Fact Sheet for NPDES Permit WA0020656
City of College Place Wastewater Treatment Facility

Purpose of this fact sheet

This fact sheet explains and documents the decisions the Department of Ecology (Ecology) made in drafting the proposed National Pollutant Discharge Elimination System (NPDES) permit for the City of College Place Wastewater Treatment Facility.

This fact sheet complies with Section 173-220-060 of the Washington Administrative Code (WAC), which requires Ecology to prepare a draft permit and accompanying fact sheet for public evaluation before issuing an NPDES permit.

Ecology makes the draft permit and fact sheet available for public review and comment at least thirty (30) days before issuing the final permit. Copies of the fact sheet and draft permit for the City of College Place NPDES permit WA0020656, are available for public review and comment from June 17, 2013 until July 16, 2013. For more details on preparing and filing comments about these documents, please see **Appendix A - Public Involvement Information**.

The City of College Place reviewed the draft permit and fact sheet for factual accuracy. Ecology corrected any errors or omissions regarding the facility's location, history, wastewater discharges, or receiving water prior to publishing this draft fact sheet for public notice.

After the public comment period closes, Ecology will summarize substantive comments and provide responses to them. Ecology will include the summary and responses to comments in this fact sheet as **Appendix F - Response to Comments**, and publish it when issuing the final NPDES permit. Ecology will not revise the rest of the fact sheet, but the full document will become part of the legal history contained in the facility's permit file.

Summary

The City of College Place operates an activated sludge wastewater treatment plant employing sequencing batch reactors that seasonally discharges to Garrison Creek from November through March and sometimes into April. Garrison Creek TMDLs identify May through October as the critical season. During the critical season College Place discharges to land treatment for irrigation of crops periodic discharges have occurred to Garrison Creek during the critical season. Based on the potential to discharge periodically during the critical season, the proposed permit provides the City with protective effluent limitations for discharge to Garrison Creek for May - October.

The proposed permit contains the same effluent limits for Biochemical Oxygen Demand (BOD_5), Total Suspended Solids, ammonia and pH as the permit modification issued in 2005. The proposed permit includes a compliance schedule for meeting water quality based ammonia limits during the next permit cycle and for meeting the pH, DO, and toxics wasteload allocations provided in the approved TMDL on the Walla Wall River. The facility cannot currently meet water quality based effluent limits for ammonia and the seasonal ammonia limits provided during the first public review period have been modified. The limits for this permit cycle will be identical to the limits from the previous permit cycle, except for pH which will be 6.5 - 8.5 when discharging to Garrison Creek. Comments received during the first public commented period resulted in modifying the proposed compliance schedule to follow the 2 permit cycle compliance timeline provided in the approved TMDLs rather than just ten years from the time of TMDL approval.

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I. Introduction

The Federal Clean Water Act (FCWA, 1972, and later amendments in 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One mechanism for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System (NPDES), administered by the federal Environmental Protection Agency (EPA). The EPA authorized the state of Washington to manage the NPDES permit program in our state. Our state legislature accepted the delegation and assigned the power and duty for conducting NPDES permitting and enforcement to Ecology. The Legislature defined Ecology's authority and obligations for the wastewater discharge permit program in 90.48 RCW (Revised Code of Washington).

The following regulations apply to domestic wastewater NPDES permits:

- Procedures Ecology follows for issuing NPDES permits (chapter 173-220 WAC)
- Technical criteria for discharges from municipal wastewater treatment facilities (chapter 173-221 WAC)
- Water quality criteria for surface waters (chapter 173-201A WAC)
- Water quality criteria for groundwaters (chapter 173-200 WAC)
- Whole effluent toxicity testing and limits (chapter 173-205 WAC)
- Sediment management standards (chapter 173-204 WAC)
- Submission of plans and reports for construction of wastewater facilities (chapter 173-240 WAC)

These rules require any treatment facility owner/operator to obtain an NPDES permit before discharging wastewater to state waters. They also help define the basis for limits on each discharge and for requirements imposed by the permit.

Under the NPDES permit program and in response to a complete and accepted permit application, Ecology must prepare a draft permit and accompanying fact sheet, and make them available for public review before final issuance. Ecology must also publish an announcement (public notice) telling people where they can read the draft permit, and where to send their comments, during a period of thirty days (WAC 173-220-050). (See **Appendix A - Public** Involvement Information for more detail about the public notice and comment procedures). After the public comment period ends, Ecology may make changes to the draft NPDES permit in response to comment(s). Ecology will summarize the responses to comments and any changes to the permit in **Appendix F**.

The City of College Place currently discharges for a portion of the year. At this time, the Permittee would like to move to becoming a zero discharger. This permit includes interim limits for discharge during the months of November – April which are identical to the October – March limits from the previous permit cycle. The City of College Place removes the majority of its effluent from Garrison Creek during the critical period of May – October. Adequate planning for irrigation system maintenance should prevent unnecessary discharges to the receiving water body during the critical period. As a result, more stringent water quality based effluent limits apply during this time period if the City elects to discharge to Garrison Creek.

No effluent limits for metals exist during this permit cycle as additional data needs to be collected for the reasonable potential analysis. This permit includes monitoring for several metals of concern.

II. Background Information

Table 1: General Facility Information

Facility Information	
Applicant	The City of College Place
Facility Name and Address	City of College Place Wastewater Treatment Plant 430 Owens Road, College Place, WA 99362-8115
Contact at Facility	Name: Bill Putnam, Environmental System Director Telephone #:509-529-2859
Responsible Official	Name: Rick Newby Title: Mayor Address: 625 S. College Ave, College Place, WA 99324 Telephone #: 509-529-1200
Type of Treatment	Activated Sludge, Sequencing Batch Reactor
Facility Location (NAD83/WGS84 reference datum)	Latitude: 46.031722 N Longitude: 118.466722 W
Discharge Waterbody Name and Location (NAD83/WGS84 reference datum)	Garrison Creek (Tributary to Walla Walla River) Outfall 1 Latitude: 46.030556 N Longitude: 118.418056 W Outfall 2 Latitude: 46.031111 N Longitude: 118.419444 W

Permit Status	
Issuance Date of Previous Permit	June 30, 2005
Application for Permit Renewal Submittal Date	November 30, 2009
Date of Ecology Acceptance of Application	April 1, 2011

Inspection Status	
Date of Last Non-sampling Inspection Date	July 27, 2010, Compliance March 8, 2012, Technical Assistance

Figure 1: Facility Location Map

A. Facility description

History

The City of College Place officially incorporated in 1946. The City took over the sewer collection system and installed a treatment system in 1953. The City, located approximately 3 miles southwest of Walla Walla, discharges treated effluent into Garrison Creek approximately 5,000 feet upstream from the confluence with the Walla Walla River during the non-critical season, October to April. The discharge goes to land treatment via surface irrigation during the growing season, May to September. In years prior to the Mill Creek flood control project, treated effluent could make up virtually the 100 percent of the flow in Garrison Creek in the fall.

Past practices included an area farmer applying a portion of the treated effluent to crops with the remainder discharging to the Creek. Recent practices have used the effluent for irrigation of crops on City property from May 1 through the end of September; however, they periodically discharged to Garrison Creek during this critical time period depending on weather. The proposed permit eliminates this practice unless the discharge quality meets the limits imposed by the TMDL at the point of discharge.

The Corps of Engineers controls flows in Garrison and Yellowhawk Creeks at the headworks of the Mill Creek Flood Control Project under conditions identified in a MOA with Ecology. During a normal irrigation seasons, the Corps maintains a level of 0.4 feet on the gauge at the headwaters of Garrison Creek.

Past evaluation by the Department of Fish and Wildlife indicate that this gauge level correlates to a flow of 5-8 cubic feet per second (cfs), according to a discussion with Chris Alford of the Corp of Engineers. However, the first in time water rights holders on Yellowhawk Creek dictated the discharge into Garrison Creek in dry years. This results in variable flows to Garrison Creek during the critical season.

Collection system status

The original Burlingame sewer was constructed in the 1910's as a combined sewer for Walla Walla College, discharging to the Walla Walla River. In 1953, the City of College Place assumed operation of the sewer and constructed a sewage treatment plant and a collection system incorporating the Burlingame sewer as an interceptor. Sewage collection mains have expanded with expansion of City boundaries and upgrades of the sewage plant.

Comprised of 3 pump stations, approximately 160,000 lineal feet of 6 to 30-inch gravity pipeline, and 4 to 8-inch pressure sewers the collection system also has approximately 200,000 lineal feet of 4 and 6-inch side sewers. The City rehabilitated pump station #6 in 2011.

Flow data indicates that the collection system receives the average annual, per capita, flow for the three year period (2007-2009) of 94.5 gallons per day (gpd). These data demonstrate that the collection system for College Place does not receive excessive inflow and infiltration.

Treatment processes

Constructed in 2001 the activated sludge treatment plant, located approximately one mile southwest of the city limits, on a 14.4 acre parcel of land, a portion of a 160 acre parcel owned by the City of College Place the current wastewater treatment facility uses land disposal in the critical season and discharges to the Creek during the non growing season. The upgraded facility includes a Sequencing Batch Reactor (SBR) activated sludge process with the ability to coagulate/flocculate, cloth filtration (currently offline) and ultraviolet disinfection and two sludge storage tanks. High efficiency turbine blowers supply the air required for SBRs.

The headworks for the plant consists of a grit chamber, fine screens, raw sewage pump station. The headworks discharge to three circular Sequencing Batch Reactors (SBR) treatment basins followed by an equalization basin (121,300 gallons), which discharges to a coagulation/flocculation system discharging to two woven cloth disk effluent filters (this system is currently offline). UV disinfected (three trains) effluent discharges to reaeration basins with two effluent airlift pumps which in turn discharges to a constructed wetland (currently offline but maintained for habitat) followed by existing wetland. For solids handling see the solid waste and residual solids discussion below.

The treated effluent either discharges to irrigation storage basin with two irrigation pumps for land application for crops or to Garrison Creek. During the winter treated effluent in excess of the storage available may discharge into Garrison Creek via the existing 30-inch diameter outfall pipe (Outfall No. 1).

The facility, designed for Class C water reclamation and reuse, requires a class III operator as the lead and responsible operator in charge of the day-to-day operation of the wastewater treatment plant. During regularly scheduled shifts require and operator with a Class II operator certification provided they function under the oversight of the Class III operator.

When in use, the constructed wetland, equipped with an oxygen header and a well water header to reoxygenate and cool the effluent prior to discharge, flows into the West Wetland. The treated effluent flows through the rehabilitated West Wetland to Garrison Creek at the downstream end of the Travaille Ditch headworks. Currently, the constructed wetland is not in use. It is maintained for the habitat value.

Solid wastes and residual solids

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), and during sludge wasting from the sequencing batch reactors (SBRs), in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum and screenings are drained and disposed of as solid waste at the local landfill.

The system includes biosolids management consisting of old digesters converted to sludge holding tanks (394,000 gallons), belt filter presses, and a sludge drying bed with a volume of 40,000 cubic feet (approximately 95,000 square feet of surface area). The old drying beds provide additional volume when needed. The City currently contracts with an outside vender to haul and beneficially use the biosolids. A side cast solids spreader and tractor applies biosolids under Biosolids Permit # BA0020656 from the drying beds to the sprayfields, approximately 148.4 acres of land acquired by the City. The plant site also includes a truck washing facility for the City owned sludge trucks.

Discharge outfalls

Treated effluent discharges via Outfall No. 1 to Garrison Creek or Outfall No 2 to the land application site.

- Outfall No. 1: Effluent from UV disinfection discharges from the reaeration basin outlet manhole overflow weir via the existing 30-inch single outfall pipe equipped with a flap valve **directly into Garrison Creek**. The outfall pipe extends from the reaeration basin into Garrison Creek, discharging at the toe of the creek bank. The flap valve prevents backflow during times when the outfall becomes submerged due to the level in the Creek. The effluent discharges to Garrison Creek in the non-growing season provided it meets the surface water limits. Otherwise, it discharges into the irrigation storage pond.
- Outfall No. 2: Effluent from UV disinfection discharges from the reaeration basin outlet manhole overflow weir via the existing 30-inch outfall pipe **to irrigation storage pond** during growing season. Treated wastewater from the storage pond provides irrigation to crops during the growing season. During regular maintenance and harvest, treated water discharges Outfall 1 or to the storage lagoon depending upon quality.

