PREPARED FOR: CITY OF COLLEGE PLACE

IN PARTNERSHIP WITH: CITY OF WALLA WALLA
PORT OF WALLA WALLA

WALLA WALLA VALLEY REGIONAL WASTEWATER FEASIBILITY STUDY

SEPTEMBER 2022

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Table of Contents

Abbreviations and Acronyms

ADF	Average Daily Flow
ADWF	Average Dry Weather Flow
AOR	Actual Oxygen Requirement
AWWF	Average Wet Weather Flow
BOD	Biochemical Oxygen Demand
CCTV	Closed-Circuit Television
cf (CF)	Cubic Feet
cfs	Cubic Feet Per Second
CIP	Capital Improvement Plan
D	Depth
EA	Each
ECY	Washington Department of Ecology
EPA	U.S. Environmental Protection Agency
ERU	Equivalent Residential Unit
ESA	Endangered Species Act
fpm	Feet Per Minute
fps	Feet Per Second
ft	Feet
gpcd	Gallons per Capita Day
gpd	Gallons Per Day
gph	Gallons Per Hour
gpm	gallons per minute
I/I	Inflow and Infiltration
L	Length
LF	Linear Feet
LS	Lump Sum
M	Million
MACP	Manhole Assessment Certification Program
MDF	Maximum/Minimum Daily Flow
MG	Million Gallons
Mgal	Million Gallons
mgd (MGD)	Million Gallons per Day
AMSL (msl)	Above Mean Sea Level
N/A	Not Available or Not Applicable
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
O&M	Operation and Maintenance
OSHA	Occupational Safety and Health Administration
PDF	Peak Day Flow
PF	Peaking Factor
PHF	Peak Hourly Flow
POTW	Publicly Owned Treatment Work
PVC	Polyvinyl Chloride
PWTF	Public Works Trust Fund
SCS	US Department of Agriculture Soil Conservation Service (Now RD)
SEPA	State Environmental Policy Act
SERP	State Environmental Review Process
sf (SF)	Square Feet
SIU	Significant Industrial User
SRF	State Revolving Loan Fund
SS	Stainless Steel
TDH	Total Dynamic Head
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
UGA	Urban Growth Area
USGS	United States Geological Survey
V (vol)	Volume
VFD	Variable Frequency Drive
W	Width
WQS	Water Quality Standards
WWTP	Wastewater Treatment Plant

Chapter 1

Introduction

Chapter 1 - Introduction

1.1. Background

The purpose of this Study is to evaluate the feasibility of a Regional wastewater treatment solution that could benefit the City of College Place, City of Walla Walla, and Port of Walla Walla. Both Walla Walla and College Place are on the cusp of significant improvements to their Wastewater Treatment Plant (WWTP) facilities; therefore, right now represents a unique time to consider a partnership.

The City of College Place is currently awaiting the issuance of a new discharge permit for their WWTP. The existing permit includes a compliance schedule with a milestone to construct improvements to their WWTP by December 31, 2023. The Phase 1 improvements have already been designed and are approved by Ecology and waiting for bidding and then construction to commence. The estimated construction cost is $26M. Ecology has offered a funding package for construction that consists of $10M in grant funding and a $16M low-interest loan. The City must decide by end of 2022 whether to accept this funding offer and move forward with Phase 1. In the meantime, the City has been evaluating the feasibility of partnering with Walla Walla on a Regional solution. The reasons that College Place is considering this include trying to minimize rate impacts to ratepayers and avoiding the need for future planned upgrades to the WWTP. If the future discharge permit updates include new regulations for ammonia limits – this could trigger the Phase 2 upgrades which were estimated at $15M in 2019 dollars. If and/or when the future discharge permit updates include new regulations for PCBs – this could trigger the Phase 3 upgrades which were estimated at $27M in 2019 dollars.

The City of Walla Walla is currently constructing rehabilitation upgrades to their WWTP at a cost of $7M – funded by a PWTF loan. Future upgrades have been identified in their General Sewer Plan which add up to approximately $18M – and are expected to be implemented in two phases in 2026 and 2029. The General Sewer Plan projected that their WWTP would reach capacity in 2027; therefore, the City is planning to commence a Facility Plan to study the improvements necessary for the next 20 years of growth. The construction of a wastewater pre-treatment system on the waste stream of one of the City's largest industrial wastewater dischargers seems to have resulted in a significant decrease of the loading at the WWTP; however, this is based on only two months of data and many more months are needed to prove consistency. This recent reduction in loading seems to have provided some welcome relief to the WWTP; however, the City must embark upon a Facility Plan study soon in order to properly plan for growth. The City of Walla Walla is considering a regional system because of the favorable economies of scale to add capacity and the potential of spreading the cost over a larger customer base.

The Port of Walla Walla currently operates both the water and wastewater collection system at the Airport Industrial Park. Sewage is collected in the Port's collection system and then passes through a flume before being discharged into Walla Walla's collection system. The City of Walla Walla assesses a sewage bill to the Port based upon what is measured at the flume. The City of Walla Walla recently implemented a strong waste surcharge on several large industrial wastewater users in their system and the Port was identified as one of those. Because of the significant increase in sewer fees, the Port is evaluating alternative management strategies. The Port is participating in the regional study because their alternative management strategies could impact flows and loads into the City of Walla Walla's WWTP.

This Study evaluates the feasibility of a Regional wastewater treatment solution that could benefit each of the three entities. This is a cursory feasibility study, and if considered viable, further evaluation(s) and facility planning will be required.

Chapter 2

Water Rights Considerations

Chapter 2 - Water Rights Considerations

2.1. Walla Walla WWTP Water Rights

In the case of the Walla Walla WWTP, two irrigation districts have water rights claims on the effluent. The effluent is discharged into Mill Creek during the non-growing season and is discharged to the irrigation districts during the growing season. Therefore, the WWTP must meet Class A reuse criteria in order to provide it to the irrigation districts. If the WWTP were to be relocated, the pumping costs for getting the water to the irrigation district would increase. Because of this water rights issue, the likelihood of the Walla Walla WWTP being relocated to a new location is low.

2.2. College Place WWTP Water Rights Impairment Analysis

The College Place WWTP irrigates City-owned crops during the growing season and discharges to Garrison Creek during the non-growing season. As part of the 2018 Facility Plan, one of the alternatives that the City evaluated was eliminating the winter-time discharge to Garrison Creek via a reclamation permit – which necessitated a water rights impairment analysis in order to determine if any water rights were relying upon the discharge to Garrison Creek. The impairment analysis concluded that all water rights on Garrison Creek pre-dated the discharge of the WWTP into Garrison Creek; therefore, no water rights on Garrison Creek would be impaired if the WWTP ceased discharging effluent into the creek. However, there is a minimum flow criterion in the Walla Walla River that could be impaired if the City ceased discharging effluent in the non-growing season. Therefore, any regional wastewater solution should include College Place effluent continuing to be discharged into the Walla Walla River during the non-growing season.

2.3. Regional Alternative Water Rights Impairment Potential

Considering these water rights restrictions, one possible alternative is to pump sewage (or treated effluent) from College Place to the Walla Walla WWTP – because the effluent would be discharged into Mill Creek – which leads to the Walla Walla River – thereby meeting College Place's need to contribute to the minimum flow requirements. Eric Hartwig, the Watermaster for the Washington Department of Ecology Water Resources Department, has reviewed the College Place impairment report for the WWTP effluent discharge and agrees that it appears to be sound in its findings and is adequate to ensure that there will not be impairment of existing water rights (email from Eric Hartwig dated May 24, 2022). Therefore, this is the alternative that will be considered in this Study – pumping sewage from College Place to the Walla Walla WWTP.

Chapter 3

College Place Conceptual Design

Chapter 3 - College Place Conceptual Design

3.1. Introduction

The regional treatment concept is based on College Place pumping their wastewater to the Walla Walla WWTP where it will be treated and discharged. Another option could be pumping effluent from College Place to the Walla Walla WWTP for disinfection and disposal. This could involve year-round pumping or possibly even pumping only when necessary. The Walla Walla plant is larger than the College Place treatment plant so it can accept the additional flow more easily.

This chapter establishes the flows and loads on which this evaluation is based and identifies the facilities needed to get the wastewater to the Walla Walla WWTP. The projected flows and loads for 2027 are used because the data are readily available from other reports and it is the last year for which flow and load projections have been made for Walla Walla.

Evaluation criteria are not the same as design criteria. The evaluation criteria are taken from current conditions and are used to evaluate the feasibility of the project. If this project proceeds into planning, careful consideration must be given to developing appropriate design criteria.

3.2. College Place Flows and Loads

The flows and loads were extrapolated for the year 2027 from the February 2021 College Place Phase 1 WWTP Improvements – Design Technical Memorandum and WWTP daily data. The criteria are summarized below in Table 3.1.

Table 3.1 – College Place Flows and Loads

Parameter	2027 Projected From College Place [1]
Flow (mgd)	
Annual Average	1.16
Peak Day	2.21
Peak Hour	3.59
BOD5	
Average Daily, ppd	2,067
Maximum Month, ppd	3,197
Peak Day	7,083
TSS	
Average Daily, ppd	2,340
Maximum Month	3,472
Peak Day	6,430

Parameter	2027 Projected From College Place [1]
TKN	
Average Daily, ppd	504
Maximum Month, ppd	771
Peak Day	1,228

1. Interpolated from City of College Place WWTP Phase 1 Basis of Design, TM2 WWTP Influent Design Criteria.

3.3. Preliminary Treatment and Equalization

Wastewater entering the College Place WWTP will receive preliminary treatment consisting of screening and grit removal in the existing headworks. The 2018 Facility Plan identified work that needed to be done on the headworks for continued operations. Those improvements will still be necessary if the regionalization plan is implemented. The headworks improvements are:

replace the influent screen. New screen to have ¼" bar spacing
provide a screenings washer compactor
replace the grit classifier
replace the manual bar rack. New bar rack to have 3/8" bar spacing
replace the heating and ventilation system
replace lights, outlets and other corroded electrical
replace the overhead door
replace the hollow metal doors and frames and door hardware
paint the room interior
replace Local Control Panel HW
and appurtenances: piping, gratings, handrails, etc.

