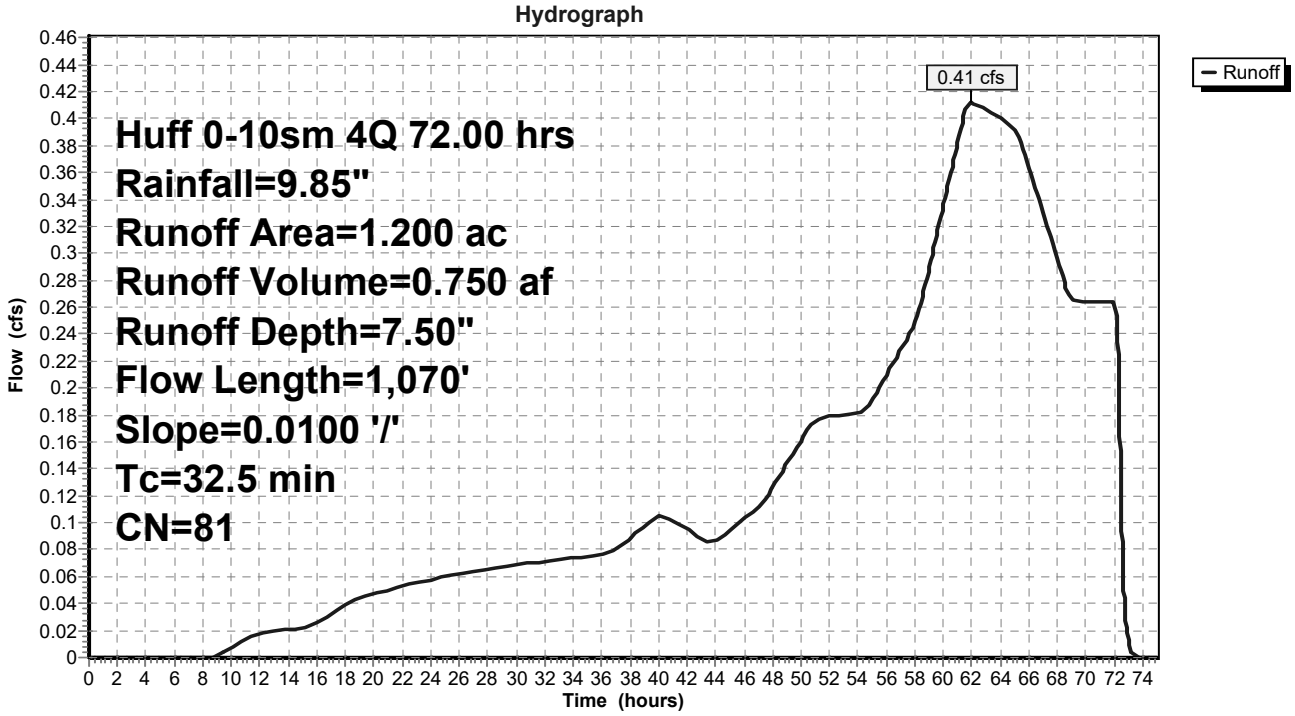
Runoff = 0.41 cfs @ 62.00 hrs, Volume= 0.750 af, Depth= 7.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.02 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=9.85"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | 0.01 | 0.00 | 0.00 |
| 2.00 | 0.03 | 0.00 | 0.00 |
| 3.00 | 0.07 | 0.00 | 0.00 |
| 4.00 | 0.13 | 0.00 | 0.00 |
| 5.00 | 0.19 | 0.00 | 0.00 |
| 6.00 | 0.26 | 0.00 | 0.00 |
| 7.00 | 0.34 | 0.00 | 0.00 |
| 8.00 | 0.43 | 0.00 | 0.00 |
| 9.00 | 0.51 | 0.00 | 0.00 |
| 10.00 | 0.60 | 0.01 | 0.01 |
| 11.00 | 0.68 | 0.02 | 0.01 |
| 12.00 | 0.76 | 0.03 | 0.02 |
| 13.00 | 0.84 | 0.05 | 0.02 |
| 14.00 | 0.90 | 0.07 | 0.02 |
| 15.00 | 0.96 | 0.08 | 0.02 |
| 16.00 | 1.02 | 0.11 | 0.03 |
| 17.00 | 1.10 | 0.13 | 0.03 |
| 18.00 | 1.18 | 0.17 | 0.04 |
| 19.00 | 1.27 | 0.20 | 0.04 |
| 20.00 | 1.35 | 0.24 | 0.05 |
| 21.00 | 1.44 | 0.28 | 0.05 |
| 22.00 | 1.52 | 0.33 | 0.05 |
| 23.00 | 1.61 | 0.37 | 0.06 |
| 24.00 | 1.69 | 0.42 | 0.06 |
| 25.00 | 1.78 | 0.47 | 0.06 |
| 26.00 | 1.86 | 0.52 | 0.06 |
| 27.00 | 1.95 | 0.57 | 0.06 |
| 28.00 | 2.03 | 0.63 | 0.07 |
| 29.00 | 2.12 | 0.68 | 0.07 |
| 30.00 | 2.21 | 0.74 | 0.07 |
| 31.00 | 2.29 | 0.80 | 0.07 |
| 32.00 | 2.38 | 0.86 | 0.07 |
| 33.00 | 2.46 | 0.92 | 0.07 |
| 34.00 | 2.55 | 0.98 | 0.07 |
| 35.00 | 2.63 | 1.04 | 0.07 |
| 36.00 | 2.72 | 1.10 | 0.08 |
| 37.00 | 2.81 | 1.17 | 0.08 |
| 38.00 | 2.91 | 1.24 | 0.09 |
| 39.00 | 3.01 | 1.32 | 0.10 |
| 40.00 | 3.12 | 1.41 | 0.11 |
| 41.00 | 3.23 | 1.49 | 0.10 |
| 42.00 | 3.33 | 1.57 | 0.10 |
| 43.00 | 3.42 | 1.64 | 0.09 |
| 44.00 | 3.51 | 1.72 | 0.09 |
| 45.00 | 3.60 | 1.79 | 0.09 |
| 46.00 | 3.71 | 1.88 | 0.10 |
| 47.00 | 3.82 | 1.97 | 0.11 |
| 48.00 | 3.94 | 2.07 | 0.13 |
| 49.00 | 4.09 | 2.19 | 0.14 |
| 50.00 | 4.24 | 2.33 | 0.16 |
| 51.00 | 4.41 | 2.47 | 0.18 |
| 52.00 | 4.58 | 2.62 | 0.18 |
| 53.00 | 4.75 | 2.77 | 0.18 |
| 54.00 | 4.93 | 2.92 | 0.18 |
| 55.00 | 5.10 | 3.08 | 0.19 |
| 56.00 | 5.30 | 3.25 | 0.21 |
| 57.00 | 5.51 | 3.44 | 0.23 |
| 58.00 | 5.74 | 3.65 | 0.25 |
| 59.00 | 6.00 | 3.88 | 0.29 |
| 60.00 | 6.30 | 4.16 | 0.34 |
| 61.00 | 6.65 | 4.48 | 0.38 |
| 62.00 | 7.01 | 4.82 | **0.41** |
| 63.00 | 7.37 | 5.15 | 0.41 |
| 64.00 | 7.73 | 5.49 | 0.40 |
| 65.00 | 8.07 | 5.81 | 0.39 |
| 66.00 | 8.39 | 6.11 | 0.37 |
| 67.00 | 8.68 | 6.39 | 0.33 |
| 68.00 | 8.94 | 6.63 | 0.30 |
| 69.00 | 9.17 | 6.85 | 0.27 |
| 70.00 | 9.39 | 7.07 | 0.26 |
| 71.00 | 9.62 | 7.29 | 0.26 |
| 72.00 | **9.85** | **7.50** | 0.26 |
| 73.00 | 9.85 | 7.50 | 0.01 |
| 74.00 | 9.85 | 7.50 | 0.00 |
| 75.00 | 9.85 | 7.50 | 0.00 |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

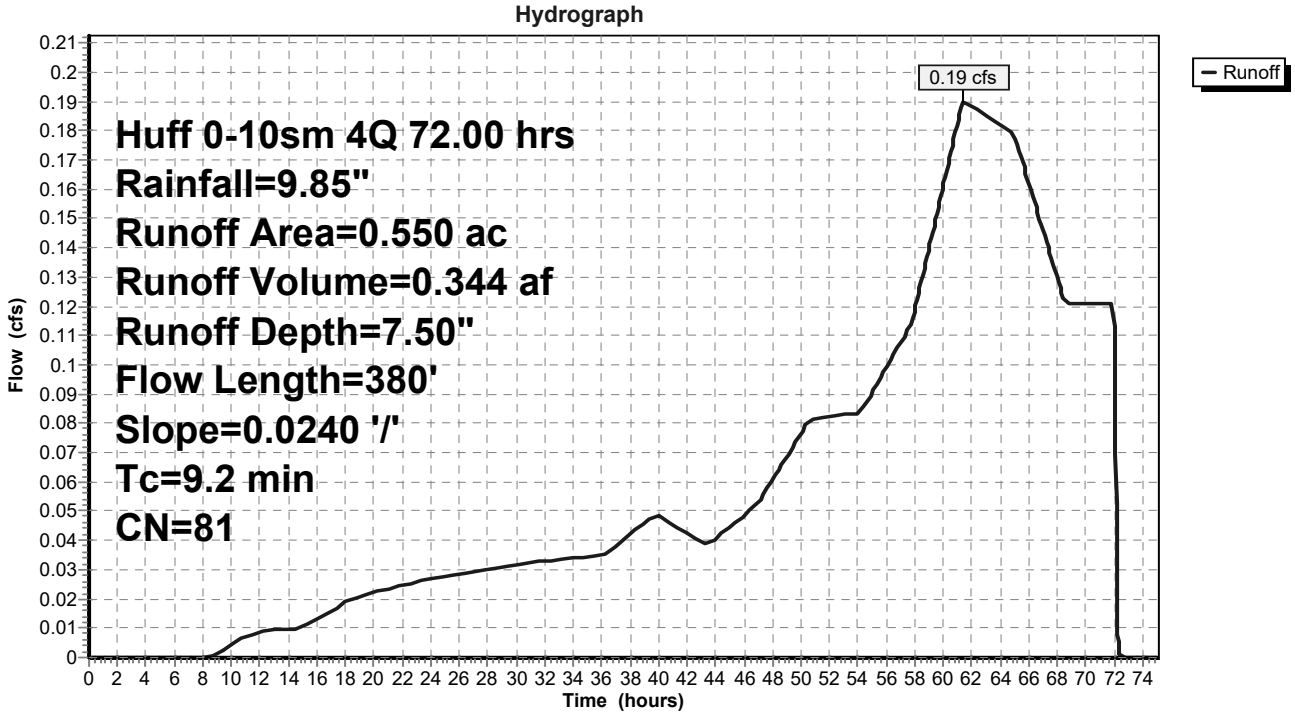
Runoff = 0.19 cfs @ 61.42 hrs, Volume= 0.344 af, Depth= 7.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.02 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=9.85"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 1.00 | 0.01 | 0.00 | 0.00 |
| 2.00 | 0.03 | 0.00 | 0.00 |
| 3.00 | 0.07 | 0.00 | 0.00 |
| 4.00 | 0.13 | 0.00 | 0.00 |
| 5.00 | 0.19 | 0.00 | 0.00 |
| 6.00 | 0.26 | 0.00 | 0.00 |
| 7.00 | 0.34 | 0.00 | 0.00 |
| 8.00 | 0.43 | 0.00 | 0.00 |
| 9.00 | 0.51 | 0.00 | 0.00 |
| 10.00 | 0.60 | 0.01 | 0.00 |
| 11.00 | 0.68 | 0.02 | 0.01 |
| 12.00 | 0.76 | 0.03 | 0.01 |
| 13.00 | 0.84 | 0.05 | 0.01 |
| 14.00 | 0.90 | 0.07 | 0.01 |
| 15.00 | 0.96 | 0.08 | 0.01 |
| 16.00 | 1.02 | 0.11 | 0.01 |
| 17.00 | 1.10 | 0.13 | 0.02 |
| 18.00 | 1.18 | 0.17 | 0.02 |
| 19.00 | 1.27 | 0.20 | 0.02 |
| 20.00 | 1.35 | 0.24 | 0.02 |
| 21.00 | 1.44 | 0.28 | 0.02 |
| 22.00 | 1.52 | 0.33 | 0.02 |
| 23.00 | 1.61 | 0.37 | 0.03 |
| 24.00 | 1.69 | 0.42 | 0.03 |
| 25.00 | 1.78 | 0.47 | 0.03 |
| 26.00 | 1.86 | 0.52 | 0.03 |
| 27.00 | 1.95 | 0.57 | 0.03 |
| 28.00 | 2.03 | 0.63 | 0.03 |
| 29.00 | 2.12 | 0.68 | 0.03 |
| 30.00 | 2.21 | 0.74 | 0.03 |
| 31.00 | 2.29 | 0.80 | 0.03 |
| 32.00 | 2.38 | 0.86 | 0.03 |
| 33.00 | 2.46 | 0.92 | 0.03 |
| 34.00 | 2.55 | 0.98 | 0.03 |
| 35.00 | 2.63 | 1.04 | 0.03 |
| 36.00 | 2.72 | 1.10 | 0.03 |
| 37.00 | 2.81 | 1.17 | 0.04 |
| 38.00 | 2.91 | 1.24 | 0.04 |
| 39.00 | 3.01 | 1.32 | 0.05 |
| 40.00 | 3.12 | 1.41 | 0.05 |
| 41.00 | 3.23 | 1.49 | 0.05 |
| 42.00 | 3.33 | 1.57 | 0.04 |
| 43.00 | 3.42 | 1.64 | 0.04 |
| 44.00 | 3.51 | 1.72 | 0.04 |
| 45.00 | 3.60 | 1.79 | 0.04 |
| 46.00 | 3.71 | 1.88 | 0.05 |
| 47.00 | 3.82 | 1.97 | 0.05 |
| 48.00 | 3.94 | 2.07 | 0.06 |
| 49.00 | 4.09 | 2.19 | 0.07 |
| 50.00 | 4.24 | 2.33 | 0.08 |
| 51.00 | 4.41 | 2.47 | 0.08 |
| 52.00 | 4.58 | 2.62 | 0.08 |
| 53.00 | 4.75 | 2.77 | 0.08 |
| 54.00 | 4.93 | 2.92 | 0.08 |
| 55.00 | 5.10 | 3.08 | 0.09 |
| 56.00 | 5.30 | 3.25 | 0.10 |
| 57.00 | 5.51 | 3.44 | 0.11 |
| 58.00 | 5.74 | 3.65 | 0.12 |
| 59.00 | 6.00 | 3.88 | 0.14 |
| 60.00 | 6.30 | 4.16 | 0.16 |
| 61.00 | 6.65 | 4.48 | **0.18** |
| 62.00 | 7.01 | 4.82 | **0.19** |
| 63.00 | 7.37 | 5.15 | 0.19 |
| 64.00 | 7.73 | 5.49 | 0.18 |
| 65.00 | 8.07 | 5.81 | 0.18 |
| 66.00 | 8.39 | 6.11 | 0.16 |
| 67.00 | 8.68 | 6.39 | 0.15 |
| 68.00 | 8.94 | 6.63 | 0.13 |
| 69.00 | 9.17 | 6.85 | 0.12 |
| 70.00 | 9.39 | 7.07 | 0.12 |
| 71.00 | 9.62 | 7.29 | 0.12 |
| 72.00 | **9.85** | **7.50** | 0.12 |
| 73.00 | 9.85 | 7.50 | 0.00 |
| 74.00 | 9.85 | 7.50 | 0.00 |
| 75.00 | 9.85 | 7.50 | 0.00 |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 3.28 cfs @ | 61.80 hrs, | Volume= | 5.872 af |
| Outflow | = | 1.35 cfs @ | 72.25 hrs, | Volume= | 3.484 af, Atten= 59%, Lag= 627.1 min |
| Primary | = | 1.35 cfs @ | 72.25 hrs, | Volume= | 3.484 af |
| Secondary | = | 0.00 cfs @ | 73.58 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-75.00 hrs, dt= 0.02 hrs
Peak Elev= 676.67' @ 72.25 hrs Surf.Area= 46,894 sf Storage= 116,087 cf

Plug-Flow detention time= 535.9 min calculated for 3.484 af (59% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

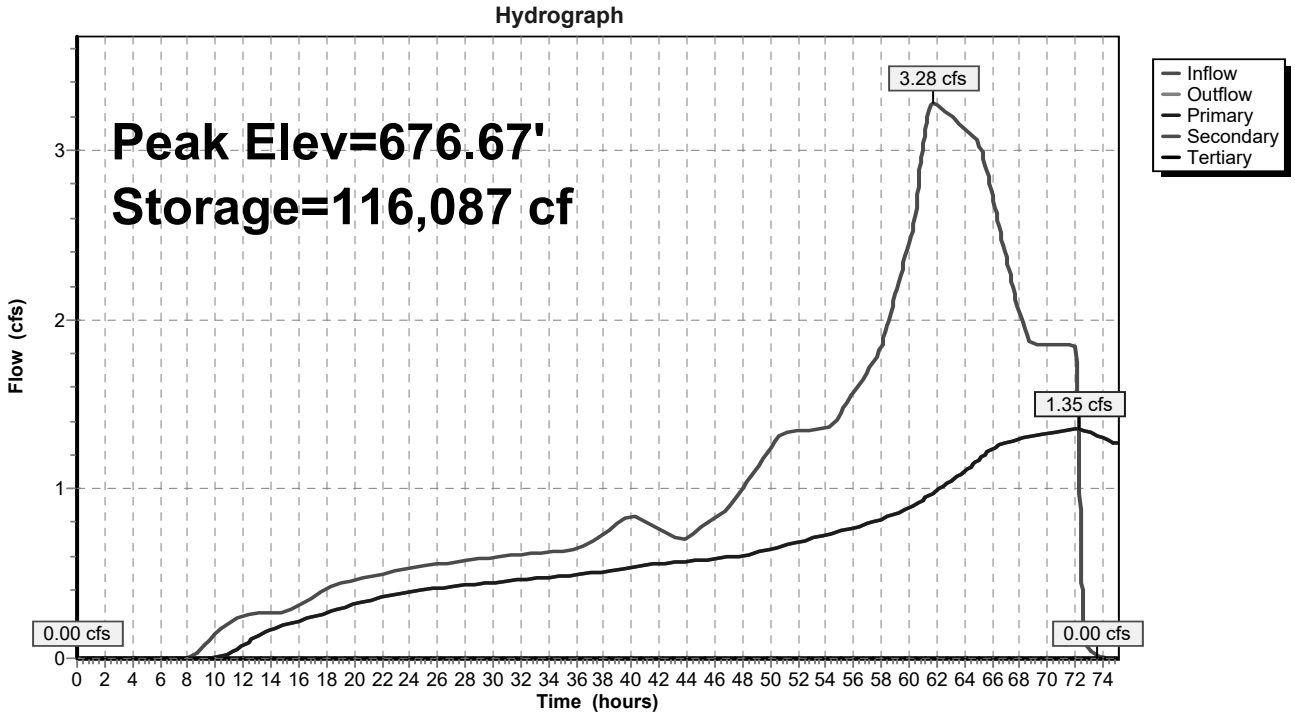
#4 Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=1.35 cfs @ 72.25 hrs HW=676.67' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.35 cfs @ 12.26 fps)

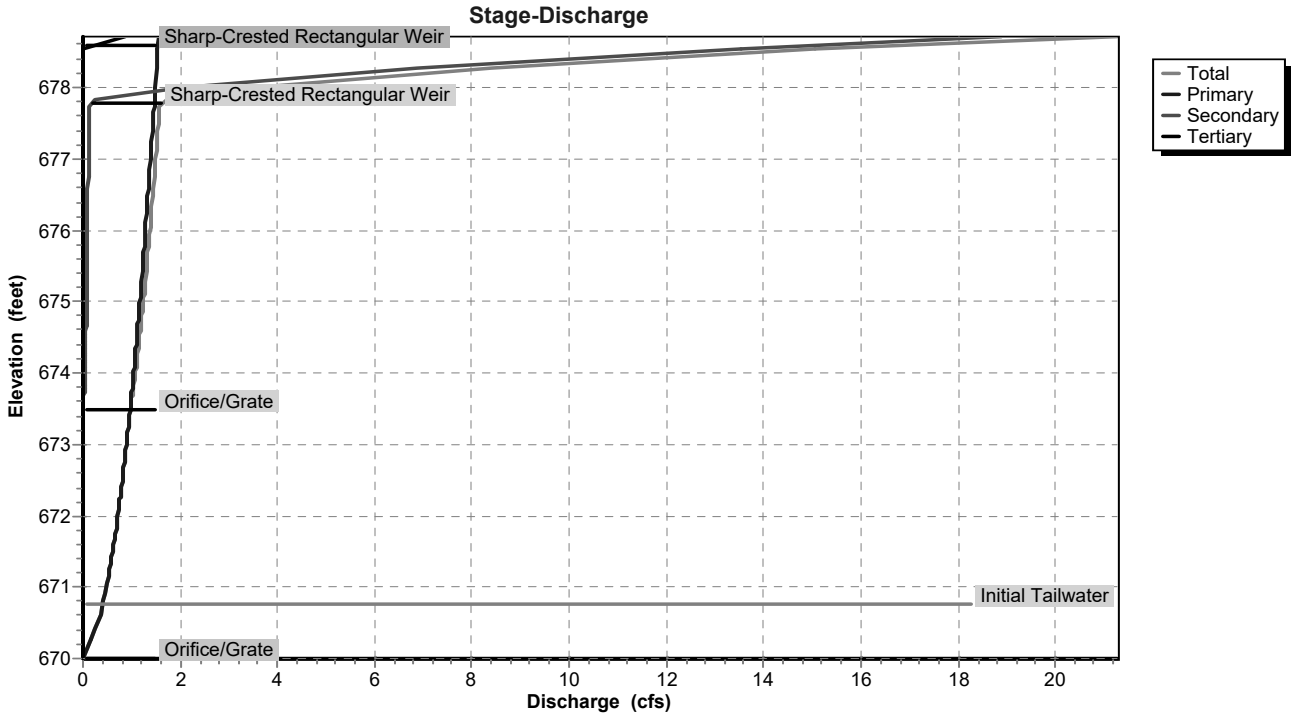
**Secondary OutFlow** Max=0.00 cfs @ 73.58 hrs HW=676.31' TW=676.31' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

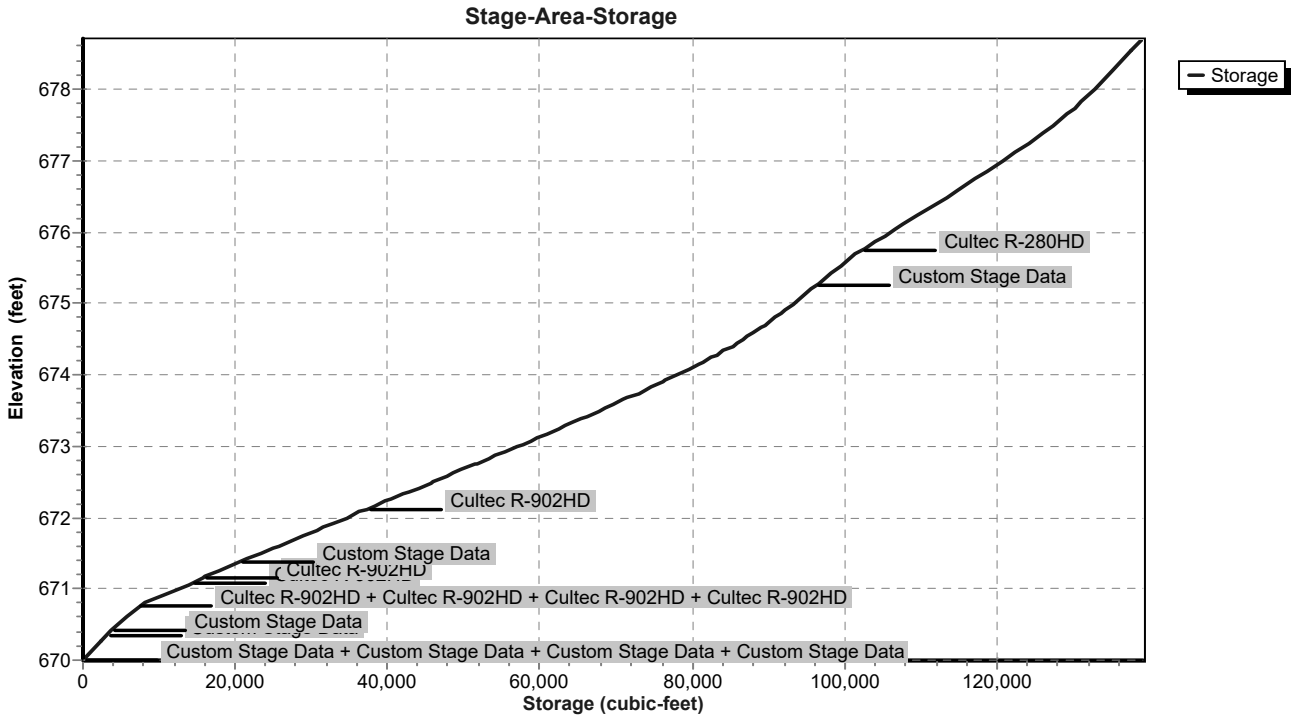
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | **0.00** |
| 2.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10.00 | 0.14 | 433 | 670.05 | 0.01 | 0.01 | 0.00 | 0.00 |
| 12.00 | 0.25 | 1,645 | 670.18 | 0.08 | 0.08 | 0.00 | 0.00 |
| 14.00 | 0.27 | 2,618 | 670.29 | 0.17 | 0.17 | 0.00 | 0.00 |
| 16.00 | 0.32 | 3,210 | 670.36 | 0.22 | 0.22 | 0.00 | 0.00 |
| 18.00 | 0.41 | 4,055 | 670.44 | 0.27 | 0.27 | 0.00 | 0.00 |
| 20.00 | 0.46 | 5,109 | 670.55 | 0.32 | 0.32 | 0.00 | 0.00 |
| 22.00 | 0.50 | 6,124 | 670.65 | 0.36 | 0.36 | 0.00 | 0.00 |
| 24.00 | 0.53 | 7,098 | 670.74 | 0.40 | 0.40 | 0.00 | 0.00 |
| 26.00 | 0.56 | 8,082 | 670.79 | 0.41 | 0.41 | 0.00 | 0.00 |
| 28.00 | 0.58 | 9,120 | 670.84 | 0.43 | 0.43 | 0.00 | 0.00 |
| 30.00 | 0.60 | 10,189 | 670.90 | 0.45 | 0.45 | 0.00 | 0.00 |
| 32.00 | 0.61 | 11,272 | 670.95 | 0.46 | 0.46 | 0.00 | 0.00 |
| 34.00 | 0.63 | 12,356 | 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 36.00 | 0.64 | 13,432 | 671.05 | 0.49 | 0.49 | 0.00 | 0.00 |
| 38.00 | 0.74 | 14,735 | 671.11 | 0.51 | 0.51 | 0.00 | 0.00 |
| 40.00 | 0.85 | 16,710 | 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 42.00 | 0.76 | 18,588 | 671.29 | 0.56 | 0.56 | 0.00 | 0.00 |
| 44.00 | 0.71 | 19,700 | 671.34 | 0.57 | 0.57 | 0.00 | 0.00 |
| 46.00 | 0.83 | 21,083 | 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 48.00 | 1.00 | 23,268 | 671.50 | 0.61 | 0.61 | 0.00 | 0.00 |
| 50.00 | 1.24 | 26,807 | 671.65 | 0.64 | 0.64 | 0.00 | 0.00 |
| 52.00 | 1.34 | 31,487 | 671.86 | 0.69 | 0.69 | 0.00 | 0.00 |
| 54.00 | 1.36 | 36,110 | 672.07 | 0.73 | 0.73 | 0.00 | 0.00 |
| 56.00 | 1.57 | 41,120 | 672.29 | 0.77 | 0.77 | 0.00 | 0.00 |
| 58.00 | 1.84 | 47,590 | 672.57 | 0.82 | 0.82 | 0.00 | 0.00 |
| 60.00 | **2.45** | 56,843 | 672.99 | 0.89 | 0.89 | 0.00 | 0.00 |
| 62.00 | **3.27** | 71,303 | 673.66 | 0.99 | 0.99 | 0.00 | 0.00 |
| 64.00 | 3.13 | 86,821 | 674.51 | 1.11 | 1.11 | 0.00 | 0.00 |
| 66.00 | 2.73 | 99,979 | 675.57 | 1.23 | 1.23 | 0.00 | 0.00 |
| 68.00 | 2.04 | 107,944 | 676.13 | 1.30 | 1.30 | 0.00 | 0.00 |
| 70.00 | 1.85 | 112,110 | 676.40 | 1.33 | 1.33 | 0.00 | 0.00 |
| 72.00 | 1.85 | **115,774** | **676.65** | **1.35** | **1.35** | **0.00** | 0.00 |
| 74.00 | 0.00 | **108,742** | **676.18** | **1.30** | **1.30** | **0.00** | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 16.68 | 1.54 | 15.13 | 0.00 |
| 678.80 | **24.77** | **1.56** | **21.42** | **1.79** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) |
|---|---|
| 670.00 | 0 |
| 670.10 | 893 |
| 670.20 | 1,787 |
| 670.30 | 2,681 |
| 670.40 | 3,618 |
| 670.50 | 4,626 |
| 670.60 | 5,639 |
| 670.70 | 6,653 |
| 670.80 | 8,202 |
| 670.90 | 10,288 |
| 671.00 | 12,379 |
| 671.10 | 14,465 |
| 671.20 | 16,635 |
| 671.30 | 18,830 |
| 671.40 | 21,049 |
| 671.50 | 23,322 |
| 671.60 | 25,582 |
| 671.70 | 27,830 |
| 671.80 | 30,075 |
| 671.90 | 32,317 |
| 672.00 | 34,546 |
| 672.10 | 36,761 |
| 672.20 | 39,047 |
| 672.30 | 41,344 |
| 672.40 | 43,628 |
| 672.50 | 45,906 |
| 672.60 | 48,170 |
| 672.70 | 50,428 |
| 672.80 | 52,674 |
| 672.90 | 54,899 |
| 673.00 | 57,117 |
| 673.10 | 59,314 |
| 673.20 | 61,492 |
| 673.30 | 63,654 |
| 673.40 | 65,789 |
| 673.50 | 67,899 |
| 673.60 | 69,981 |
| 673.70 | 72,030 |
| 673.80 | 74,047 |
| 673.90 | 76,023 |
| 674.00 | 77,955 |
| 674.10 | 79,844 |
| 674.20 | 81,679 |
| 674.30 | 83,453 |
| 674.40 | 85,139 |
| 674.50 | 86,709 |
| 674.60 | 88,153 |
| 674.70 | 89,496 |
| 674.80 | 90,763 |
| 674.90 | 91,997 |
| 675.00 | 93,215 |
| 675.10 | 94,422 |
| 675.20 | 95,621 |
| 675.30 | 96,808 |
| 675.40 | 97,984 |
| 675.50 | 99,158 |
| 675.60 | 100,327 |
| 675.70 | 101,491 |
| 675.80 | 102,865 |
| 675.90 | 104,433 |
| 676.00 | 105,977 |
| 676.10 | 107,509 |
| 676.20 | 109,032 |
| 676.30 | 110,542 |
| 676.40 | 112,038 |
| 676.50 | 113,523 |
| 676.60 | 114,993 |
| 676.70 | 116,452 |
| 676.80 | 117,901 |
| 676.90 | 119,339 |
| 677.00 | 120,753 |
| 677.10 | 122,143 |
| 677.20 | 123,511 |
| 677.30 | 124,850 |
| 677.40 | 126,157 |
| 677.50 | 127,426 |
| 677.60 | 128,644 |
| 677.70 | 129,794 |
| 677.80 | 130,846 |
| 677.90 | 131,802 |
| 678.00 | 132,704 |
| 678.10 | 133,604 |
| 678.20 | 134,505 |
| 678.30 | 135,406 |
| 678.40 | 136,307 |
| 678.50 | 137,209 |
| 678.60 | 138,112 |
| 678.70 | 139,014 |
| 678.80 | 139,917 |
| 678.90 | **140,821** |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 1.63 cfs @ | 61.78 hrs, | Volume= | 3.013 af |
| Outflow | = | 1.63 cfs @ | 61.83 hrs, | Volume= | 3.011 af, Atten= 0%, Lag= 3.1 min |
| Primary | = | 1.16 cfs @ | 61.89 hrs, | Volume= | 2.332 af |
| Secondary | = | 0.47 cfs @ | 61.80 hrs, | Volume= | 0.679 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-75.00 hrs, dt= 0.02 hrs
Peak Elev= 677.87' @ 61.89 hrs Surf.Area= 3,030 sf Storage= 2,824 cf

Plug-Flow detention time= 23.3 min calculated for 3.011 af (100% of inflow)
Center-of-Mass det. time= 22.7 min ( 3,238.0 - 3,215.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

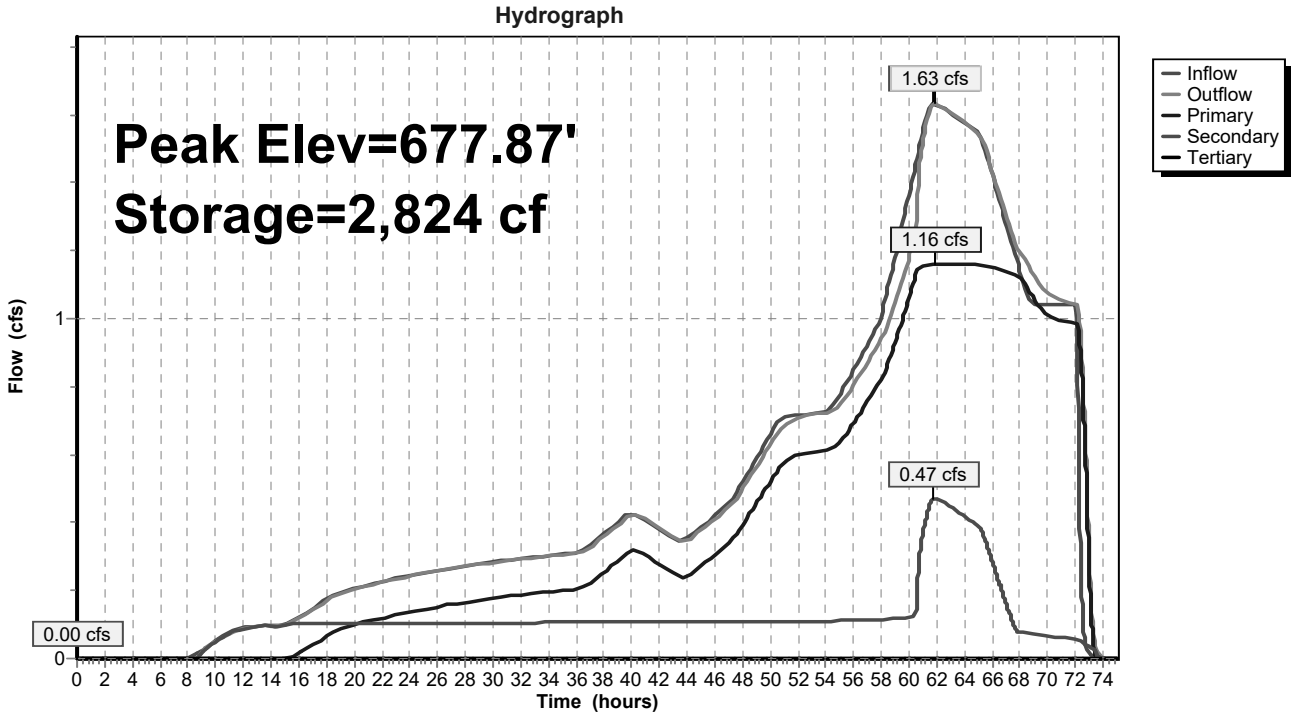
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.50' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=1.16 cfs @ 61.89 hrs HW=677.87' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 1.16 cfs @ 5.04 fps)
- **2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

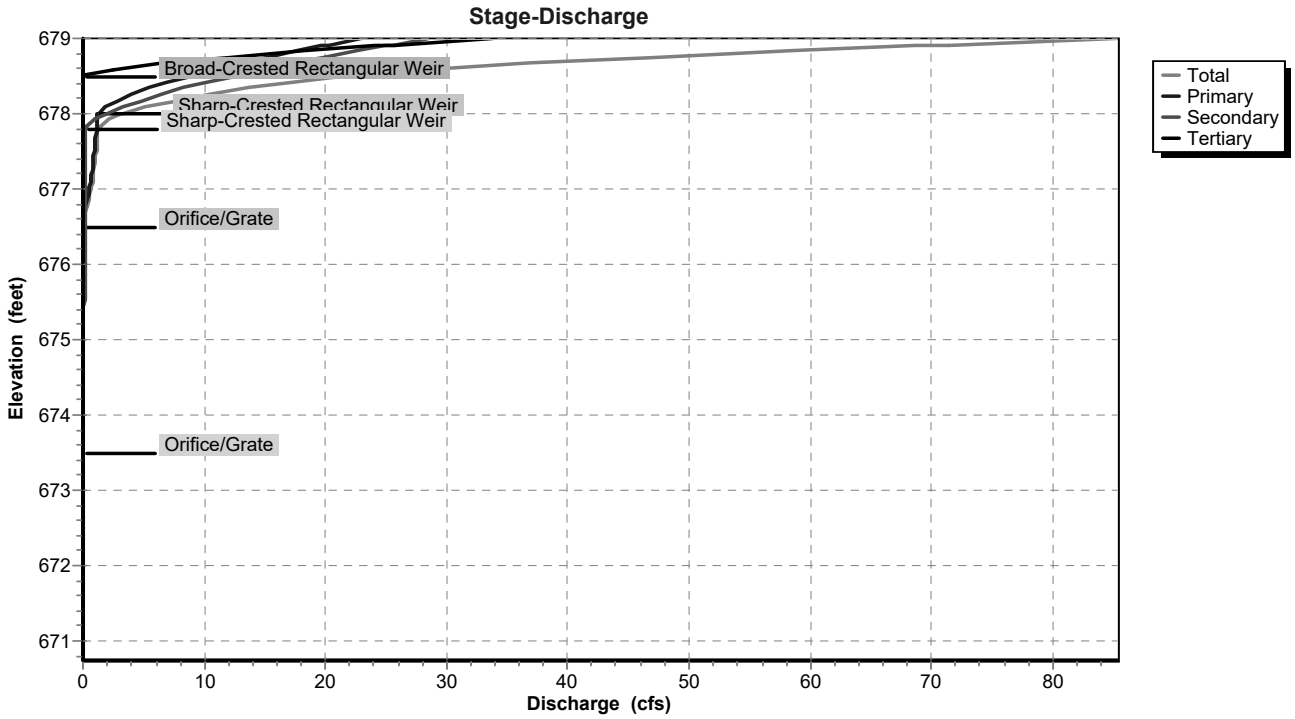
**Secondary OutFlow** Max=0.47 cfs @ 61.80 hrs HW=677.87' TW=673.58' (Dynamic Tailwater)
- **4=Orifice/Grate** (Orifice Controls 0.12 cfs @ 9.97 fps)
- **5=Sharp-Crested Rectangular Weir** (Weir Controls 0.35 cfs @ 0.86 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
- **3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

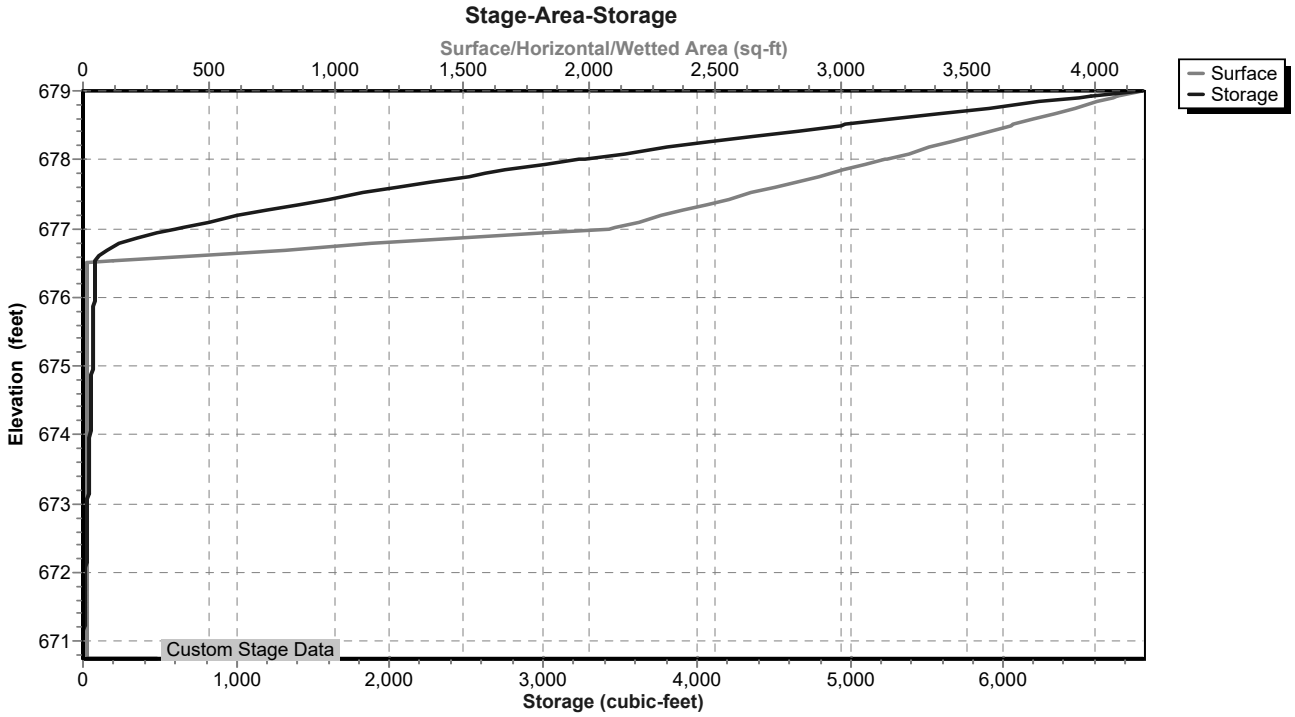
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 2.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8.00 | 0.00 | 0 | 670.76 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10.00 | 0.05 | 49 | 674.23 | 0.05 | 0.00 | 0.05 | 0.00 |
| 12.00 | 0.09 | 70 | 675.77 | 0.09 | 0.00 | 0.09 | 0.00 |
| 14.00 | 0.10 | 76 | 676.20 | 0.10 | 0.00 | 0.10 | 0.00 |
| 16.00 | 0.12 | 94 | 676.57 | 0.12 | 0.01 | 0.10 | 0.00 |
| 18.00 | 0.18 | 131 | 676.65 | 0.17 | 0.07 | 0.10 | 0.00 |
| 20.00 | 0.21 | 153 | 676.68 | 0.20 | 0.10 | 0.10 | 0.00 |
| 22.00 | 0.23 | 169 | 676.70 | 0.22 | 0.12 | 0.10 | 0.00 |
| 24.00 | 0.24 | 184 | 676.72 | 0.24 | 0.14 | 0.10 | 0.00 |
| 26.00 | 0.26 | 197 | 676.73 | 0.26 | 0.15 | 0.11 | 0.00 |
| 28.00 | 0.27 | 207 | 676.74 | 0.27 | 0.17 | 0.11 | 0.00 |
| 30.00 | 0.28 | 216 | 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 32.00 | 0.29 | 224 | 676.76 | 0.29 | 0.19 | 0.11 | 0.00 |
| 34.00 | 0.30 | 230 | 676.76 | 0.30 | 0.20 | 0.11 | 0.00 |
| 36.00 | 0.31 | 236 | 676.77 | 0.31 | 0.20 | 0.11 | 0.00 |
| 38.00 | 0.37 | 282 | 676.81 | 0.36 | 0.25 | 0.11 | 0.00 |
| 40.00 | 0.43 | 341 | 676.85 | 0.43 | 0.32 | 0.11 | 0.00 |
| 42.00 | 0.38 | 305 | 676.82 | 0.39 | 0.28 | 0.11 | 0.00 |
| 44.00 | 0.35 | 271 | 676.80 | 0.35 | 0.24 | 0.11 | 0.00 |
| 46.00 | 0.42 | 329 | 676.84 | 0.41 | 0.31 | 0.11 | 0.00 |
| 48.00 | 0.52 | 420 | 676.90 | 0.50 | 0.39 | 0.11 | 0.00 |
| 50.00 | 0.66 | 584 | 676.99 | 0.63 | 0.52 | 0.11 | 0.00 |
| 52.00 | 0.72 | 737 | 677.06 | 0.71 | 0.60 | 0.11 | 0.00 |
| 54.00 | 0.73 | 766 | 677.08 | 0.72 | 0.61 | 0.11 | 0.00 |
| 56.00 | 0.85 | 954 | 677.16 | 0.80 | 0.69 | 0.11 | 0.00 |
| 58.00 | 1.01 | 1,333 | 677.32 | 0.94 | 0.82 | 0.11 | 0.00 |
| 60.00 | **1.37** | **2,293** | **677.69** | **1.18** | **1.06** | **0.12** | 0.00 |
| 62.00 | **1.63** | **2,824** | **677.87** | **1.63** | **1.16** | **0.47** | 0.00 |
| 64.00 | 1.58 | 2,809 | 677.86 | 1.58 | 1.16 | 0.42 | 0.00 |
| 66.00 | 1.42 | 2,759 | 677.85 | 1.44 | 1.15 | 0.29 | 0.00 |
| 68.00 | 1.14 | 2,592 | 677.79 | 1.20 | 1.12 | 0.08 | 0.00 |
| 70.00 | 1.04 | 2,060 | 677.60 | 1.08 | 1.01 | 0.06 | 0.00 |
| 72.00 | 1.04 | 1,956 | 677.56 | 1.04 | 0.99 | 0.06 | 0.00 |
| 74.00 | 0.00 | 76 | 676.19 | 0.00 | 0.00 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 24.61 | 9.86 | 13.70 | 1.05 |
| 678.75 | 46.70 | 15.13 | 19.77 | 11.80 |
| 678.95 | **76.77** | **21.27** | **26.68** | **28.82** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

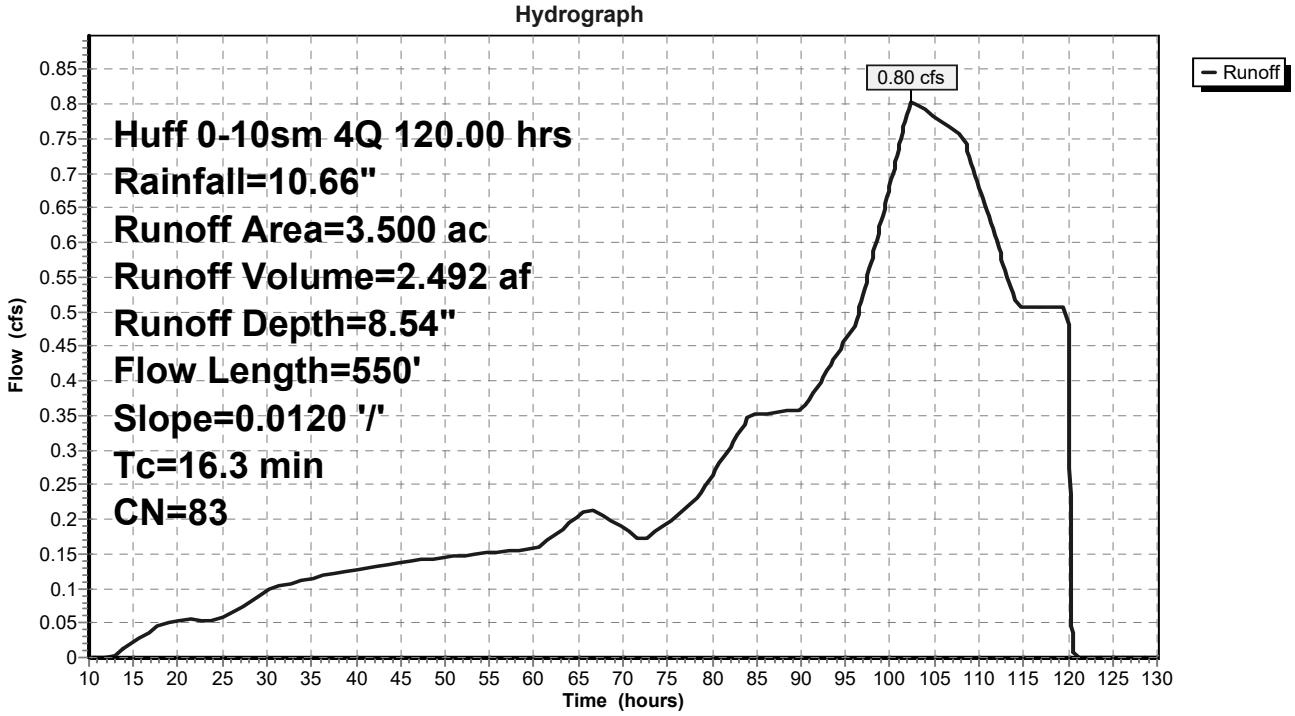
Runoff = 0.80 cfs @ 102.38 hrs, Volume= 2.492 af, Depth= 8.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.02 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=10.66"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

## Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 10.00 | 0.28 | 0.00 | 0.00 |
| 12.00 | 0.39 | 0.00 | 0.00 |
| 14.00 | 0.50 | 0.00 | 0.01 |
| 16.00 | 0.61 | 0.02 | 0.03 |
| 18.00 | 0.72 | 0.04 | 0.05 |
| 20.00 | 0.83 | 0.07 | 0.05 |
| 22.00 | 0.92 | 0.10 | 0.05 |
| 24.00 | 1.00 | 0.13 | 0.05 |
| 26.00 | 1.08 | 0.17 | 0.06 |
| 28.00 | 1.17 | 0.21 | 0.08 |
| 30.00 | 1.28 | 0.26 | 0.10 |
| 32.00 | 1.39 | 0.32 | 0.11 |
| 34.00 | 1.50 | 0.38 | 0.11 |
| 36.00 | 1.61 | 0.44 | 0.12 |
| 38.00 | 1.72 | 0.51 | 0.12 |
| 40.00 | 1.83 | 0.58 | 0.13 |
| 42.00 | 1.94 | 0.66 | 0.13 |
| 44.00 | 2.05 | 0.73 | 0.14 |
| 46.00 | 2.17 | 0.81 | 0.14 |
| 48.00 | 2.28 | 0.89 | 0.14 |
| 50.00 | 2.39 | 0.97 | 0.14 |
| 52.00 | 2.50 | 1.05 | 0.15 |
| 54.00 | 2.61 | 1.14 | 0.15 |
| 56.00 | 2.72 | 1.23 | 0.15 |
| 58.00 | 2.83 | 1.31 | 0.15 |
| 60.00 | 2.94 | 1.40 | 0.16 |
| 62.00 | 3.06 | 1.49 | 0.17 |
| 64.00 | 3.19 | 1.60 | 0.19 |
| 66.00 | 3.33 | 1.72 | 0.21 |
| 68.00 | 3.47 | 1.84 | 0.20 |
| 70.00 | 3.60 | 1.95 | 0.19 |
| 72.00 | 3.72 | 2.04 | 0.17 |
| 74.00 | 3.84 | 2.15 | 0.18 |
| 76.00 | 3.97 | 2.26 | 0.20 |
| 78.00 | 4.11 | 2.38 | 0.23 |
| 80.00 | 4.27 | 2.52 | 0.26 |
| 82.00 | 4.45 | 2.68 | 0.30 |
| 84.00 | 4.66 | 2.87 | 0.35 |
| 86.00 | 4.89 | 3.07 | 0.35 |
| 88.00 | 5.11 | 3.27 | 0.36 |
| 90.00 | 5.33 | 3.47 | 0.36 |
| 92.00 | 5.56 | 3.69 | 0.39 |
| 94.00 | 5.82 | 3.93 | 0.44 |
| 96.00 | 6.11 | 4.19 | 0.48 |
| 98.00 | 6.43 | 4.50 | 0.58 |
| 100.00 | 6.82 | 4.86 | 0.68 |
| 102.00 | 7.27 | 5.29 | **0.79** |
| 104.00 | 7.75 | 5.74 | **0.79** |
| 106.00 | 8.21 | 6.18 | 0.77 |
| 108.00 | 8.66 | 6.61 | 0.76 |
| 110.00 | 9.08 | 7.01 | 0.68 |
| 112.00 | 9.45 | 7.37 | 0.60 |
| 114.00 | 9.77 | 7.68 | 0.52 |
| 116.00 | 10.07 | 7.97 | 0.51 |
| 118.00 | 10.36 | 8.26 | 0.51 |
| 120.00 | **10.66** | **8.54** | 0.51 |
| 122.00 | 10.66 | 8.54 | 0.00 |
| 124.00 | 10.66 | 8.54 | 0.00 |
| 126.00 | 10.66 | 8.54 | 0.00 |
| 128.00 | 10.66 | 8.54 | 0.00 |
| 130.00 | 10.66 | 8.54 | 0.00 |

## Summary for Subcatchment 7S: South Property

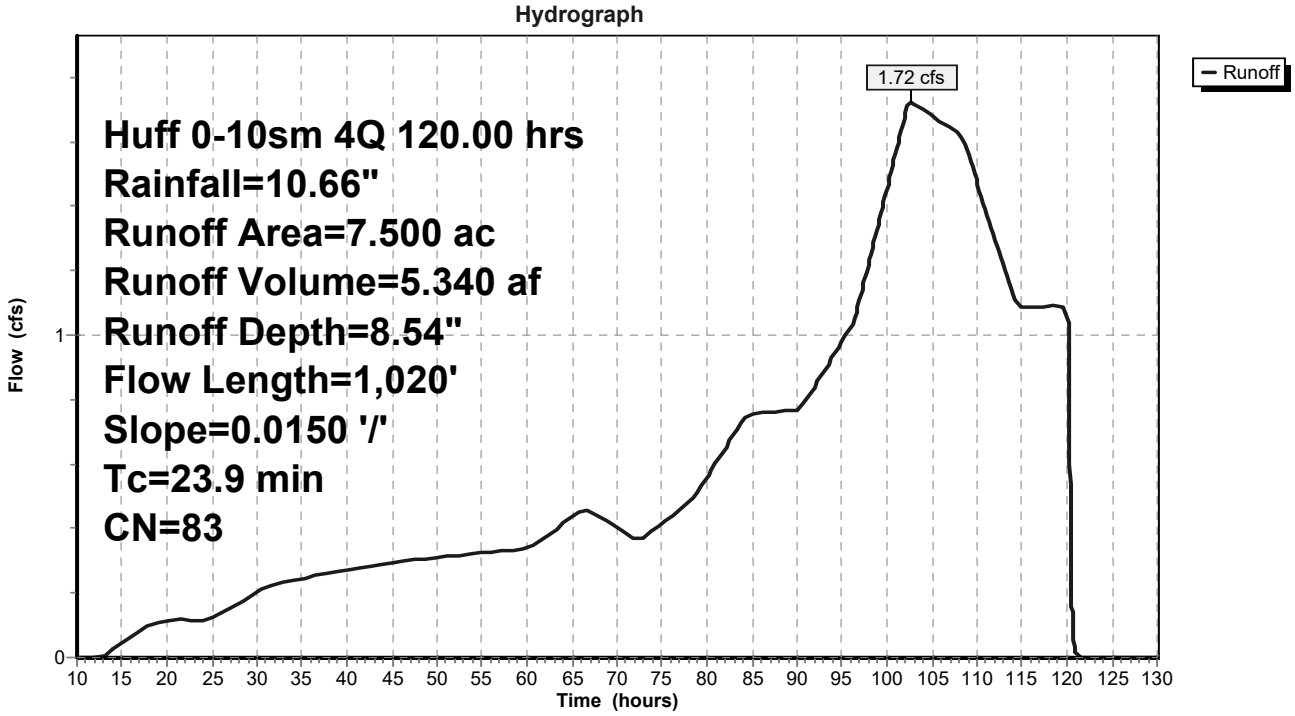
Runoff = 1.72 cfs @ 102.58 hrs, Volume= 5.340 af, Depth= 8.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.02 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=10.66"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

## Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 10.00 | 0.28 | 0.00 | 0.00 |
| 12.00 | 0.39 | 0.00 | 0.00 |
| 14.00 | 0.50 | 0.00 | 0.03 |
| 16.00 | 0.61 | 0.02 | 0.07 |
| 18.00 | 0.72 | 0.04 | 0.10 |
| 20.00 | 0.83 | 0.07 | 0.11 |
| 22.00 | 0.92 | 0.10 | 0.12 |
| 24.00 | 1.00 | 0.13 | 0.11 |
| 26.00 | 1.08 | 0.17 | 0.14 |
| 28.00 | 1.17 | 0.21 | 0.17 |
| 30.00 | 1.28 | 0.26 | 0.21 |
| 32.00 | 1.39 | 0.32 | 0.23 |
| 34.00 | 1.50 | 0.38 | 0.24 |
| 36.00 | 1.61 | 0.44 | 0.25 |
| 38.00 | 1.72 | 0.51 | 0.26 |
| 40.00 | 1.83 | 0.58 | 0.27 |
| 42.00 | 1.94 | 0.66 | 0.28 |
| 44.00 | 2.05 | 0.73 | 0.29 |
| 46.00 | 2.17 | 0.81 | 0.30 |
| 48.00 | 2.28 | 0.89 | 0.30 |
| 50.00 | 2.39 | 0.97 | 0.31 |
| 52.00 | 2.50 | 1.05 | 0.32 |
| 54.00 | 2.61 | 1.14 | 0.32 |
| 56.00 | 2.72 | 1.23 | 0.33 |
| 58.00 | 2.83 | 1.31 | 0.33 |
| 60.00 | 2.94 | 1.40 | 0.34 |
| 62.00 | 3.06 | 1.49 | 0.37 |
| 64.00 | 3.19 | 1.60 | 0.41 |
| 66.00 | 3.33 | 1.72 | 0.46 |
| 68.00 | 3.47 | 1.84 | 0.44 |
| 70.00 | 3.60 | 1.95 | 0.40 |
| 72.00 | 3.72 | 2.04 | 0.37 |
| 74.00 | 3.84 | 2.15 | 0.39 |
| 76.00 | 3.97 | 2.26 | 0.44 |
| 78.00 | 4.11 | 2.38 | 0.48 |
| 80.00 | 4.27 | 2.52 | 0.56 |
| 82.00 | 4.45 | 2.68 | 0.65 |
| 84.00 | 4.66 | 2.87 | 0.73 |
| 86.00 | 4.89 | 3.07 | 0.76 |
| 88.00 | 5.11 | 3.27 | 0.76 |
| 90.00 | 5.33 | 3.47 | 0.77 |
| 92.00 | 5.56 | 3.69 | 0.84 |
| 94.00 | 5.82 | 3.93 | 0.93 |
| 96.00 | 6.11 | 4.19 | 1.02 |
| 98.00 | 6.43 | 4.50 | 1.22 |
| 100.00 | 6.82 | 4.86 | 1.45 |
| 102.00 | 7.27 | 5.29 | **1.68** |
| 104.00 | 7.75 | 5.74 | **1.69** |
| 106.00 | 8.21 | 6.18 | 1.66 |
| 108.00 | 8.66 | 6.61 | 1.62 |
| 110.00 | 9.08 | 7.01 | 1.47 |
| 112.00 | 9.45 | 7.37 | 1.29 |
| 114.00 | 9.77 | 7.68 | 1.12 |
| 116.00 | 10.07 | 7.97 | 1.08 |
| 118.00 | 10.36 | 8.26 | 1.09 |
| 120.00 | **10.66** | **8.54** | 1.09 |
| 122.00 | 10.66 | 8.54 | 0.00 |
| 124.00 | 10.66 | 8.54 | 0.00 |
| 126.00 | 10.66 | 8.54 | 0.00 |
| 128.00 | 10.66 | 8.54 | 0.00 |
| 130.00 | 10.66 | 8.54 | 0.00 |

## Summary for Subcatchment 8S: Northwood Drive Bypass

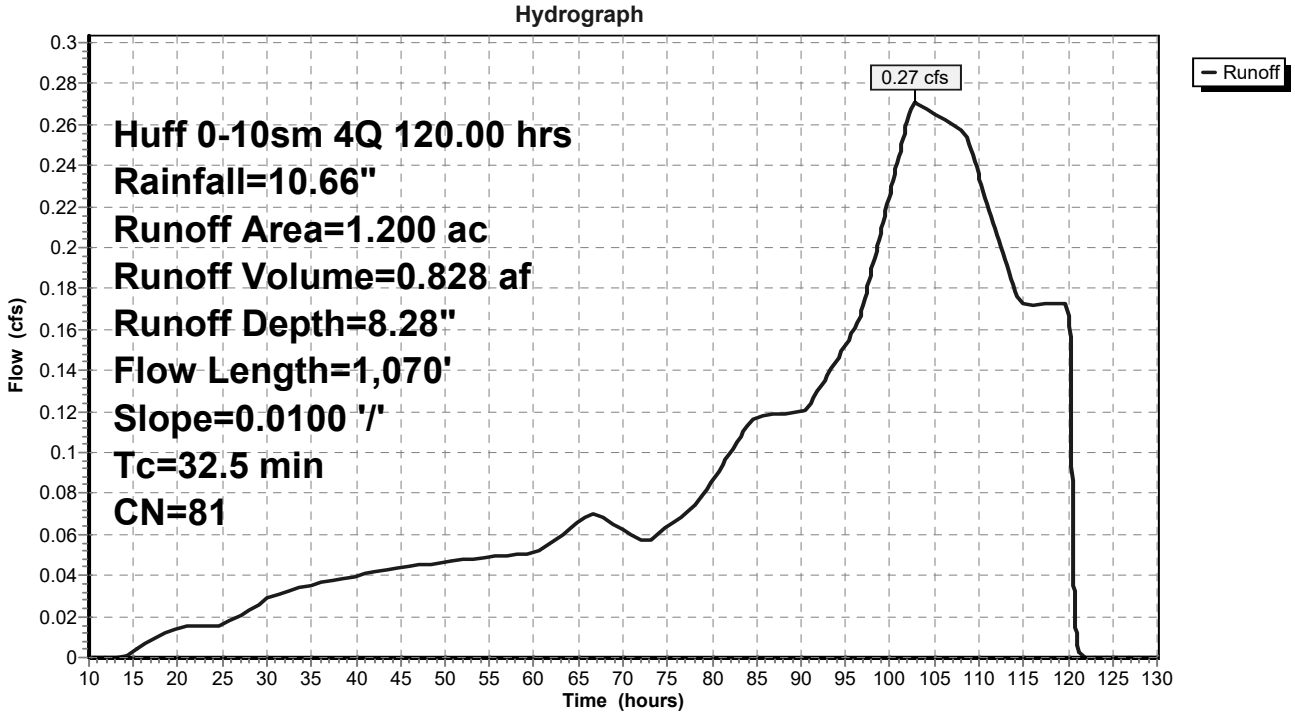
Runoff = 0.27 cfs @ 102.74 hrs, Volume= 0.828 af, Depth= 8.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.02 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=10.66"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 10.00 | 0.28 | 0.00 | 0.00 |
| 12.00 | 0.39 | 0.00 | 0.00 |
| 14.00 | 0.50 | 0.00 | 0.00 |
| 16.00 | 0.61 | 0.01 | 0.01 |
| 18.00 | 0.72 | 0.02 | 0.01 |
| 20.00 | 0.83 | 0.05 | 0.01 |
| 22.00 | 0.92 | 0.07 | 0.02 |
| 24.00 | 1.00 | 0.10 | 0.02 |
| 26.00 | 1.08 | 0.13 | 0.02 |
| 28.00 | 1.17 | 0.16 | 0.02 |
| 30.00 | 1.28 | 0.21 | 0.03 |
| 32.00 | 1.39 | 0.26 | 0.03 |
| 34.00 | 1.50 | 0.31 | 0.03 |
| 36.00 | 1.61 | 0.37 | 0.04 |
| 38.00 | 1.72 | 0.44 | 0.04 |
| 40.00 | 1.83 | 0.50 | 0.04 |
| 42.00 | 1.94 | 0.57 | 0.04 |
| 44.00 | 2.05 | 0.64 | 0.04 |
| 46.00 | 2.17 | 0.71 | 0.04 |
| 48.00 | 2.28 | 0.79 | 0.05 |
| 50.00 | 2.39 | 0.86 | 0.05 |
| 52.00 | 2.50 | 0.94 | 0.05 |
| 54.00 | 2.61 | 1.02 | 0.05 |
| 56.00 | 2.72 | 1.10 | 0.05 |
| 58.00 | 2.83 | 1.19 | 0.05 |
| 60.00 | 2.94 | 1.27 | 0.05 |
| 62.00 | 3.06 | 1.36 | 0.06 |
| 64.00 | 3.19 | 1.46 | 0.06 |
| 66.00 | 3.33 | 1.57 | 0.07 |
| 68.00 | 3.47 | 1.69 | 0.07 |
| 70.00 | 3.60 | 1.79 | 0.06 |
| 72.00 | 3.72 | 1.89 | 0.06 |
| 74.00 | 3.84 | 1.99 | 0.06 |
| 76.00 | 3.97 | 2.09 | 0.07 |
| 78.00 | 4.11 | 2.21 | 0.07 |
| 80.00 | 4.27 | 2.35 | 0.09 |
| 82.00 | 4.45 | 2.51 | 0.10 |
| 84.00 | 4.66 | 2.69 | 0.11 |
| 86.00 | 4.89 | 2.88 | 0.12 |
| 88.00 | 5.11 | 3.08 | 0.12 |
| 90.00 | 5.33 | 3.28 | 0.12 |
| 92.00 | 5.56 | 3.49 | 0.13 |
| 94.00 | 5.82 | 3.72 | 0.15 |
| 96.00 | 6.11 | 3.98 | 0.16 |
| 98.00 | 6.43 | 4.28 | 0.19 |
| 100.00 | 6.82 | 4.64 | 0.23 |
| 102.00 | 7.27 | 5.06 | **0.26** |
| 104.00 | 7.75 | 5.51 | **0.27** |
| 106.00 | 8.21 | 5.94 | 0.26 |
| 108.00 | 8.66 | 6.37 | 0.26 |
| 110.00 | 9.08 | 6.77 | 0.23 |
| 112.00 | 9.45 | 7.12 | 0.21 |
| 114.00 | 9.77 | 7.43 | 0.18 |
| 116.00 | 10.07 | 7.71 | 0.17 |
| 118.00 | 10.36 | 8.00 | 0.17 |
| 120.00 | **10.66** | **8.28** | 0.17 |
| 122.00 | 10.66 | 8.28 | 0.00 |
| 124.00 | 10.66 | 8.28 | 0.00 |
| 126.00 | 10.66 | 8.28 | 0.00 |
| 128.00 | 10.66 | 8.28 | 0.00 |
| 130.00 | 10.66 | 8.28 | 0.00 |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

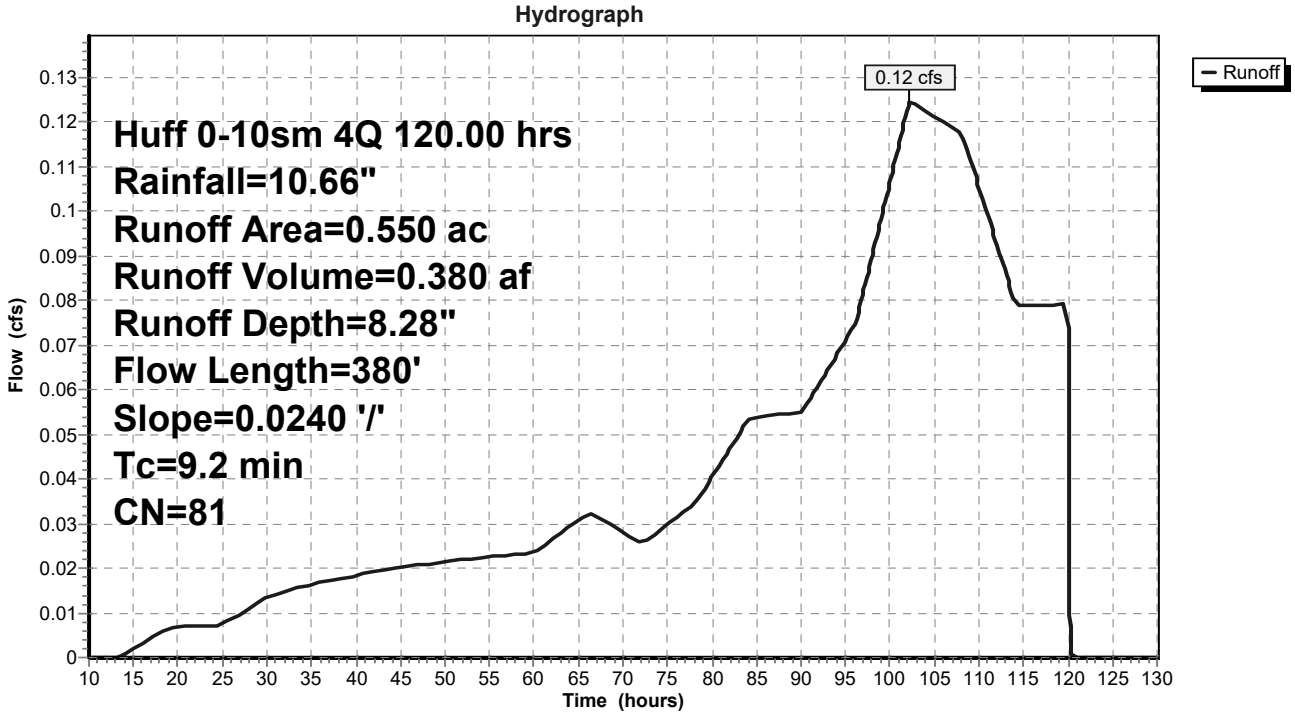
Runoff = 0.12 cfs @ 102.22 hrs, Volume= 0.380 af, Depth= 8.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.02 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=10.66"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 10.00 | 0.28 | 0.00 | 0.00 |
| 12.00 | 0.39 | 0.00 | 0.00 |
| 14.00 | 0.50 | 0.00 | 0.00 |
| 16.00 | 0.61 | 0.01 | 0.00 |
| 18.00 | 0.72 | 0.02 | 0.01 |
| 20.00 | 0.83 | 0.05 | 0.01 |
| 22.00 | 0.92 | 0.07 | 0.01 |
| 24.00 | 1.00 | 0.10 | 0.01 |
| 26.00 | 1.08 | 0.13 | 0.01 |
| 28.00 | 1.17 | 0.16 | 0.01 |
| 30.00 | 1.28 | 0.21 | 0.01 |
| 32.00 | 1.39 | 0.26 | 0.01 |
| 34.00 | 1.50 | 0.31 | 0.02 |
| 36.00 | 1.61 | 0.37 | 0.02 |
| 38.00 | 1.72 | 0.44 | 0.02 |
| 40.00 | 1.83 | 0.50 | 0.02 |
| 42.00 | 1.94 | 0.57 | 0.02 |
| 44.00 | 2.05 | 0.64 | 0.02 |
| 46.00 | 2.17 | 0.71 | 0.02 |
| 48.00 | 2.28 | 0.79 | 0.02 |
| 50.00 | 2.39 | 0.86 | 0.02 |
| 52.00 | 2.50 | 0.94 | 0.02 |
| 54.00 | 2.61 | 1.02 | 0.02 |
| 56.00 | 2.72 | 1.10 | 0.02 |
| 58.00 | 2.83 | 1.19 | 0.02 |
| 60.00 | 2.94 | 1.27 | 0.02 |
| 62.00 | 3.06 | 1.36 | 0.03 |
| 64.00 | 3.19 | 1.46 | 0.03 |
| 66.00 | 3.33 | 1.57 | 0.03 |
| 68.00 | 3.47 | 1.69 | 0.03 |
| 70.00 | 3.60 | 1.79 | 0.03 |
| 72.00 | 3.72 | 1.89 | 0.03 |
| 74.00 | 3.84 | 1.99 | 0.03 |
| 76.00 | 3.97 | 2.09 | 0.03 |
| 78.00 | 4.11 | 2.21 | 0.03 |
| 80.00 | 4.27 | 2.35 | 0.04 |
| 82.00 | 4.45 | 2.51 | 0.05 |
| 84.00 | 4.66 | 2.69 | 0.05 |
| 86.00 | 4.89 | 2.88 | 0.05 |
| 88.00 | 5.11 | 3.08 | 0.05 |
| 90.00 | 5.33 | 3.28 | 0.06 |
| 92.00 | 5.56 | 3.49 | 0.06 |
| 94.00 | 5.82 | 3.72 | 0.07 |
| 96.00 | 6.11 | 3.98 | 0.07 |
| 98.00 | 6.43 | 4.28 | 0.09 |
| 100.00 | 6.82 | 4.64 | 0.11 |
| 102.00 | 7.27 | 5.06 | **0.12** |
| 104.00 | 7.75 | 5.51 | **0.12** |
| 106.00 | 8.21 | 5.94 | 0.12 |
| 108.00 | 8.66 | 6.37 | 0.12 |
| 110.00 | 9.08 | 6.77 | 0.11 |
| 112.00 | 9.45 | 7.12 | 0.09 |
| 114.00 | 9.77 | 7.43 | 0.08 |
| 116.00 | 10.07 | 7.71 | 0.08 |
| 118.00 | 10.36 | 8.00 | 0.08 |
| 120.00 | **10.66** | **8.28** | 0.08 |
| 122.00 | 10.66 | 8.28 | 0.00 |
| 124.00 | 10.66 | 8.28 | 0.00 |
| 126.00 | 10.66 | 8.28 | 0.00 |
| 128.00 | 10.66 | 8.28 | 0.00 |
| 130.00 | 10.66 | 8.28 | 0.00 |

## Summary for Pond 3P: Southeast Chambers

| | | | | |
|---|---|---|---|---|
| Inflow | = | 1.96 cfs @ 102.58 hrs, | Volume= | 6.603 af |
| Outflow | = | 1.11 cfs @ 120.18 hrs, | Volume= | 5.372 af, Atten= 43%, Lag= 1,055.9 min |
| Primary | = | 1.11 cfs @ 120.18 hrs, | Volume= | 5.372 af |
| Secondary | = | 0.01 cfs @ 124.47 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ 10.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 10.00-130.00 hrs, dt= 0.02 hrs
Peak Elev= 674.55' @ 120.18 hrs Surf.Area= 31,393 sf Storage= 87,474 cf

Plug-Flow detention time= 597.1 min calculated for 5.372 af (81% of inflow)
Center-of-Mass det. time= 204.3 min ( 5,370.2 - 5,165.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

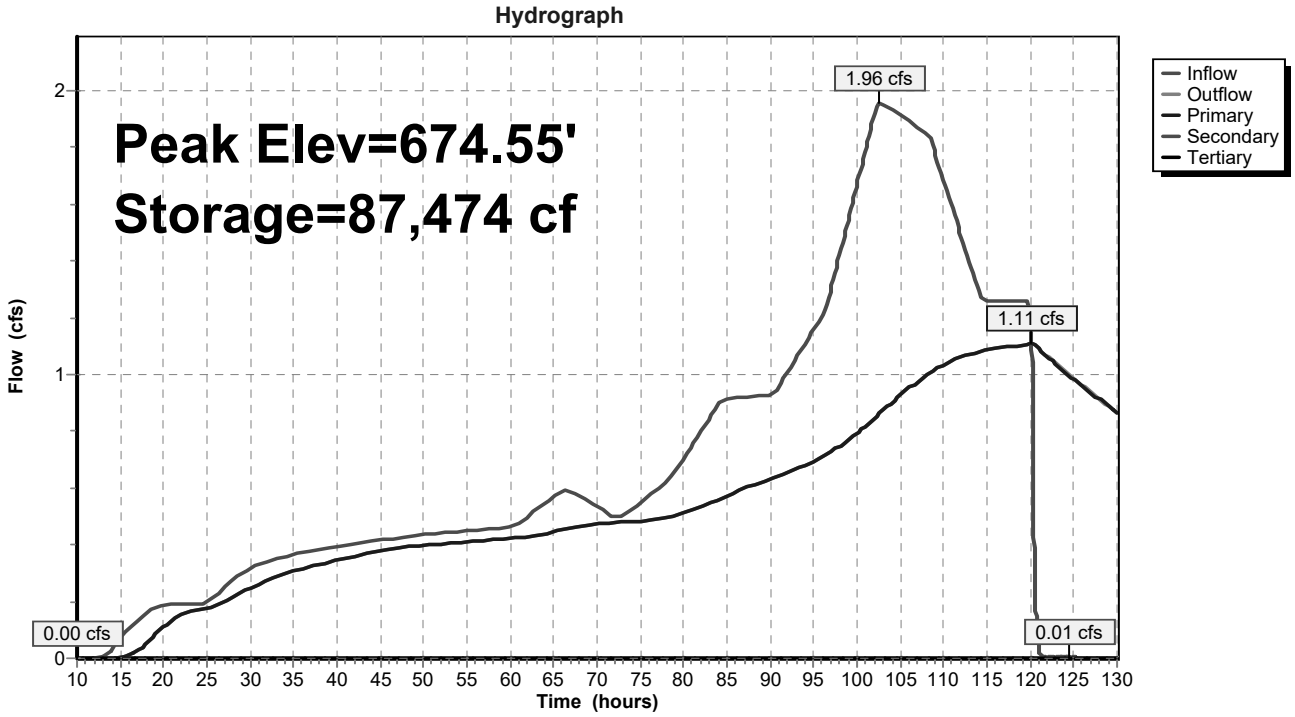
#4 Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=1.11 cfs @ 120.18 hrs HW=674.55' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.11 cfs @ 10.06 fps)

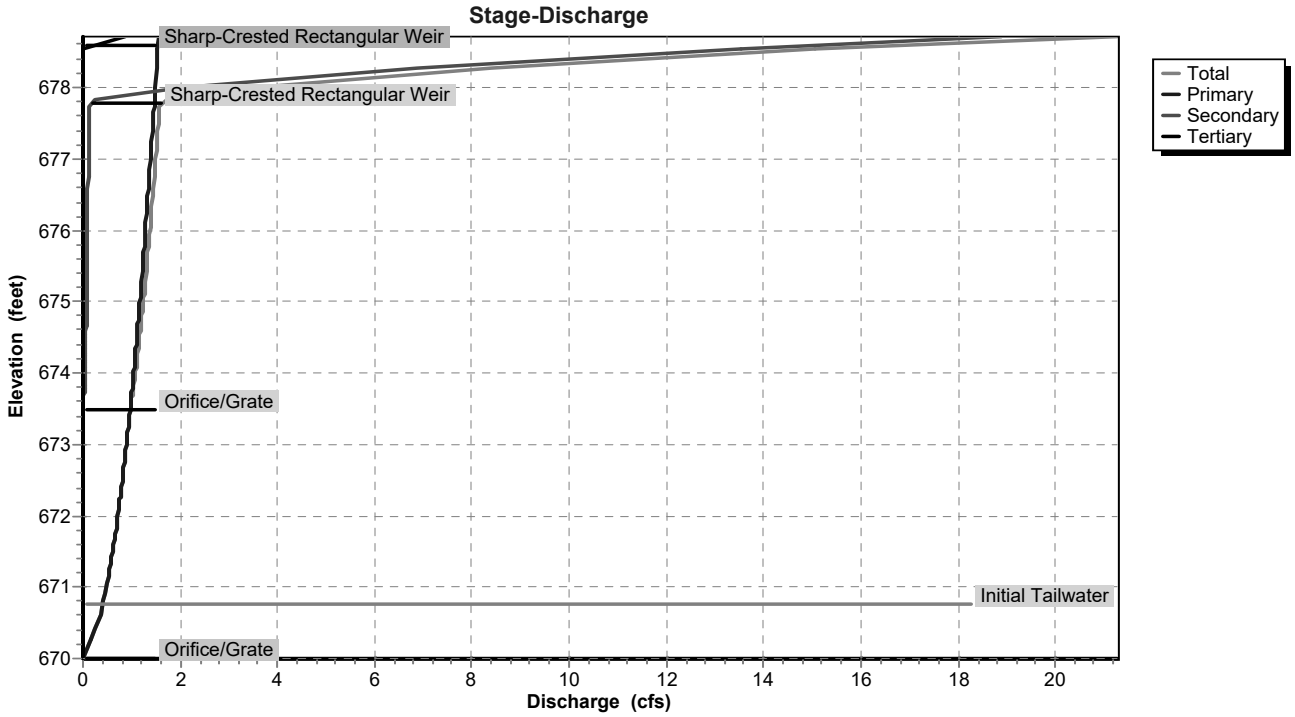
**Secondary OutFlow** Max=0.00 cfs @ 124.47 hrs HW=673.71' TW=673.71' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 10.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

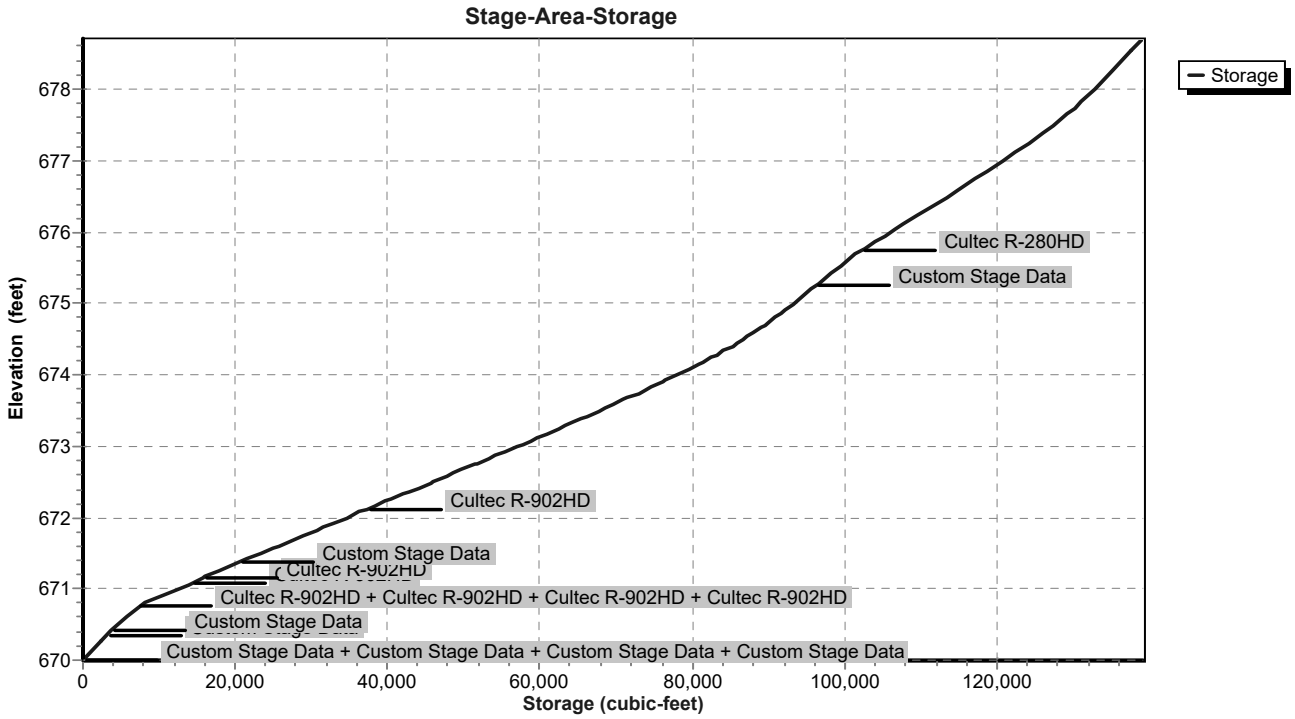
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | **0.00** |
| 14.00 | 0.03 | 63 | 670.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18.00 | 0.16 | 1,316 | 670.15 | 0.05 | 0.05 | 0.00 | 0.00 |
| 22.00 | 0.19 | 2,430 | 670.27 | 0.15 | 0.15 | 0.00 | 0.00 |
| 26.00 | 0.22 | 2,798 | 670.31 | 0.19 | 0.19 | 0.00 | 0.00 |
| 30.00 | 0.32 | 3,651 | 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 34.00 | 0.36 | 4,631 | 670.50 | 0.30 | 0.30 | 0.00 | 0.00 |
| 38.00 | 0.38 | 5,423 | 670.58 | 0.33 | 0.33 | 0.00 | 0.00 |
| 42.00 | 0.40 | 6,101 | 670.65 | 0.36 | 0.36 | 0.00 | 0.00 |
| 46.00 | 0.42 | 6,697 | 670.70 | 0.38 | 0.38 | 0.00 | 0.00 |
| 50.00 | 0.44 | 7,226 | 670.75 | 0.40 | 0.40 | 0.00 | 0.00 |
| 54.00 | 0.45 | 7,767 | 670.78 | 0.41 | 0.41 | 0.00 | 0.00 |
| 58.00 | 0.46 | 8,337 | 670.81 | 0.42 | 0.42 | 0.00 | 0.00 |
| 62.00 | 0.50 | 9,009 | 670.84 | 0.43 | 0.43 | 0.00 | 0.00 |
| 66.00 | 0.59 | 10,556 | 670.91 | 0.45 | 0.45 | 0.00 | 0.00 |
| 70.00 | 0.53 | 12,089 | 670.99 | 0.48 | 0.48 | 0.00 | 0.00 |
| 74.00 | 0.53 | 12,543 | 671.01 | 0.48 | 0.48 | 0.00 | 0.00 |
| 78.00 | 0.62 | 13,757 | 671.07 | 0.50 | 0.50 | 0.00 | 0.00 |
| 82.00 | 0.80 | 16,515 | 671.19 | 0.53 | 0.53 | 0.00 | 0.00 |
| 86.00 | 0.92 | 21,126 | 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 90.00 | 0.93 | 25,640 | 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 94.00 | 1.11 | 30,754 | 671.83 | 0.68 | 0.68 | 0.00 | 0.00 |
| 98.00 | 1.42 | 38,229 | 672.16 | 0.75 | 0.75 | 0.00 | 0.00 |
| 102.00 | **1.92** | 50,849 | 672.72 | 0.85 | 0.85 | 0.00 | 0.00 |
| 106.00 | **1.89** | 65,683 | 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 110.00 | 1.68 | 77,643 | 673.98 | 1.04 | 1.04 | 0.00 | 0.00 |
| 114.00 | 1.30 | 83,817 | 674.32 | 1.08 | 1.08 | 0.00 | 0.00 |
| 118.00 | 1.26 | **86,282** | **674.47** | **1.10** | **1.10** | 0.00 | 0.00 |
| 122.00 | 0.00 | **81,406** | **674.18** | **1.06** | **1.06** | **0.00** | 0.00 |
| 126.00 | 0.00 | 66,857 | 673.45 | 0.96 | 0.96 | **0.00** | 0.00 |
| 130.00 | 0.00 | 53,701 | 672.85 | 0.87 | 0.87 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 16.68 | 1.54 | 15.13 | 0.00 |
| 678.80 | **24.77** | **1.56** | **21.42** | **1.79** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) |
|---|---|
| 670.00 | 0 |
| 670.10 | 893 |
| 670.20 | 1,787 |
| 670.30 | 2,681 |
| 670.40 | 3,618 |
| 670.50 | 4,626 |
| 670.60 | 5,639 |
| 670.70 | 6,653 |
| 670.80 | 8,202 |
| 670.90 | 10,288 |
| 671.00 | 12,379 |
| 671.10 | 14,465 |
| 671.20 | 16,635 |
| 671.30 | 18,830 |
| 671.40 | 21,049 |
| 671.50 | 23,322 |
| 671.60 | 25,582 |
| 671.70 | 27,830 |
| 671.80 | 30,075 |
| 671.90 | 32,317 |
| 672.00 | 34,546 |
| 672.10 | 36,761 |
| 672.20 | 39,047 |
| 672.30 | 41,344 |
| 672.40 | 43,628 |
| 672.50 | 45,906 |
| 672.60 | 48,170 |
| 672.70 | 50,428 |
| 672.80 | 52,674 |
| 672.90 | 54,899 |
| 673.00 | 57,117 |
| 673.10 | 59,314 |
| 673.20 | 61,492 |
| 673.30 | 63,654 |
| 673.40 | 65,789 |
| 673.50 | 67,899 |
| 673.60 | 69,981 |
| 673.70 | 72,030 |
| 673.80 | 74,047 |
| 673.90 | 76,023 |
| 674.00 | 77,955 |
| 674.10 | 79,844 |
| 674.20 | 81,679 |
| 674.30 | 83,453 |
| 674.40 | 85,139 |
| 674.50 | 86,709 |
| 674.60 | 88,153 |
| 674.70 | 89,496 |
| 674.80 | 90,763 |
| 674.90 | 91,997 |
| 675.00 | 93,215 |
| 675.10 | 94,422 |
| 675.20 | 95,621 |
| 675.30 | 96,808 |
| 675.40 | 97,984 |
| 675.50 | 99,158 |
| 675.60 | 100,327 |
| 675.70 | 101,491 |
| 675.80 | 102,865 |
| 675.90 | 104,433 |
| 676.00 | 105,977 |
| 676.10 | 107,509 |
| 676.20 | 109,032 |
| 676.30 | 110,542 |
| 676.40 | 112,038 |
| 676.50 | 113,523 |
| 676.60 | 114,993 |
| 676.70 | 116,452 |
| 676.80 | 117,901 |
| 676.90 | 119,339 |
| 677.00 | 120,753 |
| 677.10 | 122,143 |
| 677.20 | 123,511 |
| 677.30 | 124,850 |
| 677.40 | 126,157 |
| 677.50 | 127,426 |
| 677.60 | 128,644 |
| 677.70 | 129,794 |
| 677.80 | 130,846 |
| 677.90 | 131,802 |
| 678.00 | 132,704 |
| 678.10 | 133,604 |
| 678.20 | 134,505 |
| 678.30 | 135,406 |
| 678.40 | 136,307 |
| 678.50 | 137,209 |
| 678.60 | 138,112 |
| 678.70 | 139,014 |
| 678.80 | 139,917 |
| 678.90 | **140,821** |

## Summary for Pond 8P: North System

| | | | | |
|---|---|---|---|---|
| Inflow | = | 1.07 cfs @ 102.52 hrs, | Volume= | 3.321 af |
| Outflow | = | 1.05 cfs @ 104.35 hrs, | Volume= | 3.320 af, Atten= 2%, Lag= 110.2 min |
| Primary | = | 0.94 cfs @ 104.35 hrs, | Volume= | 2.435 af |
| Secondary | = | 0.12 cfs @ 104.35 hrs, | Volume= | 0.884 af |
| Tertiary | = | 0.00 cfs @ 10.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 10.00-130.00 hrs, dt= 0.02 hrs
Peak Elev= 677.48' @ 104.35 hrs Surf.Area= 2,612 sf Storage= 1,743 cf

Plug-Flow detention time= 18.1 min calculated for 3.320 af (100% of inflow)
Center-of-Mass det. time= 17.6 min ( 5,335.1 - 5,317.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

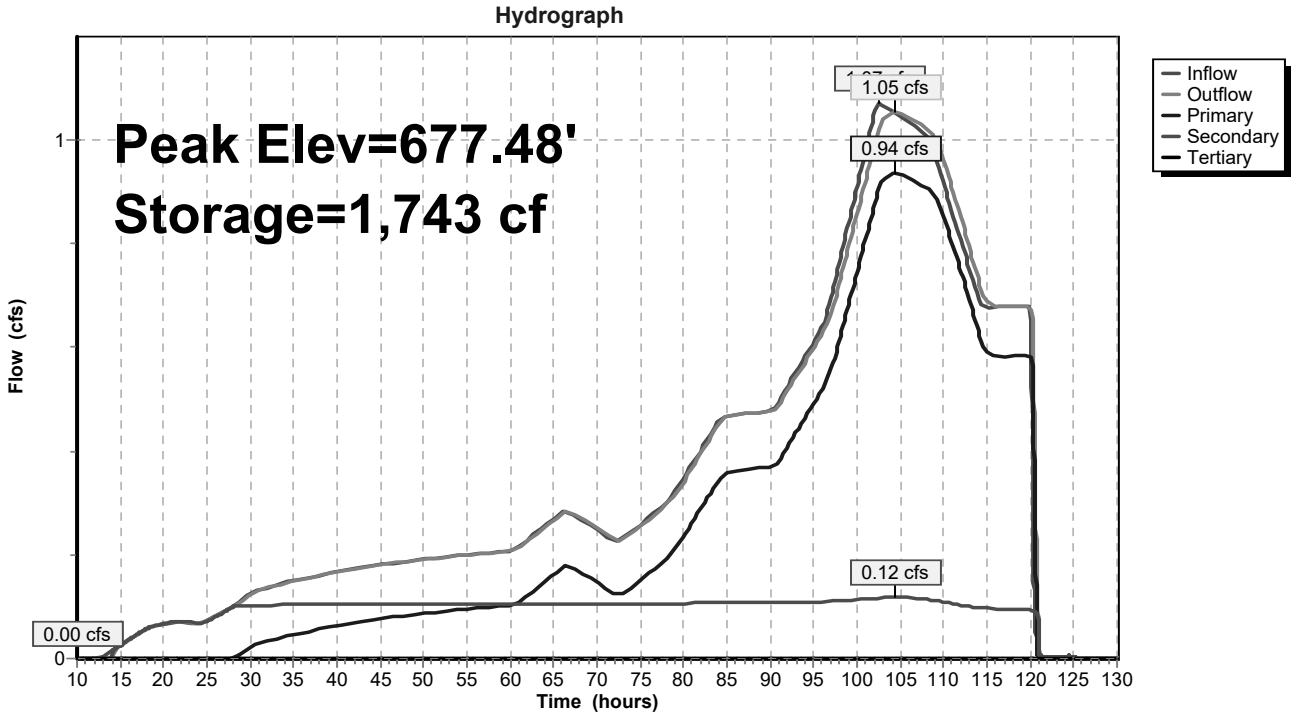
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.50' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=0.94 cfs @ 104.35 hrs HW=677.48' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 0.94 cfs @ 4.07 fps)
- **2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

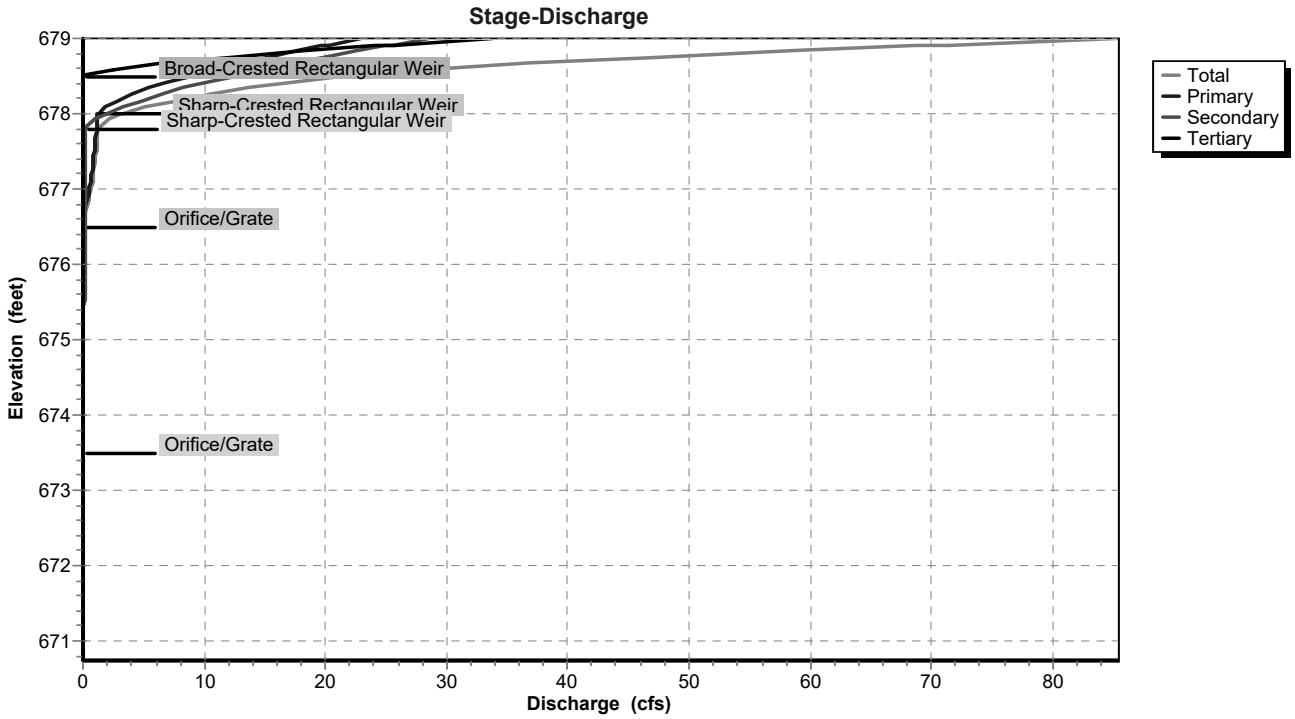
**Secondary OutFlow** Max=0.12 cfs @ 104.35 hrs HW=677.48' TW=673.13' (Dynamic Tailwater)
- **4=Orifice/Grate** (Orifice Controls 0.12 cfs @ 9.54 fps)
- **5=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 10.00 hrs HW=670.75' (Free Discharge)
- **3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

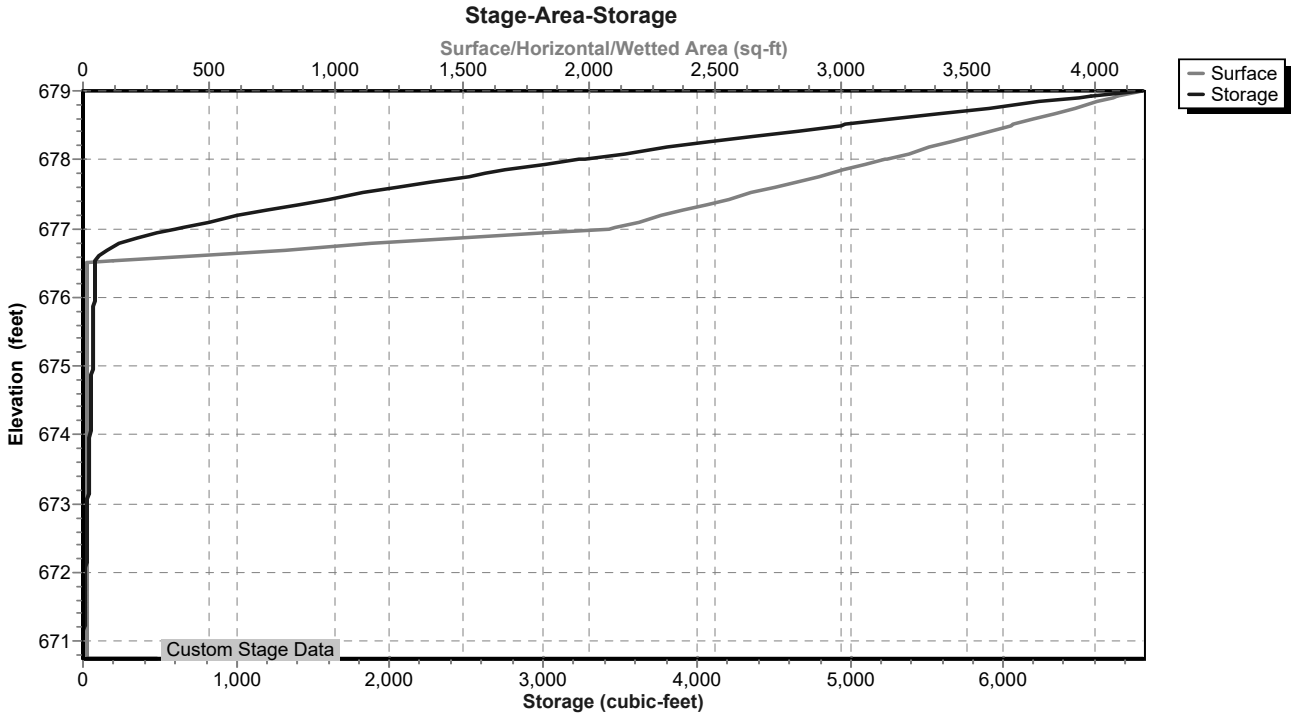
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 14.00 | 0.01 | 35 | 673.22 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18.00 | 0.06 | 52 | 674.48 | 0.06 | 0.00 | 0.06 | 0.00 |
| 22.00 | 0.07 | 59 | 674.97 | 0.07 | 0.00 | 0.07 | 0.00 |
| 26.00 | 0.08 | 65 | 675.42 | 0.08 | 0.00 | 0.08 | 0.00 |
| 30.00 | 0.13 | 98 | 676.58 | 0.12 | 0.02 | 0.10 | 0.00 |
| 34.00 | 0.15 | 111 | 676.62 | 0.14 | 0.04 | 0.10 | 0.00 |
| 38.00 | 0.16 | 123 | 676.64 | 0.16 | 0.06 | 0.10 | 0.00 |
| 42.00 | 0.17 | 133 | 676.65 | 0.17 | 0.07 | 0.10 | 0.00 |
| 46.00 | 0.18 | 140 | 676.66 | 0.18 | 0.08 | 0.10 | 0.00 |
| 50.00 | 0.19 | 145 | 676.67 | 0.19 | 0.09 | 0.10 | 0.00 |
| 54.00 | 0.20 | 150 | 676.68 | 0.20 | 0.09 | 0.10 | 0.00 |
| 58.00 | 0.20 | 154 | 676.68 | 0.20 | 0.10 | 0.10 | 0.00 |
| 62.00 | 0.23 | 171 | 676.70 | 0.23 | 0.12 | 0.10 | 0.00 |
| 66.00 | 0.28 | 215 | 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 70.00 | 0.25 | 192 | 676.73 | 0.25 | 0.15 | 0.11 | 0.00 |
| 74.00 | 0.25 | 184 | 676.72 | 0.24 | 0.14 | 0.10 | 0.00 |
| 78.00 | 0.30 | 227 | 676.76 | 0.30 | 0.19 | 0.11 | 0.00 |
| 82.00 | 0.40 | 316 | 676.83 | 0.40 | 0.29 | 0.11 | 0.00 |
| 86.00 | 0.47 | 388 | 676.88 | 0.47 | 0.36 | 0.11 | 0.00 |
| 90.00 | 0.48 | 395 | 676.88 | 0.48 | 0.37 | 0.11 | 0.00 |
| 94.00 | 0.58 | 503 | 676.95 | 0.57 | 0.46 | 0.11 | 0.00 |
| 98.00 | 0.77 | 777 | 677.08 | 0.73 | 0.62 | 0.11 | 0.00 |
| 102.00 | **1.05** | **1,506** | **677.39** | **0.99** | **0.87** | **0.12** | 0.00 |
| 106.00 | **1.04** | **1,708** | **677.47** | **1.05** | **0.93** | **0.12** | 0.00 |
| 110.00 | 0.92 | 1,425 | 677.36 | 0.96 | 0.85 | 0.11 | 0.00 |
| 114.00 | 0.70 | 811 | 677.10 | 0.73 | 0.63 | 0.10 | 0.00 |
| 118.00 | 0.68 | 707 | 677.05 | 0.68 | 0.58 | 0.09 | 0.00 |
| 122.00 | 0.00 | 48 | 674.19 | 0.00 | 0.00 | 0.00 | 0.00 |
| 126.00 | 0.00 | 39 | 673.50 | 0.00 | 0.00 | 0.00 | 0.00 |
| 130.00 | 0.00 | 39 | 673.50 | 0.00 | 0.00 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 24.61 | 9.86 | 13.70 | 1.05 |
| 678.75 | 46.70 | 15.13 | 19.77 | 11.80 |
| 678.95 | **76.77** | **21.27** | **26.68** | **28.82** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

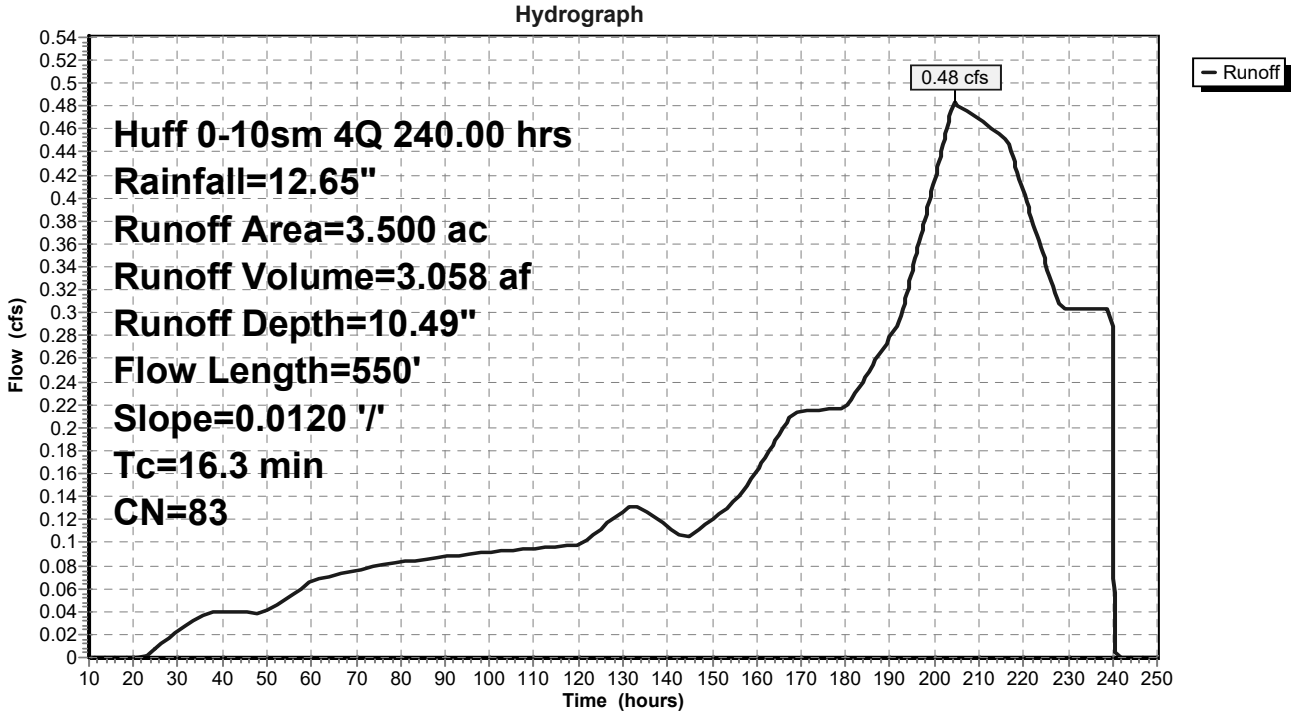
Runoff = 0.48 cfs @ 204.42 hrs, Volume= 3.058 af, Depth=10.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.02 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=12.65"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

## Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 10.00 | 0.09 | 0.00 | 0.00 |
| 14.00 | 0.18 | 0.00 | 0.00 |
| 18.00 | 0.28 | 0.00 | 0.00 |
| 22.00 | 0.40 | 0.00 | 0.00 |
| 26.00 | 0.53 | 0.01 | 0.01 |
| 30.00 | 0.66 | 0.03 | 0.02 |
| 34.00 | 0.79 | 0.06 | 0.03 |
| 38.00 | 0.92 | 0.10 | 0.04 |
| 42.00 | 1.04 | 0.15 | 0.04 |
| 46.00 | 1.14 | 0.19 | 0.04 |
| 50.00 | 1.23 | 0.24 | 0.04 |
| 54.00 | 1.33 | 0.29 | 0.05 |
| 58.00 | 1.45 | 0.35 | 0.06 |
| 62.00 | 1.58 | 0.43 | 0.07 |
| 66.00 | 1.71 | 0.51 | 0.07 |
| 70.00 | 1.84 | 0.59 | 0.08 |
| 74.00 | 1.98 | 0.68 | 0.08 |
| 78.00 | 2.11 | 0.77 | 0.08 |
| 82.00 | 2.24 | 0.86 | 0.08 |
| 86.00 | 2.37 | 0.96 | 0.09 |
| 90.00 | 2.50 | 1.06 | 0.09 |
| 94.00 | 2.64 | 1.16 | 0.09 |
| 98.00 | 2.77 | 1.26 | 0.09 |
| 102.00 | 2.90 | 1.37 | 0.09 |
| 106.00 | 3.03 | 1.47 | 0.09 |
| 110.00 | 3.16 | 1.58 | 0.10 |
| 114.00 | 3.29 | 1.69 | 0.10 |
| 118.00 | 3.43 | 1.80 | 0.10 |
| 122.00 | 3.56 | 1.91 | 0.10 |
| 126.00 | 3.71 | 2.03 | 0.11 |
| 130.00 | 3.87 | 2.17 | 0.13 |
| 134.00 | 4.04 | 2.32 | 0.13 |
| 138.00 | 4.20 | 2.46 | 0.12 |
| 142.00 | 4.35 | 2.59 | 0.11 |
| 146.00 | 4.48 | 2.71 | 0.11 |
| 150.00 | 4.63 | 2.84 | 0.12 |
| 154.00 | 4.79 | 2.98 | 0.13 |
| 158.00 | 4.97 | 3.14 | 0.15 |
| 162.00 | 5.17 | 3.33 | 0.17 |
| 166.00 | 5.41 | 3.54 | 0.20 |
| 170.00 | 5.67 | 3.78 | 0.21 |
| 174.00 | 5.93 | 4.03 | 0.22 |
| 178.00 | 6.19 | 4.27 | 0.22 |
| 182.00 | 6.46 | 4.52 | 0.23 |
| 186.00 | 6.75 | 4.80 | 0.25 |
| 190.00 | 7.08 | 5.10 | 0.28 |
| 194.00 | 7.43 | 5.44 | 0.32 |
| 198.00 | 7.86 | 5.84 | 0.38 |
| 202.00 | 8.35 | 6.32 | **0.45** |
| 206.00 | 8.91 | 6.85 | **0.48** |
| 210.00 | 9.47 | 7.39 | 0.47 |
| 214.00 | 10.01 | 7.91 | 0.46 |
| 218.00 | 10.53 | 8.42 | 0.43 |
| 222.00 | 11.00 | 8.88 | 0.38 |
| 226.00 | 11.41 | 9.28 | 0.33 |
| 230.00 | 11.77 | 9.63 | 0.30 |
| 234.00 | 12.12 | 9.97 | 0.30 |
| 238.00 | **12.47** | **10.31** | 0.30 |
| 242.00 | **12.65** | **10.49** | 0.00 |
| 246.00 | 12.65 | 10.49 | 0.00 |
| 250.00 | 12.65 | 10.49 | 0.00 |

## Summary for Subcatchment 7S: South Property

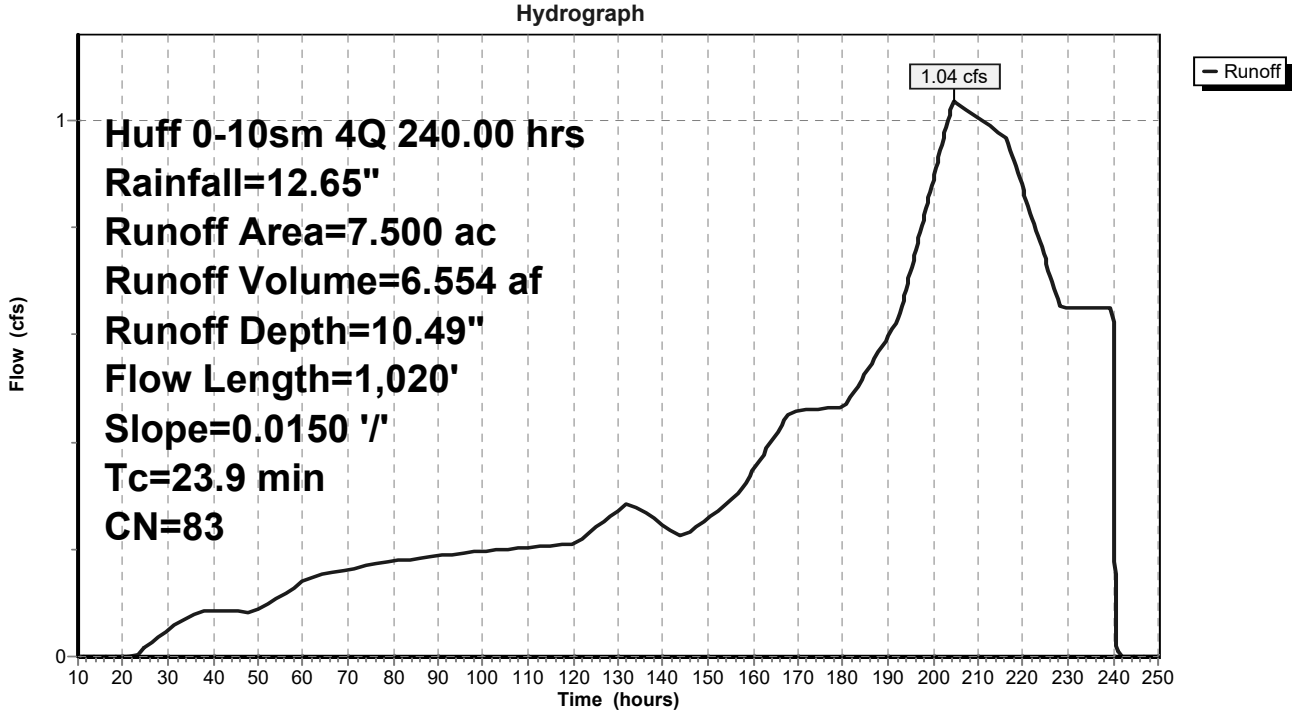
Runoff = 1.04 cfs @ 204.56 hrs, Volume= 6.554 af, Depth=10.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.02 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=12.65"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 10.00 | 0.09 | 0.00 | 0.00 |
| 14.00 | 0.18 | 0.00 | 0.00 |
| 18.00 | 0.28 | 0.00 | 0.00 |
| 22.00 | 0.40 | 0.00 | 0.00 |
| 26.00 | 0.53 | 0.01 | 0.02 |
| 30.00 | 0.66 | 0.03 | 0.05 |
| 34.00 | 0.79 | 0.06 | 0.07 |
| 38.00 | 0.92 | 0.10 | 0.08 |
| 42.00 | 1.04 | 0.15 | 0.09 |
| 46.00 | 1.14 | 0.19 | 0.08 |
| 50.00 | 1.23 | 0.24 | 0.09 |
| 54.00 | 1.33 | 0.29 | 0.11 |
| 58.00 | 1.45 | 0.35 | 0.13 |
| 62.00 | 1.58 | 0.43 | 0.15 |
| 66.00 | 1.71 | 0.51 | 0.16 |
| 70.00 | 1.84 | 0.59 | 0.16 |
| 74.00 | 1.98 | 0.68 | 0.17 |
| 78.00 | 2.11 | 0.77 | 0.17 |
| 82.00 | 2.24 | 0.86 | 0.18 |
| 86.00 | 2.37 | 0.96 | 0.18 |
| 90.00 | 2.50 | 1.06 | 0.19 |
| 94.00 | 2.64 | 1.16 | 0.19 |
| 98.00 | 2.77 | 1.26 | 0.19 |
| 102.00 | 2.90 | 1.37 | 0.20 |
| 106.00 | 3.03 | 1.47 | 0.20 |
| 110.00 | 3.16 | 1.58 | 0.20 |
| 114.00 | 3.29 | 1.69 | 0.21 |
| 118.00 | 3.43 | 1.80 | 0.21 |
| 122.00 | 3.56 | 1.91 | 0.22 |
| 126.00 | 3.71 | 2.03 | 0.25 |
| 130.00 | 3.87 | 2.17 | 0.27 |
| 134.00 | 4.04 | 2.32 | 0.28 |
| 138.00 | 4.20 | 2.46 | 0.26 |
| 142.00 | 4.35 | 2.59 | 0.23 |
| 146.00 | 4.48 | 2.71 | 0.23 |
| 150.00 | 4.63 | 2.84 | 0.26 |
| 154.00 | 4.79 | 2.98 | 0.28 |
| 158.00 | 4.97 | 3.14 | 0.32 |
| 162.00 | 5.17 | 3.33 | 0.37 |
| 166.00 | 5.41 | 3.54 | 0.43 |
| 170.00 | 5.67 | 3.78 | 0.46 |
| 174.00 | 5.93 | 4.03 | 0.46 |
| 178.00 | 6.19 | 4.27 | 0.46 |
| 182.00 | 6.46 | 4.52 | 0.49 |
| 186.00 | 6.75 | 4.80 | 0.54 |
| 190.00 | 7.08 | 5.10 | 0.60 |
| 194.00 | 7.43 | 5.44 | 0.68 |
| 198.00 | 7.86 | 5.84 | 0.82 |
| 202.00 | 8.35 | 6.32 | **0.96** |
| 206.00 | 8.91 | 6.85 | **1.03** |
| 210.00 | 9.47 | 7.39 | 1.00 |
| 214.00 | 10.01 | 7.91 | 0.98 |
| 218.00 | 10.53 | 8.42 | 0.92 |
| 222.00 | 11.00 | 8.88 | 0.82 |
| 226.00 | 11.41 | 9.28 | 0.71 |
| 230.00 | 11.77 | 9.63 | 0.65 |
| 234.00 | 12.12 | 9.97 | 0.65 |
| 238.00 | **12.47** | **10.31** | 0.65 |
| 242.00 | **12.65** | **10.49** | 0.00 |
| 246.00 | 12.65 | 10.49 | 0.00 |
| 250.00 | 12.65 | 10.49 | 0.00 |

## Summary for Subcatchment 8S: Northwood Drive Bypass

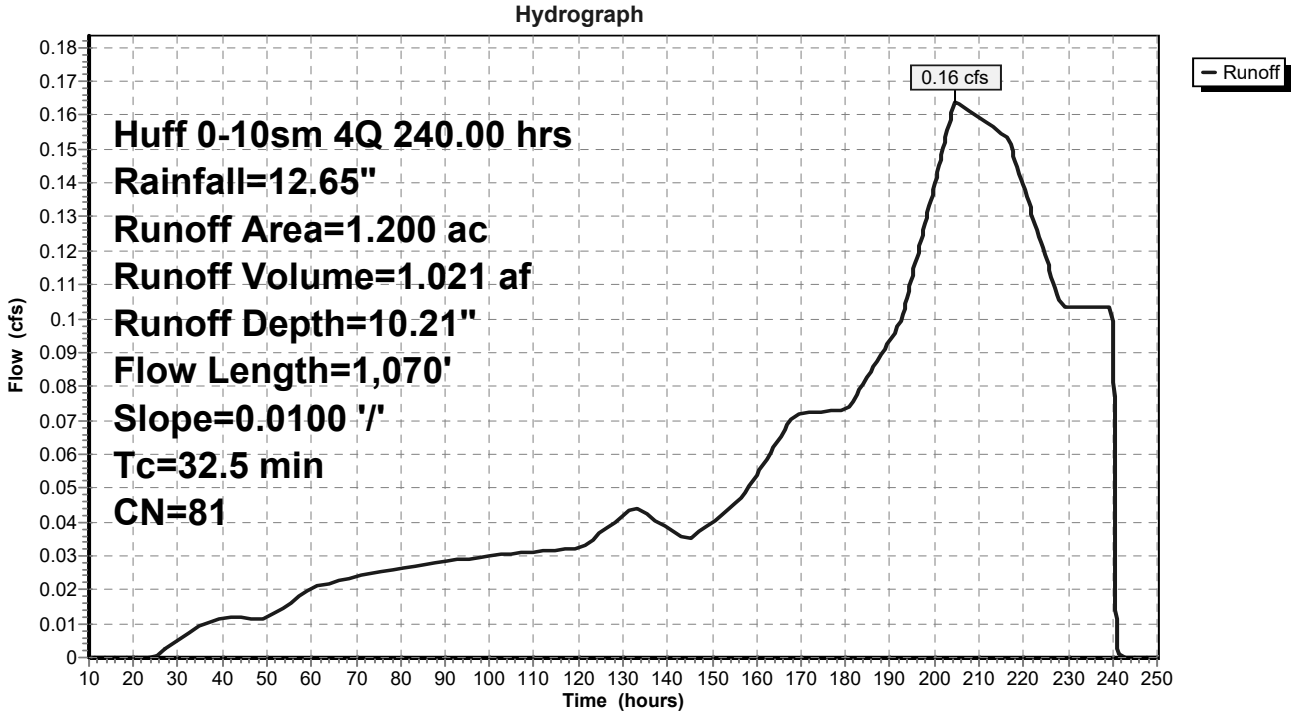
Runoff = 0.16 cfs @ 204.78 hrs, Volume= 1.021 af, Depth=10.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.02 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=12.65"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 10.00 | 0.09 | 0.00 | 0.00 |
| 14.00 | 0.18 | 0.00 | 0.00 |
| 18.00 | 0.28 | 0.00 | 0.00 |
| 22.00 | 0.40 | 0.00 | 0.00 |
| 26.00 | 0.53 | 0.00 | 0.00 |
| 30.00 | 0.66 | 0.01 | 0.01 |
| 34.00 | 0.79 | 0.04 | 0.01 |
| 38.00 | 0.92 | 0.07 | 0.01 |
| 42.00 | 1.04 | 0.11 | 0.01 |
| 46.00 | 1.14 | 0.15 | 0.01 |
| 50.00 | 1.23 | 0.19 | 0.01 |
| 54.00 | 1.33 | 0.23 | 0.02 |
| 58.00 | 1.45 | 0.29 | 0.02 |
| 62.00 | 1.58 | 0.36 | 0.02 |
| 66.00 | 1.71 | 0.43 | 0.02 |
| 70.00 | 1.84 | 0.51 | 0.02 |
| 74.00 | 1.98 | 0.59 | 0.02 |
| 78.00 | 2.11 | 0.67 | 0.03 |
| 82.00 | 2.24 | 0.76 | 0.03 |
| 86.00 | 2.37 | 0.85 | 0.03 |
| 90.00 | 2.50 | 0.94 | 0.03 |
| 94.00 | 2.64 | 1.04 | 0.03 |
| 98.00 | 2.77 | 1.14 | 0.03 |
| 102.00 | 2.90 | 1.24 | 0.03 |
| 106.00 | 3.03 | 1.34 | 0.03 |
| 110.00 | 3.16 | 1.44 | 0.03 |
| 114.00 | 3.29 | 1.54 | 0.03 |
| 118.00 | 3.43 | 1.65 | 0.03 |
| 122.00 | 3.56 | 1.76 | 0.03 |
| 126.00 | 3.71 | 1.88 | 0.04 |
| 130.00 | 3.87 | 2.01 | 0.04 |
| 134.00 | 4.04 | 2.15 | 0.04 |
| 138.00 | 4.20 | 2.29 | 0.04 |
| 142.00 | 4.35 | 2.42 | 0.04 |
| 146.00 | 4.48 | 2.53 | 0.04 |
| 150.00 | 4.63 | 2.66 | 0.04 |
| 154.00 | 4.79 | 2.80 | 0.04 |
| 158.00 | 4.97 | 2.96 | 0.05 |
| 162.00 | 5.17 | 3.14 | 0.06 |
| 166.00 | 5.41 | 3.35 | 0.07 |
| 170.00 | 5.67 | 3.58 | 0.07 |
| 174.00 | 5.93 | 3.82 | 0.07 |
| 178.00 | 6.19 | 4.06 | 0.07 |
| 182.00 | 6.46 | 4.31 | 0.08 |
| 186.00 | 6.75 | 4.58 | 0.09 |
| 190.00 | 7.08 | 4.88 | 0.09 |
| 194.00 | 7.43 | 5.21 | 0.11 |
| 198.00 | 7.86 | 5.61 | 0.13 |
| 202.00 | 8.35 | 6.08 | **0.15** |
| 206.00 | 8.91 | 6.61 | **0.16** |
| 210.00 | 9.47 | 7.14 | 0.16 |
| 214.00 | 10.01 | 7.66 | 0.16 |
| 218.00 | 10.53 | 8.16 | 0.15 |
| 222.00 | 11.00 | 8.62 | 0.13 |
| 226.00 | 11.41 | 9.01 | 0.11 |
| 230.00 | 11.77 | 9.36 | 0.10 |
| 234.00 | 12.12 | 9.70 | 0.10 |
| 238.00 | **12.47** | **10.04** | 0.10 |
| 242.00 | **12.65** | **10.21** | 0.00 |
| 246.00 | 12.65 | 10.21 | 0.00 |
| 250.00 | 12.65 | 10.21 | 0.00 |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

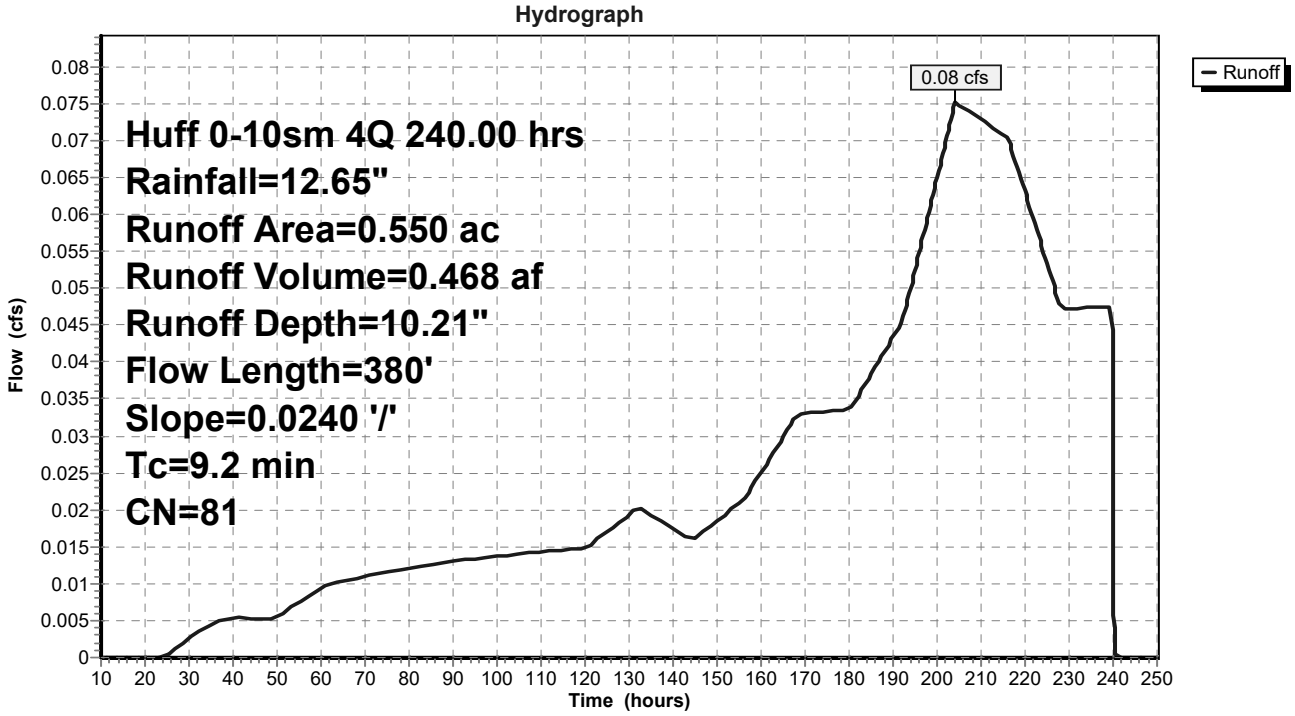
Runoff = 0.08 cfs @ 204.21 hrs, Volume= 0.468 af, Depth=10.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.02 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=12.65"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 10.00 | 0.09 | 0.00 | 0.00 |
| 14.00 | 0.18 | 0.00 | 0.00 |
| 18.00 | 0.28 | 0.00 | 0.00 |
| 22.00 | 0.40 | 0.00 | 0.00 |
| 26.00 | 0.53 | 0.00 | 0.00 |
| 30.00 | 0.66 | 0.01 | 0.00 |
| 34.00 | 0.79 | 0.04 | 0.00 |
| 38.00 | 0.92 | 0.07 | 0.01 |
| 42.00 | 1.04 | 0.11 | 0.01 |
| 46.00 | 1.14 | 0.15 | 0.01 |
| 50.00 | 1.23 | 0.19 | 0.01 |
| 54.00 | 1.33 | 0.23 | 0.01 |
| 58.00 | 1.45 | 0.29 | 0.01 |
| 62.00 | 1.58 | 0.36 | 0.01 |
| 66.00 | 1.71 | 0.43 | 0.01 |
| 70.00 | 1.84 | 0.51 | 0.01 |
| 74.00 | 1.98 | 0.59 | 0.01 |
| 78.00 | 2.11 | 0.67 | 0.01 |
| 82.00 | 2.24 | 0.76 | 0.01 |
| 86.00 | 2.37 | 0.85 | 0.01 |
| 90.00 | 2.50 | 0.94 | 0.01 |
| 94.00 | 2.64 | 1.04 | 0.01 |
| 98.00 | 2.77 | 1.14 | 0.01 |
| 102.00 | 2.90 | 1.24 | 0.01 |
| 106.00 | 3.03 | 1.34 | 0.01 |
| 110.00 | 3.16 | 1.44 | 0.01 |
| 114.00 | 3.29 | 1.54 | 0.01 |
| 118.00 | 3.43 | 1.65 | 0.01 |
| 122.00 | 3.56 | 1.76 | 0.02 |
| 126.00 | 3.71 | 1.88 | 0.02 |
| 130.00 | 3.87 | 2.01 | 0.02 |
| 134.00 | 4.04 | 2.15 | 0.02 |
| 138.00 | 4.20 | 2.29 | 0.02 |
| 142.00 | 4.35 | 2.42 | 0.02 |
| 146.00 | 4.48 | 2.53 | 0.02 |
| 150.00 | 4.63 | 2.66 | 0.02 |
| 154.00 | 4.79 | 2.80 | 0.02 |
| 158.00 | 4.97 | 2.96 | 0.02 |
| 162.00 | 5.17 | 3.14 | 0.03 |
| 166.00 | 5.41 | 3.35 | 0.03 |
| 170.00 | 5.67 | 3.58 | 0.03 |
| 174.00 | 5.93 | 3.82 | 0.03 |
| 178.00 | 6.19 | 4.06 | 0.03 |
| 182.00 | 6.46 | 4.31 | 0.04 |
| 186.00 | 6.75 | 4.58 | 0.04 |
| 190.00 | 7.08 | 4.88 | 0.04 |
| 194.00 | 7.43 | 5.21 | 0.05 |
| 198.00 | 7.86 | 5.61 | 0.06 |
| 202.00 | 8.35 | 6.08 | **0.07** |
| 206.00 | 8.91 | 6.61 | **0.07** |
| 210.00 | 9.47 | 7.14 | 0.07 |
| 214.00 | 10.01 | 7.66 | 0.07 |
| 218.00 | 10.53 | 8.16 | 0.07 |
| 222.00 | 11.00 | 8.62 | 0.06 |
| 226.00 | 11.41 | 9.01 | 0.05 |
| 230.00 | 11.77 | 9.36 | 0.05 |
| 234.00 | 12.12 | 9.70 | 0.05 |
| 238.00 | **12.47** | **10.04** | 0.05 |
| 242.00 | **12.65** | **10.21** | 0.00 |
| 246.00 | 12.65 | 10.21 | 0.00 |
| 250.00 | 12.65 | 10.21 | 0.00 |

## Summary for Pond 3P: Southeast Chambers

| | | | | |
|---|---|---|---|---|
| Inflow | = | 1.22 cfs @ 204.56 hrs, | Volume= | 8.721 af |
| Outflow | = | 0.89 cfs @ 225.23 hrs, | Volume= | 8.092 af, Atten= 27%, Lag= 1,240.6 min |
| Primary | = | 0.89 cfs @ 225.23 hrs, | Volume= | 8.092 af |
| Secondary | = | 0.00 cfs @ 10.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ 10.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 10.00-250.00 hrs, dt= 0.02 hrs
Peak Elev= 673.01' @ 225.23 hrs Surf.Area= 31,038 sf Storage= 57,307 cf

Plug-Flow detention time= 552.9 min calculated for 8.092 af (93% of inflow)
Center-of-Mass det. time= 239.6 min ( 10,352.0 - 10,112.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)**Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.60' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

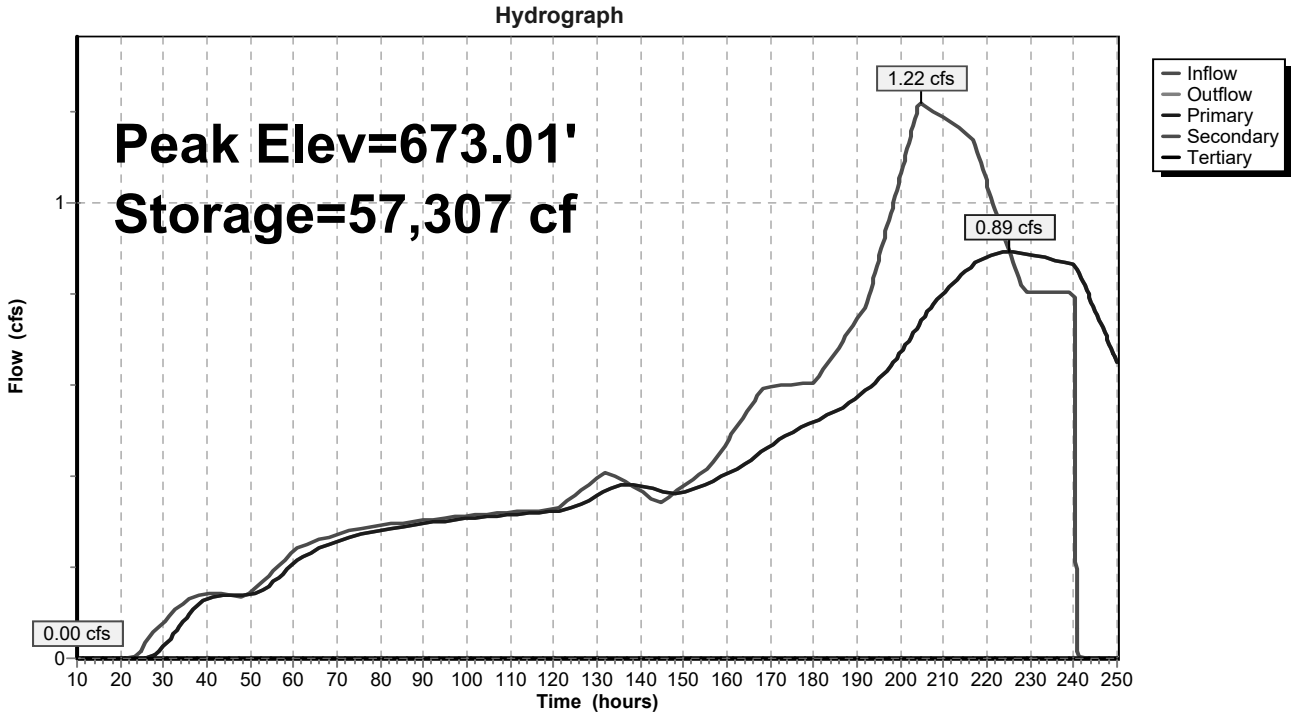
#4 Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=0.89 cfs @ 225.23 hrs HW=673.01' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.89 cfs @ 8.09 fps)

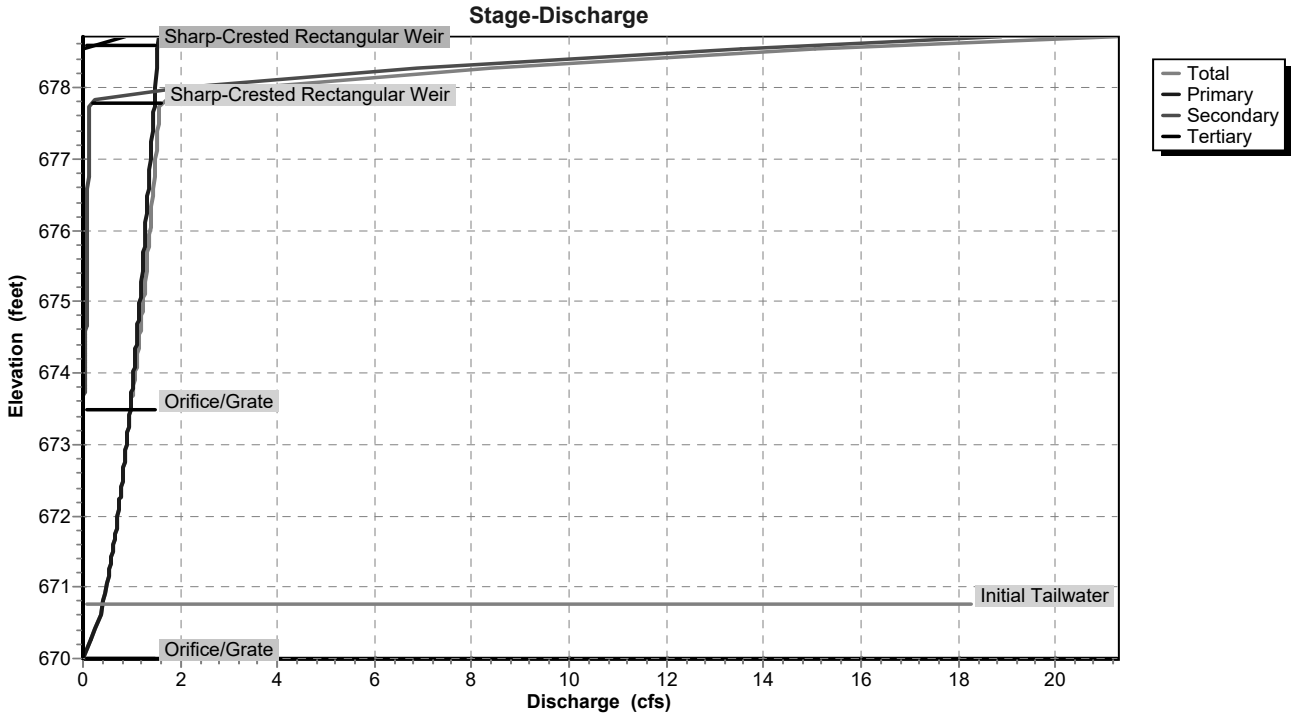
**Secondary OutFlow** Max=0.00 cfs @ 10.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 10.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

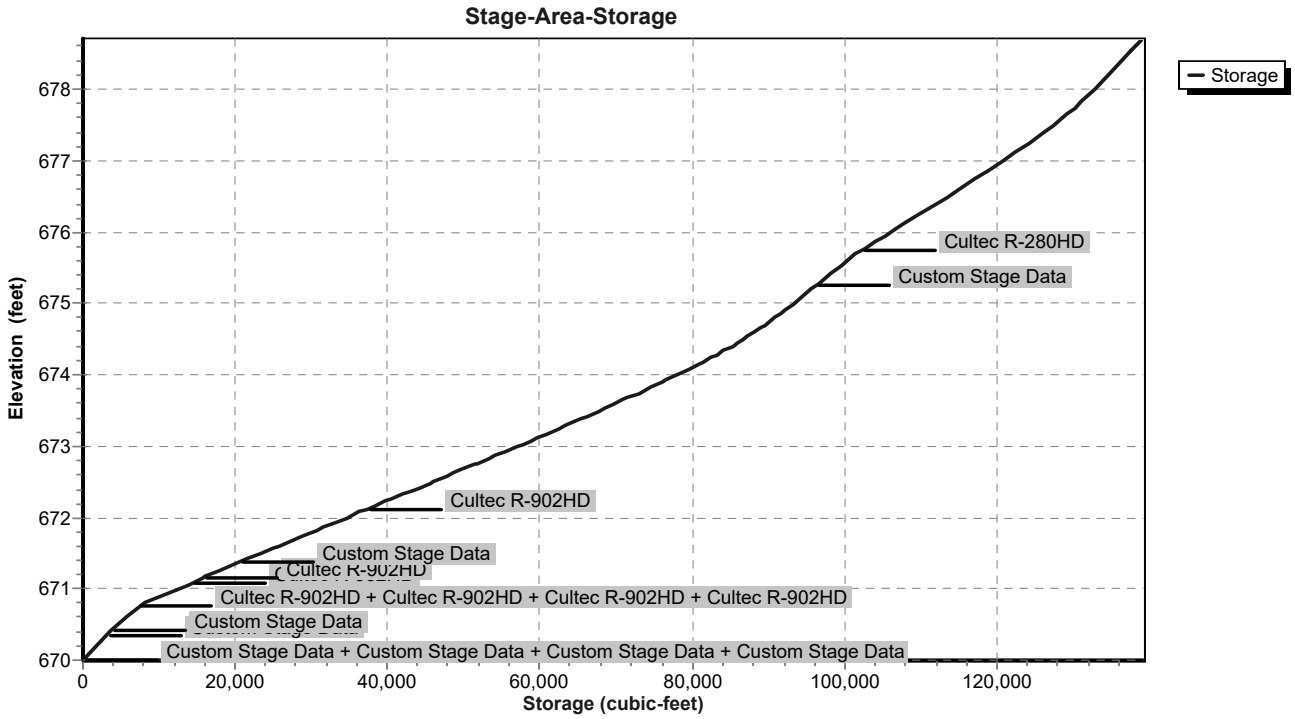
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 20.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.08 | 883 | 670.10 | 0.02 | 0.02 | 0.00 | 0.00 |
| 40.00 | 0.14 | 2,194 | 670.25 | 0.13 | 0.13 | 0.00 | 0.00 |
| 50.00 | 0.14 | 2,279 | 670.26 | 0.14 | 0.14 | 0.00 | 0.00 |
| 60.00 | 0.24 | 3,031 | 670.34 | 0.21 | 0.21 | 0.00 | 0.00 |
| 70.00 | 0.27 | 3,811 | 670.42 | 0.26 | 0.26 | 0.00 | 0.00 |
| 80.00 | 0.29 | 4,286 | 670.47 | 0.28 | 0.28 | 0.00 | 0.00 |
| 90.00 | 0.30 | 4,595 | 670.50 | 0.30 | 0.30 | 0.00 | 0.00 |
| 100.00 | 0.31 | 4,835 | 670.52 | 0.31 | 0.31 | 0.00 | 0.00 |
| 110.00 | 0.32 | 5,030 | 670.54 | 0.32 | 0.32 | 0.00 | 0.00 |
| 120.00 | 0.33 | 5,192 | 670.56 | 0.32 | 0.32 | 0.00 | 0.00 |
| 130.00 | 0.40 | 6,035 | 670.64 | 0.36 | 0.36 | 0.00 | 0.00 |
| 140.00 | 0.37 | 6,639 | 670.70 | 0.38 | 0.38 | 0.00 | 0.00 |
| 150.00 | 0.38 | 6,219 | 670.66 | 0.36 | 0.36 | 0.00 | 0.00 |
| 160.00 | 0.48 | 7,542 | 670.77 | 0.41 | 0.41 | 0.00 | 0.00 |
| 170.00 | 0.60 | 11,565 | 670.96 | 0.47 | 0.47 | 0.00 | 0.00 |
| 180.00 | 0.60 | 15,347 | 671.14 | 0.52 | 0.52 | 0.00 | 0.00 |
| 190.00 | 0.75 | 19,980 | 671.35 | 0.57 | 0.57 | 0.00 | 0.00 |
| 200.00 | **1.06** | 29,589 | 671.78 | 0.67 | 0.67 | 0.00 | 0.00 |
| 210.00 | **1.19** | 45,298 | 672.47 | 0.80 | 0.80 | 0.00 | 0.00 |
| 220.00 | 1.04 | **55,827** | **672.94** | **0.88** | **0.88** | 0.00 | 0.00 |
| 230.00 | 0.80 | **56,310** | **672.96** | **0.89** | **0.89** | 0.00 | 0.00 |
| 240.00 | 0.80 | 53,712 | 672.85 | 0.87 | 0.87 | 0.00 | 0.00 |
| 250.00 | 0.00 | 27,456 | 671.68 | 0.65 | 0.65 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 16.68 | 1.54 | 15.13 | 0.00 |
| 678.80 | **24.77** | **1.56** | **21.42** | **1.79** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) |
|---|---|
| 670.00 | 0 |
| 670.10 | 893 |
| 670.20 | 1,787 |
| 670.30 | 2,681 |
| 670.40 | 3,618 |
| 670.50 | 4,626 |
| 670.60 | 5,639 |
| 670.70 | 6,653 |
| 670.80 | 8,202 |
| 670.90 | 10,288 |
| 671.00 | 12,379 |
| 671.10 | 14,465 |
| 671.20 | 16,635 |
| 671.30 | 18,830 |
| 671.40 | 21,049 |
| 671.50 | 23,322 |
| 671.60 | 25,582 |
| 671.70 | 27,830 |
| 671.80 | 30,075 |
| 671.90 | 32,317 |
| 672.00 | 34,546 |
| 672.10 | 36,761 |
| 672.20 | 39,047 |
| 672.30 | 41,344 |
| 672.40 | 43,628 |
| 672.50 | 45,906 |
| 672.60 | 48,170 |
| 672.70 | 50,428 |
| 672.80 | 52,674 |
| 672.90 | 54,899 |
| 673.00 | 57,117 |
| 673.10 | 59,314 |
| 673.20 | 61,492 |
| 673.30 | 63,654 |
| 673.40 | 65,789 |
| 673.50 | 67,899 |
| 673.60 | 69,981 |
| 673.70 | 72,030 |
| 673.80 | 74,047 |
| 673.90 | 76,023 |
| 674.00 | 77,955 |
| 674.10 | 79,844 |
| 674.20 | 81,679 |
| 674.30 | 83,453 |
| 674.40 | 85,139 |
| 674.50 | 86,709 |
| 674.60 | 88,153 |
| 674.70 | 89,496 |
| 674.80 | 90,763 |
| 674.90 | 91,997 |
| 675.00 | 93,215 |
| 675.10 | 94,422 |
| 675.20 | 95,621 |
| 675.30 | 96,808 |
| 675.40 | 97,984 |
| 675.50 | 99,158 |
| 675.60 | 100,327 |
| 675.70 | 101,491 |
| 675.80 | 102,865 |
| 675.90 | 104,433 |
| 676.00 | 105,977 |
| 676.10 | 107,509 |
| 676.20 | 109,032 |
| 676.30 | 110,542 |
| 676.40 | 112,038 |
| 676.50 | 113,523 |
| 676.60 | 114,993 |
| 676.70 | 116,452 |
| 676.80 | 117,901 |
| 676.90 | 119,339 |
| 677.00 | 120,753 |
| 677.10 | 122,143 |
| 677.20 | 123,511 |
| 677.30 | 124,850 |
| 677.40 | 126,157 |
| 677.50 | 127,426 |
| 677.60 | 128,644 |
| 677.70 | 129,794 |
| 677.80 | 130,846 |
| 677.90 | 131,802 |
| 678.00 | 132,704 |
| 678.10 | 133,604 |
| 678.20 | 134,505 |
| 678.30 | 135,406 |
| 678.40 | 136,307 |
| 678.50 | 137,209 |
| 678.60 | 138,112 |
| 678.70 | 139,014 |
| 678.80 | 139,917 |
| 678.90 | **140,821** |

## Summary for Pond 8P: North System

| | | | | |
|---|---|---|---|---|
| Inflow | = | 0.65 cfs @ 204.42 hrs, | Volume= | 4.080 af |
| Outflow | = | 0.64 cfs @ 205.24 hrs, | Volume= | 4.079 af, Atten= 0%, Lag= 49.1 min |
| Primary | = | 0.54 cfs @ 205.24 hrs, | Volume= | 2.379 af |
| Secondary | = | 0.11 cfs @ 205.24 hrs, | Volume= | 1.700 af |
| Tertiary | = | 0.00 cfs @ 10.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 10.00-250.00 hrs, dt= 0.02 hrs
Peak Elev= 677.00' @ 205.24 hrs Surf.Area= 2,084 sf Storage= 605 cf

Plug-Flow detention time= 13.8 min calculated for 4.079 af (100% of inflow)
Center-of-Mass det. time= 13.0 min ( 10,509.8 - 10,496.8 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

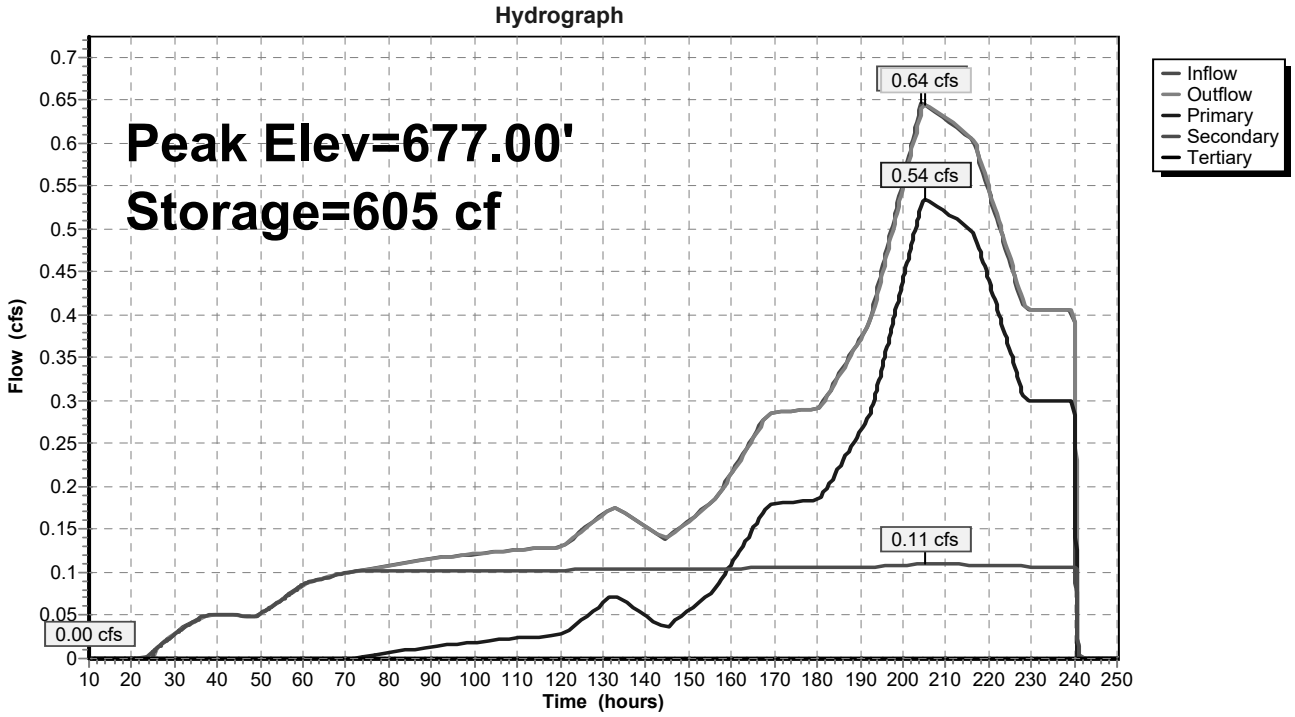
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.0' Crest Height |
| #3 | Tertiary | 678.50' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.0' Crest Height |

**Primary OutFlow** Max=0.54 cfs @ 205.24 hrs HW=677.00' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.54 cfs @ 2.41 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

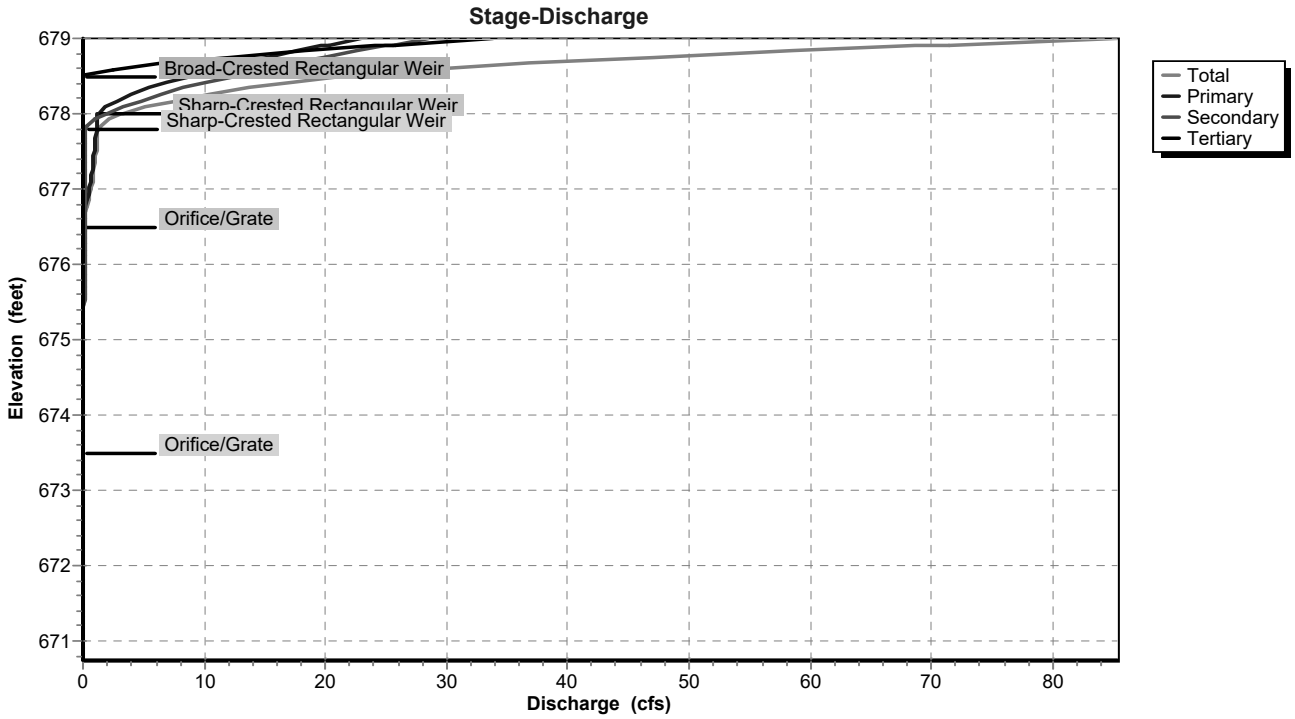
**Secondary OutFlow** Max=0.11 cfs @ 205.24 hrs HW=677.00' TW=672.15' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.11 cfs @ 8.93 fps)
└─**5=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 10.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

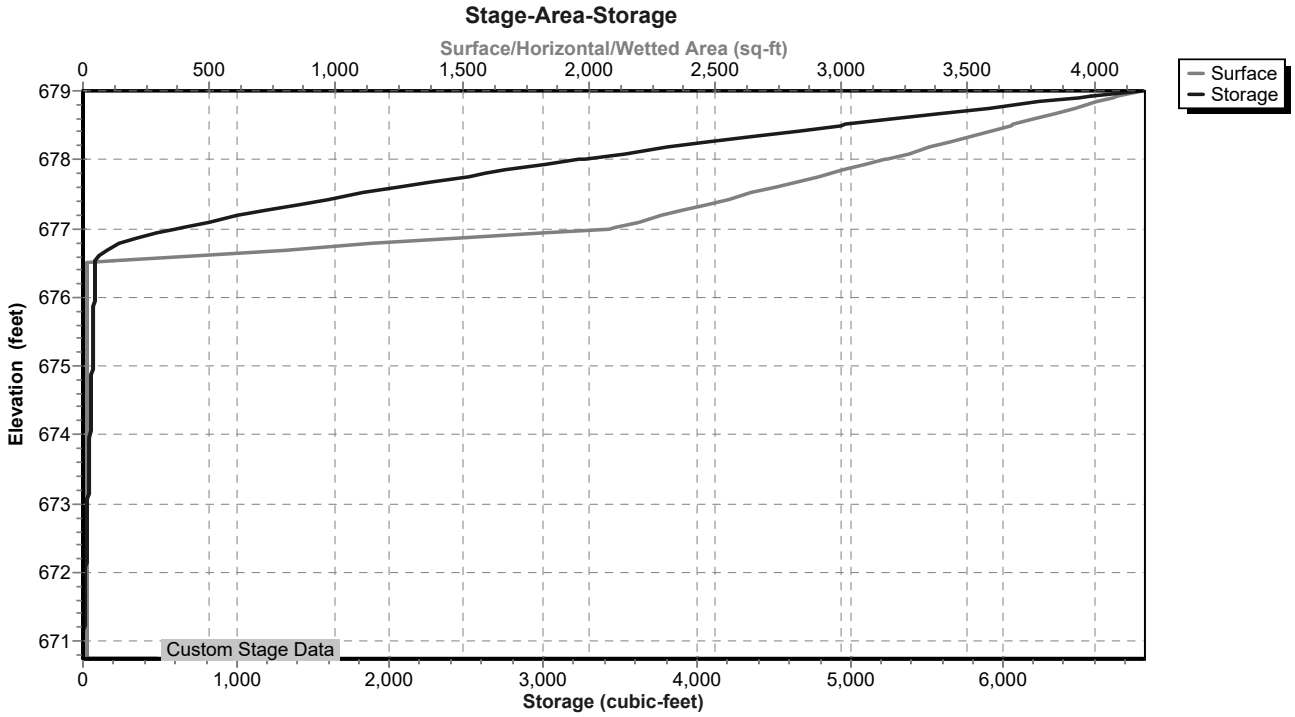
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 20.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.03 | 43 | 673.79 | 0.03 | 0.00 | 0.03 | 0.00 |
| 40.00 | 0.05 | 50 | 674.32 | 0.05 | 0.00 | 0.05 | 0.00 |
| 50.00 | 0.05 | 50 | 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 60.00 | 0.09 | 69 | 675.69 | 0.09 | 0.00 | 0.09 | 0.00 |
| 70.00 | 0.10 | 79 | 676.40 | 0.10 | 0.00 | 0.10 | 0.00 |
| 80.00 | 0.11 | 88 | 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 90.00 | 0.12 | 94 | 676.56 | 0.12 | 0.01 | 0.10 | 0.00 |
| 100.00 | 0.12 | 97 | 676.58 | 0.12 | 0.02 | 0.10 | 0.00 |
| 110.00 | 0.13 | 100 | 676.59 | 0.13 | 0.02 | 0.10 | 0.00 |
| 120.00 | 0.13 | 102 | 676.59 | 0.13 | 0.03 | 0.10 | 0.00 |
| 130.00 | 0.17 | 130 | 676.65 | 0.17 | 0.06 | 0.10 | 0.00 |
| 140.00 | 0.15 | 118 | 676.63 | 0.15 | 0.05 | 0.10 | 0.00 |
| 150.00 | 0.16 | 123 | 676.63 | 0.16 | 0.06 | 0.10 | 0.00 |
| 160.00 | 0.22 | 161 | 676.69 | 0.21 | 0.11 | 0.10 | 0.00 |
| 170.00 | 0.29 | 219 | 676.75 | 0.29 | 0.18 | 0.11 | 0.00 |
| 180.00 | 0.29 | 222 | 676.76 | 0.29 | 0.18 | 0.11 | 0.00 |
| 190.00 | 0.37 | 292 | 676.81 | 0.37 | 0.26 | 0.11 | 0.00 |
| 200.00 | **0.56** | **473** | **676.93** | **0.55** | **0.44** | **0.11** | 0.00 |
| 210.00 | **0.63** | **582** | **676.99** | **0.63** | **0.52** | **0.11** | 0.00 |
| 220.00 | 0.54 | 474 | 676.93 | 0.55 | 0.44 | 0.11 | 0.00 |
| 230.00 | 0.41 | 324 | 676.84 | 0.41 | 0.30 | 0.11 | 0.00 |
| 240.00 | 0.41 | 325 | 676.84 | 0.41 | 0.30 | 0.11 | 0.00 |
| 250.00 | 0.00 | 39 | 673.50 | 0.00 | 0.00 | 0.00 | 0.00 |

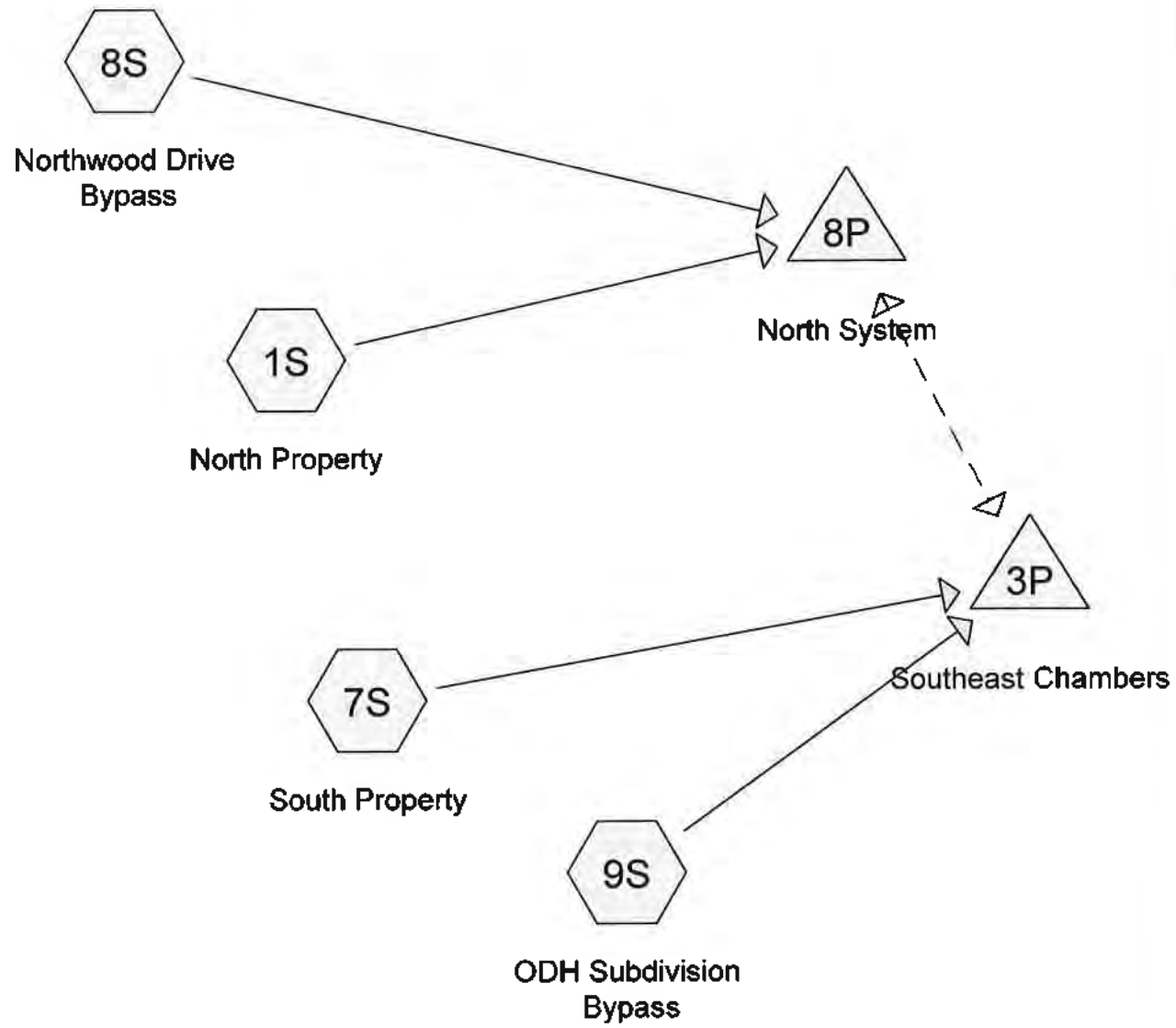
## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 24.61 | 9.86 | 13.70 | 1.05 |
| 678.75 | 46.70 | 15.13 | 19.77 | 11.80 |
| 678.95 | **76.77** | **21.27** | **26.68** | **28.82** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

# 2-YEAR AND 10-YEAR EVENT CALCULATIONS




Subcat Reach Pond Link

**Routing Diagram for D_ByPass_Detention 11.00 Ac_Cultec_4-19-20_6REV**
Prepared by {enter your company name here}, Printed 4/21/2020
HydroCAD® 10.00-25 s/n 00783 © 2019 HydroCAD Software Solutions LLC

## Summary for Subcatchment 1S: North Property

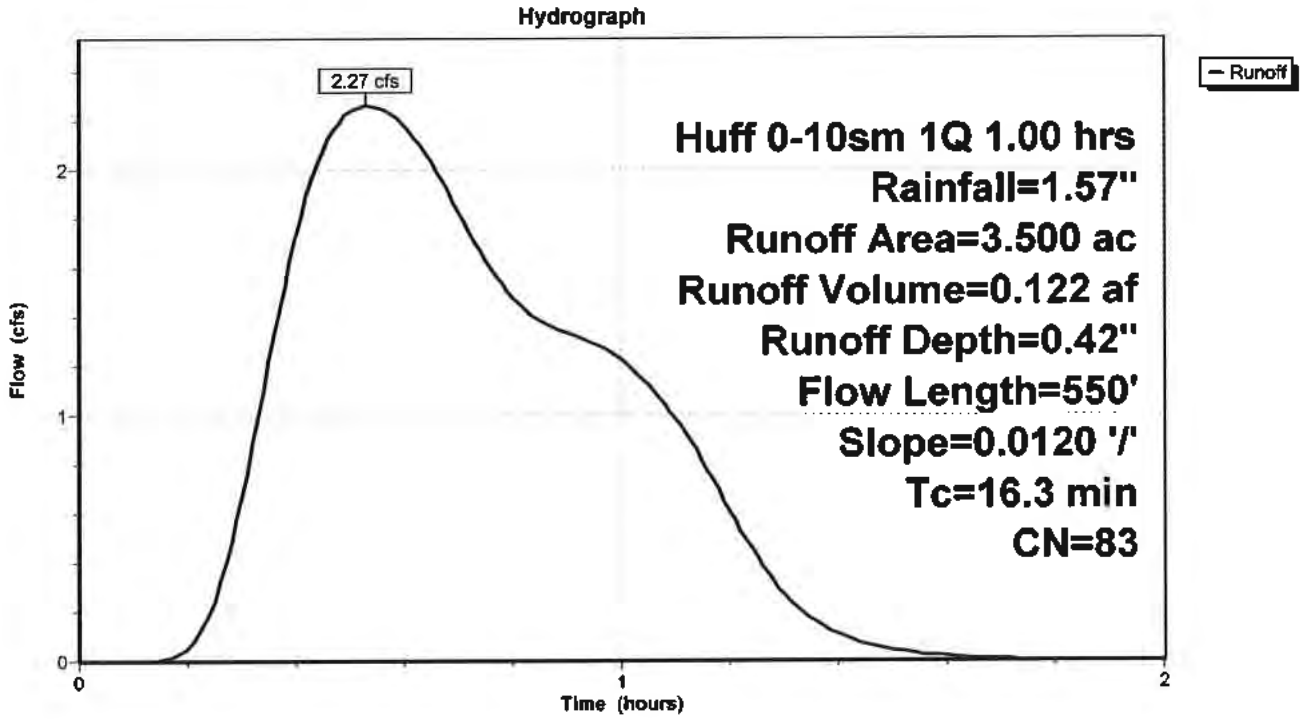
Runoff = 2.27 cfs @ 0.53 hrs, Volume= 0.122 af, Depth= 0.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=1.57"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 1.04 | 1.57 | 0.42 | 1.15 |
| 0.02 | 0.02 | 0.00 | 0.00 | 1.06 | 1.57 | 0.42 | 1.10 |
| 0.04 | 0.08 | 0.00 | 0.00 | 1.08 | 1.57 | 0.42 | 1.05 |
| 0.06 | 0.18 | 0.00 | 0.00 | 1.10 | 1.57 | 0.42 | 0.99 |
| 0.08 | 0.28 | 0.00 | 0.00 | 1.12 | 1.57 | 0.42 | 0.93 |
| 0.10 | 0.39 | 0.00 | 0.00 | 1.14 | 1.57 | 0.42 | 0.86 |
| 0.12 | 0.49 | 0.00 | 0.00 | 1.16 | 1.57 | 0.42 | 0.78 |
| 0.14 | 0.57 | 0.01 | 0.00 | 1.18 | 1.57 | 0.42 | 0.70 |
| 0.16 | 0.63 | 0.02 | 0.01 | 1.20 | 1.57 | 0.42 | 0.61 |
| 0.18 | 0.69 | 0.03 | 0.02 | 1.22 | 1.57 | 0.42 | 0.53 |
| 0.20 | 0.75 | 0.05 | 0.05 | 1.24 | 1.57 | 0.42 | 0.46 |
| 0.22 | 0.81 | 0.07 | 0.11 | 1.26 | 1.57 | 0.42 | 0.39 |
| 0.24 | 0.86 | 0.08 | 0.20 | 1.28 | 1.57 | 0.42 | 0.32 |
| 0.26 | 0.91 | 0.10 | 0.32 | 1.30 | 1.57 | 0.42 | 0.27 |
| 0.28 | 0.96 | 0.12 | 0.48 | 1.32 | 1.57 | 0.42 | 0.22 |
| 0.30 | 1.00 | 0.13 | 0.67 | 1.34 | 1.57 | 0.42 | 0.18 |
| 0.32 | 1.04 | 0.15 | 0.88 | 1.36 | 1.57 | 0.42 | 0.15 |
| 0.34 | 1.07 | 0.16 | 1.10 | 1.38 | 1.57 | 0.42 | 0.13 |
| 0.36 | 1.10 | 0.17 | 1.32 | 1.40 | 1.57 | 0.42 | 0.11 |
| 0.38 | 1.13 | 0.19 | 1.54 | 1.42 | 1.57 | 0.42 | 0.09 |
| 0.40 | 1.16 | 0.20 | 1.73 | 1.44 | 1.57 | 0.42 | 0.07 |
| 0.42 | 1.18 | 0.21 | 1.90 | 1.46 | 1.57 | 0.42 | 0.06 |
| 0.44 | 1.21 | 0.22 | 2.03 | 1.48 | 1.57 | 0.42 | 0.05 |
| 0.46 | 1.23 | 0.24 | 2.13 | 1.50 | 1.57 | 0.42 | 0.04 |
| 0.48 | 1.26 | 0.25 | 2.20 | 1.52 | 1.57 | 0.42 | 0.04 |
| 0.50 | 1.28 | 0.26 | 2.24 | 1.54 | 1.57 | 0.42 | 0.03 |
| 0.52 | 1.29 | 0.27 | **2.26** | 1.56 | 1.57 | 0.42 | 0.02 |
| 0.54 | 1.31 | 0.27 | **2.26** | 1.58 | 1.57 | 0.42 | 0.02 |
| 0.56 | 1.32 | 0.28 | 2.25 | 1.60 | 1.57 | 0.42 | 0.02 |
| 0.58 | 1.34 | 0.29 | 2.22 | 1.62 | 1.57 | 0.42 | 0.01 |
| 0.60 | 1.35 | 0.29 | 2.19 | 1.64 | 1.57 | 0.42 | 0.01 |
| 0.62 | 1.36 | 0.30 | 2.13 | 1.66 | 1.57 | 0.42 | 0.01 |
| 0.64 | 1.37 | 0.31 | 2.07 | 1.68 | 1.57 | 0.42 | 0.01 |
| 0.66 | 1.39 | 0.32 | 1.99 | 1.70 | 1.57 | 0.42 | 0.01 |
| 0.68 | 1.40 | 0.32 | 1.91 | 1.72 | 1.57 | 0.42 | 0.00 |
| 0.70 | 1.41 | 0.33 | 1.83 | 1.74 | 1.57 | 0.42 | 0.00 |
| 0.72 | 1.42 | 0.34 | 1.75 | 1.76 | 1.57 | 0.42 | 0.00 |
| 0.74 | 1.44 | 0.34 | 1.67 | 1.78 | 1.57 | 0.42 | 0.00 |
| 0.76 | 1.45 | 0.35 | 1.60 | 1.80 | 1.57 | 0.42 | 0.00 |
| 0.78 | 1.46 | 0.36 | 1.54 | 1.82 | 1.57 | 0.42 | 0.00 |
| 0.80 | 1.47 | 0.36 | 1.48 | 1.84 | 1.57 | 0.42 | 0.00 |
| 0.82 | 1.49 | 0.37 | 1.44 | 1.86 | 1.57 | 0.42 | 0.00 |
| 0.84 | 1.50 | 0.38 | 1.40 | 1.88 | 1.57 | 0.42 | 0.00 |
| 0.86 | 1.51 | 0.39 | 1.38 | 1.90 | 1.57 | 0.42 | 0.00 |
| 0.88 | 1.52 | 0.39 | 1.35 | 1.92 | 1.57 | 0.42 | 0.00 |
| 0.90 | 1.53 | 0.40 | 1.34 | 1.94 | 1.57 | 0.42 | 0.00 |
| 0.92 | 1.54 | 0.40 | 1.32 | 1.96 | 1.57 | 0.42 | 0.00 |
| 0.94 | 1.54 | 0.40 | 1.30 | 1.98 | 1.57 | 0.42 | 0.00 |
| 0.96 | 1.55 | 0.41 | 1.29 | 2.00 | 1.57 | 0.42 | 0.00 |
| 0.98 | 1.56 | 0.41 | 1.26 | | | | |
| 1.00 | **1.57** | **0.42** | 1.23 | | | | |
| 1.02 | 1.57 | 0.42 | 1.19 | | | | |

## Summary for Subcatchment 7S: South Property

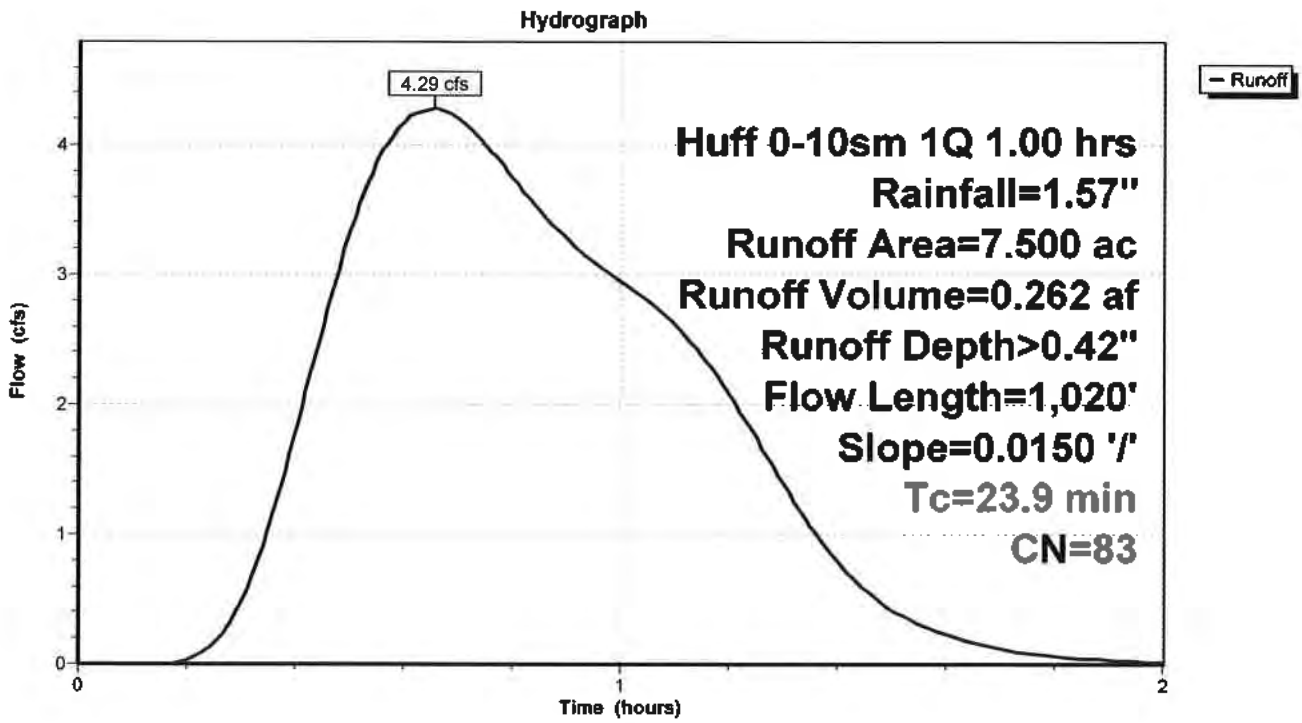
Runoff = 4.29 cfs @ 0.66 hrs, Volume= 0.262 af, Depth> 0.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=1.57"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 1.04 | 1.57 | 0.42 | 2.83 |
| 0.02 | 0.02 | 0.00 | 0.00 | 1.06 | 1.57 | 0.42 | 2.77 |
| 0.04 | 0.08 | 0.00 | 0.00 | 1.08 | 1.57 | 0.42 | 2.70 |
| 0.06 | 0.18 | 0.00 | 0.00 | 1.10 | 1.57 | 0.42 | 2.61 |
| 0.08 | 0.28 | 0.00 | 0.00 | 1.12 | 1.57 | 0.42 | 2.52 |
| 0.10 | 0.39 | 0.00 | 0.00 | 1.14 | 1.57 | 0.42 | 2.43 |
| 0.12 | 0.49 | 0.00 | 0.00 | 1.16 | 1.57 | 0.42 | 2.32 |
| 0.14 | 0.57 | 0.01 | 0.00 | 1.18 | 1.57 | 0.42 | 2.21 |
| 0.16 | 0.63 | 0.02 | 0.00 | 1.20 | 1.57 | 0.42 | 2.09 |
| 0.18 | 0.69 | 0.03 | 0.01 | 1.22 | 1.57 | 0.42 | 1.95 |
| 0.20 | 0.75 | 0.05 | 0.03 | 1.24 | 1.57 | 0.42 | 1.81 |
| 0.22 | 0.81 | 0.07 | 0.07 | 1.26 | 1.57 | 0.42 | 1.67 |
| 0.24 | 0.86 | 0.08 | 0.12 | 1.28 | 1.57 | 0.42 | 1.52 |
| 0.26 | 0.91 | 0.10 | 0.20 | 1.30 | 1.57 | 0.42 | 1.39 |
| 0.28 | 0.96 | 0.12 | 0.32 | 1.32 | 1.57 | 0.42 | 1.25 |
| 0.30 | 1.00 | 0.13 | 0.47 | 1.34 | 1.57 | 0.42 | 1.13 |
| 0.32 | 1.04 | 0.15 | 0.67 | 1.36 | 1.57 | 0.42 | 1.01 |
| 0.34 | 1.07 | 0.16 | 0.90 | 1.38 | 1.57 | 0.42 | 0.90 |
| 0.36 | 1.10 | 0.17 | 1.17 | 1.40 | 1.57 | 0.42 | 0.80 |
| 0.38 | 1.13 | 0.19 | 1.47 | 1.42 | 1.57 | 0.42 | 0.70 |
| 0.40 | 1.16 | 0.20 | 1.78 | 1.44 | 1.57 | 0.42 | 0.62 |
| 0.42 | 1.18 | 0.21 | 2.11 | 1.46 | 1.57 | 0.42 | 0.54 |
| 0.44 | 1.21 | 0.22 | 2.44 | 1.48 | 1.57 | 0.42 | 0.48 |
| 0.46 | 1.23 | 0.24 | 2.75 | 1.50 | 1.57 | 0.42 | 0.42 |
| 0.48 | 1.26 | 0.25 | 3.05 | 1.52 | 1.57 | 0.42 | 0.37 |
| 0.50 | 1.28 | 0.26 | 3.32 | 1.54 | 1.57 | 0.42 | 0.33 |
| 0.52 | 1.29 | 0.27 | 3.56 | 1.56 | 1.57 | 0.42 | 0.29 |
| 0.54 | 1.31 | 0.27 | 3.77 | 1.58 | 1.57 | 0.42 | 0.26 |
| 0.56 | 1.32 | 0.28 | 3.96 | 1.60 | 1.57 | 0.42 | 0.23 |
| 0.58 | 1.34 | 0.29 | 4.08 | 1.62 | 1.57 | 0.42 | 0.20 |
| 0.60 | 1.35 | 0.29 | 4.18 | 1.64 | 1.57 | 0.42 | 0.18 |
| 0.62 | 1.36 | 0.30 | 4.25 | 1.66 | 1.57 | 0.42 | 0.15 |
| 0.64 | 1.37 | 0.31 | 4.28 | 1.68 | 1.57 | 0.42 | 0.14 |
| 0.66 | 1.39 | 0.32 | **4.28** | 1.70 | 1.57 | 0.42 | 0.12 |
| 0.68 | 1.40 | 0.32 | 4.25 | 1.72 | 1.57 | 0.42 | 0.11 |
| 0.70 | 1.41 | 0.33 | 4.20 | 1.74 | 1.57 | 0.42 | 0.09 |
| 0.72 | 1.42 | 0.34 | 4.13 | 1.76 | 1.57 | 0.42 | 0.08 |
| 0.74 | 1.44 | 0.34 | 4.04 | 1.78 | 1.57 | 0.42 | 0.07 |
| 0.76 | 1.45 | 0.35 | 3.95 | 1.80 | 1.57 | 0.42 | 0.06 |
| 0.78 | 1.46 | 0.36 | 3.85 | 1.82 | 1.57 | 0.42 | 0.05 |
| 0.80 | 1.47 | 0.36 | 3.74 | 1.84 | 1.57 | 0.42 | 0.05 |
| 0.82 | 1.49 | 0.37 | 3.64 | 1.86 | 1.57 | 0.42 | 0.04 |
| 0.84 | 1.50 | 0.38 | 3.54 | 1.88 | 1.57 | 0.42 | 0.04 |
| 0.86 | 1.51 | 0.39 | 3.44 | 1.90 | 1.57 | 0.42 | 0.03 |
| 0.88 | 1.52 | 0.39 | 3.36 | 1.92 | 1.57 | 0.42 | 0.03 |
| 0.90 | 1.53 | 0.40 | 3.27 | 1.94 | 1.57 | 0.42 | 0.02 |
| 0.92 | 1.54 | 0.40 | 3.20 | 1.96 | 1.57 | 0.42 | 0.02 |
| 0.94 | 1.54 | 0.40 | 3.13 | 1.98 | 1.57 | 0.42 | 0.02 |
| 0.96 | 1.55 | 0.41 | 3.07 | 2.00 | 1.57 | 0.42 | 0.02 |
| 0.98 | 1.56 | 0.41 | 3.01 | | | | |
| 1.00 | **1.57** | **0.42** | 2.95 | | | | |
| 1.02 | 1.57 | 0.42 | 2.89 | | | | |

## Summary for Subcatchment 8S: Northwood Drive Bypass

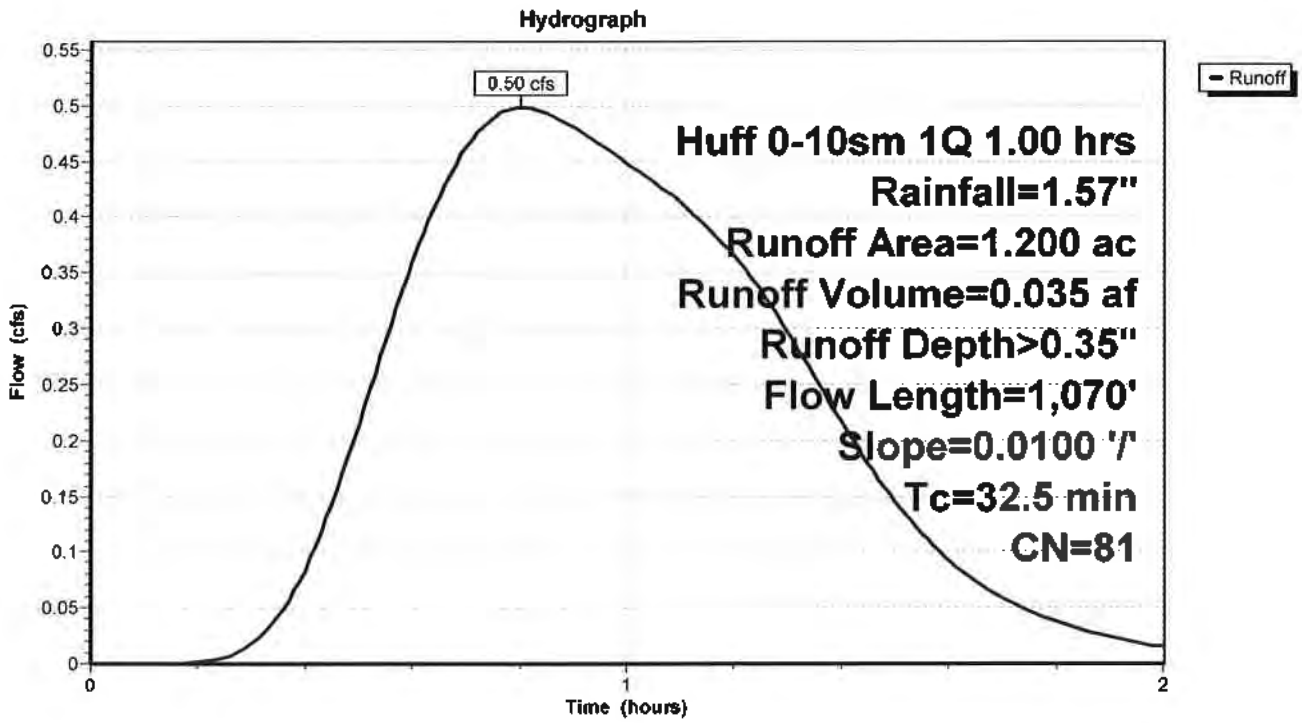
Runoff = 0.50 cfs @ 0.80 hrs, Volume= 0.035 af, Depth> 0.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=1.57"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

### Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 1.04 | 1.57 | 0.35 | 0.43 |
| 0.02 | 0.02 | 0.00 | 0.00 | 1.06 | 1.57 | 0.35 | 0.43 |
| 0.04 | 0.08 | 0.00 | 0.00 | 1.08 | 1.57 | 0.35 | 0.42 |
| 0.06 | 0.18 | 0.00 | 0.00 | 1.10 | 1.57 | 0.35 | 0.41 |
| 0.08 | 0.28 | 0.00 | 0.00 | 1.12 | 1.57 | 0.35 | 0.40 |
| 0.10 | 0.39 | 0.00 | 0.00 | 1.14 | 1.57 | 0.35 | 0.40 |
| 0.12 | 0.49 | 0.00 | 0.00 | 1.16 | 1.57 | 0.35 | 0.39 |
| 0.14 | 0.57 | 0.00 | 0.00 | 1.18 | 1.57 | 0.35 | 0.38 |
| 0.16 | 0.63 | 0.01 | 0.00 | 1.20 | 1.57 | 0.35 | 0.37 |
| 0.18 | 0.69 | 0.02 | 0.00 | 1.22 | 1.57 | 0.35 | 0.35 |
| 0.20 | 0.75 | 0.03 | 0.00 | 1.24 | 1.57 | 0.35 | 0.34 |
| 0.22 | 0.81 | 0.04 | 0.00 | 1.26 | 1.57 | 0.35 | 0.33 |
| 0.24 | 0.86 | 0.06 | 0.00 | 1.28 | 1.57 | 0.35 | 0.31 |
| 0.26 | 0.91 | 0.07 | 0.01 | 1.30 | 1.57 | 0.35 | 0.30 |
| 0.28 | 0.96 | 0.08 | 0.01 | 1.32 | 1.57 | 0.35 | 0.28 |
| 0.30 | 1.00 | 0.10 | 0.02 | 1.34 | 1.57 | 0.35 | 0.27 |
| 0.32 | 1.04 | 0.11 | 0.03 | 1.36 | 1.57 | 0.35 | 0.25 |
| 0.34 | 1.07 | 0.12 | 0.04 | 1.38 | 1.57 | 0.35 | 0.23 |
| 0.36 | 1.10 | 0.13 | 0.05 | 1.40 | 1.57 | 0.35 | 0.22 |
| 0.38 | 1.13 | 0.15 | 0.07 | 1.42 | 1.57 | 0.35 | 0.20 |
| 0.40 | 1.16 | 0.16 | 0.08 | 1.44 | 1.57 | 0.35 | 0.19 |
| 0.42 | 1.18 | 0.17 | 0.11 | 1.46 | 1.57 | 0.35 | 0.17 |
| 0.44 | 1.21 | 0.18 | 0.13 | 1.48 | 1.57 | 0.35 | 0.16 |
| 0.46 | 1.23 | 0.19 | 0.16 | 1.50 | 1.57 | 0.35 | 0.15 |
| 0.48 | 1.26 | 0.20 | 0.18 | 1.52 | 1.57 | 0.35 | 0.13 |
| 0.50 | 1.28 | 0.21 | 0.21 | 1.54 | 1.57 | 0.35 | 0.12 |
| 0.52 | 1.29 | 0.21 | 0.24 | 1.56 | 1.57 | 0.35 | 0.11 |
| 0.54 | 1.31 | 0.22 | 0.27 | 1.58 | 1.57 | 0.35 | 0.10 |
| 0.56 | 1.32 | 0.23 | 0.30 | 1.60 | 1.57 | 0.35 | 0.09 |
| 0.58 | 1.34 | 0.23 | 0.33 | 1.62 | 1.57 | 0.35 | 0.08 |
| 0.60 | 1.35 | 0.24 | 0.36 | 1.64 | 1.57 | 0.35 | 0.08 |
| 0.62 | 1.36 | 0.25 | 0.39 | 1.66 | 1.57 | 0.35 | 0.07 |
| 0.64 | 1.37 | 0.25 | 0.41 | 1.68 | 1.57 | 0.35 | 0.06 |
| 0.66 | 1.39 | 0.26 | 0.43 | 1.70 | 1.57 | 0.35 | 0.06 |
| 0.68 | 1.40 | 0.26 | 0.45 | 1.72 | 1.57 | 0.35 | 0.05 |
| 0.70 | 1.41 | 0.27 | 0.46 | 1.74 | 1.57 | 0.35 | 0.05 |
| 0.72 | 1.42 | 0.28 | 0.48 | 1.76 | 1.57 | 0.35 | 0.04 |
| 0.74 | 1.44 | 0.28 | 0.49 | 1.78 | 1.57 | 0.35 | 0.04 |
| 0.76 | 1.45 | 0.29 | 0.49 | 1.80 | 1.57 | 0.35 | 0.04 |
| 0.78 | 1.46 | 0.30 | 0.50 | 1.82 | 1.57 | 0.35 | 0.03 |
| 0.80 | 1.47 | 0.30 | **0.50** | 1.84 | 1.57 | 0.35 | 0.03 |
| 0.82 | 1.49 | 0.31 | 0.50 | 1.86 | 1.57 | 0.35 | 0.03 |
| 0.84 | 1.50 | 0.31 | 0.50 | 1.88 | 1.57 | 0.35 | 0.03 |
| 0.86 | 1.51 | 0.32 | 0.49 | 1.90 | 1.57 | 0.35 | 0.02 |
| 0.88 | 1.52 | 0.33 | 0.49 | 1.92 | 1.57 | 0.35 | 0.02 |
| 0.90 | 1.53 | 0.33 | 0.48 | 1.94 | 1.57 | 0.35 | 0.02 |
| 0.92 | 1.54 | 0.33 | 0.47 | 1.96 | 1.57 | 0.35 | 0.02 |
| 0.94 | 1.54 | 0.34 | 0.47 | 1.98 | 1.57 | 0.35 | 0.02 |
| 0.96 | 1.55 | 0.34 | 0.46 | 2.00 | 1.57 | 0.35 | 0.01 |
| 0.98 | 1.56 | 0.35 | 0.46 | | | | |
| 1.00 | **1.57** | **0.35** | 0.45 | | | | |
| 1.02 | 1.57 | 0.35 | 0.44 | | | | |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