A third method of disposal directs effluent from the reaeration basin outlet manhole into the Constructed Wetland via two air lift pumps. Flows are routed over a weir and into the West Wetland via a 12-inch outfall. Flows then enter Garrison Creek from the West Wetland. The facility no longer operates this wetland discharge to Garrison Creek because it cannot meet temperature requirements. Currently the wetland provides a beneficial habitat for local fauna and storage, as needed.

B. Description of the receiving water

The City of College Place WWTP discharges to Garrison Creek. Significant nearby non-point sources of pollutants include upstream housing and agricultural areas.

The ambient background data used for this permit includes the following from the 1998 Garrison Creek Use-Based Receiving Water Study:

Table 2: Ambient Background Data

Parameter	Value Used
Temperature (highest annual 1-DADMax)	24.8 o C
Temperature (highest annual 1-DADMax) (Nov – April)	17.5 o C
Temperature (highest annual 7-DADMax)	23.8 o C
pH (Maximum / Minimum)	7.5/7.1standard units
Dissolved Oxygen	9.23 mg/L
Total Ammonia-N	<0.1 mg/L
Fecal Coliform	670/100 mL dry weather (1,597/100 mL storm related)
Turbidity	10-15 NTU
Hardness	58.6 mg/L as CaCO3
Alkalinity	61.8 mg/L as CaCO3
Copper, Dissolved	12 µg/L
Zinc, Dissolved	9.1 µg/L

C. Wastewater influent characterization

The City of College Place reported the concentration of influent pollutants in discharge monitoring reports. The following tabulated data also includes Ecology inspection monitoring results.

The influent wastewater characterization follows:

Table 3: Wastewater Influent Characterization

Parameter	Units	Average Value	Maximum Value
Flow	mgd	.88	1.83
Biochemical Oxygen Demand (BOD_5)	mg/L	150	365
Biochemical Oxygen Demand (BOD_5)	lbs/day	1,098	5,572
Total Suspended Solids (TSS)	mg/L	215	826
Total Suspended Solids (TSS)	lbs/day	1,577	12,601
		Minimum Value	**Maximum Value**
pH	S.U.	6.5	10

D. Wastewater effluent characterization

The City of College Place reported the concentration of pollutants in the discharge in the permit application and in discharge monitoring reports. The tabulated data represents the quality of the wastewater effluent discharged from December 2007 – October 2012. The wastewater effluent characterization follows:

Table 4: Wastewater Effluent Characterization

Parameter	Units	Average Value	Maximum Value
Flow	mgd	.96	1.8
Biochemical Oxygen Demand (BOD_5)	mg/L	3.6	16.9
Biochemical Oxygen Demand (BOD_5)	lb/day	30.0	136.3
Total Suspended Solids (TSS)	mg/L	5.8	65.6
Total Suspended Solids (TSS)	lb/day	44.4	532.6
Turbidity	NTU	1.47	52.2
Total Ammonia	mg/L	0.31	2.86
Temperature, June -Oct	°C	16.9	19.9
Temperature, Nov-May	°C	14.08	19.7

Parameter	Units	Maximum Monthly Geometric Mean	Maximum Weekly Geometric Mean
Fecal Coliforms	#/100 mL	1.0/100mL	1.3/100mL

Parameter	Units	Minimum Value	Maximum Value
pH	standard units	6.2	8.7
Dissolved Oxygen	mg/L	3.2	11

E. Summary of compliance with previous permit issued

The previous permit placed effluent limits on BOD, TSS, Total Coliforms, Ammonia, pH, Dissolved Oxygen and Temperature.

With the exception of TSS exceedances early in 2012 related to equipment changes the City of College Place has generally complied with the effluent limits and permit conditions throughout the duration of the permit issued on June 30, 2005. Ecology assessed compliance based on review of the facility's information in the Ecology Permitting and Reporting Information System (PARIS), discharge monitoring reports (DMRs) and on inspections. The City of College Place received a "Good Guys" Award for the years of 2009 and 2010 for no violations of the discharge permit during those years.

The City of College place has also complied with all permit submittals over the previous permit cycle. No violations were issued for delinquent submittals.

F. State environmental policy act (SEPA) compliance

State law exempts the issuance, reissuance or modification of any wastewater discharge permit from the SEPA process as long as the permit contains conditions are no less stringent than federal and state rules and regulations (RCW 43.21C.0383). The exemption applies only to existing discharges, not to new discharges.

III. Proposed Permit Limits

Federal and state regulations require that effluent limits in an NPDES permit must be either technology- or water quality-based.

- Technology-based limits are based upon the treatment methods available to treat specific pollutants. Technology-based limits are set by the EPA and published as a regulation, or Ecology develops the limit on a case-by-case basis (40 CFR 125.3, and chapter 173-220 WAC).
- Water quality-based limits are calculated so that the effluent will comply with the Surface Water Quality Standards (chapter 173-201A WAC), Ground Water Standards (chapter 173-200 WAC), Sediment Quality Standards (chapter 173-204 WAC), or the National Toxics Rule (40 CFR 131.36).

- Ecology must apply the most stringent of these limits to each parameter of concern. These limits are described below.

The limits in this permit reflect information received in the application and from supporting reports (engineering, hydrogeology, etc.). Ecology evaluated the permit application and determined the limits needed to comply with the rules adopted by the state of Washington. Ecology does not develop effluent limits for all reported pollutants. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation.

Ecology does not usually develop limits for pollutants not reported in the permit application but may be present in the discharge. The permit does not authorize discharge of the non-reported pollutants. During the five-year permit term, the facility's effluent discharge conditions may change from those conditions reported in the permit application. The facility must notify Ecology if significant changes occur in any constituent [40 CFR 122.42(a)]. Until Ecology modifies the permit to reflect additional discharge of pollutants, a permitted facility could be violating its permit.

A. Design criteria

Under WAC 173-220-150 (1)(g), flows and waste loadings must not exceed approved design criteria. Ecology approved design criteria for this facility's treatment plant in '*Wastewater Facility/Comprehensive Sewer Plan'* dated 1996and prepared by Anderson, Perry and Associates in conjunction with Esvelt Environmental Engineering. The approved 1996 Facilities Plan estimated the 20-year population growth at 11,813. The Forecasting Division of OFM currently (2010) estimates the population of College Place as 9,035. The approved 1996 Facilities Plan selected the sequencing batch reactor activated sludge treatment process. Because of problems with irrigators, flow requirements in the creek and cost of some alternatives, the City chose to treat to a Class C Reclaimed Water standard to provide them with more use options for the discharge. Ecology's Water Quality Standards for surface water and groundwater, WAC 173-201A and 173-200, apply to discharges Garrison Creek and the land treatment system respectively. The College Place treatment plant provides sufficient disinfection to comply with the class C reclaimed water standard, going beyond the treatment needed to comply with the surface water standards.

The table below includes design criteria from the referenced report.

Table 5: Design Criteria for the City of College Place WWTP

Parameter	Design Quantity
Monthly Average Flow (max month)	1.65 MGD
Annual Average Flow	1.50 MGD
Maximum Day Flow	2.0 MGD
Instantaneous Peak Flow	5.70 MGD

Parameter	Design Quantity
BOD_5 Influent Loading (max. month)	4,500 lbs/day
TSS Influent Loading (max. month)	3,400 lbs/day
Ammonia (as N) (max. month)	500 lbs/day
Design Population Equivalent (2015)	11,813

B. Technology-based effluent limits

Federal and state regulations define technology-based effluent limits for municipal wastewater treatment plants. These effluent limits are given in 40 CFR Part 133 (federal) and in chapter 173-221 WAC (state). These regulations are performance standards that constitute all known, available, and reasonable methods of prevention, control, and treatment (AKART) for municipal wastewater.

The table below identifies technology-based limits for pH, fecal coliform, BOD_5, and TSS, as listed in chapter 173-221 WAC. Section III.F of b this fact sheet describes the potential for water quality-based limits.

Table 6: Technology-based Limits

Parameter	Average Monthly Limit	Average Weekly Limit
BOD_5 (concentration)	30 mg/L	45 mg/L
BOD_5 (concentration)	In addition, the BOD_5 effluent concentration must not exceed fifteen percent (15%) of the average influent concentration.	
TSS (concentration)	30 mg/L	45 mg/L
TSS (concentration)	In addition, the TSS effluent concentration must not exceed fifteen percent (15%) of the average influent concentration.	

Parameter	Monthly Geometric Mean Limit	Weekly Geometric Mean Limit
Fecal Coliform Bacteria	200 organisms/100 mL	400 organisms/100 mL

Parameter	Daily Minimum	Daily Maximum
pH	6.0 standard units	9.0 standard units

Ecology derived the technology-based monthly average limit for chlorine from standard operating practices. The Water Pollution Control Federation's *Chlorination of Wastewater* (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/L chlorine residual is maintained after fifteen minutes of contact time. See also Metcalf and Eddy, *Wastewater Engineering, Treatment, Disposal and Reuse,* Third Edition, 1991. A treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/L chlorine limit on a monthly average basis. According to WAC 173-221-030(11)(b), the corresponding weekly average is 0.75 mg/L.

The previous permit called for TSS and BOD_5 limits of 15 mg/L monthly and 23 mg/L weekly. **The proposed permit keeps the same limits as the previous permit to avoid backsliding.** The plant has been able to meet the 15 and 23 mg/L limits excepting during some operational changes in 2012.

Technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b). Ecology calculated the monthly and weekly average mass limits for BOD_5 and Total Suspended Solids as follows:

Mass Limit = CL x DF x CF

where:

CL = Technology-based concentration limits listed in the above table

DF = Maximum Monthly Average Design flow (MGD)

CF = Conversion factor of 8.34

Table 7: Technology-based Mass Limits

Parameter	Concentration Limit (mg/L)	Mass Limit (lbs/day)
BOD_5 Monthly Average	15	206.4
BOD_5 Weekly Average	23	316.5
TSS Monthly Average	15	206.4
TSS Weekly Average	23	316.5

C. Surface water quality-based effluent limits

The Washington State surface water quality standards (chapter 173-201A WAC) are designed to protect existing water quality and preserve the beneficial uses of Washington's surface waters.

Waste discharge permits must include conditions that ensure the discharge will meet the surface water quality standards (WAC 173-201A-510). Water quality-based effluent limits may be based on an individual waste load allocation or on a waste load allocation developed during a basin wide total maximum daily load study (TMDL).

Numerical criteria for the protection of aquatic life and recreation

Numerical water quality criteria are listed in the water quality standards for surface waters (chapter 173-201A WAC). They specify the maximum levels of pollutants allowed in receiving water to protect aquatic life and recreation in and on the water. Ecology uses numerical criteria along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limits, the discharge must meet the water quality-based limits.

Numerical criteria for the protection of human health

The U.S. EPA has published 91 numeric water quality criteria for the protection of human health that are applicable to dischargers in Washington State (EPA, 1992). These criteria are designed to protect humans from exposure to pollutants linked to cancer and other diseases, based on consuming fish and shellfish and drinking contaminated surface waters. The water quality standards also include radionuclide criteria to protect humans from the effects of radioactive substances.

Narrative criteria

Narrative water quality criteria (e.g., WAC 173-201A-240(1); 2006) limit the toxic, radioactive, or other deleterious material concentrations that the facility may discharge to levels below those which have the potential to:

- Adversely affect designated water uses.
- Cause acute or chronic toxicity to biota.
- Impair aesthetic values.
- Adversely affect human health.

Narrative criteria protect the specific designated uses of all fresh waters (WAC 173-201A-200, 2006) and of all marine waters (WAC 173-201A-210, 2006) in the state of Washington.