After preliminary treatment the existing influent pump station will pump the wastewater into the SBR tanks, just as it currently does. The influent pump station does not require any improvements.

The existing sequencing batch reactor (SBR) tanks will be used to store the wastewater until it is pumped to Walla Walla. While it is stored, it will be aerated using the existing aeration system. Aeration will reduce odor potential from the storage tanks (converted SBR tanks). Additional odor control measures may be necessary (covered tank and foul air treatment).

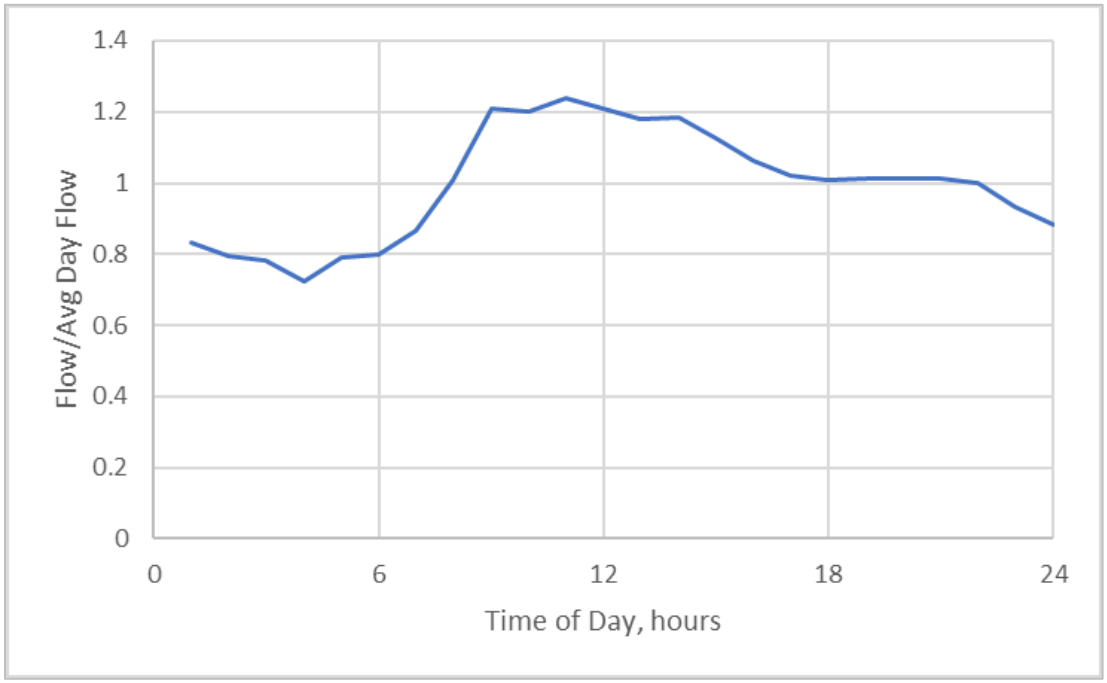
The Phase 1 WWTP Improvements identified work that needs to be done on the aeration system. Those improvements will still be necessary if the regionalization plan is implemented since the storage tanks will be aerated.

Flow will be pumped out of the SBRs with the objective of creating steady influent flow at the Walla Walla WWTP. To do this efficiently, the SCADA systems of both WWTPs should be linked.

The following analysis is an example that demonstrates the concept of how the flow being pumped from College Place could impact Walla Walla.

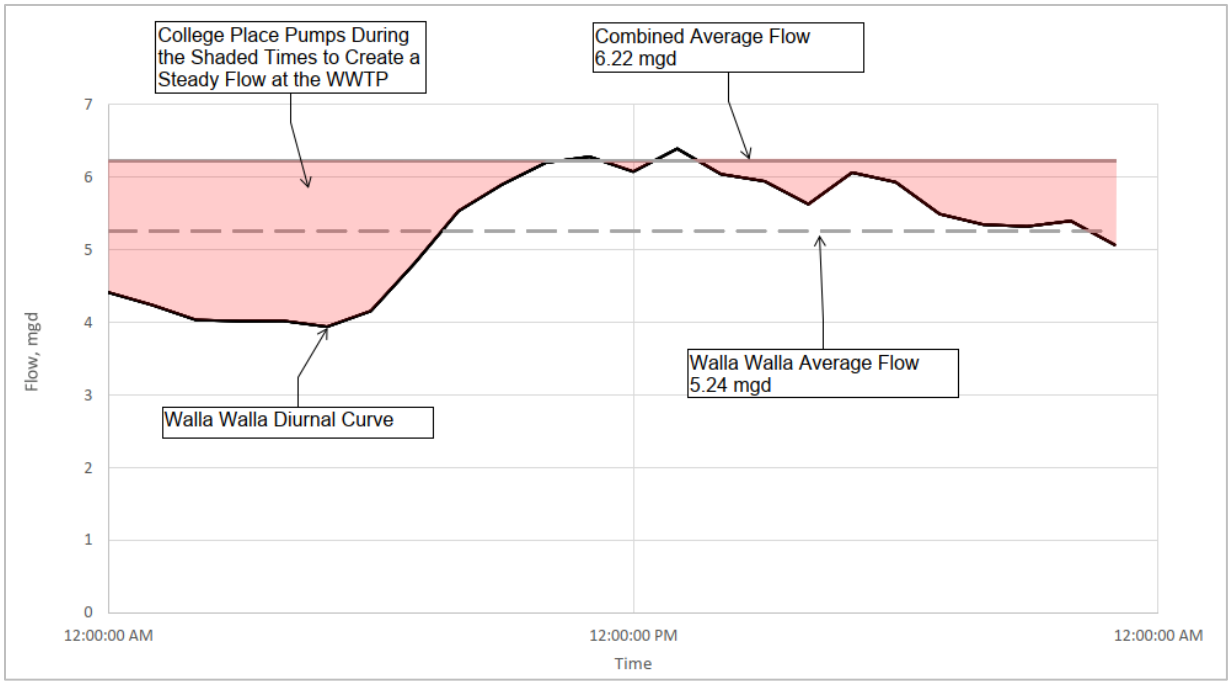
The College Place Facility Plan identified March 18, 2018 as a peak day flow event. It was used to create a normalized hydrograph (the hourly flow divided by the average flow) shown in **Figure 3.1**. The normalized hydrograph can be applied to any flow. For this evaluation it was applied to an average day flow of 1.16 mgd from College Place.

Figure 3.1 Normalized Intraday hydrograph for College Place.



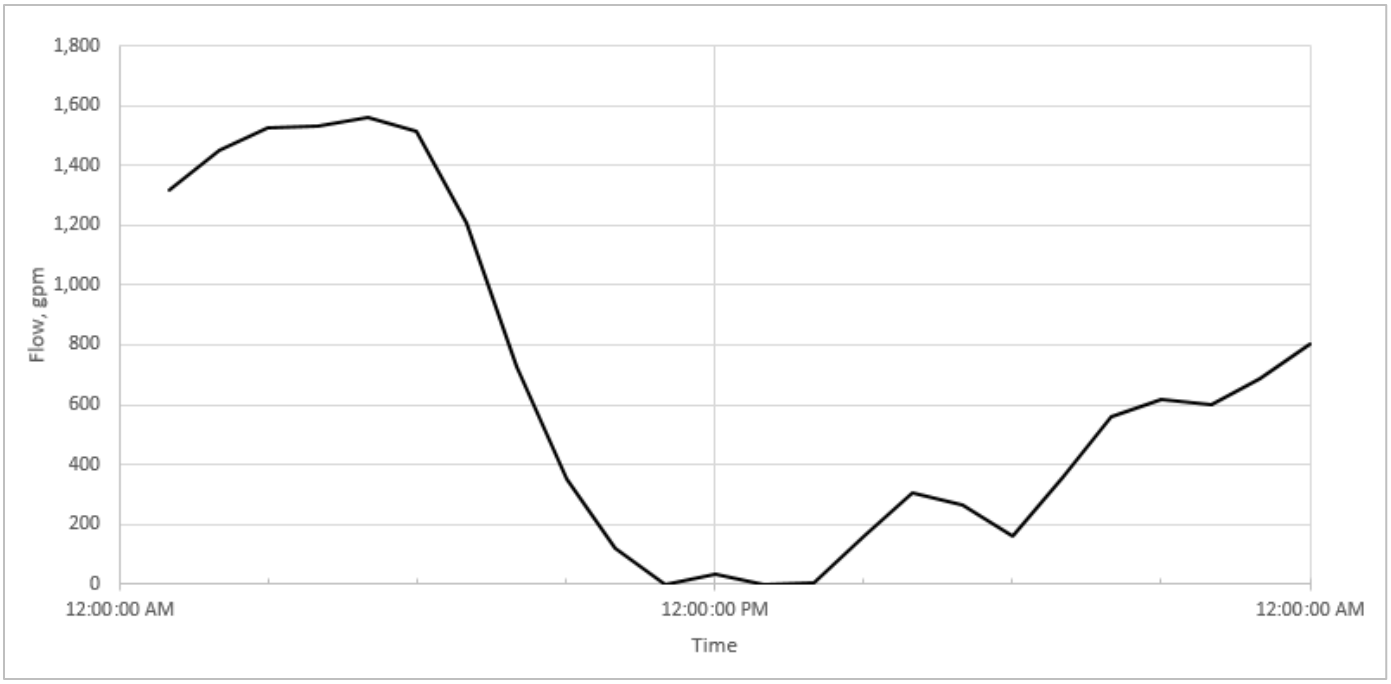
A similar hydrograph was created from Walla Walla WWTP influent data. **Figure 3.2** shows graphically how flow from College Place can be used to equalize flow at Walla Walla by "filling in" the periods of low flow at the Walla Walla treatment plant. This graph depicts the concept, but, there will be some combined peaks that will occur due to pumping constraints – as we will likely want some minimum flow at all times in the forcemain. These combined peaks will affect the sizing of the systems at Walla Walla. However, equalizing the influent flow improves the operability of the treatment plant that often results in improved performance.