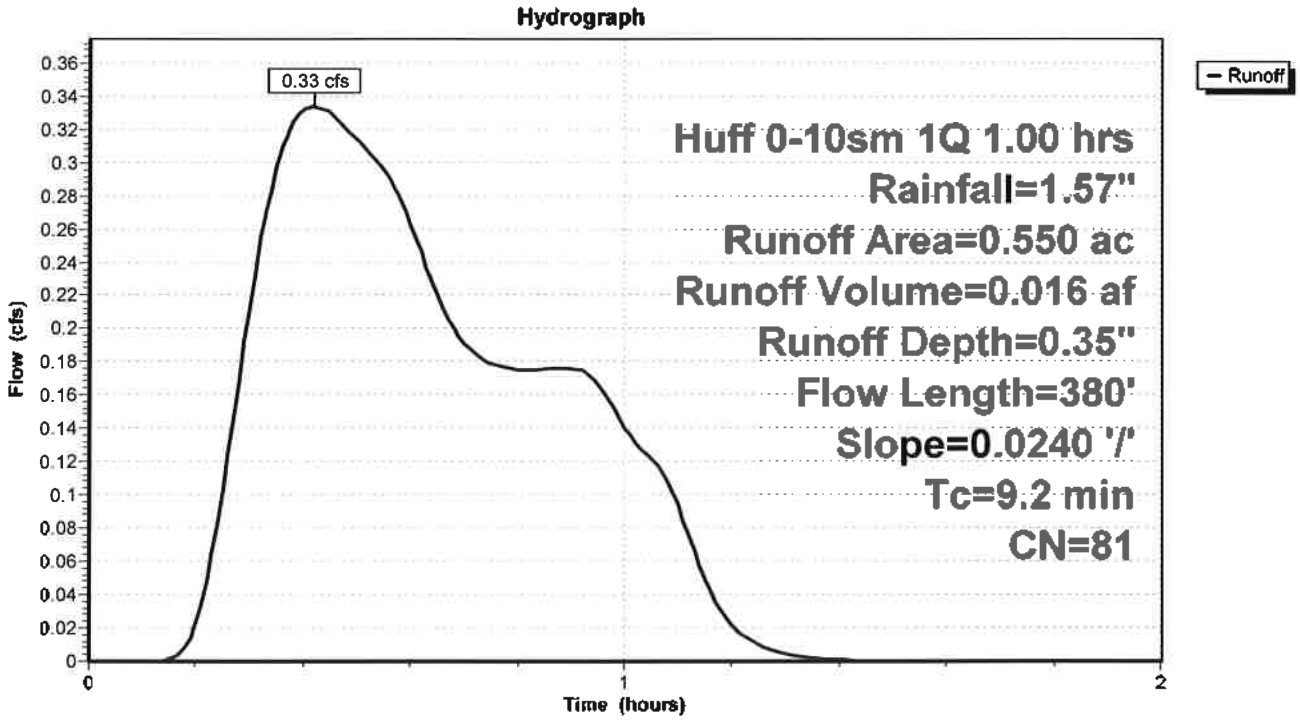
Runoff = 0.33 cfs @ 0.42 hrs, Volume= 0.016 af, Depth= 0.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=1.57"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

### Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 1.04 | 1.57 | 0.35 | 0.12 |
| 0.02 | 0.02 | 0.00 | 0.00 | 1.06 | 1.57 | 0.35 | 0.12 |
| 0.04 | 0.08 | 0.00 | 0.00 | 1.08 | 1.57 | 0.35 | 0.11 |
| 0.06 | 0.18 | 0.00 | 0.00 | 1.10 | 1.57 | 0.35 | 0.09 |
| 0.08 | 0.28 | 0.00 | 0.00 | 1.12 | 1.57 | 0.35 | 0.08 |
| 0.10 | 0.39 | 0.00 | 0.00 | 1.14 | 1.57 | 0.35 | 0.06 |
| 0.12 | 0.49 | 0.00 | 0.00 | 1.16 | 1.57 | 0.35 | 0.04 |
| 0.14 | 0.57 | 0.00 | 0.00 | 1.18 | 1.57 | 0.35 | 0.03 |
| 0.16 | 0.63 | 0.01 | 0.00 | 1.20 | 1.57 | 0.35 | 0.02 |
| 0.18 | 0.69 | 0.02 | 0.01 | 1.22 | 1.57 | 0.35 | 0.02 |
| 0.20 | 0.75 | 0.03 | 0.02 | 1.24 | 1.57 | 0.35 | 0.01 |
| 0.22 | 0.81 | 0.04 | 0.05 | 1.26 | 1.57 | 0.35 | 0.01 |
| 0.24 | 0.86 | 0.06 | 0.08 | 1.28 | 1.57 | 0.35 | 0.01 |
| 0.26 | 0.91 | 0.07 | 0.12 | 1.30 | 1.57 | 0.35 | 0.00 |
| 0.28 | 0.96 | 0.08 | 0.17 | 1.32 | 1.57 | 0.35 | 0.00 |
| 0.30 | 1.00 | 0.10 | 0.21 | 1.34 | 1.57 | 0.35 | 0.00 |
| 0.32 | 1.04 | 0.11 | 0.25 | 1.36 | 1.57 | 0.35 | 0.00 |
| 0.34 | 1.07 | 0.12 | 0.28 | 1.38 | 1.57 | 0.35 | 0.00 |
| 0.36 | 1.10 | 0.13 | 0.31 | 1.40 | 1.57 | 0.35 | 0.00 |
| 0.38 | 1.13 | 0.15 | 0.32 | 1.42 | 1.57 | 0.35 | 0.00 |
| 0.40 | 1.16 | 0.16 | 0.33 | 1.44 | 1.57 | 0.35 | 0.00 |
| 0.42 | 1.18 | 0.17 | **0.33** | 1.46 | 1.57 | 0.35 | 0.00 |
| 0.44 | 1.21 | 0.18 | 0.33 | 1.48 | 1.57 | 0.35 | 0.00 |
| 0.46 | 1.23 | 0.19 | 0.33 | 1.50 | 1.57 | 0.35 | 0.00 |
| 0.48 | 1.26 | 0.20 | 0.32 | 1.52 | 1.57 | 0.35 | 0.00 |
| 0.50 | 1.28 | 0.21 | 0.31 | 1.54 | 1.57 | 0.35 | 0.00 |
| 0.52 | 1.29 | 0.21 | 0.31 | 1.56 | 1.57 | 0.35 | 0.00 |
| 0.54 | 1.31 | 0.22 | 0.30 | 1.58 | 1.57 | 0.35 | 0.00 |
| 0.56 | 1.32 | 0.23 | 0.29 | 1.60 | 1.57 | 0.35 | 0.00 |
| 0.58 | 1.34 | 0.23 | 0.28 | 1.62 | 1.57 | 0.35 | 0.00 |
| 0.60 | 1.35 | 0.24 | 0.26 | 1.64 | 1.57 | 0.35 | 0.00 |
| 0.62 | 1.36 | 0.25 | 0.25 | 1.66 | 1.57 | 0.35 | 0.00 |
| 0.64 | 1.37 | 0.25 | 0.23 | 1.68 | 1.57 | 0.35 | 0.00 |
| 0.66 | 1.39 | 0.26 | 0.21 | 1.70 | 1.57 | 0.35 | 0.00 |
| 0.68 | 1.40 | 0.26 | 0.20 | 1.72 | 1.57 | 0.35 | 0.00 |
| 0.70 | 1.41 | 0.27 | 0.19 | 1.74 | 1.57 | 0.35 | 0.00 |
| 0.72 | 1.42 | 0.28 | 0.18 | 1.76 | 1.57 | 0.35 | 0.00 |
| 0.74 | 1.44 | 0.28 | 0.18 | 1.78 | 1.57 | 0.35 | 0.00 |
| 0.76 | 1.45 | 0.29 | 0.18 | 1.80 | 1.57 | 0.35 | 0.00 |
| 0.78 | 1.46 | 0.30 | 0.18 | 1.82 | 1.57 | 0.35 | 0.00 |
| 0.80 | 1.47 | 0.30 | 0.18 | 1.84 | 1.57 | 0.35 | 0.00 |
| 0.82 | 1.49 | 0.31 | 0.18 | 1.86 | 1.57 | 0.35 | 0.00 |
| 0.84 | 1.50 | 0.31 | 0.18 | 1.88 | 1.57 | 0.35 | 0.00 |
| 0.86 | 1.51 | 0.32 | 0.18 | 1.90 | 1.57 | 0.35 | 0.00 |
| 0.88 | 1.52 | 0.33 | 0.18 | 1.92 | 1.57 | 0.35 | 0.00 |
| 0.90 | 1.53 | 0.33 | 0.18 | 1.94 | 1.57 | 0.35 | 0.00 |
| 0.92 | 1.54 | 0.33 | 0.18 | 1.96 | 1.57 | 0.35 | 0.00 |
| 0.94 | 1.54 | 0.34 | 0.17 | 1.98 | 1.57 | 0.35 | 0.00 |
| 0.96 | 1.55 | 0.34 | 0.16 | 2.00 | 1.57 | 0.35 | 0.00 |
| 0.98 | 1.56 | 0.35 | 0.15 | | | | |
| 1.00 | **1.57** | **0.35** | 0.14 | | | | |
| 1.02 | 1.57 | 0.35 | 0.13 | | | | |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 4.62 cfs @ | 0.64 hrs, | Volume= | 0.300 af |
| Outflow | = | 0.46 cfs @ | 1.54 hrs, | Volume= | 0.051 af, Atten= 90%, Lag= 53.9 min |
| Primary | = | 0.46 cfs @ | 1.54 hrs, | Volume= | 0.051 af |
| Secondary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Peak Elev= 670.95' @ 1.54 hrs Surf.Area= 28,220 sf Storage= 11,255 cf

Plug-Flow detention time= 53.0 min calculated for 0.051 af (17% of inflow)
Center-of-Mass det. time= 28.6 min ( 79.4 - 50.8 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.40' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

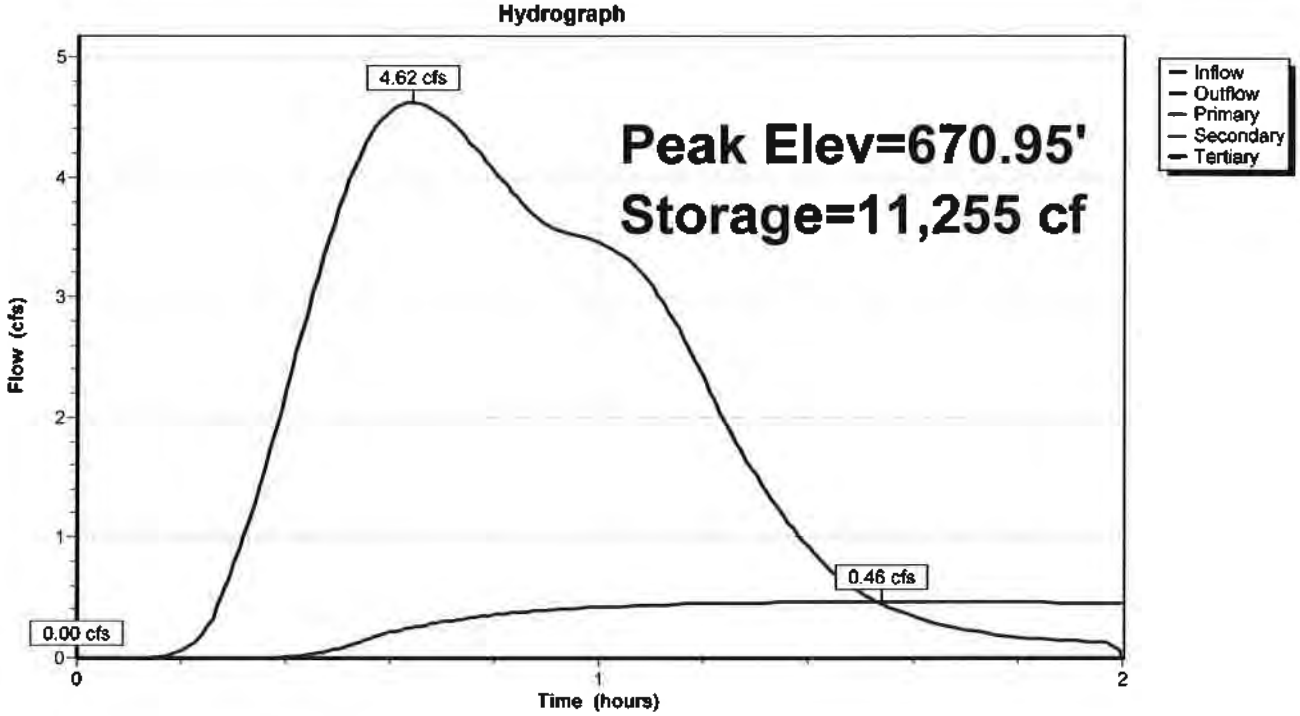
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=0.46 cfs @ 1.54 hrs HW=670.95' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.46 cfs @ 4.19 fps)

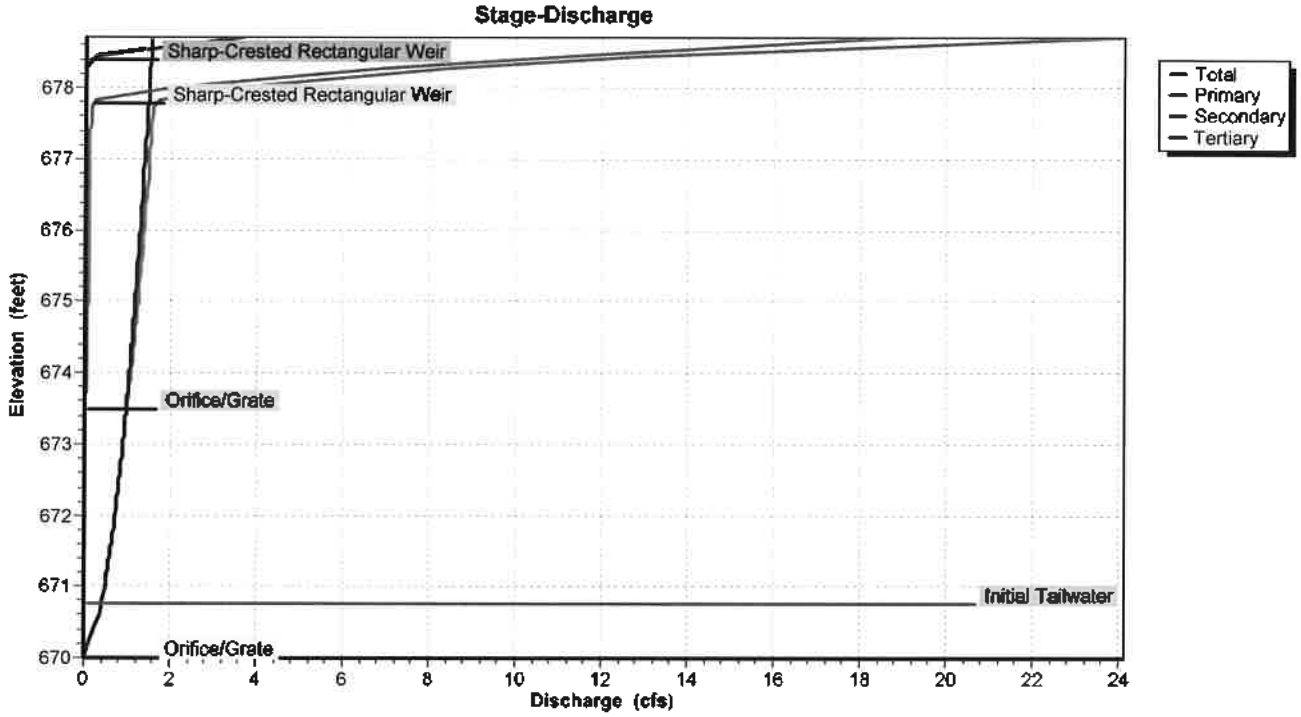
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

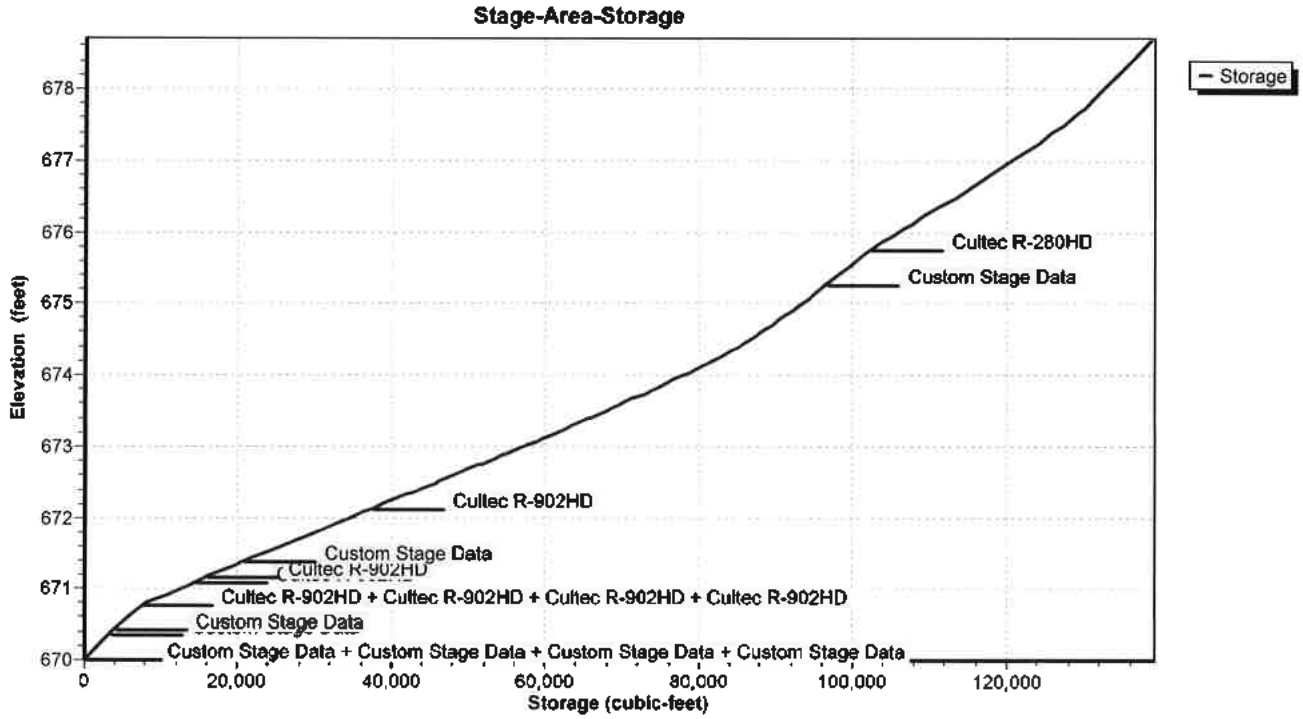
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 0.05 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.10 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.15 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.05 | 2 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.25 | 0.26 | 24 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.30 | 0.79 | 105 | 670.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.35 | 1.44 | 291 | 670.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 2.22 | 604 | 670.07 | 0.01 | 0.01 | 0.00 | 0.00 |
| 0.45 | 3.04 | 1,060 | 670.12 | 0.04 | 0.04 | 0.00 | 0.00 |
| 0.50 | 3.75 | 1,650 | 670.18 | 0.08 | 0.08 | 0.00 | 0.00 |
| 0.55 | 4.28 | 2,347 | 670.26 | 0.14 | 0.14 | 0.00 | 0.00 |
| 0.60 | **4.56** | 3,110 | 670.35 | 0.21 | 0.21 | 0.00 | 0.00 |
| 0.65 | **4.62** | 3,897 | 670.43 | 0.26 | 0.26 | 0.00 | 0.00 |
| 0.70 | 4.51 | 4,673 | 670.50 | 0.30 | 0.30 | 0.00 | 0.00 |
| 0.75 | 4.30 | 5,414 | 670.58 | 0.33 | 0.33 | 0.00 | 0.00 |
| 0.80 | 4.04 | 6,107 | 670.65 | 0.36 | 0.36 | 0.00 | 0.00 |
| 0.85 | 3.79 | 6,749 | 670.71 | 0.38 | 0.38 | 0.00 | 0.00 |
| 0.90 | 3.58 | 7,344 | 670.76 | 0.40 | 0.40 | 0.00 | 0.00 |
| 0.95 | 3.52 | 7,912 | 670.79 | 0.41 | 0.41 | 0.00 | 0.00 |
| 1.00 | 3.45 | 8,467 | 670.81 | 0.42 | 0.42 | 0.00 | 0.00 |
| 1.05 | 3.32 | 9,004 | 670.84 | 0.43 | 0.43 | 0.00 | 0.00 |
| 1.10 | 3.09 | 9,510 | 670.86 | 0.44 | 0.44 | 0.00 | 0.00 |
| 1.15 | 2.74 | 9,962 | 670.88 | 0.44 | 0.44 | 0.00 | 0.00 |
| 1.20 | 2.32 | 10,345 | 670.90 | 0.45 | 0.45 | 0.00 | 0.00 |
| 1.25 | 1.87 | 10,648 | 670.92 | 0.45 | 0.45 | 0.00 | 0.00 |
| 1.30 | 1.51 | 10,876 | 670.93 | 0.46 | 0.46 | 0.00 | 0.00 |
| 1.35 | 1.19 | 11,042 | 670.94 | 0.46 | 0.46 | 0.00 | 0.00 |
| 1.40 | 0.92 | 11,153 | 670.94 | 0.46 | 0.46 | 0.00 | 0.00 |
| 1.45 | 0.70 | 11,218 | 670.94 | 0.46 | 0.46 | 0.00 | 0.00 |
| 1.50 | 0.54 | **11,249** | **670.95** | **0.46** | **0.46** | 0.00 | 0.00 |
| 1.55 | 0.43 | **11,254** | **670.95** | **0.46** | **0.46** | 0.00 | 0.00 |
| 1.60 | 0.34 | 11,241 | 670.95 | 0.46 | 0.46 | 0.00 | 0.00 |
| 1.65 | 0.28 | 11,215 | 670.94 | 0.46 | 0.46 | 0.00 | 0.00 |
| 1.70 | 0.23 | 11,178 | 670.94 | 0.46 | 0.46 | 0.00 | 0.00 |
| 1.75 | 0.20 | 11,135 | 670.94 | 0.46 | 0.46 | 0.00 | 0.00 |
| 1.80 | 0.17 | 11,086 | 670.94 | 0.46 | 0.46 | 0.00 | 0.00 |
| 1.85 | 0.16 | 11,033 | 670.94 | 0.46 | 0.46 | 0.00 | 0.00 |
| 1.90 | 0.14 | 10,977 | 670.93 | 0.46 | 0.46 | 0.00 | 0.00 |
| 1.95 | 0.13 | 10,919 | 670.93 | 0.46 | 0.46 | 0.00 | 0.00 |
| 2.00 | 0.00 | 10,860 | 670.93 | 0.46 | 0.46 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 18.46 | 1.54 | 15.13 | 1.79 |
| 678.80 | **28.12** | **1.56** | **21.42** | **5.14** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 2.56 cfs @ | 0.57 hrs, | Volume= | 0.157 af |
| Outflow | = | 1.56 cfs @ | 1.05 hrs, | Volume= | 0.146 af, Atten= 39%, Lag= 29.1 min |
| Primary | = | 1.16 cfs @ | 1.05 hrs, | Volume= | 0.125 af |
| Secondary | = | 0.40 cfs @ | 1.05 hrs, | Volume= | 0.022 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Peak Elev= 677.86' @ 1.05 hrs Surf.Area= 3,020 sf Storage= 2,796 cf

Plug-Flow detention time= 25.6 min calculated for 0.146 af (93% of inflow)
Center-of-Mass det. time= 22.7 min ( 69.4 - 46.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

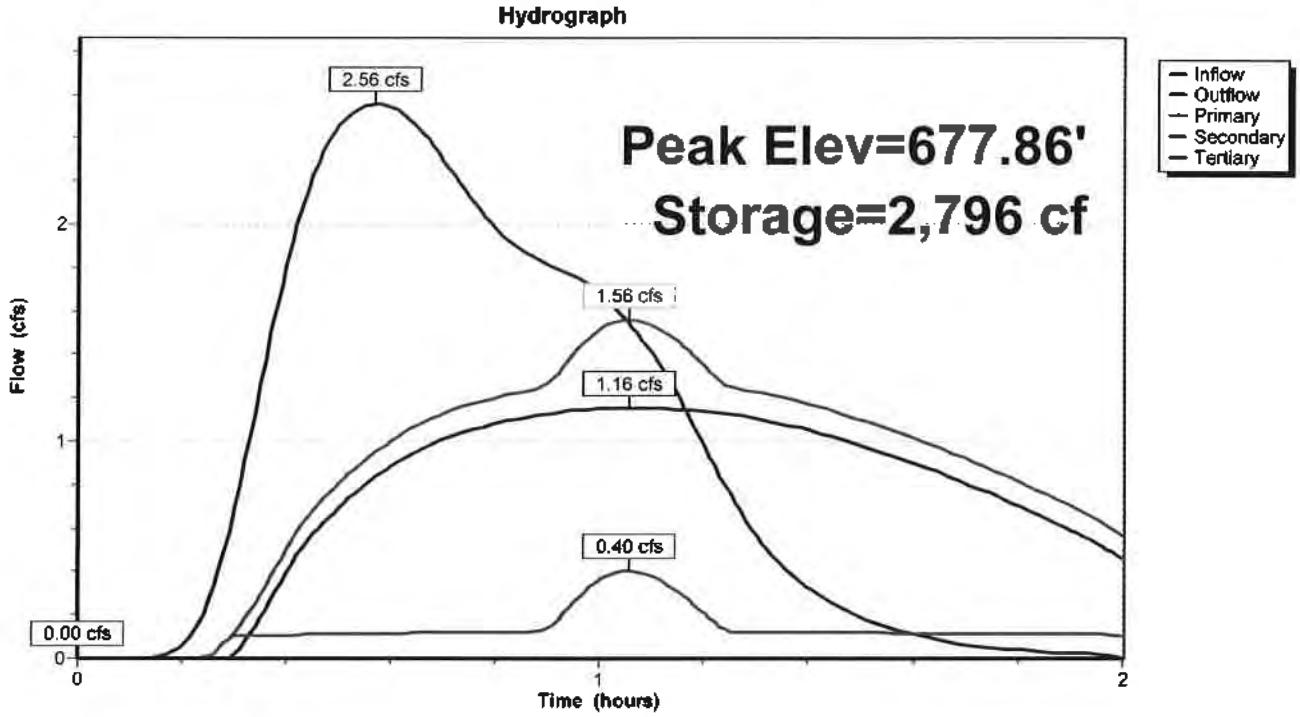
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=1.16 cfs @ 1.05 hrs HW=677.86' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.16 cfs @ 5.02 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

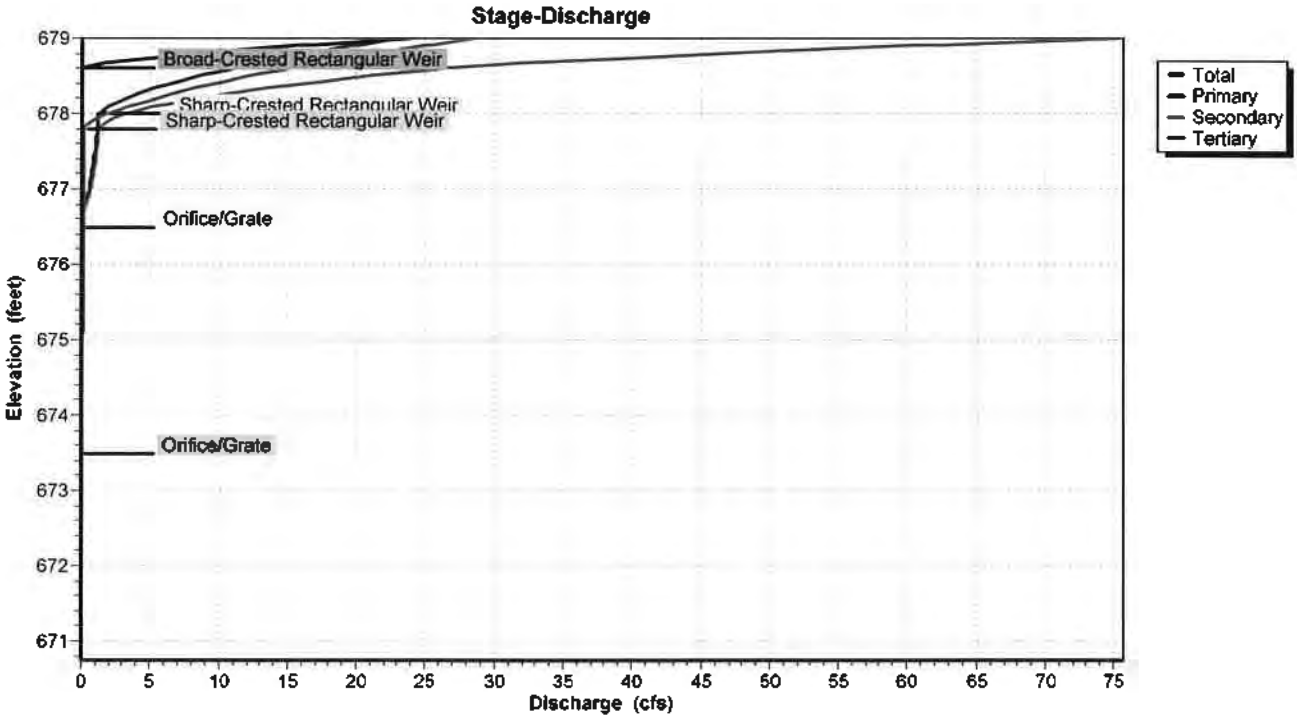
**Secondary OutFlow** Max=0.40 cfs @ 1.05 hrs HW=677.86' TW=670.84' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.12 cfs @ 9.98 fps)
└─**5=Sharp-Crested Rectangular Weir** (Weir Controls 0.28 cfs @ 0.80 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

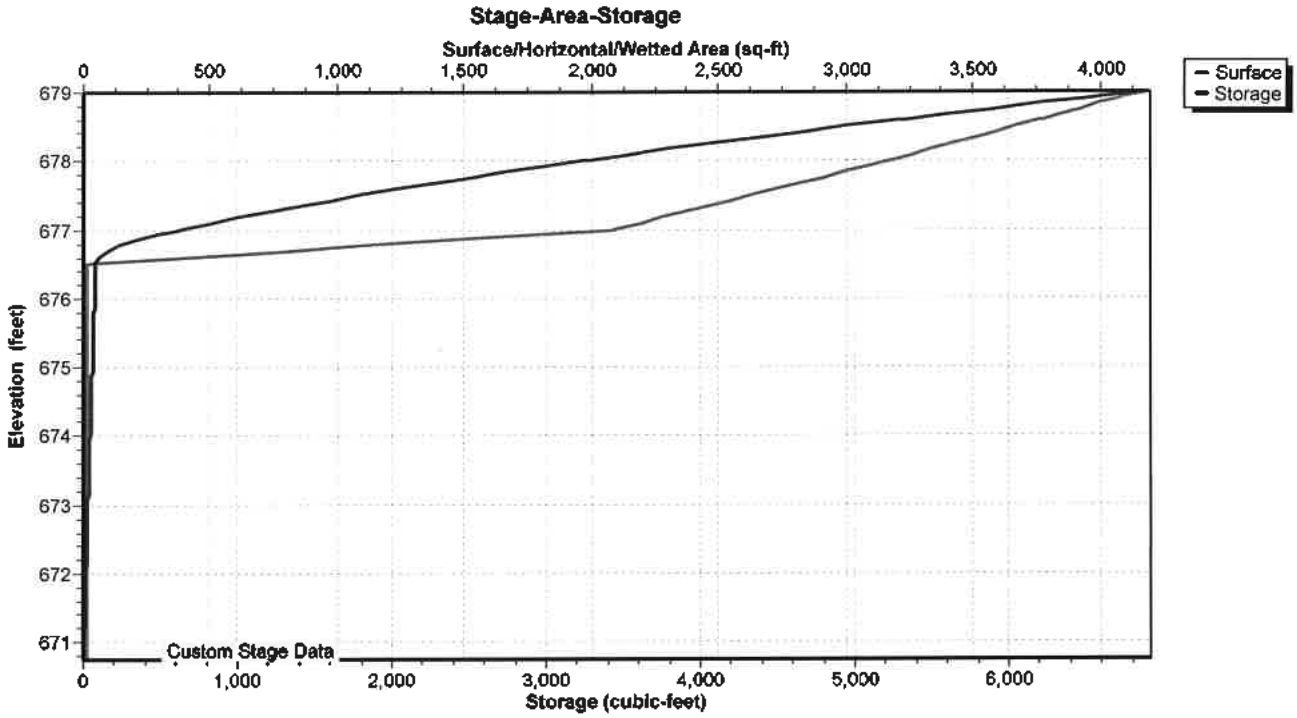
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.05 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.10 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.15 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.05 | 3 | 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.25 | 0.26 | 24 | 672.47 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.30 | 0.69 | 91 | 676.56 | 0.11 | 0.01 | 0.10 | 0.00 |
| 0.35 | 1.26 | 222 | 676.76 | 0.29 | 0.19 | 0.11 | 0.00 |
| 0.40 | 1.82 | 422 | 676.90 | 0.50 | 0.39 | 0.11 | 0.00 |
| 0.45 | 2.23 | 677 | 677.03 | 0.68 | 0.57 | 0.11 | 0.00 |
| 0.50 | 2.46 | 965 | 677.17 | 0.81 | 0.70 | 0.11 | 0.00 |
| 0.55 | **2.55** | 1,262 | 677.29 | 0.92 | 0.80 | 0.11 | 0.00 |
| 0.60 | **2.55** | 1,550 | 677.41 | 1.00 | 0.89 | 0.12 | 0.00 |
| 0.65 | 2.45 | 1,817 | 677.51 | 1.07 | 0.96 | 0.12 | 0.00 |
| 0.70 | 2.30 | 2,051 | 677.60 | 1.13 | 1.01 | 0.12 | 0.00 |
| 0.75 | 2.13 | 2,245 | 677.67 | 1.17 | 1.05 | 0.12 | 0.00 |
| 0.80 | 1.98 | 2,403 | 677.73 | 1.20 | 1.08 | 0.12 | 0.00 |
| 0.85 | 1.88 | 2,534 | 677.77 | 1.23 | 1.11 | 0.12 | 0.00 |
| 0.90 | 1.82 | 2,644 | 677.81 | 1.27 | 1.13 | 0.14 | 0.00 |
| 0.95 | 1.76 | 2,730 | 677.84 | 1.41 | 1.15 | 0.26 | 0.00 |
| 1.00 | 1.68 | 2,780 | 677.85 | 1.52 | 1.15 | 0.36 | 0.00 |
| 1.05 | 1.56 | **2,796** | **677.86** | **1.56** | **1.16** | **0.40** | 0.00 |
| 1.10 | 1.40 | 2,786 | 677.86 | 1.53 | 1.16 | 0.38 | 0.00 |
| 1.15 | 1.21 | 2,754 | 677.84 | 1.46 | 1.15 | 0.31 | 0.00 |
| 1.20 | 0.98 | 2,701 | 677.83 | 1.35 | 1.14 | 0.21 | 0.00 |
| 1.25 | 0.76 | 2,625 | 677.80 | 1.25 | 1.13 | 0.12 | 0.00 |
| 1.30 | 0.57 | 2,524 | 677.77 | 1.23 | 1.11 | 0.12 | 0.00 |
| 1.35 | 0.43 | 2,396 | 677.72 | 1.20 | 1.08 | 0.12 | 0.00 |
| 1.40 | 0.32 | 2,250 | 677.67 | 1.17 | 1.05 | 0.12 | 0.00 |
| 1.45 | 0.25 | 2,094 | 677.62 | 1.14 | 1.02 | 0.12 | 0.00 |
| 1.50 | 0.19 | 1,932 | 677.56 | 1.10 | 0.98 | 0.12 | 0.00 |
| 1.55 | 0.14 | 1,767 | 677.49 | 1.06 | 0.94 | 0.12 | 0.00 |
| 1.60 | 0.11 | 1,602 | 677.43 | 1.02 | 0.90 | 0.12 | 0.00 |
| 1.65 | 0.08 | 1,440 | 677.37 | 0.97 | 0.86 | 0.12 | 0.00 |
| 1.70 | 0.06 | 1,283 | 677.30 | 0.92 | 0.81 | 0.11 | 0.00 |
| 1.75 | 0.05 | 1,131 | 677.24 | 0.87 | 0.76 | 0.11 | 0.00 |
| 1.80 | 0.04 | 986 | 677.17 | 0.82 | 0.71 | 0.11 | 0.00 |
| 1.85 | 0.03 | 849 | 677.11 | 0.76 | 0.65 | 0.11 | 0.00 |
| 1.90 | 0.02 | 722 | 677.05 | 0.70 | 0.59 | 0.11 | 0.00 |
| 1.95 | 0.02 | 603 | 677.00 | 0.64 | 0.53 | 0.11 | 0.00 |
| 2.00 | 0.00 | 496 | 676.94 | 0.57 | 0.46 | 0.11 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 23.56 | 9.86 | 13.70 | 0.00 |
| 678.75 | 40.37 | 15.13 | 19.77 | 5.47 |
| 678.95 | **67.61** | **21.27** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

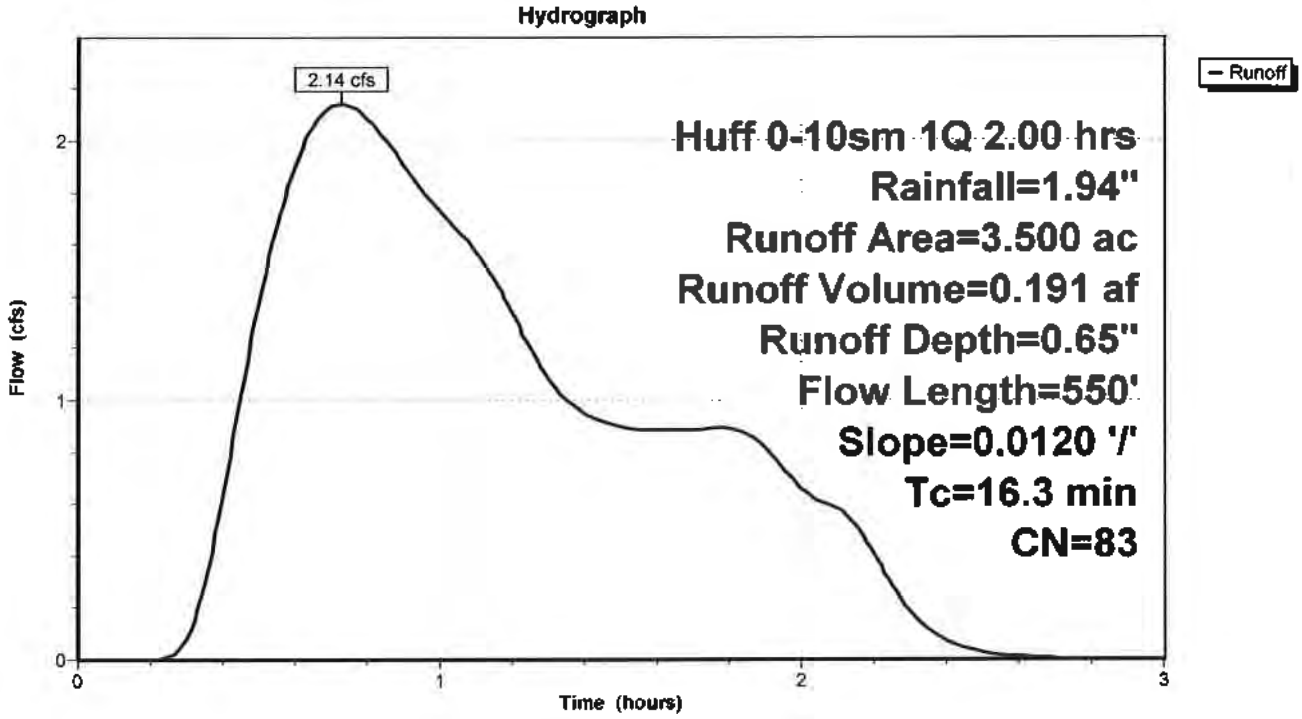
Runoff = 2.14 cfs @ 0.73 hrs, Volume= 0.191 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=1.94"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.05 | 0.04 | 0.00 | 0.00 |
| 0.10 | 0.16 | 0.00 | 0.00 |
| 0.15 | 0.32 | 0.00 | 0.00 |
| 0.20 | 0.48 | 0.00 | 0.00 |
| 0.25 | 0.63 | 0.02 | 0.01 |
| 0.30 | 0.74 | 0.05 | 0.08 |
| 0.35 | 0.84 | 0.07 | 0.29 |
| 0.40 | 0.93 | 0.11 | 0.63 |
| 0.45 | 1.02 | 0.14 | 1.02 |
| 0.50 | 1.10 | 0.17 | 1.37 |
| 0.55 | 1.17 | 0.21 | 1.67 |
| 0.60 | 1.23 | 0.24 | 1.90 |
| 0.65 | 1.29 | 0.27 | 2.06 |
| 0.70 | 1.34 | 0.29 | **2.14** |
| 0.75 | 1.39 | 0.32 | **2.14** |
| 0.80 | 1.43 | 0.34 | 2.08 |
| 0.85 | 1.47 | 0.36 | 2.00 |
| 0.90 | 1.51 | 0.38 | 1.90 |
| 0.95 | 1.55 | 0.41 | 1.81 |
| 1.00 | 1.58 | 0.42 | 1.73 |
| 1.05 | 1.60 | 0.44 | 1.65 |
| 1.10 | 1.63 | 0.45 | 1.57 |
| 1.15 | 1.65 | 0.47 | 1.47 |
| 1.20 | 1.67 | 0.48 | 1.34 |
| 1.25 | 1.69 | 0.49 | 1.20 |
| 1.30 | 1.70 | 0.50 | 1.08 |
| 1.35 | 1.72 | 0.51 | 1.00 |
| 1.40 | 1.74 | 0.53 | 0.95 |
| 1.45 | 1.76 | 0.54 | 0.92 |
| 1.50 | 1.78 | 0.55 | 0.90 |
| 1.55 | 1.80 | 0.56 | 0.89 |
| 1.60 | 1.82 | 0.58 | 0.89 |
| 1.65 | 1.84 | 0.59 | 0.89 |
| 1.70 | 1.86 | 0.60 | 0.89 |
| 1.75 | 1.88 | 0.61 | 0.89 |
| 1.80 | 1.89 | 0.62 | 0.89 |
| 1.85 | 1.90 | 0.63 | 0.87 |
| 1.90 | 1.91 | 0.63 | 0.82 |
| 1.95 | 1.92 | 0.64 | 0.73 |
| 2.00 | **1.94** | **0.65** | 0.66 |
| 2.05 | 1.94 | 0.65 | 0.61 |
| 2.10 | 1.94 | 0.65 | 0.58 |
| 2.15 | 1.94 | 0.65 | 0.52 |
| 2.20 | 1.94 | 0.65 | 0.41 |
| 2.25 | 1.94 | 0.65 | 0.28 |
| 2.30 | 1.94 | 0.65 | 0.18 |
| 2.35 | 1.94 | 0.65 | 0.11 |
| 2.40 | 1.94 | 0.65 | 0.07 |
| 2.45 | 1.94 | 0.65 | 0.05 |
| 2.50 | 1.94 | 0.65 | 0.03 |
| 2.55 | 1.94 | 0.65 | 0.02 |
| 2.60 | 1.94 | 0.65 | 0.01 |
| 2.65 | 1.94 | 0.65 | 0.01 |
| 2.70 | 1.94 | 0.65 | 0.00 |
| 2.75 | 1.94 | 0.65 | 0.00 |
| 2.80 | 1.94 | 0.65 | 0.00 |
| 2.85 | 1.94 | 0.65 | 0.00 |
| 2.90 | 1.94 | 0.65 | 0.00 |
| 2.95 | 1.94 | 0.65 | 0.00 |
| 3.00 | 1.94 | 0.65 | 0.00 |

## Summary for Subcatchment 7S: South Property

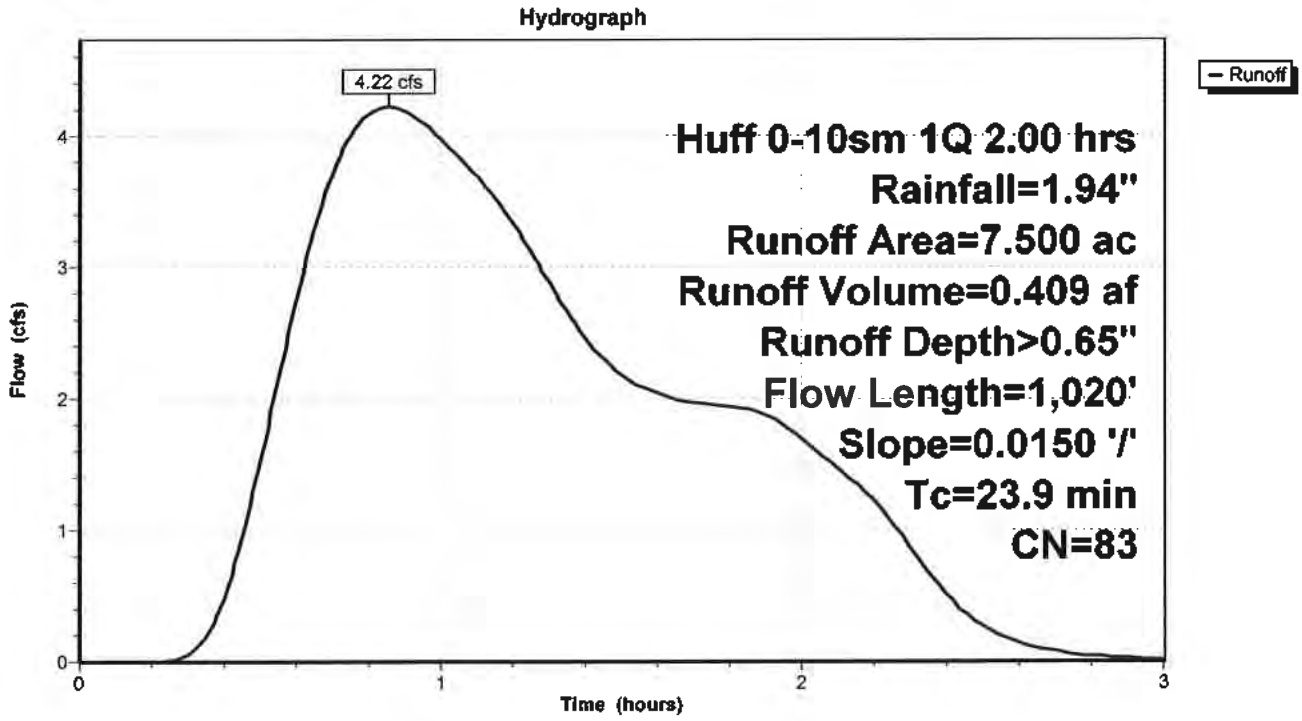
Runoff = 4.22 cfs @ 0.85 hrs, Volume= 0.409 af, Depth> 0.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=1.94"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.05 | 0.04 | 0.00 | 0.00 |
| 0.10 | 0.16 | 0.00 | 0.00 |
| 0.15 | 0.32 | 0.00 | 0.00 |
| 0.20 | 0.48 | 0.00 | 0.00 |
| 0.25 | 0.63 | 0.02 | 0.01 |
| 0.30 | 0.74 | 0.05 | 0.05 |
| 0.35 | 0.84 | 0.07 | 0.19 |
| 0.40 | 0.93 | 0.11 | 0.48 |
| 0.45 | 1.02 | 0.14 | 0.94 |
| 0.50 | 1.10 | 0.17 | 1.52 |
| 0.55 | 1.17 | 0.21 | 2.14 |
| 0.60 | 1.23 | 0.24 | 2.75 |
| 0.65 | 1.29 | 0.27 | 3.29 |
| 0.70 | 1.34 | 0.29 | 3.71 |
| 0.75 | 1.39 | 0.32 | 4.00 |
| 0.80 | 1.43 | 0.34 | 4.17 |
| 0.85 | 1.47 | 0.36 | **4.22** |
| 0.90 | 1.51 | 0.38 | 4.19 |
| 0.95 | 1.55 | 0.41 | 4.09 |
| 1.00 | 1.58 | 0.42 | 3.97 |
| 1.05 | 1.60 | 0.44 | 3.83 |
| 1.10 | 1.63 | 0.45 | 3.69 |
| 1.15 | 1.65 | 0.47 | 3.52 |
| 1.20 | 1.67 | 0.48 | 3.33 |
| 1.25 | 1.69 | 0.49 | 3.12 |
| 1.30 | 1.70 | 0.50 | 2.89 |
| 1.35 | 1.72 | 0.51 | 2.66 |
| 1.40 | 1.74 | 0.53 | 2.46 |
| 1.45 | 1.76 | 0.54 | 2.30 |
| 1.50 | 1.78 | 0.55 | 2.18 |
| 1.55 | 1.80 | 0.56 | 2.09 |
| 1.60 | 1.82 | 0.58 | 2.03 |
| 1.65 | 1.84 | 0.59 | 1.99 |
| 1.70 | 1.86 | 0.60 | 1.96 |
| 1.75 | 1.88 | 0.61 | 1.95 |
| 1.80 | 1.89 | 0.62 | 1.94 |
| 1.85 | 1.90 | 0.63 | 1.92 |
| 1.90 | 1.91 | 0.63 | 1.87 |
| 1.95 | 1.92 | 0.64 | 1.80 |
| 2.00 | **1.94** | **0.65** | 1.69 |
| 2.05 | 1.94 | 0.65 | 1.57 |
| 2.10 | 1.94 | 0.65 | 1.46 |
| 2.15 | 1.94 | 0.65 | 1.35 |
| 2.20 | 1.94 | 0.65 | 1.22 |
| 2.25 | 1.94 | 0.65 | 1.05 |
| 2.30 | 1.94 | 0.65 | 0.86 |
| 2.35 | 1.94 | 0.65 | 0.67 |
| 2.40 | 1.94 | 0.65 | 0.51 |
| 2.45 | 1.94 | 0.65 | 0.37 |
| 2.50 | 1.94 | 0.65 | 0.27 |
| 2.55 | 1.94 | 0.65 | 0.20 |
| 2.60 | 1.94 | 0.65 | 0.14 |
| 2.65 | 1.94 | 0.65 | 0.11 |
| 2.70 | 1.94 | 0.65 | 0.08 |
| 2.75 | 1.94 | 0.65 | 0.06 |
| 2.80 | 1.94 | 0.65 | 0.04 |
| 2.85 | 1.94 | 0.65 | 0.03 |
| 2.90 | 1.94 | 0.65 | 0.02 |
| 2.95 | 1.94 | 0.65 | 0.01 |
| 3.00 | 1.94 | 0.65 | 0.01 |

## Summary for Subcatchment 8S: Northwood Drive Bypass

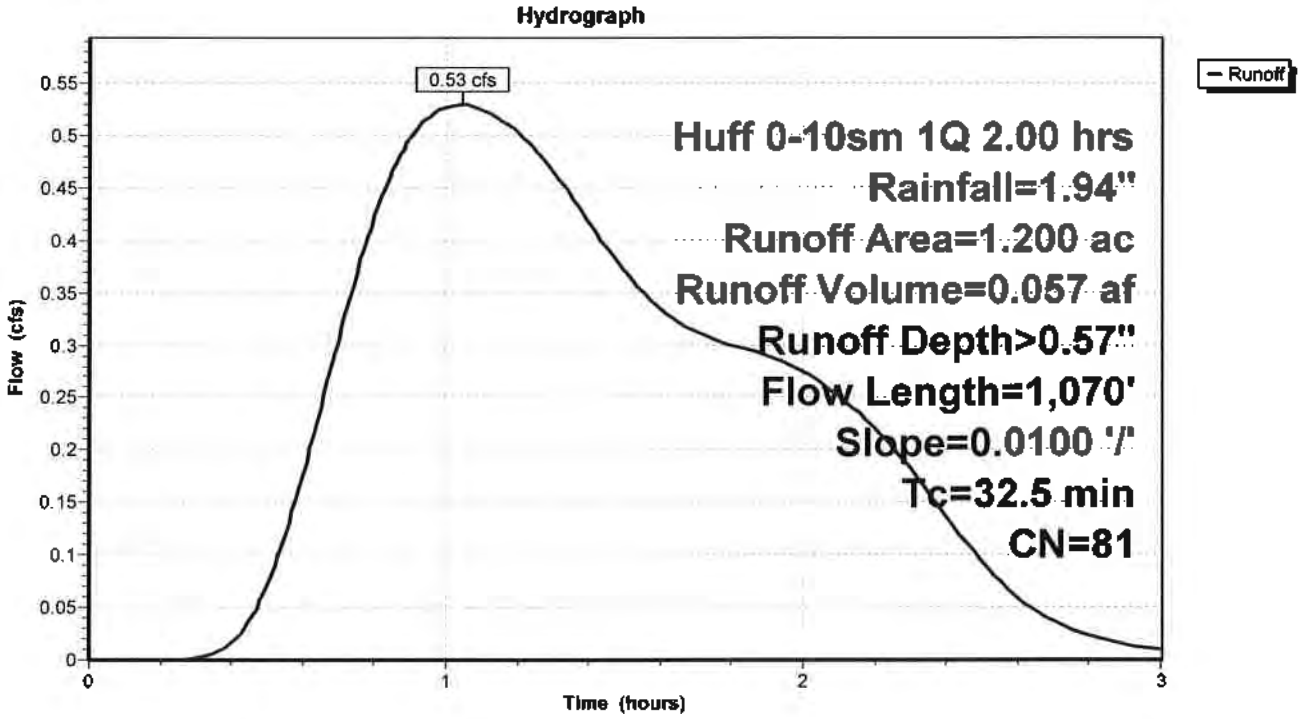
Runoff = 0.53 cfs @ 1.05 hrs, Volume= 0.057 af, Depth> 0.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=1.94"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 2.60 | 1.94 | 0.57 | 0.06 |
| 0.05 | 0.04 | 0.00 | 0.00 | 2.65 | 1.94 | 0.57 | 0.05 |
| 0.10 | 0.16 | 0.00 | 0.00 | 2.70 | 1.94 | 0.57 | 0.04 |
| 0.15 | 0.32 | 0.00 | 0.00 | 2.75 | 1.94 | 0.57 | 0.03 |
| 0.20 | 0.48 | 0.00 | 0.00 | 2.80 | 1.94 | 0.57 | 0.02 |
| 0.25 | 0.63 | 0.01 | 0.00 | 2.85 | 1.94 | 0.57 | 0.02 |
| 0.30 | 0.74 | 0.03 | 0.00 | 2.90 | 1.94 | 0.57 | 0.01 |
| 0.35 | 0.84 | 0.05 | 0.01 | 2.95 | 1.94 | 0.57 | 0.01 |
| 0.40 | 0.93 | 0.08 | 0.02 | 3.00 | 1.94 | 0.57 | 0.01 |
| 0.45 | 1.02 | 0.10 | 0.04 | | | | |
| 0.50 | 1.10 | 0.13 | 0.07 | | | | |
| 0.55 | 1.17 | 0.16 | 0.12 | | | | |
| 0.60 | 1.23 | 0.19 | 0.18 | | | | |
| 0.65 | 1.29 | 0.21 | 0.24 | | | | |
| 0.70 | 1.34 | 0.24 | 0.31 | | | | |
| 0.75 | 1.39 | 0.26 | 0.37 | | | | |
| 0.80 | 1.43 | 0.28 | 0.42 | | | | |
| 0.85 | 1.47 | 0.30 | 0.47 | | | | |
| 0.90 | 1.51 | 0.32 | 0.50 | | | | |
| 0.95 | 1.55 | 0.34 | 0.52 | | | | |
| 1.00 | 1.58 | 0.36 | 0.53 | | | | |
| 1.05 | 1.60 | 0.37 | **0.53** | | | | |
| 1.10 | 1.63 | 0.38 | 0.53 | | | | |
| 1.15 | 1.65 | 0.39 | 0.52 | | | | |
| 1.20 | 1.67 | 0.40 | 0.50 | | | | |
| 1.25 | 1.69 | 0.42 | 0.49 | | | | |
| 1.30 | 1.70 | 0.43 | 0.46 | | | | |
| 1.35 | 1.72 | 0.44 | 0.44 | | | | |
| 1.40 | 1.74 | 0.45 | 0.42 | | | | |
| 1.45 | 1.76 | 0.46 | 0.39 | | | | |
| 1.50 | 1.78 | 0.47 | 0.37 | | | | |
| 1.55 | 1.80 | 0.48 | 0.35 | | | | |
| 1.60 | 1.82 | 0.50 | 0.34 | | | | |
| 1.65 | 1.84 | 0.51 | 0.32 | | | | |
| 1.70 | 1.86 | 0.52 | 0.31 | | | | |
| 1.75 | 1.88 | 0.53 | 0.31 | | | | |
| 1.80 | 1.89 | 0.54 | 0.30 | | | | |
| 1.85 | 1.90 | 0.54 | 0.30 | | | | |
| 1.90 | 1.91 | 0.55 | 0.29 | | | | |
| 1.95 | 1.92 | 0.56 | 0.28 | | | | |
| 2.00 | **1.94** | **0.57** | 0.28 | | | | |
| 2.05 | 1.94 | 0.57 | 0.26 | | | | |
| 2.10 | 1.94 | 0.57 | 0.25 | | | | |
| 2.15 | 1.94 | 0.57 | 0.24 | | | | |
| 2.20 | 1.94 | 0.57 | 0.22 | | | | |
| 2.25 | 1.94 | 0.57 | 0.20 | | | | |
| 2.30 | 1.94 | 0.57 | 0.18 | | | | |
| 2.35 | 1.94 | 0.57 | 0.16 | | | | |
| 2.40 | 1.94 | 0.57 | 0.14 | | | | |
| 2.45 | 1.94 | 0.57 | 0.11 | | | | |
| 2.50 | 1.94 | 0.57 | 0.09 | | | | |
| 2.55 | 1.94 | 0.57 | 0.08 | | | | |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

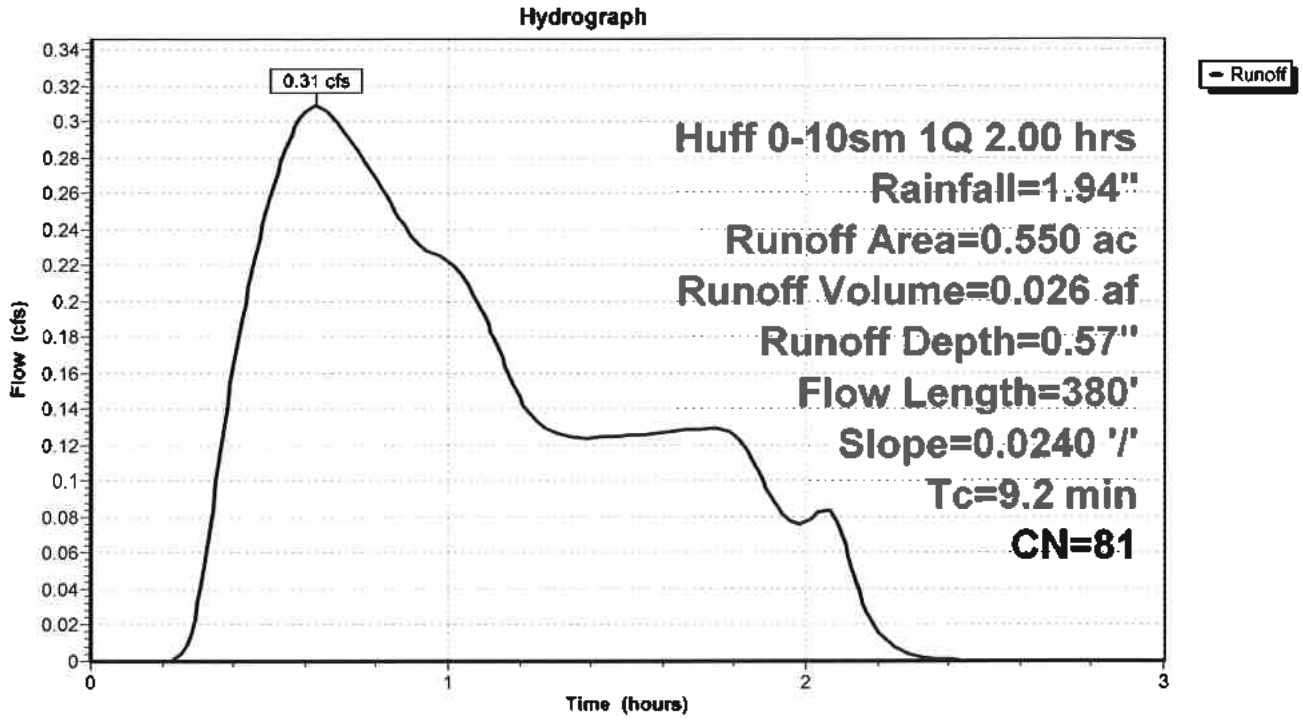
Runoff = 0.31 cfs @ 0.63 hrs, Volume= 0.026 af, Depth= 0.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=1.94"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.05 | 0.04 | 0.00 | 0.00 |
| 0.10 | 0.16 | 0.00 | 0.00 |
| 0.15 | 0.32 | 0.00 | 0.00 |
| 0.20 | 0.48 | 0.00 | 0.00 |
| 0.25 | 0.63 | 0.01 | 0.00 |
| 0.30 | 0.74 | 0.03 | 0.03 |
| 0.35 | 0.84 | 0.05 | 0.10 |
| 0.40 | 0.93 | 0.08 | 0.17 |
| 0.45 | 1.02 | 0.10 | 0.22 |
| 0.50 | 1.10 | 0.13 | 0.26 |
| 0.55 | 1.17 | 0.16 | 0.29 |
| 0.60 | 1.23 | 0.19 | **0.31** |
| 0.65 | 1.29 | 0.21 | **0.31** |
| 0.70 | 1.34 | 0.24 | 0.30 |
| 0.75 | 1.39 | 0.26 | 0.28 |
| 0.80 | 1.43 | 0.28 | 0.27 |
| 0.85 | 1.47 | 0.30 | 0.25 |
| 0.90 | 1.51 | 0.32 | 0.24 |
| 0.95 | 1.55 | 0.34 | 0.23 |
| 1.00 | 1.58 | 0.36 | 0.22 |
| 1.05 | 1.60 | 0.37 | 0.21 |
| 1.10 | 1.63 | 0.38 | 0.19 |
| 1.15 | 1.65 | 0.39 | 0.17 |
| 1.20 | 1.67 | 0.40 | 0.15 |
| 1.25 | 1.69 | 0.42 | 0.13 |
| 1.30 | 1.70 | 0.43 | 0.13 |
| 1.35 | 1.72 | 0.44 | 0.12 |
| 1.40 | 1.74 | 0.45 | 0.12 |
| 1.45 | 1.76 | 0.46 | 0.12 |
| 1.50 | 1.78 | 0.47 | 0.13 |
| 1.55 | 1.80 | 0.48 | 0.13 |
| 1.60 | 1.82 | 0.50 | 0.13 |
| 1.65 | 1.84 | 0.51 | 0.13 |
| 1.70 | 1.86 | 0.52 | 0.13 |
| 1.75 | 1.88 | 0.53 | 0.13 |
| 1.80 | 1.89 | 0.54 | 0.13 |
| 1.85 | 1.90 | 0.54 | 0.11 |
| 1.90 | 1.91 | 0.55 | 0.09 |
| 1.95 | 1.92 | 0.56 | 0.08 |
| 2.00 | **1.94** | **0.57** | 0.08 |
| 2.05 | 1.94 | 0.57 | 0.08 |
| 2.10 | 1.94 | 0.57 | 0.07 |
| 2.15 | 1.94 | 0.57 | 0.04 |
| 2.20 | 1.94 | 0.57 | 0.02 |
| 2.25 | 1.94 | 0.57 | 0.01 |
| 2.30 | 1.94 | 0.57 | 0.00 |
| 2.35 | 1.94 | 0.57 | 0.00 |
| 2.40 | 1.94 | 0.57 | 0.00 |
| 2.45 | 1.94 | 0.57 | 0.00 |
| 2.50 | 1.94 | 0.57 | 0.00 |
| 2.55 | 1.94 | 0.57 | 0.00 |
| 2.60 | 1.94 | 0.57 | 0.00 |
| 2.65 | 1.94 | 0.57 | 0.00 |
| 2.70 | 1.94 | 0.57 | 0.00 |
| 2.75 | 1.94 | 0.57 | 0.00 |
| 2.80 | 1.94 | 0.57 | 0.00 |
| 2.85 | 1.94 | 0.57 | 0.00 |
| 2.90 | 1.94 | 0.57 | 0.00 |
| 2.95 | 1.94 | 0.57 | 0.00 |
| 3.00 | 1.94 | 0.57 | 0.00 |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 4.61 cfs @ | 1.09 hrs, | Volume= | 0.480 af |
| Outflow | = | 0.55 cfs @ | 2.43 hrs, | Volume= | 0.094 af, Atten= 88%, Lag= 80.8 min |
| Primary | = | 0.55 cfs @ | 2.43 hrs, | Volume= | 0.094 af |
| Secondary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 671.24' @ 2.43 hrs Surf.Area= 28,275 sf Storage= 17,478 cf

Plug-Flow detention time= 78.1 min calculated for 0.094 af (20% of inflow)
Center-of-Mass det. time= 39.6 min ( 115.6 - 76.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.40' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

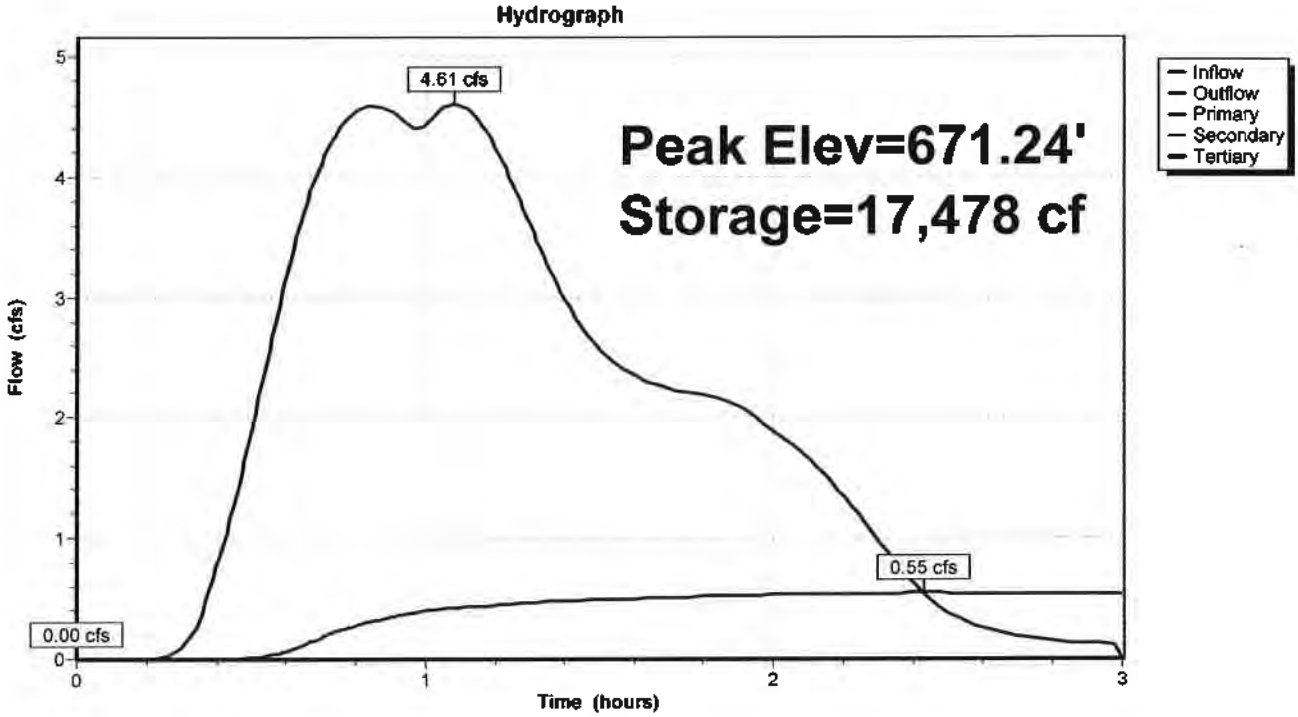
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=0.55 cfs @ 2.43 hrs HW=671.24' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.55 cfs @ 4.94 fps)

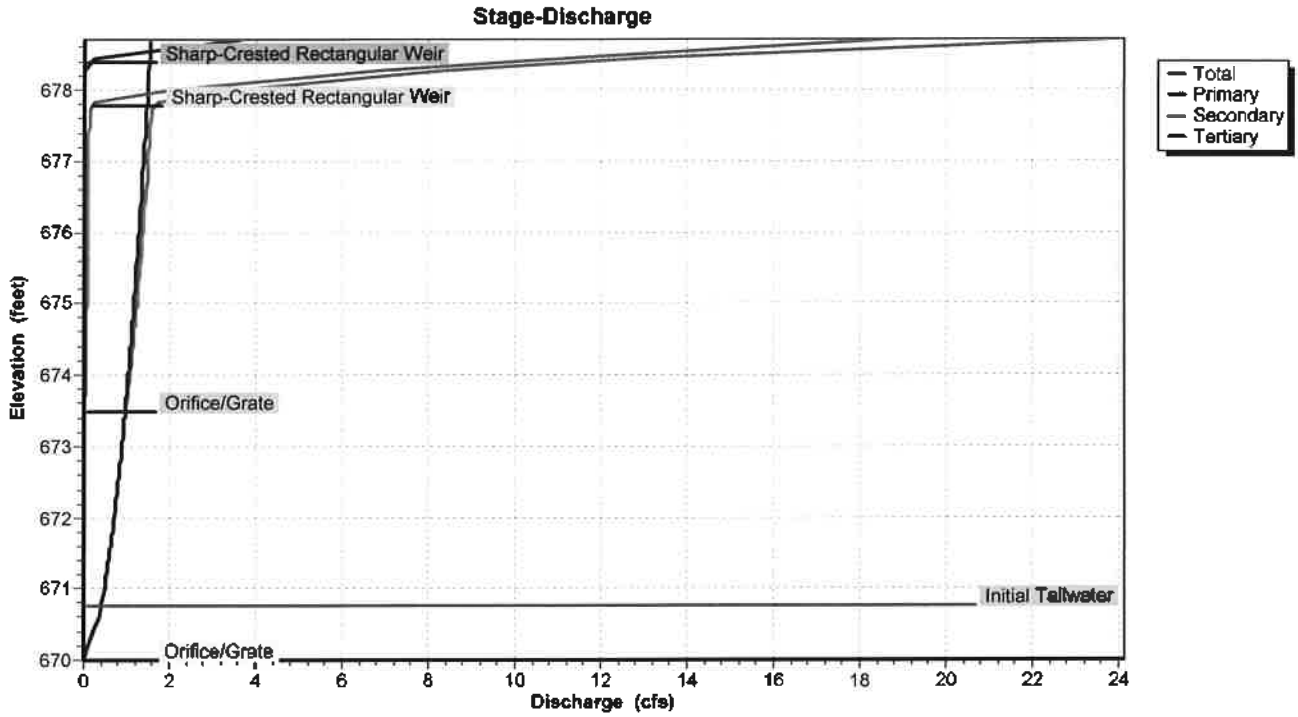
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

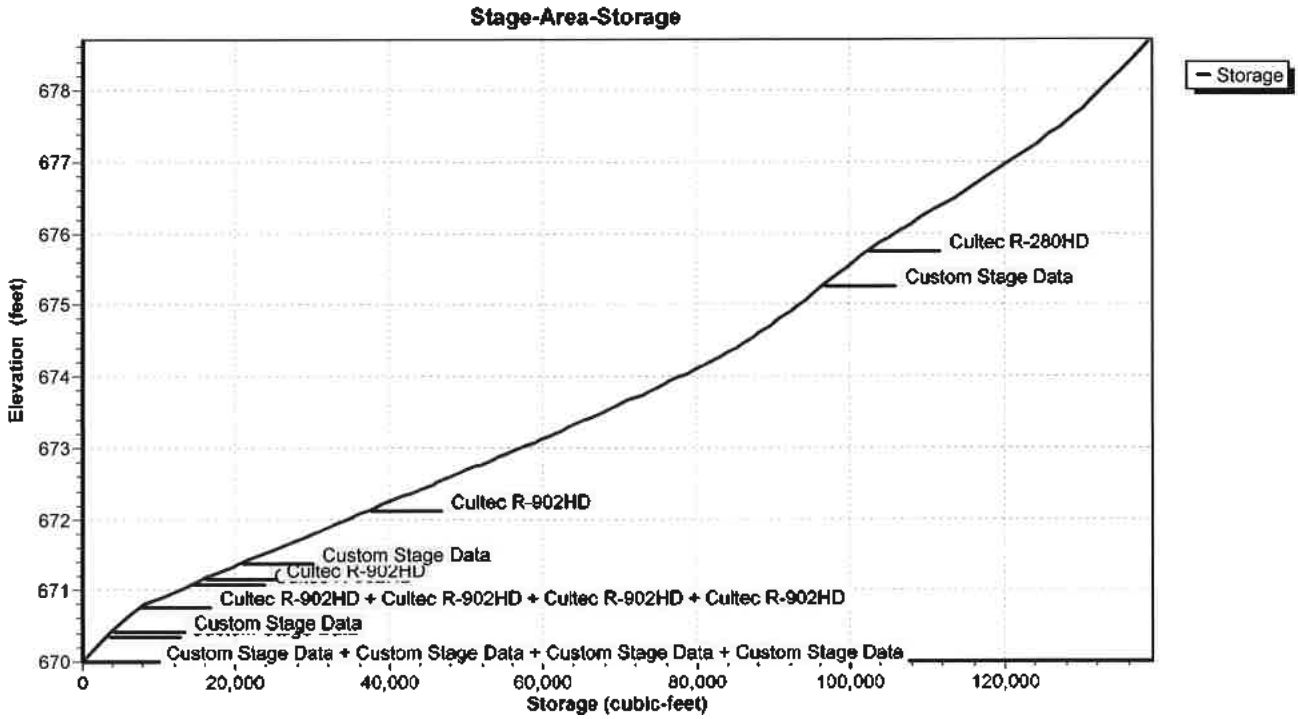
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 0.10 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.30 | 0.08 | 6 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 0.75 | 120 | 670.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.50 | 1.89 | 562 | 670.06 | 0.01 | 0.01 | 0.00 | 0.00 |
| 0.60 | 3.17 | 1,441 | 670.16 | 0.06 | 0.06 | 0.00 | 0.00 |
| 0.70 | 4.12 | 2,710 | 670.30 | 0.18 | 0.18 | 0.00 | 0.00 |
| 0.80 | 4.55 | 4,196 | 670.46 | 0.28 | 0.28 | 0.00 | 0.00 |
| 0.90 | 4.54 | 5,734 | 670.61 | 0.35 | 0.35 | 0.00 | 0.00 |
| 1.00 | **4.43** | 7,206 | 670.75 | 0.40 | 0.40 | 0.00 | 0.00 |
| 1.10 | **4.60** | 8,693 | 670.82 | 0.42 | 0.42 | 0.00 | 0.00 |
| 1.20 | 4.25 | 10,148 | 670.89 | 0.45 | 0.45 | 0.00 | 0.00 |
| 1.30 | 3.60 | 11,411 | 670.95 | 0.47 | 0.47 | 0.00 | 0.00 |
| 1.40 | 2.98 | 12,431 | 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 1.50 | 2.57 | 13,256 | 671.04 | 0.49 | 0.49 | 0.00 | 0.00 |
| 1.60 | 2.35 | 13,962 | 671.08 | 0.50 | 0.50 | 0.00 | 0.00 |
| 1.70 | 2.24 | 14,606 | 671.11 | 0.51 | 0.51 | 0.00 | 0.00 |
| 1.80 | 2.19 | 15,218 | 671.14 | 0.52 | 0.52 | 0.00 | 0.00 |
| 1.90 | 2.09 | 15,805 | 671.16 | 0.53 | 0.53 | 0.00 | 0.00 |
| 2.00 | 1.89 | 16,337 | 671.19 | 0.53 | 0.53 | 0.00 | 0.00 |
| 2.10 | 1.65 | 16,788 | 671.21 | 0.54 | 0.54 | 0.00 | 0.00 |
| 2.20 | 1.35 | 17,142 | 671.22 | 0.54 | 0.54 | 0.00 | 0.00 |
| 2.30 | 0.98 | 17,376 | 671.23 | 0.54 | 0.54 | 0.00 | 0.00 |
| 2.40 | 0.62 | **17,473** | **671.24** | **0.55** | **0.55** | 0.00 | 0.00 |
| 2.50 | 0.38 | **17,458** | **671.24** | **0.54** | **0.54** | 0.00 | 0.00 |
| 2.60 | 0.26 | 17,377 | 671.23 | 0.54 | 0.54 | 0.00 | 0.00 |
| 2.70 | 0.19 | 17,262 | 671.23 | 0.54 | 0.54 | 0.00 | 0.00 |
| 2.80 | 0.15 | 17,128 | 671.22 | 0.54 | 0.54 | 0.00 | 0.00 |
| 2.90 | 0.13 | 16,984 | 671.22 | 0.54 | 0.54 | 0.00 | 0.00 |
| 3.00 | 0.00 | 16,834 | 671.21 | 0.54 | 0.54 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 18.46 | 1.54 | 15.13 | 1.79 |
| 678.80 | **28.12** | **1.56** | **21.42** | **5.14** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 2.51 cfs @ | 0.78 hrs, | Volume= | 0.247 af |
| Outflow | = | 1.97 cfs @ | 1.16 hrs, | Volume= | 0.242 af, Atten= 22%, Lag= 22.9 min |
| Primary | = | 1.18 cfs @ | 1.16 hrs, | Volume= | 0.197 af |
| Secondary | = | 0.79 cfs @ | 1.16 hrs, | Volume= | 0.045 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 677.90' @ 1.16 hrs Surf.Area= 3,069 sf Storage= 2,934 cf

Plug-Flow detention time= 27.6 min calculated for 0.242 af (98% of inflow)
Center-of-Mass det. time= 25.8 min ( 98.0 - 72.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

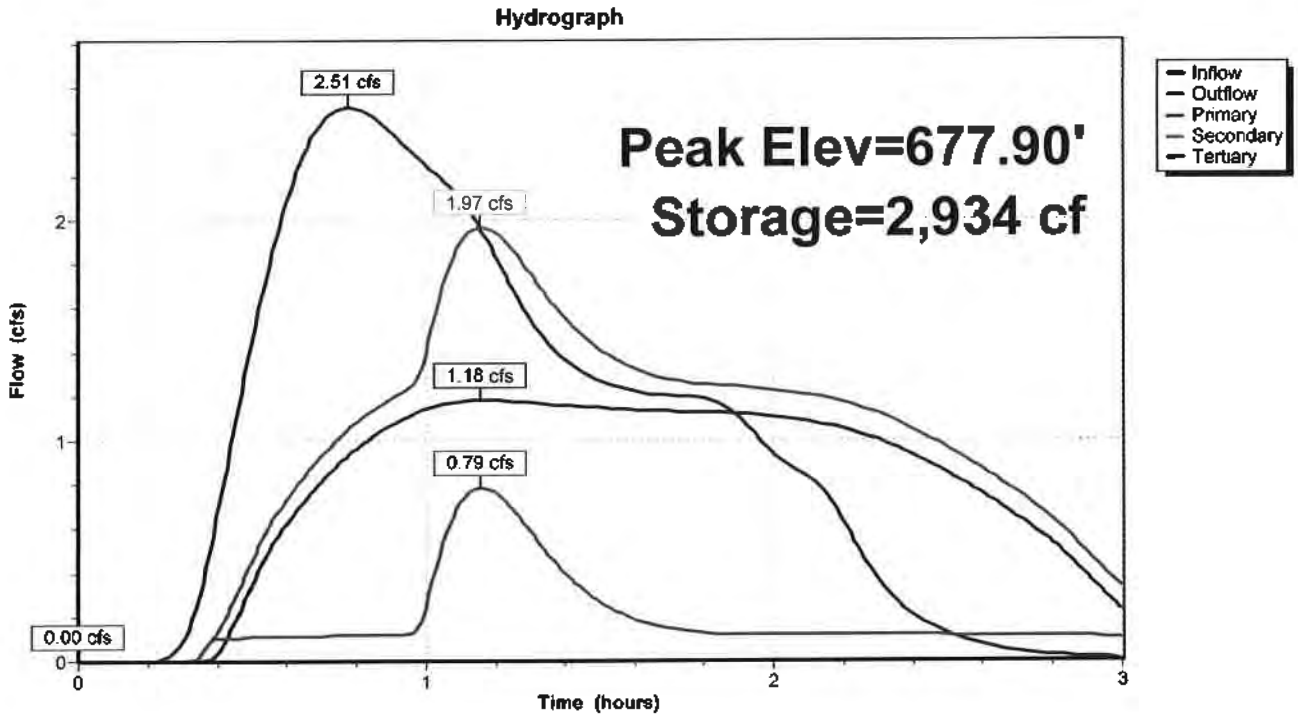
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=1.18 cfs @ 1.16 hrs HW=677.90' (Free Discharge)
- **1=Orifice/Grate** (Orifice Controls 1.18 cfs @ 5.13 fps)
- **2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

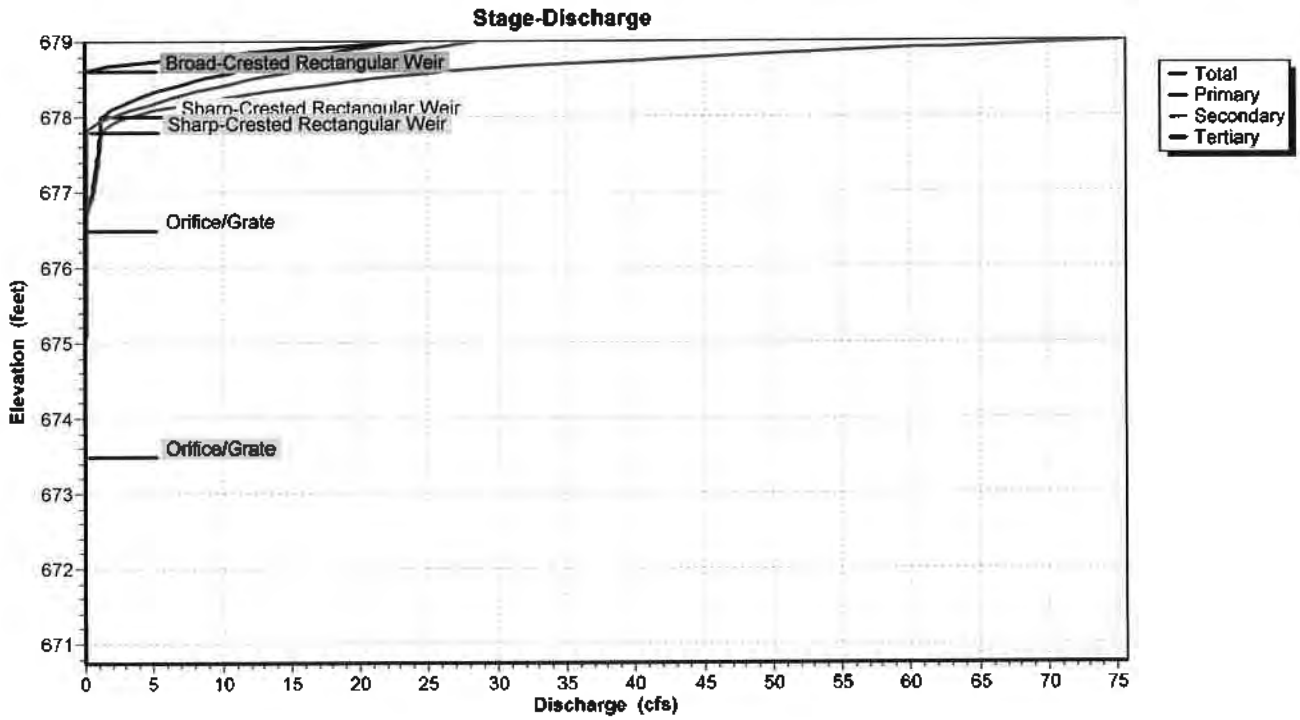
**Secondary OutFlow** Max=0.79 cfs @ 1.16 hrs HW=677.90' TW=670.87' (Dynamic Tailwater)
- **4=Orifice/Grate** (Orifice Controls 0.12 cfs @ 10.03 fps)
- **5=Sharp-Crested Rectangular Weir** (Weir Controls 0.66 cfs @ 1.07 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
- **3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

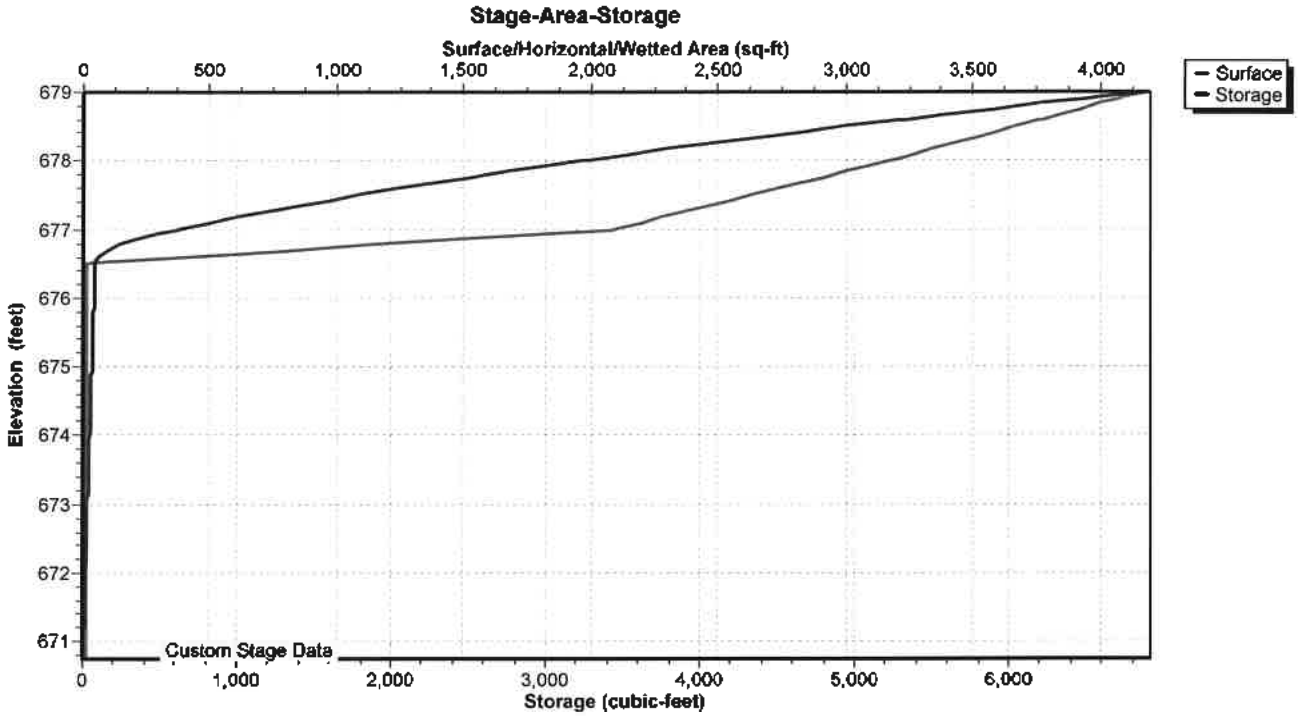
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.10 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.30 | 0.08 | 6 | 671.16 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 0.65 | 101 | 676.59 | 0.13 | 0.02 | 0.10 | 0.00 |
| 0.50 | 1.45 | 369 | 676.87 | 0.45 | 0.34 | 0.11 | 0.00 |
| 0.60 | 2.08 | 785 | 677.08 | 0.73 | 0.62 | 0.11 | 0.00 |
| 0.70 | **2.44** | 1,304 | 677.31 | 0.93 | 0.81 | 0.11 | 0.00 |
| 0.80 | **2.51** | 1,841 | 677.52 | 1.08 | 0.96 | 0.12 | 0.00 |
| 0.90 | 2.40 | 2,323 | 677.70 | 1.19 | 1.07 | 0.12 | 0.00 |
| 1.00 | 2.25 | 2,720 | 677.83 | 1.38 | 1.14 | 0.24 | 0.00 |
| 1.10 | 2.10 | **2,913** | **677.90** | **1.90** | **1.18** | **0.72** | 0.00 |
| 1.20 | 1.84 | **2,928** | **677.90** | **1.94** | **1.18** | **0.76** | 0.00 |
| 1.30 | 1.55 | 2,868 | 677.88 | 1.76 | 1.17 | 0.59 | 0.00 |
| 1.40 | 1.36 | 2,795 | 677.86 | 1.55 | 1.16 | 0.40 | 0.00 |
| 1.50 | 1.27 | 2,734 | 677.84 | 1.41 | 1.15 | 0.27 | 0.00 |
| 1.60 | 1.22 | 2,688 | 677.82 | 1.33 | 1.14 | 0.19 | 0.00 |
| 1.70 | 1.20 | 2,655 | 677.81 | 1.28 | 1.13 | 0.15 | 0.00 |
| 1.80 | 1.19 | 2,630 | 677.80 | 1.25 | 1.13 | 0.13 | 0.00 |
| 1.90 | 1.11 | 2,600 | 677.79 | 1.24 | 1.12 | 0.12 | 0.00 |
| 2.00 | 0.93 | 2,524 | 677.77 | 1.23 | 1.11 | 0.12 | 0.00 |
| 2.10 | 0.83 | 2,403 | 677.72 | 1.20 | 1.08 | 0.12 | 0.00 |
| 2.20 | 0.63 | 2,247 | 677.67 | 1.17 | 1.05 | 0.12 | 0.00 |
| 2.30 | 0.36 | 2,014 | 677.59 | 1.12 | 1.00 | 0.12 | 0.00 |
| 2.40 | 0.21 | 1,724 | 677.48 | 1.05 | 0.93 | 0.12 | 0.00 |
| 2.50 | 0.12 | 1,419 | 677.36 | 0.96 | 0.85 | 0.12 | 0.00 |
| 2.60 | 0.07 | 1,122 | 677.23 | 0.87 | 0.75 | 0.11 | 0.00 |
| 2.70 | 0.04 | 847 | 677.11 | 0.76 | 0.65 | 0.11 | 0.00 |
| 2.80 | 0.02 | 604 | 677.00 | 0.64 | 0.53 | 0.11 | 0.00 |
| 2.90 | 0.01 | 404 | 676.89 | 0.49 | 0.38 | 0.11 | 0.00 |
| 3.00 | 0.00 | 259 | 676.79 | 0.33 | 0.23 | 0.11 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 23.56 | 9.86 | 13.70 | 0.00 |
| 678.75 | 40.37 | 15.13 | 19.77 | 5.47 |
| 678.95 | **67.61** | **21.27** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

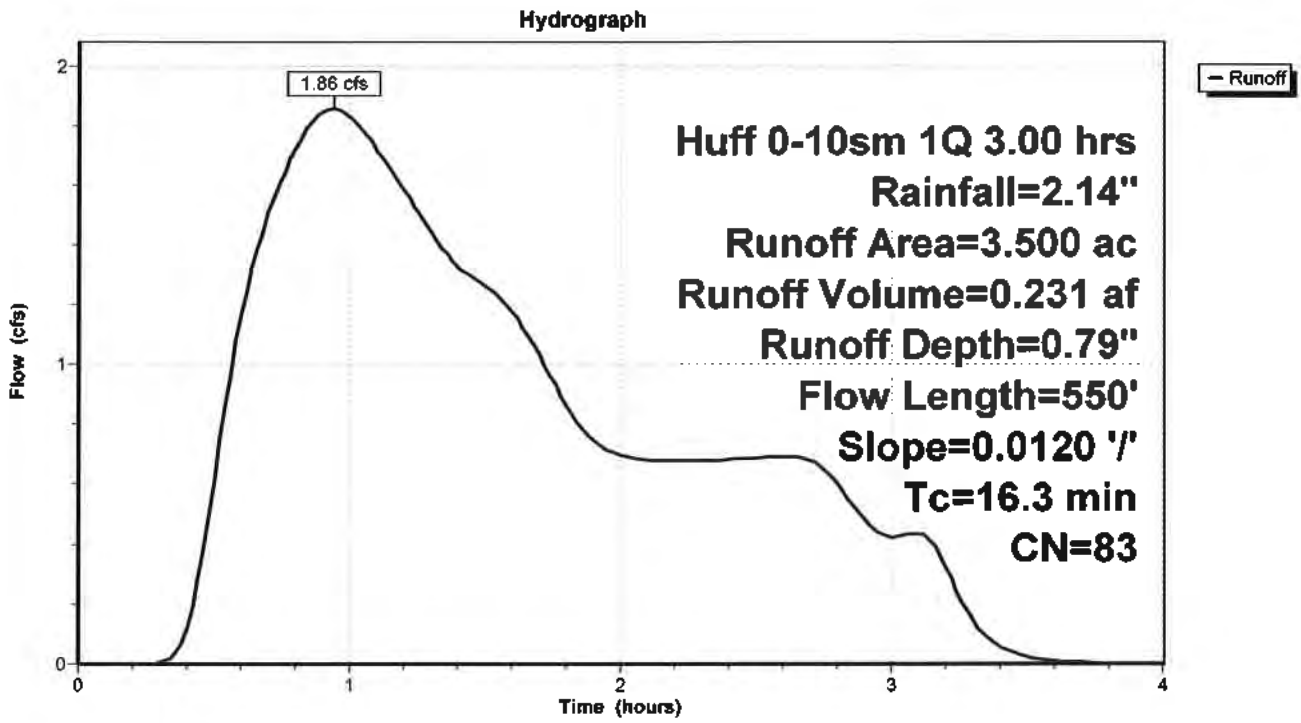
Runoff = 1.86 cfs @ 0.94 hrs, Volume= 0.231 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=2.14"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

## Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 2.08 | 1.92 | 0.64 | 0.68 |
| 0.04 | 0.01 | 0.00 | 0.00 | 2.12 | 1.93 | 0.65 | 0.68 |
| 0.08 | 0.05 | 0.00 | 0.00 | 2.16 | 1.94 | 0.66 | 0.68 |
| 0.12 | 0.11 | 0.00 | 0.00 | 2.20 | 1.95 | 0.66 | 0.68 |
| 0.16 | 0.20 | 0.00 | 0.00 | 2.24 | 1.96 | 0.67 | 0.68 |
| 0.20 | 0.29 | 0.00 | 0.00 | 2.28 | 1.98 | 0.68 | 0.68 |
| 0.24 | 0.38 | 0.00 | 0.00 | 2.32 | 1.99 | 0.69 | 0.68 |
| 0.28 | 0.48 | 0.00 | 0.00 | 2.36 | 2.00 | 0.69 | 0.68 |
| 0.32 | 0.58 | 0.01 | 0.00 | 2.40 | 2.01 | 0.70 | 0.68 |
| 0.36 | 0.66 | 0.03 | 0.03 | 2.44 | 2.02 | 0.71 | 0.69 |
| 0.40 | 0.74 | 0.05 | 0.12 | 2.48 | 2.03 | 0.72 | 0.69 |
| 0.44 | 0.81 | 0.06 | 0.27 | 2.52 | 2.04 | 0.73 | 0.69 |
| 0.48 | 0.86 | 0.08 | 0.50 | 2.56 | 2.06 | 0.73 | 0.69 |
| 0.52 | 0.92 | 0.10 | 0.74 | 2.60 | 2.07 | 0.74 | 0.69 |
| 0.56 | 0.97 | 0.12 | 0.97 | 2.64 | 2.08 | 0.75 | 0.69 |
| 0.60 | 1.03 | 0.14 | 1.17 | 2.68 | 2.08 | 0.75 | 0.69 |
| 0.64 | 1.08 | 0.16 | 1.32 | 2.72 | 2.09 | 0.76 | 0.67 |
| 0.68 | 1.13 | 0.19 | 1.45 | 2.76 | 2.09 | 0.76 | 0.64 |
| 0.72 | 1.18 | 0.21 | 1.55 | 2.80 | 2.10 | 0.76 | 0.60 |
| 0.76 | 1.22 | 0.23 | 1.65 | 2.84 | 2.11 | 0.77 | 0.55 |
| 0.80 | 1.27 | 0.25 | 1.72 | 2.88 | 2.11 | 0.77 | 0.50 |
| 0.84 | 1.31 | 0.27 | 1.79 | 2.92 | 2.12 | 0.78 | 0.46 |
| 0.88 | 1.34 | 0.29 | 1.83 | 2.96 | 2.13 | 0.78 | 0.43 |
| 0.92 | 1.38 | 0.31 | **1.86** | 3.00 | **2.14** | **0.79** | 0.42 |
| 0.96 | 1.41 | 0.33 | **1.86** | 3.04 | 2.14 | 0.79 | 0.43 |
| 1.00 | 1.44 | 0.35 | 1.83 | 3.08 | 2.14 | 0.79 | 0.44 |
| 1.04 | 1.47 | 0.36 | 1.79 | 3.12 | 2.14 | 0.79 | 0.44 |
| 1.08 | 1.50 | 0.38 | 1.74 | 3.16 | 2.14 | 0.79 | 0.39 |
| 1.12 | 1.53 | 0.40 | 1.69 | 3.20 | 2.14 | 0.79 | 0.32 |
| 1.16 | 1.55 | 0.41 | 1.64 | 3.24 | 2.14 | 0.79 | 0.25 |
| 1.20 | 1.58 | 0.42 | 1.58 | 3.28 | 2.14 | 0.79 | 0.17 |
| 1.24 | 1.60 | 0.44 | 1.53 | 3.32 | 2.14 | 0.79 | 0.12 |
| 1.28 | 1.62 | 0.45 | 1.47 | 3.36 | 2.14 | 0.79 | 0.08 |
| 1.32 | 1.65 | 0.47 | 1.42 | 3.40 | 2.14 | 0.79 | 0.06 |
| 1.36 | 1.67 | 0.48 | 1.37 | 3.44 | 2.14 | 0.79 | 0.04 |
| 1.40 | 1.69 | 0.49 | 1.33 | 3.48 | 2.14 | 0.79 | 0.03 |
| 1.44 | 1.71 | 0.51 | 1.30 | 3.52 | 2.14 | 0.79 | 0.02 |
| 1.48 | 1.73 | 0.52 | 1.27 | 3.56 | 2.14 | 0.79 | 0.01 |
| 1.52 | 1.75 | 0.53 | 1.25 | 3.60 | 2.14 | 0.79 | 0.01 |
| 1.56 | 1.76 | 0.54 | 1.22 | 3.64 | 2.14 | 0.79 | 0.01 |
| 1.60 | 1.78 | 0.55 | 1.18 | 3.68 | 2.14 | 0.79 | 0.00 |
| 1.64 | 1.79 | 0.56 | 1.12 | 3.72 | 2.14 | 0.79 | 0.00 |
| 1.68 | 1.80 | 0.56 | 1.06 | 3.76 | 2.14 | 0.79 | 0.00 |
| 1.72 | 1.81 | 0.57 | 1.00 | 3.80 | 2.14 | 0.79 | 0.00 |
| 1.76 | 1.83 | 0.58 | 0.93 | 3.84 | 2.14 | 0.79 | 0.00 |
| 1.80 | 1.84 | 0.59 | 0.86 | 3.88 | 2.14 | 0.79 | 0.00 |
| 1.84 | 1.85 | 0.59 | 0.81 | 3.92 | 2.14 | 0.79 | 0.00 |
| 1.88 | 1.86 | 0.60 | 0.76 | 3.96 | 2.14 | 0.79 | 0.00 |
| 1.92 | 1.87 | 0.61 | 0.73 | 4.00 | 2.14 | 0.79 | 0.00 |
| 1.96 | 1.88 | 0.62 | 0.71 | | | | |
| 2.00 | 1.90 | 0.62 | 0.70 | | | | |
| 2.04 | 1.91 | 0.63 | 0.69 | | | | |

## Summary for Subcatchment 7S: South Property

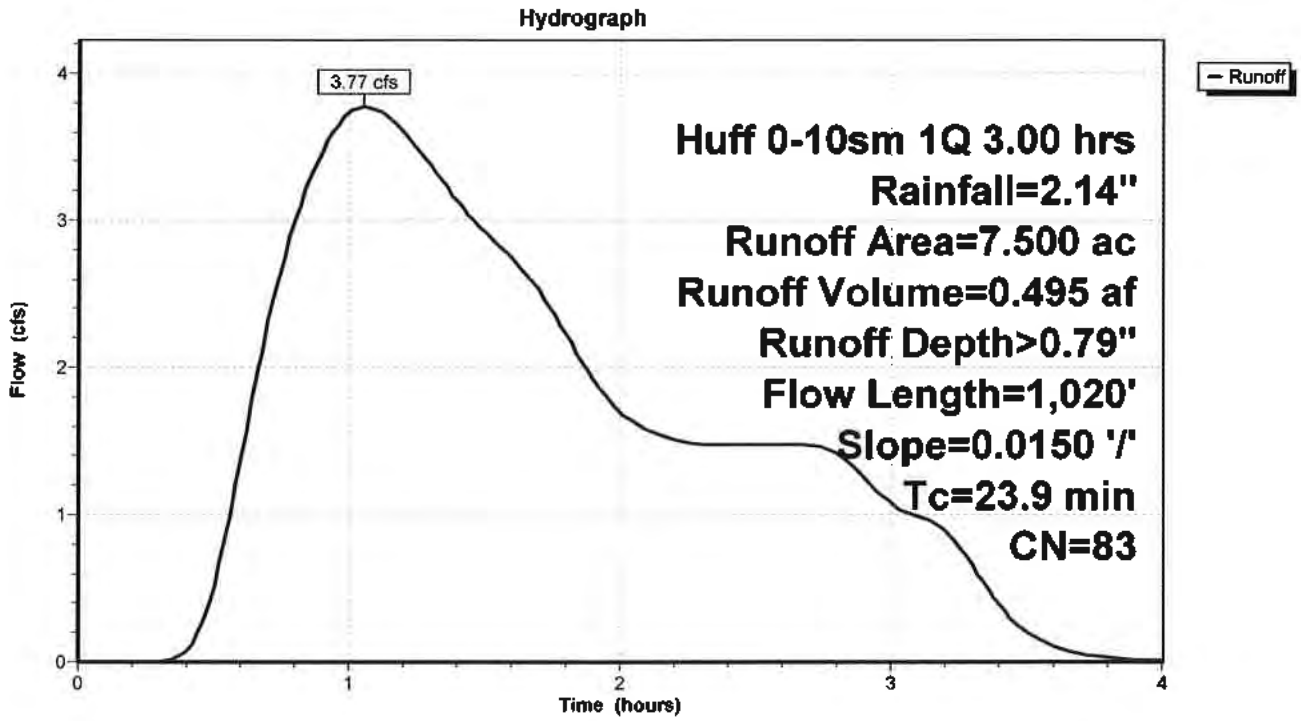
Runoff = 3.77 cfs @ 1.05 hrs, Volume= 0.495 af, Depth> 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=2.14"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 2.08 | 1.92 | 0.64 | 1.59 |
| 0.04 | 0.01 | 0.00 | 0.00 | 2.12 | 1.93 | 0.65 | 1.56 |
| 0.08 | 0.05 | 0.00 | 0.00 | 2.16 | 1.94 | 0.66 | 1.53 |
| 0.12 | 0.11 | 0.00 | 0.00 | 2.20 | 1.95 | 0.66 | 1.51 |
| 0.16 | 0.20 | 0.00 | 0.00 | 2.24 | 1.96 | 0.67 | 1.50 |
| 0.20 | 0.29 | 0.00 | 0.00 | 2.28 | 1.98 | 0.68 | 1.49 |
| 0.24 | 0.38 | 0.00 | 0.00 | 2.32 | 1.99 | 0.69 | 1.48 |
| 0.28 | 0.48 | 0.00 | 0.00 | 2.36 | 2.00 | 0.69 | 1.48 |
| 0.32 | 0.58 | 0.01 | 0.00 | 2.40 | 2.01 | 0.70 | 1.47 |
| 0.36 | 0.66 | 0.03 | 0.02 | 2.44 | 2.02 | 0.71 | 1.47 |
| 0.40 | 0.74 | 0.05 | 0.07 | 2.48 | 2.03 | 0.72 | 1.47 |
| 0.44 | 0.81 | 0.06 | 0.19 | 2.52 | 2.04 | 0.73 | 1.48 |
| 0.48 | 0.86 | 0.08 | 0.38 | 2.56 | 2.06 | 0.73 | 1.48 |
| 0.52 | 0.92 | 0.10 | 0.66 | 2.60 | 2.07 | 0.74 | 1.48 |
| 0.56 | 0.97 | 0.12 | 1.01 | 2.64 | 2.08 | 0.75 | 1.48 |
| 0.60 | 1.03 | 0.14 | 1.39 | 2.68 | 2.08 | 0.75 | 1.48 |
| 0.64 | 1.08 | 0.16 | 1.76 | 2.72 | 2.09 | 0.76 | 1.47 |
| 0.68 | 1.13 | 0.19 | 2.13 | 2.76 | 2.09 | 0.76 | 1.45 |
| 0.72 | 1.18 | 0.21 | 2.46 | 2.80 | 2.10 | 0.76 | 1.42 |
| 0.76 | 1.22 | 0.23 | 2.75 | 2.84 | 2.11 | 0.77 | 1.36 |
| 0.80 | 1.27 | 0.25 | 3.00 | 2.88 | 2.11 | 0.77 | 1.29 |
| 0.84 | 1.31 | 0.27 | 3.21 | 2.92 | 2.12 | 0.78 | 1.22 |
| 0.88 | 1.34 | 0.29 | 3.40 | 2.96 | 2.13 | 0.78 | 1.14 |
| 0.92 | 1.38 | 0.31 | 3.55 | 3.00 | **2.14** | **0.79** | 1.08 |
| 0.96 | 1.41 | 0.33 | 3.66 | 3.04 | 2.14 | 0.79 | 1.03 |
| 1.00 | 1.44 | 0.35 | 3.73 | 3.08 | 2.14 | 0.79 | 1.00 |
| 1.04 | 1.47 | 0.36 | **3.77** | 3.12 | 2.14 | 0.79 | 0.97 |
| 1.08 | 1.50 | 0.38 | 3.77 | 3.16 | 2.14 | 0.79 | 0.95 |
| 1.12 | 1.53 | 0.40 | 3.73 | 3.20 | 2.14 | 0.79 | 0.89 |
| 1.16 | 1.55 | 0.41 | 3.68 | 3.24 | 2.14 | 0.79 | 0.81 |
| 1.20 | 1.58 | 0.42 | 3.60 | 3.28 | 2.14 | 0.79 | 0.71 |
| 1.24 | 1.60 | 0.44 | 3.52 | 3.32 | 2.14 | 0.79 | 0.60 |
| 1.28 | 1.62 | 0.45 | 3.42 | 3.36 | 2.14 | 0.79 | 0.49 |
| 1.32 | 1.65 | 0.47 | 3.32 | 3.40 | 2.14 | 0.79 | 0.39 |
| 1.36 | 1.67 | 0.48 | 3.22 | 3.44 | 2.14 | 0.79 | 0.30 |
| 1.40 | 1.69 | 0.49 | 3.12 | 3.48 | 2.14 | 0.79 | 0.23 |
| 1.44 | 1.71 | 0.51 | 3.03 | 3.52 | 2.14 | 0.79 | 0.18 |
| 1.48 | 1.73 | 0.52 | 2.95 | 3.56 | 2.14 | 0.79 | 0.14 |
| 1.52 | 1.75 | 0.53 | 2.88 | 3.60 | 2.14 | 0.79 | 0.11 |
| 1.56 | 1.76 | 0.54 | 2.81 | 3.64 | 2.14 | 0.79 | 0.09 |
| 1.60 | 1.78 | 0.55 | 2.74 | 3.68 | 2.14 | 0.79 | 0.07 |
| 1.64 | 1.79 | 0.56 | 2.66 | 3.72 | 2.14 | 0.79 | 0.05 |
| 1.68 | 1.80 | 0.56 | 2.57 | 3.76 | 2.14 | 0.79 | 0.04 |
| 1.72 | 1.81 | 0.57 | 2.47 | 3.80 | 2.14 | 0.79 | 0.03 |
| 1.76 | 1.83 | 0.58 | 2.35 | 3.84 | 2.14 | 0.79 | 0.02 |
| 1.80 | 1.84 | 0.59 | 2.22 | 3.88 | 2.14 | 0.79 | 0.02 |
| 1.84 | 1.85 | 0.59 | 2.10 | 3.92 | 2.14 | 0.79 | 0.01 |
| 1.88 | 1.86 | 0.60 | 1.98 | 3.96 | 2.14 | 0.79 | 0.01 |
| 1.92 | 1.87 | 0.61 | 1.87 | 4.00 | 2.14 | 0.79 | 0.01 |
| 1.96 | 1.88 | 0.62 | 1.78 | | | | |
| 2.00 | 1.90 | 0.62 | 1.70 | | | | |
| 2.04 | 1.91 | 0.63 | 1.64 | | | | |

## Summary for Subcatchment 8S: Northwood Drive Bypass

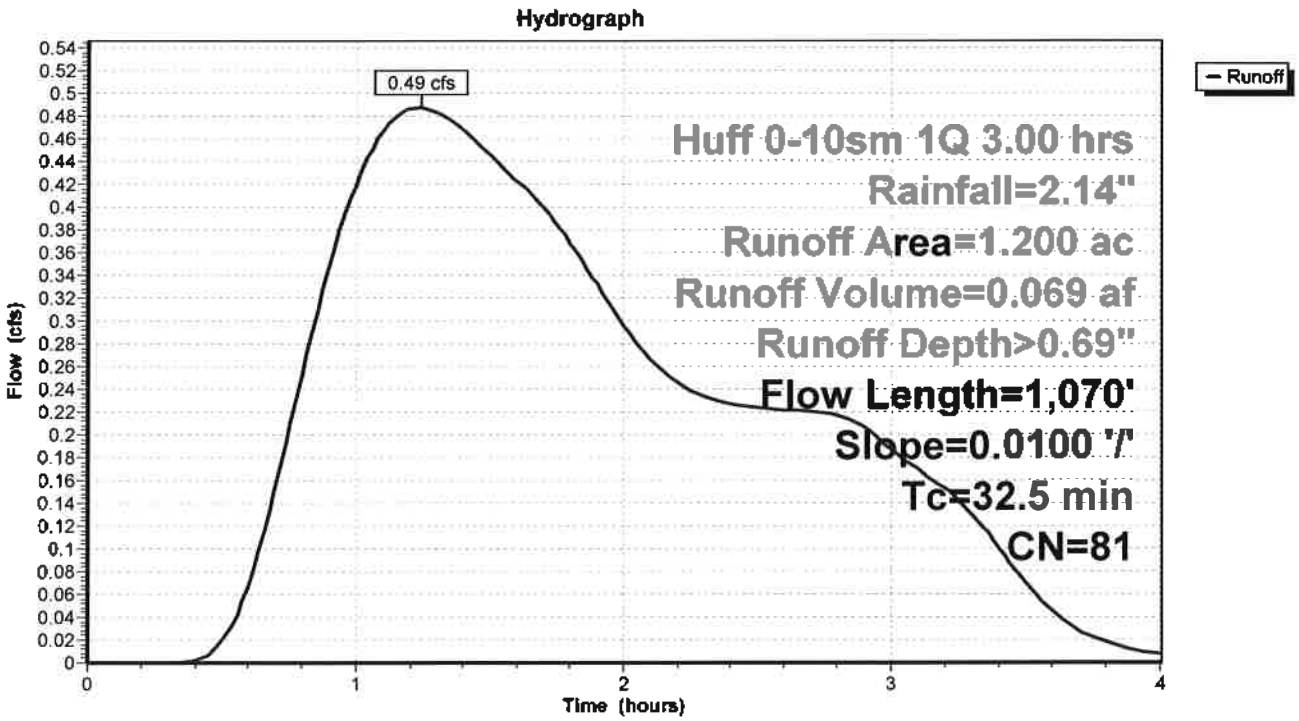
Runoff = 0.49 cfs @ 1.25 hrs, Volume= 0.069 af, Depth> 0.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=2.14"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 2.08 | 1.92 | 0.55 | 0.27 |
| 0.04 | 0.01 | 0.00 | 0.00 | 2.12 | 1.93 | 0.56 | 0.26 |
| 0.08 | 0.05 | 0.00 | 0.00 | 2.16 | 1.94 | 0.57 | 0.25 |
| 0.12 | 0.11 | 0.00 | 0.00 | 2.20 | 1.95 | 0.57 | 0.25 |
| 0.16 | 0.20 | 0.00 | 0.00 | 2.24 | 1.96 | 0.58 | 0.24 |
| 0.20 | 0.29 | 0.00 | 0.00 | 2.28 | 1.98 | 0.59 | 0.24 |
| 0.24 | 0.38 | 0.00 | 0.00 | 2.32 | 1.99 | 0.60 | 0.23 |
| 0.28 | 0.48 | 0.00 | 0.00 | 2.36 | 2.00 | 0.60 | 0.23 |
| 0.32 | 0.58 | 0.00 | 0.00 | 2.40 | 2.01 | 0.61 | 0.23 |
| 0.36 | 0.66 | 0.02 | 0.00 | 2.44 | 2.02 | 0.62 | 0.23 |
| 0.40 | 0.74 | 0.03 | 0.00 | 2.48 | 2.03 | 0.63 | 0.22 |
| 0.44 | 0.81 | 0.04 | 0.01 | 2.52 | 2.04 | 0.63 | 0.22 |
| 0.48 | 0.86 | 0.06 | 0.01 | 2.56 | 2.06 | 0.64 | 0.22 |
| 0.52 | 0.92 | 0.07 | 0.02 | 2.60 | 2.07 | 0.65 | 0.22 |
| 0.56 | 0.97 | 0.09 | 0.04 | 2.64 | 2.08 | 0.65 | 0.22 |
| 0.60 | 1.03 | 0.11 | 0.07 | 2.68 | 2.08 | 0.66 | 0.22 |
| 0.64 | 1.08 | 0.13 | 0.10 | 2.72 | 2.09 | 0.66 | 0.22 |
| 0.68 | 1.13 | 0.14 | 0.13 | 2.76 | 2.09 | 0.67 | 0.22 |
| 0.72 | 1.18 | 0.16 | 0.17 | 2.80 | 2.10 | 0.67 | 0.22 |
| 0.76 | 1.22 | 0.18 | 0.21 | 2.84 | 2.11 | 0.67 | 0.21 |
| 0.80 | 1.27 | 0.20 | 0.25 | 2.88 | 2.11 | 0.68 | 0.21 |
| 0.84 | 1.31 | 0.22 | 0.29 | 2.92 | 2.12 | 0.68 | 0.20 |
| 0.88 | 1.34 | 0.24 | 0.33 | 2.96 | 2.13 | 0.69 | 0.19 |
| 0.92 | 1.38 | 0.25 | 0.36 | 3.00 | **2.14** | **0.70** | 0.19 |
| 0.96 | 1.41 | 0.27 | 0.39 | 3.04 | 2.14 | 0.70 | 0.18 |
| 1.00 | 1.44 | 0.29 | 0.42 | 3.08 | 2.14 | 0.70 | 0.17 |
| 1.04 | 1.47 | 0.30 | 0.44 | 3.12 | 2.14 | 0.70 | 0.16 |
| 1.08 | 1.50 | 0.32 | 0.46 | 3.16 | 2.14 | 0.70 | 0.16 |
| 1.12 | 1.53 | 0.33 | 0.47 | 3.20 | 2.14 | 0.70 | 0.15 |
| 1.16 | 1.55 | 0.34 | 0.48 | 3.24 | 2.14 | 0.70 | 0.14 |
| 1.20 | 1.58 | 0.36 | 0.49 | 3.28 | 2.14 | 0.70 | 0.14 |
| 1.24 | 1.60 | 0.37 | **0.49** | 3.32 | 2.14 | 0.70 | 0.12 |
| 1.28 | 1.62 | 0.38 | 0.49 | 3.36 | 2.14 | 0.70 | 0.11 |
| 1.32 | 1.65 | 0.39 | 0.48 | 3.40 | 2.14 | 0.70 | 0.10 |
| 1.36 | 1.67 | 0.41 | 0.48 | 3.44 | 2.14 | 0.70 | 0.09 |
| 1.40 | 1.69 | 0.42 | 0.47 | 3.48 | 2.14 | 0.70 | 0.08 |
| 1.44 | 1.71 | 0.43 | 0.46 | 3.52 | 2.14 | 0.70 | 0.06 |
| 1.48 | 1.73 | 0.44 | 0.45 | 3.56 | 2.14 | 0.70 | 0.05 |
| 1.52 | 1.75 | 0.45 | 0.44 | 3.60 | 2.14 | 0.70 | 0.04 |
| 1.56 | 1.76 | 0.46 | 0.43 | 3.64 | 2.14 | 0.70 | 0.04 |
| 1.60 | 1.78 | 0.47 | 0.42 | 3.68 | 2.14 | 0.70 | 0.03 |
| 1.64 | 1.79 | 0.48 | 0.41 | 3.72 | 2.14 | 0.70 | 0.03 |
| 1.68 | 1.80 | 0.48 | 0.40 | 3.76 | 2.14 | 0.70 | 0.02 |
| 1.72 | 1.81 | 0.49 | 0.39 | 3.80 | 2.14 | 0.70 | 0.02 |
| 1.76 | 1.83 | 0.50 | 0.38 | 3.84 | 2.14 | 0.70 | 0.01 |
| 1.80 | 1.84 | 0.50 | 0.37 | 3.88 | 2.14 | 0.70 | 0.01 |
| 1.84 | 1.85 | 0.51 | 0.35 | 3.92 | 2.14 | 0.70 | 0.01 |
| 1.88 | 1.86 | 0.52 | 0.34 | 3.96 | 2.14 | 0.70 | 0.01 |
| 1.92 | 1.87 | 0.52 | 0.32 | 4.00 | 2.14 | 0.70 | 0.01 |
| 1.96 | 1.88 | 0.53 | 0.31 | | | | |
| 2.00 | 1.90 | 0.54 | 0.30 | | | | |
| 2.04 | 1.91 | 0.55 | 0.28 | | | | |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

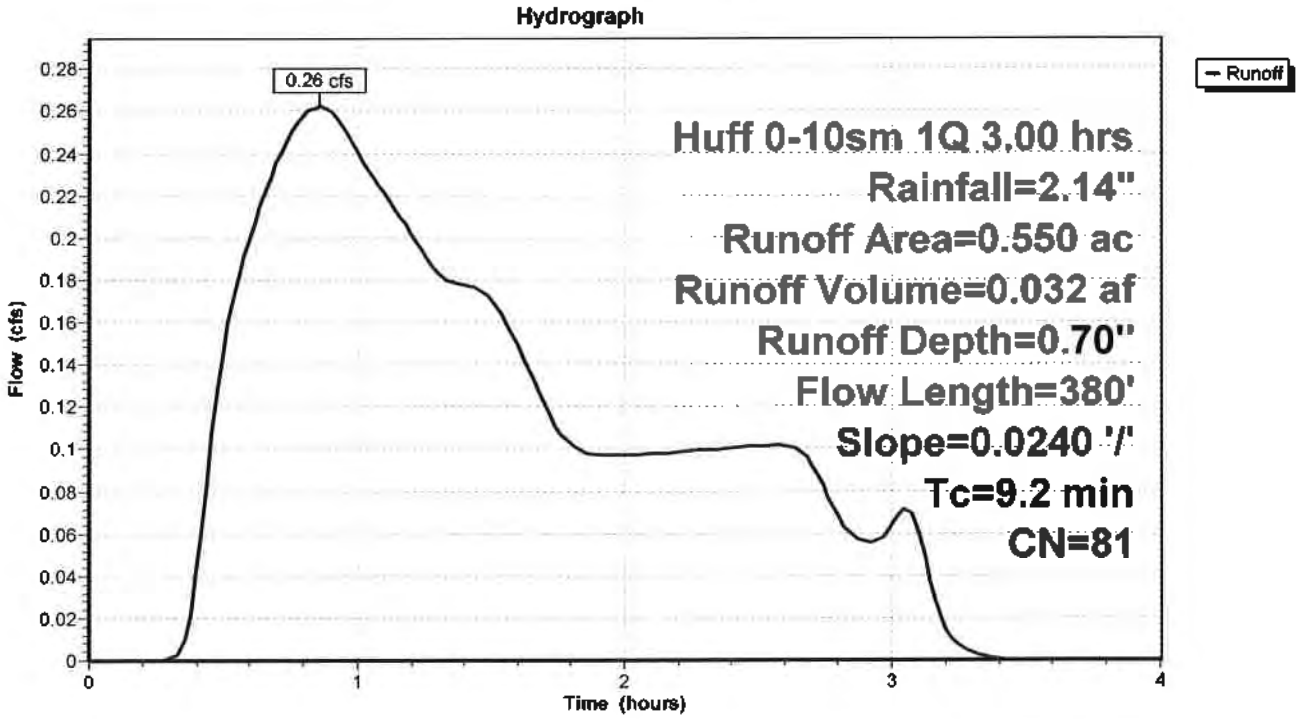
Runoff = 0.26 cfs @ 0.86 hrs, Volume= 0.032 af, Depth= 0.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=2.14"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 2.08 | 1.92 | 0.55 | 0.10 |
| 0.04 | 0.01 | 0.00 | 0.00 | 2.12 | 1.93 | 0.56 | 0.10 |
| 0.08 | 0.05 | 0.00 | 0.00 | 2.16 | 1.94 | 0.57 | 0.10 |
| 0.12 | 0.11 | 0.00 | 0.00 | 2.20 | 1.95 | 0.57 | 0.10 |
| 0.16 | 0.20 | 0.00 | 0.00 | 2.24 | 1.96 | 0.58 | 0.10 |
| 0.20 | 0.29 | 0.00 | 0.00 | 2.28 | 1.98 | 0.59 | 0.10 |
| 0.24 | 0.38 | 0.00 | 0.00 | 2.32 | 1.99 | 0.60 | 0.10 |
| 0.28 | 0.48 | 0.00 | 0.00 | 2.36 | 2.00 | 0.60 | 0.10 |
| 0.32 | 0.58 | 0.00 | 0.00 | 2.40 | 2.01 | 0.61 | 0.10 |
| 0.36 | 0.66 | 0.02 | 0.01 | 2.44 | 2.02 | 0.62 | 0.10 |
| 0.40 | 0.74 | 0.03 | 0.04 | 2.48 | 2.03 | 0.63 | 0.10 |
| 0.44 | 0.81 | 0.04 | 0.08 | 2.52 | 2.04 | 0.63 | 0.10 |
| 0.48 | 0.86 | 0.06 | 0.13 | 2.56 | 2.06 | 0.64 | 0.10 |
| 0.52 | 0.92 | 0.07 | 0.16 | 2.60 | 2.07 | 0.65 | 0.10 |
| 0.56 | 0.97 | 0.09 | 0.18 | 2.64 | 2.08 | 0.65 | 0.10 |
| 0.60 | 1.03 | 0.11 | 0.20 | 2.68 | 2.08 | 0.66 | 0.10 |
| 0.64 | 1.08 | 0.13 | 0.21 | 2.72 | 2.09 | 0.66 | 0.09 |
| 0.68 | 1.13 | 0.14 | 0.23 | 2.76 | 2.09 | 0.67 | 0.08 |
| 0.72 | 1.18 | 0.16 | 0.24 | 2.80 | 2.10 | 0.67 | 0.07 |
| 0.76 | 1.22 | 0.18 | 0.25 | 2.84 | 2.11 | 0.67 | 0.06 |
| 0.80 | 1.27 | 0.20 | 0.26 | 2.88 | 2.11 | 0.68 | 0.06 |
| 0.84 | 1.31 | 0.22 | **0.26** | 2.92 | 2.12 | 0.68 | 0.05 |
| 0.88 | 1.34 | 0.24 | **0.26** | 2.96 | 2.13 | 0.69 | 0.06 |
| 0.92 | 1.38 | 0.25 | 0.26 | 3.00 | **2.14** | **0.70** | 0.06 |
| 0.96 | 1.41 | 0.27 | 0.25 | 3.04 | 2.14 | 0.70 | 0.07 |
| 1.00 | 1.44 | 0.29 | 0.24 | 3.08 | 2.14 | 0.70 | 0.07 |
| 1.04 | 1.47 | 0.30 | 0.23 | 3.12 | 2.14 | 0.70 | 0.05 |
| 1.08 | 1.50 | 0.32 | 0.22 | 3.16 | 2.14 | 0.70 | 0.03 |
| 1.12 | 1.53 | 0.33 | 0.22 | 3.20 | 2.14 | 0.70 | 0.01 |
| 1.16 | 1.55 | 0.34 | 0.21 | 3.24 | 2.14 | 0.70 | 0.01 |
| 1.20 | 1.58 | 0.36 | 0.20 | 3.28 | 2.14 | 0.70 | 0.00 |
| 1.24 | 1.60 | 0.37 | 0.19 | 3.32 | 2.14 | 0.70 | 0.00 |
| 1.28 | 1.62 | 0.38 | 0.19 | 3.36 | 2.14 | 0.70 | 0.00 |
| 1.32 | 1.65 | 0.39 | 0.18 | 3.40 | 2.14 | 0.70 | 0.00 |
| 1.36 | 1.67 | 0.41 | 0.18 | 3.44 | 2.14 | 0.70 | 0.00 |
| 1.40 | 1.69 | 0.42 | 0.18 | 3.48 | 2.14 | 0.70 | 0.00 |
| 1.44 | 1.71 | 0.43 | 0.18 | 3.52 | 2.14 | 0.70 | 0.00 |
| 1.48 | 1.73 | 0.44 | 0.17 | 3.56 | 2.14 | 0.70 | 0.00 |
| 1.52 | 1.75 | 0.45 | 0.17 | 3.60 | 2.14 | 0.70 | 0.00 |
| 1.56 | 1.76 | 0.46 | 0.16 | 3.64 | 2.14 | 0.70 | 0.00 |
| 1.60 | 1.78 | 0.47 | 0.15 | 3.68 | 2.14 | 0.70 | 0.00 |
| 1.64 | 1.79 | 0.48 | 0.14 | 3.72 | 2.14 | 0.70 | 0.00 |
| 1.68 | 1.80 | 0.48 | 0.13 | 3.76 | 2.14 | 0.70 | 0.00 |
| 1.72 | 1.81 | 0.49 | 0.12 | 3.80 | 2.14 | 0.70 | 0.00 |
| 1.76 | 1.83 | 0.50 | 0.11 | 3.84 | 2.14 | 0.70 | 0.00 |
| 1.80 | 1.84 | 0.50 | 0.10 | 3.88 | 2.14 | 0.70 | 0.00 |
| 1.84 | 1.85 | 0.51 | 0.10 | 3.92 | 2.14 | 0.70 | 0.00 |
| 1.88 | 1.86 | 0.52 | 0.10 | 3.96 | 2.14 | 0.70 | 0.00 |
| 1.92 | 1.87 | 0.52 | 0.10 | 4.00 | 2.14 | 0.70 | 0.00 |
| 1.96 | 1.88 | 0.53 | 0.10 | | | | |
| 2.00 | 1.90 | 0.54 | 0.10 | | | | |
| 2.04 | 1.91 | 0.55 | 0.10 | | | | |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 4.12 cfs @ | 1.04 hrs, | Volume= | 0.580 af |
| Outflow | = | 0.58 cfs @ | 3.38 hrs, | Volume= | 0.135 af, Atten= 86%, Lag= 140.1 min |
| Primary | = | 0.58 cfs @ | 3.38 hrs, | Volume= | 0.135 af |
| Secondary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Peak Elev= 671.36' @ 3.38 hrs Surf.Area= 28,298 sf Storage= 20,178 cf

Plug-Flow detention time= 102.4 min calculated for 0.135 af (23% of inflow)
Center-of-Mass det. time= 50.7 min ( 152.0 - 101.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.40' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

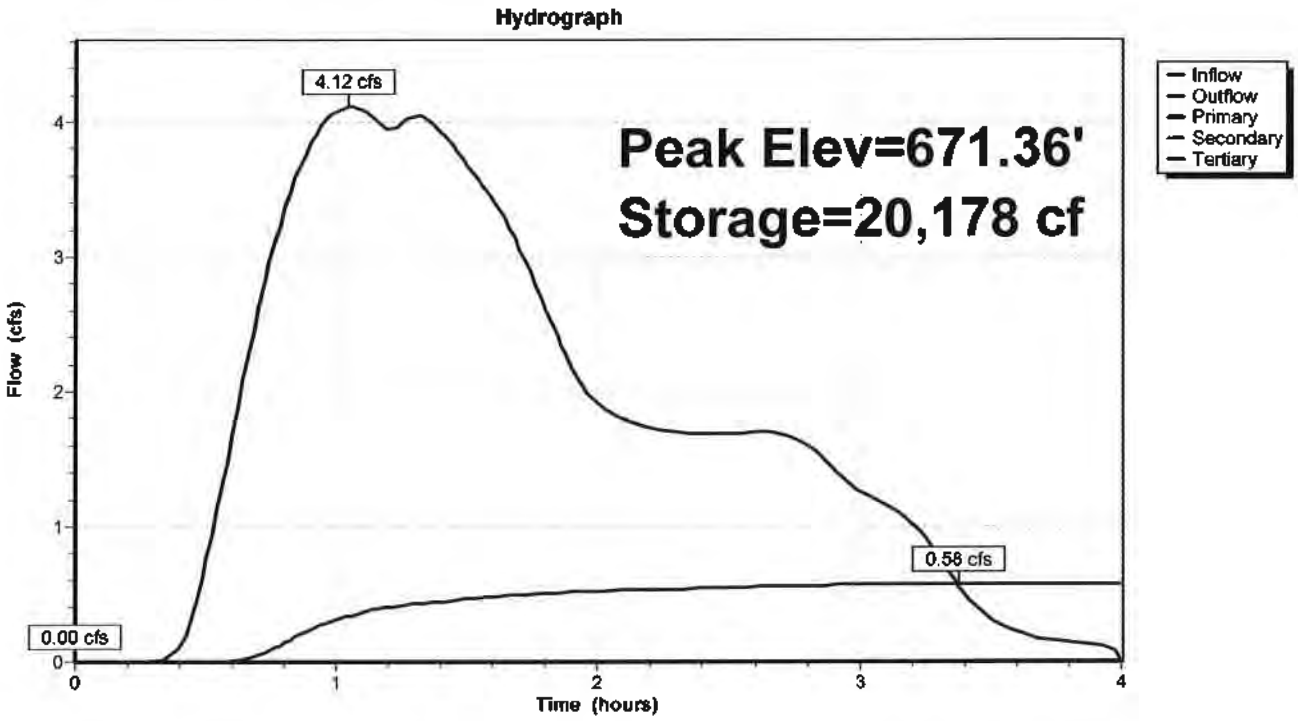
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=0.58 cfs @ 3.38 hrs HW=671.36' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.58 cfs @ 5.22 fps)

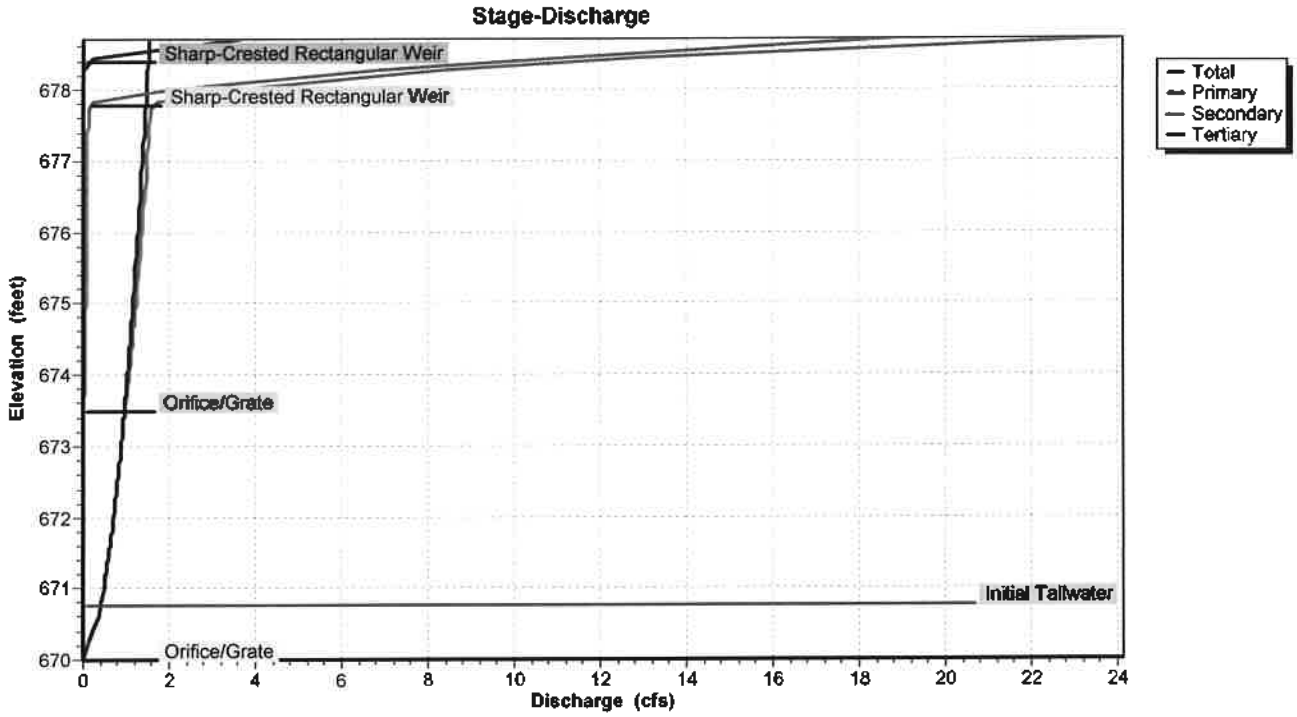
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

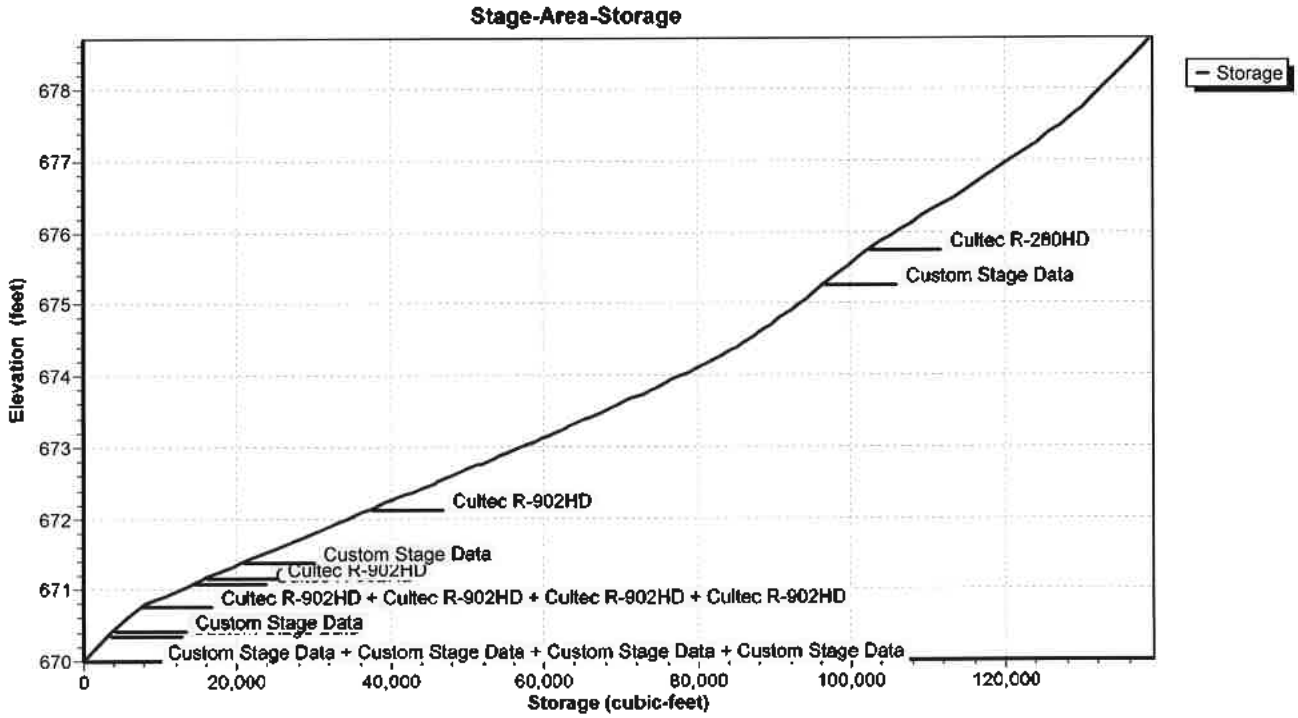
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 0.10 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.30 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 0.11 | 8 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.50 | 0.76 | 123 | 670.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.60 | 1.69 | 524 | 670.06 | 0.01 | 0.01 | 0.00 | 0.00 |
| 0.70 | 2.64 | 1,266 | 670.14 | 0.05 | 0.05 | 0.00 | 0.00 |
| 0.80 | 3.37 | 2,300 | 670.26 | 0.14 | 0.14 | 0.00 | 0.00 |
| 0.90 | 3.85 | 3,522 | 670.39 | 0.24 | 0.24 | 0.00 | 0.00 |
| 1.00 | **4.09** | 4,854 | 670.52 | 0.31 | 0.31 | 0.00 | 0.00 |
| 1.10 | **4.09** | 6,215 | 670.66 | 0.36 | 0.36 | 0.00 | 0.00 |
| 1.20 | 3.93 | 7,530 | 670.77 | 0.41 | 0.41 | 0.00 | 0.00 |
| 1.30 | 4.06 | 8,815 | 670.83 | 0.43 | 0.43 | 0.00 | 0.00 |
| 1.40 | 3.93 | 10,110 | 670.89 | 0.45 | 0.45 | 0.00 | 0.00 |
| 1.50 | 3.68 | 11,326 | 670.95 | 0.46 | 0.46 | 0.00 | 0.00 |
| 1.60 | 3.42 | 12,446 | 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 1.70 | 3.06 | 13,453 | 671.05 | 0.49 | 0.49 | 0.00 | 0.00 |
| 1.80 | 2.61 | 14,312 | 671.09 | 0.51 | 0.51 | 0.00 | 0.00 |
| 1.90 | 2.18 | 15,003 | 671.13 | 0.51 | 0.51 | 0.00 | 0.00 |
| 2.00 | 1.92 | 15,557 | 671.15 | 0.52 | 0.52 | 0.00 | 0.00 |
| 2.10 | 1.79 | 16,039 | 671.17 | 0.53 | 0.53 | 0.00 | 0.00 |
| 2.20 | 1.73 | 16,483 | 671.19 | 0.53 | 0.53 | 0.00 | 0.00 |
| 2.30 | 1.70 | 16,908 | 671.21 | 0.54 | 0.54 | 0.00 | 0.00 |
| 2.40 | 1.69 | 17,325 | 671.23 | 0.54 | 0.54 | 0.00 | 0.00 |
| 2.50 | 1.69 | 17,738 | 671.25 | 0.55 | 0.55 | 0.00 | 0.00 |
| 2.60 | 1.70 | 18,151 | 671.27 | 0.55 | 0.55 | 0.00 | 0.00 |
| 2.70 | 1.69 | 18,563 | 671.29 | 0.56 | 0.56 | 0.00 | 0.00 |
| 2.80 | 1.60 | 18,959 | 671.31 | 0.56 | 0.56 | 0.00 | 0.00 |
| 2.90 | 1.43 | 19,309 | 671.32 | 0.57 | 0.57 | 0.00 | 0.00 |
| 3.00 | 1.26 | 19,592 | 671.33 | 0.57 | 0.57 | 0.00 | 0.00 |
| 3.10 | 1.16 | 19,824 | 671.35 | 0.57 | 0.57 | 0.00 | 0.00 |
| 3.20 | 1.02 | 20,018 | 671.35 | 0.57 | 0.57 | 0.00 | 0.00 |
| 3.30 | 0.77 | **20,146** | **671.36** | **0.58** | **0.58** | 0.00 | 0.00 |
| 3.40 | 0.50 | **20,176** | **671.36** | **0.58** | **0.58** | 0.00 | 0.00 |
| 3.50 | 0.32 | 20,119 | 671.36 | 0.58 | 0.58 | 0.00 | 0.00 |
| 3.60 | 0.22 | 20,010 | 671.35 | 0.57 | 0.57 | 0.00 | 0.00 |
| 3.70 | 0.17 | 19,874 | 671.35 | 0.57 | 0.57 | 0.00 | 0.00 |
| 3.80 | 0.14 | 19,723 | 671.34 | 0.57 | 0.57 | 0.00 | 0.00 |
| 3.90 | 0.12 | 19,565 | 671.33 | 0.57 | 0.57 | 0.00 | 0.00 |
| 4.00 | 0.00 | 19,402 | 671.33 | 0.57 | 0.57 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 18.46 | 1.54 | 15.13 | 1.79 |
| 678.80 | **28.12** | **1.56** | **21.42** | **5.14** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 2.25 cfs @ | 0.99 hrs, | Volume= | 0.301 af |
| Outflow | = | 1.80 cfs @ | 1.41 hrs, | Volume= | 0.299 af, Atten= 20%, Lag= 24.9 min |
| Primary | = | 1.17 cfs @ | 1.41 hrs, | Volume= | 0.246 af |
| Secondary | = | 0.63 cfs @ | 1.41 hrs, | Volume= | 0.053 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Peak Elev= 677.89' @ 1.41 hrs Surf.Area= 3,051 sf Storage= 2,882 cf

Plug-Flow detention time= 27.6 min calculated for 0.299 af (99% of inflow)
Center-of-Mass det. time= 26.9 min ( 124.2 - 97.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

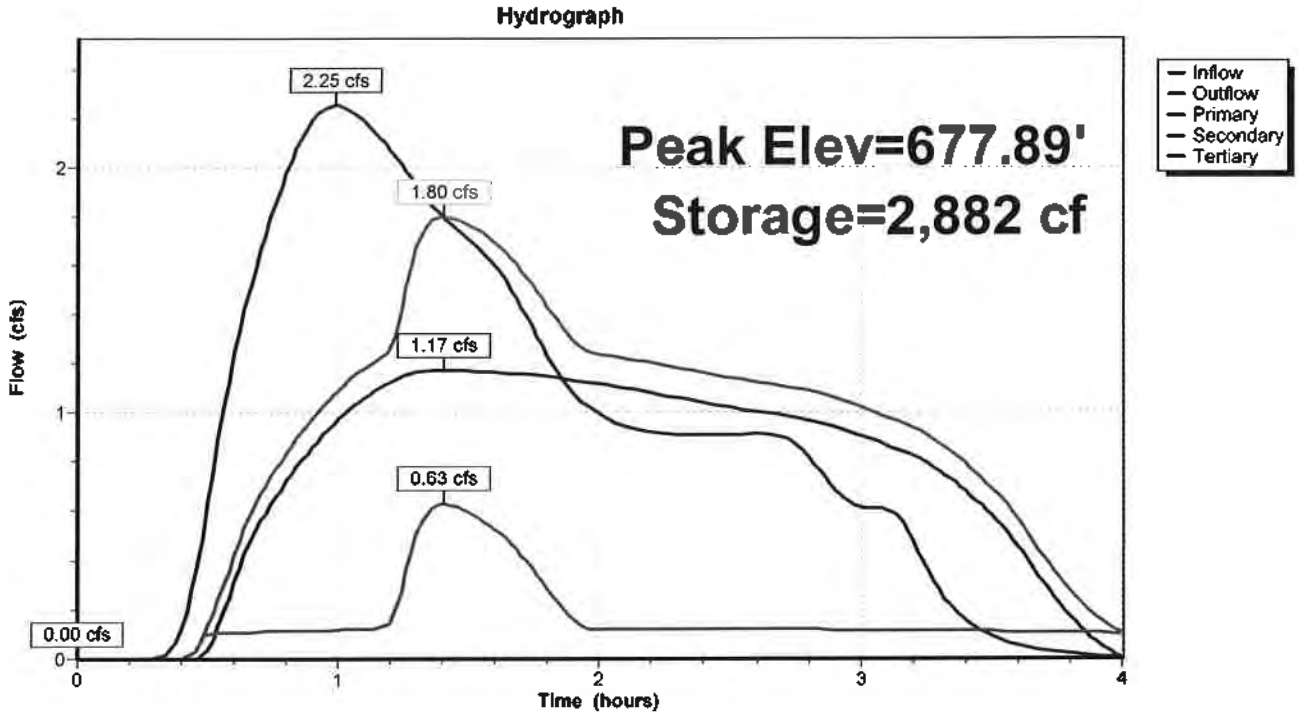
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=1.17 cfs @ 1.41 hrs HW=677.89' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.17 cfs @ 5.09 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

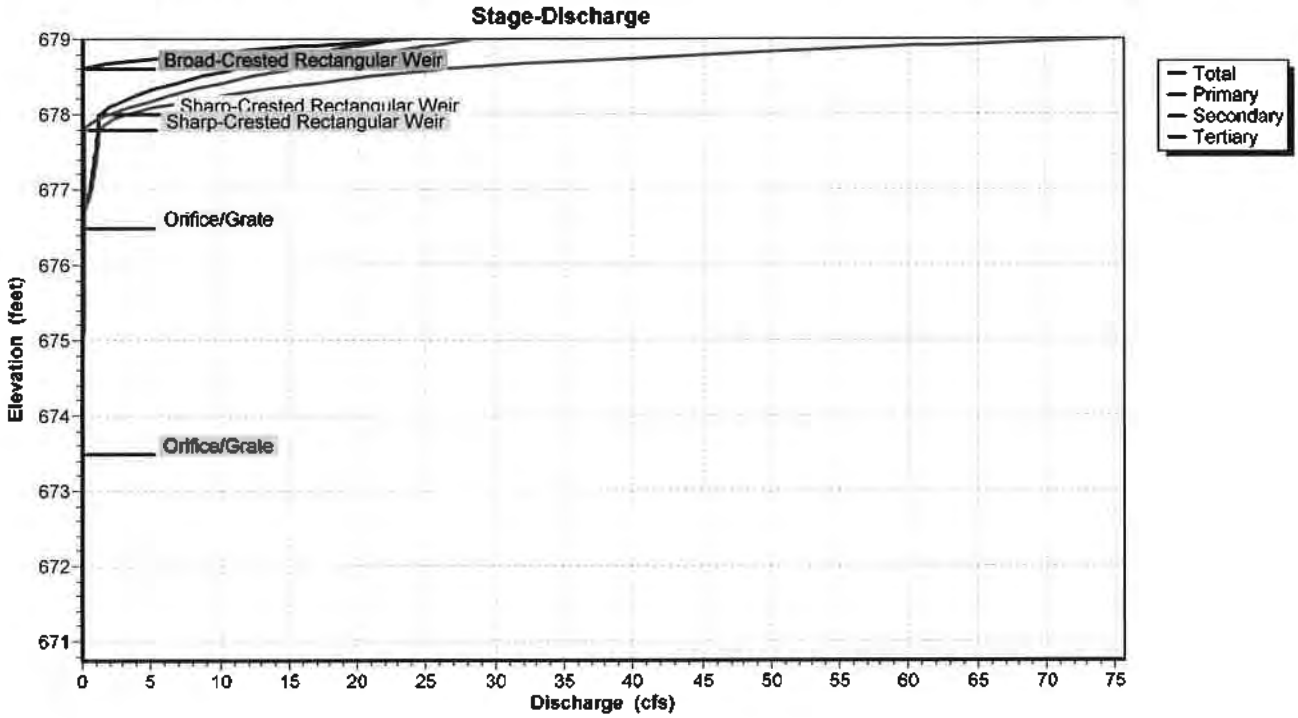
**Secondary OutFlow** Max=0.63 cfs @ 1.41 hrs HW=677.89' TW=670.89' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.12 cfs @ 10.01 fps)
└─**5=Sharp-Crested Rectangular Weir** (Weir Controls 0.51 cfs @ 0.97 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

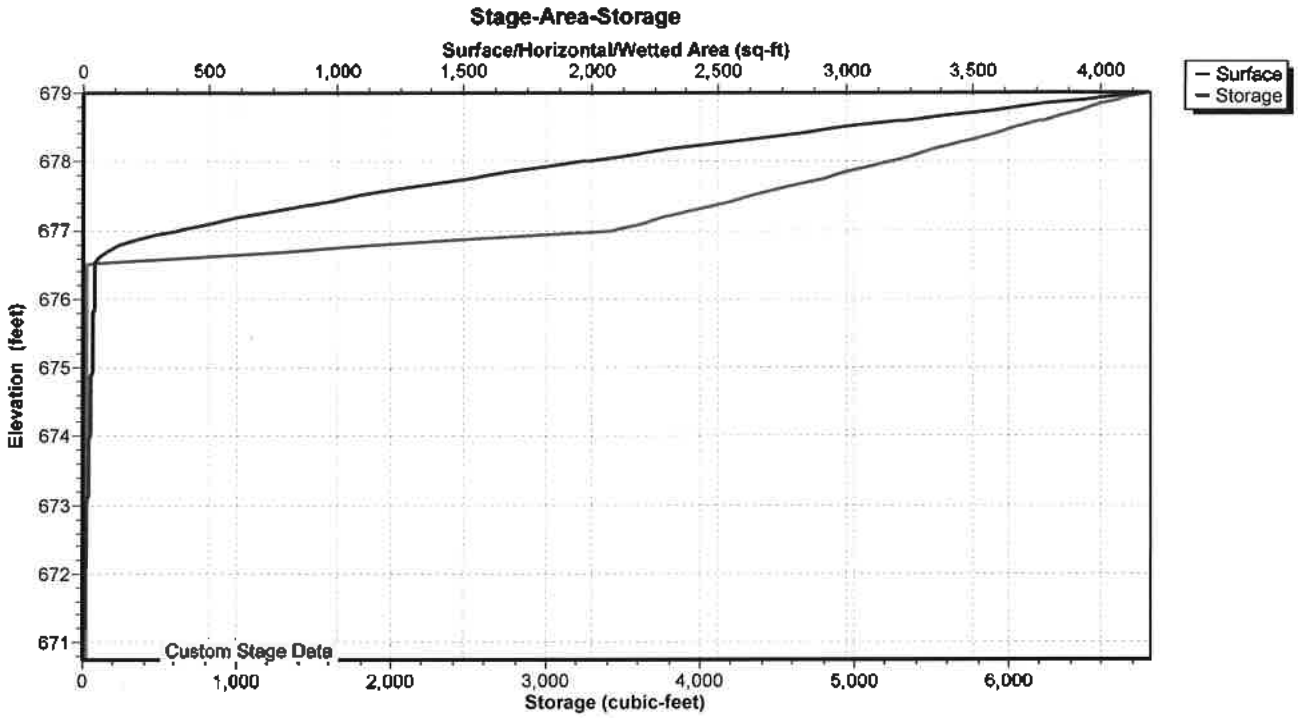
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.10 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.30 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 0.12 | 9 | 671.37 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.50 | 0.64 | 105 | 676.60 | 0.14 | 0.03 | 0.10 | 0.00 |
| 0.60 | 1.23 | 337 | 676.85 | 0.42 | 0.31 | 0.11 | 0.00 |
| 0.70 | 1.65 | 655 | 677.02 | 0.67 | 0.56 | 0.11 | 0.00 |
| 0.80 | 1.97 | 1,033 | 677.20 | 0.84 | 0.72 | 0.11 | 0.00 |
| 0.90 | **2.19** | 1,457 | 677.37 | 0.98 | 0.86 | 0.12 | 0.00 |
| 1.00 | **2.25** | 1,891 | 677.54 | 1.09 | 0.97 | 0.12 | 0.00 |
| 1.10 | 2.19 | 2,289 | 677.69 | 1.18 | 1.06 | 0.12 | 0.00 |
| 1.20 | 2.07 | 2,624 | 677.80 | 1.25 | 1.13 | 0.12 | 0.00 |
| 1.30 | 1.93 | 2,839 | 677.87 | 1.67 | 1.16 | 0.51 | 0.00 |
| 1.40 | 1.80 | **2,883** | **677.89** | **1.80** | **1.17** | **0.63** | 0.00 |
| 1.50 | 1.71 | 2,871 | 677.88 | 1.77 | 1.17 | 0.60 | 0.00 |
| 1.60 | 1.60 | 2,846 | 677.87 | 1.69 | 1.17 | 0.53 | 0.00 |
| 1.70 | 1.43 | 2,805 | 677.86 | 1.58 | 1.16 | 0.42 | 0.00 |
| 1.80 | 1.23 | 2,743 | 677.84 | 1.43 | 1.15 | 0.28 | 0.00 |
| 1.90 | 1.08 | 2,668 | 677.82 | 1.29 | 1.13 | 0.16 | 0.00 |
| 2.00 | 0.99 | 2,587 | 677.79 | 1.24 | 1.12 | 0.12 | 0.00 |
| 2.10 | 0.95 | 2,493 | 677.76 | 1.22 | 1.10 | 0.12 | 0.00 |
| 2.20 | 0.92 | 2,393 | 677.72 | 1.20 | 1.08 | 0.12 | 0.00 |
| 2.30 | 0.91 | 2,294 | 677.69 | 1.18 | 1.06 | 0.12 | 0.00 |
| 2.40 | 0.91 | 2,200 | 677.65 | 1.16 | 1.04 | 0.12 | 0.00 |
| 2.50 | 0.91 | 2,113 | 677.62 | 1.14 | 1.02 | 0.12 | 0.00 |
| 2.60 | 0.92 | 2,033 | 677.59 | 1.12 | 1.01 | 0.12 | 0.00 |
| 2.70 | 0.90 | 1,959 | 677.57 | 1.11 | 0.99 | 0.12 | 0.00 |
| 2.80 | 0.82 | 1,879 | 677.54 | 1.09 | 0.97 | 0.12 | 0.00 |
| 2.90 | 0.69 | 1,766 | 677.49 | 1.06 | 0.94 | 0.12 | 0.00 |
| 3.00 | 0.61 | 1,623 | 677.44 | 1.02 | 0.91 | 0.12 | 0.00 |
| 3.10 | 0.61 | 1,481 | 677.38 | 0.98 | 0.87 | 0.12 | 0.00 |
| 3.20 | 0.48 | 1,339 | 677.32 | 0.94 | 0.83 | 0.11 | 0.00 |
| 3.30 | 0.27 | 1,150 | 677.25 | 0.88 | 0.76 | 0.11 | 0.00 |
| 3.40 | 0.16 | 925 | 677.15 | 0.79 | 0.68 | 0.11 | 0.00 |
| 3.50 | 0.09 | 701 | 677.04 | 0.69 | 0.58 | 0.11 | 0.00 |
| 3.60 | 0.05 | 495 | 676.94 | 0.57 | 0.46 | 0.11 | 0.00 |
| 3.70 | 0.03 | 329 | 676.84 | 0.41 | 0.31 | 0.11 | 0.00 |
| 3.80 | 0.02 | 211 | 676.74 | 0.28 | 0.17 | 0.11 | 0.00 |
| 3.90 | 0.01 | 133 | 676.65 | 0.17 | 0.07 | 0.10 | 0.00 |
| 4.00 | 0.00 | 84 | 676.53 | 0.11 | 0.00 | 0.10 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 23.56 | 9.86 | 13.70 | 0.00 |
| 678.75 | 40.37 | 15.13 | 19.77 | 5.47 |
| 678.95 | **67.61** | **21.27** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

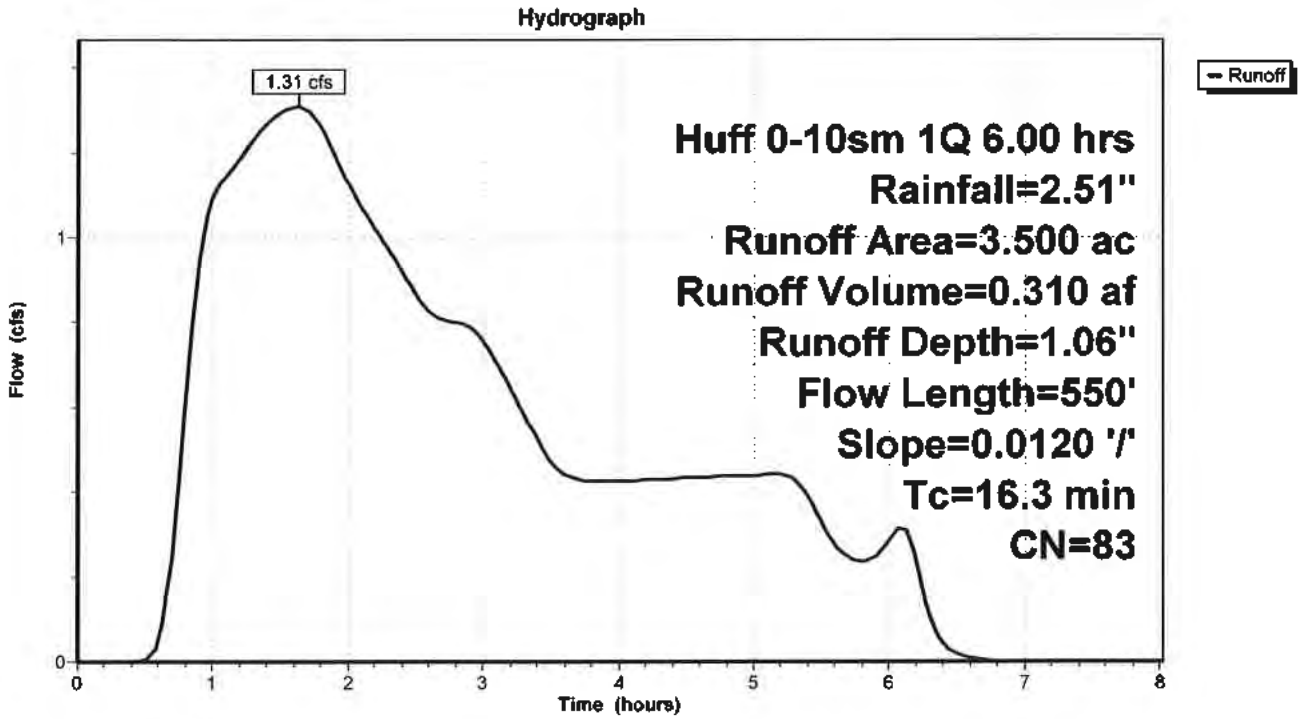
Runoff = 1.31 cfs @ 1.62 hrs, Volume= 0.310 af, Depth= 1.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=2.51"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 7.80 | 2.51 | 1.06 | 0.00 |
| 0.15 | 0.05 | 0.00 | 0.00 | 7.95 | 2.51 | 1.06 | 0.00 |
| 0.30 | 0.20 | 0.00 | 0.00 | | | | |
| 0.45 | 0.41 | 0.00 | 0.00 | | | | |
| 0.60 | 0.62 | 0.02 | 0.04 | | | | |
| 0.75 | 0.81 | 0.07 | 0.46 | | | | |
| 0.90 | 0.96 | 0.12 | 0.95 | | | | |
| 1.05 | 1.09 | 0.17 | 1.13 | | | | |
| 1.20 | 1.20 | 0.22 | 1.19 | | | | |
| 1.35 | 1.32 | 0.28 | 1.25 | | | | |
| 1.50 | 1.42 | 0.33 | **1.29** | | | | |
| 1.65 | 1.51 | 0.39 | **1.31** | | | | |
| 1.80 | 1.60 | 0.44 | 1.26 | | | | |
| 1.95 | 1.67 | 0.48 | 1.16 | | | | |
| 2.10 | 1.74 | 0.52 | 1.07 | | | | |
| 2.25 | 1.80 | 0.56 | 0.99 | | | | |
| 2.40 | 1.85 | 0.60 | 0.92 | | | | |
| 2.55 | 1.90 | 0.63 | 0.84 | | | | |
| 2.70 | 1.95 | 0.66 | 0.80 | | | | |
| 2.85 | 2.00 | 0.69 | 0.80 | | | | |
| 3.00 | 2.04 | 0.72 | 0.76 | | | | |
| 3.15 | 2.08 | 0.75 | 0.68 | | | | |
| 3.30 | 2.10 | 0.77 | 0.58 | | | | |
| 3.45 | 2.13 | 0.79 | 0.49 | | | | |
| 3.60 | 2.16 | 0.80 | 0.44 | | | | |
| 3.75 | 2.18 | 0.82 | 0.43 | | | | |
| 3.90 | 2.21 | 0.84 | 0.42 | | | | |
| 4.05 | 2.23 | 0.86 | 0.43 | | | | |
| 4.20 | 2.26 | 0.88 | 0.43 | | | | |
| 4.35 | 2.28 | 0.89 | 0.43 | | | | |
| 4.50 | 2.31 | 0.91 | 0.43 | | | | |
| 4.65 | 2.33 | 0.93 | 0.43 | | | | |
| 4.80 | 2.36 | 0.95 | 0.44 | | | | |
| 4.95 | 2.38 | 0.97 | 0.44 | | | | |
| 5.10 | 2.41 | 0.99 | 0.44 | | | | |
| 5.25 | 2.43 | 1.00 | 0.44 | | | | |
| 5.40 | 2.45 | 1.02 | 0.39 | | | | |
| 5.55 | 2.46 | 1.03 | 0.30 | | | | |
| 5.70 | 2.47 | 1.03 | 0.24 | | | | |
| 5.85 | 2.49 | 1.05 | 0.23 | | | | |
| 6.00 | **2.51** | **1.06** | 0.28 | | | | |
| 6.15 | 2.51 | 1.06 | 0.29 | | | | |
| 6.30 | 2.51 | 1.06 | 0.10 | | | | |
| 6.45 | 2.51 | 1.06 | 0.03 | | | | |
| 6.60 | 2.51 | 1.06 | 0.01 | | | | |
| 6.75 | 2.51 | 1.06 | 0.00 | | | | |
| 6.90 | 2.51 | 1.06 | 0.00 | | | | |
| 7.05 | 2.51 | 1.06 | 0.00 | | | | |
| 7.20 | 2.51 | 1.06 | 0.00 | | | | |
| 7.35 | 2.51 | 1.06 | 0.00 | | | | |
| 7.50 | 2.51 | 1.06 | 0.00 | | | | |
| 7.65 | 2.51 | 1.06 | 0.00 | | | | |

## Summary for Subcatchment 7S: South Property

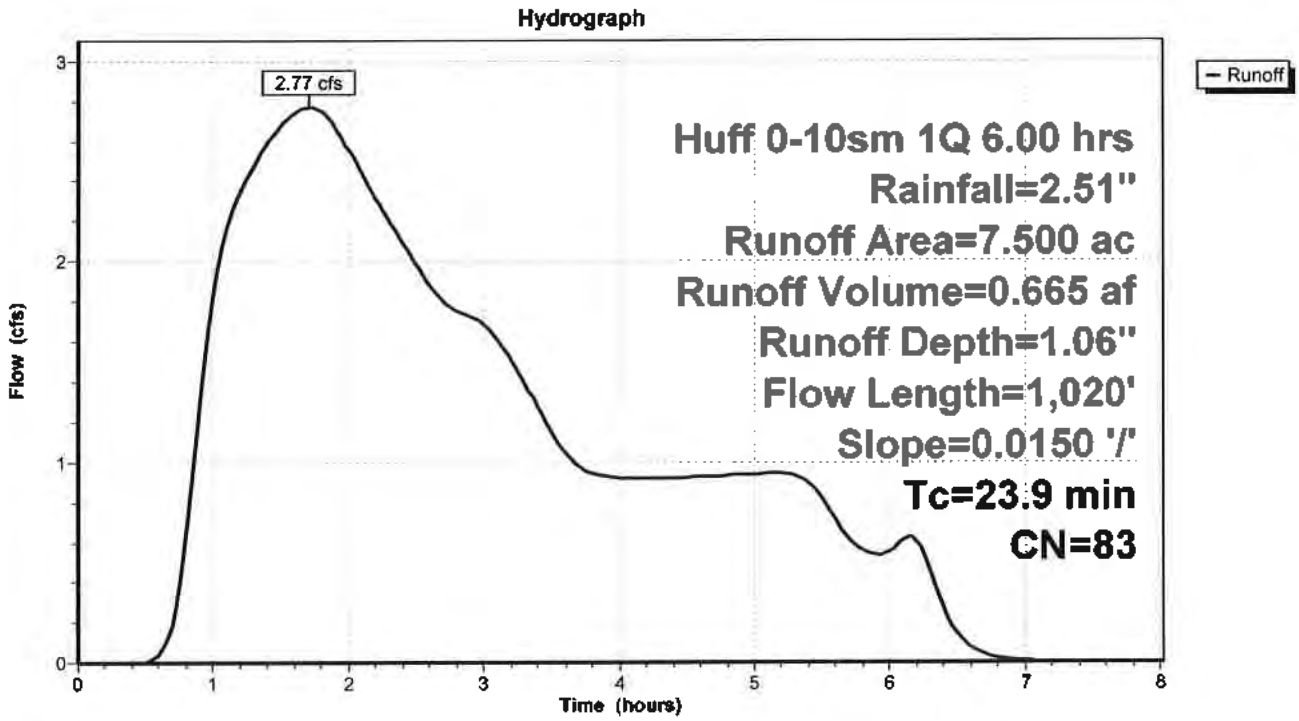
Runoff = 2.77 cfs @ 1.71 hrs, Volume= 0.665 af, Depth= 1.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=2.51"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.15 | 0.05 | 0.00 | 0.00 |
| 0.30 | 0.20 | 0.00 | 0.00 |
| 0.45 | 0.41 | 0.00 | 0.00 |
| 0.60 | 0.62 | 0.02 | 0.03 |
| 0.75 | 0.81 | 0.07 | 0.42 |
| 0.90 | 0.96 | 0.12 | 1.32 |
| 1.05 | 1.09 | 0.17 | 2.04 |
| 1.20 | 1.20 | 0.22 | 2.35 |
| 1.35 | 1.32 | 0.28 | 2.54 |
| 1.50 | 1.42 | 0.33 | 2.68 |
| 1.65 | 1.51 | 0.39 | **2.76** |
| 1.80 | 1.60 | 0.44 | **2.75** |
| 1.95 | 1.67 | 0.48 | 2.62 |
| 2.10 | 1.74 | 0.52 | 2.43 |
| 2.25 | 1.80 | 0.56 | 2.25 |
| 2.40 | 1.85 | 0.60 | 2.09 |
| 2.55 | 1.90 | 0.63 | 1.93 |
| 2.70 | 1.95 | 0.66 | 1.80 |
| 2.85 | 2.00 | 0.69 | 1.74 |
| 3.00 | 2.04 | 0.72 | 1.69 |
| 3.15 | 2.08 | 0.75 | 1.57 |
| 3.30 | 2.10 | 0.77 | 1.39 |
| 3.45 | 2.13 | 0.79 | 1.20 |
| 3.60 | 2.16 | 0.80 | 1.04 |
| 3.75 | 2.18 | 0.82 | 0.96 |
| 3.90 | 2.21 | 0.84 | 0.93 |
| 4.05 | 2.23 | 0.86 | 0.92 |
| 4.20 | 2.26 | 0.88 | 0.92 |
| 4.35 | 2.28 | 0.89 | 0.92 |
| 4.50 | 2.31 | 0.91 | 0.92 |
| 4.65 | 2.33 | 0.93 | 0.93 |
| 4.80 | 2.36 | 0.95 | 0.93 |
| 4.95 | 2.38 | 0.97 | 0.94 |
| 5.10 | 2.41 | 0.99 | 0.94 |
| 5.25 | 2.43 | 1.00 | 0.94 |
| 5.40 | 2.45 | 1.02 | 0.90 |
| 5.55 | 2.46 | 1.03 | 0.76 |
| 5.70 | 2.47 | 1.03 | 0.62 |
| 5.85 | 2.49 | 1.05 | 0.54 |
| 6.00 | **2.51** | **1.06** | 0.55 |
| 6.15 | 2.51 | 1.06 | 0.63 |
| 6.30 | 2.51 | 1.06 | 0.45 |
| 6.45 | 2.51 | 1.06 | 0.19 |
| 6.60 | 2.51 | 1.06 | 0.07 |
| 6.75 | 2.51 | 1.06 | 0.03 |
| 6.90 | 2.51 | 1.06 | 0.01 |
| 7.05 | 2.51 | 1.06 | 0.00 |
| 7.20 | 2.51 | 1.06 | 0.00 |
| 7.35 | 2.51 | 1.06 | 0.00 |
| 7.50 | 2.51 | 1.06 | 0.00 |
| 7.65 | 2.51 | 1.06 | 0.00 |
| 7.80 | 2.51 | 1.06 | 0.00 |
| 7.95 | 2.51 | 1.06 | 0.00 |

## Summary for Subcatchment 8S: Northwood Drive Bypass

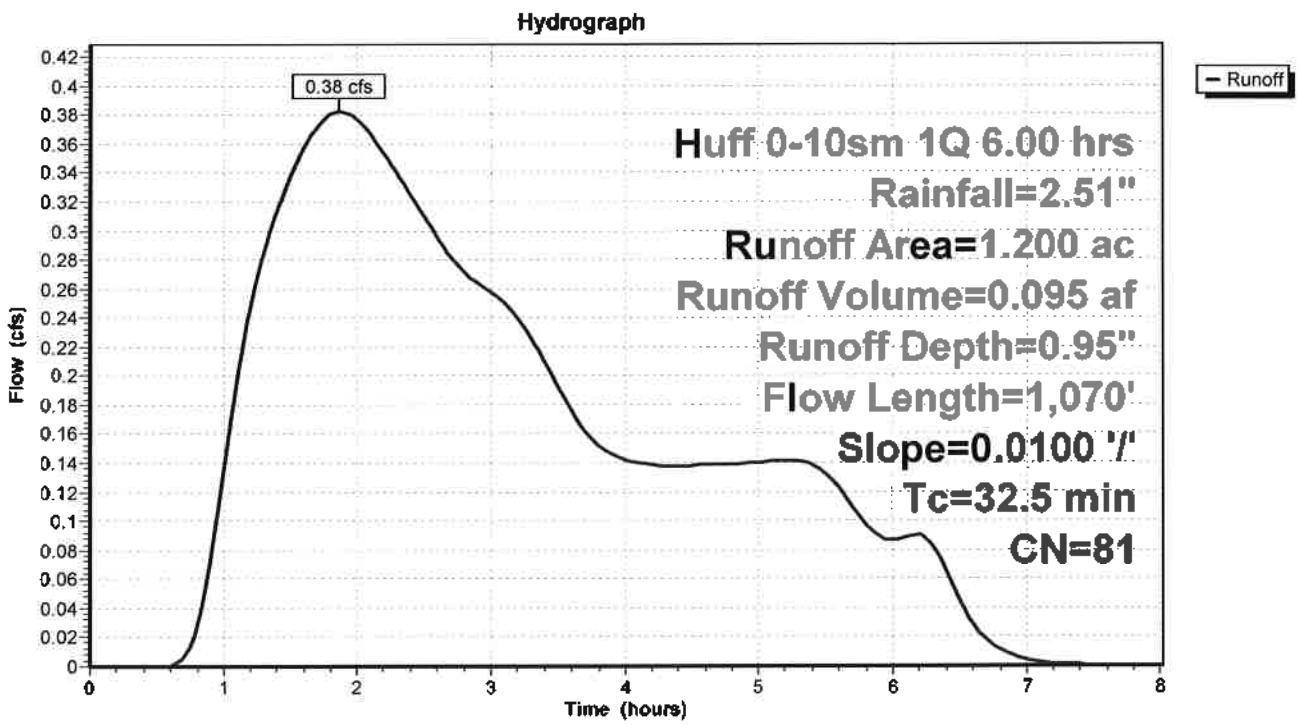
Runoff = 0.38 cfs @ 1.87 hrs, Volume= 0.095 af, Depth= 0.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=2.51"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 7.80 | 2.51 | 0.95 | 0.00 |
| 0.15 | 0.05 | 0.00 | 0.00 | 7.95 | 2.51 | 0.95 | 0.00 |
| 0.30 | 0.20 | 0.00 | 0.00 | | | | |
| 0.45 | 0.41 | 0.00 | 0.00 | | | | |
| 0.60 | 0.62 | 0.01 | 0.00 | | | | |
| 0.75 | 0.81 | 0.04 | 0.01 | | | | |
| 0.90 | 0.96 | 0.09 | 0.07 | | | | |
| 1.05 | 1.09 | 0.13 | 0.17 | | | | |
| 1.20 | 1.20 | 0.18 | 0.25 | | | | |
| 1.35 | 1.32 | 0.22 | 0.30 | | | | |
| 1.50 | 1.42 | 0.27 | 0.34 | | | | |
| 1.65 | 1.51 | 0.32 | 0.37 | | | | |
| 1.80 | 1.60 | 0.37 | **0.38** | | | | |
| 1.95 | 1.67 | 0.41 | **0.38** | | | | |
| 2.10 | 1.74 | 0.44 | 0.37 | | | | |
| 2.25 | 1.80 | 0.48 | 0.35 | | | | |
| 2.40 | 1.85 | 0.51 | 0.32 | | | | |
| 2.55 | 1.90 | 0.54 | 0.30 | | | | |
| 2.70 | 1.95 | 0.57 | 0.28 | | | | |
| 2.85 | 2.00 | 0.60 | 0.27 | | | | |
| 3.00 | 2.04 | 0.63 | 0.26 | | | | |
| 3.15 | 2.08 | 0.65 | 0.25 | | | | |
| 3.30 | 2.10 | 0.67 | 0.23 | | | | |
| 3.45 | 2.13 | 0.69 | 0.20 | | | | |
| 3.60 | 2.16 | 0.71 | 0.18 | | | | |
| 3.75 | 2.18 | 0.72 | 0.16 | | | | |
| 3.90 | 2.21 | 0.74 | 0.15 | | | | |
| 4.05 | 2.23 | 0.76 | 0.14 | | | | |
| 4.20 | 2.26 | 0.77 | 0.14 | | | | |
| 4.35 | 2.28 | 0.79 | 0.14 | | | | |
| 4.50 | 2.31 | 0.81 | 0.14 | | | | |
| 4.65 | 2.33 | 0.82 | 0.14 | | | | |
| 4.80 | 2.36 | 0.84 | 0.14 | | | | |
| 4.95 | 2.38 | 0.86 | 0.14 | | | | |
| 5.10 | 2.41 | 0.88 | 0.14 | | | | |
| 5.25 | 2.43 | 0.89 | 0.14 | | | | |
| 5.40 | 2.45 | 0.90 | 0.14 | | | | |
| 5.55 | 2.46 | 0.91 | 0.13 | | | | |
| 5.70 | 2.47 | 0.92 | 0.11 | | | | |
| 5.85 | 2.49 | 0.93 | 0.09 | | | | |
| 6.00 | **2.51** | **0.95** | 0.09 | | | | |
| 6.15 | 2.51 | 0.95 | 0.09 | | | | |
| 6.30 | 2.51 | 0.95 | 0.08 | | | | |
| 6.45 | 2.51 | 0.95 | 0.06 | | | | |
| 6.60 | 2.51 | 0.95 | 0.03 | | | | |
| 6.75 | 2.51 | 0.95 | 0.01 | | | | |
| 6.90 | 2.51 | 0.95 | 0.01 | | | | |
| 7.05 | 2.51 | 0.95 | 0.00 | | | | |
| 7.20 | 2.51 | 0.95 | 0.00 | | | | |
| 7.35 | 2.51 | 0.95 | 0.00 | | | | |
| 7.50 | 2.51 | 0.95 | 0.00 | | | | |
| 7.65 | 2.51 | 0.95 | 0.00 | | | | |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

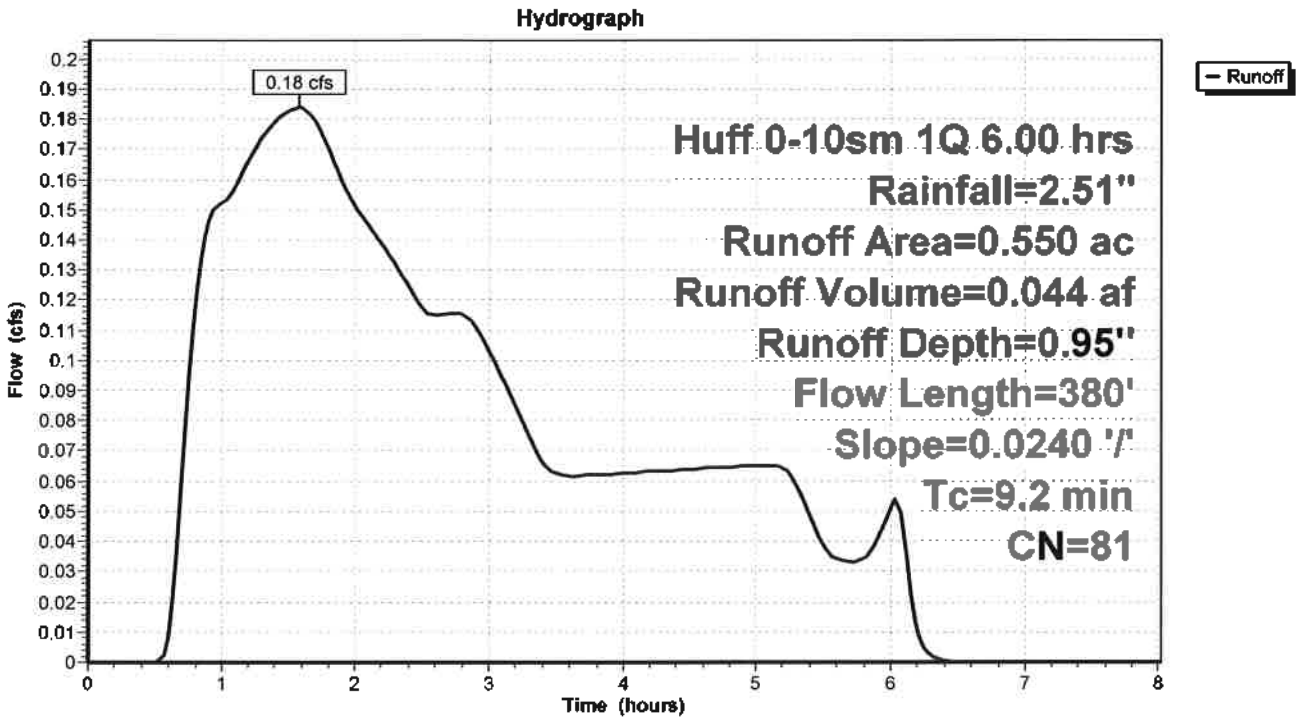
Runoff = 0.18 cfs @ 1.58 hrs, Volume= 0.044 af, Depth= 0.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=2.51"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 7.80 | 2.51 | 0.95 | 0.00 |
| 0.15 | 0.05 | 0.00 | 0.00 | 7.95 | 2.51 | 0.95 | 0.00 |
| 0.30 | 0.20 | 0.00 | 0.00 | | | | |
| 0.45 | 0.41 | 0.00 | 0.00 | | | | |
| 0.60 | 0.62 | 0.01 | 0.01 | | | | |
| 0.75 | 0.81 | 0.04 | 0.09 | | | | |
| 0.90 | 0.96 | 0.09 | 0.15 | | | | |
| 1.05 | 1.09 | 0.13 | 0.15 | | | | |
| 1.20 | 1.20 | 0.18 | 0.17 | | | | |
| 1.35 | 1.32 | 0.22 | 0.18 | | | | |
| 1.50 | 1.42 | 0.27 | **0.18** | | | | |
| 1.65 | 1.51 | 0.32 | **0.18** | | | | |
| 1.80 | 1.60 | 0.37 | 0.17 | | | | |
| 1.95 | 1.67 | 0.41 | 0.15 | | | | |
| 2.10 | 1.74 | 0.44 | 0.14 | | | | |
| 2.25 | 1.80 | 0.48 | 0.13 | | | | |
| 2.40 | 1.85 | 0.51 | 0.12 | | | | |
| 2.55 | 1.90 | 0.54 | 0.12 | | | | |
| 2.70 | 1.95 | 0.57 | 0.12 | | | | |
| 2.85 | 2.00 | 0.60 | 0.11 | | | | |
| 3.00 | 2.04 | 0.63 | 0.10 | | | | |
| 3.15 | 2.08 | 0.65 | 0.09 | | | | |
| 3.30 | 2.10 | 0.67 | 0.08 | | | | |
| 3.45 | 2.13 | 0.69 | 0.06 | | | | |
| 3.60 | 2.16 | 0.71 | 0.06 | | | | |
| 3.75 | 2.18 | 0.72 | 0.06 | | | | |
| 3.90 | 2.21 | 0.74 | 0.06 | | | | |
| 4.05 | 2.23 | 0.76 | 0.06 | | | | |
| 4.20 | 2.26 | 0.77 | 0.06 | | | | |
| 4.35 | 2.28 | 0.79 | 0.06 | | | | |
| 4.50 | 2.31 | 0.81 | 0.06 | | | | |
| 4.65 | 2.33 | 0.82 | 0.06 | | | | |
| 4.80 | 2.36 | 0.84 | 0.06 | | | | |
| 4.95 | 2.38 | 0.86 | 0.06 | | | | |
| 5.10 | 2.41 | 0.88 | 0.07 | | | | |
| 5.25 | 2.43 | 0.89 | 0.06 | | | | |
| 5.40 | 2.45 | 0.90 | 0.05 | | | | |
| 5.55 | 2.46 | 0.91 | 0.04 | | | | |
| 5.70 | 2.47 | 0.92 | 0.03 | | | | |
| 5.85 | 2.49 | 0.93 | 0.04 | | | | |
| 6.00 | **2.51** | **0.95** | 0.05 | | | | |
| 6.15 | 2.51 | 0.95 | 0.02 | | | | |
| 6.30 | 2.51 | 0.95 | 0.00 | | | | |
| 6.45 | 2.51 | 0.95 | 0.00 | | | | |
| 6.60 | 2.51 | 0.95 | 0.00 | | | | |
| 6.75 | 2.51 | 0.95 | 0.00 | | | | |
| 6.90 | 2.51 | 0.95 | 0.00 | | | | |
| 7.05 | 2.51 | 0.95 | 0.00 | | | | |
| 7.20 | 2.51 | 0.95 | 0.00 | | | | |
| 7.35 | 2.51 | 0.95 | 0.00 | | | | |
| 7.50 | 2.51 | 0.95 | 0.00 | | | | |
| 7.65 | 2.51 | 0.95 | 0.00 | | | | |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 3.07 cfs @ | 1.70 hrs, | Volume= | 0.767 af |
| Outflow | = | 0.61 cfs @ | 6.29 hrs, | Volume= | 0.311 af, Atten= 80%, Lag= 275.5 min |
| Primary | = | 0.61 cfs @ | 6.29 hrs, | Volume= | 0.311 af |
| Secondary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Peak Elev= 671.49' @ 6.29 hrs Surf.Area= 30,689 sf Storage= 23,072 cf

Plug-Flow detention time= 196.1 min calculated for 0.311 af (41% of inflow)
Center-of-Mass det. time= 112.1 min ( 288.4 - 176.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.40' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

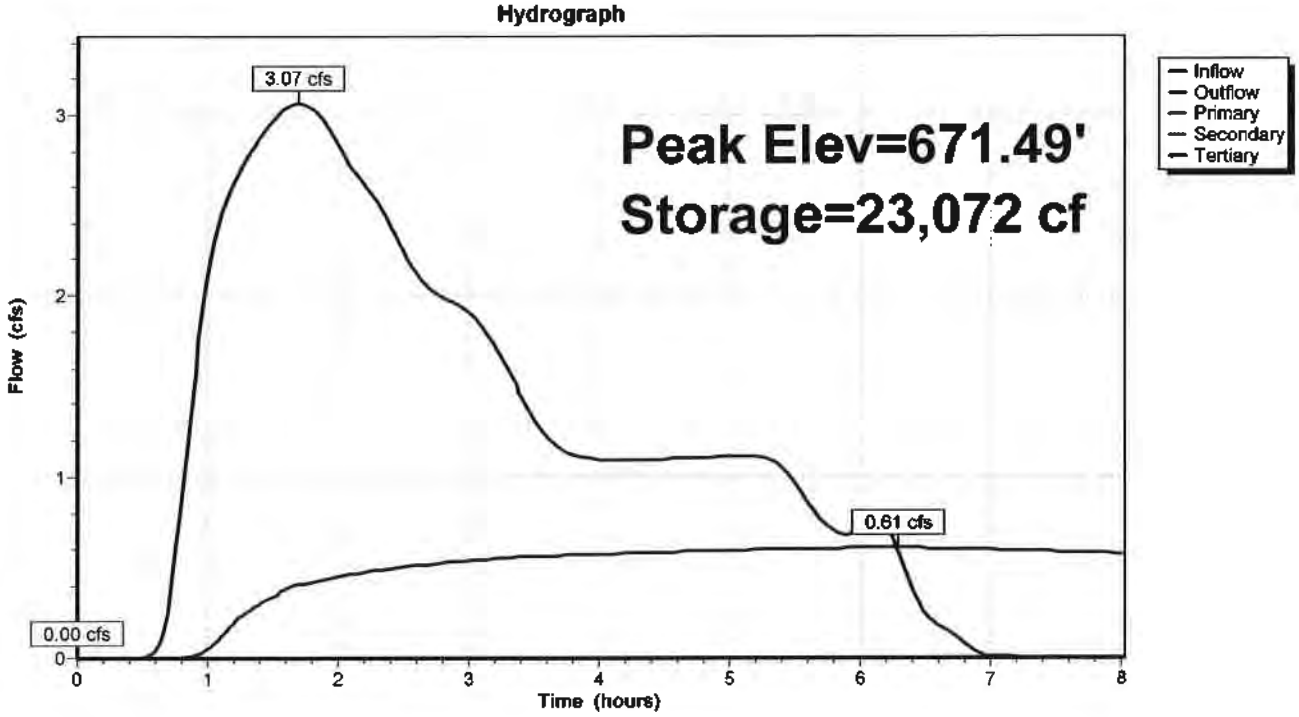
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=0.61 cfs @ 6.29 hrs HW=671.49' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.61 cfs @ 5.49 fps)

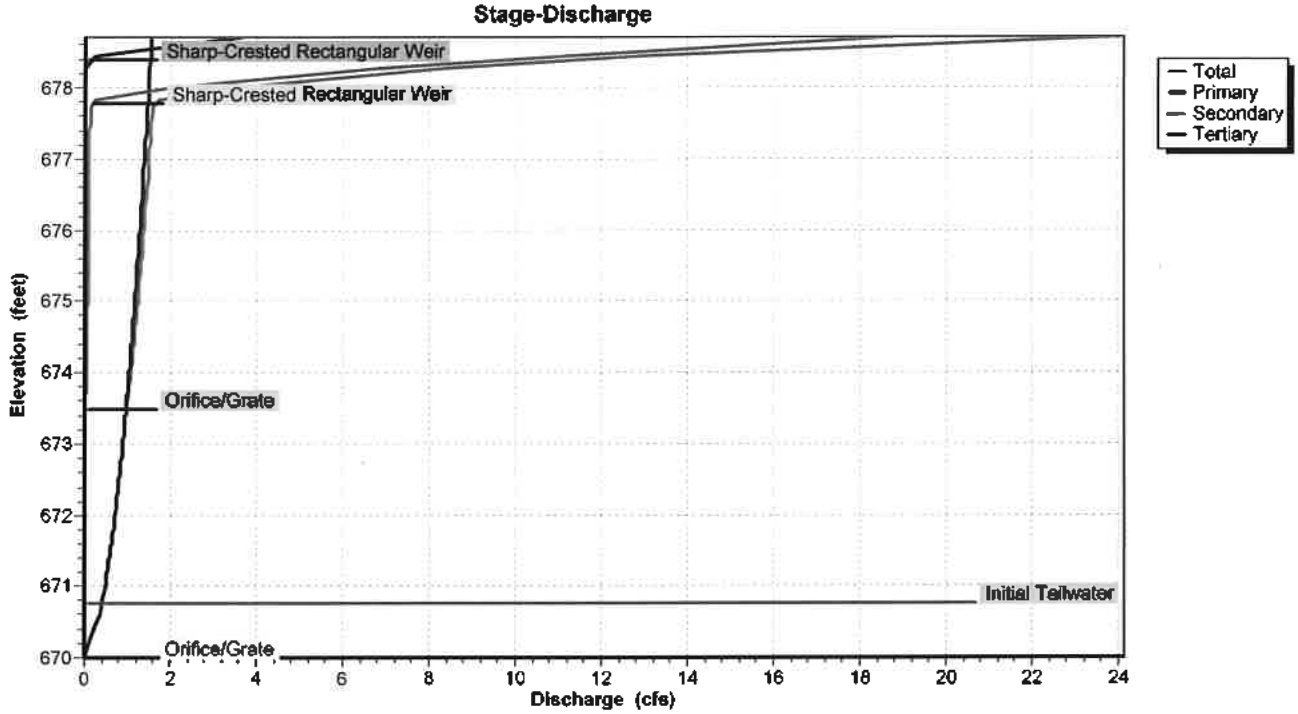
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