Antidegradation

Description - The purpose of Washington's Antidegradation Policy (WAC 173-201A-300-330; 2006) is to:

- Restore and maintain the highest possible quality of the surface waters of Washington.
- Describe situations under which water quality may be lowered from its current condition.
- Apply to human activities that are likely to have an impact on the water quality of surface water.
- Ensure that all human activities likely to contribute to a lowering of water quality, at a minimum, apply all known, available, and reasonable methods of prevention, control, and treatment (AKART).
- Apply three tiers of protection (described below) for surface waters of the state.

Tier I ensures existing and designated uses are maintained and protected and applies to all waters and all sources of pollutions. Tier II ensures that waters of a higher quality than the criteria assigned are not degraded unless such lowering of water quality is necessary and in the overriding public interest. Tier II applies only to a specific list of polluting activities. Tier III prevents the degradation of waters formally listed as "outstanding resource waters," and applies to all sources of pollution.

A facility must prepare a Tier II analysis when all three of the following conditions are met:

- The facility is planning a new or expanded action.
- Ecology regulates or authorizes the action.
- The action has the potential to cause measurable degradation to existing water quality at the edge of a chronic mixing zone.

Facility Specific Requirements - This facility must meet Tier I requirements.

- Dischargers must maintain and protect existing and designated uses. Ecology must not allow any degradation that will interfere with, or become injurious to, existing or designated uses, except as provided for in chapter 173-201A WAC.
- For waters that do not meet assigned criteria, or protect existing or designated uses, Ecology will take appropriate and definitive steps to bring the water quality back into compliance with the water quality standards.
- Whenever the natural conditions of a water body are of a lower quality than the assigned criteria, the natural conditions constitute the water quality criteria. Where water quality criteria are not met because of natural conditions, human actions are not allowed to further lower the water quality, except where explicitly allowed in chapter 173-201A WAC.

Ecology's analysis described in this section of the fact sheet demonstrates that the proposed permit conditions will protect existing and designated uses of the receiving water.

Mixing zones

A mixing zone is the defined area in the receiving water surrounding the discharge port(s), where wastewater mixes with receiving water. Within mixing zones the pollutant concentrations may exceed water quality numeric standards, so long as the discharge doesn't interfere with designated uses of the receiving water body (for example, recreation, water supply, and aquatic life and wildlife habitat, etc.) The pollutant concentrations outside of the mixing zones must meet water quality numeric standards.

State and federal rules allow mixing zones because the concentrations and effects of most pollutants diminish rapidly after discharge, due to dilution.

Ecology defines mixing zone sizes to limit the amount of time any exposure to the end-of-pipe discharge could harm water quality, plants, or fish.

The state's water quality standards allow Ecology to authorize mixing zones for the facility's permitted wastewater discharges only if those discharges already receive all known, available, and reasonable methods of prevention, control, and treatment (AKART).

Mixing zones typically require compliance with water quality criteria within a specified distance from the point of discharge and must not use more than 25% of the available width of the water body for dilution [WAC 173-201A-400 (7)(a)(ii-iii)].

Ecology uses modeling to estimate the amount of mixing within the mixing zone. Through modeling Ecology determines the potential for violating the water quality standards at the edge of the mixing zone and derives any necessary effluent limits. Steady-state models are the most frequently used tools for conducting mixing zone analyses. Ecology chooses values for each effluent and for receiving water variables that correspond to the time period when the most critical condition is likely to occur (see Ecology's *Permit Writer's Manual*). Each critical condition parameter, by itself, has a low probability of occurrence and the resulting dilution factor is conservative. The term "reasonable worst-case" applies to these values.

The mixing zone analysis produces a numerical value called a dilution factor (DF). A dilution factor represents the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. For example, a dilution factor of 10 means the effluent is 10% and the receiving water is 90% of the total volume of water at the boundary of the mixing zone. Ecology uses dilution factors with the water quality criteria to calculate reasonable potentials and effluent limits. Water quality standards include both aquatic life-based criteria and human health-based criteria. The former are applied at both the acute and chronic mixing zone boundaries; the latter are applied only at the chronic boundary. The concentration of pollutants at the boundaries of any of these mixing zones may not exceed the numerical criteria for that zone.

Each aquatic life *acute* criterion is based on the assumption that organisms are not exposed to that concentration for more than one hour and more often than one exposure in three years. Each aquatic life *chronic* criterion is based on the assumption that organisms are not exposed to that concentration for more than four consecutive days and more often than once in three years.

The two types of human health-based water quality criteria distinguish between those pollutants linked to non-cancer effects (non-carcinogenic) and those linked to cancer effects (carcinogenic). The human health-based water quality criteria incorporate several exposure and risk assumptions. These assumptions include:

- A 70-year lifetime of daily exposures.
- An ingestion rate for fish or shellfish measured in kg/day.
- An ingestion rate of two liters/day for drinking water.
- A one-in-one-million cancer risk for carcinogenic chemicals.

This permit authorizes a small acute mixing zone, surrounded by a chronic mixing zone around the point of discharge (WAC 173-201A-400). The water quality standards impose certain conditions before allowing the discharger a mixing zone:

1. Ecology must specify both the allowed size and location in a permit.

The proposed permit specifies the size and location of the allowed mixing zone (as specified below).

2. **The facility must fully apply "all known, available, and reasonable methods of prevention, control and treatment" (AKART) to its discharge.**

   Ecology has determined that the treatment provided at the City of College Place Wastewater Treatment Plant meets the requirements of AKART (see "Technology-based Limits").

3. **Ecology must consider critical discharge conditions.**

   Surface water quality-based limits are derived for the water body's critical condition (the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or designated waterbody uses). The critical discharge condition is often pollutant-specific or waterbody-specific.

   Critical discharge conditions are those conditions that result in reduced dilution or increased effect of the pollutant. Factors affecting dilution include the depth of water, the density stratification in the water column, the currents, and the rate of discharge. Density stratification is determined by the salinity and temperature of the receiving water. Temperatures are warmer in the surface waters in summer. Therefore, density stratification is generally greatest during the summer months. Density stratification affects how far up in the water column a freshwater plume may rise. The rate of mixing is greatest when an effluent is rising. The effluent stops rising when the mixed effluent is the same density as the surrounding water. After the effluent stops rising, the rate of mixing is much more gradual. Water depth can affect dilution when a plume might rise to the surface when there is little or no stratification. Ecology's *Permit Writer's Manual* describes additional guidance on criteria/design conditions for determining dilution factors. The manual can be obtained from Ecology's website at: https://fortress.wa.gov/ecy/publications/SummaryPages/92109.html.

Table 8: Critical Conditions Used to Model the Discharges

Critical Condition	Value
The seven-day-average low river flow with a recurrence interval of ten years (7Q10)	0.4 cfs* 0.64**
River depth at the 7Q10 period	0.98 feet
River velocity	1.12 ft per second
Manning roughness coefficient	n = 0.030
Slope	0.0075 fee/foot
Channel width	5.25 feet
Maximum average monthly effluent flow for chronic and human health non-carcinogen	1.65 MGD
Annual average flow for human health carcinogen	1.5 MGD

Critical Condition	Value
Maximum daily flow for acute mixing zone	2.0 MGD
7-DAD MAX Effluent temperature	20.0 ° C
*For November – April Discharge **For May – October Discharge, flows are documented to be intermittent	

In March 1998, Ecology published the "Garrison Creek Use-Based Receiving Water Study." This study was to assist Ecology in deriving water quality based effluent limitations for ammonia. Ecology used the critical conditions from the aforementioned study to model the discharge.

The City of College Place WWTP manages its effluent to avoid a discharge to Garrison Creek during the critical summer low flow period. As discussed previously, the flow in Garrison Creek depends on flows required in Yellowhawk Creek and the terms and conditions of the MOA between Ecology and the Corp of Engineers. During dry years there may be little to no flow in Garrison Creek.

For a reasonable potential evaluation of toxics, metals, and temperature used the following seasonal flows:

- November – April: the 7Q10 estimated flow equals 0.40 cfs.
- May – October: the 7Q10 estimated flow equals 0.64 cfs.

However, the documented periods of little to no flow prevent a mixing zone allocation during both the critical season, May – October, and the non-critical season November –April as effluent dominates the receiving water body. As a result, the City of College Place's effluent limits must meet water quality limits at the end of the pipe during all times of the year.

This 7Q10 was calculated using historical data (1941-1952) from USGS Stream Gage 14014500. The proposed permit require that College Place install a gauging station and complete a receiving water evaluation to verify assumptions made with respect to limits set in this permit cycle. The Walla Walla Watershed Council has offered to assist the City in developing a monitoring station. The data will be used to reevaluate the limits and allowable discharge to Garrison Creek for the next permit cycle. The gauge requires maintenance for the duration of the community's use of the receiving water for their effluent.

4. Supporting information must clearly indicate the mixing zone would not:

- Have a reasonable potential to cause the loss of sensitive or important habitat.
- Substantially interfere with the existing or characteristic uses.
- Result in damage to the ecosystem.
- Adversely affect public health.

Ecology established Washington State water quality criteria for toxic chemicals using EPA criteria. EPA developed the criteria using toxicity tests with numerous organisms and set the criteria to generally protect the species tested and to fully protect all commercially and recreationally important species.

EPA sets acute criteria for toxic chemicals assuming organisms are exposed to the pollutant at the criteria concentration for one hour. They set chronic standards assuming organisms are exposed to the pollutant at the criteria concentration for four days. Dilution modeling under critical conditions generally shows that both acute and chronic criteria concentrations are reached within minutes of discharge.

The discharge plume does not impact drifting and non-strong swimming organisms because they cannot stay in the plume close to the outfall long enough to be affected. Strong swimming fish could maintain a position within the plume, but they can also avoid the discharge by swimming away. Mixing zones generally do not affect benthic organisms (bottom dwellers) because the buoyant plume rises in the water column. Ecology has additionally determined that the effluent will not exceed 33 degrees C for more than two seconds after discharge; and that the temperature of the water will not create lethal conditions or blockages to fish migration.

Ecology evaluates the cumulative toxicity of an effluent by testing the discharge with whole effluent toxicity (WET) testing.

Because this is a domestic wastewater discharge, the effluent contains fecal coliform bacteria limits. Ecology developed the water quality criteria for fecal coliforms (discussed below) to assure that people swimming (primary contact recreation) in water meeting the criteria would not develop gastro enteric illnesses. Ecology has not authorized a mixing zone for this discharge. This means the effluent meets the water quality criteria at the point of discharge and does not need dilution to meet the water quality criteria. The Class C effluent discharge is subject to an average monthly performance-based effluent limit of 23 colony forming units/100mL with the maximum sample not exceeding 240/100mL.

Ecology reviewed the above information, the specific information on the characteristics of the discharge, the receiving water characteristics, and the discharge location. Based on this review, Ecology concluded that the discharge does not have a reasonable potential to cause the loss of sensitive or important habitat, substantially interfere with existing or characteristics uses, result in damage to the ecosystem, or adversely affect public health if the permit limits are met.

5. The discharge/receiving water mixture must not exceed water quality criteria outside the boundary of a mixing zone.

Ecology conducted a reasonable potential analysis using procedures established by the EPA and by Ecology, for each pollutant and concluded the discharge/receiving water mixture will not violate water quality criteria outside the boundary of the mixing zone if permit limits are met.

6. **The size of the mixing zone and the concentrations of the pollutants must be minimized.**

   At any given time, the effluent plume uses only a portion of the acute and chronic mixing zone, which minimizes the volume of water involved in mixing. The plume mixes as it rises through the water column therefore much of the receiving water volume at lower depths in the mixing zone is not mixed with discharge. Similarly, because the discharge may stop rising at some depth due to density stratification, waters above that depth will not mix with the discharge. Ecology determined it is impractical to specify in the permit the actual, much more limited volume in which the dilution occurs as the plume rises and moves with the current.