Figure 3.2



The flow rate needed from College Place to achieve the nearly steady state flow at Walla Walla's WWTP is show in **Figure 3.3**.

Figure 3.3



3.4. Pump Station

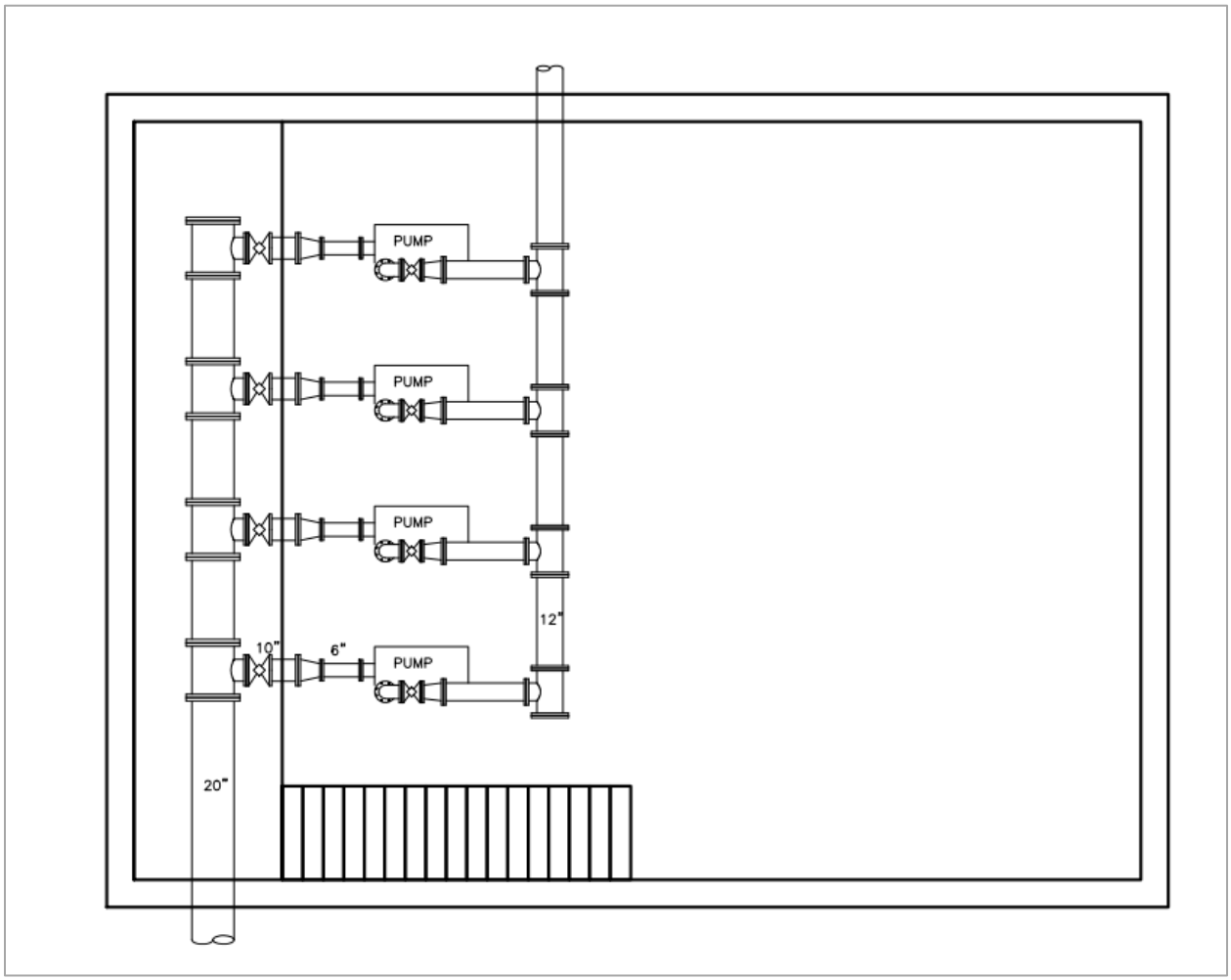
A new pump station would be constructed to pump the wastewater from the SBR tanks, to the Walla Walla WWTP for treatment and discharge.

Several pump station configurations were discussed with the City of College Place. They were:

1. Set submersible pumps inside the SBRs,
2. Construct a new submersible or wet/dry pit pump station,
3. Construct a dry pit pump station inside the existing filter building.

The City favored constructing a dry pit pump station inside the existing filter building. If this regionalization plan is implemented, the filter building would no longer be needed. Therefore, it makes good use of existing facilities. A concept layout is shown in **Figure** 3.4.

Figure 3.4 Pump Station concept design.



If it is decided that it would be favorable to keep the filter building in operation, then constructing a new building for the pump station would be necessary. If carried forward, this should be evaluated further during preliminary design.

3.5. Pumping Effluent

Another option to consider is keeping the College Place WWTP operational and only pumping effluent to the Walla Walla WWTP. This would allow the College Place WWTP to continue land applying effluent during the growing season and only pump treated effluent to Walla Walla in lieu of discharge to Garrison Creek. The effluent could be introduced at the Walla Walla WWTP just upstream of the filtration and disinfection steps.

3.6. Forcemain

Two potential routes for a forcemain from the College Place WWTP to the Walla Walla WWTP were considered. Route A (Figure 3.5) is longer but goes directly from the College Place WWTP to the Walla Walla WWTP. It would discharge directly into the headworks. The elevation difference between the College Place WWTP (bottom of the SBR EL 715) and the headworks at the Walla Walla WWTP (EL 865) is approximately 150 feet.

Route B (Figure 3.6) is from the College Place WWTP to the end of the Myra trunk line located at 12th Avenue and Myra Road. The trunk line is owned by the City of Walla Walla. It discharges into the influent pump station at WWTP. The influent pump station would then repump the flow to the headworks.

The existing capacity of the Myra trunk line is about 3 mgd (2015 General Sewer Plan, Figure A-6). The elevation difference between the College Place WWTP and the Myra trunk line (EL 850) is approximately 135 feet.

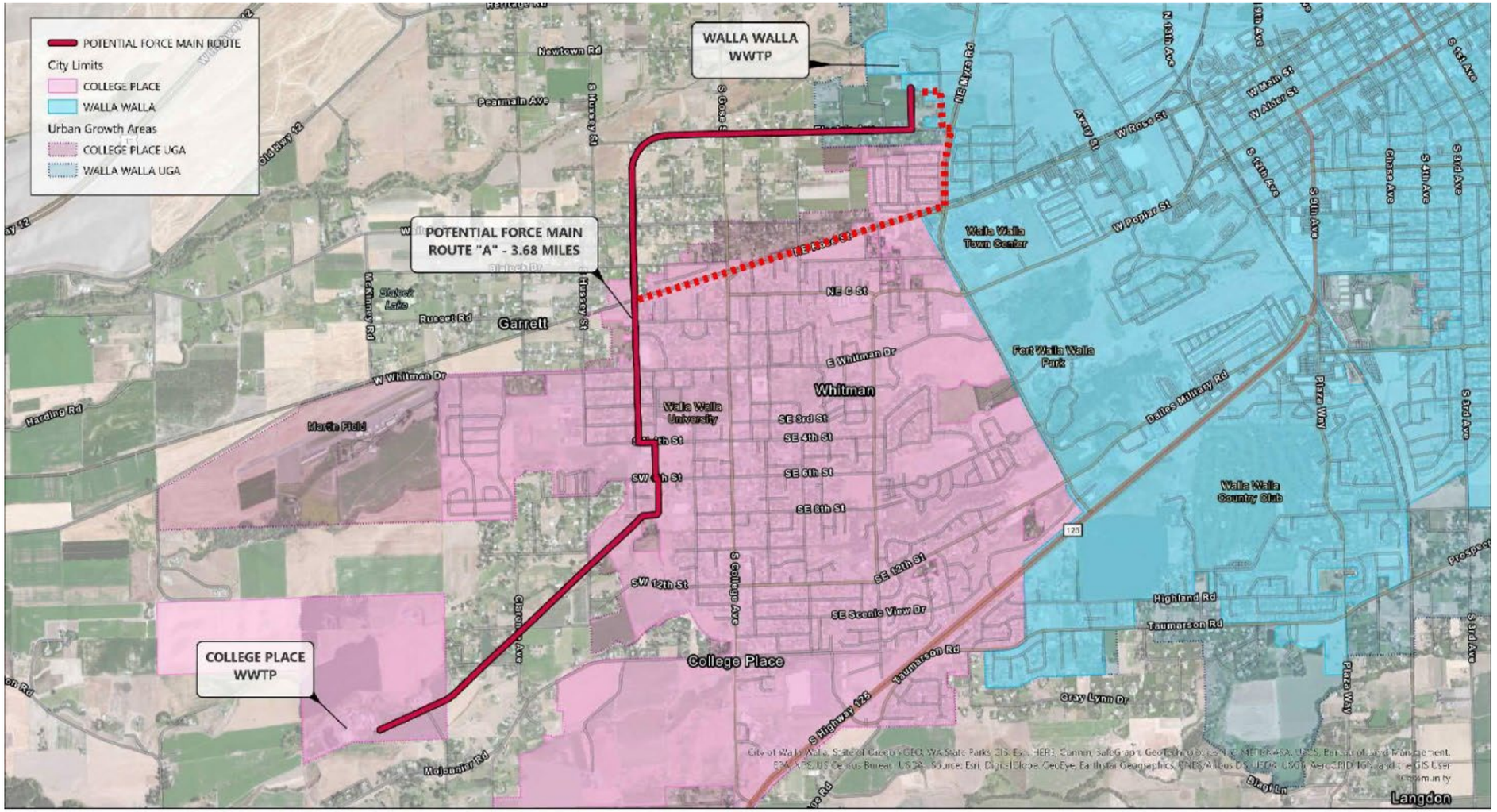
In meetings, the City of Walla Walla indicated they prefer Route A, whereas the City of College Place preferred Route B. Both Cities expressed a desire to keep the forcemain route within City boundaries and not in the County; however, that is not possible. Walla Walla prefers Route A because it does not reduce the capacities of the Myra Trunk line and the WWTP Influent Pump Station and it reduces the risk associated with repumping the flow through the Influent Pump Station.

