

Fact Sheet for Reclaimed Water Permit ST0005278

City of Quincy Water Reclamation Facility

Purpose of this fact sheet

This fact sheet explains and documents the decisions the Department of Ecology (Ecology) made in drafting the proposed reclaimed water permit for the Quincy Water Reclamation Facility in Grant County. The proposed permit authorizes Quincy to produce reclaimed water, derived from highly treated domestic wastewater, and to distribute the product water for the primary use of groundwater recharge.

State law requires the owner and operator of a reclaimed water facility to obtain a permit before beneficially using the product water.

Ecology makes the draft permit and fact sheet available for public review and comment at least thirty (30) days before it issues the final permit to the facility operator. Copies of the fact sheet and draft permit for the City of Quincy, reclaimed water permit ST0005278, are available for public review and comment from October 28, 2015 until the close of business on November 27, 2015. For more details on preparing and filing comments about these documents, please see **Appendix A - Public Involvement Information**.

Quincy reviewed the draft permit and fact sheet for factual accuracy. Ecology corrected any errors or omissions regarding the facility's location, history, reclaimed water production, 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 our responses to them. Ecology will include our summary and responses to comments to this fact sheet as **Appendix F - Response to Comments**. Ecology will publish this fact sheet and include this appendix when issuing the final permit. Ecology will not revise the rest of the fact sheet, but the full document including all appendices will become part of the legal history contained in the facility's permit file.

Summary

Quincy owns a Water Reclamation Facility (WRF) for treatment of municipal wastewater. The city has a contract with American Waters to operate the facility. The current reclamation facility was constructed in 2001 and brought online at the beginning of 2002.

In January 2013, Ecology approved the city's pretreatment program with specific requirements in Administrative Order 9665. This permit contains the pretreatment requirements for the the WRF. The city permits and regulates industrial dischargers to both the WRF and their industrial publicly owned treatment facility. Both facilities are operated and maintained through a contract operator, American Waters.

The WRF produces Class A reclaimed water for groundwater recharge and other beneficial uses. The proposed permit provides conditions to help ensure that the facility adequately and reliably produces reclaimed water for the designated uses in a manner that protects human health and the environment.

The wastewater and reclaimed water quality limits in the proposed permit remain essentially the same as in the current permit. An Ecology hydrogeologist reviewed the groundwater quality monitoring results. The proposed permit reduces the sampling parameters and frequency based on their recommendations.

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I. Introduction

A. Reclaimed Water Projects and Permits

Washington State's reclaimed water permits are generally broader and more complex than typical state waste discharge permits. This fact sheet provides a general description of reclaimed water projects and permitting. **Appendix C** provides a glossary of terms used for reclaimed water and typical state waste discharge projects.

Reclaimed water provides a new water supply derived from highly treated domestic wastewater. The reclaimed water produced can be used for one or more beneficial uses. Washington State has defined four classes of reclaimed water: Class A, B, C and D. Class A reclaimed water provides the broadest range of reuse opportunities. This class of reclaimed water requires the highest level of treatment and the most stringent water quality limits. Reclaimed water production requires treatment processes and reliability safeguards that generally go beyond conventional wastewater treatment processes. This ensures the reliability of product water quality and quantity and protects public health and the environment.

Any entity proposing to generate reclaimed water must obtain a state reclaimed water permit before using the product water. A reclaimed water permit is a comprehensive permit that integrates the requirements of Ecology's Water Quality Program and Water Resources Program as well as requirements of the Department of Health (Health). The permit defines the water quality requirements based on the intended beneficial uses and the associated reliability requirements. Reclaimed water permits govern the produced water quality as well as the rate, location, and purpose of reuse. The permit includes additional provisions to protect public health and the environment.

In circumstances where a facility produces reclaimed water for beneficial use and plans at times to discharge wastewater to waters of the state, the permit will include appropriate requirements for conventional wastewater disposal. Ecology combines the permits to streamline the permitting process. The permit will include both the reclaimed water and State Waste Discharge Permit (SWDP) or National Pollutant Discharge Elimination System (NPDES) permit requirements depending on whether the system will discharge to groundwater or surface water respectively.

In accordance with state statute, the owner of the permitted facility has the exclusive right to use, distribute, store, and recover the reclaimed water generated by the facility as long as the permittee meets the statutory requirements. Washington State grants the exclusive right to reuse reclaimed water through the issuance of a reclaimed water permit. The Reclaimed Water Use Act (chapter 90.46 Revised Code of Washington, or RCW) generally exempts the owner from the sections of the state water code that require application for a water rights permit.