   Ecology minimizes the size of mixing zones by requiring dischargers to install diffusers when they are appropriate to the discharge and the specific receiving waterbody. When a diffuser is installed, the discharge is more completely mixed with the receiving water in a shorter time. Ecology also minimizes the size of the mixing zone (in the form of the dilution factor) using design criteria with a low probability of occurrence. For example, Ecology uses the expected 95th percentile pollutant concentration, the 90th percentile background concentration, the centerline dilution factor, and the lowest flow occurring once in every ten years to perform the reasonable potential analysis. College Place primarily discharges to Garrison Creek during winter periods. The facility also discharges during non-winter months; however, from May to October, the primary discharge is used for irrigating crops on the WWTP farm. Historically, flows in Garrison Creek are minimal and effluent dominates the flow volume when the facility discharges.

   Because of the above reasons, Ecology has not authorized a mixing zone authorized in the proposed permit.

7. **Maximum size of mixing zone.**

   The authorized mixing zone does not exceed the maximum size restriction.

8. **Acute mixing zone.**

   - **The discharge/receiving water mixture must comply with acute criteria as near to the point of discharge as practicably attainable.**

     The City of College Place does not routinely discharge to Garrison Creek during the critical season. However, intermittent discharges have occurred to allow maintenance of irrigation equipment or harvesting activities. While College Place has several fields planted, agronomic rates restrict hydraulic loading and the excess flow requires either storage or discharge to Garrison Creek.

     The proposed permit allows College Place to continue to temporarily discharge as needed to Garrison Creek, until they meet the compliance schedule for removing flow from the Creek during the months of May – October. Effluent limits must meet surface water quality at the end of pipe.

   - **The pollutant concentration, duration, and frequency of exposure to the discharge will not create a barrier to migration or translocation of indigenous organisms to a degree that has the potential to cause damage to the ecosystem.**

As described above, the toxicity of any pollutant depends upon the exposure, the pollutant concentration, and the time the organism is exposed to that concentration. Authorizing a limited acute mixing zone for this discharge assures that it will not create a barrier to migration. The effluent from this discharge will rise as it enters the receiving water, assuring that the rising effluent will not cause translocation of indigenous organisms near the point of discharge (below the rising effluent).

- **Comply with size restrictions.**

  The mixing zone authorized for this discharge complies with the size restrictions published in chapter 173-201A WAC.

9. Overlap of mixing zones.

This mixing zone does not overlap another mixing zone.

D. Designated uses and surface water quality criteria

The City of College Place WWTP discharges to Garrison Creek, a tributary to the Walla Walla River in WRIA 32, part of the year. Chapter 173-201A WAC describes applicable designated uses and surface water quality criteria for the Walla Wall River between Lowden and the Stateline (including tributaries). Additionally, the U.S. EPA set human health criteria for toxic pollutants (EPA 1992). The tables included below summarize the criteria applicable to the receiving water's designated uses.

- Aquatic Life Uses are designated based on the presence of, or the intent to provide protection for the key uses. All indigenous fish and non-fish aquatic species must be protected in waters of the state in addition to the key species.

  The *Aquatic Life Uses* for this receiving water are identified below.

Table 9: Freshwater Aquatic Life Uses and Associated Criteria

Salmonid Spawning, Rearing, and Migration	
Temperature Criteria – Highest 7-DAD MAX	17.5°C (63.5°F)
Dissolved Oxygen Criteria – Lowest 1-Day Minimum	8.0 mg/L
Turbidity Criteria	• 5 NTU over background when the background is 50 NTU or less; or • A 10 percent increase in turbidity when the background turbidity is more than 50 NTU.
Total Dissolved Gas Criteria	Total dissolved gas must not exceed 110 percent of saturation at any point of sample collection.
pH Criteria	The pH must measure within the range of 6.5 to 8.5 with a human-caused variation within the above range of less than 0.5 units.

The *recreational uses* for this receiving water are identified below.

Table 10: Recreational Uses and Associated Criteria

Recreational Use	Criteria
Primary Contact Recreation	Fecal coliform organism levels must not exceed a geometric mean value of 100 colonies /100 mL, with not more than 10 percent of all samples (or any single sample when less than ten sample points exist) obtained for calculating the geometric mean value exceeding 200 colonies /100 mL.

- The *water supply uses* are domestic, agricultural, industrial, and stock watering.
- The *miscellaneous freshwater uses* are wildlife habitat, harvesting, and aesthetics.

E. Water quality impairments

The current 303 (d) list identifies Garrison Creek, a tributary of the Walla Walla River (WRIA 32), as impaired for temperature, fecal coliform, pH, dissolved oxygen, chlorinated pesticides and PCBs. Ecology has completed a Total Maximum Daily Load (TMDL) Analysis for the Walla Walla River and included Garrison Creek in the subsequent Water Quality Improvement Implementation Plan.

The TMDL implementation subjects the City of College Place to the following wasteload allocations (WLA) for Garrison Creek. The parameters and critical periods for the receiving water body are:

- Chlorinated Pesticides & PCBs (January – June)
- Fecal Coliform (June – October)
- Temperature (July – August)
- pH & Dissolved Oxygen (May – October)

Meeting the requirements of the four TMDL implementation plans will involve the facility meeting water quality criteria during the months of January – October with a non-critical discharge period of November and December. The City may want to explore alternatives for removing their discharge from Garrison Creek. The proposed permit provides a compliance schedule, Section S10 of the permit, requiring the City to investigate the feasibility of removing discharge from Garrison Creek year round.

F. Evaluation of surface water quality-based effluent limits for numeric criteria

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near-field) or at a considerable distance from the point of discharge (far-field). Toxic pollutants, for example, are near-field pollutants; their adverse effects diminish rapidly with mixing in the receiving water.

Conversely, a pollutant such as biochemical oxygen demand (BOD_5) is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating surface water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

With technology-based controls (AKART), predicted pollutant concentrations in the discharge exceed water quality criteria. Ecology therefore authorizes a mixing zone in accordance with the geometric configuration, flow restriction, and other restrictions imposed on mixing zones by chapter 173-201A WAC.

More importantly, College Place does not routinely discharge to Garrison Creek during the critical low flow period. However, intermittent discharges have occurred to allow maintenance of irrigation equipment or harvesting activities. While College Place has several fields planted, loading is restricted to agronomic rates and the excess flow may be directed to Garrison Creek until the compliance schedule is met.

Chronic Mixing Zone - WAC 173-201A-400(7)(a) specifies that mixing zones must not extend in a downstream direction from the discharge ports for a distance greater than 300 feet plus the depth of water over the discharge ports or extend upstream for a distance of over 100 feet, not utilize greater than 25% of the flow, and not occupy greater than 25% of the width of the water body.

No mixing zone has been authorized for the City of College Place during this permit cycle.

Acute Mixing Zone - WAC 173-201A-400(8)(a) specifies that in rivers and streams a zone where acute toxics criteria may be exceeded must not extend beyond 10% of the distance towards the upstream and downstream boundaries of the chronic zone, not use greater than 2.5% of the flow and not occupy greater than 25% of the width of the water body.

No mixing zone has been authorized for the City of College Place during this permit cycle.

Ecology determined the dilution factors that occur within these zones at the seasonal 7Q10susing the dilution concentrations of the reasonable potential spreadsheet. The dilution factors are listed below.

Table 11: Dilution Factors (DF) – November to April

Criteria	Acute	Chronic
Aquatic Life	1.00	1.00
Human Health, Carcinogen		1.00
Human Health, Non-carcinogen		1.00

Ecology determined the impacts of pH, ammonia, metals and temperature as described below, using the dilution factors in the above table.

The derivation of surface water quality-based limits also takes into account the variability of pollutant concentrations in both the effluent and the receiving water. Ecology completed a study of Garrison Creek in 1996 and again in 2007 as part of the Walla Walla Basin Study.

Dissolved Oxygen, BOD_5 and Ammonia Effects - Natural decomposition of organic material in wastewater effluent impacts dissolved oxygen in the receiving water at distances far outside of the regulated mixing zone.

The 5-day Biochemical Oxygen Demand (BOD_5) of an effluent sample indicates the amount of biodegradable material in the wastewater and estimates the magnitude of oxygen consumption the wastewater will generate in the receiving water. The amount of ammonia-based nitrogen in the wastewater also provides an indication of oxygen demand potential in the receiving water.

Ecology predicted no violation of the surface water quality standards for dissolved oxygen due to the impacts of biochemical oxygen demand (BOD_5) under critical conditions. Therefore, the proposed permit contains the technology-based effluent limit for BOD_5.

The permit also does not contain a limit on ammonia based on dissolved oxygen impacts (ammonia toxicity is examined elsewhere in this fact sheet).

pH - Ecology modeled the impact of the effluent pH on the receiving water using the calculations from EPA, 1988, and the chronic dilution factor tabulated above. **Appendix D** includes the model results.

Under critical conditions, modeling predicts a violation of the pH criteria for the receiving water. Therefore, the proposed permit includes water quality-based effluent limits for pH of 6.5 to 8.5.

Fecal Coliform - Under critical conditions, modeling predicts no violation of the water quality criterion for fecal coliform. In this situation, Ecology generally imposes the technology-based effluent limit for fecal coliform bacteria. The City of College Place WWTP has demonstrated it can reliably meet the water quality standard for fecal coliforms for primary contact recreation in the discharge. The facility's wasteload allocation from the Walla Walla Fecal Coliform TMDL allows the facility to discharge Fecal Coliform at the 2005 permit limits. 2005 disinfection limits for the City of College Place meet the Class C reclaimed water quality criterion (23 Total Coliforms/100mL, 7 day median) which is a more stringent requirement than the primary contact reclamation standard. The proposed permit maintains these limits for compliance with the 2006 Fecal Coliform Bacteria TMDL.

Turbidity - Ecology evaluated the impact of turbidity based on the range of total suspended solids in the effluent and turbidity of the receiving water. Ecology expects no violations of the turbidity criteria outside the designated mixing zone provided the facility meets its technology-based total suspended solids permit limits.

Toxic Pollutants - Federal regulations (40 CFR 122.44) require Ecology to place limits in NPDES permits on toxic chemicals in an effluent whenever a reasonable potential for those chemicals to exceed the surface water quality criteria exists. Ecology does not exempt facilities with technology-based effluent limits from meeting the surface water quality standards.

The following toxic pollutants are present in the discharge: PCBs, ammonia, and heavy metals. Ecology completed a TMDL with a WLA for the City of College Place Wastewater Treatment Plant for PCBs. This proposed permit includes the WLA for PCBs. Ecology conducted a reasonable potential analysis (See **Appendix D**) for ammonia to determine whether it would require effluent limits in this permit.

Ammonia: Ammonia's toxicity depends on that portion which is available in the unionized form. The amount of unionized ammonia depends on the temperature and pH in the receiving freshwater. To evaluate ammonia toxicity, Ecology used a receiving water study (Garrison Creek Use-Based Receiving Water Study – March 1998, publication number 98-302). Results from this reasonable potential evaluation yielding limits that were more stringent than the ammonia limits calculated for the 2005 NPDES permit.

Review of the facility's historic DMR data has shown that the facility is not able to meet these more stringent ammonia limits. Therefore, the facility will be given the previous permit limits for ammonia during this permit cycle and will be required to meet water quality based limits for ammonia in the next permit cycle when discharging to Garrison Creek.

College Place's decision to irrigate crops and poplar trees in the growing season protects the receiving water from ammonia's toxic impacts at the effluent concentrations of the discharge. However, the City does not always entirely remove effluent from Garrison Creek during the critical period. Therefore, Ecology has determined there is reasonable potential for exceeding water quality criteria during the critical period and total ammonia effluent limits have been calculated for May – October discharge. However, the facility does not have the ability to meet water quality based limits without an upgrade to the existing treatment process. This permit includes a compliance schedule for meeting water quality based ammonia limits during the May – October discharge period. The facility will be required to meet water quality based effluent limits for ammonia during the next permit cycle.