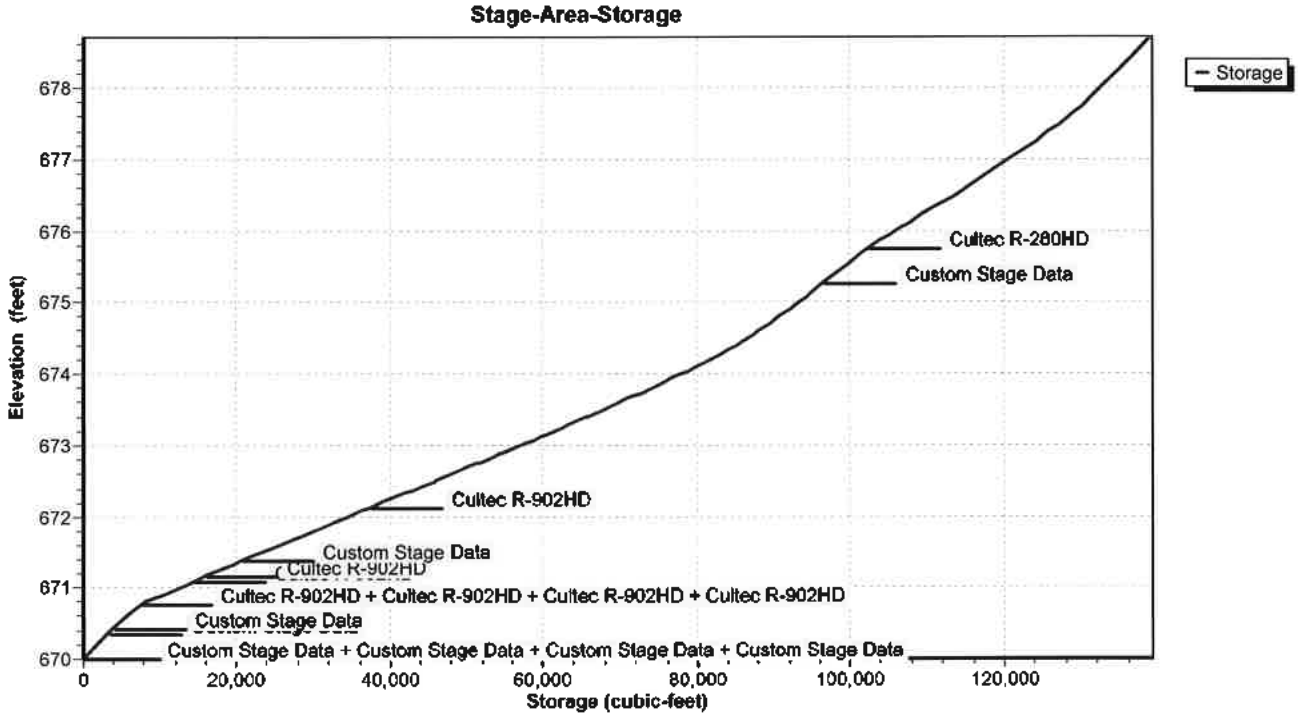
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 0.30 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.60 | 0.04 | 2 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.90 | 1.57 | 636 | 670.07 | 0.01 | 0.01 | 0.00 | 0.00 |
| 1.20 | 2.63 | 2,902 | 670.32 | 0.20 | 0.20 | 0.00 | 0.00 |
| 1.50 | **2.98** | 5,641 | 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 1.80 | **3.04** | 8,508 | 670.81 | 0.42 | 0.42 | 0.00 | 0.00 |
| 2.10 | 2.70 | 11,167 | 670.94 | 0.46 | 0.46 | 0.00 | 0.00 |
| 2.40 | 2.38 | 13,432 | 671.05 | 0.49 | 0.49 | 0.00 | 0.00 |
| 2.70 | 2.04 | 15,266 | 671.14 | 0.52 | 0.52 | 0.00 | 0.00 |
| 3.00 | 1.91 | 16,835 | 671.21 | 0.54 | 0.54 | 0.00 | 0.00 |
| 3.30 | 1.59 | 18,171 | 671.27 | 0.55 | 0.55 | 0.00 | 0.00 |
| 3.60 | 1.22 | 19,089 | 671.31 | 0.56 | 0.56 | 0.00 | 0.00 |
| 3.90 | 1.10 | 19,717 | 671.34 | 0.57 | 0.57 | 0.00 | 0.00 |
| 4.20 | 1.09 | 20,279 | 671.37 | 0.58 | 0.58 | 0.00 | 0.00 |
| 4.50 | 1.10 | 20,833 | 671.39 | 0.58 | 0.58 | 0.00 | 0.00 |
| 4.80 | 1.11 | 21,390 | 671.41 | 0.59 | 0.59 | 0.00 | 0.00 |
| 5.10 | 1.11 | 21,949 | 671.44 | 0.60 | 0.60 | 0.00 | 0.00 |
| 5.40 | 1.05 | 22,499 | 671.46 | 0.60 | 0.60 | 0.00 | 0.00 |
| 5.70 | 0.76 | 22,843 | 671.48 | 0.60 | 0.60 | 0.00 | 0.00 |
| 6.00 | 0.71 | 22,947 | 671.48 | 0.61 | 0.61 | 0.00 | 0.00 |
| 6.30 | 0.55 | **23,071** | **671.49** | **0.61** | **0.61** | 0.00 | 0.00 |
| 6.60 | 0.18 | 22,783 | 671.48 | 0.60 | 0.60 | 0.00 | 0.00 |
| 6.90 | 0.03 | 22,253 | 671.45 | 0.60 | 0.60 | 0.00 | 0.00 |
| 7.20 | 0.00 | 21,622 | 671.43 | 0.59 | 0.59 | 0.00 | 0.00 |
| 7.50 | 0.00 | 20,988 | 671.40 | 0.58 | 0.58 | 0.00 | 0.00 |
| 7.80 | 0.00 | 20,360 | 671.37 | 0.58 | 0.58 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 18.46 | 1.54 | 15.13 | 1.79 |
| 678.80 | **28.12** | **1.56** | **21.42** | **5.14** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 1.67 cfs @ | 1.67 hrs, | Volume= | 0.405 af |
| Outflow | = | 1.32 cfs @ | 2.29 hrs, | Volume= | 0.404 af, Atten= 21%, Lag= 37.0 min |
| Primary | = | 1.14 cfs @ | 2.29 hrs, | Volume= | 0.346 af |
| Secondary | = | 0.19 cfs @ | 2.29 hrs, | Volume= | 0.059 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Peak Elev= 677.82' @ 2.29 hrs Surf.Area= 2,980 sf Storage= 2,686 cf

Plug-Flow detention time= 25.8 min calculated for 0.404 af (100% of inflow)
Center-of-Mass det. time= 25.1 min ( 195.8 - 170.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

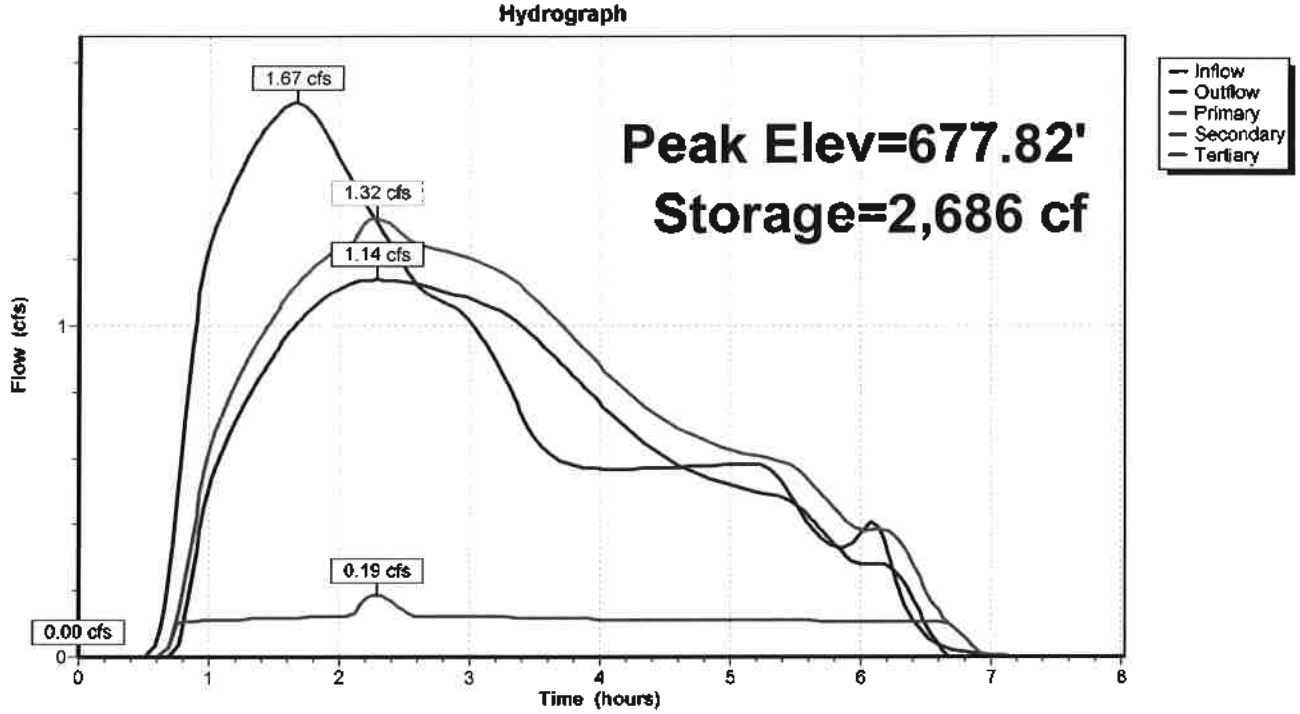
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=1.14 cfs @ 2.29 hrs HW=677.82' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.14 cfs @ 4.94 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

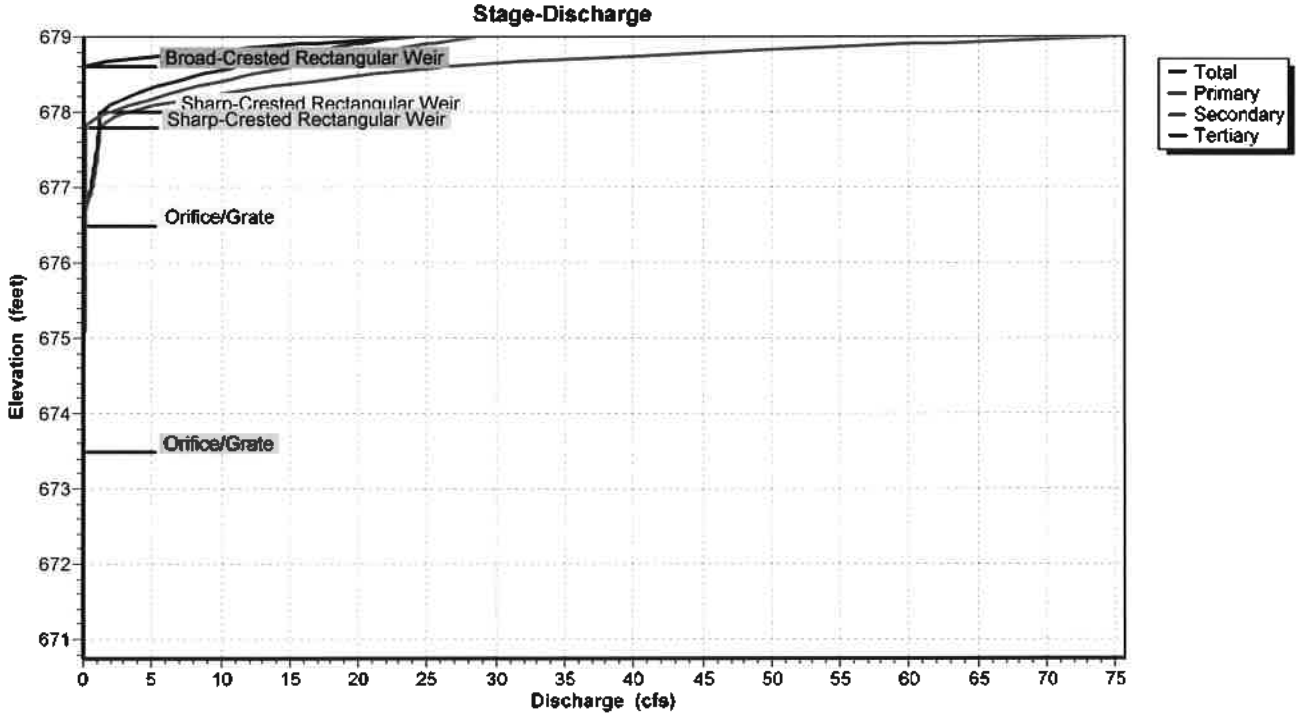
**Secondary OutFlow** Max=0.19 cfs @ 2.29 hrs HW=677.82' TW=671.01' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.12 cfs @ 9.94 fps)
└─**5=Sharp-Crested Rectangular Weir** (Weir Controls 0.06 cfs @ 0.49 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

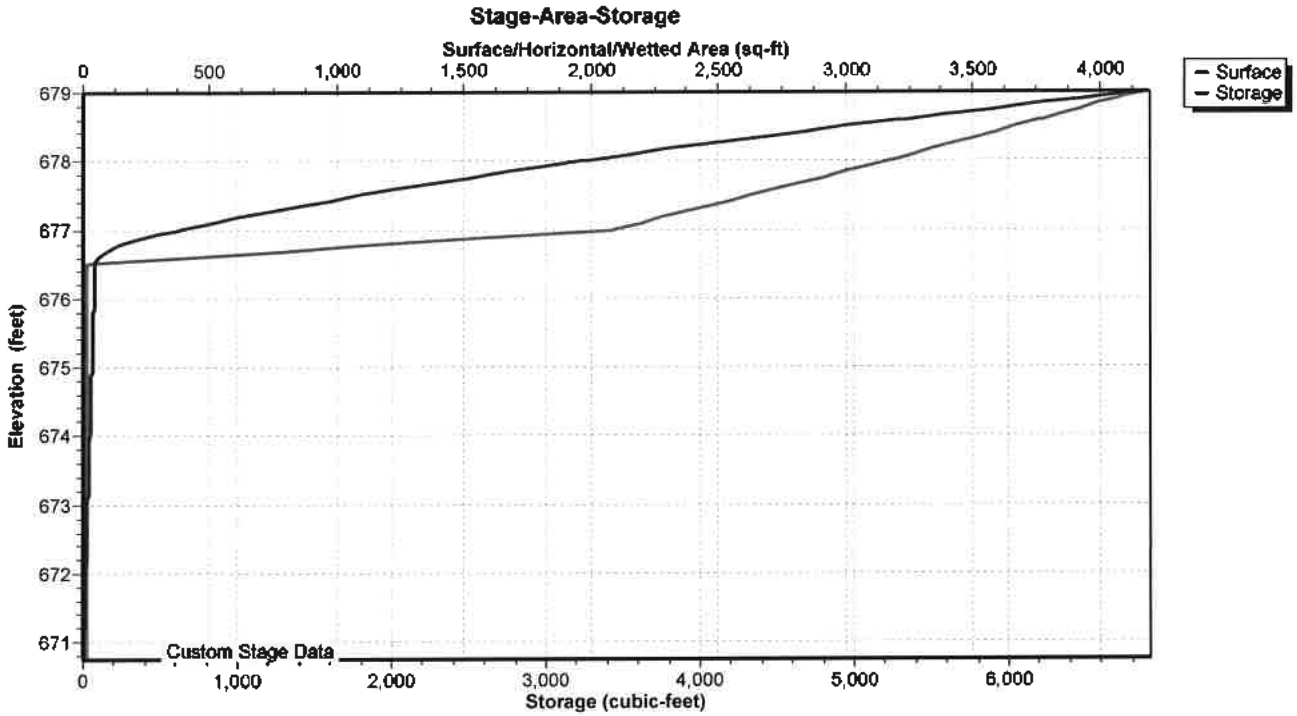
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.30 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.60 | 0.04 | 3 | 670.93 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.90 | 1.02 | 345 | 676.85 | 0.43 | 0.32 | 0.11 | 0.00 |
| 1.20 | 1.43 | 1,003 | 677.18 | 0.82 | 0.71 | 0.11 | 0.00 |
| 1.50 | **1.63** | 1,662 | 677.45 | 1.03 | 0.92 | 0.12 | 0.00 |
| 1.80 | **1.64** | 2,264 | 677.68 | 1.18 | 1.06 | 0.12 | 0.00 |
| 2.10 | 1.43 | **2,625** | **677.80** | **1.25** | **1.13** | **0.12** | 0.00 |
| 2.40 | 1.24 | **2,674** | **677.82** | **1.30** | **1.14** | **0.17** | 0.00 |
| 2.70 | 1.09 | 2,560 | 677.78 | 1.24 | 1.11 | 0.12 | 0.00 |
| 3.00 | 1.01 | 2,389 | 677.72 | 1.20 | 1.08 | 0.12 | 0.00 |
| 3.30 | 0.81 | 2,120 | 677.62 | 1.14 | 1.03 | 0.12 | 0.00 |
| 3.60 | 0.61 | 1,696 | 677.47 | 1.04 | 0.93 | 0.12 | 0.00 |
| 3.90 | 0.57 | 1,266 | 677.29 | 0.92 | 0.80 | 0.11 | 0.00 |
| 4.20 | 0.57 | 946 | 677.16 | 0.80 | 0.69 | 0.11 | 0.00 |
| 4.50 | 0.57 | 741 | 677.06 | 0.71 | 0.60 | 0.11 | 0.00 |
| 4.80 | 0.58 | 621 | 677.01 | 0.65 | 0.54 | 0.11 | 0.00 |
| 5.10 | 0.58 | 560 | 676.98 | 0.61 | 0.51 | 0.11 | 0.00 |
| 5.40 | 0.53 | 526 | 676.96 | 0.59 | 0.48 | 0.11 | 0.00 |
| 5.70 | 0.35 | 405 | 676.89 | 0.49 | 0.38 | 0.11 | 0.00 |
| 6.00 | 0.37 | 304 | 676.82 | 0.38 | 0.28 | 0.11 | 0.00 |
| 6.30 | 0.18 | 268 | 676.80 | 0.34 | 0.24 | 0.11 | 0.00 |
| 6.60 | 0.04 | 106 | 676.61 | 0.14 | 0.04 | 0.10 | 0.00 |
| 6.90 | 0.01 | 40 | 673.63 | 0.02 | 0.00 | 0.02 | 0.00 |
| 7.20 | 0.00 | 39 | 673.54 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7.50 | 0.00 | 39 | 673.52 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7.80 | 0.00 | 39 | 673.51 | 0.00 | 0.00 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 23.56 | 9.86 | 13.70 | 0.00 |
| 678.75 | 40.37 | 15.13 | 19.77 | 5.47 |
| 678.95 | **67.61** | **21.27** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

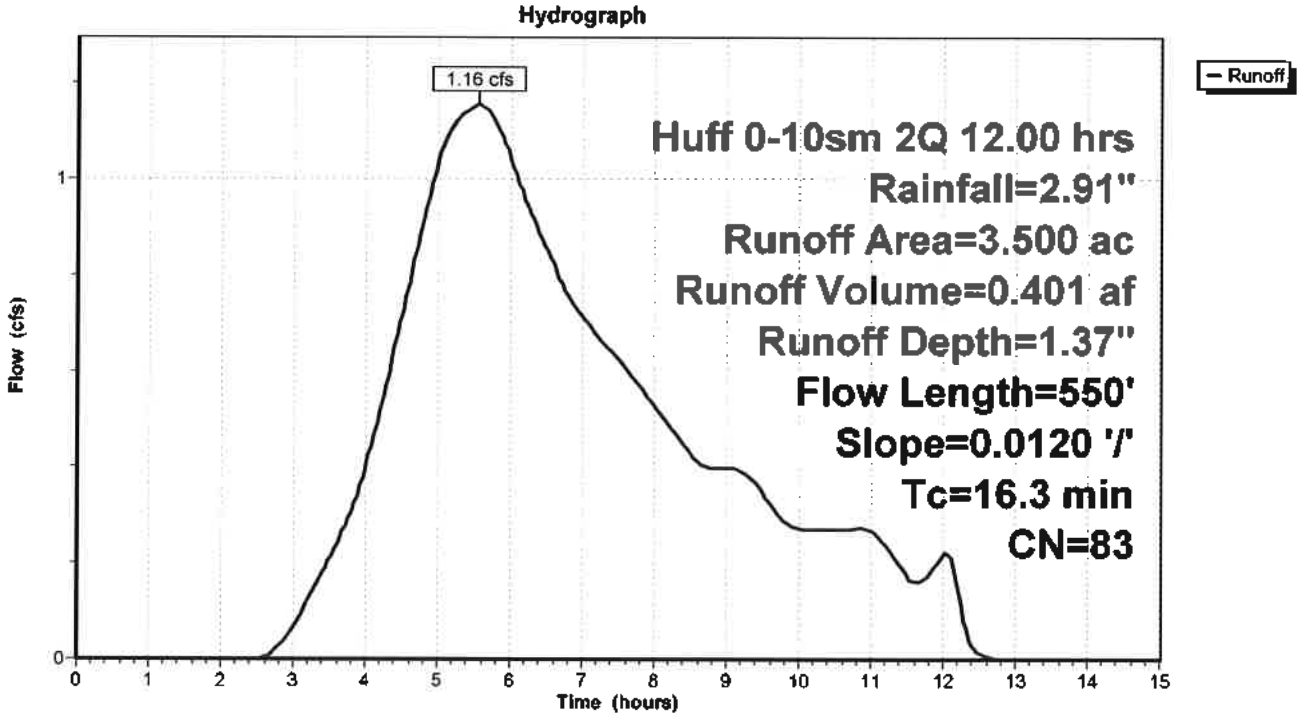
Runoff = 1.16 cfs @ 5.56 hrs, Volume= 0.401 af, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.04 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=2.91"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 10.40 | 2.78 | 1.27 | 0.27 |
| 0.20 | 0.00 | 0.00 | 0.00 | 10.60 | 2.80 | 1.29 | 0.27 |
| 0.40 | 0.02 | 0.00 | 0.00 | 10.80 | 2.82 | 1.30 | 0.27 |
| 0.60 | 0.04 | 0.00 | 0.00 | 11.00 | 2.84 | 1.32 | 0.27 |
| 0.80 | 0.08 | 0.00 | 0.00 | 11.20 | 2.85 | 1.33 | 0.24 |
| 1.00 | 0.12 | 0.00 | 0.00 | 11.40 | 2.87 | 1.34 | 0.19 |
| 1.20 | 0.16 | 0.00 | 0.00 | 11.60 | 2.88 | 1.35 | 0.16 |
| 1.40 | 0.21 | 0.00 | 0.00 | 11.80 | 2.89 | 1.36 | 0.18 |
| 1.60 | 0.25 | 0.00 | 0.00 | 12.00 | **2.91** | **1.37** | 0.22 |
| 1.80 | 0.29 | 0.00 | 0.00 | 12.20 | 2.91 | 1.37 | 0.15 |
| 2.00 | 0.33 | 0.00 | 0.00 | 12.40 | 2.91 | 1.37 | 0.03 |
| 2.20 | 0.37 | 0.00 | 0.00 | 12.60 | 2.91 | 1.37 | 0.00 |
| 2.40 | 0.41 | 0.00 | 0.00 | 12.80 | 2.91 | 1.37 | 0.00 |
| 2.60 | 0.45 | 0.00 | 0.00 | 13.00 | 2.91 | 1.37 | 0.00 |
| 2.80 | 0.50 | 0.00 | 0.03 | 13.20 | 2.91 | 1.37 | 0.00 |
| 3.00 | 0.56 | 0.01 | 0.07 | 13.40 | 2.91 | 1.37 | 0.00 |
| 3.20 | 0.62 | 0.02 | 0.12 | 13.60 | 2.91 | 1.37 | 0.00 |
| 3.40 | 0.68 | 0.03 | 0.18 | 13.80 | 2.91 | 1.37 | 0.00 |
| 3.60 | 0.75 | 0.05 | 0.24 | 14.00 | 2.91 | 1.37 | 0.00 |
| 3.80 | 0.82 | 0.07 | 0.31 | 14.20 | 2.91 | 1.37 | 0.00 |
| 4.00 | 0.91 | 0.10 | 0.40 | 14.40 | 2.91 | 1.37 | 0.00 |
| 4.20 | 1.00 | 0.13 | 0.52 | 14.60 | 2.91 | 1.37 | 0.00 |
| 4.40 | 1.10 | 0.17 | 0.65 | 14.80 | 2.91 | 1.37 | 0.00 |
| 4.60 | 1.21 | 0.22 | 0.78 | 15.00 | 2.91 | 1.37 | 0.00 |
| 4.80 | 1.32 | 0.28 | 0.91 | | | | |
| 5.00 | 1.44 | 0.34 | 1.04 | | | | |
| 5.20 | 1.55 | 0.41 | 1.11 | | | | |
| 5.40 | 1.66 | 0.47 | **1.14** | | | | |
| 5.60 | 1.76 | 0.54 | **1.16** | | | | |
| 5.80 | 1.86 | 0.60 | 1.11 | | | | |
| 6.00 | 1.94 | 0.65 | 1.04 | | | | |
| 6.20 | 2.02 | 0.71 | 0.96 | | | | |
| 6.40 | 2.08 | 0.75 | 0.89 | | | | |
| 6.60 | 2.15 | 0.80 | 0.82 | | | | |
| 6.80 | 2.20 | 0.84 | 0.76 | | | | |
| 7.00 | 2.26 | 0.88 | 0.71 | | | | |
| 7.20 | 2.31 | 0.91 | 0.68 | | | | |
| 7.40 | 2.35 | 0.95 | 0.64 | | | | |
| 7.60 | 2.40 | 0.98 | 0.60 | | | | |
| 7.80 | 2.44 | 1.01 | 0.57 | | | | |
| 8.00 | 2.48 | 1.04 | 0.53 | | | | |
| 8.20 | 2.51 | 1.06 | 0.49 | | | | |
| 8.40 | 2.54 | 1.09 | 0.45 | | | | |
| 8.60 | 2.57 | 1.11 | 0.41 | | | | |
| 8.80 | 2.60 | 1.13 | 0.40 | | | | |
| 9.00 | 2.63 | 1.16 | 0.40 | | | | |
| 9.20 | 2.66 | 1.18 | 0.39 | | | | |
| 9.40 | 2.68 | 1.20 | 0.36 | | | | |
| 9.60 | 2.70 | 1.21 | 0.32 | | | | |
| 9.80 | 2.72 | 1.23 | 0.28 | | | | |
| 10.00 | 2.74 | 1.24 | 0.27 | | | | |
| 10.20 | 2.76 | 1.26 | 0.27 | | | | |

## Summary for Subcatchment 7S: South Property

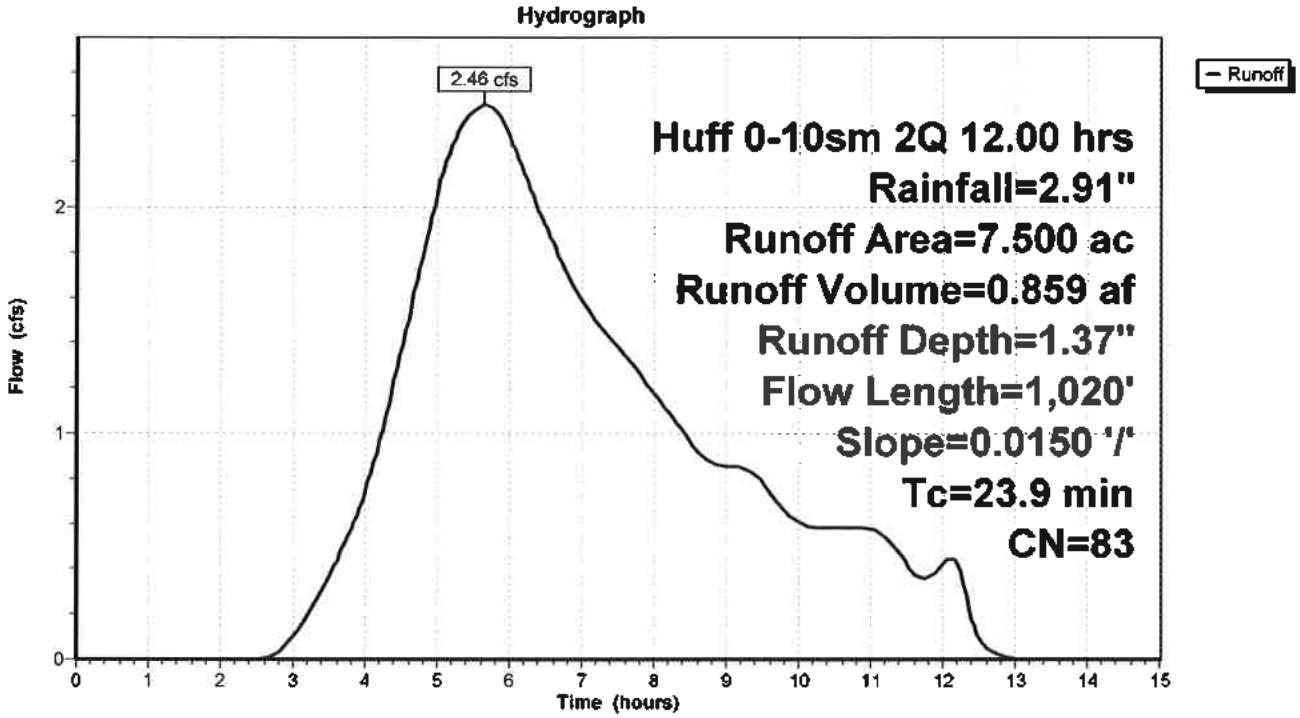
Runoff = 2.46 cfs @ 5.65 hrs, Volume= 0.859 af, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.04 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=2.91"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

## Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.00 | 0.00 | 0.00 |
| 0.40 | 0.02 | 0.00 | 0.00 |
| 0.60 | 0.04 | 0.00 | 0.00 |
| 0.80 | 0.08 | 0.00 | 0.00 |
| 1.00 | 0.12 | 0.00 | 0.00 |
| 1.20 | 0.16 | 0.00 | 0.00 |
| 1.40 | 0.21 | 0.00 | 0.00 |
| 1.60 | 0.25 | 0.00 | 0.00 |
| 1.80 | 0.29 | 0.00 | 0.00 |
| 2.00 | 0.33 | 0.00 | 0.00 |
| 2.20 | 0.37 | 0.00 | 0.00 |
| 2.40 | 0.41 | 0.00 | 0.00 |
| 2.60 | 0.45 | 0.00 | 0.00 |
| 2.80 | 0.50 | 0.00 | 0.03 |
| 3.00 | 0.56 | 0.01 | 0.10 |
| 3.20 | 0.62 | 0.02 | 0.20 |
| 3.40 | 0.68 | 0.03 | 0.31 |
| 3.60 | 0.75 | 0.05 | 0.44 |
| 3.80 | 0.82 | 0.07 | 0.57 |
| 4.00 | 0.91 | 0.10 | 0.74 |
| 4.20 | 1.00 | 0.13 | 0.97 |
| 4.40 | 1.10 | 0.17 | 1.23 |
| 4.60 | 1.21 | 0.22 | 1.51 |
| 4.80 | 1.32 | 0.28 | 1.79 |
| 5.00 | 1.44 | 0.34 | 2.07 |
| 5.20 | 1.55 | 0.41 | 2.28 |
| 5.40 | 1.66 | 0.47 | 2.39 |
| 5.60 | 1.76 | 0.54 | **2.46** |
| 5.80 | 1.86 | 0.60 | **2.43** |
| 6.00 | 1.94 | 0.65 | 2.31 |
| 6.20 | 2.02 | 0.71 | 2.15 |
| 6.40 | 2.08 | 0.75 | 1.99 |
| 6.60 | 2.15 | 0.80 | 1.84 |
| 6.80 | 2.20 | 0.84 | 1.70 |
| 7.00 | 2.26 | 0.88 | 1.58 |
| 7.20 | 2.31 | 0.91 | 1.50 |
| 7.40 | 2.35 | 0.95 | 1.42 |
| 7.60 | 2.40 | 0.98 | 1.34 |
| 7.80 | 2.44 | 1.01 | 1.26 |
| 8.00 | 2.48 | 1.04 | 1.18 |
| 8.20 | 2.51 | 1.06 | 1.09 |
| 8.40 | 2.54 | 1.09 | 1.01 |
| 8.60 | 2.57 | 1.11 | 0.92 |
| 8.80 | 2.60 | 1.13 | 0.87 |
| 9.00 | 2.63 | 1.16 | 0.86 |
| 9.20 | 2.66 | 1.18 | 0.85 |
| 9.40 | 2.68 | 1.20 | 0.82 |
| 9.60 | 2.70 | 1.21 | 0.74 |
| 9.80 | 2.72 | 1.23 | 0.66 |
| 10.00 | 2.74 | 1.24 | 0.60 |
| 10.20 | 2.76 | 1.26 | 0.59 |
| 10.40 | 2.78 | 1.27 | 0.58 |
| 10.60 | 2.80 | 1.29 | 0.58 |
| 10.80 | 2.82 | 1.30 | 0.58 |
| 11.00 | 2.84 | 1.32 | 0.58 |
| 11.20 | 2.85 | 1.33 | 0.54 |
| 11.40 | 2.87 | 1.34 | 0.47 |
| 11.60 | 2.88 | 1.35 | 0.38 |
| 11.80 | 2.89 | 1.36 | 0.36 |
| 12.00 | **2.91** | **1.37** | 0.42 |
| 12.20 | 2.91 | 1.37 | 0.43 |
| 12.40 | 2.91 | 1.37 | 0.18 |
| 12.60 | 2.91 | 1.37 | 0.05 |
| 12.80 | 2.91 | 1.37 | 0.01 |
| 13.00 | 2.91 | 1.37 | 0.00 |
| 13.20 | 2.91 | 1.37 | 0.00 |
| 13.40 | 2.91 | 1.37 | 0.00 |
| 13.60 | 2.91 | 1.37 | 0.00 |
| 13.80 | 2.91 | 1.37 | 0.00 |
| 14.00 | 2.91 | 1.37 | 0.00 |
| 14.20 | 2.91 | 1.37 | 0.00 |
| 14.40 | 2.91 | 1.37 | 0.00 |
| 14.60 | 2.91 | 1.37 | 0.00 |
| 14.80 | 2.91 | 1.37 | 0.00 |
| 15.00 | 2.91 | 1.37 | 0.00 |

## Summary for Subcatchment 8S: Northwood Drive Bypass

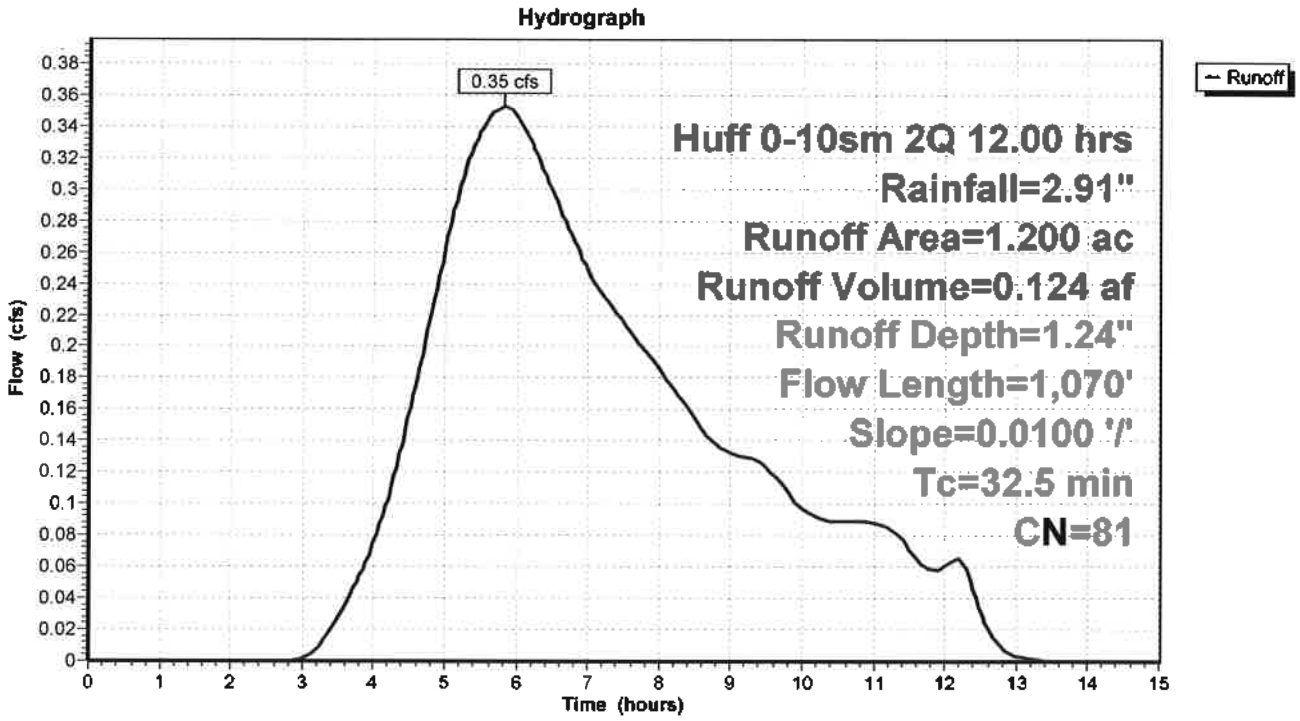
Runoff = 0.35 cfs @ 5.80 hrs, Volume= 0.124 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.04 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=2.91"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.00 | 0.00 | 0.00 |
| 0.40 | 0.02 | 0.00 | 0.00 |
| 0.60 | 0.04 | 0.00 | 0.00 |
| 0.80 | 0.08 | 0.00 | 0.00 |
| 1.00 | 0.12 | 0.00 | 0.00 |
| 1.20 | 0.16 | 0.00 | 0.00 |
| 1.40 | 0.21 | 0.00 | 0.00 |
| 1.60 | 0.25 | 0.00 | 0.00 |
| 1.80 | 0.29 | 0.00 | 0.00 |
| 2.00 | 0.33 | 0.00 | 0.00 |
| 2.20 | 0.37 | 0.00 | 0.00 |
| 2.40 | 0.41 | 0.00 | 0.00 |
| 2.60 | 0.45 | 0.00 | 0.00 |
| 2.80 | 0.50 | 0.00 | 0.00 |
| 3.00 | 0.56 | 0.00 | 0.00 |
| 3.20 | 0.62 | 0.01 | 0.01 |
| 3.40 | 0.68 | 0.02 | 0.02 |
| 3.60 | 0.75 | 0.03 | 0.04 |
| 3.80 | 0.82 | 0.05 | 0.05 |
| 4.00 | 0.91 | 0.07 | 0.08 |
| 4.20 | 1.00 | 0.10 | 0.10 |
| 4.40 | 1.10 | 0.13 | 0.14 |
| 4.60 | 1.21 | 0.18 | 0.18 |
| 4.80 | 1.32 | 0.23 | 0.22 |
| 5.00 | 1.44 | 0.28 | 0.26 |
| 5.20 | 1.55 | 0.34 | 0.30 |
| 5.40 | 1.66 | 0.40 | 0.33 |
| 5.60 | 1.76 | 0.46 | 0.35 |
| 5.80 | 1.86 | 0.52 | **0.35** |
| 6.00 | 1.94 | 0.57 | 0.35 |
| 6.20 | 2.02 | 0.61 | 0.33 |
| 6.40 | 2.08 | 0.66 | 0.31 |
| 6.60 | 2.15 | 0.70 | 0.29 |
| 6.80 | 2.20 | 0.74 | 0.27 |
| 7.00 | 2.26 | 0.77 | 0.25 |
| 7.20 | 2.31 | 0.81 | 0.23 |
| 7.40 | 2.35 | 0.84 | 0.22 |
| 7.60 | 2.40 | 0.87 | 0.21 |
| 7.80 | 2.44 | 0.90 | 0.20 |
| 8.00 | 2.48 | 0.93 | 0.19 |
| 8.20 | 2.51 | 0.95 | 0.17 |
| 8.40 | 2.54 | 0.97 | 0.16 |
| 8.60 | 2.57 | 0.99 | 0.15 |
| 8.80 | 2.60 | 1.02 | 0.14 |
| 9.00 | 2.63 | 1.04 | 0.13 |
| 9.20 | 2.66 | 1.06 | 0.13 |
| 9.40 | 2.68 | 1.07 | 0.13 |
| 9.60 | 2.70 | 1.09 | 0.12 |
| 9.80 | 2.72 | 1.11 | 0.11 |
| 10.00 | 2.74 | 1.12 | 0.10 |
| 10.20 | 2.76 | 1.13 | 0.09 |
| 10.40 | 2.78 | 1.15 | 0.09 |
| 10.60 | 2.80 | 1.16 | 0.09 |
| 10.80 | 2.82 | 1.18 | 0.09 |
| 11.00 | 2.84 | 1.19 | 0.09 |
| 11.20 | 2.85 | 1.20 | 0.09 |
| 11.40 | 2.87 | 1.21 | 0.08 |
| 11.60 | 2.88 | 1.22 | 0.07 |
| 11.80 | 2.89 | 1.23 | 0.06 |
| 12.00 | **2.91** | **1.24** | 0.06 |
| 12.20 | 2.91 | 1.24 | 0.07 |
| 12.40 | 2.91 | 1.24 | 0.05 |
| 12.60 | 2.91 | 1.24 | 0.02 |
| 12.80 | 2.91 | 1.24 | 0.01 |
| 13.00 | 2.91 | 1.24 | 0.00 |
| 13.20 | 2.91 | 1.24 | 0.00 |
| 13.40 | 2.91 | 1.24 | 0.00 |
| 13.60 | 2.91 | 1.24 | 0.00 |
| 13.80 | 2.91 | 1.24 | 0.00 |
| 14.00 | 2.91 | 1.24 | 0.00 |
| 14.20 | 2.91 | 1.24 | 0.00 |
| 14.40 | 2.91 | 1.24 | 0.00 |
| 14.60 | 2.91 | 1.24 | 0.00 |
| 14.80 | 2.91 | 1.24 | 0.00 |
| 15.00 | 2.91 | 1.24 | 0.00 |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

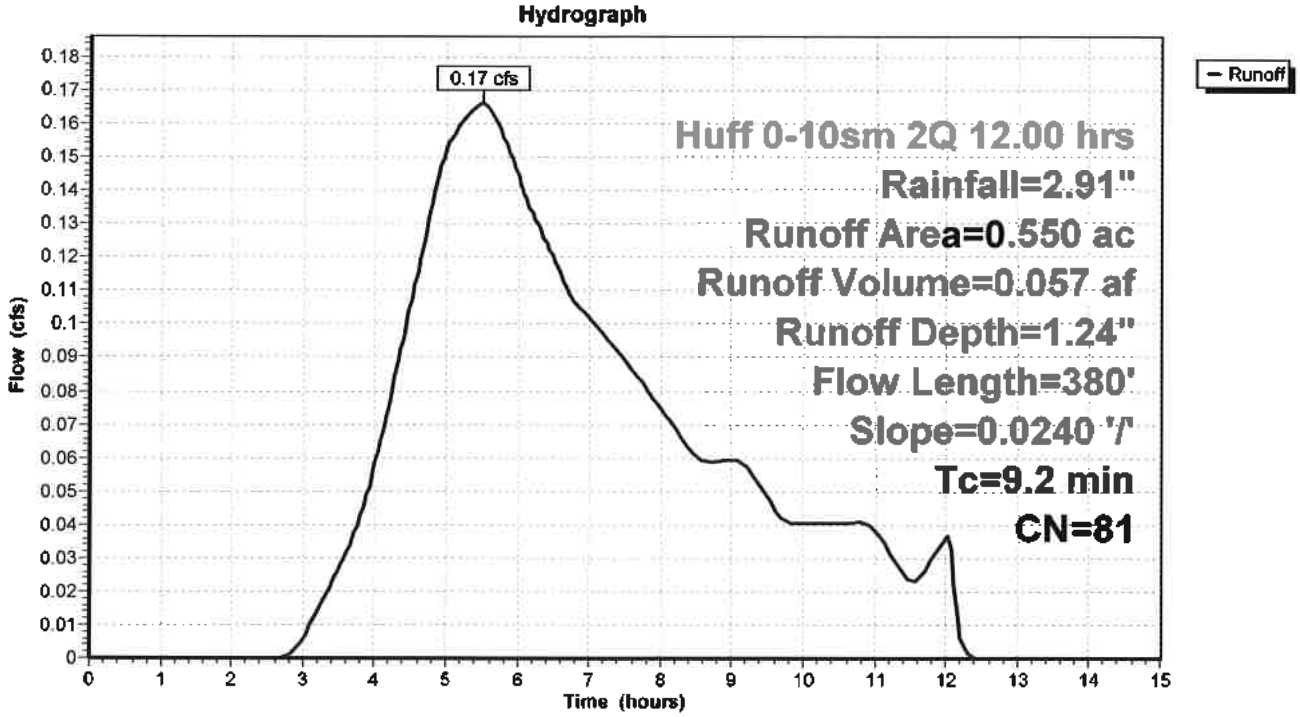
Runoff = 0.17 cfs @ 5.50 hrs, Volume= 0.057 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.04 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=2.91"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

### Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.00 | 0.00 | 0.00 |
| 0.40 | 0.02 | 0.00 | 0.00 |
| 0.60 | 0.04 | 0.00 | 0.00 |
| 0.80 | 0.08 | 0.00 | 0.00 |
| 1.00 | 0.12 | 0.00 | 0.00 |
| 1.20 | 0.16 | 0.00 | 0.00 |
| 1.40 | 0.21 | 0.00 | 0.00 |
| 1.60 | 0.25 | 0.00 | 0.00 |
| 1.80 | 0.29 | 0.00 | 0.00 |
| 2.00 | 0.33 | 0.00 | 0.00 |
| 2.20 | 0.37 | 0.00 | 0.00 |
| 2.40 | 0.41 | 0.00 | 0.00 |
| 2.60 | 0.45 | 0.00 | 0.00 |
| 2.80 | 0.50 | 0.00 | 0.00 |
| 3.00 | 0.56 | 0.00 | 0.01 |
| 3.20 | 0.62 | 0.01 | 0.01 |
| 3.40 | 0.68 | 0.02 | 0.02 |
| 3.60 | 0.75 | 0.03 | 0.03 |
| 3.80 | 0.82 | 0.05 | 0.04 |
| 4.00 | 0.91 | 0.07 | 0.06 |
| 4.20 | 1.00 | 0.10 | 0.08 |
| 4.40 | 1.10 | 0.13 | 0.10 |
| 4.60 | 1.21 | 0.18 | 0.12 |
| 4.80 | 1.32 | 0.23 | 0.14 |
| 5.00 | 1.44 | 0.28 | 0.15 |
| 5.20 | 1.55 | 0.34 | 0.16 |
| 5.40 | 1.66 | 0.40 | **0.16** |
| 5.60 | 1.76 | 0.46 | **0.16** |
| 5.80 | 1.86 | 0.52 | 0.16 |
| 6.00 | 1.94 | 0.57 | 0.14 |
| 6.20 | 2.02 | 0.61 | 0.13 |
| 6.40 | 2.08 | 0.66 | 0.12 |
| 6.60 | 2.15 | 0.70 | 0.11 |
| 6.80 | 2.20 | 0.74 | 0.11 |
| 7.00 | 2.26 | 0.77 | 0.10 |
| 7.20 | 2.31 | 0.81 | 0.10 |
| 7.40 | 2.35 | 0.84 | 0.09 |
| 7.60 | 2.40 | 0.87 | 0.09 |
| 7.80 | 2.44 | 0.90 | 0.08 |
| 8.00 | 2.48 | 0.93 | 0.07 |
| 8.20 | 2.51 | 0.95 | 0.07 |
| 8.40 | 2.54 | 0.97 | 0.06 |
| 8.60 | 2.57 | 0.99 | 0.06 |
| 8.80 | 2.60 | 1.02 | 0.06 |
| 9.00 | 2.63 | 1.04 | 0.06 |
| 9.20 | 2.66 | 1.06 | 0.06 |
| 9.40 | 2.68 | 1.07 | 0.05 |
| 9.60 | 2.70 | 1.09 | 0.04 |
| 9.80 | 2.72 | 1.11 | 0.04 |
| 10.00 | 2.74 | 1.12 | 0.04 |
| 10.20 | 2.76 | 1.13 | 0.04 |
| 10.40 | 2.78 | 1.15 | 0.04 |
| 10.60 | 2.80 | 1.16 | 0.04 |
| 10.80 | 2.82 | 1.18 | 0.04 |
| 11.00 | 2.84 | 1.19 | 0.04 |
| 11.20 | 2.85 | 1.20 | 0.03 |
| 11.40 | 2.87 | 1.21 | 0.03 |
| 11.60 | 2.88 | 1.22 | 0.02 |
| 11.80 | 2.89 | 1.23 | 0.03 |
| 12.00 | **2.91** | **1.24** | 0.04 |
| 12.20 | 2.91 | 1.24 | 0.01 |
| 12.40 | 2.91 | 1.24 | 0.00 |
| 12.60 | 2.91 | 1.24 | 0.00 |
| 12.80 | 2.91 | 1.24 | 0.00 |
| 13.00 | 2.91 | 1.24 | 0.00 |
| 13.20 | 2.91 | 1.24 | 0.00 |
| 13.40 | 2.91 | 1.24 | 0.00 |
| 13.60 | 2.91 | 1.24 | 0.00 |
| 13.80 | 2.91 | 1.24 | 0.00 |
| 14.00 | 2.91 | 1.24 | 0.00 |
| 14.20 | 2.91 | 1.24 | 0.00 |
| 14.40 | 2.91 | 1.24 | 0.00 |
| 14.60 | 2.91 | 1.24 | 0.00 |
| 14.80 | 2.91 | 1.24 | 0.00 |
| 15.00 | 2.91 | 1.24 | 0.00 |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 2.74 cfs @ | 5.64 hrs, | Volume= | 1.004 af |
| Outflow | = | 0.65 cfs @ | 11.31 hrs, | Volume= | 0.520 af, Atten= 76%, Lag= 340.0 min |
| Primary | = | 0.65 cfs @ | 11.31 hrs, | Volume= | 0.520 af |
| Secondary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-15.00 hrs, dt= 0.04 hrs
Peak Elev= 671.67' @ 11.31 hrs Surf.Area= 30,731 sf Storage= 27,201 cf

Plug-Flow detention time= 278.6 min calculated for 0.520 af (52% of inflow)
Center-of-Mass det. time= 174.7 min ( 597.3 - 422.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.40' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

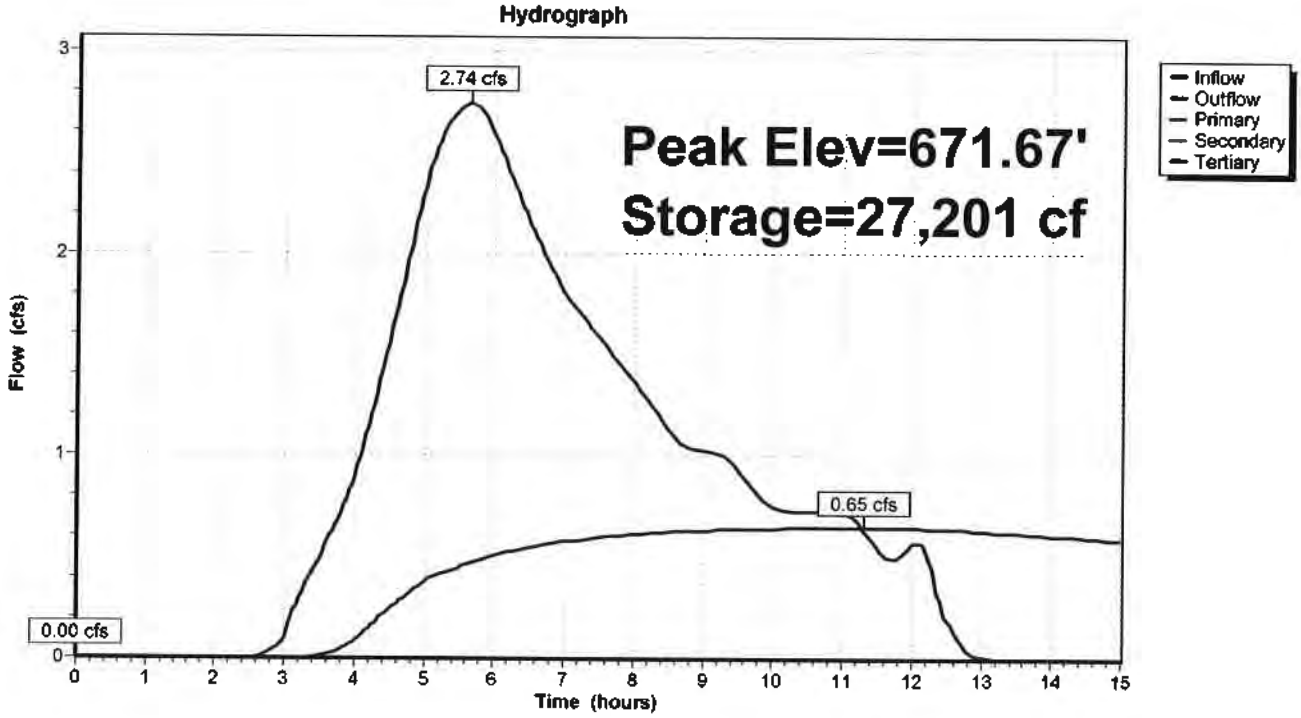
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=0.65 cfs @ 11.31 hrs HW=671.67' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.65 cfs @ 5.87 fps)

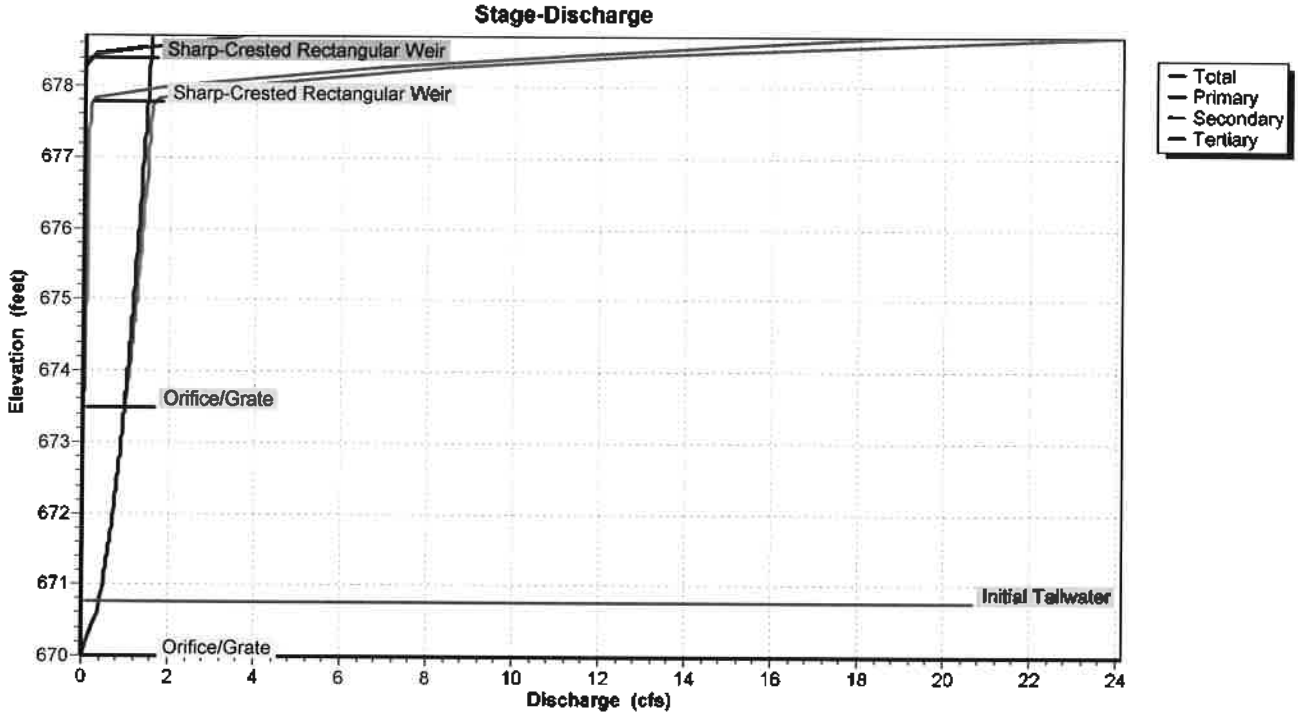
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

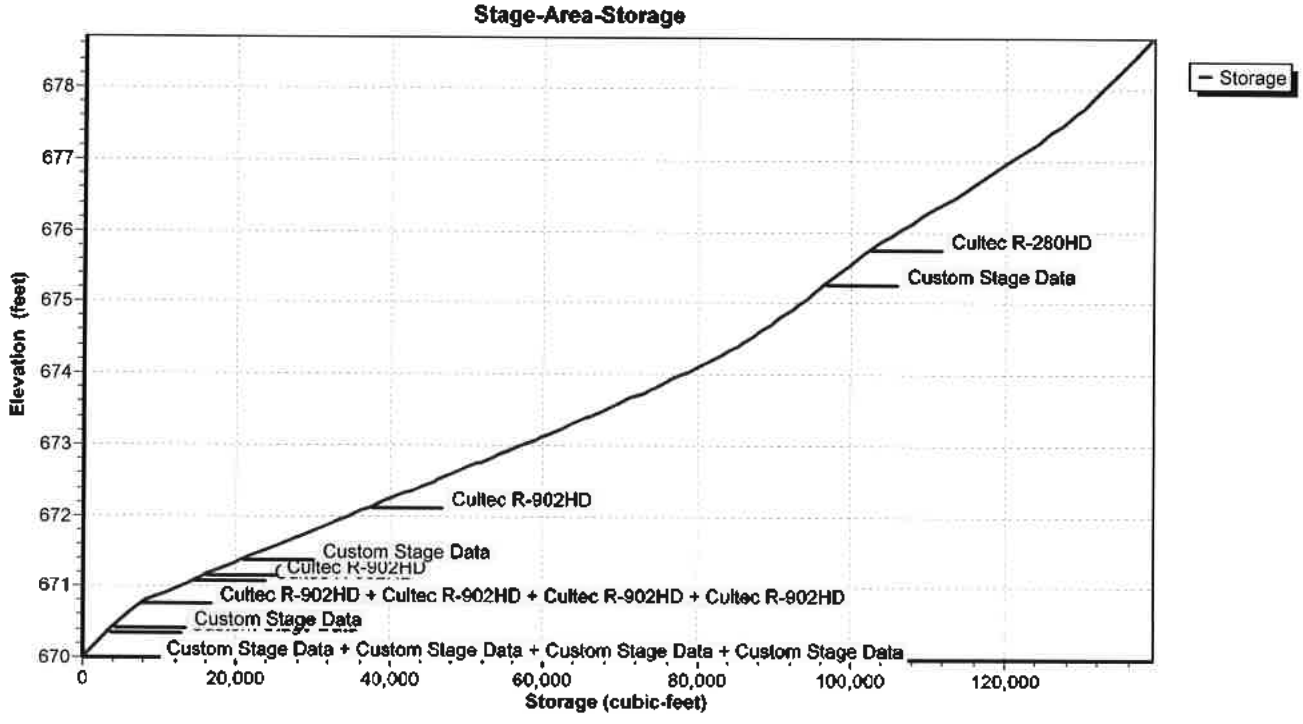
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 0.40 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.80 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.20 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.60 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.40 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.80 | 0.03 | 8 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.20 | 0.30 | 191 | 670.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.60 | 0.57 | 791 | 670.09 | 0.02 | 0.02 | 0.00 | 0.00 |
| 4.00 | 0.91 | 1,750 | 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 4.40 | 1.44 | 3,173 | 670.35 | 0.22 | 0.22 | 0.00 | 0.00 |
| 4.80 | 2.03 | 5,243 | 670.56 | 0.32 | 0.32 | 0.00 | 0.00 |
| 5.20 | 2.55 | 8,012 | 670.79 | 0.41 | 0.41 | 0.00 | 0.00 |
| 5.60 | **2.74** | 11,211 | 670.94 | 0.46 | 0.46 | 0.00 | 0.00 |
| 6.00 | **2.58** | 14,402 | 671.10 | 0.51 | 0.51 | 0.00 | 0.00 |
| 6.40 | 2.24 | 17,138 | 671.22 | 0.54 | 0.54 | 0.00 | 0.00 |
| 6.80 | 1.93 | 19,358 | 671.32 | 0.57 | 0.57 | 0.00 | 0.00 |
| 7.20 | 1.71 | 21,150 | 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 7.60 | 1.54 | 22,652 | 671.47 | 0.60 | 0.60 | 0.00 | 0.00 |
| 8.00 | 1.37 | 23,887 | 671.52 | 0.62 | 0.62 | 0.00 | 0.00 |
| 8.40 | 1.18 | 24,846 | 671.57 | 0.62 | 0.62 | 0.00 | 0.00 |
| 8.80 | 1.04 | 25,537 | 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 9.20 | 1.02 | 26,104 | 671.62 | 0.64 | 0.64 | 0.00 | 0.00 |
| 9.60 | 0.89 | 26,586 | 671.64 | 0.64 | 0.64 | 0.00 | 0.00 |
| 10.00 | 0.75 | 26,839 | 671.66 | 0.64 | 0.64 | 0.00 | 0.00 |
| 10.40 | 0.73 | 26,969 | 671.66 | 0.65 | 0.65 | 0.00 | 0.00 |
| 10.80 | 0.73 | 27,087 | 671.67 | 0.65 | 0.65 | 0.00 | 0.00 |
| 11.20 | 0.68 | **27,193** | **671.67** | **0.65** | **0.65** | 0.00 | 0.00 |
| 11.60 | 0.51 | **27,131** | **671.67** | **0.65** | **0.65** | 0.00 | 0.00 |
| 12.00 | 0.56 | 26,931 | 671.66 | 0.65 | 0.65 | 0.00 | 0.00 |
| 12.40 | 0.28 | 26,735 | 671.65 | 0.64 | 0.64 | 0.00 | 0.00 |
| 12.80 | 0.03 | 26,038 | 671.62 | 0.64 | 0.64 | 0.00 | 0.00 |
| 13.20 | 0.00 | 25,143 | 671.58 | 0.63 | 0.63 | 0.00 | 0.00 |
| 13.60 | 0.00 | 24,246 | 671.54 | 0.62 | 0.62 | 0.00 | 0.00 |
| 14.00 | 0.00 | 23,361 | 671.50 | 0.61 | 0.61 | 0.00 | 0.00 |
| 14.40 | 0.00 | 22,489 | 671.46 | 0.60 | 0.60 | 0.00 | 0.00 |
| 14.80 | 0.00 | 21,630 | 671.43 | 0.59 | 0.59 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 18.46 | 1.54 | 15.13 | 1.79 |
| 678.80 | **28.12** | **1.56** | **21.42** | **5.14** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 1.50 cfs @ | 5.60 hrs, | Volume= | 0.525 af |
| Outflow | = | 1.24 cfs @ | 6.32 hrs, | Volume= | 0.524 af, Atten= 18%, Lag= 43.2 min |
| Primary | = | 1.12 cfs @ | 6.32 hrs, | Volume= | 0.436 af |
| Secondary | = | 0.12 cfs @ | 6.32 hrs, | Volume= | 0.088 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-15.00 hrs, dt= 0.04 hrs
Peak Elev= 677.78' @ 6.32 hrs Surf.Area= 2,940 sf Storage= 2,577 cf

Plug-Flow detention time= 23.9 min calculated for 0.523 af (100% of inflow)
Center-of-Mass det. time= 23.3 min ( 439.7 - 416.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

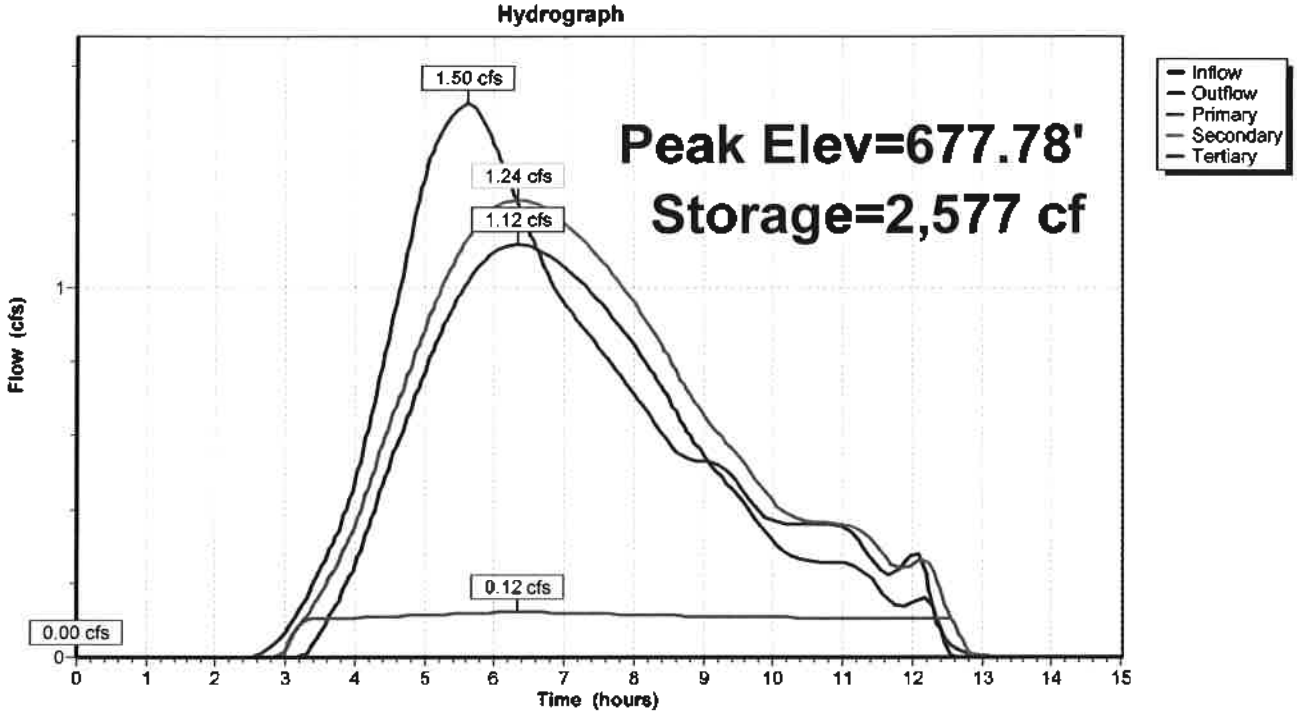
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=1.12 cfs @ 6.32 hrs HW=677.78' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.12 cfs @ 4.85 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

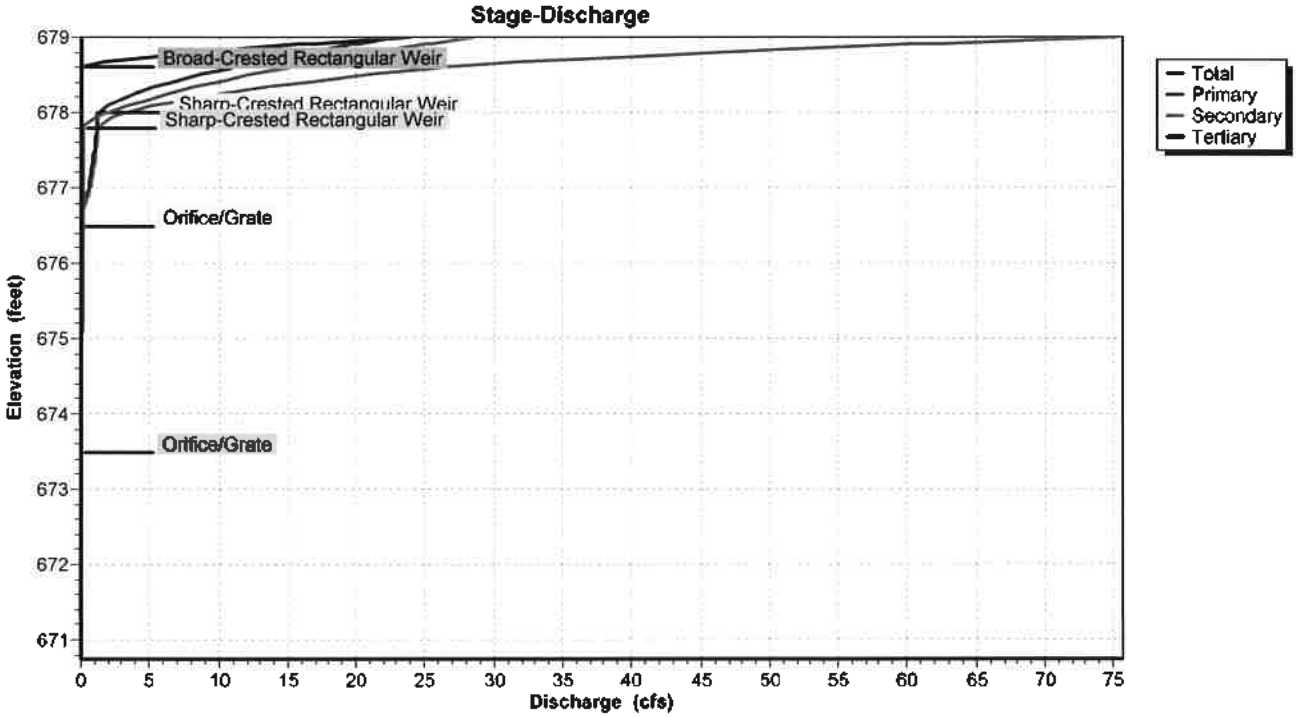
**Secondary OutFlow** Max=0.12 cfs @ 6.32 hrs HW=677.78' TW=671.20' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.12 cfs @ 9.89 fps)
└─**5=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

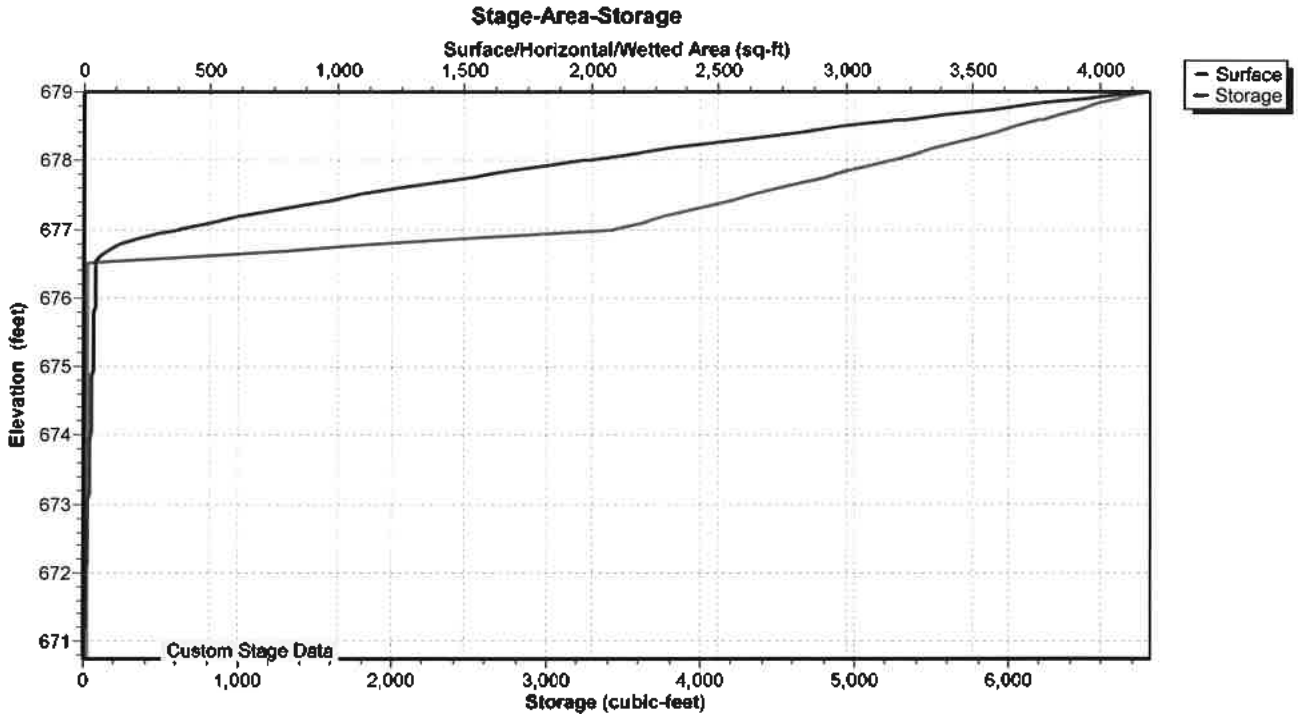
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.40 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.80 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.20 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.60 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.40 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.80 | 0.03 | 9 | 671.36 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.20 | 0.13 | 69 | 675.65 | 0.09 | 0.00 | 0.09 | 0.00 |
| 3.60 | 0.28 | 154 | 676.68 | 0.21 | 0.10 | 0.10 | 0.00 |
| 4.00 | 0.48 | 280 | 676.80 | 0.36 | 0.25 | 0.11 | 0.00 |
| 4.40 | 0.79 | 508 | 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 4.80 | 1.13 | 897 | 677.14 | 0.78 | 0.67 | 0.11 | 0.00 |
| 5.20 | 1.41 | 1,474 | 677.38 | 0.98 | 0.87 | 0.12 | 0.00 |
| 5.60 | **1.50** | 2,061 | 677.60 | 1.13 | 1.01 | 0.12 | 0.00 |
| 6.00 | 1.39 | **2,477** | **677.75** | **1.22** | **1.10** | **0.12** | 0.00 |
| 6.40 | 1.20 | **2,572** | **677.78** | **1.24** | **1.12** | **0.12** | 0.00 |
| 6.80 | 1.02 | 2,413 | 677.73 | 1.21 | 1.09 | 0.12 | 0.00 |
| 7.20 | 0.91 | 2,108 | 677.62 | 1.14 | 1.02 | 0.12 | 0.00 |
| 7.60 | 0.81 | 1,763 | 677.49 | 1.06 | 0.94 | 0.12 | 0.00 |
| 8.00 | 0.71 | 1,406 | 677.35 | 0.96 | 0.85 | 0.12 | 0.00 |
| 8.40 | 0.61 | 1,055 | 677.20 | 0.84 | 0.73 | 0.11 | 0.00 |
| 8.80 | 0.54 | 741 | 677.06 | 0.71 | 0.60 | 0.11 | 0.00 |
| 9.20 | 0.52 | 550 | 676.97 | 0.61 | 0.50 | 0.11 | 0.00 |
| 9.60 | 0.44 | 440 | 676.91 | 0.52 | 0.41 | 0.11 | 0.00 |
| 10.00 | 0.37 | 336 | 676.85 | 0.42 | 0.31 | 0.11 | 0.00 |
| 10.40 | 0.36 | 294 | 676.81 | 0.37 | 0.27 | 0.11 | 0.00 |
| 10.80 | 0.36 | 285 | 676.81 | 0.36 | 0.26 | 0.11 | 0.00 |
| 11.20 | 0.32 | 274 | 676.80 | 0.35 | 0.24 | 0.11 | 0.00 |
| 11.60 | 0.22 | 209 | 676.74 | 0.27 | 0.17 | 0.11 | 0.00 |
| 12.00 | 0.28 | 190 | 676.72 | 0.25 | 0.14 | 0.11 | 0.00 |
| 12.40 | 0.07 | 139 | 676.66 | 0.18 | 0.08 | 0.10 | 0.00 |
| 12.80 | 0.01 | 40 | 673.63 | 0.02 | 0.00 | 0.02 | 0.00 |
| 13.20 | 0.00 | 39 | 673.53 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13.60 | 0.00 | 39 | 673.51 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14.00 | 0.00 | 39 | 673.50 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14.40 | 0.00 | 39 | 673.50 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14.80 | 0.00 | 39 | 673.50 | 0.00 | 0.00 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 23.56 | 9.86 | 13.70 | 0.00 |
| 678.75 | 40.37 | 15.13 | 19.77 | 5.47 |
| 678.95 | **67.61** | **21.27** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

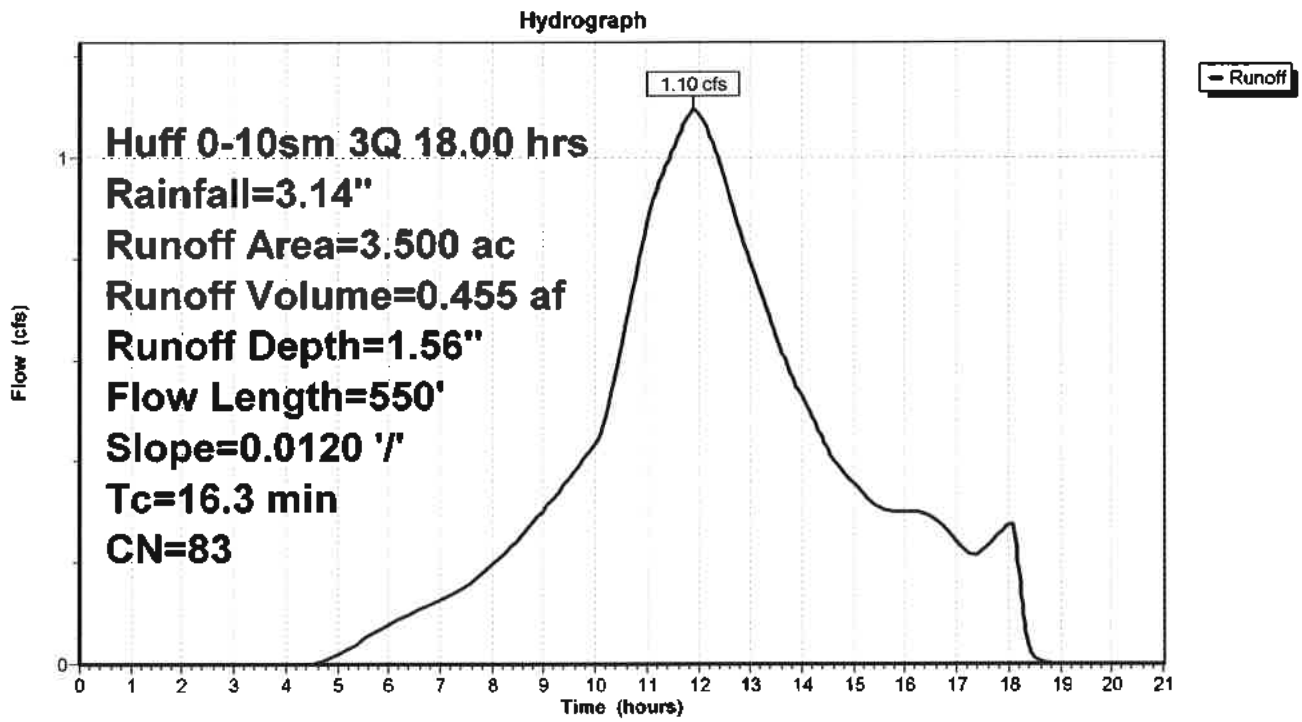
Runoff = 1.10 cfs @ 11.90 hrs, Volume= 0.455 af, Depth= 1.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.02 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=3.14"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

## Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 20.80 | 3.14 | 1.56 | 0.00 |
| 0.40 | 0.01 | 0.00 | 0.00 | | | | |
| 0.80 | 0.04 | 0.00 | 0.00 | | | | |
| 1.20 | 0.08 | 0.00 | 0.00 | | | | |
| 1.60 | 0.12 | 0.00 | 0.00 | | | | |
| 2.00 | 0.16 | 0.00 | 0.00 | | | | |
| 2.40 | 0.21 | 0.00 | 0.00 | | | | |
| 2.80 | 0.25 | 0.00 | 0.00 | | | | |
| 3.20 | 0.29 | 0.00 | 0.00 | | | | |
| 3.60 | 0.33 | 0.00 | 0.00 | | | | |
| 4.00 | 0.38 | 0.00 | 0.00 | | | | |
| 4.40 | 0.42 | 0.00 | 0.00 | | | | |
| 4.80 | 0.46 | 0.00 | 0.01 | | | | |
| 5.20 | 0.51 | 0.01 | 0.03 | | | | |
| 5.60 | 0.57 | 0.01 | 0.05 | | | | |
| 6.00 | 0.63 | 0.02 | 0.08 | | | | |
| 6.40 | 0.68 | 0.03 | 0.10 | | | | |
| 6.80 | 0.74 | 0.05 | 0.12 | | | | |
| 7.20 | 0.80 | 0.06 | 0.14 | | | | |
| 7.60 | 0.86 | 0.08 | 0.16 | | | | |
| 8.00 | 0.92 | 0.10 | 0.20 | | | | |
| 8.40 | 1.00 | 0.13 | 0.24 | | | | |
| 8.80 | 1.07 | 0.16 | 0.28 | | | | |
| 9.20 | 1.16 | 0.20 | 0.33 | | | | |
| 9.60 | 1.25 | 0.24 | 0.38 | | | | |
| 10.00 | 1.35 | 0.30 | 0.44 | | | | |
| 10.40 | 1.47 | 0.36 | 0.57 | | | | |
| 10.80 | 1.63 | 0.45 | 0.77 | | | | |
| 11.20 | 1.80 | 0.56 | 0.94 | | | | |
| 11.60 | 1.98 | 0.68 | **1.04** | | | | |
| 12.00 | 2.16 | 0.80 | **1.09** | | | | |
| 12.40 | 2.31 | 0.91 | 0.99 | | | | |
| 12.80 | 2.44 | 1.01 | 0.85 | | | | |
| 13.20 | 2.54 | 1.09 | 0.74 | | | | |
| 13.60 | 2.63 | 1.16 | 0.62 | | | | |
| 14.00 | 2.71 | 1.22 | 0.53 | | | | |
| 14.40 | 2.77 | 1.27 | 0.45 | | | | |
| 14.80 | 2.83 | 1.31 | 0.38 | | | | |
| 15.20 | 2.87 | 1.35 | 0.34 | | | | |
| 15.60 | 2.92 | 1.38 | 0.30 | | | | |
| 16.00 | 2.96 | 1.41 | 0.30 | | | | |
| 16.40 | 3.00 | 1.45 | 0.30 | | | | |
| 16.80 | 3.04 | 1.48 | 0.26 | | | | |
| 17.20 | 3.07 | 1.50 | 0.22 | | | | |
| 17.60 | 3.10 | 1.53 | 0.23 | | | | |
| 18.00 | **3.14** | **1.56** | 0.28 | | | | |
| 18.40 | 3.14 | 1.56 | 0.03 | | | | |
| 18.80 | 3.14 | 1.56 | 0.00 | | | | |
| 19.20 | 3.14 | 1.56 | 0.00 | | | | |
| 19.60 | 3.14 | 1.56 | 0.00 | | | | |
| 20.00 | 3.14 | 1.56 | 0.00 | | | | |
| 20.40 | 3.14 | 1.56 | 0.00 | | | | |

## Summary for Subcatchment 7S: South Property

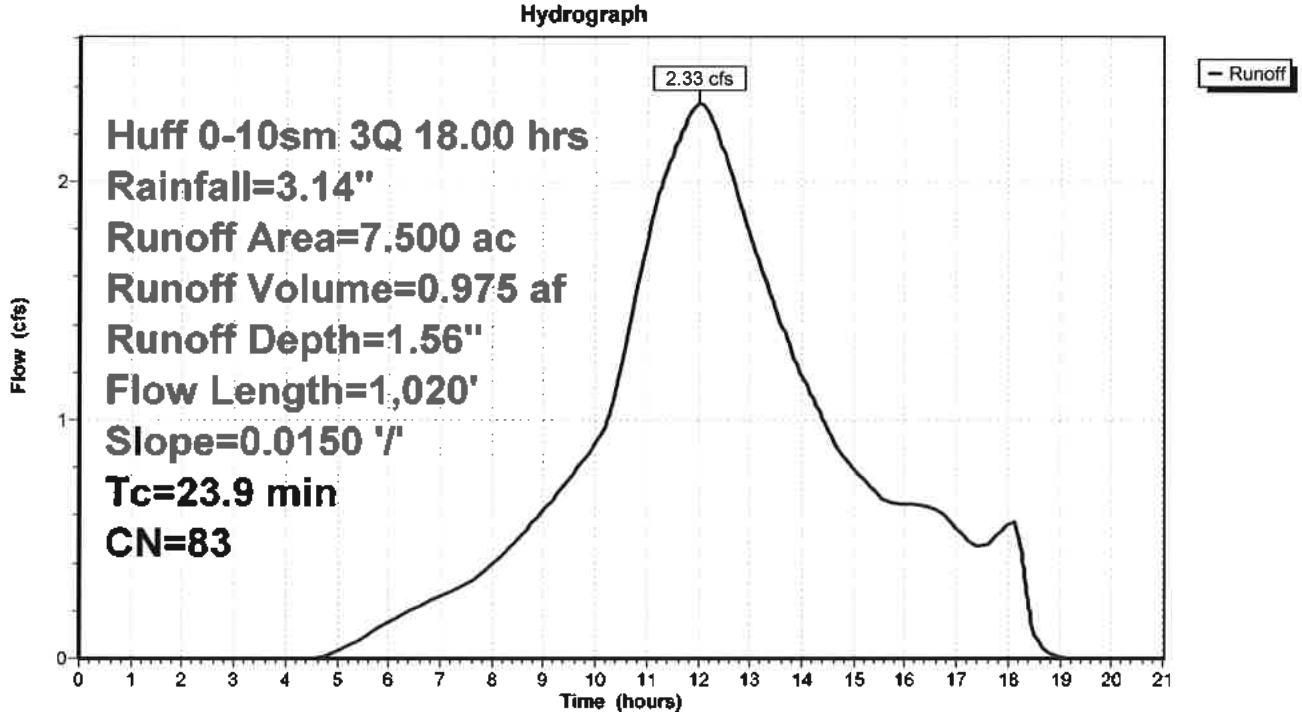
Runoff = 2.33 cfs @ 12.03 hrs, Volume= 0.975 af, Depth= 1.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.02 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=3.14"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 0.01 | 0.00 | 0.00 |
| 0.80 | 0.04 | 0.00 | 0.00 |
| 1.20 | 0.08 | 0.00 | 0.00 |
| 1.60 | 0.12 | 0.00 | 0.00 |
| 2.00 | 0.16 | 0.00 | 0.00 |
| 2.40 | 0.21 | 0.00 | 0.00 |
| 2.80 | 0.25 | 0.00 | 0.00 |
| 3.20 | 0.29 | 0.00 | 0.00 |
| 3.60 | 0.33 | 0.00 | 0.00 |
| 4.00 | 0.38 | 0.00 | 0.00 |
| 4.40 | 0.42 | 0.00 | 0.00 |
| 4.80 | 0.46 | 0.00 | 0.01 |
| 5.20 | 0.51 | 0.01 | 0.05 |
| 5.60 | 0.57 | 0.01 | 0.10 |
| 6.00 | 0.63 | 0.02 | 0.15 |
| 6.40 | 0.68 | 0.03 | 0.20 |
| 6.80 | 0.74 | 0.05 | 0.24 |
| 7.20 | 0.80 | 0.06 | 0.28 |
| 7.60 | 0.86 | 0.08 | 0.32 |
| 8.00 | 0.92 | 0.10 | 0.40 |
| 8.40 | 1.00 | 0.13 | 0.48 |
| 8.80 | 1.07 | 0.16 | 0.57 |
| 9.20 | 1.16 | 0.20 | 0.67 |
| 9.60 | 1.25 | 0.24 | 0.78 |
| 10.00 | 1.35 | 0.30 | 0.90 |
| 10.40 | 1.47 | 0.36 | 1.12 |
| 10.80 | 1.63 | 0.45 | 1.52 |
| 11.20 | 1.80 | 0.56 | 1.93 |
| 11.60 | 1.98 | 0.68 | 2.16 |
| 12.00 | 2.16 | 0.80 | **2.32** |
| 12.40 | 2.31 | 0.91 | **2.18** |
| 12.80 | 2.44 | 1.01 | 1.91 |
| 13.20 | 2.54 | 1.09 | 1.65 |
| 13.60 | 2.63 | 1.16 | 1.40 |
| 14.00 | 2.71 | 1.22 | 1.19 |
| 14.40 | 2.77 | 1.27 | 1.01 |
| 14.80 | 2.83 | 1.31 | 0.85 |
| 15.20 | 2.87 | 1.35 | 0.75 |
| 15.60 | 2.92 | 1.38 | 0.66 |
| 16.00 | 2.96 | 1.41 | 0.64 |
| 16.40 | 3.00 | 1.45 | 0.64 |
| 16.80 | 3.04 | 1.48 | 0.59 |
| 17.20 | 3.07 | 1.50 | 0.50 |
| 17.60 | 3.10 | 1.53 | 0.48 |
| 18.00 | **3.14** | **1.56** | 0.57 |
| 18.40 | 3.14 | 1.56 | 0.21 |
| 18.80 | 3.14 | 1.56 | 0.02 |
| 19.20 | 3.14 | 1.56 | 0.00 |
| 19.60 | 3.14 | 1.56 | 0.00 |
| 20.00 | 3.14 | 1.56 | 0.00 |
| 20.40 | 3.14 | 1.56 | 0.00 |
| 20.80 | 3.14 | 1.56 | 0.00 |

## Summary for Subcatchment 8S: Northwood Drive Bypass

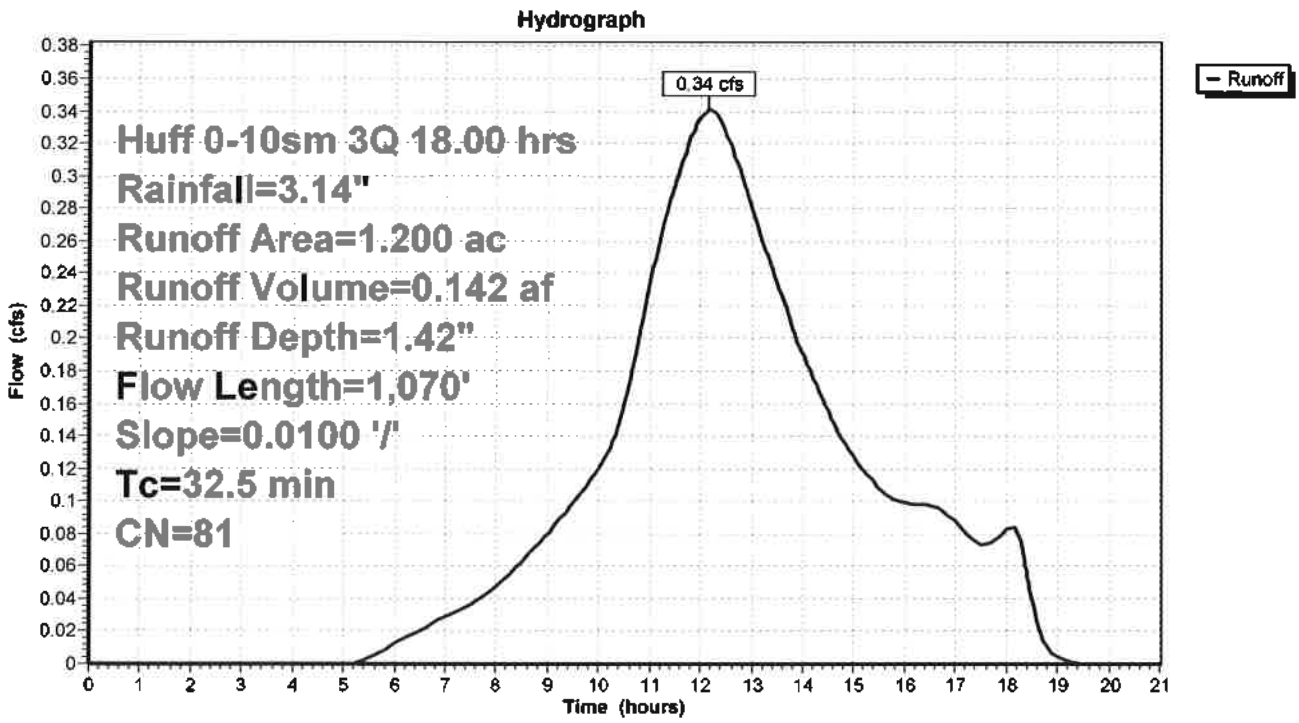
Runoff = 0.34 cfs @ 12.17 hrs, Volume= 0.142 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.02 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=3.14"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 0.01 | 0.00 | 0.00 |
| 0.80 | 0.04 | 0.00 | 0.00 |
| 1.20 | 0.08 | 0.00 | 0.00 |
| 1.60 | 0.12 | 0.00 | 0.00 |
| 2.00 | 0.16 | 0.00 | 0.00 |
| 2.40 | 0.21 | 0.00 | 0.00 |
| 2.80 | 0.25 | 0.00 | 0.00 |
| 3.20 | 0.29 | 0.00 | 0.00 |
| 3.60 | 0.33 | 0.00 | 0.00 |
| 4.00 | 0.38 | 0.00 | 0.00 |
| 4.40 | 0.42 | 0.00 | 0.00 |
| 4.80 | 0.46 | 0.00 | 0.00 |
| 5.20 | 0.51 | 0.00 | 0.00 |
| 5.60 | 0.57 | 0.00 | 0.00 |
| 6.00 | 0.63 | 0.01 | 0.01 |
| 6.40 | 0.68 | 0.02 | 0.02 |
| 6.80 | 0.74 | 0.03 | 0.03 |
| 7.20 | 0.80 | 0.04 | 0.03 |
| 7.60 | 0.86 | 0.05 | 0.04 |
| 8.00 | 0.92 | 0.07 | 0.05 |
| 8.40 | 1.00 | 0.10 | 0.06 |
| 8.80 | 1.07 | 0.12 | 0.07 |
| 9.20 | 1.16 | 0.16 | 0.09 |
| 9.60 | 1.25 | 0.20 | 0.10 |
| 10.00 | 1.35 | 0.24 | 0.12 |
| 10.40 | 1.47 | 0.30 | 0.15 |
| 10.80 | 1.63 | 0.38 | 0.20 |
| 11.20 | 1.80 | 0.48 | 0.26 |
| 11.60 | 1.98 | 0.59 | 0.31 |
| 12.00 | 2.16 | 0.71 | **0.34** |
| 12.40 | 2.31 | 0.81 | **0.33** |
| 12.80 | 2.44 | 0.90 | 0.30 |
| 13.20 | 2.54 | 0.97 | 0.26 |
| 13.60 | 2.63 | 1.04 | 0.22 |
| 14.00 | 2.71 | 1.10 | 0.19 |
| 14.40 | 2.77 | 1.14 | 0.16 |
| 14.80 | 2.83 | 1.18 | 0.14 |
| 15.20 | 2.87 | 1.22 | 0.12 |
| 15.60 | 2.92 | 1.25 | 0.10 |
| 16.00 | 2.96 | 1.28 | 0.10 |
| 16.40 | 3.00 | 1.31 | 0.10 |
| 16.80 | 3.04 | 1.34 | 0.09 |
| 17.20 | 3.07 | 1.37 | 0.08 |
| 17.60 | 3.10 | 1.39 | 0.07 |
| 18.00 | **3.14** | **1.42** | 0.08 |
| 18.40 | 3.14 | 1.42 | 0.06 |
| 18.80 | 3.14 | 1.42 | 0.01 |
| 19.20 | 3.14 | 1.42 | 0.00 |
| 19.60 | 3.14 | 1.42 | 0.00 |
| 20.00 | 3.14 | 1.42 | 0.00 |
| 20.40 | 3.14 | 1.42 | 0.00 |
| 20.80 | 3.14 | 1.42 | 0.00 |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

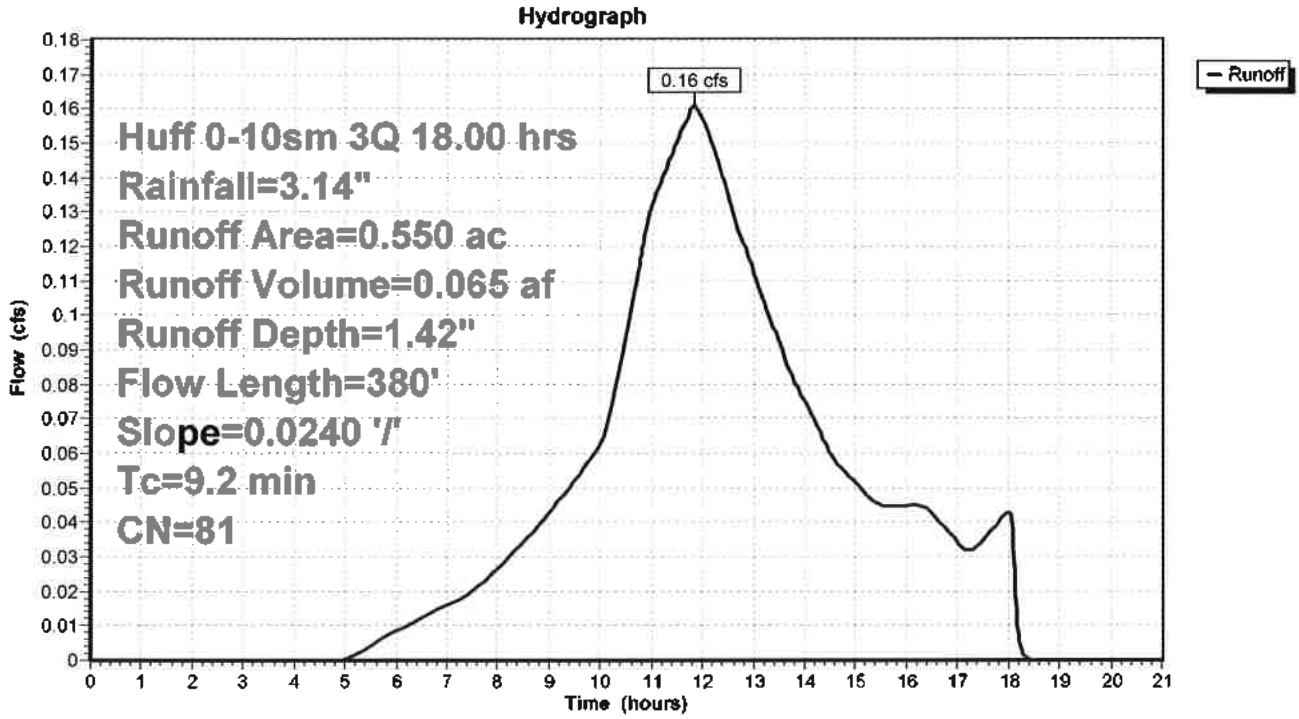
Runoff = 0.16 cfs @ 11.83 hrs, Volume= 0.065 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.02 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=3.14"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 0.01 | 0.00 | 0.00 |
| 0.80 | 0.04 | 0.00 | 0.00 |
| 1.20 | 0.08 | 0.00 | 0.00 |
| 1.60 | 0.12 | 0.00 | 0.00 |
| 2.00 | 0.16 | 0.00 | 0.00 |
| 2.40 | 0.21 | 0.00 | 0.00 |
| 2.80 | 0.25 | 0.00 | 0.00 |
| 3.20 | 0.29 | 0.00 | 0.00 |
| 3.60 | 0.33 | 0.00 | 0.00 |
| 4.00 | 0.38 | 0.00 | 0.00 |
| 4.40 | 0.42 | 0.00 | 0.00 |
| 4.80 | 0.46 | 0.00 | 0.00 |
| 5.20 | 0.51 | 0.00 | 0.00 |
| 5.60 | 0.57 | 0.00 | 0.01 |
| 6.00 | 0.63 | 0.01 | 0.01 |
| 6.40 | 0.68 | 0.02 | 0.01 |
| 6.80 | 0.74 | 0.03 | 0.01 |
| 7.20 | 0.80 | 0.04 | 0.02 |
| 7.60 | 0.86 | 0.05 | 0.02 |
| 8.00 | 0.92 | 0.07 | 0.03 |
| 8.40 | 1.00 | 0.10 | 0.03 |
| 8.80 | 1.07 | 0.12 | 0.04 |
| 9.20 | 1.16 | 0.16 | 0.05 |
| 9.60 | 1.25 | 0.20 | 0.05 |
| 10.00 | 1.35 | 0.24 | 0.06 |
| 10.40 | 1.47 | 0.30 | 0.09 |
| 10.80 | 1.63 | 0.38 | 0.12 |
| 11.20 | 1.80 | 0.48 | 0.14 |
| 11.60 | 1.98 | 0.59 | **0.15** |
| 12.00 | 2.16 | 0.71 | **0.16** |
| 12.40 | 2.31 | 0.81 | 0.14 |
| 12.80 | 2.44 | 0.90 | 0.12 |
| 13.20 | 2.54 | 0.97 | 0.10 |
| 13.60 | 2.63 | 1.04 | 0.09 |
| 14.00 | 2.71 | 1.10 | 0.08 |
| 14.40 | 2.77 | 1.14 | 0.06 |
| 14.80 | 2.83 | 1.18 | 0.05 |
| 15.20 | 2.87 | 1.22 | 0.05 |
| 15.60 | 2.92 | 1.25 | 0.04 |
| 16.00 | 2.96 | 1.28 | 0.04 |
| 16.40 | 3.00 | 1.31 | 0.04 |
| 16.80 | 3.04 | 1.34 | 0.04 |
| 17.20 | 3.07 | 1.37 | 0.03 |
| 17.60 | 3.10 | 1.39 | 0.04 |
| 18.00 | **3.14** | **1.42** | 0.04 |
| 18.40 | 3.14 | 1.42 | 0.00 |
| 18.80 | 3.14 | 1.42 | 0.00 |
| 19.20 | 3.14 | 1.42 | 0.00 |
| 19.60 | 3.14 | 1.42 | 0.00 |
| 20.00 | 3.14 | 1.42 | 0.00 |
| 20.40 | 3.14 | 1.42 | 0.00 |
| 20.80 | 3.14 | 1.42 | 0.00 |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 2.60 cfs @ | 12.02 hrs, | Volume= | 1.159 af |
| Outflow | = | 0.67 cfs @ | 17.06 hrs, | Volume= | 0.613 af, Atten= 74%, Lag= 302.3 min |
| Primary | = | 0.67 cfs @ | 17.06 hrs, | Volume= | 0.613 af |
| Secondary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-21.00 hrs, dt= 0.02 hrs
Peak Elev= 671.79' @ 17.06 hrs Surf.Area= 30,758 sf Storage= 29,765 cf

Plug-Flow detention time= 286.6 min calculated for 0.613 af (53% of inflow)
Center-of-Mass det. time= 163.4 min ( 908.9 - 745.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.40' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

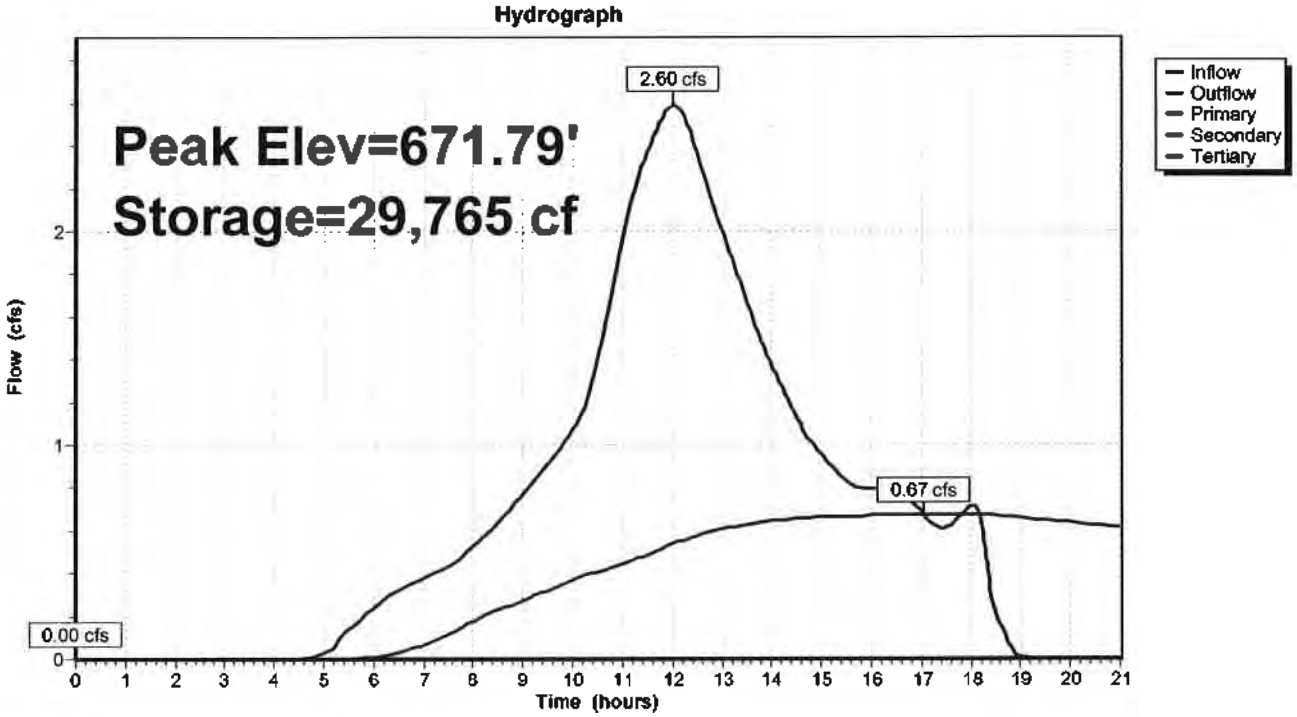
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=0.67 cfs @ 17.06 hrs HW=671.79' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.67 cfs @ 6.09 fps)

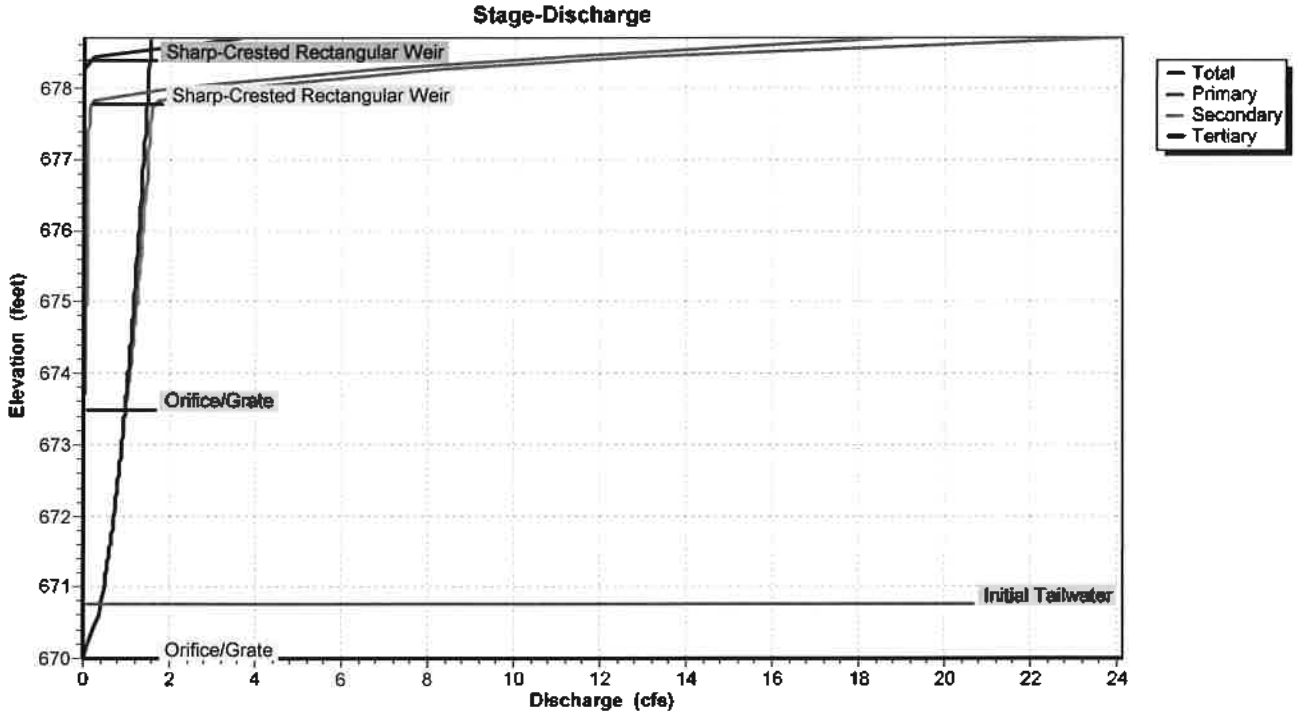
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

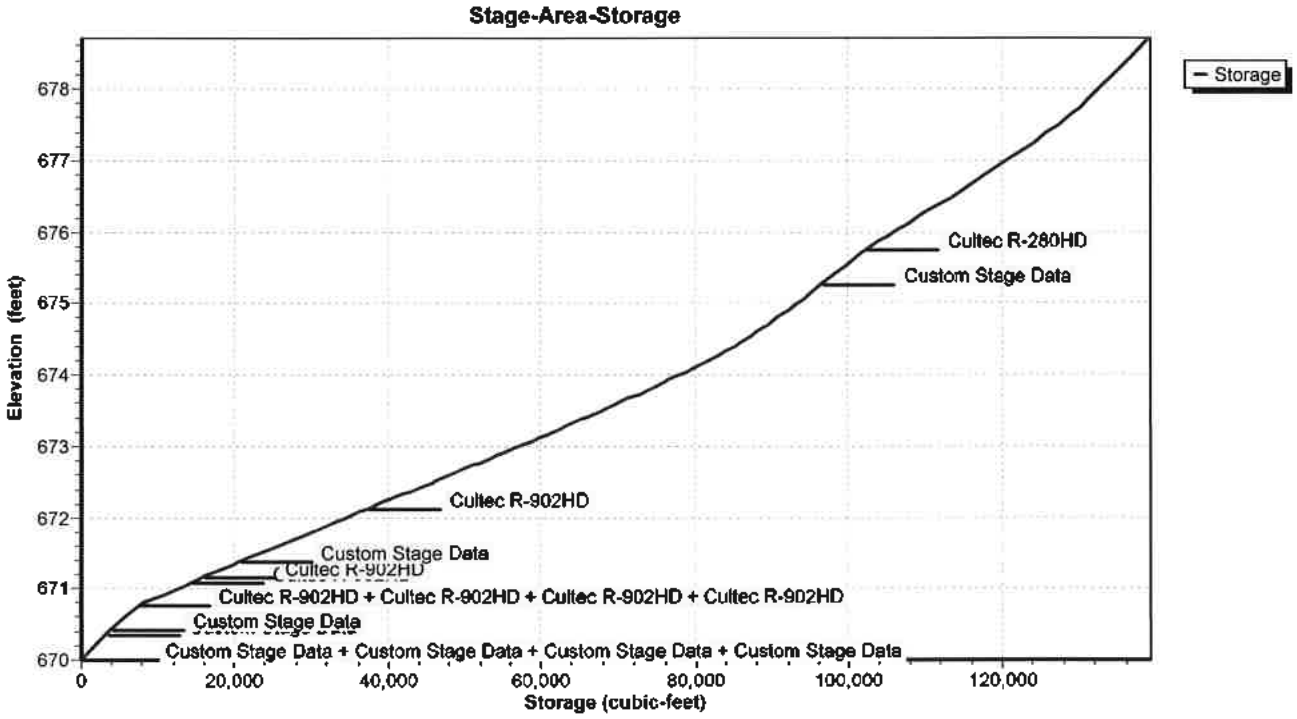
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 1.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | 0.03 | 20 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.24 | 482 | 670.05 | 0.01 | 0.01 | 0.00 | 0.00 |
| 7.00 | 0.38 | 1,512 | 670.17 | 0.07 | 0.07 | 0.00 | 0.00 |
| 8.00 | 0.53 | 2,671 | 670.30 | 0.18 | 0.18 | 0.00 | 0.00 |
| 9.00 | 0.77 | 4,164 | 670.45 | 0.27 | 0.27 | 0.00 | 0.00 |
| 10.00 | 1.07 | 6,301 | 670.67 | 0.37 | 0.37 | 0.00 | 0.00 |
| 11.00 | 1.99 | 10,038 | 670.89 | 0.45 | 0.45 | 0.00 | 0.00 |
| 12.00 | **2.60** | 16,738 | 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 13.00 | **2.01** | 23,164 | 671.49 | 0.61 | 0.61 | 0.00 | 0.00 |
| 14.00 | 1.38 | 26,976 | 671.66 | 0.65 | 0.65 | 0.00 | 0.00 |
| 15.00 | 0.95 | 28,751 | 671.74 | 0.66 | 0.66 | 0.00 | 0.00 |
| 16.00 | 0.80 | 29,412 | 671.77 | 0.67 | 0.67 | 0.00 | 0.00 |
| 17.00 | 0.68 | **29,764** | **671.79** | **0.67** | **0.67** | 0.00 | 0.00 |
| 18.00 | 0.71 | **29,662** | **671.78** | **0.67** | **0.67** | 0.00 | 0.00 |
| 19.00 | 0.01 | 28,393 | 671.73 | 0.66 | 0.66 | 0.00 | 0.00 |
| 20.00 | 0.00 | 26,065 | 671.62 | 0.64 | 0.64 | 0.00 | 0.00 |
| 21.00 | 0.00 | 23,812 | 671.52 | 0.61 | 0.61 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 18.46 | 1.54 | 15.13 | 1.79 |
| 678.80 | **28.12** | **1.56** | **21.42** | **5.14** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 1.43 cfs @ | 11.95 hrs, | Volume= | 0.597 af |
| Outflow | = | 1.21 cfs @ | 12.67 hrs, | Volume= | 0.596 af, Atten= 15%, Lag= 43.0 min |
| Primary | = | 1.09 cfs @ | 12.67 hrs, | Volume= | 0.478 af |
| Secondary | = | 0.12 cfs @ | 12.67 hrs, | Volume= | 0.118 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-21.00 hrs, dt= 0.02 hrs
Peak Elev= 677.74' @ 12.67 hrs Surf.Area= 2,894 sf Storage= 2,455 cf

Plug-Flow detention time= 22.1 min calculated for 0.596 af (100% of inflow)
Center-of-Mass det. time= 21.5 min ( 767.2 - 745.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

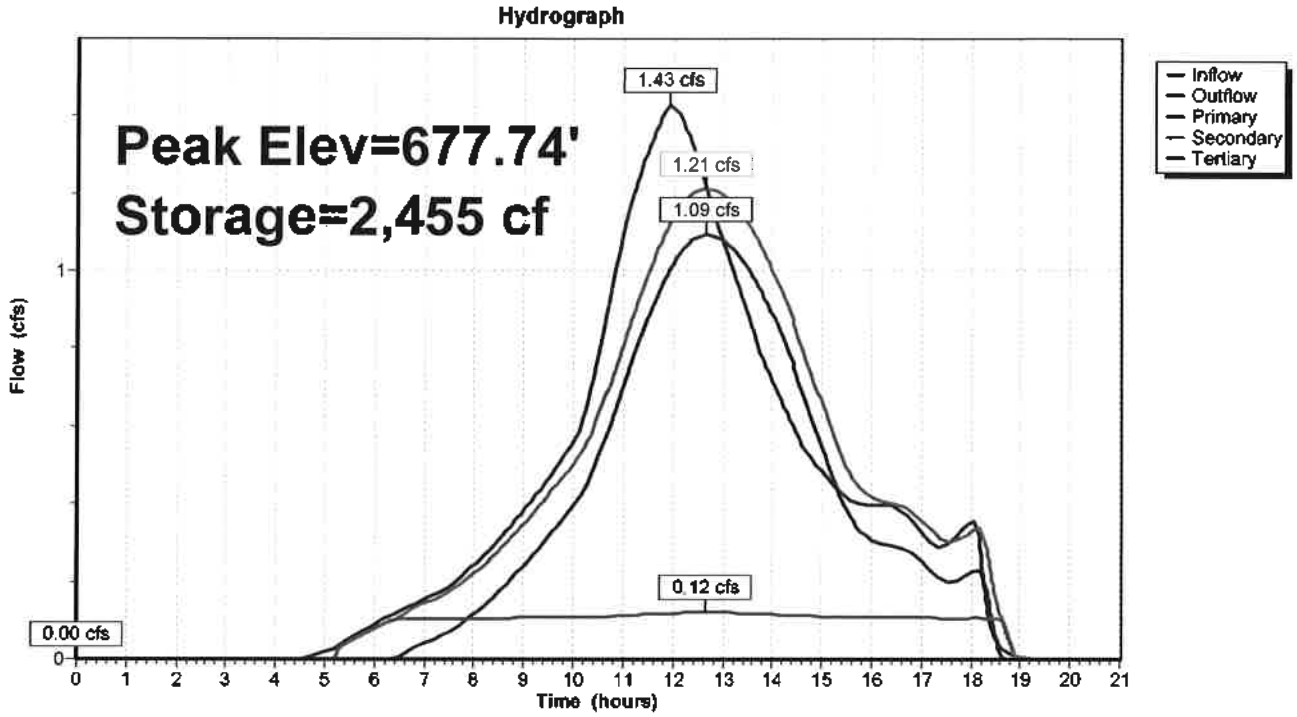
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=1.09 cfs @ 12.67 hrs HW=677.74' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.09 cfs @ 4.75 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

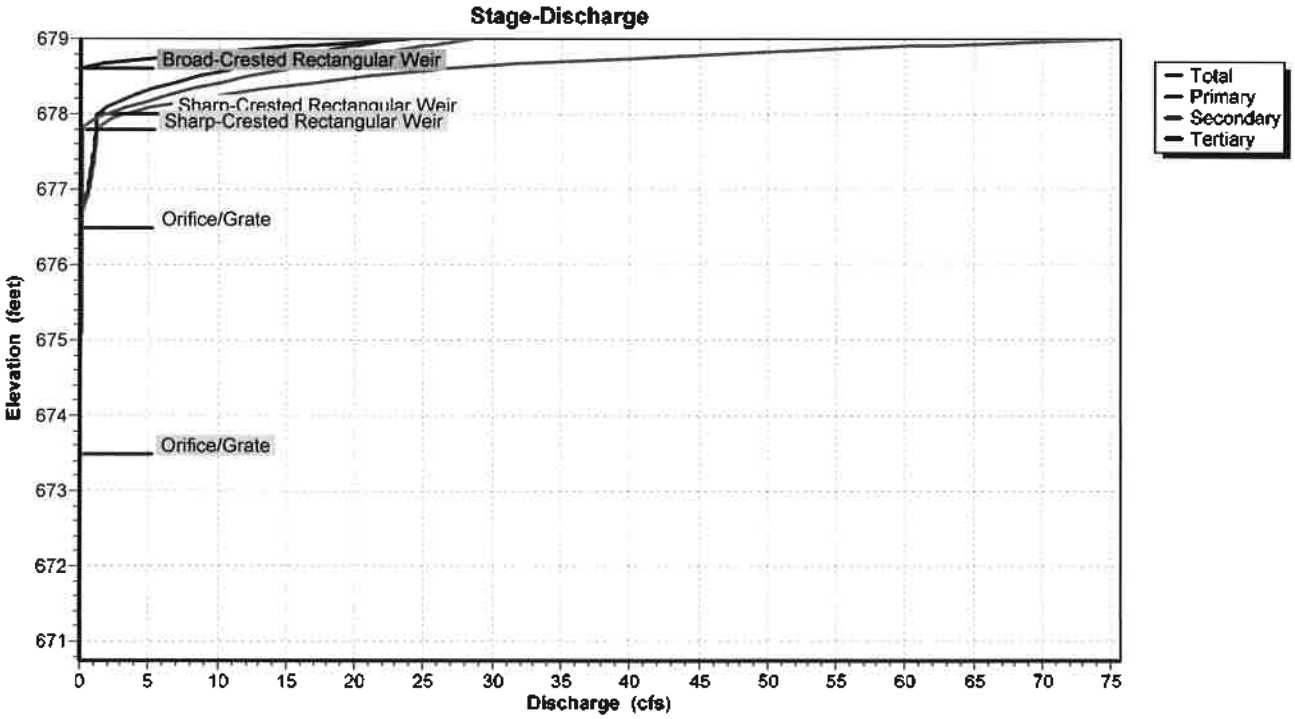
**Secondary OutFlow** Max=0.12 cfs @ 12.67 hrs HW=677.74' TW=671.41' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.12 cfs @ 9.84 fps)
└─**5=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

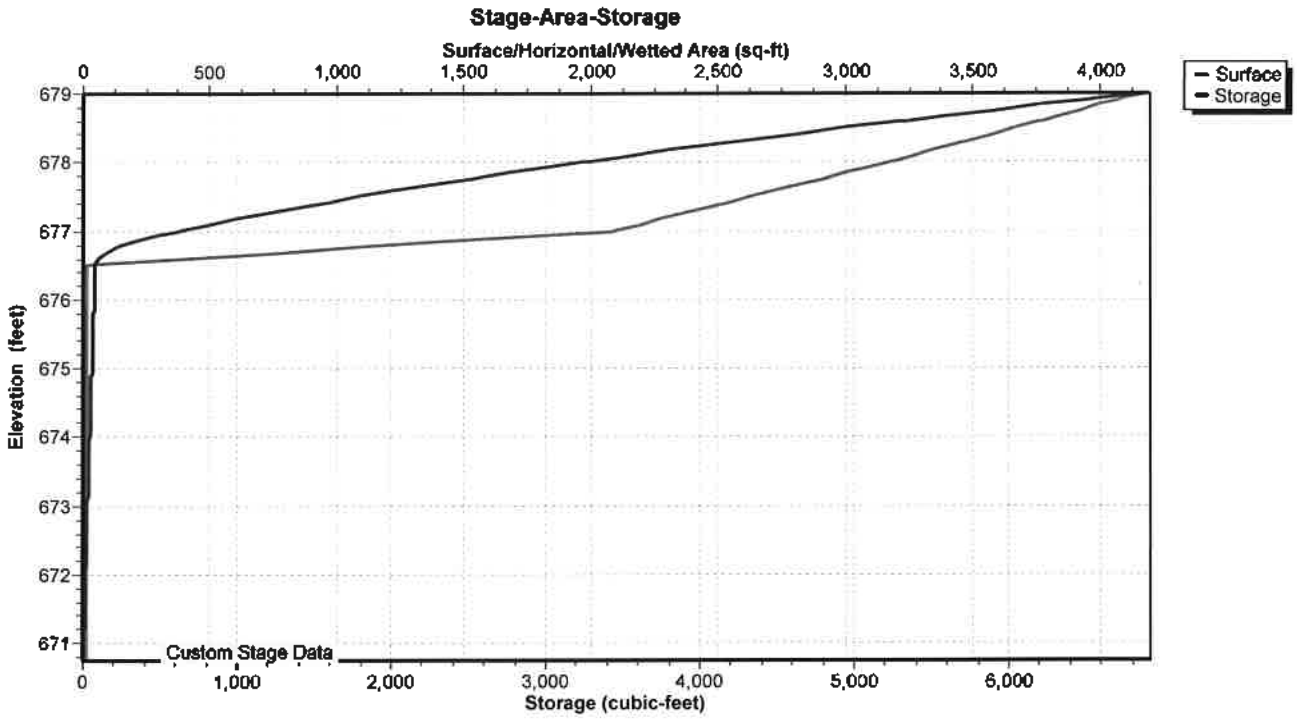
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 1.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | 0.02 | 15 | 671.80 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.09 | 64 | 675.33 | 0.08 | 0.00 | 0.08 | 0.00 |
| 7.00 | 0.16 | 110 | 676.61 | 0.14 | 0.04 | 0.10 | 0.00 |
| 8.00 | 0.24 | 166 | 676.70 | 0.22 | 0.12 | 0.10 | 0.00 |
| 9.00 | 0.38 | 271 | 676.80 | 0.35 | 0.24 | 0.11 | 0.00 |
| 10.00 | 0.56 | 425 | 676.90 | 0.50 | 0.40 | 0.11 | 0.00 |
| 11.00 | **1.11** | 976 | 677.17 | 0.81 | 0.70 | 0.11 | 0.00 |
| 12.00 | **1.43** | **2,095** | **677.62** | **1.14** | **1.02** | **0.12** | 0.00 |
| 13.00 | 1.07 | **2,376** | **677.72** | **1.20** | **1.08** | **0.12** | 0.00 |
| 14.00 | 0.72 | 1,552 | 677.41 | 1.00 | 0.89 | 0.12 | 0.00 |
| 15.00 | 0.48 | 642 | 677.02 | 0.67 | 0.56 | 0.11 | 0.00 |
| 16.00 | 0.40 | 331 | 676.84 | 0.41 | 0.31 | 0.11 | 0.00 |
| 17.00 | 0.33 | 281 | 676.81 | 0.36 | 0.25 | 0.11 | 0.00 |
| 18.00 | 0.36 | 255 | 676.79 | 0.33 | 0.22 | 0.11 | 0.00 |
| 19.00 | 0.00 | 39 | 673.56 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20.00 | 0.00 | 39 | 673.50 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21.00 | 0.00 | 39 | 673.50 | 0.00 | 0.00 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 23.56 | 9.86 | 13.70 | 0.00 |
| 678.75 | 40.37 | 15.13 | 19.77 | 5.47 |
| 678.95 | **67.61** | **21.27** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

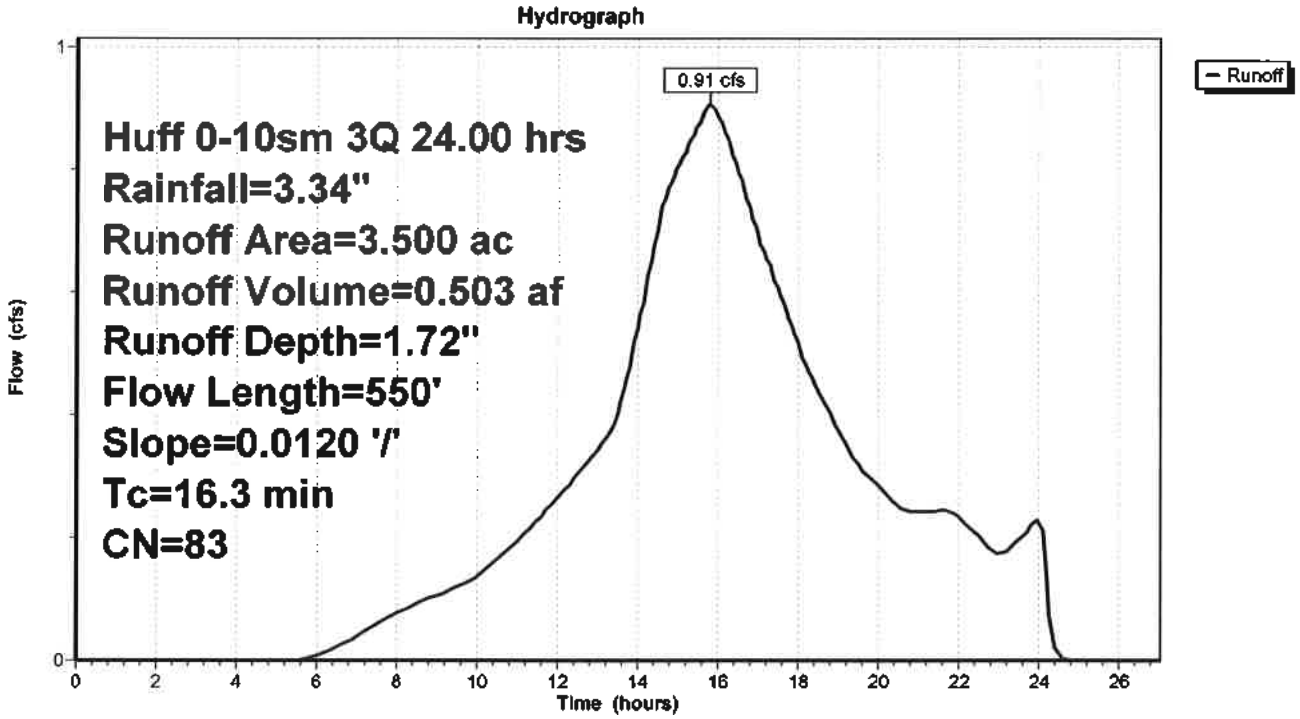
Runoff = 0.91 cfs @ 15.82 hrs, Volume= 0.503 af, Depth= 1.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.02 hrs, dt= 0.07 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=3.34"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 18.20 | 2.81 | 1.30 | 0.48 |
| 0.35 | 0.00 | 0.00 | 0.00 | 18.55 | 2.87 | 1.34 | 0.43 |
| 0.70 | 0.02 | 0.00 | 0.00 | 18.90 | 2.91 | 1.38 | 0.39 |
| 1.05 | 0.04 | 0.00 | 0.00 | 19.25 | 2.96 | 1.41 | 0.35 |
| 1.40 | 0.07 | 0.00 | 0.00 | 19.60 | 2.99 | 1.44 | 0.31 |
| 1.75 | 0.10 | 0.00 | 0.00 | 19.95 | 3.03 | 1.47 | 0.29 |
| 2.10 | 0.13 | 0.00 | 0.00 | 20.30 | 3.06 | 1.50 | 0.27 |
| 2.45 | 0.16 | 0.00 | 0.00 | 20.65 | 3.09 | 1.52 | 0.25 |
| 2.80 | 0.19 | 0.00 | 0.00 | 21.00 | 3.12 | 1.54 | 0.24 |
| 3.15 | 0.22 | 0.00 | 0.00 | 21.35 | 3.15 | 1.57 | 0.24 |
| 3.50 | 0.25 | 0.00 | 0.00 | 21.70 | 3.18 | 1.59 | 0.24 |
| 3.85 | 0.28 | 0.00 | 0.00 | 22.05 | 3.21 | 1.61 | 0.23 |
| 4.20 | 0.31 | 0.00 | 0.00 | 22.40 | 3.23 | 1.63 | 0.21 |
| 4.55 | 0.33 | 0.00 | 0.00 | 22.75 | 3.25 | 1.65 | 0.18 |
| 4.90 | 0.36 | 0.00 | 0.00 | 23.10 | 3.27 | 1.67 | 0.17 |
| 5.25 | 0.39 | 0.00 | 0.00 | 23.45 | 3.30 | 1.69 | 0.19 |
| 5.60 | 0.42 | 0.00 | 0.00 | 23.80 | **3.32** | **1.71** | 0.22 |
| 5.95 | 0.45 | 0.00 | 0.01 | 24.15 | **3.34** | **1.72** | 0.19 |
| 6.30 | 0.48 | 0.00 | 0.02 | 24.50 | 3.34 | 1.72 | 0.01 |
| 6.65 | 0.52 | 0.01 | 0.03 | 24.85 | 3.34 | 1.72 | 0.00 |
| 7.00 | 0.55 | 0.01 | 0.04 | 25.20 | 3.34 | 1.72 | 0.00 |
| 7.35 | 0.59 | 0.02 | 0.05 | 25.55 | 3.34 | 1.72 | 0.00 |
| 7.70 | 0.63 | 0.02 | 0.07 | 25.90 | 3.34 | 1.72 | 0.00 |
| 8.05 | 0.67 | 0.03 | 0.08 | 26.25 | 3.34 | 1.72 | 0.00 |
| 8.40 | 0.71 | 0.04 | 0.09 | 26.60 | 3.34 | 1.72 | 0.00 |
| 8.75 | 0.75 | 0.05 | 0.10 | 26.95 | 3.34 | 1.72 | 0.00 |
| 9.10 | 0.79 | 0.06 | 0.11 | | | | |
| 9.45 | 0.83 | 0.07 | 0.12 | | | | |
| 9.80 | 0.87 | 0.08 | 0.13 | | | | |
| 10.15 | 0.91 | 0.10 | 0.14 | | | | |
| 10.50 | 0.96 | 0.12 | 0.16 | | | | |
| 10.85 | 1.01 | 0.14 | 0.19 | | | | |
| 11.20 | 1.06 | 0.16 | 0.21 | | | | |
| 11.55 | 1.11 | 0.18 | 0.23 | | | | |
| 11.90 | 1.17 | 0.21 | 0.26 | | | | |
| 12.25 | 1.23 | 0.23 | 0.28 | | | | |
| 12.60 | 1.29 | 0.27 | 0.31 | | | | |
| 12.95 | 1.36 | 0.30 | 0.34 | | | | |
| 13.30 | 1.43 | 0.34 | 0.37 | | | | |
| 13.65 | 1.51 | 0.38 | 0.44 | | | | |
| 14.00 | 1.60 | 0.44 | 0.54 | | | | |
| 14.35 | 1.71 | 0.51 | 0.65 | | | | |
| 14.70 | 1.83 | 0.58 | 0.75 | | | | |
| 15.05 | 1.95 | 0.66 | 0.81 | | | | |
| 15.40 | 2.08 | 0.75 | 0.86 | | | | |
| 15.75 | 2.21 | 0.84 | **0.90** | | | | |
| 16.10 | 2.33 | 0.93 | **0.87** | | | | |
| 16.45 | 2.43 | 1.00 | 0.81 | | | | |
| 16.80 | 2.53 | 1.08 | 0.74 | | | | |
| 17.15 | 2.61 | 1.14 | 0.67 | | | | |
| 17.50 | 2.69 | 1.20 | 0.61 | | | | |
| 17.85 | 2.75 | 1.25 | 0.54 | | | | |

## Summary for Subcatchment 7S: South Property

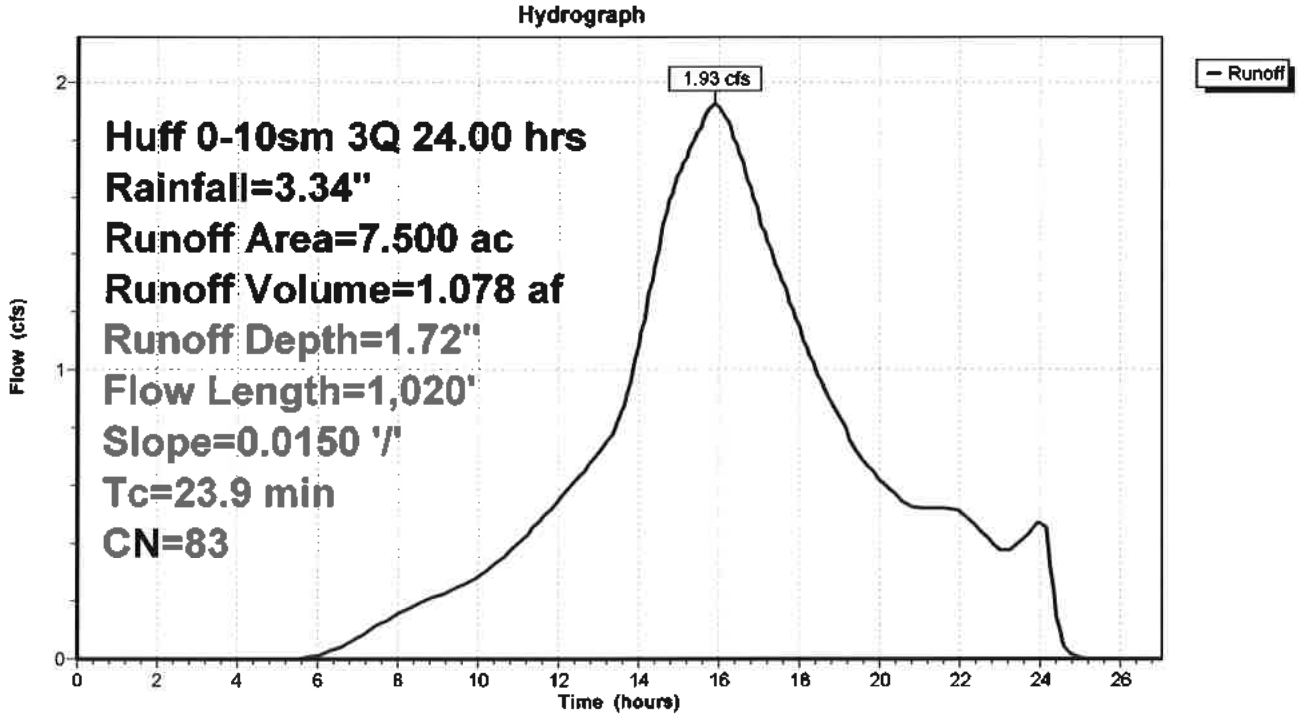
Runoff = 1.93 cfs @ 15.91 hrs, Volume= 1.078 af, Depth= 1.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.02 hrs, dt= 0.07 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=3.34"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.35 | 0.00 | 0.00 | 0.00 |
| 0.70 | 0.02 | 0.00 | 0.00 |
| 1.05 | 0.04 | 0.00 | 0.00 |
| 1.40 | 0.07 | 0.00 | 0.00 |
| 1.75 | 0.10 | 0.00 | 0.00 |
| 2.10 | 0.13 | 0.00 | 0.00 |
| 2.45 | 0.16 | 0.00 | 0.00 |
| 2.80 | 0.19 | 0.00 | 0.00 |
| 3.15 | 0.22 | 0.00 | 0.00 |
| 3.50 | 0.25 | 0.00 | 0.00 |
| 3.85 | 0.28 | 0.00 | 0.00 |
| 4.20 | 0.31 | 0.00 | 0.00 |
| 4.55 | 0.33 | 0.00 | 0.00 |
| 4.90 | 0.36 | 0.00 | 0.00 |
| 5.25 | 0.39 | 0.00 | 0.00 |
| 5.60 | 0.42 | 0.00 | 0.00 |
| 5.95 | 0.45 | 0.00 | 0.01 |
| 6.30 | 0.48 | 0.00 | 0.03 |
| 6.65 | 0.52 | 0.01 | 0.05 |
| 7.00 | 0.55 | 0.01 | 0.07 |
| 7.35 | 0.59 | 0.02 | 0.10 |
| 7.70 | 0.63 | 0.02 | 0.13 |
| 8.05 | 0.67 | 0.03 | 0.16 |
| 8.40 | 0.71 | 0.04 | 0.18 |
| 8.75 | 0.75 | 0.05 | 0.20 |
| 9.10 | 0.79 | 0.06 | 0.23 |
| 9.45 | 0.83 | 0.07 | 0.25 |
| 9.80 | 0.87 | 0.08 | 0.27 |
| 10.15 | 0.91 | 0.10 | 0.30 |
| 10.50 | 0.96 | 0.12 | 0.34 |
| 10.85 | 1.01 | 0.14 | 0.38 |
| 11.20 | 1.06 | 0.16 | 0.43 |
| 11.55 | 1.11 | 0.18 | 0.48 |
| 11.90 | 1.17 | 0.21 | 0.53 |
| 12.25 | 1.23 | 0.23 | 0.59 |
| 12.60 | 1.29 | 0.27 | 0.65 |
| 12.95 | 1.36 | 0.30 | 0.71 |
| 13.30 | 1.43 | 0.34 | 0.77 |
| 13.65 | 1.51 | 0.38 | 0.88 |
| 14.00 | 1.60 | 0.44 | 1.08 |
| 14.35 | 1.71 | 0.51 | 1.32 |
| 14.70 | 1.83 | 0.58 | 1.55 |
| 15.05 | 1.95 | 0.66 | 1.70 |
| 15.40 | 2.08 | 0.75 | 1.80 |
| 15.75 | 2.21 | 0.84 | **1.90** |
| 16.10 | 2.33 | 0.93 | **1.90** |
| 16.45 | 2.43 | 1.00 | 1.78 |
| 16.80 | 2.53 | 1.08 | 1.63 |
| 17.15 | 2.61 | 1.14 | 1.47 |
| 17.50 | 2.69 | 1.20 | 1.34 |
| 17.85 | 2.75 | 1.25 | 1.21 |
| 18.20 | 2.81 | 1.30 | 1.07 |
| 18.55 | 2.87 | 1.34 | 0.96 |
| 18.90 | 2.91 | 1.38 | 0.87 |
| 19.25 | 2.96 | 1.41 | 0.77 |
| 19.60 | 2.99 | 1.44 | 0.69 |
| 19.95 | 3.03 | 1.47 | 0.63 |
| 20.30 | 3.06 | 1.50 | 0.58 |
| 20.65 | 3.09 | 1.52 | 0.54 |
| 21.00 | 3.12 | 1.54 | 0.52 |
| 21.35 | 3.15 | 1.57 | 0.52 |
| 21.70 | 3.18 | 1.59 | 0.52 |
| 22.05 | 3.21 | 1.61 | 0.51 |
| 22.40 | 3.23 | 1.63 | 0.46 |
| 22.75 | 3.25 | 1.65 | 0.41 |
| 23.10 | 3.27 | 1.67 | 0.37 |
| 23.45 | 3.30 | 1.69 | 0.40 |
| 23.80 | **3.32** | **1.71** | 0.45 |
| 24.15 | **3.34** | **1.72** | 0.47 |
| 24.50 | 3.34 | 1.72 | 0.09 |
| 24.85 | 3.34 | 1.72 | 0.01 |
| 25.20 | 3.34 | 1.72 | 0.00 |
| 25.55 | 3.34 | 1.72 | 0.00 |
| 25.90 | 3.34 | 1.72 | 0.00 |
| 26.25 | 3.34 | 1.72 | 0.00 |
| 26.60 | 3.34 | 1.72 | 0.00 |
| 26.95 | 3.34 | 1.72 | 0.00 |

## Summary for Subcatchment 8S: Northwood Drive Bypass

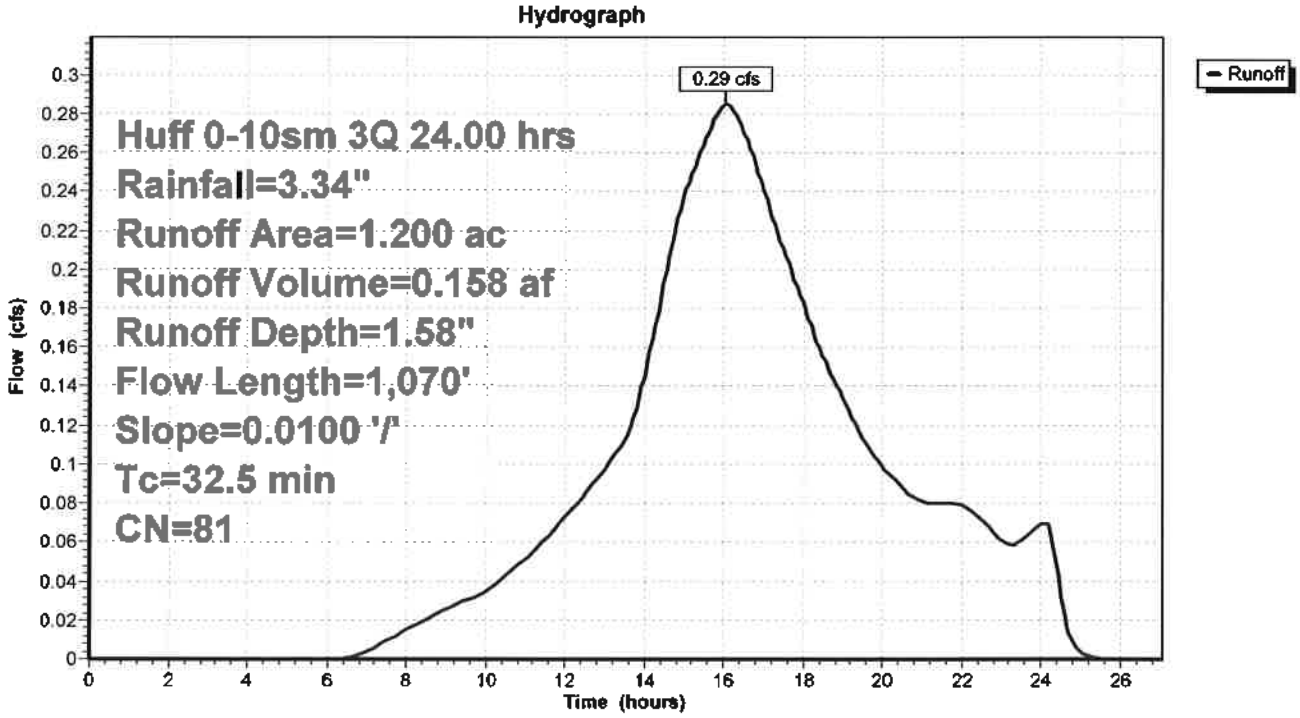
Runoff = 0.29 cfs @ 16.05 hrs, Volume= 0.158 af, Depth= 1.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.02 hrs, dt= 0.07 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=3.34"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 18.20 | 2.81 | 1.17 | 0.17 |
| 0.35 | 0.00 | 0.00 | 0.00 | 18.55 | 2.87 | 1.21 | 0.15 |
| 0.70 | 0.02 | 0.00 | 0.00 | 18.90 | 2.91 | 1.25 | 0.14 |
| 1.05 | 0.04 | 0.00 | 0.00 | 19.25 | 2.96 | 1.28 | 0.12 |
| 1.40 | 0.07 | 0.00 | 0.00 | 19.60 | 2.99 | 1.31 | 0.11 |
| 1.75 | 0.10 | 0.00 | 0.00 | 19.95 | 3.03 | 1.34 | 0.10 |
| 2.10 | 0.13 | 0.00 | 0.00 | 20.30 | 3.06 | 1.36 | 0.09 |
| 2.45 | 0.16 | 0.00 | 0.00 | 20.65 | 3.09 | 1.38 | 0.08 |
| 2.80 | 0.19 | 0.00 | 0.00 | 21.00 | 3.12 | 1.41 | 0.08 |
| 3.15 | 0.22 | 0.00 | 0.00 | 21.35 | 3.15 | 1.43 | 0.08 |
| 3.50 | 0.25 | 0.00 | 0.00 | 21.70 | 3.18 | 1.45 | 0.08 |
| 3.85 | 0.28 | 0.00 | 0.00 | 22.05 | 3.21 | 1.47 | 0.08 |
| 4.20 | 0.31 | 0.00 | 0.00 | 22.40 | 3.23 | 1.49 | 0.07 |
| 4.55 | 0.33 | 0.00 | 0.00 | 22.75 | 3.25 | 1.51 | 0.07 |
| 4.90 | 0.36 | 0.00 | 0.00 | 23.10 | 3.27 | 1.53 | 0.06 |
| 5.25 | 0.39 | 0.00 | 0.00 | 23.45 | 3.30 | 1.55 | 0.06 |
| 5.60 | 0.42 | 0.00 | 0.00 | 23.80 | **3.32** | **1.57** | 0.07 |
| 5.95 | 0.45 | 0.00 | 0.00 | 24.15 | **3.34** | **1.58** | 0.07 |
| 6.30 | 0.48 | 0.00 | 0.00 | 24.50 | 3.34 | 1.58 | 0.03 |
| 6.65 | 0.52 | 0.00 | 0.00 | 24.85 | 3.34 | 1.58 | 0.01 |
| 7.00 | 0.55 | 0.00 | 0.00 | 25.20 | 3.34 | 1.58 | 0.00 |
| 7.35 | 0.59 | 0.01 | 0.01 | 25.55 | 3.34 | 1.58 | 0.00 |
| 7.70 | 0.63 | 0.01 | 0.01 | 25.90 | 3.34 | 1.58 | 0.00 |
| 8.05 | 0.67 | 0.02 | 0.02 | 26.25 | 3.34 | 1.58 | 0.00 |
| 8.40 | 0.71 | 0.02 | 0.02 | 26.60 | 3.34 | 1.58 | 0.00 |
| 8.75 | 0.75 | 0.03 | 0.02 | 26.95 | 3.34 | 1.58 | 0.00 |
| 9.10 | 0.79 | 0.04 | 0.03 | | | | |
| 9.45 | 0.83 | 0.05 | 0.03 | | | | |
| 9.80 | 0.87 | 0.06 | 0.03 | | | | |
| 10.15 | 0.91 | 0.07 | 0.04 | | | | |
| 10.50 | 0.96 | 0.08 | 0.04 | | | | |
| 10.85 | 1.01 | 0.10 | 0.05 | | | | |
| 11.20 | 1.06 | 0.12 | 0.06 | | | | |
| 11.55 | 1.11 | 0.14 | 0.06 | | | | |
| 11.90 | 1.17 | 0.16 | 0.07 | | | | |
| 12.25 | 1.23 | 0.19 | 0.08 | | | | |
| 12.60 | 1.29 | 0.21 | 0.09 | | | | |
| 12.95 | 1.36 | 0.24 | 0.10 | | | | |
| 13.30 | 1.43 | 0.28 | 0.11 | | | | |
| 13.65 | 1.51 | 0.32 | 0.12 | | | | |
| 14.00 | 1.60 | 0.37 | 0.15 | | | | |
| 14.35 | 1.71 | 0.43 | 0.18 | | | | |
| 14.70 | 1.83 | 0.50 | 0.21 | | | | |
| 15.05 | 1.95 | 0.58 | 0.24 | | | | |
| 15.40 | 2.08 | 0.66 | 0.26 | | | | |
| 15.75 | 2.21 | 0.74 | **0.28** | | | | |
| 16.10 | 2.33 | 0.82 | **0.28** | | | | |
| 16.45 | 2.43 | 0.89 | 0.27 | | | | |
| 16.80 | 2.53 | 0.96 | 0.25 | | | | |
| 17.15 | 2.61 | 1.02 | 0.23 | | | | |
| 17.50 | 2.69 | 1.08 | 0.21 | | | | |
| 17.85 | 2.75 | 1.13 | 0.19 | | | | |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

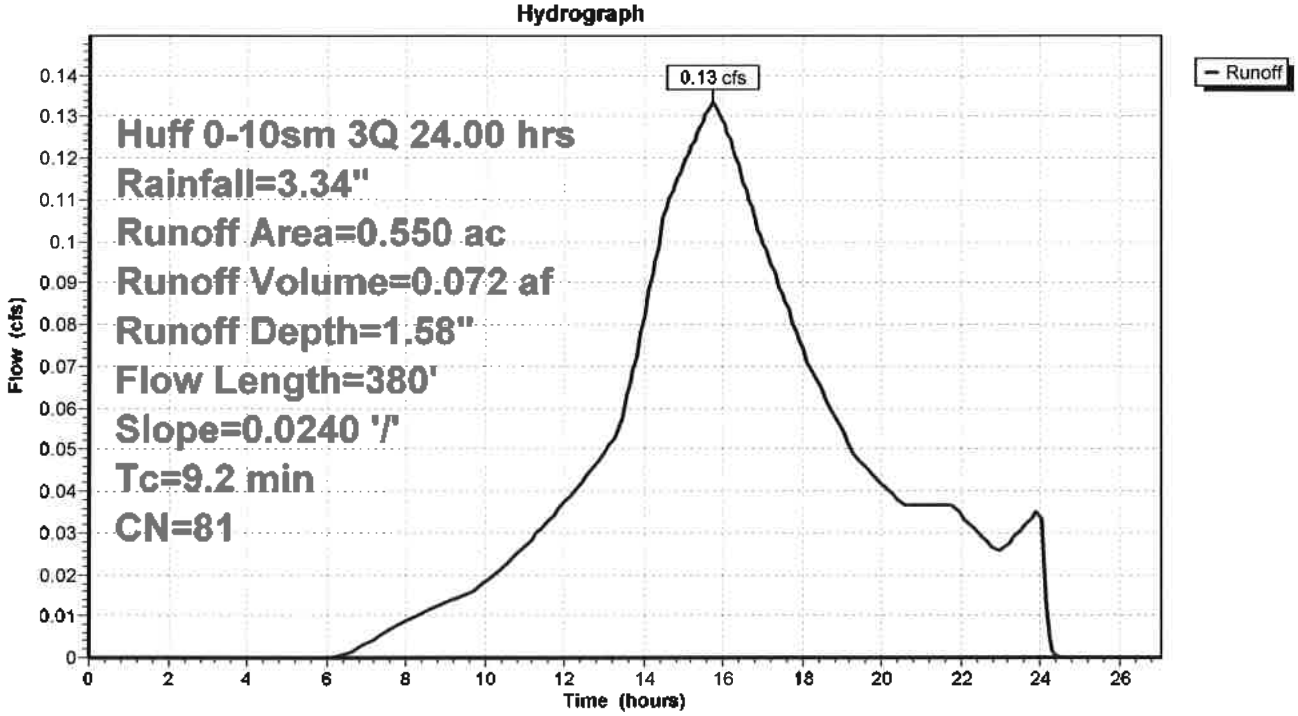
Runoff = 0.13 cfs @ 15.73 hrs, Volume= 0.072 af, Depth= 1.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.02 hrs, dt= 0.07 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=3.34"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 18.20 | 2.81 | 1.17 | 0.07 |
| 0.35 | 0.00 | 0.00 | 0.00 | 18.55 | 2.87 | 1.21 | 0.06 |
| 0.70 | 0.02 | 0.00 | 0.00 | 18.90 | 2.91 | 1.25 | 0.06 |
| 1.05 | 0.04 | 0.00 | 0.00 | 19.25 | 2.96 | 1.28 | 0.05 |
| 1.40 | 0.07 | 0.00 | 0.00 | 19.60 | 2.99 | 1.31 | 0.05 |
| 1.75 | 0.10 | 0.00 | 0.00 | 19.95 | 3.03 | 1.34 | 0.04 |
| 2.10 | 0.13 | 0.00 | 0.00 | 20.30 | 3.06 | 1.36 | 0.04 |
| 2.45 | 0.16 | 0.00 | 0.00 | 20.65 | 3.09 | 1.38 | 0.04 |
| 2.80 | 0.19 | 0.00 | 0.00 | 21.00 | 3.12 | 1.41 | 0.04 |
| 3.15 | 0.22 | 0.00 | 0.00 | 21.35 | 3.15 | 1.43 | 0.04 |
| 3.50 | 0.25 | 0.00 | 0.00 | 21.70 | 3.18 | 1.45 | 0.04 |
| 3.85 | 0.28 | 0.00 | 0.00 | 22.05 | 3.21 | 1.47 | 0.03 |
| 4.20 | 0.31 | 0.00 | 0.00 | 22.40 | 3.23 | 1.49 | 0.03 |
| 4.55 | 0.33 | 0.00 | 0.00 | 22.75 | 3.25 | 1.51 | 0.03 |
| 4.90 | 0.36 | 0.00 | 0.00 | 23.10 | 3.27 | 1.53 | 0.03 |
| 5.25 | 0.39 | 0.00 | 0.00 | 23.45 | 3.30 | 1.55 | 0.03 |
| 5.60 | 0.42 | 0.00 | 0.00 | 23.80 | **3.32** | **1.57** | 0.03 |
| 5.95 | 0.45 | 0.00 | 0.00 | 24.15 | **3.34** | **1.58** | 0.01 |
| 6.30 | 0.48 | 0.00 | 0.00 | 24.50 | 3.34 | 1.58 | 0.00 |
| 6.65 | 0.52 | 0.00 | 0.00 | 24.85 | 3.34 | 1.58 | 0.00 |
| 7.00 | 0.55 | 0.00 | 0.00 | 25.20 | 3.34 | 1.58 | 0.00 |
| 7.35 | 0.59 | 0.01 | 0.01 | 25.55 | 3.34 | 1.58 | 0.00 |
| 7.70 | 0.63 | 0.01 | 0.01 | 25.90 | 3.34 | 1.58 | 0.00 |
| 8.05 | 0.67 | 0.02 | 0.01 | 26.25 | 3.34 | 1.58 | 0.00 |
| 8.40 | 0.71 | 0.02 | 0.01 | 26.60 | 3.34 | 1.58 | 0.00 |
| 8.75 | 0.75 | 0.03 | 0.01 | 26.95 | 3.34 | 1.58 | 0.00 |
| 9.10 | 0.79 | 0.04 | 0.01 | | | | |
| 9.45 | 0.83 | 0.05 | 0.02 | | | | |
| 9.80 | 0.87 | 0.06 | 0.02 | | | | |
| 10.15 | 0.91 | 0.07 | 0.02 | | | | |
| 10.50 | 0.96 | 0.08 | 0.02 | | | | |
| 10.85 | 1.01 | 0.10 | 0.03 | | | | |
| 11.20 | 1.06 | 0.12 | 0.03 | | | | |
| 11.55 | 1.11 | 0.14 | 0.03 | | | | |
| 11.90 | 1.17 | 0.16 | 0.04 | | | | |
| 12.25 | 1.23 | 0.19 | 0.04 | | | | |
| 12.60 | 1.29 | 0.21 | 0.04 | | | | |
| 12.95 | 1.36 | 0.24 | 0.05 | | | | |
| 13.30 | 1.43 | 0.28 | 0.05 | | | | |
| 13.65 | 1.51 | 0.32 | 0.07 | | | | |
| 14.00 | 1.60 | 0.37 | 0.08 | | | | |
| 14.35 | 1.71 | 0.43 | 0.10 | | | | |
| 14.70 | 1.83 | 0.50 | 0.11 | | | | |
| 15.05 | 1.95 | 0.58 | 0.12 | | | | |
| 15.40 | 2.08 | 0.66 | 0.13 | | | | |
| 15.75 | 2.21 | 0.74 | **0.13** | | | | |
| 16.10 | 2.33 | 0.82 | 0.13 | | | | |
| 16.45 | 2.43 | 0.89 | 0.12 | | | | |
| 16.80 | 2.53 | 0.96 | 0.11 | | | | |
| 17.15 | 2.61 | 1.02 | 0.10 | | | | |
| 17.50 | 2.69 | 1.08 | 0.09 | | | | |
| 17.85 | 2.75 | 1.13 | 0.08 | | | | |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 2.17 cfs @ | 15.90 hrs, | Volume= | 1.305 af |
| Outflow | = | 0.67 cfs @ | 20.86 hrs, | Volume= | 0.785 af, Atten= 69%, Lag= 297.5 min |
| Primary | = | 0.67 cfs @ | 20.86 hrs, | Volume= | 0.785 af |
| Secondary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-27.02 hrs, dt= 0.07 hrs
Peak Elev= 671.77' @ 20.86 hrs Surf.Area= 30,754 sf Storage= 29,460 cf

Plug-Flow detention time= 331.6 min calculated for 0.783 af (60% of inflow)
Center-of-Mass det. time= 188.1 min ( 1,169.0 - 980.8 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.40' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

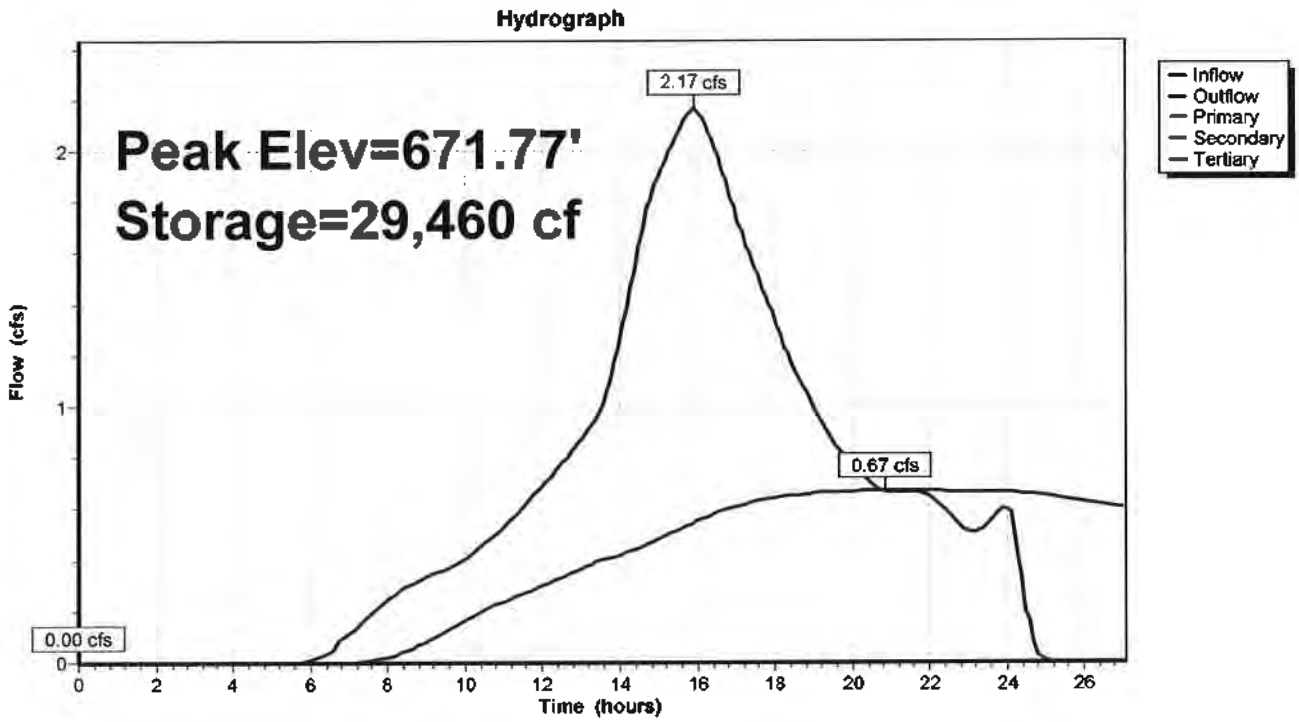
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=0.67 cfs @ 20.86 hrs HW=671.77' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.67 cfs @ 6.06 fps)

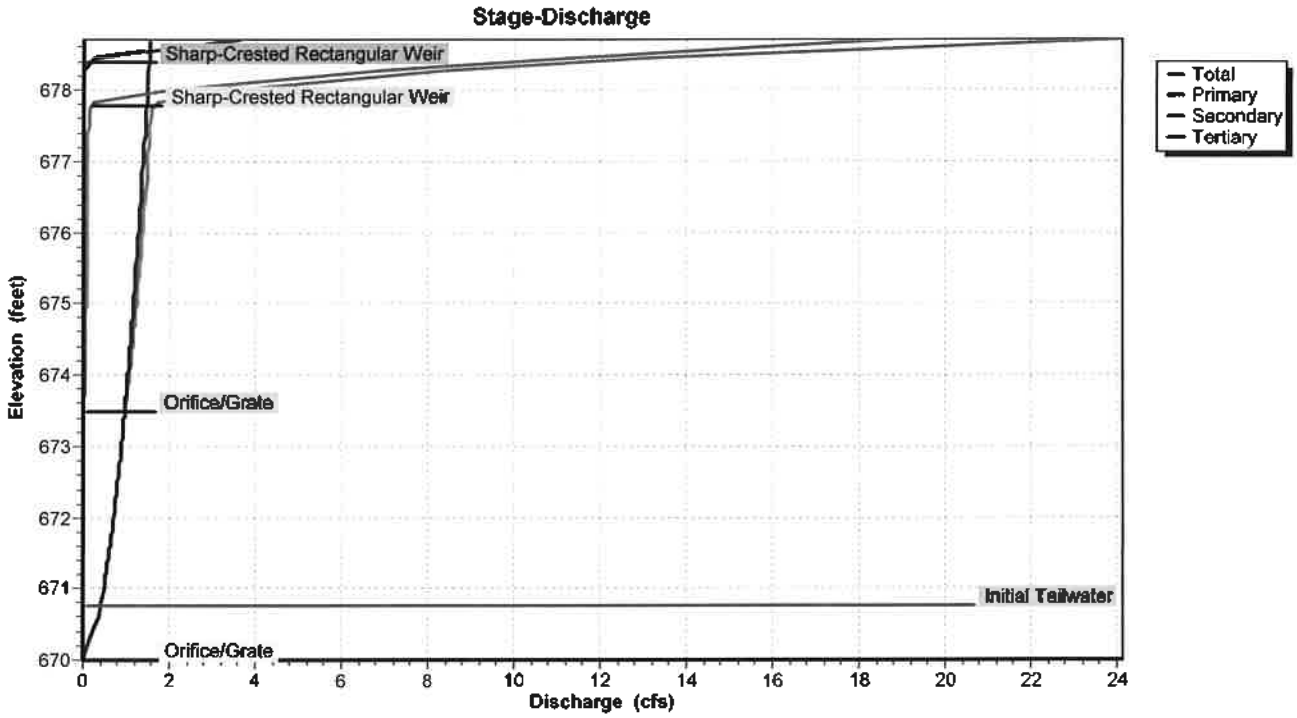
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

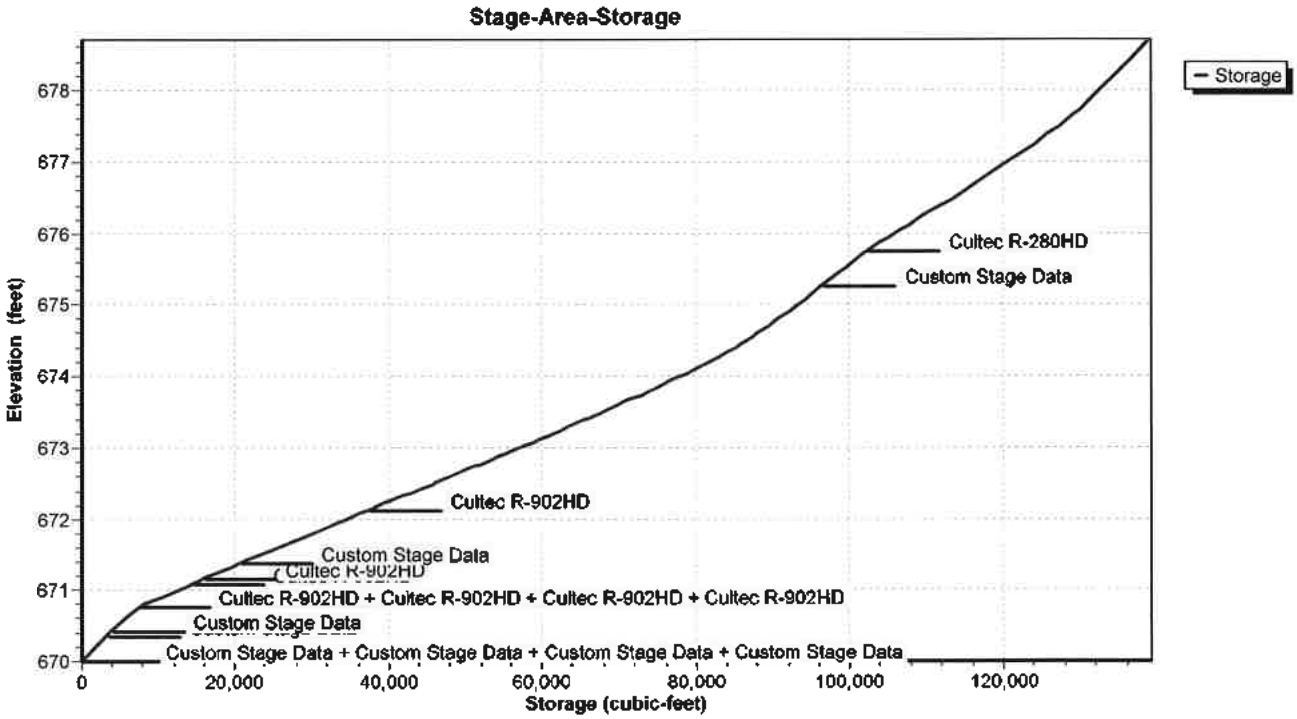
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 0.70 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.40 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.10 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.80 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.50 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.20 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.90 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.60 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.30 | 0.03 | 23 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7.00 | 0.11 | 177 | 670.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7.70 | 0.21 | 565 | 670.06 | 0.01 | 0.01 | 0.00 | 0.00 |
| 8.40 | 0.29 | 1,135 | 670.13 | 0.04 | 0.04 | 0.00 | 0.00 |
| 9.10 | 0.34 | 1,776 | 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 9.80 | 0.39 | 2,395 | 670.27 | 0.15 | 0.15 | 0.00 | 0.00 |
| 10.50 | 0.46 | 3,006 | 670.34 | 0.21 | 0.21 | 0.00 | 0.00 |
| 11.20 | 0.56 | 3,714 | 670.41 | 0.25 | 0.25 | 0.00 | 0.00 |
| 11.90 | 0.68 | 4,576 | 670.50 | 0.29 | 0.29 | 0.00 | 0.00 |
| 12.60 | 0.80 | 5,620 | 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 13.30 | 0.93 | 6,867 | 670.72 | 0.39 | 0.39 | 0.00 | 0.00 |
| 14.00 | 1.27 | 8,510 | 670.81 | 0.42 | 0.42 | 0.00 | 0.00 |
| 14.70 | 1.77 | 11,187 | 670.94 | 0.46 | 0.46 | 0.00 | 0.00 |
| 15.40 | **2.05** | 14,777 | 671.11 | 0.51 | 0.51 | 0.00 | 0.00 |
| 16.10 | **2.14** | 18,792 | 671.30 | 0.56 | 0.56 | 0.00 | 0.00 |
| 16.80 | 1.85 | 22,430 | 671.46 | 0.60 | 0.60 | 0.00 | 0.00 |
| 17.50 | 1.54 | 25,184 | 671.58 | 0.63 | 0.63 | 0.00 | 0.00 |
| 18.20 | 1.26 | 27,142 | 671.67 | 0.65 | 0.65 | 0.00 | 0.00 |
| 18.90 | 1.03 | 28,394 | 671.73 | 0.66 | 0.66 | 0.00 | 0.00 |
| 19.60 | 0.84 | 29,097 | 671.76 | 0.67 | 0.67 | 0.00 | 0.00 |
| 20.30 | 0.73 | **29,404** | **671.77** | **0.67** | **0.67** | 0.00 | 0.00 |
| 21.00 | 0.67 | **29,459** | **671.77** | **0.67** | **0.67** | 0.00 | 0.00 |
| 21.70 | 0.67 | 29,448 | 671.77 | 0.67 | 0.67 | 0.00 | 0.00 |
| 22.40 | 0.60 | 29,388 | 671.77 | 0.67 | 0.67 | 0.00 | 0.00 |
| 23.10 | 0.50 | 29,094 | 671.76 | 0.67 | 0.67 | 0.00 | 0.00 |
| 23.80 | 0.59 | 28,761 | 671.74 | 0.66 | 0.66 | 0.00 | 0.00 |
| 24.50 | 0.20 | 28,390 | 671.72 | 0.66 | 0.66 | 0.00 | 0.00 |
| 25.20 | 0.00 | 26,902 | 671.66 | 0.65 | 0.65 | 0.00 | 0.00 |
| 25.90 | 0.00 | 25,296 | 671.59 | 0.63 | 0.63 | 0.00 | 0.00 |
| 26.60 | 0.00 | 23,728 | 671.52 | 0.61 | 0.61 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 18.46 | 1.54 | 15.13 | 1.79 |
| 678.80 | **28.12** | **1.56** | **21.42** | **5.14** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 1.19 cfs @ | 15.85 hrs, | Volume= | 0.661 af |
| Outflow | = | 1.08 cfs @ | 16.50 hrs, | Volume= | 0.660 af, Atten= 9%, Lag= 39.2 min |
| Primary | = | 0.96 cfs @ | 16.50 hrs, | Volume= | 0.505 af |
| Secondary | = | 0.12 cfs @ | 16.50 hrs, | Volume= | 0.155 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-27.02 hrs, dt= 0.07 hrs
Peak Elev= 677.52' @ 16.50 hrs Surf.Area= 2,651 sf Storage= 1,836 cf

Plug-Flow detention time= 19.1 min calculated for 0.660 af (100% of inflow)
Center-of-Mass det. time= 18.3 min ( 1,000.9 - 982.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

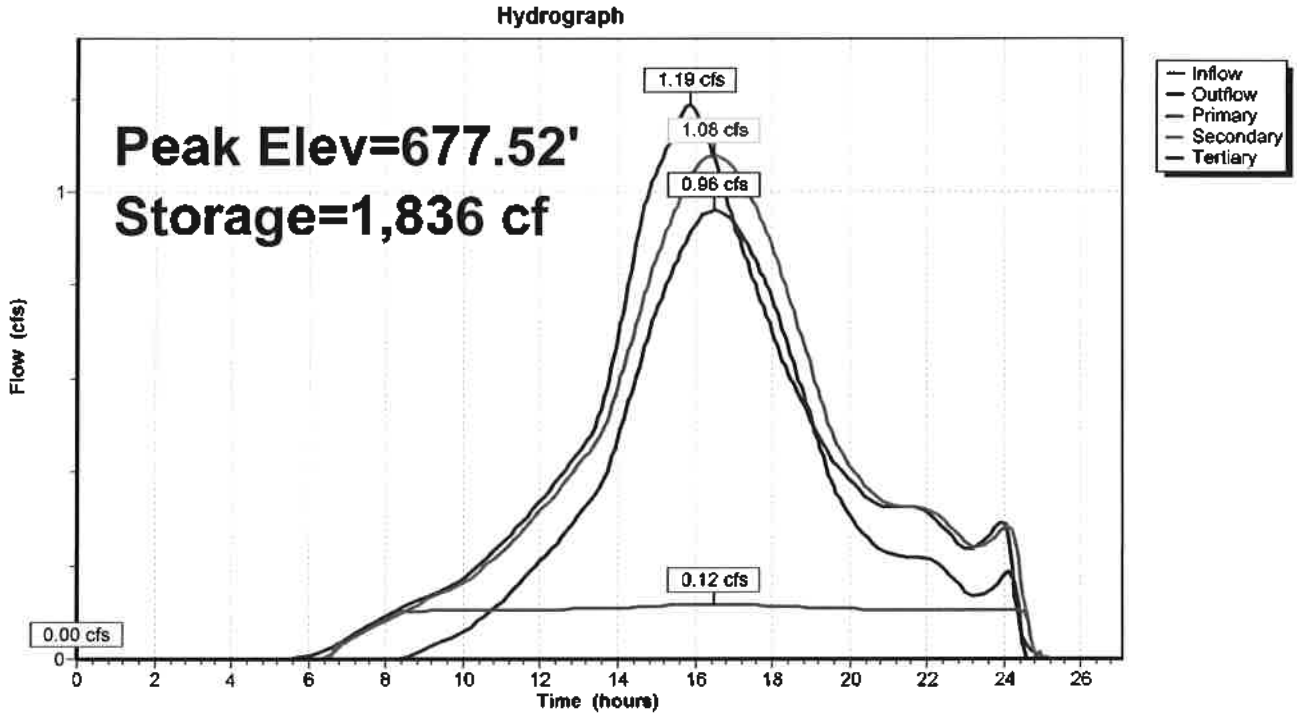
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=0.96 cfs @ 16.50 hrs HW=677.52' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.96 cfs @ 4.17 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

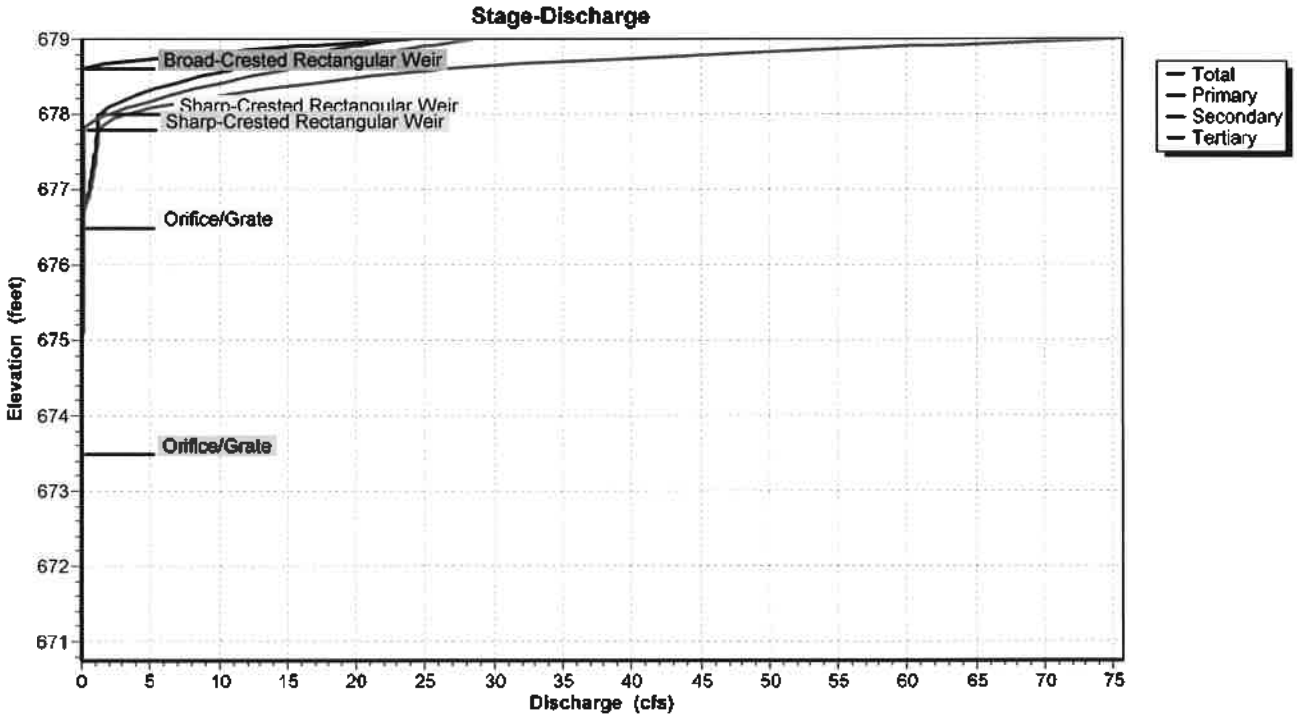
**Secondary OutFlow** Max=0.12 cfs @ 16.50 hrs HW=677.52' TW=671.40' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.12 cfs @ 9.58 fps)
└─**5=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

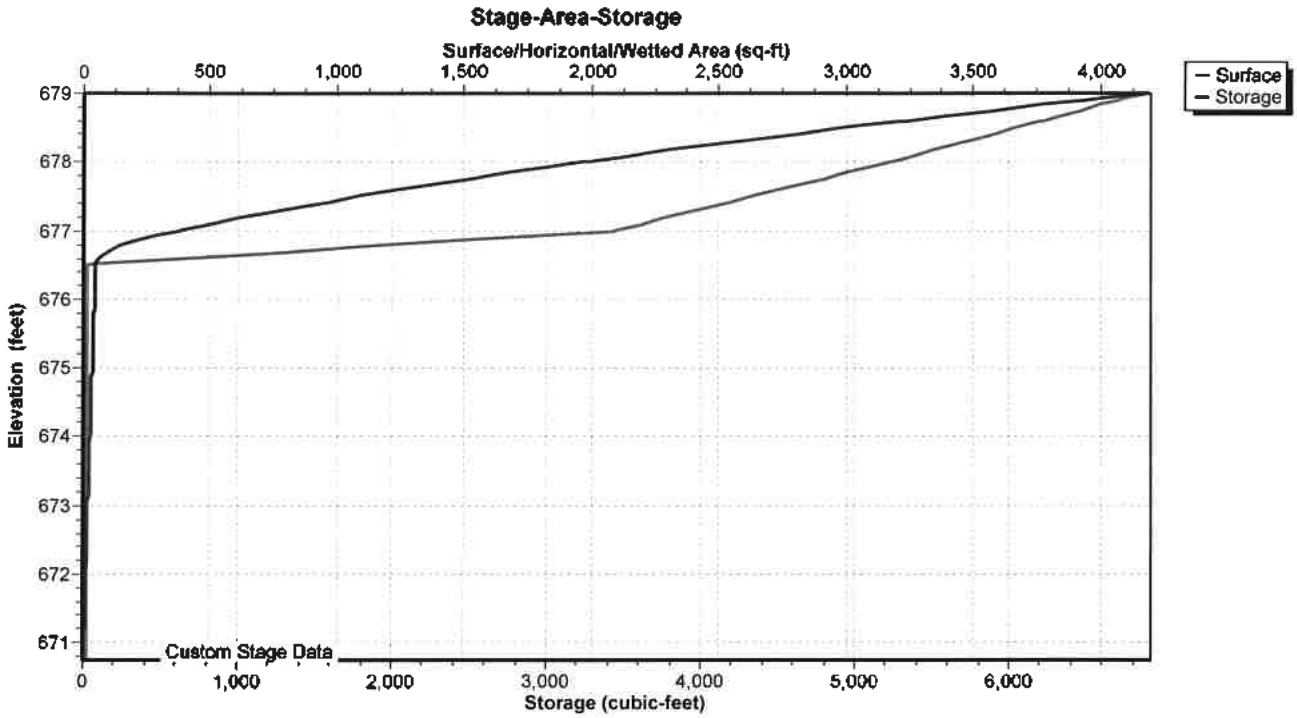
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.70 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.40 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.10 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.80 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.50 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.20 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.90 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.60 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.30 | 0.02 | 15 | 671.85 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7.00 | 0.04 | 45 | 673.98 | 0.04 | 0.00 | 0.04 | 0.00 |
| 7.70 | 0.08 | 59 | 675.00 | 0.07 | 0.00 | 0.07 | 0.00 |
| 8.40 | 0.11 | 79 | 676.38 | 0.10 | 0.00 | 0.10 | 0.00 |
| 9.10 | 0.13 | 101 | 676.59 | 0.13 | 0.03 | 0.10 | 0.00 |
| 9.80 | 0.16 | 117 | 676.63 | 0.15 | 0.05 | 0.10 | 0.00 |
| 10.50 | 0.21 | 146 | 676.67 | 0.19 | 0.09 | 0.10 | 0.00 |
| 11.20 | 0.26 | 186 | 676.72 | 0.24 | 0.14 | 0.10 | 0.00 |
| 11.90 | 0.33 | 235 | 676.77 | 0.31 | 0.20 | 0.11 | 0.00 |
| 12.60 | 0.40 | 294 | 676.82 | 0.37 | 0.27 | 0.11 | 0.00 |
| 13.30 | 0.48 | 361 | 676.86 | 0.45 | 0.34 | 0.11 | 0.00 |
| 14.00 | 0.69 | 514 | 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 14.70 | 0.97 | 886 | 677.13 | 0.78 | 0.67 | 0.11 | 0.00 |
| 15.40 | **1.12** | 1,349 | 677.33 | 0.94 | 0.83 | 0.11 | 0.00 |
| 16.10 | **1.16** | **1,757** | **677.49** | **1.06** | **0.94** | **0.12** | 0.00 |
| 16.80 | 0.99 | **1,797** | **677.51** | **1.07** | **0.95** | **0.12** | 0.00 |
| 17.50 | 0.82 | 1,475 | 677.38 | 0.98 | 0.87 | 0.12 | 0.00 |
| 18.20 | 0.65 | 1,028 | 677.19 | 0.83 | 0.72 | 0.11 | 0.00 |
| 18.90 | 0.53 | 627 | 677.01 | 0.66 | 0.55 | 0.11 | 0.00 |
| 19.60 | 0.42 | 391 | 676.88 | 0.47 | 0.37 | 0.11 | 0.00 |
| 20.30 | 0.36 | 302 | 676.82 | 0.38 | 0.27 | 0.11 | 0.00 |
| 21.00 | 0.32 | 256 | 676.79 | 0.33 | 0.22 | 0.11 | 0.00 |
| 21.70 | 0.32 | 250 | 676.78 | 0.32 | 0.22 | 0.11 | 0.00 |
| 22.40 | 0.28 | 228 | 676.76 | 0.30 | 0.19 | 0.11 | 0.00 |
| 23.10 | 0.23 | 184 | 676.72 | 0.24 | 0.14 | 0.10 | 0.00 |
| 23.80 | 0.28 | 202 | 676.74 | 0.26 | 0.16 | 0.11 | 0.00 |
| 24.50 | 0.04 | 106 | 676.61 | 0.14 | 0.04 | 0.10 | 0.00 |
| 25.20 | 0.00 | 39 | 673.51 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25.90 | 0.00 | 39 | 673.51 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26.60 | 0.00 | 39 | 673.50 | 0.00 | 0.00 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 23.56 | 9.86 | 13.70 | 0.00 |
| 678.75 | 40.37 | 15.13 | 19.77 | 5.47 |
| 678.95 | **67.61** | **21.27** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

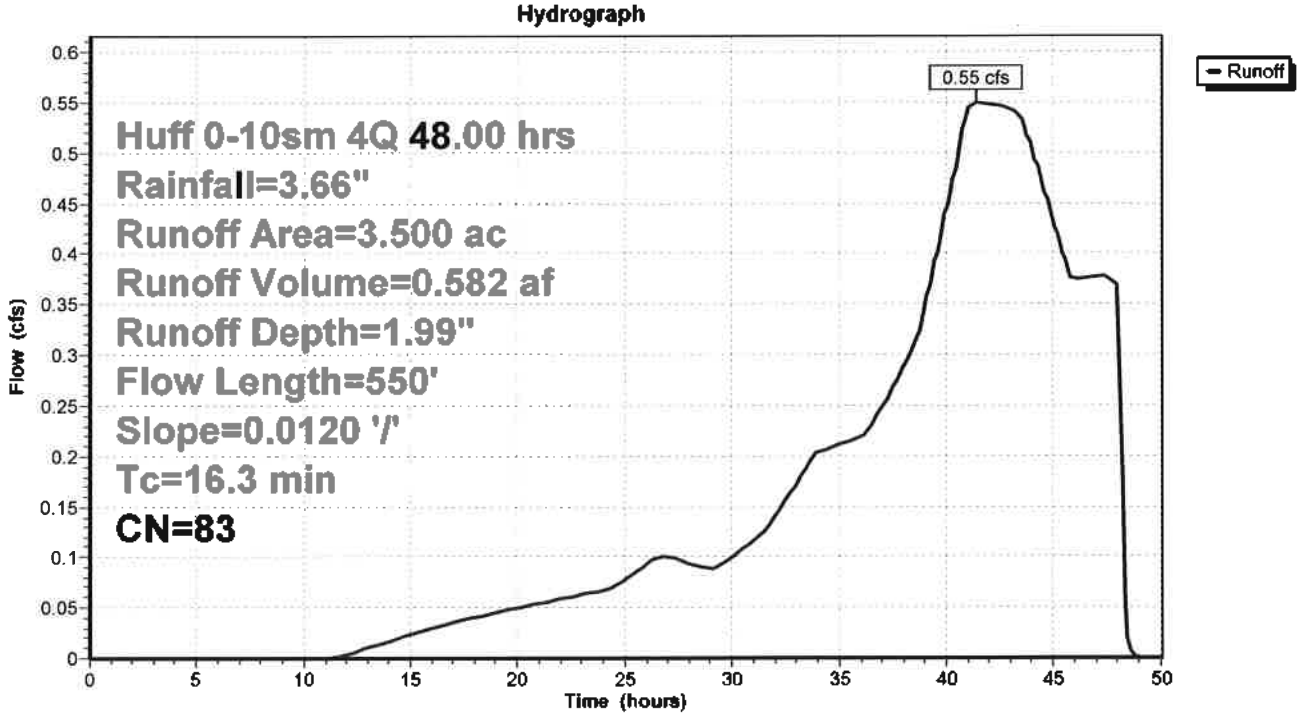
Runoff = 0.55 cfs @ 41.44 hrs, Volume= 0.582 af, Depth= 1.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.04 hrs, dt= 0.12 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=3.66"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.60 | 0.00 | 0.00 | 0.00 |
| 1.20 | 0.01 | 0.00 | 0.00 |
| 1.80 | 0.02 | 0.00 | 0.00 |
| 2.40 | 0.04 | 0.00 | 0.00 |
| 3.00 | 0.06 | 0.00 | 0.00 |
| 3.60 | 0.08 | 0.00 | 0.00 |
| 4.20 | 0.11 | 0.00 | 0.00 |
| 4.80 | 0.13 | 0.00 | 0.00 |
| 5.40 | 0.16 | 0.00 | 0.00 |
| 6.00 | 0.19 | 0.00 | 0.00 |
| 6.60 | 0.22 | 0.00 | 0.00 |
| 7.20 | 0.25 | 0.00 | 0.00 |
| 7.80 | 0.28 | 0.00 | 0.00 |
| 8.40 | 0.30 | 0.00 | 0.00 |
| 9.00 | 0.32 | 0.00 | 0.00 |
| 9.60 | 0.34 | 0.00 | 0.00 |
| 10.20 | 0.36 | 0.00 | 0.00 |
| 10.80 | 0.39 | 0.00 | 0.00 |
| 11.40 | 0.41 | 0.00 | 0.00 |
| 12.00 | 0.44 | 0.00 | 0.00 |
| 12.60 | 0.47 | 0.00 | 0.01 |
| 13.20 | 0.50 | 0.00 | 0.01 |
| 13.80 | 0.52 | 0.01 | 0.02 |
| 14.40 | 0.55 | 0.01 | 0.02 |
| 15.00 | 0.58 | 0.01 | 0.02 |
| 15.60 | 0.61 | 0.02 | 0.03 |
| 16.20 | 0.64 | 0.02 | 0.03 |
| 16.80 | 0.67 | 0.03 | 0.03 |
| 17.40 | 0.70 | 0.04 | 0.04 |
| 18.00 | 0.72 | 0.04 | 0.04 |
| 18.60 | 0.75 | 0.05 | 0.04 |
| 19.20 | 0.78 | 0.06 | 0.05 |
| 19.80 | 0.81 | 0.07 | 0.05 |
| 20.40 | 0.84 | 0.07 | 0.05 |
| 21.00 | 0.87 | 0.08 | 0.05 |
| 21.60 | 0.90 | 0.09 | 0.06 |
| 22.20 | 0.92 | 0.10 | 0.06 |
| 22.80 | 0.95 | 0.11 | 0.06 |
| 23.40 | 0.98 | 0.12 | 0.06 |
| 24.00 | 1.01 | 0.14 | 0.07 |
| 24.60 | 1.04 | 0.15 | 0.07 |
| 25.20 | 1.07 | 0.16 | 0.08 |
| 25.80 | 1.11 | 0.18 | 0.09 |
| 26.40 | 1.14 | 0.19 | 0.10 |
| 27.00 | 1.18 | 0.21 | 0.10 |
| 27.60 | 1.22 | 0.23 | 0.10 |
| 28.20 | 1.25 | 0.24 | 0.09 |
| 28.80 | 1.28 | 0.26 | 0.09 |
| 29.40 | 1.31 | 0.27 | 0.09 |
| 30.00 | 1.34 | 0.29 | 0.10 |
| 30.60 | 1.37 | 0.31 | 0.11 |
| 31.20 | 1.41 | 0.33 | 0.12 |
| 31.80 | 1.45 | 0.35 | 0.13 |
| 32.40 | 1.50 | 0.38 | 0.15 |
| 33.00 | 1.55 | 0.41 | 0.17 |
| 33.60 | 1.60 | 0.44 | 0.19 |
| 34.20 | 1.66 | 0.47 | 0.20 |
| 34.80 | 1.72 | 0.51 | 0.21 |
| 35.40 | 1.77 | 0.54 | 0.21 |
| 36.00 | 1.83 | 0.58 | 0.22 |
| 36.60 | 1.89 | 0.62 | 0.23 |
| 37.20 | 1.95 | 0.66 | 0.26 |
| 37.80 | 2.02 | 0.71 | 0.28 |
| 38.40 | 2.10 | 0.76 | 0.30 |
| 39.00 | 2.18 | 0.82 | 0.35 |
| 39.60 | 2.27 | 0.89 | 0.40 |
| 40.20 | 2.38 | 0.97 | 0.46 |
| 40.80 | 2.50 | 1.05 | 0.52 |
| 41.40 | 2.62 | 1.15 | **0.55** |
| 42.00 | 2.74 | 1.24 | 0.55 |
| 42.60 | 2.86 | 1.33 | 0.55 |
| 43.20 | 2.97 | 1.43 | 0.54 |
| 43.80 | 3.08 | 1.51 | 0.52 |
| 44.40 | 3.18 | 1.60 | 0.48 |
| 45.00 | 3.27 | 1.67 | 0.43 |
| 45.60 | 3.35 | 1.74 | 0.39 |
| 46.20 | 3.43 | 1.80 | 0.37 |
| 46.80 | 3.51 | 1.86 | 0.38 |
| 47.40 | 3.58 | 1.93 | 0.38 |
| 48.00 | **3.66** | **1.99** | 0.38 |
| 48.60 | 3.66 | 1.99 | 0.01 |
| 49.20 | 3.66 | 1.99 | 0.00 |
| 49.80 | 3.66 | 1.99 | 0.00 |

## Summary for Subcatchment 7S: South Property

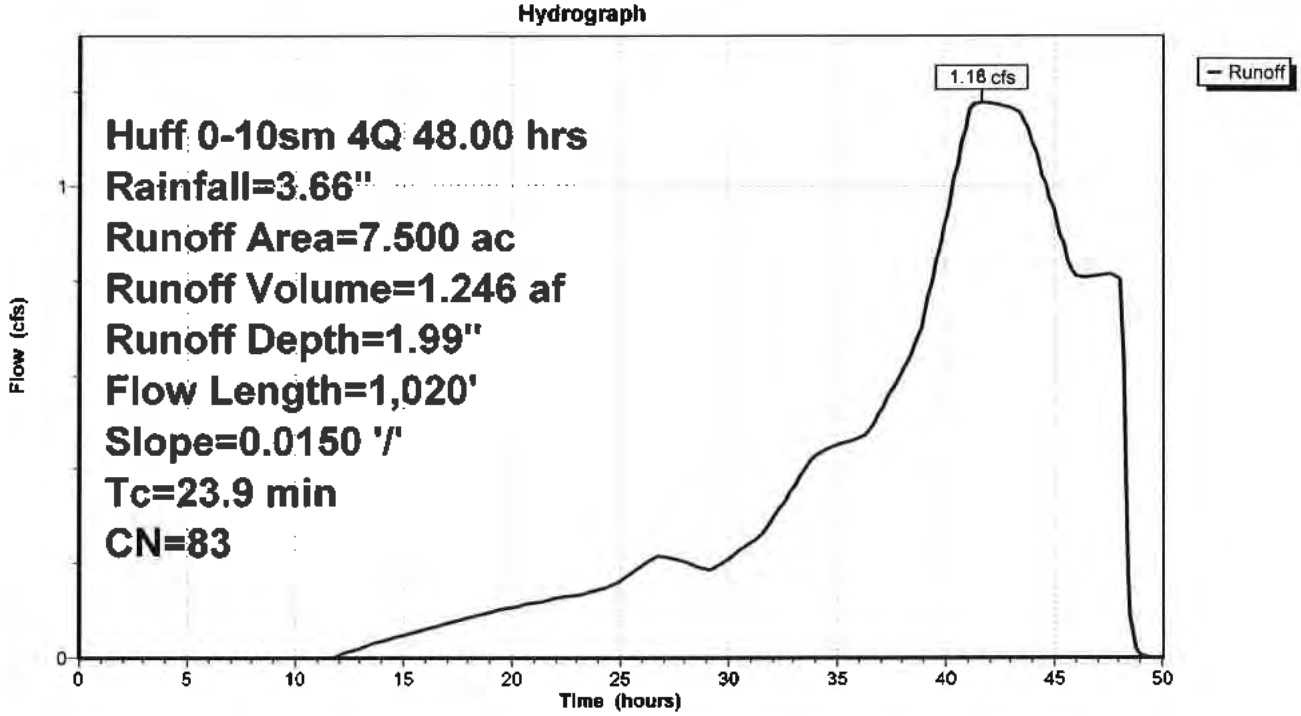
Runoff = 1.18 cfs @ 41.70 hrs, Volume= 1.246 af, Depth= 1.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.04 hrs, dt= 0.12 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=3.66"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

## Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 31.20 | 1.41 | 0.33 | 0.25 |
| 0.60 | 0.00 | 0.00 | 0.00 | 31.80 | 1.45 | 0.35 | 0.28 |
| 1.20 | 0.01 | 0.00 | 0.00 | 32.40 | 1.50 | 0.38 | 0.32 |
| 1.80 | 0.02 | 0.00 | 0.00 | 33.00 | 1.55 | 0.41 | 0.36 |
| 2.40 | 0.04 | 0.00 | 0.00 | 33.60 | 1.60 | 0.44 | 0.40 |
| 3.00 | 0.06 | 0.00 | 0.00 | 34.20 | 1.66 | 0.47 | 0.44 |
| 3.60 | 0.08 | 0.00 | 0.00 | 34.80 | 1.72 | 0.51 | 0.45 |
| 4.20 | 0.11 | 0.00 | 0.00 | 35.40 | 1.77 | 0.54 | 0.46 |
| 4.80 | 0.13 | 0.00 | 0.00 | 36.00 | 1.83 | 0.58 | 0.46 |
| 5.40 | 0.16 | 0.00 | 0.00 | 36.60 | 1.89 | 0.62 | 0.49 |
| 6.00 | 0.19 | 0.00 | 0.00 | 37.20 | 1.95 | 0.66 | 0.54 |
| 6.60 | 0.22 | 0.00 | 0.00 | 37.80 | 2.02 | 0.71 | 0.59 |
| 7.20 | 0.25 | 0.00 | 0.00 | 38.40 | 2.10 | 0.76 | 0.64 |
| 7.80 | 0.28 | 0.00 | 0.00 | 39.00 | 2.18 | 0.82 | 0.72 |
| 8.40 | 0.30 | 0.00 | 0.00 | 39.60 | 2.27 | 0.89 | 0.84 |
| 9.00 | 0.32 | 0.00 | 0.00 | 40.20 | 2.38 | 0.97 | 0.96 |
| 9.60 | 0.34 | 0.00 | 0.00 | 40.80 | 2.50 | 1.05 | 1.10 |
| 10.20 | 0.36 | 0.00 | 0.00 | 41.40 | 2.62 | 1.15 | **1.17** |
| 10.80 | 0.39 | 0.00 | 0.00 | 42.00 | 2.74 | 1.24 | **1.18** |
| 11.40 | 0.41 | 0.00 | 0.00 | 42.60 | 2.86 | 1.33 | 1.17 |
| 12.00 | 0.44 | 0.00 | 0.00 | 43.20 | 2.97 | 1.43 | 1.16 |
| 12.60 | 0.47 | 0.00 | 0.01 | 43.80 | 3.08 | 1.51 | 1.12 |
| 13.20 | 0.50 | 0.00 | 0.02 | 44.40 | 3.18 | 1.60 | 1.04 |
| 13.80 | 0.52 | 0.01 | 0.03 | 45.00 | 3.27 | 1.67 | 0.95 |
| 14.40 | 0.55 | 0.01 | 0.04 | 45.60 | 3.35 | 1.74 | 0.86 |
| 15.00 | 0.58 | 0.01 | 0.05 | 46.20 | 3.43 | 1.80 | 0.80 |
| 15.60 | 0.61 | 0.02 | 0.06 | 46.80 | 3.51 | 1.86 | 0.81 |
| 16.20 | 0.64 | 0.02 | 0.06 | 47.40 | 3.58 | 1.93 | 0.81 |
| 16.80 | 0.67 | 0.03 | 0.07 | 48.00 | **3.66** | **1.99** | 0.81 |
| 17.40 | 0.70 | 0.04 | 0.08 | 48.60 | 3.66 | 1.99 | 0.08 |
| 18.00 | 0.72 | 0.04 | 0.09 | 49.20 | 3.66 | 1.99 | 0.00 |
| 18.60 | 0.75 | 0.05 | 0.09 | 49.80 | 3.66 | 1.99 | 0.00 |
| 19.20 | 0.78 | 0.06 | 0.10 | | | | |
| 19.80 | 0.81 | 0.07 | 0.10 | | | | |
| 20.40 | 0.84 | 0.07 | 0.11 | | | | |
| 21.00 | 0.87 | 0.08 | 0.12 | | | | |
| 21.60 | 0.90 | 0.09 | 0.12 | | | | |
| 22.20 | 0.92 | 0.10 | 0.13 | | | | |
| 22.80 | 0.95 | 0.11 | 0.13 | | | | |
| 23.40 | 0.98 | 0.12 | 0.14 | | | | |
| 24.00 | 1.01 | 0.14 | 0.14 | | | | |
| 24.60 | 1.04 | 0.15 | 0.15 | | | | |
| 25.20 | 1.07 | 0.16 | 0.17 | | | | |
| 25.80 | 1.11 | 0.18 | 0.19 | | | | |
| 26.40 | 1.14 | 0.19 | 0.21 | | | | |
| 27.00 | 1.18 | 0.21 | 0.22 | | | | |
| 27.60 | 1.22 | 0.23 | 0.21 | | | | |
| 28.20 | 1.25 | 0.24 | 0.20 | | | | |
| 28.80 | 1.28 | 0.26 | 0.19 | | | | |
| 29.40 | 1.31 | 0.27 | 0.19 | | | | |
| 30.00 | 1.34 | 0.29 | 0.21 | | | | |
| 30.60 | 1.37 | 0.31 | 0.23 | | | | |

## Summary for Subcatchment 8S: Northwood Drive Bypass

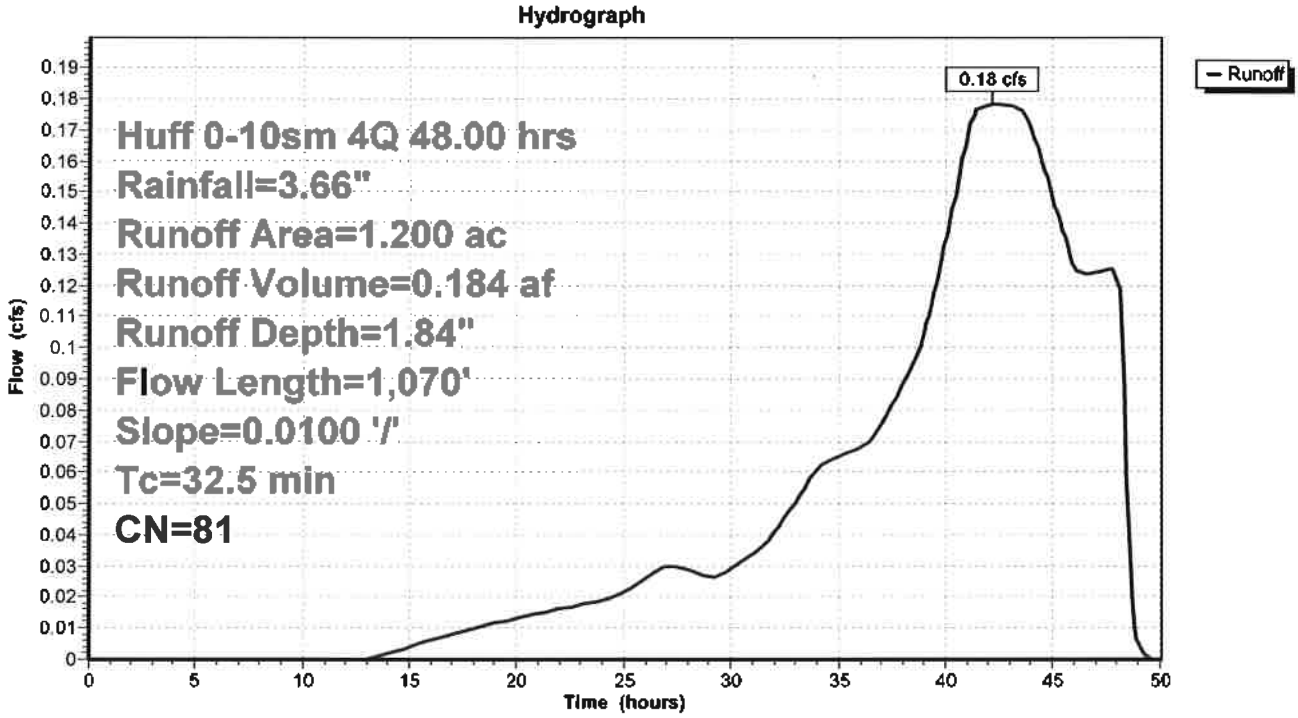
Runoff = 0.18 cfs @ 42.20 hrs, Volume= 0.184 af, Depth= 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.04 hrs, dt= 0.12 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=3.66"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

### Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.60 | 0.00 | 0.00 | 0.00 |
| 1.20 | 0.01 | 0.00 | 0.00 |
| 1.80 | 0.02 | 0.00 | 0.00 |
| 2.40 | 0.04 | 0.00 | 0.00 |
| 3.00 | 0.06 | 0.00 | 0.00 |
| 3.60 | 0.08 | 0.00 | 0.00 |
| 4.20 | 0.11 | 0.00 | 0.00 |
| 4.80 | 0.13 | 0.00 | 0.00 |
| 5.40 | 0.16 | 0.00 | 0.00 |
| 6.00 | 0.19 | 0.00 | 0.00 |
| 6.60 | 0.22 | 0.00 | 0.00 |
| 7.20 | 0.25 | 0.00 | 0.00 |
| 7.80 | 0.28 | 0.00 | 0.00 |
| 8.40 | 0.30 | 0.00 | 0.00 |
| 9.00 | 0.32 | 0.00 | 0.00 |
| 9.60 | 0.34 | 0.00 | 0.00 |
| 10.20 | 0.36 | 0.00 | 0.00 |
| 10.80 | 0.39 | 0.00 | 0.00 |
| 11.40 | 0.41 | 0.00 | 0.00 |
| 12.00 | 0.44 | 0.00 | 0.00 |
| 12.60 | 0.47 | 0.00 | 0.00 |
| 13.20 | 0.50 | 0.00 | 0.00 |
| 13.80 | 0.52 | 0.00 | 0.00 |
| 14.40 | 0.55 | 0.00 | 0.00 |
| 15.00 | 0.58 | 0.01 | 0.00 |
| 15.60 | 0.61 | 0.01 | 0.01 |
| 16.20 | 0.64 | 0.01 | 0.01 |
| 16.80 | 0.67 | 0.02 | 0.01 |
| 17.40 | 0.70 | 0.02 | 0.01 |
| 18.00 | 0.72 | 0.03 | 0.01 |
| 18.60 | 0.75 | 0.03 | 0.01 |
| 19.20 | 0.78 | 0.04 | 0.01 |
| 19.80 | 0.81 | 0.04 | 0.01 |
| 20.40 | 0.84 | 0.05 | 0.01 |
| 21.00 | 0.87 | 0.06 | 0.01 |
| 21.60 | 0.90 | 0.07 | 0.02 |
| 22.20 | 0.92 | 0.07 | 0.02 |
| 22.80 | 0.95 | 0.08 | 0.02 |
| 23.40 | 0.98 | 0.09 | 0.02 |
| 24.00 | 1.01 | 0.10 | 0.02 |
| 24.60 | 1.04 | 0.11 | 0.02 |
| 25.20 | 1.07 | 0.12 | 0.02 |
| 25.80 | 1.11 | 0.14 | 0.03 |
| 26.40 | 1.14 | 0.15 | 0.03 |
| 27.00 | 1.18 | 0.17 | 0.03 |
| 27.60 | 1.22 | 0.18 | 0.03 |
| 28.20 | 1.25 | 0.19 | 0.03 |
| 28.80 | 1.28 | 0.21 | 0.03 |
| 29.40 | 1.31 | 0.22 | 0.03 |
| 30.00 | 1.34 | 0.24 | 0.03 |
| 30.60 | 1.37 | 0.25 | 0.03 |
| 31.20 | 1.41 | 0.27 | 0.04 |
| 31.80 | 1.45 | 0.29 | 0.04 |
| 32.40 | 1.50 | 0.31 | 0.04 |
| 33.00 | 1.55 | 0.34 | 0.05 |
| 33.60 | 1.60 | 0.37 | 0.06 |
| 34.20 | 1.66 | 0.40 | 0.06 |
| 34.80 | 1.72 | 0.43 | 0.06 |
| 35.40 | 1.77 | 0.47 | 0.07 |
| 36.00 | 1.83 | 0.50 | 0.07 |
| 36.60 | 1.89 | 0.54 | 0.07 |
| 37.20 | 1.95 | 0.58 | 0.08 |
| 37.80 | 2.02 | 0.62 | 0.09 |
| 38.40 | 2.10 | 0.67 | 0.09 |
| 39.00 | 2.18 | 0.72 | 0.10 |
| 39.60 | 2.27 | 0.78 | 0.12 |
| 40.20 | 2.38 | 0.86 | 0.14 |
| 40.80 | 2.50 | 0.94 | 0.16 |
| 41.40 | 2.62 | 1.03 | 0.18 |
| 42.00 | 2.74 | 1.12 | **0.18** |
| 42.60 | 2.86 | 1.21 | **0.18** |
| 43.20 | 2.97 | 1.29 | 0.18 |
| 43.80 | 3.08 | 1.38 | 0.17 |
| 44.40 | 3.18 | 1.46 | 0.16 |
| 45.00 | 3.27 | 1.53 | 0.15 |
| 45.60 | 3.35 | 1.59 | 0.13 |
| 46.20 | 3.43 | 1.65 | 0.12 |
| 46.80 | 3.51 | 1.71 | 0.12 |
| 47.40 | 3.58 | 1.78 | 0.12 |
| 48.00 | **3.66** | **1.84** | 0.13 |
| 48.60 | 3.66 | 1.84 | 0.03 |
| 49.20 | 3.66 | 1.84 | 0.00 |
| 49.80 | 3.66 | 1.84 | 0.00 |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

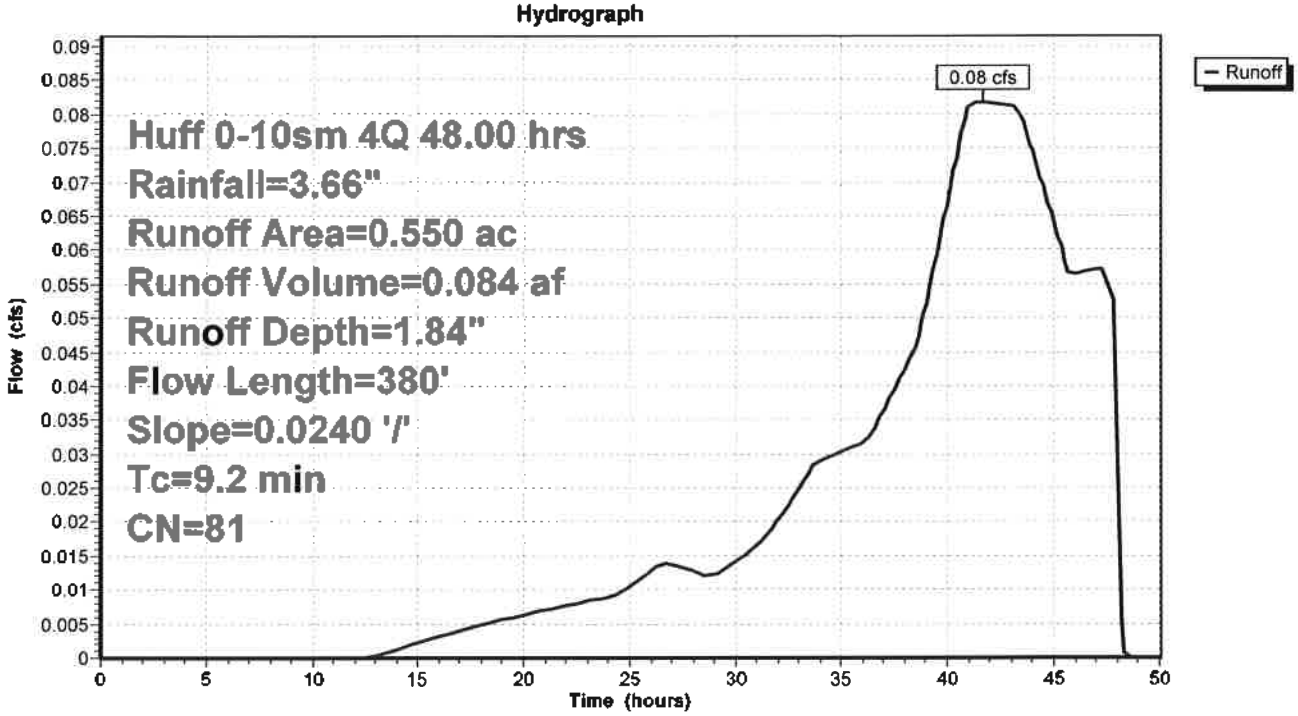
Runoff = 0.08 cfs @ 41.66 hrs, Volume= 0.084 af, Depth= 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.04 hrs, dt= 0.12 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=3.66"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 31.20 | 1.41 | 0.27 | 0.02 |
| 0.60 | 0.00 | 0.00 | 0.00 | 31.80 | 1.45 | 0.29 | 0.02 |
| 1.20 | 0.01 | 0.00 | 0.00 | 32.40 | 1.50 | 0.31 | 0.02 |
| 1.80 | 0.02 | 0.00 | 0.00 | 33.00 | 1.55 | 0.34 | 0.02 |
| 2.40 | 0.04 | 0.00 | 0.00 | 33.60 | 1.60 | 0.37 | 0.03 |
| 3.00 | 0.06 | 0.00 | 0.00 | 34.20 | 1.66 | 0.40 | 0.03 |
| 3.60 | 0.08 | 0.00 | 0.00 | 34.80 | 1.72 | 0.43 | 0.03 |
| 4.20 | 0.11 | 0.00 | 0.00 | 35.40 | 1.77 | 0.47 | 0.03 |
| 4.80 | 0.13 | 0.00 | 0.00 | 36.00 | 1.83 | 0.50 | 0.03 |
| 5.40 | 0.16 | 0.00 | 0.00 | 36.60 | 1.89 | 0.54 | 0.03 |
| 6.00 | 0.19 | 0.00 | 0.00 | 37.20 | 1.95 | 0.58 | 0.04 |
| 6.60 | 0.22 | 0.00 | 0.00 | 37.80 | 2.02 | 0.62 | 0.04 |
| 7.20 | 0.25 | 0.00 | 0.00 | 38.40 | 2.10 | 0.67 | 0.05 |
| 7.80 | 0.28 | 0.00 | 0.00 | 39.00 | 2.18 | 0.72 | 0.05 |
| 8.40 | 0.30 | 0.00 | 0.00 | 39.60 | 2.27 | 0.78 | 0.06 |
| 9.00 | 0.32 | 0.00 | 0.00 | 40.20 | 2.38 | 0.86 | 0.07 |
| 9.60 | 0.34 | 0.00 | 0.00 | 40.80 | 2.50 | 0.94 | 0.08 |
| 10.20 | 0.36 | 0.00 | 0.00 | 41.40 | 2.62 | 1.03 | **0.08** |
| 10.80 | 0.39 | 0.00 | 0.00 | 42.00 | 2.74 | 1.12 | **0.08** |
| 11.40 | 0.41 | 0.00 | 0.00 | 42.60 | 2.86 | 1.21 | 0.08 |
| 12.00 | 0.44 | 0.00 | 0.00 | 43.20 | 2.97 | 1.29 | 0.08 |
| 12.60 | 0.47 | 0.00 | 0.00 | 43.80 | 3.08 | 1.38 | 0.08 |
| 13.20 | 0.50 | 0.00 | 0.00 | 44.40 | 3.18 | 1.46 | 0.07 |
| 13.80 | 0.52 | 0.00 | 0.00 | 45.00 | 3.27 | 1.53 | 0.06 |
| 14.40 | 0.55 | 0.00 | 0.00 | 45.60 | 3.35 | 1.59 | 0.06 |
| 15.00 | 0.58 | 0.01 | 0.00 | 46.20 | 3.43 | 1.65 | 0.06 |
| 15.60 | 0.61 | 0.01 | 0.00 | 46.80 | 3.51 | 1.71 | 0.06 |
| 16.20 | 0.64 | 0.01 | 0.00 | 47.40 | 3.58 | 1.78 | 0.06 |
| 16.80 | 0.67 | 0.02 | 0.00 | 48.00 | **3.66** | **1.84** | 0.06 |
| 17.40 | 0.70 | 0.02 | 0.00 | 48.60 | 3.66 | 1.84 | 0.00 |
| 18.00 | 0.72 | 0.03 | 0.00 | 49.20 | 3.66 | 1.84 | 0.00 |
| 18.60 | 0.75 | 0.03 | 0.01 | 49.80 | 3.66 | 1.84 | 0.00 |
| 19.20 | 0.78 | 0.04 | 0.01 | | | | |
| 19.80 | 0.81 | 0.04 | 0.01 | | | | |
| 20.40 | 0.84 | 0.05 | 0.01 | | | | |
| 21.00 | 0.87 | 0.06 | 0.01 | | | | |
| 21.60 | 0.90 | 0.07 | 0.01 | | | | |
| 22.20 | 0.92 | 0.07 | 0.01 | | | | |
| 22.80 | 0.95 | 0.08 | 0.01 | | | | |
| 23.40 | 0.98 | 0.09 | 0.01 | | | | |
| 24.00 | 1.01 | 0.10 | 0.01 | | | | |
| 24.60 | 1.04 | 0.11 | 0.01 | | | | |
| 25.20 | 1.07 | 0.12 | 0.01 | | | | |
| 25.80 | 1.11 | 0.14 | 0.01 | | | | |
| 26.40 | 1.14 | 0.15 | 0.01 | | | | |
| 27.00 | 1.18 | 0.17 | 0.01 | | | | |
| 27.60 | 1.22 | 0.18 | 0.01 | | | | |
| 28.20 | 1.25 | 0.19 | 0.01 | | | | |
| 28.80 | 1.28 | 0.21 | 0.01 | | | | |
| 29.40 | 1.31 | 0.22 | 0.01 | | | | |
| 30.00 | 1.34 | 0.24 | 0.01 | | | | |
| 30.60 | 1.37 | 0.25 | 0.02 | | | | |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 1.37 cfs @ | 41.73 hrs, | Volume= | 1.593 af |
| Outflow | = | 0.67 cfs @ | 48.33 hrs, | Volume= | 1.000 af, Atten= 51%, Lag= 396.3 min |
| Primary | = | 0.67 cfs @ | 48.33 hrs, | Volume= | 1.000 af |
| Secondary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-50.04 hrs, dt= 0.12 hrs
Peak Elev= 671.78' @ 48.33 hrs Surf.Area= 30,755 sf Storage= 29,560 cf

Plug-Flow detention time= 294.3 min calculated for 0.998 af (63% of inflow)
Center-of-Mass det. time= 40.6 min ( 2,311.0 - 2,270.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.40' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

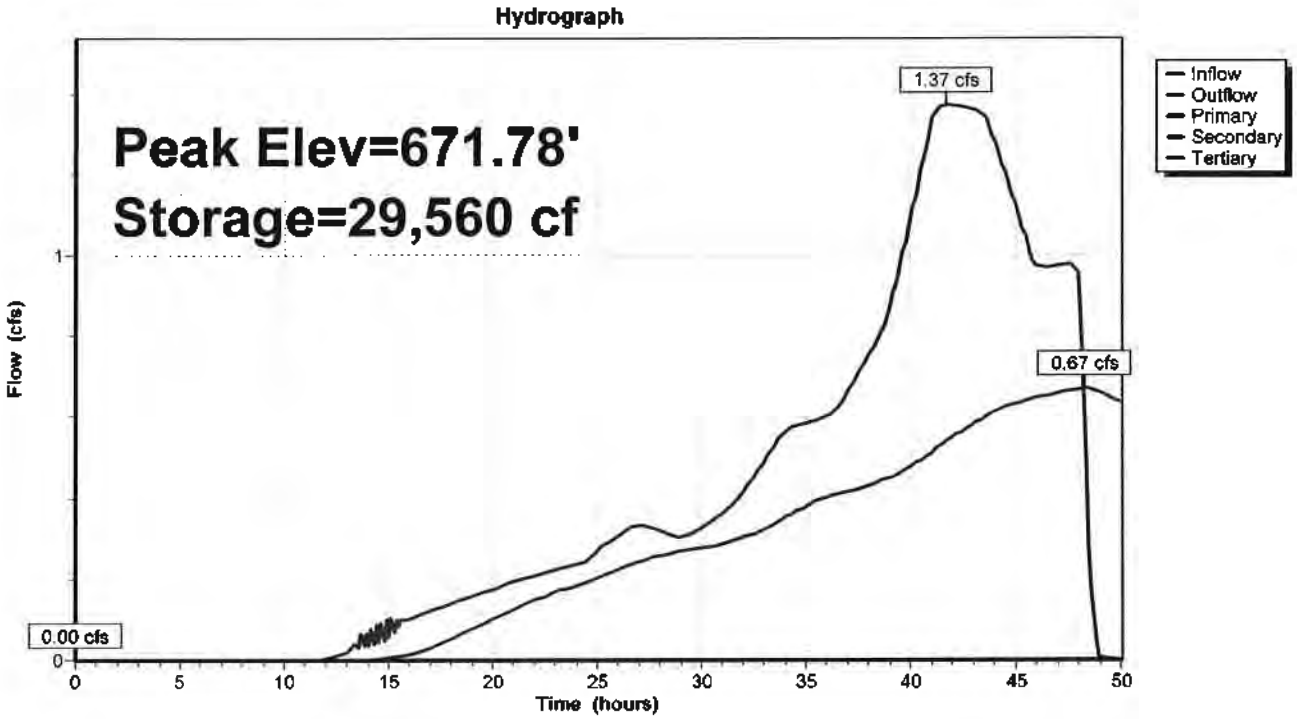
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=0.67 cfs @ 48.33 hrs HW=671.78' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.67 cfs @ 6.07 fps)

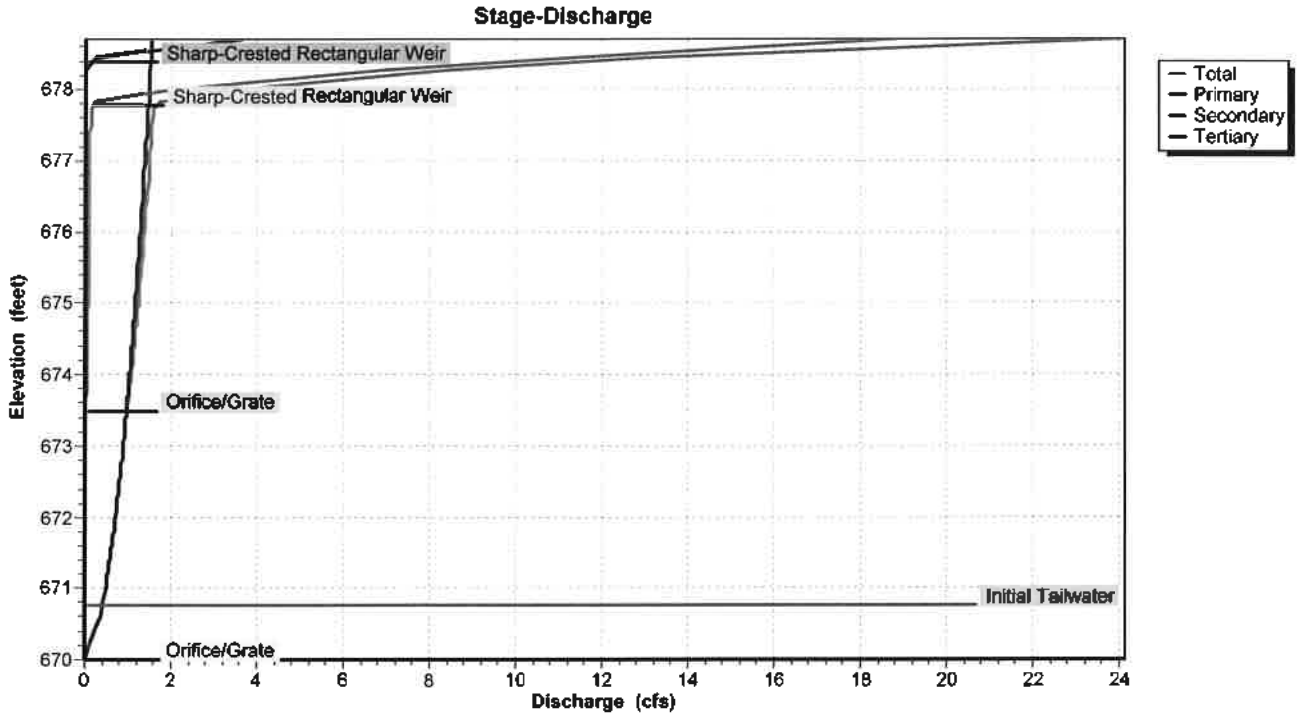
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

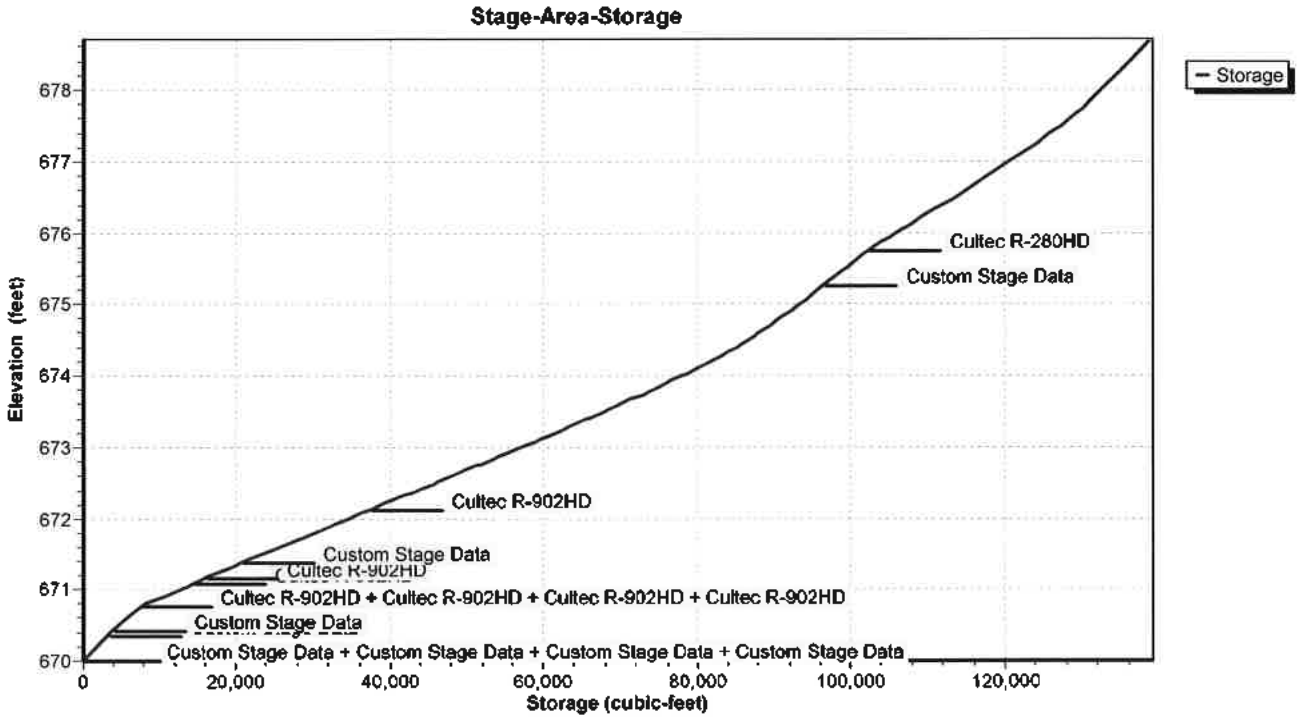
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 1.20 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.40 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.60 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.80 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7.20 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8.40 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9.60 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10.80 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12.00 | 0.00 | 2 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13.20 | 0.02 | 56 | 670.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14.40 | 0.08 | 247 | 670.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15.60 | 0.10 | 558 | 670.06 | 0.01 | 0.01 | 0.00 | 0.00 |
| 16.80 | 0.12 | 930 | 670.10 | 0.03 | 0.03 | 0.00 | 0.00 |
| 18.00 | 0.14 | 1,314 | 670.15 | 0.05 | 0.05 | 0.00 | 0.00 |
| 19.20 | 0.16 | 1,679 | 670.19 | 0.08 | 0.08 | 0.00 | 0.00 |
| 20.40 | 0.18 | 2,007 | 670.22 | 0.11 | 0.11 | 0.00 | 0.00 |
| 21.60 | 0.20 | 2,295 | 670.26 | 0.14 | 0.14 | 0.00 | 0.00 |
| 22.80 | 0.22 | 2,549 | 670.29 | 0.16 | 0.16 | 0.00 | 0.00 |
| 24.00 | 0.24 | 2,777 | 670.31 | 0.19 | 0.19 | 0.00 | 0.00 |
| 25.20 | 0.28 | 3,019 | 670.34 | 0.21 | 0.21 | 0.00 | 0.00 |
| 26.40 | 0.32 | 3,373 | 670.37 | 0.23 | 0.23 | 0.00 | 0.00 |
| 27.60 | 0.33 | 3,758 | 670.41 | 0.25 | 0.25 | 0.00 | 0.00 |
| 28.80 | 0.30 | 4,001 | 670.44 | 0.27 | 0.27 | 0.00 | 0.00 |
| 30.00 | 0.33 | 4,164 | 670.45 | 0.27 | 0.27 | 0.00 | 0.00 |
| 31.20 | 0.37 | 4,447 | 670.48 | 0.29 | 0.29 | 0.00 | 0.00 |
| 32.40 | 0.44 | 4,891 | 670.53 | 0.31 | 0.31 | 0.00 | 0.00 |
| 33.60 | 0.54 | 5,598 | 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 34.80 | 0.58 | 6,500 | 670.68 | 0.38 | 0.38 | 0.00 | 0.00 |
| 36.00 | 0.60 | 7,371 | 670.76 | 0.40 | 0.40 | 0.00 | 0.00 |
| 37.20 | 0.68 | 8,320 | 670.81 | 0.42 | 0.42 | 0.00 | 0.00 |
| 38.40 | 0.79 | 9,627 | 670.87 | 0.44 | 0.44 | 0.00 | 0.00 |
| 39.60 | 1.01 | 11,460 | 670.96 | 0.47 | 0.47 | 0.00 | 0.00 |
| 40.80 | **1.28** | 14,257 | 671.09 | 0.51 | 0.51 | 0.00 | 0.00 |
| 42.00 | **1.37** | 17,818 | 671.25 | 0.55 | 0.55 | 0.00 | 0.00 |
| 43.20 | 1.35 | 21,256 | 671.41 | 0.59 | 0.59 | 0.00 | 0.00 |
| 44.40 | 1.22 | 24,311 | 671.54 | 0.62 | 0.62 | 0.00 | 0.00 |
| 45.60 | 1.02 | 26,483 | 671.64 | 0.64 | 0.64 | 0.00 | 0.00 |
| 46.80 | 0.97 | 27,922 | 671.70 | 0.65 | 0.65 | 0.00 | 0.00 |
| 48.00 | 0.98 | **29,281** | **671.76** | **0.67** | **0.67** | 0.00 | 0.00 |
| 49.20 | 0.01 | **28,033** | **671.71** | **0.66** | **0.66** | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 18.46 | 1.54 | 15.13 | 1.79 |
| 678.80 | **28.12** | **1.56** | **21.42** | **5.14** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 0.73 cfs @ | 41.76 hrs, | Volume= | 0.765 af |
| Outflow | = | 0.72 cfs @ | 42.85 hrs, | Volume= | 0.765 af, Atten= 1%, Lag= 65.8 min |
| Primary | = | 0.61 cfs @ | 42.85 hrs, | Volume= | 0.502 af |
| Secondary | = | 0.11 cfs @ | 42.85 hrs, | Volume= | 0.262 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-50.04 hrs, dt= 0.12 hrs
Peak Elev= 677.07' @ 42.85 hrs Surf.Area= 2,166 sf Storage= 764 cf

Plug-Flow detention time= 14.8 min calculated for 0.763 af (100% of inflow)
Center-of-Mass det. time= 14.2 min ( 2,335.9 - 2,321.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

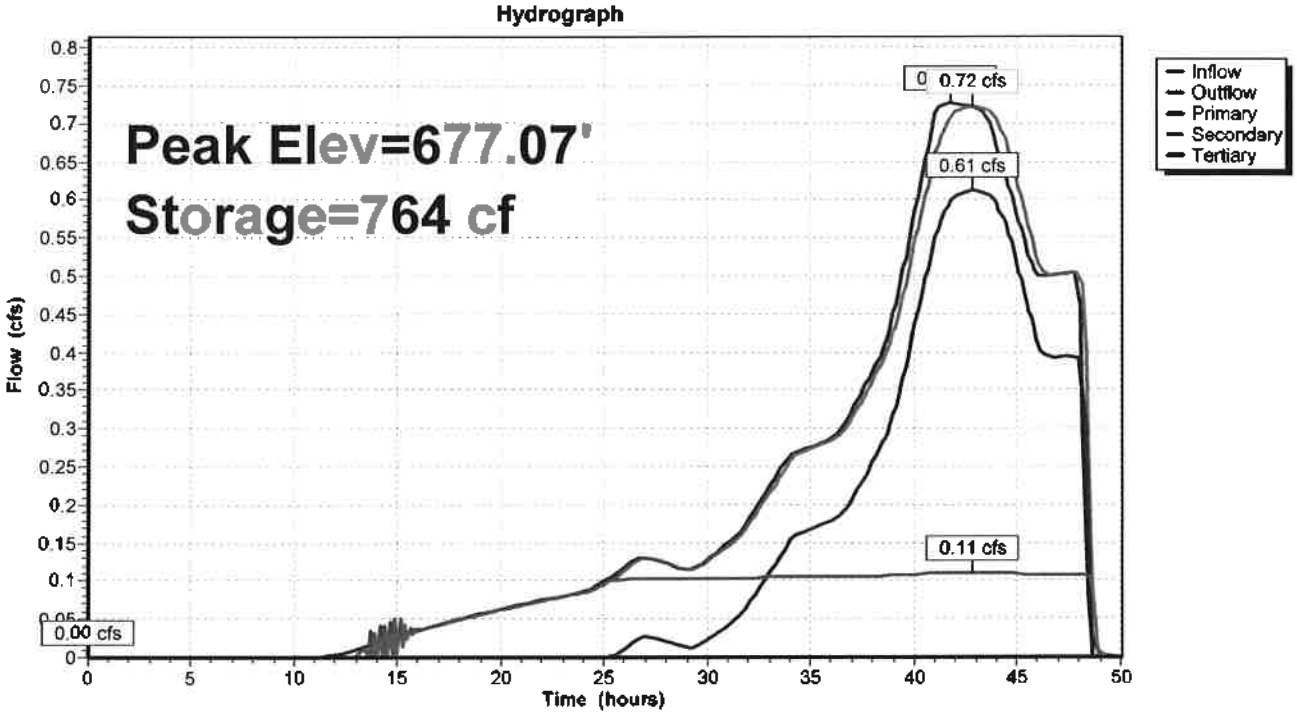
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=0.61 cfs @ 42.85 hrs HW=677.07' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.61 cfs @ 2.66 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

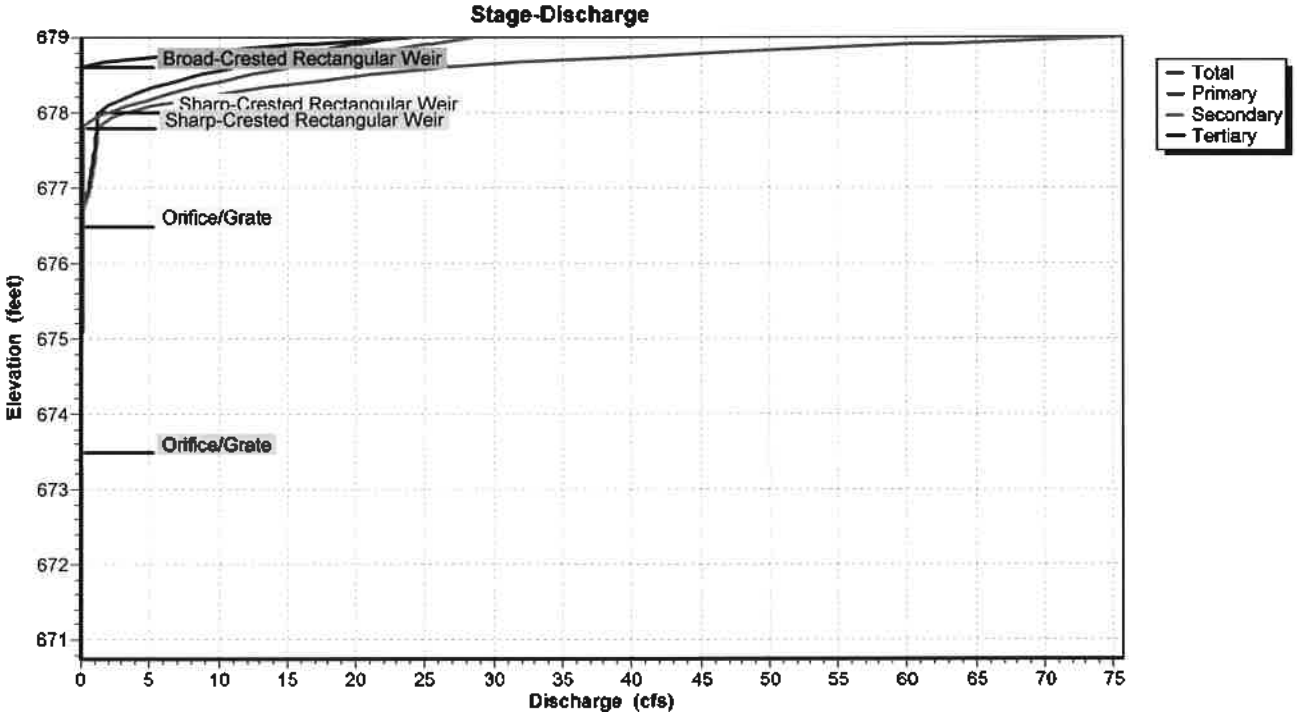
**Secondary OutFlow** Max=0.11 cfs @ 42.85 hrs HW=677.07' TW=671.37' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.11 cfs @ 9.02 fps)
└─**5=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

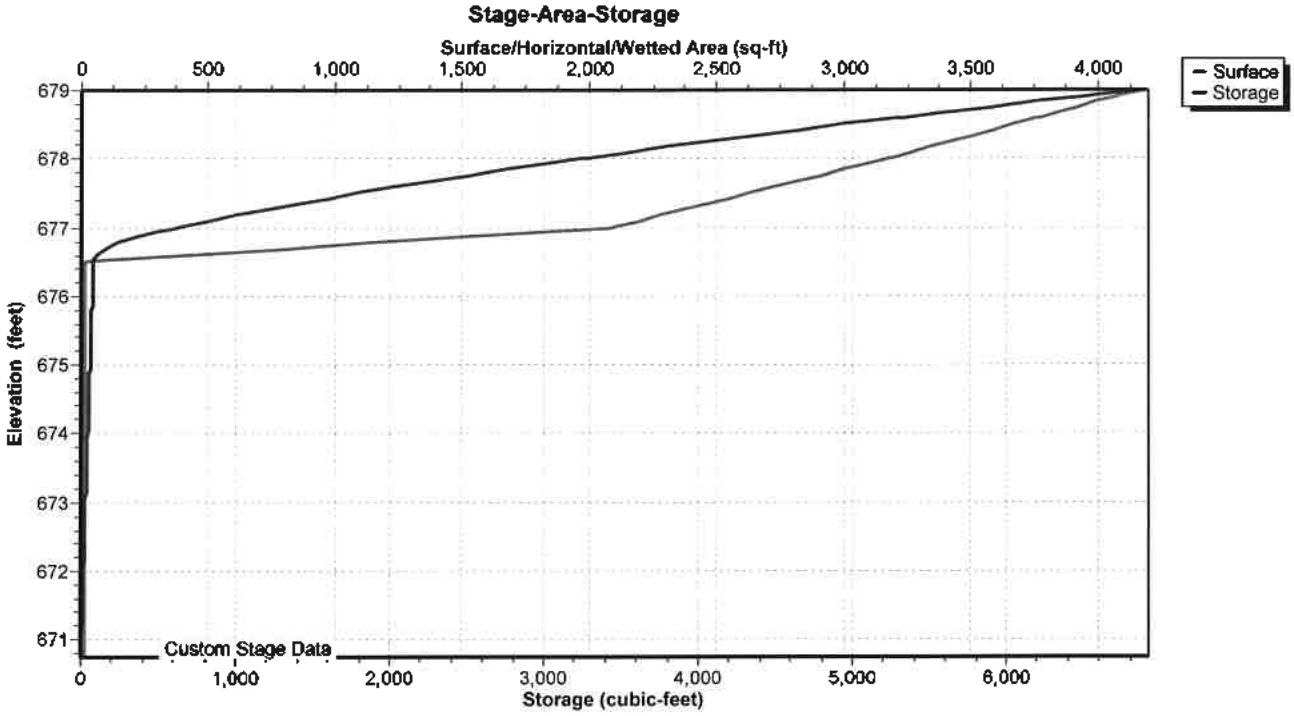
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 1.20 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.40 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.60 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.80 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7.20 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8.40 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9.60 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10.80 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12.00 | 0.00 | 1 | 670.85 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13.20 | 0.01 | 31 | 672.93 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14.40 | 0.02 | 47 | 674.07 | 0.04 | 0.00 | 0.04 | 0.00 |
| 15.60 | 0.03 | 45 | 673.99 | 0.04 | 0.00 | 0.04 | 0.00 |
| 16.80 | 0.04 | 46 | 674.05 | 0.04 | 0.00 | 0.04 | 0.00 |
| 18.00 | 0.05 | 49 | 674.27 | 0.05 | 0.00 | 0.05 | 0.00 |
| 19.20 | 0.06 | 53 | 674.51 | 0.06 | 0.00 | 0.06 | 0.00 |
| 20.40 | 0.07 | 56 | 674.78 | 0.07 | 0.00 | 0.07 | 0.00 |
| 21.60 | 0.07 | 60 | 675.05 | 0.07 | 0.00 | 0.07 | 0.00 |
| 22.80 | 0.08 | 64 | 675.33 | 0.08 | 0.00 | 0.08 | 0.00 |
| 24.00 | 0.09 | 68 | 675.62 | 0.08 | 0.00 | 0.08 | 0.00 |
| 25.20 | 0.10 | 79 | 676.38 | 0.10 | 0.00 | 0.10 | 0.00 |
| 26.40 | 0.13 | 98 | 676.58 | 0.12 | 0.02 | 0.10 | 0.00 |
| 27.60 | 0.13 | 100 | 676.59 | 0.13 | 0.02 | 0.10 | 0.00 |
| 28.80 | 0.11 | 94 | 676.57 | 0.12 | 0.01 | 0.10 | 0.00 |
| 30.00 | 0.13 | 99 | 676.58 | 0.13 | 0.02 | 0.10 | 0.00 |
| 31.20 | 0.15 | 114 | 676.62 | 0.15 | 0.05 | 0.10 | 0.00 |
| 32.40 | 0.20 | 144 | 676.67 | 0.19 | 0.09 | 0.10 | 0.00 |
| 33.60 | 0.25 | 182 | 676.71 | 0.24 | 0.13 | 0.10 | 0.00 |
| 34.80 | 0.27 | 208 | 676.74 | 0.27 | 0.17 | 0.11 | 0.00 |
| 36.00 | 0.29 | 217 | 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 37.20 | 0.33 | 246 | 676.78 | 0.32 | 0.21 | 0.11 | 0.00 |
| 38.40 | 0.40 | 303 | 676.82 | 0.38 | 0.28 | 0.11 | 0.00 |
| 39.60 | 0.52 | 407 | 676.89 | 0.49 | 0.38 | 0.11 | 0.00 |
| 40.80 | **0.68** | 587 | 676.99 | 0.63 | 0.52 | 0.11 | 0.00 |
| 42.00 | **0.73** | **749** | **677.07** | **0.71** | **0.60** | **0.11** | 0.00 |
| 43.20 | 0.72 | **764** | **677.07** | **0.72** | **0.61** | **0.11** | 0.00 |
| 44.40 | 0.64 | 678 | 677.03 | 0.68 | 0.57 | 0.11 | 0.00 |
| 45.60 | 0.53 | 491 | 676.94 | 0.56 | 0.46 | 0.11 | 0.00 |
| 46.80 | 0.50 | 420 | 676.90 | 0.50 | 0.39 | 0.11 | 0.00 |
| 48.00 | 0.51 | 425 | 676.90 | 0.50 | 0.40 | 0.11 | 0.00 |
| 49.20 | 0.00 | 40 | 673.57 | 0.01 | 0.00 | 0.01 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 23.56 | 9.86 | 13.70 | 0.00 |
| 678.75 | 40.37 | 15.13 | 19.77 | 5.47 |
| 678.95 | **67.61** | **21.27** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

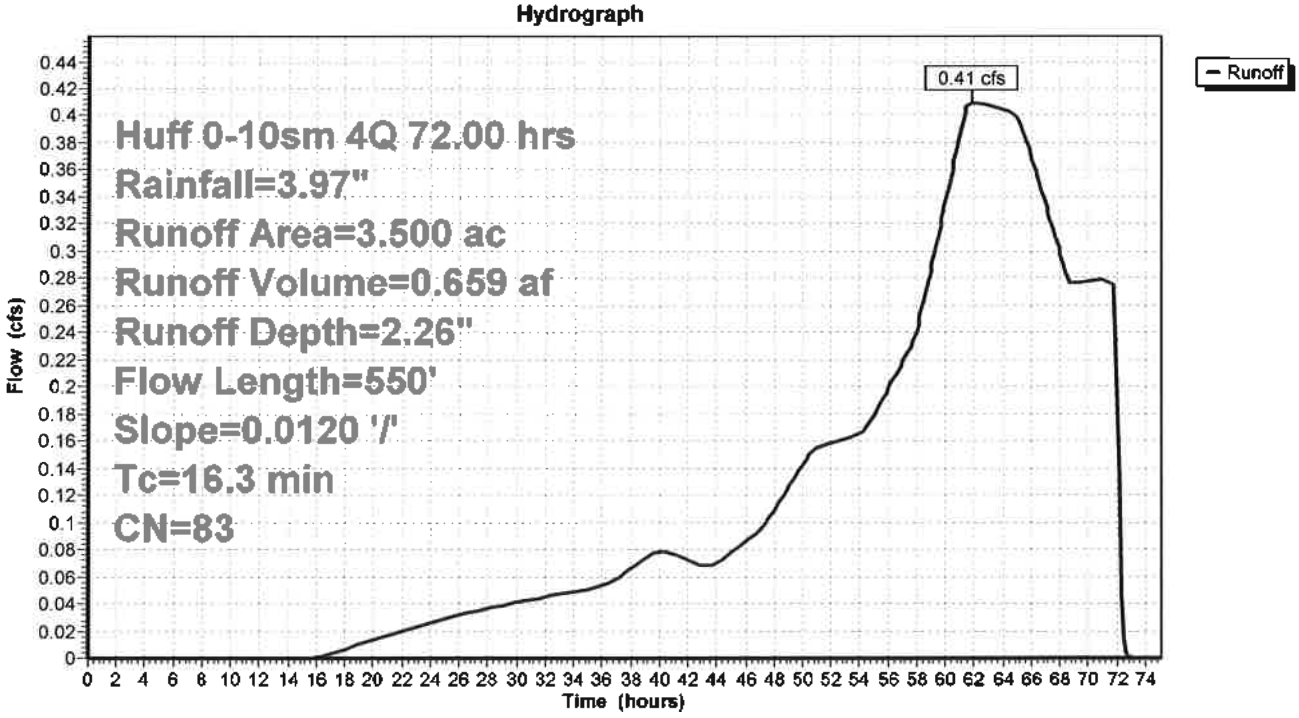
Runoff = 0.41 cfs @ 61.79 hrs, Volume= 0.659 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.12 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=3.97"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 1.20 | 0.00 | 0.00 | 0.00 |
| 2.40 | 0.02 | 0.00 | 0.00 |
| 3.60 | 0.04 | 0.00 | 0.00 |
| 4.80 | 0.07 | 0.00 | 0.00 |
| 6.00 | 0.11 | 0.00 | 0.00 |
| 7.20 | 0.14 | 0.00 | 0.00 |
| 8.40 | 0.19 | 0.00 | 0.00 |
| 9.60 | 0.23 | 0.00 | 0.00 |
| 10.80 | 0.27 | 0.00 | 0.00 |
| 12.00 | 0.31 | 0.00 | 0.00 |
| 13.20 | 0.34 | 0.00 | 0.00 |
| 14.40 | 0.37 | 0.00 | 0.00 |
| 15.60 | 0.40 | 0.00 | 0.00 |
| 16.80 | 0.44 | 0.00 | 0.00 |
| 18.00 | 0.48 | 0.00 | 0.01 |
| 19.20 | 0.52 | 0.01 | 0.01 |
| 20.40 | 0.56 | 0.01 | 0.02 |
| 21.60 | 0.60 | 0.02 | 0.02 |
| 22.80 | 0.64 | 0.02 | 0.02 |
| 24.00 | 0.68 | 0.03 | 0.03 |
| 25.20 | 0.72 | 0.04 | 0.03 |
| 26.40 | 0.77 | 0.05 | 0.03 |
| 27.60 | 0.81 | 0.06 | 0.04 |
| 28.80 | 0.85 | 0.08 | 0.04 |
| 30.00 | 0.89 | 0.09 | 0.04 |
| 31.20 | 0.93 | 0.11 | 0.04 |
| 32.40 | 0.97 | 0.12 | 0.05 |
| 33.60 | 1.01 | 0.14 | 0.05 |
| 34.80 | 1.05 | 0.15 | 0.05 |
| 36.00 | 1.10 | 0.17 | 0.05 |
| 37.20 | 1.14 | 0.19 | 0.06 |
| 38.40 | 1.19 | 0.21 | 0.07 |
| 39.60 | 1.24 | 0.24 | 0.08 |
| 40.80 | 1.29 | 0.27 | 0.08 |
| 42.00 | 1.34 | 0.29 | 0.07 |
| 43.20 | 1.39 | 0.31 | 0.07 |
| 44.40 | 1.43 | 0.34 | 0.07 |
| 45.60 | 1.48 | 0.37 | 0.08 |
| 46.80 | 1.53 | 0.40 | 0.09 |
| 48.00 | 1.59 | 0.43 | 0.11 |
| 49.20 | 1.66 | 0.47 | 0.13 |
| 50.40 | 1.74 | 0.52 | 0.15 |
| 51.60 | 1.82 | 0.57 | 0.16 |
| 52.80 | 1.90 | 0.63 | 0.16 |
| 54.00 | 1.99 | 0.68 | 0.16 |
| 55.20 | 2.07 | 0.74 | 0.18 |
| 56.40 | 2.17 | 0.81 | 0.21 |
| 57.60 | 2.27 | 0.89 | 0.23 |
| 58.80 | 2.40 | 0.98 | 0.28 |
| 60.00 | 2.54 | 1.09 | 0.34 |
| 61.20 | 2.71 | 1.22 | **0.40** |
| 62.40 | 2.89 | 1.36 | **0.41** |
| 63.60 | 3.06 | 1.49 | 0.41 |
| 64.80 | 3.23 | 1.63 | 0.40 |
| 66.00 | 3.38 | 1.76 | 0.37 |
| 67.20 | 3.52 | 1.88 | 0.33 |
| 68.40 | 3.64 | 1.98 | 0.28 |
| 69.60 | 3.75 | 2.07 | 0.28 |
| 70.80 | 3.86 | 2.16 | 0.28 |
| 72.00 | **3.97** | **2.26** | 0.28 |
| 73.20 | 3.97 | 2.26 | 0.00 |
| 74.40 | 3.97 | 2.26 | 0.00 |

## Summary for Subcatchment 7S: South Property

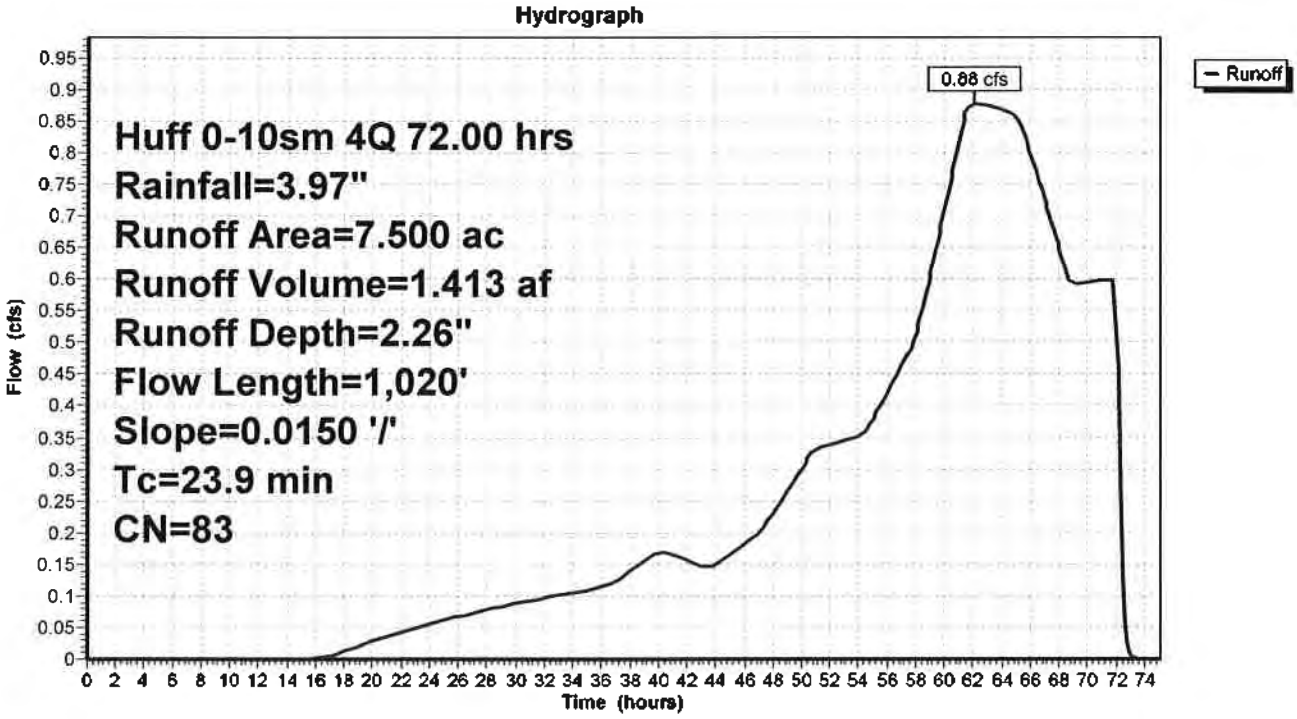
Runoff = 0.88 cfs @ 62.06 hrs, Volume= 1.413 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.12 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=3.97"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

## Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 1.20 | 0.00 | 0.00 | 0.00 |
| 2.40 | 0.02 | 0.00 | 0.00 |
| 3.60 | 0.04 | 0.00 | 0.00 |
| 4.80 | 0.07 | 0.00 | 0.00 |
| 6.00 | 0.11 | 0.00 | 0.00 |
| 7.20 | 0.14 | 0.00 | 0.00 |
| 8.40 | 0.19 | 0.00 | 0.00 |
| 9.60 | 0.23 | 0.00 | 0.00 |
| 10.80 | 0.27 | 0.00 | 0.00 |
| 12.00 | 0.31 | 0.00 | 0.00 |
| 13.20 | 0.34 | 0.00 | 0.00 |
| 14.40 | 0.37 | 0.00 | 0.00 |
| 15.60 | 0.40 | 0.00 | 0.00 |
| 16.80 | 0.44 | 0.00 | 0.00 |
| 18.00 | 0.48 | 0.00 | 0.01 |
| 19.20 | 0.52 | 0.01 | 0.02 |
| 20.40 | 0.56 | 0.01 | 0.03 |
| 21.60 | 0.60 | 0.02 | 0.04 |
| 22.80 | 0.64 | 0.02 | 0.05 |
| 24.00 | 0.68 | 0.03 | 0.06 |
| 25.20 | 0.72 | 0.04 | 0.06 |
| 26.40 | 0.77 | 0.05 | 0.07 |
| 27.60 | 0.81 | 0.06 | 0.08 |
| 28.80 | 0.85 | 0.08 | 0.08 |
| 30.00 | 0.89 | 0.09 | 0.09 |
| 31.20 | 0.93 | 0.11 | 0.09 |
| 32.40 | 0.97 | 0.12 | 0.10 |
| 33.60 | 1.01 | 0.14 | 0.10 |
| 34.80 | 1.05 | 0.15 | 0.11 |
| 36.00 | 1.10 | 0.17 | 0.11 |
| 37.20 | 1.14 | 0.19 | 0.13 |
| 38.40 | 1.19 | 0.21 | 0.15 |
| 39.60 | 1.24 | 0.24 | 0.17 |
| 40.80 | 1.29 | 0.27 | 0.17 |
| 42.00 | 1.34 | 0.29 | 0.16 |
| 43.20 | 1.39 | 0.31 | 0.14 |
| 44.40 | 1.43 | 0.34 | 0.15 |
| 45.60 | 1.48 | 0.37 | 0.17 |
| 46.80 | 1.53 | 0.40 | 0.20 |
| 48.00 | 1.59 | 0.43 | 0.23 |
| 49.20 | 1.66 | 0.47 | 0.27 |
| 50.40 | 1.74 | 0.52 | 0.32 |
| 51.60 | 1.82 | 0.57 | 0.34 |
| 52.80 | 1.90 | 0.63 | 0.34 |
| 54.00 | 1.99 | 0.68 | 0.35 |
| 55.20 | 2.07 | 0.74 | 0.39 |
| 56.40 | 2.17 | 0.81 | 0.44 |
| 57.60 | 2.27 | 0.89 | 0.49 |
| 58.80 | 2.40 | 0.98 | 0.59 |
| 60.00 | 2.54 | 1.09 | 0.71 |
| 61.20 | 2.71 | 1.22 | **0.84** |
| 62.40 | 2.89 | 1.36 | **0.88** |
| 63.60 | 3.06 | 1.49 | 0.87 |
| 64.80 | 3.23 | 1.63 | 0.86 |
| 66.00 | 3.38 | 1.76 | 0.80 |
| 67.20 | 3.52 | 1.88 | 0.71 |
| 68.40 | 3.64 | 1.98 | 0.62 |
| 69.60 | 3.75 | 2.07 | 0.59 |
| 70.80 | 3.86 | 2.16 | 0.60 |
| 72.00 | **3.97** | **2.26** | 0.60 |
| 73.20 | 3.97 | 2.26 | 0.00 |
| 74.40 | 3.97 | 2.26 | 0.00 |

## Summary for Subcatchment 8S: Northwood Drive Bypass

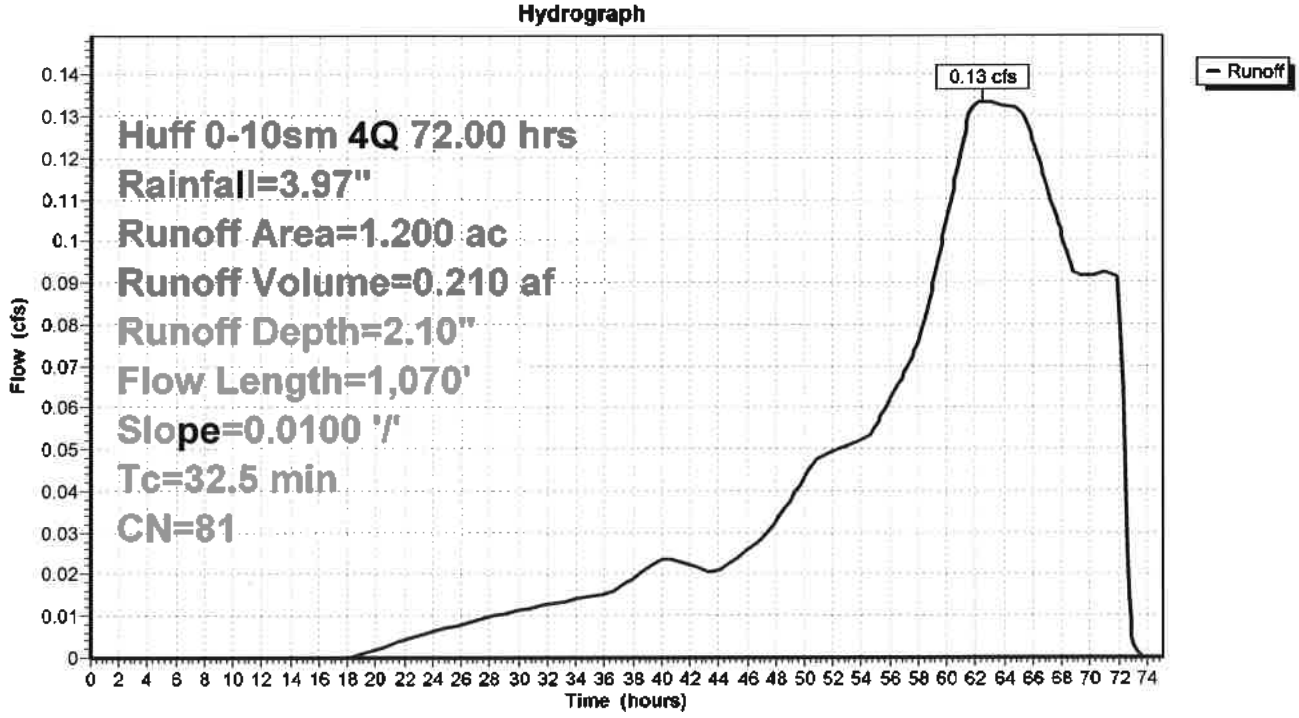
Runoff = 0.13 cfs @ 62.44 hrs, Volume= 0.210 af, Depth= 2.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.12 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=3.97"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 1.20 | 0.00 | 0.00 | 0.00 |
| 2.40 | 0.02 | 0.00 | 0.00 |
| 3.60 | 0.04 | 0.00 | 0.00 |
| 4.80 | 0.07 | 0.00 | 0.00 |
| 6.00 | 0.11 | 0.00 | 0.00 |
| 7.20 | 0.14 | 0.00 | 0.00 |
| 8.40 | 0.19 | 0.00 | 0.00 |
| 9.60 | 0.23 | 0.00 | 0.00 |
| 10.80 | 0.27 | 0.00 | 0.00 |
| 12.00 | 0.31 | 0.00 | 0.00 |
| 13.20 | 0.34 | 0.00 | 0.00 |
| 14.40 | 0.37 | 0.00 | 0.00 |
| 15.60 | 0.40 | 0.00 | 0.00 |
| 16.80 | 0.44 | 0.00 | 0.00 |
| 18.00 | 0.48 | 0.00 | 0.00 |
| 19.20 | 0.52 | 0.00 | 0.00 |
| 20.40 | 0.56 | 0.00 | 0.00 |
| 21.60 | 0.60 | 0.01 | 0.00 |
| 22.80 | 0.64 | 0.01 | 0.00 |
| 24.00 | 0.68 | 0.02 | 0.01 |
| 25.20 | 0.72 | 0.02 | 0.01 |
| 26.40 | 0.77 | 0.03 | 0.01 |
| 27.60 | 0.81 | 0.04 | 0.01 |
| 28.80 | 0.85 | 0.05 | 0.01 |
| 30.00 | 0.89 | 0.06 | 0.01 |
| 31.20 | 0.93 | 0.08 | 0.01 |
| 32.40 | 0.97 | 0.09 | 0.01 |
| 33.60 | 1.01 | 0.10 | 0.01 |
| 34.80 | 1.05 | 0.12 | 0.01 |
| 36.00 | 1.10 | 0.13 | 0.02 |
| 37.20 | 1.14 | 0.15 | 0.02 |
| 38.40 | 1.19 | 0.17 | 0.02 |
| 39.60 | 1.24 | 0.19 | 0.02 |
| 40.80 | 1.29 | 0.21 | 0.02 |
| 42.00 | 1.34 | 0.24 | 0.02 |
| 43.20 | 1.39 | 0.26 | 0.02 |
| 44.40 | 1.43 | 0.28 | 0.02 |
| 45.60 | 1.48 | 0.30 | 0.02 |
| 46.80 | 1.53 | 0.33 | 0.03 |
| 48.00 | 1.59 | 0.36 | 0.03 |
| 49.20 | 1.66 | 0.40 | 0.04 |
| 50.40 | 1.74 | 0.44 | 0.05 |
| 51.60 | 1.82 | 0.49 | 0.05 |
| 52.80 | 1.90 | 0.54 | 0.05 |
| 54.00 | 1.99 | 0.60 | 0.05 |
| 55.20 | 2.07 | 0.65 | 0.06 |
| 56.40 | 2.17 | 0.71 | 0.06 |
| 57.60 | 2.27 | 0.79 | 0.07 |
| 58.80 | 2.40 | 0.87 | 0.09 |
| 60.00 | 2.54 | 0.97 | 0.10 |
| 61.20 | 2.71 | 1.09 | 0.12 |
| 62.40 | 2.89 | 1.23 | **0.13** |
| 63.60 | 3.06 | 1.36 | 0.13 |
| 64.80 | 3.23 | 1.49 | 0.13 |
| 66.00 | 3.38 | 1.61 | 0.12 |
| 67.20 | 3.52 | 1.72 | 0.11 |
| 68.40 | 3.64 | 1.82 | 0.10 |
| 69.60 | 3.75 | 1.91 | 0.09 |
| 70.80 | 3.86 | 2.00 | 0.09 |
| 72.00 | **3.97** | **2.10** | 0.09 |
| 73.20 | 3.97 | 2.10 | 0.00 |
| 74.40 | 3.97 | 2.10 | 0.00 |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

[49] Hint: Tc<2dt may require smaller dt

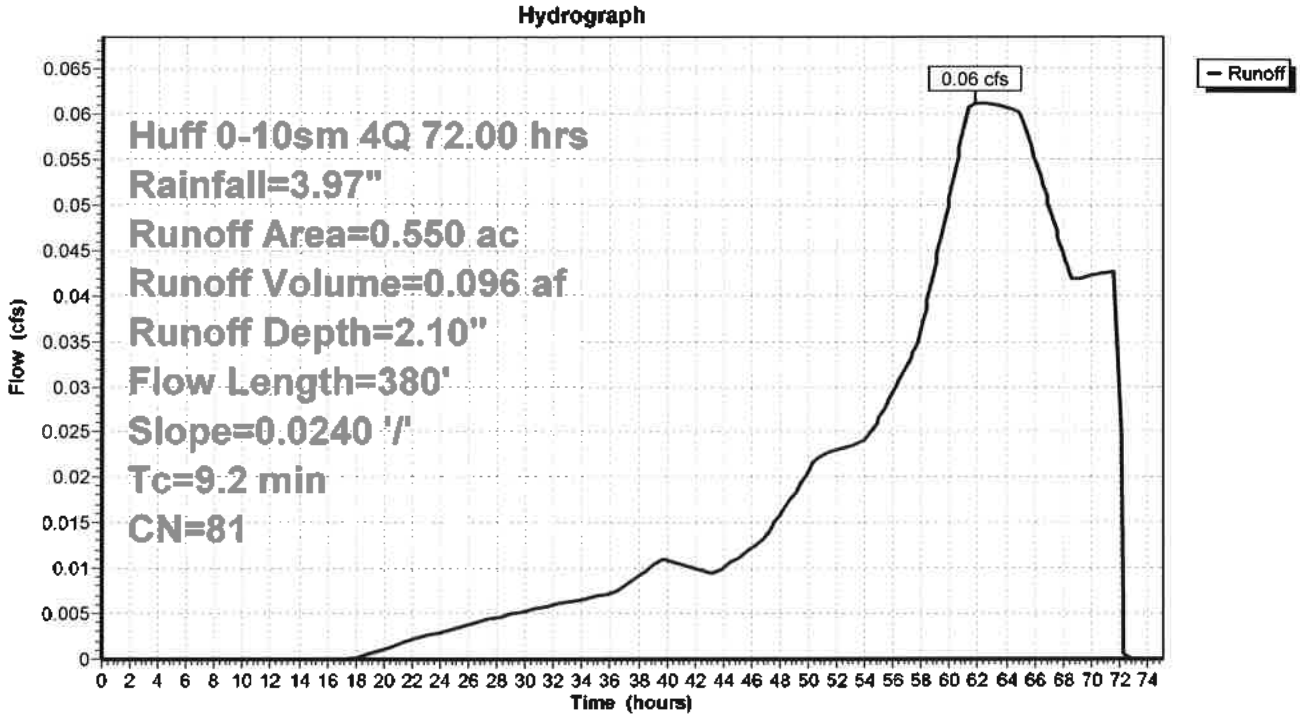
Runoff = 0.06 cfs @ 61.80 hrs, Volume= 0.096 af, Depth= 2.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.12 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=3.97"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 1.20 | 0.00 | 0.00 | 0.00 |
| 2.40 | 0.02 | 0.00 | 0.00 |
| 3.60 | 0.04 | 0.00 | 0.00 |
| 4.80 | 0.07 | 0.00 | 0.00 |
| 6.00 | 0.11 | 0.00 | 0.00 |
| 7.20 | 0.14 | 0.00 | 0.00 |
| 8.40 | 0.19 | 0.00 | 0.00 |
| 9.60 | 0.23 | 0.00 | 0.00 |
| 10.80 | 0.27 | 0.00 | 0.00 |
| 12.00 | 0.31 | 0.00 | 0.00 |
| 13.20 | 0.34 | 0.00 | 0.00 |
| 14.40 | 0.37 | 0.00 | 0.00 |
| 15.60 | 0.40 | 0.00 | 0.00 |
| 16.80 | 0.44 | 0.00 | 0.00 |
| 18.00 | 0.48 | 0.00 | 0.00 |
| 19.20 | 0.52 | 0.00 | 0.00 |
| 20.40 | 0.56 | 0.00 | 0.00 |
| 21.60 | 0.60 | 0.01 | 0.00 |
| 22.80 | 0.64 | 0.01 | 0.00 |
| 24.00 | 0.68 | 0.02 | 0.00 |
| 25.20 | 0.72 | 0.02 | 0.00 |
| 26.40 | 0.77 | 0.03 | 0.00 |
| 27.60 | 0.81 | 0.04 | 0.00 |
| 28.80 | 0.85 | 0.05 | 0.00 |
| 30.00 | 0.89 | 0.06 | 0.01 |
| 31.20 | 0.93 | 0.08 | 0.01 |
| 32.40 | 0.97 | 0.09 | 0.01 |
| 33.60 | 1.01 | 0.10 | 0.01 |
| 34.80 | 1.05 | 0.12 | 0.01 |
| 36.00 | 1.10 | 0.13 | 0.01 |
| 37.20 | 1.14 | 0.15 | 0.01 |
| 38.40 | 1.19 | 0.17 | 0.01 |
| 39.60 | 1.24 | 0.19 | 0.01 |
| 40.80 | 1.29 | 0.21 | 0.01 |
| 42.00 | 1.34 | 0.24 | 0.01 |
| 43.20 | 1.39 | 0.26 | 0.01 |
| 44.40 | 1.43 | 0.28 | 0.01 |
| 45.60 | 1.48 | 0.30 | 0.01 |
| 46.80 | 1.53 | 0.33 | 0.01 |
| 48.00 | 1.59 | 0.36 | 0.02 |
| 49.20 | 1.66 | 0.40 | 0.02 |
| 50.40 | 1.74 | 0.44 | 0.02 |
| 51.60 | 1.82 | 0.49 | 0.02 |
| 52.80 | 1.90 | 0.54 | 0.02 |
| 54.00 | 1.99 | 0.60 | 0.02 |
| 55.20 | 2.07 | 0.65 | 0.03 |
| 56.40 | 2.17 | 0.71 | 0.03 |
| 57.60 | 2.27 | 0.79 | 0.03 |
| 58.80 | 2.40 | 0.87 | 0.04 |
| 60.00 | 2.54 | 0.97 | 0.05 |
| 61.20 | 2.71 | 1.09 | **0.06** |
| 62.40 | 2.89 | 1.23 | **0.06** |
| 63.60 | 3.06 | 1.36 | 0.06 |
| 64.80 | 3.23 | 1.49 | 0.06 |
| 66.00 | 3.38 | 1.61 | 0.06 |
| 67.20 | 3.52 | 1.72 | 0.05 |
| 68.40 | 3.64 | 1.82 | 0.04 |
| 69.60 | 3.75 | 1.91 | 0.04 |
| 70.80 | 3.86 | 2.00 | 0.04 |
| 72.00 | **3.97** | **2.10** | 0.04 |
| 73.20 | 3.97 | 2.10 | 0.00 |
| 74.40 | 3.97 | 2.10 | 0.00 |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 1.05 cfs @ | 62.06 hrs, | Volume= | 1.878 af |
| Outflow | = | 0.63 cfs @ | 72.25 hrs, | Volume= | 1.424 af, Atten= 40%, Lag= 611.1 min |
| Primary | = | 0.63 cfs @ | 72.25 hrs, | Volume= | 1.424 af |
| Secondary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-75.00 hrs, dt= 0.12 hrs
Peak Elev= 671.59' @ 72.25 hrs Surf.Area= 30,713 sf Storage= 25,438 cf

Plug-Flow detention time= 325.6 min calculated for 1.424 af (76% of inflow)
Center-of-Mass det. time= 82.5 min ( 3,449.7 - 3,367.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.40' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

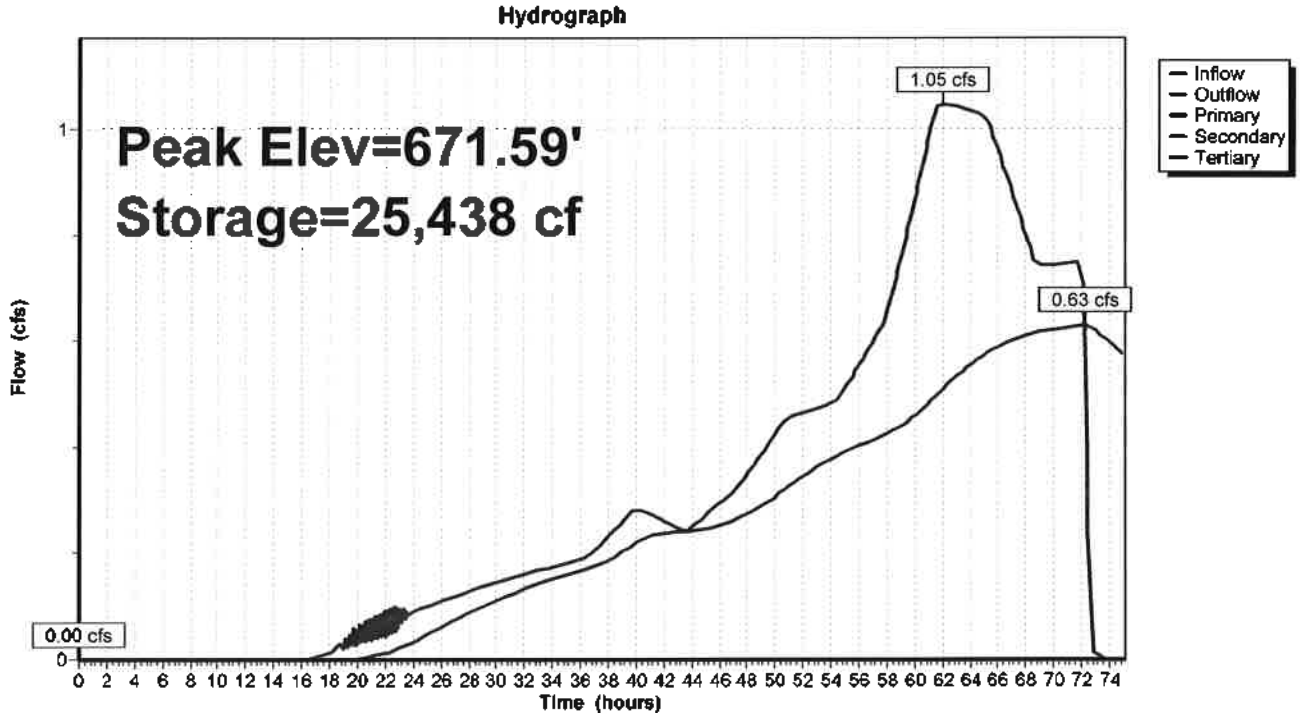
**#4 Secondary 673.50' 1.5" Vert. Orifice/Grate C= 0.600**

**Primary OutFlow** Max=0.63 cfs @ 72.25 hrs HW=671.59' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.63 cfs @ 5.71 fps)

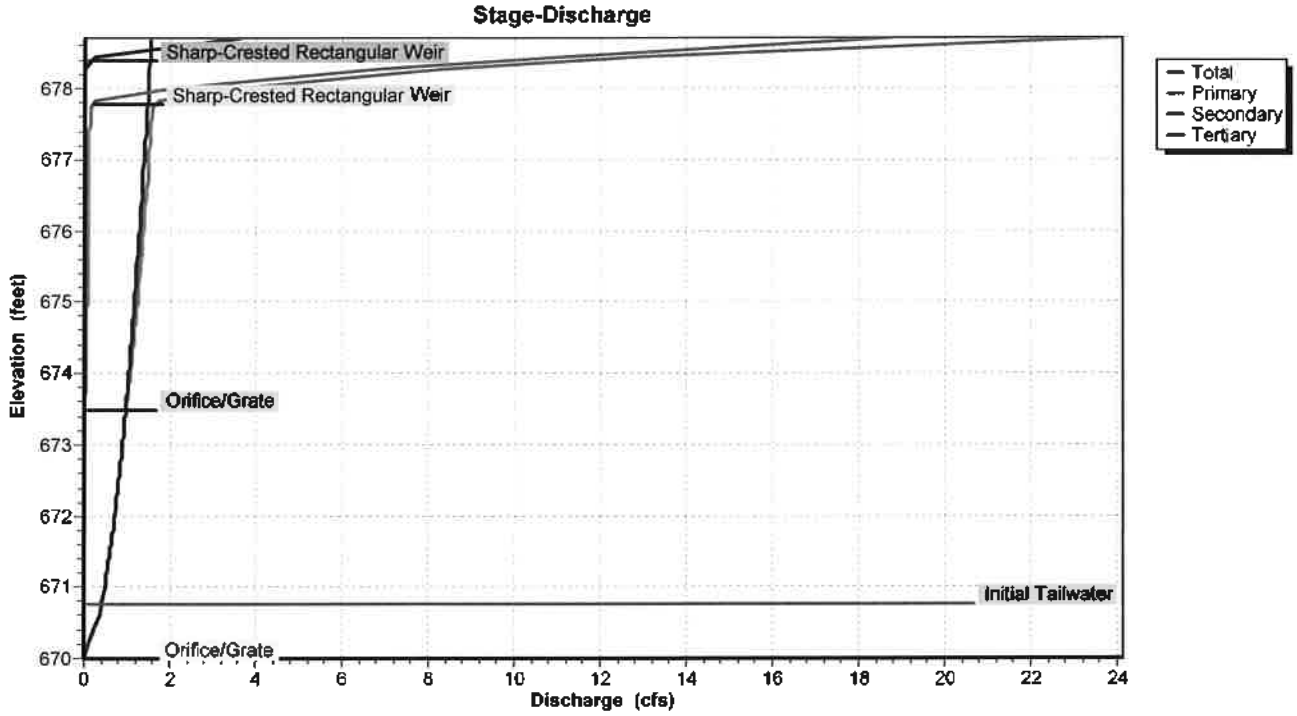
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

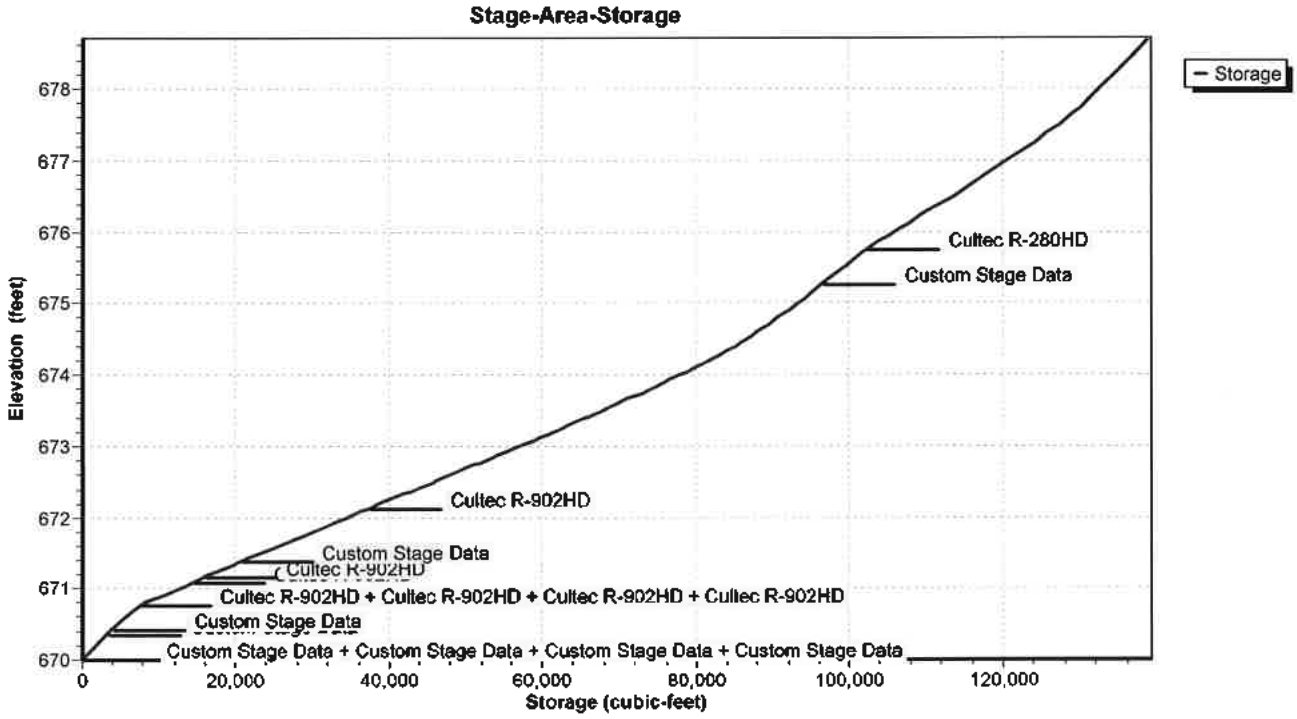
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 2.40 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.80 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7.20 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9.60 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14.40 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16.80 | 0.00 | 3 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19.20 | 0.05 | 125 | 670.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21.60 | 0.09 | 516 | 670.06 | 0.01 | 0.01 | 0.00 | 0.00 |
| 24.00 | 0.09 | 1,021 | 670.11 | 0.03 | 0.03 | 0.00 | 0.00 |
| 26.40 | 0.11 | 1,486 | 670.17 | 0.07 | 0.07 | 0.00 | 0.00 |
| 28.80 | 0.14 | 1,859 | 670.21 | 0.10 | 0.10 | 0.00 | 0.00 |
| 31.20 | 0.15 | 2,149 | 670.24 | 0.12 | 0.12 | 0.00 | 0.00 |
| 33.60 | 0.17 | 2,383 | 670.27 | 0.15 | 0.15 | 0.00 | 0.00 |
| 36.00 | 0.19 | 2,580 | 670.29 | 0.17 | 0.17 | 0.00 | 0.00 |
| 38.40 | 0.24 | 2,861 | 670.32 | 0.19 | 0.19 | 0.00 | 0.00 |
| 40.80 | 0.28 | 3,350 | 670.37 | 0.23 | 0.23 | 0.00 | 0.00 |
| 43.20 | 0.24 | 3,567 | 670.39 | 0.24 | 0.24 | 0.00 | 0.00 |
| 45.60 | 0.29 | 3,694 | 670.41 | 0.25 | 0.25 | 0.00 | 0.00 |
| 48.00 | 0.35 | 4,146 | 670.45 | 0.27 | 0.27 | 0.00 | 0.00 |
| 50.40 | 0.44 | 5,008 | 670.54 | 0.31 | 0.31 | 0.00 | 0.00 |
| 52.80 | 0.47 | 6,079 | 670.64 | 0.36 | 0.36 | 0.00 | 0.00 |
| 55.20 | 0.52 | 7,024 | 670.74 | 0.39 | 0.39 | 0.00 | 0.00 |
| 57.60 | 0.63 | 8,441 | 670.81 | 0.42 | 0.42 | 0.00 | 0.00 |
| 60.00 | **0.87** | 10,989 | 670.93 | 0.46 | 0.46 | 0.00 | 0.00 |
| 62.40 | **1.05** | 15,279 | 671.14 | 0.52 | 0.52 | 0.00 | 0.00 |
| 64.80 | 1.03 | 19,561 | 671.33 | 0.57 | 0.57 | 0.00 | 0.00 |
| 67.20 | 0.87 | 22,807 | 671.48 | 0.60 | 0.60 | 0.00 | 0.00 |
| 69.60 | 0.74 | 24,298 | 671.54 | 0.62 | 0.62 | 0.00 | 0.00 |
| 72.00 | 0.75 | **25,351** | **671.59** | **0.63** | **0.63** | 0.00 | 0.00 |
| 74.40 | 0.00 | **21,306** | **671.41** | **0.59** | **0.59** | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 18.46 | 1.54 | 15.13 | 1.79 |
| 678.80 | **28.12** | **1.56** | **21.42** | **5.14** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

[86] Warning: Oscillations may require smaller dt (severity=20)

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 0.54 cfs @ | 62.07 hrs, | Volume= | 0.869 af |
| Outflow | = | 0.54 cfs @ | 62.59 hrs, | Volume= | 0.868 af, Atten= 0%, Lag= 30.8 min |
| Primary | = | 0.43 cfs @ | 62.59 hrs, | Volume= | 0.498 af |
| Secondary | = | 0.11 cfs @ | 62.59 hrs, | Volume= | 0.370 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-75.00 hrs, dt= 0.12 hrs
Peak Elev= 676.93' @ 62.59 hrs Surf.Area= 1,782 sf Storage= 464 cf

Plug-Flow detention time= 13.8 min calculated for 0.867 af (100% of inflow)
Center-of-Mass det. time= 13.0 min ( 3,462.4 - 3,449.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

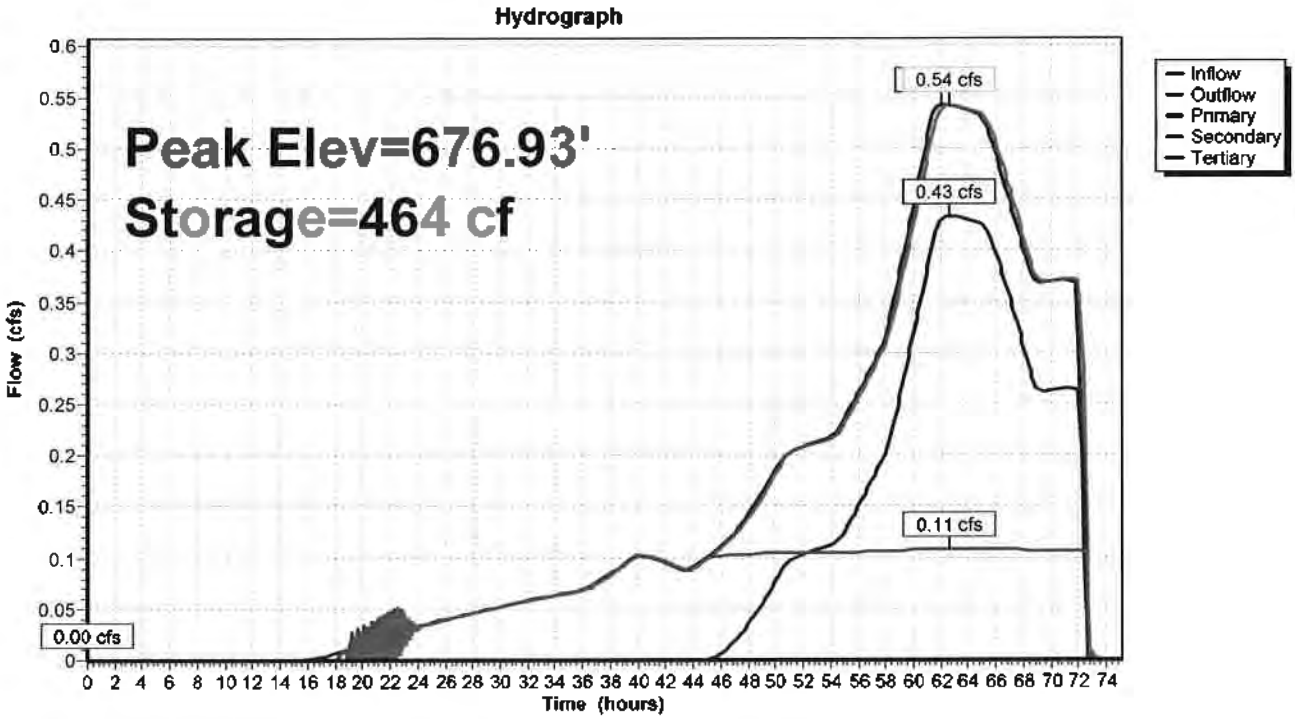
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=0.43 cfs @ 62.59 hrs HW=676.93' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.43 cfs @ 2.22 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

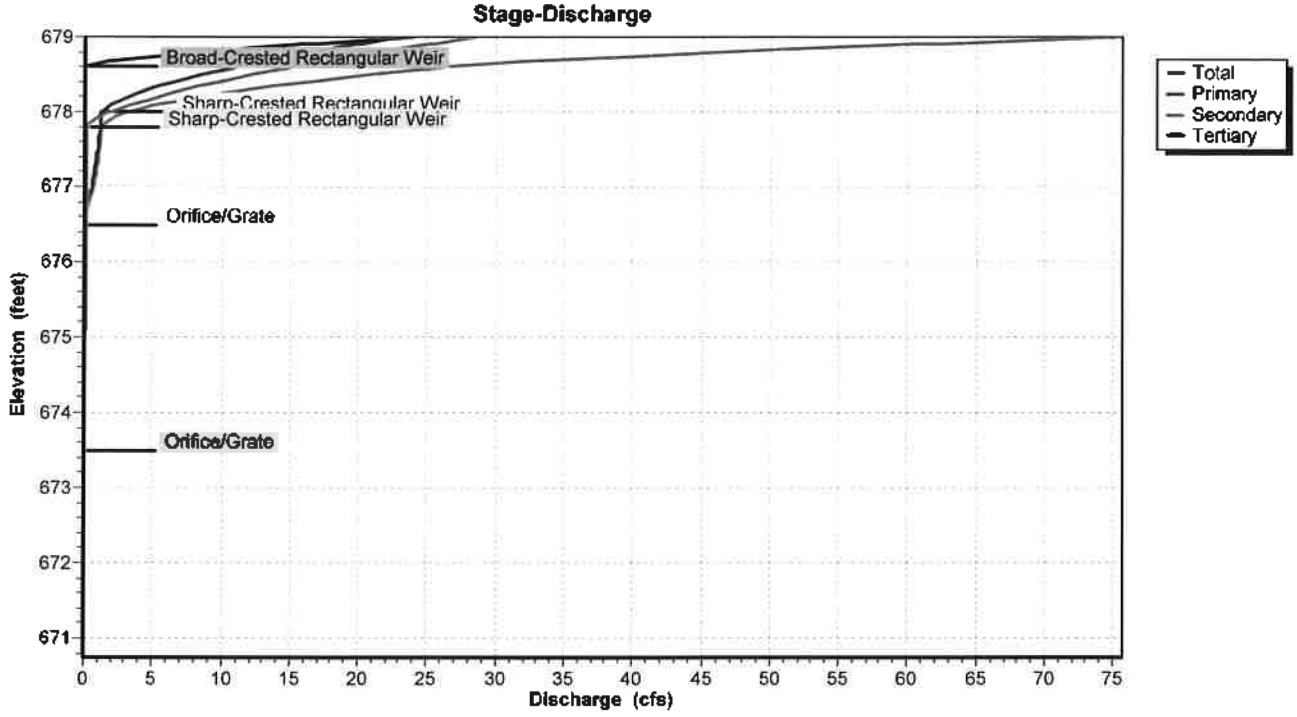
**Secondary OutFlow** Max=0.11 cfs @ 62.59 hrs HW=676.93' TW=671.15' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.11 cfs @ 8.83 fps)
└─**5=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

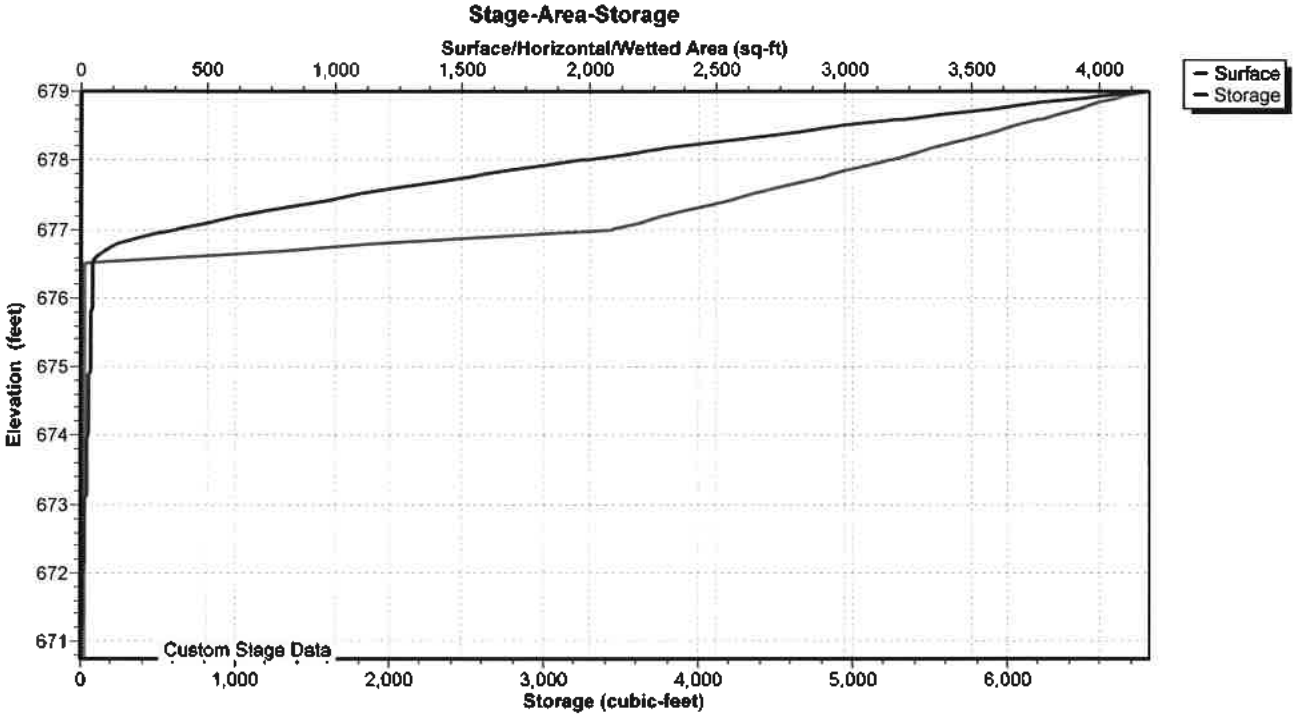
## Pond 8P: North System



## Pond 8P: North System




## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 2.40 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.80 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7.20 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9.60 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14.40 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16.80 | 0.00 | 2 | 670.89 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19.20 | 0.01 | 42 | 673.77 | 0.03 | 0.00 | 0.03 | 0.00 |
| 21.60 | 0.02 | 47 | 674.13 | 0.04 | 0.00 | 0.04 | 0.00 |
| 24.00 | 0.03 | 44 | 673.89 | 0.03 | 0.00 | 0.03 | 0.00 |
| 26.40 | 0.04 | 46 | 674.04 | 0.04 | 0.00 | 0.04 | 0.00 |
| 28.80 | 0.05 | 49 | 674.24 | 0.05 | 0.00 | 0.05 | 0.00 |
| 31.20 | 0.06 | 52 | 674.45 | 0.06 | 0.00 | 0.06 | 0.00 |
| 33.60 | 0.06 | 55 | 674.67 | 0.06 | 0.00 | 0.06 | 0.00 |
| 36.00 | 0.07 | 58 | 674.89 | 0.07 | 0.00 | 0.07 | 0.00 |
| 38.40 | 0.09 | 70 | 675.72 | 0.09 | 0.00 | 0.09 | 0.00 |
| 40.80 | 0.10 | 81 | 676.51 | 0.10 | 0.00 | 0.10 | 0.00 |
| 43.20 | 0.09 | 71 | 675.83 | 0.09 | 0.00 | 0.09 | 0.00 |
| 45.60 | 0.11 | 83 | 676.53 | 0.10 | 0.00 | 0.10 | 0.00 |
| 48.00 | 0.14 | 106 | 676.61 | 0.14 | 0.04 | 0.10 | 0.00 |
| 50.40 | 0.19 | 145 | 676.67 | 0.19 | 0.09 | 0.10 | 0.00 |
| 52.80 | 0.21 | 158 | 676.69 | 0.21 | 0.11 | 0.10 | 0.00 |
| 55.20 | 0.24 | 178 | 676.71 | 0.23 | 0.13 | 0.10 | 0.00 |
| 57.60 | 0.30 | 227 | 676.76 | 0.30 | 0.19 | 0.11 | 0.00 |
| 60.00 | **0.44** | 341 | 676.85 | 0.43 | 0.32 | 0.11 | 0.00 |
| 62.40 | **0.54** | **465** | **676.93** | **0.54** | **0.43** | **0.11** | 0.00 |
| 64.80 | 0.53 | **458** | **676.92** | **0.53** | **0.43** | **0.11** | 0.00 |
| 67.20 | 0.44 | 369 | 676.87 | 0.45 | 0.34 | 0.11 | 0.00 |
| 69.60 | 0.37 | 290 | 676.81 | 0.37 | 0.26 | 0.11 | 0.00 |
| 72.00 | 0.37 | 295 | 676.82 | 0.37 | 0.27 | 0.11 | 0.00 |
| 74.40 | 0.00 | 36 | 673.29 | 0.00 | 0.00 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 23.56 | 9.86 | 13.70 | 0.00 |
| 678.75 | 40.37 | 15.13 | 19.77 | 5.47 |
| 678.95 | **67.61** | **21.27** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

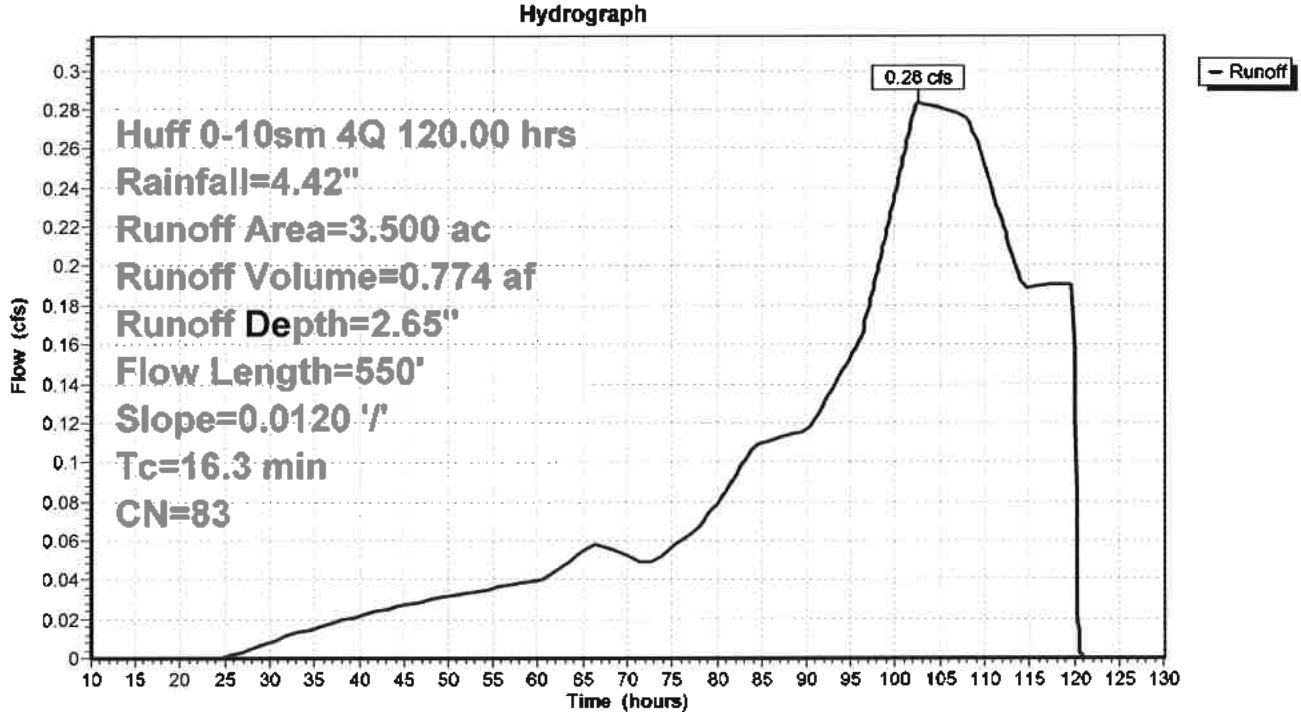
Runoff = 0.28 cfs @ 102.54 hrs, Volume= 0.774 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.05 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=4.42"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 10.00 | 0.12 | 0.00 | 0.00 |
| 12.50 | 0.17 | 0.00 | 0.00 |
| 15.00 | 0.23 | 0.00 | 0.00 |
| 17.50 | 0.29 | 0.00 | 0.00 |
| 20.00 | 0.34 | 0.00 | 0.00 |
| 22.50 | 0.39 | 0.00 | 0.00 |
| 25.00 | 0.43 | 0.00 | 0.00 |
| 27.50 | 0.48 | 0.00 | 0.00 |
| 30.00 | 0.53 | 0.01 | 0.01 |
| 32.50 | 0.59 | 0.01 | 0.01 |
| 35.00 | 0.64 | 0.02 | 0.02 |
| 37.50 | 0.70 | 0.04 | 0.02 |
| 40.00 | 0.76 | 0.05 | 0.02 |
| 42.50 | 0.82 | 0.07 | 0.02 |
| 45.00 | 0.87 | 0.09 | 0.03 |
| 47.50 | 0.93 | 0.11 | 0.03 |
| 50.00 | 0.99 | 0.13 | 0.03 |
| 52.50 | 1.05 | 0.15 | 0.03 |
| 55.00 | 1.11 | 0.18 | 0.04 |
| 57.50 | 1.16 | 0.20 | 0.04 |
| 60.00 | 1.22 | 0.23 | 0.04 |
| 62.50 | 1.28 | 0.26 | 0.05 |
| 65.00 | 1.35 | 0.30 | 0.05 |
| 67.50 | 1.43 | 0.34 | 0.06 |
| 70.00 | 1.49 | 0.38 | 0.05 |
| 72.50 | 1.55 | 0.41 | 0.05 |
| 75.00 | 1.62 | 0.45 | 0.06 |
| 77.50 | 1.69 | 0.49 | 0.06 |
| 80.00 | 1.77 | 0.54 | 0.08 |
| 82.50 | 1.87 | 0.61 | 0.10 |
| 85.00 | 1.98 | 0.68 | 0.11 |
| 87.50 | 2.09 | 0.76 | 0.11 |
| 90.00 | 2.21 | 0.84 | 0.12 |
| 92.50 | 2.33 | 0.93 | 0.13 |
| 95.00 | 2.47 | 1.03 | 0.15 |
| 97.50 | 2.63 | 1.16 | 0.19 |
| 100.00 | 2.83 | 1.31 | 0.24 |
| 102.50 | 3.07 | 1.50 | **0.28** |
| 105.00 | 3.31 | 1.70 | **0.28** |
| 107.50 | 3.55 | 1.90 | 0.28 |
| 110.00 | 3.77 | 2.08 | 0.25 |
| 112.50 | 3.95 | 2.25 | 0.21 |
| 115.00 | 4.11 | 2.38 | 0.19 |
| 117.50 | 4.27 | 2.52 | 0.19 |
| 120.00 | **4.42** | **2.65** | 0.19 |
| 122.50 | 4.42 | 2.65 | 0.00 |
| 125.00 | 4.42 | 2.65 | 0.00 |
| 127.50 | 4.42 | 2.65 | 0.00 |
| 130.00 | 4.42 | 2.65 | 0.00 |

## Summary for Subcatchment 7S: South Property

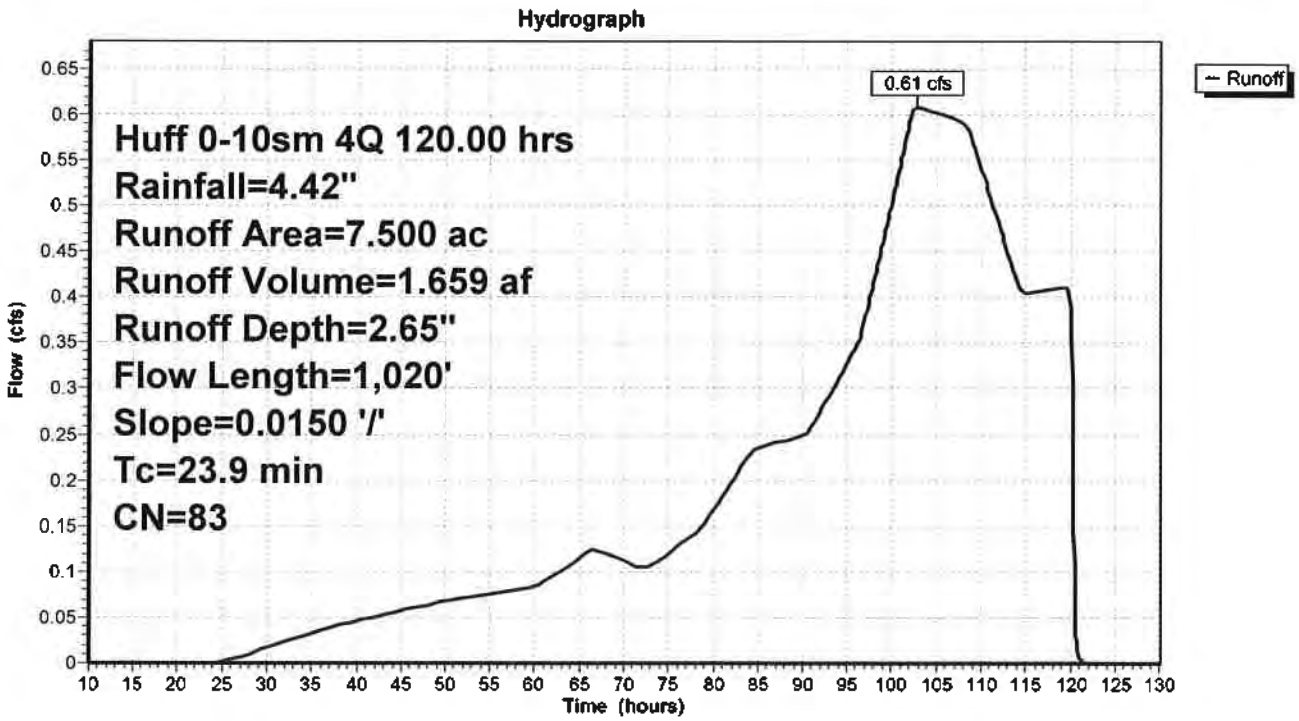
Runoff = 0.61 cfs @ 102.77 hrs, Volume= 1.659 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.05 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=4.42"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 10.00 | 0.12 | 0.00 | 0.00 |
| 12.50 | 0.17 | 0.00 | 0.00 |
| 15.00 | 0.23 | 0.00 | 0.00 |
| 17.50 | 0.29 | 0.00 | 0.00 |
| 20.00 | 0.34 | 0.00 | 0.00 |
| 22.50 | 0.39 | 0.00 | 0.00 |
| 25.00 | 0.43 | 0.00 | 0.00 |
| 27.50 | 0.48 | 0.00 | 0.01 |
| 30.00 | 0.53 | 0.01 | 0.02 |
| 32.50 | 0.59 | 0.01 | 0.03 |
| 35.00 | 0.64 | 0.02 | 0.03 |
| 37.50 | 0.70 | 0.04 | 0.04 |
| 40.00 | 0.76 | 0.05 | 0.05 |
| 42.50 | 0.82 | 0.07 | 0.05 |
| 45.00 | 0.87 | 0.09 | 0.06 |
| 47.50 | 0.93 | 0.11 | 0.06 |
| 50.00 | 0.99 | 0.13 | 0.07 |
| 52.50 | 1.05 | 0.15 | 0.07 |
| 55.00 | 1.11 | 0.18 | 0.08 |
| 57.50 | 1.16 | 0.20 | 0.08 |
| 60.00 | 1.22 | 0.23 | 0.08 |
| 62.50 | 1.28 | 0.26 | 0.10 |
| 65.00 | 1.35 | 0.30 | 0.12 |
| 67.50 | 1.43 | 0.34 | 0.12 |
| 70.00 | 1.49 | 0.38 | 0.11 |
| 72.50 | 1.55 | 0.41 | 0.10 |
| 75.00 | 1.62 | 0.45 | 0.12 |
| 77.50 | 1.69 | 0.49 | 0.14 |
| 80.00 | 1.77 | 0.54 | 0.17 |
| 82.50 | 1.87 | 0.61 | 0.20 |
| 85.00 | 1.98 | 0.68 | 0.24 |
| 87.50 | 2.09 | 0.76 | 0.24 |
| 90.00 | 2.21 | 0.84 | 0.25 |
| 92.50 | 2.33 | 0.93 | 0.28 |
| 95.00 | 2.47 | 1.03 | 0.33 |
| 97.50 | 2.63 | 1.16 | 0.40 |
| 100.00 | 2.83 | 1.31 | 0.50 |
| 102.50 | 3.07 | 1.50 | **0.61** |
| 105.00 | 3.31 | 1.70 | **0.60** |
| 107.50 | 3.55 | 1.90 | 0.59 |
| 110.00 | 3.77 | 2.08 | 0.54 |
| 112.50 | 3.95 | 2.25 | 0.46 |
| 115.00 | 4.11 | 2.38 | 0.40 |
| 117.50 | 4.27 | 2.52 | 0.41 |
| 120.00 | **4.42** | **2.65** | 0.41 |
| 122.50 | 4.42 | 2.65 | 0.00 |
| 125.00 | 4.42 | 2.65 | 0.00 |
| 127.50 | 4.42 | 2.65 | 0.00 |
| 130.00 | 4.42 | 2.65 | 0.00 |

## Summary for Subcatchment 8S: Northwood Drive Bypass

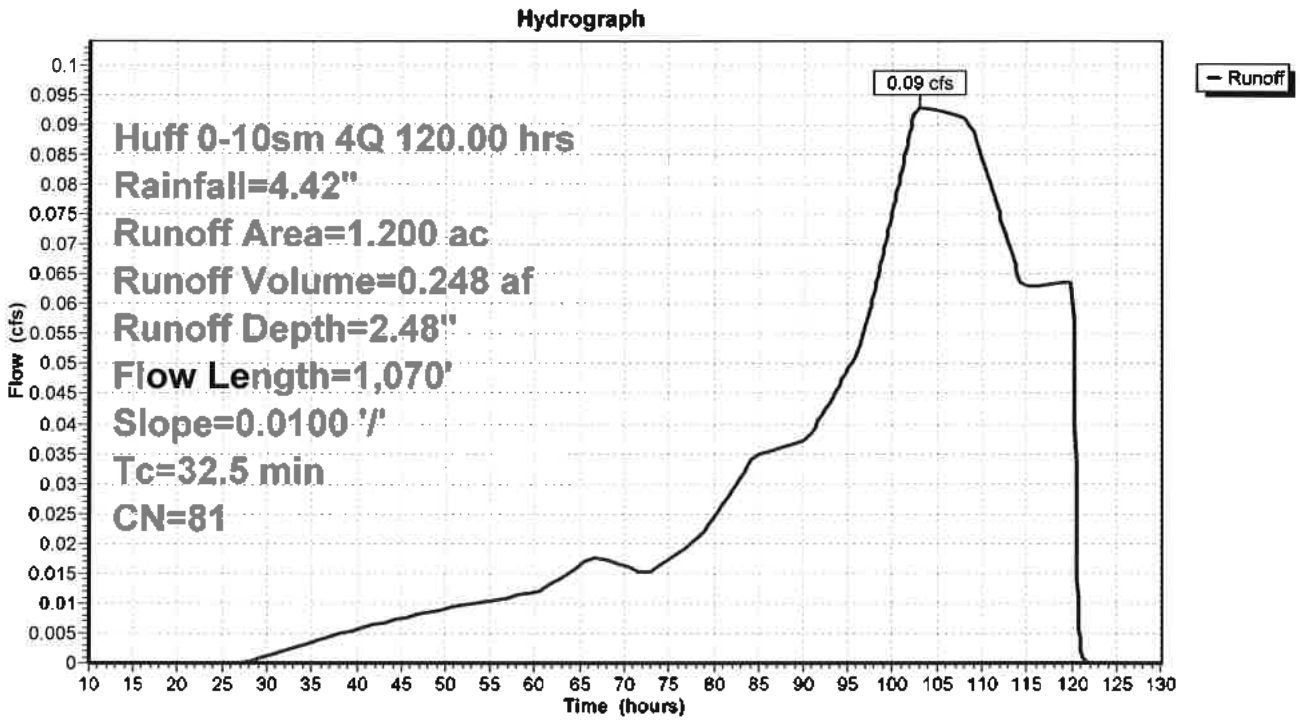
Runoff = 0.09 cfs @ 103.11 hrs, Volume= 0.248 af, Depth= 2.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.05 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=4.42"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 10.00 | 0.12 | 0.00 | 0.00 |
| 12.50 | 0.17 | 0.00 | 0.00 |
| 15.00 | 0.23 | 0.00 | 0.00 |
| 17.50 | 0.29 | 0.00 | 0.00 |
| 20.00 | 0.34 | 0.00 | 0.00 |
| 22.50 | 0.39 | 0.00 | 0.00 |
| 25.00 | 0.43 | 0.00 | 0.00 |
| 27.50 | 0.48 | 0.00 | 0.00 |
| 30.00 | 0.53 | 0.00 | 0.00 |
| 32.50 | 0.59 | 0.01 | 0.00 |
| 35.00 | 0.64 | 0.01 | 0.00 |
| 37.50 | 0.70 | 0.02 | 0.00 |
| 40.00 | 0.76 | 0.03 | 0.01 |
| 42.50 | 0.82 | 0.04 | 0.01 |
| 45.00 | 0.87 | 0.06 | 0.01 |
| 47.50 | 0.93 | 0.08 | 0.01 |
| 50.00 | 0.99 | 0.09 | 0.01 |
| 52.50 | 1.05 | 0.11 | 0.01 |
| 55.00 | 1.11 | 0.14 | 0.01 |
| 57.50 | 1.16 | 0.16 | 0.01 |
| 60.00 | 1.22 | 0.18 | 0.01 |
| 62.50 | 1.28 | 0.21 | 0.01 |
| 65.00 | 1.35 | 0.24 | 0.02 |
| 67.50 | 1.43 | 0.28 | 0.02 |
| 70.00 | 1.49 | 0.31 | 0.02 |
| 72.50 | 1.55 | 0.34 | 0.01 |
| 75.00 | 1.62 | 0.38 | 0.02 |
| 77.50 | 1.69 | 0.42 | 0.02 |
| 80.00 | 1.77 | 0.46 | 0.02 |
| 82.50 | 1.87 | 0.52 | 0.03 |
| 85.00 | 1.98 | 0.59 | 0.03 |
| 87.50 | 2.09 | 0.67 | 0.04 |
| 90.00 | 2.21 | 0.74 | 0.04 |
| 92.50 | 2.33 | 0.83 | 0.04 |
| 95.00 | 2.47 | 0.92 | 0.05 |
| 97.50 | 2.63 | 1.04 | 0.06 |
| 100.00 | 2.83 | 1.18 | 0.08 |
| 102.50 | 3.07 | 1.36 | **0.09** |
| 105.00 | 3.31 | 1.56 | **0.09** |
| 107.50 | 3.55 | 1.75 | 0.09 |
| 110.00 | 3.77 | 1.93 | 0.08 |
| 112.50 | 3.95 | 2.08 | 0.07 |
| 115.00 | 4.11 | 2.22 | 0.06 |
| 117.50 | 4.27 | 2.35 | 0.06 |
| 120.00 | **4.42** | **2.48** | 0.06 |
| 122.50 | 4.42 | 2.48 | 0.00 |
| 125.00 | 4.42 | 2.48 | 0.00 |
| 127.50 | 4.42 | 2.48 | 0.00 |
| 130.00 | 4.42 | 2.48 | 0.00 |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

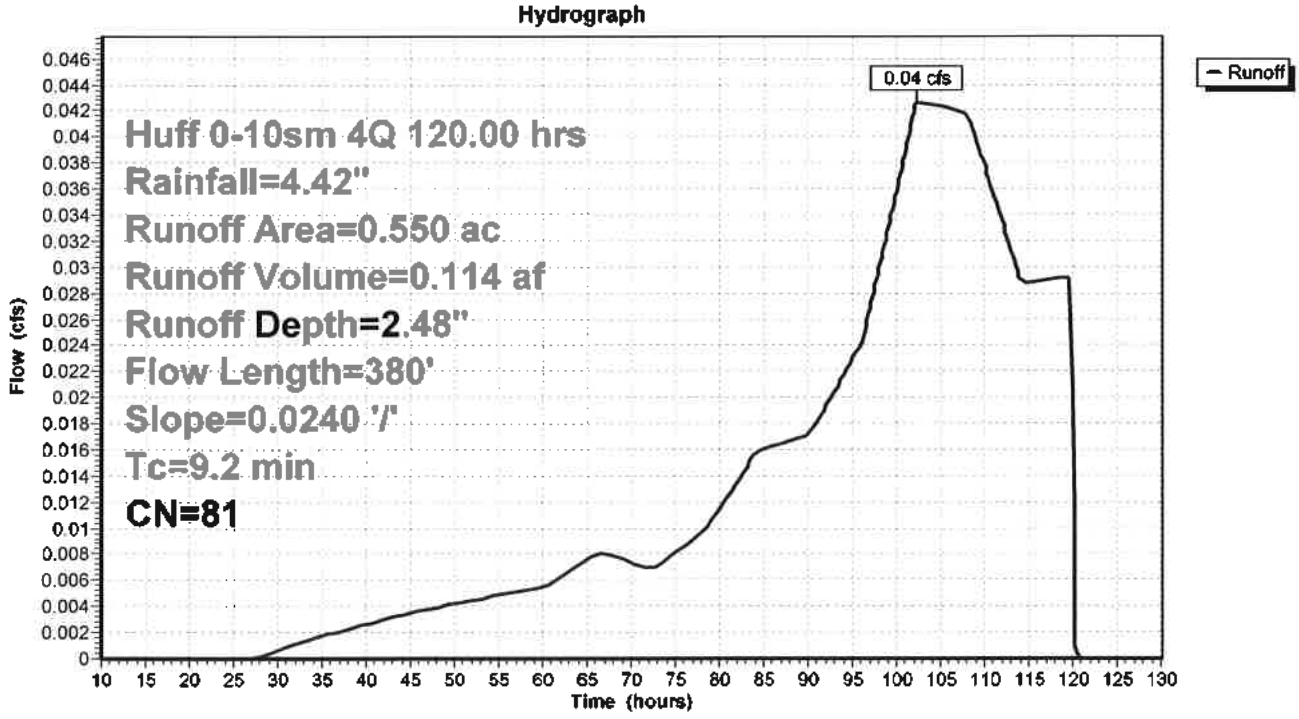
Runoff = 0.04 cfs @ 102.38 hrs, Volume= 0.114 af, Depth= 2.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.05 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=4.42"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 10.00 | 0.12 | 0.00 | 0.00 |
| 12.50 | 0.17 | 0.00 | 0.00 |
| 15.00 | 0.23 | 0.00 | 0.00 |
| 17.50 | 0.29 | 0.00 | 0.00 |
| 20.00 | 0.34 | 0.00 | 0.00 |
| 22.50 | 0.39 | 0.00 | 0.00 |
| 25.00 | 0.43 | 0.00 | 0.00 |
| 27.50 | 0.48 | 0.00 | 0.00 |
| 30.00 | 0.53 | 0.00 | 0.00 |
| 32.50 | 0.59 | 0.01 | 0.00 |
| 35.00 | 0.64 | 0.01 | 0.00 |
| 37.50 | 0.70 | 0.02 | 0.00 |
| 40.00 | 0.76 | 0.03 | 0.00 |
| 42.50 | 0.82 | 0.04 | 0.00 |
| 45.00 | 0.87 | 0.06 | 0.00 |
| 47.50 | 0.93 | 0.08 | 0.00 |
| 50.00 | 0.99 | 0.09 | 0.00 |
| 52.50 | 1.05 | 0.11 | 0.00 |
| 55.00 | 1.11 | 0.14 | 0.00 |
| 57.50 | 1.16 | 0.16 | 0.01 |
| 60.00 | 1.22 | 0.18 | 0.01 |
| 62.50 | 1.28 | 0.21 | 0.01 |
| 65.00 | 1.35 | 0.24 | 0.01 |
| 67.50 | 1.43 | 0.28 | 0.01 |
| 70.00 | 1.49 | 0.31 | 0.01 |
| 72.50 | 1.55 | 0.34 | 0.01 |
| 75.00 | 1.62 | 0.38 | 0.01 |
| 77.50 | 1.69 | 0.42 | 0.01 |
| 80.00 | 1.77 | 0.46 | 0.01 |
| 82.50 | 1.87 | 0.52 | 0.01 |
| 85.00 | 1.98 | 0.59 | 0.02 |
| 87.50 | 2.09 | 0.67 | 0.02 |
| 90.00 | 2.21 | 0.74 | 0.02 |
| 92.50 | 2.33 | 0.83 | 0.02 |
| 95.00 | 2.47 | 0.92 | 0.02 |
| 97.50 | 2.63 | 1.04 | 0.03 |
| 100.00 | 2.83 | 1.18 | **0.04** |
| 102.50 | 3.07 | 1.36 | **0.04** |
| 105.00 | 3.31 | 1.56 | 0.04 |
| 107.50 | 3.55 | 1.75 | 0.04 |
| 110.00 | 3.77 | 1.93 | 0.04 |
| 112.50 | 3.95 | 2.08 | 0.03 |
| 115.00 | 4.11 | 2.22 | 0.03 |
| 117.50 | 4.27 | 2.35 | 0.03 |
| 120.00 | **4.42** | **2.48** | 0.03 |
| 122.50 | 4.42 | 2.48 | 0.00 |
| 125.00 | 4.42 | 2.48 | 0.00 |
| 127.50 | 4.42 | 2.48 | 0.00 |
| 130.00 | 4.42 | 2.48 | 0.00 |

## Summary for Pond 3P: Southeast Chambers

| | | | | |
|---|---|---|---|---|
| Inflow | = | 0.76 cfs @ 102.77 hrs, | Volume= | 2.325 af |
| Outflow | = | 0.56 cfs @ 113.85 hrs, | Volume= | 2.246 af, Atten= 26%, Lag= 664.9 min |
| Primary | = | 0.56 cfs @ 113.85 hrs, | Volume= | 2.246 af |
| Secondary | = | 0.00 cfs @ 10.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ 10.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 10.00-130.00 hrs, dt= 0.05 hrs
Peak Elev= 671.28' @ 113.85 hrs Surf.Area= 28,283 sf Storage= 18,433 cf

Plug-Flow detention time= 364.4 min calculated for 2.245 af (97% of inflow)
Center-of-Mass det. time= 307.3 min ( 5,864.6 - 5,557.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.40' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

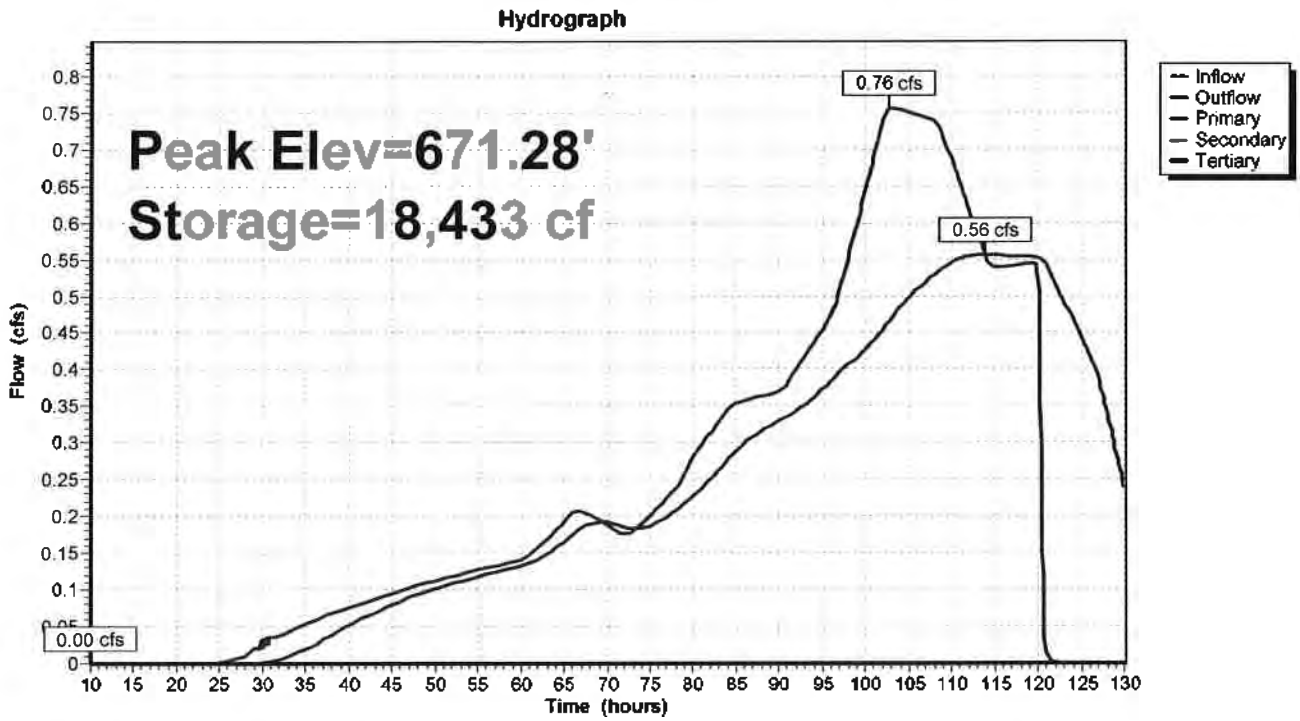
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=0.56 cfs @ 113.85 hrs HW=671.28' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.56 cfs @ 5.04 fps)

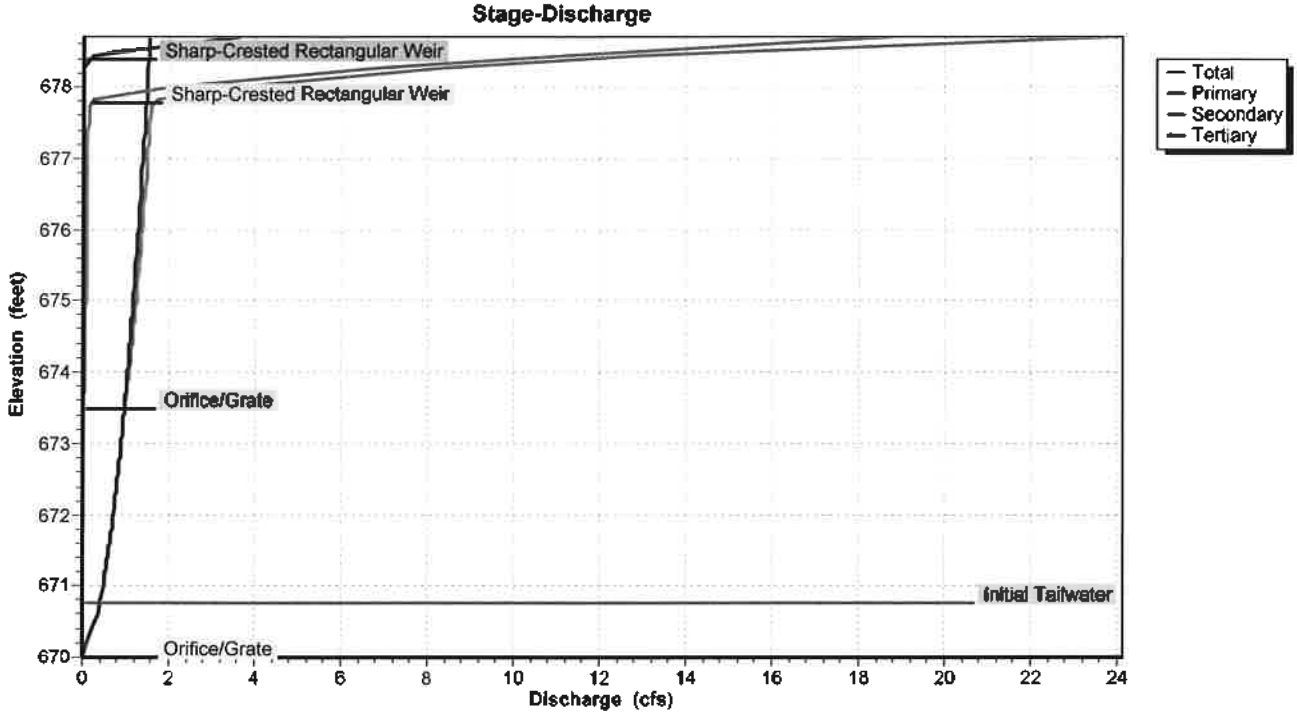
**Secondary OutFlow** Max=0.00 cfs @ 10.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 10.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

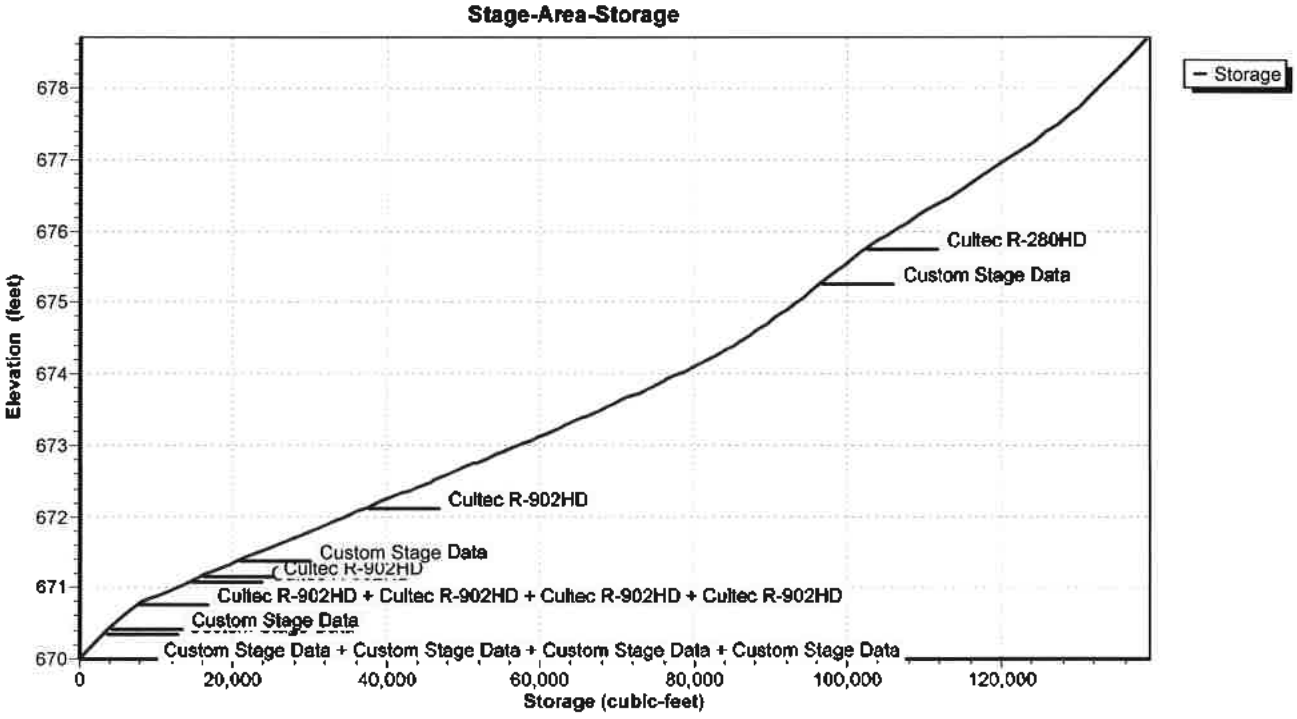
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 12.50 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17.50 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 22.50 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25.00 | 0.00 | 3 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27.50 | 0.01 | 44 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.03 | 194 | 670.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32.50 | 0.04 | 468 | 670.05 | 0.01 | 0.01 | 0.00 | 0.00 |
| 35.00 | 0.05 | 778 | 670.09 | 0.02 | 0.02 | 0.00 | 0.00 |
| 37.50 | 0.07 | 1,067 | 670.12 | 0.04 | 0.04 | 0.00 | 0.00 |
| 40.00 | 0.08 | 1,309 | 670.15 | 0.05 | 0.05 | 0.00 | 0.00 |
| 42.50 | 0.09 | 1,502 | 670.17 | 0.07 | 0.07 | 0.00 | 0.00 |
| 45.00 | 0.10 | 1,658 | 670.19 | 0.08 | 0.08 | 0.00 | 0.00 |
| 47.50 | 0.10 | 1,787 | 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 50.00 | 0.11 | 1,897 | 670.21 | 0.10 | 0.10 | 0.00 | 0.00 |
| 52.50 | 0.12 | 1,993 | 670.22 | 0.11 | 0.11 | 0.00 | 0.00 |
| 55.00 | 0.13 | 2,080 | 670.23 | 0.12 | 0.12 | 0.00 | 0.00 |
| 57.50 | 0.13 | 2,159 | 670.24 | 0.13 | 0.13 | 0.00 | 0.00 |
| 60.00 | 0.14 | 2,231 | 670.25 | 0.13 | 0.13 | 0.00 | 0.00 |
| 62.50 | 0.16 | 2,350 | 670.26 | 0.14 | 0.14 | 0.00 | 0.00 |
| 65.00 | 0.19 | 2,565 | 670.29 | 0.17 | 0.17 | 0.00 | 0.00 |
| 67.50 | 0.20 | 2,801 | 670.31 | 0.19 | 0.19 | 0.00 | 0.00 |
| 70.00 | 0.19 | 2,848 | 670.32 | 0.19 | 0.19 | 0.00 | 0.00 |
| 72.50 | 0.17 | 2,764 | 670.31 | 0.18 | 0.18 | 0.00 | 0.00 |
| 75.00 | 0.20 | 2,788 | 670.31 | 0.19 | 0.19 | 0.00 | 0.00 |
| 77.50 | 0.23 | 2,983 | 670.33 | 0.20 | 0.20 | 0.00 | 0.00 |
| 80.00 | 0.28 | 3,320 | 670.37 | 0.23 | 0.23 | 0.00 | 0.00 |
| 82.50 | 0.32 | 3,846 | 670.42 | 0.26 | 0.26 | 0.00 | 0.00 |
| 85.00 | 0.35 | 4,454 | 670.48 | 0.29 | 0.29 | 0.00 | 0.00 |
| 87.50 | 0.36 | 4,968 | 670.53 | 0.31 | 0.31 | 0.00 | 0.00 |
| 90.00 | 0.37 | 5,364 | 670.57 | 0.33 | 0.33 | 0.00 | 0.00 |
| 92.50 | 0.41 | 5,796 | 670.62 | 0.35 | 0.35 | 0.00 | 0.00 |
| 95.00 | 0.46 | 6,441 | 670.68 | 0.37 | 0.37 | 0.00 | 0.00 |
| 97.50 | 0.53 | 7,321 | 670.76 | 0.40 | 0.40 | 0.00 | 0.00 |
| 100.00 | 0.65 | 8,882 | 670.83 | 0.43 | 0.43 | 0.00 | 0.00 |
| 102.50 | **0.76** | 11,212 | 670.94 | 0.46 | 0.46 | 0.00 | 0.00 |
| 105.00 | **0.75** | 13,680 | 671.06 | 0.50 | 0.50 | 0.00 | 0.00 |
| 107.50 | 0.74 | 15,797 | 671.16 | 0.52 | 0.52 | 0.00 | 0.00 |
| 110.00 | 0.69 | 17,472 | 671.24 | 0.55 | 0.55 | 0.00 | 0.00 |
| 112.50 | 0.60 | **18,318** | **671.28** | **0.55** | **0.55** | 0.00 | 0.00 |
| 115.00 | 0.54 | **18,379** | **671.28** | **0.56** | **0.56** | 0.00 | 0.00 |
| 117.50 | 0.54 | 18,249 | 671.27 | 0.55 | 0.55 | 0.00 | 0.00 |
| 120.00 | 0.55 | 18,159 | 671.27 | 0.55 | 0.55 | 0.00 | 0.00 |
| 122.50 | 0.00 | 14,222 | 671.09 | 0.50 | 0.50 | 0.00 | 0.00 |
| 125.00 | 0.00 | 9,948 | 670.88 | 0.44 | 0.44 | 0.00 | 0.00 |
| 127.50 | 0.00 | 6,243 | 670.66 | 0.37 | 0.37 | 0.00 | 0.00 |
| 130.00 | 0.00 | 3,511 | 670.39 | 0.24 | 0.24 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 18.46 | 1.54 | 15.13 | 1.79 |
| 678.80 | **28.12** | **1.56** | **21.42** | **5.14** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | |
|---|---|---|---|---|
| Inflow | = | 0.38 cfs @ 102.79 hrs, | Volume= | 1.022 af |
| Outflow | = | 0.38 cfs @ 103.23 hrs, | Volume= | 1.021 af, Atten= 0%, Lag= 26.3 min |
| Primary | = | 0.27 cfs @ 103.23 hrs, | Volume= | 0.469 af |
| Secondary | = | 0.11 cfs @ 103.23 hrs, | Volume= | 0.553 af |
| Tertiary | = | 0.00 cfs @ 10.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 10.00-130.00 hrs, dt= 0.05 hrs
Peak Elev= 676.82' @ 103.23 hrs Surf.Area= 1,329 sf Storage= 294 cf

Plug-Flow detention time= 13.9 min calculated for 1.021 af (100% of inflow)
Center-of-Mass det. time= 12.6 min ( 5,698.0 - 5,685.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

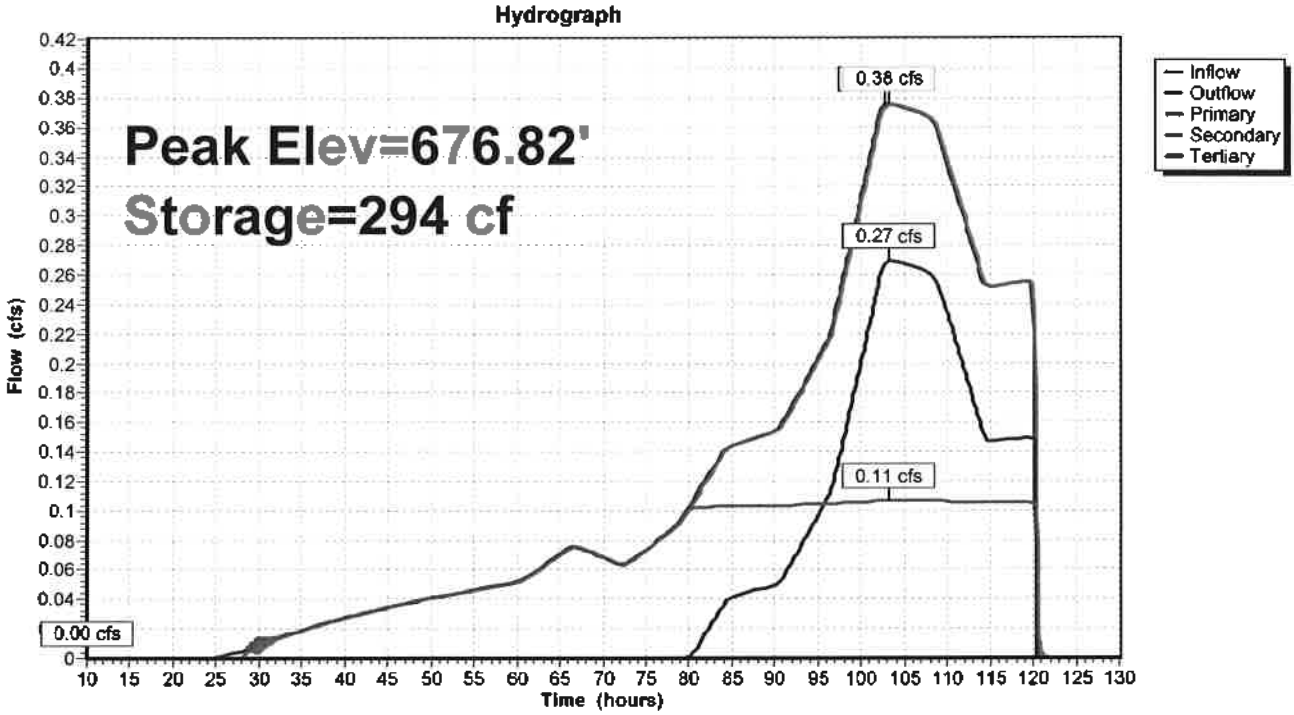
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=0.27 cfs @ 103.23 hrs HW=676.82' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.27 cfs @ 1.92 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

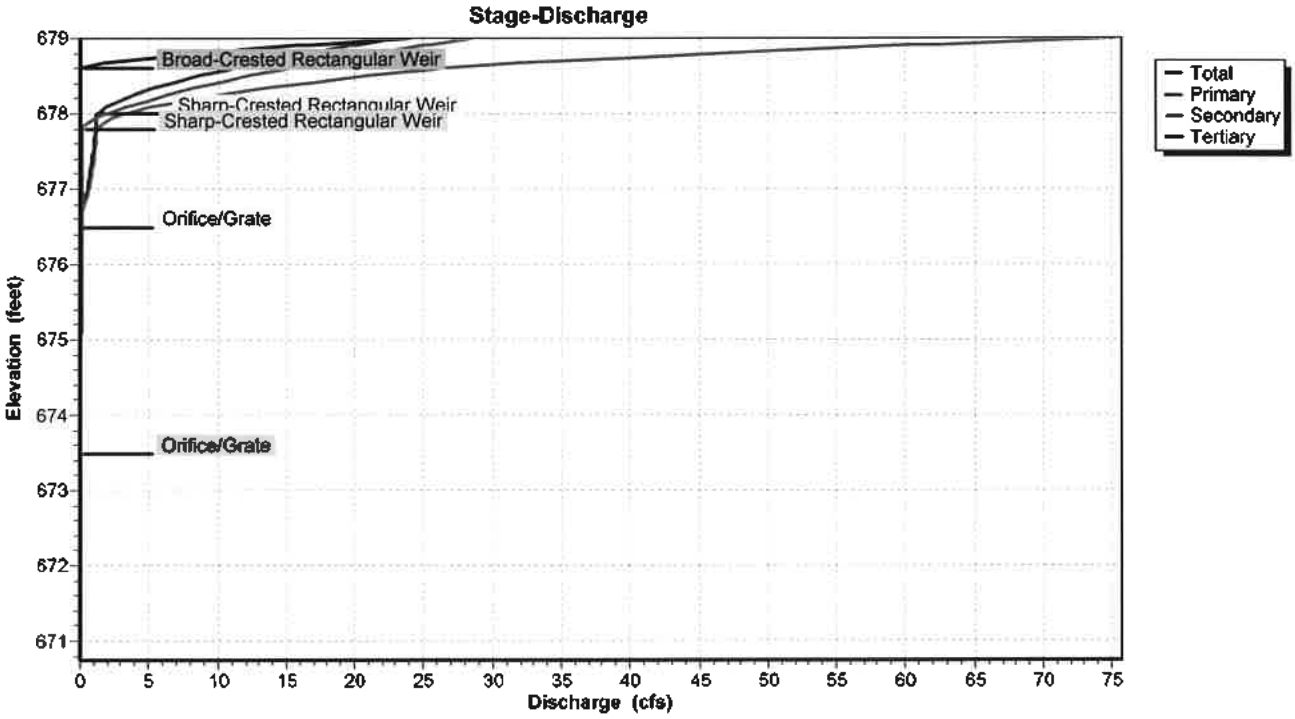
**Secondary OutFlow** Max=0.11 cfs @ 103.23 hrs HW=676.82' TW=670.98' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.11 cfs @ 8.69 fps)
└─**5=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 10.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

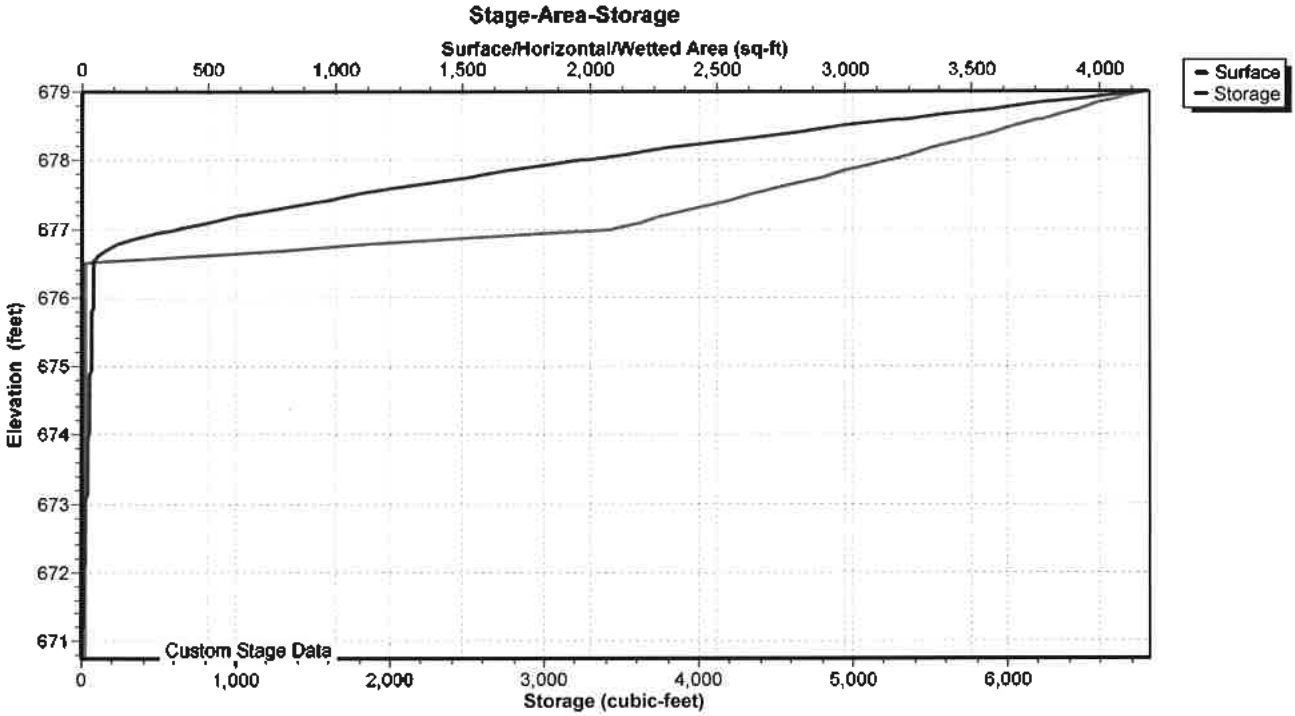
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 12.50 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17.50 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 22.50 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25.00 | 0.00 | 2 | 670.87 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27.50 | 0.00 | 22 | 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.01 | 40 | 673.62 | 0.01 | 0.00 | 0.01 | 0.00 |
| 32.50 | 0.01 | 40 | 673.62 | 0.01 | 0.00 | 0.01 | 0.00 |
| 35.00 | 0.02 | 41 | 673.67 | 0.02 | 0.00 | 0.02 | 0.00 |
| 37.50 | 0.02 | 42 | 673.72 | 0.02 | 0.00 | 0.02 | 0.00 |
| 40.00 | 0.03 | 42 | 673.77 | 0.03 | 0.00 | 0.03 | 0.00 |
| 42.50 | 0.03 | 43 | 673.84 | 0.03 | 0.00 | 0.03 | 0.00 |
| 45.00 | 0.03 | 44 | 673.90 | 0.03 | 0.00 | 0.03 | 0.00 |
| 47.50 | 0.04 | 45 | 673.97 | 0.04 | 0.00 | 0.04 | 0.00 |
| 50.00 | 0.04 | 46 | 674.04 | 0.04 | 0.00 | 0.04 | 0.00 |
| 52.50 | 0.04 | 47 | 674.10 | 0.04 | 0.00 | 0.04 | 0.00 |
| 55.00 | 0.05 | 48 | 674.17 | 0.05 | 0.00 | 0.05 | 0.00 |
| 57.50 | 0.05 | 49 | 674.24 | 0.05 | 0.00 | 0.05 | 0.00 |
| 60.00 | 0.05 | 50 | 674.31 | 0.05 | 0.00 | 0.05 | 0.00 |
| 62.50 | 0.06 | 54 | 674.57 | 0.06 | 0.00 | 0.06 | 0.00 |
| 65.00 | 0.07 | 59 | 674.96 | 0.07 | 0.00 | 0.07 | 0.00 |
| 67.50 | 0.07 | 62 | 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 70.00 | 0.07 | 58 | 674.92 | 0.07 | 0.00 | 0.07 | 0.00 |
| 72.50 | 0.06 | 55 | 674.70 | 0.06 | 0.00 | 0.06 | 0.00 |
| 75.00 | 0.07 | 61 | 675.09 | 0.07 | 0.00 | 0.07 | 0.00 |
| 77.50 | 0.09 | 68 | 675.59 | 0.08 | 0.00 | 0.08 | 0.00 |
| 80.00 | 0.10 | 81 | 676.50 | 0.10 | 0.00 | 0.10 | 0.00 |
| 82.50 | 0.13 | 99 | 676.58 | 0.12 | 0.02 | 0.10 | 0.00 |
| 85.00 | 0.14 | 110 | 676.61 | 0.14 | 0.04 | 0.10 | 0.00 |
| 87.50 | 0.15 | 115 | 676.62 | 0.15 | 0.05 | 0.10 | 0.00 |
| 90.00 | 0.15 | 118 | 676.63 | 0.15 | 0.05 | 0.10 | 0.00 |
| 92.50 | 0.18 | 134 | 676.65 | 0.17 | 0.07 | 0.10 | 0.00 |
| 95.00 | 0.20 | 152 | 676.68 | 0.20 | 0.10 | 0.10 | 0.00 |
| 97.50 | 0.25 | 184 | 676.72 | 0.24 | 0.14 | 0.10 | 0.00 |
| 100.00 | 0.31 | 235 | 676.77 | 0.31 | 0.20 | 0.11 | 0.00 |
| 102.50 | **0.38** | **294** | **676.82** | **0.37** | **0.27** | **0.11** | 0.00 |
| 105.00 | **0.37** | **295** | **676.82** | **0.37** | **0.27** | **0.11** | 0.00 |
| 107.50 | 0.37 | 291 | 676.81 | 0.37 | 0.26 | 0.11 | 0.00 |
| 110.00 | 0.34 | 264 | 676.79 | 0.34 | 0.23 | 0.11 | 0.00 |
| 112.50 | 0.29 | 223 | 676.76 | 0.29 | 0.19 | 0.11 | 0.00 |
| 115.00 | 0.25 | 192 | 676.73 | 0.25 | 0.15 | 0.11 | 0.00 |
| 117.50 | 0.25 | 194 | 676.73 | 0.25 | 0.15 | 0.11 | 0.00 |
| 120.00 | 0.26 | 195 | 676.73 | 0.26 | 0.15 | 0.11 | 0.00 |
| 122.50 | 0.00 | 39 | 673.50 | 0.00 | 0.00 | 0.00 | 0.00 |
| 125.00 | 0.00 | 39 | 673.50 | 0.00 | 0.00 | 0.00 | 0.00 |
| 127.50 | 0.00 | 39 | 673.50 | 0.00 | 0.00 | 0.00 | 0.00 |
| 130.00 | 0.00 | 39 | 673.50 | 0.00 | 0.00 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 23.56 | 9.86 | 13.70 | 0.00 |
| 678.75 | 40.37 | 15.13 | 19.77 | 5.47 |
| 678.95 | **67.61** | **21.27** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

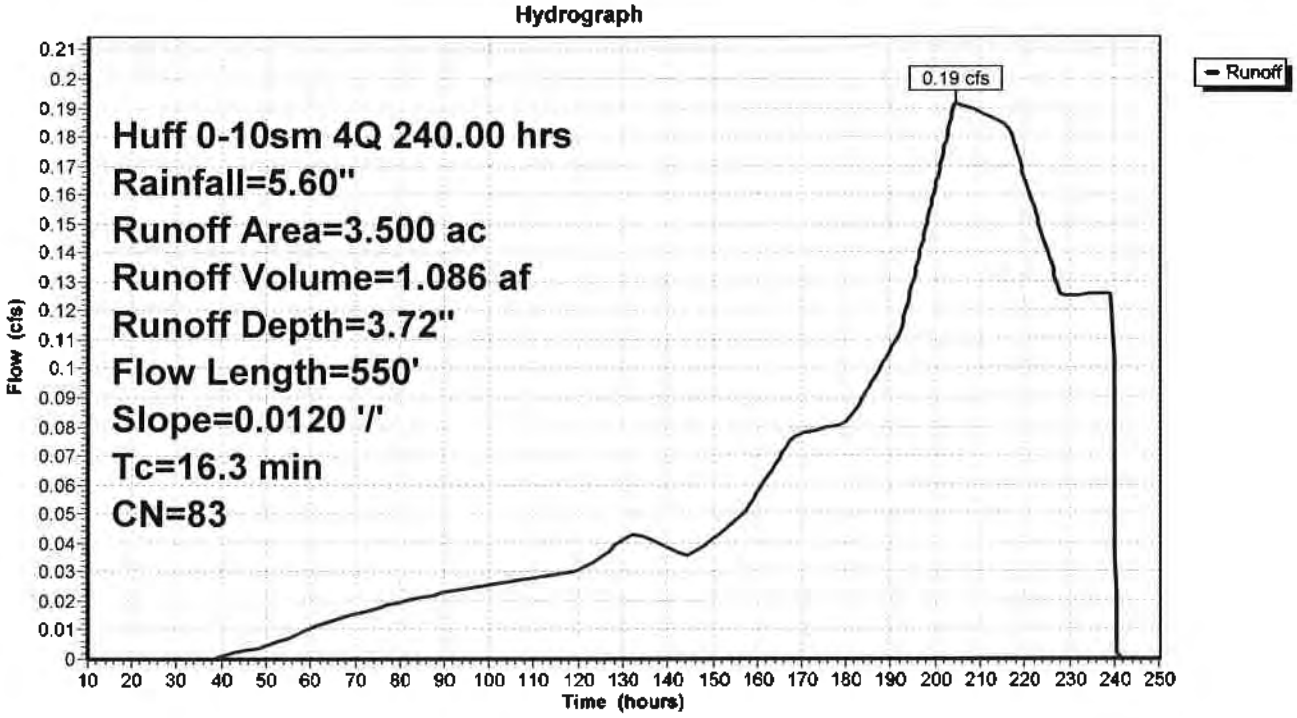
Runoff = 0.19 cfs @ 204.41 hrs, Volume= 1.086 af, Depth= 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.05 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=5.60"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

## Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.04 | 0.00 | 0.00 | 140.00 | 1.89 | 0.62 | 0.04 |
| 12.50 | 0.06 | 0.00 | 0.00 | 142.50 | 1.93 | 0.65 | 0.04 |
| 15.00 | 0.09 | 0.00 | 0.00 | 145.00 | 1.97 | 0.67 | 0.04 |
| 17.50 | 0.12 | 0.00 | 0.00 | 147.50 | 2.01 | 0.70 | 0.04 |
| 20.00 | 0.15 | 0.00 | 0.00 | 150.00 | 2.05 | 0.73 | 0.04 |
| 22.50 | 0.18 | 0.00 | 0.00 | 152.50 | 2.09 | 0.76 | 0.04 |
| 25.00 | 0.22 | 0.00 | 0.00 | 155.00 | 2.14 | 0.79 | 0.05 |
| 27.50 | 0.26 | 0.00 | 0.00 | 157.50 | 2.19 | 0.83 | 0.05 |
| 30.00 | 0.29 | 0.00 | 0.00 | 160.00 | 2.24 | 0.87 | 0.06 |
| 32.50 | 0.33 | 0.00 | 0.00 | 162.50 | 2.30 | 0.91 | 0.06 |
| 35.00 | 0.36 | 0.00 | 0.00 | 165.00 | 2.37 | 0.96 | 0.07 |
| 37.50 | 0.40 | 0.00 | 0.00 | 167.50 | 2.44 | 1.01 | 0.08 |
| 40.00 | 0.43 | 0.00 | 0.00 | 170.00 | 2.51 | 1.06 | 0.08 |
| 42.50 | 0.47 | 0.00 | 0.00 | 172.50 | 2.58 | 1.12 | 0.08 |
| 45.00 | 0.49 | 0.00 | 0.00 | 175.00 | 2.65 | 1.17 | 0.08 |
| 47.50 | 0.52 | 0.01 | 0.00 | 177.50 | 2.73 | 1.23 | 0.08 |
| 50.00 | 0.55 | 0.01 | 0.00 | 180.00 | 2.80 | 1.29 | 0.08 |
| 52.50 | 0.57 | 0.01 | 0.01 | 182.50 | 2.88 | 1.35 | 0.09 |
| 55.00 | 0.60 | 0.02 | 0.01 | 185.00 | 2.96 | 1.41 | 0.09 |
| 57.50 | 0.64 | 0.02 | 0.01 | 187.50 | 3.04 | 1.48 | 0.10 |
| 60.00 | 0.67 | 0.03 | 0.01 | 190.00 | 3.13 | 1.55 | 0.11 |
| 62.50 | 0.71 | 0.04 | 0.01 | 192.50 | 3.23 | 1.63 | 0.11 |
| 65.00 | 0.74 | 0.05 | 0.01 | 195.00 | 3.33 | 1.72 | 0.13 |
| 67.50 | 0.78 | 0.06 | 0.01 | 197.50 | 3.45 | 1.82 | 0.15 |
| 70.00 | 0.82 | 0.07 | 0.02 | 200.00 | 3.58 | 1.93 | 0.16 |
| 72.50 | 0.85 | 0.08 | 0.02 | 202.50 | 3.73 | 2.05 | **0.18** |
| 75.00 | 0.89 | 0.09 | 0.02 | 205.00 | 3.88 | 2.19 | **0.19** |
| 77.50 | 0.93 | 0.10 | 0.02 | 207.50 | 4.04 | 2.32 | 0.19 |
| 80.00 | 0.96 | 0.12 | 0.02 | 210.00 | 4.19 | 2.45 | 0.19 |
| 82.50 | 1.00 | 0.13 | 0.02 | 212.50 | 4.34 | 2.59 | 0.19 |
| 85.00 | 1.04 | 0.15 | 0.02 | 215.00 | 4.49 | 2.72 | 0.18 |
| 87.50 | 1.07 | 0.16 | 0.02 | 217.50 | 4.64 | 2.85 | 0.18 |
| 90.00 | 1.11 | 0.18 | 0.02 | 220.00 | 4.77 | 2.97 | 0.17 |
| 92.50 | 1.14 | 0.19 | 0.02 | 222.50 | 4.89 | 3.08 | 0.15 |
| 95.00 | 1.18 | 0.21 | 0.02 | 225.00 | 5.01 | 3.18 | 0.14 |
| 97.50 | 1.22 | 0.23 | 0.02 | 227.50 | 5.11 | 3.28 | 0.13 |
| 100.00 | 1.25 | 0.25 | 0.03 | 230.00 | 5.21 | 3.37 | 0.12 |
| 102.50 | 1.29 | 0.26 | 0.03 | 232.50 | 5.31 | 3.45 | 0.13 |
| 105.00 | 1.33 | 0.28 | 0.03 | 235.00 | 5.41 | 3.54 | 0.13 |
| 107.50 | 1.36 | 0.30 | 0.03 | 237.50 | 5.50 | 3.63 | 0.13 |
| 110.00 | 1.40 | 0.32 | 0.03 | 240.00 | **5.60** | **3.72** | 0.13 |
| 112.50 | 1.44 | 0.34 | 0.03 | 242.50 | 5.60 | 3.72 | 0.00 |
| 115.00 | 1.47 | 0.36 | 0.03 | 245.00 | 5.60 | 3.72 | 0.00 |
| 117.50 | 1.51 | 0.38 | 0.03 | 247.50 | 5.60 | 3.72 | 0.00 |
| 120.00 | 1.55 | 0.41 | 0.03 | 250.00 | 5.60 | 3.72 | 0.00 |
| 122.50 | 1.58 | 0.43 | 0.03 | | | | |
| 125.00 | 1.62 | 0.45 | 0.04 | | | | |
| 127.50 | 1.67 | 0.48 | 0.04 | | | | |
| 130.00 | 1.71 | 0.51 | 0.04 | | | | |
| 132.50 | 1.76 | 0.54 | 0.04 | | | | |
| 135.00 | 1.81 | 0.57 | 0.04 | | | | |
| 137.50 | 1.85 | 0.60 | 0.04 | | | | |

## Summary for Subcatchment 7S: South Property

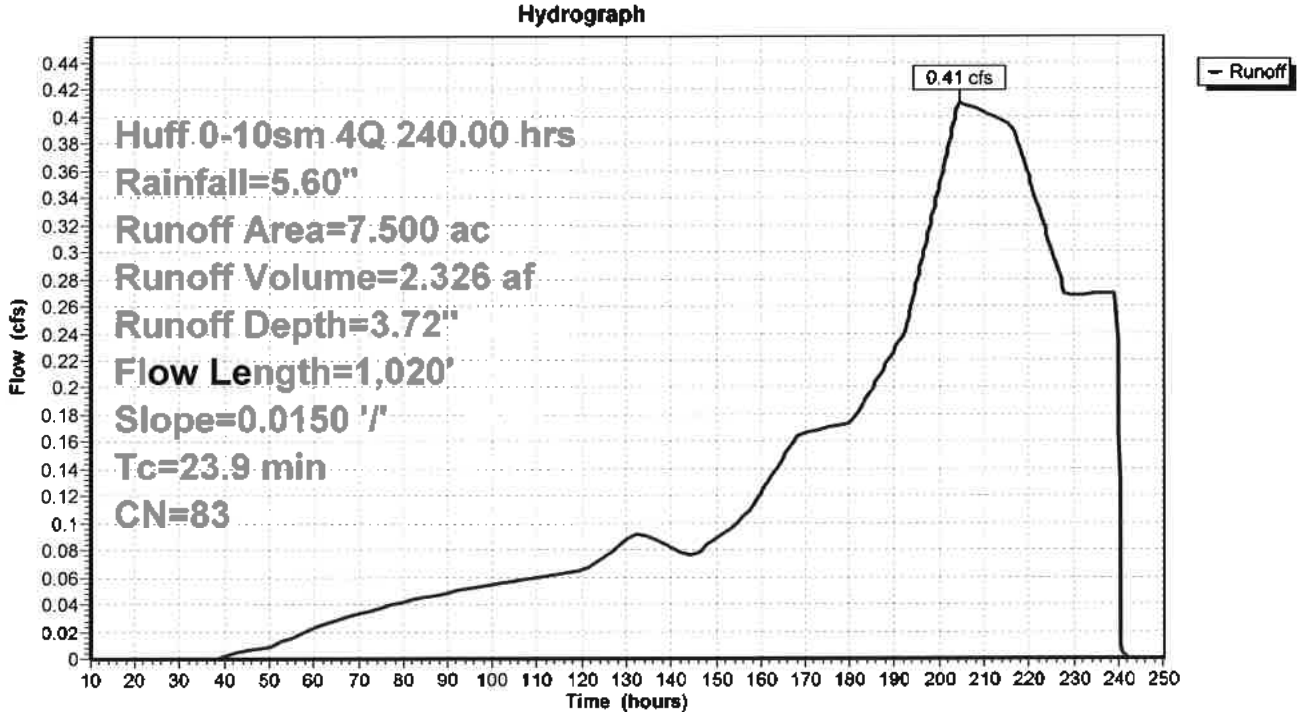
Runoff = 0.41 cfs @ 204.65 hrs, Volume= 2.326 af, Depth= 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.05 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=5.60"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

## Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.04 | 0.00 | 0.00 | 140.00 | 1.89 | 0.62 | 0.08 |
| 12.50 | 0.06 | 0.00 | 0.00 | 142.50 | 1.93 | 0.65 | 0.08 |
| 15.00 | 0.09 | 0.00 | 0.00 | 145.00 | 1.97 | 0.67 | 0.08 |
| 17.50 | 0.12 | 0.00 | 0.00 | 147.50 | 2.01 | 0.70 | 0.08 |
| 20.00 | 0.15 | 0.00 | 0.00 | 150.00 | 2.05 | 0.73 | 0.09 |
| 22.50 | 0.18 | 0.00 | 0.00 | 152.50 | 2.09 | 0.76 | 0.09 |
| 25.00 | 0.22 | 0.00 | 0.00 | 155.00 | 2.14 | 0.79 | 0.10 |
| 27.50 | 0.26 | 0.00 | 0.00 | 157.50 | 2.19 | 0.83 | 0.11 |
| 30.00 | 0.29 | 0.00 | 0.00 | 160.00 | 2.24 | 0.87 | 0.12 |
| 32.50 | 0.33 | 0.00 | 0.00 | 162.50 | 2.30 | 0.91 | 0.13 |
| 35.00 | 0.36 | 0.00 | 0.00 | 165.00 | 2.37 | 0.96 | 0.15 |
| 37.50 | 0.40 | 0.00 | 0.00 | 167.50 | 2.44 | 1.01 | 0.16 |
| 40.00 | 0.43 | 0.00 | 0.00 | 170.00 | 2.51 | 1.06 | 0.17 |
| 42.50 | 0.47 | 0.00 | 0.00 | 172.50 | 2.58 | 1.12 | 0.17 |
| 45.00 | 0.49 | 0.00 | 0.01 | 175.00 | 2.65 | 1.17 | 0.17 |
| 47.50 | 0.52 | 0.01 | 0.01 | 177.50 | 2.73 | 1.23 | 0.17 |
| 50.00 | 0.55 | 0.01 | 0.01 | 180.00 | 2.80 | 1.29 | 0.17 |
| 52.50 | 0.57 | 0.01 | 0.01 | 182.50 | 2.88 | 1.35 | 0.19 |
| 55.00 | 0.60 | 0.02 | 0.02 | 185.00 | 2.96 | 1.41 | 0.20 |
| 57.50 | 0.64 | 0.02 | 0.02 | 187.50 | 3.04 | 1.48 | 0.21 |
| 60.00 | 0.67 | 0.03 | 0.02 | 190.00 | 3.13 | 1.55 | 0.23 |
| 62.50 | 0.71 | 0.04 | 0.03 | 192.50 | 3.23 | 1.63 | 0.24 |
| 65.00 | 0.74 | 0.05 | 0.03 | 195.00 | 3.33 | 1.72 | 0.28 |
| 67.50 | 0.78 | 0.06 | 0.03 | 197.50 | 3.45 | 1.82 | 0.31 |
| 70.00 | 0.82 | 0.07 | 0.03 | 200.00 | 3.58 | 1.93 | 0.35 |
| 72.50 | 0.85 | 0.08 | 0.04 | 202.50 | 3.73 | 2.05 | **0.38** |
| 75.00 | 0.89 | 0.09 | 0.04 | 205.00 | 3.88 | 2.19 | **0.41** |
| 77.50 | 0.93 | 0.10 | 0.04 | 207.50 | 4.04 | 2.32 | 0.41 |
| 80.00 | 0.96 | 0.12 | 0.04 | 210.00 | 4.19 | 2.45 | 0.40 |
| 82.50 | 1.00 | 0.13 | 0.04 | 212.50 | 4.34 | 2.59 | 0.40 |
| 85.00 | 1.04 | 0.15 | 0.05 | 215.00 | 4.49 | 2.72 | 0.40 |
| 87.50 | 1.07 | 0.16 | 0.05 | 217.50 | 4.64 | 2.85 | 0.38 |
| 90.00 | 1.11 | 0.18 | 0.05 | 220.00 | 4.77 | 2.97 | 0.36 |
| 92.50 | 1.14 | 0.19 | 0.05 | 222.50 | 4.89 | 3.08 | 0.33 |
| 95.00 | 1.18 | 0.21 | 0.05 | 225.00 | 5.01 | 3.18 | 0.30 |
| 97.50 | 1.22 | 0.23 | 0.05 | 227.50 | 5.11 | 3.28 | 0.28 |
| 100.00 | 1.25 | 0.25 | 0.05 | 230.00 | 5.21 | 3.37 | 0.27 |
| 102.50 | 1.29 | 0.26 | 0.06 | 232.50 | 5.31 | 3.45 | 0.27 |
| 105.00 | 1.33 | 0.28 | 0.06 | 235.00 | 5.41 | 3.54 | 0.27 |
| 107.50 | 1.36 | 0.30 | 0.06 | 237.50 | 5.50 | 3.63 | 0.27 |
| 110.00 | 1.40 | 0.32 | 0.06 | 240.00 | **5.60** | **3.72** | 0.27 |
| 112.50 | 1.44 | 0.34 | 0.06 | 242.50 | 5.60 | 3.72 | 0.00 |
| 115.00 | 1.47 | 0.36 | 0.06 | 245.00 | 5.60 | 3.72 | 0.00 |
| 117.50 | 1.51 | 0.38 | 0.06 | 247.50 | 5.60 | 3.72 | 0.00 |
| 120.00 | 1.55 | 0.41 | 0.06 | 250.00 | 5.60 | 3.72 | 0.00 |
| 122.50 | 1.58 | 0.43 | 0.07 | | | | |
| 125.00 | 1.62 | 0.45 | 0.08 | | | | |
| 127.50 | 1.67 | 0.48 | 0.08 | | | | |
| 130.00 | 1.71 | 0.51 | 0.09 | | | | |
| 132.50 | 1.76 | 0.54 | 0.09 | | | | |
| 135.00 | 1.81 | 0.57 | 0.09 | | | | |
| 137.50 | 1.85 | 0.60 | 0.09 | | | | |

## Summary for Subcatchment 8S: Northwood Drive Bypass

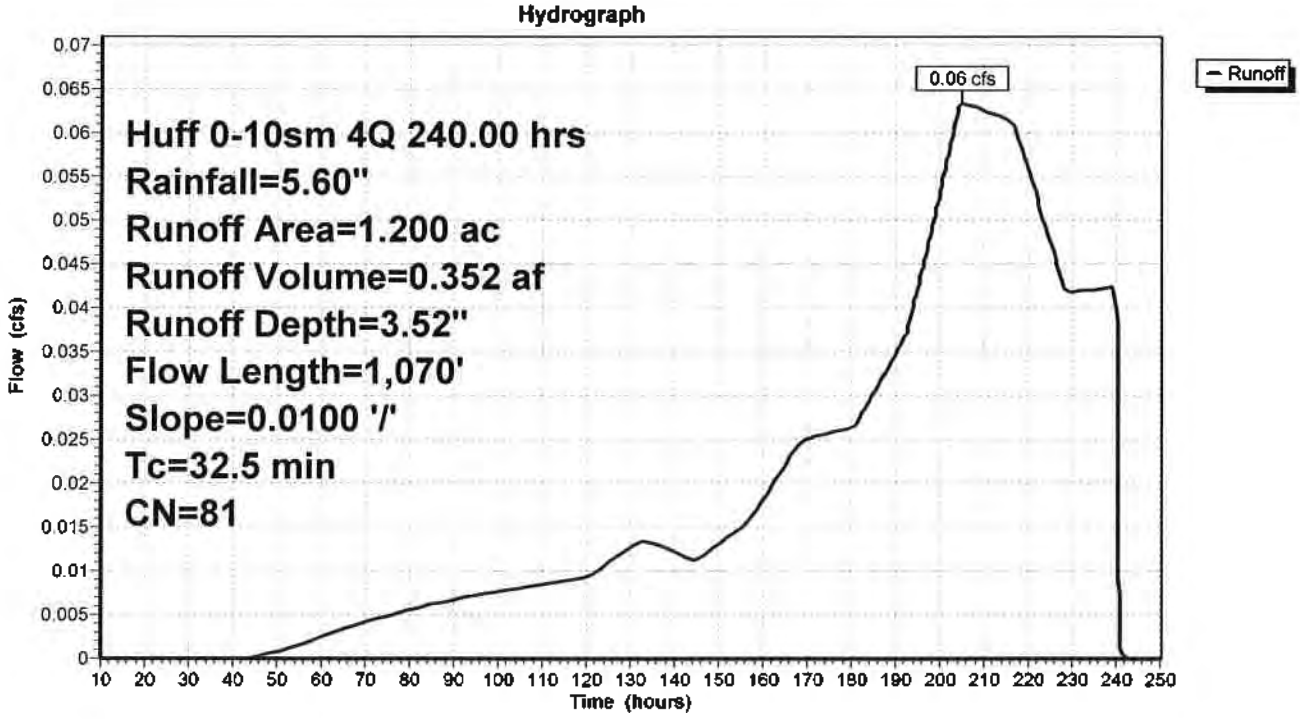
Runoff = 0.06 cfs @ 204.99 hrs, Volume= 0.352 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.05 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=5.60"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.04 | 0.00 | 0.00 | 140.00 | 1.89 | 0.54 | 0.01 |
| 12.50 | 0.06 | 0.00 | 0.00 | 142.50 | 1.93 | 0.56 | 0.01 |
| 15.00 | 0.09 | 0.00 | 0.00 | 145.00 | 1.97 | 0.58 | 0.01 |
| 17.50 | 0.12 | 0.00 | 0.00 | 147.50 | 2.01 | 0.61 | 0.01 |
| 20.00 | 0.15 | 0.00 | 0.00 | 150.00 | 2.05 | 0.64 | 0.01 |
| 22.50 | 0.18 | 0.00 | 0.00 | 152.50 | 2.09 | 0.66 | 0.01 |
| 25.00 | 0.22 | 0.00 | 0.00 | 155.00 | 2.14 | 0.69 | 0.01 |
| 27.50 | 0.26 | 0.00 | 0.00 | 157.50 | 2.19 | 0.73 | 0.02 |
| 30.00 | 0.29 | 0.00 | 0.00 | 160.00 | 2.24 | 0.76 | 0.02 |
| 32.50 | 0.33 | 0.00 | 0.00 | 162.50 | 2.30 | 0.80 | 0.02 |
| 35.00 | 0.36 | 0.00 | 0.00 | 165.00 | 2.37 | 0.85 | 0.02 |
| 37.50 | 0.40 | 0.00 | 0.00 | 167.50 | 2.44 | 0.90 | 0.02 |
| 40.00 | 0.43 | 0.00 | 0.00 | 170.00 | 2.51 | 0.95 | 0.03 |
| 42.50 | 0.47 | 0.00 | 0.00 | 172.50 | 2.58 | 1.00 | 0.03 |
| 45.00 | 0.49 | 0.00 | 0.00 | 175.00 | 2.65 | 1.05 | 0.03 |
| 47.50 | 0.52 | 0.00 | 0.00 | 177.50 | 2.73 | 1.11 | 0.03 |
| 50.00 | 0.55 | 0.00 | 0.00 | 180.00 | 2.80 | 1.16 | 0.03 |
| 52.50 | 0.57 | 0.00 | 0.00 | 182.50 | 2.88 | 1.22 | 0.03 |
| 55.00 | 0.60 | 0.01 | 0.00 | 185.00 | 2.96 | 1.28 | 0.03 |
| 57.50 | 0.64 | 0.01 | 0.00 | 187.50 | 3.04 | 1.35 | 0.03 |
| 60.00 | 0.67 | 0.02 | 0.00 | 190.00 | 3.13 | 1.42 | 0.03 |
| 62.50 | 0.71 | 0.02 | 0.00 | 192.50 | 3.23 | 1.49 | 0.04 |
| 65.00 | 0.74 | 0.03 | 0.00 | 195.00 | 3.33 | 1.58 | 0.04 |
| 67.50 | 0.78 | 0.04 | 0.00 | 197.50 | 3.45 | 1.67 | 0.05 |
| 70.00 | 0.82 | 0.04 | 0.00 | 200.00 | 3.58 | 1.78 | 0.05 |
| 72.50 | 0.85 | 0.05 | 0.00 | 202.50 | 3.73 | 1.90 | 0.06 |
| 75.00 | 0.89 | 0.06 | 0.00 | 205.00 | 3.88 | 2.02 | **0.06** |
| 77.50 | 0.93 | 0.07 | 0.01 | 207.50 | 4.04 | 2.15 | 0.06 |
| 80.00 | 0.96 | 0.09 | 0.01 | 210.00 | 4.19 | 2.28 | 0.06 |
| 82.50 | 1.00 | 0.10 | 0.01 | 212.50 | 4.34 | 2.41 | 0.06 |
| 85.00 | 1.04 | 0.11 | 0.01 | 215.00 | 4.49 | 2.54 | 0.06 |
| 87.50 | 1.07 | 0.12 | 0.01 | 217.50 | 4.64 | 2.67 | 0.06 |
| 90.00 | 1.11 | 0.14 | 0.01 | 220.00 | 4.77 | 2.78 | 0.06 |
| 92.50 | 1.14 | 0.15 | 0.01 | 222.50 | 4.89 | 2.89 | 0.05 |
| 95.00 | 1.18 | 0.17 | 0.01 | 225.00 | 5.01 | 2.99 | 0.05 |
| 97.50 | 1.22 | 0.18 | 0.01 | 227.50 | 5.11 | 3.09 | 0.04 |
| 100.00 | 1.25 | 0.20 | 0.01 | 230.00 | 5.21 | 3.17 | 0.04 |
| 102.50 | 1.29 | 0.21 | 0.01 | 232.50 | 5.31 | 3.26 | 0.04 |
| 105.00 | 1.33 | 0.23 | 0.01 | 235.00 | 5.41 | 3.35 | 0.04 |
| 107.50 | 1.36 | 0.25 | 0.01 | 237.50 | 5.50 | 3.43 | 0.04 |
| 110.00 | 1.40 | 0.26 | 0.01 | 240.00 | **5.60** | **3.52** | 0.04 |
| 112.50 | 1.44 | 0.28 | 0.01 | 242.50 | 5.60 | 3.52 | 0.00 |
| 115.00 | 1.47 | 0.30 | 0.01 | 245.00 | 5.60 | 3.52 | 0.00 |
| 117.50 | 1.51 | 0.32 | 0.01 | 247.50 | 5.60 | 3.52 | 0.00 |
| 120.00 | 1.55 | 0.34 | 0.01 | 250.00 | 5.60 | 3.52 | 0.00 |
| 122.50 | 1.58 | 0.36 | 0.01 | | | | |
| 125.00 | 1.62 | 0.38 | 0.01 | | | | |
| 127.50 | 1.67 | 0.40 | 0.01 | | | | |
| 130.00 | 1.71 | 0.43 | 0.01 | | | | |
| 132.50 | 1.76 | 0.46 | 0.01 | | | | |
| 135.00 | 1.81 | 0.49 | 0.01 | | | | |
| 137.50 | 1.85 | 0.51 | 0.01 | | | | |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

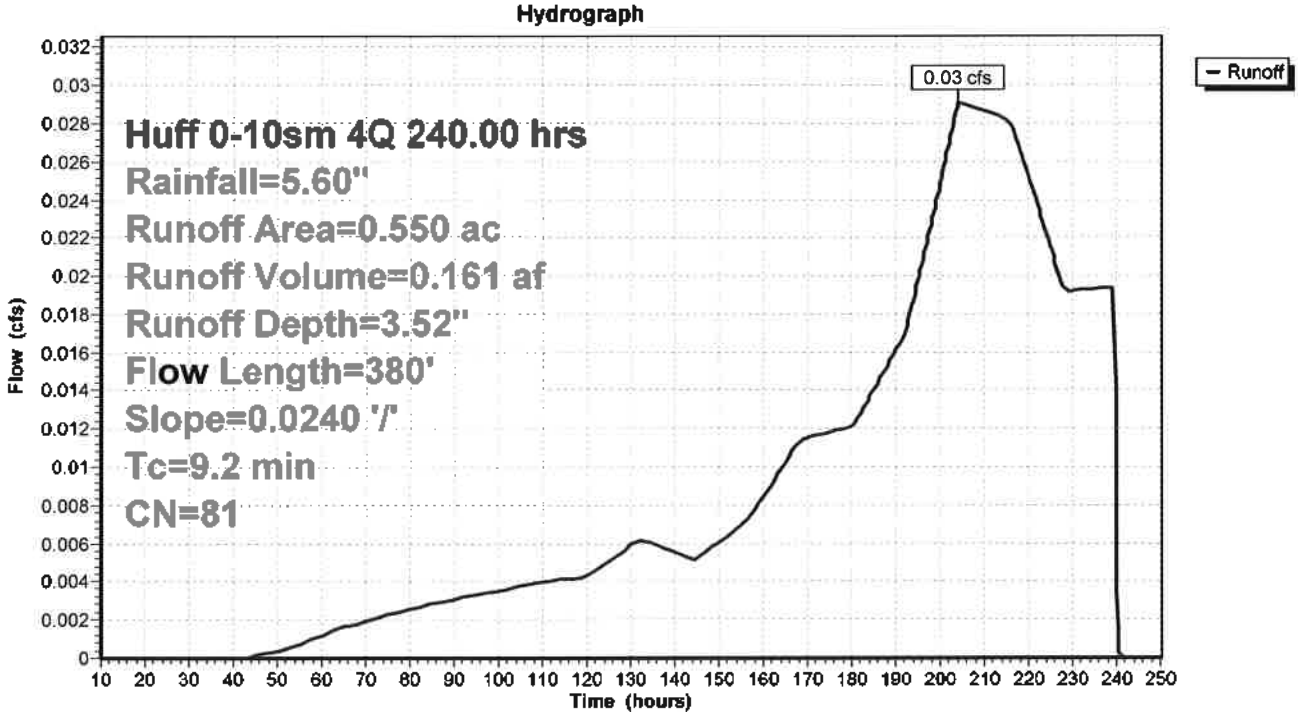
Runoff = 0.03 cfs @ 204.26 hrs, Volume= 0.161 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.05 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=5.60"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.04 | 0.00 | 0.00 | 140.00 | 1.89 | 0.54 | 0.01 |
| 12.50 | 0.06 | 0.00 | 0.00 | 142.50 | 1.93 | 0.56 | 0.01 |
| 15.00 | 0.09 | 0.00 | 0.00 | 145.00 | 1.97 | 0.58 | 0.01 |
| 17.50 | 0.12 | 0.00 | 0.00 | 147.50 | 2.01 | 0.61 | 0.01 |
| 20.00 | 0.15 | 0.00 | 0.00 | 150.00 | 2.05 | 0.64 | 0.01 |
| 22.50 | 0.18 | 0.00 | 0.00 | 152.50 | 2.09 | 0.66 | 0.01 |
| 25.00 | 0.22 | 0.00 | 0.00 | 155.00 | 2.14 | 0.69 | 0.01 |
| 27.50 | 0.26 | 0.00 | 0.00 | 157.50 | 2.19 | 0.73 | 0.01 |
| 30.00 | 0.29 | 0.00 | 0.00 | 160.00 | 2.24 | 0.76 | 0.01 |
| 32.50 | 0.33 | 0.00 | 0.00 | 162.50 | 2.30 | 0.80 | 0.01 |
| 35.00 | 0.36 | 0.00 | 0.00 | 165.00 | 2.37 | 0.85 | 0.01 |
| 37.50 | 0.40 | 0.00 | 0.00 | 167.50 | 2.44 | 0.90 | 0.01 |
| 40.00 | 0.43 | 0.00 | 0.00 | 170.00 | 2.51 | 0.95 | 0.01 |
| 42.50 | 0.47 | 0.00 | 0.00 | 172.50 | 2.58 | 1.00 | 0.01 |
| 45.00 | 0.49 | 0.00 | 0.00 | 175.00 | 2.65 | 1.05 | 0.01 |
| 47.50 | 0.52 | 0.00 | 0.00 | 177.50 | 2.73 | 1.11 | 0.01 |
| 50.00 | 0.55 | 0.00 | 0.00 | 180.00 | 2.80 | 1.16 | 0.01 |
| 52.50 | 0.57 | 0.00 | 0.00 | 182.50 | 2.88 | 1.22 | 0.01 |
| 55.00 | 0.60 | 0.01 | 0.00 | 185.00 | 2.96 | 1.28 | 0.01 |
| 57.50 | 0.64 | 0.01 | 0.00 | 187.50 | 3.04 | 1.35 | 0.02 |
| 60.00 | 0.67 | 0.02 | 0.00 | 190.00 | 3.13 | 1.42 | 0.02 |
| 62.50 | 0.71 | 0.02 | 0.00 | 192.50 | 3.23 | 1.49 | 0.02 |
| 65.00 | 0.74 | 0.03 | 0.00 | 195.00 | 3.33 | 1.58 | 0.02 |
| 67.50 | 0.78 | 0.04 | 0.00 | 197.50 | 3.45 | 1.67 | 0.02 |
| 70.00 | 0.82 | 0.04 | 0.00 | 200.00 | 3.58 | 1.78 | 0.02 |
| 72.50 | 0.85 | 0.05 | 0.00 | 202.50 | 3.73 | 1.90 | **0.03** |
| 75.00 | 0.89 | 0.06 | 0.00 | 205.00 | 3.88 | 2.02 | **0.03** |
| 77.50 | 0.93 | 0.07 | 0.00 | 207.50 | 4.04 | 2.15 | 0.03 |
| 80.00 | 0.96 | 0.09 | 0.00 | 210.00 | 4.19 | 2.28 | 0.03 |
| 82.50 | 1.00 | 0.10 | 0.00 | 212.50 | 4.34 | 2.41 | 0.03 |
| 85.00 | 1.04 | 0.11 | 0.00 | 215.00 | 4.49 | 2.54 | 0.03 |
| 87.50 | 1.07 | 0.12 | 0.00 | 217.50 | 4.64 | 2.67 | 0.03 |
| 90.00 | 1.11 | 0.14 | 0.00 | 220.00 | 4.77 | 2.78 | 0.03 |
| 92.50 | 1.14 | 0.15 | 0.00 | 222.50 | 4.89 | 2.89 | 0.02 |
| 95.00 | 1.18 | 0.17 | 0.00 | 225.00 | 5.01 | 2.99 | 0.02 |
| 97.50 | 1.22 | 0.18 | 0.00 | 227.50 | 5.11 | 3.09 | 0.02 |
| 100.00 | 1.25 | 0.20 | 0.00 | 230.00 | 5.21 | 3.17 | 0.02 |
| 102.50 | 1.29 | 0.21 | 0.00 | 232.50 | 5.31 | 3.26 | 0.02 |
| 105.00 | 1.33 | 0.23 | 0.00 | 235.00 | 5.41 | 3.35 | 0.02 |
| 107.50 | 1.36 | 0.25 | 0.00 | 237.50 | 5.50 | 3.43 | 0.02 |
| 110.00 | 1.40 | 0.26 | 0.00 | 240.00 | **5.60** | **3.52** | 0.02 |
| 112.50 | 1.44 | 0.28 | 0.00 | 242.50 | 5.60 | 3.52 | 0.00 |
| 115.00 | 1.47 | 0.30 | 0.00 | 245.00 | 5.60 | 3.52 | 0.00 |
| 117.50 | 1.51 | 0.32 | 0.00 | 247.50 | 5.60 | 3.52 | 0.00 |
| 120.00 | 1.55 | 0.34 | 0.00 | 250.00 | 5.60 | 3.52 | 0.00 |
| 122.50 | 1.58 | 0.36 | 0.00 | | | | |
| 125.00 | 1.62 | 0.38 | 0.01 | | | | |
| 127.50 | 1.67 | 0.40 | 0.01 | | | | |
| 130.00 | 1.71 | 0.43 | 0.01 | | | | |
| 132.50 | 1.76 | 0.46 | 0.01 | | | | |
| 135.00 | 1.81 | 0.49 | 0.01 | | | | |
| 137.50 | 1.85 | 0.51 | 0.01 | | | | |