The Reclaimed Water Use Act also prohibits water reclamation facilities from impairing existing downstream water rights unless mitigation or compensation is agreed to by and provided to the holder(s) of the water right. To implement this requirement, Ecology requires the facility to conduct an impairment analysis and obtain approval from Ecology's Water Resources Program prior to issuing a reclaimed water permit.

The purpose of the impairment analysis is to evaluate whether existing water rights will be impaired when the reclaimed water facility decreases or eliminates its existing discharge of wastewater in order to reclaim the water for beneficial uses. If the analysis concludes mitigation is required, the reclaimed water permit will include specific permit conditions to implement the requirements.

B. Permit Regulatory Authority

The Reclaimed Water Use Act authorizes Ecology to issue and enforce a single comprehensive Reclaimed Water Permit for the treatment and beneficial use of reclaimed water. Ecology issues the permit under the authority of the Reclaimed Water Act and, as applicable, the Water Pollution Control law (chapter 90.48 RCW), through its Water Quality Program. The Water Quality Program coordinates with Ecology's Water Resources Program and the Department of Health to develop the permit.

The provisions of the Reclaimed Water Use Act determine how the state regulates reclaimed water projects. The Reclaimed Water Use Act required the state to develop water reclamation and reuse standards for the beneficial use of reclaimed water. Ecology and Health collaborated to develop the Water Reclamation and Reuse Standards (WRRS) and completed them in 1997. The WRRS define "adequate and reliable treatment" (ART) requirements that facilities must meet at all times for various uses of the reclaimed water. The ART requirements are in addition to and generally more stringent than the AKART requirements for most conventional wastewater treatment facilities. Ecology may use its discretion in collaboration with Health to modify the requirements of the WRRS based on unique facility characteristics and best professional judgment.

The Reclaimed Water Program has adopted the state waste discharge program procedures of Ecology's Water Quality Program as the basis for preparing and issuing reclaimed water permits. The legislature defined Ecology's authority and obligations for the wastewater discharge permit program in the Water Pollution Control law. Ecology uses its authority under chapters 90.46 RCW and 90.48 RCW to review, approve, permit and inspect water reclamation and reuse facilities. Ecology uses the following to develop a Reclaimed Water Permit:

1. 1997 Water Reclamation and Reuse Standards (pursuant to RCW 90.46)
2. State waste discharge program (chapter 173-216 WAC)
3. Water quality criteria for groundwaters (chapter 173-200 WAC)
4. Discharge standards and effluent limits for domestic wastewater facilities (chapter 173-221 WAC)
5. Submission of plans and reports for construction of wastewater facilities (chapter 173-240 WAC)

These regulations and standards help define the basis for limits and other requirements that the permit may impose.

C. Public Role in the Permit

In response to a complete and accepted permit application, Ecology prepares a draft permit and accompanying fact sheet. Ecology typically makes these documents available for public review and comment before final issuance. When a facility will not increase the volume of or change the characteristics of the reclaimed water it produces under its existing permit, Ecology may choose not to issue a public notice (WAC 173-216-090[5]).

When Ecology issues the public notice, it tells people where they can read the draft permit and where to send their comments during a period of thirty days. After the public comment period ends, Ecology may make changes to the draft reclaimed water permit in response to comments. Ecology will address the comments and summarize its responses and any changes to the permit in **Appendix F**.

See **Appendix A - Public Involvement Information** for more detail about the public notice and comment procedures and for contact information for inquiring about these procedures.

II. Background Information

Table 1: General Facility Information

| Facility Information | |
|---|--|
| Applicant | City of Quincy |
| Facility Name and Address | Quincy Water Reclamation Facility 16749 Road 9 NW, Quincy, WA 98848 |
| Contact at Facility | Jami Favor, Facility Manager (509) 787-2423 |
| Responsible Official | Jim Hemberry, Mayor P.O. Box 338, Quincy, WA 98848 (509) 797-3053 |
| Type of Treatment | Reclaimed Water: sequencing batch reactors equalization basin, coagulation, filtration, and ultraviolet disinfection |
| Beneficial Use | Groundwater recharge/irrigation |
| Facility Location - see Figure 1 (NAD83/WGS84 reference datum) | Latitude: 47.215278 Longitude: -119.843056 |
| Location of Groundwater Recharge Area (center) | Latitude: 47.215278 Longitude: -119.843056 |
| Permit Status | |
| Application Submittal Date | May 18, 2011 |

| | |
|---|------------------|
| Date of Ecology Acceptance of Application | October 25, 2011 |
| Inspection Status | |
| Date of Last Inspection | October 30, 2013 |