Metals: Water quality criteria for most metals published in chapter 173-201A WAC are based on the dissolved fraction of the metal (see footnotes to table WAC 173-201A-240(3); 2006). For the initial permit application and a retest, the method detection limit was above the water quality standard criterion for the respective metal. The City was asked to collect additional information on heavy metals using more sensitive method detection limits, which they did. Three metals are a potential concern: hexavalent chromium, copper and zinc. However, due to the limited amount data received, no limits can be placed on these metals at this time. This proposed permit increases the sampling frequency so more reliable data may be obtained to make a final reasonable potential determination within the next permit cycle. The source for these metals should be determined. College Place has not identified any of the usual industrial sources. College Place does receive influent from college (or university) labs and maintenance facilities. The college should be evaluated and a pretreatment permit issued if they discharge metals to the facility. The proposed permit requires that the City prepare a toxics management plan. The plan must include a metals source identification and elimination component.

Temperature - The state temperature standards [WAC 173-201A-200-210 and 600-612] include multiple elements:

- Annual summer maximum threshold criteria (June 15 to September 15)
- Supplemental spawning and rearing season criteria (September 15 to June 15)
- Incremental warming restrictions
- Protections against acute effects

Ecology evaluates each criterion independently to determine reasonable potential and derive permit limits.

- Annual summer maximum and supplementary spawning/rearing criteria

Each water body has an annual maximum temperature criterion [WAC 173-201A-200(1)(c), 210(1)(c), and Table 602]. These threshold criteria (e.g., 12, 16, 17.5, 20°C) protect specific categories of aquatic life by controlling the effect of human actions on summer temperatures.

Some waters have an additional threshold criterion to protect the spawning and incubation of salmonids (9°C for char and 13°C for salmon and trout) [WAC 173-201A-602, Table 602]. These criteria apply during specific date-windows.

The threshold criteria apply at the edge of the chronic mixing zone. Criteria for most fresh waters are expressed as the highest 7-Day average of daily maximum temperature (7-DADMax).

The 7-DADMax temperature is the arithmetic average of seven consecutive measures of daily maximum temperatures. Criteria for marine waters and some fresh waters are expressed as the highest 1-Day annual maximum temperature (1-DMax).

- Incremental warming criteria

The water quality standards limit the amount of warming human sources can cause under specific situations [WAC 173-201A-200(1)(c)(i)-(ii), 210(1)(c)(i)-(ii)]. The incremental warming criteria apply at the edge of the chronic mixing zone.

Ecology provides permittees an incremental increase when cooler background temperatures exists provided that the increase does not cause temperature to exceed either the annual maximum or supplemental spawning criteria. At locations and times when a threshold criterion exceeds annual maximum or supplemental spanning criteria due to natural conditions, all human sources, considered cumulatively, must not warm the water more than 0.3°C above the naturally warm condition.

When Ecology has not yet completed a TMDL, our policy allows each point source to warm water at the edge of the chronic mixing zone by 0.3°C. This is true regardless of the background temperature and even if doing so would cause the temperature at the edge of a standard mixing zone to exceed the numeric threshold criteria. Allowing a 0.3°C warming for each point source is reasonable and protective where the dilution factor is based on 25% or less of the critical flow. This is because the fully mixed effect on temperature will only be a fraction of the 0.3°C cumulative allowance (0.075°C or less) for all human sources combined.

The College Place WWTP does not routinely discharge to Garrison Creek during the critical season. However, intermittent discharges have occurred to allow maintenance of irrigation equipment and harvesting activities. The engineering report for College Place indicates that they have adequate acreage under design conditions. However, the permit does restrict hydraulic loading to agronomic rates; during wet years or during harvest and routine maintenance, they may exceed the agronomic capacity of the treatment site. The flow exceeding storage capacity temporarily discharges to Garrison Creek.

The proposed permit provides a temperature limit for the discharge. Additionally, a receiving water evaluation and an in-stream flow gauging station will provide quantifiable data for determining compliance with water quality standards for the next permit cycle.

- Protections for temperature acute effects

Instantaneous lethality to passing fish: The upper 99th percentile daily maximum effluent temperature must not exceed 33°C, unless a dilution analysis indicates ambient temperatures will not exceed 33°C two seconds after discharge.

General lethality and migration blockage: Measurable (0.3°C) increases in temperature at the edge of a chronic mixing zone are not allowed when the receiving water temperature exceeds either a 1DMax of 23°C or a 7DADMax of 22°C.

Lethality to incubating fish: Human actions must not cause a measurable (0.3°C) warming above 17.5°C at locations where eggs are incubating.

The effluent from the College Place WWTP into Garrison Creek does not represent a hazard which the above restrictions are meant to correct. This is largely due to temperature below the first 2 criteria and a lack of surface water discharge in the critical period, but also due to the current poor habitat qualities of lower Garrison Creek due to channel dredging and irrigation diversions for the 3rd criterion.

Reasonable Potential Analysis

Data Collection Required: Ecology does not have sufficient information on the temperature of the effluent or the receiving water to determine compliance with water quality criteria for temperature. The proposed permit requires The City of College Place WWTP to monitor effluent and receiving water temperature and report the results to Ecology. Ecology will use the data to assess compliance with temperature and need for BMPs and facility operational changes to address temperature in next permit.

G. Human health

Washington's water quality standards include 91 numeric human health-based criteria that Ecology must consider when writing NPDES permits. These criteria were established in 1992 by the U.S. EPA in its National Toxics Rule (40 CFR 131.36). The National Toxics Rule allows states to use mixing zones to evaluate whether discharges comply with human health criteria.

Ecology determined the effluent does contain PCBs, a chemical of concern for human health, based on existing effluent data and knowledge of discharges to their system.

Ecology evaluated the discharge's potential to violate the water quality standards as required by 40 CFR 122.44(d) by following the procedures published in the *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001) and Ecology's *Permit Writer's Manual* to make a reasonable potential determination. The evaluation showed that the existing data resulted in an ambiguous determination. The proposed permit requires the facility to submit additional data before the next permit reissuance.

Ecology issued a TMDL with a waste load allocation, WLA, for PCBs from the City of College Place Wastewater Treatment Plant. The proposed permit includes the WLA for PCBs. The permit also requires monitoring in the collection system to locate and remove potential PCB sources. The facility must implement the WLA by December 31, 2018, the end of the 10 year compliance window.

The water quality standards also include radionuclide criteria to protect humans from the effects of radioactive substances.

H. Sediment quality

The aquatic sediment standards (chapter 173-204 WAC) protect aquatic biota and human health. Under these standards Ecology may require a facility to evaluate the potential for its discharge to cause a violation of sediment standards (WAC 173-204-400). You can obtain additional information about sediments at the Aquatic Lands Cleanup Unit website. http://www.ecy.wa.gov/programs/tcp/smu/sediment.html.

Through a review of the discharger characteristics, the effluent characteristics and the flow regime of Garrison Creek, Ecology determined that this discharge has no reasonable potential to violate the sediment management standards.

I. Whole effluent toxicity

The water quality standards for surface waters forbid discharge of effluent that has the potential to cause toxic effects in the receiving waters. Many toxic pollutants cannot be measured by commonly available detection methods. However, laboratory tests can measure toxicity directly by exposing living organisms to the wastewater and measuring their responses. These tests measure the aggregate toxicity of the whole effluent, so this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

- *Acute toxicity tests measure mortality as the significant response* to the toxicity of the effluent. Dischargers who monitor their wastewater with acute toxicity tests find early indications of any potential lethal effect of the effluent on organisms in the receiving water.
- *Chronic toxicity tests measure various sublethal toxic responses,* such as reduced growth or reproduction. Chronic toxicity tests often involve either a complete life cycle test on an organism with an extremely short life cycle, or a partial life cycle test during a critical stage of a test organism's life. Some chronic toxicity tests also measure organism survival.

Laboratories accredited by Ecology for WET testing know how to use the proper WET testing protocols, fulfill the data requirements, and submit results in the correct reporting format. Accredited laboratory staff knows about WET testing and how to calculate an NOEC, LC50, EC50, IC25, etc.

Ecology gives all accredited labs the most recent version of Ecology Publication No. WQ-R-95-80, *Laboratory Guidance and Whole Effluent Toxicity Test Review Criteria* (https://fortress.wa.gov/ecy/publications/SummaryPages/9580.html), which is referenced in the permit. Ecology recommends that The City of College Place send a copy of the acute or chronic toxicity sections(s) of its NPDES permit to the laboratory.

WET testing conducted during effluent characterization showed no reasonable potential for effluent discharges to cause receiving water acute toxicity.

The proposed permit will not include an acute WET limit. The City of College Place must retest the effluent before submitting an application for permit renewal.

- If this facility makes process or material changes which, in Ecology's opinion, increase the potential for effluent toxicity, then Ecology may (in a regulatory order, by permit modification, or in the permit renewal) require the facility to conduct additional effluent characterization. The City of College Place may demonstrate to Ecology that effluent toxicity has not increased by performing additional WET testing and/or chemical analyses after the process or material changes have been made. Ecology recommends that the Permittee check with it first to make sure that Ecology will consider the demonstration adequate to support a decision to not require an additional effluent characterization.
- If WET testing conducted for submittal with a permit application fails to meet the performance standards in WAC 173-205-020, Ecology will assume that effluent toxicity has increased.

WET testing conducted during effluent characterization showed no reasonable potential for effluent discharges to cause receiving water chronic toxicity. The proposed permit will not include a chronic WET limit. The City of College Place must retest the effluent before submitting an application for permit renewal.

- If this facility makes process or material changes which, in Ecology's opinion, increase the potential for effluent toxicity, then Ecology may (in a regulatory order, by permit modification, or in the permit renewal) require the facility to conduct additional effluent characterization
- If WET testing conducted for submittal with a permit application fails to meet the performance standards in WAC 173-205-020, Ecology will assume that effluent toxicity has increased. The City of College Place may demonstrate to Ecology that effluent toxicity has not increased by performing additional WET testing after the process or material changes have been made.

J. Groundwater quality limits

The groundwater quality standards (chapter 173-200 WAC) protect beneficial uses of groundwater. Permits issued by Ecology must not allow violations of those standards (WAC 173-200-100).

The City of College Place WWTP does not discharge wastewater to the ground. No permit limits are required to protect groundwater. However, the WWTP does irrigate crops.

The permit limits require nitrification and denitrification to be protective of groundwater and are more restrictive than the design criteria for municipal wastewater land treatment system requirements.

Monitoring wells, MW3 and MW4 indicate that groundwater is being protected. MW2 has nitrate concentration above the groundwater standards in winter which is atypical. Monitoring of nitrates, TDS and total coliform in the effluent is beneficial to reliably demonstrating that the effluent quality is protective of groundwater standards.

K. Comparison of effluent limits with the previous permit modified on December 7, 2005.

The following table is for discharge to Garrison Creek from November – April.

Table 12: Comparison of Previous and Proposed Effluent Limits; November – April

		Previous Effluent Limits: Outfall # 001 & 002		Proposed November –April Effluent Limits: Outfall # 001 & 002	
Parameter	**Basis of Limit**	**Average Monthly**	**Average Weekly**	**Average Monthly**	**Average Weekly**
Biochemical Oxygen Demand (5-day)	Technology	15 mg/L	23 mg/L	15 mg/L	23 mg/L
Total Suspended Solids	Technology	15 mg/L	23 mg/L	15 mg/L	23 mg/L

Parameter		**Weekly Geometric Mean Limit**	**Sample Maximum Limit**	**Weekly Geometric Mean Limit**	**Sample Maximum Limit**
Total Coliform Bacteria	Technology	23/100 mL	240/100 mL	23/100 mL	240/100 mL

Parameter		**Minimum**	**Maximum**	**Minimum**	**Maximum**
pH	Technology	6	9	6.5	8.5

Parameter		**Average Monthly**	**Maximum Daily**	**Average Monthly**	**Maximum Daily**
Total Ammonia (as NH_3-N	Water Quality	2.0 mg/L	3.0 mg/L	2.0 mg/L	3.0 mg/L
PCBs	Water Quality	NA	NA	NA	0.0011 gm/day

For Discharge to Irrigation System for May through October

The land application window is being expanded to allow for discharge to the irrigation system through the month of October. This is beyond the period when uptake of nutrients at agronomic rates would be anticipated.