College Place prefers Route B because it is shorter and the roadway for part of the route is planned to be re-constructed. Before proceeding with Route B, the condition of the Myra trunk pipe should be evaluated in a CCTV survey and the available capacity needs to be evaluated in greater detail.

From Figure 3.3 the peak flow required for pumping is approximately 1,600 gpm. Assuming Route A and a 16-in forcemain the pumping head is approximately 182-feet.

Constructing dual forcemains should be considered for improved reliability and redundancy as part of the preliminary engineering report.

Figure 3.5 Potential Forcemain Route A



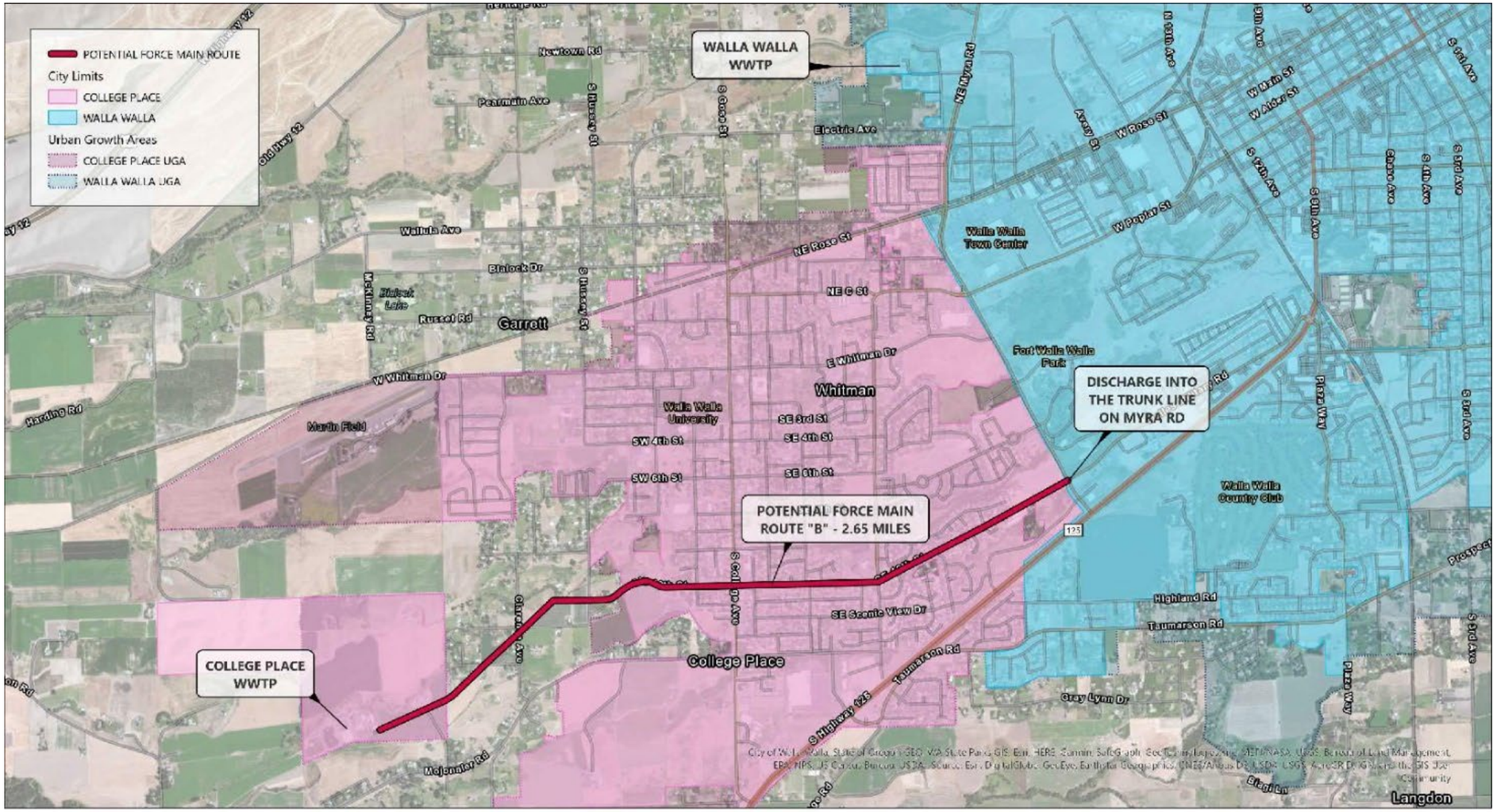
POTENTIAL FORCE MAIN ROUTE "A"- 3.68 MILES

College Place, WA

NORTH

0 800 1,600 3,200 Feet

Figure 3.6 Potential Forcemain Route B



POTENTIAL FORCE MAIN ROUTE "B"- 2.65 MILES

College Place, WA

NORTH

0 800 1,600 3,200 Feet

3.7. Planning Level Cost Opinion

A planning level cost opinion for the preliminary treatment, aeration, and equalization improvements that were previously planned in Phase 1, a pump station, tank covers with odor control and the forcemain is approximately $20 million. This presumes that the pump station will be built inside of the existing filter building – if it is decided to leave the filter building operational, then a new building will be needed to house the pumping equipment at an additional cost of about $1M. If dual forcemains are desired for redundancy, it could increase the cost of the project by an additional 15%.

This cost opinion does not include the costs of upgrades at the Walla Walla WWTP that College Place may be expected to participate in.

Operation and maintenance costs are not included in this evaluation. Expectations are that they would decrease at College Place but increase at Walla Walla.

If this alternative is carried forward, additional preliminary engineering will be necessary to refine this option and the cost opinion.

Chapter 4

Walla Walla WWTP

Chapter 4 - Walla Walla WWTP

4.1. Impact of Additional Flows and Loads

This feasibility study considered flows and loads for the year 2027 because that is the last year for which flow and load projections have been made for Walla Walla. The waste load projections for Walla Walla come from Addendum No. 1 to the 2015 General Sewer Plan Update, July 2021 (the 2021 General Sewer Plan Update). Since then, industrial pretreatment has lowered the influent BOD load, but more long-term data is necessary to be confident in those results.

The combined flows and loads of College Place and Walla Walla are compared to the capacity of the Walla Walla WWTP in **Table 4.1**. The combined loads will exceed the treatment plant capacity for BOD5, TSS and TKN. If treated effluent from College Place is pumped to Walla Walla, then it would only add to the flows but not the loads.

Table 4.1 Regional Facility Flows and Loads

Parameter	2027 Projected From College Place (1)	2027 Projected From Walla Walla (2)	2027 Total Projected Loading (College Place + Walla Walla)	Walla Walla WWTP Capacity	Surplus (Deficit) Capacity
Flow (mgd)					
Annual Average	1.16	5.26	6.42	7.9	1.48
Maximum Month					
Peak Day	2.21	8.57	10.78	---	---
Peak Hour	3.59	16.92	20.51	20.90 (4)	0.39
BOD5					
Average Daily, ppd	2,067	10,394	12,461	---	---
Maximum Month, ppd	3,197	12,953	16,150	12,664 (3)	(3,486)
Peak Day	7,083	27,453	34,536	---	---
TSS					
Average Daily, ppd	2,340	7,489	9,829	---	---
Maximum Month	3,472	10,513	13,985	10,815 (4)	(3,170)
Peak Day	6,430	23,177	29,607	---	---
TKN					
Average Daily, ppd	504	993	1497	---	---
Maximum Month, ppd	771	1,354	2,125	1,871(4)	(254)
Peak Day	1,228	2,417	3,645	---	---

1. Interpolated from City of College Place WWTP Phase 1 Basis of Design, TM2 WWTP Influent Design Criteria.
2. From the City of Walla Walla General Sewer Plan Update, 7-14-2021.
3. 2021 Capacity evaluation report by JUB Engineers, Inc.
4. NPDES Permit part S4.A.