Figure 1: Quincy Water Reclamation Facility Location Map

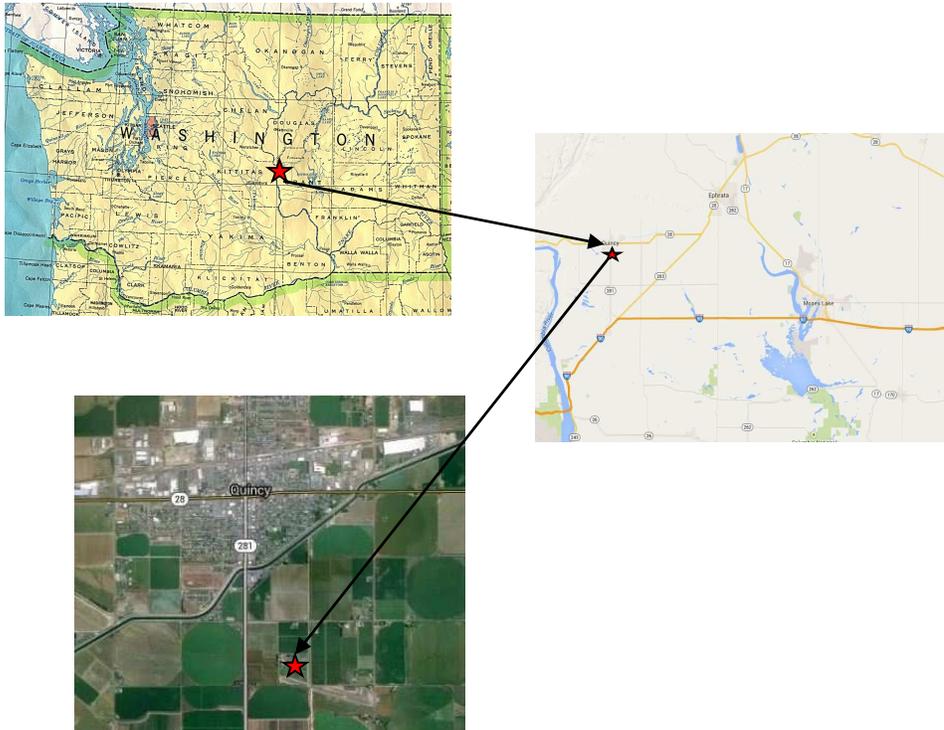
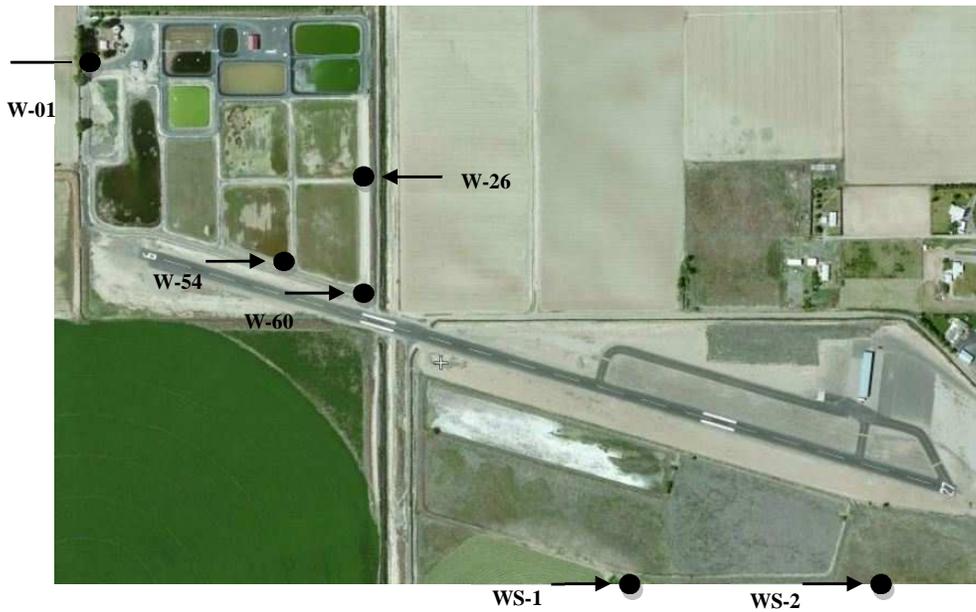


Figure 2: Quincy Water Reclamation Facility Plant Map



Figure 3: Quincy Water Reclamation Well Location Map (arrows do not denote direction of flow)



A. Facility description

History

Quincy is located in Grant County in central Washington, in the heart of the Columbia Basin (Figure 1). Founded in 1900, the city officially incorporated in 1907. Quincy currently has a population of 7,000 according to the most recent estimate from the Washington State Office of Financial Management.

Quincy has a large economic base provided by agriculture related industries. Over 200,000 acres of irrigated land are under production. They are also home to several large food processing plants and computer data centers. The area has an average annual rainfall of about 8 inches per year.