The Irrigation and Crop Management Plan indicates that soil nitrogen in October is low so minimal impact is anticipated, but monthly groundwater monitoring will reveal any rising trends.

Table 13: Comparison of Previous and Proposed Effluent Limits; May – October

		Previous Effluent Limits: Outfall # 001 & 002		Proposed May – October Effluent Limits: Outfall # 001 & 002	
Parameter	**Basis of Limit**	**Average Monthly**	**Average Weekly**	**Average Monthly**	**Average Weekly**
Biochemical Oxygen Demand (5-day)	Technology	15 mg/L	23 mg/L	15 mg/L	23 mg/L
Total Suspended Solids	Technology	15 mg/L	23 mg/L	15 mg/L	23 mg/L
pH		Between 6 and 9		Between 6.5 and 8.5	
Parameter		**Weekly Geometric Mean Limit**	**Sample Maximum Limit**	**Weekly Geometric Mean Limit**	**Sample Maximum Limit**
Total Coliform Bacteria	Technology	23/100 mL	240/100 mL	23/100 mL	240/100 mL

Parameter		**Average Monthly**	**Maximum Daily**	**Average Monthly**	**Maximum Daily**
Temperature	Water Quality	--	20 °C	--	20.0 °C
Total Ammonia (as NH_3-N	Water Quality	2.0 mg/L	3.0 mg/L	2.0 mg/L	3.0 mg/L
PCBs	Water Quality	NA	NA	NA	0.0011 gm/day

Total net nitrogen and water applied to the irrigation lands shall not exceed the crop requirements as determined by the Permittee's Irrigation and Crop Management Plan, Condition S10.

IV. Monitoring Requirements

Ecology requires monitoring, recording, and reporting (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and that the discharge complies with the permit's effluent limits.

If a facility uses a contract laboratory to monitor wastewater, it must ensure that the laboratory uses the methods and meets or exceeds the method detection levels required by the permit. The permit describes when facilities may use alternative methods. It also describes what to do in certain situations when the laboratory encounters matrix effects.

When a facility uses an alternative method as allowed by the permit, it must report the test method, DL, and QL on the discharge monitoring report or in the required report.

A. Wastewater monitoring

The monitoring schedule is detailed in the proposed permit under Special Condition S.2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

The required monitoring frequency is consistent with agency guidance given in the current version of Ecology's *Permit Writer's Manual* (Publication Number 92-09) for an activated sludge wastewater treatment plant (sequencing batch reactor) with an average design flow of 2.0 MGD or less.

Ecology has included some additional monitoring of nutrients in the proposed permit to establish a baseline for this discharger. The Department will use this data for evaluation of the facility and for development of TMDL for dissolved oxygen. The data also aids in development of WLAs for nutrients.

In addition to requirements under 40 CFR 503, sludge Monitoring for quantity and quality aids in determination of the appropriate uses for the sludge. College place sludge management plan and Biosolids Permit #BA0020656 identify sludge monitoring requirements.

B. Receiving Water Monitoring

the proposed permit requires the City to develop a quality assurance plan and monitor the upstream and downstream receiving water quality for temperature and other parameters. The proposed permit also requires that the Permittee establish and maintain an in-stream flow monitoring gauge upstream of the Garrison Creek outfall in conjunction with the Walla Walla Basin Watershed Council. The Department will use the flow data to verify and evaluate the mixing zone dilution factors and water quality limits in the next permit cycle.

C. Lab accreditation

Ecology requires that facilities must use a laboratory registered or accredited under the provisions of chapter 173-50 WAC, Accreditation of Environmental Laboratories, to prepare all monitoring data (with the exception of certain parameters). Ecology accredited the laboratory at this facility for:

Table 14: Accredited Parameters

General Chemistry				
Parameter Name	**Analyte Code**	**Method Description**	**NELAC Code**	**Matrix***
Ammonia as N	1515	SM 18 4500-NH3 C	20023603	N
Biochemical Oxygen Demand	1530	SM 5210 B	20027401	N
Oxygen, Dissolved	1880	SM 4500-O G	20025405	N

General Chemistry				
Parameter Name	**Analyte Code**	**Method Description**	**NELAC Code**	**Matrix***
pH	1900	SM 4500-H	20022406	N
Residue – nonfilterable (TSS)	1960	SM 2540 D	20004802	N
Solids, Total Suspended		SM 2540 D		N
Turbidity		SM 2130 B		N

Microbiology				
Parameter Name	**Analyte Code**	**Method Description**	**NELAC Code**	**Matrix***
Fecal Coliforms		SM 9221 D/E, 9222		N
*Matrix Key: D = Drinking Water, N = non-potable water, S = Solids/chem materials A=Air				

D. Effluent limits which are near detection or quantitation levels

The water quality-based effluent concentration limits for total phosphorus are near the limits of current analytical methods to detect or accurately quantify.

The method detection level (MDL) also known as detection level (DL) is the minimum concentration of a pollutant that a laboratory can measure and report with a 99 percent confidence that its concentration is greater than zero (as determined by a specific laboratory method). The quantitation level (QL) is the level at which a laboratory can reliably report concentrations with a specified level of error. Estimated concentrations are the values between the DL and the QL. Ecology requires permitted facilities to report estimated concentrations. When reporting maximum daily effluent concentrations, Ecology requires the facility to report "less than X" where X is the required detection level if the measured effluent concentration falls below the detection level.

V. Other Permit Conditions

A. Reporting and record keeping

Ecology based Special Condition S3 on its authority to specify any appropriate reporting and record keeping requirements to prevent and control waste discharges (WAC 173-220-210).

B. Prevention of facility overloading

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the City of College Place to:

- Take the actions detailed in proposed permit Special Condition S.4.
- Design and construct expansions or modifications before the treatment plant reaches existing capacity.
- Report and correct conditions that could result in new or increased discharges of pollutants.

Special Condition S.4 restricts the amount of flow.

If a municipality intends to apply for Ecology-administered funding for the design or construction of a facility project, the plan must meet the standard of a "Facility Plan", as defined in WAC 173-98-030.

A complete "Facility Plan" includes all elements of an "Engineering Report" as identified in WAC 173-240-060 along with State Environmental Review Process (SERP) documentation to demonstrate compliance with 40 CFR 35.3140 and 40 CFR 35.3145, and a cost effectiveness analysis as required by WAC 173-98-730. The municipality should contact Ecology's regional office as early as practical before planning a project that may include Ecology-administered funding.

C. Operation and maintenance

The proposed permit contains Special Condition S.5 as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. Ecology included it to ensure proper operation and regular maintenance of equipment, and to ensure that the City of College Place takes adequate safeguards so that it uses constructed facilities to their optimum potential in terms of pollutant capture and treatment.

D. Pretreatment

Duty to enforce discharge prohibitions

This provision prohibits the publicly owned treatment works (POTW) from authorizing or permitting an industrial discharger to discharge certain types of waste into the sanitary sewer.

- The first section of the pretreatment requirements prohibits the POTW from accepting pollutants which causes "pass-through" or "interference". This general prohibition is from 40 CFR §403.5(a). **Appendix C** of this fact sheet defines these terms.
- The second section reinforces a number of specific state and federal pretreatment prohibitions found in WAC 173-216-060 and 40 CFR §403.5(b). These reinforce that the POTW may not accept certain wastes, which:
  a. Are prohibited due to dangerous waste rules.
  b. Are explosive or flammable.
  c. Have too high or low of a pH (too corrosive, acidic or basic).
  d. May cause a blockage such as grease, sand, rocks, or viscous materials.
  e. Are hot enough to cause a problem.
  f. Are of sufficient strength or volume to interfere with treatment.

g. Contain too much petroleum-based oils, mineral oil, or cutting fluid.

h. Create noxious or toxic gases at any point.

40 CFR Part 403 contains the regulatory basis for these prohibitions, with the exception of the pH provisions which are based on WAC 173-216-060.

- The third section of pretreatment conditions reflects state prohibitions on the POTW accepting certain types of discharges unless the discharge has received prior written authorization from Ecology. These discharges include:

  a. Cooling water in significant volumes.

  b. Stormwater and other direct inflow sources.

  c. Wastewaters significantly affecting system hydraulic loading, which do not require treatment.

Federal and state pretreatment program requirements

Ecology administers the Pretreatment Program under the terms of the addendum to the "Memorandum of Understanding between Washington Department of Ecology and the United States Environmental Protection Agency, Region 10" (1986) and 40 CFR, part 403. Under this delegation of authority, Ecology issues wastewater discharge permits for significant industrial users (SIUs) discharging to POTWs which have not been delegated authority to issue wastewater discharge permits. Ecology must approve, condition, or deny new discharges or a significant increase in the discharge for existing significant industrial users (SIUs) [40 CFR 403.8 (f)(1)(i) and(iii)].

Industrial dischargers must obtain a permit from Ecology before discharging waste to the City of College Place Wastewater Treatment Plant [WAC 173-216-110(5)].

Industries discharging wastewater that is similar in character to domestic wastewater do not require a permit.

Routine identification and reporting of industrial users

The permit requires non-delegated POTWs to take "continuous, routine measures to identify all existing, new, and proposed significant industrial users (SIUs) and potential significant industrial users (PSIUs)" discharging to their sewer system.

Examples of such routine measures include regular review of water and sewer billing records, business license and building permit applications, advertisements, and personal reconnaissance. System maintenance personnel should be trained on what to look for so they can identify and report new industrial dischargers in the course of performing their jobs. The POTW may not allow SIUs to discharge prior to receiving a permit, and must notify all industrial dischargers (significant or not) in writing of their responsibility to apply for a State Waste Discharge Permit. The POTW must send a copy of this notification to Ecology.

Requirements for performing an industrial user survey

This POTW has the potential to serve significant industrial or commercial users and must conduct an industrial user (IU) survey.

The purpose of the IU Survey is to identify all facilities that may be subject to pretreatment standards or requirements so that Ecology can take appropriate measures to control these discharges. The POTW should identify each such user, and require them to apply for a permit before allowing their discharge to the POTW to commence. For SIUs, the POTW must require they actually are issued a permit prior to accepting their discharge. The steps the POTW must document in their IU Survey submittal include:

1. The POTW must develop a master list of businesses that may be subject to pretreatment standards and requirements and show their disposition. This list must be based on several sources of information including business licenses, and water and sewer billing records.
2. The POTW must canvas all the potential sources, having them either complete a survey form or ruling them out by confirming they only generate domestic wastewater.
3. The POTW must develop a list of the SIUs and potential SIUs in all areas served by the POTW. The list must contain sufficient information on each to allow Ecology to decide which discharges merit further controls such as a state waste discharge permit.

Ecology describes the information needed in IU Survey submittals to allow Ecology to make permitting decision in the manual "Performing an Industrial User Survey". A properly completed an Industrial User Survey helps Ecology identify and control discharges that may otherwise harm the POTW including its collection system, processes, and receiving waters. Where surveys are incomplete, Ecology may take such enforcement as appropriate and/or require the POTW to develop a fully delegated pretreatment program.

The proposed permit requires College Place Wastewater Treatment Plant to conduct an industrial user survey to determine the extent of compliance of all industrial users of the sanitary sewer and wastewater treatment facility with federal pretreatment regulations [40 CFR Part 403 and Sections 307(b) and 308 of the Clean Water Act)], with state regulations (chapter 90.48 RCW and chapter 173-216 WAC), and with local ordinances.

E. Solid wastes

To prevent water quality problems the facility is required in permit Special Condition S7 to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and state water quality standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503, and by Ecology under chapter 70.95J RCW, chapter 173-308 WAC "Biosolids Management," and chapter 173-350 WAC "Solid Waste Handling Standards." The disposal of other solid waste is under the jurisdiction of the Walla Walla County Health Department.