Part S4.B of the Walla Walla NPDES Permit requires that a plan and schedule for maintaining adequate capacity be submitted to the Department of Ecology when the waste load reaches 85% of the design capacity for 3 consecutive month or when the projected increase would reach design capacity within five years.

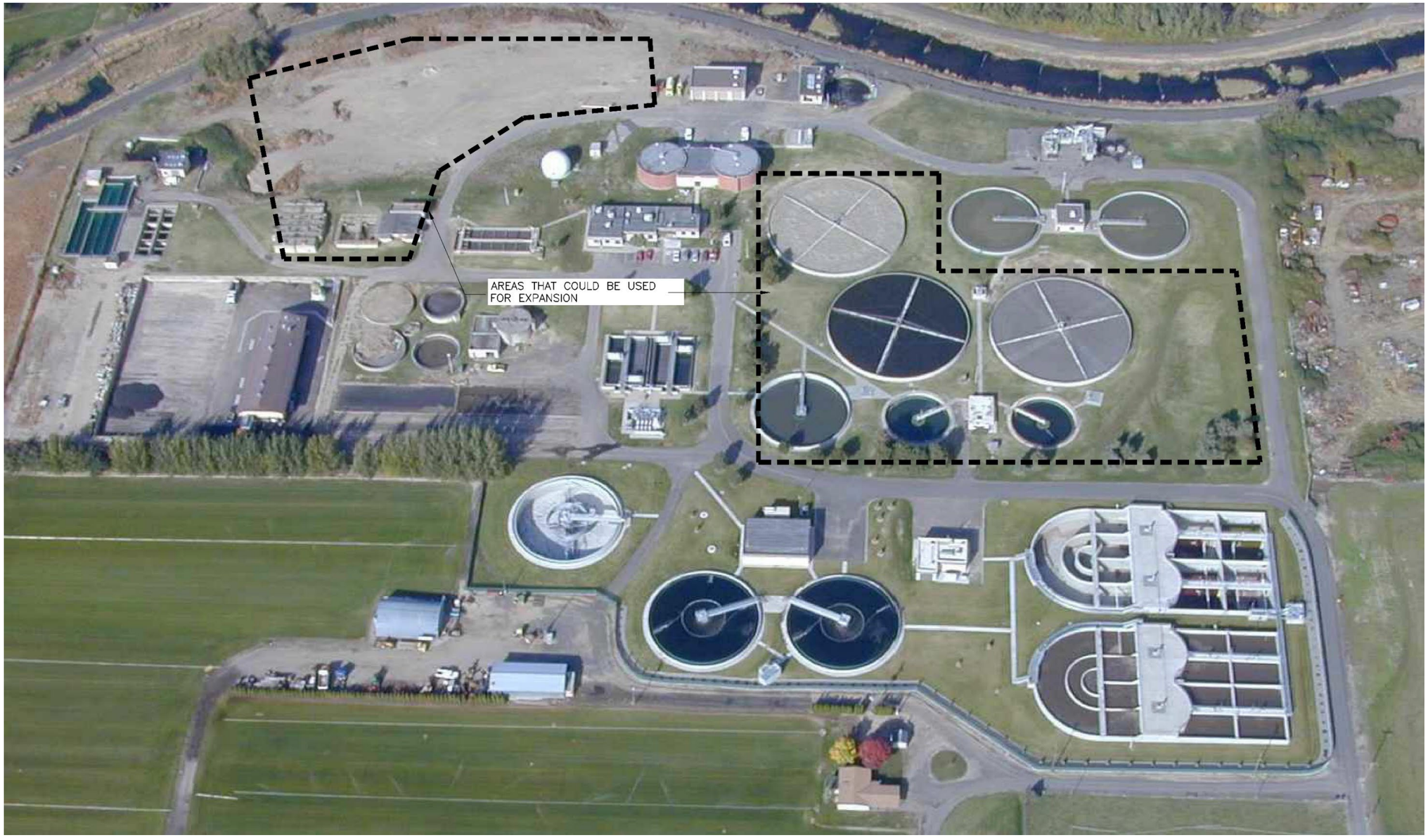
As previously mentioned, one of the significant industrial users has recently constructed pre-treatment facilities that appear to have dramatically reduced loading to the WWTP. However, there are only three months of data. Several more months of data should be gathered – including operation over the winter-time months – to provide more confidence in the results.

To comply with the planning requirement of the NPDES Permit and to include the results of the recently constructed pre-treatment facilities, we recommend that a Facility Plan be started in 2023.

A Facility Plan is a long-term planning document that typically considers the next 20-years. It has been 40-years since the last Facility Plan was completed. Walla Walla is planning to begin a new Facility Plan in 2023; therefore, the decision to regionalize or not should be made before the Facility Plan is started so that College Place can be included in the planning. **Figure 4.1** shows areas available inside the plant boundaries that could be used for expansion. There are also vacant lands to the west and south of the WWTP that could be purchased by the City for expansion. The ability to expand the plant is something that will be further evaluated in the Facility Plan. The division of cost between the two entities is yet to be determined.

As previously mentioned, one option to consider if pumping treated effluent from College Place to the Walla Walla WWTP for filtration, disinfection, and disposal. This could be an attractive near-term solution until additional load treatment capacity is evaluated at the Walla Walla WWTP. This would preclude the need for the large storage pond and irrigation pump station currently planned in the College Place WWTP Phase 1 improvements. Ultimately, this could provide flexibility of operating the College Place WWTP as a satellite treatment facility and provide options for effluent disposal.

Figure 4.1 The Walla Walla WWTP showing areas inside the plant that could be used for expansion. There is also vacant land east and west of the plant.



Chapter 5

Port of Walla Walla Strong Waste Management Options

Chapter 5 - Port of Walla Walla Strong Waste Management

5.1. Introduction

The Port of Walla Walla (Port) Airport Industrial Park serves a variety of commercial businesses located within the Port boundaries. The Port provides the businesses with potable water and wastewater collection utility service. Potable water is pumped from groundwater wells located on port property and distributed to individual users via a network of pressurized potable water pipes. Wastewater is collected from each individual user via a network of gravity pipes that flow together into a main trunk that discharges through a flume into the City of Walla Walla's wastewater collection system and flows to the City's wastewater treatment plant for treatment and disposal. The Port discharges an estimated 22,381 gallons of wastewater per day (8 million gallons per year) with an average Biochemical Oxygen Demand (BOD) of 1,855 mg/l (standard deviation of 1068 mg/l).

The City of Walla Walla considers the Port as a single entity and bills the Port for wastewater conveyance, treatment and disposal services. The Port's combined wastewater flow exceeds the City's definition of a significant industrial user (SIU) due to the annual volume of wastewater flow being greater than 120,000 gallons and/or have an organic strength greater than 300 mg/l of BOD which triggers a "high-strength" category[1]. In lieu of requiring dischargers to treat high-strength wastewater to bring the BOD down to less than 300 mg/l, the City offers the option to dischargers to pay a high-strength waste surcharge fee to cover the extra cost to treat and manage high-strength wastewater.

In 2021 The City's fee, assessed on the port, was $3529.7 per million gallons to treat the flow plus a 9.3% high strength surcharge of $328.26 per million gallons, and $922.00 per million gallons to convey the flow – for a total bill of about $55,500 in 2021. In 2022, the City changed how the strong waste fee is calculated and is instead basing it entirely on wastewater volume – a cost of $8.048 per thousand gallons. Based on 2021, the Port anticipated that this would approximately double their annual bill; however, some apparently erroneous flume readings from 2021 seem to have affected that projection and the realized bill to date in 2022 is lower than projected. The high-strength waste charge is scheduled to increase about 39% each year from 2023-2027 – which will ultimately result in about a 5x increase over the 2022 rates. The City is in the process of re-evaluating the high-strength rate structure and proposed increases.

The Port's wastewater qualifies as an SIU due to the commercial/industrial nature of some businesses causing 100 percent of the Ports flow to incur surcharge fees. The surcharge fees are causing economic impacts to Port tenants and having a negative effect on business development. The Port seeks alternative wastewater management strategies that could lower overall operating costs. Alternative strategies are reviewed in this chapter.

5.2. Wastewater Production

Daily Port wastewater production was estimated by reviewing the wastewater flume data for 2020 and 2021. The data set has many erroneously high readings, likely recorded when the flume was plugged;

[1] Chapter 13.03.435 (Ord. 2021-39 § 5, 2021)

therefore, data points were eliminated if the daily value was more than 200% higher than the preceding 7-day average. The remaining data set is show in Figure 5.1. Peak flows are likely caused by a significant volume of stormwater entering the collections system though illicit means (roof drains, surface runoff connections, etc.) The Port is working toward eliminating connections that allow stormwater to enter the system. Flow data from individual users is not known since flow is only measured at the Port's discharge flume.

High peak flows remain in the data set as well as sudden drops in production (See around 5-29-21). The sudden drop in flow readings was likely caused by flume clogging and reading artificially high.

The data set has some anomalies that need to be vetted prior to use for planning or design purposes. For example, there was only one occurrence of daily flow greater than 80,000 gpd as seen in the flow histogram in Figure 5.2. If the Port can eliminate high flow anomalies, management alternatives would not have to consider infrastructure to deal with high flows nor would the Port pay the City for flow that should not be in the system (stormwater) or flow that was never there (plugged flume).