## Summary for Pond 3P: Southeast Chambers

| | | | | |
|---|---|---|---|---|
| Inflow | = | 0.54 cfs @ 204.64 hrs, | Volume= | 3.492 af |
| Outflow | = | 0.48 cfs @ 220.43 hrs, | Volume= | 3.463 af, Atten= 12%, Lag= 947.7 min |
| Primary | = | 0.48 cfs @ 220.43 hrs, | Volume= | 3.463 af |
| Secondary | = | 0.00 cfs @ 10.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ 10.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 10.00-250.00 hrs, dt= 0.05 hrs
Peak Elev= 671.01' @ 220.43 hrs Surf.Area= 28,232 sf Storage= 12,515 cf

Plug-Flow detention time= 327.4 min calculated for 3.463 af (99% of inflow)
Center-of-Mass det. time= 298.5 min ( 11,225.4 - 10,926.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.40' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

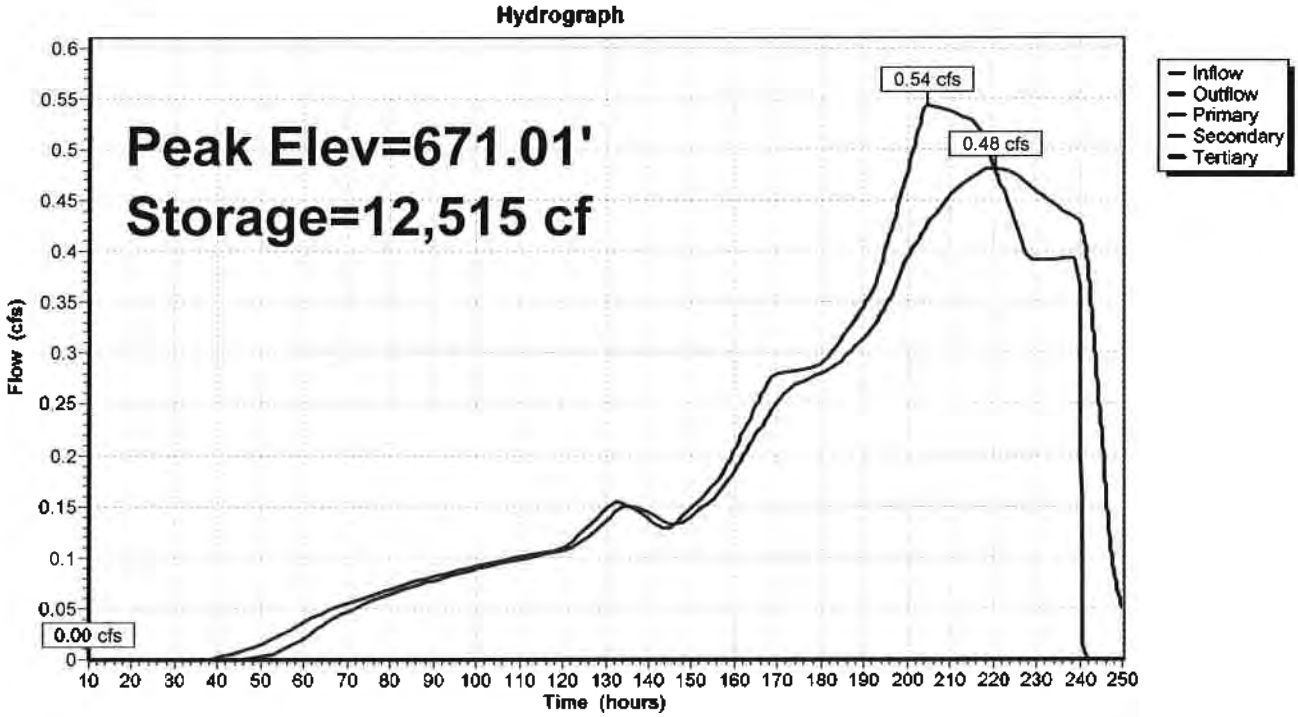
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=0.48 cfs @ 220.43 hrs HW=671.01' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.48 cfs @ 4.36 fps)

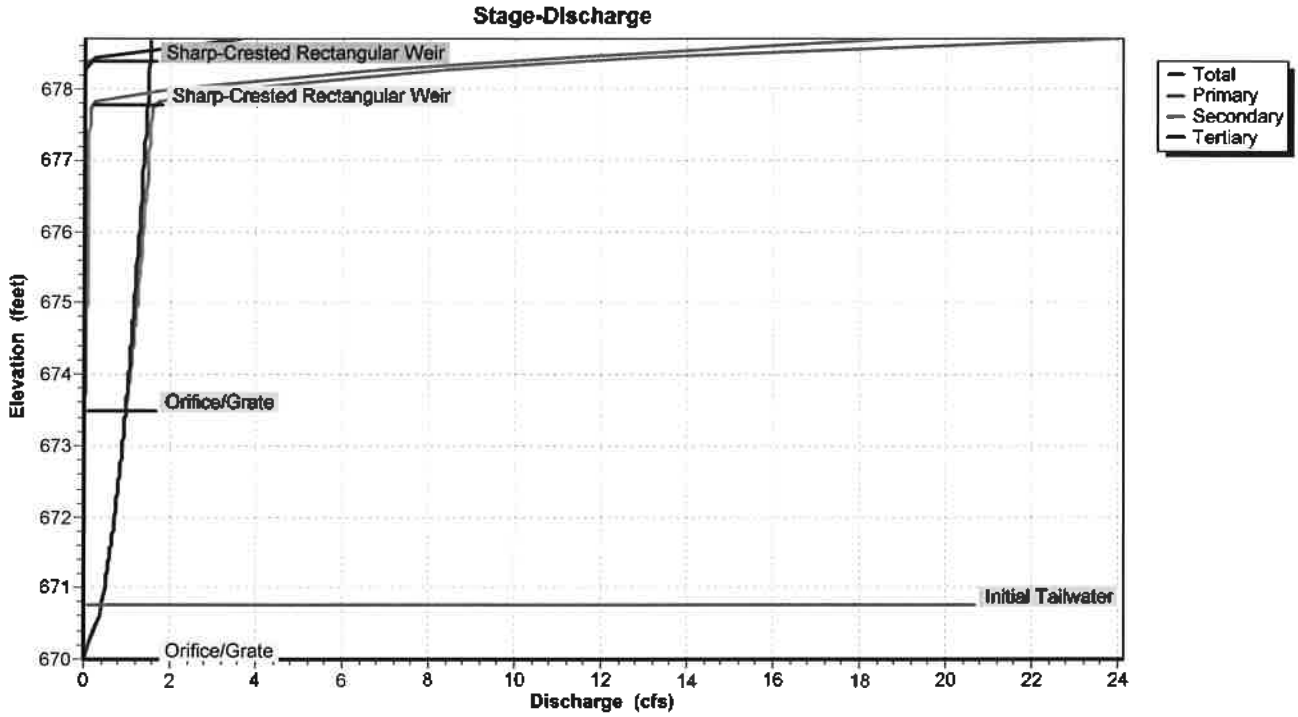
**Secondary OutFlow** Max=0.00 cfs @ 10.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 10.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

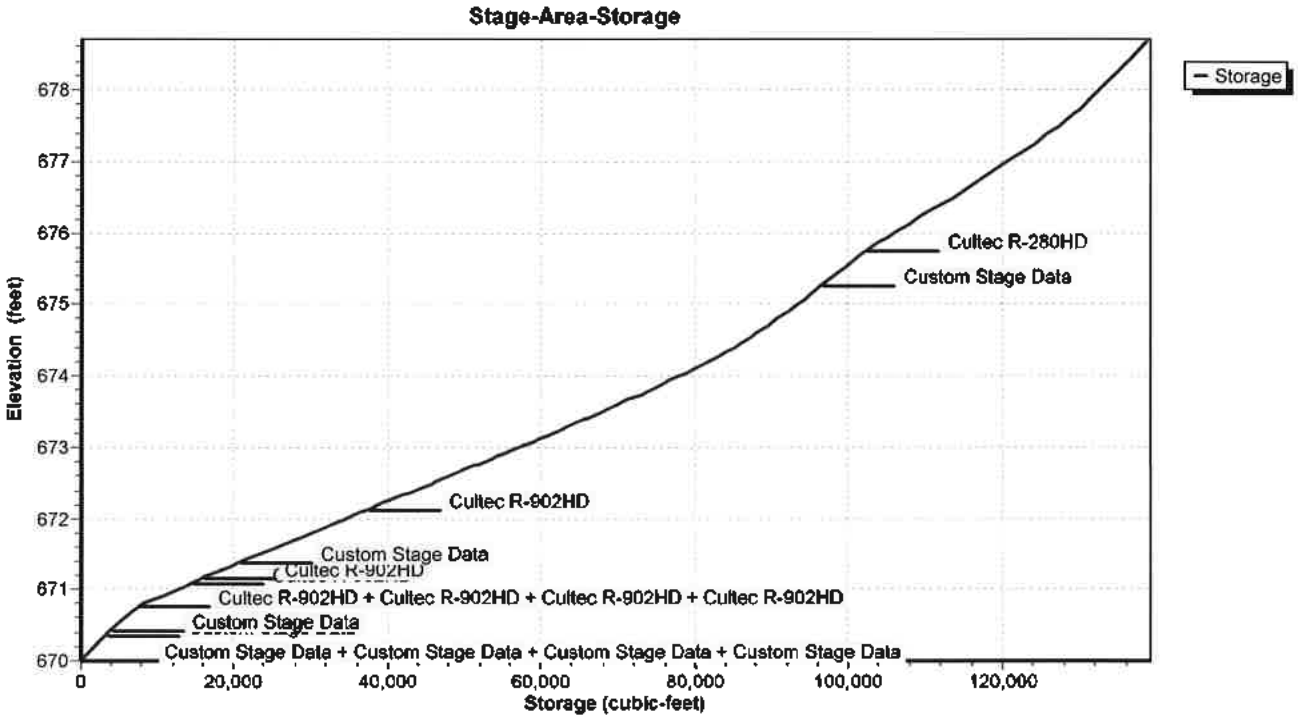
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 15.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.00 | 5 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 45.00 | 0.01 | 82 | 670.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50.00 | 0.01 | 272 | 670.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| 55.00 | 0.02 | 523 | 670.06 | 0.01 | 0.01 | 0.00 | 0.00 |
| 60.00 | 0.04 | 811 | 670.09 | 0.02 | 0.02 | 0.00 | 0.00 |
| 65.00 | 0.05 | 1,062 | 670.12 | 0.04 | 0.04 | 0.00 | 0.00 |
| 70.00 | 0.05 | 1,234 | 670.14 | 0.05 | 0.05 | 0.00 | 0.00 |
| 75.00 | 0.06 | 1,362 | 670.15 | 0.06 | 0.06 | 0.00 | 0.00 |
| 80.00 | 0.07 | 1,464 | 670.16 | 0.06 | 0.06 | 0.00 | 0.00 |
| 85.00 | 0.08 | 1,551 | 670.17 | 0.07 | 0.07 | 0.00 | 0.00 |
| 90.00 | 0.08 | 1,627 | 670.18 | 0.08 | 0.08 | 0.00 | 0.00 |
| 95.00 | 0.09 | 1,694 | 670.19 | 0.08 | 0.08 | 0.00 | 0.00 |
| 100.00 | 0.09 | 1,755 | 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 105.00 | 0.10 | 1,810 | 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 110.00 | 0.10 | 1,860 | 670.21 | 0.10 | 0.10 | 0.00 | 0.00 |
| 115.00 | 0.10 | 1,906 | 670.21 | 0.10 | 0.10 | 0.00 | 0.00 |
| 120.00 | 0.11 | 1,949 | 670.22 | 0.11 | 0.11 | 0.00 | 0.00 |
| 125.00 | 0.13 | 2,063 | 670.23 | 0.12 | 0.12 | 0.00 | 0.00 |
| 130.00 | 0.15 | 2,255 | 670.25 | 0.14 | 0.14 | 0.00 | 0.00 |
| 135.00 | 0.15 | 2,407 | 670.27 | 0.15 | 0.15 | 0.00 | 0.00 |
| 140.00 | 0.14 | 2,344 | 670.26 | 0.14 | 0.14 | 0.00 | 0.00 |
| 145.00 | 0.13 | 2,220 | 670.25 | 0.13 | 0.13 | 0.00 | 0.00 |
| 150.00 | 0.15 | 2,296 | 670.26 | 0.14 | 0.14 | 0.00 | 0.00 |
| 155.00 | 0.17 | 2,487 | 670.28 | 0.16 | 0.16 | 0.00 | 0.00 |
| 160.00 | 0.21 | 2,766 | 670.31 | 0.18 | 0.18 | 0.00 | 0.00 |
| 165.00 | 0.25 | 3,195 | 670.36 | 0.22 | 0.22 | 0.00 | 0.00 |
| 170.00 | 0.28 | 3,761 | 670.41 | 0.25 | 0.25 | 0.00 | 0.00 |
| 175.00 | 0.28 | 4,092 | 670.45 | 0.27 | 0.27 | 0.00 | 0.00 |
| 180.00 | 0.29 | 4,267 | 670.46 | 0.28 | 0.28 | 0.00 | 0.00 |
| 185.00 | 0.32 | 4,541 | 670.49 | 0.29 | 0.29 | 0.00 | 0.00 |
| 190.00 | 0.35 | 5,031 | 670.54 | 0.32 | 0.32 | 0.00 | 0.00 |
| 195.00 | 0.40 | 5,738 | 670.61 | 0.35 | 0.35 | 0.00 | 0.00 |
| 200.00 | **0.48** | 6,999 | 670.73 | 0.39 | 0.39 | 0.00 | 0.00 |
| 205.00 | **0.54** | 8,874 | 670.83 | 0.43 | 0.43 | 0.00 | 0.00 |
| 210.00 | 0.54 | 10,661 | 670.92 | 0.45 | 0.45 | 0.00 | 0.00 |
| 215.00 | 0.53 | 11,901 | 670.98 | 0.47 | 0.47 | 0.00 | 0.00 |
| 220.00 | 0.49 | **12,511** | **671.01** | **0.48** | **0.48** | 0.00 | 0.00 |
| 225.00 | 0.43 | **12,121** | **670.99** | **0.48** | **0.48** | 0.00 | 0.00 |
| 230.00 | 0.39 | 10,960 | 670.93 | 0.46 | 0.46 | 0.00 | 0.00 |
| 235.00 | 0.39 | 9,894 | 670.88 | 0.44 | 0.44 | 0.00 | 0.00 |
| 240.00 | 0.39 | 9,108 | 670.84 | 0.43 | 0.43 | 0.00 | 0.00 |
| 245.00 | 0.00 | 3,398 | 670.38 | 0.23 | 0.23 | 0.00 | 0.00 |
| 250.00 | 0.00 | 1,268 | 670.14 | 0.05 | 0.05 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 18.46 | 1.54 | 15.13 | 1.79 |
| 678.80 | **28.12** | **1.56** | **21.42** | **5.14** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | |
|---|---|---|---|---|
| Inflow | = | 0.25 cfs @ 204.66 hrs, | Volume= | 1.438 af |
| Outflow | = | 0.25 cfs @ 205.00 hrs, | Volume= | 1.437 af, Atten= 0%, Lag= 20.6 min |
| Primary | = | 0.15 cfs @ 205.00 hrs, | Volume= | 0.432 af |
| Secondary | = | 0.11 cfs @ 205.00 hrs, | Volume= | 1.005 af |
| Tertiary | = | 0.00 cfs @ 10.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 10.00-250.00 hrs, dt= 0.05 hrs
Peak Elev= 676.73' @ 205.00 hrs Surf.Area= 957 sf Storage= 191 cf

Plug-Flow detention time= 15.0 min calculated for 1.436 af (100% of inflow)
Center-of-Mass det. time= 13.0 min ( 11,148.5 - 11,135.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

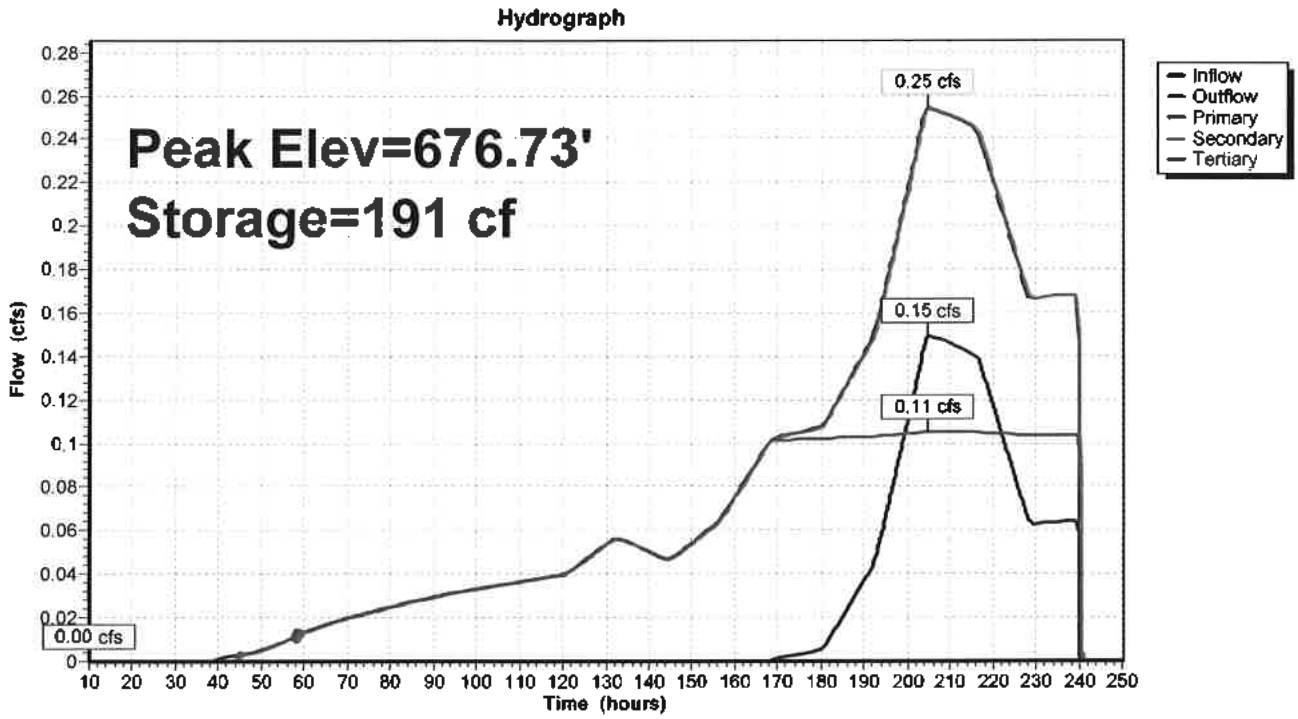
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.0' Crest Height |

**Primary OutFlow** Max=0.15 cfs @ 205.00 hrs HW=676.73' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.15 cfs @ 1.63 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

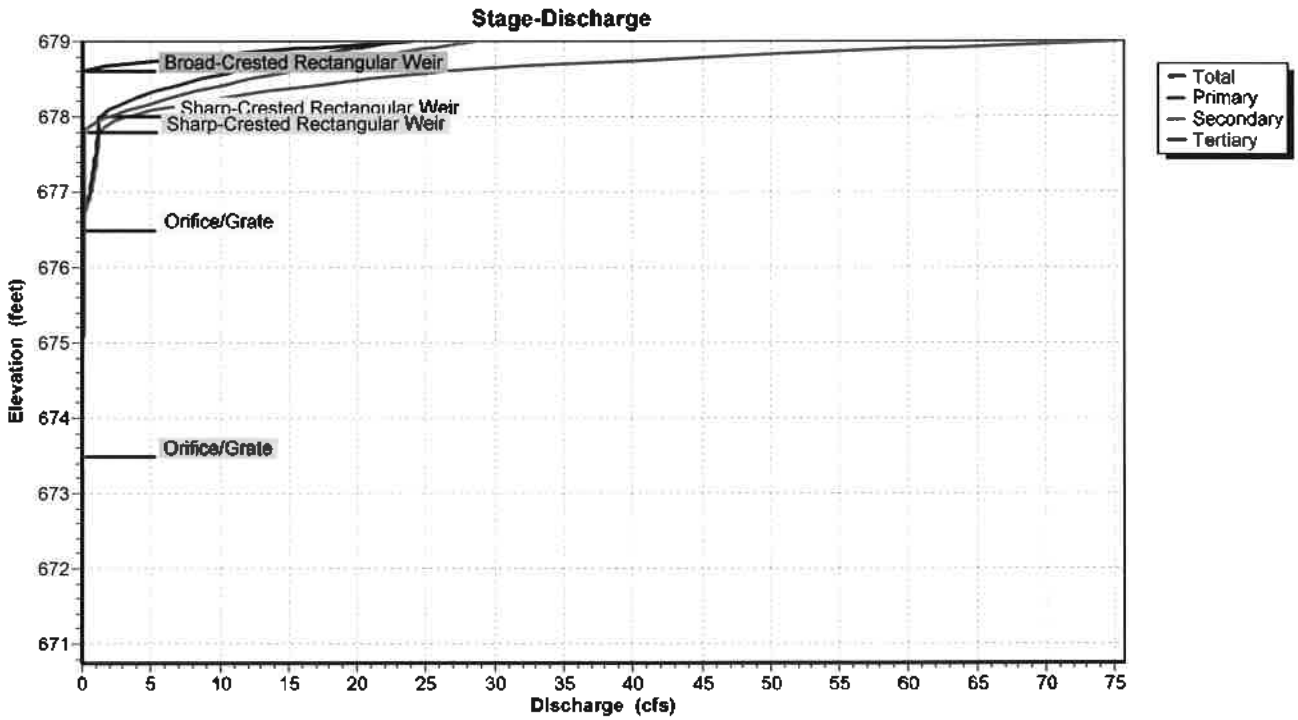
**Secondary OutFlow** Max=0.11 cfs @ 205.00 hrs HW=676.73' TW=670.83' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.11 cfs @ 8.57 fps)
└─**5=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 10.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

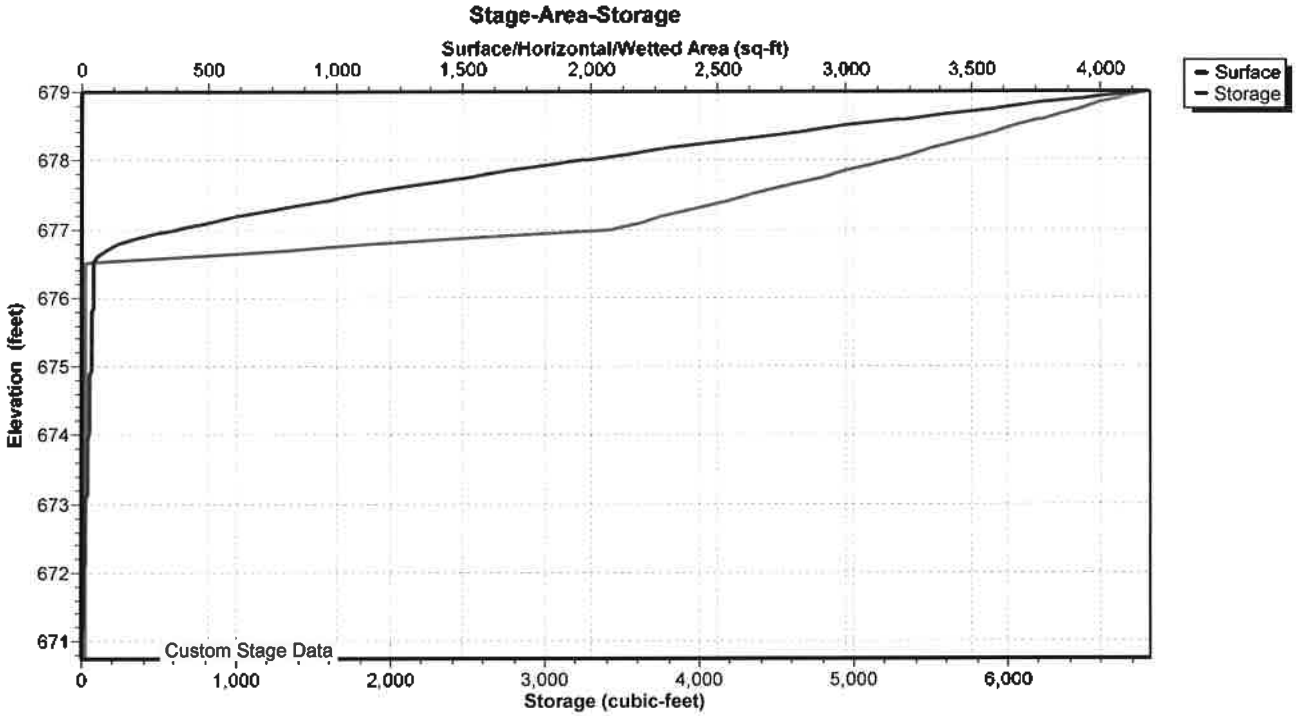
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 15.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.00 | 3 | 670.94 | 0.00 | 0.00 | 0.00 | 0.00 |
| 45.00 | 0.00 | 39 | 673.54 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50.00 | 0.01 | 39 | 673.56 | 0.01 | 0.00 | 0.01 | 0.00 |
| 55.00 | 0.01 | 40 | 673.58 | 0.01 | 0.00 | 0.01 | 0.00 |
| 60.00 | 0.01 | 40 | 673.61 | 0.01 | 0.00 | 0.01 | 0.00 |
| 65.00 | 0.02 | 40 | 673.64 | 0.02 | 0.00 | 0.02 | 0.00 |
| 70.00 | 0.02 | 41 | 673.67 | 0.02 | 0.00 | 0.02 | 0.00 |
| 75.00 | 0.02 | 41 | 673.71 | 0.02 | 0.00 | 0.02 | 0.00 |
| 80.00 | 0.02 | 42 | 673.74 | 0.02 | 0.00 | 0.02 | 0.00 |
| 85.00 | 0.03 | 42 | 673.78 | 0.03 | 0.00 | 0.03 | 0.00 |
| 90.00 | 0.03 | 43 | 673.81 | 0.03 | 0.00 | 0.03 | 0.00 |
| 95.00 | 0.03 | 43 | 673.85 | 0.03 | 0.00 | 0.03 | 0.00 |
| 100.00 | 0.03 | 44 | 673.88 | 0.03 | 0.00 | 0.03 | 0.00 |
| 105.00 | 0.03 | 44 | 673.91 | 0.03 | 0.00 | 0.03 | 0.00 |
| 110.00 | 0.04 | 45 | 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 115.00 | 0.04 | 45 | 673.98 | 0.04 | 0.00 | 0.04 | 0.00 |
| 120.00 | 0.04 | 46 | 674.01 | 0.04 | 0.00 | 0.04 | 0.00 |
| 125.00 | 0.05 | 48 | 674.17 | 0.05 | 0.00 | 0.05 | 0.00 |
| 130.00 | 0.05 | 51 | 674.38 | 0.05 | 0.00 | 0.05 | 0.00 |
| 135.00 | 0.05 | 52 | 674.43 | 0.06 | 0.00 | 0.06 | 0.00 |
| 140.00 | 0.05 | 50 | 674.29 | 0.05 | 0.00 | 0.05 | 0.00 |
| 145.00 | 0.05 | 48 | 674.19 | 0.05 | 0.00 | 0.05 | 0.00 |
| 150.00 | 0.05 | 51 | 674.40 | 0.05 | 0.00 | 0.05 | 0.00 |
| 155.00 | 0.06 | 55 | 674.66 | 0.06 | 0.00 | 0.06 | 0.00 |
| 160.00 | 0.08 | 62 | 675.17 | 0.07 | 0.00 | 0.07 | 0.00 |
| 165.00 | 0.09 | 72 | 675.91 | 0.09 | 0.00 | 0.09 | 0.00 |
| 170.00 | 0.10 | 82 | 676.52 | 0.10 | 0.00 | 0.10 | 0.00 |
| 175.00 | 0.11 | 84 | 676.53 | 0.11 | 0.00 | 0.10 | 0.00 |
| 180.00 | 0.11 | 86 | 676.54 | 0.11 | 0.01 | 0.10 | 0.00 |
| 185.00 | 0.12 | 98 | 676.58 | 0.12 | 0.02 | 0.10 | 0.00 |
| 190.00 | 0.14 | 107 | 676.61 | 0.14 | 0.04 | 0.10 | 0.00 |
| 195.00 | 0.17 | 132 | 676.65 | 0.17 | 0.07 | 0.10 | 0.00 |
| 200.00 | **0.22** | 160 | 676.69 | 0.21 | 0.11 | 0.10 | 0.00 |
| 205.00 | **0.25** | **195** | **676.73** | **0.25** | **0.15** | **0.11** | 0.00 |
| 210.00 | 0.25 | 192 | 676.72 | 0.25 | 0.15 | 0.11 | 0.00 |
| 215.00 | 0.25 | 188 | 676.72 | 0.25 | 0.14 | 0.11 | 0.00 |
| 220.00 | 0.22 | 168 | 676.70 | 0.22 | 0.12 | 0.10 | 0.00 |
| 225.00 | 0.19 | 144 | 676.67 | 0.19 | 0.09 | 0.10 | 0.00 |
| 230.00 | 0.17 | 129 | 676.64 | 0.17 | 0.06 | 0.10 | 0.00 |
| 235.00 | 0.17 | 129 | 676.64 | 0.17 | 0.06 | 0.10 | 0.00 |
| 240.00 | 0.17 | 130 | 676.65 | 0.17 | 0.06 | 0.10 | 0.00 |
| 245.00 | 0.00 | 39 | 673.50 | 0.00 | 0.00 | 0.00 | 0.00 |
| 250.00 | 0.00 | 39 | 673.50 | 0.00 | 0.00 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 23.56 | 9.86 | 13.70 | 0.00 |
| 678.75 | 40.37 | 15.13 | 19.77 | 5.47 |
| 678.95 | **67.61** | **21.27** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

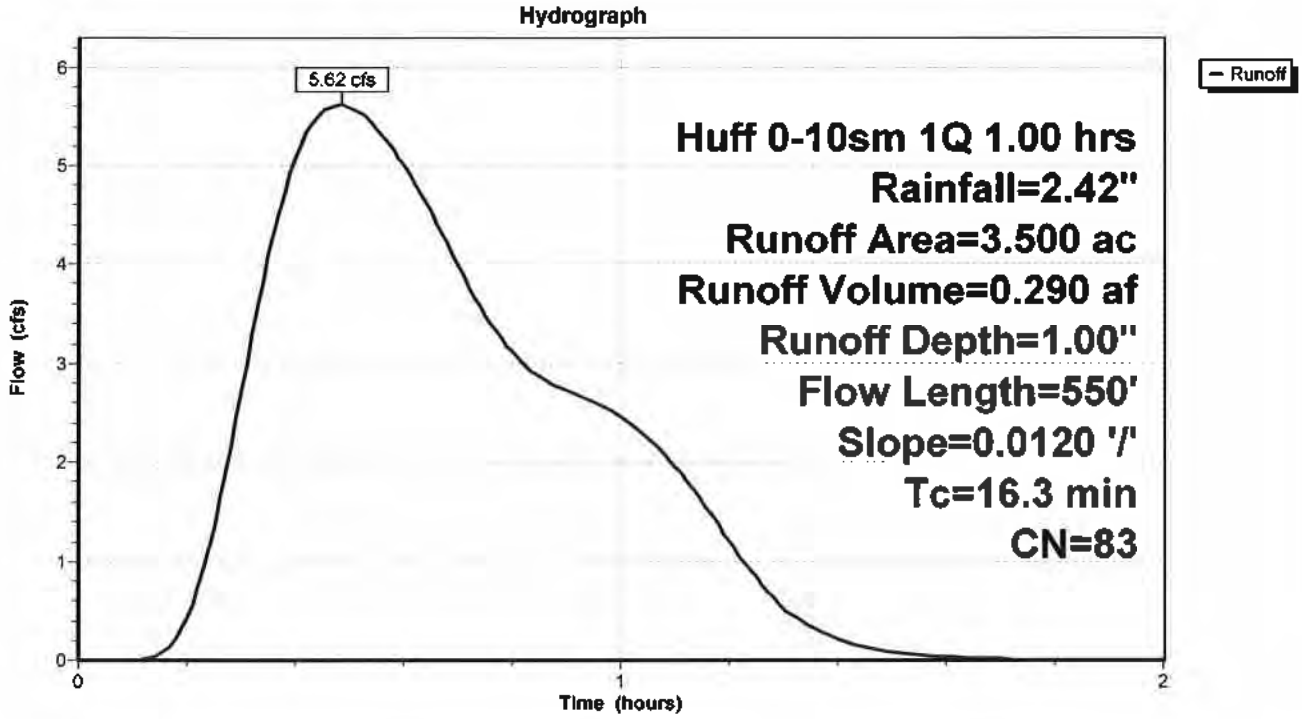
Runoff = 5.62 cfs @ 0.48 hrs, Volume= 0.290 af, Depth= 1.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=2.42"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 1.04 | 2.42 | 1.00 | 2.29 |
| 0.02 | 0.03 | 0.00 | 0.00 | 1.06 | 2.42 | 1.00 | 2.18 |
| 0.04 | 0.13 | 0.00 | 0.00 | 1.08 | 2.42 | 1.00 | 2.07 |
| 0.06 | 0.27 | 0.00 | 0.00 | 1.10 | 2.42 | 1.00 | 1.96 |
| 0.08 | 0.43 | 0.00 | 0.00 | 1.12 | 2.42 | 1.00 | 1.83 |
| 0.10 | 0.60 | 0.02 | 0.00 | 1.14 | 2.42 | 1.00 | 1.69 |
| 0.12 | 0.75 | 0.05 | 0.01 | 1.16 | 2.42 | 1.00 | 1.53 |
| 0.14 | 0.88 | 0.09 | 0.03 | 1.18 | 2.42 | 1.00 | 1.37 |
| 0.16 | 0.98 | 0.12 | 0.10 | 1.20 | 2.42 | 1.00 | 1.20 |
| 0.18 | 1.07 | 0.16 | 0.22 | 1.22 | 2.42 | 1.00 | 1.05 |
| 0.20 | 1.16 | 0.20 | 0.43 | 1.24 | 2.42 | 1.00 | 0.90 |
| 0.22 | 1.25 | 0.24 | 0.73 | 1.26 | 2.42 | 1.00 | 0.76 |
| 0.24 | 1.33 | 0.28 | 1.13 | 1.28 | 2.42 | 1.00 | 0.64 |
| 0.26 | 1.41 | 0.33 | 1.62 | 1.30 | 2.42 | 1.00 | 0.53 |
| 0.28 | 1.48 | 0.37 | 2.16 | 1.32 | 2.42 | 1.00 | 0.44 |
| 0.30 | 1.54 | 0.40 | 2.72 | 1.34 | 2.42 | 1.00 | 0.36 |
| 0.32 | 1.60 | 0.44 | 3.28 | 1.36 | 2.42 | 1.00 | 0.30 |
| 0.34 | 1.65 | 0.47 | 3.83 | 1.38 | 2.42 | 1.00 | 0.25 |
| 0.36 | 1.70 | 0.50 | 4.32 | 1.40 | 2.42 | 1.00 | 0.21 |
| 0.38 | 1.74 | 0.53 | 4.75 | 1.42 | 2.42 | 1.00 | 0.18 |
| 0.40 | 1.78 | 0.55 | 5.09 | 1.44 | 2.42 | 1.00 | 0.15 |
| 0.42 | 1.82 | 0.58 | 5.34 | 1.46 | 2.42 | 1.00 | 0.12 |
| 0.44 | 1.86 | 0.60 | 5.50 | 1.48 | 2.42 | 1.00 | 0.10 |
| 0.46 | 1.90 | 0.63 | 5.59 | 1.50 | 2.42 | 1.00 | 0.08 |
| 0.48 | 1.94 | 0.65 | **5.62** | 1.52 | 2.42 | 1.00 | 0.07 |
| 0.50 | 1.97 | 0.67 | 5.59 | 1.54 | 2.42 | 1.00 | 0.06 |
| 0.52 | 2.00 | 0.69 | 5.53 | 1.56 | 2.42 | 1.00 | 0.05 |
| 0.54 | 2.02 | 0.71 | 5.42 | 1.58 | 2.42 | 1.00 | 0.04 |
| 0.56 | 2.04 | 0.72 | 5.30 | 1.60 | 2.42 | 1.00 | 0.03 |
| 0.58 | 2.06 | 0.74 | 5.15 | 1.62 | 2.42 | 1.00 | 0.03 |
| 0.60 | 2.08 | 0.75 | 5.00 | 1.64 | 2.42 | 1.00 | 0.02 |
| 0.62 | 2.10 | 0.76 | 4.81 | 1.66 | 2.42 | 1.00 | 0.02 |
| 0.64 | 2.12 | 0.78 | 4.62 | 1.68 | 2.42 | 1.00 | 0.01 |
| 0.66 | 2.14 | 0.79 | 4.41 | 1.70 | 2.42 | 1.00 | 0.01 |
| 0.68 | 2.16 | 0.80 | 4.20 | 1.72 | 2.42 | 1.00 | 0.01 |
| 0.70 | 2.18 | 0.82 | 3.98 | 1.74 | 2.42 | 1.00 | 0.01 |
| 0.72 | 2.20 | 0.83 | 3.78 | 1.76 | 2.42 | 1.00 | 0.01 |
| 0.74 | 2.21 | 0.85 | 3.58 | 1.78 | 2.42 | 1.00 | 0.00 |
| 0.76 | 2.23 | 0.86 | 3.40 | 1.80 | 2.42 | 1.00 | 0.00 |
| 0.78 | 2.25 | 0.87 | 3.25 | 1.82 | 2.42 | 1.00 | 0.00 |
| 0.80 | 2.27 | 0.89 | 3.11 | 1.84 | 2.42 | 1.00 | 0.00 |
| 0.82 | 2.29 | 0.90 | 3.00 | 1.86 | 2.42 | 1.00 | 0.00 |
| 0.84 | 2.31 | 0.92 | 2.91 | 1.88 | 2.42 | 1.00 | 0.00 |
| 0.86 | 2.33 | 0.93 | 2.84 | 1.90 | 2.42 | 1.00 | 0.00 |
| 0.88 | 2.35 | 0.94 | 2.78 | 1.92 | 2.42 | 1.00 | 0.00 |
| 0.90 | 2.36 | 0.95 | 2.73 | 1.94 | 2.42 | 1.00 | 0.00 |
| 0.92 | 2.37 | 0.96 | 2.69 | 1.96 | 2.42 | 1.00 | 0.00 |
| 0.94 | 2.38 | 0.96 | 2.64 | 1.98 | 2.42 | 1.00 | 0.00 |
| 0.96 | 2.39 | 0.97 | 2.59 | 2.00 | 2.42 | 1.00 | 0.00 |
| 0.98 | 2.40 | 0.98 | 2.53 | | | | |
| 1.00 | **2.42** | **1.00** | 2.46 | | | | |
| 1.02 | 2.42 | 1.00 | 2.38 | | | | |

## Summary for Subcatchment 7S: South Property

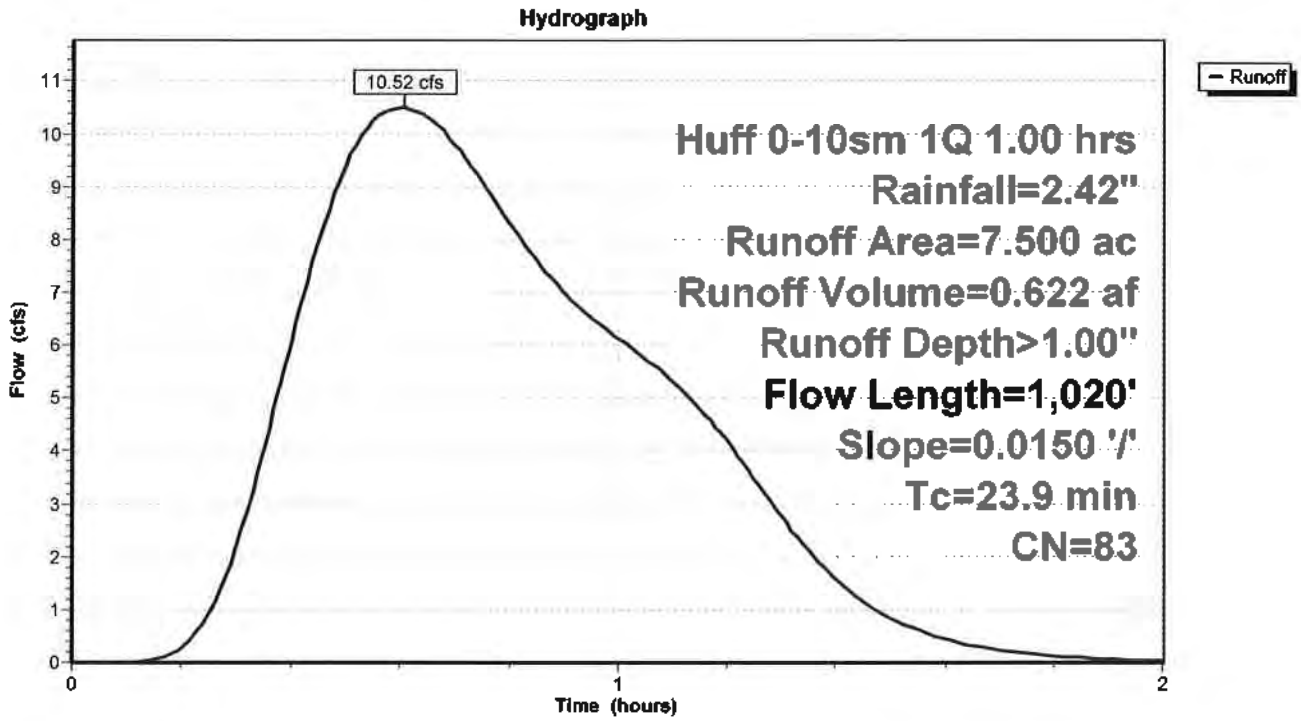
Runoff = 10.52 cfs @ 0.61 hrs, Volume= 0.622 af, Depth> 1.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=2.42"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 1.04 | 2.42 | 1.00 | 5.85 |
| 0.02 | 0.03 | 0.00 | 0.00 | 1.06 | 2.42 | 1.00 | 5.68 |
| 0.04 | 0.13 | 0.00 | 0.00 | 1.08 | 2.42 | 1.00 | 5.52 |
| 0.06 | 0.27 | 0.00 | 0.00 | 1.10 | 2.42 | 1.00 | 5.33 |
| 0.08 | 0.43 | 0.00 | 0.00 | 1.12 | 2.42 | 1.00 | 5.13 |
| 0.10 | 0.60 | 0.02 | 0.00 | 1.14 | 2.42 | 1.00 | 4.92 |
| 0.12 | 0.75 | 0.05 | 0.01 | 1.16 | 2.42 | 1.00 | 4.69 |
| 0.14 | 0.88 | 0.09 | 0.03 | 1.18 | 2.42 | 1.00 | 4.45 |
| 0.16 | 0.98 | 0.12 | 0.06 | 1.20 | 2.42 | 1.00 | 4.20 |
| 0.18 | 1.07 | 0.16 | 0.14 | 1.22 | 2.42 | 1.00 | 3.91 |
| 0.20 | 1.16 | 0.20 | 0.27 | 1.24 | 2.42 | 1.00 | 3.63 |
| 0.22 | 1.25 | 0.24 | 0.47 | 1.26 | 2.42 | 1.00 | 3.34 |
| 0.24 | 1.33 | 0.28 | 0.74 | 1.28 | 2.42 | 1.00 | 3.05 |
| 0.26 | 1.41 | 0.33 | 1.11 | 1.30 | 2.42 | 1.00 | 2.77 |
| 0.28 | 1.48 | 0.37 | 1.59 | 1.32 | 2.42 | 1.00 | 2.50 |
| 0.30 | 1.54 | 0.40 | 2.17 | 1.34 | 2.42 | 1.00 | 2.25 |
| 0.32 | 1.60 | 0.44 | 2.85 | 1.36 | 2.42 | 1.00 | 2.01 |
| 0.34 | 1.65 | 0.47 | 3.59 | 1.38 | 2.42 | 1.00 | 1.79 |
| 0.36 | 1.70 | 0.50 | 4.39 | 1.40 | 2.42 | 1.00 | 1.59 |
| 0.38 | 1.74 | 0.53 | 5.21 | 1.42 | 2.42 | 1.00 | 1.40 |
| 0.40 | 1.78 | 0.55 | 6.03 | 1.44 | 2.42 | 1.00 | 1.23 |
| 0.42 | 1.82 | 0.58 | 6.82 | 1.46 | 2.42 | 1.00 | 1.08 |
| 0.44 | 1.86 | 0.60 | 7.57 | 1.48 | 2.42 | 1.00 | 0.95 |
| 0.46 | 1.90 | 0.63 | 8.26 | 1.50 | 2.42 | 1.00 | 0.84 |
| 0.48 | 1.94 | 0.65 | 8.86 | 1.52 | 2.42 | 1.00 | 0.74 |
| 0.50 | 1.97 | 0.67 | 9.39 | 1.54 | 2.42 | 1.00 | 0.65 |
| 0.52 | 2.00 | 0.69 | 9.79 | 1.56 | 2.42 | 1.00 | 0.58 |
| 0.54 | 2.02 | 0.71 | 10.12 | 1.58 | 2.42 | 1.00 | 0.51 |
| 0.56 | 2.04 | 0.72 | 10.36 | 1.60 | 2.42 | 1.00 | 0.45 |
| 0.58 | 2.06 | 0.74 | 10.46 | 1.62 | 2.42 | 1.00 | 0.40 |
| 0.60 | 2.08 | 0.75 | **10.50** | 1.64 | 2.42 | 1.00 | 0.35 |
| 0.62 | 2.10 | 0.76 | **10.48** | 1.66 | 2.42 | 1.00 | 0.31 |
| 0.64 | 2.12 | 0.78 | 10.38 | 1.68 | 2.42 | 1.00 | 0.27 |
| 0.66 | 2.14 | 0.79 | 10.25 | 1.70 | 2.42 | 1.00 | 0.24 |
| 0.68 | 2.16 | 0.80 | 10.04 | 1.72 | 2.42 | 1.00 | 0.21 |
| 0.70 | 2.18 | 0.82 | 9.80 | 1.74 | 2.42 | 1.00 | 0.18 |
| 0.72 | 2.20 | 0.83 | 9.54 | 1.76 | 2.42 | 1.00 | 0.16 |
| 0.74 | 2.21 | 0.85 | 9.24 | 1.78 | 2.42 | 1.00 | 0.14 |
| 0.76 | 2.23 | 0.86 | 8.94 | 1.80 | 2.42 | 1.00 | 0.12 |
| 0.78 | 2.25 | 0.87 | 8.64 | 1.82 | 2.42 | 1.00 | 0.11 |
| 0.80 | 2.27 | 0.89 | 8.33 | 1.84 | 2.42 | 1.00 | 0.09 |
| 0.82 | 2.29 | 0.90 | 8.04 | 1.86 | 2.42 | 1.00 | 0.08 |
| 0.84 | 2.31 | 0.92 | 7.76 | 1.88 | 2.42 | 1.00 | 0.07 |
| 0.86 | 2.33 | 0.93 | 7.49 | 1.90 | 2.42 | 1.00 | 0.06 |
| 0.88 | 2.35 | 0.94 | 7.25 | 1.92 | 2.42 | 1.00 | 0.05 |
| 0.90 | 2.36 | 0.95 | 7.02 | 1.94 | 2.42 | 1.00 | 0.05 |
| 0.92 | 2.37 | 0.96 | 6.82 | 1.96 | 2.42 | 1.00 | 0.04 |
| 0.94 | 2.38 | 0.96 | 6.63 | 1.98 | 2.42 | 1.00 | 0.04 |
| 0.96 | 2.39 | 0.97 | 6.45 | 2.00 | 2.42 | 1.00 | 0.03 |
| 0.98 | 2.40 | 0.98 | 6.30 | | | | |
| 1.00 | **2.42** | **1.00** | 6.14 | | | | |
| 1.02 | 2.42 | 1.00 | 5.99 | | | | |

## Summary for Subcatchment 8S: Northwood Drive Bypass

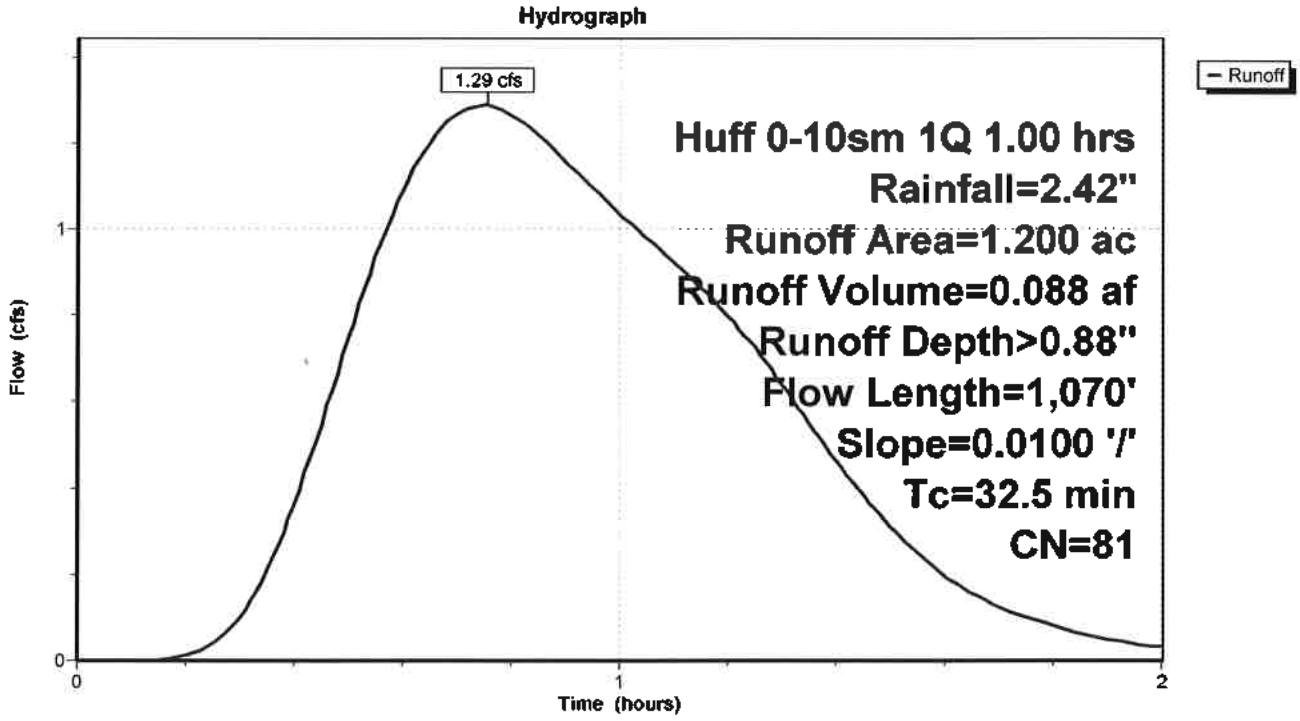
Runoff = 1.29 cfs @ 0.76 hrs, Volume= 0.088 af, Depth> 0.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=2.42"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

### Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 1.04 | 2.42 | 0.89 | 0.99 |
| 0.02 | 0.03 | 0.00 | 0.00 | 1.06 | 2.42 | 0.89 | 0.97 |
| 0.04 | 0.13 | 0.00 | 0.00 | 1.08 | 2.42 | 0.89 | 0.95 |
| 0.06 | 0.27 | 0.00 | 0.00 | 1.10 | 2.42 | 0.89 | 0.92 |
| 0.08 | 0.43 | 0.00 | 0.00 | 1.12 | 2.42 | 0.89 | 0.90 |
| 0.10 | 0.60 | 0.01 | 0.00 | 1.14 | 2.42 | 0.89 | 0.88 |
| 0.12 | 0.75 | 0.03 | 0.00 | 1.16 | 2.42 | 0.89 | 0.85 |
| 0.14 | 0.88 | 0.06 | 0.00 | 1.18 | 2.42 | 0.89 | 0.83 |
| 0.16 | 0.98 | 0.09 | 0.00 | 1.20 | 2.42 | 0.89 | 0.80 |
| 0.18 | 1.07 | 0.12 | 0.01 | 1.22 | 2.42 | 0.89 | 0.77 |
| 0.20 | 1.16 | 0.16 | 0.01 | 1.24 | 2.42 | 0.89 | 0.74 |
| 0.22 | 1.25 | 0.19 | 0.02 | 1.26 | 2.42 | 0.89 | 0.71 |
| 0.24 | 1.33 | 0.23 | 0.03 | 1.28 | 2.42 | 0.89 | 0.67 |
| 0.26 | 1.41 | 0.27 | 0.05 | 1.30 | 2.42 | 0.89 | 0.64 |
| 0.28 | 1.48 | 0.30 | 0.07 | 1.32 | 2.42 | 0.89 | 0.61 |
| 0.30 | 1.54 | 0.34 | 0.10 | 1.34 | 2.42 | 0.89 | 0.57 |
| 0.32 | 1.60 | 0.37 | 0.14 | 1.36 | 2.42 | 0.89 | 0.53 |
| 0.34 | 1.65 | 0.40 | 0.18 | 1.38 | 2.42 | 0.89 | 0.50 |
| 0.36 | 1.70 | 0.42 | 0.24 | 1.40 | 2.42 | 0.89 | 0.46 |
| 0.38 | 1.74 | 0.45 | 0.30 | 1.42 | 2.42 | 0.89 | 0.43 |
| 0.40 | 1.78 | 0.47 | 0.36 | 1.44 | 2.42 | 0.89 | 0.40 |
| 0.42 | 1.82 | 0.50 | 0.43 | 1.46 | 2.42 | 0.89 | 0.37 |
| 0.44 | 1.86 | 0.52 | 0.51 | 1.48 | 2.42 | 0.89 | 0.34 |
| 0.46 | 1.90 | 0.54 | 0.59 | 1.50 | 2.42 | 0.89 | 0.31 |
| 0.48 | 1.94 | 0.56 | 0.67 | 1.52 | 2.42 | 0.89 | 0.28 |
| 0.50 | 1.97 | 0.58 | 0.75 | 1.54 | 2.42 | 0.89 | 0.26 |
| 0.52 | 2.00 | 0.60 | 0.83 | 1.56 | 2.42 | 0.89 | 0.24 |
| 0.54 | 2.02 | 0.62 | 0.90 | 1.58 | 2.42 | 0.89 | 0.22 |
| 0.56 | 2.04 | 0.63 | 0.97 | 1.60 | 2.42 | 0.89 | 0.20 |
| 0.58 | 2.06 | 0.64 | 1.03 | 1.62 | 2.42 | 0.89 | 0.18 |
| 0.60 | 2.08 | 0.65 | 1.09 | 1.64 | 2.42 | 0.89 | 0.16 |
| 0.62 | 2.10 | 0.67 | 1.14 | 1.66 | 2.42 | 0.89 | 0.15 |
| 0.64 | 2.12 | 0.68 | 1.19 | 1.68 | 2.42 | 0.89 | 0.14 |
| 0.66 | 2.14 | 0.69 | 1.22 | 1.70 | 2.42 | 0.89 | 0.13 |
| 0.68 | 2.16 | 0.71 | 1.25 | 1.72 | 2.42 | 0.89 | 0.11 |
| 0.70 | 2.18 | 0.72 | 1.27 | 1.74 | 2.42 | 0.89 | 0.10 |
| 0.72 | 2.20 | 0.73 | 1.28 | 1.76 | 2.42 | 0.89 | 0.10 |
| 0.74 | 2.21 | 0.74 | 1.29 | 1.78 | 2.42 | 0.89 | 0.09 |
| 0.76 | 2.23 | 0.76 | **1.29** | 1.80 | 2.42 | 0.89 | 0.08 |
| 0.78 | 2.25 | 0.77 | 1.28 | 1.82 | 2.42 | 0.89 | 0.07 |
| 0.80 | 2.27 | 0.78 | 1.27 | 1.84 | 2.42 | 0.89 | 0.07 |
| 0.82 | 2.29 | 0.80 | 1.25 | 1.86 | 2.42 | 0.89 | 0.06 |
| 0.84 | 2.31 | 0.81 | 1.23 | 1.88 | 2.42 | 0.89 | 0.06 |
| 0.86 | 2.33 | 0.82 | 1.21 | 1.90 | 2.42 | 0.89 | 0.05 |
| 0.88 | 2.35 | 0.84 | 1.18 | 1.92 | 2.42 | 0.89 | 0.05 |
| 0.90 | 2.36 | 0.84 | 1.16 | 1.94 | 2.42 | 0.89 | 0.04 |
| 0.92 | 2.37 | 0.85 | 1.14 | 1.96 | 2.42 | 0.89 | 0.04 |
| 0.94 | 2.38 | 0.86 | 1.11 | 1.98 | 2.42 | 0.89 | 0.03 |
| 0.96 | 2.39 | 0.86 | 1.09 | 2.00 | 2.42 | 0.89 | 0.03 |
| 0.98 | 2.40 | 0.87 | 1.06 | | | | |
| 1.00 | **2.42** | **0.89** | 1.04 | | | | |
| 1.02 | 2.42 | 0.89 | 1.01 | | | | |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

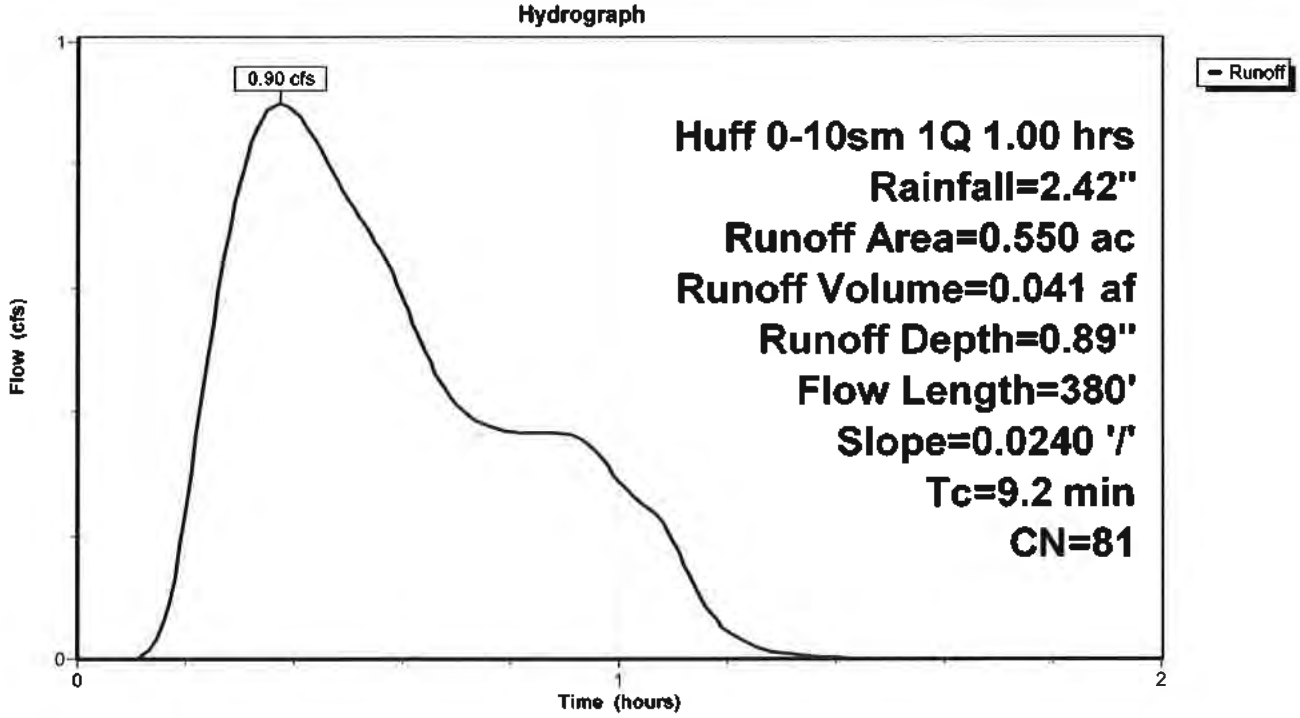
Runoff = 0.90 cfs @ 0.38 hrs, Volume= 0.041 af, Depth= 0.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=2.42"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 1.04 | 2.42 | 0.89 | 0.25 |
| 0.02 | 0.03 | 0.00 | 0.00 | 1.06 | 2.42 | 0.89 | 0.24 |
| 0.04 | 0.13 | 0.00 | 0.00 | 1.08 | 2.42 | 0.89 | 0.22 |
| 0.06 | 0.27 | 0.00 | 0.00 | 1.10 | 2.42 | 0.89 | 0.19 |
| 0.08 | 0.43 | 0.00 | 0.00 | 1.12 | 2.42 | 0.89 | 0.15 |
| 0.10 | 0.60 | 0.01 | 0.00 | 1.14 | 2.42 | 0.89 | 0.12 |
| 0.12 | 0.75 | 0.03 | 0.00 | 1.16 | 2.42 | 0.89 | 0.09 |
| 0.14 | 0.88 | 0.06 | 0.02 | 1.18 | 2.42 | 0.89 | 0.06 |
| 0.16 | 0.98 | 0.09 | 0.06 | 1.20 | 2.42 | 0.89 | 0.04 |
| 0.18 | 1.07 | 0.12 | 0.13 | 1.22 | 2.42 | 0.89 | 0.03 |
| 0.20 | 1.16 | 0.16 | 0.24 | 1.24 | 2.42 | 0.89 | 0.02 |
| 0.22 | 1.25 | 0.19 | 0.36 | 1.26 | 2.42 | 0.89 | 0.02 |
| 0.24 | 1.33 | 0.23 | 0.49 | 1.28 | 2.42 | 0.89 | 0.01 |
| 0.26 | 1.41 | 0.27 | 0.60 | 1.30 | 2.42 | 0.89 | 0.01 |
| 0.28 | 1.48 | 0.30 | 0.70 | 1.32 | 2.42 | 0.89 | 0.01 |
| 0.30 | 1.54 | 0.34 | 0.77 | 1.34 | 2.42 | 0.89 | 0.00 |
| 0.32 | 1.60 | 0.37 | 0.83 | 1.36 | 2.42 | 0.89 | 0.00 |
| 0.34 | 1.65 | 0.40 | 0.88 | 1.38 | 2.42 | 0.89 | 0.00 |
| 0.36 | 1.70 | 0.42 | 0.90 | 1.40 | 2.42 | 0.89 | 0.00 |
| 0.38 | 1.74 | 0.45 | **0.90** | 1.42 | 2.42 | 0.89 | 0.00 |
| 0.40 | 1.78 | 0.47 | 0.89 | 1.44 | 2.42 | 0.89 | 0.00 |
| 0.42 | 1.82 | 0.50 | 0.87 | 1.46 | 2.42 | 0.89 | 0.00 |
| 0.44 | 1.86 | 0.52 | 0.84 | 1.48 | 2.42 | 0.89 | 0.00 |
| 0.46 | 1.90 | 0.54 | 0.81 | 1.50 | 2.42 | 0.89 | 0.00 |
| 0.48 | 1.94 | 0.56 | 0.77 | 1.52 | 2.42 | 0.89 | 0.00 |
| 0.50 | 1.97 | 0.58 | 0.74 | 1.54 | 2.42 | 0.89 | 0.00 |
| 0.52 | 2.00 | 0.60 | 0.72 | 1.56 | 2.42 | 0.89 | 0.00 |
| 0.54 | 2.02 | 0.62 | 0.69 | 1.58 | 2.42 | 0.89 | 0.00 |
| 0.56 | 2.04 | 0.63 | 0.66 | 1.60 | 2.42 | 0.89 | 0.00 |
| 0.58 | 2.06 | 0.64 | 0.63 | 1.62 | 2.42 | 0.89 | 0.00 |
| 0.60 | 2.08 | 0.65 | 0.59 | 1.64 | 2.42 | 0.89 | 0.00 |
| 0.62 | 2.10 | 0.67 | 0.54 | 1.66 | 2.42 | 0.89 | 0.00 |
| 0.64 | 2.12 | 0.68 | 0.50 | 1.68 | 2.42 | 0.89 | 0.00 |
| 0.66 | 2.14 | 0.69 | 0.46 | 1.70 | 2.42 | 0.89 | 0.00 |
| 0.68 | 2.16 | 0.71 | 0.43 | 1.72 | 2.42 | 0.89 | 0.00 |
| 0.70 | 2.18 | 0.72 | 0.41 | 1.74 | 2.42 | 0.89 | 0.00 |
| 0.72 | 2.20 | 0.73 | 0.40 | 1.76 | 2.42 | 0.89 | 0.00 |
| 0.74 | 2.21 | 0.74 | 0.38 | 1.78 | 2.42 | 0.89 | 0.00 |
| 0.76 | 2.23 | 0.76 | 0.38 | 1.80 | 2.42 | 0.89 | 0.00 |
| 0.78 | 2.25 | 0.77 | 0.37 | 1.82 | 2.42 | 0.89 | 0.00 |
| 0.80 | 2.27 | 0.78 | 0.37 | 1.84 | 2.42 | 0.89 | 0.00 |
| 0.82 | 2.29 | 0.80 | 0.37 | 1.86 | 2.42 | 0.89 | 0.00 |
| 0.84 | 2.31 | 0.81 | 0.37 | 1.88 | 2.42 | 0.89 | 0.00 |
| 0.86 | 2.33 | 0.82 | 0.37 | 1.90 | 2.42 | 0.89 | 0.00 |
| 0.88 | 2.35 | 0.84 | 0.37 | 1.92 | 2.42 | 0.89 | 0.00 |
| 0.90 | 2.36 | 0.84 | 0.37 | 1.94 | 2.42 | 0.89 | 0.00 |
| 0.92 | 2.37 | 0.85 | 0.36 | 1.96 | 2.42 | 0.89 | 0.00 |
| 0.94 | 2.38 | 0.86 | 0.35 | 1.98 | 2.42 | 0.89 | 0.00 |
| 0.96 | 2.39 | 0.86 | 0.33 | 2.00 | 2.42 | 0.89 | 0.00 |
| 0.98 | 2.40 | 0.87 | 0.31 | | | | |
| 1.00 | **2.42** | **0.89** | 0.29 | | | | |
| 1.02 | 2.42 | 0.89 | 0.27 | | | | |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 15.02 cfs @ | 0.59 hrs, | Volume= | 0.847 af |
| Outflow | = | 0.71 cfs @ | 1.56 hrs, | Volume= | 0.083 af, Atten= 95%, Lag= 58.0 min |
| Primary | = | 0.71 cfs @ | 1.56 hrs, | Volume= | 0.083 af |
| Secondary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Peak Elev= 671.97' @ 1.56 hrs Surf.Area= 30,801 sf Storage= 33,959 cf

Plug-Flow detention time= 55.0 min calculated for 0.082 af (10% of inflow)
Center-of-Mass det. time= 29.2 min ( 76.8 - 47.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.40' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

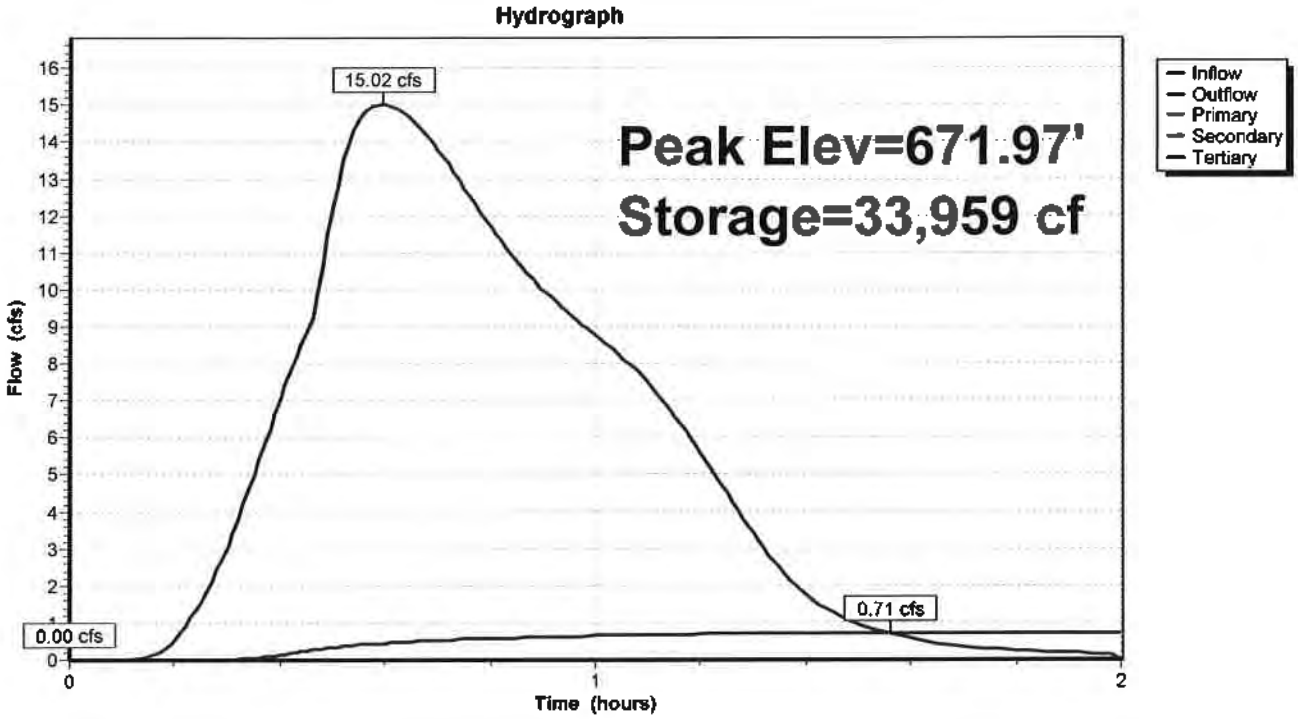
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=0.71 cfs @ 1.56 hrs HW=671.97' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.71 cfs @ 6.44 fps)

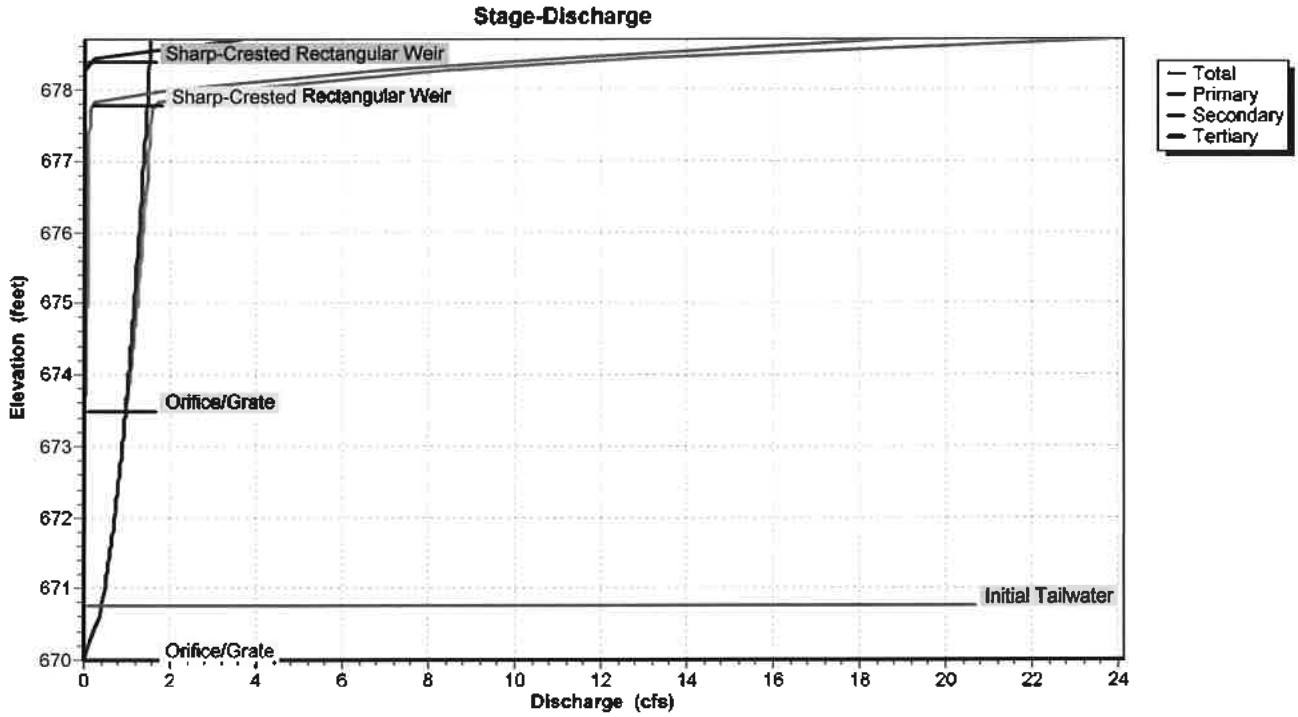
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

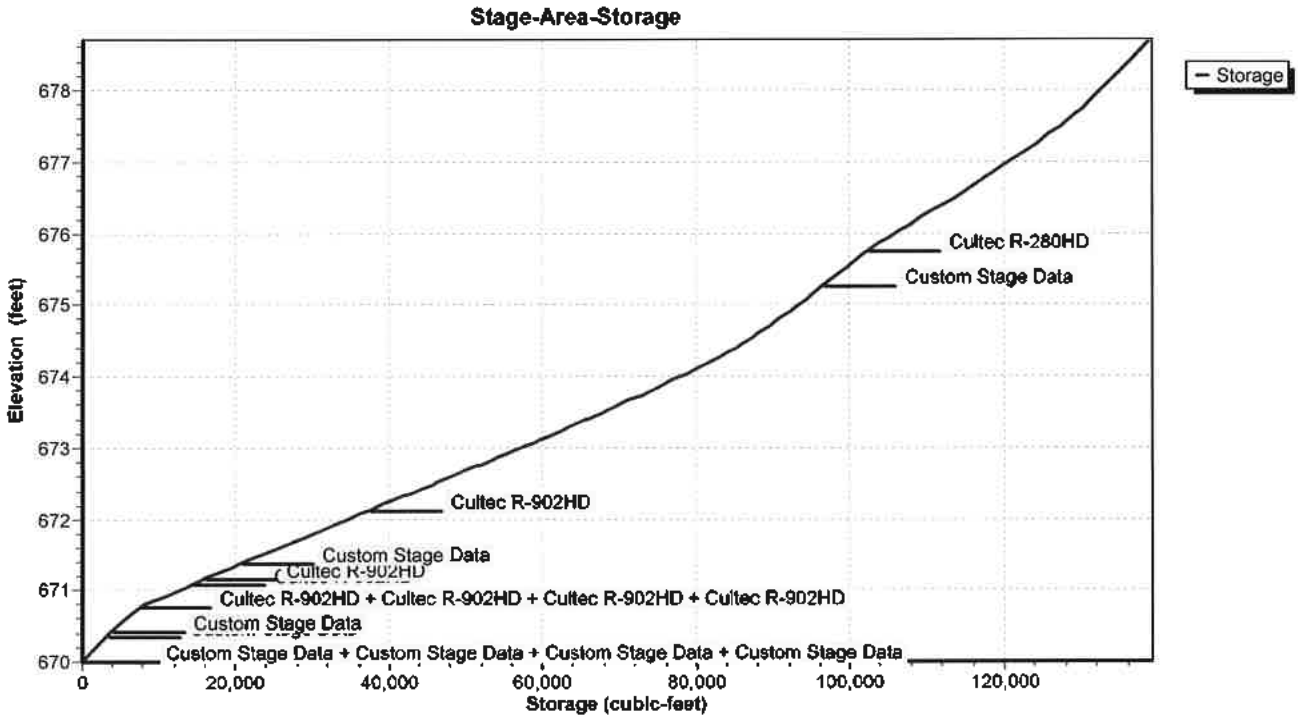
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 0.05 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.10 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.15 | 0.07 | 3 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.52 | 40 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.25 | 1.57 | 205 | 670.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.30 | 3.05 | 585 | 670.07 | 0.01 | 0.01 | 0.00 | 0.00 |
| 0.35 | 4.99 | 1,266 | 670.14 | 0.05 | 0.05 | 0.00 | 0.00 |
| 0.40 | 7.04 | 2,298 | 670.26 | 0.14 | 0.14 | 0.00 | 0.00 |
| 0.45 | 8.88 | 3,668 | 670.41 | 0.25 | 0.25 | 0.00 | 0.00 |
| 0.50 | 12.23 | 5,419 | 670.58 | 0.33 | 0.33 | 0.00 | 0.00 |
| 0.55 | **14.60** | 7,763 | 670.78 | 0.41 | 0.41 | 0.00 | 0.00 |
| 0.60 | **15.01** | 10,362 | 670.90 | 0.45 | 0.45 | 0.00 | 0.00 |
| 0.65 | 14.60 | 12,959 | 671.03 | 0.49 | 0.49 | 0.00 | 0.00 |
| 0.70 | 13.78 | 15,443 | 671.15 | 0.52 | 0.52 | 0.00 | 0.00 |
| 0.75 | 12.75 | 17,756 | 671.25 | 0.55 | 0.55 | 0.00 | 0.00 |
| 0.80 | 11.70 | 19,875 | 671.35 | 0.57 | 0.57 | 0.00 | 0.00 |
| 0.85 | 10.76 | 21,807 | 671.43 | 0.59 | 0.59 | 0.00 | 0.00 |
| 0.90 | 9.98 | 23,578 | 671.51 | 0.61 | 0.61 | 0.00 | 0.00 |
| 0.95 | 9.35 | 25,218 | 671.58 | 0.63 | 0.63 | 0.00 | 0.00 |
| 1.00 | 8.76 | 26,744 | 671.65 | 0.64 | 0.64 | 0.00 | 0.00 |
| 1.05 | 8.18 | 28,164 | 671.71 | 0.66 | 0.66 | 0.00 | 0.00 |
| 1.10 | 7.48 | 29,470 | 671.77 | 0.67 | 0.67 | 0.00 | 0.00 |
| 1.15 | 6.60 | 30,633 | 671.82 | 0.68 | 0.68 | 0.00 | 0.00 |
| 1.20 | 5.58 | 31,625 | 671.87 | 0.69 | 0.69 | 0.00 | 0.00 |
| 1.25 | 4.48 | 32,426 | 671.90 | 0.70 | 0.70 | 0.00 | 0.00 |
| 1.30 | 3.40 | 33,026 | 671.93 | 0.70 | 0.70 | 0.00 | 0.00 |
| 1.35 | 2.47 | 33,442 | 671.95 | 0.71 | 0.71 | 0.00 | 0.00 |
| 1.40 | 1.74 | 33,704 | 671.96 | 0.71 | 0.71 | 0.00 | 0.00 |
| 1.45 | 1.28 | 33,853 | 671.97 | 0.71 | 0.71 | 0.00 | 0.00 |
| 1.50 | 0.96 | 33,930 | 671.97 | 0.71 | 0.71 | 0.00 | 0.00 |
| 1.55 | 0.74 | **33,958** | **671.97** | **0.71** | **0.71** | 0.00 | 0.00 |
| 1.60 | 0.57 | **33,950** | **671.97** | **0.71** | **0.71** | 0.00 | 0.00 |
| 1.65 | 0.44 | 33,915 | 671.97 | 0.71 | 0.71 | 0.00 | 0.00 |
| 1.70 | 0.35 | 33,860 | 671.97 | 0.71 | 0.71 | 0.00 | 0.00 |
| 1.75 | 0.29 | 33,791 | 671.97 | 0.71 | 0.71 | 0.00 | 0.00 |
| 1.80 | 0.24 | 33,711 | 671.96 | 0.71 | 0.71 | 0.00 | 0.00 |
| 1.85 | 0.20 | 33,623 | 671.96 | 0.71 | 0.71 | 0.00 | 0.00 |
| 1.90 | 0.18 | 33,531 | 671.95 | 0.71 | 0.71 | 0.00 | 0.00 |
| 1.95 | 0.16 | 33,434 | 671.95 | 0.71 | 0.71 | 0.00 | 0.00 |
| 2.00 | 0.00 | 33,334 | 671.95 | 0.71 | 0.71 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 18.46 | 1.54 | 15.13 | 1.79 |
| 678.80 | **28.12** | **1.56** | **21.42** | **5.14** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 6.35 cfs @ | 0.52 hrs, | Volume= | 0.379 af |
| Outflow | = | 6.12 cfs @ | 0.60 hrs, | Volume= | 0.360 af, Atten= 4%, Lag= 4.9 min |
| Primary | = | 2.20 cfs @ | 0.60 hrs, | Volume= | 0.175 af |
| Secondary | = | 3.92 cfs @ | 0.60 hrs, | Volume= | 0.185 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Peak Elev= 678.13' @ 0.60 hrs Surf.Area= 3,302 sf Storage= 3,649 cf

Plug-Flow detention time= 15.0 min calculated for 0.358 af (95% of inflow)
Center-of-Mass det. time= 12.9 min ( 56.9 - 44.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

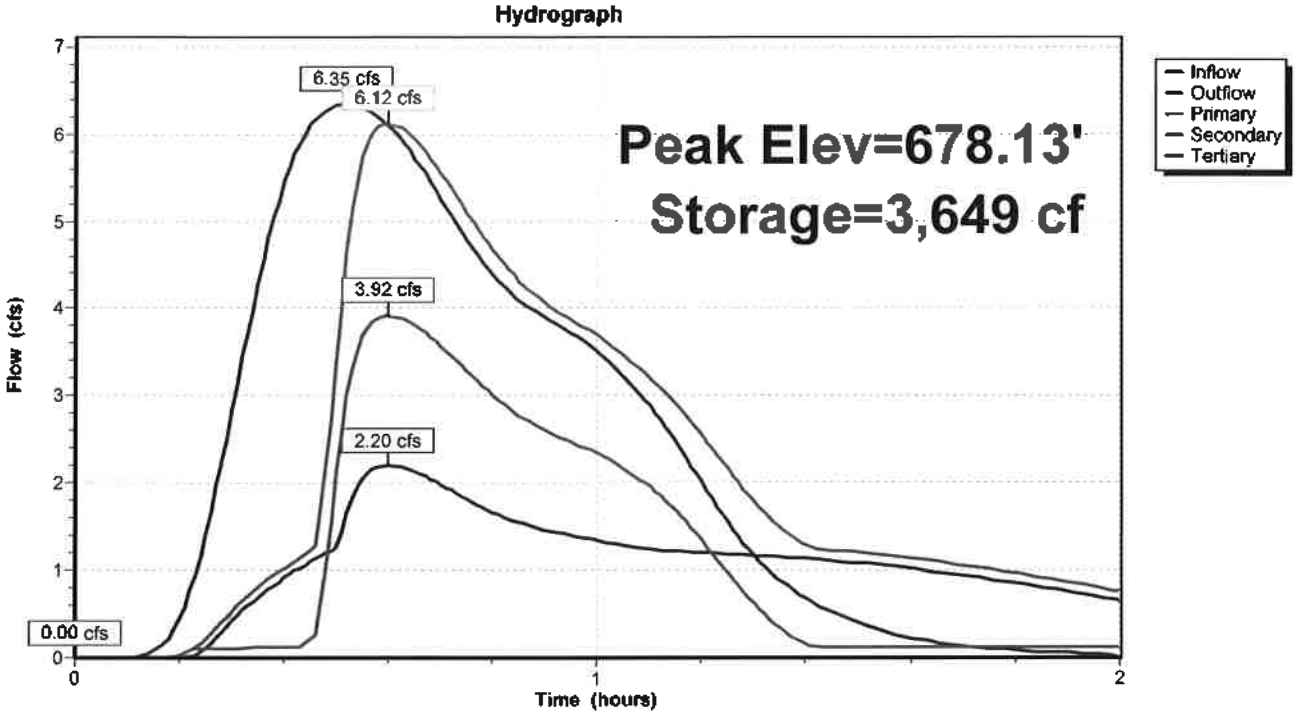
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=2.20 cfs @ 0.60 hrs HW=678.13' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.29 cfs @ 5.61 fps)
└─**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.91 cfs @ 1.19 fps)

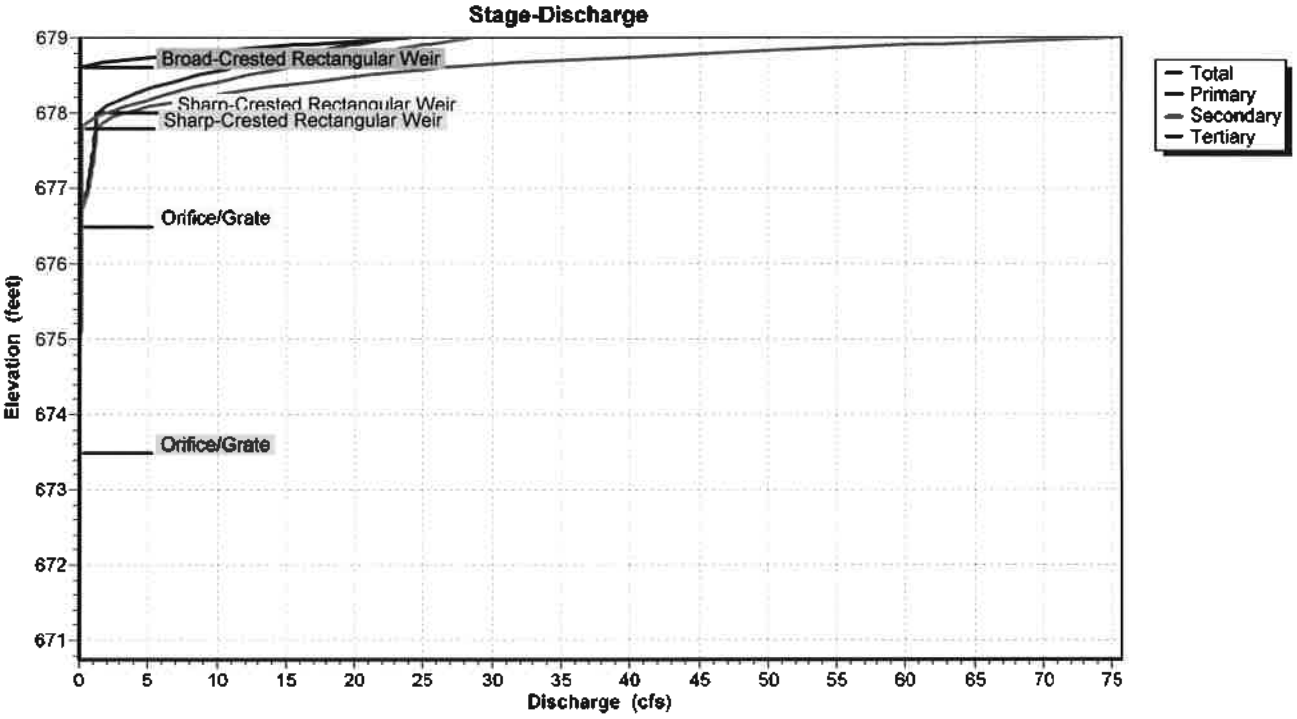
**Secondary OutFlow** Max=3.92 cfs @ 0.60 hrs HW=678.13' TW=670.90' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.13 cfs @ 10.29 fps)
└─**5=Sharp-Crested Rectangular Weir** (Weir Controls 3.79 cfs @ 1.95 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

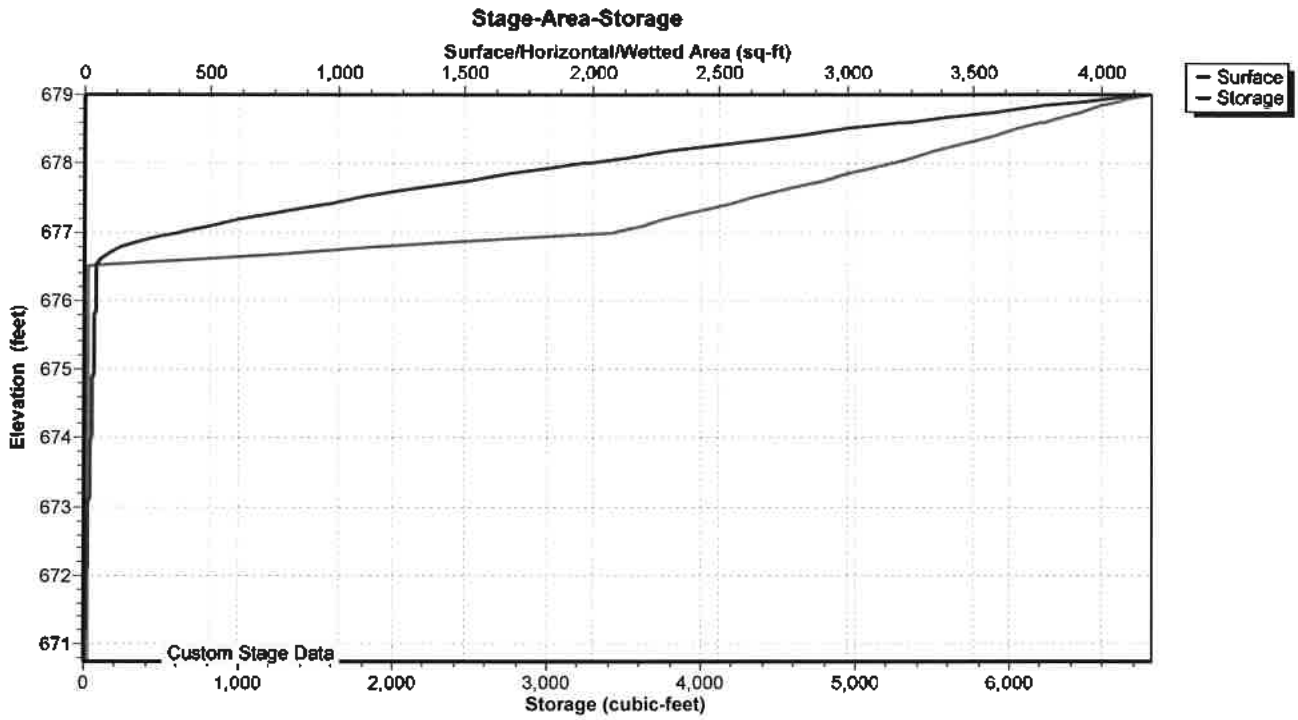
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.05 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.10 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.15 | 0.06 | 2 | 670.91 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.44 | 34 | 673.17 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.25 | 1.41 | 159 | 676.69 | 0.21 | 0.11 | 0.10 | 0.00 |
| 0.30 | 2.82 | 451 | 676.92 | 0.53 | 0.42 | 0.11 | 0.00 |
| 0.35 | 4.29 | 950 | 677.16 | 0.80 | 0.69 | 0.11 | 0.00 |
| 0.40 | 5.45 | 1,650 | 677.45 | 1.03 | 0.91 | 0.12 | 0.00 |
| 0.45 | 6.11 | 2,486 | 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 0.50 | **6.34** | 3,277 | 678.01 | 3.37 | 1.27 | 2.10 | 0.00 |
| 0.55 | **6.30** | 3,604 | 678.11 | 5.73 | 2.05 | 3.68 | 0.00 |
| 0.60 | 6.09 | **3,650** | **678.13** | **6.12** | **2.20** | **3.92** | 0.00 |
| 0.65 | 5.72 | 3,628 | 678.12 | 5.94 | 2.13 | 3.81 | 0.00 |
| 0.70 | 5.26 | 3,583 | 678.11 | 5.55 | 1.98 | 3.57 | 0.00 |
| 0.75 | 4.78 | 3,527 | 678.09 | 5.10 | 1.82 | 3.28 | 0.00 |
| 0.80 | 4.38 | 3,472 | 678.07 | 4.67 | 1.66 | 3.00 | 0.00 |
| 0.85 | 4.09 | 3,425 | 678.06 | 4.32 | 1.54 | 2.77 | 0.00 |
| 0.90 | 3.89 | 3,388 | 678.05 | 4.06 | 1.46 | 2.60 | 0.00 |
| 0.95 | 3.71 | 3,359 | 678.04 | 3.87 | 1.40 | 2.46 | 0.00 |
| 1.00 | 3.50 | 3,331 | 678.03 | 3.68 | 1.35 | 2.33 | 0.00 |
| 1.05 | 3.22 | 3,294 | 678.02 | 3.46 | 1.29 | 2.17 | 0.00 |
| 1.10 | 2.88 | 3,245 | 678.00 | 3.20 | 1.24 | 1.96 | 0.00 |
| 1.15 | 2.47 | 3,181 | 677.98 | 2.91 | 1.22 | 1.69 | 0.00 |
| 1.20 | 2.00 | 3,094 | 677.96 | 2.55 | 1.21 | 1.34 | 0.00 |
| 1.25 | 1.55 | 2,990 | 677.92 | 2.16 | 1.19 | 0.97 | 0.00 |
| 1.30 | 1.17 | 2,879 | 677.89 | 1.79 | 1.17 | 0.62 | 0.00 |
| 1.35 | 0.88 | 2,768 | 677.85 | 1.49 | 1.15 | 0.34 | 0.00 |
| 1.40 | 0.68 | 2,659 | 677.81 | 1.28 | 1.13 | 0.15 | 0.00 |
| 1.45 | 0.51 | 2,543 | 677.77 | 1.23 | 1.11 | 0.12 | 0.00 |
| 1.50 | 0.39 | 2,407 | 677.73 | 1.21 | 1.08 | 0.12 | 0.00 |
| 1.55 | 0.30 | 2,256 | 677.67 | 1.17 | 1.05 | 0.12 | 0.00 |
| 1.60 | 0.23 | 2,096 | 677.62 | 1.14 | 1.02 | 0.12 | 0.00 |
| 1.65 | 0.18 | 1,931 | 677.56 | 1.10 | 0.98 | 0.12 | 0.00 |
| 1.70 | 0.14 | 1,764 | 677.49 | 1.06 | 0.94 | 0.12 | 0.00 |
| 1.75 | 0.11 | 1,599 | 677.43 | 1.02 | 0.90 | 0.12 | 0.00 |
| 1.80 | 0.08 | 1,437 | 677.36 | 0.97 | 0.85 | 0.12 | 0.00 |
| 1.85 | 0.07 | 1,279 | 677.30 | 0.92 | 0.81 | 0.11 | 0.00 |
| 1.90 | 0.05 | 1,128 | 677.24 | 0.87 | 0.76 | 0.11 | 0.00 |
| 1.95 | 0.04 | 983 | 677.17 | 0.82 | 0.70 | 0.11 | 0.00 |
| 2.00 | 0.00 | 847 | 677.11 | 0.76 | 0.65 | 0.11 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 23.56 | 9.86 | 13.70 | 0.00 |
| 678.75 | 40.37 | 15.13 | 19.77 | 5.47 |
| 678.95 | **67.61** | **21.27** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

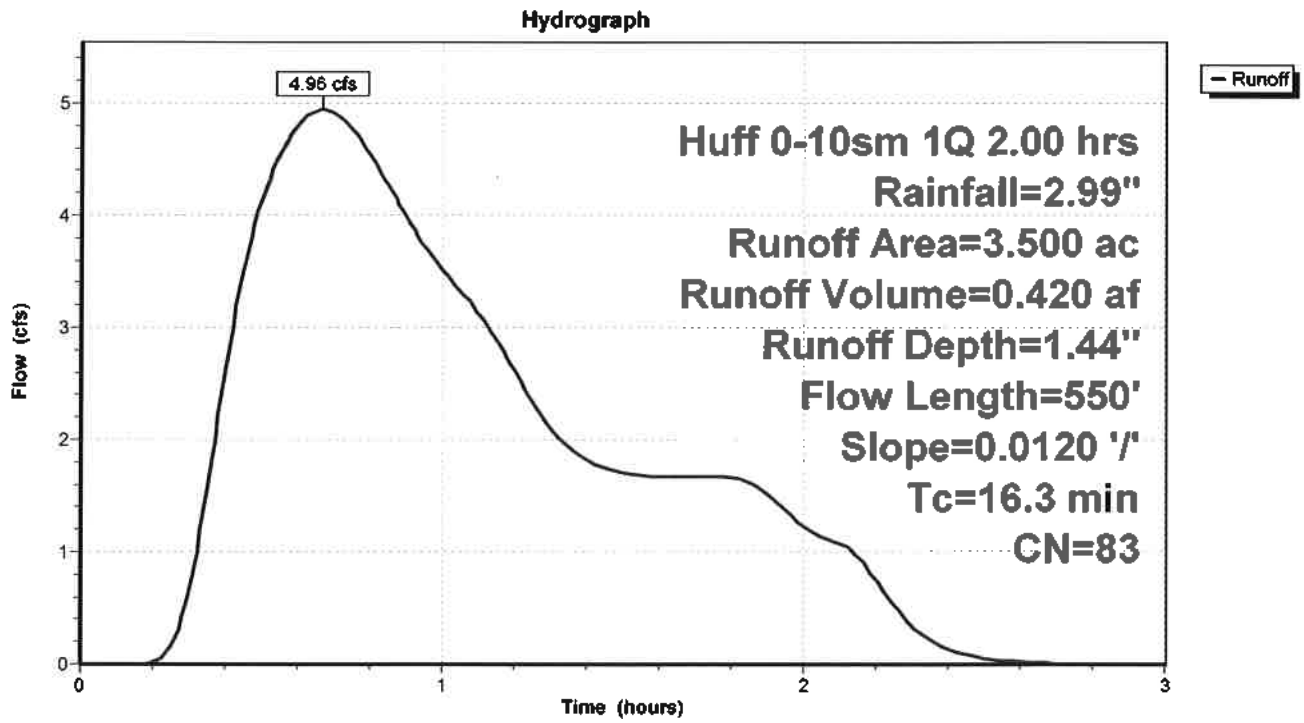
Runoff = 4.96 cfs @ 0.67 hrs, Volume= 0.420 af, Depth= 1.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=2.99"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

## Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.05 | 0.06 | 0.00 | 0.00 |
| 0.10 | 0.24 | 0.00 | 0.00 |
| 0.15 | 0.49 | 0.00 | 0.00 |
| 0.20 | 0.74 | 0.05 | 0.02 |
| 0.25 | 0.97 | 0.12 | 0.17 |
| 0.30 | 1.15 | 0.20 | 0.67 |
| 0.35 | 1.29 | 0.27 | 1.58 |
| 0.40 | 1.43 | 0.34 | 2.62 |
| 0.45 | 1.57 | 0.42 | 3.52 |
| 0.50 | 1.69 | 0.49 | 4.14 |
| 0.55 | 1.80 | 0.57 | 4.55 |
| 0.60 | 1.90 | 0.63 | 4.82 |
| 0.65 | 1.99 | 0.69 | **4.94** |
| 0.70 | 2.07 | 0.74 | **4.92** |
| 0.75 | 2.14 | 0.79 | 4.77 |
| 0.80 | 2.20 | 0.84 | 4.54 |
| 0.85 | 2.27 | 0.88 | 4.27 |
| 0.90 | 2.33 | 0.93 | 3.99 |
| 0.95 | 2.38 | 0.97 | 3.73 |
| 1.00 | 2.43 | 1.00 | 3.51 |
| 1.05 | 2.47 | 1.04 | 3.32 |
| 1.10 | 2.51 | 1.06 | 3.13 |
| 1.15 | 2.54 | 1.08 | 2.90 |
| 1.20 | 2.57 | 1.11 | 2.62 |
| 1.25 | 2.60 | 1.13 | 2.34 |
| 1.30 | 2.63 | 1.15 | 2.10 |
| 1.35 | 2.66 | 1.18 | 1.93 |
| 1.40 | 2.69 | 1.20 | 1.82 |
| 1.45 | 2.72 | 1.22 | 1.75 |
| 1.50 | 2.75 | 1.25 | 1.71 |
| 1.55 | 2.78 | 1.27 | 1.69 |
| 1.60 | 2.81 | 1.29 | 1.68 |
| 1.65 | 2.84 | 1.32 | 1.67 |
| 1.70 | 2.87 | 1.34 | 1.67 |
| 1.75 | 2.90 | 1.36 | 1.67 |
| 1.80 | 2.91 | 1.38 | 1.67 |
| 1.85 | 2.93 | 1.39 | 1.62 |
| 1.90 | 2.94 | 1.40 | 1.52 |
| 1.95 | 2.96 | 1.42 | 1.37 |
| 2.00 | **2.99** | **1.44** | 1.22 |
| 2.05 | 2.99 | 1.44 | 1.13 |
| 2.10 | 2.99 | 1.44 | 1.08 |
| 2.15 | 2.99 | 1.44 | 0.96 |
| 2.20 | 2.99 | 1.44 | 0.75 |
| 2.25 | 2.99 | 1.44 | 0.53 |
| 2.30 | 2.99 | 1.44 | 0.33 |
| 2.35 | 2.99 | 1.44 | 0.21 |
| 2.40 | 2.99 | 1.44 | 0.13 |
| 2.45 | 2.99 | 1.44 | 0.08 |
| 2.50 | 2.99 | 1.44 | 0.05 |
| 2.55 | 2.99 | 1.44 | 0.03 |
| 2.60 | 2.99 | 1.44 | 0.02 |
| 2.65 | 2.99 | 1.44 | 0.01 |
| 2.70 | 2.99 | 1.44 | 0.01 |
| 2.75 | 2.99 | 1.44 | 0.00 |
| 2.80 | 2.99 | 1.44 | 0.00 |
| 2.85 | 2.99 | 1.44 | 0.00 |
| 2.90 | 2.99 | 1.44 | 0.00 |
| 2.95 | 2.99 | 1.44 | 0.00 |
| 3.00 | 2.99 | 1.44 | 0.00 |

## Summary for Subcatchment 7S: South Property

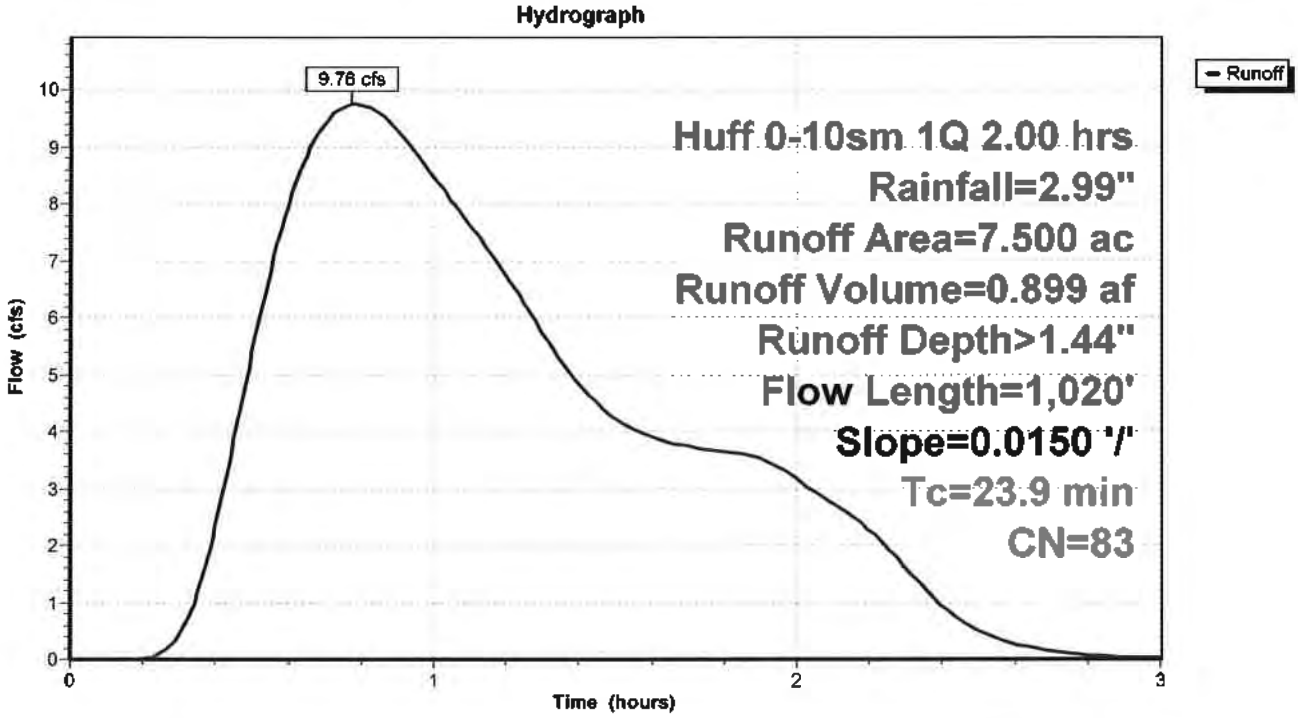
Runoff = 9.76 cfs @ 0.78 hrs, Volume= 0.899 af, Depth> 1.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=2.99"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.05 | 0.06 | 0.00 | 0.00 |
| 0.10 | 0.24 | 0.00 | 0.00 |
| 0.15 | 0.49 | 0.00 | 0.00 |
| 0.20 | 0.74 | 0.05 | 0.01 |
| 0.25 | 0.97 | 0.12 | 0.11 |
| 0.30 | 1.15 | 0.20 | 0.44 |
| 0.35 | 1.29 | 0.27 | 1.17 |
| 0.40 | 1.43 | 0.34 | 2.36 |
| 0.45 | 1.57 | 0.42 | 3.86 |
| 0.50 | 1.69 | 0.49 | 5.40 |
| 0.55 | 1.80 | 0.57 | 6.81 |
| 0.60 | 1.90 | 0.63 | 7.99 |
| 0.65 | 1.99 | 0.69 | 8.85 |
| 0.70 | 2.07 | 0.74 | 9.41 |
| 0.75 | 2.14 | 0.79 | **9.70** |
| 0.80 | 2.20 | 0.84 | **9.74** |
| 0.85 | 2.27 | 0.88 | 9.59 |
| 0.90 | 2.33 | 0.93 | 9.28 |
| 0.95 | 2.38 | 0.97 | 8.88 |
| 1.00 | 2.43 | 1.00 | 8.45 |
| 1.05 | 2.47 | 1.04 | 8.03 |
| 1.10 | 2.51 | 1.06 | 7.62 |
| 1.15 | 2.54 | 1.08 | 7.20 |
| 1.20 | 2.57 | 1.11 | 6.74 |
| 1.25 | 2.60 | 1.13 | 6.25 |
| 1.30 | 2.63 | 1.15 | 5.74 |
| 1.35 | 2.66 | 1.18 | 5.25 |
| 1.40 | 2.69 | 1.20 | 4.83 |
| 1.45 | 2.72 | 1.22 | 4.48 |
| 1.50 | 2.75 | 1.25 | 4.22 |
| 1.55 | 2.78 | 1.27 | 4.03 |
| 1.60 | 2.81 | 1.29 | 3.90 |
| 1.65 | 2.84 | 1.32 | 3.80 |
| 1.70 | 2.87 | 1.34 | 3.74 |
| 1.75 | 2.90 | 1.36 | 3.69 |
| 1.80 | 2.91 | 1.38 | 3.66 |
| 1.85 | 2.93 | 1.39 | 3.61 |
| 1.90 | 2.94 | 1.40 | 3.52 |
| 1.95 | 2.96 | 1.42 | 3.37 |
| 2.00 | **2.99** | **1.44** | 3.16 |
| 2.05 | 2.99 | 1.44 | 2.94 |
| 2.10 | 2.99 | 1.44 | 2.73 |
| 2.15 | 2.99 | 1.44 | 2.51 |
| 2.20 | 2.99 | 1.44 | 2.26 |
| 2.25 | 2.99 | 1.44 | 1.95 |
| 2.30 | 2.99 | 1.44 | 1.59 |
| 2.35 | 2.99 | 1.44 | 1.25 |
| 2.40 | 2.99 | 1.44 | 0.94 |
| 2.45 | 2.99 | 1.44 | 0.68 |
| 2.50 | 2.99 | 1.44 | 0.50 |
| 2.55 | 2.99 | 1.44 | 0.36 |
| 2.60 | 2.99 | 1.44 | 0.27 |
| 2.65 | 2.99 | 1.44 | 0.20 |
| 2.70 | 2.99 | 1.44 | 0.14 |
| 2.75 | 2.99 | 1.44 | 0.10 |
| 2.80 | 2.99 | 1.44 | 0.08 |
| 2.85 | 2.99 | 1.44 | 0.05 |
| 2.90 | 2.99 | 1.44 | 0.04 |
| 2.95 | 2.99 | 1.44 | 0.03 |
| 3.00 | 2.99 | 1.44 | 0.02 |

## Summary for Subcatchment 8S: Northwood Drive Bypass

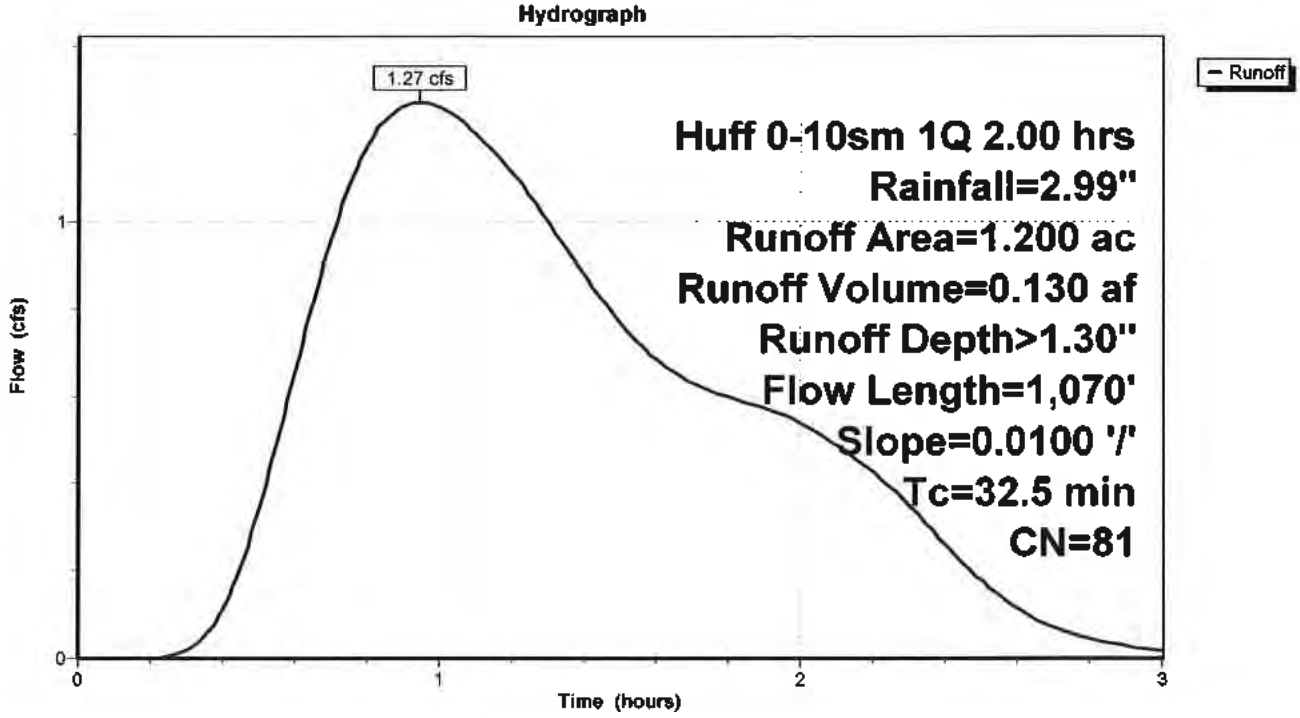
Runoff = 1.27 cfs @ 0.94 hrs, Volume= 0.130 af, Depth> 1.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=2.99"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.05 | 0.06 | 0.00 | 0.00 |
| 0.10 | 0.24 | 0.00 | 0.00 |
| 0.15 | 0.49 | 0.00 | 0.00 |
| 0.20 | 0.74 | 0.03 | 0.00 |
| 0.25 | 0.97 | 0.09 | 0.00 |
| 0.30 | 1.15 | 0.15 | 0.02 |
| 0.35 | 1.29 | 0.22 | 0.05 |
| 0.40 | 1.43 | 0.28 | 0.11 |
| 0.45 | 1.57 | 0.35 | 0.21 |
| 0.50 | 1.69 | 0.42 | 0.34 |
| 0.55 | 1.80 | 0.48 | 0.49 |
| 0.60 | 1.90 | 0.54 | 0.66 |
| 0.65 | 1.99 | 0.60 | 0.81 |
| 0.70 | 2.07 | 0.65 | 0.96 |
| 0.75 | 2.14 | 0.70 | 1.08 |
| 0.80 | 2.20 | 0.74 | 1.17 |
| 0.85 | 2.27 | 0.78 | 1.23 |
| 0.90 | 2.33 | 0.82 | **1.27** |
| 0.95 | 2.38 | 0.86 | **1.27** |
| 1.00 | 2.43 | 0.89 | 1.26 |
| 1.05 | 2.47 | 0.92 | 1.24 |
| 1.10 | 2.51 | 0.95 | 1.20 |
| 1.15 | 2.54 | 0.97 | 1.16 |
| 1.20 | 2.57 | 0.99 | 1.11 |
| 1.25 | 2.60 | 1.01 | 1.06 |
| 1.30 | 2.63 | 1.03 | 1.00 |
| 1.35 | 2.66 | 1.06 | 0.94 |
| 1.40 | 2.69 | 1.08 | 0.88 |
| 1.45 | 2.72 | 1.10 | 0.82 |
| 1.50 | 2.75 | 1.12 | 0.77 |
| 1.55 | 2.78 | 1.15 | 0.72 |
| 1.60 | 2.81 | 1.17 | 0.69 |
| 1.65 | 2.84 | 1.19 | 0.66 |
| 1.70 | 2.87 | 1.21 | 0.63 |
| 1.75 | 2.90 | 1.23 | 0.61 |
| 1.80 | 2.91 | 1.25 | 0.60 |
| 1.85 | 2.93 | 1.26 | 0.59 |
| 1.90 | 2.94 | 1.27 | 0.57 |
| 1.95 | 2.96 | 1.29 | 0.56 |
| 2.00 | **2.99** | **1.31** | 0.54 |
| 2.05 | 2.99 | 1.31 | 0.52 |
| 2.10 | 2.99 | 1.31 | 0.49 |
| 2.15 | 2.99 | 1.31 | 0.46 |
| 2.20 | 2.99 | 1.31 | 0.43 |
| 2.25 | 2.99 | 1.31 | 0.39 |
| 2.30 | 2.99 | 1.31 | 0.35 |
| 2.35 | 2.99 | 1.31 | 0.31 |
| 2.40 | 2.99 | 1.31 | 0.26 |
| 2.45 | 2.99 | 1.31 | 0.22 |
| 2.50 | 2.99 | 1.31 | 0.18 |
| 2.55 | 2.99 | 1.31 | 0.14 |
| 2.60 | 2.99 | 1.31 | 0.11 |
| 2.65 | 2.99 | 1.31 | 0.09 |
| 2.70 | 2.99 | 1.31 | 0.07 |
| 2.75 | 2.99 | 1.31 | 0.06 |
| 2.80 | 2.99 | 1.31 | 0.05 |
| 2.85 | 2.99 | 1.31 | 0.04 |
| 2.90 | 2.99 | 1.31 | 0.03 |
| 2.95 | 2.99 | 1.31 | 0.02 |
| 3.00 | 2.99 | 1.31 | 0.02 |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

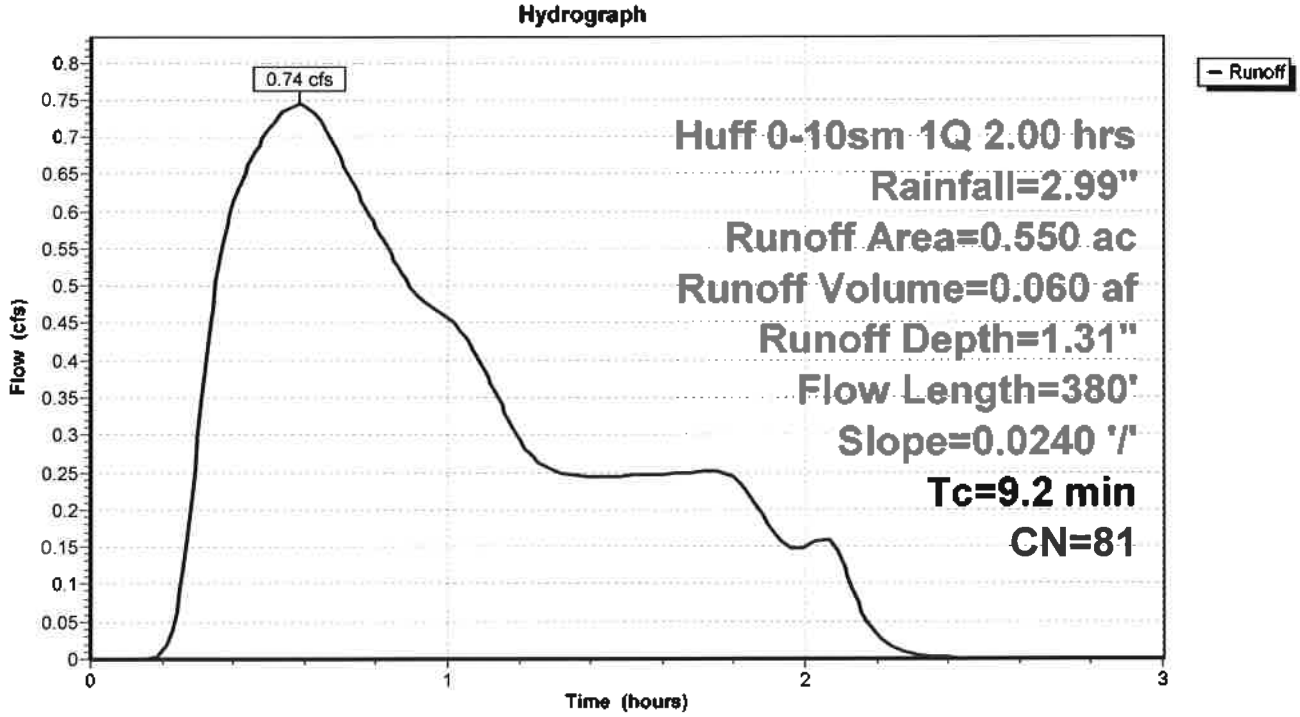
Runoff = 0.74 cfs @ 0.58 hrs, Volume= 0.060 af, Depth= 1.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=2.99"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.05 | 0.06 | 0.00 | 0.00 |
| 0.10 | 0.24 | 0.00 | 0.00 |
| 0.15 | 0.49 | 0.00 | 0.00 |
| 0.20 | 0.74 | 0.03 | 0.01 |
| 0.25 | 0.97 | 0.09 | 0.09 |
| 0.30 | 1.15 | 0.15 | 0.30 |
| 0.35 | 1.29 | 0.22 | 0.50 |
| 0.40 | 1.43 | 0.28 | 0.61 |
| 0.45 | 1.57 | 0.35 | 0.67 |
| 0.50 | 1.69 | 0.42 | 0.71 |
| 0.55 | 1.80 | 0.48 | **0.74** |
| 0.60 | 1.90 | 0.54 | **0.74** |
| 0.65 | 1.99 | 0.60 | 0.72 |
| 0.70 | 2.07 | 0.65 | 0.67 |
| 0.75 | 2.14 | 0.70 | 0.62 |
| 0.80 | 2.20 | 0.74 | 0.58 |
| 0.85 | 2.27 | 0.78 | 0.53 |
| 0.90 | 2.33 | 0.82 | 0.50 |
| 0.95 | 2.38 | 0.86 | 0.47 |
| 1.00 | 2.43 | 0.89 | 0.46 |
| 1.05 | 2.47 | 0.92 | 0.43 |
| 1.10 | 2.51 | 0.95 | 0.39 |
| 1.15 | 2.54 | 0.97 | 0.34 |
| 1.20 | 2.57 | 0.99 | 0.29 |
| 1.25 | 2.60 | 1.01 | 0.26 |
| 1.30 | 2.63 | 1.03 | 0.25 |
| 1.35 | 2.66 | 1.06 | 0.25 |
| 1.40 | 2.69 | 1.08 | 0.25 |
| 1.45 | 2.72 | 1.10 | 0.25 |
| 1.50 | 2.75 | 1.12 | 0.25 |
| 1.55 | 2.78 | 1.15 | 0.25 |
| 1.60 | 2.81 | 1.17 | 0.25 |
| 1.65 | 2.84 | 1.19 | 0.25 |
| 1.70 | 2.87 | 1.21 | 0.25 |
| 1.75 | 2.90 | 1.23 | 0.25 |
| 1.80 | 2.91 | 1.25 | 0.24 |
| 1.85 | 2.93 | 1.26 | 0.22 |
| 1.90 | 2.94 | 1.27 | 0.18 |
| 1.95 | 2.96 | 1.29 | 0.15 |
| 2.00 | **2.99** | **1.31** | 0.15 |
| 2.05 | 2.99 | 1.31 | 0.16 |
| 2.10 | 2.99 | 1.31 | 0.13 |
| 2.15 | 2.99 | 1.31 | 0.07 |
| 2.20 | 2.99 | 1.31 | 0.03 |
| 2.25 | 2.99 | 1.31 | 0.01 |
| 2.30 | 2.99 | 1.31 | 0.01 |
| 2.35 | 2.99 | 1.31 | 0.00 |
| 2.40 | 2.99 | 1.31 | 0.00 |
| 2.45 | 2.99 | 1.31 | 0.00 |
| 2.50 | 2.99 | 1.31 | 0.00 |
| 2.55 | 2.99 | 1.31 | 0.00 |
| 2.60 | 2.99 | 1.31 | 0.00 |
| 2.65 | 2.99 | 1.31 | 0.00 |
| 2.70 | 2.99 | 1.31 | 0.00 |
| 2.75 | 2.99 | 1.31 | 0.00 |
| 2.80 | 2.99 | 1.31 | 0.00 |
| 2.85 | 2.99 | 1.31 | 0.00 |
| 2.90 | 2.99 | 1.31 | 0.00 |
| 2.95 | 2.99 | 1.31 | 0.00 |
| 3.00 | 2.99 | 1.31 | 0.00 |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 14.10 cfs @ | 0.77 hrs, | Volume= | 1.231 af |
| Outflow | = | 0.83 cfs @ | 2.45 hrs, | Volume= | 0.147 af, Atten= 94%, Lag= 100.7 min |
| Primary | = | 0.83 cfs @ | 2.45 hrs, | Volume= | 0.147 af |
| Secondary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 672.60' @ 2.45 hrs Surf.Area= 30,945 sf Storage= 48,250 cf

Plug-Flow detention time= 81.7 min calculated for 0.147 af (12% of inflow)
Center-of-Mass det. time= 42.4 min ( 112.9 - 70.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.40' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

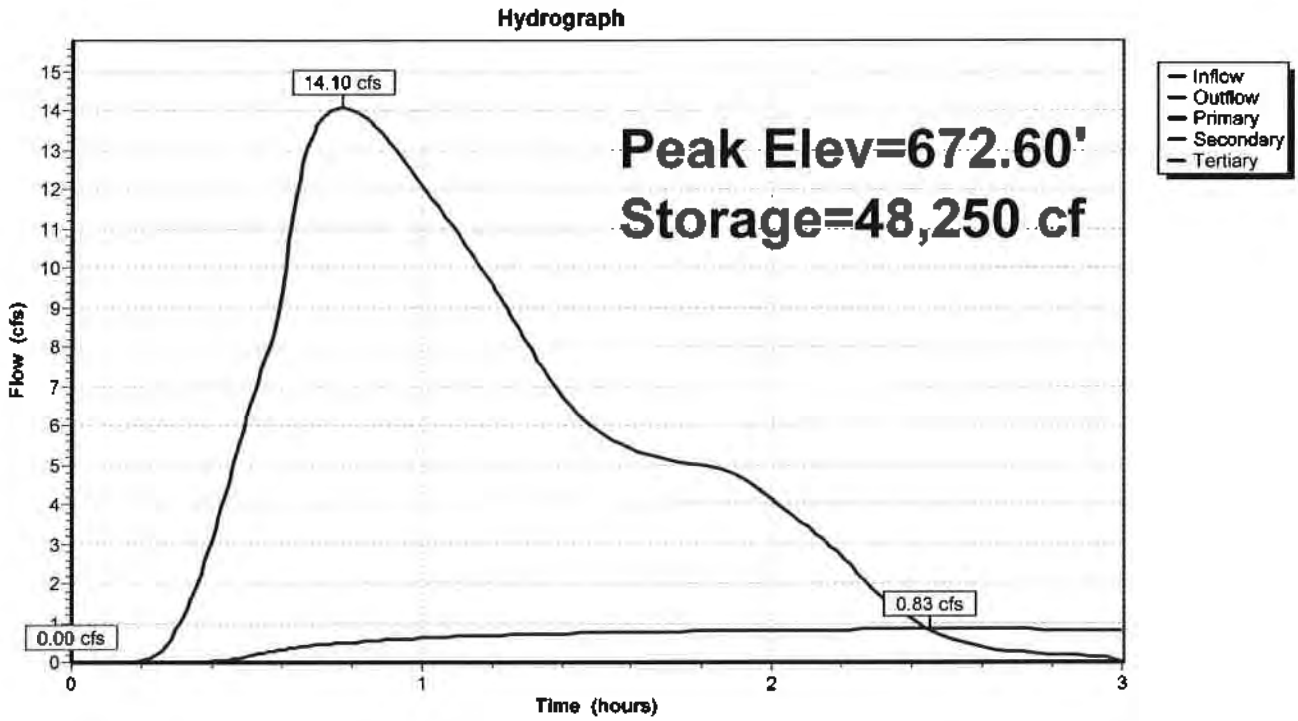
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=0.83 cfs @ 2.45 hrs HW=672.60' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.83 cfs @ 7.48 fps)

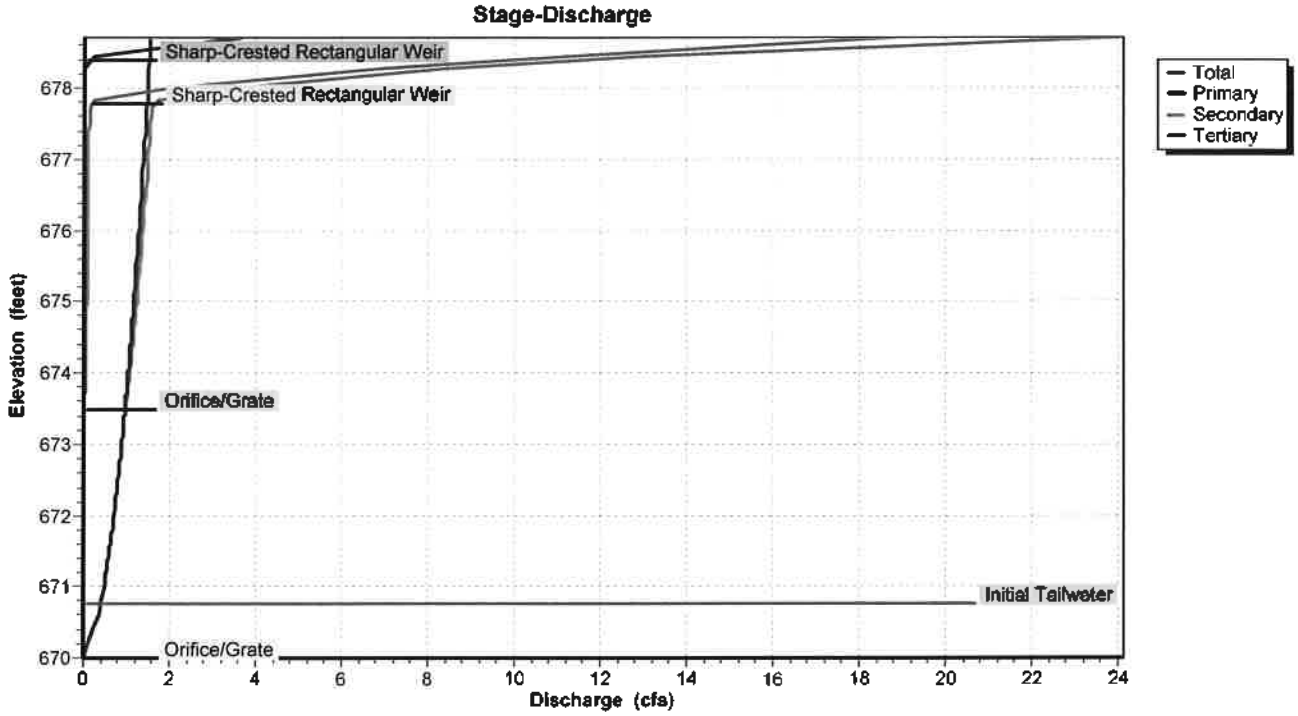
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

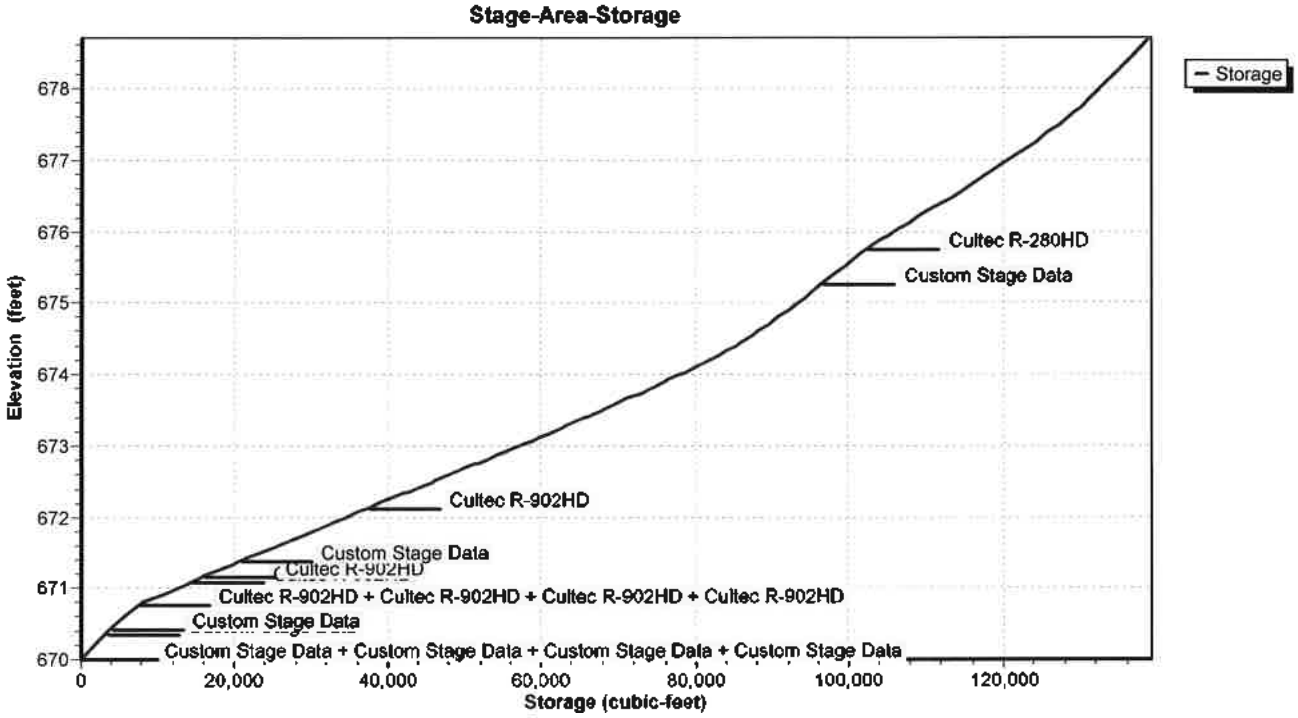
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 0.10 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.02 | 1 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.30 | 0.82 | 82 | 670.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 3.08 | 703 | 670.08 | 0.02 | 0.02 | 0.00 | 0.00 |
| 0.50 | 6.23 | 2,298 | 670.26 | 0.14 | 0.14 | 0.00 | 0.00 |
| 0.60 | 9.44 | 4,922 | 670.53 | 0.31 | 0.31 | 0.00 | 0.00 |
| 0.70 | **13.64** | 9,038 | 670.84 | 0.43 | 0.43 | 0.00 | 0.00 |
| 0.80 | **14.04** | 13,900 | 671.07 | 0.50 | 0.50 | 0.00 | 0.00 |
| 0.90 | 13.26 | 18,662 | 671.29 | 0.56 | 0.56 | 0.00 | 0.00 |
| 1.00 | 12.09 | 23,041 | 671.49 | 0.61 | 0.61 | 0.00 | 0.00 |
| 1.10 | 10.91 | 26,977 | 671.66 | 0.65 | 0.65 | 0.00 | 0.00 |
| 1.20 | 9.58 | 30,457 | 671.82 | 0.68 | 0.68 | 0.00 | 0.00 |
| 1.30 | 8.10 | 33,416 | 671.95 | 0.71 | 0.71 | 0.00 | 0.00 |
| 1.40 | 6.78 | 35,850 | 672.06 | 0.73 | 0.73 | 0.00 | 0.00 |
| 1.50 | 5.90 | 37,869 | 672.15 | 0.74 | 0.74 | 0.00 | 0.00 |
| 1.60 | 5.40 | 39,632 | 672.23 | 0.76 | 0.76 | 0.00 | 0.00 |
| 1.70 | 5.14 | 41,255 | 672.30 | 0.77 | 0.77 | 0.00 | 0.00 |
| 1.80 | 5.00 | 42,803 | 672.36 | 0.78 | 0.78 | 0.00 | 0.00 |
| 1.90 | 4.72 | 44,283 | 672.43 | 0.80 | 0.80 | 0.00 | 0.00 |
| 2.00 | 4.12 | 45,604 | 672.49 | 0.81 | 0.81 | 0.00 | 0.00 |
| 2.10 | 3.44 | 46,686 | 672.53 | 0.81 | 0.81 | 0.00 | 0.00 |
| 2.20 | 2.66 | 47,508 | 672.57 | 0.82 | 0.82 | 0.00 | 0.00 |
| 2.30 | 1.72 | 48,016 | 672.59 | 0.82 | 0.82 | 0.00 | 0.00 |
| 2.40 | 1.06 | **48,228** | **672.60** | **0.83** | **0.83** | 0.00 | 0.00 |
| 2.50 | 0.62 | **48,231** | **672.60** | **0.83** | **0.83** | 0.00 | 0.00 |
| 2.60 | 0.39 | 48,114 | 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 2.70 | 0.26 | 47,933 | 672.59 | 0.82 | 0.82 | 0.00 | 0.00 |
| 2.80 | 0.19 | 47,717 | 672.58 | 0.82 | 0.82 | 0.00 | 0.00 |
| 2.90 | 0.15 | 47,482 | 672.57 | 0.82 | 0.82 | 0.00 | 0.00 |
| 3.00 | 0.00 | 47,237 | 672.56 | 0.82 | 0.82 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 18.46 | 1.54 | 15.13 | 1.79 |
| 678.80 | **28.12** | **1.56** | **21.42** | **5.14** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 5.89 cfs @ | 0.71 hrs, | Volume= | 0.550 af |
| Outflow | = | 5.83 cfs @ | 0.76 hrs, | Volume= | 0.537 af, Atten= 1%, Lag= 3.2 min |
| Primary | = | 2.09 cfs @ | 0.76 hrs, | Volume= | 0.264 af |
| Secondary | = | 3.74 cfs @ | 0.76 hrs, | Volume= | 0.273 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Peak Elev= 678.12' @ 0.76 hrs Surf.Area= 3,292 sf Storage= 3,615 cf

Plug-Flow detention time= 16.9 min calculated for 0.537 af (98% of inflow)
Center-of-Mass det. time= 15.0 min ( 82.5 - 67.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

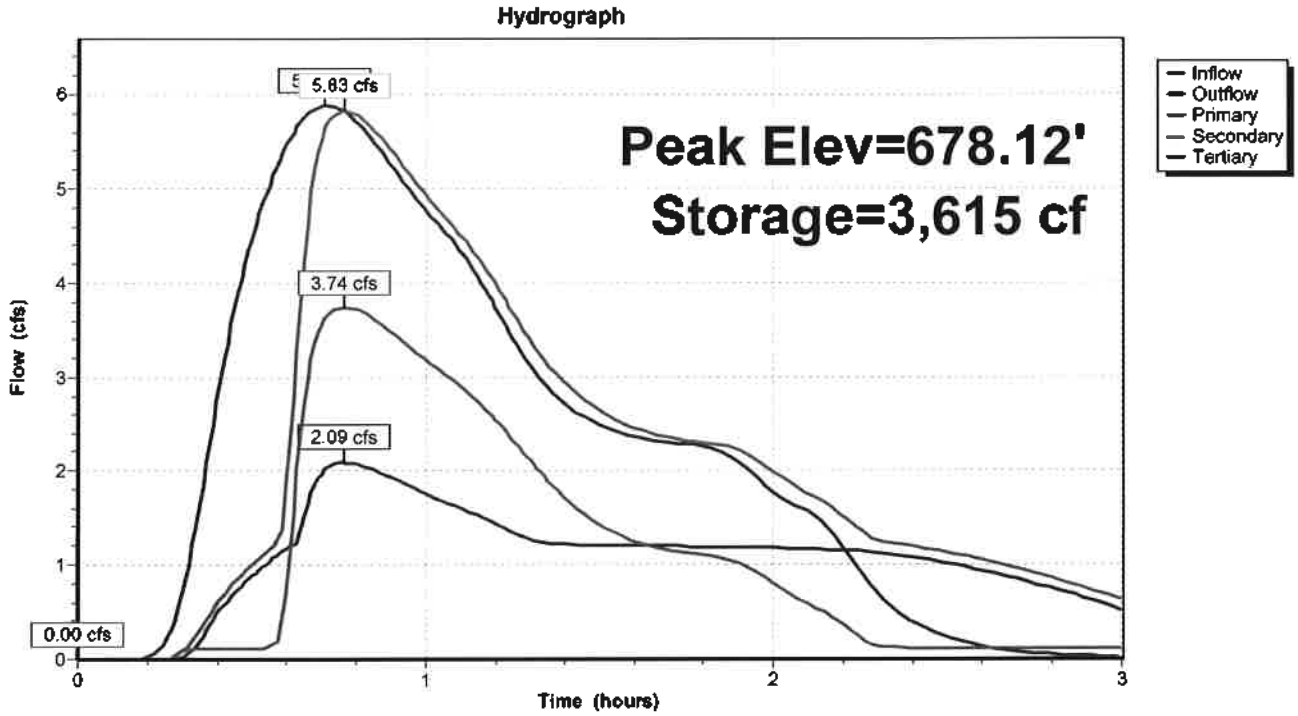
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 1.0' Crest Height |

**Primary OutFlow** Max=2.09 cfs @ 0.76 hrs HW=678.12' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.29 cfs @ 5.59 fps)
└─**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.80 cfs @ 1.14 fps)

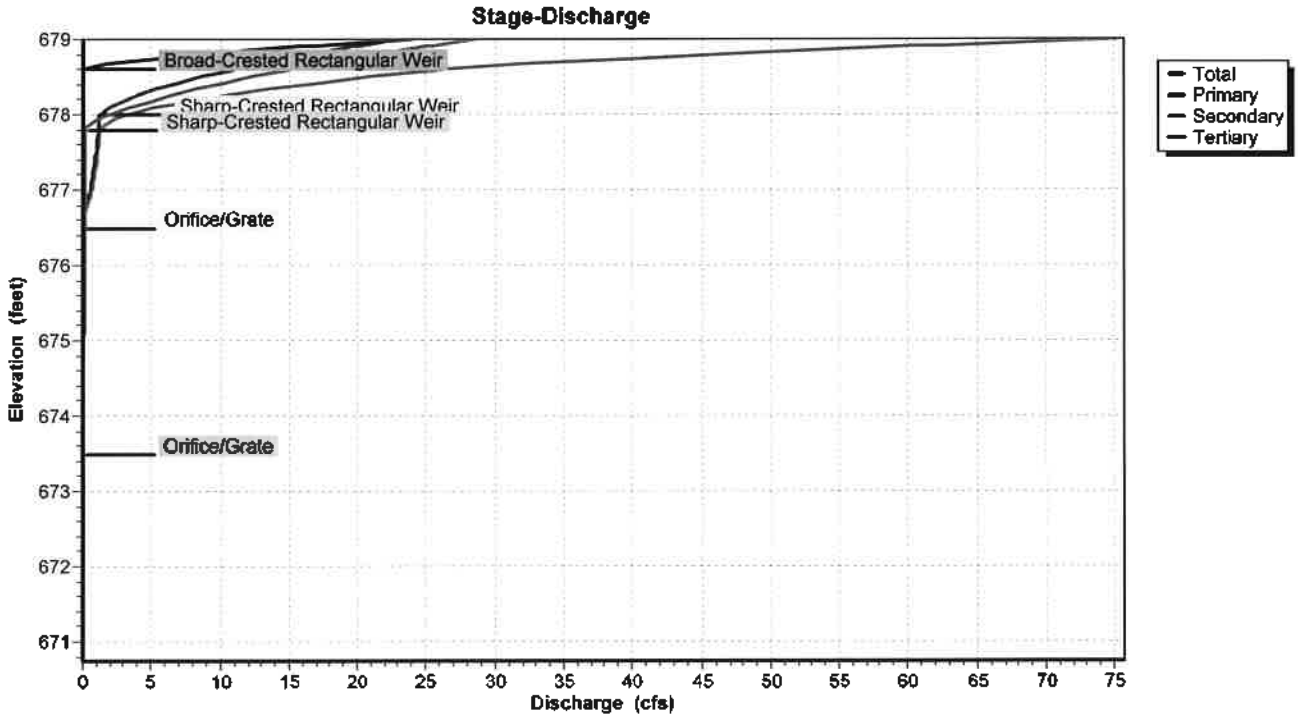
**Secondary OutFlow** Max=3.74 cfs @ 0.76 hrs HW=678.12' TW=670.99' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.13 cfs @ 10.28 fps)
└─**5=Sharp-Crested Rectangular Weir** (Weir Controls 3.62 cfs @ 1.92 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

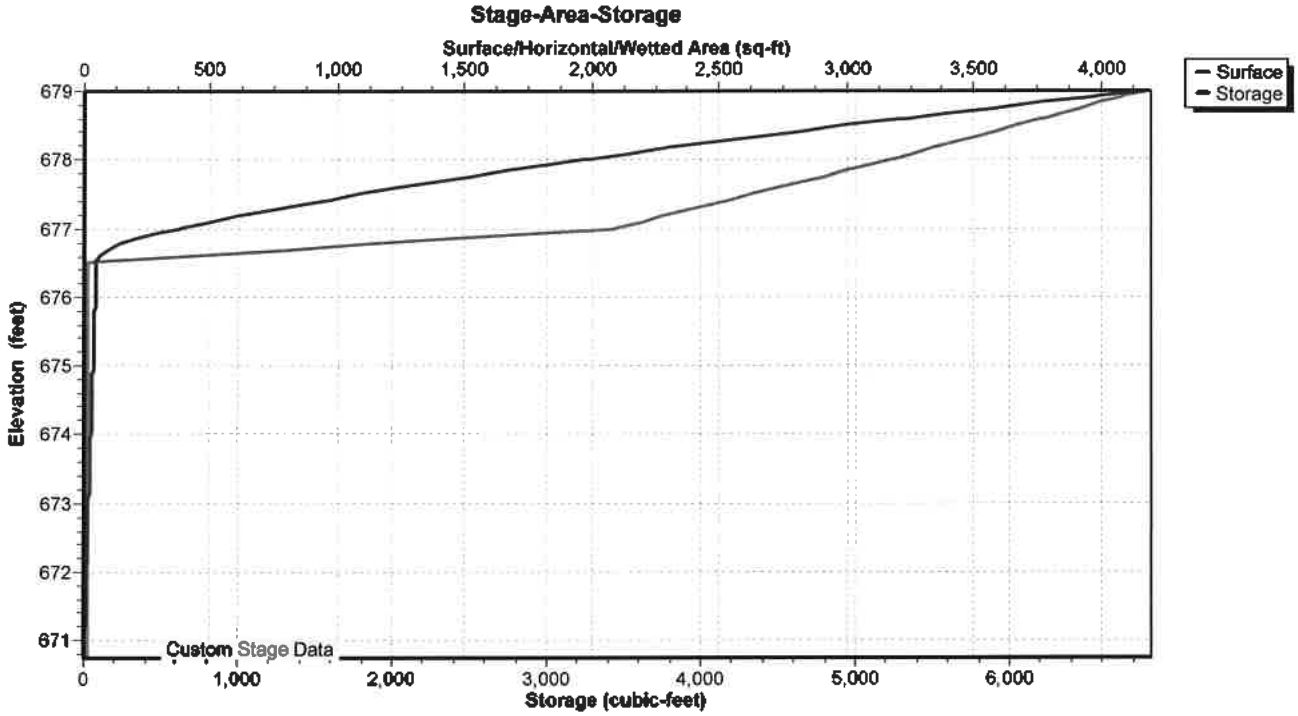
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.10 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.02 | 0 | 670.78 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.30 | 0.69 | 70 | 675.74 | 0.09 | 0.00 | 0.09 | 0.00 |
| 0.40 | 2.74 | 527 | 676.96 | 0.59 | 0.48 | 0.11 | 0.00 |
| 0.50 | 4.48 | 1,540 | 677.41 | 1.00 | 0.88 | 0.12 | 0.00 |
| 0.60 | 5.47 | 2,911 | 677.90 | 1.89 | 1.18 | 0.71 | 0.00 |
| 0.70 | **5.88** | **3,581** | **678.11** | **5.54** | **1.98** | **3.56** | 0.00 |
| 0.80 | **5.71** | **3,611** | **678.12** | **5.79** | **2.08** | **3.72** | 0.00 |
| 0.90 | 5.26 | 3,566 | 678.10 | 5.42 | 1.93 | 3.48 | 0.00 |
| 1.00 | 4.78 | 3,506 | 678.08 | 4.93 | 1.76 | 3.18 | 0.00 |
| 1.10 | 4.33 | 3,450 | 678.07 | 4.50 | 1.61 | 2.90 | 0.00 |
| 1.20 | 3.73 | 3,377 | 678.04 | 3.98 | 1.44 | 2.55 | 0.00 |
| 1.30 | 3.11 | 3,280 | 678.01 | 3.38 | 1.27 | 2.11 | 0.00 |
| 1.40 | 2.70 | 3,187 | 677.99 | 2.93 | 1.22 | 1.71 | 0.00 |
| 1.50 | 2.48 | 3,116 | 677.96 | 2.64 | 1.21 | 1.43 | 0.00 |
| 1.60 | 2.36 | 3,071 | 677.95 | 2.46 | 1.20 | 1.25 | 0.00 |
| 1.70 | 2.30 | 3,044 | 677.94 | 2.36 | 1.20 | 1.16 | 0.00 |
| 1.80 | 2.26 | 3,029 | 677.93 | 2.30 | 1.20 | 1.10 | 0.00 |
| 1.90 | 2.10 | 3,006 | 677.93 | 2.22 | 1.19 | 1.02 | 0.00 |
| 2.00 | 1.76 | 2,941 | 677.91 | 1.99 | 1.18 | 0.81 | 0.00 |
| 2.10 | 1.57 | 2,866 | 677.88 | 1.75 | 1.17 | 0.58 | 0.00 |
| 2.20 | 1.18 | 2,781 | 677.85 | 1.52 | 1.15 | 0.37 | 0.00 |
| 2.30 | 0.68 | 2,623 | 677.80 | 1.25 | 1.13 | 0.12 | 0.00 |
| 2.40 | 0.40 | 2,375 | 677.72 | 1.20 | 1.08 | 0.12 | 0.00 |
| 2.50 | 0.23 | 2,067 | 677.61 | 1.13 | 1.01 | 0.12 | 0.00 |
| 2.60 | 0.13 | 1,739 | 677.48 | 1.05 | 0.94 | 0.12 | 0.00 |
| 2.70 | 0.08 | 1,412 | 677.35 | 0.96 | 0.85 | 0.12 | 0.00 |
| 2.80 | 0.05 | 1,105 | 677.23 | 0.86 | 0.75 | 0.11 | 0.00 |
| 2.90 | 0.03 | 826 | 677.10 | 0.75 | 0.64 | 0.11 | 0.00 |
| 3.00 | 0.00 | 583 | 676.99 | 0.63 | 0.52 | 0.11 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 23.56 | 9.86 | 13.70 | 0.00 |
| 678.75 | 40.37 | 15.13 | 19.77 | 5.47 |
| 678.95 | **67.61** | **21.27** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

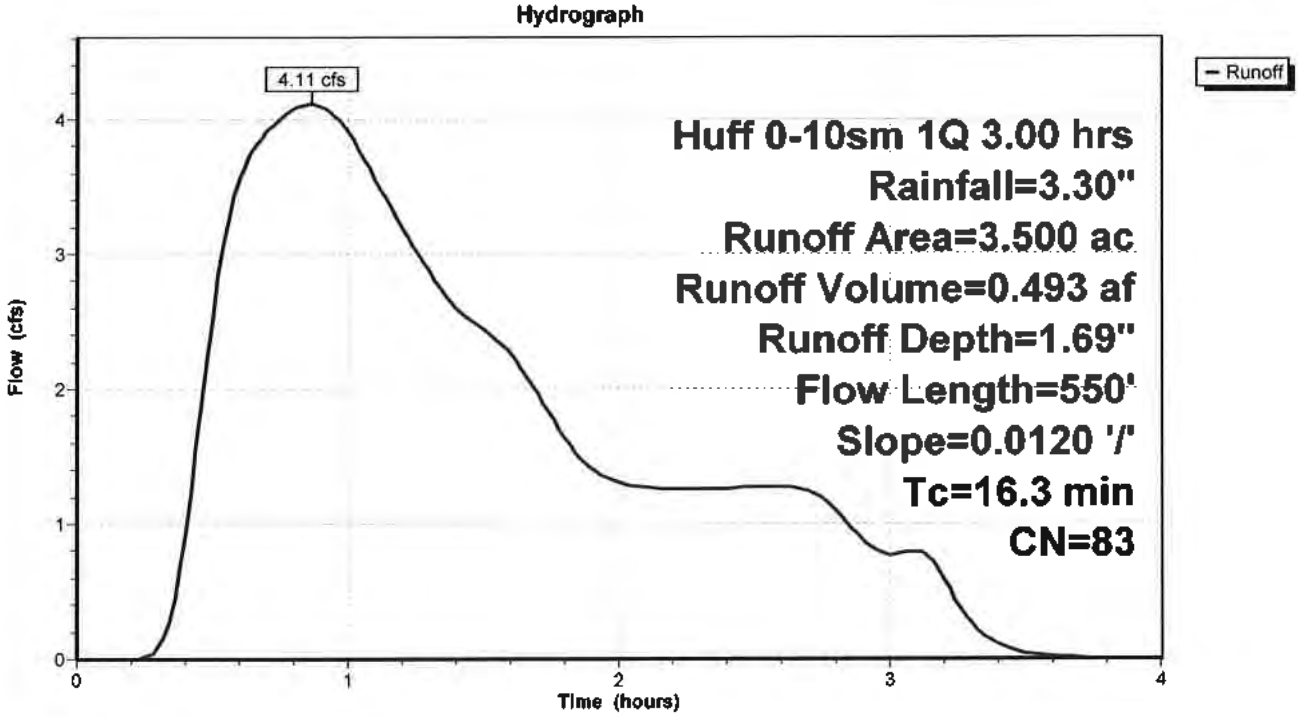
Runoff = 4.11 cfs @ 0.87 hrs, Volume= 0.493 af, Depth= 1.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=3.30"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 2.08 | 2.96 | 1.41 | 1.28 |
| 0.04 | 0.02 | 0.00 | 0.00 | 2.12 | 2.98 | 1.43 | 1.27 |
| 0.08 | 0.08 | 0.00 | 0.00 | 2.16 | 2.99 | 1.44 | 1.26 |
| 0.12 | 0.17 | 0.00 | 0.00 | 2.20 | 3.01 | 1.46 | 1.26 |
| 0.16 | 0.30 | 0.00 | 0.00 | 2.24 | 3.03 | 1.47 | 1.26 |
| 0.20 | 0.45 | 0.00 | 0.00 | 2.28 | 3.05 | 1.48 | 1.26 |
| 0.24 | 0.59 | 0.02 | 0.00 | 2.32 | 3.06 | 1.50 | 1.26 |
| 0.28 | 0.74 | 0.05 | 0.03 | 2.36 | 3.08 | 1.51 | 1.26 |
| 0.32 | 0.89 | 0.09 | 0.15 | 2.40 | 3.10 | 1.53 | 1.26 |
| 0.36 | 1.02 | 0.14 | 0.44 | 2.44 | 3.12 | 1.54 | 1.26 |
| 0.40 | 1.14 | 0.19 | 0.93 | 2.48 | 3.14 | 1.56 | 1.27 |
| 0.44 | 1.24 | 0.24 | 1.56 | 2.52 | 3.15 | 1.57 | 1.27 |
| 0.48 | 1.33 | 0.29 | 2.23 | 2.56 | 3.17 | 1.59 | 1.27 |
| 0.52 | 1.42 | 0.33 | 2.83 | 2.60 | 3.19 | 1.60 | 1.27 |
| 0.56 | 1.50 | 0.38 | 3.27 | 2.64 | 3.20 | 1.61 | 1.27 |
| 0.60 | 1.58 | 0.43 | 3.56 | 2.68 | 3.21 | 1.62 | 1.26 |
| 0.64 | 1.66 | 0.48 | 3.74 | 2.72 | 3.22 | 1.63 | 1.23 |
| 0.68 | 1.74 | 0.52 | 3.86 | 2.76 | 3.23 | 1.63 | 1.18 |
| 0.72 | 1.81 | 0.57 | 3.95 | 2.80 | 3.24 | 1.64 | 1.10 |
| 0.76 | 1.88 | 0.62 | 4.02 | 2.84 | 3.25 | 1.65 | 1.01 |
| 0.80 | 1.95 | 0.66 | 4.07 | 2.88 | 3.26 | 1.66 | 0.92 |
| 0.84 | 2.01 | 0.71 | **4.10** | 2.92 | 3.27 | 1.67 | 0.84 |
| 0.88 | 2.07 | 0.75 | **4.11** | 2.96 | 3.28 | 1.68 | 0.79 |
| 0.92 | 2.13 | 0.78 | 4.08 | 3.00 | **3.30** | **1.69** | 0.77 |
| 0.96 | 2.18 | 0.82 | 4.01 | 3.04 | 3.30 | 1.69 | 0.78 |
| 1.00 | 2.23 | 0.85 | 3.91 | 3.08 | 3.30 | 1.69 | 0.80 |
| 1.04 | 2.27 | 0.89 | 3.77 | 3.12 | 3.30 | 1.69 | 0.79 |
| 1.08 | 2.32 | 0.92 | 3.63 | 3.16 | 3.30 | 1.69 | 0.72 |
| 1.12 | 2.36 | 0.95 | 3.48 | 3.20 | 3.30 | 1.69 | 0.59 |
| 1.16 | 2.40 | 0.98 | 3.34 | 3.24 | 3.30 | 1.69 | 0.44 |
| 1.20 | 2.43 | 1.01 | 3.20 | 3.28 | 3.30 | 1.69 | 0.31 |
| 1.24 | 2.47 | 1.03 | 3.06 | 3.32 | 3.30 | 1.69 | 0.22 |
| 1.28 | 2.50 | 1.06 | 2.93 | 3.36 | 3.30 | 1.69 | 0.15 |
| 1.32 | 2.54 | 1.09 | 2.80 | 3.40 | 3.30 | 1.69 | 0.10 |
| 1.36 | 2.58 | 1.11 | 2.69 | 3.44 | 3.30 | 1.69 | 0.07 |
| 1.40 | 2.61 | 1.14 | 2.60 | 3.48 | 3.30 | 1.69 | 0.05 |
| 1.44 | 2.64 | 1.16 | 2.53 | 3.52 | 3.30 | 1.69 | 0.03 |
| 1.48 | 2.67 | 1.19 | 2.47 | 3.56 | 3.30 | 1.69 | 0.02 |
| 1.52 | 2.70 | 1.21 | 2.41 | 3.60 | 3.30 | 1.69 | 0.02 |
| 1.56 | 2.72 | 1.23 | 2.34 | 3.64 | 3.30 | 1.69 | 0.01 |
| 1.60 | 2.74 | 1.24 | 2.25 | 3.68 | 3.30 | 1.69 | 0.01 |
| 1.64 | 2.76 | 1.26 | 2.15 | 3.72 | 3.30 | 1.69 | 0.01 |
| 1.68 | 2.78 | 1.27 | 2.03 | 3.76 | 3.30 | 1.69 | 0.00 |
| 1.72 | 2.80 | 1.29 | 1.89 | 3.80 | 3.30 | 1.69 | 0.00 |
| 1.76 | 2.82 | 1.30 | 1.76 | 3.84 | 3.30 | 1.69 | 0.00 |
| 1.80 | 2.83 | 1.31 | 1.63 | 3.88 | 3.30 | 1.69 | 0.00 |
| 1.84 | 2.85 | 1.33 | 1.52 | 3.92 | 3.30 | 1.69 | 0.00 |
| 1.88 | 2.87 | 1.34 | 1.44 | 3.96 | 3.30 | 1.69 | 0.00 |
| 1.92 | 2.89 | 1.36 | 1.38 | 4.00 | 3.30 | 1.69 | 0.00 |
| 1.96 | 2.90 | 1.37 | 1.33 | | | | |
| 2.00 | 2.92 | 1.38 | 1.31 | | | | |
| 2.04 | 2.94 | 1.40 | 1.29 | | | | |

## Summary for Subcatchment 7S: South Property

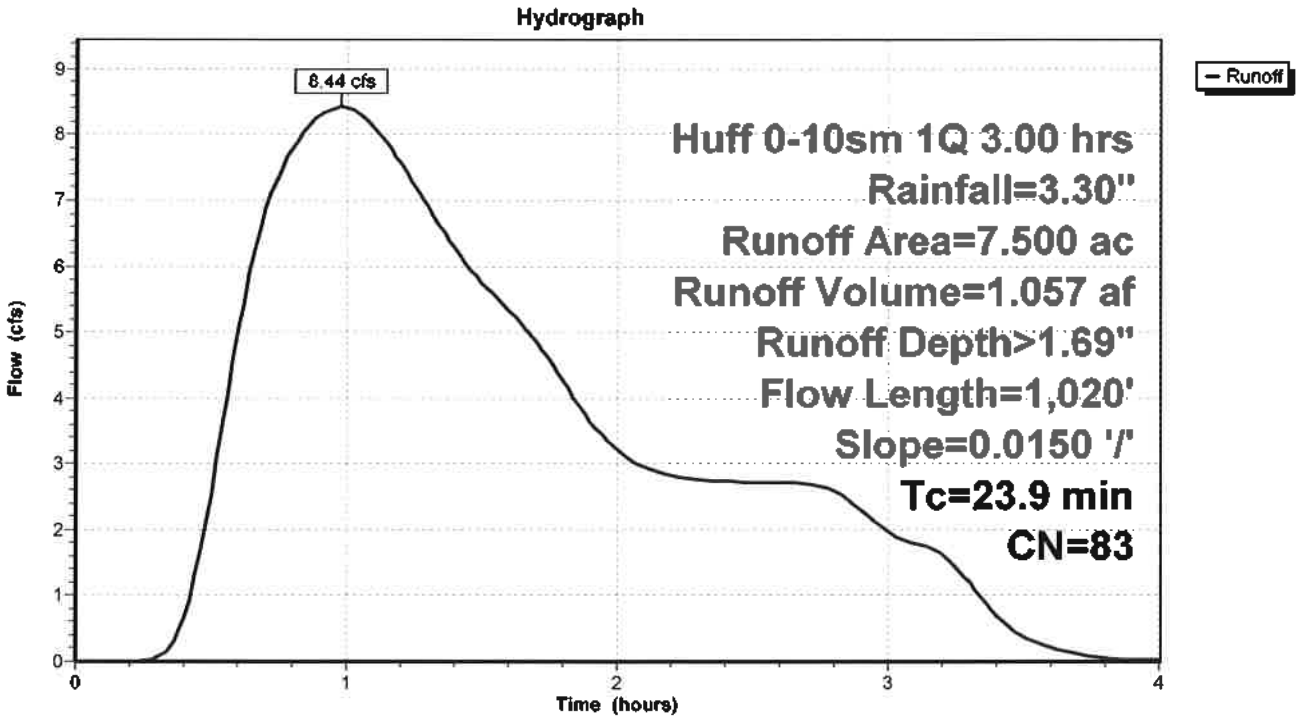
Runoff = 8.44 cfs @ 0.98 hrs, Volume= 1.057 af, Depth> 1.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=3.30"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 2.08 | 2.96 | 1.41 | 2.99 |
| 0.04 | 0.02 | 0.00 | 0.00 | 2.12 | 2.98 | 1.43 | 2.92 |
| 0.08 | 0.08 | 0.00 | 0.00 | 2.16 | 2.99 | 1.44 | 2.87 |
| 0.12 | 0.17 | 0.00 | 0.00 | 2.20 | 3.01 | 1.46 | 2.82 |
| 0.16 | 0.30 | 0.00 | 0.00 | 2.24 | 3.03 | 1.47 | 2.79 |
| 0.20 | 0.45 | 0.00 | 0.00 | 2.28 | 3.05 | 1.48 | 2.77 |
| 0.24 | 0.59 | 0.02 | 0.00 | 2.32 | 3.06 | 1.50 | 2.75 |
| 0.28 | 0.74 | 0.05 | 0.02 | 2.36 | 3.08 | 1.51 | 2.74 |
| 0.32 | 0.89 | 0.09 | 0.09 | 2.40 | 3.10 | 1.53 | 2.73 |
| 0.36 | 1.02 | 0.14 | 0.29 | 2.44 | 3.12 | 1.54 | 2.72 |
| 0.40 | 1.14 | 0.19 | 0.66 | 2.48 | 3.14 | 1.56 | 2.72 |
| 0.44 | 1.24 | 0.24 | 1.27 | 2.52 | 3.15 | 1.57 | 2.72 |
| 0.48 | 1.33 | 0.29 | 2.10 | 2.56 | 3.17 | 1.59 | 2.72 |
| 0.52 | 1.42 | 0.33 | 3.06 | 2.60 | 3.19 | 1.60 | 2.72 |
| 0.56 | 1.50 | 0.38 | 4.07 | 2.64 | 3.20 | 1.61 | 2.72 |
| 0.60 | 1.58 | 0.43 | 5.03 | 2.68 | 3.21 | 1.62 | 2.72 |
| 0.64 | 1.66 | 0.48 | 5.86 | 2.72 | 3.22 | 1.63 | 2.70 |
| 0.68 | 1.74 | 0.52 | 6.55 | 2.76 | 3.23 | 1.63 | 2.66 |
| 0.72 | 1.81 | 0.57 | 7.09 | 2.80 | 3.24 | 1.64 | 2.59 |
| 0.76 | 1.88 | 0.62 | 7.50 | 2.84 | 3.25 | 1.65 | 2.49 |
| 0.80 | 1.95 | 0.66 | 7.81 | 2.88 | 3.26 | 1.66 | 2.36 |
| 0.84 | 2.01 | 0.71 | 8.05 | 2.92 | 3.27 | 1.67 | 2.22 |
| 0.88 | 2.07 | 0.75 | 8.24 | 2.96 | 3.28 | 1.68 | 2.08 |
| 0.92 | 2.13 | 0.78 | 8.37 | 3.00 | **3.30** | **1.69** | 1.96 |
| 0.96 | 2.18 | 0.82 | **8.42** | 3.04 | 3.30 | 1.69 | 1.87 |
| 1.00 | 2.23 | 0.85 | **8.42** | 3.08 | 3.30 | 1.69 | 1.81 |
| 1.04 | 2.27 | 0.89 | 8.35 | 3.12 | 3.30 | 1.69 | 1.77 |
| 1.08 | 2.32 | 0.92 | 8.20 | 3.16 | 3.30 | 1.69 | 1.72 |
| 1.12 | 2.36 | 0.95 | 8.01 | 3.20 | 3.30 | 1.69 | 1.62 |
| 1.16 | 2.40 | 0.98 | 7.79 | 3.24 | 3.30 | 1.69 | 1.47 |
| 1.20 | 2.43 | 1.01 | 7.55 | 3.28 | 3.30 | 1.69 | 1.29 |
| 1.24 | 2.47 | 1.03 | 7.29 | 3.32 | 3.30 | 1.69 | 1.09 |
| 1.28 | 2.50 | 1.06 | 7.02 | 3.36 | 3.30 | 1.69 | 0.89 |
| 1.32 | 2.54 | 1.09 | 6.76 | 3.40 | 3.30 | 1.69 | 0.70 |
| 1.36 | 2.58 | 1.11 | 6.51 | 3.44 | 3.30 | 1.69 | 0.55 |
| 1.40 | 2.61 | 1.14 | 6.27 | 3.48 | 3.30 | 1.69 | 0.42 |
| 1.44 | 2.64 | 1.16 | 6.04 | 3.52 | 3.30 | 1.69 | 0.33 |
| 1.48 | 2.67 | 1.19 | 5.85 | 3.56 | 3.30 | 1.69 | 0.26 |
| 1.52 | 2.70 | 1.21 | 5.67 | 3.60 | 3.30 | 1.69 | 0.20 |
| 1.56 | 2.72 | 1.23 | 5.51 | 3.64 | 3.30 | 1.69 | 0.16 |
| 1.60 | 2.74 | 1.24 | 5.34 | 3.68 | 3.30 | 1.69 | 0.12 |
| 1.64 | 2.76 | 1.26 | 5.16 | 3.72 | 3.30 | 1.69 | 0.09 |
| 1.68 | 2.78 | 1.27 | 4.96 | 3.76 | 3.30 | 1.69 | 0.07 |
| 1.72 | 2.80 | 1.29 | 4.74 | 3.80 | 3.30 | 1.69 | 0.06 |
| 1.76 | 2.82 | 1.30 | 4.50 | 3.84 | 3.30 | 1.69 | 0.04 |
| 1.80 | 2.83 | 1.31 | 4.25 | 3.88 | 3.30 | 1.69 | 0.03 |
| 1.84 | 2.85 | 1.33 | 4.00 | 3.92 | 3.30 | 1.69 | 0.03 |
| 1.88 | 2.87 | 1.34 | 3.76 | 3.96 | 3.30 | 1.69 | 0.02 |
| 1.92 | 2.89 | 1.36 | 3.54 | 4.00 | 3.30 | 1.69 | 0.01 |
| 1.96 | 2.90 | 1.37 | 3.36 | | | | |
| 2.00 | 2.92 | 1.38 | 3.21 | | | | |
| 2.04 | 2.94 | 1.40 | 3.09 | | | | |

## Summary for Subcatchment 8S: Northwood Drive Bypass

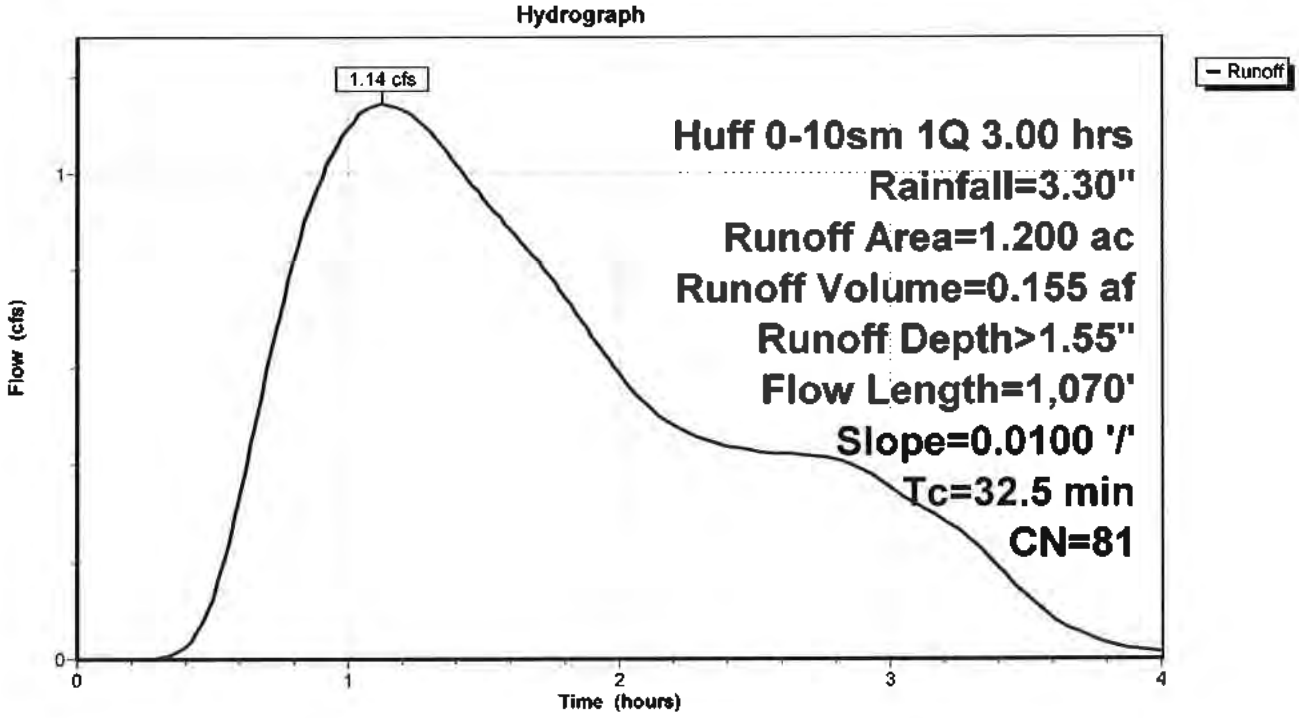
Runoff = 1.14 cfs @ 1.13 hrs, Volume= 0.155 af, Depth> 1.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=3.30"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

### Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 2.08 | 2.96 | 1.28 | 0.54 |
| 0.04 | 0.02 | 0.00 | 0.00 | 2.12 | 2.98 | 1.29 | 0.51 |
| 0.08 | 0.08 | 0.00 | 0.00 | 2.16 | 2.99 | 1.31 | 0.50 |
| 0.12 | 0.17 | 0.00 | 0.00 | 2.20 | 3.01 | 1.32 | 0.48 |
| 0.16 | 0.30 | 0.00 | 0.00 | 2.24 | 3.03 | 1.34 | 0.47 |
| 0.20 | 0.45 | 0.00 | 0.00 | 2.28 | 3.05 | 1.35 | 0.46 |
| 0.24 | 0.59 | 0.01 | 0.00 | 2.32 | 3.06 | 1.36 | 0.45 |
| 0.28 | 0.74 | 0.03 | 0.00 | 2.36 | 3.08 | 1.38 | 0.44 |
| 0.32 | 0.89 | 0.06 | 0.00 | 2.40 | 3.10 | 1.39 | 0.44 |
| 0.36 | 1.02 | 0.11 | 0.01 | 2.44 | 3.12 | 1.40 | 0.43 |
| 0.40 | 1.14 | 0.15 | 0.02 | 2.48 | 3.14 | 1.42 | 0.43 |
| 0.44 | 1.24 | 0.19 | 0.05 | 2.52 | 3.15 | 1.43 | 0.43 |
| 0.48 | 1.33 | 0.23 | 0.10 | 2.56 | 3.17 | 1.45 | 0.43 |
| 0.52 | 1.42 | 0.27 | 0.16 | 2.60 | 3.19 | 1.46 | 0.42 |
| 0.56 | 1.50 | 0.32 | 0.24 | 2.64 | 3.20 | 1.47 | 0.42 |
| 0.60 | 1.58 | 0.36 | 0.34 | 2.68 | 3.21 | 1.48 | 0.42 |
| 0.64 | 1.66 | 0.40 | 0.44 | 2.72 | 3.22 | 1.49 | 0.42 |
| 0.68 | 1.74 | 0.45 | 0.54 | 2.76 | 3.23 | 1.49 | 0.42 |
| 0.72 | 1.81 | 0.49 | 0.64 | 2.80 | 3.24 | 1.50 | 0.41 |
| 0.76 | 1.88 | 0.53 | 0.74 | 2.84 | 3.25 | 1.51 | 0.40 |
| 0.80 | 1.95 | 0.57 | 0.82 | 2.88 | 3.26 | 1.51 | 0.39 |
| 0.84 | 2.01 | 0.61 | 0.90 | 2.92 | 3.27 | 1.52 | 0.38 |
| 0.88 | 2.07 | 0.65 | 0.96 | 2.96 | 3.28 | 1.53 | 0.37 |
| 0.92 | 2.13 | 0.69 | 1.02 | 3.00 | **3.30** | **1.55** | 0.35 |
| 0.96 | 2.18 | 0.72 | 1.06 | 3.04 | 3.30 | 1.55 | 0.34 |
| 1.00 | 2.23 | 0.75 | 1.10 | 3.08 | 3.30 | 1.55 | 0.32 |
| 1.04 | 2.27 | 0.78 | 1.12 | 3.12 | 3.30 | 1.55 | 0.31 |
| 1.08 | 2.32 | 0.81 | 1.14 | 3.16 | 3.30 | 1.55 | 0.30 |
| 1.12 | 2.36 | 0.84 | **1.14** | 3.20 | 3.30 | 1.55 | 0.28 |
| 1.16 | 2.40 | 0.87 | 1.14 | 3.24 | 3.30 | 1.55 | 0.27 |
| 1.20 | 2.43 | 0.90 | 1.13 | 3.28 | 3.30 | 1.55 | 0.25 |
| 1.24 | 2.47 | 0.92 | 1.12 | 3.32 | 3.30 | 1.55 | 0.23 |
| 1.28 | 2.50 | 0.95 | 1.10 | 3.36 | 3.30 | 1.55 | 0.21 |
| 1.32 | 2.54 | 0.97 | 1.07 | 3.40 | 3.30 | 1.55 | 0.19 |
| 1.36 | 2.58 | 1.00 | 1.05 | 3.44 | 3.30 | 1.55 | 0.17 |
| 1.40 | 2.61 | 1.02 | 1.02 | 3.48 | 3.30 | 1.55 | 0.14 |
| 1.44 | 2.64 | 1.04 | 0.99 | 3.52 | 3.30 | 1.55 | 0.12 |
| 1.48 | 2.67 | 1.07 | 0.96 | 3.56 | 3.30 | 1.55 | 0.10 |
| 1.52 | 2.70 | 1.08 | 0.93 | 3.60 | 3.30 | 1.55 | 0.08 |
| 1.56 | 2.72 | 1.10 | 0.91 | 3.64 | 3.30 | 1.55 | 0.07 |
| 1.60 | 2.74 | 1.12 | 0.88 | 3.68 | 3.30 | 1.55 | 0.06 |
| 1.64 | 2.76 | 1.13 | 0.86 | 3.72 | 3.30 | 1.55 | 0.05 |
| 1.68 | 2.78 | 1.15 | 0.83 | 3.76 | 3.30 | 1.55 | 0.04 |
| 1.72 | 2.80 | 1.16 | 0.80 | 3.80 | 3.30 | 1.55 | 0.03 |
| 1.76 | 2.82 | 1.17 | 0.78 | 3.84 | 3.30 | 1.55 | 0.03 |
| 1.80 | 2.83 | 1.19 | 0.75 | 3.88 | 3.30 | 1.55 | 0.02 |
| 1.84 | 2.85 | 1.20 | 0.71 | 3.92 | 3.30 | 1.55 | 0.02 |
| 1.88 | 2.87 | 1.21 | 0.68 | 3.96 | 3.30 | 1.55 | 0.02 |
| 1.92 | 2.89 | 1.23 | 0.65 | 4.00 | 3.30 | 1.55 | 0.01 |
| 1.96 | 2.90 | 1.24 | 0.62 | | | | |
| 2.00 | 2.92 | 1.25 | 0.59 | | | | |
| 2.04 | 2.94 | 1.27 | 0.56 | | | | |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

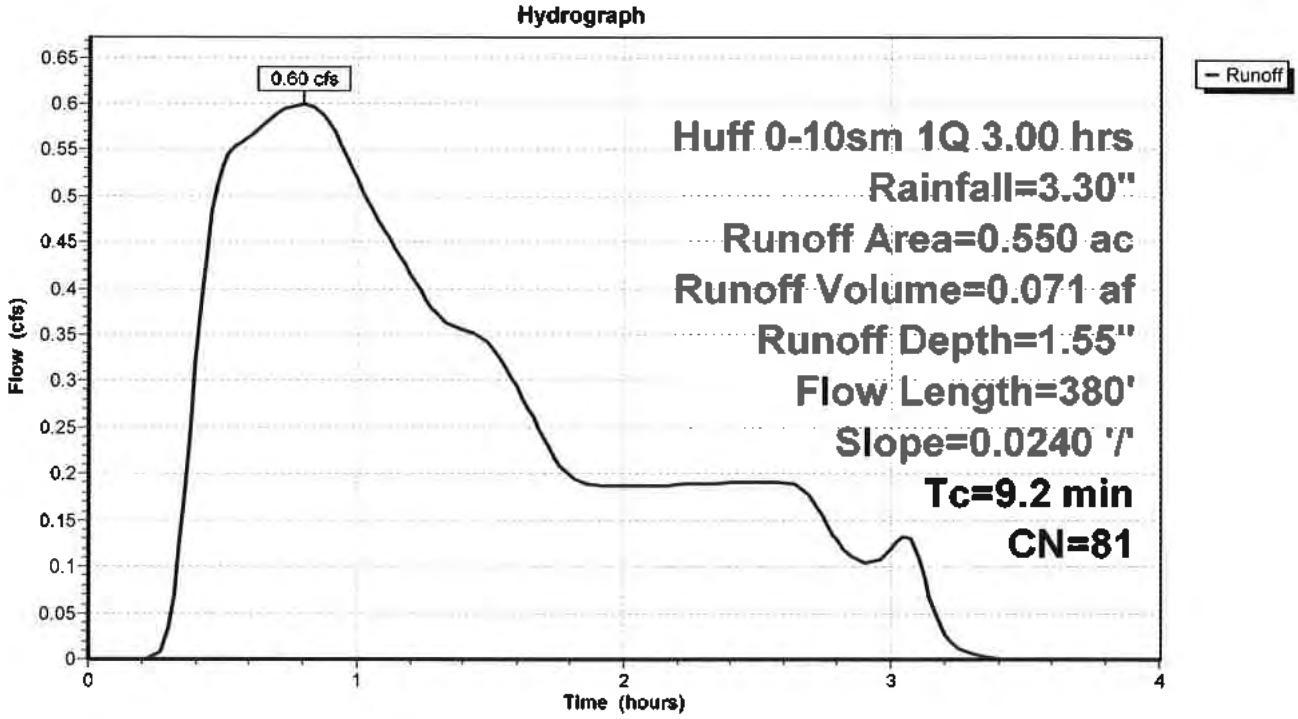
Runoff = 0.60 cfs @ 0.80 hrs, Volume= 0.071 af, Depth= 1.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=3.30"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 2.08 | 2.96 | 1.28 | 0.19 |
| 0.04 | 0.02 | 0.00 | 0.00 | 2.12 | 2.98 | 1.29 | 0.19 |
| 0.08 | 0.08 | 0.00 | 0.00 | 2.16 | 2.99 | 1.31 | 0.19 |
| 0.12 | 0.17 | 0.00 | 0.00 | 2.20 | 3.01 | 1.32 | 0.19 |
| 0.16 | 0.30 | 0.00 | 0.00 | 2.24 | 3.03 | 1.34 | 0.19 |
| 0.20 | 0.45 | 0.00 | 0.00 | 2.28 | 3.05 | 1.35 | 0.19 |
| 0.24 | 0.59 | 0.01 | 0.00 | 2.32 | 3.06 | 1.36 | 0.19 |
| 0.28 | 0.74 | 0.03 | 0.01 | 2.36 | 3.08 | 1.38 | 0.19 |
| 0.32 | 0.89 | 0.06 | 0.07 | 2.40 | 3.10 | 1.39 | 0.19 |
| 0.36 | 1.02 | 0.11 | 0.18 | 2.44 | 3.12 | 1.40 | 0.19 |
| 0.40 | 1.14 | 0.15 | 0.32 | 2.48 | 3.14 | 1.42 | 0.19 |
| 0.44 | 1.24 | 0.19 | 0.44 | 2.52 | 3.15 | 1.43 | 0.19 |
| 0.48 | 1.33 | 0.23 | 0.51 | 2.56 | 3.17 | 1.45 | 0.19 |
| 0.52 | 1.42 | 0.27 | 0.55 | 2.60 | 3.19 | 1.46 | 0.19 |
| 0.56 | 1.50 | 0.32 | 0.56 | 2.64 | 3.20 | 1.47 | 0.19 |
| 0.60 | 1.58 | 0.36 | 0.56 | 2.68 | 3.21 | 1.48 | 0.18 |
| 0.64 | 1.66 | 0.40 | 0.57 | 2.72 | 3.22 | 1.49 | 0.16 |
| 0.68 | 1.74 | 0.45 | 0.58 | 2.76 | 3.23 | 1.49 | 0.14 |
| 0.72 | 1.81 | 0.49 | 0.59 | 2.80 | 3.24 | 1.50 | 0.13 |
| 0.76 | 1.88 | 0.53 | 0.60 | 2.84 | 3.25 | 1.51 | 0.11 |
| 0.80 | 1.95 | 0.57 | **0.60** | 2.88 | 3.26 | 1.51 | 0.11 |
| 0.84 | 2.01 | 0.61 | 0.60 | 2.92 | 3.27 | 1.52 | 0.10 |
| 0.88 | 2.07 | 0.65 | 0.59 | 2.96 | 3.28 | 1.53 | 0.11 |
| 0.92 | 2.13 | 0.69 | 0.57 | 3.00 | **3.30** | **1.55** | 0.12 |
| 0.96 | 2.18 | 0.72 | 0.54 | 3.04 | 3.30 | 1.55 | 0.13 |
| 1.00 | 2.23 | 0.75 | 0.52 | 3.08 | 3.30 | 1.55 | 0.13 |
| 1.04 | 2.27 | 0.78 | 0.49 | 3.12 | 3.30 | 1.55 | 0.09 |
| 1.08 | 2.32 | 0.81 | 0.47 | 3.16 | 3.30 | 1.55 | 0.05 |
| 1.12 | 2.36 | 0.84 | 0.45 | 3.20 | 3.30 | 1.55 | 0.03 |
| 1.16 | 2.40 | 0.87 | 0.44 | 3.24 | 3.30 | 1.55 | 0.01 |
| 1.20 | 2.43 | 0.90 | 0.42 | 3.28 | 3.30 | 1.55 | 0.01 |
| 1.24 | 2.47 | 0.92 | 0.40 | 3.32 | 3.30 | 1.55 | 0.00 |
| 1.28 | 2.50 | 0.95 | 0.38 | 3.36 | 3.30 | 1.55 | 0.00 |
| 1.32 | 2.54 | 0.97 | 0.37 | 3.40 | 3.30 | 1.55 | 0.00 |
| 1.36 | 2.58 | 1.00 | 0.36 | 3.44 | 3.30 | 1.55 | 0.00 |
| 1.40 | 2.61 | 1.02 | 0.36 | 3.48 | 3.30 | 1.55 | 0.00 |
| 1.44 | 2.64 | 1.04 | 0.35 | 3.52 | 3.30 | 1.55 | 0.00 |
| 1.48 | 2.67 | 1.07 | 0.34 | 3.56 | 3.30 | 1.55 | 0.00 |
| 1.52 | 2.70 | 1.08 | 0.33 | 3.60 | 3.30 | 1.55 | 0.00 |
| 1.56 | 2.72 | 1.10 | 0.31 | 3.64 | 3.30 | 1.55 | 0.00 |
| 1.60 | 2.74 | 1.12 | 0.29 | 3.68 | 3.30 | 1.55 | 0.00 |
| 1.64 | 2.76 | 1.13 | 0.27 | 3.72 | 3.30 | 1.55 | 0.00 |
| 1.68 | 2.78 | 1.15 | 0.25 | 3.76 | 3.30 | 1.55 | 0.00 |
| 1.72 | 2.80 | 1.16 | 0.23 | 3.80 | 3.30 | 1.55 | 0.00 |
| 1.76 | 2.82 | 1.17 | 0.21 | 3.84 | 3.30 | 1.55 | 0.00 |
| 1.80 | 2.83 | 1.19 | 0.20 | 3.88 | 3.30 | 1.55 | 0.00 |
| 1.84 | 2.85 | 1.20 | 0.19 | 3.92 | 3.30 | 1.55 | 0.00 |
| 1.88 | 2.87 | 1.21 | 0.19 | 3.96 | 3.30 | 1.55 | 0.00 |
| 1.92 | 2.89 | 1.23 | 0.19 | 4.00 | 3.30 | 1.55 | 0.00 |
| 1.96 | 2.90 | 1.24 | 0.19 | | | | |
| 2.00 | 2.92 | 1.25 | 0.19 | | | | |
| 2.04 | 2.94 | 1.27 | 0.19 | | | | |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 12.24 cfs @ | 0.96 hrs, | Volume= | 1.427 af |
| Outflow | = | 0.87 cfs @ | 3.40 hrs, | Volume= | 0.211 af, Atten= 93%, Lag= 146.3 min |
| Primary | = | 0.87 cfs @ | 3.40 hrs, | Volume= | 0.211 af |
| Secondary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Peak Elev= 672.87' @ 3.40 hrs Surf.Area= 31,007 sf Storage= 54,236 cf

Plug-Flow detention time= 108.7 min calculated for 0.211 af (15% of inflow)
Center-of-Mass det. time= 56.4 min ( 148.8 - 92.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.40' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

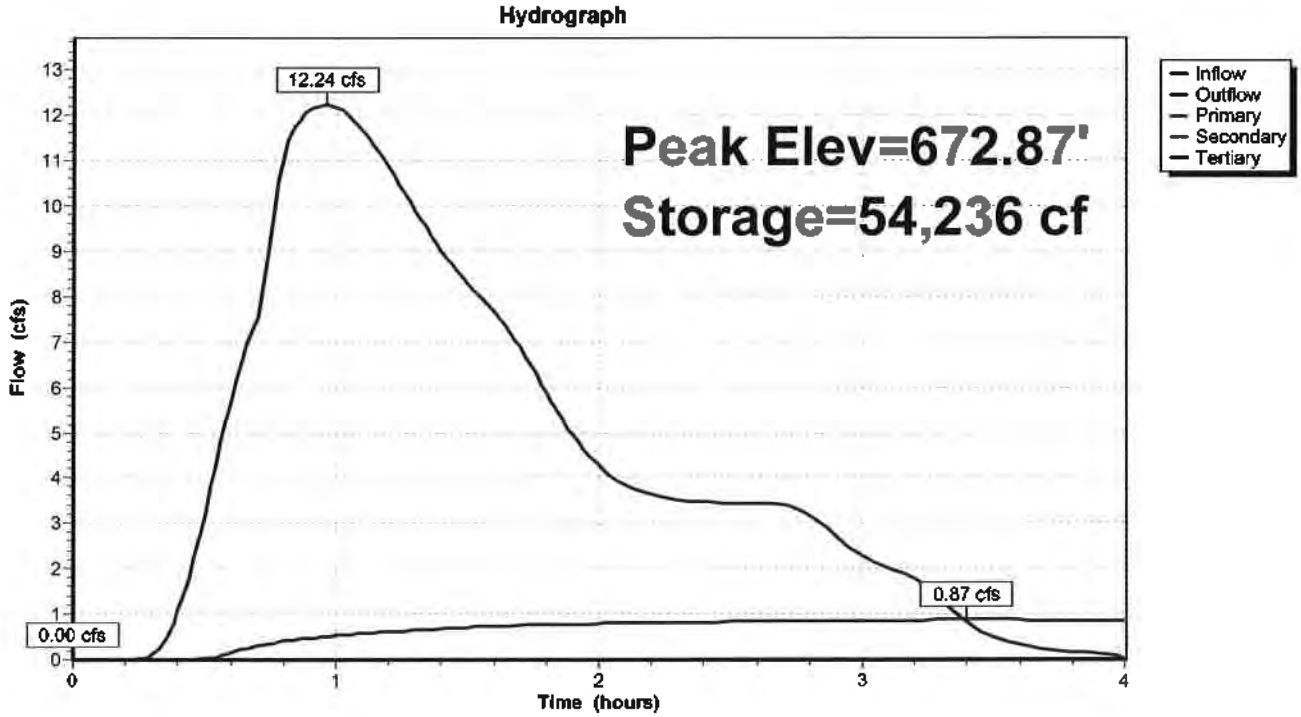
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=0.87 cfs @ 3.40 hrs HW=672.87' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.87 cfs @ 7.89 fps)

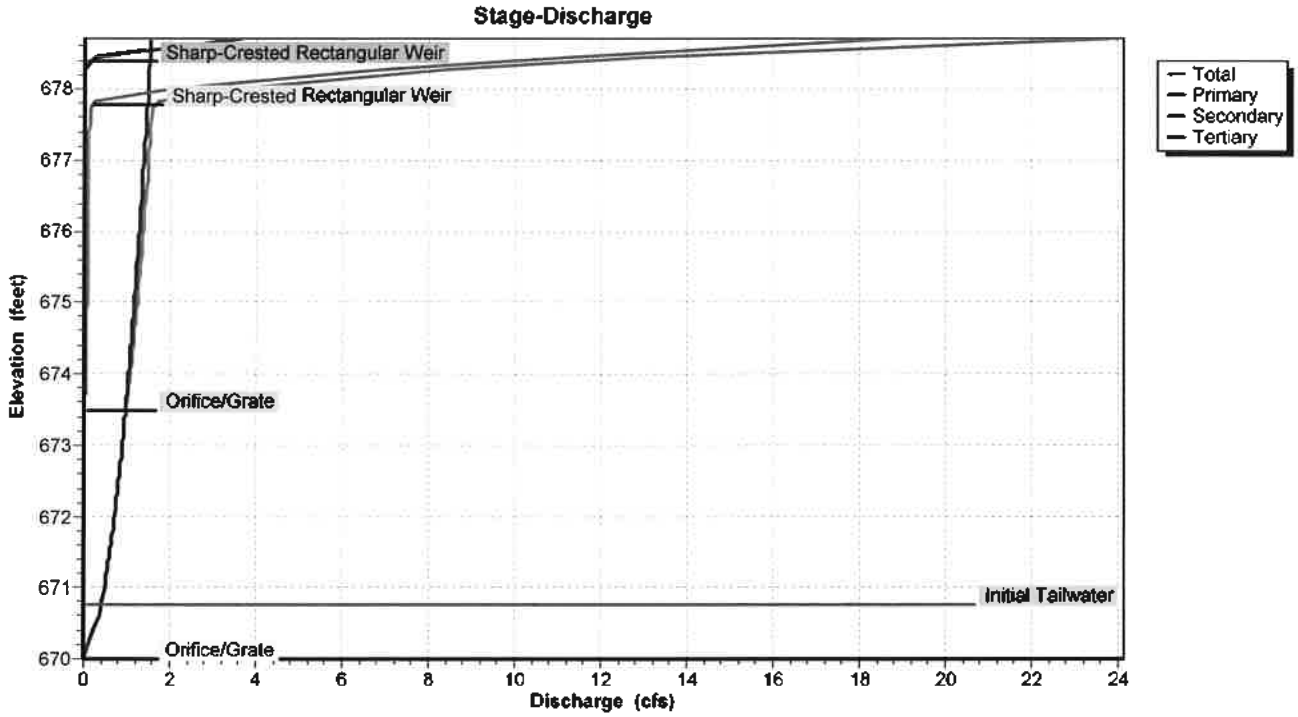
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