Requirements for monitoring sewage sludge and record keeping are included in this permit. Ecology will use this information, required under 40 CFR 503, to develop or update local limits.

F. Toxic Management Plan

As described in III.G Human Health, the proposed permit requires an action plan for identifying and controlling sources of toxics. Known wastewater treatment technologies can reduce effluent PCBs adequately to meet current water quality standards for PCBs.

However, removed PCBs transfer from water to the biosolids or other residual solids which affects the possible uses for the solids. As a result, removal at the source controlling the PCBs and other toxics prior to entering the wastewater collections system becomes the best option for elimination of PCBs. The Departments focus on source identification control and elimination for PCB may be found on the website: http://srrttf.org/. The December 2011 EPA Handbook for PCB TMDL refers to the Plan as a "Pollutant Reduction Plan," or PDP.

The Handbook gives some brief guidance on a PDP and a couple descriptions from other areas of the country.

- The Toxics Management Plan implements a narrative effluent limit for PCBs. As such the Plan has two goals.
    - To reduce toxicant influent loadings, including PCBs, to Garrison Creek and the Walla Walla River watershed to the maximum extent practicable realizing statistically significant reductions in the influent concentration of toxicants to the College Place Wastewater Treatment Plant over the next eight years.
    - Reduce PCBs in the effluent to the to meet the TMDL wasteload allocation so that in time the effluent does not contribute to PCBs in Garrison Creek and the Walla Walla River watershed exceeding applicable water quality standards.
- A Toxics Management Report shall be prepared by the City and submitted to Ecology on an annual basis for review and evaluation of the toxics management effort. The report must provide a review of actions taken and address specific activities planned for PCB reduction in the subsequent year of operation. The report must be reviewed and approved by Ecology.

G. Compliance Schedule

The proposed permit includes a compliance schedule for the College Place Wastewater Treatment Facility. The first compliance schedule details actions that the facility should complete in order to come into compliance with the pH, DO and PCB TMDLs over two permit cycles. The compliance schedule also requires receiving water body monitoring. Receiving water body monitoring requirements included with this proposed permit will assist in developing the WQBELs for the next permit cycle.

H. General conditions

Ecology bases the standardized General Conditions on state and federal law and regulations. They are included in all individual domestic wastewater NPDES permits issued by Ecology.

VI. Permit Issuance Procedures

A. Permit modifications

Ecology may modify this permit to impose numerical limits, if necessary to comply with water quality standards for surface waters, with sediment quality standards, or with water quality standards for groundwaters, based on new information from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

Ecology may also modify this permit to comply with new or amended state or federal regulations.

B. Proposed permit issuance

This proposed permit meets all statutory requirements for Ecology to authorize a wastewater discharge. The permit includes limits and conditions to protect human health and aquatic life, and the beneficial uses of waters of the state of Washington. Ecology proposes to issue this permit for a term of five (5) years.

VII. References for Text and Appendices

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. *Technical Support Document for Water Quality-based Toxics Control*. EPA/505/2-90-001.

1988. *Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling*. USEPA Office of Water, Washington, D.C.

1985. *Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water*. EPA/600/6-85/002a.

1983. *Water Quality Standards Handbook.* USEPA Office of Water, Washington, D.C.

Tsivoglou, E.C., and J.R. Wallace.

1972. *Characterization of Stream Reaeration Capacity*. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

December 2011. *Permit Writer's Manual*. Publication Number 92-109 (https://fortress.wa.gov/ecy/publications/SummaryPages/92109.html)

Laws and Regulations (http://www.ecy.wa.gov/laws-rules/index.html)

Permit and Wastewater Related Information (http://www.ecy.wa.gov/programs/wq/permits/guidance.html)

Water Pollution Control Federation.

1976. *Chlorination of Wastewater*.

Wright, R.M., and A.J. McDonnell.

1979. *In-stream Deoxygenation Rate Prediction*. Journal Environmental Engineering Division, ASCE. 105(EE2). (Cited in EPA 1985 op.cit.)

Appendix A - Public Involvement Information

Ecology proposes to reissue a permit to the City of College Place Wastewater Treatment Plant. The permit includes wastewater discharge limits and other conditions. This fact sheet describes the facility and Ecology's reasons for requiring permit conditions.

Ecology will place a Public Notice of Draft on June 17, 2013 in the Walla Walla Union Bulletin to inform the public and to invite comment on the proposed draft National Pollutant Discharge Elimination System Permit and Fact Sheet. A second Public Notice of Draft was placed on December 12, 2013.

The notice:

- Tells where copies of the draft permit and fact sheet are available for public evaluation (a local public library, the closest regional or field office, posted on our website).
- Offers to provide the documents in an alternate format to accommodate special needs.
- Asks people to tell us how well the proposed permit would protect the receiving water.
- Invites people to suggest fairer conditions, limits, and requirements for the permit.
- Invites comments on Ecology's determination of compliance with antidegradation rules.
- Urges people to submit their comments, in writing, before the end of the comment period.
- Tells how to request a public hearing about the proposed NPDES permit.

Ecology has published a document entitled *Frequently Asked Questions about Effective Public Commenting*, which is available on our website at https://fortress.wa.gov/ecy/publications/SummaryPages/0307023.html.

You may obtain further information from Ecology by telephone at (509) 329-3519 or by writing to the address listed below.

Ms. Ellie Key
Department of Ecology
Water Quality Program
Eastern Regional Office
4601 North Monroe Street
Spokane, WA 99205-1295

The primary author of this permit and fact sheet is Ellie Key.

Appendix B - Your Right to Appeal

You have a right to appeal this permit to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of the final permit. The appeal process is governed by chapter 43.21B RCW and chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2) (see glossary).

To appeal you must do the following within 30 days of the date of receipt of this permit:

- File your appeal and a copy of this permit with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this permit on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in chapter 43.21B RCW and chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board 1111 Israel RD SW STE 301 Tumwater, WA 98501	**Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

Appendix C - Glossary

1-DMax or 1-day maximum temperature -- The highest water temperature reached on any given day. This measure can be obtained using calibrated maximum/minimum thermometers or continuous monitoring probes having sampling intervals of thirty minutes or less.

7-DADMax or 7-day average of the daily maximum temperatures -- The arithmetic average of seven consecutive measures of daily maximum temperatures. The 7-DADMax for any individual day is calculated by averaging that day's daily maximum temperature with the daily maximum temperatures of the three days prior and the three days after that date.

Acute toxicity -- The lethal effect of a compound on an organism that occurs in a short time period, usually 48 to 96 hours.

AKART -- The acronym for "all known, available, and reasonable methods of prevention, control and treatment." AKART is a technology-based approach to limiting pollutants from wastewater discharges, which requires an engineering judgment and an economic judgment. AKART must be applied to all wastes and contaminants prior to entry into waters of the state in accordance with RCW 90.48.010 and 520, WAC 173-200-030(2)(c)(ii), and WAC 173-216-110(1)(a).

Alternate point of compliance -- An alternative location in the groundwater from the point of compliance where compliance with the groundwater standards is measured. It may be established in the groundwater at locations some distance from the discharge source, up to, but not exceeding the property boundary and is determined on a site specific basis following an AKART analysis. An "early warning value" must be used when an alternate point is established. An alternate point of compliance must be determined and approved in accordance with WAC 173-200-060(2).

Ambient water quality -- The existing environmental condition of the water in a receiving water body.

Ammonia -- Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Annual average design flow (AADF) -- average of the daily flow volumes anticipated to occur over a calendar year.

Average monthly (intermittent) discharge limit -- The average of the measured values obtained over a calendar months time taking into account zero discharge days.

Average monthly discharge limit -- The average of the measured values obtained over a calendar month's time.

Background water quality -- The concentrations of chemical, physical, biological or radiological constituents or other characteristics in or of groundwater at a particular point in time upgradient of an activity that has not been affected by that activity, [WAC 173-200-020(3)].

Background water quality for any parameter is statistically defined as the 95% upper tolerance interval with a 95% confidence based on at least eight hydraulically upgradient water quality samples. The eight samples are collected over a period of at least one year, with no more than one sample collected during any month in a single calendar year.

Best management practices (BMPs) -- Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the state. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD5 -- Determining the five-day Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD5 is used in modeling to measure the reduction of dissolved oxygen in receiving waters after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD_5 is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass -- The intentional diversion of waste streams from any portion of a treatment facility.

Categorical pretreatment standards -- National pretreatment standards specifying quantities or concentrations of pollutants or pollutant properties, which may be discharged to a POTW by existing or new industrial users in specific industrial subcategories.

Chlorine -- A chemical used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic toxicity -- The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean water act (CWA) -- The federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Compliance inspection-without sampling -- A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance inspection-with sampling -- A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations. In addition it includes as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Ecology may conduct additional sampling.

Composite sample -- A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples.

May be "time-composite" (collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots).

Construction activity -- Clearing, grading, excavation, and any other activity, which disturbs the surface of the land. Such activities may include road building; construction of residential houses, office buildings, or industrial buildings; and demolition activity.

Continuous monitoring -- Uninterrupted, unless otherwise noted in the permit.

Critical condition -- The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Date of receipt – This is defined in RCW 43.21B.001(2) as five business days after the date of mailing; or the date of actual receipt, when the actual receipt date can be proven by a preponderance of the evidence. The recipient's sworn affidavit or declaration indicating the date of receipt, which is unchallenged by the agency, constitutes sufficient evidence of actual receipt. The date of actual receipt, however, may not exceed forty-five days from the date of mailing.

Detection limit -- The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the pollutant concentration is above zero and is determined from analysis of a sample in a given matrix containing the pollutant.

Dilution factor (DF) -- A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the percent effluent fraction, for example, a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Distribution uniformity -- The uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field expressed as a percent relating to the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

Early warning value -- The concentration of a pollutant set in accordance with WAC 173-200-070 that is a percentage of an enforcement limit. It may be established in the effluent, groundwater, surface water, the vadose zone or within the treatment process. This value acts as a trigger to detect and respond to increasing contaminant concentrations prior to the degradation of a beneficial use.

Enforcement limit -- The concentration assigned to a contaminant in the groundwater at the point of compliance for the purpose of regulation, [WAC 173-200-020(11)]. This limit assures that a groundwater criterion will not be exceeded and that background water quality will be protected.

Engineering report -- A document that thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report must contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal coliform bacteria -- Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans.

Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab sample -- A single sample or measurement taken at a specific time or over as short a period of time as is feasible.

Groundwater -- Water in a saturated zone or stratum beneath the surface of land or below a surface water body.

Industrial user -- A discharger of wastewater to the sanitary sewer that is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial wastewater -- Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business; from the development of any natural resource; or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

- Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

- Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Local limits -- Specific prohibitions or limits on pollutants or pollutant parameters developed by a POTW.

Major facility -- A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum daily discharge limit -- The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Maximum day design flow (MDDF) -- The largest volume of flow anticipated to occur during a one-day period, expressed as a daily average.

Maximum month design flow (MMDF) -- The largest volume of flow anticipated to occur during a continuous 30-day period, expressed as a daily average.

Maximum week design flow (MWDF) -- The largest volume of flow anticipated to occur during a continuous 7-day period, expressed as a daily average.

Method detection level (MDL) -- See Method Detection Level.

Minor facility -- A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing zone -- An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The permit specifies the area of the authorized mixing zone that Ecology defines following procedures outlined in state regulations (chapter 173-201A WAC).

National pollutant discharge elimination system (NPDES) -- The NPDES (Section 402 of the Clean Water Act) is the federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the state of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both state and federal laws.

pH -- The pH of a liquid measures its acidity or alkalinity. It is the negative logarithm of the hydrogen ion concentration. A pH of 7 is defined as neutral and large variations above or below this value are considered harmful to most aquatic life.

Pass-through -- A discharge which exits the POTW into waters of the State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

Peak hour design flow (PHDF) -- The largest volume of flow anticipated to occur during a one-hour period, expressed as a daily or hourly average.

Peak instantaneous design flow (PIDF) -- The maximum anticipated instantaneous flow.