Figure 5.1 Daily Wastewater Flow Flume Data

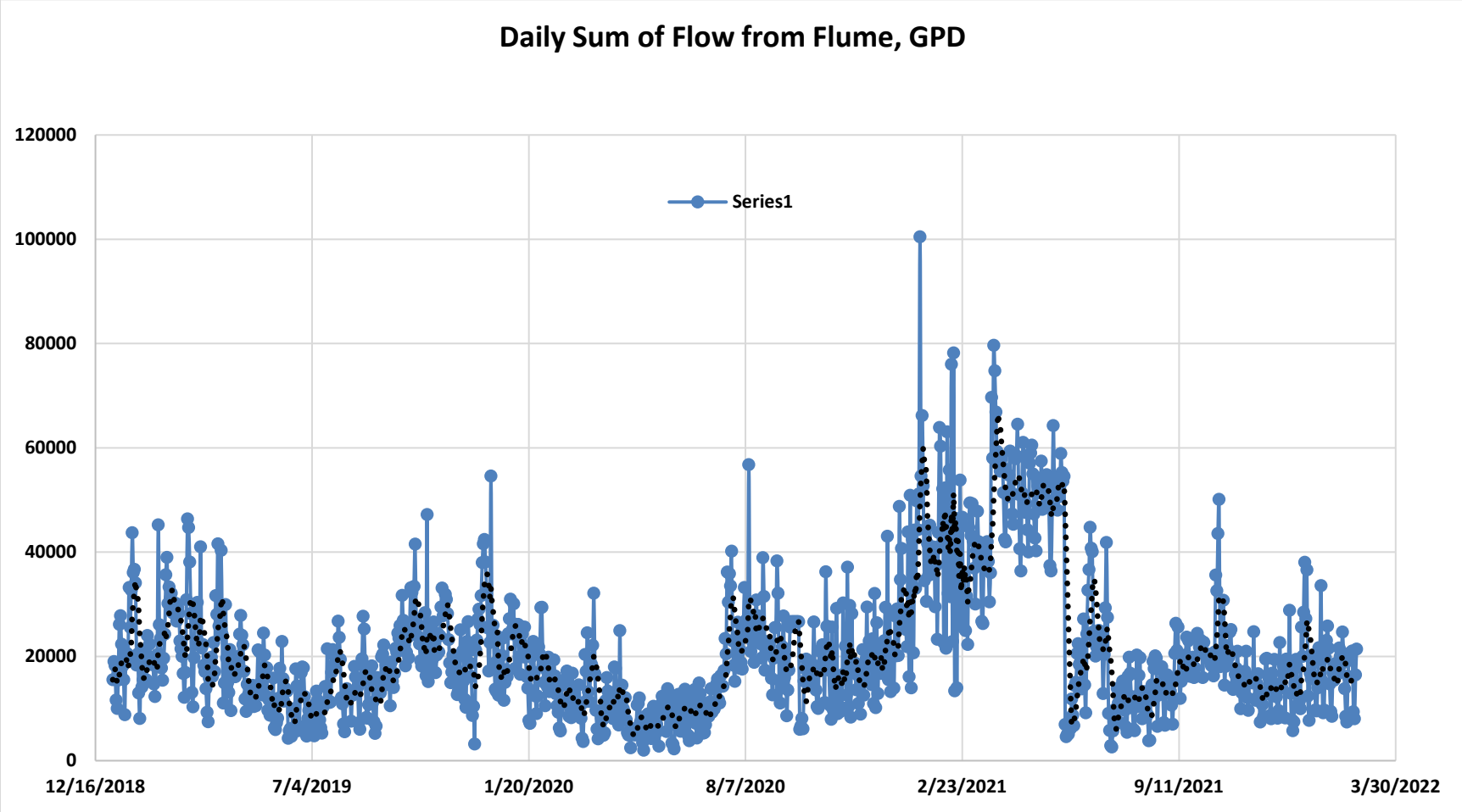
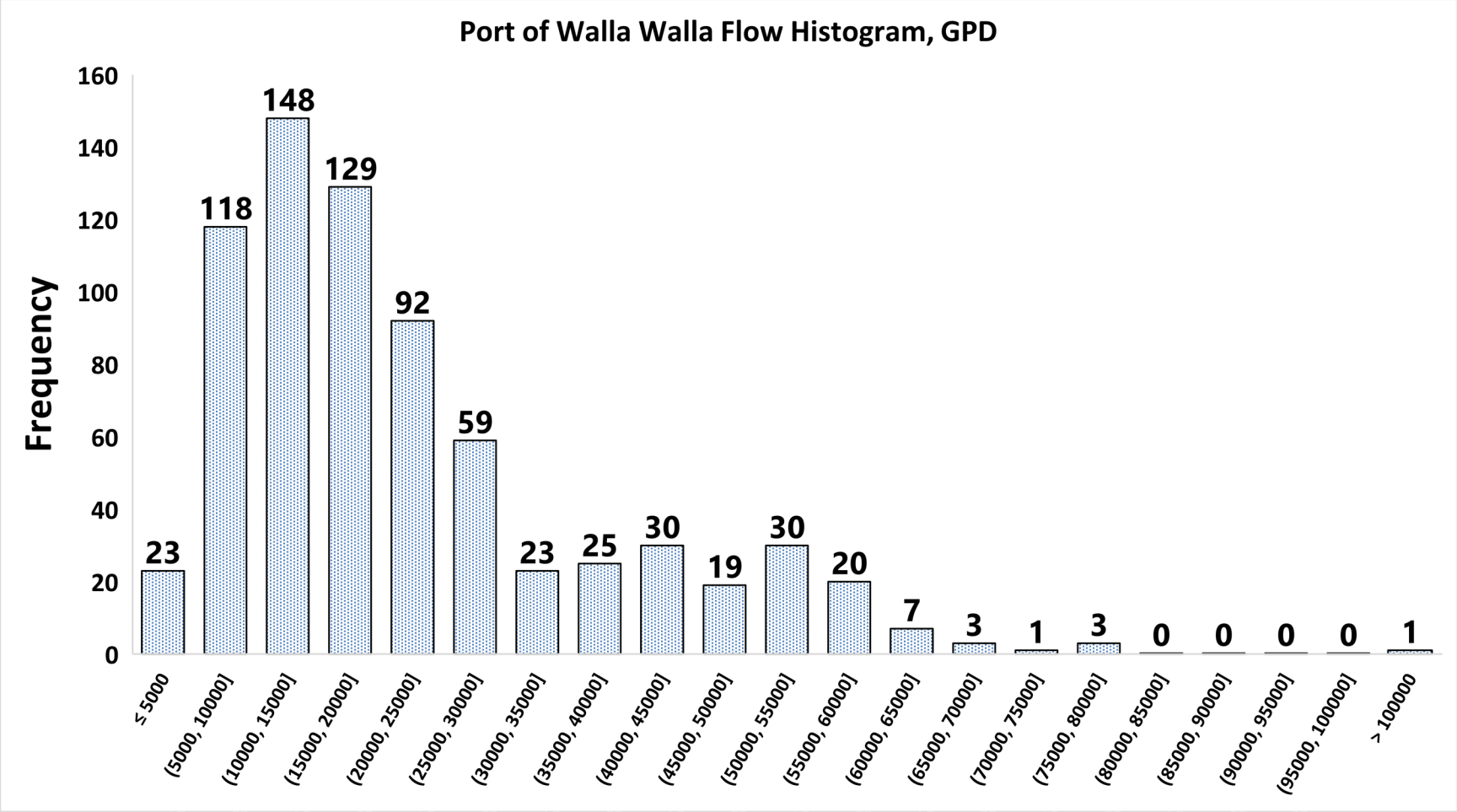


Figure 5.2 – Wastewater Flow Histogram (2X outliers eliminated)



In summary, using the 2020 & 2021 data, as conditioned above, wastewater production parameters are reported in Table 5-1.

Table 5.1 – Port of Walla Walla Flows and Loads

Parameter	2020 - 21
Flow (gallons/day)	
Annual Average	22,381
Maximum Month	55,600
Peak Day	100,500
BOD5	
Average Daily, ppd	363
Peak Day, ppd	1,510
TSS	
Average Daily, ppd	303
Peak Day, ppd	1,476

5.3. Potable Water Use

Potable water use was reviewed to correlate water use with wastewater production and to confirm the peak wastewater flows resulted from a plugged flume or rain. Daily Port potable water use was estimated by reviewing well production data for 2020 and 2021. The data set had many blanks since the well flow meter is not recorded every day; therefore, the 7-day running average was used to estimate water use. Flow trends are typically lower between November and May and higher between June and October as shown in Figure 5.3. Wastewater production is loosely correlated with potable water use during the non-irrigation season as shown in Figure 5.4. Peak wastewater flow is not correlated with potable water use suggesting peak wastewater flows are from a plugged flume or rain. The data set has some anomalies that need to be vetted prior to use for planning or design purposes.

Figure 5.3 – Estimated Daily Potable Water Use, 7-day Average.