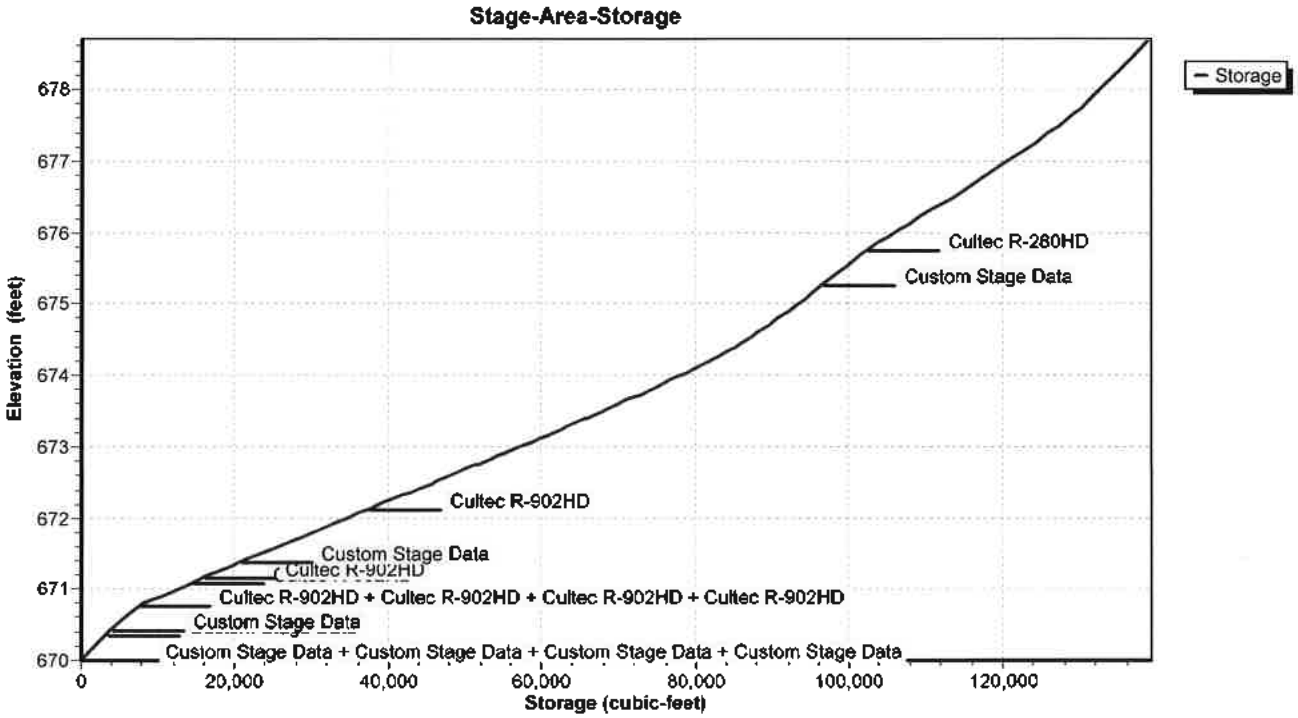
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 0.10 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.30 | 0.08 | 3 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 1.08 | 134 | 670.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.50 | 3.21 | 800 | 670.09 | 0.02 | 0.02 | 0.00 | 0.00 |
| 0.60 | 5.71 | 2,302 | 670.26 | 0.14 | 0.14 | 0.00 | 0.00 |
| 0.70 | 7.55 | 4,574 | 670.49 | 0.29 | 0.29 | 0.00 | 0.00 |
| 0.80 | 11.10 | 7,691 | 670.78 | 0.41 | 0.41 | 0.00 | 0.00 |
| 0.90 | **12.12** | 11,729 | 670.97 | 0.47 | 0.47 | 0.00 | 0.00 |
| 1.00 | **12.19** | 15,946 | 671.17 | 0.53 | 0.53 | 0.00 | 0.00 |
| 1.10 | 11.68 | 20,077 | 671.36 | 0.58 | 0.58 | 0.00 | 0.00 |
| 1.20 | 10.84 | 23,951 | 671.53 | 0.62 | 0.62 | 0.00 | 0.00 |
| 1.30 | 9.90 | 27,491 | 671.68 | 0.65 | 0.65 | 0.00 | 0.00 |
| 1.40 | 9.01 | 30,683 | 671.83 | 0.68 | 0.68 | 0.00 | 0.00 |
| 1.50 | 8.29 | 33,568 | 671.96 | 0.71 | 0.71 | 0.00 | 0.00 |
| 1.60 | 7.65 | 36,204 | 672.07 | 0.73 | 0.73 | 0.00 | 0.00 |
| 1.70 | 6.86 | 38,586 | 672.18 | 0.75 | 0.75 | 0.00 | 0.00 |
| 1.80 | 5.87 | 40,644 | 672.27 | 0.77 | 0.77 | 0.00 | 0.00 |
| 1.90 | 4.93 | 42,339 | 672.34 | 0.78 | 0.78 | 0.00 | 0.00 |
| 2.00 | 4.25 | 43,725 | 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 2.10 | 3.86 | 44,905 | 672.46 | 0.80 | 0.80 | 0.00 | 0.00 |
| 2.20 | 3.64 | 45,969 | 672.50 | 0.81 | 0.81 | 0.00 | 0.00 |
| 2.30 | 3.53 | 46,968 | 672.55 | 0.82 | 0.82 | 0.00 | 0.00 |
| 2.40 | 3.47 | 47,933 | 672.59 | 0.82 | 0.82 | 0.00 | 0.00 |
| 2.50 | 3.45 | 48,882 | 672.63 | 0.83 | 0.83 | 0.00 | 0.00 |
| 2.60 | 3.45 | 49,823 | 672.67 | 0.84 | 0.84 | 0.00 | 0.00 |
| 2.70 | 3.41 | 50,759 | 672.71 | 0.85 | 0.85 | 0.00 | 0.00 |
| 2.80 | 3.19 | 51,656 | 672.75 | 0.85 | 0.85 | 0.00 | 0.00 |
| 2.90 | 2.73 | 52,435 | 672.79 | 0.86 | 0.86 | 0.00 | 0.00 |
| 3.00 | 2.26 | 53,034 | 672.82 | 0.86 | 0.86 | 0.00 | 0.00 |
| 3.10 | 2.03 | 53,501 | 672.84 | 0.87 | 0.87 | 0.00 | 0.00 |
| 3.20 | 1.77 | 53,885 | 672.85 | 0.87 | 0.87 | 0.00 | 0.00 |
| 3.30 | 1.31 | 54,148 | 672.87 | 0.87 | 0.87 | 0.00 | 0.00 |
| 3.40 | 0.82 | **54,236** | **672.87** | **0.87** | **0.87** | 0.00 | 0.00 |
| 3.50 | 0.49 | 54,165 | 672.87 | 0.87 | 0.87 | 0.00 | 0.00 |
| 3.60 | 0.32 | 54,000 | 672.86 | 0.87 | 0.87 | 0.00 | 0.00 |
| 3.70 | 0.22 | 53,786 | 672.85 | 0.87 | 0.87 | 0.00 | 0.00 |
| 3.80 | 0.17 | 53,545 | 672.84 | 0.87 | 0.87 | 0.00 | 0.00 |
| 3.90 | 0.14 | 53,289 | 672.83 | 0.86 | 0.86 | 0.00 | 0.00 |
| 4.00 | 0.00 | 53,026 | 672.82 | 0.86 | 0.86 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 18.46 | 1.54 | 15.13 | 1.79 |
| 678.80 | **28.12** | **1.56** | **21.42** | **5.14** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 5.10 cfs @ | 0.92 hrs, | Volume= | 0.648 af |
| Outflow | = | 5.09 cfs @ | 0.95 hrs, | Volume= | 0.639 af, Atten= 0%, Lag= 2.1 min |
| Primary | = | 1.81 cfs @ | 0.95 hrs, | Volume= | 0.340 af |
| Secondary | = | 3.28 cfs @ | 0.95 hrs, | Volume= | 0.299 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Peak Elev= 678.09' @ 0.95 hrs Surf.Area= 3,264 sf Storage= 3,525 cf

Plug-Flow detention time= 19.3 min calculated for 0.639 af (99% of inflow)
Center-of-Mass det. time= 17.8 min ( 108.4 - 90.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

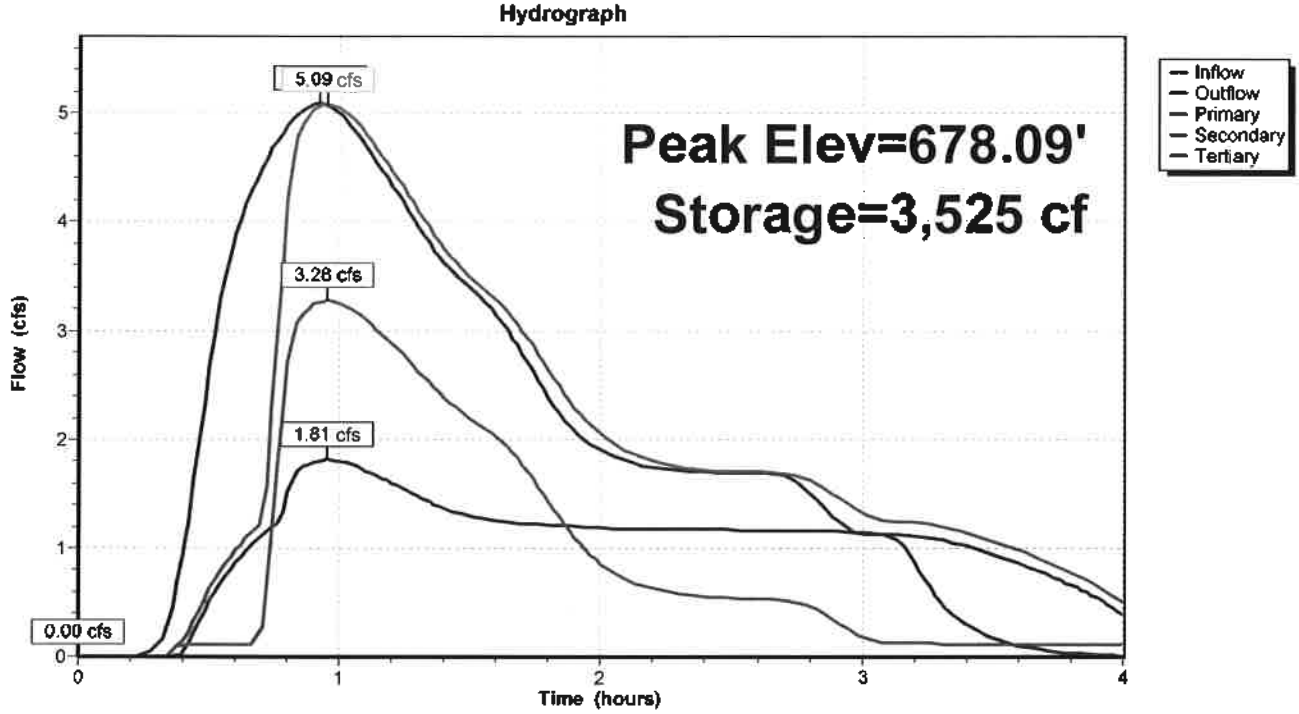
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=1.81 cfs @ 0.95 hrs HW=678.09' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.27 cfs @ 5.53 fps)
└─**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.54 cfs @ 0.99 fps)

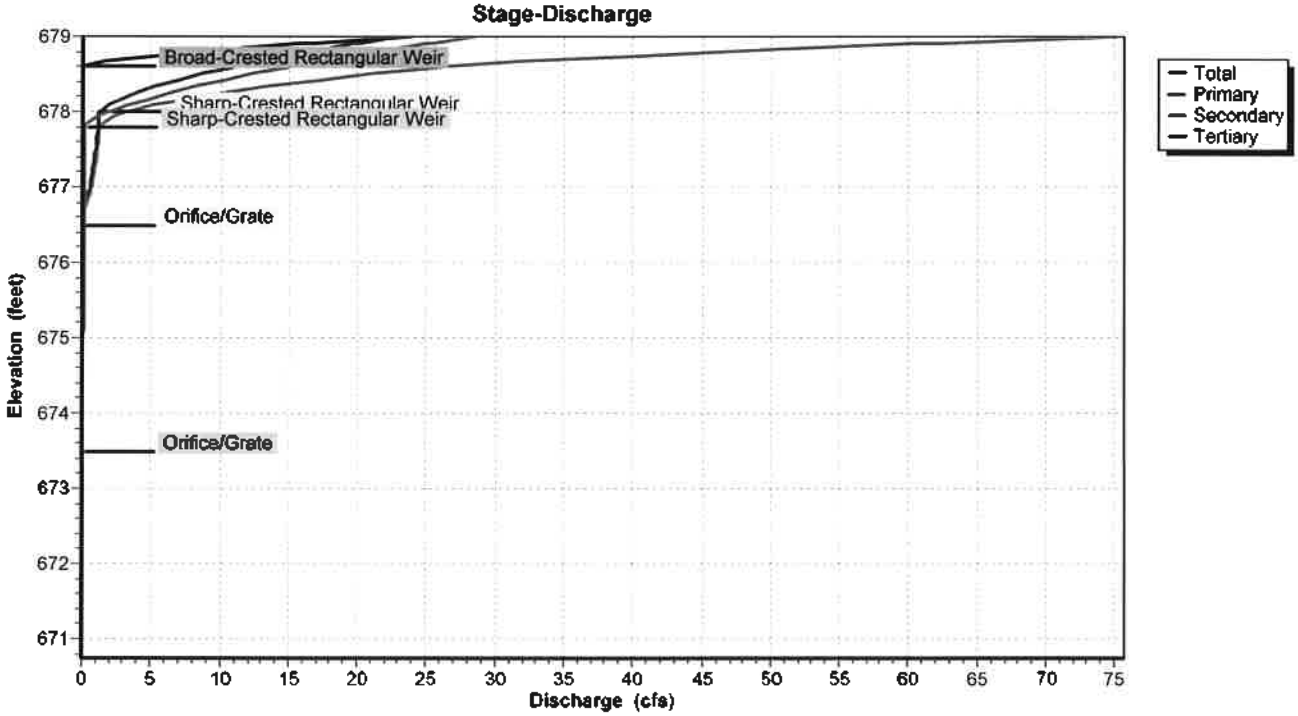
**Secondary OutFlow** Max=3.28 cfs @ 0.95 hrs HW=678.09' TW=671.08' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.13 cfs @ 10.25 fps)
└─**5=Sharp-Crested Rectangular Weir** (Weir Controls 3.15 cfs @ 1.82 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

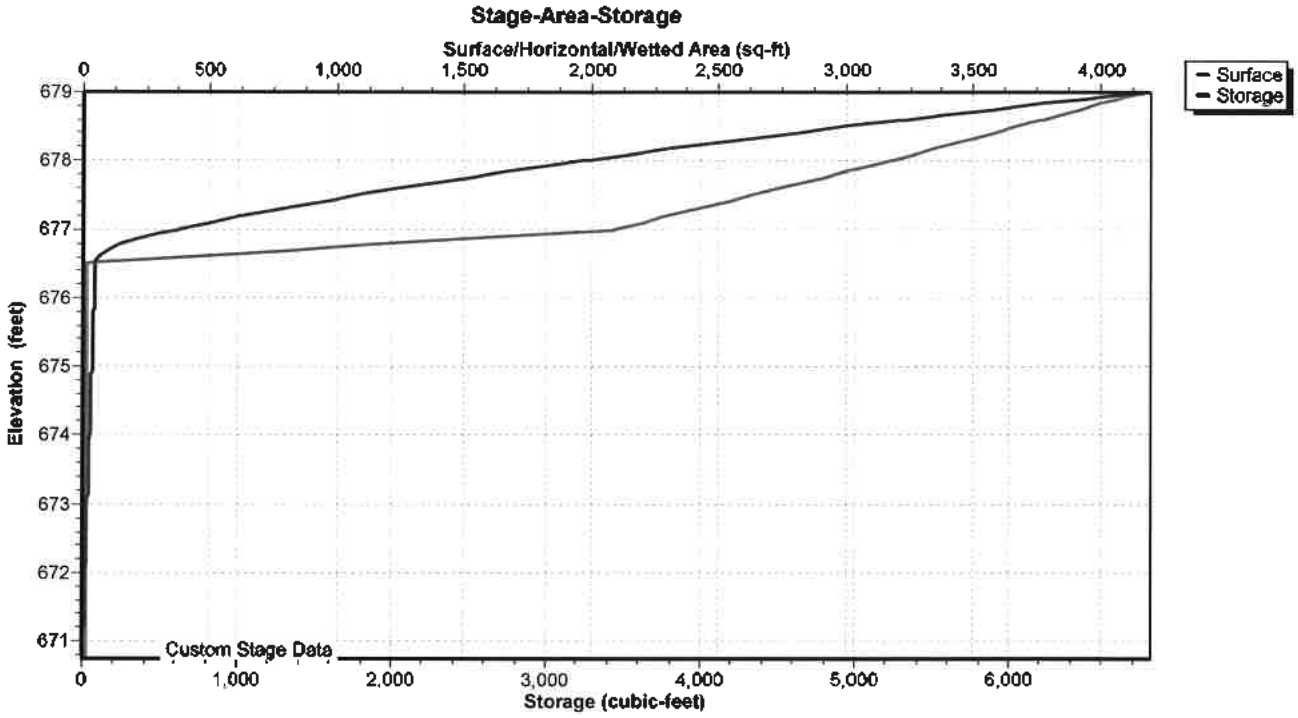
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.10 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.30 | 0.08 | 4 | 671.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 0.95 | 114 | 676.62 | 0.15 | 0.04 | 0.10 | 0.00 |
| 0.50 | 2.67 | 581 | 676.99 | 0.63 | 0.52 | 0.11 | 0.00 |
| 0.60 | 3.89 | 1,464 | 677.37 | 0.98 | 0.86 | 0.12 | 0.00 |
| 0.70 | 4.50 | 2,569 | 677.78 | 1.24 | 1.12 | 0.12 | 0.00 |
| 0.80 | 4.89 | 3,409 | 678.05 | 4.20 | 1.51 | 2.70 | 0.00 |
| 0.90 | **5.09** | **3,519** | **678.09** | **5.04** | **1.79** | **3.24** | 0.00 |
| 1.00 | **5.00** | **3,521** | **678.09** | **5.06** | **1.80** | **3.26** | 0.00 |
| 1.10 | 4.69 | 3,490 | 678.08 | 4.81 | 1.71 | 3.10 | 0.00 |
| 1.20 | 4.33 | 3,445 | 678.07 | 4.47 | 1.59 | 2.87 | 0.00 |
| 1.30 | 3.95 | 3,394 | 678.05 | 4.10 | 1.47 | 2.63 | 0.00 |
| 1.40 | 3.62 | 3,341 | 678.03 | 3.75 | 1.37 | 2.38 | 0.00 |
| 1.50 | 3.39 | 3,299 | 678.02 | 3.49 | 1.30 | 2.19 | 0.00 |
| 1.60 | 3.14 | 3,260 | 678.01 | 3.27 | 1.25 | 2.02 | 0.00 |
| 1.70 | 2.78 | 3,201 | 677.99 | 2.99 | 1.22 | 1.77 | 0.00 |
| 1.80 | 2.38 | 3,116 | 677.96 | 2.64 | 1.21 | 1.42 | 0.00 |
| 1.90 | 2.07 | 3,027 | 677.93 | 2.29 | 1.20 | 1.10 | 0.00 |
| 2.00 | 1.89 | 2,957 | 677.91 | 2.04 | 1.18 | 0.86 | 0.00 |
| 2.10 | 1.79 | 2,911 | 677.90 | 1.89 | 1.18 | 0.71 | 0.00 |
| 2.20 | 1.74 | 2,882 | 677.89 | 1.80 | 1.17 | 0.63 | 0.00 |
| 2.30 | 1.71 | 2,865 | 677.88 | 1.75 | 1.17 | 0.58 | 0.00 |
| 2.40 | 1.70 | 2,855 | 677.88 | 1.72 | 1.17 | 0.55 | 0.00 |
| 2.50 | 1.70 | 2,850 | 677.88 | 1.70 | 1.17 | 0.54 | 0.00 |
| 2.60 | 1.70 | 2,848 | 677.88 | 1.70 | 1.17 | 0.53 | 0.00 |
| 2.70 | 1.67 | 2,846 | 677.87 | 1.69 | 1.17 | 0.53 | 0.00 |
| 2.80 | 1.51 | 2,825 | 677.87 | 1.63 | 1.16 | 0.47 | 0.00 |
| 2.90 | 1.26 | 2,764 | 677.85 | 1.48 | 1.15 | 0.33 | 0.00 |
| 3.00 | 1.12 | 2,685 | 677.82 | 1.32 | 1.14 | 0.18 | 0.00 |
| 3.10 | 1.12 | 2,626 | 677.80 | 1.25 | 1.13 | 0.12 | 0.00 |
| 3.20 | 0.87 | 2,556 | 677.78 | 1.23 | 1.11 | 0.12 | 0.00 |
| 3.30 | 0.50 | 2,375 | 677.71 | 1.20 | 1.08 | 0.12 | 0.00 |
| 3.40 | 0.29 | 2,098 | 677.62 | 1.14 | 1.02 | 0.12 | 0.00 |
| 3.50 | 0.17 | 1,785 | 677.50 | 1.06 | 0.95 | 0.12 | 0.00 |
| 3.60 | 0.10 | 1,464 | 677.38 | 0.98 | 0.86 | 0.12 | 0.00 |
| 3.70 | 0.06 | 1,155 | 677.25 | 0.88 | 0.77 | 0.11 | 0.00 |
| 3.80 | 0.04 | 871 | 677.12 | 0.77 | 0.66 | 0.11 | 0.00 |
| 3.90 | 0.02 | 621 | 677.01 | 0.65 | 0.54 | 0.11 | 0.00 |
| 4.00 | 0.00 | 414 | 676.90 | 0.49 | 0.39 | 0.11 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 23.56 | 9.86 | 13.70 | 0.00 |
| 678.75 | 40.37 | 15.13 | 19.77 | 5.47 |
| 678.95 | **67.61** | **21.27** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

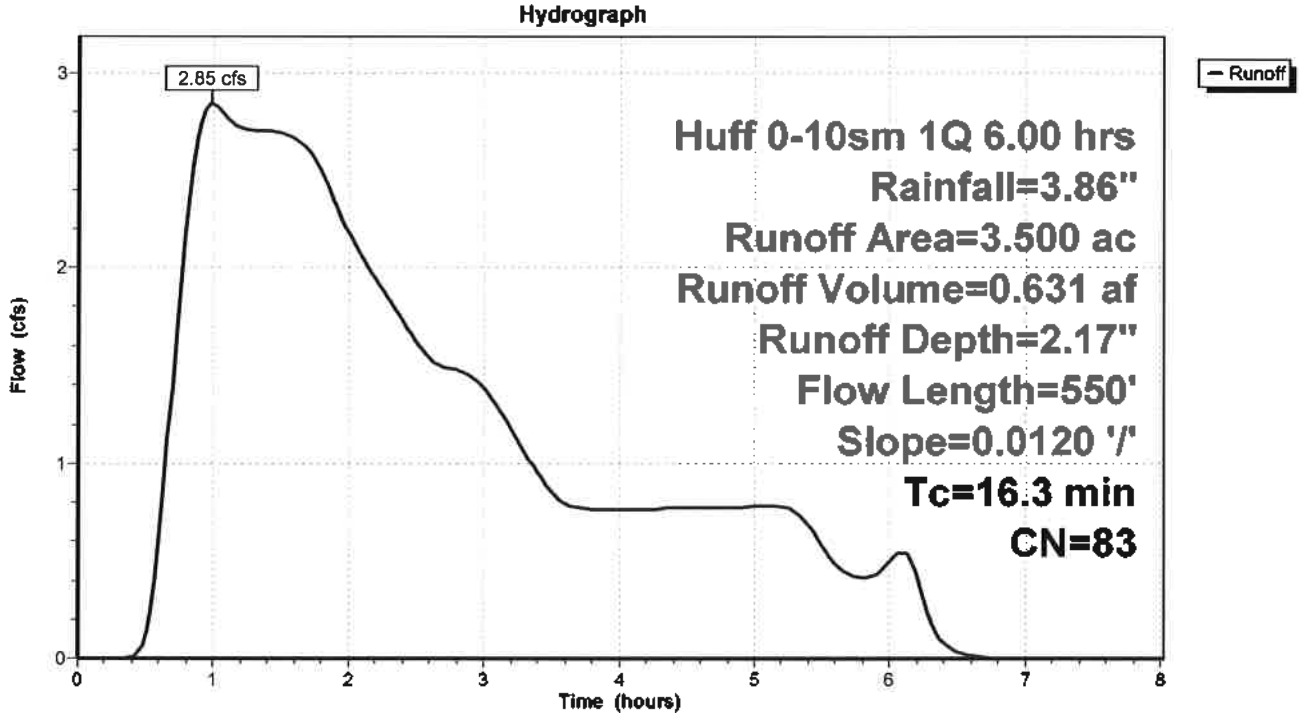
Runoff = 2.85 cfs @ 0.98 hrs, Volume= 0.631 af, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=3.86"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

## Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 7.80 | 3.86 | 2.17 | 0.00 |
| 0.15 | 0.08 | 0.00 | 0.00 | 7.95 | 3.86 | 2.17 | 0.00 |
| 0.30 | 0.31 | 0.00 | 0.00 | | | | |
| 0.45 | 0.63 | 0.02 | 0.02 | | | | |
| 0.60 | 0.96 | 0.11 | 0.62 | | | | |
| 0.75 | 1.25 | 0.25 | 1.92 | | | | |
| 0.90 | 1.48 | 0.37 | **2.75** | | | | |
| 1.05 | 1.67 | 0.48 | **2.81** | | | | |
| 1.20 | 1.85 | 0.60 | 2.71 | | | | |
| 1.35 | 2.02 | 0.71 | 2.71 | | | | |
| 1.50 | 2.18 | 0.82 | 2.69 | | | | |
| 1.65 | 2.33 | 0.93 | 2.64 | | | | |
| 1.80 | 2.46 | 1.02 | 2.49 | | | | |
| 1.95 | 2.57 | 1.11 | 2.25 | | | | |
| 2.10 | 2.67 | 1.19 | 2.05 | | | | |
| 2.25 | 2.76 | 1.26 | 1.88 | | | | |
| 2.40 | 2.85 | 1.32 | 1.72 | | | | |
| 2.55 | 2.92 | 1.39 | 1.57 | | | | |
| 2.70 | 3.00 | 1.45 | 1.49 | | | | |
| 2.85 | 3.08 | 1.51 | 1.47 | | | | |
| 3.00 | 3.14 | 1.56 | 1.39 | | | | |
| 3.15 | 3.19 | 1.60 | 1.24 | | | | |
| 3.30 | 3.24 | 1.64 | 1.06 | | | | |
| 3.45 | 3.28 | 1.67 | 0.89 | | | | |
| 3.60 | 3.31 | 1.70 | 0.79 | | | | |
| 3.75 | 3.35 | 1.74 | 0.77 | | | | |
| 3.90 | 3.39 | 1.77 | 0.76 | | | | |
| 4.05 | 3.43 | 1.80 | 0.76 | | | | |
| 4.20 | 3.47 | 1.83 | 0.77 | | | | |
| 4.35 | 3.51 | 1.87 | 0.77 | | | | |
| 4.50 | 3.55 | 1.90 | 0.77 | | | | |
| 4.65 | 3.59 | 1.93 | 0.77 | | | | |
| 4.80 | 3.63 | 1.97 | 0.78 | | | | |
| 4.95 | 3.67 | 2.00 | 0.78 | | | | |
| 5.10 | 3.70 | 2.03 | 0.78 | | | | |
| 5.25 | 3.74 | 2.06 | 0.77 | | | | |
| 5.40 | 3.76 | 2.08 | 0.68 | | | | |
| 5.55 | 3.78 | 2.10 | 0.52 | | | | |
| 5.70 | 3.80 | 2.11 | 0.43 | | | | |
| 5.85 | 3.83 | 2.14 | 0.41 | | | | |
| 6.00 | **3.86** | **2.17** | 0.50 | | | | |
| 6.15 | 3.86 | 2.17 | 0.51 | | | | |
| 6.30 | 3.86 | 2.17 | 0.18 | | | | |
| 6.45 | 3.86 | 2.17 | 0.05 | | | | |
| 6.60 | 3.86 | 2.17 | 0.01 | | | | |
| 6.75 | 3.86 | 2.17 | 0.00 | | | | |
| 6.90 | 3.86 | 2.17 | 0.00 | | | | |
| 7.05 | 3.86 | 2.17 | 0.00 | | | | |
| 7.20 | 3.86 | 2.17 | 0.00 | | | | |
| 7.35 | 3.86 | 2.17 | 0.00 | | | | |
| 7.50 | 3.86 | 2.17 | 0.00 | | | | |
| 7.65 | 3.86 | 2.17 | 0.00 | | | | |

## Summary for Subcatchment 7S: South Property

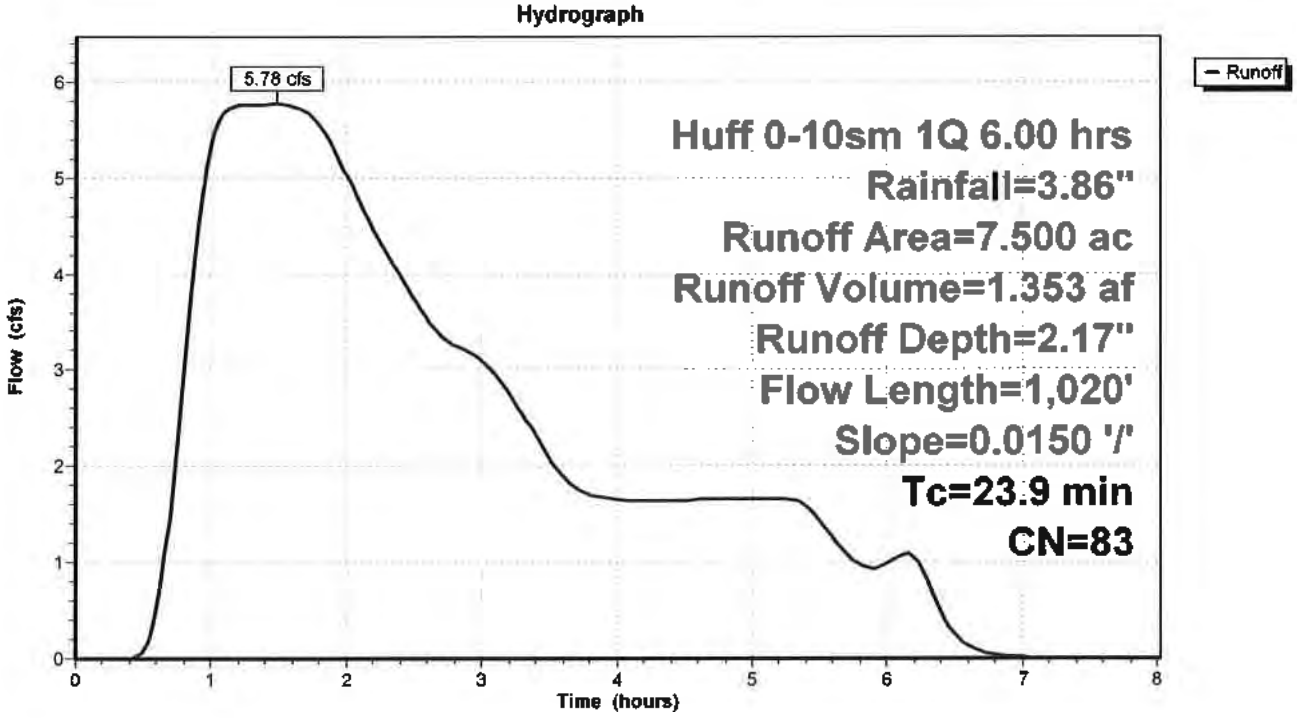
Runoff = 5.78 cfs @ 1.48 hrs, Volume= 1.353 af, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=3.86"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 7.80 | 3.86 | 2.17 | 0.00 |
| 0.15 | 0.08 | 0.00 | 0.00 | 7.95 | 3.86 | 2.17 | 0.00 |
| 0.30 | 0.31 | 0.00 | 0.00 | | | | |
| 0.45 | 0.63 | 0.02 | 0.01 | | | | |
| 0.60 | 0.96 | 0.11 | 0.50 | | | | |
| 0.75 | 1.25 | 0.25 | 2.33 | | | | |
| 0.90 | 1.48 | 0.37 | 4.51 | | | | |
| 1.05 | 1.67 | 0.48 | 5.60 | | | | |
| 1.20 | 1.85 | 0.60 | 5.76 | | | | |
| 1.35 | 2.02 | 0.71 | **5.76** | | | | |
| 1.50 | 2.18 | 0.82 | **5.78** | | | | |
| 1.65 | 2.33 | 0.93 | 5.73 | | | | |
| 1.80 | 2.46 | 1.02 | 5.55 | | | | |
| 1.95 | 2.57 | 1.11 | 5.18 | | | | |
| 2.10 | 2.67 | 1.19 | 4.72 | | | | |
| 2.25 | 2.76 | 1.26 | 4.32 | | | | |
| 2.40 | 2.85 | 1.32 | 3.97 | | | | |
| 2.55 | 2.92 | 1.39 | 3.63 | | | | |
| 2.70 | 3.00 | 1.45 | 3.36 | | | | |
| 2.85 | 3.08 | 1.51 | 3.22 | | | | |
| 3.00 | 3.14 | 1.56 | 3.11 | | | | |
| 3.15 | 3.19 | 1.60 | 2.87 | | | | |
| 3.30 | 3.24 | 1.64 | 2.54 | | | | |
| 3.45 | 3.28 | 1.67 | 2.18 | | | | |
| 3.60 | 3.31 | 1.70 | 1.88 | | | | |
| 3.75 | 3.35 | 1.74 | 1.73 | | | | |
| 3.90 | 3.39 | 1.77 | 1.67 | | | | |
| 4.05 | 3.43 | 1.80 | 1.65 | | | | |
| 4.20 | 3.47 | 1.83 | 1.64 | | | | |
| 4.35 | 3.51 | 1.87 | 1.64 | | | | |
| 4.50 | 3.55 | 1.90 | 1.65 | | | | |
| 4.65 | 3.59 | 1.93 | 1.65 | | | | |
| 4.80 | 3.63 | 1.97 | 1.66 | | | | |
| 4.95 | 3.67 | 2.00 | 1.66 | | | | |
| 5.10 | 3.70 | 2.03 | 1.67 | | | | |
| 5.25 | 3.74 | 2.06 | 1.66 | | | | |
| 5.40 | 3.76 | 2.08 | 1.58 | | | | |
| 5.55 | 3.78 | 2.10 | 1.35 | | | | |
| 5.70 | 3.80 | 2.11 | 1.08 | | | | |
| 5.85 | 3.83 | 2.14 | 0.94 | | | | |
| 6.00 | **3.86** | **2.17** | 0.97 | | | | |
| 6.15 | 3.86 | 2.17 | 1.10 | | | | |
| 6.30 | 3.86 | 2.17 | 0.78 | | | | |
| 6.45 | 3.86 | 2.17 | 0.33 | | | | |
| 6.60 | 3.86 | 2.17 | 0.13 | | | | |
| 6.75 | 3.86 | 2.17 | 0.05 | | | | |
| 6.90 | 3.86 | 2.17 | 0.02 | | | | |
| 7.05 | 3.86 | 2.17 | 0.01 | | | | |
| 7.20 | 3.86 | 2.17 | 0.00 | | | | |
| 7.35 | 3.86 | 2.17 | 0.00 | | | | |
| 7.50 | 3.86 | 2.17 | 0.00 | | | | |
| 7.65 | 3.86 | 2.17 | 0.00 | | | | |

## Summary for Subcatchment 8S: Northwood Drive Bypass

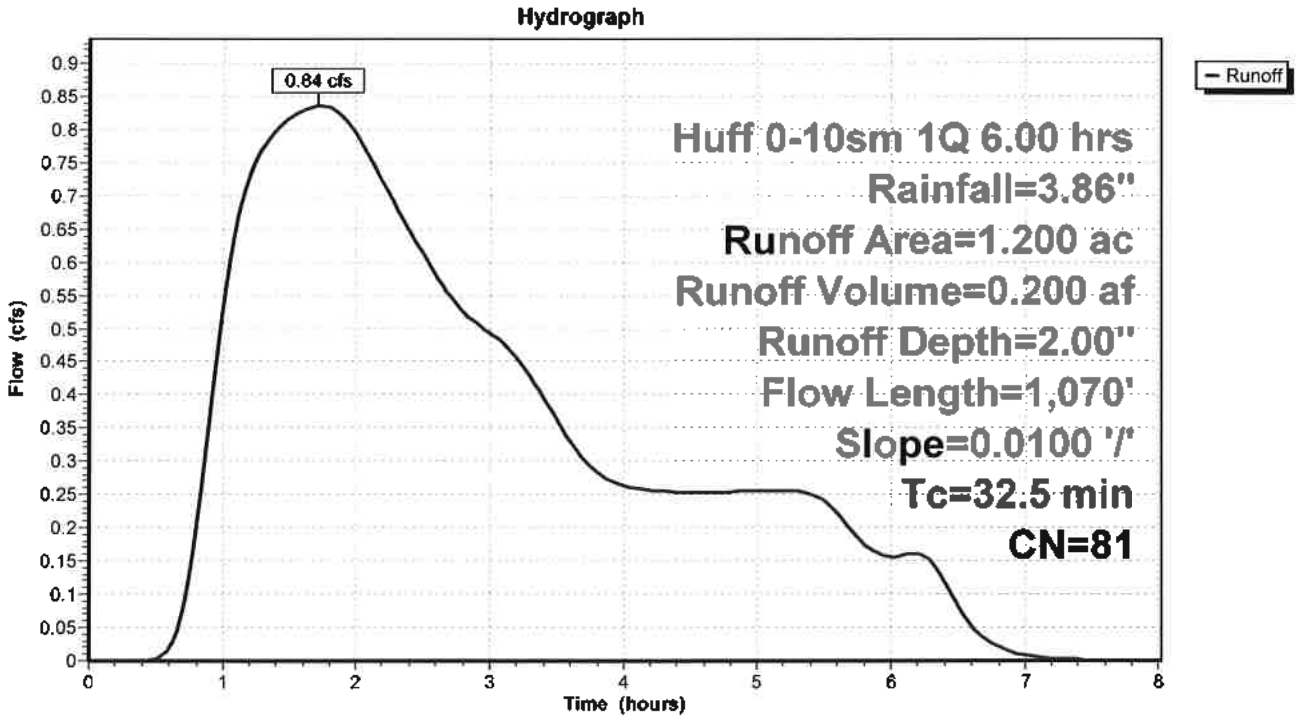
Runoff = 0.84 cfs @ 1.71 hrs, Volume= 0.200 af, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=3.86"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 7.80 | 3.86 | 2.00 | 0.00 |
| 0.15 | 0.08 | 0.00 | 0.00 | 7.95 | 3.86 | 2.00 | 0.00 |
| 0.30 | 0.31 | 0.00 | 0.00 | | | | |
| 0.45 | 0.63 | 0.01 | 0.00 | | | | |
| 0.60 | 0.96 | 0.08 | 0.02 | | | | |
| 0.75 | 1.25 | 0.20 | 0.13 | | | | |
| 0.90 | 1.48 | 0.31 | 0.36 | | | | |
| 1.05 | 1.67 | 0.41 | 0.60 | | | | |
| 1.20 | 1.85 | 0.51 | 0.73 | | | | |
| 1.35 | 2.02 | 0.62 | 0.79 | | | | |
| 1.50 | 2.18 | 0.72 | 0.82 | | | | |
| 1.65 | 2.33 | 0.82 | **0.83** | | | | |
| 1.80 | 2.46 | 0.91 | **0.83** | | | | |
| 1.95 | 2.57 | 0.99 | 0.81 | | | | |
| 2.10 | 2.67 | 1.07 | 0.76 | | | | |
| 2.25 | 2.76 | 1.13 | 0.70 | | | | |
| 2.40 | 2.85 | 1.20 | 0.65 | | | | |
| 2.55 | 2.92 | 1.26 | 0.60 | | | | |
| 2.70 | 3.00 | 1.32 | 0.55 | | | | |
| 2.85 | 3.08 | 1.37 | 0.52 | | | | |
| 3.00 | 3.14 | 1.42 | 0.49 | | | | |
| 3.15 | 3.19 | 1.46 | 0.47 | | | | |
| 3.30 | 3.24 | 1.50 | 0.43 | | | | |
| 3.45 | 3.28 | 1.53 | 0.38 | | | | |
| 3.60 | 3.31 | 1.56 | 0.33 | | | | |
| 3.75 | 3.35 | 1.59 | 0.29 | | | | |
| 3.90 | 3.39 | 1.62 | 0.27 | | | | |
| 4.05 | 3.43 | 1.65 | 0.26 | | | | |
| 4.20 | 3.47 | 1.68 | 0.26 | | | | |
| 4.35 | 3.51 | 1.72 | 0.25 | | | | |
| 4.50 | 3.55 | 1.75 | 0.25 | | | | |
| 4.65 | 3.59 | 1.78 | 0.25 | | | | |
| 4.80 | 3.63 | 1.81 | 0.25 | | | | |
| 4.95 | 3.67 | 1.84 | 0.26 | | | | |
| 5.10 | 3.70 | 1.88 | 0.26 | | | | |
| 5.25 | 3.74 | 1.90 | 0.26 | | | | |
| 5.40 | 3.76 | 1.92 | 0.25 | | | | |
| 5.55 | 3.78 | 1.94 | 0.23 | | | | |
| 5.70 | 3.80 | 1.96 | 0.20 | | | | |
| 5.85 | 3.83 | 1.98 | 0.17 | | | | |
| 6.00 | **3.86** | **2.00** | 0.15 | | | | |
| 6.15 | 3.86 | 2.00 | 0.16 | | | | |
| 6.30 | 3.86 | 2.00 | 0.15 | | | | |
| 6.45 | 3.86 | 2.00 | 0.10 | | | | |
| 6.60 | 3.86 | 2.00 | 0.05 | | | | |
| 6.75 | 3.86 | 2.00 | 0.03 | | | | |
| 6.90 | 3.86 | 2.00 | 0.01 | | | | |
| 7.05 | 3.86 | 2.00 | 0.01 | | | | |
| 7.20 | 3.86 | 2.00 | 0.00 | | | | |
| 7.35 | 3.86 | 2.00 | 0.00 | | | | |
| 7.50 | 3.86 | 2.00 | 0.00 | | | | |
| 7.65 | 3.86 | 2.00 | 0.00 | | | | |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

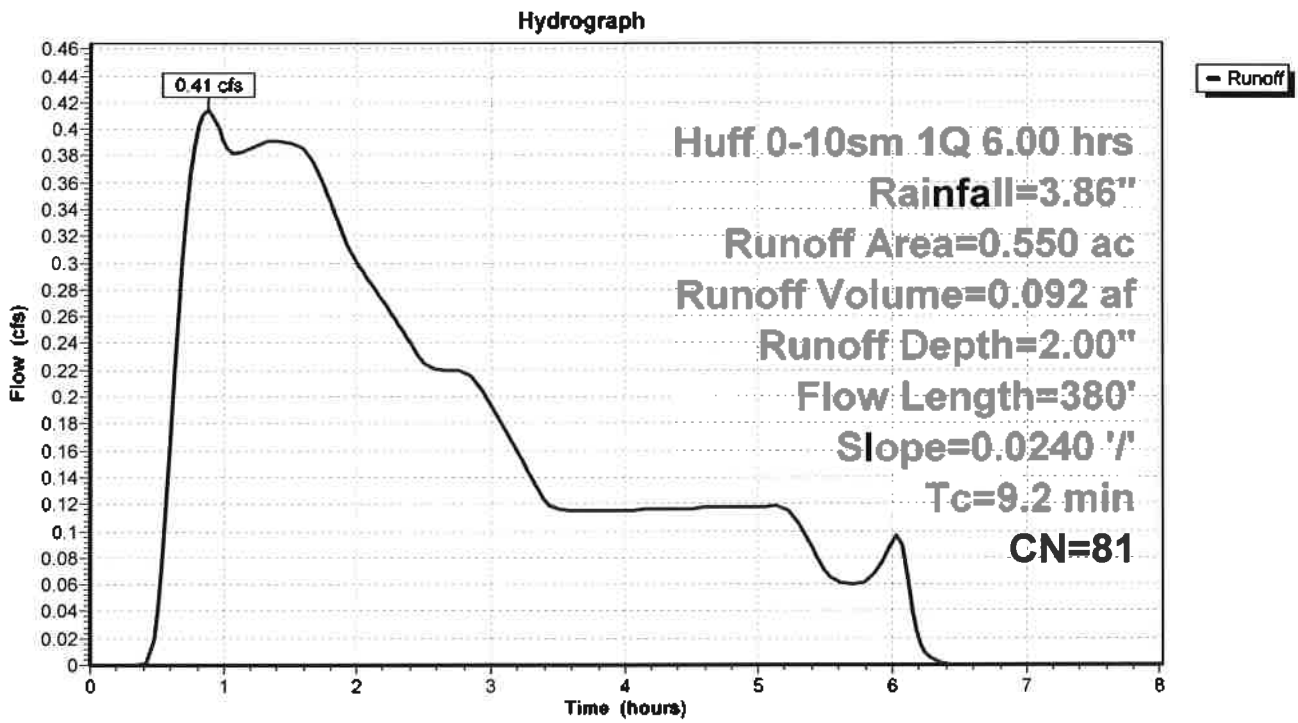
Runoff = 0.41 cfs @ 0.88 hrs, Volume= 0.092 af, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=3.86"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 7.80 | 3.86 | 2.00 | 0.00 |
| 0.15 | 0.08 | 0.00 | 0.00 | 7.95 | 3.86 | 2.00 | 0.00 |
| 0.30 | 0.31 | 0.00 | 0.00 | | | | |
| 0.45 | 0.63 | 0.01 | 0.01 | | | | |
| 0.60 | 0.96 | 0.08 | 0.17 | | | | |
| 0.75 | 1.25 | 0.20 | **0.37** | | | | |
| 0.90 | 1.48 | 0.31 | **0.41** | | | | |
| 1.05 | 1.67 | 0.41 | 0.38 | | | | |
| 1.20 | 1.85 | 0.51 | 0.39 | | | | |
| 1.35 | 2.02 | 0.62 | 0.39 | | | | |
| 1.50 | 2.18 | 0.72 | 0.39 | | | | |
| 1.65 | 2.33 | 0.82 | 0.38 | | | | |
| 1.80 | 2.46 | 0.91 | 0.34 | | | | |
| 1.95 | 2.57 | 0.99 | 0.31 | | | | |
| 2.10 | 2.67 | 1.07 | 0.29 | | | | |
| 2.25 | 2.76 | 1.13 | 0.26 | | | | |
| 2.40 | 2.85 | 1.20 | 0.24 | | | | |
| 2.55 | 2.92 | 1.26 | 0.22 | | | | |
| 2.70 | 3.00 | 1.32 | 0.22 | | | | |
| 2.85 | 3.08 | 1.37 | 0.22 | | | | |
| 3.00 | 3.14 | 1.42 | 0.19 | | | | |
| 3.15 | 3.19 | 1.46 | 0.17 | | | | |
| 3.30 | 3.24 | 1.50 | 0.14 | | | | |
| 3.45 | 3.28 | 1.53 | 0.12 | | | | |
| 3.60 | 3.31 | 1.56 | 0.11 | | | | |
| 3.75 | 3.35 | 1.59 | 0.11 | | | | |
| 3.90 | 3.39 | 1.62 | 0.12 | | | | |
| 4.05 | 3.43 | 1.65 | 0.12 | | | | |
| 4.20 | 3.47 | 1.68 | 0.12 | | | | |
| 4.35 | 3.51 | 1.72 | 0.12 | | | | |
| 4.50 | 3.55 | 1.75 | 0.12 | | | | |
| 4.65 | 3.59 | 1.78 | 0.12 | | | | |
| 4.80 | 3.63 | 1.81 | 0.12 | | | | |
| 4.95 | 3.67 | 1.84 | 0.12 | | | | |
| 5.10 | 3.70 | 1.88 | 0.12 | | | | |
| 5.25 | 3.74 | 1.90 | 0.11 | | | | |
| 5.40 | 3.76 | 1.92 | 0.09 | | | | |
| 5.55 | 3.78 | 1.94 | 0.06 | | | | |
| 5.70 | 3.80 | 1.96 | 0.06 | | | | |
| 5.85 | 3.83 | 1.98 | 0.07 | | | | |
| 6.00 | **3.86** | **2.00** | 0.09 | | | | |
| 6.15 | 3.86 | 2.00 | 0.04 | | | | |
| 6.30 | 3.86 | 2.00 | 0.00 | | | | |
| 6.45 | 3.86 | 2.00 | 0.00 | | | | |
| 6.60 | 3.86 | 2.00 | 0.00 | | | | |
| 6.75 | 3.86 | 2.00 | 0.00 | | | | |
| 6.90 | 3.86 | 2.00 | 0.00 | | | | |
| 7.05 | 3.86 | 2.00 | 0.00 | | | | |
| 7.20 | 3.86 | 2.00 | 0.00 | | | | |
| 7.35 | 3.86 | 2.00 | 0.00 | | | | |
| 7.50 | 3.86 | 2.00 | 0.00 | | | | |
| 7.65 | 3.86 | 2.00 | 0.00 | | | | |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 8.37 cfs @ | 1.49 hrs, | Volume= | 1.762 af |
| Outflow | = | 0.92 cfs @ | 6.31 hrs, | Volume= | 0.481 af, Atten= 89%, Lag= 289.4 min |
| Primary | = | 0.92 cfs @ | 6.31 hrs, | Volume= | 0.481 af |
| Secondary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Peak Elev= 673.16' @ 6.31 hrs Surf.Area= 31,073 sf Storage= 60,610 cf

Plug-Flow detention time= 213.0 min calculated for 0.479 af (27% of inflow)
Center-of-Mass det. time= 127.6 min ( 284.5 - 156.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.40' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

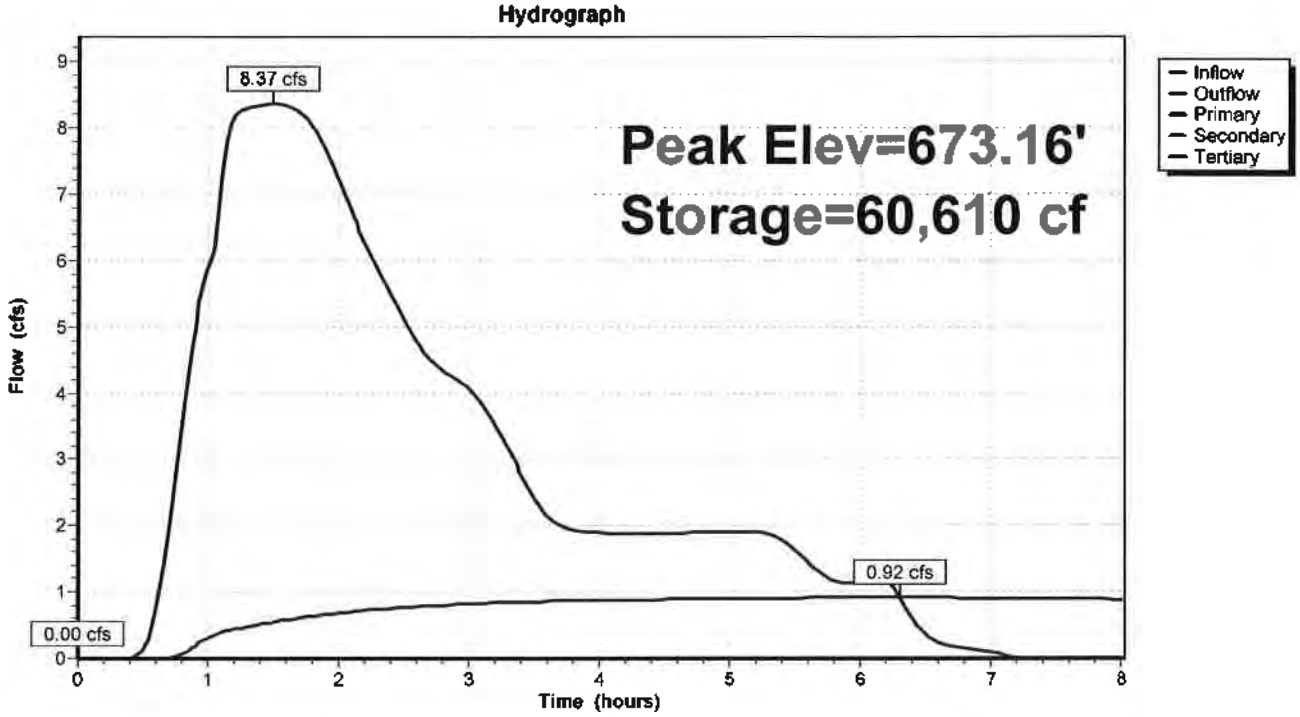
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=0.92 cfs @ 6.31 hrs HW=673.16' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.92 cfs @ 8.30 fps)

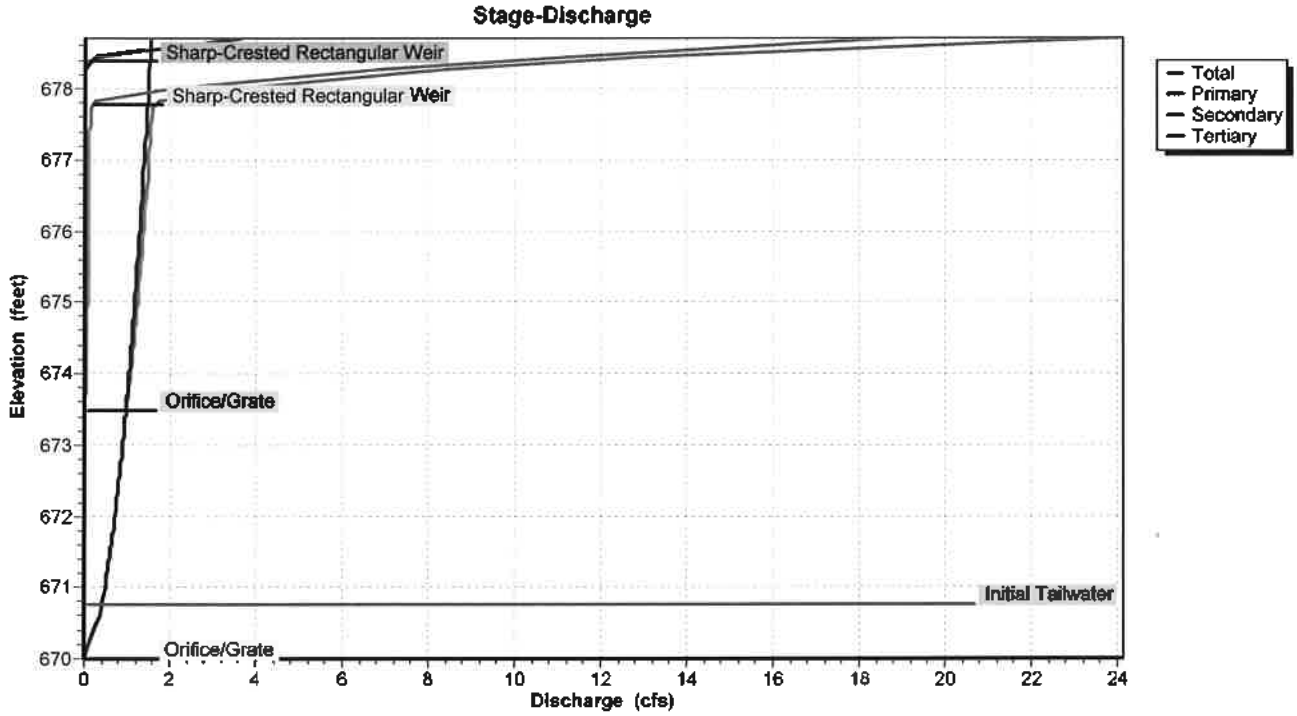
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

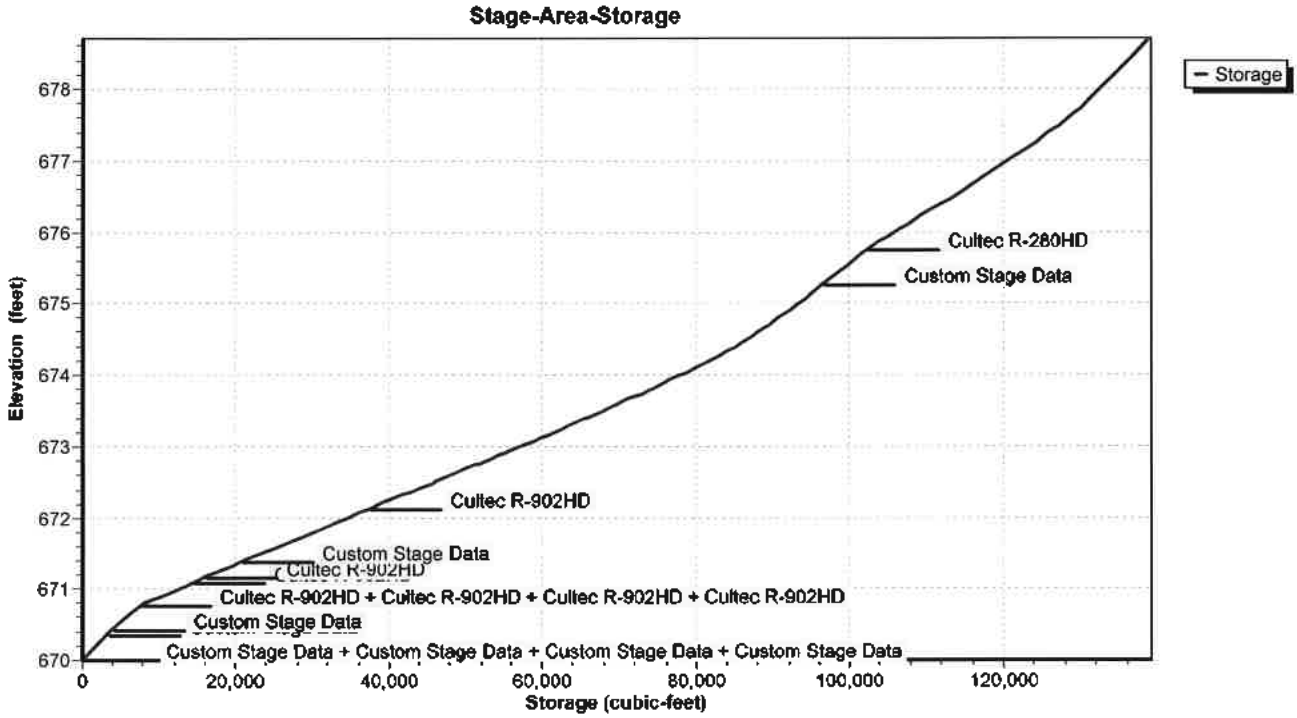
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 0.30 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.60 | 0.77 | 102 | 670.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.90 | 5.04 | 2,892 | 670.32 | 0.20 | 0.20 | 0.00 | 0.00 |
| 1.20 | 8.19 | 9,460 | 670.86 | 0.44 | 0.44 | 0.00 | 0.00 |
| 1.50 | **8.37** | 17,912 | 671.26 | 0.55 | 0.55 | 0.00 | 0.00 |
| 1.80 | 8.01 | 26,224 | 671.63 | 0.64 | 0.64 | 0.00 | 0.00 |
| 2.10 | 6.69 | 33,557 | 671.96 | 0.71 | 0.71 | 0.00 | 0.00 |
| 2.40 | 5.48 | 39,382 | 672.21 | 0.76 | 0.76 | 0.00 | 0.00 |
| 2.70 | 4.49 | 43,935 | 672.41 | 0.79 | 0.79 | 0.00 | 0.00 |
| 3.00 | 4.06 | 47,701 | 672.58 | 0.82 | 0.82 | 0.00 | 0.00 |
| 3.30 | 3.15 | 50,789 | 672.72 | 0.85 | 0.85 | 0.00 | 0.00 |
| 3.60 | 2.14 | 52,737 | 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 3.90 | 1.90 | 53,956 | 672.86 | 0.87 | 0.87 | 0.00 | 0.00 |
| 4.20 | 1.88 | 55,052 | 672.91 | 0.88 | 0.88 | 0.00 | 0.00 |
| 4.50 | 1.88 | 56,132 | 672.96 | 0.88 | 0.88 | 0.00 | 0.00 |
| 4.80 | 1.89 | 57,211 | 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 5.10 | 1.90 | 58,293 | 673.05 | 0.90 | 0.90 | 0.00 | 0.00 |
| 5.40 | 1.79 | 59,351 | 673.10 | 0.91 | 0.91 | 0.00 | 0.00 |
| 5.70 | 1.26 | 60,044 | 673.13 | 0.91 | 0.91 | 0.00 | 0.00 |
| 6.00 | 1.18 | 60,311 | 673.15 | 0.91 | 0.91 | 0.00 | 0.00 |
| 6.30 | 0.90 | **60,610** | **673.16** | **0.92** | **0.92** | 0.00 | 0.00 |
| 6.60 | 0.24 | 60,182 | 673.14 | 0.91 | 0.91 | 0.00 | 0.00 |
| 6.90 | 0.12 | 59,382 | 673.10 | 0.91 | 0.91 | 0.00 | 0.00 |
| 7.20 | 0.01 | 58,482 | 673.06 | 0.90 | 0.90 | 0.00 | 0.00 |
| 7.50 | 0.00 | 57,514 | 673.02 | 0.89 | 0.89 | 0.00 | 0.00 |
| 7.80 | 0.00 | 56,552 | 672.97 | 0.89 | 0.89 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 18.46 | 1.54 | 15.13 | 1.79 |
| 678.80 | **28.12** | **1.56** | **21.42** | **5.14** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 3.51 cfs @ | 1.48 hrs, | Volume= | 0.832 af |
| Outflow | = | 3.51 cfs @ | 1.53 hrs, | Volume= | 0.831 af, Atten= 0%, Lag= 2.9 min |
| Primary | = | 1.30 cfs @ | 1.53 hrs, | Volume= | 0.515 af |
| Secondary | = | 2.21 cfs @ | 1.53 hrs, | Volume= | 0.317 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Peak Elev= 678.02' @ 1.53 hrs Surf.Area= 3,195 sf Storage= 3,302 cf

Plug-Flow detention time= 22.9 min calculated for 0.831 af (100% of inflow)
Center-of-Mass det. time= 22.6 min ( 181.3 - 158.8 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

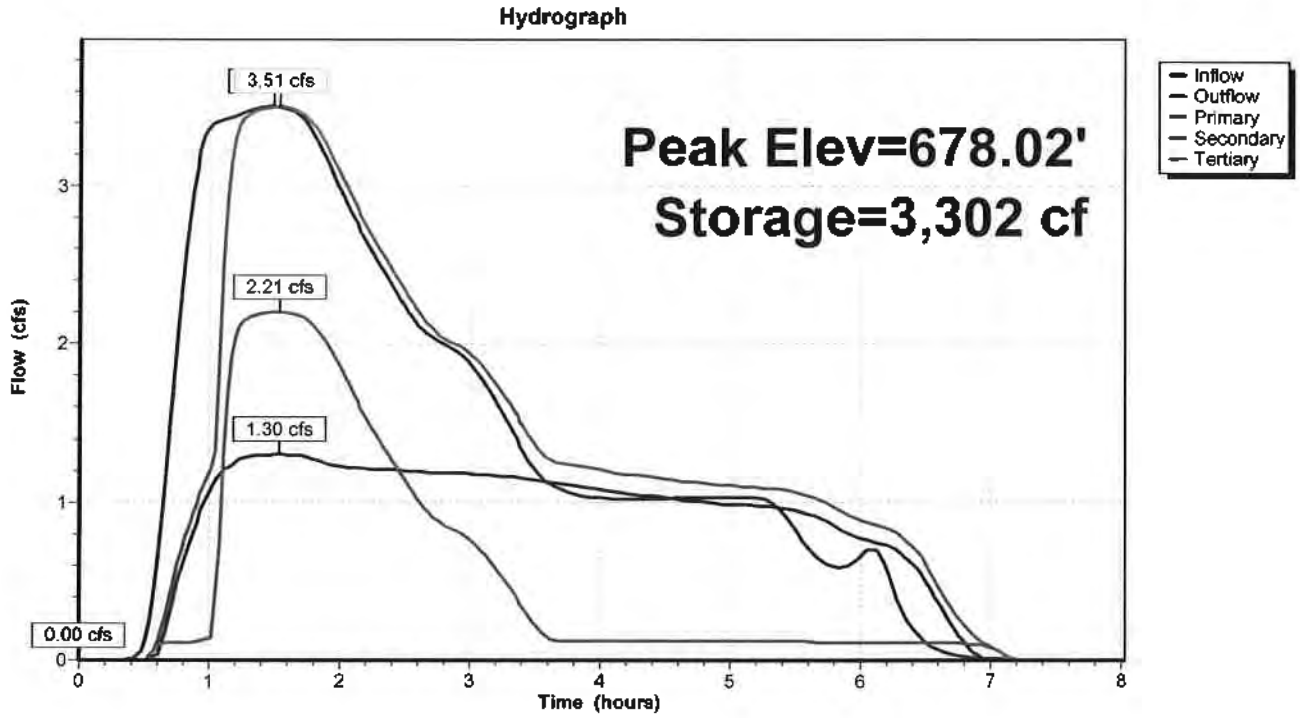
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=1.30 cfs @ 1.53 hrs HW=678.02' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.24 cfs @ 5.38 fps)
└─**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.06 cfs @ 0.48 fps)

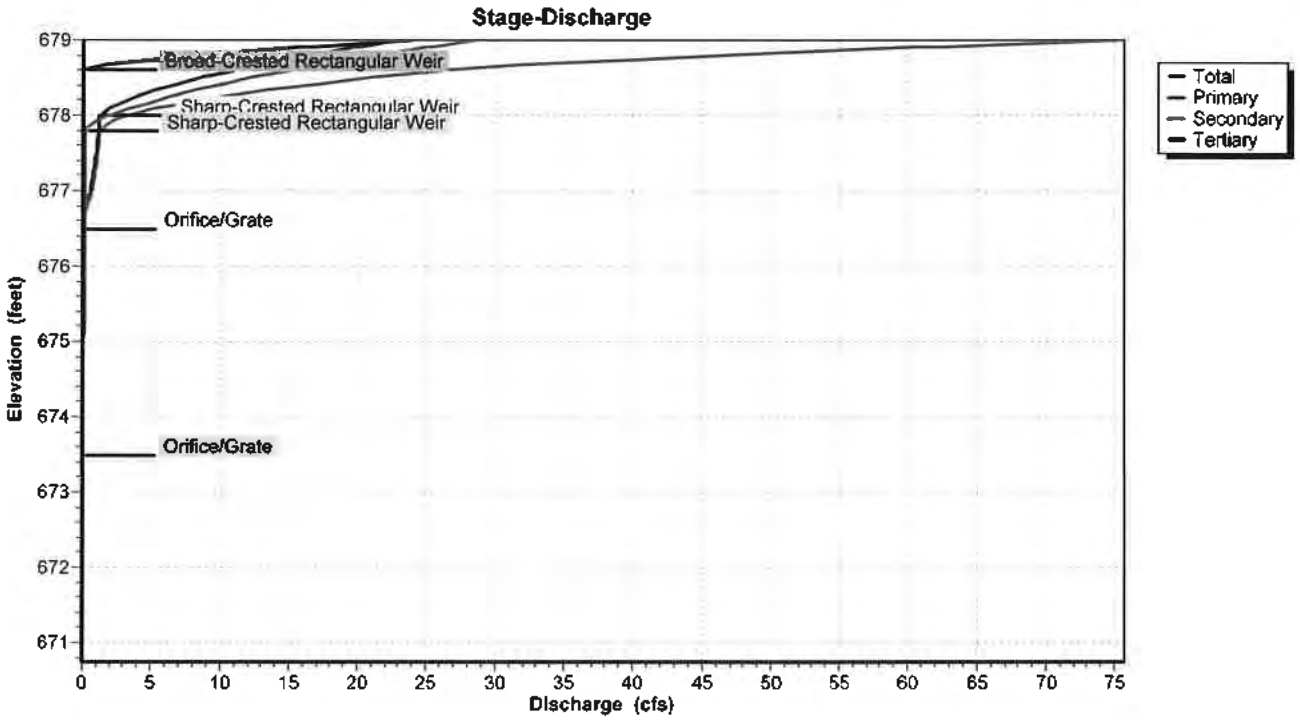
**Secondary OutFlow** Max=2.21 cfs @ 1.53 hrs HW=678.02' TW=671.30' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.12 cfs @ 10.17 fps)
└─**5=Sharp-Crested Rectangular Weir** (Weir Controls 2.08 cfs @ 1.58 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

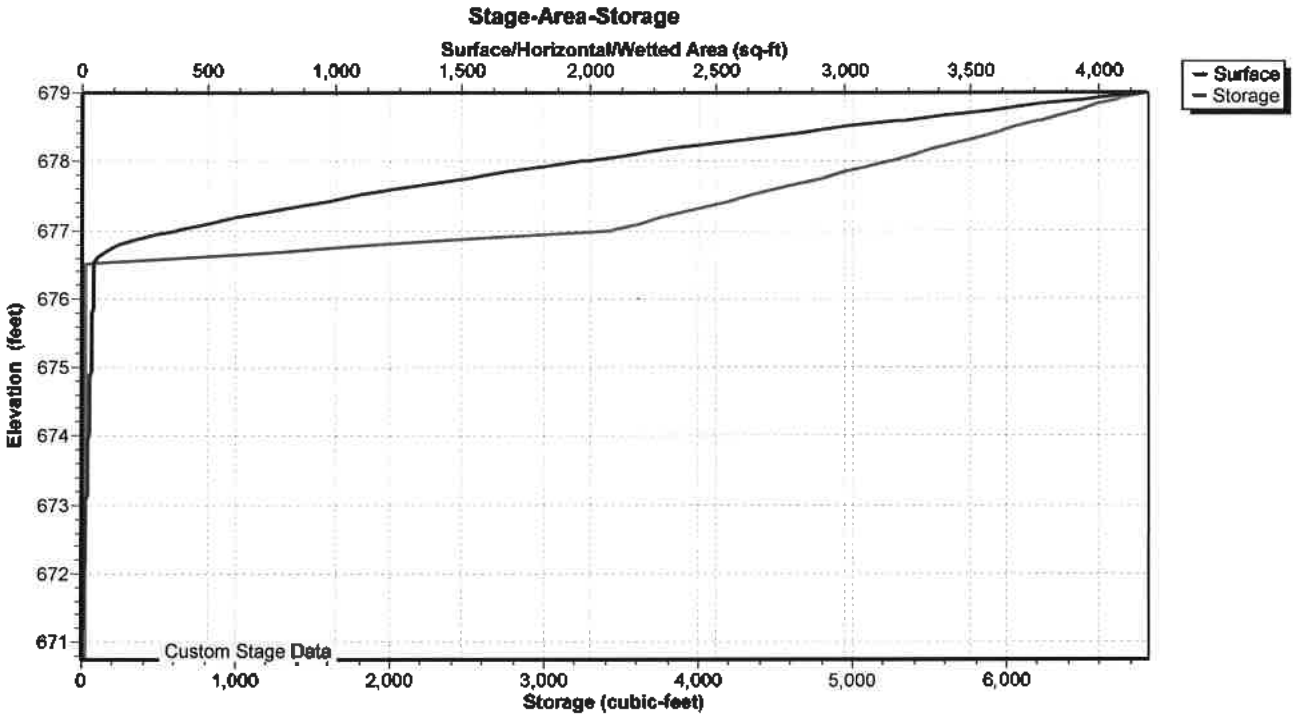
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.30 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.60 | 0.64 | 92 | 676.56 | 0.11 | 0.01 | 0.10 | 0.00 |
| 0.90 | 3.11 | 1,518 | 677.40 | 0.99 | 0.88 | 0.12 | 0.00 |
| 1.20 | **3.44** | 3,267 | 678.01 | 3.31 | 1.26 | 2.05 | 0.00 |
| 1.50 | **3.51** | **3,302** | **678.02** | **3.51** | **1.30** | **2.21** | 0.00 |
| 1.80 | 3.33 | **3,281** | **678.01** | **3.39** | **1.27** | **2.12** | 0.00 |
| 2.10 | 2.80 | 3,181 | 677.98 | 2.91 | 1.22 | 1.69 | 0.00 |
| 2.40 | 2.37 | 3,074 | 677.95 | 2.47 | 1.20 | 1.27 | 0.00 |
| 2.70 | 2.04 | 2,973 | 677.92 | 2.10 | 1.19 | 0.91 | 0.00 |
| 3.00 | 1.88 | 2,927 | 677.90 | 1.94 | 1.18 | 0.76 | 0.00 |
| 3.30 | 1.49 | 2,822 | 677.87 | 1.62 | 1.16 | 0.46 | 0.00 |
| 3.60 | 1.12 | 2,655 | 677.81 | 1.28 | 1.13 | 0.15 | 0.00 |
| 3.90 | 1.03 | 2,470 | 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 4.20 | 1.02 | 2,282 | 677.68 | 1.18 | 1.06 | 0.12 | 0.00 |
| 4.50 | 1.02 | 2,130 | 677.63 | 1.15 | 1.03 | 0.12 | 0.00 |
| 4.80 | 1.03 | 2,014 | 677.59 | 1.12 | 1.00 | 0.12 | 0.00 |
| 5.10 | 1.04 | 1,929 | 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 5.40 | 0.93 | 1,848 | 677.52 | 1.08 | 0.96 | 0.12 | 0.00 |
| 5.70 | 0.63 | 1,555 | 677.41 | 1.00 | 0.89 | 0.12 | 0.00 |
| 6.00 | 0.65 | 1,176 | 677.26 | 0.89 | 0.77 | 0.11 | 0.00 |
| 6.30 | 0.33 | 919 | 677.14 | 0.79 | 0.68 | 0.11 | 0.00 |
| 6.60 | 0.06 | 385 | 676.88 | 0.47 | 0.36 | 0.11 | 0.00 |
| 6.90 | 0.01 | 103 | 676.60 | 0.13 | 0.03 | 0.10 | 0.00 |
| 7.20 | 0.00 | 39 | 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7.50 | 0.00 | 39 | 673.53 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7.80 | 0.00 | 39 | 673.51 | 0.00 | 0.00 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 23.56 | 9.86 | 13.70 | 0.00 |
| 678.75 | 40.37 | 15.13 | 19.77 | 5.47 |
| 678.95 | **67.61** | **21.27** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

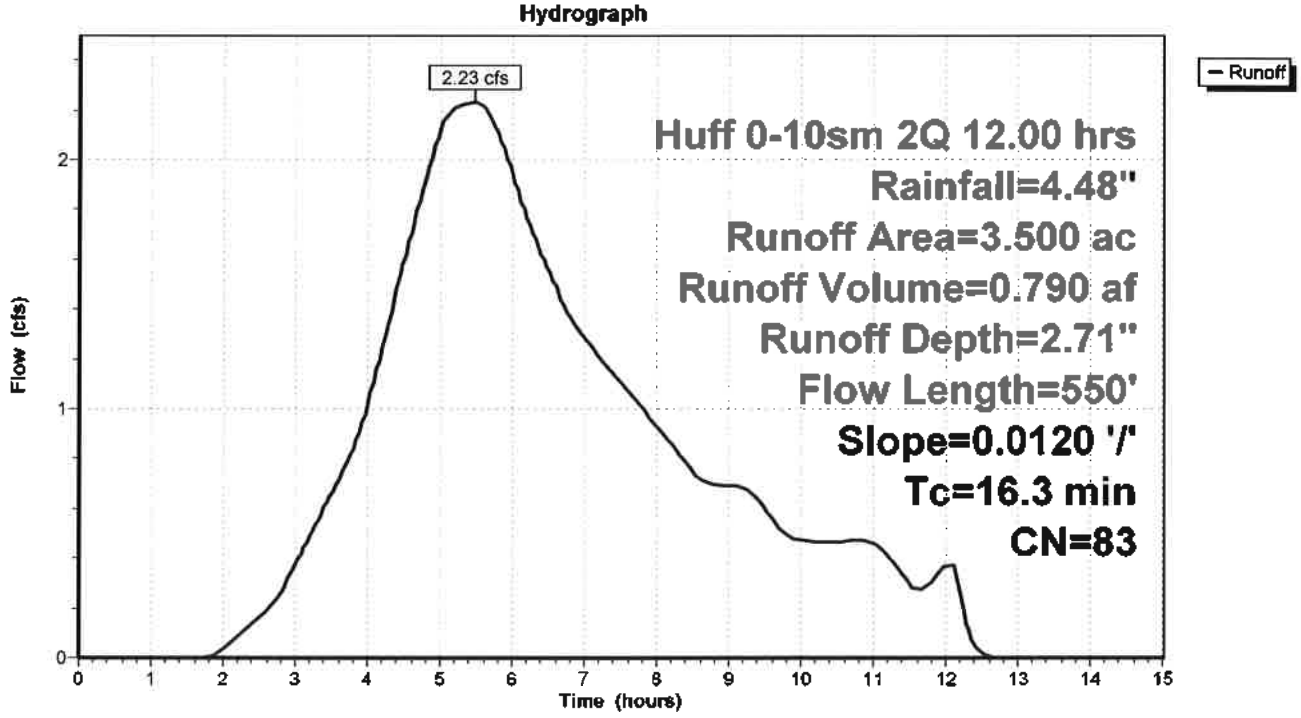
Runoff = 2.23 cfs @ 5.46 hrs, Volume= 0.790 af, Depth= 2.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.04 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=4.48"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

## Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 10.40 | 4.28 | 2.53 | 0.47 |
| 0.20 | 0.01 | 0.00 | 0.00 | 10.60 | 4.31 | 2.56 | 0.47 |
| 0.40 | 0.03 | 0.00 | 0.00 | 10.80 | 4.34 | 2.59 | 0.47 |
| 0.60 | 0.07 | 0.00 | 0.00 | 11.00 | 4.37 | 2.61 | 0.46 |
| 0.80 | 0.12 | 0.00 | 0.00 | 11.20 | 4.39 | 2.63 | 0.41 |
| 1.00 | 0.18 | 0.00 | 0.00 | 11.40 | 4.41 | 2.65 | 0.33 |
| 1.20 | 0.25 | 0.00 | 0.00 | 11.60 | 4.43 | 2.66 | 0.27 |
| 1.40 | 0.32 | 0.00 | 0.00 | 11.80 | 4.45 | 2.68 | 0.30 |
| 1.60 | 0.39 | 0.00 | 0.00 | 12.00 | **4.48** | **2.71** | 0.37 |
| 1.80 | 0.45 | 0.00 | 0.00 | 12.20 | 4.48 | 2.71 | 0.27 |
| 2.00 | 0.51 | 0.00 | 0.03 | 12.40 | 4.48 | 2.71 | 0.05 |
| 2.20 | 0.57 | 0.01 | 0.09 | 12.60 | 4.48 | 2.71 | 0.01 |
| 2.40 | 0.63 | 0.02 | 0.14 | 12.80 | 4.48 | 2.71 | 0.00 |
| 2.60 | 0.70 | 0.04 | 0.19 | 13.00 | 4.48 | 2.71 | 0.00 |
| 2.80 | 0.77 | 0.06 | 0.27 | 13.20 | 4.48 | 2.71 | 0.00 |
| 3.00 | 0.86 | 0.08 | 0.37 | 13.40 | 4.48 | 2.71 | 0.00 |
| 3.20 | 0.95 | 0.11 | 0.49 | 13.60 | 4.48 | 2.71 | 0.00 |
| 3.40 | 1.05 | 0.15 | 0.60 | 13.80 | 4.48 | 2.71 | 0.00 |
| 3.60 | 1.15 | 0.20 | 0.72 | 14.00 | 4.48 | 2.71 | 0.00 |
| 3.80 | 1.27 | 0.25 | 0.84 | 14.20 | 4.48 | 2.71 | 0.00 |
| 4.00 | 1.40 | 0.32 | 1.02 | 14.40 | 4.48 | 2.71 | 0.00 |
| 4.20 | 1.54 | 0.40 | 1.25 | 14.60 | 4.48 | 2.71 | 0.00 |
| 4.40 | 1.69 | 0.50 | 1.49 | 14.80 | 4.48 | 2.71 | 0.00 |
| 4.60 | 1.86 | 0.60 | 1.71 | 15.00 | 4.48 | 2.71 | 0.00 |
| 4.80 | 2.04 | 0.72 | 1.93 | | | | |
| 5.00 | 2.21 | 0.85 | 2.13 | | | | |
| 5.20 | 2.39 | 0.97 | 2.21 | | | | |
| 5.40 | 2.56 | 1.10 | **2.23** | | | | |
| 5.60 | 2.72 | 1.22 | **2.22** | | | | |
| 5.80 | 2.86 | 1.33 | 2.10 | | | | |
| 6.00 | 2.99 | 1.44 | 1.94 | | | | |
| 6.20 | 3.10 | 1.53 | 1.77 | | | | |
| 6.40 | 3.21 | 1.62 | 1.62 | | | | |
| 6.60 | 3.30 | 1.69 | 1.49 | | | | |
| 6.80 | 3.39 | 1.77 | 1.37 | | | | |
| 7.00 | 3.47 | 1.84 | 1.28 | | | | |
| 7.20 | 3.55 | 1.90 | 1.21 | | | | |
| 7.40 | 3.63 | 1.96 | 1.14 | | | | |
| 7.60 | 3.69 | 2.02 | 1.07 | | | | |
| 7.80 | 3.76 | 2.08 | 1.00 | | | | |
| 8.00 | 3.81 | 2.13 | 0.93 | | | | |
| 8.20 | 3.87 | 2.17 | 0.86 | | | | |
| 8.40 | 3.91 | 2.21 | 0.78 | | | | |
| 8.60 | 3.96 | 2.25 | 0.72 | | | | |
| 8.80 | 4.00 | 2.29 | 0.70 | | | | |
| 9.00 | 4.05 | 2.33 | 0.69 | | | | |
| 9.20 | 4.09 | 2.37 | 0.69 | | | | |
| 9.40 | 4.13 | 2.40 | 0.63 | | | | |
| 9.60 | 4.16 | 2.43 | 0.56 | | | | |
| 9.80 | 4.19 | 2.45 | 0.49 | | | | |
| 10.00 | 4.22 | 2.48 | 0.47 | | | | |
| 10.20 | 4.25 | 2.51 | 0.47 | | | | |

## Summary for Subcatchment 7S: South Property

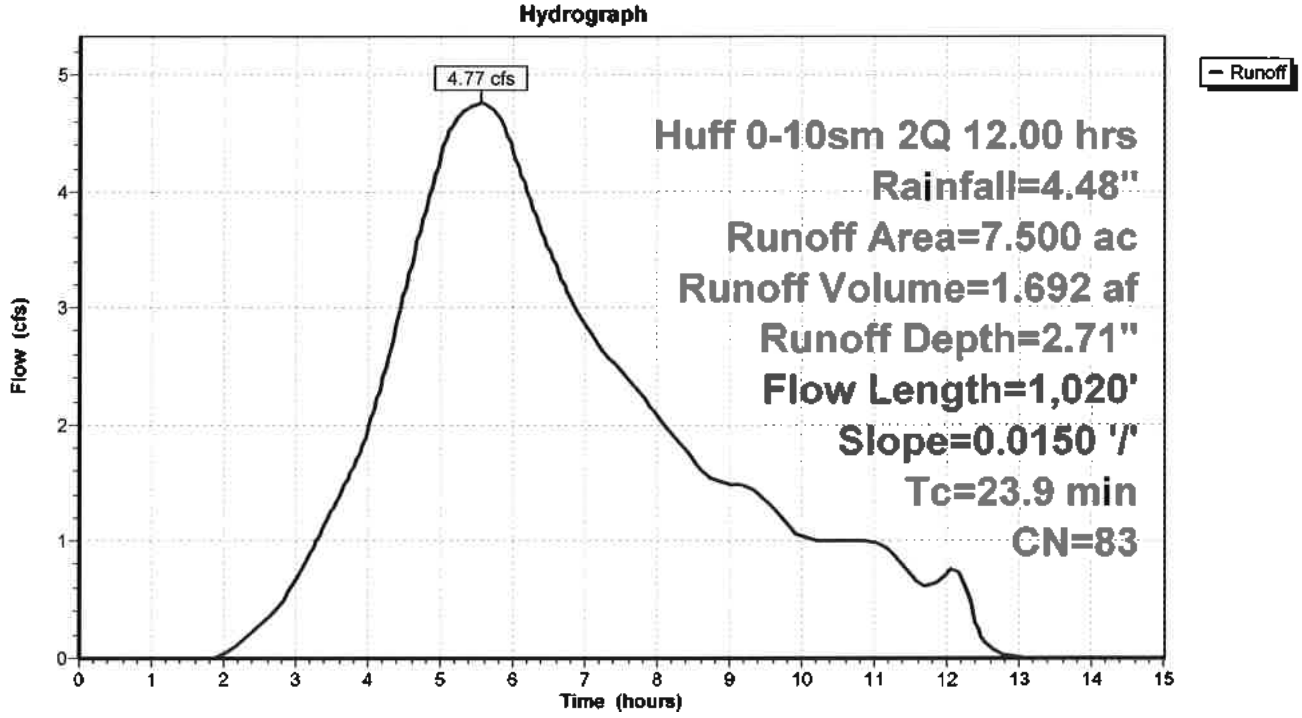
Runoff = 4.77 cfs @ 5.56 hrs, Volume= 1.692 af, Depth= 2.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.04 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=4.48"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 10.40 | 4.28 | 2.53 | 1.00 |
| 0.20 | 0.01 | 0.00 | 0.00 | 10.60 | 4.31 | 2.56 | 1.00 |
| 0.40 | 0.03 | 0.00 | 0.00 | 10.80 | 4.34 | 2.59 | 1.00 |
| 0.60 | 0.07 | 0.00 | 0.00 | 11.00 | 4.37 | 2.61 | 1.00 |
| 0.80 | 0.12 | 0.00 | 0.00 | 11.20 | 4.39 | 2.63 | 0.93 |
| 1.00 | 0.18 | 0.00 | 0.00 | 11.40 | 4.41 | 2.65 | 0.80 |
| 1.20 | 0.25 | 0.00 | 0.00 | 11.60 | 4.43 | 2.66 | 0.66 |
| 1.40 | 0.32 | 0.00 | 0.00 | 11.80 | 4.45 | 2.68 | 0.62 |
| 1.60 | 0.39 | 0.00 | 0.00 | 12.00 | **4.48** | **2.71** | 0.73 |
| 1.80 | 0.45 | 0.00 | 0.00 | 12.20 | 4.48 | 2.71 | 0.73 |
| 2.00 | 0.51 | 0.00 | 0.03 | 12.40 | 4.48 | 2.71 | 0.31 |
| 2.20 | 0.57 | 0.01 | 0.12 | 12.60 | 4.48 | 2.71 | 0.09 |
| 2.40 | 0.63 | 0.02 | 0.23 | 12.80 | 4.48 | 2.71 | 0.03 |
| 2.60 | 0.70 | 0.04 | 0.34 | 13.00 | 4.48 | 2.71 | 0.01 |
| 2.80 | 0.77 | 0.06 | 0.48 | 13.20 | 4.48 | 2.71 | 0.00 |
| 3.00 | 0.86 | 0.08 | 0.67 | 13.40 | 4.48 | 2.71 | 0.00 |
| 3.20 | 0.95 | 0.11 | 0.90 | 13.60 | 4.48 | 2.71 | 0.00 |
| 3.40 | 1.05 | 0.15 | 1.15 | 13.80 | 4.48 | 2.71 | 0.00 |
| 3.60 | 1.15 | 0.20 | 1.39 | 14.00 | 4.48 | 2.71 | 0.00 |
| 3.80 | 1.27 | 0.25 | 1.64 | 14.20 | 4.48 | 2.71 | 0.00 |
| 4.00 | 1.40 | 0.32 | 1.97 | 14.40 | 4.48 | 2.71 | 0.00 |
| 4.20 | 1.54 | 0.40 | 2.40 | 14.60 | 4.48 | 2.71 | 0.00 |
| 4.40 | 1.69 | 0.50 | 2.89 | 14.80 | 4.48 | 2.71 | 0.00 |
| 4.60 | 1.86 | 0.60 | 3.38 | 15.00 | 4.48 | 2.71 | 0.00 |
| 4.80 | 2.04 | 0.72 | 3.85 | | | | |
| 5.00 | 2.21 | 0.85 | 4.31 | | | | |
| 5.20 | 2.39 | 0.97 | 4.61 | | | | |
| 5.40 | 2.56 | 1.10 | **4.74** | | | | |
| 5.60 | 2.72 | 1.22 | **4.76** | | | | |
| 5.80 | 2.86 | 1.33 | 4.63 | | | | |
| 6.00 | 2.99 | 1.44 | 4.35 | | | | |
| 6.20 | 3.10 | 1.53 | 4.00 | | | | |
| 6.40 | 3.21 | 1.62 | 3.66 | | | | |
| 6.60 | 3.30 | 1.69 | 3.37 | | | | |
| 6.80 | 3.39 | 1.77 | 3.08 | | | | |
| 7.00 | 3.47 | 1.84 | 2.85 | | | | |
| 7.20 | 3.55 | 1.90 | 2.69 | | | | |
| 7.40 | 3.63 | 1.96 | 2.53 | | | | |
| 7.60 | 3.69 | 2.02 | 2.38 | | | | |
| 7.80 | 3.76 | 2.08 | 2.23 | | | | |
| 8.00 | 3.81 | 2.13 | 2.08 | | | | |
| 8.20 | 3.87 | 2.17 | 1.93 | | | | |
| 8.40 | 3.91 | 2.21 | 1.77 | | | | |
| 8.60 | 3.96 | 2.25 | 1.62 | | | | |
| 8.80 | 4.00 | 2.29 | 1.52 | | | | |
| 9.00 | 4.05 | 2.33 | 1.50 | | | | |
| 9.20 | 4.09 | 2.37 | 1.48 | | | | |
| 9.40 | 4.13 | 2.40 | 1.42 | | | | |
| 9.60 | 4.16 | 2.43 | 1.29 | | | | |
| 9.80 | 4.19 | 2.45 | 1.14 | | | | |
| 10.00 | 4.22 | 2.48 | 1.04 | | | | |
| 10.20 | 4.25 | 2.51 | 1.01 | | | | |

## Summary for Subcatchment 8S: Northwood Drive Bypass

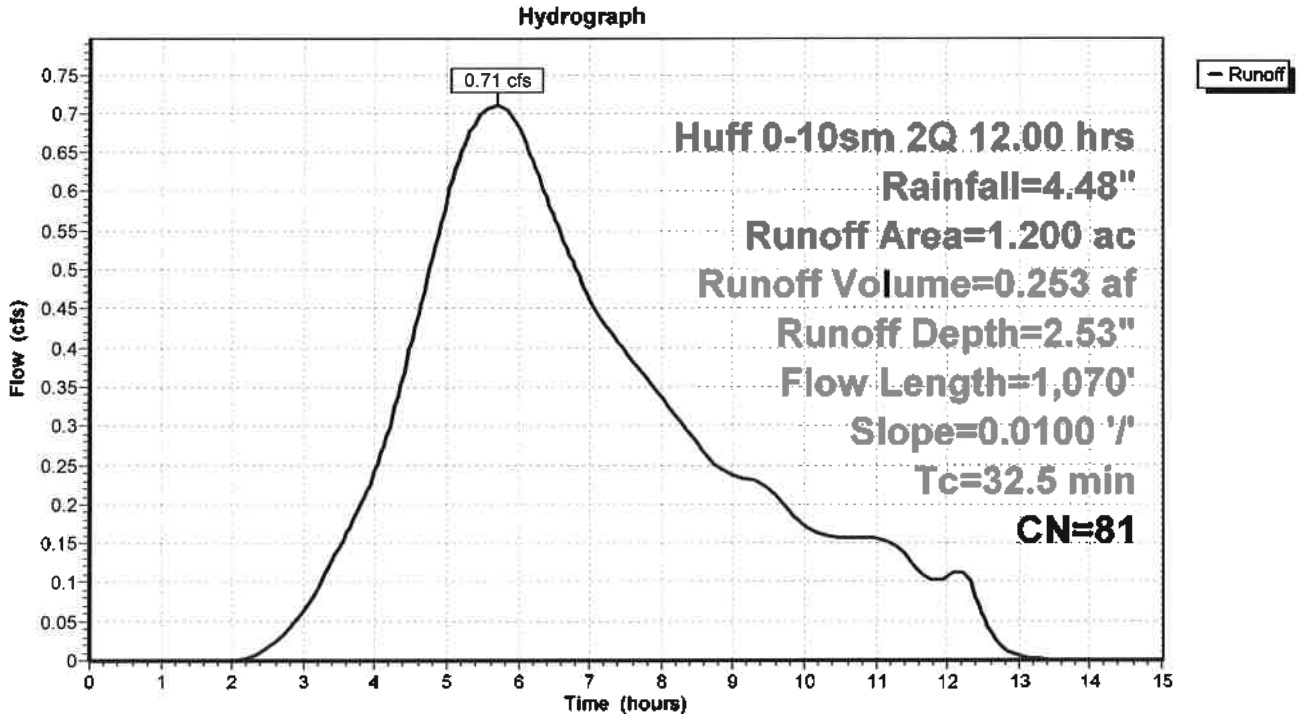
Runoff = 0.71 cfs @ 5.69 hrs, Volume= 0.253 af, Depth= 2.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.04 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=4.48"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

### Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.01 | 0.00 | 0.00 |
| 0.40 | 0.03 | 0.00 | 0.00 |
| 0.60 | 0.07 | 0.00 | 0.00 |
| 0.80 | 0.12 | 0.00 | 0.00 |
| 1.00 | 0.18 | 0.00 | 0.00 |
| 1.20 | 0.25 | 0.00 | 0.00 |
| 1.40 | 0.32 | 0.00 | 0.00 |
| 1.60 | 0.39 | 0.00 | 0.00 |
| 1.80 | 0.45 | 0.00 | 0.00 |
| 2.00 | 0.51 | 0.00 | 0.00 |
| 2.20 | 0.57 | 0.00 | 0.00 |
| 2.40 | 0.63 | 0.01 | 0.01 |
| 2.60 | 0.70 | 0.02 | 0.02 |
| 2.80 | 0.77 | 0.04 | 0.04 |
| 3.00 | 0.86 | 0.06 | 0.06 |
| 3.20 | 0.95 | 0.08 | 0.09 |
| 3.40 | 1.05 | 0.12 | 0.13 |
| 3.60 | 1.15 | 0.15 | 0.16 |
| 3.80 | 1.27 | 0.20 | 0.20 |
| 4.00 | 1.40 | 0.26 | 0.24 |
| 4.20 | 1.54 | 0.33 | 0.30 |
| 4.40 | 1.69 | 0.42 | 0.37 |
| 4.60 | 1.86 | 0.52 | 0.44 |
| 4.80 | 2.04 | 0.63 | 0.52 |
| 5.00 | 2.21 | 0.74 | 0.59 |
| 5.20 | 2.39 | 0.86 | 0.65 |
| 5.40 | 2.56 | 0.98 | 0.69 |
| 5.60 | 2.72 | 1.10 | **0.71** |
| 5.80 | 2.86 | 1.21 | **0.71** |
| 6.00 | 2.99 | 1.30 | 0.68 |
| 6.20 | 3.10 | 1.39 | 0.64 |
| 6.40 | 3.21 | 1.48 | 0.59 |
| 6.60 | 3.30 | 1.55 | 0.55 |
| 6.80 | 3.39 | 1.62 | 0.50 |
| 7.00 | 3.47 | 1.69 | 0.46 |
| 7.20 | 3.55 | 1.75 | 0.43 |
| 7.40 | 3.63 | 1.81 | 0.41 |
| 7.60 | 3.69 | 1.87 | 0.38 |
| 7.80 | 3.76 | 1.92 | 0.36 |
| 8.00 | 3.81 | 1.97 | 0.34 |
| 8.20 | 3.87 | 2.01 | 0.31 |
| 8.40 | 3.91 | 2.05 | 0.29 |
| 8.60 | 3.96 | 2.09 | 0.27 |
| 8.80 | 4.00 | 2.13 | 0.25 |
| 9.00 | 4.05 | 2.16 | 0.24 |
| 9.20 | 4.09 | 2.20 | 0.23 |
| 9.40 | 4.13 | 2.23 | 0.23 |
| 9.60 | 4.16 | 2.26 | 0.21 |
| 9.80 | 4.19 | 2.29 | 0.19 |
| 10.00 | 4.22 | 2.31 | 0.17 |
| 10.20 | 4.25 | 2.34 | 0.16 |
| 10.40 | 4.28 | 2.36 | 0.16 |
| 10.60 | 4.31 | 2.39 | 0.16 |
| 10.80 | 4.34 | 2.41 | 0.16 |
| 11.00 | 4.37 | 2.44 | 0.16 |
| 11.20 | 4.39 | 2.46 | 0.15 |
| 11.40 | 4.41 | 2.47 | 0.14 |
| 11.60 | 4.43 | 2.49 | 0.12 |
| 11.80 | 4.45 | 2.51 | 0.10 |
| 12.00 | **4.48** | **2.53** | 0.11 |
| 12.20 | 4.48 | 2.53 | 0.12 |
| 12.40 | 4.48 | 2.53 | 0.08 |
| 12.60 | 4.48 | 2.53 | 0.04 |
| 12.80 | 4.48 | 2.53 | 0.01 |
| 13.00 | 4.48 | 2.53 | 0.01 |
| 13.20 | 4.48 | 2.53 | 0.00 |
| 13.40 | 4.48 | 2.53 | 0.00 |
| 13.60 | 4.48 | 2.53 | 0.00 |
| 13.80 | 4.48 | 2.53 | 0.00 |
| 14.00 | 4.48 | 2.53 | 0.00 |
| 14.20 | 4.48 | 2.53 | 0.00 |
| 14.40 | 4.48 | 2.53 | 0.00 |
| 14.60 | 4.48 | 2.53 | 0.00 |
| 14.80 | 4.48 | 2.53 | 0.00 |
| 15.00 | 4.48 | 2.53 | 0.00 |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

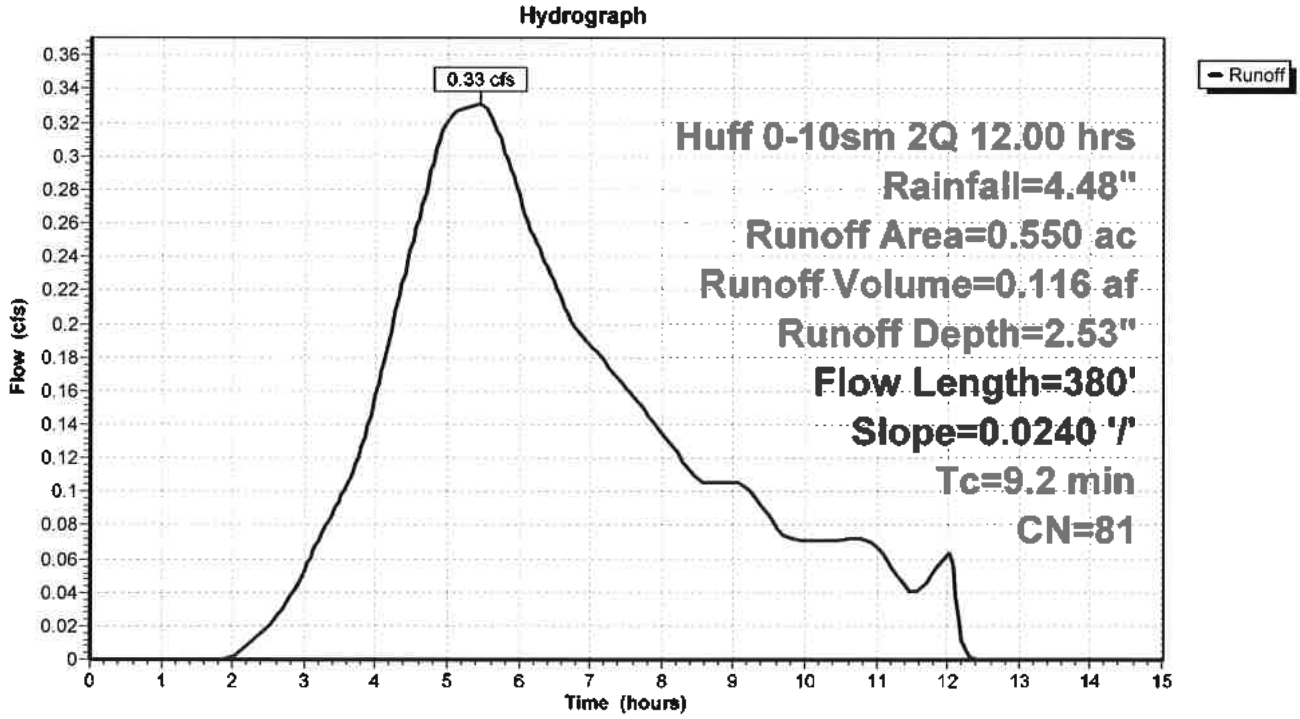
Runoff = 0.33 cfs @ 5.44 hrs, Volume= 0.116 af, Depth= 2.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.04 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=4.48"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

### Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.20 | 0.01 | 0.00 | 0.00 |
| 0.40 | 0.03 | 0.00 | 0.00 |
| 0.60 | 0.07 | 0.00 | 0.00 |
| 0.80 | 0.12 | 0.00 | 0.00 |
| 1.00 | 0.18 | 0.00 | 0.00 |
| 1.20 | 0.25 | 0.00 | 0.00 |
| 1.40 | 0.32 | 0.00 | 0.00 |
| 1.60 | 0.39 | 0.00 | 0.00 |
| 1.80 | 0.45 | 0.00 | 0.00 |
| 2.00 | 0.51 | 0.00 | 0.00 |
| 2.20 | 0.57 | 0.00 | 0.01 |
| 2.40 | 0.63 | 0.01 | 0.02 |
| 2.60 | 0.70 | 0.02 | 0.02 |
| 2.80 | 0.77 | 0.04 | 0.04 |
| 3.00 | 0.86 | 0.06 | 0.05 |
| 3.20 | 0.95 | 0.08 | 0.07 |
| 3.40 | 1.05 | 0.12 | 0.09 |
| 3.60 | 1.15 | 0.15 | 0.10 |
| 3.80 | 1.27 | 0.20 | 0.13 |
| 4.00 | 1.40 | 0.26 | 0.16 |
| 4.20 | 1.54 | 0.33 | 0.19 |
| 4.40 | 1.69 | 0.42 | 0.23 |
| 4.60 | 1.86 | 0.52 | 0.26 |
| 4.80 | 2.04 | 0.63 | 0.30 |
| 5.00 | 2.21 | 0.74 | 0.32 |
| 5.20 | 2.39 | 0.86 | 0.33 |
| 5.40 | 2.56 | 0.98 | **0.33** |
| 5.60 | 2.72 | 1.10 | **0.32** |
| 5.80 | 2.86 | 1.21 | 0.30 |
| 6.00 | 2.99 | 1.30 | 0.28 |
| 6.20 | 3.10 | 1.39 | 0.25 |
| 6.40 | 3.21 | 1.48 | 0.23 |
| 6.60 | 3.30 | 1.55 | 0.21 |
| 6.80 | 3.39 | 1.62 | 0.20 |
| 7.00 | 3.47 | 1.69 | 0.19 |
| 7.20 | 3.55 | 1.75 | 0.18 |
| 7.40 | 3.63 | 1.81 | 0.17 |
| 7.60 | 3.69 | 1.87 | 0.16 |
| 7.80 | 3.76 | 1.92 | 0.15 |
| 8.00 | 3.81 | 1.97 | 0.14 |
| 8.20 | 3.87 | 2.01 | 0.12 |
| 8.40 | 3.91 | 2.05 | 0.11 |
| 8.60 | 3.96 | 2.09 | 0.11 |
| 8.80 | 4.00 | 2.13 | 0.11 |
| 9.00 | 4.05 | 2.16 | 0.11 |
| 9.20 | 4.09 | 2.20 | 0.10 |
| 9.40 | 4.13 | 2.23 | 0.09 |
| 9.60 | 4.16 | 2.26 | 0.08 |
| 9.80 | 4.19 | 2.29 | 0.07 |
| 10.00 | 4.22 | 2.31 | 0.07 |
| 10.20 | 4.25 | 2.34 | 0.07 |
| 10.40 | 4.28 | 2.36 | 0.07 |
| 10.60 | 4.31 | 2.39 | 0.07 |
| 10.80 | 4.34 | 2.41 | 0.07 |
| 11.00 | 4.37 | 2.44 | 0.07 |
| 11.20 | 4.39 | 2.46 | 0.06 |
| 11.40 | 4.41 | 2.47 | 0.04 |
| 11.60 | 4.43 | 2.49 | 0.04 |
| 11.80 | 4.45 | 2.51 | 0.05 |
| 12.00 | **4.48** | **2.53** | 0.06 |
| 12.20 | 4.48 | 2.53 | 0.01 |
| 12.40 | 4.48 | 2.53 | 0.00 |
| 12.60 | 4.48 | 2.53 | 0.00 |
| 12.80 | 4.48 | 2.53 | 0.00 |
| 13.00 | 4.48 | 2.53 | 0.00 |
| 13.20 | 4.48 | 2.53 | 0.00 |
| 13.40 | 4.48 | 2.53 | 0.00 |
| 13.60 | 4.48 | 2.53 | 0.00 |
| 13.80 | 4.48 | 2.53 | 0.00 |
| 14.00 | 4.48 | 2.53 | 0.00 |
| 14.20 | 4.48 | 2.53 | 0.00 |
| 14.40 | 4.48 | 2.53 | 0.00 |
| 14.60 | 4.48 | 2.53 | 0.00 |
| 14.80 | 4.48 | 2.53 | 0.00 |
| 15.00 | 4.48 | 2.53 | 0.00 |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 6.80 cfs @ | 5.56 hrs, | Volume= | 2.155 af |
| Outflow | = | 0.97 cfs @ | 11.40 hrs, | Volume= | 0.802 af, Atten= 86%, Lag= 350.8 min |
| Primary | = | 0.97 cfs @ | 11.40 hrs, | Volume= | 0.802 af |
| Secondary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-15.00 hrs, dt= 0.04 hrs
Peak Elev= 673.51' @ 11.40 hrs Surf.Area= 31,152 sf Storage= 68,010 cf

Plug-Flow detention time= 309.1 min calculated for 0.802 af (37% of inflow)
Center-of-Mass det. time= 190.9 min ( 588.1 - 397.2 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.40' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

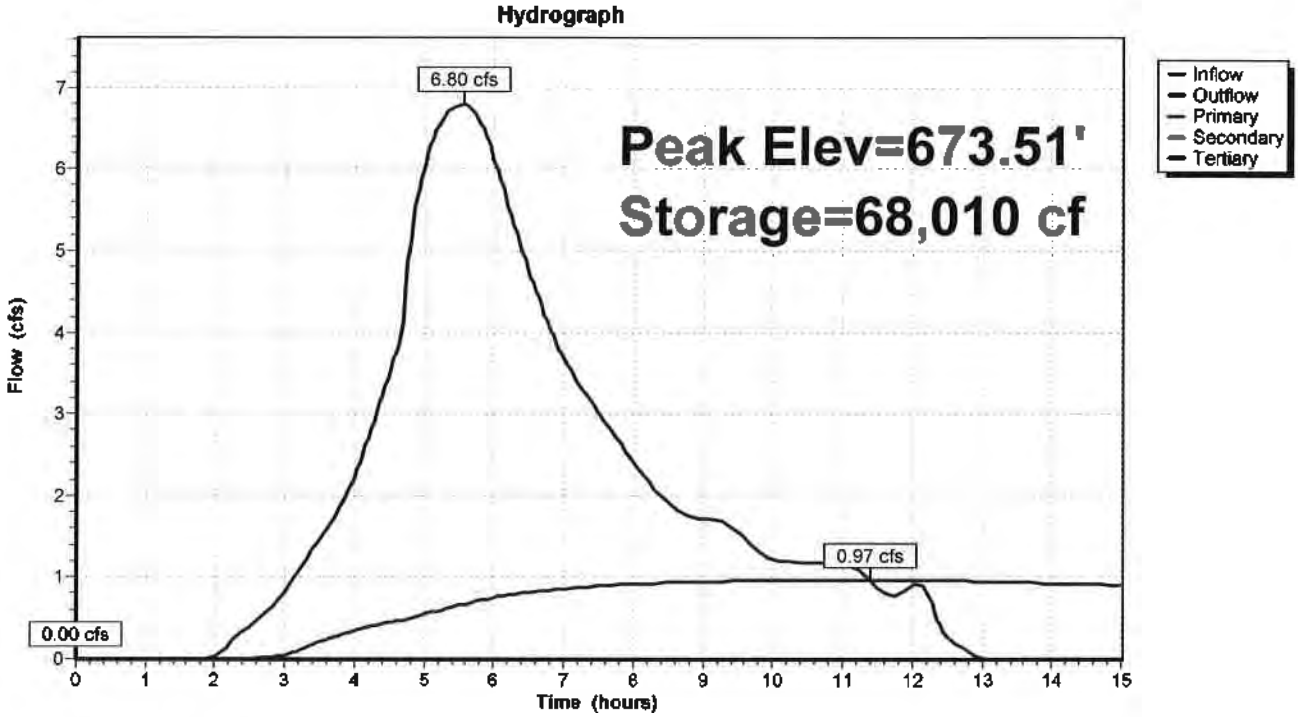
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=0.97 cfs @ 11.40 hrs HW=673.51' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.97 cfs @ 8.77 fps)

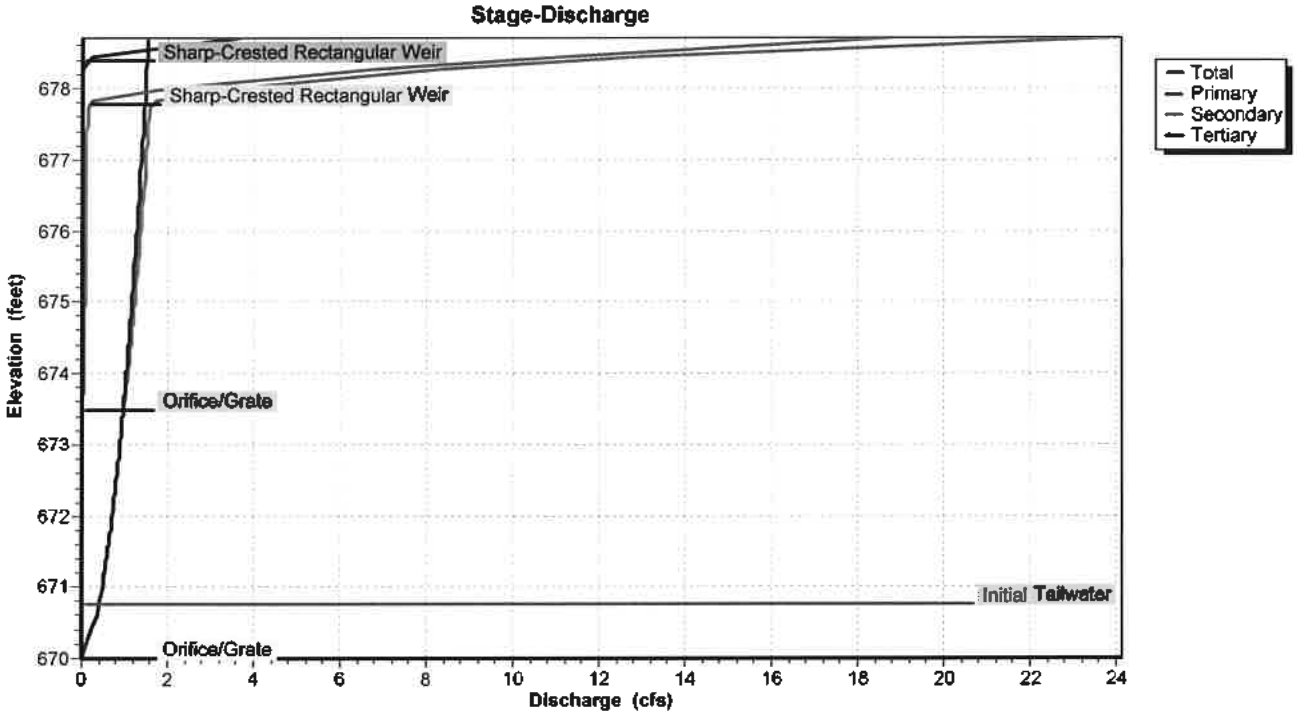
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

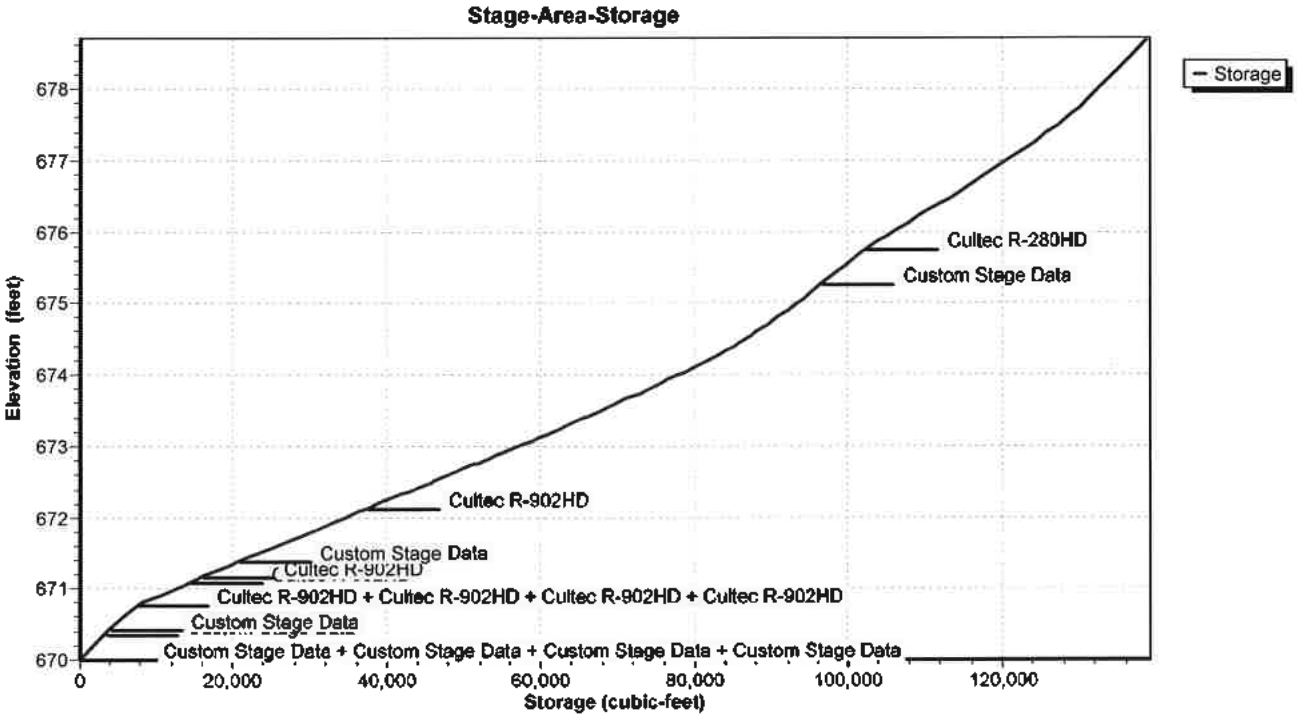
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 0.40 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.80 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.20 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.60 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.04 | 7 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.40 | 0.35 | 235 | 670.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.80 | 0.62 | 885 | 670.10 | 0.03 | 0.03 | 0.00 | 0.00 |
| 3.20 | 1.08 | 1,977 | 670.22 | 0.11 | 0.11 | 0.00 | 0.00 |
| 3.60 | 1.61 | 3,628 | 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 4.00 | 2.24 | 5,888 | 670.62 | 0.35 | 0.35 | 0.00 | 0.00 |
| 4.40 | 3.24 | 9,164 | 670.85 | 0.43 | 0.43 | 0.00 | 0.00 |
| 4.80 | 5.16 | 14,035 | 671.08 | 0.50 | 0.50 | 0.00 | 0.00 |
| 5.20 | **6.55** | 21,767 | 671.43 | 0.59 | 0.59 | 0.00 | 0.00 |
| 5.60 | **6.80** | 30,523 | 671.82 | 0.68 | 0.68 | 0.00 | 0.00 |
| 6.00 | 6.10 | 38,949 | 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 6.40 | 4.98 | 45,875 | 672.50 | 0.81 | 0.81 | 0.00 | 0.00 |
| 6.80 | 4.04 | 51,231 | 672.74 | 0.85 | 0.85 | 0.00 | 0.00 |
| 7.20 | 3.39 | 55,335 | 672.92 | 0.88 | 0.88 | 0.00 | 0.00 |
| 7.60 | 2.89 | 58,607 | 673.07 | 0.90 | 0.90 | 0.00 | 0.00 |
| 8.00 | 2.41 | 61,150 | 673.18 | 0.92 | 0.92 | 0.00 | 0.00 |
| 8.40 | 2.01 | 63,003 | 673.27 | 0.93 | 0.93 | 0.00 | 0.00 |
| 8.80 | 1.75 | 64,344 | 673.33 | 0.94 | 0.94 | 0.00 | 0.00 |
| 9.20 | 1.70 | 65,464 | 673.38 | 0.95 | 0.95 | 0.00 | 0.00 |
| 9.60 | 1.48 | 66,433 | 673.43 | 0.96 | 0.96 | 0.00 | 0.00 |
| 10.00 | 1.23 | 66,996 | 673.46 | 0.96 | 0.96 | 0.00 | 0.00 |
| 10.40 | 1.19 | 67,342 | 673.47 | 0.96 | 0.96 | 0.00 | 0.00 |
| 10.80 | 1.19 | 67,661 | 673.49 | 0.97 | 0.97 | 0.00 | 0.00 |
| 11.20 | 1.10 | **67,954** | **673.50** | **0.97** | **0.97** | 0.00 | 0.00 |
| 11.60 | 0.80 | **67,953** | **673.50** | **0.97** | **0.97** | 0.00 | 0.00 |
| 12.00 | 0.90 | 67,714 | 673.49 | 0.97 | 0.97 | 0.00 | 0.00 |
| 12.40 | 0.41 | 67,474 | 673.48 | 0.96 | 0.96 | 0.00 | 0.00 |
| 12.80 | 0.10 | 66,420 | 673.43 | 0.96 | 0.96 | 0.00 | 0.00 |
| 13.20 | 0.00 | 65,094 | 673.37 | 0.95 | 0.95 | 0.00 | 0.00 |
| 13.60 | 0.00 | 63,737 | 673.30 | 0.94 | 0.94 | 0.00 | 0.00 |
| 14.00 | 0.00 | 62,391 | 673.24 | 0.93 | 0.93 | 0.00 | 0.00 |
| 14.40 | 0.00 | 61,059 | 673.18 | 0.92 | 0.92 | 0.00 | 0.00 |
| 14.80 | 0.00 | 59,740 | 673.12 | 0.91 | 0.91 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 18.46 | 1.54 | 15.13 | 1.79 |
| 678.80 | **28.12** | **1.56** | **21.42** | **5.14** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 2.93 cfs @ | 5.52 hrs, | Volume= | 1.043 af |
| Outflow | = | 2.93 cfs @ | 5.58 hrs, | Volume= | 1.042 af, Atten= 0%, Lag= 3.5 min |
| Primary | = | 1.22 cfs @ | 5.58 hrs, | Volume= | 0.695 af |
| Secondary | = | 1.71 cfs @ | 5.58 hrs, | Volume= | 0.347 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-15.00 hrs, dt= 0.04 hrs
Peak Elev= 677.98' @ 5.58 hrs Surf.Area= 3,157 sf Storage= 3,186 cf

Plug-Flow detention time= 23.4 min calculated for 1.042 af (100% of inflow)
Center-of-Mass det. time= 22.9 min ( 421.4 - 398.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

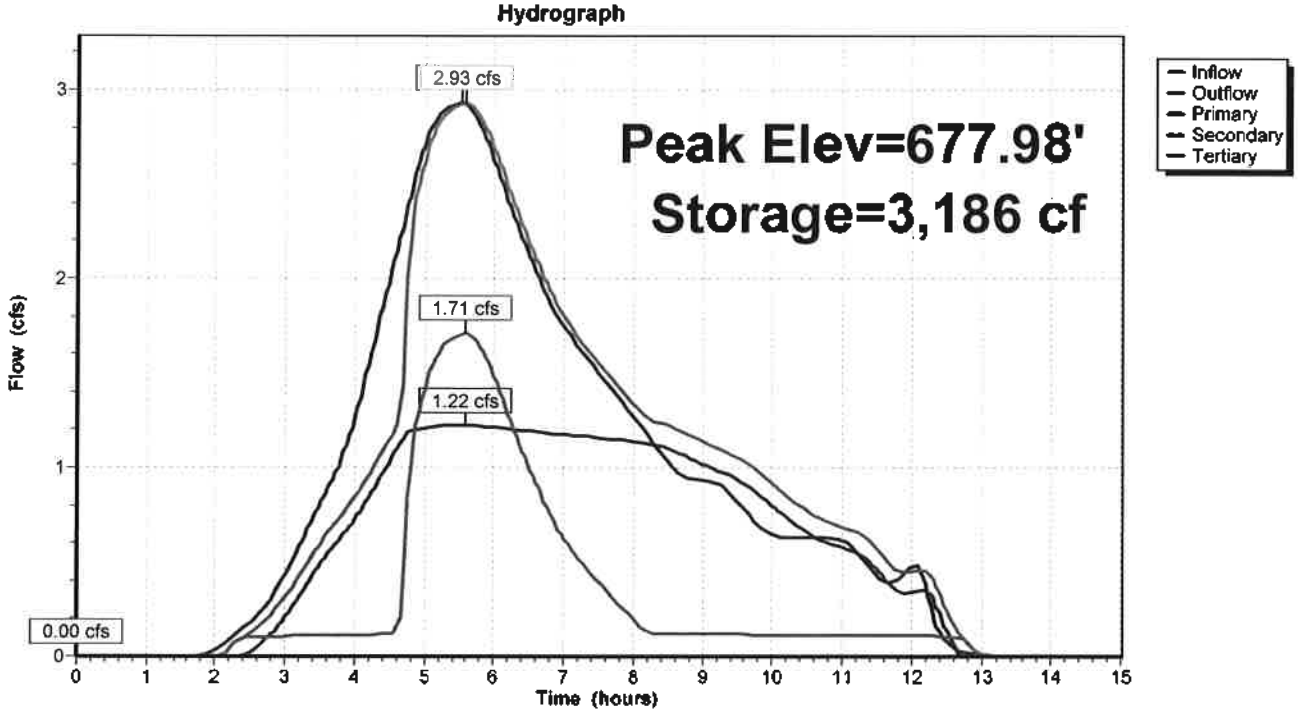
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=1.22 cfs @ 5.58 hrs HW=677.98' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.22 cfs @ 5.31 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

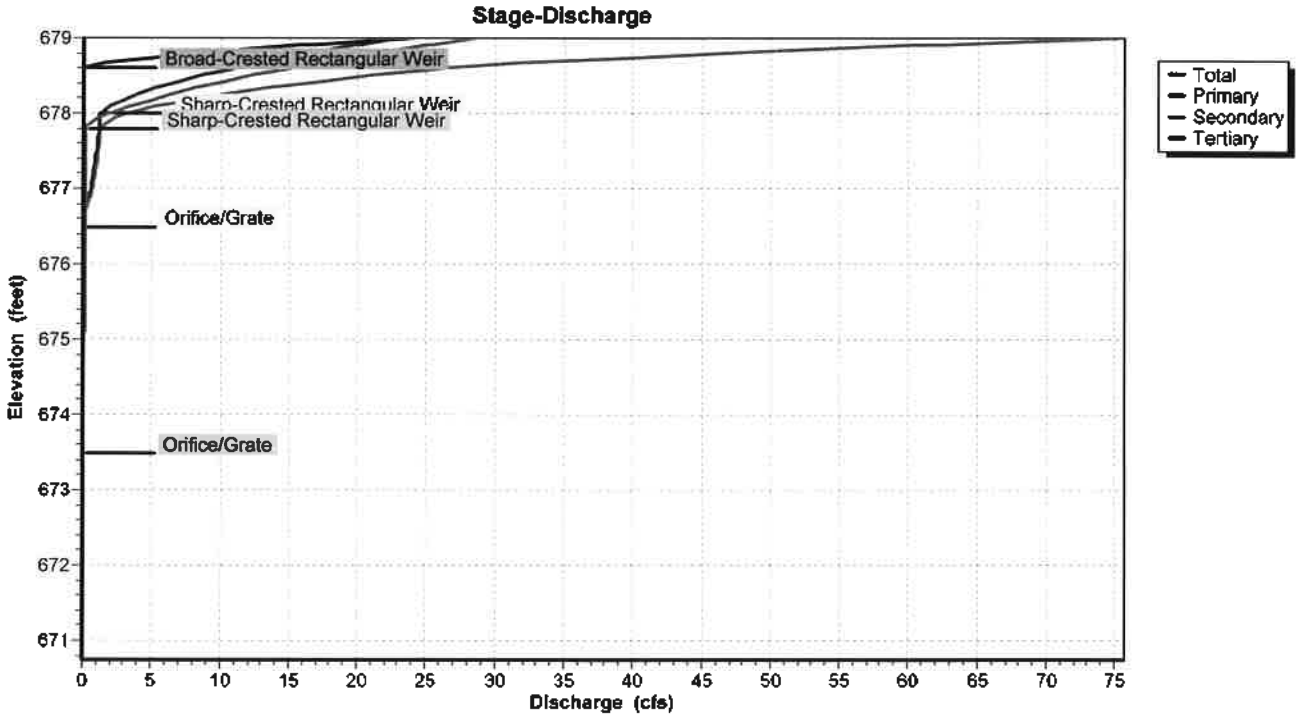
**Secondary OutFlow** Max=1.71 cfs @ 5.58 hrs HW=677.98' TW=671.80' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.12 cfs @ 10.13 fps)
└─**5=Sharp-Crested Rectangular Weir** (Weir Controls 1.58 cfs @ 1.44 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

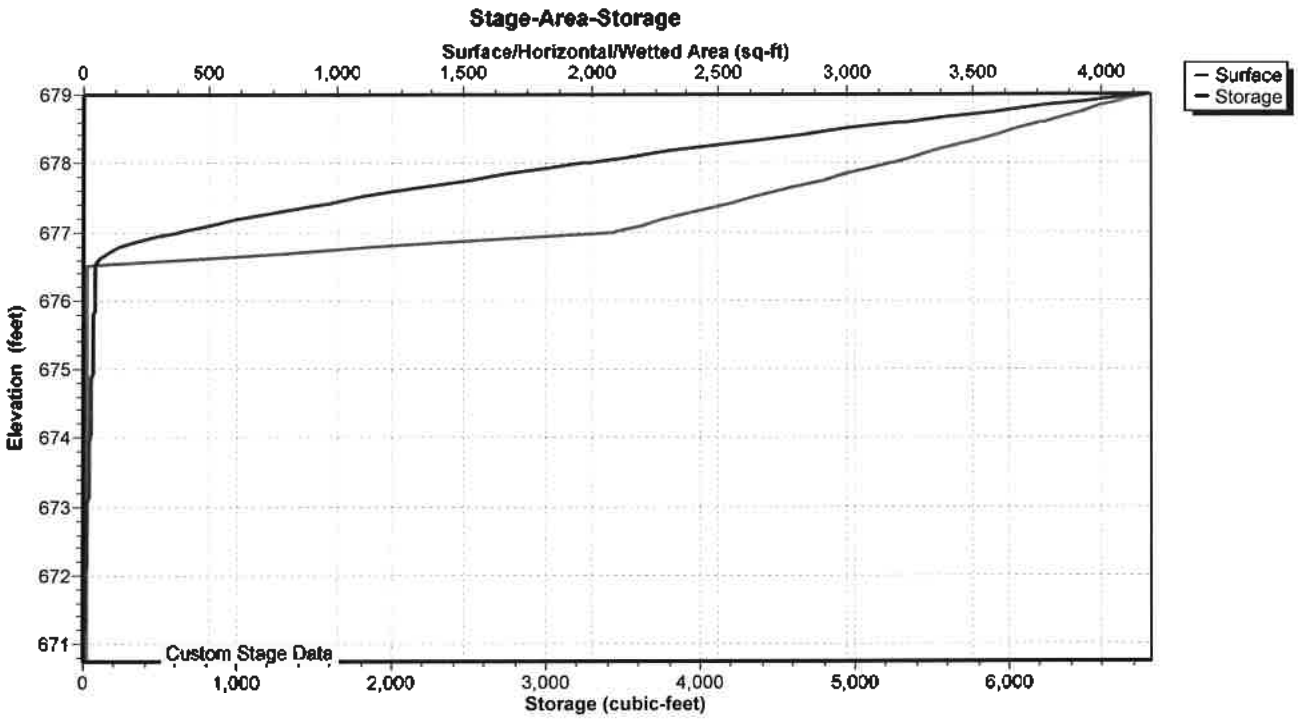
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.40 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.80 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.20 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.60 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.03 | 8 | 671.32 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.40 | 0.15 | 78 | 676.33 | 0.10 | 0.00 | 0.10 | 0.00 |
| 2.80 | 0.31 | 168 | 676.70 | 0.22 | 0.12 | 0.10 | 0.00 |
| 3.20 | 0.58 | 339 | 676.85 | 0.42 | 0.32 | 0.11 | 0.00 |
| 3.60 | 0.88 | 611 | 677.00 | 0.65 | 0.54 | 0.11 | 0.00 |
| 4.00 | 1.27 | 1,046 | 677.20 | 0.84 | 0.73 | 0.11 | 0.00 |
| 4.40 | 1.85 | 1,871 | 677.53 | 1.09 | 0.97 | 0.12 | 0.00 |
| 4.80 | 2.44 | 3,002 | 677.93 | 2.20 | 1.19 | 1.01 | 0.00 |
| 5.20 | **2.86** | **3,161** | **677.98** | **2.82** | **1.22** | **1.60** | 0.00 |
| 5.60 | **2.92** | **3,186** | **677.98** | **2.93** | **1.22** | **1.71** | 0.00 |
| 6.00 | 2.62 | 3,129 | 677.97 | 2.69 | 1.21 | 1.48 | 0.00 |
| 6.40 | 2.21 | 3,024 | 677.93 | 2.28 | 1.20 | 1.09 | 0.00 |
| 6.80 | 1.87 | 2,925 | 677.90 | 1.93 | 1.18 | 0.75 | 0.00 |
| 7.20 | 1.64 | 2,845 | 677.87 | 1.69 | 1.17 | 0.52 | 0.00 |
| 7.60 | 1.46 | 2,775 | 677.85 | 1.51 | 1.15 | 0.35 | 0.00 |
| 8.00 | 1.27 | 2,693 | 677.82 | 1.33 | 1.14 | 0.20 | 0.00 |
| 8.40 | 1.07 | 2,556 | 677.78 | 1.23 | 1.11 | 0.12 | 0.00 |
| 8.80 | 0.94 | 2,253 | 677.67 | 1.17 | 1.05 | 0.12 | 0.00 |
| 9.20 | 0.92 | 1,950 | 677.56 | 1.11 | 0.99 | 0.12 | 0.00 |
| 9.60 | 0.77 | 1,647 | 677.45 | 1.03 | 0.91 | 0.12 | 0.00 |
| 10.00 | 0.64 | 1,246 | 677.29 | 0.91 | 0.80 | 0.11 | 0.00 |
| 10.40 | 0.63 | 925 | 677.15 | 0.79 | 0.68 | 0.11 | 0.00 |
| 10.80 | 0.63 | 741 | 677.06 | 0.71 | 0.60 | 0.11 | 0.00 |
| 11.20 | 0.56 | 631 | 677.01 | 0.66 | 0.55 | 0.11 | 0.00 |
| 11.60 | 0.39 | 445 | 676.91 | 0.52 | 0.41 | 0.11 | 0.00 |
| 12.00 | 0.48 | 361 | 676.86 | 0.44 | 0.34 | 0.11 | 0.00 |
| 12.40 | 0.13 | 261 | 676.79 | 0.34 | 0.23 | 0.11 | 0.00 |
| 12.80 | 0.02 | 61 | 675.12 | 0.07 | 0.00 | 0.07 | 0.00 |
| 13.20 | 0.00 | 39 | 673.54 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13.60 | 0.00 | 39 | 673.52 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14.00 | 0.00 | 39 | 673.50 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14.40 | 0.00 | 39 | 673.50 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14.80 | 0.00 | 39 | 673.50 | 0.00 | 0.00 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 23.56 | 9.86 | 13.70 | 0.00 |
| 678.75 | 40.37 | 15.13 | 19.77 | 5.47 |
| 678.95 | **67.61** | **21.27** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

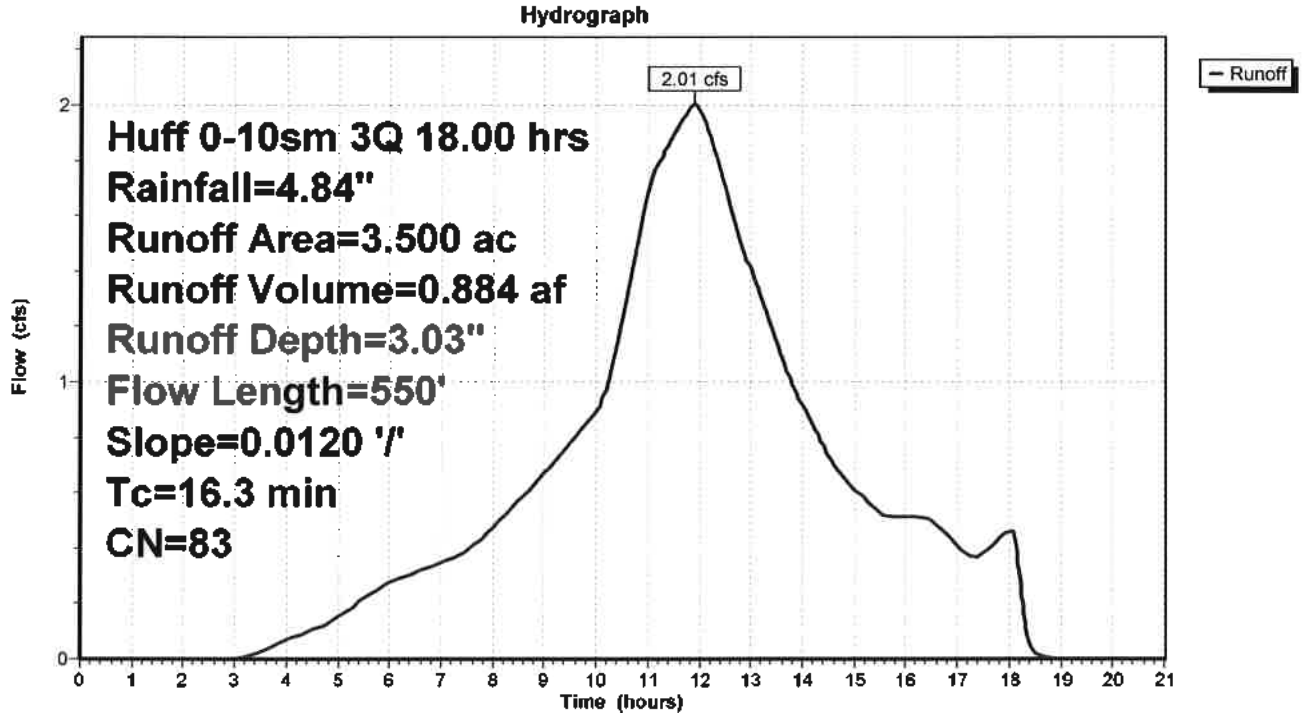
Runoff = 2.01 cfs @ 11.90 hrs, Volume= 0.884 af, Depth= 3.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.02 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=4.84"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 0.01 | 0.00 | 0.00 |
| 0.80 | 0.06 | 0.00 | 0.00 |
| 1.20 | 0.12 | 0.00 | 0.00 |
| 1.60 | 0.19 | 0.00 | 0.00 |
| 2.00 | 0.25 | 0.00 | 0.00 |
| 2.40 | 0.32 | 0.00 | 0.00 |
| 2.80 | 0.38 | 0.00 | 0.00 |
| 3.20 | 0.45 | 0.00 | 0.00 |
| 3.60 | 0.52 | 0.01 | 0.03 |
| 4.00 | 0.58 | 0.01 | 0.07 |
| 4.40 | 0.65 | 0.02 | 0.10 |
| 4.80 | 0.72 | 0.04 | 0.13 |
| 5.20 | 0.79 | 0.06 | 0.18 |
| 5.60 | 0.88 | 0.09 | 0.23 |
| 6.00 | 0.97 | 0.12 | 0.27 |
| 6.40 | 1.05 | 0.15 | 0.31 |
| 6.80 | 1.14 | 0.19 | 0.34 |
| 7.20 | 1.23 | 0.23 | 0.36 |
| 7.60 | 1.32 | 0.28 | 0.40 |
| 8.00 | 1.42 | 0.34 | 0.47 |
| 8.40 | 1.53 | 0.40 | 0.55 |
| 8.80 | 1.66 | 0.47 | 0.63 |
| 9.20 | 1.79 | 0.55 | 0.71 |
| 9.60 | 1.93 | 0.65 | 0.80 |
| 10.00 | 2.08 | 0.75 | 0.90 |
| 10.40 | 2.27 | 0.88 | 1.14 |
| 10.80 | 2.51 | 1.06 | 1.51 |
| 11.20 | 2.77 | 1.27 | 1.79 |
| 11.60 | 3.05 | 1.49 | **1.93** |
| 12.00 | 3.32 | 1.71 | **1.99** |
| 12.40 | 3.56 | 1.91 | 1.77 |
| 12.80 | 3.76 | 2.08 | 1.51 |
| 13.20 | 3.92 | 2.22 | 1.30 |
| 13.60 | 4.06 | 2.34 | 1.09 |
| 14.00 | 4.18 | 2.44 | 0.92 |
| 14.40 | 4.27 | 2.53 | 0.77 |
| 14.80 | 4.36 | 2.60 | 0.65 |
| 15.20 | 4.43 | 2.66 | 0.58 |
| 15.60 | 4.50 | 2.72 | 0.52 |
| 16.00 | 4.56 | 2.78 | 0.51 |
| 16.40 | 4.63 | 2.84 | 0.51 |
| 16.80 | 4.68 | 2.89 | 0.45 |
| 17.20 | 4.73 | 2.93 | 0.37 |
| 17.60 | 4.78 | 2.98 | 0.39 |
| 18.00 | **4.84** | **3.03** | 0.47 |
| 18.40 | 4.84 | 3.03 | 0.05 |
| 18.80 | 4.84 | 3.03 | 0.00 |
| 19.20 | 4.84 | 3.03 | 0.00 |
| 19.60 | 4.84 | 3.03 | 0.00 |
| 20.00 | 4.84 | 3.03 | 0.00 |
| 20.40 | 4.84 | 3.03 | 0.00 |
| 20.80 | 4.84 | 3.03 | 0.00 |

## Summary for Subcatchment 7S: South Property

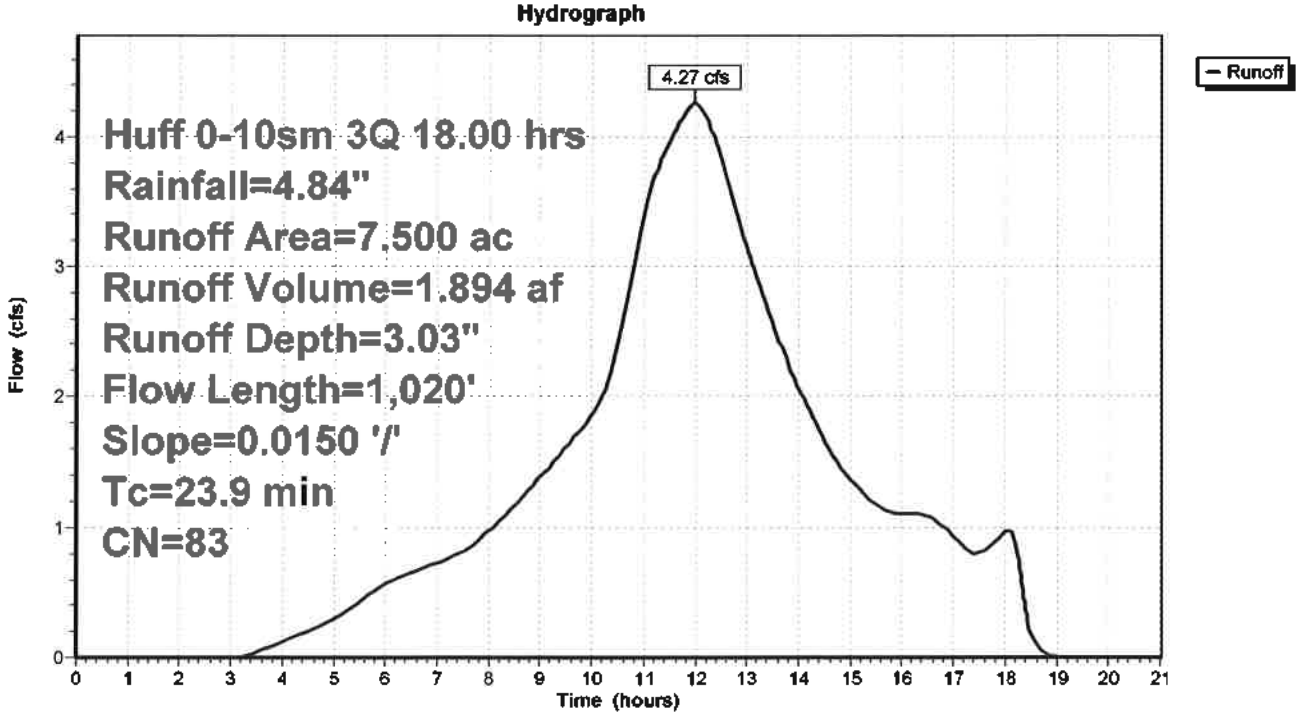
Runoff = 4.27 cfs @ 11.98 hrs, Volume= 1.894 af, Depth= 3.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.02 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=4.84"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 0.01 | 0.00 | 0.00 |
| 0.80 | 0.06 | 0.00 | 0.00 |
| 1.20 | 0.12 | 0.00 | 0.00 |
| 1.60 | 0.19 | 0.00 | 0.00 |
| 2.00 | 0.25 | 0.00 | 0.00 |
| 2.40 | 0.32 | 0.00 | 0.00 |
| 2.80 | 0.38 | 0.00 | 0.00 |
| 3.20 | 0.45 | 0.00 | 0.00 |
| 3.60 | 0.52 | 0.01 | 0.06 |
| 4.00 | 0.58 | 0.01 | 0.12 |
| 4.40 | 0.65 | 0.02 | 0.19 |
| 4.80 | 0.72 | 0.04 | 0.25 |
| 5.20 | 0.79 | 0.06 | 0.34 |
| 5.60 | 0.88 | 0.09 | 0.46 |
| 6.00 | 0.97 | 0.12 | 0.56 |
| 6.40 | 1.05 | 0.15 | 0.64 |
| 6.80 | 1.14 | 0.19 | 0.70 |
| 7.20 | 1.23 | 0.23 | 0.76 |
| 7.60 | 1.32 | 0.28 | 0.83 |
| 8.00 | 1.42 | 0.34 | 0.97 |
| 8.40 | 1.53 | 0.40 | 1.13 |
| 8.80 | 1.66 | 0.47 | 1.30 |
| 9.20 | 1.79 | 0.55 | 1.48 |
| 9.60 | 1.93 | 0.65 | 1.67 |
| 10.00 | 2.08 | 0.75 | 1.86 |
| 10.40 | 2.27 | 0.88 | 2.27 |
| 10.80 | 2.51 | 1.06 | 3.00 |
| 11.20 | 2.77 | 1.27 | 3.69 |
| 11.60 | 3.05 | 1.49 | **4.05** |
| 12.00 | 3.32 | 1.71 | **4.26** |
| 12.40 | 3.56 | 1.91 | 3.94 |
| 12.80 | 3.76 | 2.08 | 3.40 |
| 13.20 | 3.92 | 2.22 | 2.92 |
| 13.60 | 4.06 | 2.34 | 2.46 |
| 14.00 | 4.18 | 2.44 | 2.07 |
| 14.40 | 4.27 | 2.53 | 1.74 |
| 14.80 | 4.36 | 2.60 | 1.46 |
| 15.20 | 4.43 | 2.66 | 1.29 |
| 15.60 | 4.50 | 2.72 | 1.14 |
| 16.00 | 4.56 | 2.78 | 1.10 |
| 16.40 | 4.63 | 2.84 | 1.10 |
| 16.80 | 4.68 | 2.89 | 1.01 |
| 17.20 | 4.73 | 2.93 | 0.85 |
| 17.60 | 4.78 | 2.98 | 0.82 |
| 18.00 | **4.84** | **3.03** | 0.96 |
| 18.40 | 4.84 | 3.03 | 0.36 |
| 18.80 | 4.84 | 3.03 | 0.03 |
| 19.20 | 4.84 | 3.03 | 0.00 |
| 19.60 | 4.84 | 3.03 | 0.00 |
| 20.00 | 4.84 | 3.03 | 0.00 |
| 20.40 | 4.84 | 3.03 | 0.00 |
| 20.80 | 4.84 | 3.03 | 0.00 |

## Summary for Subcatchment 8S: Northwood Drive Bypass

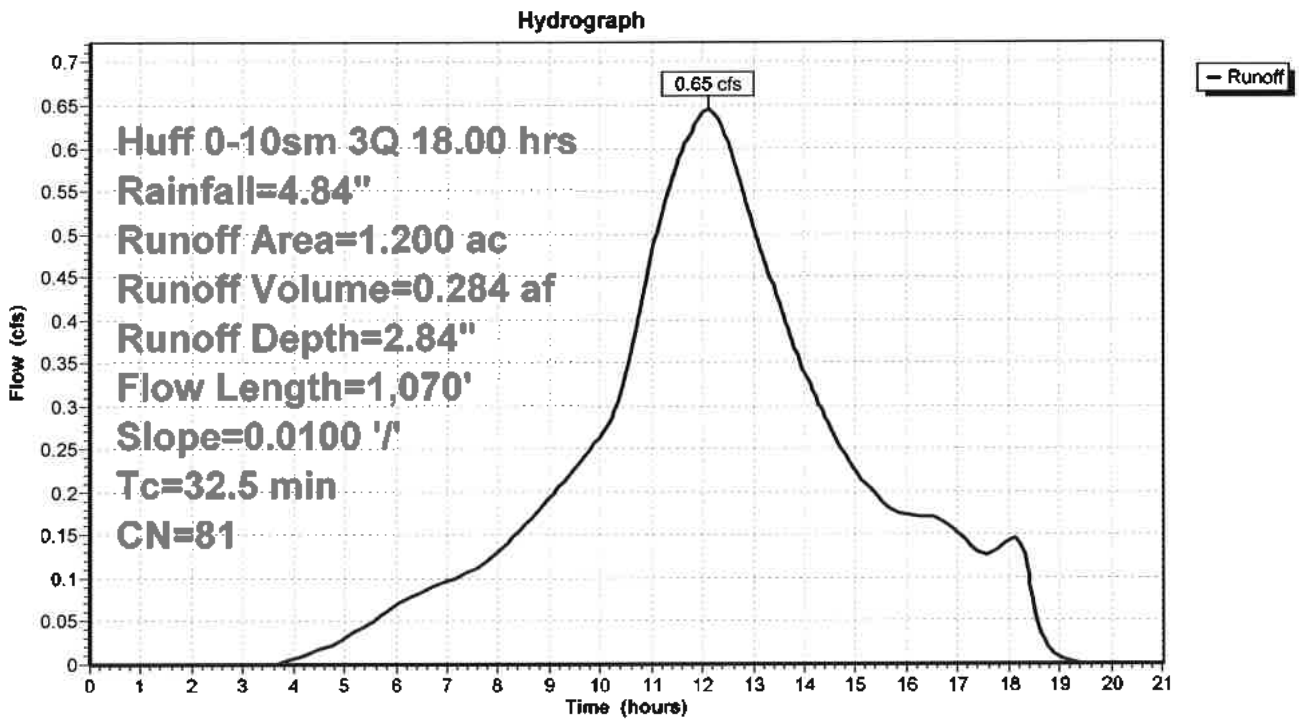
Runoff = 0.65 cfs @ 12.10 hrs, Volume= 0.284 af, Depth= 2.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.02 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=4.84"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 0.01 | 0.00 | 0.00 |
| 0.80 | 0.06 | 0.00 | 0.00 |
| 1.20 | 0.12 | 0.00 | 0.00 |
| 1.60 | 0.19 | 0.00 | 0.00 |
| 2.00 | 0.25 | 0.00 | 0.00 |
| 2.40 | 0.32 | 0.00 | 0.00 |
| 2.80 | 0.38 | 0.00 | 0.00 |
| 3.20 | 0.45 | 0.00 | 0.00 |
| 3.60 | 0.52 | 0.00 | 0.00 |
| 4.00 | 0.58 | 0.01 | 0.01 |
| 4.40 | 0.65 | 0.01 | 0.02 |
| 4.80 | 0.72 | 0.02 | 0.02 |
| 5.20 | 0.79 | 0.04 | 0.04 |
| 5.60 | 0.88 | 0.06 | 0.05 |
| 6.00 | 0.97 | 0.09 | 0.07 |
| 6.40 | 1.05 | 0.12 | 0.08 |
| 6.80 | 1.14 | 0.15 | 0.09 |
| 7.20 | 1.23 | 0.19 | 0.10 |
| 7.60 | 1.32 | 0.23 | 0.11 |
| 8.00 | 1.42 | 0.28 | 0.13 |
| 8.40 | 1.53 | 0.33 | 0.15 |
| 8.80 | 1.66 | 0.40 | 0.18 |
| 9.20 | 1.79 | 0.47 | 0.21 |
| 9.60 | 1.93 | 0.56 | 0.24 |
| 10.00 | 2.08 | 0.66 | 0.27 |
| 10.40 | 2.27 | 0.78 | 0.31 |
| 10.80 | 2.51 | 0.95 | 0.41 |
| 11.20 | 2.77 | 1.14 | 0.53 |
| 11.60 | 3.05 | 1.35 | 0.60 |
| 12.00 | 3.32 | 1.57 | **0.64** |
| 12.40 | 3.56 | 1.76 | **0.62** |
| 12.80 | 3.76 | 1.92 | 0.55 |
| 13.20 | 3.92 | 2.06 | 0.47 |
| 13.60 | 4.06 | 2.17 | 0.40 |
| 14.00 | 4.18 | 2.27 | 0.34 |
| 14.40 | 4.27 | 2.35 | 0.29 |
| 14.80 | 4.36 | 2.43 | 0.24 |
| 15.20 | 4.43 | 2.49 | 0.21 |
| 15.60 | 4.50 | 2.54 | 0.18 |
| 16.00 | 4.56 | 2.60 | 0.17 |
| 16.40 | 4.63 | 2.66 | 0.17 |
| 16.80 | 4.68 | 2.71 | 0.16 |
| 17.20 | 4.73 | 2.75 | 0.14 |
| 17.60 | 4.78 | 2.79 | 0.13 |
| 18.00 | **4.84** | **2.84** | 0.14 |
| 18.40 | 4.84 | 2.84 | 0.10 |
| 18.80 | 4.84 | 2.84 | 0.02 |
| 19.20 | 4.84 | 2.84 | 0.00 |
| 19.60 | 4.84 | 2.84 | 0.00 |
| 20.00 | 4.84 | 2.84 | 0.00 |
| 20.40 | 4.84 | 2.84 | 0.00 |
| 20.80 | 4.84 | 2.84 | 0.00 |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

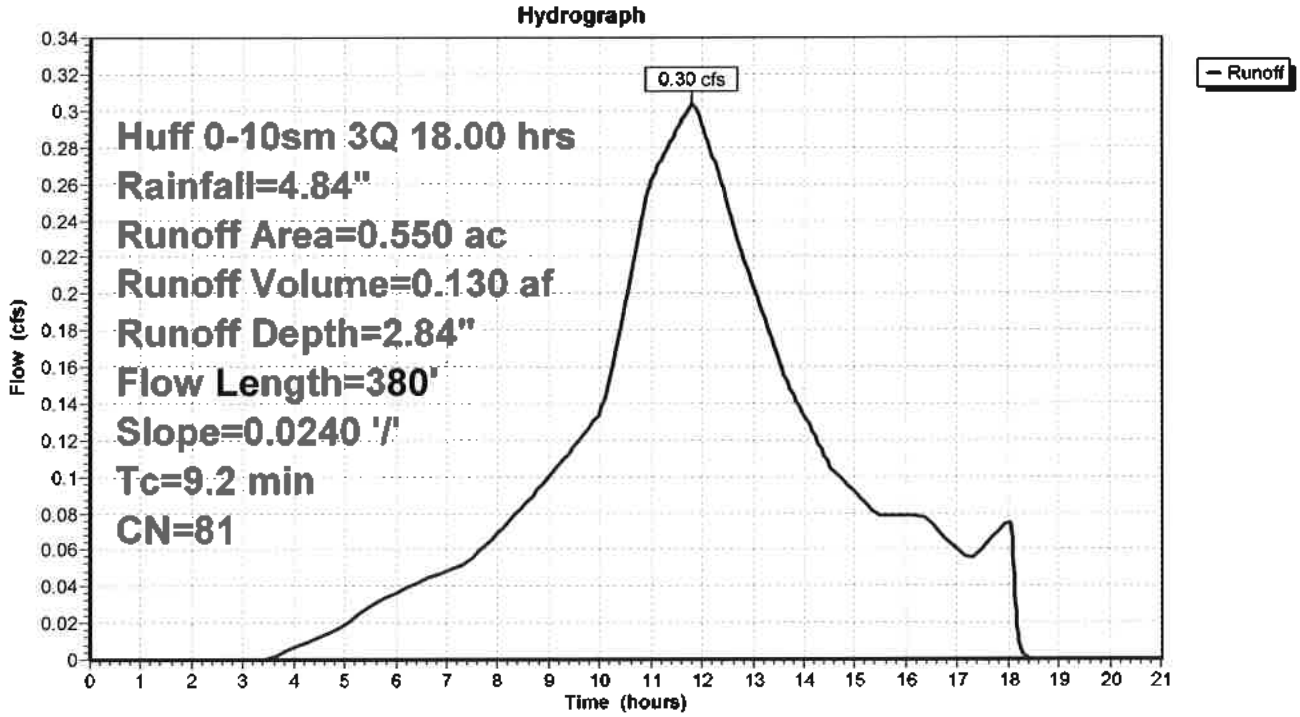
Runoff = 0.30 cfs @ 11.81 hrs, Volume= 0.130 af, Depth= 2.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.02 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=4.84"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.40 | 0.01 | 0.00 | 0.00 |
| 0.80 | 0.06 | 0.00 | 0.00 |
| 1.20 | 0.12 | 0.00 | 0.00 |
| 1.60 | 0.19 | 0.00 | 0.00 |
| 2.00 | 0.25 | 0.00 | 0.00 |
| 2.40 | 0.32 | 0.00 | 0.00 |
| 2.80 | 0.38 | 0.00 | 0.00 |
| 3.20 | 0.45 | 0.00 | 0.00 |
| 3.60 | 0.52 | 0.00 | 0.00 |
| 4.00 | 0.58 | 0.01 | 0.01 |
| 4.40 | 0.65 | 0.01 | 0.01 |
| 4.80 | 0.72 | 0.02 | 0.02 |
| 5.20 | 0.79 | 0.04 | 0.02 |
| 5.60 | 0.88 | 0.06 | 0.03 |
| 6.00 | 0.97 | 0.09 | 0.04 |
| 6.40 | 1.05 | 0.12 | 0.04 |
| 6.80 | 1.14 | 0.15 | 0.05 |
| 7.20 | 1.23 | 0.19 | 0.05 |
| 7.60 | 1.32 | 0.23 | 0.06 |
| 8.00 | 1.42 | 0.28 | 0.07 |
| 8.40 | 1.53 | 0.33 | 0.08 |
| 8.80 | 1.66 | 0.40 | 0.09 |
| 9.20 | 1.79 | 0.47 | 0.11 |
| 9.60 | 1.93 | 0.56 | 0.12 |
| 10.00 | 2.08 | 0.66 | 0.14 |
| 10.40 | 2.27 | 0.78 | 0.18 |
| 10.80 | 2.51 | 0.95 | 0.24 |
| 11.20 | 2.77 | 1.14 | 0.27 |
| 11.60 | 3.05 | 1.35 | **0.29** |
| 12.00 | 3.32 | 1.57 | **0.29** |
| 12.40 | 3.56 | 1.76 | 0.26 |
| 12.80 | 3.76 | 1.92 | 0.22 |
| 13.20 | 3.92 | 2.06 | 0.19 |
| 13.60 | 4.06 | 2.17 | 0.16 |
| 14.00 | 4.18 | 2.27 | 0.13 |
| 14.40 | 4.27 | 2.35 | 0.11 |
| 14.80 | 4.36 | 2.43 | 0.10 |
| 15.20 | 4.43 | 2.49 | 0.09 |
| 15.60 | 4.50 | 2.54 | 0.08 |
| 16.00 | 4.56 | 2.60 | 0.08 |
| 16.40 | 4.63 | 2.66 | 0.08 |
| 16.80 | 4.68 | 2.71 | 0.07 |
| 17.20 | 4.73 | 2.75 | 0.05 |
| 17.60 | 4.78 | 2.79 | 0.06 |
| 18.00 | **4.84** | **2.84** | 0.08 |
| 18.40 | 4.84 | 2.84 | 0.00 |
| 18.80 | 4.84 | 2.84 | 0.00 |
| 19.20 | 4.84 | 2.84 | 0.00 |
| 19.60 | 4.84 | 2.84 | 0.00 |
| 20.00 | 4.84 | 2.84 | 0.00 |
| 20.40 | 4.84 | 2.84 | 0.00 |
| 20.80 | 4.84 | 2.84 | 0.00 |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 5.99 cfs @ | 11.98 hrs, | Volume= | 2.372 af |
| Outflow | = | 0.99 cfs @ | 18.22 hrs, | Volume= | 0.947 af, Atten= 83%, Lag= 374.5 min |
| Primary | = | 0.99 cfs @ | 18.22 hrs, | Volume= | 0.947 af |
| Secondary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-21.00 hrs, dt= 0.02 hrs
Peak Elev= 673.64' @ 18.22 hrs Surf.Area= 31,184 sf Storage= 70,872 cf

Plug-Flow detention time= 325.3 min calculated for 0.946 af (40% of inflow)
Center-of-Mass det. time= 165.7 min ( 885.0 - 719.3 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.40' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

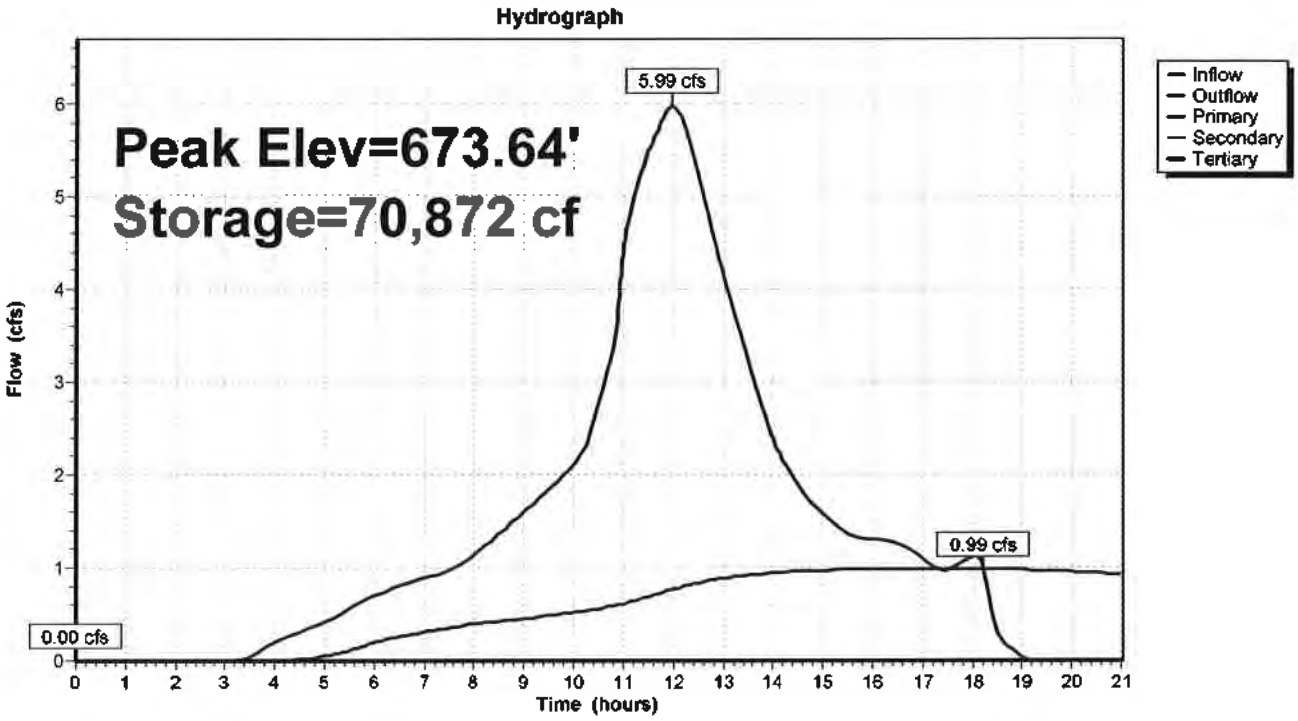
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=0.99 cfs @ 18.22 hrs HW=673.64' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.99 cfs @ 8.95 fps)

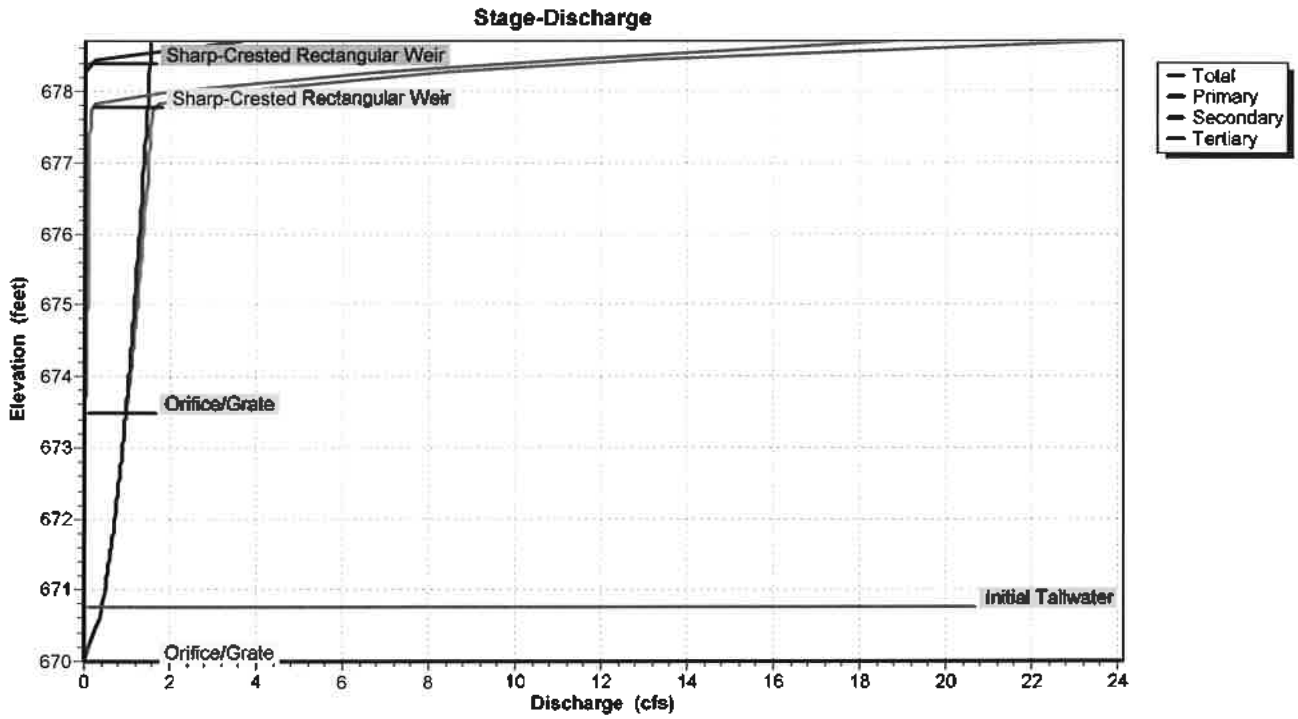
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

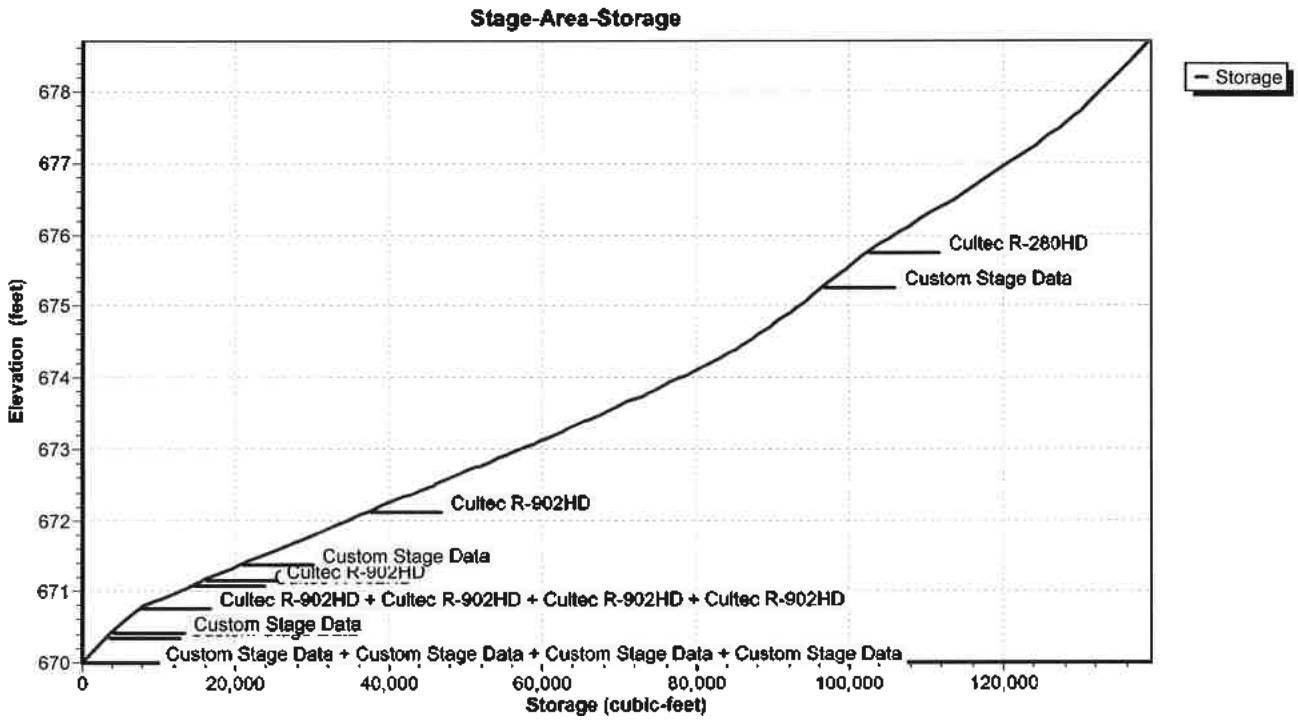
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 1.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.19 | 215 | 670.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.00 | 0.42 | 1,258 | 670.14 | 0.05 | 0.05 | 0.00 | 0.00 |
| 6.00 | 0.70 | 2,875 | 670.32 | 0.19 | 0.19 | 0.00 | 0.00 |
| 7.00 | 0.89 | 4,832 | 670.52 | 0.31 | 0.31 | 0.00 | 0.00 |
| 8.00 | 1.15 | 7,117 | 670.75 | 0.40 | 0.40 | 0.00 | 0.00 |
| 9.00 | 1.60 | 10,497 | 670.91 | 0.45 | 0.45 | 0.00 | 0.00 |
| 10.00 | 2.11 | 15,393 | 671.14 | 0.52 | 0.52 | 0.00 | 0.00 |
| 11.00 | **4.40** | 23,610 | 671.51 | 0.61 | 0.61 | 0.00 | 0.00 |
| 12.00 | **5.98** | 40,621 | 672.27 | 0.77 | 0.77 | 0.00 | 0.00 |
| 13.00 | 4.14 | 56,337 | 672.96 | 0.89 | 0.89 | 0.00 | 0.00 |
| 14.00 | 2.39 | 64,696 | 673.35 | 0.95 | 0.95 | 0.00 | 0.00 |
| 15.00 | 1.58 | 68,180 | 673.51 | 0.97 | 0.97 | 0.00 | 0.00 |
| 16.00 | 1.30 | 69,686 | 673.59 | 0.98 | 0.98 | 0.00 | 0.00 |
| 17.00 | 1.10 | 70,629 | 673.63 | 0.99 | 0.99 | 0.00 | 0.00 |
| 18.00 | 1.14 | **70,767** | **673.64** | **0.99** | **0.99** | 0.00 | 0.00 |
| 19.00 | 0.03 | **69,004** | **673.55** | **0.98** | **0.98** | 0.00 | 0.00 |
| 20.00 | 0.00 | 65,547 | 673.39 | 0.95 | 0.95 | 0.00 | 0.00 |
| 21.00 | 0.00 | 62,163 | 673.23 | 0.93 | 0.93 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 18.46 | 1.54 | 15.13 | 1.79 |
| 678.80 | **28.12** | **1.56** | **21.42** | **5.14** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 2.64 cfs @ | 11.94 hrs, | Volume= | 1.168 af |
| Outflow | = | 2.64 cfs @ | 11.99 hrs, | Volume= | 1.167 af, Atten= 0%, Lag= 2.8 min |
| Primary | = | 1.21 cfs @ | 11.99 hrs, | Volume= | 0.819 af |
| Secondary | = | 1.42 cfs @ | 11.99 hrs, | Volume= | 0.348 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-21.00 hrs, dt= 0.02 hrs
Peak Elev= 677.96' @ 11.99 hrs Surf.Area= 3,133 sf Storage= 3,115 cf

Plug-Flow detention time= 22.7 min calculated for 1.167 af (100% of inflow)
Center-of-Mass det. time= 22.3 min ( 741.3 - 719.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

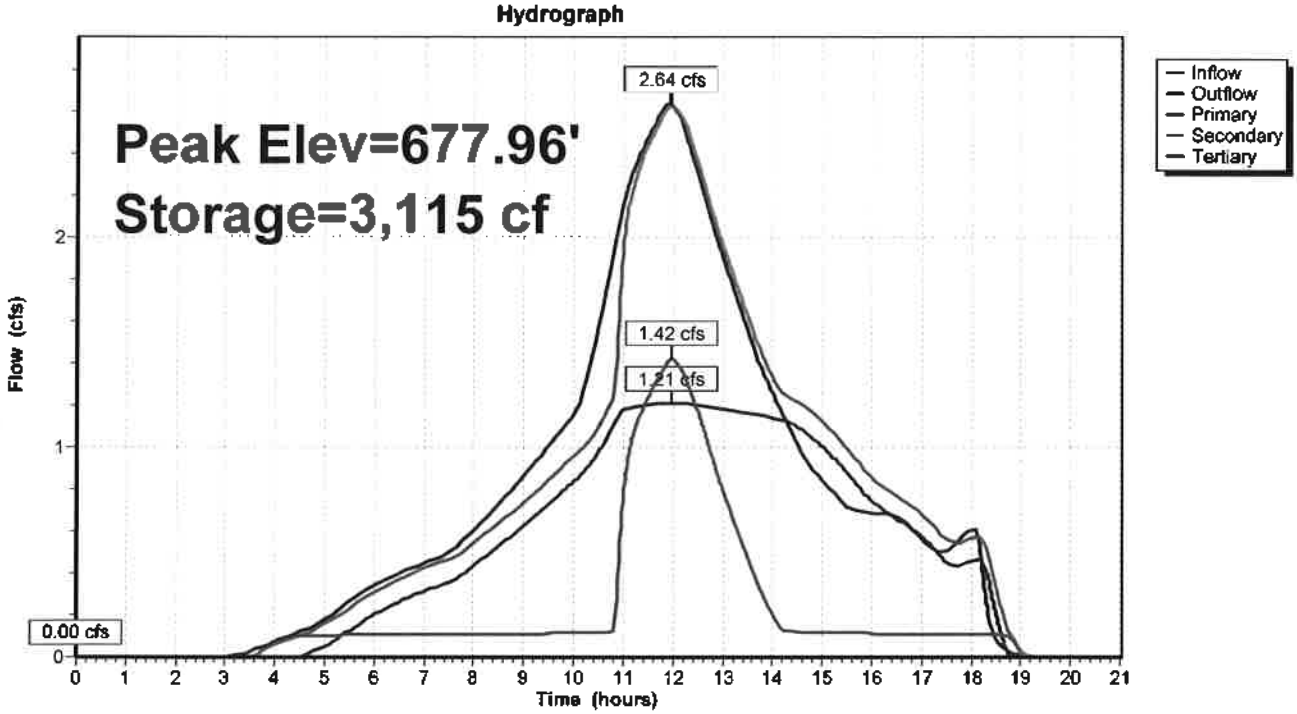
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=1.21 cfs @ 11.99 hrs HW=677.96' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.21 cfs @ 5.26 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

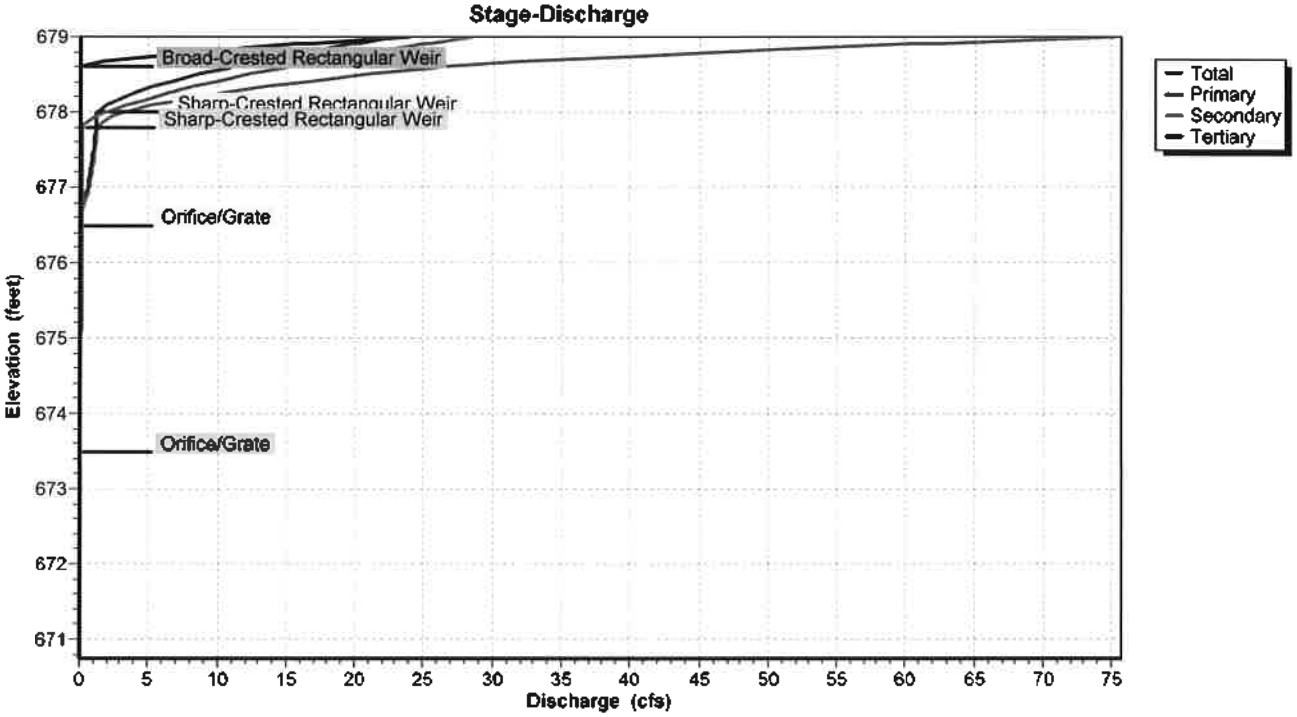
**Secondary OutFlow** Max=1.42 cfs @ 11.99 hrs HW=677.96' TW=672.26' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.12 cfs @ 10.10 fps)
└─**5=Sharp-Crested Rectangular Weir** (Weir Controls 1.30 cfs @ 1.34 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

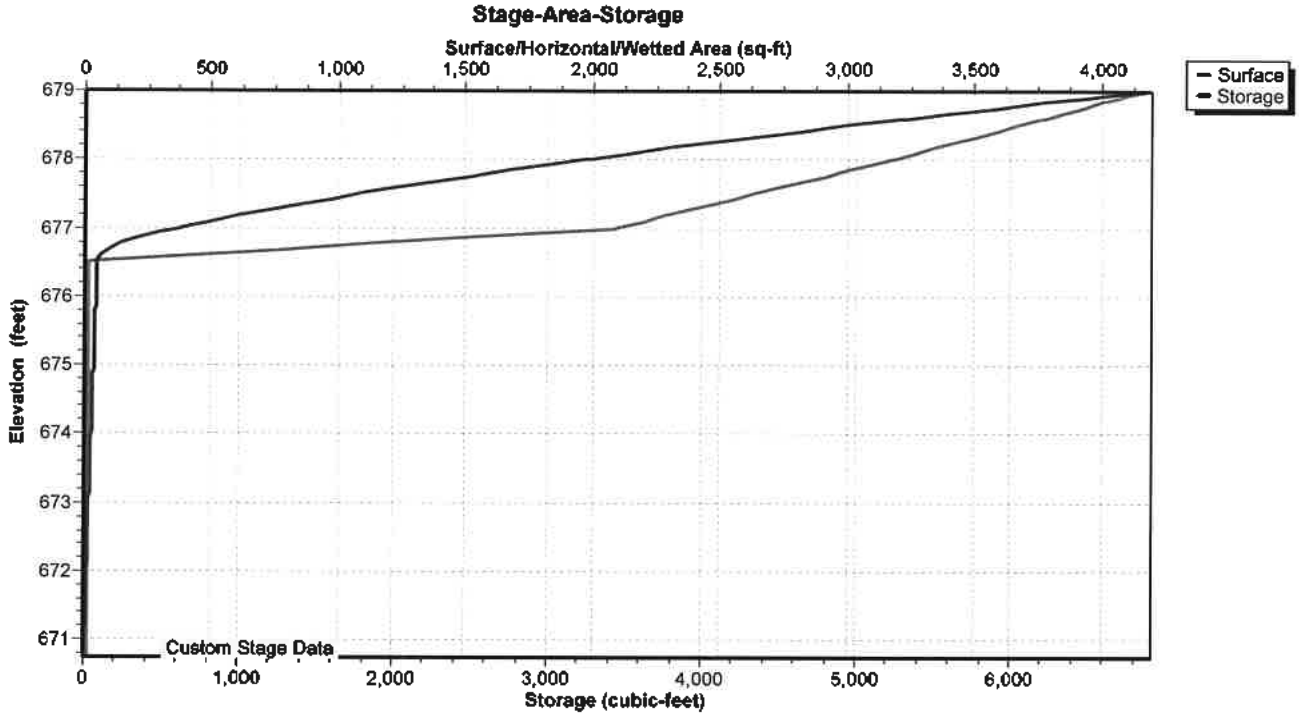
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 1.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.00 | 0.07 | 54 | 674.64 | 0.06 | 0.00 | 0.06 | 0.00 |
| 5.00 | 0.18 | 119 | 676.63 | 0.15 | 0.05 | 0.10 | 0.00 |
| 6.00 | 0.34 | 238 | 676.77 | 0.31 | 0.21 | 0.11 | 0.00 |
| 7.00 | 0.45 | 338 | 676.85 | 0.42 | 0.32 | 0.11 | 0.00 |
| 8.00 | 0.60 | 467 | 676.93 | 0.54 | 0.44 | 0.11 | 0.00 |
| 9.00 | 0.86 | 794 | 677.09 | 0.74 | 0.63 | 0.11 | 0.00 |
| 10.00 | 1.16 | 1,387 | 677.34 | 0.96 | 0.84 | 0.11 | 0.00 |
| 11.00 | **2.16** | **2,923** | **677.90** | **1.93** | **1.18** | **0.75** | 0.00 |
| 12.00 | **2.63** | **3,115** | **677.96** | **2.63** | **1.21** | **1.42** | 0.00 |
| 13.00 | 1.91 | 2,937 | 677.90 | 1.97 | 1.18 | 0.79 | 0.00 |
| 14.00 | 1.26 | 2,692 | 677.82 | 1.33 | 1.14 | 0.19 | 0.00 |
| 15.00 | 0.84 | 2,010 | 677.58 | 1.12 | 1.00 | 0.12 | 0.00 |
| 16.00 | 0.69 | 1,094 | 677.22 | 0.86 | 0.74 | 0.11 | 0.00 |
| 17.00 | 0.56 | 680 | 677.04 | 0.68 | 0.57 | 0.11 | 0.00 |
| 18.00 | 0.61 | 495 | 676.94 | 0.57 | 0.46 | 0.11 | 0.00 |
| 19.00 | 0.01 | 42 | 673.72 | 0.02 | 0.00 | 0.02 | 0.00 |
| 20.00 | 0.00 | 39 | 673.51 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21.00 | 0.00 | 39 | 673.50 | 0.00 | 0.00 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 23.56 | 9.86 | 13.70 | 0.00 |
| 678.75 | 40.37 | 15.13 | 19.77 | 5.47 |
| 678.95 | **67.61** | **21.27** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

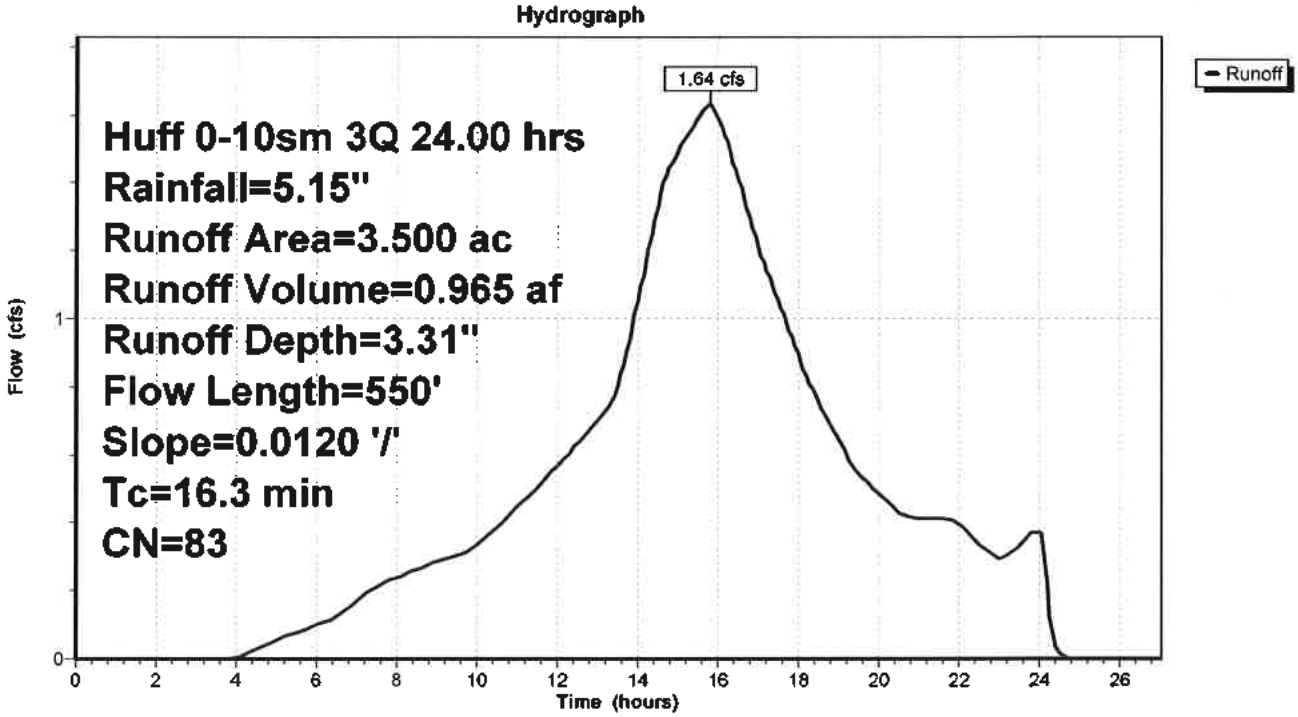
Runoff = 1.64 cfs @ 15.79 hrs, Volume= 0.965 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.02 hrs, dt= 0.07 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=5.15"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 18.20 | 4.34 | 2.58 | 0.83 |
| 0.35 | 0.01 | 0.00 | 0.00 | 18.55 | 4.42 | 2.65 | 0.75 |
| 0.70 | 0.03 | 0.00 | 0.00 | 18.90 | 4.49 | 2.72 | 0.67 |
| 1.05 | 0.06 | 0.00 | 0.00 | 19.25 | 4.56 | 2.78 | 0.59 |
| 1.40 | 0.10 | 0.00 | 0.00 | 19.60 | 4.62 | 2.83 | 0.53 |
| 1.75 | 0.15 | 0.00 | 0.00 | 19.95 | 4.67 | 2.88 | 0.49 |
| 2.10 | 0.20 | 0.00 | 0.00 | 20.30 | 4.72 | 2.92 | 0.45 |
| 2.45 | 0.24 | 0.00 | 0.00 | 20.65 | 4.76 | 2.96 | 0.42 |
| 2.80 | 0.29 | 0.00 | 0.00 | 21.00 | 4.81 | 3.00 | 0.41 |
| 3.15 | 0.33 | 0.00 | 0.00 | 21.35 | 4.86 | 3.04 | 0.41 |
| 3.50 | 0.38 | 0.00 | 0.00 | 21.70 | 4.90 | 3.09 | 0.42 |
| 3.85 | 0.42 | 0.00 | 0.00 | 22.05 | 4.94 | 3.12 | 0.39 |
| 4.20 | 0.47 | 0.00 | 0.01 | 22.40 | 4.98 | 3.16 | 0.35 |
| 4.55 | 0.52 | 0.01 | 0.03 | 22.75 | 5.01 | 3.19 | 0.31 |
| 4.90 | 0.56 | 0.01 | 0.05 | 23.10 | 5.05 | 3.22 | 0.29 |
| 5.25 | 0.61 | 0.02 | 0.07 | 23.45 | 5.08 | 3.25 | 0.33 |
| 5.60 | 0.65 | 0.03 | 0.08 | 23.80 | **5.12** | **3.29** | 0.37 |
| 5.95 | 0.70 | 0.04 | 0.10 | 24.15 | **5.15** | **3.31** | 0.33 |
| 6.30 | 0.75 | 0.05 | 0.11 | 24.50 | 5.15 | 3.31 | 0.02 |
| 6.65 | 0.80 | 0.06 | 0.14 | 24.85 | 5.15 | 3.31 | 0.00 |
| 7.00 | 0.85 | 0.08 | 0.17 | 25.20 | 5.15 | 3.31 | 0.00 |
| 7.35 | 0.91 | 0.10 | 0.20 | 25.55 | 5.15 | 3.31 | 0.00 |
| 7.70 | 0.98 | 0.12 | 0.22 | 25.90 | 5.15 | 3.31 | 0.00 |
| 8.05 | 1.04 | 0.15 | 0.24 | 26.25 | 5.15 | 3.31 | 0.00 |
| 8.40 | 1.10 | 0.17 | 0.26 | 26.60 | 5.15 | 3.31 | 0.00 |
| 8.75 | 1.16 | 0.20 | 0.27 | 26.95 | 5.15 | 3.31 | 0.00 |
| 9.10 | 1.22 | 0.23 | 0.29 | | | | |
| 9.45 | 1.28 | 0.26 | 0.30 | | | | |
| 9.80 | 1.34 | 0.29 | 0.32 | | | | |
| 10.15 | 1.41 | 0.33 | 0.35 | | | | |
| 10.50 | 1.48 | 0.37 | 0.39 | | | | |
| 10.85 | 1.55 | 0.41 | 0.43 | | | | |
| 11.20 | 1.63 | 0.46 | 0.47 | | | | |
| 11.55 | 1.72 | 0.51 | 0.51 | | | | |
| 11.90 | 1.80 | 0.56 | 0.56 | | | | |
| 12.25 | 1.90 | 0.63 | 0.60 | | | | |
| 12.60 | 1.99 | 0.69 | 0.65 | | | | |
| 12.95 | 2.09 | 0.76 | 0.70 | | | | |
| 13.30 | 2.20 | 0.84 | 0.74 | | | | |
| 13.65 | 2.33 | 0.93 | 0.87 | | | | |
| 14.00 | 2.47 | 1.03 | 1.05 | | | | |
| 14.35 | 2.64 | 1.16 | 1.25 | | | | |
| 14.70 | 2.82 | 1.31 | 1.43 | | | | |
| 15.05 | 3.01 | 1.46 | 1.51 | | | | |
| 15.40 | 3.21 | 1.62 | 1.57 | | | | |
| 15.75 | 3.40 | 1.78 | **1.64** | | | | |
| 16.10 | 3.59 | 1.93 | **1.57** | | | | |
| 16.45 | 3.75 | 2.07 | 1.44 | | | | |
| 16.80 | 3.90 | 2.20 | 1.30 | | | | |
| 17.15 | 4.03 | 2.31 | 1.17 | | | | |
| 17.50 | 4.14 | 2.41 | 1.06 | | | | |
| 17.85 | 4.25 | 2.50 | 0.94 | | | | |