Point of compliance -- The location in the groundwater where the enforcement limit must not be exceeded and a facility must comply with the Ground Water Quality Standards. Ecology determines this limit on a site-specific basis. Ecology locates the point of compliance in the groundwater as near and directly downgradient from the pollutant source as technically, hydrogeologically, and geographically feasible, unless it approves an alternative point of compliance.

Potential significant industrial user (PSIU) -- A potential significant industrial user is defined as an Industrial User that does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;

b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).
Ecology may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation level (QL) -- Also known as Minimum Level of Quantitation (ML) – The lowest level at which the entire analytical system must give a recognizable signal and acceptable calibration point for the analyte. It is equivalent to the concentration of the lowest calibration standard, assuming that the lab has used all method-specified sample weights, volumes, and cleanup procedures. The QL is calculated by multiplying the MDL by 3.18 and rounding the result to the number nearest to (1,2,or 5) x 10^n, where n is an integer. (64 FR 30417).
ALSO GIVEN AS:
The smallest detectable concentration of analyte greater than the Detection Limit (DL) where the accuracy (precision & bias) achieves the objectives of the intended purpose. (Report of the Federal Advisory Committee on Detection and Quantitation Approaches and Uses in Clean Water Act Programs Submitted to the US Environmental Protection Agency December 2007).

Reasonable potential -- A reasonable potential to cause a water quality violation, or loss of sensitive and/or important habitat.

Responsible corporate officer -- A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

Significant industrial user (SIU) --

1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;

2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement [in accordance with 40 CFR 403.8(f)(6)].

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

Slug discharge -- Any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge to the POTW. This may include any pollutant released at a flow rate that may cause interference or pass through with the POTW or in any way violate the permit conditions or the POTW's regulations and local limits.

Soil scientist -- An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy, crops or soils, and have 5,3,or 1 years, respectively, of professional experience working in the area of agronomy, crops, or soils.

Solid waste -- All putrescible and non-putrescible solid and semisolid wastes including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, sewage sludge, demolition and construction wastes, abandoned vehicles or parts thereof, contaminated soils and contaminated dredged material, and recyclable materials.

Soluble BOD_5 -- Determining the soluble fraction of Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of soluble organic material present in an effluent that is utilized by bacteria. Although the soluble BOD_5 test is not specifically described in Standard Methods, filtering the raw sample through at least a 1.2 um filter prior to running the standard BOD_5 test is sufficient to remove the particulate organic fraction.

State waters -- Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based effluent limit -- A permit limit based on the ability of a treatment method to reduce the pollutant.

Total coliform bacteria -- A microbiological test, which detects and enumerates the total coliform group of bacteria in water samples.

Total dissolved solids--That portion of total solids in water or wastewater that passes through a specific filter.

Total maximum daily load (TMDL) -- A determination of the amount of pollutant that a water body can receive and still meet water quality standards.

Total suspended solids (TSS) -- Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation.

Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna.

Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset -- An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limits because of factors beyond the reasonable control of the Permittee.

An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water quality-based effluent limit -- A limit imposed on the concentration of an effluent parameter to prevent the concentration of that parameter from exceeding its water quality criterion after discharge into receiving waters.

Appendix D - Technical Calculations

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on Ecology's homepage at http://www.ecy.wa.gov/programs/eap/pwspread/pwspread.html.

Dilution Factor Calculations and Receiving Water Critical Conditions

Step 1: Enter Waterbody Type

Water Body Type	Freshwater

Facility Name	College Place
Receiving Water	Garrison Creek, May - Oct

Step 2: Enter Dilution Factors -OR- Calculate DFs by entering Facility/Receiving Water Flow Data

Do you want to enter dilution factors instead of flows?	No

	Annual Average	Max Monthly Average	Daily Max
Facility Flow, MGD	1.5	16.5	2
Facility Flow, cfs (calculated)	2.32	25.53	3.09

	Condition	Receiving Water Flow, cfs	Allowable % of river flow	Dilution Factors
Aquatic Life - Acute	7Q10	0.64	0.025	1
Aquatic Life - Chronic	7Q10	0.64	0.25	1
HH-Non-Carcinogen	30Q5	1.14	0.25	1
HH-Carcinogen	Harmonic Mean	1.92	0.25	1
Whole river at 7Q10	7Q10	0.64	1	1

Step 3: Enter Critical Data

	Effluent	Receiving Water
Temp, °C	19.8	17
pH, s.u.	8.7	7.5
Alkalinity, mg/L as CaCO3	163	61.8
Hardness, mg/L CaCO3	87	58.6
Salinity, psu		
Receiving water TSS, mg/L (leave blank if unknown)		
If TSS is annual data, enter 'A'; if from critical period, enter 'S'; If no TSS, leave blank		

Step 4: Specifiy if using 'Mixed' values for hardness, temperature, and pH

	Use 'Mixed Hardness' (Y/N)	Use 'Mixed Max Temp' (Y/N)	Use 'Mixed pH (Y/N)
	Y	Y	Y
Acute Zone Boundary	86.9	19.8	8.7
Chronic Zone Boundary	86.8	19.8	8.7
Whole river at 7Q10	86.3	19.7	8.6

Reasonable Potential Calculation

Facility	College Place
Water Body Type	Freshwater
Rec. Water Hardness	Acute=86.9, Chronic=86.8 mg/L

Dilution Factors:	Acute	Chronic
Aquatic Life	1	1
Human Health Carcinogenic		1
Human Health Non-Carcinogenic		1

Pollutant, CAS No. & NPDES Application Ref. No.			AMMONIA, Criteria as Total NH3										
Effluent Data	# of Samples (n)		23										
	Coeff of Variation (Cv)		0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Effluent Concentration, ug/L (Max. or 95th Percentile)		1,720										
	Calculated 50th percentile Effluent Conc. (when n>10)												
Receiving Water Data	90th Percentile Conc., ug/L		100		0	0	0	0	0	0	0	0	0
	Geo Mean, ug/L			0.1					0	0		0	0
Water Quality Criteria	Aquatic Life Criteria, ug/L	Acute	1,508										
		Chronic	220										
	WQ Criteria for Protection of Human Health, ug/L		-										
	Metal Criteria Translator, decimal	Acute	-										
		Chronic	-										
	Carcinogen?		N										

Aquatic Life Reasonable Potential

Effluent percentile value			0.950
s	$s^2=\ln(CV^2+1)$		0.555
Pn	$Pn=(1\text{-confidence level})^{1/n}$		0.878
Multiplier			1.00
Max concentration (ug/L) at edge of...		Acute	1,712
		Chronic	1,710
Reasonable Potential? Limit Required?			**YES**

Aquatic Life Limit Calculation

# of Compliance Samples Expected per month		4
LTA Coeff. Var. (CV), decimal		0.6
Permit Limit Coeff. Var. (CV). decimal		0.6
Waste Load Allocations, ug/L	Acute	1515.15
	Chronic	220.433
Long Term Averages, ug/L	Acute	486.488
	Chronic	116.263
Limiting LTA, ug/L		116.263
Metal Translator or 1?		1.00
Average Monthly Limit (AML), ug/L		**180.5**
Maximum Daily Limit (MDL), ug/L		**362.1**

Human Health Reasonable Potential

s	$s^2=\ln(CV^2+1)$
Pn	$Pn=(1\text{-confidence level})1/n$
Multiplier	
Dilution Factor	
Max Conc. at edge of Chronic Zone, ug/L	
Reasonable Potential? Limit Required?	

Human Health Limit Calculation

# of Compliance Samples Expected per month	
Average Monthly Effluent Limit, ug/L	
Maximum Daily Effluent Limit, ug/L	

Comments/Notes:

References: WAC 173-201A,

Technical Support Document for Water Quality-based Toxics Control, US EPA, March 1991, EPA/505/2-90-001, pages 56/99

Simple Mixing:

Ecology uses simple mixing calculations to assess the impacts of certain conservative pollutants, such as the expected increase in fecal coliform bacteria at the edge of the chronic mixing zone boundary. Simple mixing uses a mass balance approach to proportionally distribute a pollutant load from a discharge into the authorized mixing zone. The approach assumes no decay or generation of the pollutant of concern within the mixing zone. The predicted concentration at the edge of a mixing zone (MC) is based on the following calculation:

$$MC = [EC + (AC \times DF)]/(1 + DF)$$

where:

EC = Effluent Concentration

AC = Ambient Concentration

DF = Dilution Factor

Reasonable Potential Analysis:

The spreadsheets REASPOT.XLS, and LIMIT.XLS in Ecology's TSDCALC Workbook determine reasonable potential (to violate the aquatic life water quality standards) and calculate effluent limits. The spreadsheet HUMAN-H.XLS determines reasonable potential and calculates effluent limits for human health pollutants. The process and formulas for determining reasonable potential and effluent limits in these spreadsheets are taken directly from the *Technical Support Document for Water Quality-based Toxics Control*, (EPA 505/2-90-001). The adjustment for autocorrelation is from EPA (1996a), and EPA (1996b).

Calculation of Water Quality-Based Effluent Limits:

Water quality-based effluent limits are calculated by the two-value wasteload allocation process as described on page 100 of the TSD (EPA, 1991) and shown below.

1. Calculate the acute wasteload allocation WLA_a by multiplying the acute criteria by the acute dilution factor and subtracting the background factor. Calculate the chronic wasteload allocation (WLA_c) by multiplying the chronic criteria by the chronic dilution factor and subtracting the background factor.

$$WLA_a = (\text{acute criteria} \times DF_a) - [(\text{background conc.} \times (DF_a - 1)]$$

$$WLA_c = (\text{chronic criteria} \times DF_c) - [(\text{background conc.} \times (DF_c - 1)]$$

where: DF_a = Acute Dilution Factor

DF_c = Chronic Dilution Factor

2. Calculate the long term averages (LTA_a and LTA_c) which will comply with the wasteload allocations WLA_a and WLA_c.

$LTA_a = WLA_a \times e^{[0.5\sigma^2 - z\sigma]}$ where: $\sigma^2 = \ln[CV^2 + 1]$

$z = 2.326$

CV = coefficient of variation = std. dev./mean

$LTA_c = WLA_c \times e^{[0.5\sigma^2 - z\sigma]}$ where: $\sigma^2 = \ln[(CV^2 \div 4) + 1]$

$z = 2.326$

3. Use the smallest LTA of the LTA_a or LTA_c to calculate the maximum daily effluent limit and the monthly average effluent limit.

Maximum Daily Limit = MDL

$MDL = LTA x e^{(Z\sigma - 0.5\sigma^2)}$ where: $\sigma^2 = \ln[CV^2 + 1]$

$z = 2.326$ (99th percentile occurrence

LTA = Limiting long term average

Average Monthly Limit = AML

$AML = LTA x\ e^{(Z\sigma_n - 0.5\sigma_n^2)}$ where: $\sigma^2 = \ln[(CV^2 \div n) + 1]$

n = number of samples/month

$z = 1.645$ (95^{th} % occurrence probability)

LTA = Limiting long term average

Appendix E - Response to Comments – Factual Review

College Place was given 15 days to review the draft permit and fact sheet for factual accuracy. Ecology received comments during the factual comment period; May 13, 2013 – May 28, 2013. Specific comments and Ecology's responses are attached to this fact sheet as **Attachment E-1**; the original comment documents are also included in the attachment.

Appendix F - Response to Comments

1st Public Notice

Ecology placed a Public Notice of Draft on June 17, 2013 in the Walla Walla Union Bulletin. Ecology received comments on the draft documents during the review period; June 17, 2013 through August 15, 2013. Specific comments and Ecology's responses are attached to this fact sheet as **Attachment F-1**; the original comment documents are also included in the attachment.

2nd Public Notice

Ecology placed another Public Notice of Draft on December 10, 2013 in the Walla Walla Union Bulletin. Ecology received comments on the draft documents during the review period; December 12, 2013 through January 13, 2014. Specific comments and Ecology's responses are attached to this fact sheet as **Attachment F-1**; the original comment documents are also included in the attachment.