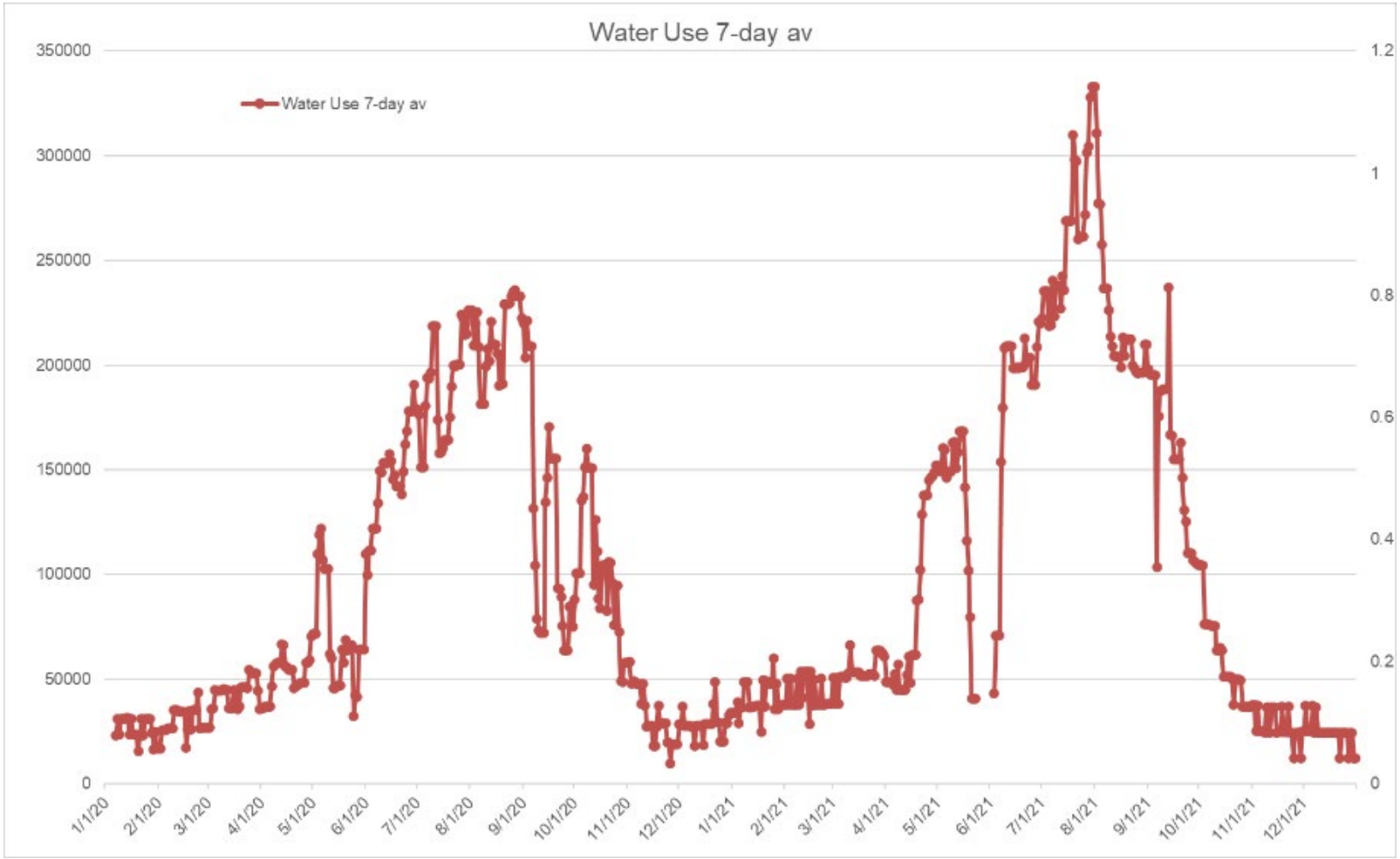
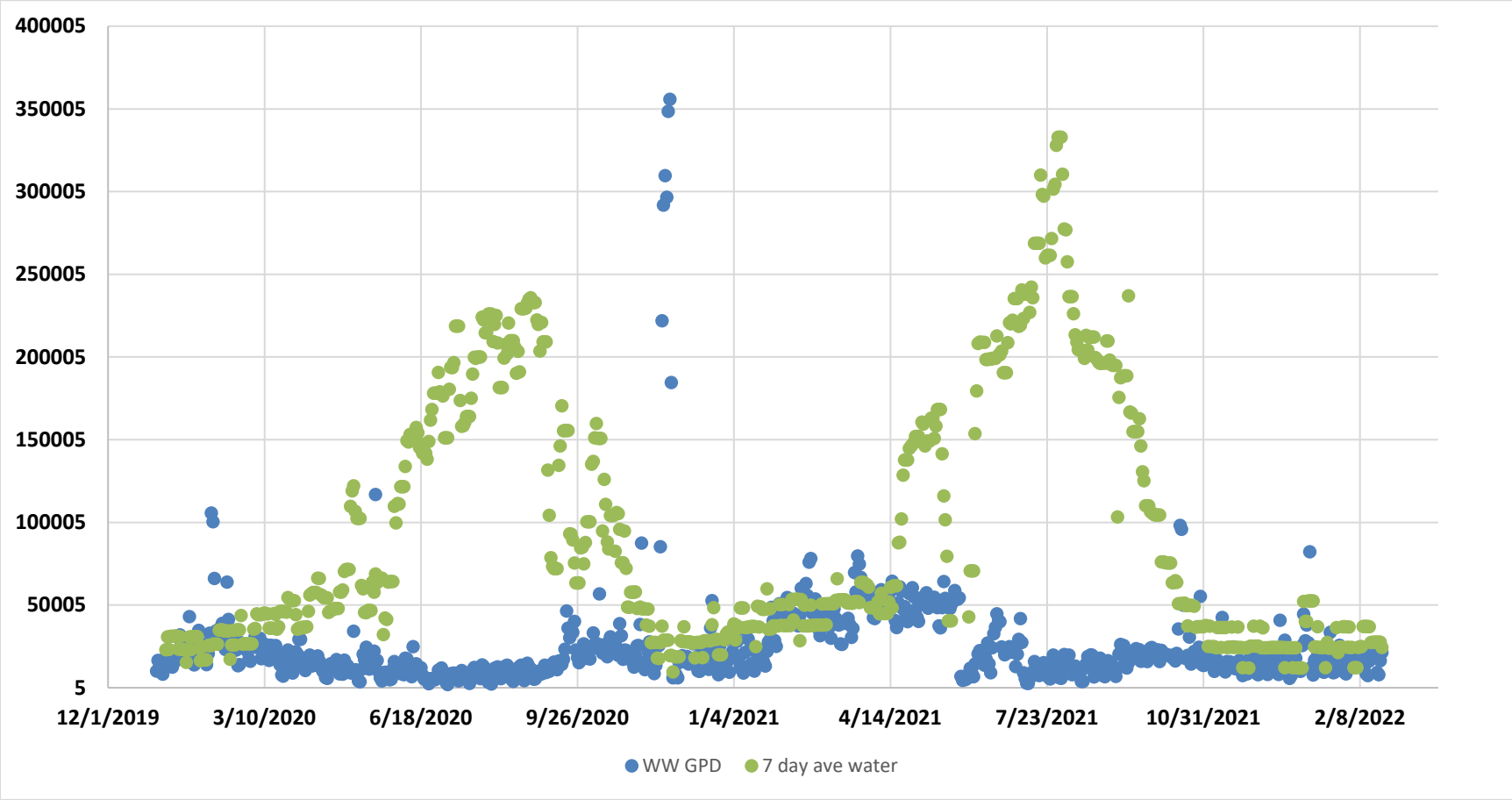


Figure 5.4 – Potable Water Use and Wastewater Production



See Table 5.2 for a list of the Ports highest volume potable water users for 2020 and 2021 based on meter readings.

Table 5.2 - Port of Walla Walla Highest Potable Water Users, 2020 & 2021

2020 Highest Dischargers			2021 Highest Dischargers		
User	**Gallons/yr**	**% of Total**	**User**	**Gallons/yr**	**% of Total**
Dunham Cellars	2,211,088	16%	Dunham Cellars	2,078,836	15%
Litz	1,810,908	13%	Litz	1,190,899	9%
WWCC Vineyard	893,860	6%	WWCC Vineyard	933,569	7%
McGregor	886,380	6%	McGregor	886,442	6%
Tate	806,344	6%	Tate	676,987	5%
WSDOT	667,216	5%	Tamarack	640,332	5%
Wilbur Ellis	623,084	4%	WSDOT	633,600	5%
Devona	520,608	4%	Wilbur Ellis	570,016	4%
Public Works	457,776	3%	COE-725 E St-1	552,062	4%
Burwood Brewing	420,376	3%	Public Works	543,086	4%
Life Flight	409,904	3%	Devona	484,738	3%
COE-725 E St-1	406,912	3%	Burwood Brewing	483,990	3%
WW Roastery LLC	379,984	3%	Life Flight	482,494	3%
BTB Winery	293,216	2%	Roastery	466,036	3%
Blaze King	281,248	2%	BTB Winery	395,719	3%
Frito Lay/Ecova	234,872	2%	Blaze King	270,795	2%
Sky Runners Corporation	187,000	1.3%	Sky Runners Corporation	236,384	1.7%
United Parcel Service	184,008	1.3%	Reiff	166,816	1.2%
Nelson Construction	164,560	1.2%	Adamant	150,358	1.1%
W/2 Vans	160,820	1.2%	Five Star Cellars	142,878	1.0%
Reiff Fiberglass Mfg Co	159,324	1.1%	Elegante Cellars, LLC	135,397	1.0%
Five Star Cellars, Inc.	152,592	1.1%	Grab	129,413	0.9%
Buty Winery, LLC	141,372	1.0%	Gorge Aviation	124,925	0.9%
Elegante Cellars, LLC	123,420	0.9%	Syzygy	122,681	0.9%

5.4. Wastewater Management Alternatives

J-U-B met with Port officials to review different wastewater management options that could reduce the overall fee impact of high strength wastewater. Several options were discussed. Four alternative management strategies were vetted for further consideration:

1. City of Walla Walla Manages Individual Port Discharges.
2. Discharge Wastewater During Low Flow Hours at a Reduced Rate.
3. Construct an Industrial Wastewater Treatment Plant to Lower BOD.
4. Implement Best Management Practices (BMPs) to Reduce Flow and Lower Strength. The Port stated BMPs should be implemented at each tenant where there is potential to reduce wastewater flow and strength regardless other options implemented. Therefore, this option was not discussed further.