## Summary for Subcatchment 7S: South Property

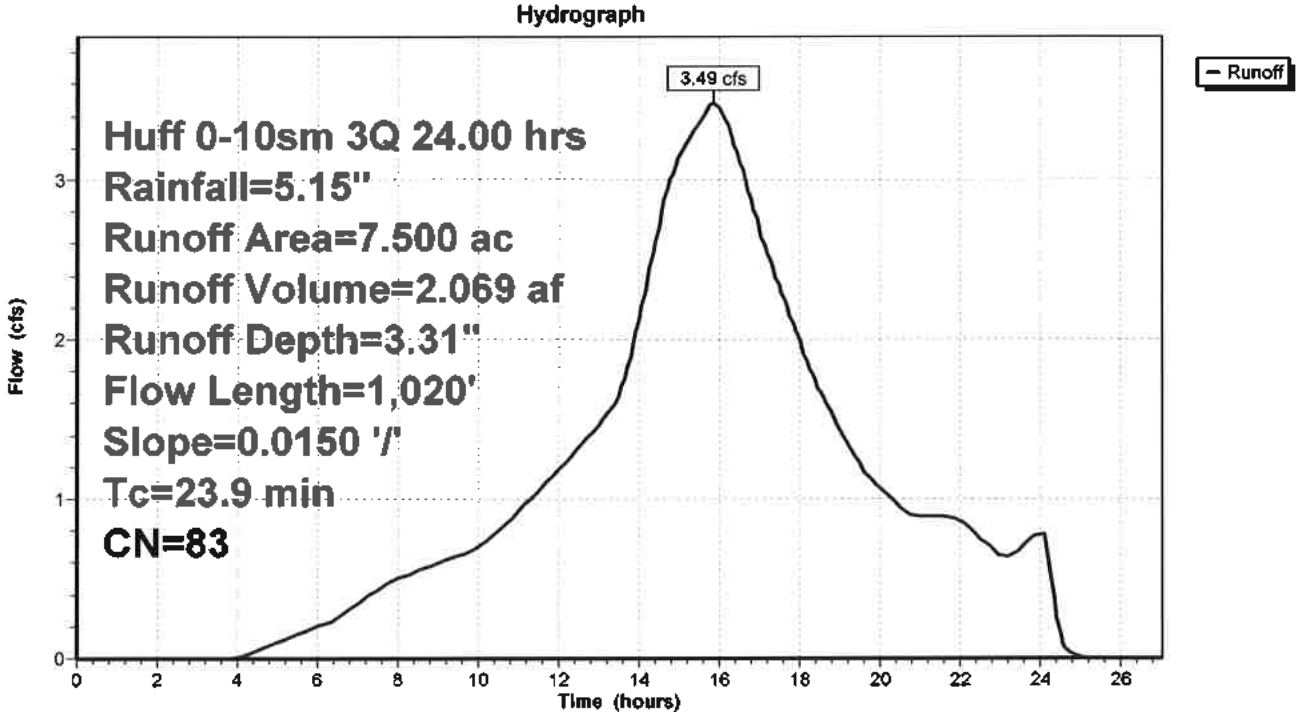
Runoff = 3.49 cfs @ 15.88 hrs, Volume= 2.069 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.02 hrs, dt= 0.07 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=5.15"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.35 | 0.01 | 0.00 | 0.00 |
| 0.70 | 0.03 | 0.00 | 0.00 |
| 1.05 | 0.06 | 0.00 | 0.00 |
| 1.40 | 0.10 | 0.00 | 0.00 |
| 1.75 | 0.15 | 0.00 | 0.00 |
| 2.10 | 0.20 | 0.00 | 0.00 |
| 2.45 | 0.24 | 0.00 | 0.00 |
| 2.80 | 0.29 | 0.00 | 0.00 |
| 3.15 | 0.33 | 0.00 | 0.00 |
| 3.50 | 0.38 | 0.00 | 0.00 |
| 3.85 | 0.42 | 0.00 | 0.00 |
| 4.20 | 0.47 | 0.00 | 0.02 |
| 4.55 | 0.52 | 0.01 | 0.05 |
| 4.90 | 0.56 | 0.01 | 0.09 |
| 5.25 | 0.61 | 0.02 | 0.13 |
| 5.60 | 0.65 | 0.03 | 0.16 |
| 5.95 | 0.70 | 0.04 | 0.20 |
| 6.30 | 0.75 | 0.05 | 0.23 |
| 6.65 | 0.80 | 0.06 | 0.28 |
| 7.00 | 0.85 | 0.08 | 0.34 |
| 7.35 | 0.91 | 0.10 | 0.41 |
| 7.70 | 0.98 | 0.12 | 0.47 |
| 8.05 | 1.04 | 0.15 | 0.51 |
| 8.40 | 1.10 | 0.17 | 0.54 |
| 8.75 | 1.16 | 0.20 | 0.58 |
| 9.10 | 1.22 | 0.23 | 0.61 |
| 9.45 | 1.28 | 0.26 | 0.64 |
| 9.80 | 1.34 | 0.29 | 0.67 |
| 10.15 | 1.41 | 0.33 | 0.72 |
| 10.50 | 1.48 | 0.37 | 0.80 |
| 10.85 | 1.55 | 0.41 | 0.89 |
| 11.20 | 1.63 | 0.46 | 0.97 |
| 11.55 | 1.72 | 0.51 | 1.06 |
| 11.90 | 1.80 | 0.56 | 1.16 |
| 12.25 | 1.90 | 0.63 | 1.25 |
| 12.60 | 1.99 | 0.69 | 1.35 |
| 12.95 | 2.09 | 0.76 | 1.46 |
| 13.30 | 2.20 | 0.84 | 1.56 |
| 13.65 | 2.33 | 0.93 | 1.76 |
| 14.00 | 2.47 | 1.03 | 2.13 |
| 14.35 | 2.64 | 1.16 | 2.54 |
| 14.70 | 2.82 | 1.31 | 2.94 |
| 15.05 | 3.01 | 1.46 | 3.17 |
| 15.40 | 3.21 | 1.62 | 3.32 |
| 15.75 | 3.40 | 1.78 | **3.46** |
| 16.10 | 3.59 | 1.93 | **3.42** |
| 16.45 | 3.75 | 2.07 | 3.17 |
| 16.80 | 3.90 | 2.20 | 2.88 |
| 17.15 | 4.03 | 2.31 | 2.59 |
| 17.50 | 4.14 | 2.41 | 2.34 |
| 17.85 | 4.25 | 2.50 | 2.10 |
| 18.20 | 4.34 | 2.58 | 1.86 |
| 18.55 | 4.42 | 2.65 | 1.66 |
| 18.90 | 4.49 | 2.72 | 1.49 |
| 19.25 | 4.56 | 2.78 | 1.33 |
| 19.60 | 4.62 | 2.83 | 1.18 |
| 19.95 | 4.67 | 2.88 | 1.08 |
| 20.30 | 4.72 | 2.92 | 1.00 |
| 20.65 | 4.76 | 2.96 | 0.92 |
| 21.00 | 4.81 | 3.00 | 0.89 |
| 21.35 | 4.86 | 3.04 | 0.89 |
| 21.70 | 4.90 | 3.09 | 0.89 |
| 22.05 | 4.94 | 3.12 | 0.86 |
| 22.40 | 4.98 | 3.16 | 0.78 |
| 22.75 | 5.01 | 3.19 | 0.70 |
| 23.10 | 5.05 | 3.22 | 0.63 |
| 23.45 | 5.08 | 3.25 | 0.67 |
| 23.80 | **5.12** | **3.29** | 0.76 |
| 24.15 | **5.15** | **3.31** | 0.79 |
| 24.50 | 5.15 | 3.31 | 0.16 |
| 24.85 | 5.15 | 3.31 | 0.02 |
| 25.20 | 5.15 | 3.31 | 0.00 |
| 25.55 | 5.15 | 3.31 | 0.00 |
| 25.90 | 5.15 | 3.31 | 0.00 |
| 26.25 | 5.15 | 3.31 | 0.00 |
| 26.60 | 5.15 | 3.31 | 0.00 |
| 26.95 | 5.15 | 3.31 | 0.00 |

## Summary for Subcatchment 8S: Northwood Drive Bypass

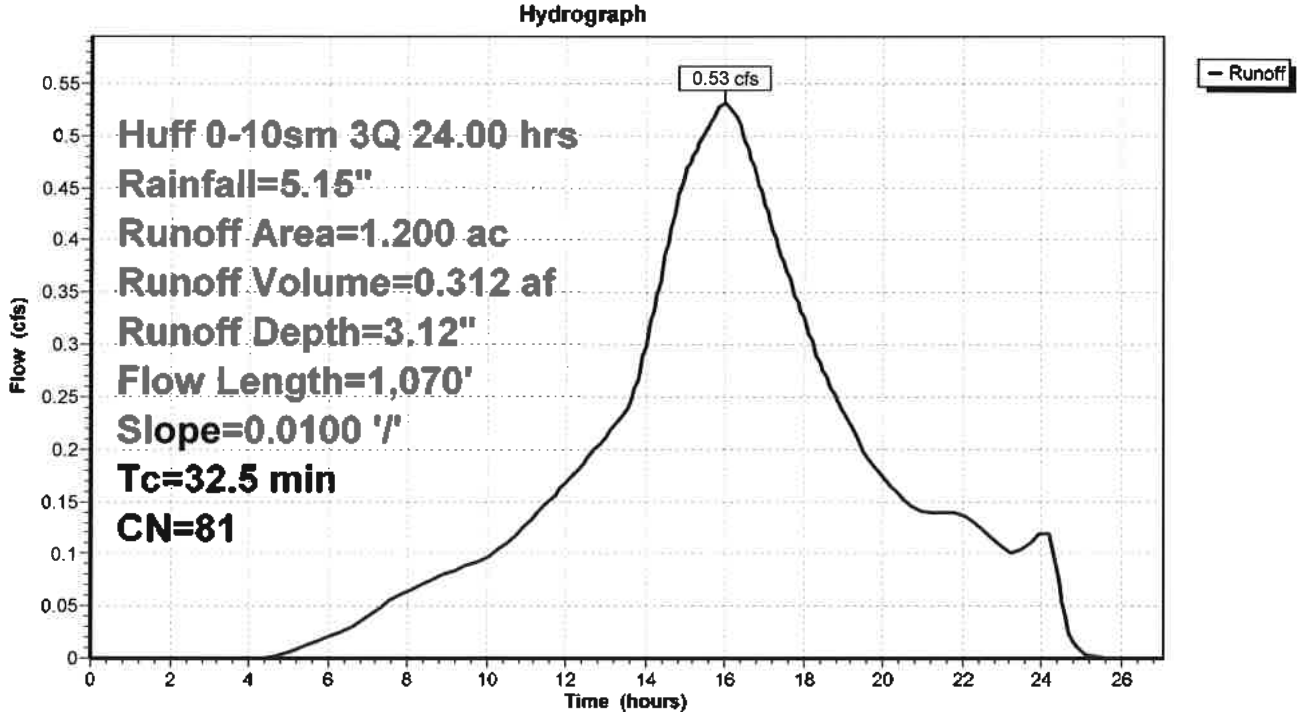
Runoff = 0.53 cfs @ 16.00 hrs, Volume= 0.312 af, Depth= 3.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.02 hrs, dt= 0.07 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=5.15"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 18.20 | 4.34 | 2.41 | 0.30 |
| 0.35 | 0.01 | 0.00 | 0.00 | 18.55 | 4.42 | 2.48 | 0.27 |
| 0.70 | 0.03 | 0.00 | 0.00 | 18.90 | 4.49 | 2.54 | 0.24 |
| 1.05 | 0.06 | 0.00 | 0.00 | 19.25 | 4.56 | 2.60 | 0.22 |
| 1.40 | 0.10 | 0.00 | 0.00 | 19.60 | 4.62 | 2.65 | 0.19 |
| 1.75 | 0.15 | 0.00 | 0.00 | 19.95 | 4.67 | 2.69 | 0.17 |
| 2.10 | 0.20 | 0.00 | 0.00 | 20.30 | 4.72 | 2.74 | 0.16 |
| 2.45 | 0.24 | 0.00 | 0.00 | 20.65 | 4.76 | 2.78 | 0.15 |
| 2.80 | 0.29 | 0.00 | 0.00 | 21.00 | 4.81 | 2.82 | 0.14 |
| 3.15 | 0.33 | 0.00 | 0.00 | 21.35 | 4.86 | 2.86 | 0.14 |
| 3.50 | 0.38 | 0.00 | 0.00 | 21.70 | 4.90 | 2.90 | 0.14 |
| 3.85 | 0.42 | 0.00 | 0.00 | 22.05 | 4.94 | 2.94 | 0.14 |
| 4.20 | 0.47 | 0.00 | 0.00 | 22.40 | 4.98 | 2.97 | 0.13 |
| 4.55 | 0.52 | 0.00 | 0.00 | 22.75 | 5.01 | 3.00 | 0.11 |
| 4.90 | 0.56 | 0.00 | 0.00 | 23.10 | 5.05 | 3.03 | 0.10 |
| 5.25 | 0.61 | 0.01 | 0.01 | 23.45 | 5.08 | 3.06 | 0.10 |
| 5.60 | 0.65 | 0.01 | 0.01 | 23.80 | **5.12** | **3.10** | 0.11 |
| 5.95 | 0.70 | 0.02 | 0.02 | 24.15 | **5.15** | **3.12** | 0.12 |
| 6.30 | 0.75 | 0.03 | 0.03 | 24.50 | 5.15 | 3.12 | 0.06 |
| 6.65 | 0.80 | 0.04 | 0.03 | 24.85 | 5.15 | 3.12 | 0.01 |
| 7.00 | 0.85 | 0.05 | 0.04 | 25.20 | 5.15 | 3.12 | 0.00 |
| 7.35 | 0.91 | 0.07 | 0.05 | 25.55 | 5.15 | 3.12 | 0.00 |
| 7.70 | 0.98 | 0.09 | 0.06 | 25.90 | 5.15 | 3.12 | 0.00 |
| 8.05 | 1.04 | 0.11 | 0.07 | 26.25 | 5.15 | 3.12 | 0.00 |
| 8.40 | 1.10 | 0.13 | 0.07 | 26.60 | 5.15 | 3.12 | 0.00 |
| 8.75 | 1.16 | 0.16 | 0.08 | 26.95 | 5.15 | 3.12 | 0.00 |
| 9.10 | 1.22 | 0.18 | 0.08 | | | | |
| 9.45 | 1.28 | 0.21 | 0.09 | | | | |
| 9.80 | 1.34 | 0.24 | 0.09 | | | | |
| 10.15 | 1.41 | 0.27 | 0.10 | | | | |
| 10.50 | 1.48 | 0.30 | 0.11 | | | | |
| 10.85 | 1.55 | 0.34 | 0.12 | | | | |
| 11.20 | 1.63 | 0.39 | 0.14 | | | | |
| 11.55 | 1.72 | 0.43 | 0.15 | | | | |
| 11.90 | 1.80 | 0.48 | 0.16 | | | | |
| 12.25 | 1.90 | 0.54 | 0.18 | | | | |
| 12.60 | 1.99 | 0.60 | 0.19 | | | | |
| 12.95 | 2.09 | 0.67 | 0.21 | | | | |
| 13.30 | 2.20 | 0.74 | 0.23 | | | | |
| 13.65 | 2.33 | 0.82 | 0.25 | | | | |
| 14.00 | 2.47 | 0.92 | 0.30 | | | | |
| 14.35 | 2.64 | 1.04 | 0.36 | | | | |
| 14.70 | 2.82 | 1.18 | 0.42 | | | | |
| 15.05 | 3.01 | 1.32 | 0.47 | | | | |
| 15.40 | 3.21 | 1.47 | 0.50 | | | | |
| 15.75 | 3.40 | 1.63 | **0.52** | | | | |
| 16.10 | 3.59 | 1.78 | **0.53** | | | | |
| 16.45 | 3.75 | 1.91 | 0.50 | | | | |
| 16.80 | 3.90 | 2.03 | 0.46 | | | | |
| 17.15 | 4.03 | 2.14 | 0.42 | | | | |
| 17.50 | 4.14 | 2.24 | 0.38 | | | | |
| 17.85 | 4.25 | 2.33 | 0.34 | | | | |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

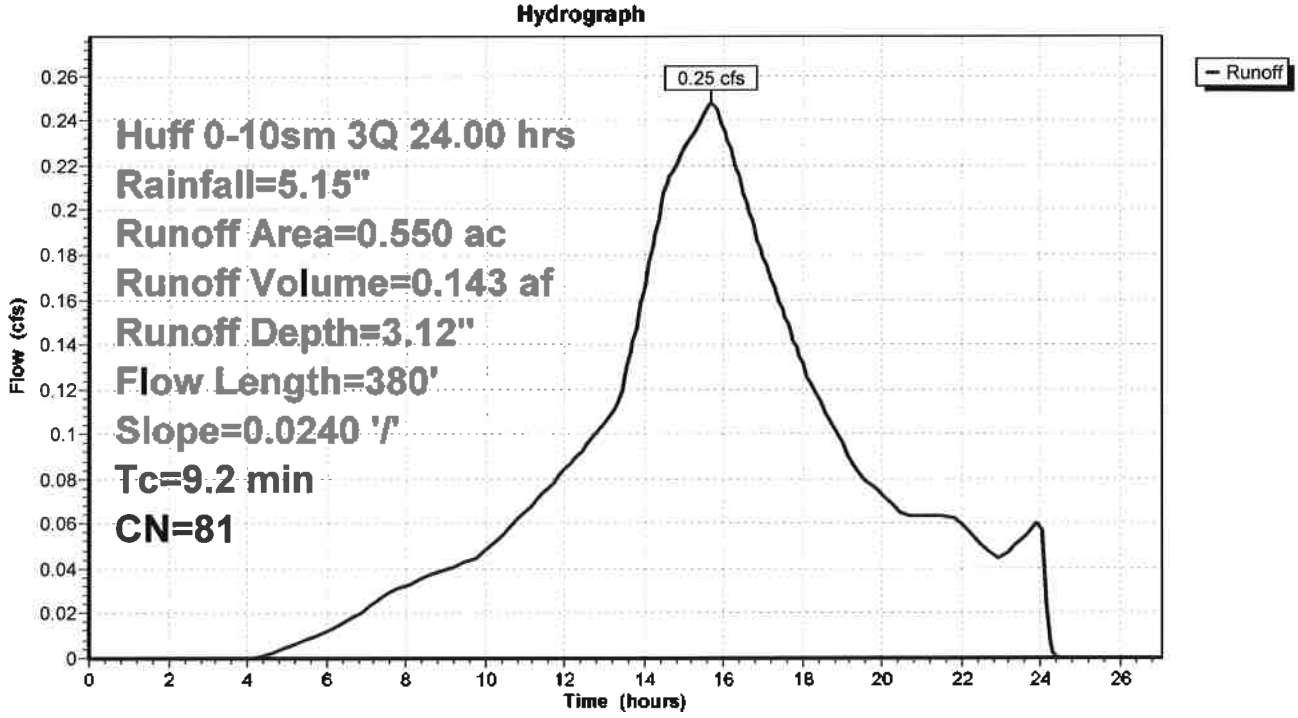
Runoff = 0.25 cfs @ 15.71 hrs, Volume= 0.143 af, Depth= 3.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.02 hrs, dt= 0.07 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=5.15"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.35 | 0.01 | 0.00 | 0.00 |
| 0.70 | 0.03 | 0.00 | 0.00 |
| 1.05 | 0.06 | 0.00 | 0.00 |
| 1.40 | 0.10 | 0.00 | 0.00 |
| 1.75 | 0.15 | 0.00 | 0.00 |
| 2.10 | 0.20 | 0.00 | 0.00 |
| 2.45 | 0.24 | 0.00 | 0.00 |
| 2.80 | 0.29 | 0.00 | 0.00 |
| 3.15 | 0.33 | 0.00 | 0.00 |
| 3.50 | 0.38 | 0.00 | 0.00 |
| 3.85 | 0.42 | 0.00 | 0.00 |
| 4.20 | 0.47 | 0.00 | 0.00 |
| 4.55 | 0.52 | 0.00 | 0.00 |
| 4.90 | 0.56 | 0.00 | 0.00 |
| 5.25 | 0.61 | 0.01 | 0.01 |
| 5.60 | 0.65 | 0.01 | 0.01 |
| 5.95 | 0.70 | 0.02 | 0.01 |
| 6.30 | 0.75 | 0.03 | 0.01 |
| 6.65 | 0.80 | 0.04 | 0.02 |
| 7.00 | 0.85 | 0.05 | 0.02 |
| 7.35 | 0.91 | 0.07 | 0.03 |
| 7.70 | 0.98 | 0.09 | 0.03 |
| 8.05 | 1.04 | 0.11 | 0.03 |
| 8.40 | 1.10 | 0.13 | 0.04 |
| 8.75 | 1.16 | 0.16 | 0.04 |
| 9.10 | 1.22 | 0.18 | 0.04 |
| 9.45 | 1.28 | 0.21 | 0.04 |
| 9.80 | 1.34 | 0.24 | 0.05 |
| 10.15 | 1.41 | 0.27 | 0.05 |
| 10.50 | 1.48 | 0.30 | 0.06 |
| 10.85 | 1.55 | 0.34 | 0.06 |
| 11.20 | 1.63 | 0.39 | 0.07 |
| 11.55 | 1.72 | 0.43 | 0.08 |
| 11.90 | 1.80 | 0.48 | 0.08 |
| 12.25 | 1.90 | 0.54 | 0.09 |
| 12.60 | 1.99 | 0.60 | 0.10 |
| 12.95 | 2.09 | 0.67 | 0.10 |
| 13.30 | 2.20 | 0.74 | 0.11 |
| 13.65 | 2.33 | 0.82 | 0.14 |
| 14.00 | 2.47 | 0.92 | 0.16 |
| 14.35 | 2.64 | 1.04 | 0.20 |
| 14.70 | 2.82 | 1.18 | 0.22 |
| 15.05 | 3.01 | 1.32 | 0.23 |
| 15.40 | 3.21 | 1.47 | **0.24** |
| 15.75 | 3.40 | 1.63 | **0.25** |
| 16.10 | 3.59 | 1.78 | 0.23 |
| 16.45 | 3.75 | 1.91 | 0.21 |
| 16.80 | 3.90 | 2.03 | 0.19 |
| 17.15 | 4.03 | 2.14 | 0.17 |
| 17.50 | 4.14 | 2.24 | 0.16 |
| 17.85 | 4.25 | 2.33 | 0.14 |
| 18.20 | 4.34 | 2.41 | 0.12 |
| 18.55 | 4.42 | 2.48 | 0.11 |
| 18.90 | 4.49 | 2.54 | 0.10 |
| 19.25 | 4.56 | 2.60 | 0.09 |
| 19.60 | 4.62 | 2.65 | 0.08 |
| 19.95 | 4.67 | 2.69 | 0.07 |
| 20.30 | 4.72 | 2.74 | 0.07 |
| 20.65 | 4.76 | 2.78 | 0.06 |
| 21.00 | 4.81 | 2.82 | 0.06 |
| 21.35 | 4.86 | 2.86 | 0.06 |
| 21.70 | 4.90 | 2.90 | 0.06 |
| 22.05 | 4.94 | 2.94 | 0.06 |
| 22.40 | 4.98 | 2.97 | 0.05 |
| 22.75 | 5.01 | 3.00 | 0.05 |
| 23.10 | 5.05 | 3.03 | 0.05 |
| 23.45 | 5.08 | 3.06 | 0.05 |
| 23.80 | **5.12** | **3.10** | 0.06 |
| 24.15 | **5.15** | **3.12** | 0.02 |
| 24.50 | 5.15 | 3.12 | 0.00 |
| 24.85 | 5.15 | 3.12 | 0.00 |
| 25.20 | 5.15 | 3.12 | 0.00 |
| 25.55 | 5.15 | 3.12 | 0.00 |
| 25.90 | 5.15 | 3.12 | 0.00 |
| 26.25 | 5.15 | 3.12 | 0.00 |
| 26.60 | 5.15 | 3.12 | 0.00 |
| 26.95 | 5.15 | 3.12 | 0.00 |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 4.70 cfs @ | 15.88 hrs, | Volume= | 2.541 af |
| Outflow | = | 0.97 cfs @ | 22.34 hrs, | Volume= | 1.196 af, Atten= 79%, Lag= 387.9 min |
| Primary | = | 0.97 cfs @ | 22.34 hrs, | Volume= | 1.196 af |
| Secondary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-27.02 hrs, dt= 0.07 hrs
Peak Elev= 673.51' @ 22.34 hrs Surf.Area= 31,153 sf Storage= 68,027 cf

Plug-Flow detention time= 381.3 min calculated for 1.193 af (47% of inflow)
Center-of-Mass det. time= 191.0 min ( 1,136.9 - 945.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.40' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

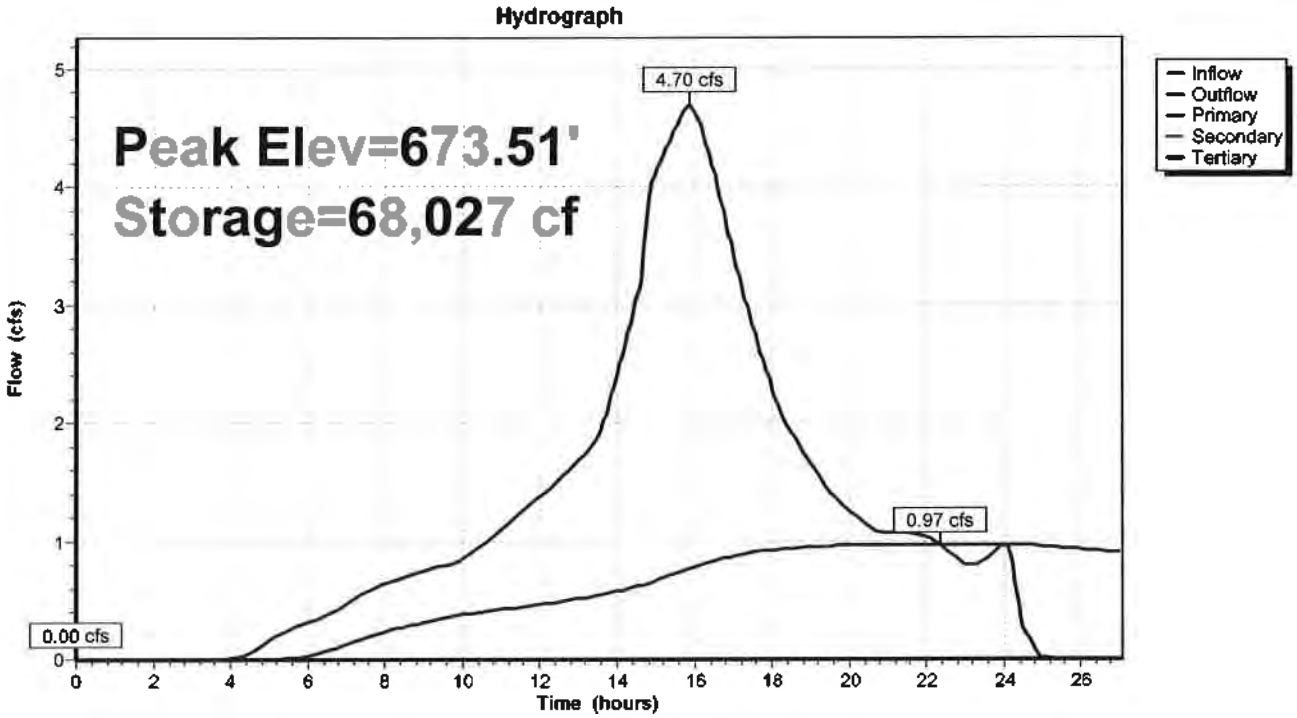
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=0.97 cfs @ 22.34 hrs HW=673.51' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.97 cfs @ 8.77 fps)

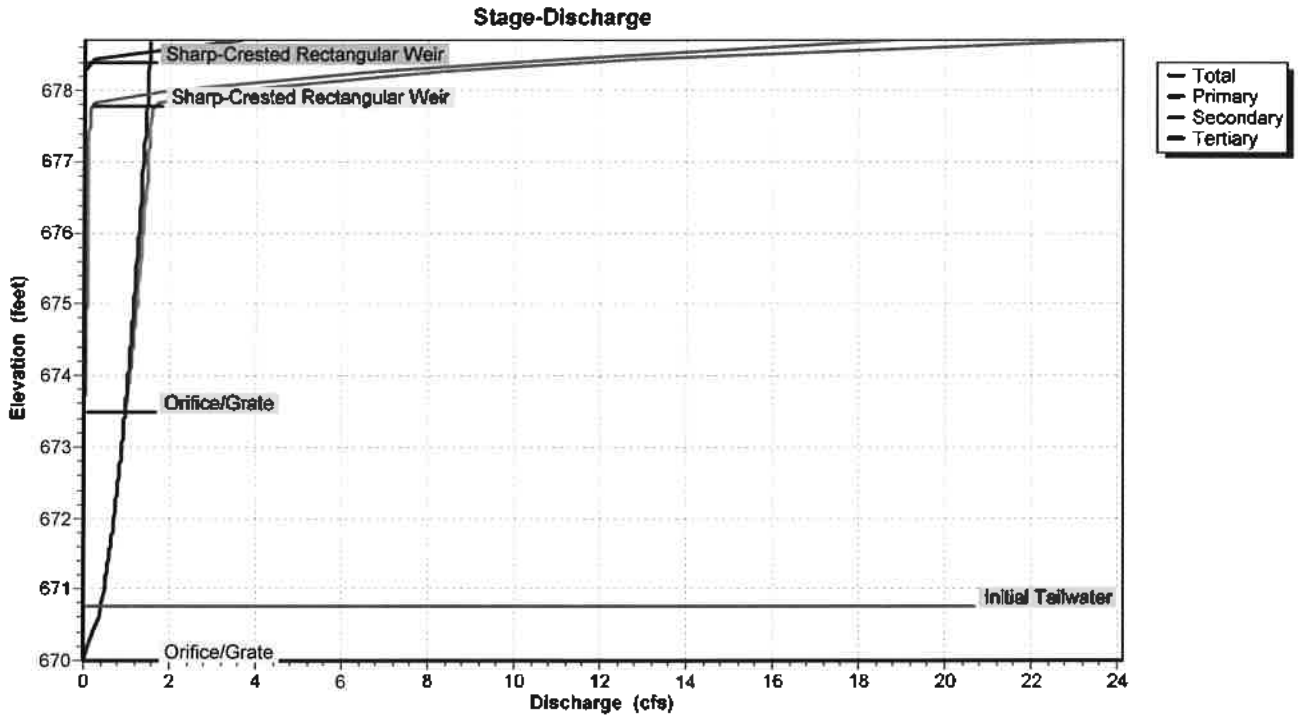
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

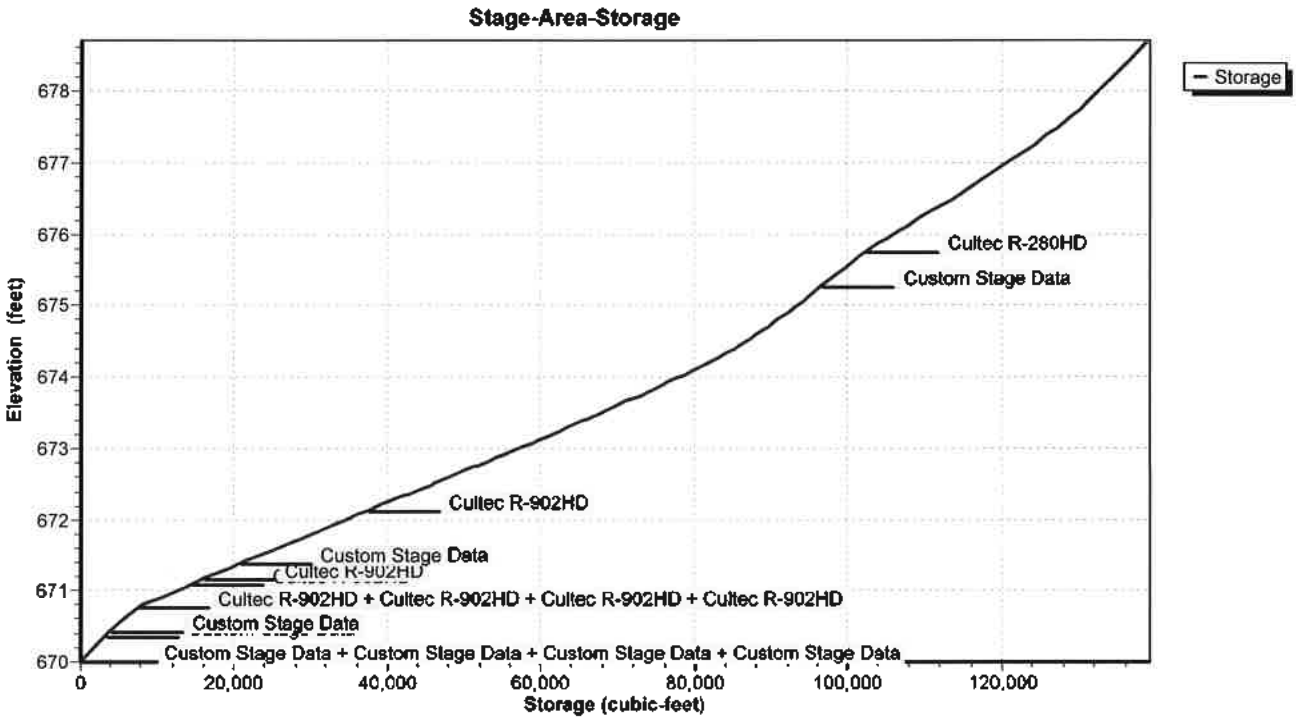
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 0.70 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.40 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.10 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.80 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.50 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.20 | 0.02 | 5 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.90 | 0.14 | 168 | 670.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5.60 | 0.26 | 654 | 670.07 | 0.01 | 0.01 | 0.00 | 0.00 |
| 6.30 | 0.35 | 1,342 | 670.15 | 0.05 | 0.05 | 0.00 | 0.00 |
| 7.00 | 0.47 | 2,133 | 670.24 | 0.12 | 0.12 | 0.00 | 0.00 |
| 7.70 | 0.60 | 3,060 | 670.34 | 0.21 | 0.21 | 0.00 | 0.00 |
| 8.40 | 0.68 | 4,072 | 670.45 | 0.27 | 0.27 | 0.00 | 0.00 |
| 9.10 | 0.76 | 5,142 | 670.55 | 0.32 | 0.32 | 0.00 | 0.00 |
| 9.80 | 0.82 | 6,260 | 670.66 | 0.37 | 0.37 | 0.00 | 0.00 |
| 10.50 | 0.97 | 7,501 | 670.77 | 0.40 | 0.40 | 0.00 | 0.00 |
| 11.20 | 1.15 | 9,092 | 670.84 | 0.43 | 0.43 | 0.00 | 0.00 |
| 11.90 | 1.35 | 11,094 | 670.94 | 0.46 | 0.46 | 0.00 | 0.00 |
| 12.60 | 1.56 | 13,533 | 671.06 | 0.50 | 0.50 | 0.00 | 0.00 |
| 13.30 | 1.78 | 16,426 | 671.19 | 0.53 | 0.53 | 0.00 | 0.00 |
| 14.00 | 2.41 | 20,102 | 671.36 | 0.58 | 0.58 | 0.00 | 0.00 |
| 14.70 | 3.45 | 25,669 | 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 15.40 | **4.43** | 34,228 | 671.99 | 0.71 | 0.71 | 0.00 | 0.00 |
| 16.10 | **4.58** | 43,930 | 672.41 | 0.79 | 0.79 | 0.00 | 0.00 |
| 16.80 | 3.70 | 52,466 | 672.79 | 0.86 | 0.86 | 0.00 | 0.00 |
| 17.50 | 2.83 | 58,533 | 673.06 | 0.90 | 0.90 | 0.00 | 0.00 |
| 18.20 | 2.10 | 62,489 | 673.25 | 0.93 | 0.93 | 0.00 | 0.00 |
| 18.90 | 1.71 | 64,956 | 673.36 | 0.95 | 0.95 | 0.00 | 0.00 |
| 19.60 | 1.37 | 66,464 | 673.43 | 0.96 | 0.96 | 0.00 | 0.00 |
| 20.30 | 1.18 | 67,276 | 673.47 | 0.96 | 0.96 | 0.00 | 0.00 |
| 21.00 | 1.06 | 67,641 | 673.49 | 0.97 | 0.97 | 0.00 | 0.00 |
| 21.70 | 1.06 | **67,881** | **673.50** | **0.97** | **0.97** | 0.00 | 0.00 |
| 22.40 | 0.95 | **68,025** | **673.51** | **0.97** | **0.97** | 0.00 | 0.00 |
| 23.10 | 0.78 | 67,763 | 673.49 | 0.97 | 0.97 | 0.00 | 0.00 |
| 23.80 | 0.92 | 67,422 | 673.48 | 0.96 | 0.96 | 0.00 | 0.00 |
| 24.50 | 0.26 | 67,008 | 673.46 | 0.96 | 0.96 | 0.00 | 0.00 |
| 25.20 | 0.00 | 64,854 | 673.36 | 0.95 | 0.95 | 0.00 | 0.00 |
| 25.90 | 0.00 | 62,491 | 673.25 | 0.93 | 0.93 | 0.00 | 0.00 |
| 26.60 | 0.00 | 60,166 | 673.14 | 0.91 | 0.91 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 18.46 | 1.54 | 15.13 | 1.79 |
| 678.80 | **28.12** | **1.56** | **21.42** | **5.14** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 2.16 cfs @ | 15.82 hrs, | Volume= | 1.277 af |
| Outflow | = | 2.16 cfs @ | 15.89 hrs, | Volume= | 1.276 af, Atten= 0%, Lag= 4.6 min |
| Primary | = | 1.19 cfs @ | 15.89 hrs, | Volume= | 0.947 af |
| Secondary | = | 0.97 cfs @ | 15.89 hrs, | Volume= | 0.329 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-27.02 hrs, dt= 0.07 hrs
Peak Elev= 677.92' @ 15.89 hrs Surf.Area= 3,089 sf Storage= 2,991 cf

Plug-Flow detention time= 23.0 min calculated for 1.276 af (100% of inflow)
Center-of-Mass det. time= 22.5 min ( 970.1 - 947.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

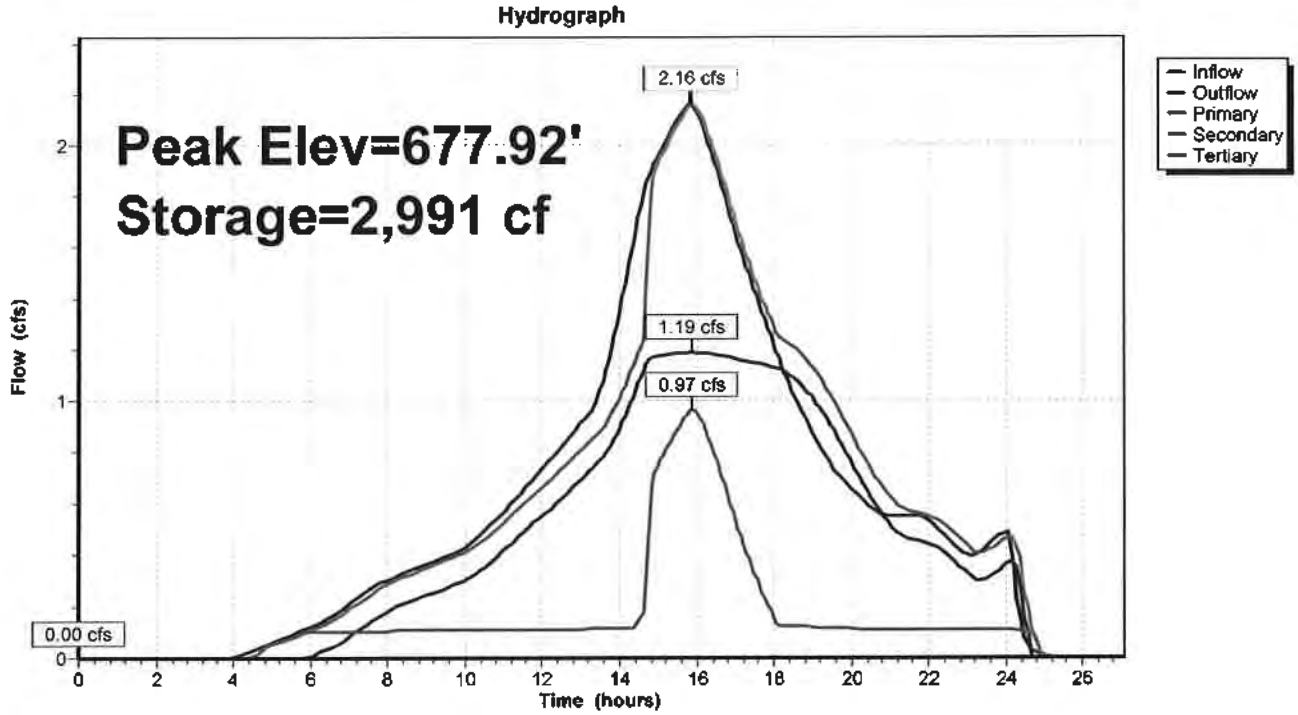
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=1.19 cfs @ 15.89 hrs HW=677.92' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.19 cfs @ 5.17 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

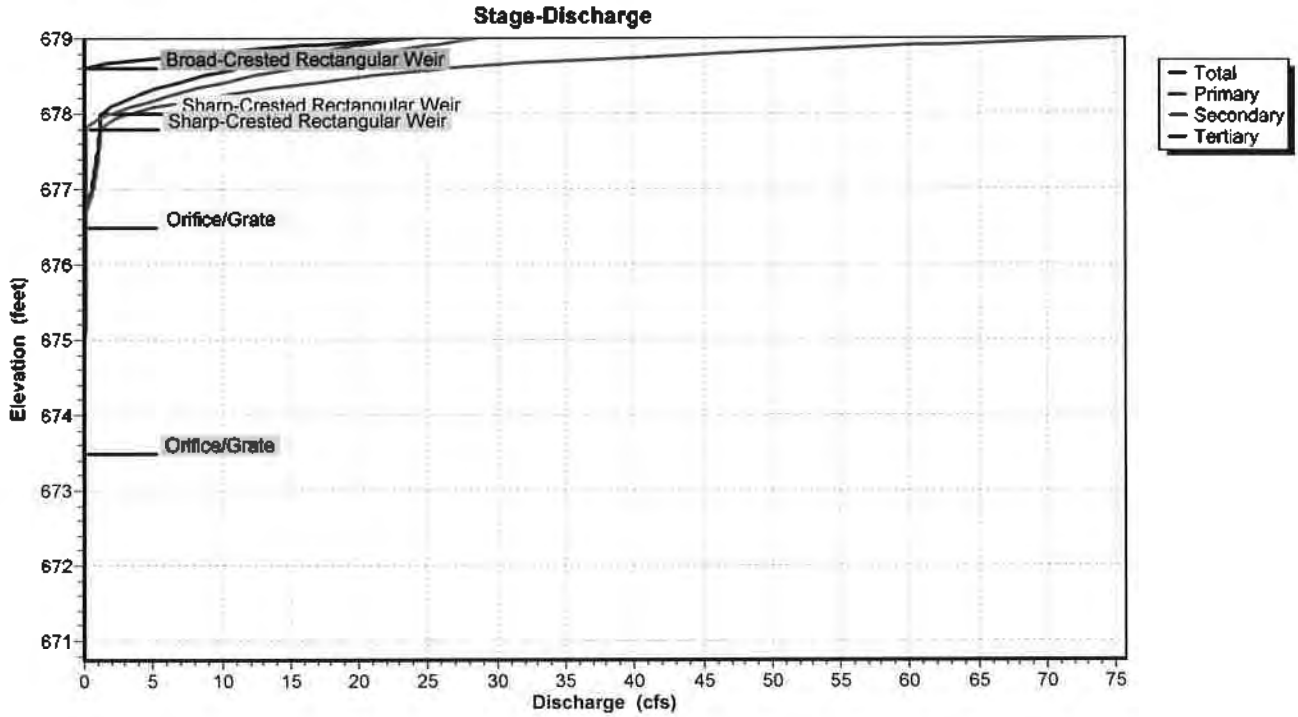
**Secondary OutFlow** Max=0.97 cfs @ 15.89 hrs HW=677.92' TW=672.29' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.12 cfs @ 10.05 fps)
└─**5=Sharp-Crested Rectangular Weir** (Weir Controls 0.85 cfs @ 1.16 fps)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

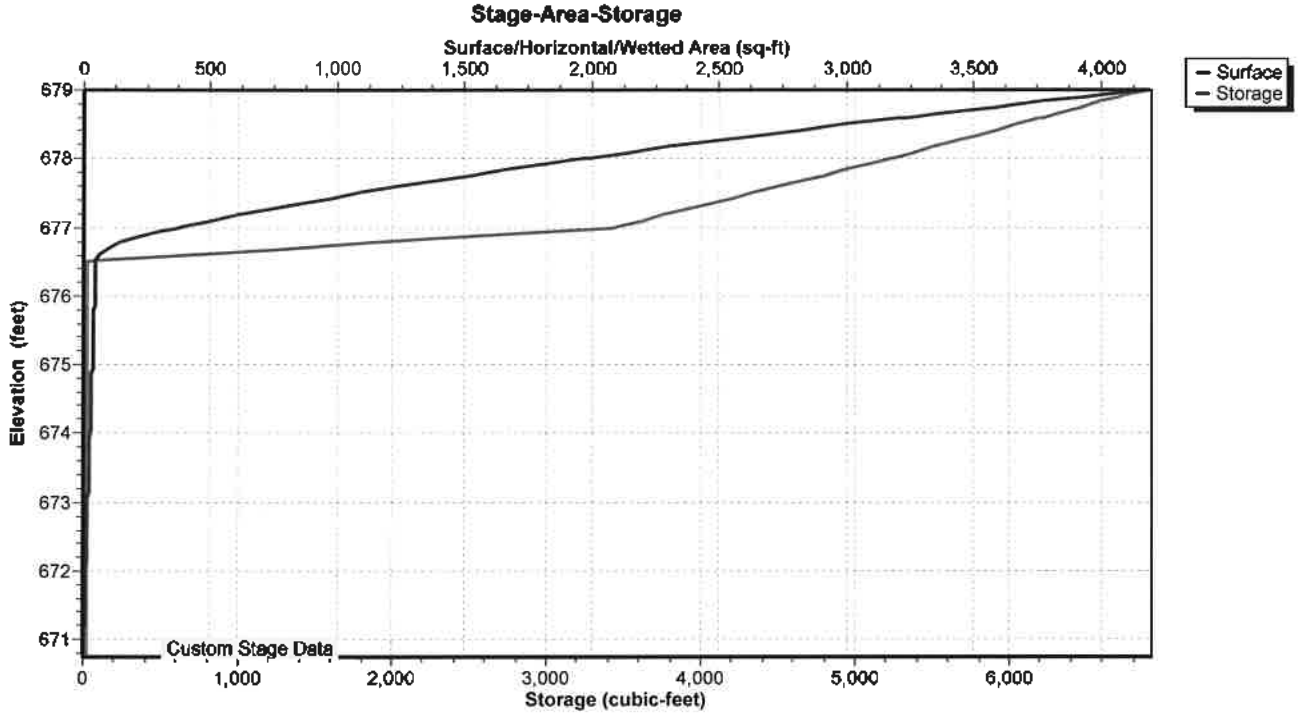
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 0.70 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1.40 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.10 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.80 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.50 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.20 | 0.01 | 5 | 671.09 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.90 | 0.05 | 48 | 674.21 | 0.05 | 0.00 | 0.05 | 0.00 |
| 5.60 | 0.10 | 69 | 675.70 | 0.09 | 0.00 | 0.09 | 0.00 |
| 6.30 | 0.14 | 100 | 676.59 | 0.13 | 0.02 | 0.10 | 0.00 |
| 7.00 | 0.21 | 143 | 676.67 | 0.19 | 0.08 | 0.10 | 0.00 |
| 7.70 | 0.28 | 200 | 676.73 | 0.26 | 0.16 | 0.11 | 0.00 |
| 8.40 | 0.33 | 242 | 676.78 | 0.32 | 0.21 | 0.11 | 0.00 |
| 9.10 | 0.37 | 280 | 676.80 | 0.36 | 0.25 | 0.11 | 0.00 |
| 9.80 | 0.41 | 315 | 676.83 | 0.40 | 0.29 | 0.11 | 0.00 |
| 10.50 | 0.50 | 377 | 676.87 | 0.46 | 0.35 | 0.11 | 0.00 |
| 11.20 | 0.60 | 482 | 676.94 | 0.56 | 0.45 | 0.11 | 0.00 |
| 11.90 | 0.72 | 620 | 677.01 | 0.65 | 0.54 | 0.11 | 0.00 |
| 12.60 | 0.84 | 821 | 677.10 | 0.75 | 0.64 | 0.11 | 0.00 |
| 13.30 | 0.97 | 1,081 | 677.22 | 0.85 | 0.74 | 0.11 | 0.00 |
| 14.00 | 1.35 | 1,587 | 677.42 | 1.01 | 0.90 | 0.12 | 0.00 |
| 14.70 | 1.85 | 2,744 | 677.84 | 1.44 | 1.15 | 0.29 | 0.00 |
| 15.40 | **2.07** | **2,959** | **677.91** | **2.05** | **1.19** | **0.86** | 0.00 |
| 16.10 | **2.10** | **2,980** | **677.92** | **2.12** | **1.19** | **0.93** | 0.00 |
| 16.80 | 1.76 | 2,884 | 677.89 | 1.81 | 1.17 | 0.63 | 0.00 |
| 17.50 | 1.43 | 2,764 | 677.85 | 1.48 | 1.15 | 0.33 | 0.00 |
| 18.20 | 1.13 | 2,607 | 677.80 | 1.24 | 1.12 | 0.12 | 0.00 |
| 18.90 | 0.91 | 2,156 | 677.64 | 1.15 | 1.03 | 0.12 | 0.00 |
| 19.60 | 0.72 | 1,496 | 677.39 | 0.99 | 0.87 | 0.12 | 0.00 |
| 20.30 | 0.61 | 926 | 677.15 | 0.79 | 0.68 | 0.11 | 0.00 |
| 21.00 | 0.55 | 580 | 676.99 | 0.63 | 0.52 | 0.11 | 0.00 |
| 21.70 | 0.55 | 491 | 676.94 | 0.56 | 0.46 | 0.11 | 0.00 |
| 22.40 | 0.48 | 439 | 676.91 | 0.52 | 0.41 | 0.11 | 0.00 |
| 23.10 | 0.39 | 335 | 676.85 | 0.42 | 0.31 | 0.11 | 0.00 |
| 23.80 | 0.48 | 360 | 676.86 | 0.44 | 0.34 | 0.11 | 0.00 |
| 24.50 | 0.07 | 195 | 676.73 | 0.25 | 0.15 | 0.11 | 0.00 |
| 25.20 | 0.00 | 39 | 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25.90 | 0.00 | 39 | 673.51 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26.60 | 0.00 | 39 | 673.50 | 0.00 | 0.00 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 23.56 | 9.86 | 13.70 | 0.00 |
| 678.75 | 40.37 | 15.13 | 19.77 | 5.47 |
| 678.95 | **67.61** | **21.27** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

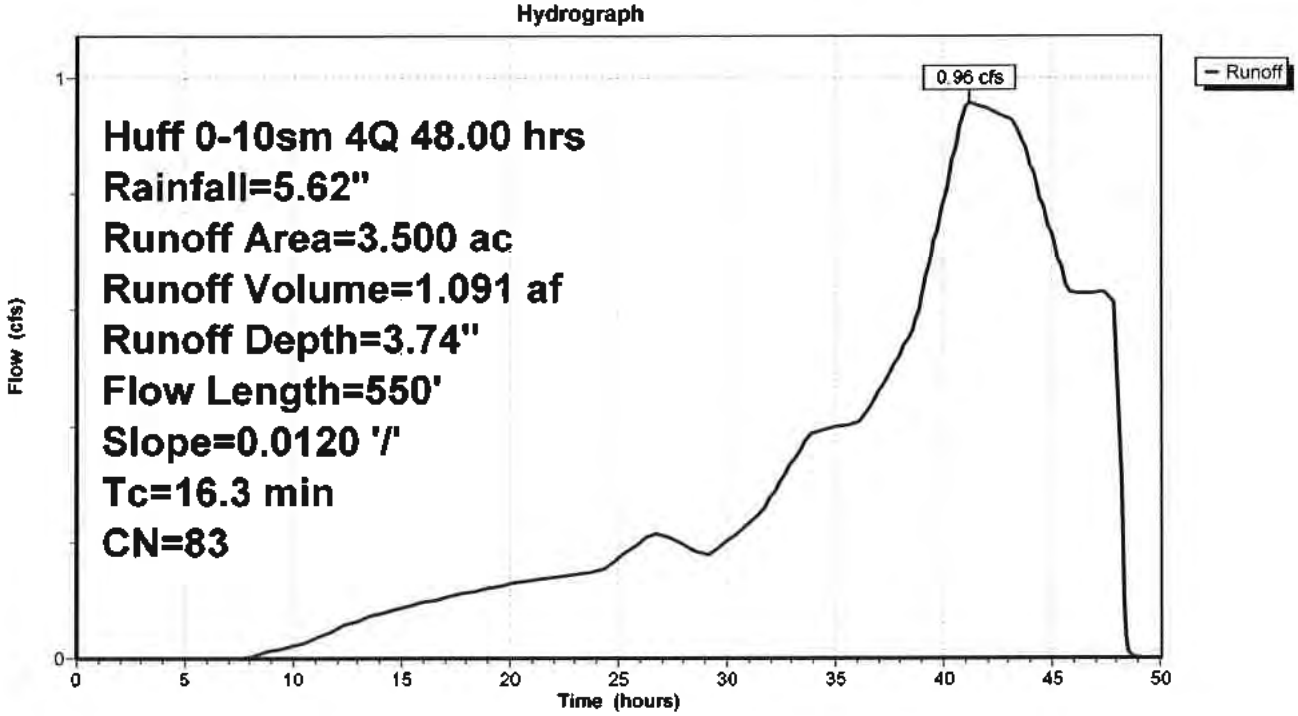
Runoff = 0.96 cfs @ 41.27 hrs, Volume= 1.091 af, Depth= 3.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.04 hrs, dt= 0.12 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=5.62"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

### Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.60 | 0.00 | 0.00 | 0.00 |
| 1.20 | 0.01 | 0.00 | 0.00 |
| 1.80 | 0.03 | 0.00 | 0.00 |
| 2.40 | 0.06 | 0.00 | 0.00 |
| 3.00 | 0.09 | 0.00 | 0.00 |
| 3.60 | 0.12 | 0.00 | 0.00 |
| 4.20 | 0.16 | 0.00 | 0.00 |
| 4.80 | 0.20 | 0.00 | 0.00 |
| 5.40 | 0.25 | 0.00 | 0.00 |
| 6.00 | 0.29 | 0.00 | 0.00 |
| 6.60 | 0.34 | 0.00 | 0.00 |
| 7.20 | 0.38 | 0.00 | 0.00 |
| 7.80 | 0.42 | 0.00 | 0.00 |
| 8.40 | 0.46 | 0.00 | 0.01 |
| 9.00 | 0.50 | 0.00 | 0.01 |
| 9.60 | 0.53 | 0.01 | 0.02 |
| 10.20 | 0.56 | 0.01 | 0.02 |
| 10.80 | 0.59 | 0.02 | 0.03 |
| 11.40 | 0.63 | 0.02 | 0.04 |
| 12.00 | 0.67 | 0.03 | 0.05 |
| 12.60 | 0.72 | 0.04 | 0.06 |
| 13.20 | 0.76 | 0.05 | 0.07 |
| 13.80 | 0.80 | 0.06 | 0.07 |
| 14.40 | 0.85 | 0.08 | 0.08 |
| 15.00 | 0.89 | 0.09 | 0.09 |
| 15.60 | 0.94 | 0.11 | 0.09 |
| 16.20 | 0.98 | 0.12 | 0.10 |
| 16.80 | 1.02 | 0.14 | 0.10 |
| 17.40 | 1.07 | 0.16 | 0.11 |
| 18.00 | 1.11 | 0.18 | 0.11 |
| 18.60 | 1.16 | 0.20 | 0.12 |
| 19.20 | 1.20 | 0.22 | 0.12 |
| 19.80 | 1.24 | 0.24 | 0.13 |
| 20.40 | 1.29 | 0.26 | 0.13 |
| 21.00 | 1.33 | 0.29 | 0.13 |
| 21.60 | 1.38 | 0.31 | 0.14 |
| 22.20 | 1.42 | 0.33 | 0.14 |
| 22.80 | 1.46 | 0.36 | 0.14 |
| 23.40 | 1.51 | 0.38 | 0.15 |
| 24.00 | 1.55 | 0.41 | 0.15 |
| 24.60 | 1.60 | 0.44 | 0.16 |
| 25.20 | 1.65 | 0.47 | 0.18 |
| 25.80 | 1.70 | 0.50 | 0.19 |
| 26.40 | 1.76 | 0.53 | 0.21 |
| 27.00 | 1.81 | 0.57 | 0.21 |
| 27.60 | 1.87 | 0.61 | 0.20 |
| 28.20 | 1.92 | 0.64 | 0.19 |
| 28.80 | 1.96 | 0.67 | 0.18 |
| 29.40 | 2.01 | 0.70 | 0.18 |
| 30.00 | 2.06 | 0.73 | 0.20 |
| 30.60 | 2.11 | 0.77 | 0.22 |
| 31.20 | 2.17 | 0.81 | 0.24 |
| 31.80 | 2.23 | 0.86 | 0.26 |
| 32.40 | 2.30 | 0.91 | 0.30 |
| 33.00 | 2.37 | 0.96 | 0.33 |
| 33.60 | 2.46 | 1.02 | 0.37 |
| 34.20 | 2.55 | 1.09 | 0.39 |
| 34.80 | 2.63 | 1.16 | 0.40 |
| 35.40 | 2.72 | 1.23 | 0.40 |
| 36.00 | 2.81 | 1.30 | 0.41 |
| 36.60 | 2.90 | 1.37 | 0.43 |
| 37.20 | 3.00 | 1.45 | 0.47 |
| 37.80 | 3.11 | 1.53 | 0.51 |
| 38.40 | 3.22 | 1.63 | 0.55 |
| 39.00 | 3.35 | 1.73 | 0.62 |
| 39.60 | 3.49 | 1.85 | 0.72 |
| 40.20 | 3.65 | 1.99 | 0.82 |
| 40.80 | 3.83 | 2.14 | **0.92** |
| 41.40 | 4.02 | 2.31 | **0.96** |
| 42.00 | 4.21 | 2.47 | 0.95 |
| 42.60 | 4.39 | 2.63 | 0.94 |
| 43.20 | 4.57 | 2.78 | 0.93 |
| 43.80 | 4.73 | 2.93 | 0.88 |
| 44.40 | 4.89 | 3.07 | 0.81 |
| 45.00 | 5.03 | 3.20 | 0.73 |
| 45.60 | 5.15 | 3.31 | 0.66 |
| 46.20 | 5.27 | 3.42 | 0.63 |
| 46.80 | 5.39 | 3.53 | 0.63 |
| 47.40 | 5.50 | 3.63 | 0.63 |
| 48.00 | **5.62** | **3.74** | 0.63 |
| 48.60 | 5.62 | 3.74 | 0.01 |
| 49.20 | 5.62 | 3.74 | 0.00 |
| 49.80 | 5.62 | 3.74 | 0.00 |

## Summary for Subcatchment 7S: South Property

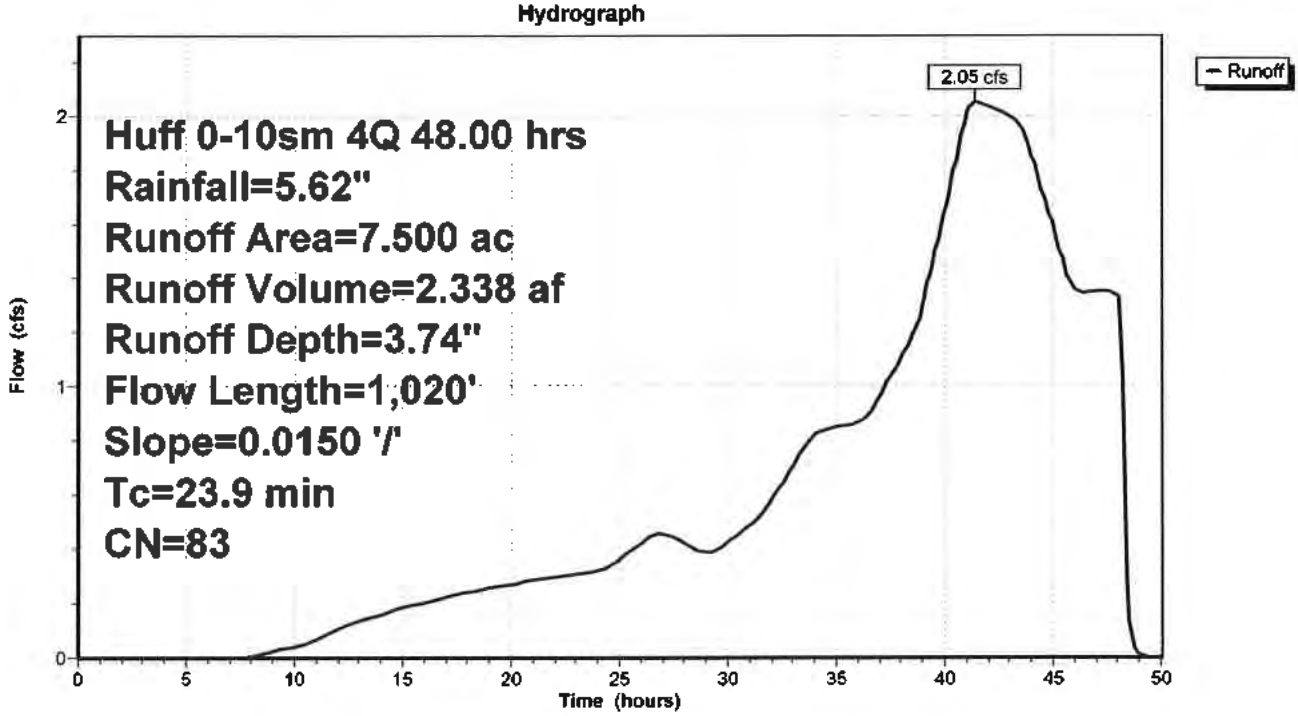
Runoff = 2.05 cfs @ 41.45 hrs, Volume= 2.338 af, Depth= 3.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.04 hrs, dt= 0.12 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=5.62"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 0.60 | 0.00 | 0.00 | 0.00 |
| 1.20 | 0.01 | 0.00 | 0.00 |
| 1.80 | 0.03 | 0.00 | 0.00 |
| 2.40 | 0.06 | 0.00 | 0.00 |
| 3.00 | 0.09 | 0.00 | 0.00 |
| 3.60 | 0.12 | 0.00 | 0.00 |
| 4.20 | 0.16 | 0.00 | 0.00 |
| 4.80 | 0.20 | 0.00 | 0.00 |
| 5.40 | 0.25 | 0.00 | 0.00 |
| 6.00 | 0.29 | 0.00 | 0.00 |
| 6.60 | 0.34 | 0.00 | 0.00 |
| 7.20 | 0.38 | 0.00 | 0.00 |
| 7.80 | 0.42 | 0.00 | 0.00 |
| 8.40 | 0.46 | 0.00 | 0.01 |
| 9.00 | 0.50 | 0.00 | 0.03 |
| 9.60 | 0.53 | 0.01 | 0.04 |
| 10.20 | 0.56 | 0.01 | 0.04 |
| 10.80 | 0.59 | 0.02 | 0.06 |
| 11.40 | 0.63 | 0.02 | 0.08 |
| 12.00 | 0.67 | 0.03 | 0.10 |
| 12.60 | 0.72 | 0.04 | 0.12 |
| 13.20 | 0.76 | 0.05 | 0.14 |
| 13.80 | 0.80 | 0.06 | 0.16 |
| 14.40 | 0.85 | 0.08 | 0.17 |
| 15.00 | 0.89 | 0.09 | 0.18 |
| 15.60 | 0.94 | 0.11 | 0.20 |
| 16.20 | 0.98 | 0.12 | 0.21 |
| 16.80 | 1.02 | 0.14 | 0.22 |
| 17.40 | 1.07 | 0.16 | 0.23 |
| 18.00 | 1.11 | 0.18 | 0.24 |
| 18.60 | 1.16 | 0.20 | 0.25 |
| 19.20 | 1.20 | 0.22 | 0.26 |
| 19.80 | 1.24 | 0.24 | 0.27 |
| 20.40 | 1.29 | 0.26 | 0.28 |
| 21.00 | 1.33 | 0.29 | 0.29 |
| 21.60 | 1.38 | 0.31 | 0.29 |
| 22.20 | 1.42 | 0.33 | 0.30 |
| 22.80 | 1.46 | 0.36 | 0.31 |
| 23.40 | 1.51 | 0.38 | 0.31 |
| 24.00 | 1.55 | 0.41 | 0.32 |
| 24.60 | 1.60 | 0.44 | 0.34 |
| 25.20 | 1.65 | 0.47 | 0.37 |
| 25.80 | 1.70 | 0.50 | 0.41 |
| 26.40 | 1.76 | 0.53 | 0.45 |
| 27.00 | 1.81 | 0.57 | 0.46 |
| 27.60 | 1.87 | 0.61 | 0.44 |
| 28.20 | 1.92 | 0.64 | 0.42 |
| 28.80 | 1.96 | 0.67 | 0.39 |
| 29.40 | 2.01 | 0.70 | 0.39 |
| 30.00 | 2.06 | 0.73 | 0.42 |
| 30.60 | 2.11 | 0.77 | 0.46 |
| 31.20 | 2.17 | 0.81 | 0.50 |
| 31.80 | 2.23 | 0.86 | 0.55 |
| 32.40 | 2.30 | 0.91 | 0.63 |
| 33.00 | 2.37 | 0.96 | 0.70 |
| 33.60 | 2.46 | 1.02 | 0.78 |
| 34.20 | 2.55 | 1.09 | 0.83 |
| 34.80 | 2.63 | 1.16 | 0.85 |
| 35.40 | 2.72 | 1.23 | 0.86 |
| 36.00 | 2.81 | 1.30 | 0.87 |
| 36.60 | 2.90 | 1.37 | 0.91 |
| 37.20 | 3.00 | 1.45 | 0.99 |
| 37.80 | 3.11 | 1.53 | 1.07 |
| 38.40 | 3.22 | 1.63 | 1.16 |
| 39.00 | 3.35 | 1.73 | 1.29 |
| 39.60 | 3.49 | 1.85 | 1.50 |
| 40.20 | 3.65 | 1.99 | 1.71 |
| 40.80 | 3.83 | 2.14 | 1.93 |
| 41.40 | 4.02 | 2.31 | **2.05** |
| 42.00 | 4.21 | 2.47 | 2.04 |
| 42.60 | 4.39 | 2.63 | 2.01 |
| 43.20 | 4.57 | 2.78 | 1.99 |
| 43.80 | 4.73 | 2.93 | 1.91 |
| 44.40 | 4.89 | 3.07 | 1.76 |
| 45.00 | 5.03 | 3.20 | 1.60 |
| 45.60 | 5.15 | 3.31 | 1.44 |
| 46.20 | 5.27 | 3.42 | 1.35 |
| 46.80 | 5.39 | 3.53 | 1.35 |
| 47.40 | 5.50 | 3.63 | 1.35 |
| 48.00 | **5.62** | **3.74** | 1.36 |
| 48.60 | 5.62 | 3.74 | 0.14 |
| 49.20 | 5.62 | 3.74 | 0.00 |
| 49.80 | 5.62 | 3.74 | 0.00 |

## Summary for Subcatchment 8S: Northwood Drive Bypass

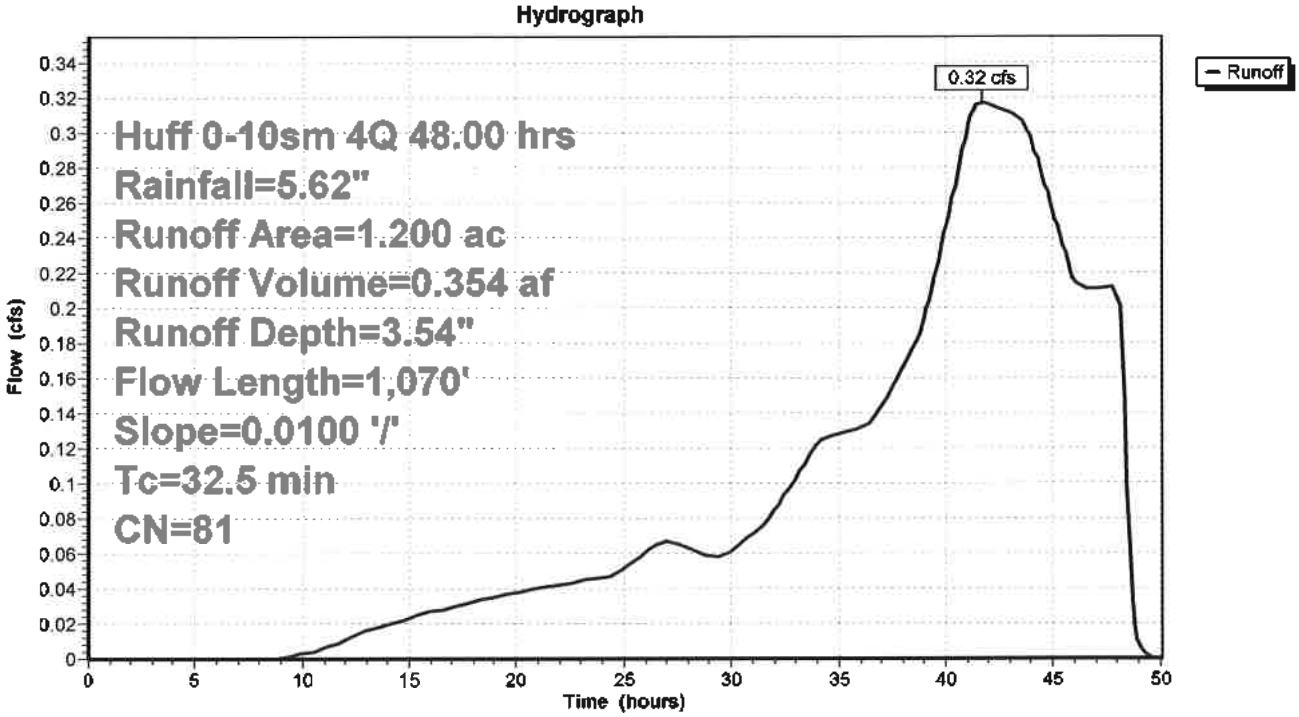
Runoff = 0.32 cfs @ 41.75 hrs, Volume= 0.354 af, Depth= 3.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.04 hrs, dt= 0.12 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=5.62"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 31.20 | 2.17 | 0.71 | 0.07 |
| 0.60 | 0.00 | 0.00 | 0.00 | 31.80 | 2.23 | 0.75 | 0.08 |
| 1.20 | 0.01 | 0.00 | 0.00 | 32.40 | 2.30 | 0.80 | 0.09 |
| 1.80 | 0.03 | 0.00 | 0.00 | 33.00 | 2.37 | 0.85 | 0.10 |
| 2.40 | 0.06 | 0.00 | 0.00 | 33.60 | 2.46 | 0.91 | 0.11 |
| 3.00 | 0.09 | 0.00 | 0.00 | 34.20 | 2.55 | 0.98 | 0.12 |
| 3.60 | 0.12 | 0.00 | 0.00 | 34.80 | 2.63 | 1.04 | 0.13 |
| 4.20 | 0.16 | 0.00 | 0.00 | 35.40 | 2.72 | 1.10 | 0.13 |
| 4.80 | 0.20 | 0.00 | 0.00 | 36.00 | 2.81 | 1.17 | 0.13 |
| 5.40 | 0.25 | 0.00 | 0.00 | 36.60 | 2.90 | 1.24 | 0.14 |
| 6.00 | 0.29 | 0.00 | 0.00 | 37.20 | 3.00 | 1.31 | 0.15 |
| 6.60 | 0.34 | 0.00 | 0.00 | 37.80 | 3.11 | 1.40 | 0.16 |
| 7.20 | 0.38 | 0.00 | 0.00 | 38.40 | 3.22 | 1.48 | 0.17 |
| 7.80 | 0.42 | 0.00 | 0.00 | 39.00 | 3.35 | 1.58 | 0.19 |
| 8.40 | 0.46 | 0.00 | 0.00 | 39.60 | 3.49 | 1.70 | 0.22 |
| 9.00 | 0.50 | 0.00 | 0.00 | 40.20 | 3.65 | 1.83 | 0.26 |
| 9.60 | 0.53 | 0.00 | 0.00 | 40.80 | 3.83 | 1.98 | 0.29 |
| 10.20 | 0.56 | 0.00 | 0.00 | 41.40 | 4.02 | 2.14 | **0.32** |
| 10.80 | 0.59 | 0.01 | 0.01 | 42.00 | 4.21 | 2.30 | **0.32** |
| 11.40 | 0.63 | 0.01 | 0.01 | 42.60 | 4.39 | 2.45 | 0.31 |
| 12.00 | 0.67 | 0.02 | 0.01 | 43.20 | 4.57 | 2.61 | 0.31 |
| 12.60 | 0.72 | 0.02 | 0.01 | 43.80 | 4.73 | 2.75 | 0.30 |
| 13.20 | 0.76 | 0.03 | 0.02 | 44.40 | 4.89 | 2.89 | 0.28 |
| 13.80 | 0.80 | 0.04 | 0.02 | 45.00 | 5.03 | 3.01 | 0.26 |
| 14.40 | 0.85 | 0.05 | 0.02 | 45.60 | 5.15 | 3.12 | 0.23 |
| 15.00 | 0.89 | 0.06 | 0.02 | 46.20 | 5.27 | 3.22 | 0.21 |
| 15.60 | 0.94 | 0.08 | 0.03 | 46.80 | 5.39 | 3.33 | 0.21 |
| 16.20 | 0.98 | 0.09 | 0.03 | 47.40 | 5.50 | 3.43 | 0.21 |
| 16.80 | 1.02 | 0.11 | 0.03 | 48.00 | **5.62** | **3.54** | 0.21 |
| 17.40 | 1.07 | 0.12 | 0.03 | 48.60 | 5.62 | 3.54 | 0.06 |
| 18.00 | 1.11 | 0.14 | 0.03 | 49.20 | 5.62 | 3.54 | 0.00 |
| 18.60 | 1.16 | 0.16 | 0.03 | 49.80 | 5.62 | 3.54 | 0.00 |
| 19.20 | 1.20 | 0.17 | 0.04 | | | | |
| 19.80 | 1.24 | 0.19 | 0.04 | | | | |
| 20.40 | 1.29 | 0.21 | 0.04 | | | | |
| 21.00 | 1.33 | 0.23 | 0.04 | | | | |
| 21.60 | 1.38 | 0.25 | 0.04 | | | | |
| 22.20 | 1.42 | 0.27 | 0.04 | | | | |
| 22.80 | 1.46 | 0.30 | 0.04 | | | | |
| 23.40 | 1.51 | 0.32 | 0.05 | | | | |
| 24.00 | 1.55 | 0.34 | 0.05 | | | | |
| 24.60 | 1.60 | 0.37 | 0.05 | | | | |
| 25.20 | 1.65 | 0.39 | 0.05 | | | | |
| 25.80 | 1.70 | 0.42 | 0.06 | | | | |
| 26.40 | 1.76 | 0.46 | 0.06 | | | | |
| 27.00 | 1.81 | 0.49 | 0.07 | | | | |
| 27.60 | 1.87 | 0.52 | 0.07 | | | | |
| 28.20 | 1.92 | 0.55 | 0.06 | | | | |
| 28.80 | 1.96 | 0.58 | 0.06 | | | | |
| 29.40 | 2.01 | 0.61 | 0.06 | | | | |
| 30.00 | 2.06 | 0.64 | 0.06 | | | | |
| 30.60 | 2.11 | 0.67 | 0.07 | | | | |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

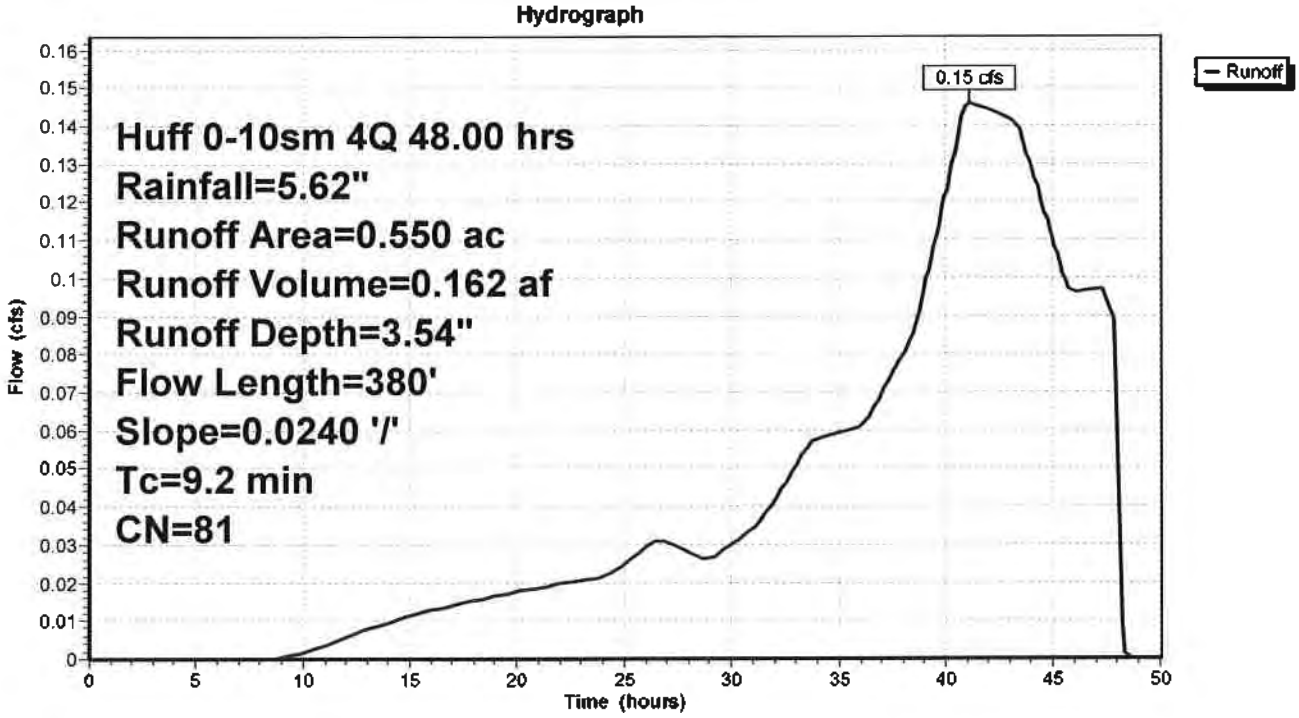
Runoff = 0.15 cfs @ 41.10 hrs, Volume= 0.162 af, Depth= 3.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-50.04 hrs, dt= 0.12 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=5.62"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 31.20 | 2.17 | 0.71 | 0.04 |
| 0.60 | 0.00 | 0.00 | 0.00 | 31.80 | 2.23 | 0.75 | 0.04 |
| 1.20 | 0.01 | 0.00 | 0.00 | 32.40 | 2.30 | 0.80 | 0.05 |
| 1.80 | 0.03 | 0.00 | 0.00 | 33.00 | 2.37 | 0.85 | 0.05 |
| 2.40 | 0.06 | 0.00 | 0.00 | 33.60 | 2.46 | 0.91 | 0.06 |
| 3.00 | 0.09 | 0.00 | 0.00 | 34.20 | 2.55 | 0.98 | 0.06 |
| 3.60 | 0.12 | 0.00 | 0.00 | 34.80 | 2.63 | 1.04 | 0.06 |
| 4.20 | 0.16 | 0.00 | 0.00 | 35.40 | 2.72 | 1.10 | 0.06 |
| 4.80 | 0.20 | 0.00 | 0.00 | 36.00 | 2.81 | 1.17 | 0.06 |
| 5.40 | 0.25 | 0.00 | 0.00 | 36.60 | 2.90 | 1.24 | 0.07 |
| 6.00 | 0.29 | 0.00 | 0.00 | 37.20 | 3.00 | 1.31 | 0.07 |
| 6.60 | 0.34 | 0.00 | 0.00 | 37.80 | 3.11 | 1.40 | 0.08 |
| 7.20 | 0.38 | 0.00 | 0.00 | 38.40 | 3.22 | 1.48 | 0.08 |
| 7.80 | 0.42 | 0.00 | 0.00 | 39.00 | 3.35 | 1.58 | 0.10 |
| 8.40 | 0.46 | 0.00 | 0.00 | 39.60 | 3.49 | 1.70 | 0.11 |
| 9.00 | 0.50 | 0.00 | 0.00 | 40.20 | 3.65 | 1.83 | 0.13 |
| 9.60 | 0.53 | 0.00 | 0.00 | 40.80 | 3.83 | 1.98 | **0.14** |
| 10.20 | 0.56 | 0.00 | 0.00 | 41.40 | 4.02 | 2.14 | **0.15** |
| 10.80 | 0.59 | 0.01 | 0.00 | 42.00 | 4.21 | 2.30 | 0.14 |
| 11.40 | 0.63 | 0.01 | 0.00 | 42.60 | 4.39 | 2.45 | 0.14 |
| 12.00 | 0.67 | 0.02 | 0.01 | 43.20 | 4.57 | 2.61 | 0.14 |
| 12.60 | 0.72 | 0.02 | 0.01 | 43.80 | 4.73 | 2.75 | 0.13 |
| 13.20 | 0.76 | 0.03 | 0.01 | 44.40 | 4.89 | 2.89 | 0.12 |
| 13.80 | 0.80 | 0.04 | 0.01 | 45.00 | 5.03 | 3.01 | 0.11 |
| 14.40 | 0.85 | 0.05 | 0.01 | 45.60 | 5.15 | 3.12 | 0.10 |
| 15.00 | 0.89 | 0.06 | 0.01 | 46.20 | 5.27 | 3.22 | 0.10 |
| 15.60 | 0.94 | 0.08 | 0.01 | 46.80 | 5.39 | 3.33 | 0.10 |
| 16.20 | 0.98 | 0.09 | 0.01 | 47.40 | 5.50 | 3.43 | 0.10 |
| 16.80 | 1.02 | 0.11 | 0.01 | 48.00 | **5.62** | **3.54** | 0.10 |
| 17.40 | 1.07 | 0.12 | 0.01 | 48.60 | 5.62 | 3.54 | 0.00 |
| 18.00 | 1.11 | 0.14 | 0.02 | 49.20 | 5.62 | 3.54 | 0.00 |
| 18.60 | 1.16 | 0.16 | 0.02 | 49.80 | 5.62 | 3.54 | 0.00 |
| 19.20 | 1.20 | 0.17 | 0.02 | | | | |
| 19.80 | 1.24 | 0.19 | 0.02 | | | | |
| 20.40 | 1.29 | 0.21 | 0.02 | | | | |
| 21.00 | 1.33 | 0.23 | 0.02 | | | | |
| 21.60 | 1.38 | 0.25 | 0.02 | | | | |
| 22.20 | 1.42 | 0.27 | 0.02 | | | | |
| 22.80 | 1.46 | 0.30 | 0.02 | | | | |
| 23.40 | 1.51 | 0.32 | 0.02 | | | | |
| 24.00 | 1.55 | 0.34 | 0.02 | | | | |
| 24.60 | 1.60 | 0.37 | 0.02 | | | | |
| 25.20 | 1.65 | 0.39 | 0.03 | | | | |
| 25.80 | 1.70 | 0.42 | 0.03 | | | | |
| 26.40 | 1.76 | 0.46 | 0.03 | | | | |
| 27.00 | 1.81 | 0.49 | 0.03 | | | | |
| 27.60 | 1.87 | 0.52 | 0.03 | | | | |
| 28.20 | 1.92 | 0.55 | 0.03 | | | | |
| 28.80 | 1.96 | 0.58 | 0.03 | | | | |
| 29.40 | 2.01 | 0.61 | 0.03 | | | | |
| 30.00 | 2.06 | 0.64 | 0.03 | | | | |
| 30.60 | 2.11 | 0.67 | 0.03 | | | | |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 2.31 cfs @ | 41.45 hrs, | Volume= | 2.833 af |
| Outflow | = | 0.92 cfs @ | 48.37 hrs, | Volume= | 1.548 af, Atten= 60%, Lag= 414.7 min |
| Primary | = | 0.92 cfs @ | 48.37 hrs, | Volume= | 1.548 af |
| Secondary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-50.04 hrs, dt= 0.12 hrs
Peak Elev= 673.18' @ 48.37 hrs Surf.Area= 31,078 sf Storage= 61,078 cf

Plug-Flow detention time= 362.3 min calculated for 1.545 af (55% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.40' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

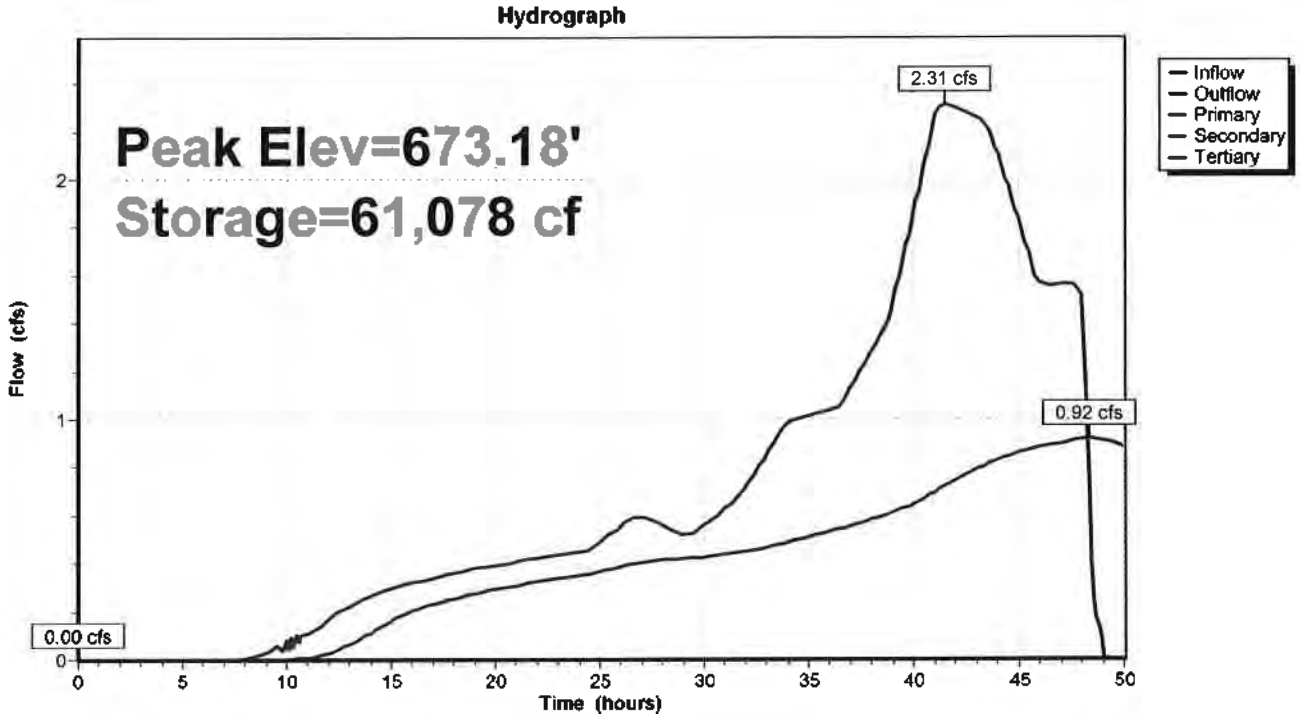
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=0.92 cfs @ 48.37 hrs HW=673.18' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.92 cfs @ 8.33 fps)

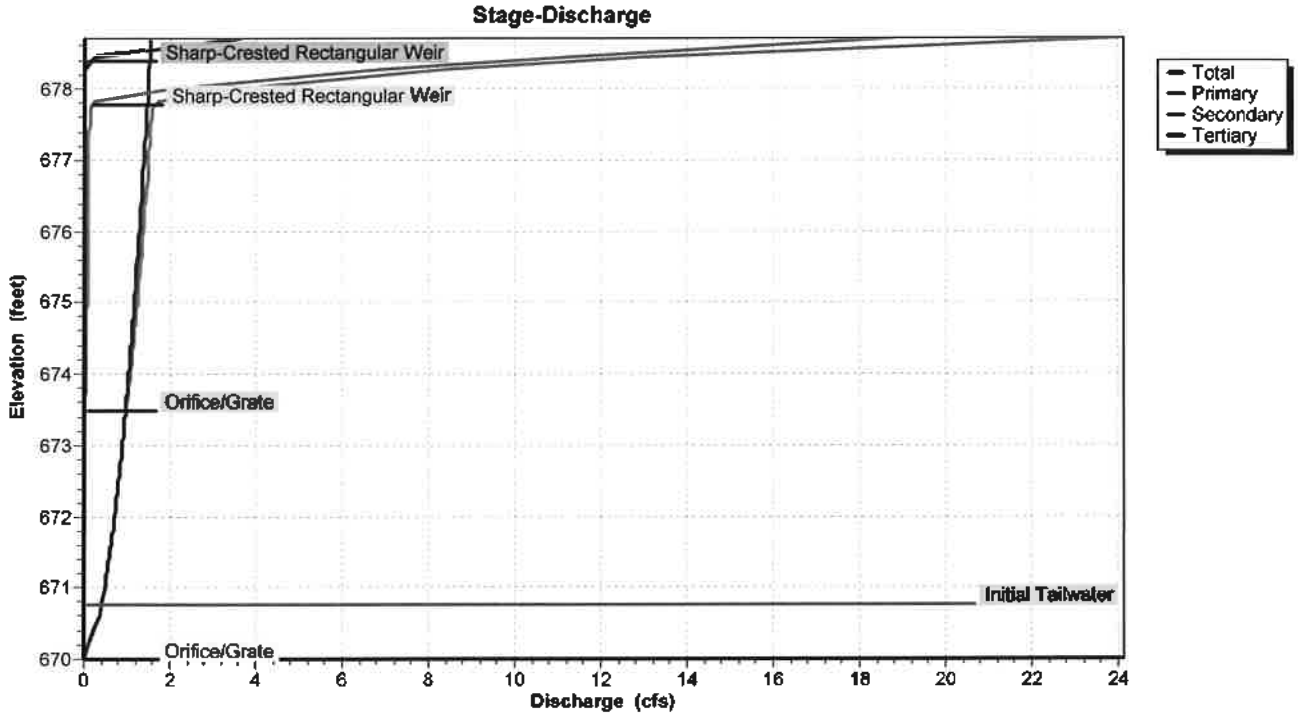
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

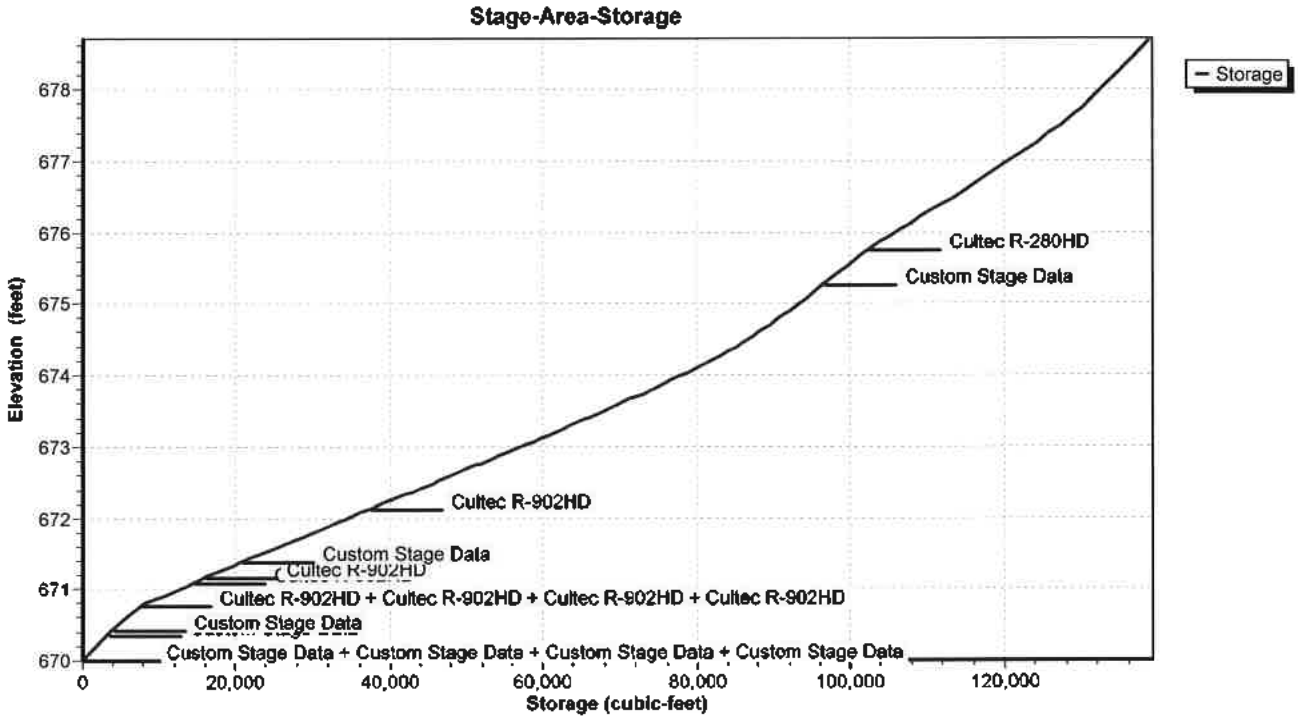
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 1.20 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.40 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.60 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.80 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7.20 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8.40 | 0.01 | 9 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9.60 | 0.04 | 143 | 670.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10.80 | 0.09 | 437 | 670.05 | 0.01 | 0.01 | 0.00 | 0.00 |
| 12.00 | 0.17 | 926 | 670.10 | 0.03 | 0.03 | 0.00 | 0.00 |
| 13.20 | 0.23 | 1,584 | 670.18 | 0.07 | 0.07 | 0.00 | 0.00 |
| 14.40 | 0.28 | 2,240 | 670.25 | 0.13 | 0.13 | 0.00 | 0.00 |
| 15.60 | 0.31 | 2,820 | 670.32 | 0.19 | 0.19 | 0.00 | 0.00 |
| 16.80 | 0.34 | 3,311 | 670.37 | 0.23 | 0.23 | 0.00 | 0.00 |
| 18.00 | 0.36 | 3,775 | 670.42 | 0.25 | 0.25 | 0.00 | 0.00 |
| 19.20 | 0.38 | 4,222 | 670.46 | 0.28 | 0.28 | 0.00 | 0.00 |
| 20.40 | 0.40 | 4,660 | 670.50 | 0.30 | 0.30 | 0.00 | 0.00 |
| 21.60 | 0.42 | 5,089 | 670.55 | 0.32 | 0.32 | 0.00 | 0.00 |
| 22.80 | 0.43 | 5,510 | 670.59 | 0.34 | 0.34 | 0.00 | 0.00 |
| 24.00 | 0.45 | 5,921 | 670.63 | 0.35 | 0.35 | 0.00 | 0.00 |
| 25.20 | 0.50 | 6,380 | 670.67 | 0.37 | 0.37 | 0.00 | 0.00 |
| 26.40 | 0.58 | 7,059 | 670.74 | 0.40 | 0.40 | 0.00 | 0.00 |
| 27.60 | 0.57 | 7,867 | 670.78 | 0.41 | 0.41 | 0.00 | 0.00 |
| 28.80 | 0.52 | 8,452 | 670.81 | 0.42 | 0.42 | 0.00 | 0.00 |
| 30.00 | 0.56 | 8,896 | 670.83 | 0.43 | 0.43 | 0.00 | 0.00 |
| 31.20 | 0.64 | 9,604 | 670.87 | 0.44 | 0.44 | 0.00 | 0.00 |
| 32.40 | 0.78 | 10,684 | 670.92 | 0.45 | 0.45 | 0.00 | 0.00 |
| 33.60 | 0.94 | 12,355 | 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 34.80 | 1.01 | 14,501 | 671.10 | 0.51 | 0.51 | 0.00 | 0.00 |
| 36.00 | 1.04 | 16,671 | 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 37.20 | 1.17 | 18,973 | 671.31 | 0.56 | 0.56 | 0.00 | 0.00 |
| 38.40 | 1.35 | 21,884 | 671.44 | 0.59 | 0.59 | 0.00 | 0.00 |
| 39.60 | 1.72 | 25,705 | 671.61 | 0.63 | 0.63 | 0.00 | 0.00 |
| 40.80 | **2.19** | 31,204 | 671.85 | 0.69 | 0.69 | 0.00 | 0.00 |
| 42.00 | **2.30** | 37,994 | 672.15 | 0.75 | 0.75 | 0.00 | 0.00 |
| 43.20 | 2.25 | 44,515 | 672.44 | 0.80 | 0.80 | 0.00 | 0.00 |
| 44.40 | 2.00 | 50,328 | 672.70 | 0.84 | 0.84 | 0.00 | 0.00 |
| 45.60 | 1.66 | 54,606 | 672.89 | 0.87 | 0.87 | 0.00 | 0.00 |
| 46.80 | 1.56 | 57,613 | 673.02 | 0.90 | 0.90 | 0.00 | 0.00 |
| 48.00 | 1.56 | **60,452** | **673.15** | **0.92** | **0.92** | 0.00 | 0.00 |
| 49.20 | 0.00 | **59,074** | **673.09** | **0.91** | **0.91** | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 18.46 | 1.54 | 15.13 | 1.79 |
| 678.80 | **28.12** | **1.56** | **21.42** | **5.14** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 1.27 cfs @ | 41.43 hrs, | Volume= | 1.445 af |
| Outflow | = | 1.22 cfs @ | 43.51 hrs, | Volume= | 1.444 af, Atten= 4%, Lag= 124.7 min |
| Primary | = | 1.10 cfs @ | 43.51 hrs, | Volume= | 1.110 af |
| Secondary | = | 0.12 cfs @ | 43.51 hrs, | Volume= | 0.334 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-50.04 hrs, dt= 0.12 hrs
Peak Elev= 677.76' @ 43.51 hrs Surf.Area= 2,912 sf Storage= 2,503 cf

Plug-Flow detention time= 21.7 min calculated for 1.444 af (100% of inflow)
Center-of-Mass det. time= 21.3 min ( 2,262.8 - 2,241.5 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

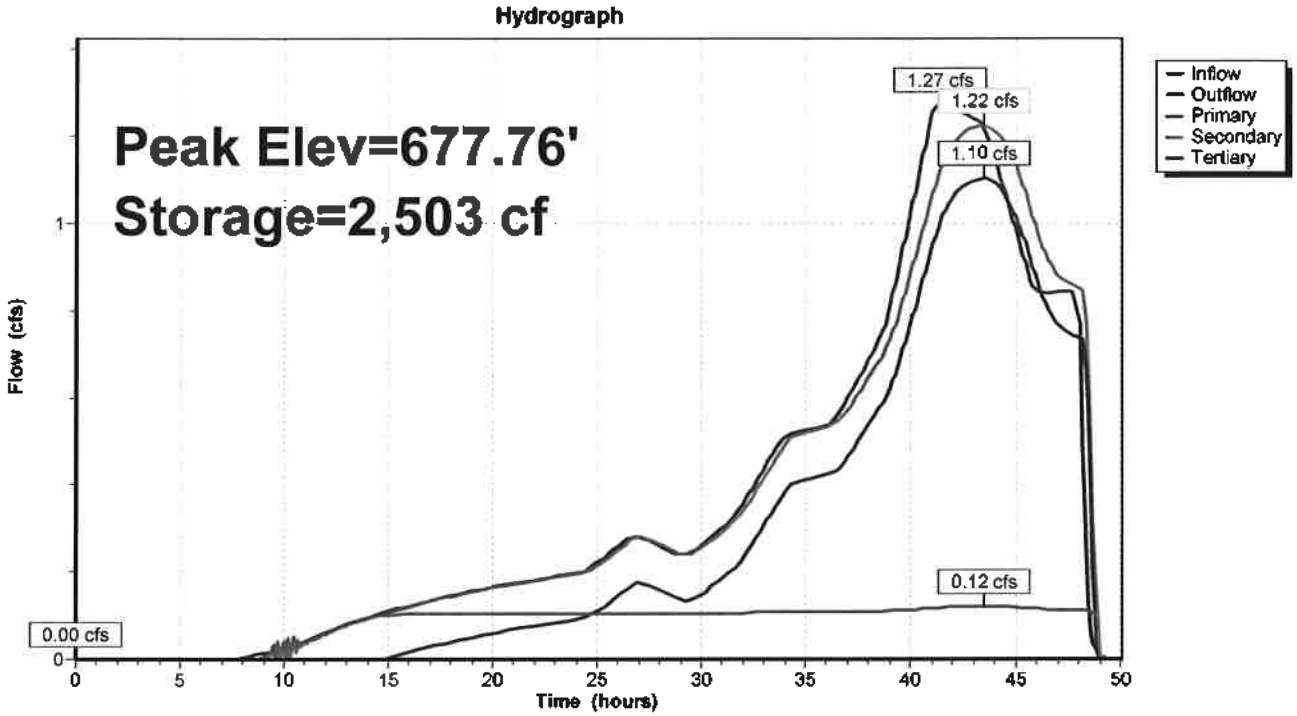
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=1.10 cfs @ 43.51 hrs HW=677.76' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.10 cfs @ 4.79 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

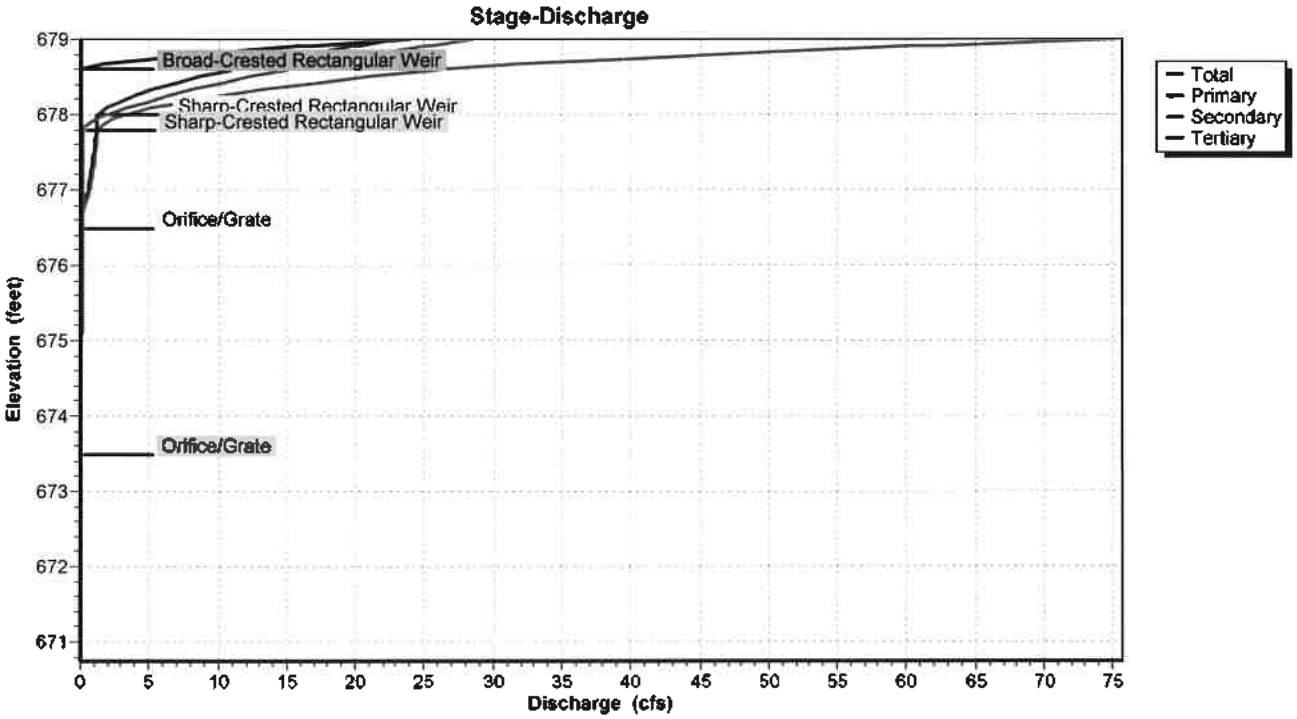
**Secondary OutFlow** Max=0.12 cfs @ 43.51 hrs HW=677.76' TW=672.51' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.12 cfs @ 9.86 fps)
└─**5=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

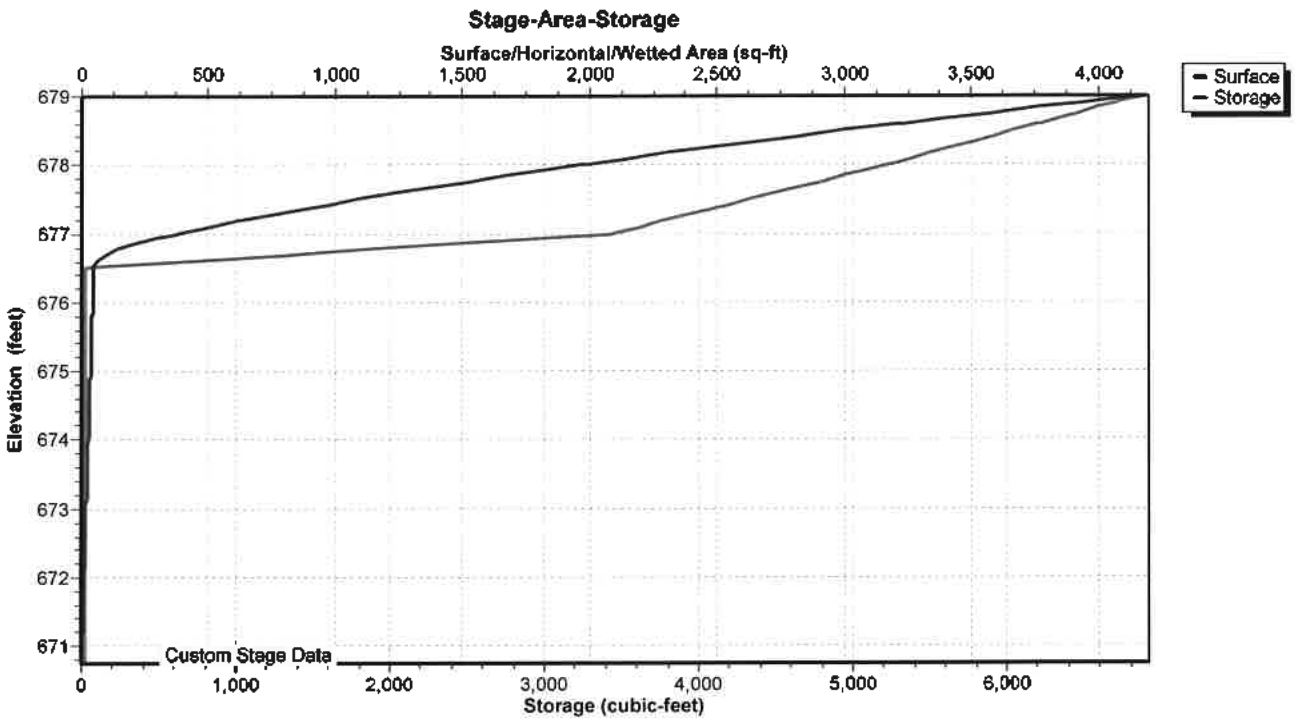
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 1.20 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2.40 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3.60 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.80 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7.20 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8.40 | 0.01 | 7 | 671.22 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9.60 | 0.02 | 37 | 673.41 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10.80 | 0.04 | 42 | 673.78 | 0.03 | 0.00 | 0.03 | 0.00 |
| 12.00 | 0.06 | 53 | 674.53 | 0.06 | 0.00 | 0.06 | 0.00 |
| 13.20 | 0.08 | 66 | 675.43 | 0.08 | 0.00 | 0.08 | 0.00 |
| 14.40 | 0.10 | 78 | 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 15.60 | 0.12 | 93 | 676.56 | 0.12 | 0.01 | 0.10 | 0.00 |
| 16.80 | 0.13 | 102 | 676.59 | 0.13 | 0.03 | 0.10 | 0.00 |
| 18.00 | 0.15 | 109 | 676.61 | 0.14 | 0.04 | 0.10 | 0.00 |
| 19.20 | 0.16 | 120 | 676.63 | 0.16 | 0.05 | 0.10 | 0.00 |
| 20.40 | 0.17 | 129 | 676.64 | 0.17 | 0.06 | 0.10 | 0.00 |
| 21.60 | 0.18 | 136 | 676.66 | 0.18 | 0.07 | 0.10 | 0.00 |
| 22.80 | 0.19 | 143 | 676.67 | 0.19 | 0.08 | 0.10 | 0.00 |
| 24.00 | 0.20 | 148 | 676.67 | 0.20 | 0.09 | 0.10 | 0.00 |
| 25.20 | 0.23 | 167 | 676.70 | 0.22 | 0.12 | 0.10 | 0.00 |
| 26.40 | 0.28 | 204 | 676.74 | 0.27 | 0.16 | 0.11 | 0.00 |
| 27.60 | 0.27 | 209 | 676.74 | 0.27 | 0.17 | 0.11 | 0.00 |
| 28.80 | 0.24 | 186 | 676.72 | 0.24 | 0.14 | 0.10 | 0.00 |
| 30.00 | 0.26 | 195 | 676.73 | 0.26 | 0.15 | 0.11 | 0.00 |
| 31.20 | 0.31 | 231 | 676.76 | 0.30 | 0.20 | 0.11 | 0.00 |
| 32.40 | 0.39 | 293 | 676.81 | 0.37 | 0.26 | 0.11 | 0.00 |
| 33.60 | 0.49 | 380 | 676.88 | 0.46 | 0.36 | 0.11 | 0.00 |
| 34.80 | 0.52 | 440 | 676.91 | 0.52 | 0.41 | 0.11 | 0.00 |
| 36.00 | 0.54 | 456 | 676.92 | 0.53 | 0.42 | 0.11 | 0.00 |
| 37.20 | 0.62 | 522 | 676.96 | 0.59 | 0.48 | 0.11 | 0.00 |
| 38.40 | 0.72 | 671 | 677.03 | 0.68 | 0.57 | 0.11 | 0.00 |
| 39.60 | 0.94 | 1,000 | 677.18 | 0.82 | 0.71 | 0.11 | 0.00 |
| 40.80 | **1.21** | 1,638 | 677.44 | 1.03 | 0.91 | 0.12 | 0.00 |
| 42.00 | **1.26** | 2,288 | 677.68 | 1.18 | 1.06 | 0.12 | 0.00 |
| 43.20 | 1.24 | **2,493** | **677.76** | **1.22** | **1.10** | **0.12** | 0.00 |
| 44.40 | 1.09 | **2,340** | **677.70** | **1.19** | **1.07** | **0.12** | 0.00 |
| 45.60 | 0.89 | 1,740 | 677.48 | 1.05 | 0.94 | 0.12 | 0.00 |
| 46.80 | 0.84 | 1,205 | 677.27 | 0.90 | 0.78 | 0.11 | 0.00 |
| 48.00 | 0.84 | 1,082 | 677.22 | 0.85 | 0.74 | 0.11 | 0.00 |
| 49.20 | 0.00 | 37 | 673.39 | 0.00 | 0.00 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 23.56 | 9.86 | 13.70 | 0.00 |
| 678.75 | 40.37 | 15.13 | 19.77 | 5.47 |
| 678.95 | **67.61** | **21.27** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

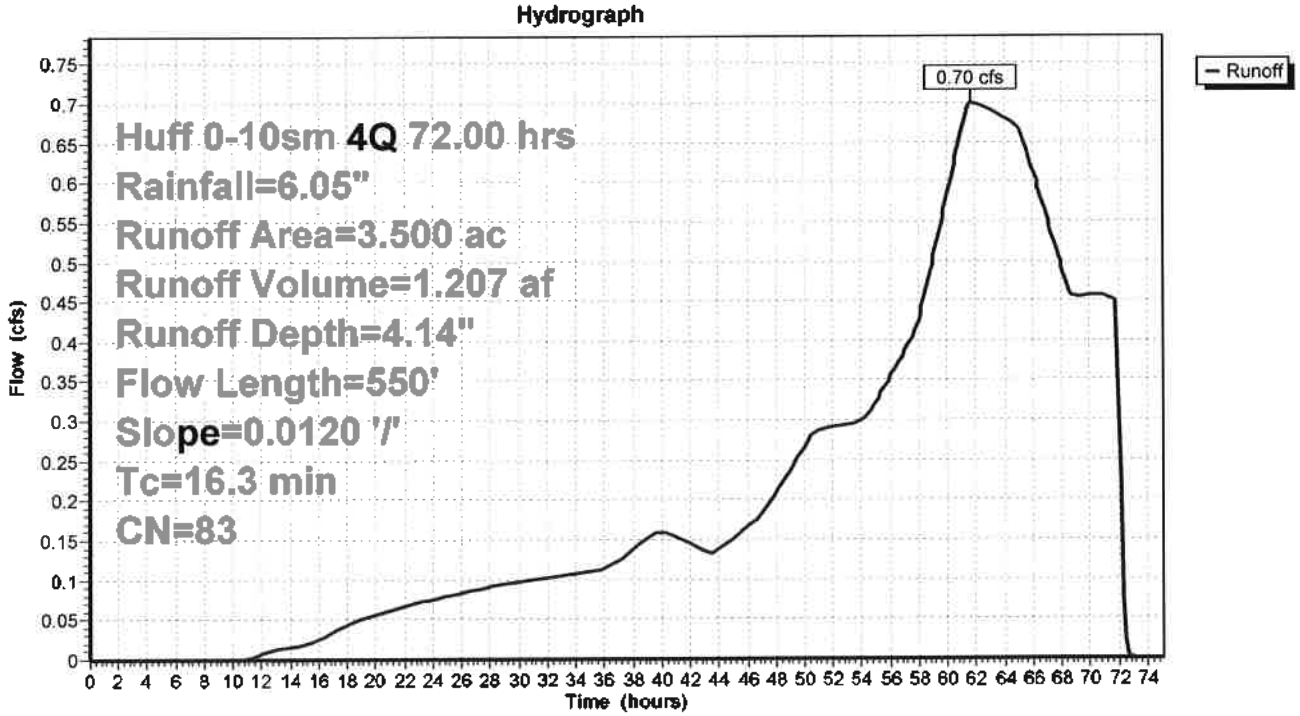
Runoff = 0.70 cfs @ 61.66 hrs, Volume= 1.207 af, Depth= 4.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.12 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=6.05"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

## Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 1.20 | 0.01 | 0.00 | 0.00 |
| 2.40 | 0.03 | 0.00 | 0.00 |
| 3.60 | 0.06 | 0.00 | 0.00 |
| 4.80 | 0.11 | 0.00 | 0.00 |
| 6.00 | 0.16 | 0.00 | 0.00 |
| 7.20 | 0.22 | 0.00 | 0.00 |
| 8.40 | 0.28 | 0.00 | 0.00 |
| 9.60 | 0.35 | 0.00 | 0.00 |
| 10.80 | 0.41 | 0.00 | 0.00 |
| 12.00 | 0.47 | 0.00 | 0.01 |
| 13.20 | 0.52 | 0.01 | 0.01 |
| 14.40 | 0.57 | 0.01 | 0.02 |
| 15.60 | 0.61 | 0.02 | 0.02 |
| 16.80 | 0.67 | 0.03 | 0.03 |
| 18.00 | 0.72 | 0.04 | 0.04 |
| 19.20 | 0.79 | 0.06 | 0.05 |
| 20.40 | 0.85 | 0.08 | 0.06 |
| 21.60 | 0.91 | 0.10 | 0.06 |
| 22.80 | 0.98 | 0.12 | 0.07 |
| 24.00 | 1.04 | 0.15 | 0.08 |
| 25.20 | 1.10 | 0.18 | 0.08 |
| 26.40 | 1.17 | 0.20 | 0.09 |
| 27.60 | 1.23 | 0.23 | 0.09 |
| 28.80 | 1.29 | 0.27 | 0.09 |
| 30.00 | 1.35 | 0.30 | 0.10 |
| 31.20 | 1.42 | 0.33 | 0.10 |
| 32.40 | 1.48 | 0.37 | 0.10 |
| 33.60 | 1.54 | 0.40 | 0.11 |
| 34.80 | 1.61 | 0.44 | 0.11 |
| 36.00 | 1.67 | 0.48 | 0.11 |
| 37.20 | 1.74 | 0.52 | 0.13 |
| 38.40 | 1.81 | 0.57 | 0.14 |
| 39.60 | 1.89 | 0.62 | 0.16 |
| 40.80 | 1.97 | 0.68 | 0.16 |
| 42.00 | 2.04 | 0.73 | 0.14 |
| 43.20 | 2.11 | 0.77 | 0.13 |
| 44.40 | 2.18 | 0.82 | 0.14 |
| 45.60 | 2.25 | 0.87 | 0.16 |
| 46.80 | 2.33 | 0.93 | 0.18 |
| 48.00 | 2.42 | 1.00 | 0.21 |
| 49.20 | 2.53 | 1.08 | 0.24 |
| 50.40 | 2.65 | 1.17 | 0.28 |
| 51.60 | 2.77 | 1.27 | 0.29 |
| 52.80 | 2.90 | 1.37 | 0.29 |
| 54.00 | 3.03 | 1.47 | 0.30 |
| 55.20 | 3.16 | 1.57 | 0.33 |
| 56.40 | 3.31 | 1.70 | 0.37 |
| 57.60 | 3.47 | 1.83 | 0.41 |
| 58.80 | 3.65 | 1.99 | 0.49 |
| 60.00 | 3.87 | 2.18 | 0.58 |
| 61.20 | 4.13 | 2.40 | **0.68** |
| 62.40 | 4.40 | 2.63 | **0.69** |
| 63.60 | 4.66 | 2.87 | 0.68 |
| 64.80 | 4.92 | 3.10 | 0.67 |
| 66.00 | 5.15 | 3.31 | 0.61 |
| 67.20 | 5.36 | 3.51 | 0.54 |
| 68.40 | 5.55 | 3.67 | 0.47 |
| 69.60 | 5.71 | 3.83 | 0.46 |
| 70.80 | 5.88 | 3.98 | 0.46 |
| 72.00 | **6.05** | **4.14** | 0.46 |
| 73.20 | 6.05 | 4.14 | 0.00 |
| 74.40 | 6.05 | 4.14 | 0.00 |

## Summary for Subcatchment 7S: South Property

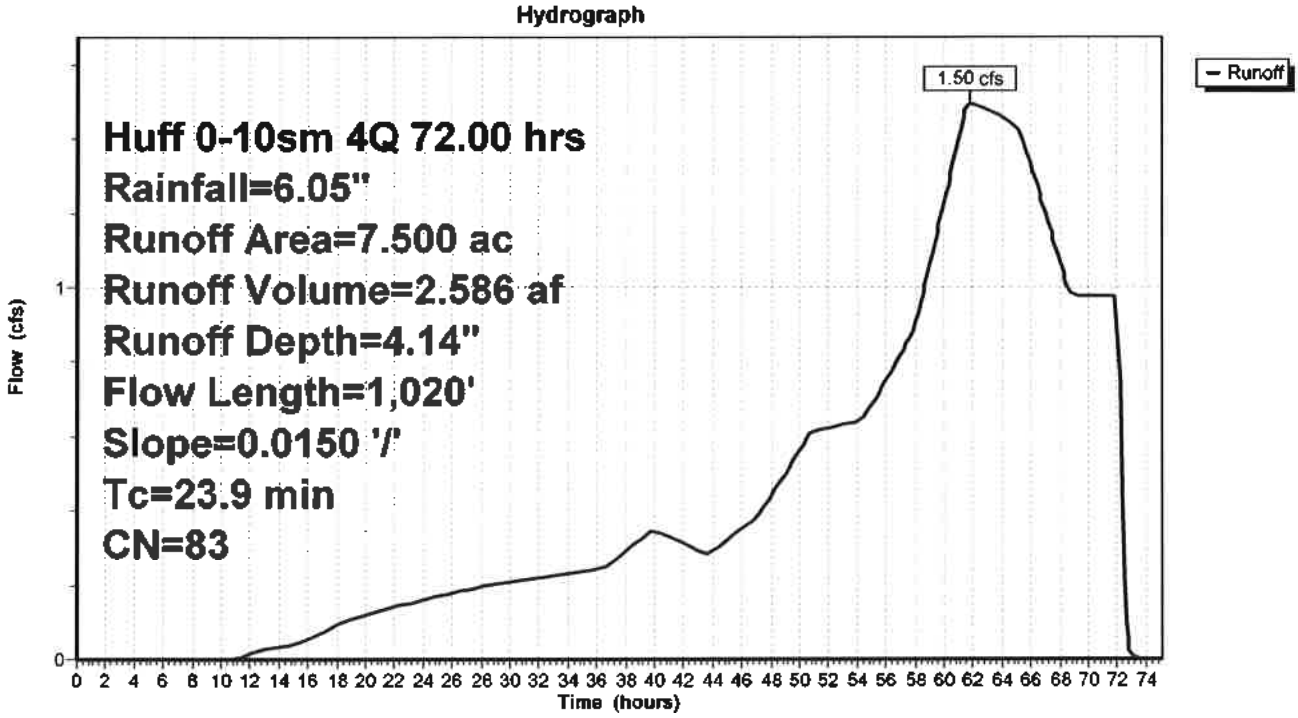
Runoff = 1.50 cfs @ 61.84 hrs, Volume= 2.586 af, Depth= 4.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.12 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=6.05"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 1.20 | 0.01 | 0.00 | 0.00 |
| 2.40 | 0.03 | 0.00 | 0.00 |
| 3.60 | 0.06 | 0.00 | 0.00 |
| 4.80 | 0.11 | 0.00 | 0.00 |
| 6.00 | 0.16 | 0.00 | 0.00 |
| 7.20 | 0.22 | 0.00 | 0.00 |
| 8.40 | 0.28 | 0.00 | 0.00 |
| 9.60 | 0.35 | 0.00 | 0.00 |
| 10.80 | 0.41 | 0.00 | 0.00 |
| 12.00 | 0.47 | 0.00 | 0.01 |
| 13.20 | 0.52 | 0.01 | 0.03 |
| 14.40 | 0.57 | 0.01 | 0.04 |
| 15.60 | 0.61 | 0.02 | 0.05 |
| 16.80 | 0.67 | 0.03 | 0.07 |
| 18.00 | 0.72 | 0.04 | 0.09 |
| 19.20 | 0.79 | 0.06 | 0.11 |
| 20.40 | 0.85 | 0.08 | 0.12 |
| 21.60 | 0.91 | 0.10 | 0.14 |
| 22.80 | 0.98 | 0.12 | 0.15 |
| 24.00 | 1.04 | 0.15 | 0.16 |
| 25.20 | 1.10 | 0.18 | 0.17 |
| 26.40 | 1.17 | 0.20 | 0.18 |
| 27.60 | 1.23 | 0.23 | 0.19 |
| 28.80 | 1.29 | 0.27 | 0.20 |
| 30.00 | 1.35 | 0.30 | 0.21 |
| 31.20 | 1.42 | 0.33 | 0.22 |
| 32.40 | 1.48 | 0.37 | 0.22 |
| 33.60 | 1.54 | 0.40 | 0.23 |
| 34.80 | 1.61 | 0.44 | 0.24 |
| 36.00 | 1.67 | 0.48 | 0.24 |
| 37.20 | 1.74 | 0.52 | 0.27 |
| 38.40 | 1.81 | 0.57 | 0.30 |
| 39.60 | 1.89 | 0.62 | 0.34 |
| 40.80 | 1.97 | 0.68 | 0.34 |
| 42.00 | 2.04 | 0.73 | 0.31 |
| 43.20 | 2.11 | 0.77 | 0.29 |
| 44.40 | 2.18 | 0.82 | 0.30 |
| 45.60 | 2.25 | 0.87 | 0.34 |
| 46.80 | 2.33 | 0.93 | 0.38 |
| 48.00 | 2.42 | 1.00 | 0.44 |
| 49.20 | 2.53 | 1.08 | 0.51 |
| 50.40 | 2.65 | 1.17 | 0.59 |
| 51.60 | 2.77 | 1.27 | 0.62 |
| 52.80 | 2.90 | 1.37 | 0.63 |
| 54.00 | 3.03 | 1.47 | 0.64 |
| 55.20 | 3.16 | 1.57 | 0.70 |
| 56.40 | 3.31 | 1.70 | 0.78 |
| 57.60 | 3.47 | 1.83 | 0.86 |
| 58.80 | 3.65 | 1.99 | 1.03 |
| 60.00 | 3.87 | 2.18 | 1.23 |
| 61.20 | 4.13 | 2.40 | **1.44** |
| 62.40 | 4.40 | 2.63 | **1.49** |
| 63.60 | 4.66 | 2.87 | 1.47 |
| 64.80 | 4.92 | 3.10 | 1.44 |
| 66.00 | 5.15 | 3.31 | 1.33 |
| 67.20 | 5.36 | 3.51 | 1.18 |
| 68.40 | 5.55 | 3.67 | 1.02 |
| 69.60 | 5.71 | 3.83 | 0.98 |
| 70.80 | 5.88 | 3.98 | 0.98 |
| 72.00 | **6.05** | **4.14** | 0.98 |
| 73.20 | 6.05 | 4.14 | 0.00 |
| 74.40 | 6.05 | 4.14 | 0.00 |

## Summary for Subcatchment 8S: Northwood Drive Bypass

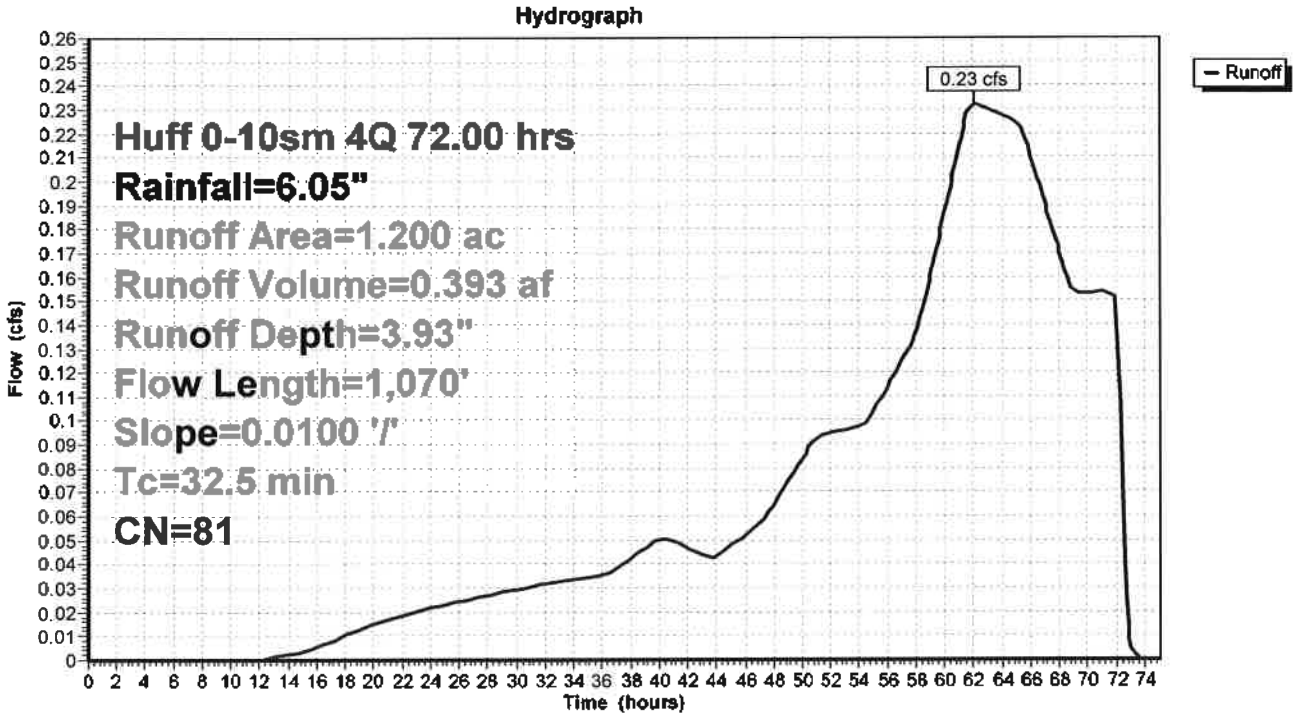
Runoff = 0.23 cfs @ 62.09 hrs, Volume= 0.393 af, Depth= 3.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.12 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=6.05"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 1.20 | 0.01 | 0.00 | 0.00 |
| 2.40 | 0.03 | 0.00 | 0.00 |
| 3.60 | 0.06 | 0.00 | 0.00 |
| 4.80 | 0.11 | 0.00 | 0.00 |
| 6.00 | 0.16 | 0.00 | 0.00 |
| 7.20 | 0.22 | 0.00 | 0.00 |
| 8.40 | 0.28 | 0.00 | 0.00 |
| 9.60 | 0.35 | 0.00 | 0.00 |
| 10.80 | 0.41 | 0.00 | 0.00 |
| 12.00 | 0.47 | 0.00 | 0.00 |
| 13.20 | 0.52 | 0.00 | 0.00 |
| 14.40 | 0.57 | 0.00 | 0.00 |
| 15.60 | 0.61 | 0.01 | 0.00 |
| 16.80 | 0.67 | 0.02 | 0.01 |
| 18.00 | 0.72 | 0.03 | 0.01 |
| 19.20 | 0.79 | 0.04 | 0.01 |
| 20.40 | 0.85 | 0.05 | 0.02 |
| 21.60 | 0.91 | 0.07 | 0.02 |
| 22.80 | 0.98 | 0.09 | 0.02 |
| 24.00 | 1.04 | 0.11 | 0.02 |
| 25.20 | 1.10 | 0.13 | 0.02 |
| 26.40 | 1.17 | 0.16 | 0.03 |
| 27.60 | 1.23 | 0.19 | 0.03 |
| 28.80 | 1.29 | 0.21 | 0.03 |
| 30.00 | 1.35 | 0.24 | 0.03 |
| 31.20 | 1.42 | 0.27 | 0.03 |
| 32.40 | 1.48 | 0.30 | 0.03 |
| 33.60 | 1.54 | 0.34 | 0.03 |
| 34.80 | 1.61 | 0.37 | 0.03 |
| 36.00 | 1.67 | 0.41 | 0.04 |
| 37.20 | 1.74 | 0.44 | 0.04 |
| 38.40 | 1.81 | 0.49 | 0.04 |
| 39.60 | 1.89 | 0.54 | 0.05 |
| 40.80 | 1.97 | 0.59 | 0.05 |
| 42.00 | 2.04 | 0.63 | 0.05 |
| 43.20 | 2.11 | 0.68 | 0.04 |
| 44.40 | 2.18 | 0.72 | 0.04 |
| 45.60 | 2.25 | 0.77 | 0.05 |
| 46.80 | 2.33 | 0.82 | 0.06 |
| 48.00 | 2.42 | 0.89 | 0.06 |
| 49.20 | 2.53 | 0.96 | 0.08 |
| 50.40 | 2.65 | 1.05 | 0.09 |
| 51.60 | 2.77 | 1.14 | 0.09 |
| 52.80 | 2.90 | 1.24 | 0.10 |
| 54.00 | 3.03 | 1.33 | 0.10 |
| 55.20 | 3.16 | 1.44 | 0.11 |
| 56.40 | 3.31 | 1.55 | 0.12 |
| 57.60 | 3.47 | 1.68 | 0.13 |
| 58.80 | 3.65 | 1.83 | 0.15 |
| 60.00 | 3.87 | 2.01 | 0.19 |
| 61.20 | 4.13 | 2.23 | **0.22** |
| 62.40 | 4.40 | 2.46 | **0.23** |
| 63.60 | 4.66 | 2.69 | 0.23 |
| 64.80 | 4.92 | 2.91 | 0.23 |
| 66.00 | 5.15 | 3.12 | 0.21 |
| 67.20 | 5.36 | 3.31 | 0.19 |
| 68.40 | 5.55 | 3.47 | 0.16 |
| 69.60 | 5.71 | 3.62 | 0.15 |
| 70.80 | 5.88 | 3.78 | 0.15 |
| 72.00 | **6.05** | **3.93** | 0.15 |
| 73.20 | 6.05 | 3.93 | 0.00 |
| 74.40 | 6.05 | 3.93 | 0.00 |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

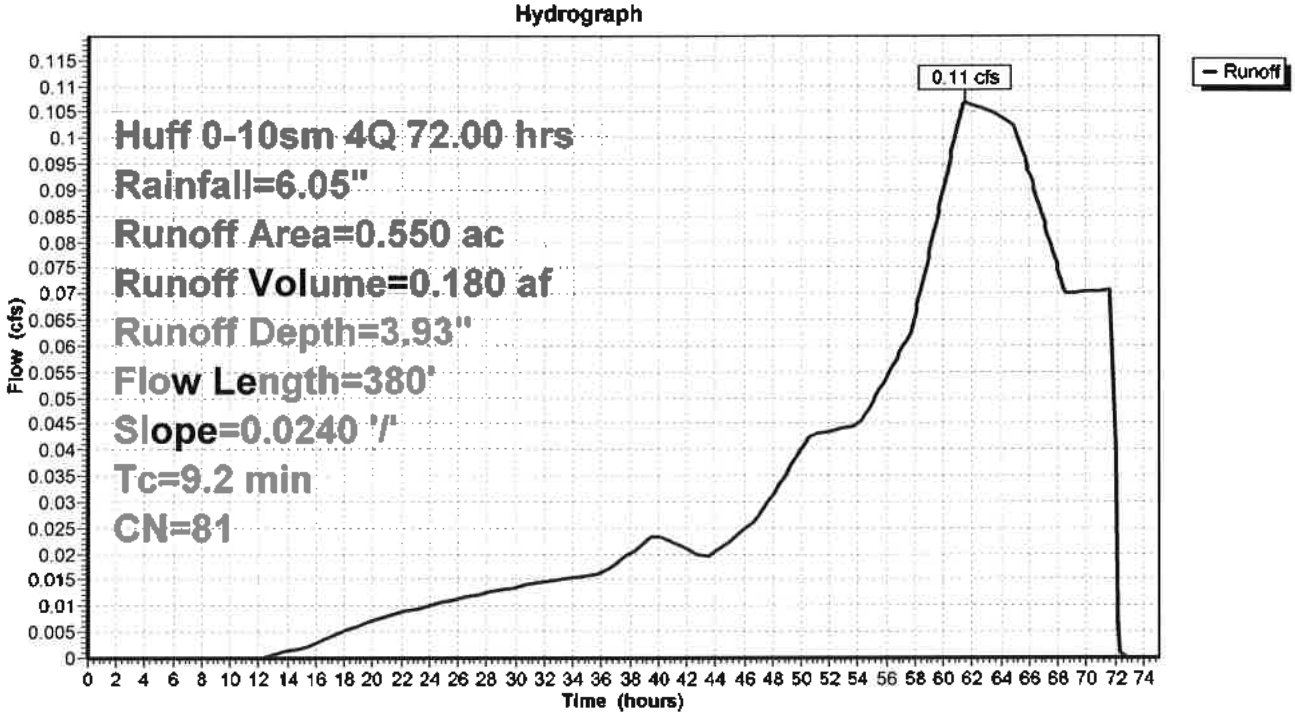
Runoff = 0.11 cfs @ 61.49 hrs, Volume= 0.180 af, Depth= 3.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.12 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=6.05"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 |
| 1.20 | 0.01 | 0.00 | 0.00 |
| 2.40 | 0.03 | 0.00 | 0.00 |
| 3.60 | 0.06 | 0.00 | 0.00 |
| 4.80 | 0.11 | 0.00 | 0.00 |
| 6.00 | 0.16 | 0.00 | 0.00 |
| 7.20 | 0.22 | 0.00 | 0.00 |
| 8.40 | 0.28 | 0.00 | 0.00 |
| 9.60 | 0.35 | 0.00 | 0.00 |
| 10.80 | 0.41 | 0.00 | 0.00 |
| 12.00 | 0.47 | 0.00 | 0.00 |
| 13.20 | 0.52 | 0.00 | 0.00 |
| 14.40 | 0.57 | 0.00 | 0.00 |
| 15.60 | 0.61 | 0.01 | 0.00 |
| 16.80 | 0.67 | 0.02 | 0.00 |
| 18.00 | 0.72 | 0.03 | 0.01 |
| 19.20 | 0.79 | 0.04 | 0.01 |
| 20.40 | 0.85 | 0.05 | 0.01 |
| 21.60 | 0.91 | 0.07 | 0.01 |
| 22.80 | 0.98 | 0.09 | 0.01 |
| 24.00 | 1.04 | 0.11 | 0.01 |
| 25.20 | 1.10 | 0.13 | 0.01 |
| 26.40 | 1.17 | 0.16 | 0.01 |
| 27.60 | 1.23 | 0.19 | 0.01 |
| 28.80 | 1.29 | 0.21 | 0.01 |
| 30.00 | 1.35 | 0.24 | 0.01 |
| 31.20 | 1.42 | 0.27 | 0.01 |
| 32.40 | 1.48 | 0.30 | 0.01 |
| 33.60 | 1.54 | 0.34 | 0.02 |
| 34.80 | 1.61 | 0.37 | 0.02 |
| 36.00 | 1.67 | 0.41 | 0.02 |
| 37.20 | 1.74 | 0.44 | 0.02 |
| 38.40 | 1.81 | 0.49 | 0.02 |
| 39.60 | 1.89 | 0.54 | 0.02 |
| 40.80 | 1.97 | 0.59 | 0.02 |
| 42.00 | 2.04 | 0.63 | 0.02 |
| 43.20 | 2.11 | 0.68 | 0.02 |
| 44.40 | 2.18 | 0.72 | 0.02 |
| 45.60 | 2.25 | 0.77 | 0.02 |
| 46.80 | 2.33 | 0.82 | 0.03 |
| 48.00 | 2.42 | 0.89 | 0.03 |
| 49.20 | 2.53 | 0.96 | 0.04 |
| 50.40 | 2.65 | 1.05 | 0.04 |
| 51.60 | 2.77 | 1.14 | 0.04 |
| 52.80 | 2.90 | 1.24 | 0.04 |
| 54.00 | 3.03 | 1.33 | 0.04 |
| 55.20 | 3.16 | 1.44 | 0.05 |
| 56.40 | 3.31 | 1.55 | 0.06 |
| 57.60 | 3.47 | 1.68 | 0.06 |
| 58.80 | 3.65 | 1.83 | 0.08 |
| 60.00 | 3.87 | 2.01 | 0.09 |
| 61.20 | 4.13 | 2.23 | **0.11** |
| 62.40 | 4.40 | 2.46 | **0.11** |
| 63.60 | 4.66 | 2.69 | 0.10 |
| 64.80 | 4.92 | 2.91 | 0.10 |
| 66.00 | 5.15 | 3.12 | 0.09 |
| 67.20 | 5.36 | 3.31 | 0.08 |
| 68.40 | 5.55 | 3.47 | 0.07 |
| 69.60 | 5.71 | 3.62 | 0.07 |
| 70.80 | 5.88 | 3.78 | 0.07 |
| 72.00 | **6.05** | **3.93** | 0.07 |
| 73.20 | 6.05 | 3.93 | 0.00 |
| 74.40 | 6.05 | 3.93 | 0.00 |

## Summary for Pond 3P: Southeast Chambers

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 1.72 cfs @ | 61.84 hrs, | Volume= | 3.246 af |
| Outflow | = | 0.87 cfs @ | 72.30 hrs, | Volume= | 2.198 af, Atten= 50%, Lag= 627.7 min |
| Primary | = | 0.87 cfs @ | 72.30 hrs, | Volume= | 2.198 af |
| Secondary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-75.00 hrs, dt= 0.12 hrs
Peak Elev= 672.83' @ 72.30 hrs Surf.Area= 30,998 sf Storage= 53,447 cf

Plug-Flow detention time= 393.7 min calculated for 2.198 af (68% of inflow)
Center-of-Mass det. time= 13.2 min ( 3,257.1 - 3,243.9 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.40' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

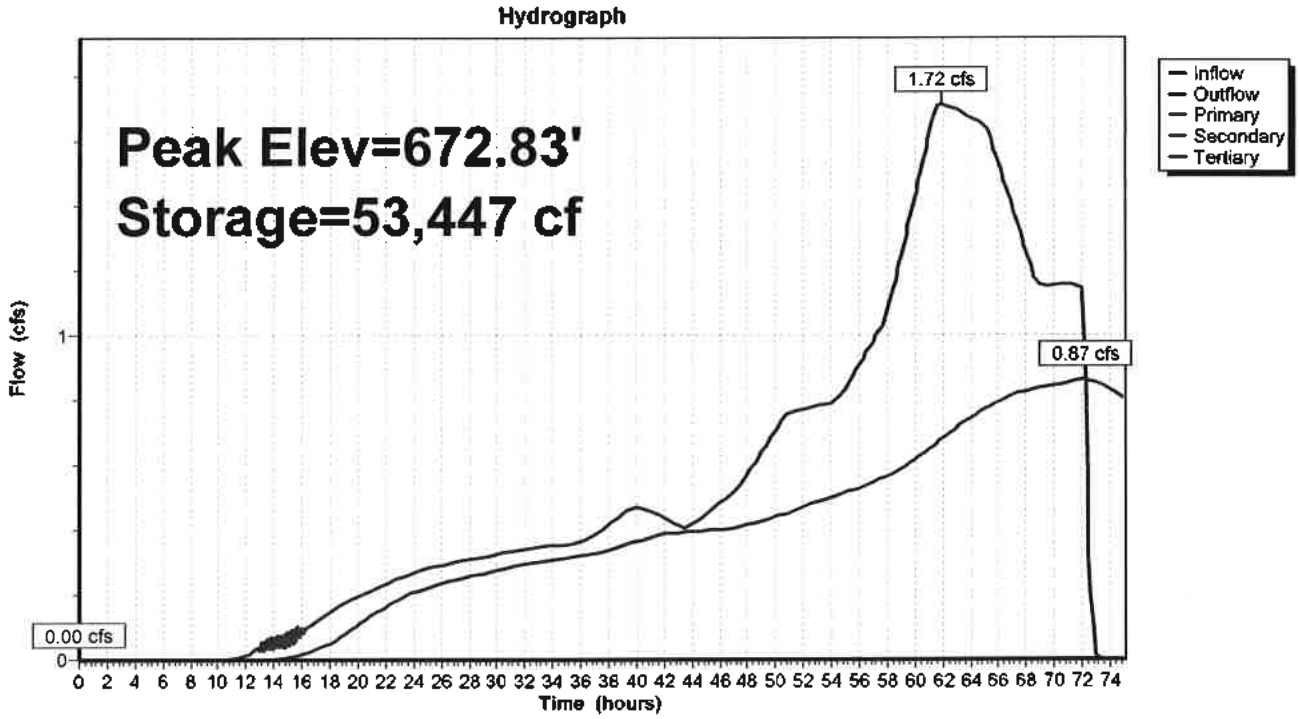
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=0.87 cfs @ 72.30 hrs HW=672.83' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.87 cfs @ 7.83 fps)

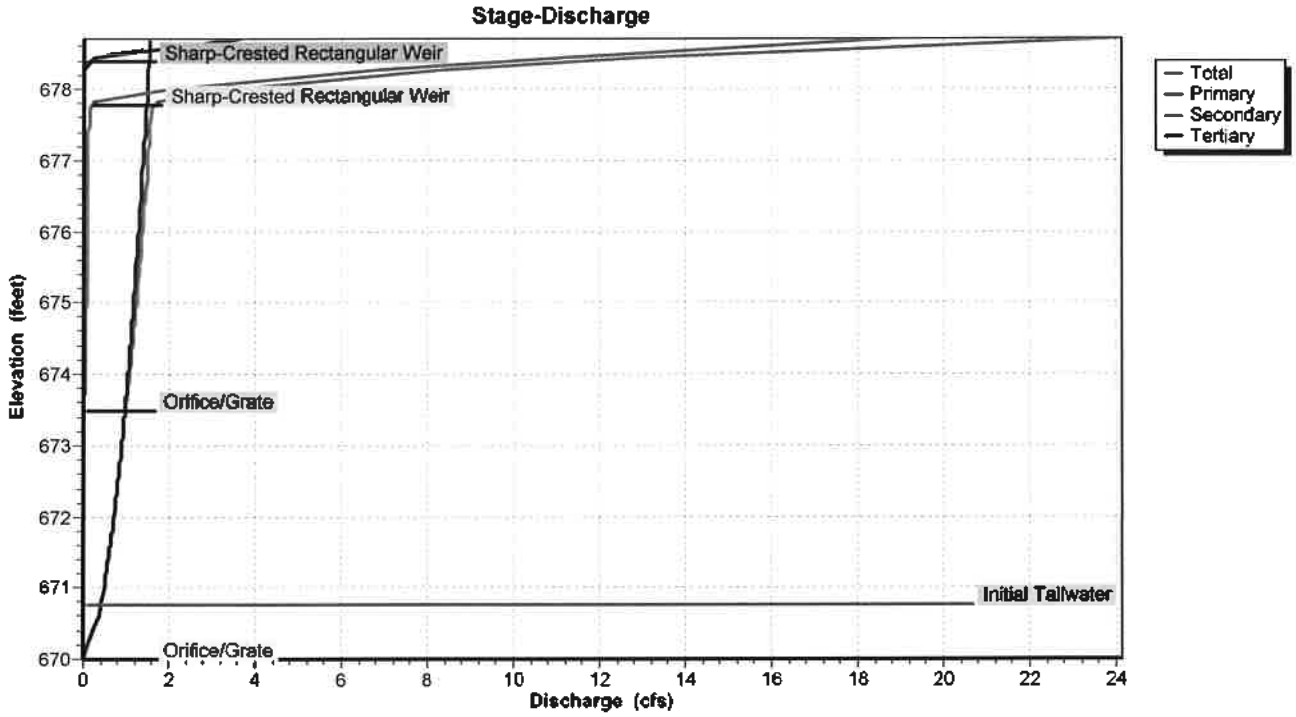
**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.00' (Free Discharge)
└**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

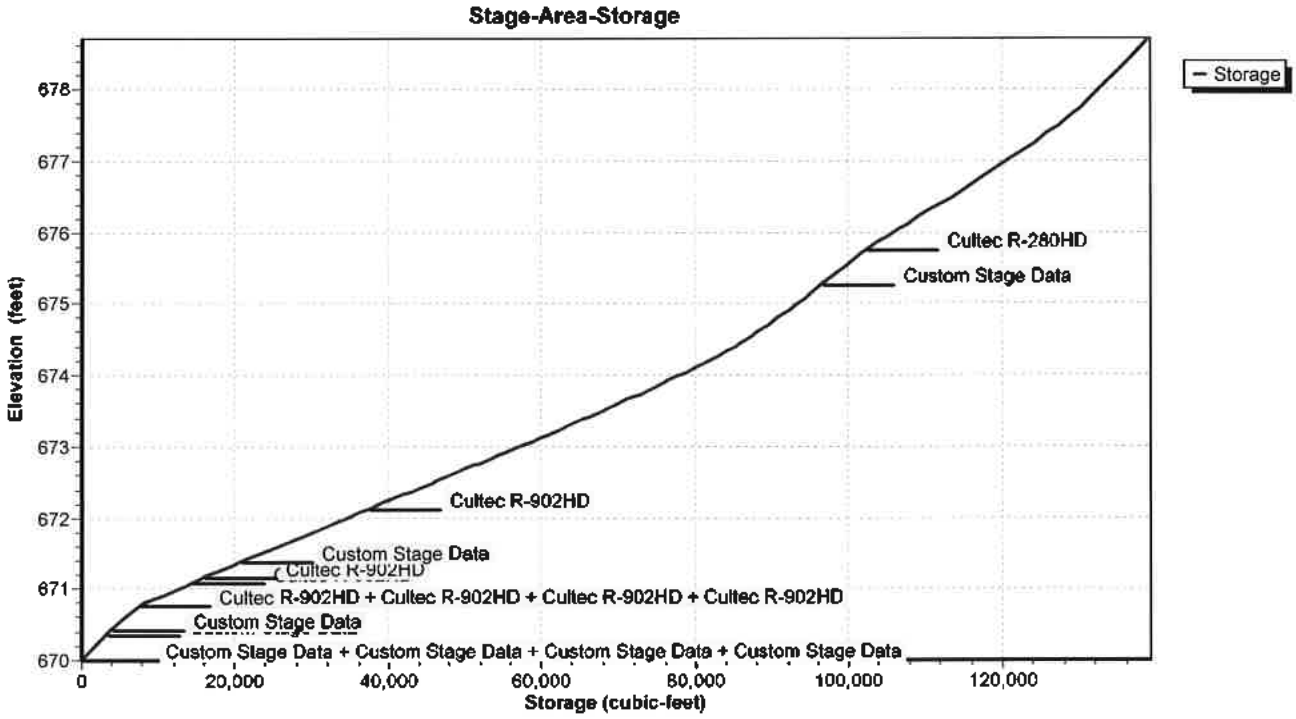
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 2.40 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.80 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7.20 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9.60 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12.00 | 0.01 | 21 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14.40 | 0.04 | 347 | 670.04 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16.80 | 0.11 | 908 | 670.10 | 0.03 | 0.03 | 0.00 | 0.00 |
| 19.20 | 0.18 | 1,720 | 670.19 | 0.09 | 0.09 | 0.00 | 0.00 |
| 21.60 | 0.23 | 2,448 | 670.27 | 0.15 | 0.15 | 0.00 | 0.00 |
| 24.00 | 0.27 | 3,020 | 670.34 | 0.21 | 0.21 | 0.00 | 0.00 |
| 26.40 | 0.30 | 3,532 | 670.39 | 0.24 | 0.24 | 0.00 | 0.00 |
| 28.80 | 0.32 | 3,991 | 670.44 | 0.27 | 0.27 | 0.00 | 0.00 |
| 31.20 | 0.33 | 4,411 | 670.48 | 0.29 | 0.29 | 0.00 | 0.00 |
| 33.60 | 0.35 | 4,802 | 670.52 | 0.31 | 0.31 | 0.00 | 0.00 |
| 36.00 | 0.36 | 5,168 | 670.55 | 0.32 | 0.32 | 0.00 | 0.00 |
| 38.40 | 0.43 | 5,679 | 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 40.80 | 0.46 | 6,540 | 670.69 | 0.38 | 0.38 | 0.00 | 0.00 |
| 43.20 | 0.41 | 6,993 | 670.73 | 0.39 | 0.39 | 0.00 | 0.00 |
| 45.60 | 0.47 | 7,278 | 670.76 | 0.40 | 0.40 | 0.00 | 0.00 |
| 48.00 | 0.57 | 8,171 | 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 50.40 | 0.74 | 10,090 | 670.89 | 0.45 | 0.45 | 0.00 | 0.00 |
| 52.80 | 0.78 | 12,704 | 671.02 | 0.48 | 0.48 | 0.00 | 0.00 |
| 55.20 | 0.85 | 15,277 | 671.14 | 0.52 | 0.52 | 0.00 | 0.00 |
| 57.60 | 1.03 | 18,740 | 671.30 | 0.56 | 0.56 | 0.00 | 0.00 |
| 60.00 | **1.43** | 24,096 | 671.53 | 0.62 | 0.62 | 0.00 | 0.00 |
| 62.40 | **1.71** | 32,419 | 671.90 | 0.70 | 0.70 | 0.00 | 0.00 |
| 64.80 | 1.66 | 40,670 | 672.27 | 0.77 | 0.77 | 0.00 | 0.00 |
| 67.20 | 1.37 | 47,114 | 672.55 | 0.82 | 0.82 | 0.00 | 0.00 |
| 69.60 | 1.16 | 50,560 | 672.71 | 0.84 | 0.84 | 0.00 | 0.00 |
| 72.00 | 1.16 | **53,200** | **672.82** | **0.86** | **0.86** | 0.00 | 0.00 |
| 74.40 | 0.00 | **47,787** | **672.58** | **0.82** | **0.82** | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 18.46 | 1.54 | 15.13 | 1.79 |
| 678.80 | **28.12** | **1.56** | **21.42** | **5.14** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | | |
|---|---|---|---|---|---|
| Inflow | = | 0.93 cfs @ | 61.81 hrs, | Volume= | 1.600 af |
| Outflow | = | 0.92 cfs @ | 63.33 hrs, | Volume= | 1.599 af, Atten= 1%, Lag= 90.9 min |
| Primary | = | 0.80 cfs @ | 63.33 hrs, | Volume= | 1.119 af |
| Secondary | = | 0.11 cfs @ | 63.33 hrs, | Volume= | 0.480 af |
| Tertiary | = | 0.00 cfs @ | 0.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 0.00-75.00 hrs, dt= 0.12 hrs
Peak Elev= 677.29' @ 63.33 hrs Surf.Area= 2,405 sf Storage= 1,265 cf

Plug-Flow detention time= 16.6 min calculated for 1.599 af (100% of inflow)
Center-of-Mass det. time= 16.1 min ( 3,349.5 - 3,333.4 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

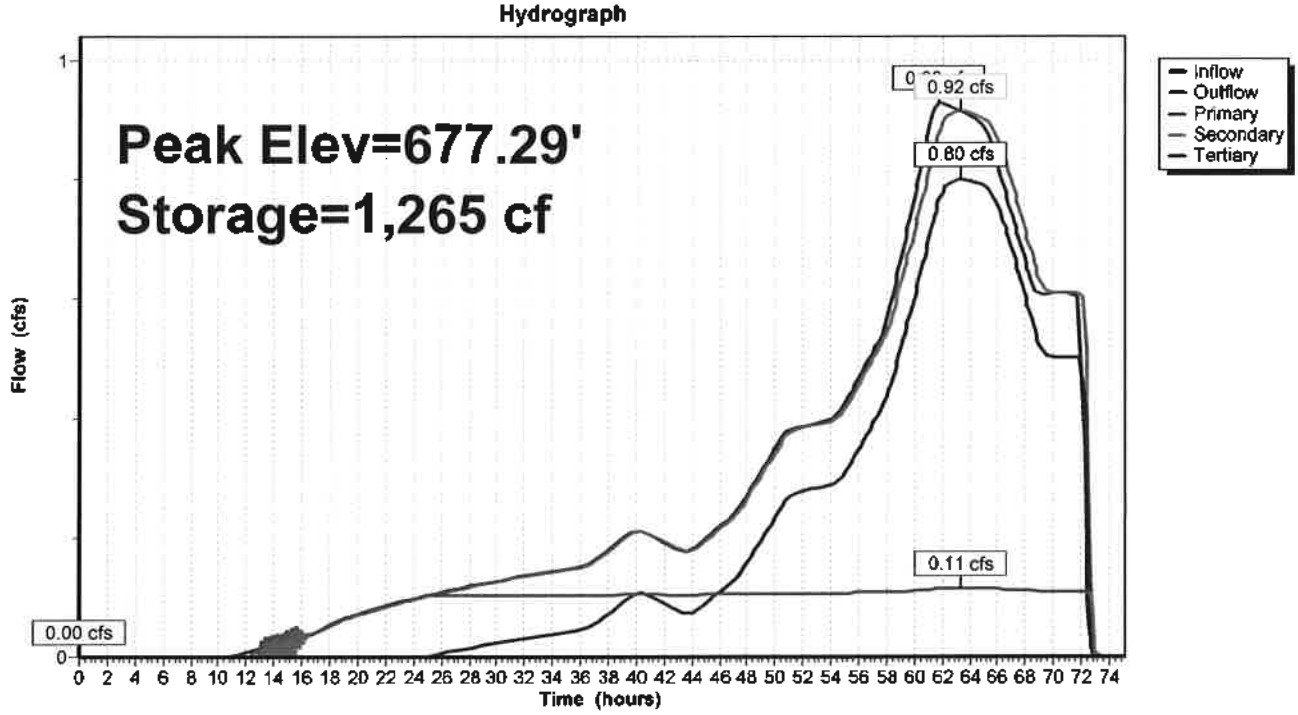
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=0.80 cfs @ 63.33 hrs HW=677.29' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.80 cfs @ 3.48 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

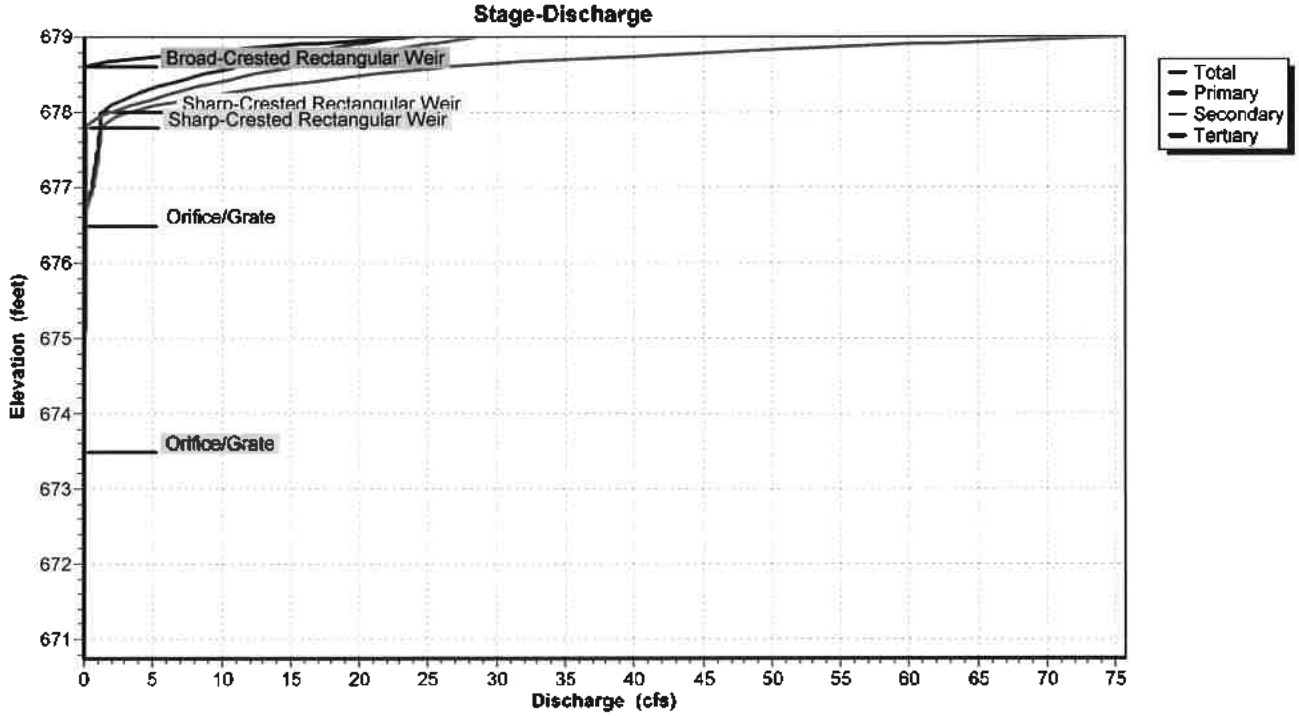
**Secondary OutFlow** Max=0.11 cfs @ 63.33 hrs HW=677.29' TW=672.05' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.11 cfs @ 9.30 fps)
└─**5=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

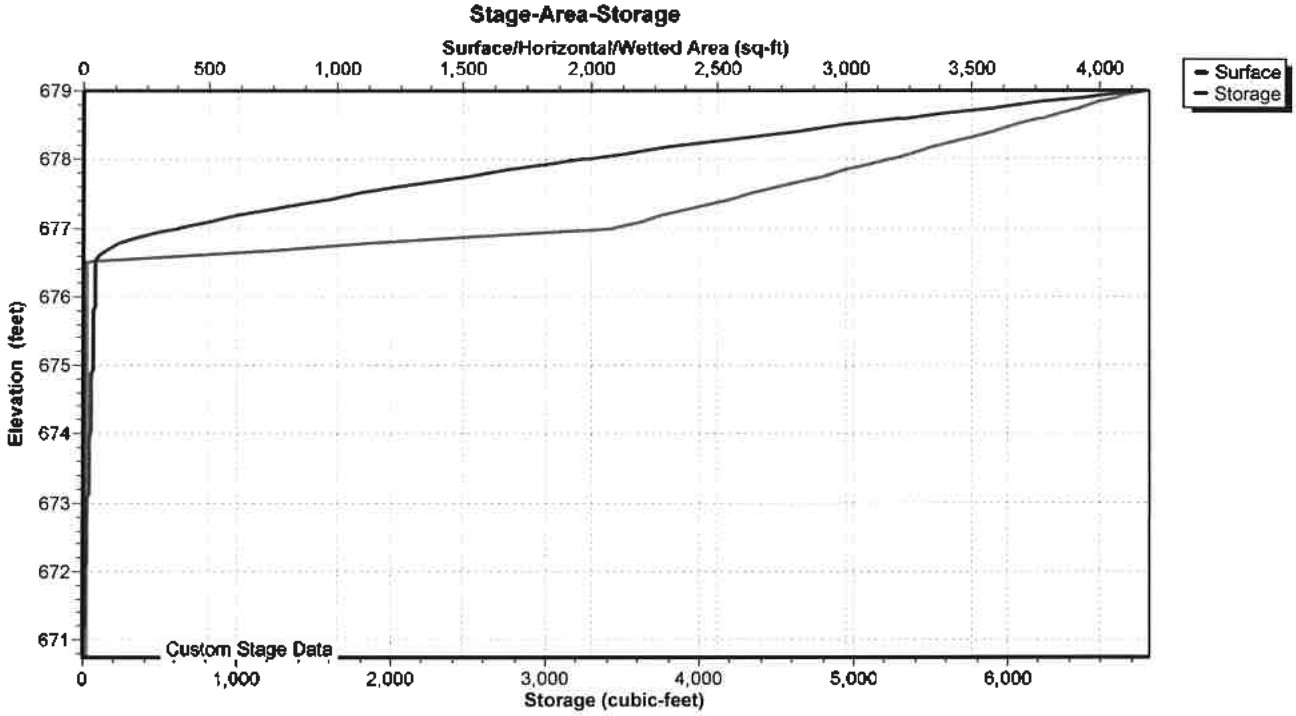
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 2.40 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4.80 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7.20 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9.60 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12.00 | 0.01 | 12 | 671.63 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14.40 | 0.02 | 37 | 673.40 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16.80 | 0.04 | 45 | 673.98 | 0.04 | 0.00 | 0.04 | 0.00 |
| 19.20 | 0.07 | 56 | 674.74 | 0.06 | 0.00 | 0.06 | 0.00 |
| 21.60 | 0.08 | 66 | 675.46 | 0.08 | 0.00 | 0.08 | 0.00 |
| 24.00 | 0.10 | 77 | 676.22 | 0.10 | 0.00 | 0.10 | 0.00 |
| 26.40 | 0.11 | 88 | 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 28.80 | 0.12 | 97 | 676.58 | 0.12 | 0.02 | 0.10 | 0.00 |
| 31.20 | 0.13 | 102 | 676.60 | 0.13 | 0.03 | 0.10 | 0.00 |
| 33.60 | 0.14 | 107 | 676.61 | 0.14 | 0.04 | 0.10 | 0.00 |
| 36.00 | 0.15 | 114 | 676.62 | 0.15 | 0.04 | 0.10 | 0.00 |
| 38.40 | 0.19 | 140 | 676.66 | 0.18 | 0.08 | 0.10 | 0.00 |
| 40.80 | 0.21 | 156 | 676.69 | 0.21 | 0.10 | 0.10 | 0.00 |
| 43.20 | 0.18 | 137 | 676.66 | 0.18 | 0.07 | 0.10 | 0.00 |
| 45.60 | 0.21 | 155 | 676.69 | 0.21 | 0.10 | 0.10 | 0.00 |
| 48.00 | 0.27 | 202 | 676.74 | 0.26 | 0.16 | 0.11 | 0.00 |
| 50.40 | 0.37 | 279 | 676.80 | 0.36 | 0.25 | 0.11 | 0.00 |
| 52.80 | 0.39 | 309 | 676.83 | 0.39 | 0.28 | 0.11 | 0.00 |
| 55.20 | 0.43 | 340 | 676.85 | 0.42 | 0.32 | 0.11 | 0.00 |
| 57.60 | 0.54 | 446 | 676.92 | 0.52 | 0.42 | 0.11 | 0.00 |
| 60.00 | **0.77** | 744 | 677.06 | 0.71 | 0.60 | 0.11 | 0.00 |
| 62.40 | **0.93** | **1,237** | **677.28** | **0.91** | **0.79** | **0.11** | 0.00 |
| 64.80 | 0.90 | **1,235** | **677.28** | **0.91** | **0.79** | **0.11** | 0.00 |
| 67.20 | 0.73 | 904 | 677.14 | 0.78 | 0.67 | 0.11 | 0.00 |
| 69.60 | 0.61 | 557 | 676.98 | 0.61 | 0.50 | 0.11 | 0.00 |
| 72.00 | 0.61 | 557 | 676.98 | 0.61 | 0.50 | 0.11 | 0.00 |
| 74.40 | 0.00 | 38 | 673.44 | 0.00 | 0.00 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 23.56 | 9.86 | 13.70 | 0.00 |
| 678.75 | 40.37 | 15.13 | 19.77 | 5.47 |
| 678.95 | **67.61** | **21.27** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

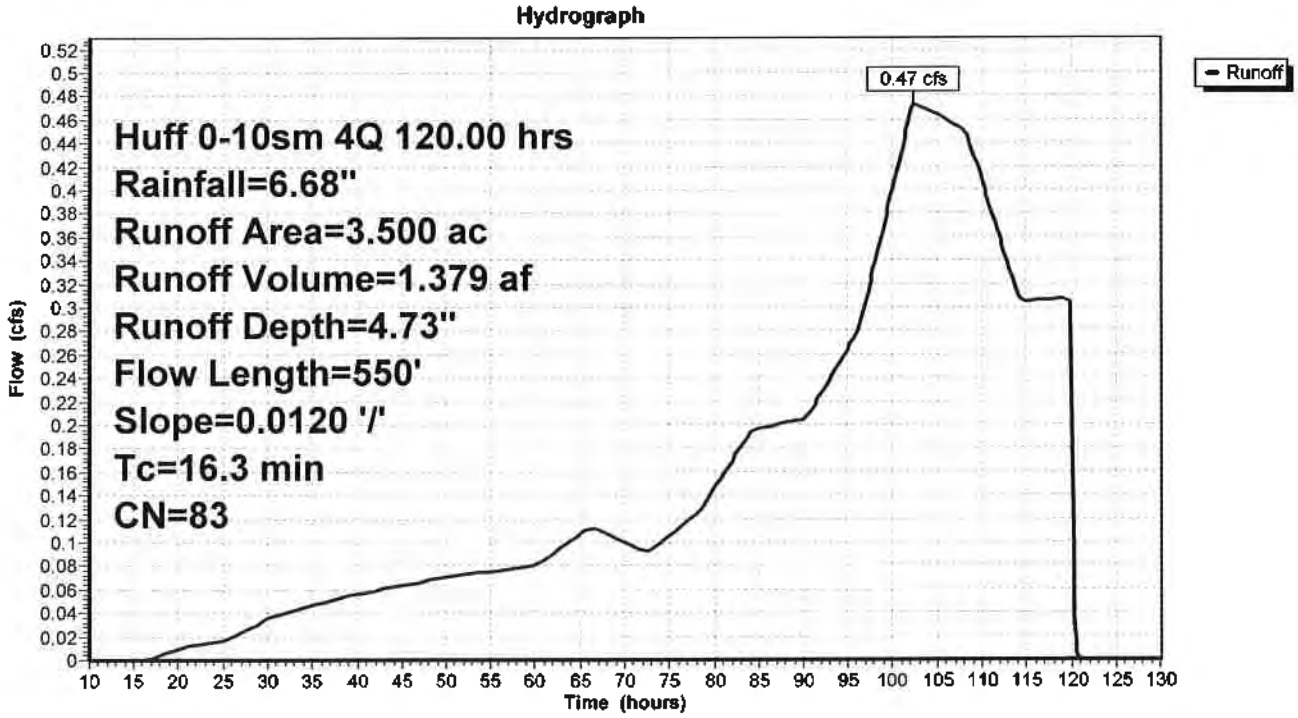
Runoff = 0.47 cfs @ 102.44 hrs, Volume= 1.379 af, Depth= 4.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.10 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=6.68"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

## Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 10.00 | 0.18 | 0.00 | 0.00 |
| 12.00 | 0.24 | 0.00 | 0.00 |
| 14.00 | 0.31 | 0.00 | 0.00 |
| 16.00 | 0.38 | 0.00 | 0.00 |
| 18.00 | 0.45 | 0.00 | 0.00 |
| 20.00 | 0.52 | 0.01 | 0.01 |
| 22.00 | 0.58 | 0.01 | 0.01 |
| 24.00 | 0.63 | 0.02 | 0.01 |
| 26.00 | 0.68 | 0.03 | 0.02 |
| 28.00 | 0.73 | 0.04 | 0.03 |
| 30.00 | 0.80 | 0.06 | 0.04 |
| 32.00 | 0.87 | 0.08 | 0.04 |
| 34.00 | 0.94 | 0.11 | 0.04 |
| 36.00 | 1.01 | 0.14 | 0.05 |
| 38.00 | 1.08 | 0.16 | 0.05 |
| 40.00 | 1.15 | 0.20 | 0.06 |
| 42.00 | 1.22 | 0.23 | 0.06 |
| 44.00 | 1.29 | 0.26 | 0.06 |
| 46.00 | 1.36 | 0.30 | 0.07 |
| 48.00 | 1.43 | 0.34 | 0.07 |
| 50.00 | 1.50 | 0.38 | 0.07 |
| 52.00 | 1.57 | 0.42 | 0.07 |
| 54.00 | 1.64 | 0.46 | 0.07 |
| 56.00 | 1.70 | 0.50 | 0.08 |
| 58.00 | 1.77 | 0.55 | 0.08 |
| 60.00 | 1.84 | 0.59 | 0.08 |
| 62.00 | 1.92 | 0.64 | 0.09 |
| 64.00 | 2.00 | 0.69 | 0.10 |
| 66.00 | 2.09 | 0.76 | 0.11 |
| 68.00 | 2.18 | 0.82 | 0.11 |
| 70.00 | 2.26 | 0.88 | 0.10 |
| 72.00 | 2.33 | 0.93 | 0.09 |
| 74.00 | 2.40 | 0.98 | 0.10 |
| 76.00 | 2.49 | 1.05 | 0.11 |
| 78.00 | 2.57 | 1.11 | 0.12 |
| 80.00 | 2.68 | 1.19 | 0.15 |
| 82.00 | 2.79 | 1.28 | 0.17 |
| 84.00 | 2.92 | 1.38 | 0.19 |
| 86.00 | 3.06 | 1.50 | 0.20 |
| 88.00 | 3.20 | 1.61 | 0.20 |
| 90.00 | 3.34 | 1.72 | 0.20 |
| 92.00 | 3.49 | 1.85 | 0.23 |
| 94.00 | 3.65 | 1.98 | 0.25 |
| 96.00 | 3.83 | 2.14 | 0.28 |
| 98.00 | 4.03 | 2.31 | 0.34 |
| 100.00 | 4.28 | 2.53 | 0.40 |
| 102.00 | 4.56 | 2.78 | **0.47** |
| 104.00 | 4.86 | 3.04 | **0.47** |
| 106.00 | 5.15 | 3.31 | 0.46 |
| 108.00 | 5.43 | 3.56 | 0.45 |
| 110.00 | 5.69 | 3.80 | 0.41 |
| 112.00 | 5.92 | 4.02 | 0.36 |
| 114.00 | 6.12 | 4.21 | 0.31 |
| 116.00 | 6.31 | 4.38 | 0.31 |
| 118.00 | 6.49 | 4.55 | 0.31 |
| 120.00 | **6.68** | **4.73** | 0.31 |
| 122.00 | 6.68 | 4.73 | 0.00 |
| 124.00 | 6.68 | 4.73 | 0.00 |
| 126.00 | 6.68 | 4.73 | 0.00 |
| 128.00 | 6.68 | 4.73 | 0.00 |
| 130.00 | 6.68 | 4.73 | 0.00 |

## Summary for Subcatchment 7S: South Property

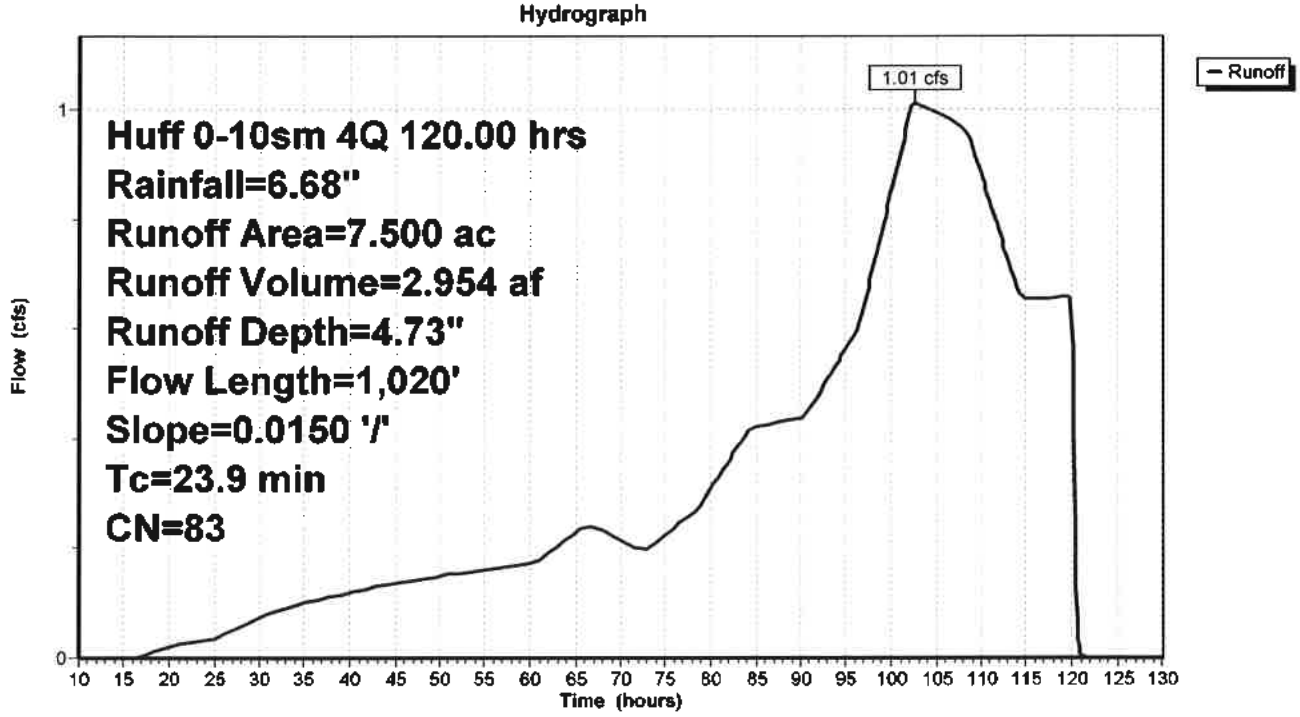
Runoff = 1.01 cfs @ 102.62 hrs, Volume= 2.954 af, Depth= 4.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.10 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=6.68"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.18 | 0.00 | 0.00 | 114.00 | 6.12 | 4.21 | 0.67 |
| 12.00 | 0.24 | 0.00 | 0.00 | 116.00 | 6.31 | 4.38 | 0.65 |
| 14.00 | 0.31 | 0.00 | 0.00 | 118.00 | 6.49 | 4.55 | 0.66 |
| 16.00 | 0.38 | 0.00 | 0.00 | 120.00 | **6.68** | **4.73** | 0.66 |
| 18.00 | 0.45 | 0.00 | 0.01 | 122.00 | 6.68 | 4.73 | 0.00 |
| 20.00 | 0.52 | 0.01 | 0.02 | 124.00 | 6.68 | 4.73 | 0.00 |
| 22.00 | 0.58 | 0.01 | 0.03 | 126.00 | 6.68 | 4.73 | 0.00 |
| 24.00 | 0.63 | 0.02 | 0.03 | 128.00 | 6.68 | 4.73 | 0.00 |
| 26.00 | 0.68 | 0.03 | 0.04 | 130.00 | 6.68 | 4.73 | 0.00 |
| 28.00 | 0.73 | 0.04 | 0.06 | | | | |
| 30.00 | 0.80 | 0.06 | 0.07 | | | | |
| 32.00 | 0.87 | 0.08 | 0.09 | | | | |
| 34.00 | 0.94 | 0.11 | 0.10 | | | | |
| 36.00 | 1.01 | 0.14 | 0.10 | | | | |
| 38.00 | 1.08 | 0.16 | 0.11 | | | | |
| 40.00 | 1.15 | 0.20 | 0.12 | | | | |
| 42.00 | 1.22 | 0.23 | 0.13 | | | | |
| 44.00 | 1.29 | 0.26 | 0.13 | | | | |
| 46.00 | 1.36 | 0.30 | 0.14 | | | | |
| 48.00 | 1.43 | 0.34 | 0.14 | | | | |
| 50.00 | 1.50 | 0.38 | 0.15 | | | | |
| 52.00 | 1.57 | 0.42 | 0.15 | | | | |
| 54.00 | 1.64 | 0.46 | 0.16 | | | | |
| 56.00 | 1.70 | 0.50 | 0.16 | | | | |
| 58.00 | 1.77 | 0.55 | 0.17 | | | | |
| 60.00 | 1.84 | 0.59 | 0.17 | | | | |
| 62.00 | 1.92 | 0.64 | 0.19 | | | | |
| 64.00 | 2.00 | 0.69 | 0.22 | | | | |
| 66.00 | 2.09 | 0.76 | 0.24 | | | | |
| 68.00 | 2.18 | 0.82 | 0.23 | | | | |
| 70.00 | 2.26 | 0.88 | 0.21 | | | | |
| 72.00 | 2.33 | 0.93 | 0.20 | | | | |
| 74.00 | 2.40 | 0.98 | 0.21 | | | | |
| 76.00 | 2.49 | 1.05 | 0.24 | | | | |
| 78.00 | 2.57 | 1.11 | 0.26 | | | | |
| 80.00 | 2.68 | 1.19 | 0.31 | | | | |
| 82.00 | 2.79 | 1.28 | 0.36 | | | | |
| 84.00 | 2.92 | 1.38 | 0.41 | | | | |
| 86.00 | 3.06 | 1.50 | 0.43 | | | | |
| 88.00 | 3.20 | 1.61 | 0.43 | | | | |
| 90.00 | 3.34 | 1.72 | 0.44 | | | | |
| 92.00 | 3.49 | 1.85 | 0.48 | | | | |
| 94.00 | 3.65 | 1.98 | 0.54 | | | | |
| 96.00 | 3.83 | 2.14 | 0.59 | | | | |
| 98.00 | 4.03 | 2.31 | 0.71 | | | | |
| 100.00 | 4.28 | 2.53 | 0.85 | | | | |
| 102.00 | 4.56 | 2.78 | **0.99** | | | | |
| 104.00 | 4.86 | 3.04 | **1.00** | | | | |
| 106.00 | 5.15 | 3.31 | 0.99 | | | | |
| 108.00 | 5.43 | 3.56 | 0.97 | | | | |
| 110.00 | 5.69 | 3.80 | 0.88 | | | | |
| 112.00 | 5.92 | 4.02 | 0.78 | | | | |

## Summary for Subcatchment 8S: Northwood Drive Bypass

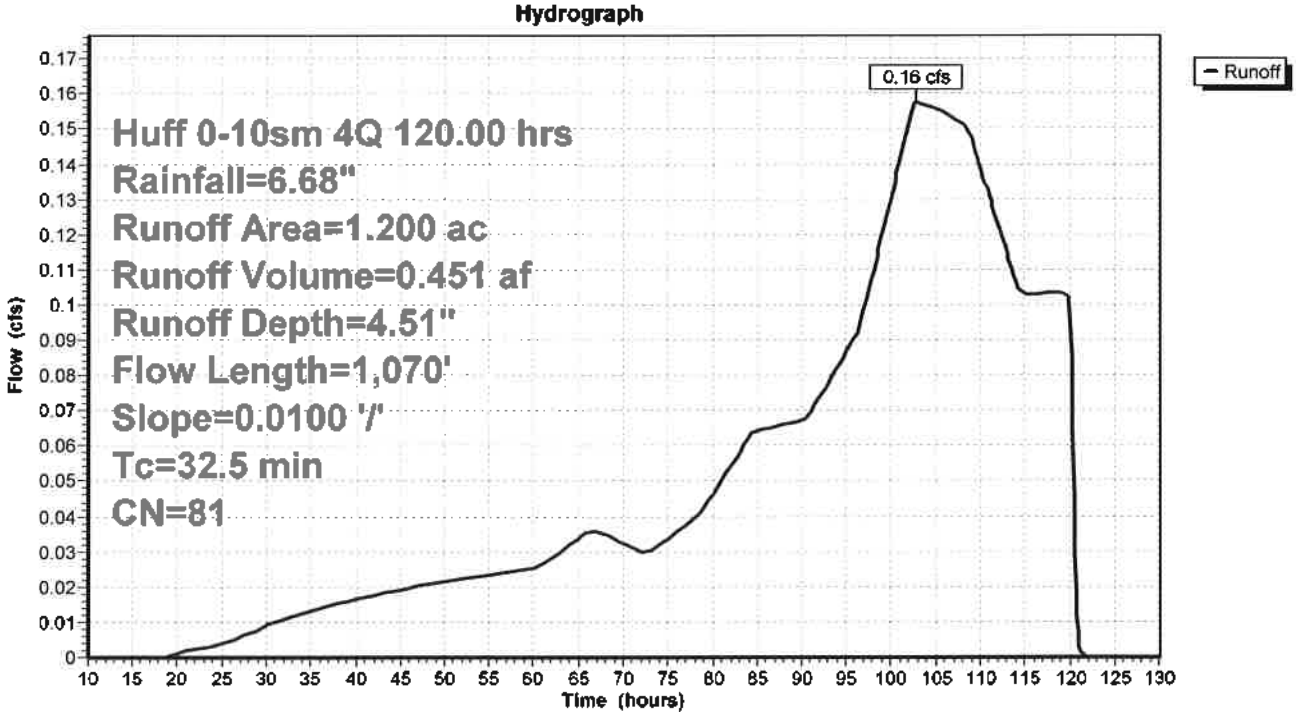
Runoff = 0.16 cfs @ 102.91 hrs, Volume= 0.451 af, Depth= 4.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.10 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=6.68"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 10.00 | 0.18 | 0.00 | 0.00 |
| 12.00 | 0.24 | 0.00 | 0.00 |
| 14.00 | 0.31 | 0.00 | 0.00 |
| 16.00 | 0.38 | 0.00 | 0.00 |
| 18.00 | 0.45 | 0.00 | 0.00 |
| 20.00 | 0.52 | 0.00 | 0.00 |
| 22.00 | 0.58 | 0.00 | 0.00 |
| 24.00 | 0.63 | 0.01 | 0.00 |
| 26.00 | 0.68 | 0.02 | 0.00 |
| 28.00 | 0.73 | 0.03 | 0.01 |
| 30.00 | 0.80 | 0.04 | 0.01 |
| 32.00 | 0.87 | 0.06 | 0.01 |
| 34.00 | 0.94 | 0.08 | 0.01 |
| 36.00 | 1.01 | 0.10 | 0.01 |
| 38.00 | 1.08 | 0.13 | 0.02 |
| 40.00 | 1.15 | 0.15 | 0.02 |
| 42.00 | 1.22 | 0.18 | 0.02 |
| 44.00 | 1.29 | 0.21 | 0.02 |
| 46.00 | 1.36 | 0.24 | 0.02 |
| 48.00 | 1.43 | 0.28 | 0.02 |
| 50.00 | 1.50 | 0.31 | 0.02 |
| 52.00 | 1.57 | 0.35 | 0.02 |
| 54.00 | 1.64 | 0.39 | 0.02 |
| 56.00 | 1.70 | 0.43 | 0.02 |
| 58.00 | 1.77 | 0.47 | 0.02 |
| 60.00 | 1.84 | 0.51 | 0.03 |
| 62.00 | 1.92 | 0.55 | 0.03 |
| 64.00 | 2.00 | 0.60 | 0.03 |
| 66.00 | 2.09 | 0.66 | 0.04 |
| 68.00 | 2.18 | 0.72 | 0.03 |
| 70.00 | 2.26 | 0.77 | 0.03 |
| 72.00 | 2.33 | 0.82 | 0.03 |
| 74.00 | 2.40 | 0.87 | 0.03 |
| 76.00 | 2.49 | 0.93 | 0.04 |
| 78.00 | 2.57 | 1.00 | 0.04 |
| 80.00 | 2.68 | 1.07 | 0.05 |
| 82.00 | 2.79 | 1.16 | 0.05 |
| 84.00 | 2.92 | 1.25 | 0.06 |
| 86.00 | 3.06 | 1.36 | 0.06 |
| 88.00 | 3.20 | 1.47 | 0.07 |
| 90.00 | 3.34 | 1.58 | 0.07 |
| 92.00 | 3.49 | 1.70 | 0.07 |
| 94.00 | 3.65 | 1.83 | 0.08 |
| 96.00 | 3.83 | 1.98 | 0.09 |
| 98.00 | 4.03 | 2.15 | 0.11 |
| 100.00 | 4.28 | 2.36 | 0.13 |
| 102.00 | 4.56 | 2.60 | **0.15** |
| 104.00 | 4.86 | 2.86 | **0.16** |
| 106.00 | 5.15 | 3.11 | 0.15 |
| 108.00 | 5.43 | 3.37 | 0.15 |
| 110.00 | 5.69 | 3.60 | 0.14 |
| 112.00 | 5.92 | 3.81 | 0.12 |
| 114.00 | 6.12 | 4.00 | 0.11 |
| 116.00 | 6.31 | 4.17 | 0.10 |
| 118.00 | 6.49 | 4.34 | 0.10 |
| 120.00 | **6.68** | **4.51** | 0.10 |
| 122.00 | 6.68 | 4.51 | 0.00 |
| 124.00 | 6.68 | 4.51 | 0.00 |
| 126.00 | 6.68 | 4.51 | 0.00 |
| 128.00 | 6.68 | 4.51 | 0.00 |
| 130.00 | 6.68 | 4.51 | 0.00 |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

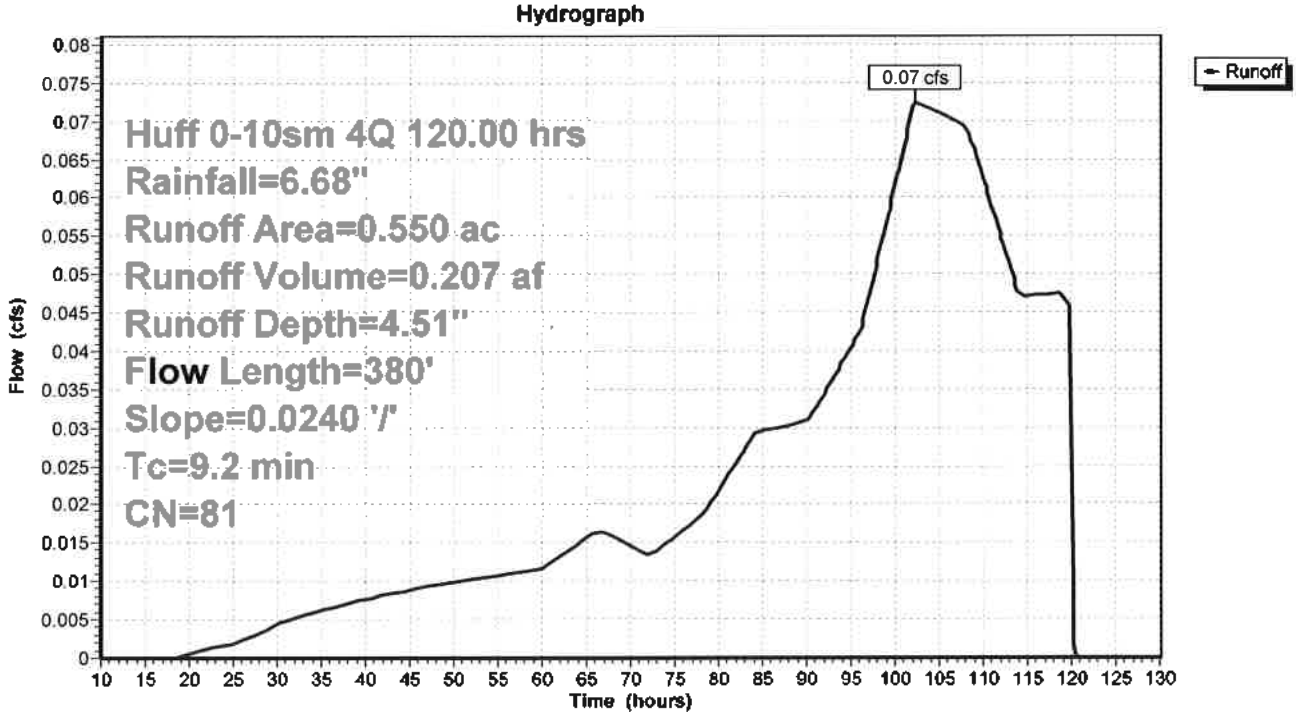
Runoff = 0.07 cfs @ 102.27 hrs, Volume= 0.207 af, Depth= 4.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.10 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=6.68"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|
| 10.00 | 0.18 | 0.00 | 0.00 |
| 12.00 | 0.24 | 0.00 | 0.00 |
| 14.00 | 0.31 | 0.00 | 0.00 |
| 16.00 | 0.38 | 0.00 | 0.00 |
| 18.00 | 0.45 | 0.00 | 0.00 |
| 20.00 | 0.52 | 0.00 | 0.00 |
| 22.00 | 0.58 | 0.00 | 0.00 |
| 24.00 | 0.63 | 0.01 | 0.00 |
| 26.00 | 0.68 | 0.02 | 0.00 |
| 28.00 | 0.73 | 0.03 | 0.00 |
| 30.00 | 0.80 | 0.04 | 0.00 |
| 32.00 | 0.87 | 0.06 | 0.01 |
| 34.00 | 0.94 | 0.08 | 0.01 |
| 36.00 | 1.01 | 0.10 | 0.01 |
| 38.00 | 1.08 | 0.13 | 0.01 |
| 40.00 | 1.15 | 0.15 | 0.01 |
| 42.00 | 1.22 | 0.18 | 0.01 |
| 44.00 | 1.29 | 0.21 | 0.01 |
| 46.00 | 1.36 | 0.24 | 0.01 |
| 48.00 | 1.43 | 0.28 | 0.01 |
| 50.00 | 1.50 | 0.31 | 0.01 |
| 52.00 | 1.57 | 0.35 | 0.01 |
| 54.00 | 1.64 | 0.39 | 0.01 |
| 56.00 | 1.70 | 0.43 | 0.01 |
| 58.00 | 1.77 | 0.47 | 0.01 |
| 60.00 | 1.84 | 0.51 | 0.01 |
| 62.00 | 1.92 | 0.55 | 0.01 |
| 64.00 | 2.00 | 0.60 | 0.01 |
| 66.00 | 2.09 | 0.66 | 0.02 |
| 68.00 | 2.18 | 0.72 | 0.02 |
| 70.00 | 2.26 | 0.77 | 0.01 |
| 72.00 | 2.33 | 0.82 | 0.01 |
| 74.00 | 2.40 | 0.87 | 0.01 |
| 76.00 | 2.49 | 0.93 | 0.02 |
| 78.00 | 2.57 | 1.00 | 0.02 |
| 80.00 | 2.68 | 1.07 | 0.02 |
| 82.00 | 2.79 | 1.16 | 0.03 |
| 84.00 | 2.92 | 1.25 | 0.03 |
| 86.00 | 3.06 | 1.36 | 0.03 |
| 88.00 | 3.20 | 1.47 | 0.03 |
| 90.00 | 3.34 | 1.58 | 0.03 |
| 92.00 | 3.49 | 1.70 | 0.03 |
| 94.00 | 3.65 | 1.83 | 0.04 |
| 96.00 | 3.83 | 1.98 | 0.04 |
| 98.00 | 4.03 | 2.15 | 0.05 |
| 100.00 | 4.28 | 2.36 | 0.06 |
| 102.00 | 4.56 | 2.60 | **0.07** |
| 104.00 | 4.86 | 2.86 | **0.07** |
| 106.00 | 5.15 | 3.11 | 0.07 |
| 108.00 | 5.43 | 3.37 | 0.07 |
| 110.00 | 5.69 | 3.60 | 0.06 |
| 112.00 | 5.92 | 3.81 | 0.06 |
| 114.00 | 6.12 | 4.00 | 0.05 |
| 116.00 | 6.31 | 4.17 | 0.05 |
| 118.00 | 6.49 | 4.34 | 0.05 |
| 120.00 | **6.68** | **4.51** | 0.05 |
| 122.00 | 6.68 | 4.51 | 0.00 |
| 124.00 | 6.68 | 4.51 | 0.00 |
| 126.00 | 6.68 | 4.51 | 0.00 |
| 128.00 | 6.68 | 4.51 | 0.00 |
| 130.00 | 6.68 | 4.51 | 0.00 |

## Summary for Pond 3P: Southeast Chambers

| | | | | |
|---|---|---|---|---|
| Inflow | = | 1.19 cfs @ 102.62 hrs, | Volume= | 3.909 af |
| Outflow | = | 0.77 cfs @ 120.17 hrs, | Volume= | 3.503 af, Atten= 36%, Lag= 1,053.1 min |
| Primary | = | 0.77 cfs @ 120.17 hrs, | Volume= | 3.503 af |
| Secondary | = | 0.00 cfs @ 10.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ 10.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 10.00-130.00 hrs, dt= 0.10 hrs
Peak Elev= 672.26' @ 120.17 hrs Surf.Area= 30,867 sf Storage= 40,524 cf

Plug-Flow detention time= 457.5 min calculated for 3.500 af (90% of inflow)
Center-of-Mass det. time= 259.1 min ( 5,588.8 - 5,329.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.40' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

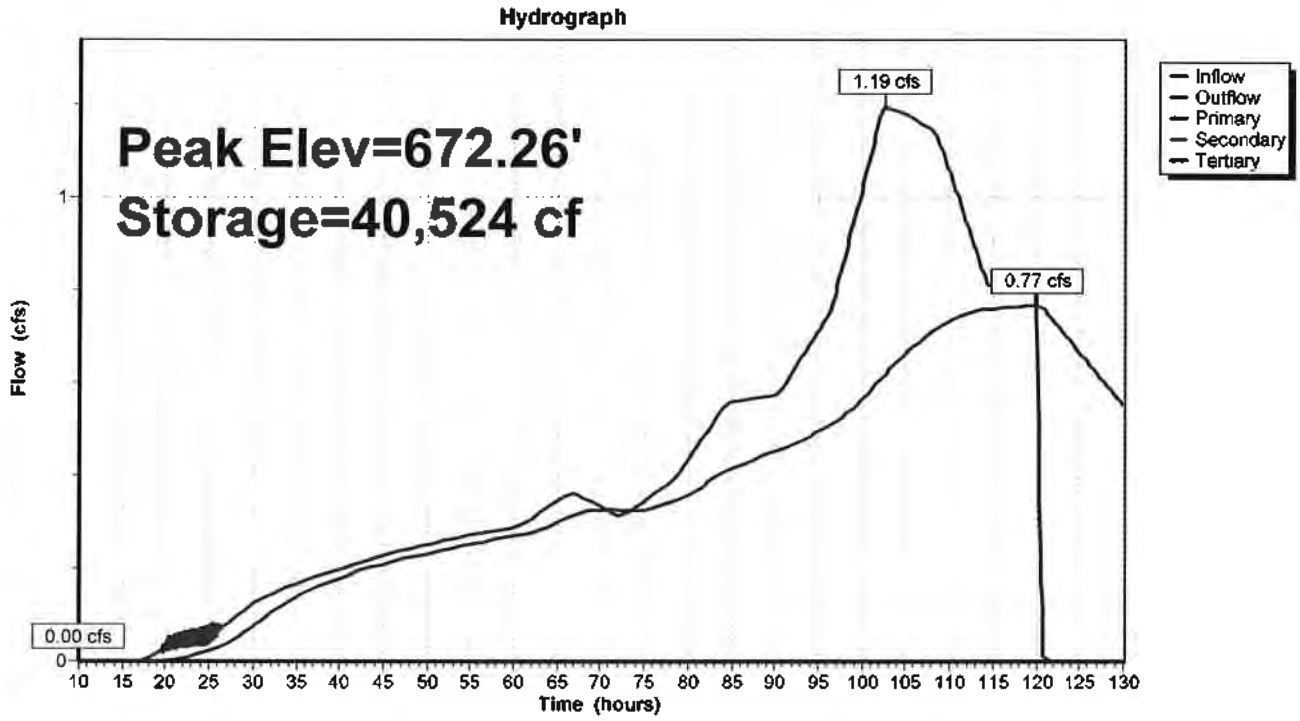
**#4** Secondary 673.50' **1.5" Vert. Orifice/Grate** C= 0.600

**Primary OutFlow** Max=0.77 cfs @ 120.17 hrs HW=672.26' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.77 cfs @ 6.94 fps)

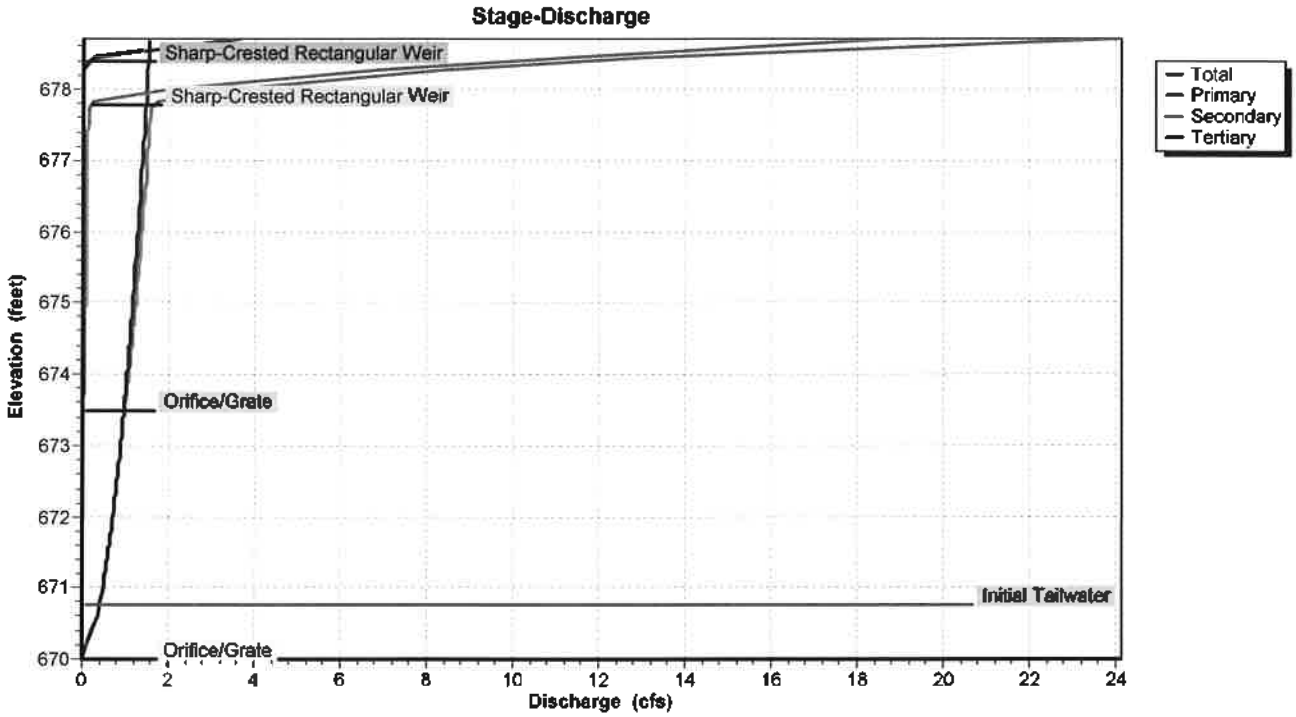
**Secondary OutFlow** Max=0.00 cfs @ 10.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 10.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

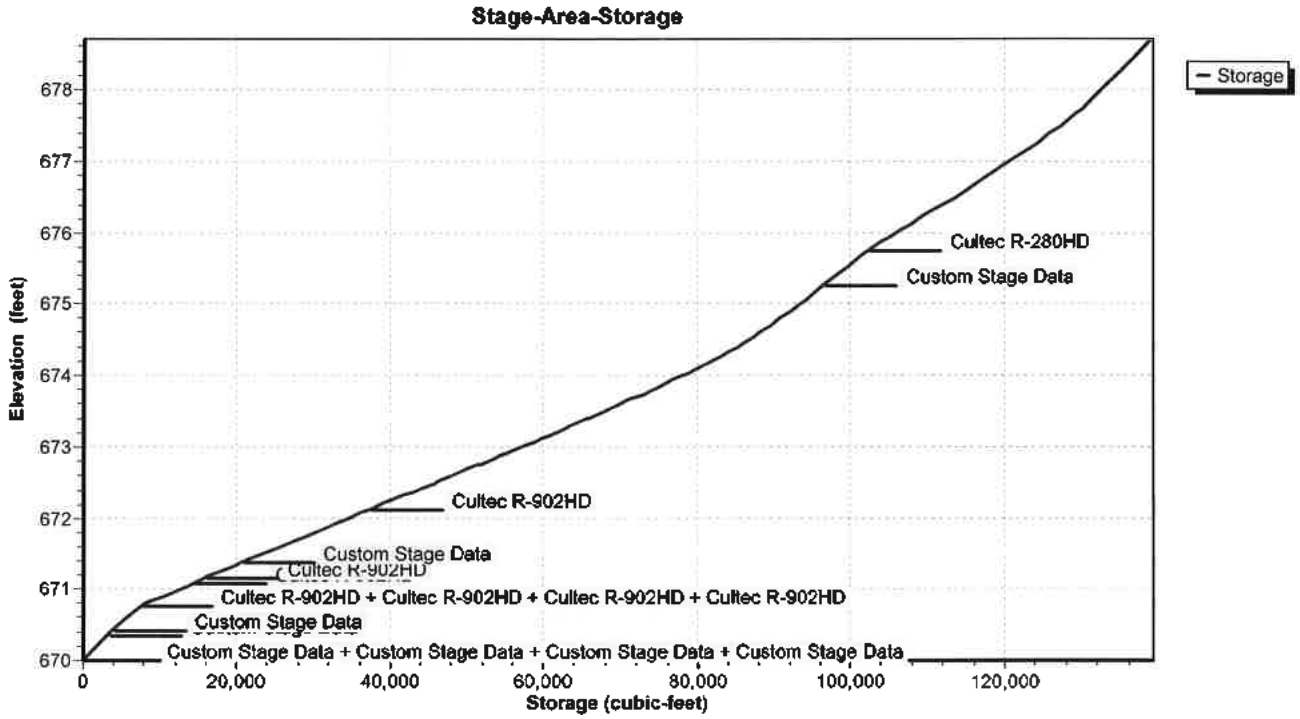
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 15.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20.00 | 0.02 | 139 | 670.02 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25.00 | 0.04 | 818 | 670.09 | 0.02 | 0.02 | 0.00 | 0.00 |
| 30.00 | 0.12 | 1,590 | 670.18 | 0.07 | 0.07 | 0.00 | 0.00 |
| 35.00 | 0.17 | 2,275 | 670.25 | 0.14 | 0.14 | 0.00 | 0.00 |
| 40.00 | 0.20 | 2,705 | 670.30 | 0.18 | 0.18 | 0.00 | 0.00 |
| 45.00 | 0.23 | 3,047 | 670.34 | 0.21 | 0.21 | 0.00 | 0.00 |
| 50.00 | 0.25 | 3,384 | 670.38 | 0.23 | 0.23 | 0.00 | 0.00 |
| 55.00 | 0.27 | 3,736 | 670.41 | 0.25 | 0.25 | 0.00 | 0.00 |
| 60.00 | 0.28 | 4,057 | 670.44 | 0.27 | 0.27 | 0.00 | 0.00 |
| 65.00 | 0.35 | 4,633 | 670.50 | 0.30 | 0.30 | 0.00 | 0.00 |
| 70.00 | 0.33 | 5,273 | 670.56 | 0.33 | 0.33 | 0.00 | 0.00 |
| 75.00 | 0.34 | 5,252 | 670.56 | 0.33 | 0.33 | 0.00 | 0.00 |
| 80.00 | 0.43 | 6,026 | 670.64 | 0.36 | 0.36 | 0.00 | 0.00 |
| 85.00 | 0.56 | 8,065 | 670.79 | 0.41 | 0.41 | 0.00 | 0.00 |
| 90.00 | 0.57 | 10,437 | 670.91 | 0.45 | 0.45 | 0.00 | 0.00 |
| 95.00 | 0.71 | 13,413 | 671.05 | 0.49 | 0.49 | 0.00 | 0.00 |
| 100.00 | **1.02** | 19,094 | 671.31 | 0.56 | 0.56 | 0.00 | 0.00 |
| 105.00 | **1.18** | 28,723 | 671.74 | 0.66 | 0.66 | 0.00 | 0.00 |
| 110.00 | 1.05 | 36,634 | 672.09 | 0.73 | 0.73 | 0.00 | 0.00 |
| 115.00 | 0.81 | 39,637 | 672.23 | 0.76 | 0.76 | 0.00 | 0.00 |
| 120.00 | 0.81 | **40,498** | **672.26** | **0.77** | **0.77** | 0.00 | 0.00 |
| 125.00 | 0.00 | **28,859** | **671.75** | **0.66** | **0.66** | 0.00 | 0.00 |
| 130.00 | 0.00 | 17,908 | 671.26 | 0.55 | 0.55 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 18.46 | 1.54 | 15.13 | 1.79 |
| 678.80 | **28.12** | **1.56** | **21.42** | **5.14** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | |
|---|---|---|---|---|
| Inflow | = | 0.63 cfs @ 102.60 hrs, | Volume= | 1.829 af |
| Outflow | = | 0.63 cfs @ 103.27 hrs, | Volume= | 1.829 af, Atten= 0%, Lag= 40.5 min |
| Primary | = | 0.52 cfs @ 103.27 hrs, | Volume= | 1.080 af |
| Secondary | = | 0.11 cfs @ 103.27 hrs, | Volume= | 0.749 af |
| Tertiary | = | 0.00 cfs @ 10.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 10.00-130.00 hrs, dt= 0.10 hrs
Peak Elev= 676.99' @ 103.27 hrs Surf.Area= 2,031 sf Storage= 578 cf

Plug-Flow detention time= 13.9 min calculated for 1.829 af (100% of inflow)
Center-of-Mass det. time= 13.1 min ( 5,513.8 - 5,500.7 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

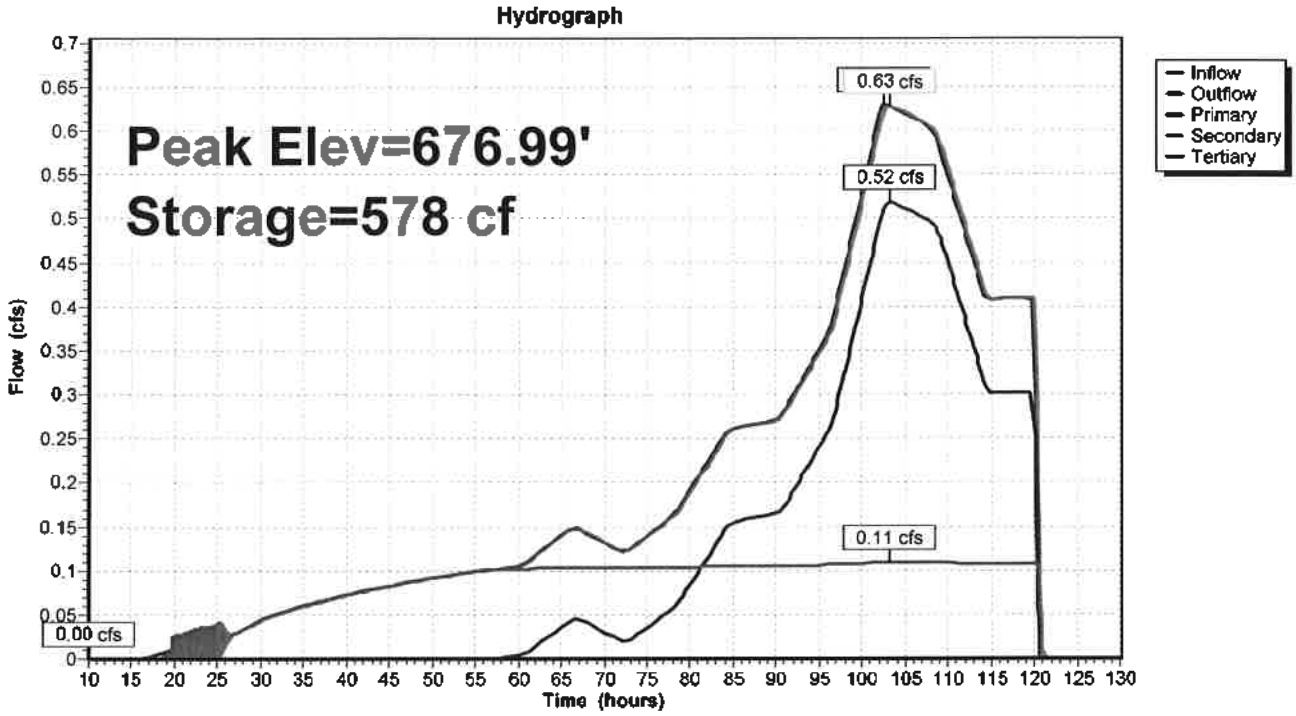
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=0.52 cfs @ 103.27 hrs HW=676.99' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.52 cfs @ 2.38 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

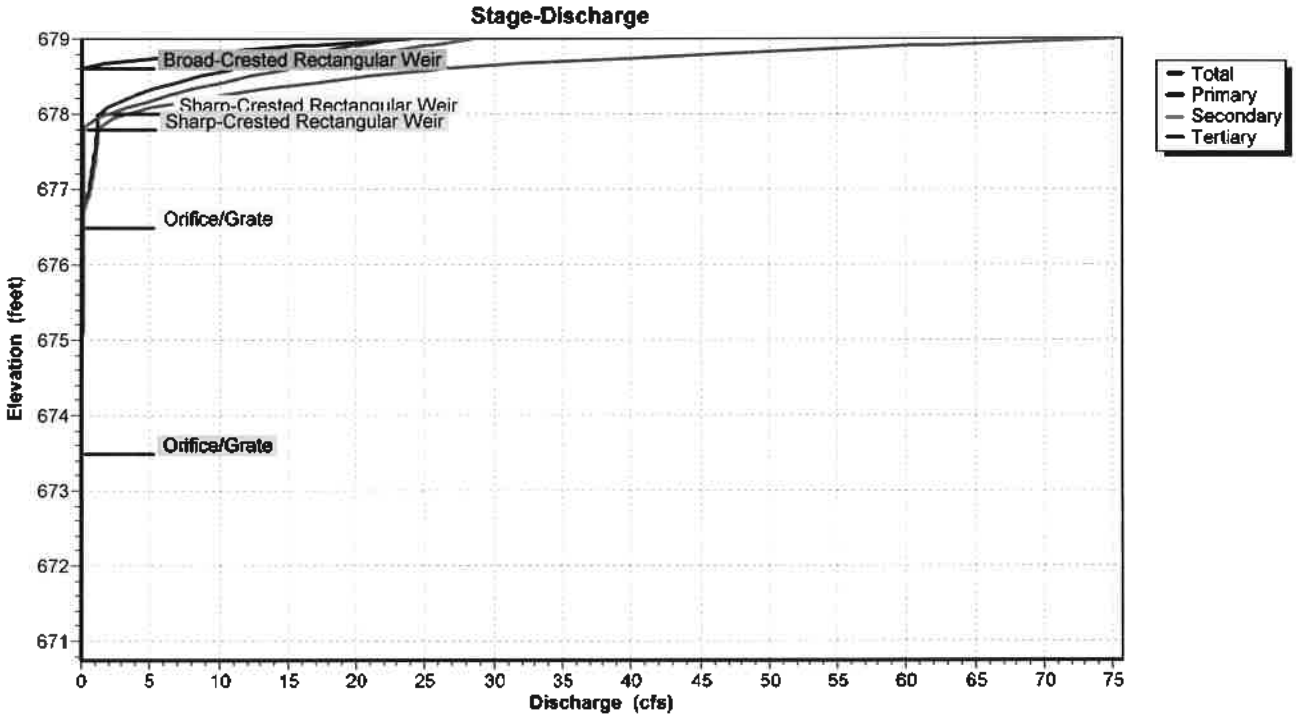
**Secondary OutFlow** Max=0.11 cfs @ 103.27 hrs HW=676.99' TW=671.59' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.11 cfs @ 8.91 fps)
└─**5=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 10.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

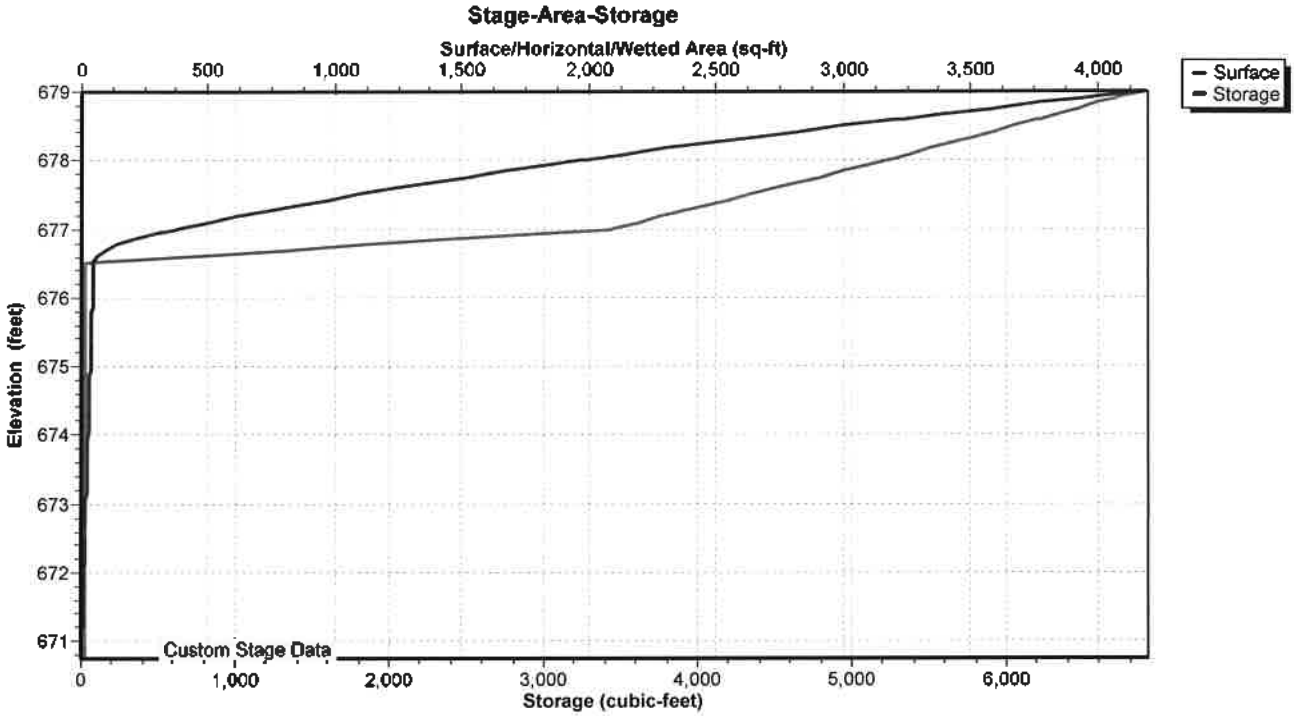
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 15.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20.00 | 0.01 | 37 | 673.37 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25.00 | 0.02 | 39 | 673.52 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.04 | 47 | 674.11 | 0.04 | 0.00 | 0.04 | 0.00 |
| 35.00 | 0.06 | 54 | 674.58 | 0.06 | 0.00 | 0.06 | 0.00 |
| 40.00 | 0.07 | 60 | 675.05 | 0.07 | 0.00 | 0.07 | 0.00 |
| 45.00 | 0.08 | 67 | 675.51 | 0.08 | 0.00 | 0.08 | 0.00 |
| 50.00 | 0.09 | 73 | 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 55.00 | 0.10 | 78 | 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 60.00 | 0.11 | 84 | 676.53 | 0.10 | 0.00 | 0.10 | 0.00 |
| 65.00 | 0.14 | 106 | 676.61 | 0.14 | 0.04 | 0.10 | 0.00 |
| 70.00 | 0.13 | 103 | 676.60 | 0.13 | 0.03 | 0.10 | 0.00 |
| 75.00 | 0.14 | 106 | 676.61 | 0.14 | 0.04 | 0.10 | 0.00 |
| 80.00 | 0.19 | 144 | 676.67 | 0.19 | 0.08 | 0.10 | 0.00 |
| 85.00 | 0.26 | 200 | 676.73 | 0.26 | 0.16 | 0.11 | 0.00 |
| 90.00 | 0.27 | 207 | 676.74 | 0.27 | 0.16 | 0.11 | 0.00 |
| 95.00 | 0.35 | 271 | 676.80 | 0.35 | 0.24 | 0.11 | 0.00 |
| 100.00 | **0.53** | **439** | **676.91** | **0.52** | **0.41** | **0.11** | 0.00 |
| 105.00 | **0.62** | **570** | **676.98** | **0.62** | **0.51** | **0.11** | 0.00 |
| 110.00 | 0.55 | 485 | 676.94 | 0.56 | 0.45 | 0.11 | 0.00 |
| 115.00 | 0.41 | 326 | 676.84 | 0.41 | 0.30 | 0.11 | 0.00 |
| 120.00 | 0.41 | 328 | 676.84 | 0.41 | 0.30 | 0.11 | 0.00 |
| 125.00 | 0.00 | 37 | 673.43 | 0.00 | 0.00 | 0.00 | 0.00 |
| 130.00 | 0.00 | 37 | 673.43 | 0.00 | 0.00 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 23.56 | 9.86 | 13.70 | 0.00 |
| 678.75 | 40.37 | 15.13 | 19.77 | 5.47 |
| 678.95 | **67.61** | **21.27** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

## Summary for Subcatchment 1S: North Property

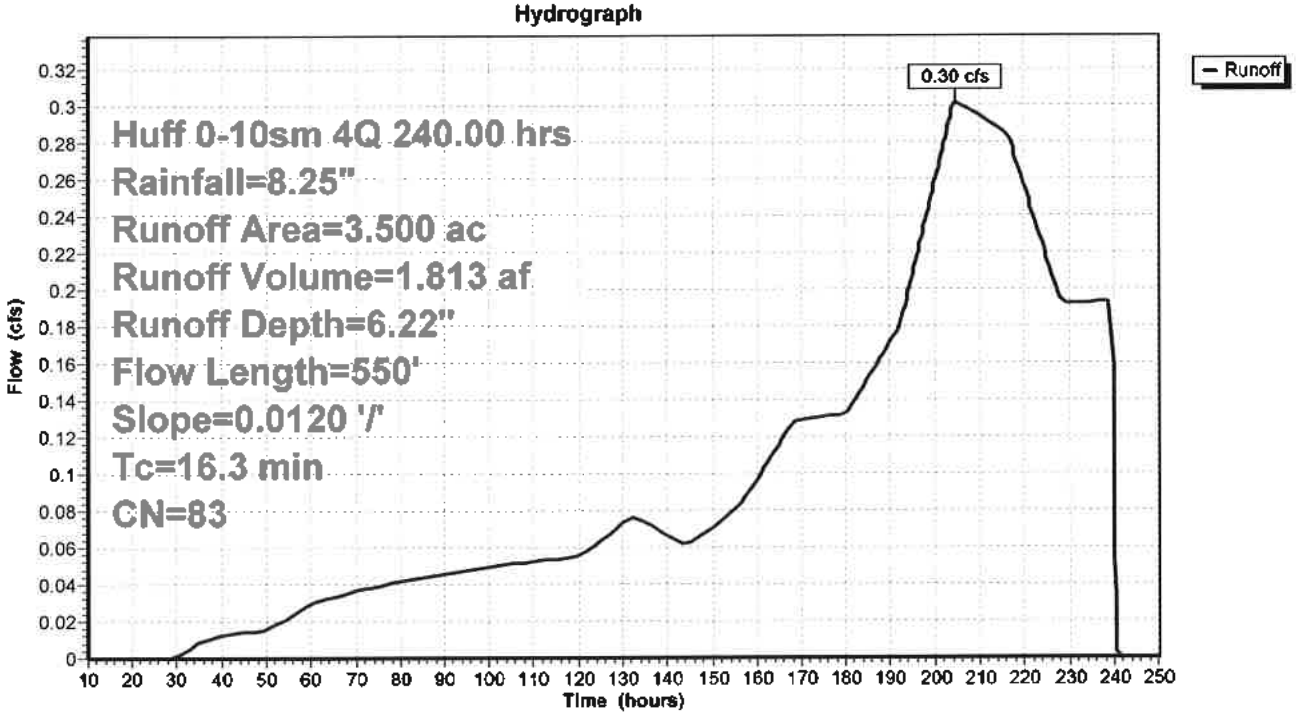
Runoff = 0.30 cfs @ 204.40 hrs, Volume= 1.813 af, Depth= 6.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.05 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=8.25"

| Area (ac) | CN | Description |
|---|---|---|
| 3.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 2.170 | | 62.00% Pervious Area |
| 1.330 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 16.3 | 550 | 0.0120 | 0.56 | | **Lag/CN Method,** |

## Subcatchment 1S: North Property



## Hydrograph for Subcatchment 1S: North Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.06 | 0.00 | 0.00 | 140.00 | 2.79 | 1.28 | 0.07 |
| 12.50 | 0.09 | 0.00 | 0.00 | 142.50 | 2.85 | 1.32 | 0.06 |
| 15.00 | 0.13 | 0.00 | 0.00 | 145.00 | 2.90 | 1.37 | 0.06 |
| 17.50 | 0.17 | 0.00 | 0.00 | 147.50 | 2.96 | 1.41 | 0.07 |
| 20.00 | 0.22 | 0.00 | 0.00 | 150.00 | 3.02 | 1.46 | 0.07 |
| 22.50 | 0.27 | 0.00 | 0.00 | 152.50 | 3.08 | 1.51 | 0.08 |
| 25.00 | 0.32 | 0.00 | 0.00 | 155.00 | 3.15 | 1.57 | 0.08 |
| 27.50 | 0.38 | 0.00 | 0.00 | 157.50 | 3.22 | 1.63 | 0.09 |
| 30.00 | 0.43 | 0.00 | 0.00 | 160.00 | 3.30 | 1.69 | 0.10 |
| 32.50 | 0.48 | 0.00 | 0.00 | 162.50 | 3.39 | 1.77 | 0.11 |
| 35.00 | 0.54 | 0.01 | 0.01 | 165.00 | 3.49 | 1.85 | 0.12 |
| 37.50 | 0.59 | 0.01 | 0.01 | 167.50 | 3.59 | 1.93 | 0.13 |
| 40.00 | 0.64 | 0.02 | 0.01 | 170.00 | 3.70 | 2.02 | 0.13 |
| 42.50 | 0.69 | 0.03 | 0.01 | 172.50 | 3.80 | 2.12 | 0.13 |
| 45.00 | 0.73 | 0.04 | 0.01 | 175.00 | 3.91 | 2.21 | 0.13 |
| 47.50 | 0.77 | 0.05 | 0.01 | 177.50 | 4.02 | 2.30 | 0.13 |
| 50.00 | 0.80 | 0.06 | 0.02 | 180.00 | 4.13 | 2.40 | 0.13 |
| 52.50 | 0.84 | 0.08 | 0.02 | 182.50 | 4.24 | 2.49 | 0.14 |
| 55.00 | 0.89 | 0.09 | 0.02 | 185.00 | 4.35 | 2.60 | 0.15 |
| 57.50 | 0.94 | 0.11 | 0.03 | 187.50 | 4.48 | 2.71 | 0.16 |
| 60.00 | 0.99 | 0.13 | 0.03 | 190.00 | 4.61 | 2.83 | 0.17 |
| 62.50 | 1.04 | 0.15 | 0.03 | 192.50 | 4.76 | 2.95 | 0.18 |
| 65.00 | 1.10 | 0.17 | 0.03 | 195.00 | 4.91 | 3.09 | 0.21 |
| 67.50 | 1.15 | 0.20 | 0.03 | 197.50 | 5.09 | 3.25 | 0.23 |
| 70.00 | 1.20 | 0.22 | 0.04 | 200.00 | 5.28 | 3.43 | 0.26 |
| 72.50 | 1.26 | 0.25 | 0.04 | 202.50 | 5.49 | 3.62 | **0.28** |
| 75.00 | 1.31 | 0.28 | 0.04 | 205.00 | 5.72 | 3.83 | **0.30** |
| 77.50 | 1.36 | 0.30 | 0.04 | 207.50 | 5.95 | 4.05 | 0.30 |
| 80.00 | 1.42 | 0.33 | 0.04 | 210.00 | 6.18 | 4.26 | 0.29 |
| 82.50 | 1.47 | 0.36 | 0.04 | 212.50 | 6.40 | 4.46 | 0.29 |
| 85.00 | 1.53 | 0.39 | 0.04 | 215.00 | 6.62 | 4.67 | 0.29 |
| 87.50 | 1.58 | 0.43 | 0.04 | 217.50 | 6.83 | 4.87 | 0.28 |
| 90.00 | 1.63 | 0.46 | 0.05 | 220.00 | 7.03 | 5.05 | 0.26 |
| 92.50 | 1.69 | 0.49 | 0.05 | 222.50 | 7.21 | 5.23 | 0.24 |
| 95.00 | 1.74 | 0.52 | 0.05 | 225.00 | 7.38 | 5.39 | 0.22 |
| 97.50 | 1.79 | 0.56 | 0.05 | 227.50 | 7.53 | 5.53 | 0.20 |
| 100.00 | 1.85 | 0.59 | 0.05 | 230.00 | 7.68 | 5.67 | 0.19 |
| 102.50 | 1.90 | 0.63 | 0.05 | 232.50 | 7.82 | 5.81 | 0.19 |
| 105.00 | 1.96 | 0.66 | 0.05 | 235.00 | 7.96 | 5.94 | 0.19 |
| 107.50 | 2.01 | 0.70 | 0.05 | 237.50 | 8.11 | 6.08 | 0.19 |
| 110.00 | 2.06 | 0.74 | 0.05 | 240.00 | **8.25** | **6.22** | 0.19 |
| 112.50 | 2.12 | 0.78 | 0.05 | 242.50 | 8.25 | 6.22 | 0.00 |
| 115.00 | 2.17 | 0.81 | 0.05 | 245.00 | 8.25 | 6.22 | 0.00 |
| 117.50 | 2.22 | 0.85 | 0.05 | 247.50 | 8.25 | 6.22 | 0.00 |
| 120.00 | 2.28 | 0.89 | 0.06 | 250.00 | 8.25 | 6.22 | 0.00 |
| 122.50 | 2.33 | 0.93 | 0.06 | | | | |
| 125.00 | 2.39 | 0.98 | 0.06 | | | | |
| 127.50 | 2.46 | 1.02 | 0.07 | | | | |
| 130.00 | 2.52 | 1.07 | 0.07 | | | | |
| 132.50 | 2.59 | 1.13 | 0.08 | | | | |
| 135.00 | 2.66 | 1.18 | 0.07 | | | | |
| 137.50 | 2.73 | 1.23 | 0.07 | | | | |

## Summary for Subcatchment 7S: South Property

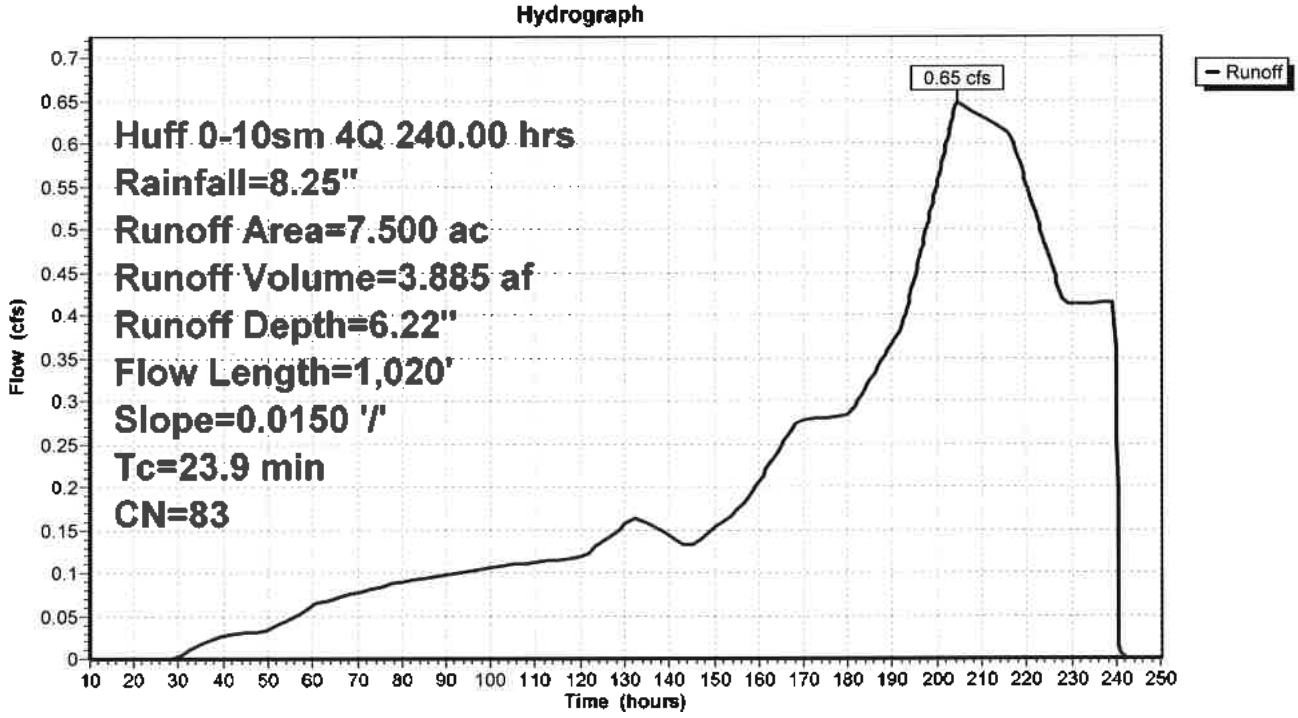
Runoff = 0.65 cfs @ 204.58 hrs, Volume= 3.885 af, Depth= 6.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.05 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=8.25"

| Area (ac) | CN | Description |
|---|---|---|
| 7.500 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 4.650 | | 62.00% Pervious Area |
| 2.850 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 23.9 | 1,020 | 0.0150 | 0.71 | | **Lag/CN Method,** |

### Subcatchment 7S: South Property



## Hydrograph for Subcatchment 7S: South Property

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.06 | 0.00 | 0.00 | 140.00 | 2.79 | 1.28 | 0.14 |
| 12.50 | 0.09 | 0.00 | 0.00 | 142.50 | 2.85 | 1.32 | 0.14 |
| 15.00 | 0.13 | 0.00 | 0.00 | 145.00 | 2.90 | 1.37 | 0.13 |
| 17.50 | 0.17 | 0.00 | 0.00 | 147.50 | 2.96 | 1.41 | 0.14 |
| 20.00 | 0.22 | 0.00 | 0.00 | 150.00 | 3.02 | 1.46 | 0.15 |
| 22.50 | 0.27 | 0.00 | 0.00 | 152.50 | 3.08 | 1.51 | 0.16 |
| 25.00 | 0.32 | 0.00 | 0.00 | 155.00 | 3.15 | 1.57 | 0.17 |
| 27.50 | 0.38 | 0.00 | 0.00 | 157.50 | 3.22 | 1.63 | 0.19 |
| 30.00 | 0.43 | 0.00 | 0.00 | 160.00 | 3.30 | 1.69 | 0.21 |
| 32.50 | 0.48 | 0.00 | 0.01 | 162.50 | 3.39 | 1.77 | 0.23 |
| 35.00 | 0.54 | 0.01 | 0.02 | 165.00 | 3.49 | 1.85 | 0.25 |
| 37.50 | 0.59 | 0.01 | 0.02 | 167.50 | 3.59 | 1.93 | 0.27 |
| 40.00 | 0.64 | 0.02 | 0.03 | 170.00 | 3.70 | 2.02 | 0.28 |
| 42.50 | 0.69 | 0.03 | 0.03 | 172.50 | 3.80 | 2.12 | 0.28 |
| 45.00 | 0.73 | 0.04 | 0.03 | 175.00 | 3.91 | 2.21 | 0.28 |
| 47.50 | 0.77 | 0.05 | 0.03 | 177.50 | 4.02 | 2.30 | 0.28 |
| 50.00 | 0.80 | 0.06 | 0.03 | 180.00 | 4.13 | 2.40 | 0.28 |
| 52.50 | 0.84 | 0.08 | 0.04 | 182.50 | 4.24 | 2.49 | 0.30 |
| 55.00 | 0.89 | 0.09 | 0.05 | 185.00 | 4.35 | 2.60 | 0.32 |
| 57.50 | 0.94 | 0.11 | 0.05 | 187.50 | 4.48 | 2.71 | 0.35 |
| 60.00 | 0.99 | 0.13 | 0.06 | 190.00 | 4.61 | 2.83 | 0.37 |
| 62.50 | 1.04 | 0.15 | 0.07 | 192.50 | 4.76 | 2.95 | 0.39 |
| 65.00 | 1.10 | 0.17 | 0.07 | 195.00 | 4.91 | 3.09 | 0.44 |
| 67.50 | 1.15 | 0.20 | 0.07 | 197.50 | 5.09 | 3.25 | 0.50 |
| 70.00 | 1.20 | 0.22 | 0.08 | 200.00 | 5.28 | 3.43 | 0.55 |
| 72.50 | 1.26 | 0.25 | 0.08 | 202.50 | 5.49 | 3.62 | **0.61** |
| 75.00 | 1.31 | 0.28 | 0.08 | 205.00 | 5.72 | 3.83 | **0.65** |
| 77.50 | 1.36 | 0.30 | 0.09 | 207.50 | 5.95 | 4.05 | 0.64 |
| 80.00 | 1.42 | 0.33 | 0.09 | 210.00 | 6.18 | 4.26 | 0.63 |
| 82.50 | 1.47 | 0.36 | 0.09 | 212.50 | 6.40 | 4.46 | 0.62 |
| 85.00 | 1.53 | 0.39 | 0.09 | 215.00 | 6.62 | 4.67 | 0.62 |
| 87.50 | 1.58 | 0.43 | 0.10 | 217.50 | 6.83 | 4.87 | 0.59 |
| 90.00 | 1.63 | 0.46 | 0.10 | 220.00 | 7.03 | 5.05 | 0.55 |
| 92.50 | 1.69 | 0.49 | 0.10 | 222.50 | 7.21 | 5.23 | 0.51 |
| 95.00 | 1.74 | 0.52 | 0.10 | 225.00 | 7.38 | 5.39 | 0.47 |
| 97.50 | 1.79 | 0.56 | 0.10 | 227.50 | 7.53 | 5.53 | 0.43 |
| 100.00 | 1.85 | 0.59 | 0.11 | 230.00 | 7.68 | 5.67 | 0.41 |
| 102.50 | 1.90 | 0.63 | 0.11 | 232.50 | 7.82 | 5.81 | 0.41 |
| 105.00 | 1.96 | 0.66 | 0.11 | 235.00 | 7.96 | 5.94 | 0.41 |
| 107.50 | 2.01 | 0.70 | 0.11 | 237.50 | 8.11 | 6.08 | 0.41 |
| 110.00 | 2.06 | 0.74 | 0.11 | 240.00 | **8.25** | **6.22** | 0.41 |
| 112.50 | 2.12 | 0.78 | 0.11 | 242.50 | 8.25 | 6.22 | 0.00 |
| 115.00 | 2.17 | 0.81 | 0.12 | 245.00 | 8.25 | 6.22 | 0.00 |
| 117.50 | 2.22 | 0.85 | 0.12 | 247.50 | 8.25 | 6.22 | 0.00 |
| 120.00 | 2.28 | 0.89 | 0.12 | 250.00 | 8.25 | 6.22 | 0.00 |
| 122.50 | 2.33 | 0.93 | 0.13 | | | | |
| 125.00 | 2.39 | 0.98 | 0.14 | | | | |
| 127.50 | 2.46 | 1.02 | 0.15 | | | | |
| 130.00 | 2.52 | 1.07 | 0.16 | | | | |
| 132.50 | 2.59 | 1.13 | 0.16 | | | | |
| 135.00 | 2.66 | 1.18 | 0.16 | | | | |
| 137.50 | 2.73 | 1.23 | 0.15 | | | | |

## Summary for Subcatchment 8S: Northwood Drive Bypass

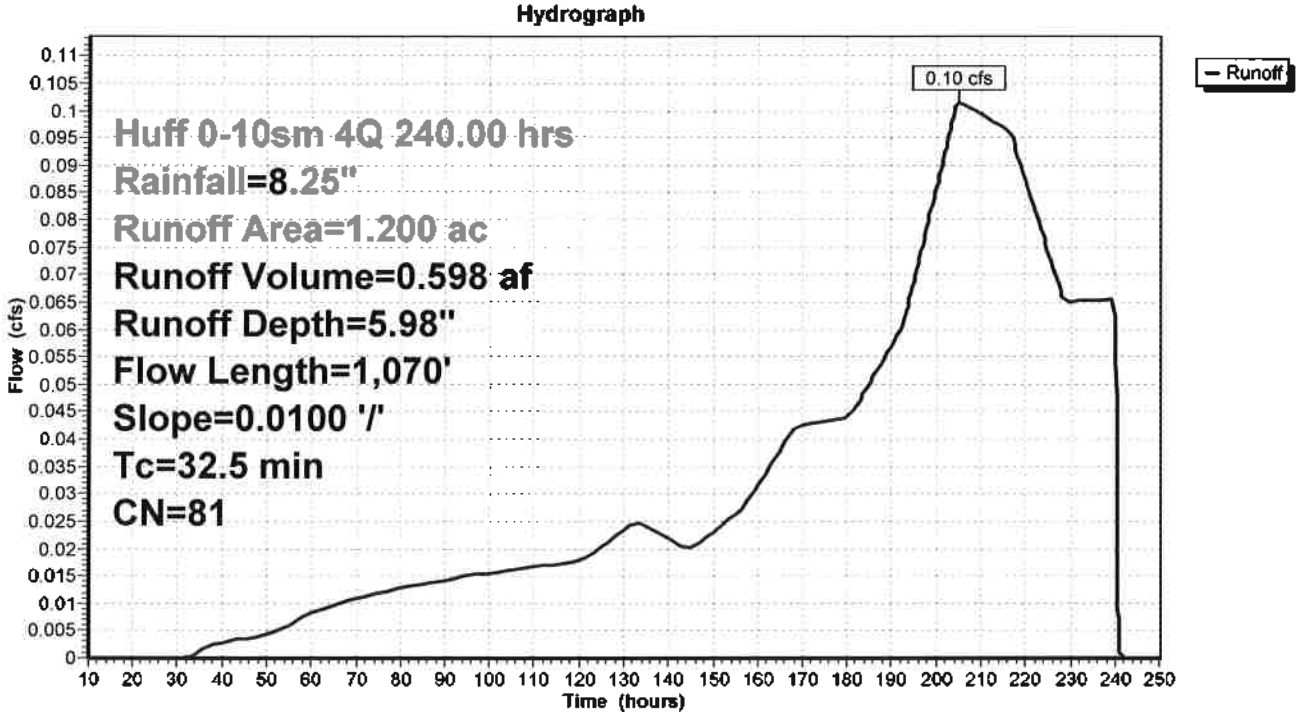
Runoff = 0.10 cfs @ 204.83 hrs, Volume= 0.598 af, Depth= 5.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.05 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=8.25"

| Area (ac) | CN | Description |
|---|---|---|
| 1.200 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.840 | | 70.00% Pervious Area |
| 0.360 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 32.5 | 1,070 | 0.0100 | 0.55 | | **Lag/CN Method, Lag CN** |

## Subcatchment 8S: Northwood Drive Bypass



## Hydrograph for Subcatchment 8S: Northwood Drive Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.06 | 0.00 | 0.00 | 140.00 | 2.79 | 1.15 | 0.02 |
| 12.50 | 0.09 | 0.00 | 0.00 | 142.50 | 2.85 | 1.20 | 0.02 |
| 15.00 | 0.13 | 0.00 | 0.00 | 145.00 | 2.90 | 1.24 | 0.02 |
| 17.50 | 0.17 | 0.00 | 0.00 | 147.50 | 2.96 | 1.28 | 0.02 |
| 20.00 | 0.22 | 0.00 | 0.00 | 150.00 | 3.02 | 1.33 | 0.02 |
| 22.50 | 0.27 | 0.00 | 0.00 | 152.50 | 3.08 | 1.38 | 0.02 |
| 25.00 | 0.32 | 0.00 | 0.00 | 155.00 | 3.15 | 1.43 | 0.03 |
| 27.50 | 0.38 | 0.00 | 0.00 | 157.50 | 3.22 | 1.49 | 0.03 |
| 30.00 | 0.43 | 0.00 | 0.00 | 160.00 | 3.30 | 1.55 | 0.03 |
| 32.50 | 0.48 | 0.00 | 0.00 | 162.50 | 3.39 | 1.62 | 0.03 |
| 35.00 | 0.54 | 0.00 | 0.00 | 165.00 | 3.49 | 1.70 | 0.04 |
| 37.50 | 0.59 | 0.01 | 0.00 | 167.50 | 3.59 | 1.78 | 0.04 |
| 40.00 | 0.64 | 0.01 | 0.00 | 170.00 | 3.70 | 1.87 | 0.04 |
| 42.50 | 0.69 | 0.02 | 0.00 | 172.50 | 3.80 | 1.96 | 0.04 |
| 45.00 | 0.73 | 0.03 | 0.00 | 175.00 | 3.91 | 2.05 | 0.04 |
| 47.50 | 0.77 | 0.03 | 0.00 | 177.50 | 4.02 | 2.14 | 0.04 |
| 50.00 | 0.80 | 0.04 | 0.00 | 180.00 | 4.13 | 2.23 | 0.04 |
| 52.50 | 0.84 | 0.05 | 0.01 | 182.50 | 4.24 | 2.32 | 0.05 |
| 55.00 | 0.89 | 0.06 | 0.01 | 185.00 | 4.35 | 2.42 | 0.05 |
| 57.50 | 0.94 | 0.08 | 0.01 | 187.50 | 4.48 | 2.53 | 0.05 |
| 60.00 | 0.99 | 0.09 | 0.01 | 190.00 | 4.61 | 2.65 | 0.06 |
| 62.50 | 1.04 | 0.11 | 0.01 | 192.50 | 4.76 | 2.77 | 0.06 |
| 65.00 | 1.10 | 0.13 | 0.01 | 195.00 | 4.91 | 2.91 | 0.07 |
| 67.50 | 1.15 | 0.15 | 0.01 | 197.50 | 5.09 | 3.06 | 0.08 |
| 70.00 | 1.20 | 0.17 | 0.01 | 200.00 | 5.28 | 3.23 | 0.09 |
| 72.50 | 1.26 | 0.20 | 0.01 | 202.50 | 5.49 | 3.42 | **0.09** |
| 75.00 | 1.31 | 0.22 | 0.01 | 205.00 | 5.72 | 3.63 | **0.10** |
| 77.50 | 1.36 | 0.25 | 0.01 | 207.50 | 5.95 | 3.84 | 0.10 |
| 80.00 | 1.42 | 0.27 | 0.01 | 210.00 | 6.18 | 4.05 | 0.10 |
| 82.50 | 1.47 | 0.30 | 0.01 | 212.50 | 6.40 | 4.25 | 0.10 |
| 85.00 | 1.53 | 0.33 | 0.01 | 215.00 | 6.62 | 4.45 | 0.10 |
| 87.50 | 1.58 | 0.36 | 0.01 | 217.50 | 6.83 | 4.65 | 0.09 |
| 90.00 | 1.63 | 0.39 | 0.01 | 220.00 | 7.03 | 4.83 | 0.09 |
| 92.50 | 1.69 | 0.42 | 0.01 | 222.50 | 7.21 | 5.00 | 0.08 |
| 95.00 | 1.74 | 0.45 | 0.01 | 225.00 | 7.38 | 5.16 | 0.07 |
| 97.50 | 1.79 | 0.48 | 0.02 | 227.50 | 7.53 | 5.30 | 0.07 |
| 100.00 | 1.85 | 0.51 | 0.02 | 230.00 | 7.68 | 5.44 | 0.07 |
| 102.50 | 1.90 | 0.54 | 0.02 | 232.50 | 7.82 | 5.57 | 0.07 |
| 105.00 | 1.96 | 0.58 | 0.02 | 235.00 | 7.96 | 5.71 | 0.07 |
| 107.50 | 2.01 | 0.61 | 0.02 | 237.50 | 8.11 | 5.84 | 0.07 |
| 110.00 | 2.06 | 0.64 | 0.02 | 240.00 | **8.25** | **5.98** | 0.07 |
| 112.50 | 2.12 | 0.68 | 0.02 | 242.50 | 8.25 | 5.98 | 0.00 |
| 115.00 | 2.17 | 0.71 | 0.02 | 245.00 | 8.25 | 5.98 | 0.00 |
| 117.50 | 2.22 | 0.75 | 0.02 | 247.50 | 8.25 | 5.98 | 0.00 |
| 120.00 | 2.28 | 0.79 | 0.02 | 250.00 | 8.25 | 5.98 | 0.00 |
| 122.50 | 2.33 | 0.83 | 0.02 | | | | |
| 125.00 | 2.39 | 0.87 | 0.02 | | | | |
| 127.50 | 2.46 | 0.91 | 0.02 | | | | |
| 130.00 | 2.52 | 0.96 | 0.02 | | | | |
| 132.50 | 2.59 | 1.01 | 0.02 | | | | |
| 135.00 | 2.66 | 1.06 | 0.02 | | | | |
| 137.50 | 2.73 | 1.11 | 0.02 | | | | |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

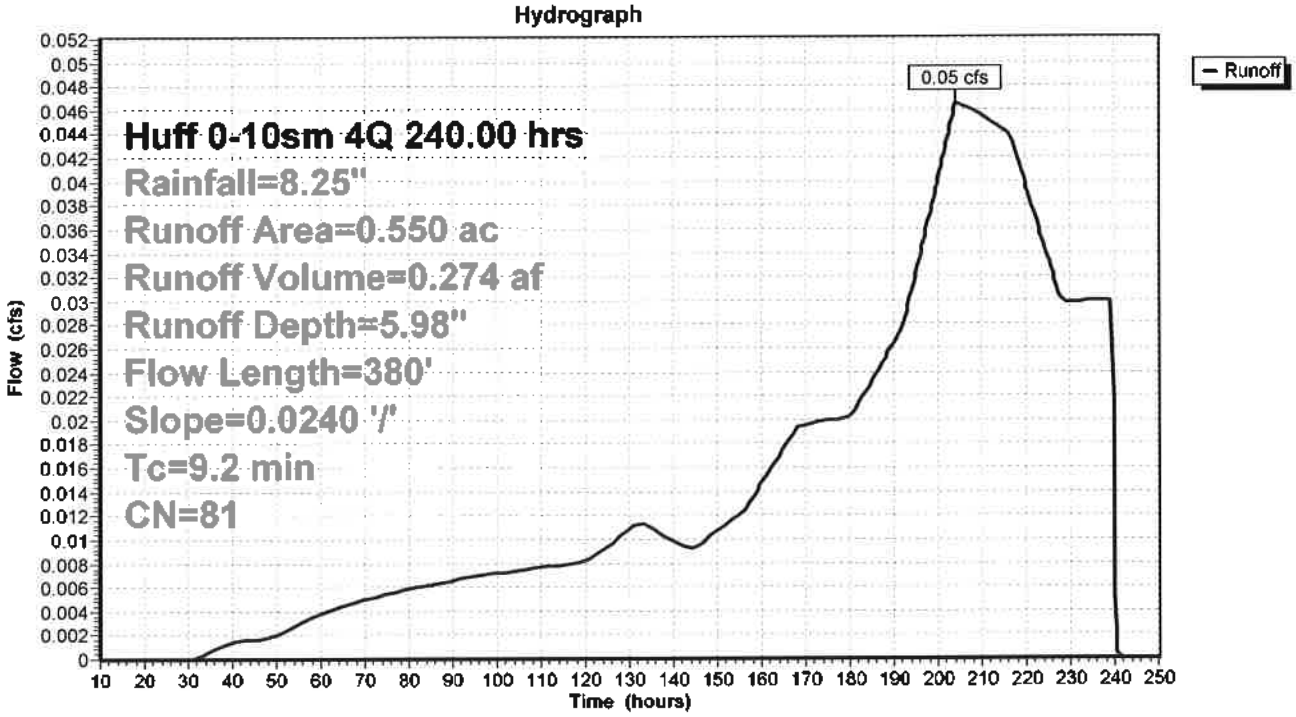
Runoff = 0.05 cfs @ 204.25 hrs, Volume= 0.274 af, Depth= 5.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.05 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=8.25"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Subcatchment 9S: ODH Subdivision Bypass



## Hydrograph for Subcatchment 9S: ODH Subdivision Bypass

| Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) | Time (hours) | Precip. (inches) | Excess (inches) | Runoff (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.06 | 0.00 | 0.00 | 140.00 | 2.79 | 1.15 | 0.01 |
| 12.50 | 0.09 | 0.00 | 0.00 | 142.50 | 2.85 | 1.20 | 0.01 |
| 15.00 | 0.13 | 0.00 | 0.00 | 145.00 | 2.90 | 1.24 | 0.01 |
| 17.50 | 0.17 | 0.00 | 0.00 | 147.50 | 2.96 | 1.28 | 0.01 |
| 20.00 | 0.22 | 0.00 | 0.00 | 150.00 | 3.02 | 1.33 | 0.01 |
| 22.50 | 0.27 | 0.00 | 0.00 | 152.50 | 3.08 | 1.38 | 0.01 |
| 25.00 | 0.32 | 0.00 | 0.00 | 155.00 | 3.15 | 1.43 | 0.01 |
| 27.50 | 0.38 | 0.00 | 0.00 | 157.50 | 3.22 | 1.49 | 0.01 |
| 30.00 | 0.43 | 0.00 | 0.00 | 160.00 | 3.30 | 1.55 | 0.01 |
| 32.50 | 0.48 | 0.00 | 0.00 | 162.50 | 3.39 | 1.62 | 0.02 |
| 35.00 | 0.54 | 0.00 | 0.00 | 165.00 | 3.49 | 1.70 | 0.02 |
| 37.50 | 0.59 | 0.01 | 0.00 | 167.50 | 3.59 | 1.78 | 0.02 |
| 40.00 | 0.64 | 0.01 | 0.00 | 170.00 | 3.70 | 1.87 | 0.02 |
| 42.50 | 0.69 | 0.02 | 0.00 | 172.50 | 3.80 | 1.96 | 0.02 |
| 45.00 | 0.73 | 0.03 | 0.00 | 175.00 | 3.91 | 2.05 | 0.02 |
| 47.50 | 0.77 | 0.03 | 0.00 | 177.50 | 4.02 | 2.14 | 0.02 |
| 50.00 | 0.80 | 0.04 | 0.00 | 180.00 | 4.13 | 2.23 | 0.02 |
| 52.50 | 0.84 | 0.05 | 0.00 | 182.50 | 4.24 | 2.32 | 0.02 |
| 55.00 | 0.89 | 0.06 | 0.00 | 185.00 | 4.35 | 2.42 | 0.02 |
| 57.50 | 0.94 | 0.08 | 0.00 | 187.50 | 4.48 | 2.53 | 0.02 |
| 60.00 | 0.99 | 0.09 | 0.00 | 190.00 | 4.61 | 2.65 | 0.03 |
| 62.50 | 1.04 | 0.11 | 0.00 | 192.50 | 4.76 | 2.77 | 0.03 |
| 65.00 | 1.10 | 0.13 | 0.00 | 195.00 | 4.91 | 2.91 | 0.03 |
| 67.50 | 1.15 | 0.15 | 0.00 | 197.50 | 5.09 | 3.06 | 0.04 |
| 70.00 | 1.20 | 0.17 | 0.00 | 200.00 | 5.28 | 3.23 | 0.04 |
| 72.50 | 1.26 | 0.20 | 0.01 | 202.50 | 5.49 | 3.42 | **0.04** |
| 75.00 | 1.31 | 0.22 | 0.01 | 205.00 | 5.72 | 3.63 | **0.05** |
| 77.50 | 1.36 | 0.25 | 0.01 | 207.50 | 5.95 | 3.84 | 0.05 |
| 80.00 | 1.42 | 0.27 | 0.01 | 210.00 | 6.18 | 4.05 | 0.05 |
| 82.50 | 1.47 | 0.30 | 0.01 | 212.50 | 6.40 | 4.25 | 0.04 |
| 85.00 | 1.53 | 0.33 | 0.01 | 215.00 | 6.62 | 4.45 | 0.04 |
| 87.50 | 1.58 | 0.36 | 0.01 | 217.50 | 6.83 | 4.65 | 0.04 |
| 90.00 | 1.63 | 0.39 | 0.01 | 220.00 | 7.03 | 4.83 | 0.04 |
| 92.50 | 1.69 | 0.42 | 0.01 | 222.50 | 7.21 | 5.00 | 0.04 |
| 95.00 | 1.74 | 0.45 | 0.01 | 225.00 | 7.38 | 5.16 | 0.03 |
| 97.50 | 1.79 | 0.48 | 0.01 | 227.50 | 7.53 | 5.30 | 0.03 |
| 100.00 | 1.85 | 0.51 | 0.01 | 230.00 | 7.68 | 5.44 | 0.03 |
| 102.50 | 1.90 | 0.54 | 0.01 | 232.50 | 7.82 | 5.57 | 0.03 |
| 105.00 | 1.96 | 0.58 | 0.01 | 235.00 | 7.96 | 5.71 | 0.03 |
| 107.50 | 2.01 | 0.61 | 0.01 | 237.50 | 8.11 | 5.84 | 0.03 |
| 110.00 | 2.06 | 0.64 | 0.01 | 240.00 | **8.25** | **5.98** | 0.03 |
| 112.50 | 2.12 | 0.68 | 0.01 | 242.50 | 8.25 | 5.98 | 0.00 |
| 115.00 | 2.17 | 0.71 | 0.01 | 245.00 | 8.25 | 5.98 | 0.00 |
| 117.50 | 2.22 | 0.75 | 0.01 | 247.50 | 8.25 | 5.98 | 0.00 |
| 120.00 | 2.28 | 0.79 | 0.01 | 250.00 | 8.25 | 5.98 | 0.00 |
| 122.50 | 2.33 | 0.83 | 0.01 | | | | |
| 125.00 | 2.39 | 0.87 | 0.01 | | | | |
| 127.50 | 2.46 | 0.91 | 0.01 | | | | |
| 130.00 | 2.52 | 0.96 | 0.01 | | | | |
| 132.50 | 2.59 | 1.01 | 0.01 | | | | |
| 135.00 | 2.66 | 1.06 | 0.01 | | | | |
| 137.50 | 2.73 | 1.11 | 0.01 | | | | |

## Summary for Pond 3P: Southeast Chambers

| | | | | |
|---|---|---|---|---|
| Inflow | = | 0.80 cfs @ 204.58 hrs, | Volume= | 5.498 af |
| Outflow | = | 0.64 cfs @ 222.99 hrs, | Volume= | 5.363 af, Atten= 19%, Lag= 1,104.8 min |
| Primary | = | 0.64 cfs @ 222.99 hrs, | Volume= | 5.363 af |
| Secondary | = | 0.00 cfs @ 10.00 hrs, | Volume= | 0.000 af |
| Tertiary | = | 0.00 cfs @ 10.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 10.00-250.00 hrs, dt= 0.05 hrs
Peak Elev= 671.66' @ 222.99 hrs Surf.Area= 30,728 sf Storage= 26,842 cf

Plug-Flow detention time= 416.5 min calculated for 5.362 af (98% of inflow)
Center-of-Mass det. time= 319.6 min ( 10,800.6 - 10,481.0 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.00' | 8,508 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>36,469 cf Overall - 12,835 cf Embedded = 23,634 cf x 36.0% Voids |
| #2 | 670.75' | 12,835 cf | **Cultec R-902HD @ 727.00' L** Inside #1<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 727.00'L = 12,835.2 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #3 | 670.00' | 6,320 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>22,076 cf Overall - 4,520 cf Embedded = 17,557 cf x 36.0% Voids |
| #4 | 670.75' | 4,520 cf | **Cultec R-902HD @ 256.00' L** Inside #3<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 256.00'L = 4,519.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #5 | 670.00' | 17,648 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>80,732 cf Overall - 31,708 cf Embedded = 49,023 cf x 36.0% Voids |
| #6 | 670.75' | 31,708 cf | **Cultec R-902HD @ 1,796.00' L** Inside #5<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 1,796.00'L = 31,708.4 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #7 | 675.25' | 14,060 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>55,345 cf Overall - 16,291 cf Embedded = 39,054 cf x 36.0% Voids |
| #8 | 675.75' | 16,291 cf | **Cultec R-280HD @ 2,683.00' L** Inside #7<br>Effective Size= 46.9"W x 26.0"H => 6.07 sf x 2,683.00'L = 16,290.5 cf<br>Overall Size= 47.0"W x 26.5"H x 8.00'L with 1.00' Overlap |
| #9 | 670.00' | 2,847 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>10,008 cf Overall - 2,101 cf Embedded = 7,907 cf x 36.0% Voids |
| #10 | 670.75' | 2,101 cf | **Cultec R-902HD @ 119.00' L** Inside #9<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 119.00'L = 2,100.9 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #11 | 670.34' | 4,845 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>17,077 cf Overall - 3,619 cf Embedded = 13,458 cf x 36.0% Voids |
| #12 | 671.09' | 3,619 cf | **Cultec R-902HD @ 205.00' L** Inside #11<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 205.00'L = 3,619.3 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #13 | 670.41' | 3,242 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>11,529 cf Overall - 2,525 cf Embedded = 9,005 cf x 36.0% Voids |
| #14 | 671.16' | 2,525 cf | **Cultec R-902HD @ 143.00' L** Inside #13<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 143.00'L = 2,524.7 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| #15 | 671.37' | 5,180 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc)<br>18,961 cf Overall - 4,573 cf Embedded = 14,388 cf x 36.0% Voids |

| | | | |
|---|---|---|---|
| #16 | 672.12' | 4,573 cf | **Cultec R-902HD @ 259.00' L** Inside #15<br>Effective Size= 69.8"W x 48.0"H => 17.65 sf x 259.00'L = 4,572.6 cf<br>Overall Size= 78.0"W x 48.0"H x 4.10'L with 0.44' Overlap |
| | | 140,821 cf | Total Available Storage |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 6,238 | 0 | 0 |
| 675.75 | 6,447 | 36,469 | 36,469 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 2,338 | 0 | 0 |
| 678.90 | 2,623 | 22,076 | 22,076 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 15,163 | 0 | 0 |
| 675.25 | 15,592 | 80,732 | 80,732 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 675.25 | 15,163 | 0 | 0 |
| 678.90 | 15,163 | 55,345 | 55,345 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.00 | 1,062 | 0 | 0 |
| 678.90 | 1,187 | 10,008 | 10,008 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.34 | 1,940 | 0 | 0 |
| 678.90 | 2,050 | 17,077 | 17,077 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.41 | 1,310 | 0 | 0 |
| 678.90 | 1,406 | 11,529 | 11,529 |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 671.37 | 2,362 | 0 | 0 |
| 678.90 | 2,674 | 18,961 | 18,961 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 670.00' | **4.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Tertiary | 678.40' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

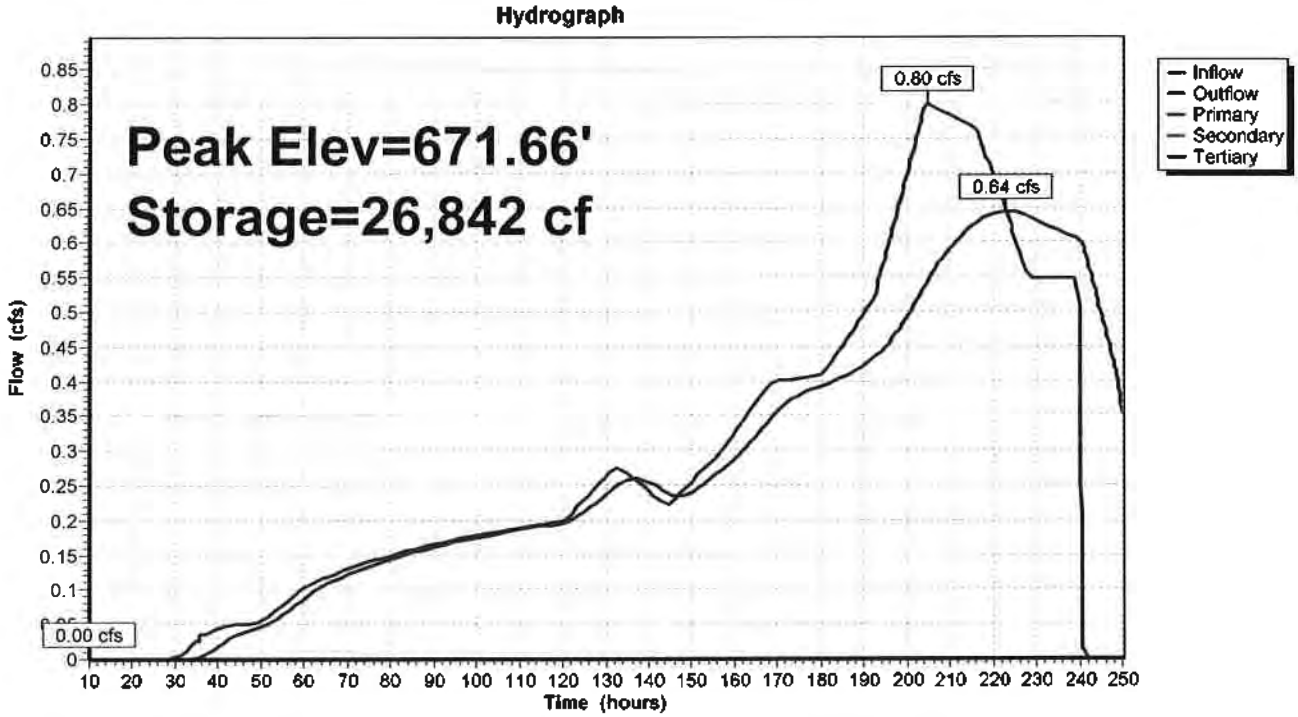
**#4 Secondary 673.50' 1.5" Vert. Orifice/Grate C= 0.600**

**Primary OutFlow** Max=0.64 cfs @ 222.99 hrs HW=671.66' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.64 cfs @ 5.83 fps)

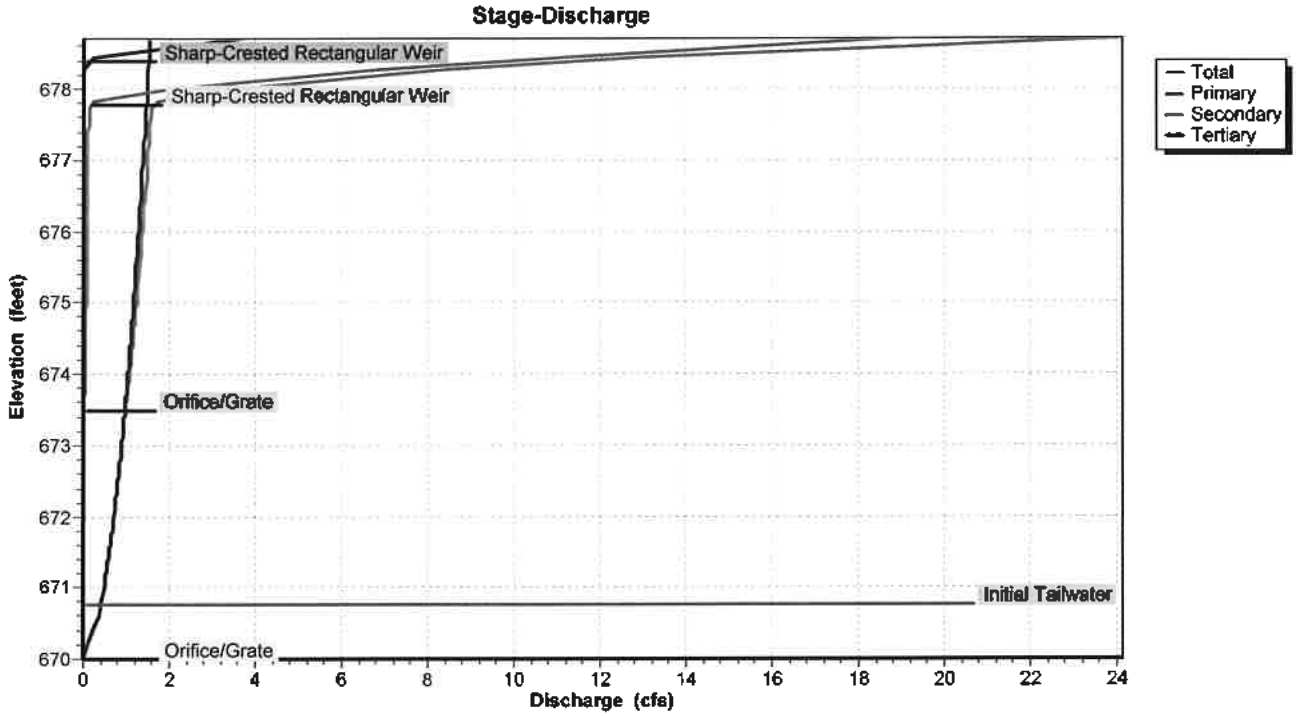
**Secondary OutFlow** Max=0.00 cfs @ 10.00 hrs HW=670.00' TW=670.75' (Dynamic Tailwater)
├─**3=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)
└─**4=Orifice/Grate** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 10.00 hrs HW=670.00' (Free Discharge)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

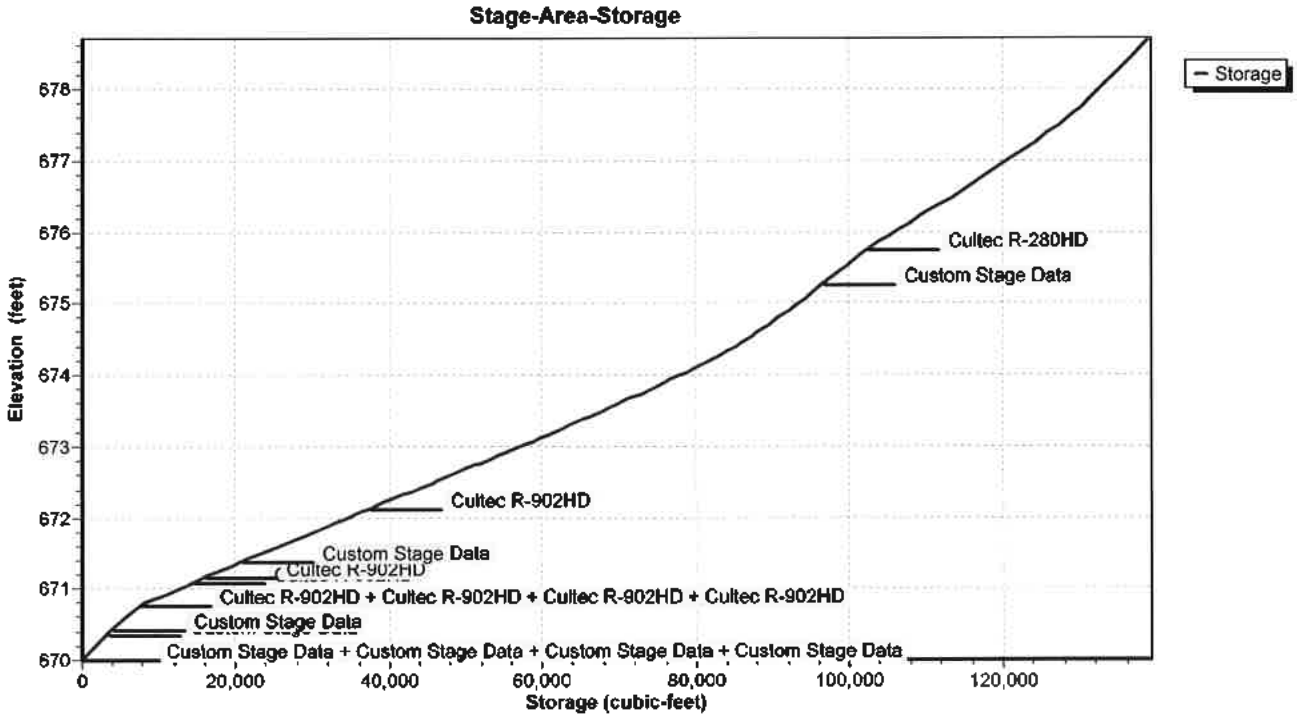
## Pond 3P: Southeast Chambers



## Pond 3P: Southeast Chambers




## Pond 3P: Southeast Chambers



## Hydrograph for Pond 3P: Southeast Chambers

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | **0.00** | **0.00** |
| 15.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25.00 | 0.00 | 0 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.00 | 2 | 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35.00 | 0.02 | 229 | 670.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.04 | 744 | 670.08 | 0.02 | 0.02 | 0.00 | 0.00 |
| 45.00 | 0.05 | 1,097 | 670.12 | 0.04 | 0.04 | 0.00 | 0.00 |
| 50.00 | 0.06 | 1,244 | 670.14 | 0.05 | 0.05 | 0.00 | 0.00 |
| 55.00 | 0.08 | 1,458 | 670.16 | 0.06 | 0.06 | 0.00 | 0.00 |
| 60.00 | 0.10 | 1,740 | 670.19 | 0.09 | 0.09 | 0.00 | 0.00 |
| 65.00 | 0.12 | 1,973 | 670.22 | 0.11 | 0.11 | 0.00 | 0.00 |
| 70.00 | 0.13 | 2,122 | 670.24 | 0.12 | 0.12 | 0.00 | 0.00 |
| 75.00 | 0.14 | 2,241 | 670.25 | 0.13 | 0.13 | 0.00 | 0.00 |
| 80.00 | 0.15 | 2,344 | 670.26 | 0.14 | 0.14 | 0.00 | 0.00 |
| 85.00 | 0.16 | 2,436 | 670.27 | 0.15 | 0.15 | 0.00 | 0.00 |
| 90.00 | 0.17 | 2,519 | 670.28 | 0.16 | 0.16 | 0.00 | 0.00 |
| 95.00 | 0.17 | 2,594 | 670.29 | 0.17 | 0.17 | 0.00 | 0.00 |
| 100.00 | 0.18 | 2,662 | 670.30 | 0.17 | 0.17 | 0.00 | 0.00 |
| 105.00 | 0.18 | 2,725 | 670.30 | 0.18 | 0.18 | 0.00 | 0.00 |
| 110.00 | 0.19 | 2,783 | 670.31 | 0.19 | 0.19 | 0.00 | 0.00 |
| 115.00 | 0.19 | 2,837 | 670.32 | 0.19 | 0.19 | 0.00 | 0.00 |
| 120.00 | 0.20 | 2,888 | 670.32 | 0.20 | 0.20 | 0.00 | 0.00 |
| 125.00 | 0.23 | 3,076 | 670.34 | 0.21 | 0.21 | 0.00 | 0.00 |
| 130.00 | 0.26 | 3,469 | 670.38 | 0.24 | 0.24 | 0.00 | 0.00 |
| 135.00 | 0.27 | 3,871 | 670.43 | 0.26 | 0.26 | 0.00 | 0.00 |
| 140.00 | 0.24 | 3,793 | 670.42 | 0.26 | 0.26 | 0.00 | 0.00 |
| 145.00 | 0.22 | 3,475 | 670.39 | 0.24 | 0.24 | 0.00 | 0.00 |
| 150.00 | 0.26 | 3,530 | 670.39 | 0.24 | 0.24 | 0.00 | 0.00 |
| 155.00 | 0.29 | 3,917 | 670.43 | 0.26 | 0.26 | 0.00 | 0.00 |
| 160.00 | 0.32 | 4,432 | 670.48 | 0.29 | 0.29 | 0.00 | 0.00 |
| 165.00 | 0.37 | 5,174 | 670.55 | 0.32 | 0.32 | 0.00 | 0.00 |
| 170.00 | 0.40 | 6,046 | 670.64 | 0.36 | 0.36 | 0.00 | 0.00 |
| 175.00 | 0.40 | 6,629 | 670.70 | 0.38 | 0.38 | 0.00 | 0.00 |
| 180.00 | 0.41 | 6,978 | 670.73 | 0.39 | 0.39 | 0.00 | 0.00 |
| 185.00 | 0.45 | 7,507 | 670.77 | 0.40 | 0.40 | 0.00 | 0.00 |
| 190.00 | 0.50 | 8,614 | 670.82 | 0.42 | 0.42 | 0.00 | 0.00 |
| 195.00 | 0.58 | 10,349 | 670.90 | 0.45 | 0.45 | 0.00 | 0.00 |
| 200.00 | **0.70** | 13,389 | 671.05 | 0.49 | 0.49 | 0.00 | 0.00 |
| 205.00 | **0.80** | 17,638 | 671.25 | 0.55 | 0.55 | 0.00 | 0.00 |
| 210.00 | 0.78 | 21,624 | 671.43 | 0.59 | 0.59 | 0.00 | 0.00 |
| 215.00 | 0.77 | 24,640 | 671.56 | 0.62 | 0.62 | 0.00 | 0.00 |
| 220.00 | 0.70 | **26,544** | **671.64** | **0.64** | **0.64** | 0.00 | 0.00 |
| 225.00 | 0.61 | **26,714** | **671.65** | **0.64** | **0.64** | 0.00 | 0.00 |
| 230.00 | 0.55 | 25,451 | 671.59 | 0.63 | 0.63 | 0.00 | 0.00 |
| 235.00 | 0.55 | 24,086 | 671.53 | 0.62 | 0.62 | 0.00 | 0.00 |
| 240.00 | 0.55 | 22,970 | 671.48 | 0.61 | 0.61 | 0.00 | 0.00 |
| 245.00 | 0.00 | 13,804 | 671.07 | 0.50 | 0.50 | 0.00 | 0.00 |
| 250.00 | 0.00 | 5,944 | 670.63 | 0.35 | 0.35 | 0.00 | 0.00 |

## Stage-Discharge for Pond 3P: Southeast Chambers

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.20 | 0.09 | 0.09 | 0.00 | 0.00 |
| 670.40 | 0.25 | 0.25 | 0.00 | 0.00 |
| 670.60 | 0.34 | 0.34 | 0.00 | 0.00 |
| 670.80 | 0.42 | 0.42 | 0.00 | 0.00 |
| 671.00 | 0.48 | 0.48 | 0.00 | 0.00 |
| 671.20 | 0.54 | 0.54 | 0.00 | 0.00 |
| 671.40 | 0.59 | 0.59 | 0.00 | 0.00 |
| 671.60 | 0.63 | 0.63 | 0.00 | 0.00 |
| 671.80 | 0.68 | 0.68 | 0.00 | 0.00 |
| 672.00 | 0.72 | 0.72 | 0.00 | 0.00 |
| 672.20 | 0.75 | 0.75 | 0.00 | 0.00 |
| 672.40 | 0.79 | 0.79 | 0.00 | 0.00 |
| 672.60 | 0.83 | 0.83 | 0.00 | 0.00 |
| 672.80 | 0.86 | 0.86 | 0.00 | 0.00 |
| 673.00 | 0.89 | 0.89 | 0.00 | 0.00 |
| 673.20 | 0.92 | 0.92 | 0.00 | 0.00 |
| 673.40 | 0.95 | 0.95 | 0.00 | 0.00 |
| 673.60 | 0.99 | 0.98 | 0.01 | 0.00 |
| 673.80 | 1.04 | 1.01 | 0.03 | 0.00 |
| 674.00 | 1.08 | 1.04 | 0.04 | 0.00 |
| 674.20 | 1.11 | 1.07 | 0.05 | 0.00 |
| 674.40 | 1.15 | 1.09 | 0.05 | 0.00 |
| 674.60 | 1.18 | 1.12 | 0.06 | 0.00 |
| 674.80 | 1.21 | 1.14 | 0.07 | 0.00 |
| 675.00 | 1.24 | 1.17 | 0.07 | 0.00 |
| 675.20 | 1.27 | 1.19 | 0.08 | 0.00 |
| 675.40 | 1.29 | 1.21 | 0.08 | 0.00 |
| 675.60 | 1.32 | 1.24 | 0.08 | 0.00 |
| 675.80 | 1.35 | 1.26 | 0.09 | 0.00 |
| 676.00 | 1.37 | 1.28 | 0.09 | 0.00 |
| 676.20 | 1.40 | 1.30 | 0.10 | 0.00 |
| 676.40 | 1.43 | 1.33 | 0.10 | 0.00 |
| 676.60 | 1.45 | 1.35 | 0.10 | 0.00 |
| 676.80 | 1.47 | 1.37 | 0.11 | 0.00 |
| 677.00 | 1.50 | 1.39 | 0.11 | 0.00 |
| 677.20 | 1.52 | 1.41 | 0.11 | 0.00 |
| 677.40 | 1.54 | 1.43 | 0.12 | 0.00 |
| 677.60 | 1.57 | 1.45 | 0.12 | 0.00 |
| 677.80 | 1.59 | 1.47 | 0.12 | 0.00 |
| 678.00 | 3.40 | 1.49 | 1.91 | 0.00 |
| 678.20 | 6.77 | 1.51 | 5.26 | 0.00 |
| 678.40 | 11.25 | 1.52 | 9.72 | 0.00 |
| 678.60 | 18.46 | 1.54 | 15.13 | 1.79 |
| 678.80 | **28.12** | **1.56** | **21.42** | **5.14** |

## Stage-Area-Storage for Pond 3P: Southeast Chambers

| Elevation (feet) | Storage (cubic-feet) | Elevation (feet) | Storage (cubic-feet) |
|---|---|---|---|
| 670.00 | 0 | 675.20 | 95,621 |
| 670.10 | 893 | 675.30 | 96,808 |
| 670.20 | 1,787 | 675.40 | 97,984 |
| 670.30 | 2,681 | 675.50 | 99,158 |
| 670.40 | 3,618 | 675.60 | 100,327 |
| 670.50 | 4,626 | 675.70 | 101,491 |
| 670.60 | 5,639 | 675.80 | 102,865 |
| 670.70 | 6,653 | 675.90 | 104,433 |
| 670.80 | 8,202 | 676.00 | 105,977 |
| 670.90 | 10,288 | 676.10 | 107,509 |
| 671.00 | 12,379 | 676.20 | 109,032 |
| 671.10 | 14,465 | 676.30 | 110,542 |
| 671.20 | 16,635 | 676.40 | 112,038 |
| 671.30 | 18,830 | 676.50 | 113,523 |
| 671.40 | 21,049 | 676.60 | 114,993 |
| 671.50 | 23,322 | 676.70 | 116,452 |
| 671.60 | 25,582 | 676.80 | 117,901 |
| 671.70 | 27,830 | 676.90 | 119,339 |
| 671.80 | 30,075 | 677.00 | 120,753 |
| 671.90 | 32,317 | 677.10 | 122,143 |
| 672.00 | 34,546 | 677.20 | 123,511 |
| 672.10 | 36,761 | 677.30 | 124,850 |
| 672.20 | 39,047 | 677.40 | 126,157 |
| 672.30 | 41,344 | 677.50 | 127,426 |
| 672.40 | 43,628 | 677.60 | 128,644 |
| 672.50 | 45,906 | 677.70 | 129,794 |
| 672.60 | 48,170 | 677.80 | 130,846 |
| 672.70 | 50,428 | 677.90 | 131,802 |
| 672.80 | 52,674 | 678.00 | 132,704 |
| 672.90 | 54,899 | 678.10 | 133,604 |
| 673.00 | 57,117 | 678.20 | 134,505 |
| 673.10 | 59,314 | 678.30 | 135,406 |
| 673.20 | 61,492 | 678.40 | 136,307 |
| 673.30 | 63,654 | 678.50 | 137,209 |
| 673.40 | 65,789 | 678.60 | 138,112 |
| 673.50 | 67,899 | 678.70 | 139,014 |
| 673.60 | 69,981 | 678.80 | 139,917 |
| 673.70 | 72,030 | 678.90 | **140,821** |
| 673.80 | 74,047 | | |
| 673.90 | 76,023 | | |
| 674.00 | 77,955 | | |
| 674.10 | 79,844 | | |
| 674.20 | 81,679 | | |
| 674.30 | 83,453 | | |
| 674.40 | 85,139 | | |
| 674.50 | 86,709 | | |
| 674.60 | 88,153 | | |
| 674.70 | 89,496 | | |
| 674.80 | 90,763 | | |
| 674.90 | 91,997 | | |
| 675.00 | 93,215 | | |
| 675.10 | 94,422 | | |

## Summary for Pond 8P: North System

| | | | | |
|---|---|---|---|---|
| Inflow | = | 0.40 cfs @ 204.54 hrs, | Volume= | 2.411 af |
| Outflow | = | 0.40 cfs @ 204.91 hrs, | Volume= | 2.410 af, Atten= 0%, Lag= 22.7 min |
| Primary | = | 0.30 cfs @ 204.91 hrs, | Volume= | 1.071 af |
| Secondary | = | 0.11 cfs @ 204.91 hrs, | Volume= | 1.339 af |
| Tertiary | = | 0.00 cfs @ 10.00 hrs, | Volume= | 0.000 af |

Routing by Sim-Route method, Time Span= 10.00-250.00 hrs, dt= 0.05 hrs
Peak Elev= 676.84' @ 204.91 hrs Surf.Area= 1,404 sf Storage= 319 cf

Plug-Flow detention time= 13.7 min calculated for 2.410 af (100% of inflow)
Center-of-Mass det. time= 12.3 min ( 10,821.9 - 10,809.6 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 670.75' | 6,908 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 670.75 | 14 | 0 | 0 |
| 672.50 | 14 | 25 | 25 |
| 674.50 | 14 | 28 | 53 |
| 676.50 | 14 | 28 | 81 |
| 677.00 | 2,084 | 525 | 605 |
| 678.00 | 3,174 | 2,629 | 3,234 |
| 678.90 | 4,072 | 3,261 | 6,495 |
| 679.00 | 4,193 | 413 | 6,908 |

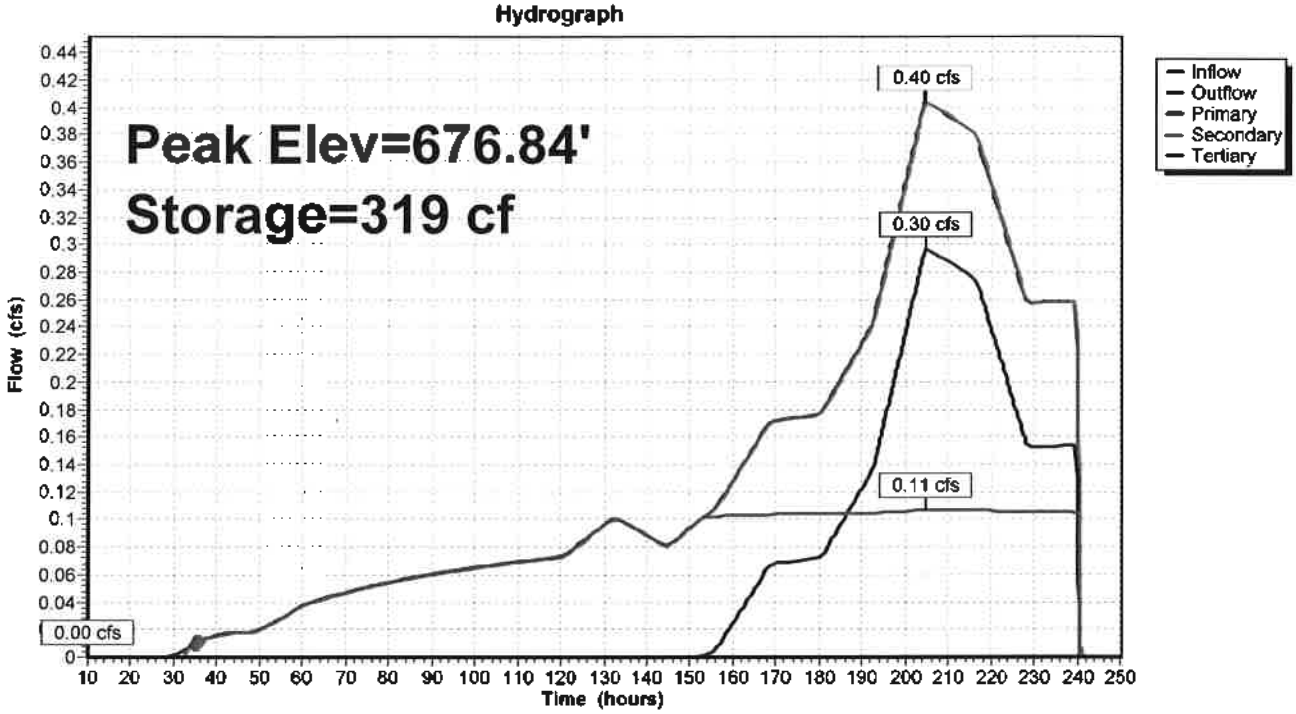
| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Primary | 676.50' | **6.5" Vert. Orifice/Grate** C= 0.600 |
| #2 | Primary | 678.00' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |
| #3 | Tertiary | 678.60' | **35.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |
| #4 | Secondary | 673.50' | **1.5" Vert. Orifice/Grate** C= 0.600 |
| #5 | Secondary | 677.80' | **6.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)<br>1.0' Crest Height |

**Primary OutFlow** Max=0.30 cfs @ 204.91 hrs HW=676.84' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.30 cfs @ 1.97 fps)
└─**2=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

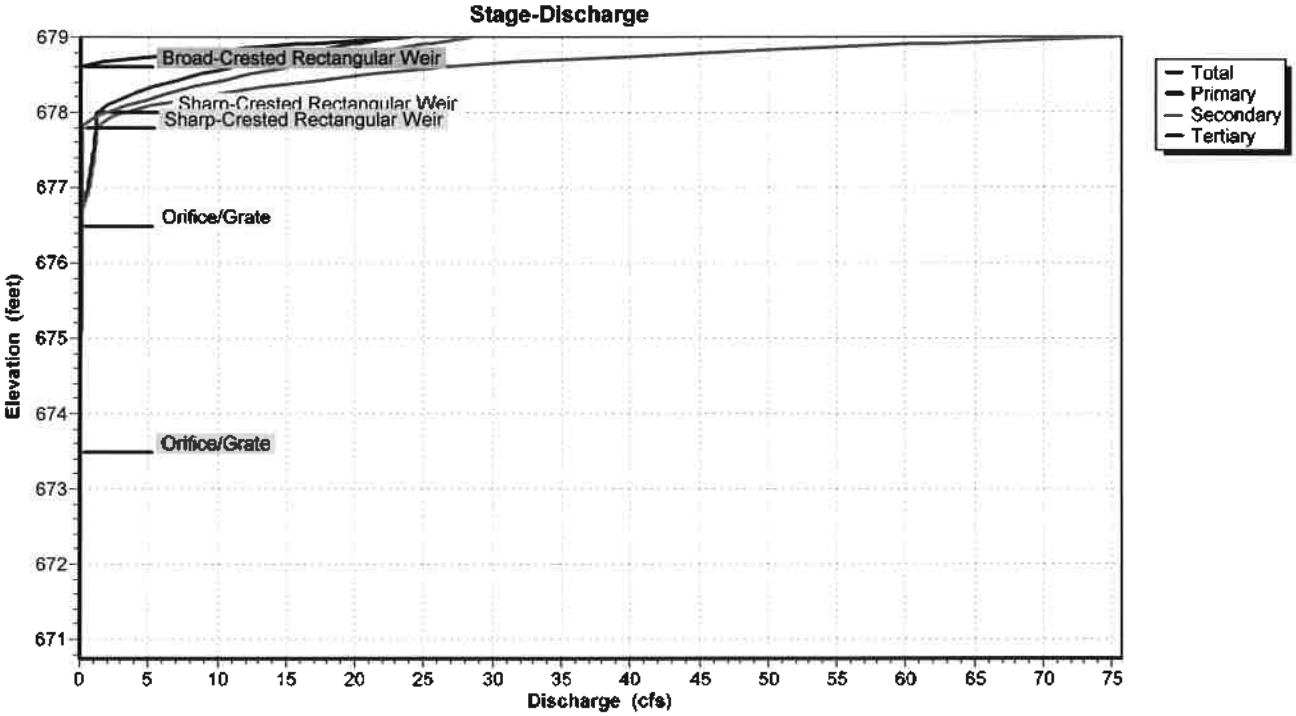
**Secondary OutFlow** Max=0.11 cfs @ 204.91 hrs HW=676.84' TW=671.24' (Dynamic Tailwater)
└─**4=Orifice/Grate** (Orifice Controls 0.11 cfs @ 8.71 fps)
└─**5=Sharp-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Tertiary OutFlow** Max=0.00 cfs @ 10.00 hrs HW=670.75' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

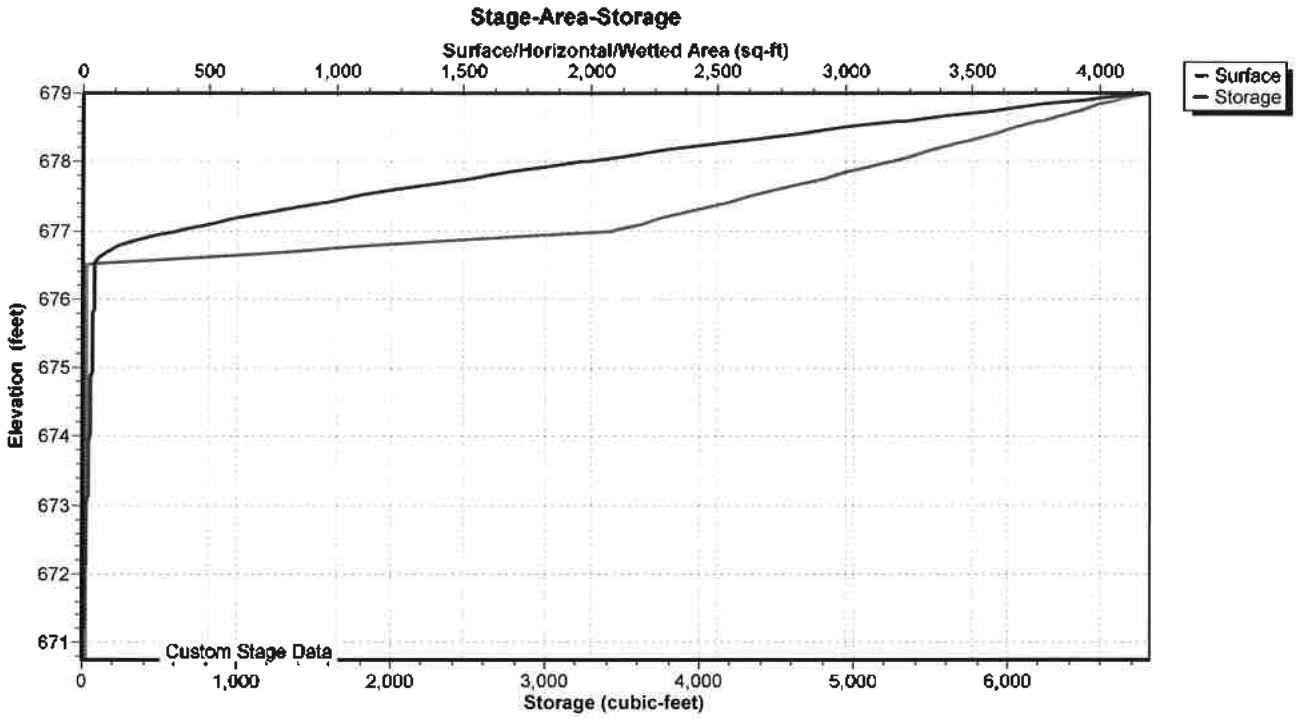
## Pond 8P: North System




## Pond 8P: North System



## Pond 8P: North System



## Hydrograph for Pond 8P: North System

| Time (hours) | Inflow (cfs) | Storage (cubic-feet) | Elevation (feet) | Outflow (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|---|---|---|
| 10.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | **0.00** |
| 15.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25.00 | 0.00 | 0 | 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30.00 | 0.00 | 1 | 670.84 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35.00 | 0.01 | 39 | 673.56 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40.00 | 0.02 | 40 | 673.63 | 0.02 | 0.00 | 0.02 | 0.00 |
| 45.00 | 0.02 | 41 | 673.65 | 0.02 | 0.00 | 0.02 | 0.00 |
| 50.00 | 0.02 | 41 | 673.68 | 0.02 | 0.00 | 0.02 | 0.00 |
| 55.00 | 0.03 | 43 | 673.79 | 0.03 | 0.00 | 0.03 | 0.00 |
| 60.00 | 0.04 | 45 | 673.96 | 0.04 | 0.00 | 0.04 | 0.00 |
| 65.00 | 0.04 | 47 | 674.08 | 0.04 | 0.00 | 0.04 | 0.00 |
| 70.00 | 0.05 | 48 | 674.20 | 0.05 | 0.00 | 0.05 | 0.00 |
| 75.00 | 0.05 | 50 | 674.30 | 0.05 | 0.00 | 0.05 | 0.00 |
| 80.00 | 0.05 | 51 | 674.41 | 0.05 | 0.00 | 0.05 | 0.00 |
| 85.00 | 0.06 | 53 | 674.51 | 0.06 | 0.00 | 0.06 | 0.00 |
| 90.00 | 0.06 | 54 | 674.60 | 0.06 | 0.00 | 0.06 | 0.00 |
| 95.00 | 0.06 | 55 | 674.69 | 0.06 | 0.00 | 0.06 | 0.00 |
| 100.00 | 0.07 | 56 | 674.78 | 0.07 | 0.00 | 0.07 | 0.00 |
| 105.00 | 0.07 | 58 | 674.86 | 0.07 | 0.00 | 0.07 | 0.00 |
| 110.00 | 0.07 | 59 | 674.93 | 0.07 | 0.00 | 0.07 | 0.00 |
| 115.00 | 0.07 | 60 | 675.01 | 0.07 | 0.00 | 0.07 | 0.00 |
| 120.00 | 0.07 | 61 | 675.07 | 0.07 | 0.00 | 0.07 | 0.00 |
| 125.00 | 0.08 | 67 | 675.56 | 0.08 | 0.00 | 0.08 | 0.00 |
| 130.00 | 0.10 | 76 | 676.19 | 0.10 | 0.00 | 0.10 | 0.00 |
| 135.00 | 0.10 | 78 | 676.31 | 0.10 | 0.00 | 0.10 | 0.00 |
| 140.00 | 0.09 | 71 | 675.82 | 0.09 | 0.00 | 0.09 | 0.00 |
| 145.00 | 0.08 | 66 | 675.45 | 0.08 | 0.00 | 0.08 | 0.00 |
| 150.00 | 0.09 | 74 | 676.06 | 0.09 | 0.00 | 0.09 | 0.00 |
| 155.00 | 0.11 | 85 | 676.53 | 0.11 | 0.00 | 0.10 | 0.00 |
| 160.00 | 0.13 | 100 | 676.59 | 0.13 | 0.02 | 0.10 | 0.00 |
| 165.00 | 0.15 | 118 | 676.63 | 0.15 | 0.05 | 0.10 | 0.00 |
| 170.00 | 0.17 | 132 | 676.65 | 0.17 | 0.07 | 0.10 | 0.00 |
| 175.00 | 0.17 | 134 | 676.65 | 0.17 | 0.07 | 0.10 | 0.00 |
| 180.00 | 0.18 | 135 | 676.65 | 0.18 | 0.07 | 0.10 | 0.00 |
| 185.00 | 0.20 | 151 | 676.68 | 0.20 | 0.10 | 0.10 | 0.00 |
| 190.00 | 0.23 | 172 | 676.70 | 0.23 | 0.12 | 0.10 | 0.00 |
| 195.00 | 0.28 | 210 | 676.74 | 0.27 | 0.17 | 0.11 | 0.00 |
| 200.00 | **0.34** | **265** | **676.79** | **0.34** | **0.23** | **0.11** | 0.00 |
| 205.00 | **0.40** | **321** | **676.84** | **0.40** | **0.30** | **0.11** | 0.00 |
| 210.00 | 0.39 | 314 | 676.83 | 0.39 | 0.29 | 0.11 | 0.00 |
| 215.00 | 0.38 | 305 | 676.82 | 0.38 | 0.28 | 0.11 | 0.00 |
| 220.00 | 0.34 | 270 | 676.80 | 0.35 | 0.24 | 0.11 | 0.00 |
| 225.00 | 0.29 | 225 | 676.76 | 0.29 | 0.19 | 0.11 | 0.00 |
| 230.00 | 0.26 | 197 | 676.73 | 0.26 | 0.15 | 0.11 | 0.00 |
| 235.00 | 0.26 | 198 | 676.73 | 0.26 | 0.15 | 0.11 | 0.00 |
| 240.00 | 0.26 | 198 | 676.73 | 0.26 | 0.15 | 0.11 | 0.00 |
| 245.00 | 0.00 | 39 | 673.50 | 0.00 | 0.00 | 0.00 | 0.00 |
| 250.00 | 0.00 | 39 | 673.50 | 0.00 | 0.00 | 0.00 | 0.00 |

## Stage-Discharge for Pond 8P: North System

| Elevation (feet) | Discharge (cfs) | Primary (cfs) | Secondary (cfs) | Tertiary (cfs) |
|---|---|---|---|---|
| 670.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 670.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 671.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.75 | 0.00 | 0.00 | 0.00 | 0.00 |
| 672.95 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.35 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.55 | 0.00 | 0.00 | 0.00 | 0.00 |
| 673.75 | 0.03 | 0.00 | 0.03 | 0.00 |
| 673.95 | 0.04 | 0.00 | 0.04 | 0.00 |
| 674.15 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.35 | 0.05 | 0.00 | 0.05 | 0.00 |
| 674.55 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.75 | 0.06 | 0.00 | 0.06 | 0.00 |
| 674.95 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.15 | 0.07 | 0.00 | 0.07 | 0.00 |
| 675.35 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.55 | 0.08 | 0.00 | 0.08 | 0.00 |
| 675.75 | 0.09 | 0.00 | 0.09 | 0.00 |
| 675.95 | 0.09 | 0.00 | 0.09 | 0.00 |
| 676.15 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.35 | 0.10 | 0.00 | 0.10 | 0.00 |
| 676.55 | 0.11 | 0.01 | 0.10 | 0.00 |
| 676.75 | 0.28 | 0.18 | 0.11 | 0.00 |
| 676.95 | 0.58 | 0.47 | 0.11 | 0.00 |
| 677.15 | 0.80 | 0.68 | 0.11 | 0.00 |
| 677.35 | 0.96 | 0.84 | 0.11 | 0.00 |
| 677.55 | 1.10 | 0.98 | 0.12 | 0.00 |
| 677.75 | 1.22 | 1.10 | 0.12 | 0.00 |
| 677.95 | 2.48 | 1.20 | 1.28 | 0.00 |
| 678.15 | 6.77 | 2.46 | 4.31 | 0.00 |
| 678.35 | 14.10 | 5.58 | 8.51 | 0.00 |
| 678.55 | 23.56 | 9.86 | 13.70 | 0.00 |
| 678.75 | 40.37 | 15.13 | 19.77 | 5.47 |
| 678.95 | **67.61** | **21.27** | **26.68** | **19.66** |

## Stage-Area-Storage for Pond 8P: North System

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---|---|---|
| 670.75 | 14 | 0 |
| 670.85 | 14 | 1 |
| 670.95 | 14 | 3 |
| 671.05 | 14 | 4 |
| 671.15 | 14 | 6 |
| 671.25 | 14 | 7 |
| 671.35 | 14 | 8 |
| 671.45 | 14 | 10 |
| 671.55 | 14 | 11 |
| 671.65 | 14 | 13 |
| 671.75 | 14 | 14 |
| 671.85 | 14 | 15 |
| 671.95 | 14 | 17 |
| 672.05 | 14 | 18 |
| 672.15 | 14 | 20 |
| 672.25 | 14 | 21 |
| 672.35 | 14 | 22 |
| 672.45 | 14 | 24 |
| 672.55 | 14 | 25 |
| 672.65 | 14 | 27 |
| 672.75 | 14 | 28 |
| 672.85 | 14 | 29 |
| 672.95 | 14 | 31 |
| 673.05 | 14 | 32 |
| 673.15 | 14 | 34 |
| 673.25 | 14 | 35 |
| 673.35 | 14 | 36 |
| 673.45 | 14 | 38 |
| 673.55 | 14 | 39 |
| 673.65 | 14 | 41 |
| 673.75 | 14 | 42 |
| 673.85 | 14 | 43 |
| 673.95 | 14 | 45 |
| 674.05 | 14 | 46 |
| 674.15 | 14 | 48 |
| 674.25 | 14 | 49 |
| 674.35 | 14 | 50 |
| 674.45 | 14 | 52 |
| 674.55 | 14 | 53 |
| 674.65 | 14 | 55 |
| 674.75 | 14 | 56 |
| 674.85 | 14 | 57 |
| 674.95 | 14 | 59 |
| 675.05 | 14 | 60 |
| 675.15 | 14 | 62 |
| 675.25 | 14 | 63 |
| 675.35 | 14 | 64 |
| 675.45 | 14 | 66 |
| 675.55 | 14 | 67 |
| 675.65 | 14 | 69 |
| 675.75 | 14 | 70 |
| 675.85 | 14 | 71 |
| 675.95 | 14 | 73 |
| 676.05 | 14 | 74 |
| 676.15 | 14 | 76 |
| 676.25 | 14 | 77 |
| 676.35 | 14 | 78 |
| 676.45 | 14 | 80 |
| 676.55 | 221 | 86 |
| 676.65 | 635 | 129 |
| 676.75 | 1,049 | 213 |
| 676.85 | 1,463 | 339 |
| 676.95 | 1,877 | 506 |
| 677.05 | 2,138 | 711 |
| 677.15 | 2,247 | 930 |
| 677.25 | 2,357 | 1,160 |
| 677.35 | 2,466 | 1,401 |
| 677.45 | 2,575 | 1,653 |
| 677.55 | 2,683 | 1,916 |
| 677.65 | 2,792 | 2,190 |
| 677.75 | 2,902 | 2,475 |
| 677.85 | 3,011 | 2,770 |
| 677.95 | 3,120 | 3,077 |
| 678.05 | 3,224 | 3,394 |
| 678.15 | 3,324 | 3,721 |
| 678.25 | 3,423 | 4,059 |
| 678.35 | 3,523 | 4,406 |
| 678.45 | 3,623 | 4,763 |
| 678.55 | 3,723 | 5,131 |
| 678.65 | 3,823 | 5,508 |
| 678.75 | 3,922 | 5,895 |
| 678.85 | 4,022 | 6,292 |
| 678.95 | **4,133** | **6,700** |

# APPENDIX C

# EXISTING AND PROPOSED RUNOFF CALCULATIONS

## Summary for Subcatchment 1S: (new Subcat)

Runoff = 3.56 cfs @ 0.62 hrs, Volume= 0.216 af, Depth> 1.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=4.03"

| Area (ac) | CN | Description |
|---|---|---|
| 1.600 | 74 | >75% Grass cover, Good, HSG C |
| 1.600 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 25.2 | 600 | 0.0100 | 0.40 | | **Lag/CN Method, Shallow Concentrated Flow** |

## Summary for Subcatchment 1S: (new Subcat)

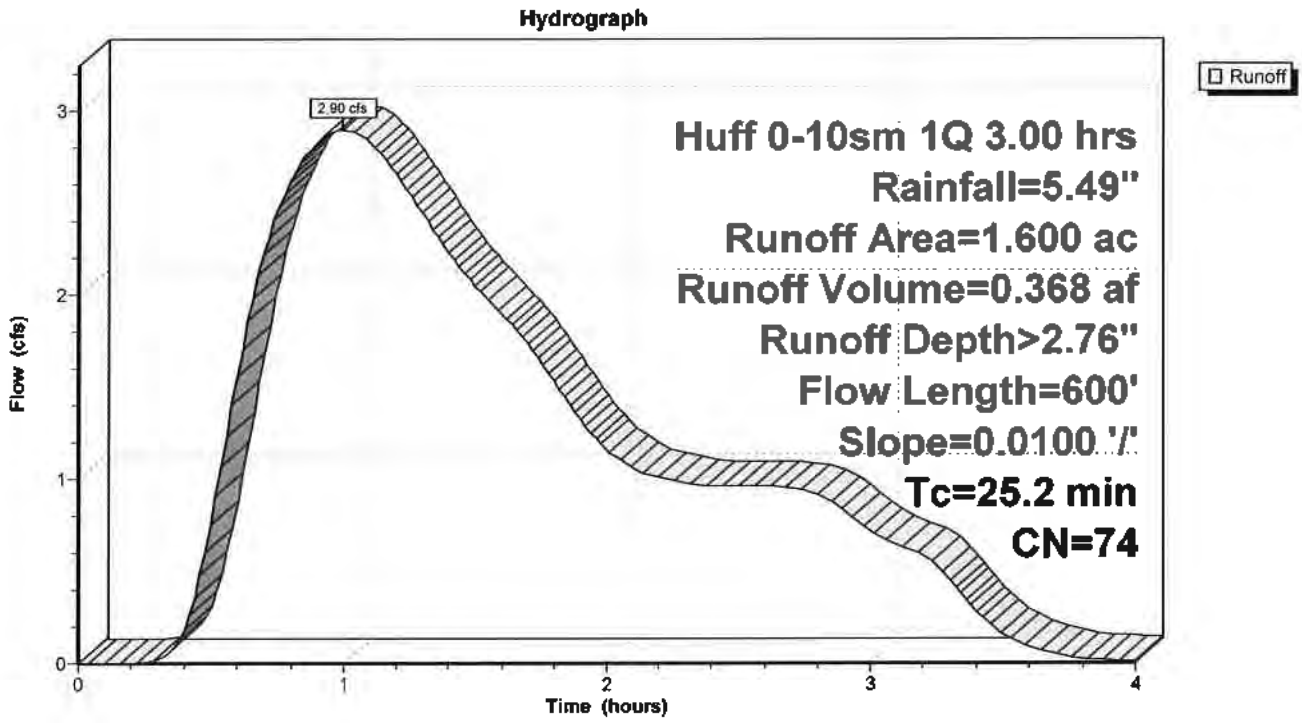
Runoff = 3.33 cfs @ 0.81 hrs, Volume= 0.312 af, Depth> 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=4.97"

| Area (ac) | CN | Description |
|---|---|---|
| 1.600 | 74 | >75% Grass cover, Good, HSG C |
| 1.600 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 25.2 | 600 | 0.0100 | 0.40 | | **Lag/CN Method, Shallow Concentrated Flow** |

## Subcatchment 1S: (new Subcat)



## Summary for Subcatchment 1S: (new Subcat)

Runoff = 2.01 cfs @ 1.53 hrs, Volume= 0.473 af, Depth= 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=6.43"

| Area (ac) | CN | Description |
|---|---|---|
| 1.600 | 74 | >75% Grass cover, Good, HSG C |
| 1.600 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 25.2 | 600 | 0.0100 | 0.40 | | **Lag/CN Method, Shallow Concentrated Flow** |

## Summary for Subcatchment 1S: (new Subcat)

Runoff = 1.67 cfs @ 5.58 hrs, Volume= 0.593 af, Depth= 4.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.05 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=7.46"

| Area (ac) | CN | Description |
|---|---|---|
| 1.600 | 74 | >75% Grass cover, Good, HSG C |
| 1.600 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 25.2 | 600 | 0.0100 | 0.40 | | **Lag/CN Method, Shallow Concentrated Flow** |

## Summary for Subcatchment 1S: (new Subcat)

Runoff = 1.50 cfs @ 12.01 hrs, Volume= 0.664 af, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.07 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=8.06"

| Area (ac) | CN | Description |
|---|---|---|
| 1.600 | 74 | >75% Grass cover, Good, HSG C |
| 1.600 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 25.2 | 600 | 0.0100 | 0.40 | | **Lag/CN Method, Shallow Concentrated Flow** |

## Summary for Subcatchment 1S: (new Subcat)

Runoff = 1.23 cfs @ 15.90 hrs, Volume= 0.725 af, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.10 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=8.57"

| Area (ac) | CN | Description |
|---|---|---|
| 1.600 | 74 | >75% Grass cover, Good, HSG C |
| 1.600 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 25.2 | 600 | 0.0100 | 0.40 | | **Lag/CN Method, Shallow Concentrated Flow** |

## Summary for Subcatchment 1S: (new Subcat)

Runoff = 0.72 cfs @ 41.52 hrs, Volume= 0.811 af, Depth= 6.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-49.98 hrs, dt= 0.17 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=9.28"

| Area (ac) | CN | Description |
|---|---|---|
| 1.600 | 74 | >75% Grass cover, Good, HSG C |
| 1.600 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 25.2 | 600 | 0.0100 | 0.40 | | **Lag/CN Method, Shallow Concentrated Flow** |

## Summary for Subcatchment 1S: (new Subcat)

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.51 cfs @ 61.93 hrs, Volume= 0.881 af, Depth= 6.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.25 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=9.85"

| Area (ac) | CN | Description |
|---|---|---|
| 1.600 | 74 | >75% Grass cover, Good, HSG C |
| 1.600 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 25.2 | 600 | 0.0100 | 0.40 | | **Lag/CN Method, Shallow Concentrated Flow** |

## Summary for Subcatchment 1S: (new Subcat)

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.34 cfs @ 102.84 hrs, Volume= 0.981 af, Depth= 7.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.40 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=10.66"

| Area (ac) | CN | Description |
|---|---|---|
| 1.600 | 74 | >75% Grass cover, Good, HSG C |
| 1.600 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 25.2 | 600 | 0.0100 | 0.40 | | **Lag/CN Method, Shallow Concentrated Flow** |

## Summary for Subcatchment 1S: (new Subcat)

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.21 cfs @ 205.04 hrs, Volume= 1.231 af, Depth= 9.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.80 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=12.65"

| Area (ac) | CN | Description |
|---|---|---|
| 1.600 | 74 | >75% Grass cover, Good, HSG C |
| 1.600 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 25.2 | 600 | 0.0100 | 0.40 | | **Lag/CN Method, Shallow Concentrated Flow** |

## Summary for Subcatchment 1S: 3.6 Ac.

Runoff = 8.77 cfs @ 0.58 hrs, Volume= 0.507 af, Depth> 1.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=4.03"

| Area (ac) | CN | Description |
|---|---|---|
| 3.460 | 74 | >75% Grass cover, Good, HSG C |
| 0.140 | 98 | Paved parking, HSG C |
| 3.600 | 75 | Weighted Average |
| 3.460 | | 96.11% Pervious Area |
| 0.140 | | 3.89% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 22.6 | 541 | 0.0100 | 0.40 | | **Lag/CN Method, 3.60 Ac.** |

## Summary for Subcatchment 1S: 3.6 Ac.

Runoff = 8.03 cfs @ 0.77 hrs, Volume= 0.727 af, Depth> 2.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=4.97"

| Area (ac) | CN | Description |
|---|---|---|
| 3.460 | 74 | >75% Grass cover, Good, HSG C |
| 0.140 | 98 | Paved parking, HSG C |
| 3.600 | 75 | Weighted Average |
| 3.460 | | 96.11% Pervious Area |
| 0.140 | | 3.89% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 22.6 | 541 | 0.0100 | 0.40 | | **Lag/CN Method, 3.60 Ac.** |

## Summary for Subcatchment 1S: 3.6 Ac.

Runoff = 6.90 cfs @ 0.95 hrs, Volume= 0.856 af, Depth> 2.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=5.49"

| Area (ac) | CN | Description |
|---|---|---|
| 3.460 | 74 | >75% Grass cover, Good, HSG C |
| 0.140 | 98 | Paved parking, HSG C |
| 3.600 | 75 | Weighted Average |
| 3.460 | | 96.11% Pervious Area |
| 0.140 | | 3.89% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 22.6 | 541 | 0.0100 | 0.40 | | **Lag/CN Method, 3.60 Ac.** |

## Summary for Subcatchment 1S: 3.6 Ac.

Runoff = 4.73 cfs @ 1.13 hrs, Volume= 1.095 af, Depth= 3.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=6.43"

| Area (ac) | CN | Description |
|---|---|---|
| 3.460 | 74 | >75% Grass cover, Good, HSG C |
| 0.140 | 98 | Paved parking, HSG C |
| 3.600 | 75 | Weighted Average |
| 3.460 | | 96.11% Pervious Area |
| 0.140 | | 3.89% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 22.6 | 541 | 0.0100 | 0.40 | | **Lag/CN Method, 3.60 Ac.** |

## Summary for Subcatchment 1S: 3.6 Ac.

Runoff = 3.85 cfs @ 5.53 hrs, Volume= 1.367 af, Depth= 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.05 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=7.46"

| Area (ac) | CN | Description |
|---|---|---|
| 3.460 | 74 | >75% Grass cover, Good, HSG C |
| 0.140 | 98 | Paved parking, HSG C |
| 3.600 | 75 | Weighted Average |
| 3.460 | | 96.11% Pervious Area |
| 0.140 | | 3.89% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 22.6 | 541 | 0.0100 | 0.40 | | **Lag/CN Method, 3.60 Ac.** |

## Summary for Subcatchment 1S: 3.6 Ac.

Runoff = 3.44 cfs @ 11.97 hrs, Volume= 1.529 af, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.07 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=8.06"

| Area (ac) | CN | Description |
|---|---|---|
| 3.460 | 74 | >75% Grass cover, Good, HSG C |
| 0.140 | 98 | Paved parking, HSG C |
| 3.600 | 75 | Weighted Average |
| 3.460 | | 96.11% Pervious Area |
| 0.140 | | 3.89% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 22.6 | 541 | 0.0100 | 0.40 | | **Lag/CN Method, 3.60 Ac.** |

## Summary for Subcatchment 1S: 3.6 Ac.

Runoff = 2.80 cfs @ 15.86 hrs, Volume= 1.668 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.10 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=8.57"

| Area (ac) | CN | Description |
|---|---|---|
| 3.460 | 74 | >75% Grass cover, Good, HSG C |
| 0.140 | 98 | Paved parking, HSG C |
| 3.600 | 75 | Weighted Average |
| 3.460 | | 96.11% Pervious Area |
| 0.140 | | 3.89% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 22.6 | 541 | 0.0100 | 0.40 | | **Lag/CN Method, 3.60 Ac.** |

## Summary for Subcatchment 1S: 3.6 Ac.

Runoff = 1.63 cfs @ 41.44 hrs, Volume= 1.863 af, Depth= 6.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-49.98 hrs, dt= 0.17 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=9.28"

| Area (ac) | CN | Description |
|---|---|---|
| 3.460 | 74 | >75% Grass cover, Good, HSG C |
| 0.140 | 98 | Paved parking, HSG C |
| 3.600 | 75 | Weighted Average |
| 3.460 | | 96.11% Pervious Area |
| 0.140 | | 3.89% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 22.6 | 541 | 0.0100 | 0.40 | | **Lag/CN Method, 3.60 Ac.** |

## Summary for Subcatchment 1S: 3.6 Ac.

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.17 cfs @ 61.85 hrs, Volume= 2.021 af, Depth= 6.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.25 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=9.85"

| Area (ac) | CN | Description |
|---|---|---|
| 3.460 | 74 | >75% Grass cover, Good, HSG C |
| 0.140 | 98 | Paved parking, HSG C |
| 3.600 | 75 | Weighted Average |
| 3.460 | | 96.11% Pervious Area |
| 0.140 | | 3.89% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 22.6 | 541 | 0.0100 | 0.40 | | **Lag/CN Method, 3.60 Ac.** |

## Summary for Subcatchment 1S: 3.6 Ac.

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.77 cfs @ 102.74 hrs, Volume= 2.248 af, Depth= 7.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.40 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=10.66"

| Area (ac) | CN | Description |
|---|---|---|
| 3.460 | 74 | >75% Grass cover, Good, HSG C |
| 0.140 | 98 | Paved parking, HSG C |
| 3.600 | 75 | Weighted Average |
| 3.460 | | 96.11% Pervious Area |
| 0.140 | | 3.89% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 22.6 | 541 | 0.0100 | 0.40 | | **Lag/CN Method, 3.60 Ac.** |

## Summary for Subcatchment 1S: 3.6 Ac.

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.47 cfs @ 204.87 hrs, Volume= 2.813 af, Depth= 9.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.80 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=12.65"

| Area (ac) | CN | Description |
|---|---|---|
| 3.460 | 74 | >75% Grass cover, Good, HSG C |
| 0.140 | 98 | Paved parking, HSG C |
| 3.600 | 75 | Weighted Average |
| 3.460 | | 96.11% Pervious Area |
| 0.140 | | 3.89% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 22.6 | 541 | 0.0100 | 0.40 | | **Lag/CN Method, 3.60 Ac.** |

## Summary for Subcatchment 1S: 5.9 Ac.

Runoff = 11.49 cfs @ 0.78 hrs, Volume= 0.821 af, Depth> 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=4.03"

| Area (ac) | CN | Description |
|---|---|---|
| 0.160 | 98 | Roofs, HSG C |
| 5.740 | 74 | >75% Grass cover, Good, HSG C |
| 5.900 | 75 | Weighted Average |
| 5.740 | | 97.29% Pervious Area |
| 0.160 | | 2.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 36.9 | 1,000 | 0.0100 | 0.45 | | **Lag/CN Method, 5.90 Ac.** |

## Summary for Subcatchment 1S: 5.9 Ac.

Runoff = 11.30 cfs @ 0.99 hrs, Volume= 1.187 af, Depth> 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=4.97"

| Area (ac) | CN | Description |
|---|---|---|
| 0.160 | 98 | Roofs, HSG C |
| 5.740 | 74 | >75% Grass cover, Good, HSG C |
| 5.900 | 75 | Weighted Average |
| 5.740 | | 97.29% Pervious Area |
| 0.160 | | 2.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 36.9 | 1,000 | 0.0100 | 0.45 | | **Lag/CN Method, 5.90 Ac.** |

## Summary for Subcatchment 1S: 5.9 Ac.

Runoff = 10.19 cfs @ 1.18 hrs, Volume= 1.399 af, Depth> 2.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=5.49"

| Area (ac) | CN | Description |
|---|---|---|
| 0.160 | 98 | Roofs, HSG C |
| 5.740 | 74 | >75% Grass cover, Good, HSG C |
| 5.900 | 75 | Weighted Average |
| 5.740 | | 97.29% Pervious Area |
| 0.160 | | 2.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 36.9 | 1,000 | 0.0100 | 0.45 | | **Lag/CN Method, 5.90 Ac.** |

## Summary for Subcatchment 1S: 5.9 Ac.

Runoff = 7.51 cfs @ 1.69 hrs, Volume= 1.795 af, Depth> 3.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=6.43"

| Area (ac) | CN | Description |
|---|---|---|
| 0.160 | 98 | Roofs, HSG C |
| 5.740 | 74 | >75% Grass cover, Good, HSG C |
| 5.900 | 75 | Weighted Average |
| 5.740 | | 97.29% Pervious Area |
| 0.160 | | 2.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 36.9 | 1,000 | 0.0100 | 0.45 | | **Lag/CN Method, 5.90 Ac.** |

## Summary for Subcatchment 1S: 5.9 Ac.

Runoff = 6.21 cfs @ 5.71 hrs, Volume= 2.241 af, Depth= 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.05 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=7.46"

| Area (ac) | CN | Description |
|---|---|---|
| 0.160 | 98 | Roofs, HSG C |
| 5.740 | 74 | >75% Grass cover, Good, HSG C |
| 5.900 | 75 | Weighted Average |
| 5.740 | | 97.29% Pervious Area |
| 0.160 | | 2.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 36.9 | 1,000 | 0.0100 | 0.45 | | **Lag/CN Method, 5.90 Ac.** |

## Summary for Subcatchment 1S: 5.9 Ac.

Runoff = 5.54 cfs @ 12.15 hrs, Volume= 2.505 af, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.07 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=8.06"

| Area (ac) | CN | Description |
|---|---|---|
| 0.160 | 98 | Roofs, HSG C |
| 5.740 | 74 | >75% Grass cover, Good, HSG C |
| 5.900 | 75 | Weighted Average |
| 5.740 | | 97.29% Pervious Area |
| 0.160 | | 2.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 36.9 | 1,000 | 0.0100 | 0.45 | | **Lag/CN Method, 5.90 Ac.** |

## Summary for Subcatchment 1S: 5.9 Ac.

Runoff = 4.55 cfs @ 16.03 hrs, Volume= 2.733 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.10 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=8.57"

| Area (ac) | CN | Description |
|---|---|---|
| 0.160 | 98 | Roofs, HSG C |
| 5.740 | 74 | >75% Grass cover, Good, HSG C |
| 5.900 | 75 | Weighted Average |
| 5.740 | | 97.29% Pervious Area |
| 0.160 | | 2.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 36.9 | 1,000 | 0.0100 | 0.45 | | **Lag/CN Method, 5.90 Ac.** |

## Summary for Subcatchment 1S: 5.9 Ac.

Runoff = 2.66 cfs @ 41.80 hrs, Volume= 3.053 af, Depth> 6.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-49.98 hrs, dt= 0.17 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=9.28"

| Area (ac) | CN | Description |
|---|---|---|
| 0.160 | 98 | Roofs, HSG C |
| 5.740 | 74 | >75% Grass cover, Good, HSG C |
| 5.900 | 75 | Weighted Average |
| 5.740 | | 97.29% Pervious Area |
| 0.160 | | 2.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 36.9 | 1,000 | 0.0100 | 0.45 | | **Lag/CN Method, 5.90 Ac.** |

## Summary for Subcatchment 1S: 5.9 Ac.

Runoff = 1.91 cfs @ 62.21 hrs, Volume= 3.313 af, Depth= 6.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.25 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=9.85"

| Area (ac) | CN | Description |
|---|---|---|
| 0.160 | 98 | Roofs, HSG C |
| 5.740 | 74 | >75% Grass cover, Good, HSG C |
| 5.900 | 75 | Weighted Average |
| 5.740 | | 97.29% Pervious Area |
| 0.160 | | 2.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 36.9 | 1,000 | 0.0100 | 0.45 | | **Lag/CN Method, 5.90 Ac.** |

## Summary for Subcatchment 1S: 5.9 Ac.

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.26 cfs @ 103.01 hrs, Volume= 3.684 af, Depth= 7.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.40 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=10.66"

| Area (ac) | CN | Description |
|---|---|---|
| 0.160 | 98 | Roofs, HSG C |
| 5.740 | 74 | >75% Grass cover, Good, HSG C |
| 5.900 | 75 | Weighted Average |
| 5.740 | | 97.29% Pervious Area |
| 0.160 | | 2.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 36.9 | 1,000 | 0.0100 | 0.45 | | **Lag/CN Method, 5.90 Ac.** |

## Summary for Subcatchment 1S: 5.9 Ac.

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.77 cfs @ 205.33 hrs, Volume= 4.610 af, Depth= 9.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.80 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=12.65"

| Area (ac) | CN | Description |
|---|---|---|
| 0.160 | 98 | Roofs, HSG C |
| 5.740 | 74 | >75% Grass cover, Good, HSG C |
| 5.900 | 75 | Weighted Average |
| 5.740 | | 97.29% Pervious Area |
| 0.160 | | 2.71% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 36.9 | 1,000 | 0.0100 | 0.45 | | **Lag/CN Method, 5.90 Ac.** |

## Summary for Subcatchment 1S: 0.40 North to Turnbull Woods

Runoff = 1.15 cfs @ 0.40 hrs, Volume= 0.054 af, Depth= 1.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=4.03"

| Area (ac) | CN | Description |
|---|---|---|
| 0.400 | 74 | >75% Grass cover, Good, HSG C |
| 0.400 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.6 | 198 | 0.0080 | 0.28 | | **Lag/CN Method, 0.40** |

## Summary for Subcatchment 1S: 0.40 North to Turnbull Woods

Runoff = 0.96 cfs @ 0.61 hrs, Volume= 0.078 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=4.97"

| Area (ac) | CN | Description |
|---|---|---|
| 0.400 | 74 | >75% Grass cover, Good, HSG C |
| 0.400 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.6 | 198 | 0.0080 | 0.28 | | **Lag/CN Method, 0.40** |

## Summary for Subcatchment 1S: 0.40 North to Turnbull Woods

Runoff = 0.78 cfs @ 0.81 hrs, Volume= 0.092 af, Depth= 2.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=5.49"

| Area (ac) | CN | Description |
|---|---|---|
| 0.400 | 74 | >75% Grass cover, Good, HSG C |
| 0.400 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.6 | 198 | 0.0080 | 0.28 | | **Lag/CN Method, 0.40** |

## Summary for Subcatchment 1S: 0.40 North to Turnbull Woods

Runoff = 0.55 cfs @ 0.90 hrs, Volume= 0.118 af, Depth= 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=6.43"

| Area (ac) | CN | Description |
|---|---|---|
| 0.400 | 74 | >75% Grass cover, Good, HSG C |
| 0.400 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.6 | 198 | 0.0080 | 0.28 | | **Lag/CN Method, 0.40** |

## Summary for Subcatchment 1S: 0.40 North to Turnbull Woods

Runoff = 0.42 cfs @ 5.42 hrs, Volume= 0.148 af, Depth= 4.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.05 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=7.46"

| Area (ac) | CN | Description |
|---|---|---|
| 0.400 | 74 | >75% Grass cover, Good, HSG C |
| 0.400 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.6 | 198 | 0.0080 | 0.28 | | **Lag/CN Method, 0.40** |

## Summary for Subcatchment 1S: 0.40 North to Turnbull Woods

Runoff = 0.38 cfs @ 11.84 hrs, Volume= 0.166 af, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.07 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=8.06"

| Area (ac) | CN | Description |
|---|---|---|
| 0.400 | 74 | >75% Grass cover, Good, HSG C |
| 0.400 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.6 | 198 | 0.0080 | 0.28 | | **Lag/CN Method, 0.40** |

## Summary for Subcatchment 1S: 0.40 North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.31 cfs @ 15.73 hrs, Volume= 0.181 af, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.10 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=8.57"

| Area (ac) | CN | Description |
|---|---|---|
| 0.400 | 74 | >75% Grass cover, Good, HSG C |
| 0.400 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.6 | 198 | 0.0080 | 0.28 | | **Lag/CN Method, 0.40** |

## Summary for Subcatchment 1S: 0.40 North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.18 cfs @ 41.19 hrs, Volume= 0.203 af, Depth= 6.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-49.98 hrs, dt= 0.17 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=9.28"

| Area (ac) | CN | Description |
|---|---|---|
| 0.400 | 74 | >75% Grass cover, Good, HSG C |
| 0.400 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.6 | 198 | 0.0080 | 0.28 | | **Lag/CN Method, 0.40** |

## Summary for Subcatchment 1S: 0.40 North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.13 cfs @ 61.60 hrs, Volume= 0.220 af, Depth= 6.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.25 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=9.85"

| Area (ac) | CN | Description |
|---|---|---|
| 0.400 | 74 | >75% Grass cover, Good, HSG C |
| 0.400 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.6 | 198 | 0.0080 | 0.28 | | **Lag/CN Method, 0.40** |

## Summary for Subcatchment 1S: 0.40 North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.09 cfs @ 102.53 hrs, Volume= 0.245 af, Depth= 7.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.40 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=10.66"

| Area (ac) | CN | Description |
|---|---|---|
| 0.400 | 74 | >75% Grass cover, Good, HSG C |
| 0.400 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.6 | 198 | 0.0080 | 0.28 | | **Lag/CN Method, 0.40** |

## Summary for Subcatchment 1S: 0.40 North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.05 cfs @ 204.71 hrs, Volume= 0.308 af, Depth= 9.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.80 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=12.65"

| Area (ac) | CN | Description |
|---|---|---|
| 0.400 | 74 | >75% Grass cover, Good, HSG C |
| 0.400 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.6 | 198 | 0.0080 | 0.28 | | **Lag/CN Method, 0.40** |

## Summary for Subcatchment 1S: 0.60 North to Turnbull Woods

Runoff = 1.77 cfs @ 0.39 hrs, Volume= 0.081 af, Depth= 1.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=4.03"

| Area (ac) | CN | Description |
|---|---|---|
| 0.600 | 74 | >75% Grass cover, Good, HSG C |
| 0.600 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.5 | 200 | 0.0100 | 0.32 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.60 North to Turnbull Woods

Runoff = 1.45 cfs @ 0.59 hrs, Volume= 0.117 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=4.97"

| Area (ac) | CN | Description |
|---|---|---|
| 0.600 | 74 | >75% Grass cover, Good, HSG C |
| 0.600 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.5 | 200 | 0.0100 | 0.32 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.60 North to Turnbull Woods

Runoff = 1.17 cfs @ 0.79 hrs, Volume= 0.138 af, Depth= 2.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=5.49"

| Area (ac) | CN | Description |
|---|---|---|
| 0.600 | 74 | >75% Grass cover, Good, HSG C |
| 0.600 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.5 | 200 | 0.0100 | 0.32 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.60 North to Turnbull Woods

Runoff = 0.83 cfs @ 0.88 hrs, Volume= 0.177 af, Depth= 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=6.43"

| Area (ac) | CN | Description |
|---|---|---|
| 0.600 | 74 | >75% Grass cover, Good, HSG C |
| 0.600 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.5 | 200 | 0.0100 | 0.32 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.60 North to Turnbull Woods

Runoff = 0.63 cfs @ 5.40 hrs, Volume= 0.222 af, Depth= 4.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.05 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=7.46"

| Area (ac) | CN | Description |
|---|---|---|
| 0.600 | 74 | >75% Grass cover, Good, HSG C |
| 0.600 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.5 | 200 | 0.0100 | 0.32 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.60 North to Turnbull Woods

Runoff = 0.57 cfs @ 11.83 hrs, Volume= 0.249 af, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.07 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=8.06"

| Area (ac) | CN | Description |
|---|---|---|
| 0.600 | 74 | >75% Grass cover, Good, HSG C |
| 0.600 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.5 | 200 | 0.0100 | 0.32 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.60 North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.46 cfs @ 15.72 hrs, Volume= 0.272 af, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.10 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=8.57"

| Area (ac) | CN | Description |
|---|---|---|
| 0.600 | 74 | >75% Grass cover, Good, HSG C |
| 0.600 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.5 | 200 | 0.0100 | 0.32 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.60 North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.27 cfs @ 41.17 hrs, Volume= 0.304 af, Depth= 6.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-49.98 hrs, dt= 0.17 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=9.28"

| Area (ac) | CN | Description |
|---|---|---|
| 0.600 | 74 | >75% Grass cover, Good, HSG C |
| 0.600 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.5 | 200 | 0.0100 | 0.32 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.60 North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.19 cfs @ 61.60 hrs, Volume= 0.330 af, Depth= 6.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.25 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=9.85"

| Area (ac) | CN | Description |
|---|---|---|
| 0.600 | 74 | >75% Grass cover, Good, HSG C |
| 0.600 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.5 | 200 | 0.0100 | 0.32 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.60 North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.13 cfs @ 102.52 hrs, Volume= 0.368 af, Depth= 7.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.40 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=10.66"

| Area (ac) | CN | Description |
|---|---|---|
| 0.600 | 74 | >75% Grass cover, Good, HSG C |
| 0.600 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.5 | 200 | 0.0100 | 0.32 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.60 North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.08 cfs @ 204.71 hrs, Volume= 0.462 af, Depth= 9.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.80 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=12.65"

| Area (ac) | CN | Description |
|---|---|---|
| 0.600 | 74 | >75% Grass cover, Good, HSG C |
| 0.600 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 10.5 | 200 | 0.0100 | 0.32 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.80 North to Turnbull Woods

Runoff = 3.47 cfs @ 0.37 hrs, Volume= 0.154 af, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=4.03"

| Area (ac) | CN | Description |
|---|---|---|
| 0.800 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.496 | | 62.00% Pervious Area |
| 0.304 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.6 | 320 | 0.0100 | 0.46 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.80 North to Turnbull Woods

Runoff = 2.71 cfs @ 0.48 hrs, Volume= 0.210 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=4.97"

| Area (ac) | CN | Description |
|---|---|---|
| 0.800 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.496 | | 62.00% Pervious Area |
| 0.304 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.6 | 320 | 0.0100 | 0.46 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.80 North to Turnbull Woods

Runoff = 2.31 cfs @ 0.53 hrs, Volume= 0.241 af, Depth= 3.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=5.49"

| Area (ac) | CN | Description |
|---|---|---|
| 0.800 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.496 | | 62.00% Pervious Area |
| 0.304 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.6 | 320 | 0.0100 | 0.46 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.80 North to Turnbull Woods

Runoff = 1.67 cfs @ 0.83 hrs, Volume= 0.299 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=6.43"

| Area (ac) | CN | Description |
|---|---|---|
| 0.800 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.496 | | 62.00% Pervious Area |
| 0.304 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.6 | 320 | 0.0100 | 0.46 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.80 North to Turnbull Woods

Runoff = 1.01 cfs @ 5.10 hrs, Volume= 0.364 af, Depth= 5.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.05 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=7.46"

| Area (ac) | CN | Description |
|---|---|---|
| 0.800 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.496 | | 62.00% Pervious Area |
| 0.304 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.6 | 320 | 0.0100 | 0.46 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.80 North to Turnbull Woods

Runoff = 0.86 cfs @ 11.82 hrs, Volume= 0.402 af, Depth= 6.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.07 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=8.06"

| Area (ac) | CN | Description |
|---|---|---|
| 0.800 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.496 | | 62.00% Pervious Area |
| 0.304 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.6 | 320 | 0.0100 | 0.46 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.80 North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.69 cfs @ 15.71 hrs, Volume= 0.435 af, Depth= 6.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.10 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=8.57"

| Area (ac) | CN | Description |
|---|---|---|
| 0.800 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.496 | | 62.00% Pervious Area |
| 0.304 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.6 | 320 | 0.0100 | 0.46 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.80 North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.39 cfs @ 41.14 hrs, Volume= 0.480 af, Depth= 7.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-49.98 hrs, dt= 0.17 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=9.28"

| Area (ac) | CN | Description |
|---|---|---|
| 0.800 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.496 | | 62.00% Pervious Area |
| 0.304 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.6 | 320 | 0.0100 | 0.46 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.80 North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.28 cfs @ 61.58 hrs, Volume= 0.517 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.25 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=9.85"

| Area (ac) | CN | Description |
|---|---|---|
| 0.800 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.496 | | 62.00% Pervious Area |
| 0.304 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.6 | 320 | 0.0100 | 0.46 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.80 North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.18 cfs @ 102.49 hrs, Volume= 0.570 af, Depth= 8.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.40 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=10.66"

| Area (ac) | CN | Description |
|---|---|---|
| 0.800 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.496 | | 62.00% Pervious Area |
| 0.304 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.6 | 320 | 0.0100 | 0.46 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.80 North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.11 cfs @ 204.67 hrs, Volume= 0.699 af, Depth=10.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.80 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=12.65"

| Area (ac) | CN | Description |
|---|---|---|
| 0.800 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.496 | | 62.00% Pervious Area |
| 0.304 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.6 | 320 | 0.0100 | 0.46 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: Proposed 0.94 Ac. North to Turnbull Woods

Runoff = 4.80 cfs @ 0.18 hrs, Volume= 0.181 af, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=4.03"

| Area (ac) | CN | Description |
|---|---|---|
| 0.940 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.583 | | 62.00% Pervious Area |
| 0.357 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 263 | 0.0830 | 1.27 | | **Lag/CN Method,** |

## Summary for Subcatchment 1S: Proposed 0.94 Ac. North to Turnbull Woods

Runoff = 3.86 cfs @ 0.28 hrs, Volume= 0.247 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=4.97"

| Area (ac) | CN | Description |
|---|---|---|
| 0.940 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.583 | | 62.00% Pervious Area |
| 0.357 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 263 | 0.0830 | 1.27 | | **Lag/CN Method,** |

## Summary for Subcatchment 1S: Proposed 0.94 Ac. North to Turnbull Woods

Runoff = 3.13 cfs @ 0.38 hrs, Volume= 0.284 af, Depth= 3.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=5.49"

| Area (ac) | CN | Description |
|---|---|---|
| 0.940 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.583 | | 62.00% Pervious Area |
| 0.357 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 263 | 0.0830 | 1.27 | | **Lag/CN Method,** |

## Summary for Subcatchment 1S: Proposed 0.94 Ac. North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 2.07 cfs @ 0.69 hrs, Volume= 0.352 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=6.43"

| Area (ac) | CN | Description |
|---|---|---|
| 0.940 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.583 | | 62.00% Pervious Area |
| 0.357 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 263 | 0.0830 | 1.27 | | **Lag/CN Method,** |

## Summary for Subcatchment 1S: Proposed 0.94 Ac. North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.19 cfs @ 4.91 hrs, Volume= 0.428 af, Depth= 5.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.05 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=7.46"

| Area (ac) | CN | Description |
|---|---|---|
| 0.940 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.583 | | 62.00% Pervious Area |
| 0.357 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 263 | 0.0830 | 1.27 | | **Lag/CN Method,** |

## Summary for Subcatchment 1S: Proposed 0.94 Ac. North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.02 cfs @ 11.73 hrs, Volume= 0.473 af, Depth= 6.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.07 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=8.06"

| Area (ac) | CN | Description |
|---|---|---|
| 0.940 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.583 | | 62.00% Pervious Area |
| 0.357 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 263 | 0.0830 | 1.27 | | **Lag/CN Method,** |

## Summary for Subcatchment 1S: Proposed 0.94 Ac. North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.82 cfs @ 15.61 hrs, Volume= 0.511 af, Depth= 6.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.10 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=8.57"

| Area (ac) | CN | Description |
|---|---|---|
| 0.940 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.583 | | 62.00% Pervious Area |
| 0.357 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 263 | 0.0830 | 1.27 | | **Lag/CN Method,** |

## Summary for Subcatchment 1S: Proposed 0.94 Ac. North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.46 cfs @ 40.99 hrs, Volume= 0.565 af, Depth= 7.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-49.98 hrs, dt= 0.17 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=9.28"

| Area (ac) | CN | Description |
|---|---|---|
| 0.940 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.583 | | 62.00% Pervious Area |
| 0.357 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 263 | 0.0830 | 1.27 | | **Lag/CN Method,** |

## Summary for Subcatchment 1S: Proposed 0.94 Ac. North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.33 cfs @ 61.40 hrs, Volume= 0.608 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.25 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=9.85"

| Area (ac) | CN | Description |
|---|---|---|
| 0.940 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.583 | | 62.00% Pervious Area |
| 0.357 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 263 | 0.0830 | 1.27 | | **Lag/CN Method,** |

## Summary for Subcatchment 1S: Proposed 0.94 Ac. North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.22 cfs @ 102.34 hrs, Volume= 0.669 af, Depth= 8.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.40 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=10.66"

| Area (ac) | CN | Description |
|---|---|---|
| 0.940 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.583 | | 62.00% Pervious Area |
| 0.357 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 263 | 0.0830 | 1.27 | | **Lag/CN Method,** |

## Summary for Subcatchment 1S: Proposed 0.94 Ac. North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.13 cfs @ 204.61 hrs, Volume= 0.821 af, Depth=10.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.80 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=12.65"

| Area (ac) | CN | Description |
|---|---|---|
| 0.940 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.583 | | 62.00% Pervious Area |
| 0.357 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 263 | 0.0830 | 1.27 | | **Lag/CN Method,** |

## Summary for Subcatchment 8S: Northwood Drive

Runoff = 3.91 cfs @ 0.68 hrs, Volume= 0.254 af, Depth> 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=4.03"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.600 | 78 | 1/3 acre lots, 30% imp, HSG C |
| | 1.120 | | 70.00% Pervious Area |
| | 0.480 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.4 | 875 | 0.0100 | 0.48 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive

Runoff = 3.69 cfs @ 0.85 hrs, Volume= 0.358 af, Depth> 2.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=4.97"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.600 | 78 | 1/3 acre lots, 30% imp, HSG C |
| | 1.120 | | 70.00% Pervious Area |
| | 0.480 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.4 | 875 | 0.0100 | 0.48 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive

Runoff = 3.24 cfs @ 1.04 hrs, Volume= 0.417 af, Depth> 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=5.49"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.600 | 78 | 1/3 acre lots, 30% imp, HSG C |
| | 1.120 | | 70.00% Pervious Area |
| | 0.480 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.4 | 875 | 0.0100 | 0.48 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive

Runoff = 2.29 cfs @ 1.31 hrs, Volume= 0.528 af, Depth= 3.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=6.43"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.600 | 78 | 1/3 acre lots, 30% imp, HSG C |
| | 1.120 | | 70.00% Pervious Area |
| | 0.480 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.4 | 875 | 0.0100 | 0.48 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive

Runoff = 1.81 cfs @ 5.59 hrs, Volume= 0.653 af, Depth= 4.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.05 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=7.46"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.600 | 78 | 1/3 acre lots, 30% imp, HSG C |
| | 1.120 | | 70.00% Pervious Area |
| | 0.480 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.4 | 875 | 0.0100 | 0.48 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive

Runoff = 1.58 cfs @ 12.05 hrs, Volume= 0.726 af, Depth= 5.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.07 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=8.06"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.600 | 78 | 1/3 acre lots, 30% imp, HSG C |
| | 1.120 | | 70.00% Pervious Area |
| | 0.480 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.4 | 875 | 0.0100 | 0.48 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive

Runoff = 1.29 cfs @ 15.95 hrs, Volume= 0.789 af, Depth= 5.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.10 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=8.57"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.600 | 78 | 1/3 acre lots, 30% imp, HSG C |
| | 1.120 | | 70.00% Pervious Area |
| | 0.480 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.4 | 875 | 0.0100 | 0.48 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive

Runoff = 0.75 cfs @ 41.60 hrs, Volume= 0.878 af, Depth> 6.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-49.98 hrs, dt= 0.17 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=9.28"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.600 | 78 | 1/3 acre lots, 30% imp, HSG C |
| | 1.120 | | 70.00% Pervious Area |
| | 0.480 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.4 | 875 | 0.0100 | 0.48 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive

Runoff = 0.54 cfs @ 62.02 hrs, Volume= 0.950 af, Depth= 7.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.25 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=9.85"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.600 | 78 | 1/3 acre lots, 30% imp, HSG C |
| | 1.120 | | 70.00% Pervious Area |
| | 0.480 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.4 | 875 | 0.0100 | 0.48 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.35 cfs @ 102.89 hrs, Volume= 1.052 af, Depth= 7.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.40 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=10.66"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.600 | 78 | 1/3 acre lots, 30% imp, HSG C |
| | 1.120 | | 70.00% Pervious Area |
| | 0.480 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.4 | 875 | 0.0100 | 0.48 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.21 cfs @ 205.14 hrs, Volume= 1.307 af, Depth= 9.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.80 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=12.65"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.600 | 78 | 1/3 acre lots, 30% imp, HSG C |
| | 1.120 | | 70.00% Pervious Area |
| | 0.480 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 30.4 | 875 | 0.0100 | 0.48 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 1S: 0.60 Ac Res Lot

Runoff = 2.50 cfs @ 0.32 hrs, Volume= 0.103 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=4.03"

| Area (ac) | CN | Description |
|---|---|---|
| 0.600 | 80 | 1/2 acre lots, 25% imp, HSG C |
| 0.450 | | 75.00% Pervious Area |
| 0.150 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 7.3 | 160 | 0.0100 | 0.36 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.60 Ac Res Lot

Runoff = 1.89 cfs @ 0.36 hrs, Volume= 0.143 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=4.97"

| Area (ac) | CN | Description |
|---|---|---|
| 0.600 | 80 | 1/2 acre lots, 25% imp, HSG C |
| 0.450 | | 75.00% Pervious Area |
| 0.150 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 7.3 | 160 | 0.0100 | 0.36 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.60 Ac Res Lot

Runoff = 1.61 cfs @ 0.46 hrs, Volume= 0.166 af, Depth= 3.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=5.49"

| Area (ac) | CN | Description |
|---|---|---|
| 0.600 | 80 | 1/2 acre lots, 25% imp, HSG C |
| 0.450 | | 75.00% Pervious Area |
| 0.150 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 7.3 | 160 | 0.0100 | 0.36 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.60 Ac Res Lot

Runoff = 1.13 cfs @ 0.78 hrs, Volume= 0.209 af, Depth= 4.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=6.43"

| Area (ac) | CN | Description |
|---|---|---|
| 0.600 | 80 | 1/2 acre lots, 25% imp, HSG C |
| 0.450 | | 75.00% Pervious Area |
| 0.150 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 7.3 | 160 | 0.0100 | 0.36 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.60 Ac Res Lot

Runoff = 0.72 cfs @ 5.06 hrs, Volume= 0.256 af, Depth= 5.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.05 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=7.46"

| Area (ac) | CN | Description |
|---|---|---|
| 0.600 | 80 | 1/2 acre lots, 25% imp, HSG C |
| 0.450 | | 75.00% Pervious Area |
| 0.150 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 7.3 | 160 | 0.0100 | 0.36 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.60 Ac Res Lot

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.62 cfs @ 11.77 hrs, Volume= 0.284 af, Depth= 5.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.07 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=8.06"

| Area (ac) | CN | Description |
|---|---|---|
| 0.600 | 80 | 1/2 acre lots, 25% imp, HSG C |
| 0.450 | | 75.00% Pervious Area |
| 0.150 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 7.3 | 160 | 0.0100 | 0.36 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.60 Ac Res Lot

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.50 cfs @ 15.67 hrs, Volume= 0.308 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.10 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=8.57"

| Area (ac) | CN | Description |
|---|---|---|
| 0.600 | 80 | 1/2 acre lots, 25% imp, HSG C |
| 0.450 | | 75.00% Pervious Area |
| 0.150 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 7.3 | 160 | 0.0100 | 0.36 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.60 Ac Res Lot

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.29 cfs @ 41.04 hrs, Volume= 0.342 af, Depth= 6.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-49.98 hrs, dt= 0.17 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=9.28"

| Area (ac) | CN | Description |
|---|---|---|
| 0.600 | 80 | 1/2 acre lots, 25% imp, HSG C |
| 0.450 | | 75.00% Pervious Area |
| 0.150 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 7.3 | 160 | 0.0100 | 0.36 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.60 Ac Res Lot

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.21 cfs @ 61.53 hrs, Volume= 0.369 af, Depth= 7.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.25 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=9.85"

| Area (ac) | CN | Description |
|---|---|---|
| 0.600 | 80 | 1/2 acre lots, 25% imp, HSG C |
| 0.450 | | 75.00% Pervious Area |
| 0.150 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 7.3 | 160 | 0.0100 | 0.36 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.60 Ac Res Lot

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.13 cfs @ 102.45 hrs, Volume= 0.408 af, Depth= 8.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.40 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=10.66"

| Area (ac) | CN | Description |
|---|---|---|
| 0.600 | 80 | 1/2 acre lots, 25% imp, HSG C |
| 0.450 | | 75.00% Pervious Area |
| 0.150 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 7.3 | 160 | 0.0100 | 0.36 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 1S: 0.60 Ac Res Lot

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.08 cfs @ 204.65 hrs, Volume= 0.504 af, Depth=10.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.80 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=12.65"

| Area (ac) | CN | Description |
|---|---|---|
| 0.600 | 80 | 1/2 acre lots, 25% imp, HSG C |
| 0.450 | | 75.00% Pervious Area |
| 0.150 | | 25.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 7.3 | 160 | 0.0100 | 0.36 | | **Lag/CN Method, 1.0 Ac.** |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

Runoff = 2.31 cfs @ 0.34 hrs, Volume= 0.098 af, Depth= 2.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=4.03"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

Runoff = 1.76 cfs @ 0.42 hrs, Volume= 0.136 af, Depth= 2.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=4.97"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

Runoff = 1.50 cfs @ 0.49 hrs, Volume= 0.157 af, Depth= 3.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=5.49"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

Runoff = 1.07 cfs @ 0.81 hrs, Volume= 0.196 af, Depth= 4.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=6.43"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

Runoff = 0.67 cfs @ 5.09 hrs, Volume= 0.240 af, Depth= 5.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.05 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=7.46"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

Runoff = 0.58 cfs @ 11.80 hrs, Volume= 0.266 af, Depth= 5.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.07 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=8.06"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.47 cfs @ 15.69 hrs, Volume= 0.288 af, Depth= 6.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.10 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=8.57"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.27 cfs @ 41.07 hrs, Volume= 0.319 af, Depth= 6.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-49.98 hrs, dt= 0.17 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=9.28"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.19 cfs @ 61.56 hrs, Volume= 0.344 af, Depth= 7.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.25 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=9.85"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.12 cfs @ 102.47 hrs, Volume= 0.380 af, Depth= 8.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.40 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=10.66"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Summary for Subcatchment 9S: ODH Subdivision Bypass

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.08 cfs @ 204.38 hrs, Volume= 0.468 af, Depth=10.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.30 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=12.65"

| Area (ac) | CN | Description |
|---|---|---|
| 0.550 | 81 | 1/3 acre lots, 30% imp, HSG C |
| 0.385 | | 70.00% Pervious Area |
| 0.165 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 9.2 | 380 | 0.0240 | 0.69 | | **Lag/CN Method,** |

## Summary for Subcatchment 1S: Proposed 1.04 Ac. North to Turnbull Woods

Runoff = 5.31 cfs @ 0.18 hrs, Volume= 0.200 af, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=4.03"

| Area (ac) | CN | Description |
|---|---|---|
| 1.040 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.645 | | 62.00% Pervious Area |
| 0.395 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 263 | 0.0830 | 1.27 | | **Lag/CN Method,** |

## Summary for Subcatchment 1S: Proposed 1.04 Ac. North to Turnbull Woods

Runoff = 4.28 cfs @ 0.28 hrs, Volume= 0.273 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=4.97"

| Area (ac) | CN | Description |
|---|---|---|
| 1.040 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.645 | | 62.00% Pervious Area |
| 0.395 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 263 | 0.0830 | 1.27 | | **Lag/CN Method,** |

## Summary for Subcatchment 1S: Proposed 1.04 Ac. North to Turnbull Woods

Runoff = 3.47 cfs @ 0.38 hrs, Volume= 0.314 af, Depth= 3.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=5.49"

| Area (ac) | CN | Description |
|---|---|---|
| 1.040 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.645 | | 62.00% Pervious Area |
| 0.395 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 263 | 0.0830 | 1.27 | | **Lag/CN Method,** |

## Summary for Subcatchment 1S: Proposed 1.04 Ac. North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 2.29 cfs @ 0.69 hrs, Volume= 0.389 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=6.43"

| Area (ac) | CN | Description |
|---|---|---|
| 1.040 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.645 | | 62.00% Pervious Area |
| 0.395 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 263 | 0.0830 | 1.27 | | **Lag/CN Method,** |

## Summary for Subcatchment 1S: Proposed 1.04 Ac. North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.32 cfs @ 4.91 hrs, Volume= 0.473 af, Depth= 5.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.05 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=7.46"

| Area (ac) | CN | Description |
|---|---|---|
| 1.040 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.645 | | 62.00% Pervious Area |
| 0.395 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 263 | 0.0830 | 1.27 | | **Lag/CN Method,** |

## Summary for Subcatchment 1S: Proposed 1.04 Ac. North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 1.12 cfs @ 11.73 hrs, Volume= 0.523 af, Depth= 6.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.07 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=8.06"

| Area (ac) | CN | Description |
|---|---|---|
| 1.040 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.645 | | 62.00% Pervious Area |
| 0.395 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 263 | 0.0830 | 1.27 | | **Lag/CN Method,** |

## Summary for Subcatchment 1S: Proposed 1.04 Ac. North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.90 cfs @ 15.61 hrs, Volume= 0.565 af, Depth= 6.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.10 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=8.57"

| Area (ac) | CN | Description |
|---|---|---|
| 1.040 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.645 | | 62.00% Pervious Area |
| 0.395 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 263 | 0.0830 | 1.27 | | **Lag/CN Method,** |

## Summary for Subcatchment 1S: Proposed 1.04 Ac. North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.51 cfs @ 40.99 hrs, Volume= 0.625 af, Depth= 7.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-49.98 hrs, dt= 0.17 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=9.28"

| Area (ac) | CN | Description |
|---|---|---|
| 1.040 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.645 | | 62.00% Pervious Area |
| 0.395 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 263 | 0.0830 | 1.27 | | **Lag/CN Method,** |

## Summary for Subcatchment 1S: Proposed 1.04 Ac. North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.36 cfs @ 61.40 hrs, Volume= 0.672 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.25 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=9.85"

| Area (ac) | CN | Description |
|---|---|---|
| 1.040 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.645 | | 62.00% Pervious Area |
| 0.395 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 263 | 0.0830 | 1.27 | | **Lag/CN Method,** |

## Summary for Subcatchment 1S: Proposed 1.04 Ac. North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.24 cfs @ 102.34 hrs, Volume= 0.740 af, Depth= 8.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.40 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=10.66"

| Area (ac) | CN | Description |
|---|---|---|
| 1.040 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.645 | | 62.00% Pervious Area |
| 0.395 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 263 | 0.0830 | 1.27 | | **Lag/CN Method,** |

## Summary for Subcatchment 1S: Proposed 1.04 Ac. North to Turnbull Woods

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.14 cfs @ 204.61 hrs, Volume= 0.909 af, Depth=10.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.80 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=12.65"

| Area (ac) | CN | Description |
|---|---|---|
| 1.040 | 83 | 1/4 acre lots, 38% imp, HSG C |
| 0.645 | | 62.00% Pervious Area |
| 0.395 | | 38.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 3.4 | 263 | 0.0830 | 1.27 | | **Lag/CN Method,** |

## Summary for Subcatchment 8S: Northwood Drive

Runoff = 1.74 cfs @ 0.64 hrs, Volume= 0.107 af, Depth> 2.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=4.03"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 0.600 | 81 | 1/3 acre lots, 30% imp, HSG C |
| | 0.420 | | 70.00% Pervious Area |
| | 0.180 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 27.7 | 875 | 0.0100 | 0.53 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive

Runoff = 1.59 cfs @ 0.79 hrs, Volume= 0.148 af, Depth> 2.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=4.97"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 0.600 | 81 | 1/3 acre lots, 30% imp, HSG C |
| | 0.420 | | 70.00% Pervious Area |
| | 0.180 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 27.7 | 875 | 0.0100 | 0.53 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive

Runoff = 1.37 cfs @ 0.96 hrs, Volume= 0.171 af, Depth> 3.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=5.49"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 0.600 | 81 | 1/3 acre lots, 30% imp, HSG C |
| | 0.420 | | 70.00% Pervious Area |
| | 0.180 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 27.7 | 875 | 0.0100 | 0.53 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive

Runoff = 0.99 cfs @ 1.14 hrs, Volume= 0.214 af, Depth= 4.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=6.43"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 0.600 | 81 | 1/3 acre lots, 30% imp, HSG C |
| | 0.420 | | 70.00% Pervious Area |
| | 0.180 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 27.7 | 875 | 0.0100 | 0.53 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive

Runoff = 0.72 cfs @ 5.49 hrs, Volume= 0.262 af, Depth= 5.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.05 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=7.46"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 0.600 | 81 | 1/3 acre lots, 30% imp, HSG C |
| | 0.420 | | 70.00% Pervious Area |
| | 0.180 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 27.7 | 875 | 0.0100 | 0.53 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive

Runoff = 0.62 cfs @ 12.01 hrs, Volume= 0.290 af, Depth= 5.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.07 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=8.06"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 0.600 | 81 | 1/3 acre lots, 30% imp, HSG C |
| | 0.420 | | 70.00% Pervious Area |
| | 0.180 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 27.7 | 875 | 0.0100 | 0.53 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive

Runoff = 0.50 cfs @ 15.90 hrs, Volume= 0.314 af, Depth= 6.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.10 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=8.57"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 0.600 | 81 | 1/3 acre lots, 30% imp, HSG C |
| | 0.420 | | 70.00% Pervious Area |
| | 0.180 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 27.7 | 875 | 0.0100 | 0.53 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive

Runoff = 0.29 cfs @ 41.51 hrs, Volume= 0.348 af, Depth= 6.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-49.98 hrs, dt= 0.17 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=9.28"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 0.600 | 81 | 1/3 acre lots, 30% imp, HSG C |
| | 0.420 | | 70.00% Pervious Area |
| | 0.180 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 27.7 | 875 | 0.0100 | 0.53 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.21 cfs @ 61.91 hrs, Volume= 0.375 af, Depth= 7.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.25 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=9.85"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 0.600 | 81 | 1/3 acre lots, 30% imp, HSG C |
| | 0.420 | | 70.00% Pervious Area |
| | 0.180 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 27.7 | 875 | 0.0100 | 0.53 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.14 cfs @ 102.82 hrs, Volume= 0.414 af, Depth= 8.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.40 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=10.66"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 0.600 | 81 | 1/3 acre lots, 30% imp, HSG C |
| | 0.420 | | 70.00% Pervious Area |
| | 0.180 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 27.7 | 875 | 0.0100 | 0.53 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.08 cfs @ 204.99 hrs, Volume= 0.511 af, Depth=10.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.80 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=12.65"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 0.600 | 81 | 1/3 acre lots, 30% imp, HSG C |
| | 0.420 | | 70.00% Pervious Area |
| | 0.180 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 27.7 | 875 | 0.0100 | 0.53 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive to Turnbull

Runoff = 5.86 cfs @ 0.60 hrs, Volume= 0.347 af, Depth> 2.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 1.00 hrs Rainfall=4.03"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.800 | 83 | 1/3 acre lots, 30% imp, HSG C |
| | 1.260 | | 70.00% Pervious Area |
| | 0.540 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 25.9 | 875 | 0.0100 | 0.56 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive to Turnbull

Runoff = 5.25 cfs @ 0.75 hrs, Volume= 0.472 af, Depth> 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-3.00 hrs, dt= 0.01 hrs
Huff 0-10sm 1Q 2.00 hrs Rainfall=4.97"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.800 | 83 | 1/3 acre lots, 30% imp, HSG C |
| | 1.260 | | 70.00% Pervious Area |
| | 0.540 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 25.9 | 875 | 0.0100 | 0.56 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive to Turnbull

Runoff = 4.47 cfs @ 0.90 hrs, Volume= 0.543 af, Depth> 3.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-4.00 hrs, dt= 0.02 hrs
Huff 0-10sm 1Q 3.00 hrs Rainfall=5.49"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.800 | 83 | 1/3 acre lots, 30% imp, HSG C |
| | 1.260 | | 70.00% Pervious Area |
| | 0.540 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 25.9 | 875 | 0.0100 | 0.56 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive to Turnbull

Runoff = 3.28 cfs @ 1.08 hrs, Volume= 0.674 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-8.01 hrs, dt= 0.03 hrs
Huff 0-10sm 1Q 6.00 hrs Rainfall=6.43"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.800 | 83 | 1/3 acre lots, 30% imp, HSG C |
| | 1.260 | | 70.00% Pervious Area |
| | 0.540 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 25.9 | 875 | 0.0100 | 0.56 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive to Turnbull

Runoff = 2.24 cfs @ 5.42 hrs, Volume= 0.819 af, Depth= 5.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-15.00 hrs, dt= 0.05 hrs
Huff 0-10sm 2Q 12.00 hrs Rainfall=7.46"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.800 | 83 | 1/3 acre lots, 30% imp, HSG C |
| | 1.260 | | 70.00% Pervious Area |
| | 0.540 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 25.9 | 875 | 0.0100 | 0.56 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive to Turnbull

Runoff = 1.91 cfs @ 11.98 hrs, Volume= 0.905 af, Depth= 6.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-21.00 hrs, dt= 0.07 hrs
Huff 0-10sm 3Q 18.00 hrs Rainfall=8.06"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.800 | 83 | 1/3 acre lots, 30% imp, HSG C |
| | 1.260 | | 70.00% Pervious Area |
| | 0.540 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 25.9 | 875 | 0.0100 | 0.56 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive to Turnbull

Runoff = 1.54 cfs @ 15.88 hrs, Volume= 0.978 af, Depth= 6.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.10 hrs
Huff 0-10sm 3Q 24.00 hrs Rainfall=8.57"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.800 | 83 | 1/3 acre lots, 30% imp, HSG C |
| | 1.260 | | 70.00% Pervious Area |
| | 0.540 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 25.9 | 875 | 0.0100 | 0.56 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive to Turnbull

Runoff = 0.88 cfs @ 41.44 hrs, Volume= 1.081 af, Depth= 7.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-49.98 hrs, dt= 0.17 hrs
Huff 0-10sm 4Q 48.00 hrs Rainfall=9.28"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.800 | 83 | 1/3 acre lots, 30% imp, HSG C |
| | 1.260 | | 70.00% Pervious Area |
| | 0.540 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 25.9 | 875 | 0.0100 | 0.56 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive to Turnbull

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.63 cfs @ 61.86 hrs, Volume= 1.164 af, Depth= 7.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-75.00 hrs, dt= 0.25 hrs
Huff 0-10sm 4Q 72.00 hrs Rainfall=9.85"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.800 | 83 | 1/3 acre lots, 30% imp, HSG C |
| | 1.260 | | 70.00% Pervious Area |
| | 0.540 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 25.9 | 875 | 0.0100 | 0.56 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive to Turnbull

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.41 cfs @ 102.75 hrs, Volume= 1.281 af, Depth= 8.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-130.00 hrs, dt= 0.40 hrs
Huff 0-10sm 4Q 120.00 hrs Rainfall=10.66"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.800 | 83 | 1/3 acre lots, 30% imp, HSG C |
| | 1.260 | | 70.00% Pervious Area |
| | 0.540 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 25.9 | 875 | 0.0100 | 0.56 | | **Lag/CN Method, Lag CN** |

## Summary for Subcatchment 8S: Northwood Drive to Turnbull

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.25 cfs @ 204.87 hrs, Volume= 1.573 af, Depth=10.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 10.00-250.00 hrs, dt= 0.80 hrs
Huff 0-10sm 4Q 240.00 hrs Rainfall=12.65"

| | Area (ac) | CN | Description |
|---|---|---|---|
| * | 1.800 | 83 | 1/3 acre lots, 30% imp, HSG C |
| | 1.260 | | 70.00% Pervious Area |
| | 0.540 | | 30.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 25.9 | 875 | 0.0100 | 0.56 | | **Lag/CN Method, Lag CN** |

# Operation and Maintenance Requirements
# As They Relate to
# Storm Water Management Facilities
# For
# The Forest Edge Subdivision
# 1801 Green Bay Road
# Glencoe, Illinois

June 8, 2020

Prepared By:
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## Introduction

This guide is prepared to assist the property owner in the inspection and maintenance of the stormwater management system for The Forest Edge Subdivision. Proper maintenance is essential for the long term performance of the system as well as the esthetics of the property. The owner, and the onsite or out-sourced maintenance staff should be made aware of the maintenance responsibility that is connected with the storm water detention system and water quality component that exists on this property. Specific care for the subject system must be incorporated into an ongoing maintenance plan, to see that the storm water impoundment system operates problem free and the water quality component operates at peak efficiency. This system should not be neglected and degrade to a level that it becomes a hazard for the property owner, the adjacent landowners or the Village of Glencoe's public infrastructure system. The following guidelines must be followed as set forth by the Metropolitan Water Reclamation District of Greater Chicago.

## Homeowner's Association Responsibility

The Homeowner's Association (HOA) should retain on file, a list of names and contact information of all responsible parties, including contact information of the property maintenance company and/or contract services, that will be responsible for the maintenance of common grounds, and areas within the Storm Water Management Easement, which includes the storm water detention and sedimentation control system (Chamber/Rock Void Detention System) and common area landscaping. Contact information will be attached to this report and kept by the HOA, for the maintenance staff to review.

## Inspection and Maintenance Schedule

An inspection and maintenance schedule should be created as part of the ongoing maintenance of the storm water management system. The schedule shall provide for routine examination of the detention system, surrounding landscaping that accompanies the system and any of its constructed components. A log book should be prepared and kept by the HOA, The logbook will contain inspection dates, facility components inspected along with any maintenance performed and repairs that were made. All inspections, whether routine or emergency, shall be recorded in the logbook. The HOA should familiarize themselves with the logbook and report, so that these individuals are aware of proper inspection and O&M procedures.

## Minimum Requirements

Along with specific maintenance procedures for the onsite storm water detention system, the following minimum requirements shall be incorporated into the inspection and maintenance of the on-site system:

- O&M plan procedures and practices must be reviewed and assessed annually
- Access routes, sidewalks, pavements, shall be inspected annually and maintained as needed
- Drainage structures and flow restrictors (3 restrictor catch basins, one found to the northeast, in the back of Lot 23, another between lots 22 and 23 and to the southeast, between the back yards of lots 17 and 18) must be inspected and cleaned in the early spring, mid summer and late fall, after leaves have fallen and the northeast detention basin is cleaned of all debris from a scheduled fall cleanup. Additional inspections shall be provided, as needed.
- The detention system is comprised of an above ground basin in the northeast corner of the subdivision and a below ground, combination plastic arch pipe and stone chamber system that spans from the northeast corner to the southeast corner of the subdivision. The system shall be inspected during the same schedule as the flow restrictor and after significant rainfall events exceeding 1.5 inches.
- A logbook shall be kept complete and updated. Logbooks should be produced upon request of a service provider or contractor, to properly assess any problems with the detention system or other site amenities. The HOA shall provide copies of the logbook to the Village, on an annual basis.
- Vegetation shall be maintained on a regular basis.
- Pest control measures shall be implemented to address insects and rodents.
- Signage and fencing, if necessary, shall be installed and maintained to protect property and the public.

The following are O&M guidelines for the site-specific facilities found on this property:

## Natural Landscaping and Trees

Regular tree maintenance is required such as pruning and trimming in late fall or winter to remove dead wood and access growth to maintain a healthy canopy. Maintenance such as lawn mowing and trimming will be necessary to maintain esthetics of the site.

General Planted Bioswale Maintenance and Care:

1. Watering: Within the first three weeks after planting, water the bioswale once per week. It is not necessary to water during a given week if one inch of rain accumulates.

2. Water the bioswale during periods of drought in mid-summer, if needed.

3. Weeding: Using a field guide, identify and separate weeds from bioswale plants. Remove identified weeds. To avoid confusion, bioswale plants may be marked with small planting stakes, until they are established.

4. Mulch: Until bioswale plants are established, mulching the edge / slope of the bioswale interior will discourage weed growth and soil erosion.

5. Sedimentation: It is always best to protect the bioswale from the possibility of silt entering the area. It is important to be diligent, as conditions change. If bioswales have sediment build up, an easy remedy is to dig small pits in the swale and remove the soil.

   Over time, the pits will naturally fill in and bioswale plants will grow over the area. Small pits are less invasive than to skim off silt in larger areas. Creating small pits will reduce disturbance to the plant community. In severe cases, it may be necessary to re-dig the entire swale/basin area.

6. Maintenance of bioswales includes replacement of dead or dying plant material. Identify dead or weak plantings which will not recover. Remove the plantings, including root structures. Clear the area and provide additional soil media, if necessary.

   Using the enclosed list of recommended plantings, replant the subject area, following proper spacing guidelines for each of the replanted species. Water as necessary, following guidelines mentioned in this plan for new planted material.

| **BIOSWALE PLANT LIST OF RECOMMENDED SPECIES** | |
|---|---|
| ***Botanical Name*** | ***Common Name*** |
| Agropyron elongatum | Tall Wheatgrass |
| Alisma subcordatum | American Water Plantain |
| Symphyotrichum lanceolatum | Aster lanceolatus |
| Bidens cernua | Nodding Beggarticks |
| Bouteloua hirsuta | Hairy Grama |
| Carex stipata | Awlfruit Sedge |
| Carex vulpinoidea | Fox Sedge |
| Eleocharis obtusa | Blunt Spikerush |
| Elymus canadensis | Canada Wild Rye |
| Pascopyrum smithii | Western Wheatgrass |
| Helianthus gosseserratus | Sawtooth Sunflower |
| Panicum virgatum | Switchgrass |
| Schizachyrium scoparium | Little Bluestem |
| Bolboschoenus fluviatilis | River Bulrush |
| Schoenoplectus tabernaemontani | Softstem Bulrush |
| Spartina pectinata | Prairie Cordgrass |
| Verbena hastata | American Blue Vervain |
| Eleocharis erythopoda | Bald Spikerush |
| Solidago sempervirens | Seaside Goldenrod |
| Juncus effusus | Common Rush |

**Ongoing Maintenance Schedule:**

As Needed -Mowing and trimming of vegetation

Monthly - Inspect all vegetation expected to trap silt, debris and sediment that can impede the storm sewer and detention system.

Twice-a-year - Inspect swales and slopes for erosion, scour and unwanted growth. Erosion repair and removal of unwanted growth should be executed with minimal disruption to the planting soil bed and remaining vegetation (See Bioswale Maintenance).

Once-a-year - Inspect inlets and catch basins for trapped sediment and flow capabilities. Remove sediment during dry periods.

**<u>Detention System</u>**

Maintenance is imperative, for continuous operation of storm water detention. This is the most important component of a development's storm water management system.

**Schedule:**

As Needed - Sediment should be removed from the below ground chamber system as defined in the maintenance schedule, provided by the manufacturer and attached to this O & M plan.
- Inspect basin after every storm greater than 1.5 inches of rainfall.

Quarterly - Inspect inlet and outlet pipes of the control structures (Restrictors) for clogging.
- Remove trash and debris.
- Grassed areas of the surface basin require mowing, trimming, weeding, dethatching and fertilizing
- Trees, shrubs will require maintenance as well.

Once-a-year - Inspection of the chamber system. Potential problems include pavement settlement, unusual settlement in yards within the chamber system location, access openings (unable to open) and debris removal.

A maintenance guide was provided by the chamber system manufacturer and is attached to this plan, for inspection and upkeep of the system. Qualified services can be retained to manage, provide maintenance and cleaning services for the system.

**Permeable Paver System**

**Schedule:**

As needed
- Permeable pavers shall be inspected and cleaned with a low-pressure power washer.
- Accumulated sediment from surface shall be vacuumed out and disposed of properly
- Remove litter and debris.
- Replace broken pavers and provide granular fill between paver joints as needed.

Maintenance of the onsite storm water management system can be minimal and cost effective, if a schedule is adhered to by the HOA and contracted service providers. This preventive type of management will provide a long lasting and effectively operating system that will benefit the property and surrounding area by providing water quality and potentially minimizing impacts to the Village's sewer system.

# RECHARGER® CHAMBERS

## STORMWATER MANAGEMENT SOLUTIONS

## OPERATION & MAINTENANCE GUIDELINES

### FOR 1801 GREEN BAY ROAD, GLENCOE, IL

STORMWATER MANAGEMENT SOLUTIONS

CULTEC®

*This manual contains guidelines recommended by CULTEC, Inc. and may be used in conjunction with, but not to supersede, local regulations or regulatory authorities. OSHA Guidelines must be followed when inspecting or cleaning any structure.*

## Introduction

The CULTEC Subsurface Stormwater Management System is an open-bottom corrugated plastic arch chamber system arranged in parallel rows surrounded by crushed, open graded stone. The CULTEC chambers create voids within the washed stone to provide stormwater storage for detention and volume-control purposes. Non-woven geotextile fabric is placed between the native soil and stone interface to prevent the intrusion of fines into the system. In order to minimize the amount of sediment which may enter the CULTEC system, a sediment collection device is recommended upstream from the CULTEC chamber system. An appropriately sized catch basin with sump, pretreatment catchment device, oil grit separator, or baffled distribution box all serve this function. 1801 Green Bay Road has been designed with sumped catch basins directly upstream of each CULTEC chamber system to capture as much sediment as possible. Installation, operation, and maintenance of these devices shall be in accordance with manufacturer's recommendations. Fine sediment that is not captured by the sumped catch basin will be captured in the CULTEC Separator Row. The CULTEC Separator Row explained in more detail on page 3.

Best Management Practices allow for the maintenance of the preliminary collection systems prior to feeding the CULTEC chambers. The pretreatment structures shall be inspected for any debris that will restrict inlet flow rates. Outfall structures, if any, such as outlet control must also be inspected for any obstructions that would restrict outlet flow rates. OSHA Guidelines must be followed when inspecting or cleaning any structure.

## Operation and Maintenance Requirements

### I. Operation

CULTEC stormwater management systems shall be operated to receive only stormwater run-off in accordance with applicable local regulations. CULTEC subsurface stormwater management chambers operate at peak performance when installed in series with pretreatment. Pretreatment of suspended solids is superior to treatment of solids once they have been introduced into the system. The use of pretreatment is adequate as long as the structure is maintained and the site remains stable with finished impervious surfaces such as parking lots, walkways, and pervious areas are properly maintained. If there is to be an unstable condition, such as improvements to buildings or parking areas, all proper silt control measures shall be implemented according to local regulations.

### II. Inspection and Maintenance

**A.** The CULTEC systems are equipped with an inspection port located on the Separator Rows. The CULTEC Inspection Port Kit is a circular PVC housing with a cast-iron frame and cover, supported with a concrete collar. When the lid is removed, a 6-inch (150 mm) pipe with a screw-in plug will be exposed. Remove the plug. This will provide access to the CULTEC Chamber row below. From the surface, through this access, the sediment may be measured at this location. A stadia rod may be used to measure the depth of sediment if any in this row. If the depth of sediment is in excess of 3 inches (76 mm), then this row should be cleaned with high pressure water through a culvert cleaning nozzle. This would be carried out through an upstream manhole.

#### 1. Manhole Access

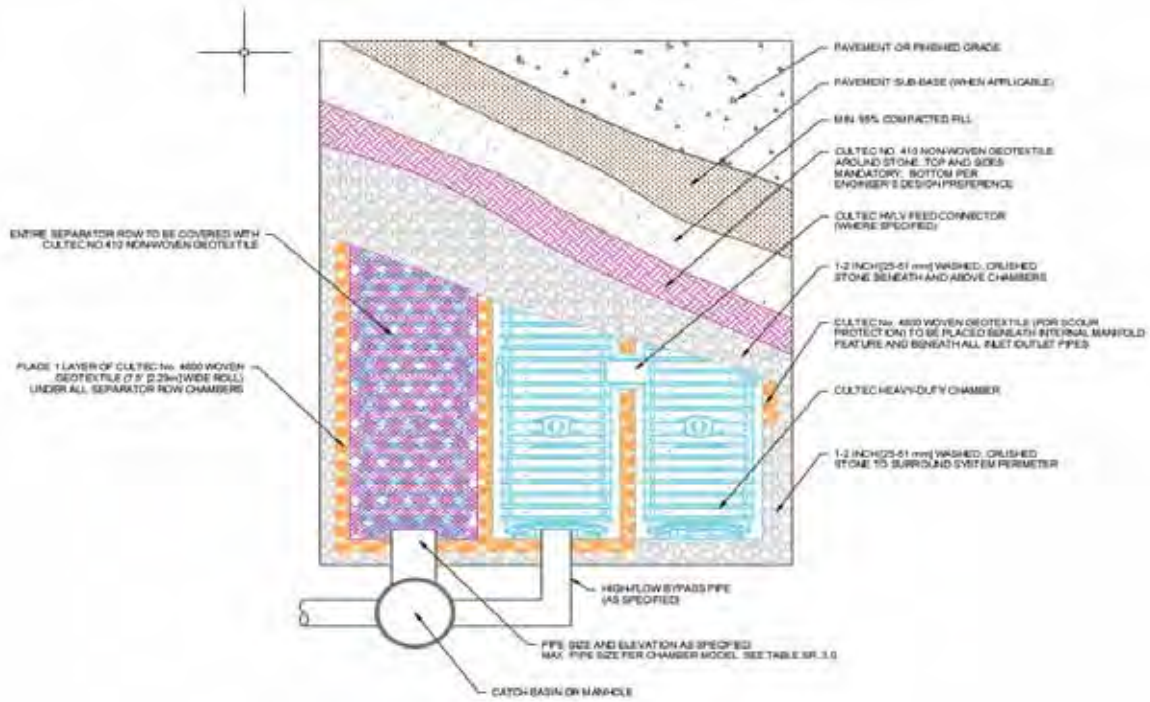
This inspection should only be carried out by persons trained in confined space entry and sewer inspection services. After the manhole cover has been removed a gas detector must be lowered into the manhole to ensure that there are not high concentrations of toxic gases present. The inspector should be lowered into the manhole with the proper safety equipment as per OSHA requirements. The inspector may be able to observe sediment from this location. If this is not possible, the inspector will need to deploy a CCTV robot to permit viewing of the sediment.

## 2. Separator Row

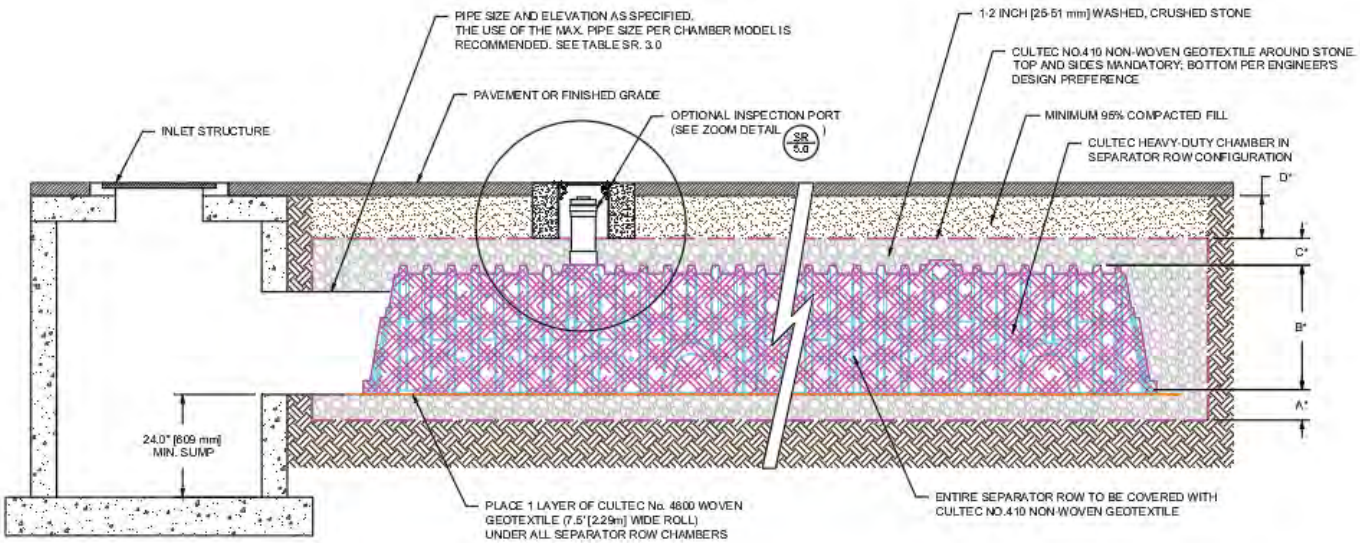
CULTEC's Separator™ Row is an inexpensive means of removing Total Suspended Solids from the CULTEC chamber system, as well as providing easier access for inspection and maintenance. The Separator Row is designed to capture the First Flush of a rain event and is typically included as part of the "Treatment Train" for water quality.

The CULTEC Separator Row is a row of CULTEC Recharger Chambers that are surrounded on all sides by filter fabric. One layer of CULTEC No. 4800™ Woven Geotextile are placed between the clean foundation stone and the chamber feet. The chambers are then completely wrapped with CULTEC No. 410™ non-woven geotextile. This configuration is designed to trap any sediment and/or debris that may pass through the upstream structures and into the chamber system.

Access manhole and/or catch basins are installed upstream of the Separator Rows for inspection and maintenance.The upstream manhole is designed with a sump to trap heavier sediment and allow for proper cleaning of the Separator Row. A JetVac process with a high pressure water nozzle is introduced down the Separator Row via the access manhole to clean all sediment and debris from the Separator Row. Captured pollutants are flushed into the sumped access manhole for vacuuming, and the process is repeated until the Separator Row is completely free of sediment and debris.




## Typical Separator Row Plan-View Detail




## Typical Separator Row Cross-Section Detail

## Inspection and Maintenance

CULTEC recommends inspection of the Separator Row to be performed quarterly for the first year of service. Future inspection frequency can be adjusted based upon previous inspection observations. However annual inspections are recommended. Inspection of the Separator Row can be achieved via an inspection port riser installed during construction. This inspection port riser will connect the top of the Separator Row chambers to finished grade with a removable lid. Alternatively the Separator Row may be inspected via the manhole(s) located at the end(s) of the Separator Row. However this method of inspection requires confined space entry. If entry into the manhole is required, all local and OSHA rules for confined space entries must be strictly followed.

To inspect:

- Remove the inspection port lid.
- Remove the riser pipe cap.
- With a flashlight and stadia rod, measure the depth of sediment.
- Record results in a maintenance log.
- When depth of sediment exceeds 3” (76 mm), use the JetVac procedure described below.

The JetVac process utilizes a high pressure water nozzle controlled from the surface. The high pressure nozzle is introduced down the Separator Row via the access manhole(s). The high pressure water cleans all sediment and debris from the Separator Row as the nozzle is retrieved. Captured pollutants are flushed into the sumped access manhole for vacuuming. This process is repeated until the Separator Row is completely free of sediment and debris. A small diameter culvert cleaning nozzle is recommended for this procedure.

High pressure water nozzle

Cleaning Separator Row and pipes with high pressure water nozzle

SEPARATOR ROW: Separator Row prior to cleaning

ADJACENT ROW: When the Separator Row is working properly, the adjacent rows will not show signs of sediment.

## III. Maintenance Guidelines

The following guidelines shall be adhered to for the operation and maintenance of the CULTEC stormwater management system:

**A.** The owner shall keep a maintenance log which shall include details of any events which would have an effect on the system's operational capacity.

**B.** The operation and maintenance procedure shall be reviewed periodically and changed to meet site conditions.

**C.** Maintenance of the stormwater management system shall be performed by qualified workers and shall follow applicable occupational health and safety requirements.

**D.** Debris removed from the stormwater management system shall be disposed of in accordance with applicable laws and regulations.

## IV. Suggested Maintenance Schedules

**A. Maintenance**

The following suggested schedule shall be followed for routine maintenance during the regular operation of the stormwater system:

| Frequency | Action |
|---|---|
| Quarterly | Check inlets and outlets for clogging and remove any debris, as required. |
| After rain events > 1 inch per hour | Check inlets and outlets for clogging and remove any debris, as required. |
| Annually | Inspect Separator Rows through inspection ports. Check all components for structural damage or erosion. Remove sediment from Separator Rows if necessary |

## BMP OPERATION & MAINTENANCE LOG

Project Name: _____

Today's Date:_____

Name of Person Performing Activity (Printed):_____

Signature: _____

| BMP Name (As Shown in O&M Plan) | Brief Description of Implementation, Maintenance, and Inspection Activity Performed |
|---|---|
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This O&M Plan describes the designated responsible party for implementation of this WQMP, including: operation and maintenance of all the structural BMP(s), conducting the training/educational program and duties, and any other necessary activities. The O&M Plan includes detailed inspection and maintenance requirements for all structural BMPs, including copies of any maintenance contract agreements, manufacturer's maintenance requirements, permits, etc.

### 4.1.1 Project Information

| | |
|---|---|
| Project name | |
| Address | |
| City, State Zip | |
| Site size | |
| List of structural BMPs, number of each | |
| Other notes | |

### 4.1.2 Responsible Party

The responsible party for implementation of this WQMP is:

| | |
|---|---|
| Name of Person or HOA Property Manager | |
| Address | |
| City, State Zip | |
| Phone number | |
| 24-Hour Emergency Contact number | |
| Email | |

### 4.1.3 Record Keeping

Parties responsible for the O&M plan shall retain records for at least 5 years.

All training and educational activities and BMP operation and maintenance shall be documented to verify compliance with this O&M Plan. A sample Training Log and Inspection and Maintenance Log are included in this document.

### 4.1.4 Electronic Data Submittal

This document along with the Site Plan and Attachments shall be provided in PDF format. AutoCAD files and/or GIS coordinates of BMPs shall also be submitted to the City.