Alternatives 1, 2 and 3 are discussed below.

Alternative 1 – Defer Sewer Service to City

This alternative "turns over" the Port's wastewater facilities to the City of Walla Walla (City) for long term operation and management. In addition to maintaining the sewer lines, the City would extend their industrial pre-treatment program to the entire Airport Industrial Park for individual assessment, management and billing. All the Airport Industrial Park tenants would become customers of the City's sewer system. This would require providing the City with water service meter data so that the City could determine sewer flows to assess monthly sewer rates to all of the Airport Industrial Park tenants; therefore, this will likely require installation of water service meter reading equipment so that the City would have access to the water service meter data. As an added benefit, this water service meter data could be shared with the Port to aid in water system billing for the tenants. The Port and City would likely need to develop an agreement to compensate the City for the effort in gathering, processing, and sharing the water service meter data.

Many Port tenants would not be considered a significant industrial user and would only be charge the typical monthly sewer rate from the City. However, larger dischargers will be subject to the City's industrial pre-treatment program and the higher surcharge rates. Individual tenant wastewater discharge is not measured; however, potable water use is often correlated to wastewater discharged and used as a surrogate. In the Port's case, the pre-treatment program may impact up to 24 Port tenants that use more than 120,000 gallons of potable water per year (see Table 5.2 above). However, the data in Table 5.2 are not correlated to wastewater. Tenants that use potable water not discharged to the sewer (irrigation) may be overrepresented in Table 5.2. The City and Port tenants would work together to correlate wastewater flow. The Port has estimated that only their two largest producers are likely to qualify as a significant industrial user.

Deferring sewer services to the City of Walla Walla will likely have a net zero cost impact to the Port since the City's cost for service will be billed directly to the Port's tenants. The Port's administrative efforts will move away from individual tenant billing to providing the City with potable water use data unless the City reads the water meters directly.

Alternative 2 – Pumping at Night

Sewer service customers pay to have full access to the City's wastewater facilities, which means they can produce and flush wastewater 24 hours a day 365 days a year. Most citizens utilize the City's facilities around the same time since general lifestyle trends for Walla Walla residences are similar *i.e.,* we all get up, eat, work, and go to bed within a few hours of each other. The City's wastewater facilities experience large flow increases as people become active in the morning and active in the late afternoon. Wastewater flow significantly drops in the night between 10 p.m. and 4 a.m. as people rest. This alternative would take advantage of the unused nighttime capacity by storing wastewater during the day and discharging it to the City at night. Pumping at night should cost significantly less since the Port would not have 24-hour/365-day access. The Cost would have to be negotiated with the City.

The Port would need to decide how much of the daily flow to capture and pump at night which will determine how large the storage tank would need to be. For example, using the last two years to model and eliminating the peak flows greater than 80,000 gallons per day, The Port could:

- Capture 100% of the flow by installing an 80,000-gallon tank
- Capture 75% of the flow by installing a 30,800-gallon tank
- Capture 50% of the flow by installing a 20,500-gallon tank

Alternatively, the Port could store only flow from the SIUs which would decrease the required storge volume. The Port would have to work with the SIU to determine how much storage is needed.

As noted above, the Port experiences periodic high flow. Short duration peak flows have been correlated to high intensity rain fall events which suggest direct stormwater connections to the Ports wastewater collection system. The Port could reduce the volume of storage by eliminating rain inflow to the sewer system.

An economic analysis that vetted the cost to install different size tanks compared to the cost saved would determine the viable tank size. Additionally, the economics of removing stormwater flow from the collections system as well as building storage for only the largest industrial producers should be analyzed.

Alternative 2 would require the following major components:

- Raw wastewater diversion structure
- Raw wastewater pump station
- Storage tanks, with overflow piping
    - 31,000 gallons, or
    - 80,000 gallons
- Storage tank mixing
- Storage tank drainage system
- Yard piping
- Odor Control
- Electrical and SCADA control

The cost for 31,000 gallons of storage and 80,000 gallons of storage is estimated to be $1.1 million and $1.8 million, respectively.

Alternative 3 – Port Owned Wastewater Treatment Plant

For this alternative, the Port would separate the industrial wastewater from the sanitary sewer and construct a wastewater treatment plant to treat the industrial wastewater while continuing to send the sanitary sewer to the City. This alternative would likely target the SIUs in order to minimize the cost of a new industrial wastewater collection system. Separating out the sanitary sewer and only treating the industrial wastewater results in less stringent regulatory requirements due to the lack of human pathogens that potentially could be in domestic wastewater. Provided that the treatment system can reliably achieve clean effluent, the Port could utilize the effluent for a variety of reuse options – including irrigation.

Alternative 3 has following major treatment components:

- Packaged WWTP
- Building
- Diversion structure
- Raw wastewater pump station

The wastewater treatment plant and ancillary equipment is expected to cost $3.2 million dollars. The cost to discharge to a surface water is expected to add $3,400,000 and the cost to develop a reuse system is expected to cost $1,600,000. The Cost to implement Alternative 3 ranges from $4,800,000 to $6,600,000 for a reuse system or surface water discharge, respectively.

It should be noted that Alternative 3 will require qualified personnel to manage the WWTP and the reuse system.

Chapter 6

Regionalization Issues

Chapter 6 - Regionalization Issues

6.1. College Place Perspective

Pumping sewage from College Place to the Walla Walla WWTP appears to be a feasible option from an engineering perspective. For College Place, this would result in lower capital cost compared to the WWTP Phase 1 Upgrades; however, the amount that College Place would need to cost share with Walla Walla for the Walla Walla WWTP upgrades has yet to be determined. It would eliminate the need for a discharge permit and the cost associated with future upgrades to the College Place WWTP. The unused land and assets at the WWTP could be repurposed.

The potential drawback is a reliance on Walla Walla for wastewater treatment and disposal. Prior to committing, agreements would need to be put in place to identify a rate structure and establish fairness regarding future upgrades and growth allowances. One scenario would be for College Place to be considered a customer of Walla Walla. Another scenario could be the formation of a joint sewer district. These arrangement and agreements could take years to develop.

Another variation to consider is pumping treated effluent from College Place to Walla Walla. Instead of building the irrigation storage pump and pump station as currently identified in the Phase 1 Upgrades project, the City would instead build a pump station and pipeline to the Walla Walla WWTP for effluent disposal.

It should be noted that if College Place elects to pursue a regional option, the current funding offer from Ecology ($10M grant, $16M loan) could change – based upon a phone call with Ecology on August 1, 2022. Additional discussion with Ecology to understand the ramifications is recommended.

6.2. Walla Walla Perspective

Pumping sewage from College Place to the Walla Walla WWTP could immediately push the Walla Walla WWTP to capacity. Recent pre-treatment improvements by a Significant Industrial User (SIU) seem to have successfully freed up capacity; but several additional months of data are necessary to gain confidence in the results. There are currently $18M of improvements planned at the Walla Walla WWTP that may need to occur sooner than expected upon connection of College Place. Moreover, the upcoming Facility Plan could identify even more upgrades that would be necessary. A Facility Plan is recommended to project flows/loads for the next twenty years and identify a long-term capital improvement plan.

Because the College Place sewage would be pumped during off-peak periods, it would maximize use of the existing assets. The off-site equalization storage would even out peaks and result in more constant loading of the plant. A larger customer base would also lessen the per connection charge for any planned upgrades in the future.

Pumping treated effluent from College Place to the Walla Walla WWTP might be an attractive near-term option until additional load treatment capacity can be constructed at the Walla Walla WWTP.

6.3. Regional Project

If College Place decides to pursue this regionalization concept, then they will need to notify Ecology so that the Phase 1 Upgrades project plan can be modified. It is presumed that the current funding package could be accepted and the headworks and SBR air piping could be constructed soon while we continue to evaluate the regional option.

A Facility Plan must be completed at the Walla Walla WWTP in order to determine exactly what upgrades will be necessary. It is likely that it will be a minimum of the $18M in already planned upgrades in addition to the projects identified from the Facility Plan effort. Depending on which of the three alternatives are selected for the Port of Walla Walla, it could add another $7M of cost to the regional project.

6.4. Next Steps

The regionalization concept was discussed at a Joint Council Workshop on August 22, 2022. Both councils agreed that the regionalization plan has merit and deserves further consideration. The following action items were identified:

- Meet with Ecology in September to ask if additional time can be offered to further evaluate the regionalization option.
- Meet with metropolitan areas that have recently formed sewer districts to learn more about the process of forming a sewer district.
- Engage a consultant to evaluate rate impacts of the regionalization concept.
- Engage legal counsels to assist in vetting sewer district formation and development of agreements.
- Commission a Facility Plan for the Walla Walla WWTP

Works Cited

J-U-B Engineers, Inc. *City of College Place Wastewater Treatment Plant Facility Plan*. September 2018.

J-U-B Engineers, Inc. *City of College Place Wastewater Treatment Plant Facility Plan Amendment No. 1.* October 2019.

J-U-B Engineers, Inc. *City of College Place Wastewater Treatment Plant Facility Plan Amendment No. 2.* December 2019.