In 1940, Quincy constructed a collection system and wastewater treatment plant (WWTP) to provide sewer service for the community. The first WWTP included a communitor and a single Imhof tank with a capacity of 0.125 MGD. Treated effluent was applied to approximately 17 acres of land at the present recharge basin site (see Figure 2).

The plant was expanded in 1954 with the addition of headworks, primary clarifier, sludge pump station, and operations building. Further improvements in 1958 included a new headworks, aerated grit chamber, two facultative lagoons, and an anaerobic primary digester.

In 1987, the city completed upgrades to the existing plant that included a new headworks with a manual bar screen, influent pump station, flow measurement/splitter box, two clay-lined sediment ponds, and a blower building. The existing 17 acre land application site was cleared, graded and tilled prior to construction berms to create six separate infiltration basins totaling 15.2 acres. A 35 acre site located south of the Quincy Airport was diked to provide approximately 58 acre feet of winter storage capacity. Distribution piping and valving was installed in addition to a pipe to allow effluent to be diverted to the winter storage site.

In November 1999, the city advertised for and received bids for a project to Design, Build, Finance and Operate (DBFO) its municipal and industrial wastewater treatment facilities.

The city entered into a Service Agreement (Privatization Contract) with Earth Tech, Inc. in August 2000 to provide the DBFO services. The Service Agreement required Earth Tech to complete the Design and Build (DB) of the new Water Reclamation Facility and to meet a construction completion date of December 1, 2001 and a startup date of February 1, 2002.

The selected alternative was a Sequencing Batch Reactor (SBR) for treatment. Under this alternative, the SBRs were constructed in the existing north lagoon. This lagoon was modified by constructing a reinforced concrete wall to divide the lagoon into two basins. The wall has a walkway on top to provide access to decanters, waste activated sludge (WAS) pumps and level sensors. The basins were lined with a synthetic membrane liner.

Each basin provides a volume of 1.53 million gallons. The system is designed for 5 cycles per SBR basin per day. Because the effluent is discharged intermittently and at a high flow rate, an equalization basin was constructed downstream of the SBR. The equalization basin effluent pump station provides flow to the coagulation, filtration and UV disinfection systems prior to distribution to the existing groundwater recharge basins.

In accordance with WAC 173-230, the Class III wastewater treatment facility requires the operator in charge to have a Group III certification.

Ecology approved the following reports that support the facility's design (listed chronologically):

1. "Hydrogeologic Evaluation Domestic Wastewater Treatment Plant". HWA Geosciences, Inc. February 2000.
2. "Comprehensive Domestic Sewer and Wastewater Facility Plan". Gray & Osborne, Inc. April 2000.
3. "Engineering Report and Facility Plan Amendment". Earth Tech Consultants. August 2000.

The Class A WRF began operations in 2002. The city is currently beginning the planning process to expand the capacity of the existing system.

Collection system status

The original collection system was constructed in 1940 and consisted of approximately 5,000 feet of mostly 8-inch diameter concrete gravity sewers. Expansions of this system have occurred periodically in response to growth and maintenance requirements. In 1990, the collection system was expanded to serve the Simplot vegetable processing plant; 1996 improvements provided sanitary service to the Port District Industrial Park No.2; and 1997 improvements provided service to a residential area in the western portion of the city.

Currently, the sewer collection system consists of approximately 105,800 feet of gravity (6-inch to 15-inch) sewer and 3,240 feet (2 and 4-inch) of pressure line. Under the terms of the Service Agreement with EarthTech, the city retains responsibility for construction, operation, and maintenance of the wastewater collection system prior to discharge into the Water Reclamation Facility.

Reclaimed water process

This facility is a reclaimed water facility designed to produce Class A reclaimed water with additional treatment for nitrogen reduction. The WRRS require additional nitrogen removal beyond the standard Class A requirements to meet requirements for groundwater recharge.

Appendix D provides a facility site plan for the WRF and **Appendix E** provides a process schematic. Quincy owns the groundwater recharge basins located adjacent to and south of the mechanical treatment facilities.

The WRF is a tertiary treatment facility that provides:

1. **Headworks** with flow monitoring and screening
2. **Biological treatment** consisting of an activated sludge process operating in batch mode with sequencing batch reactors (SBR). Raw wastewater and mixed liquor are mixed and aerated in one basin, while the other basin operates as a settling tank
3. **Flow Equalization Basins** that holds the supernatant that is decanted as a result of the settling process

4. **Blowers** that provide air for the SBR basins
5. **Coagulation** with a chemical coagulant
6. **Filtration** using fabric media filter
7. **Disinfection** using ultraviolet light
8. **Ground water recharge** using 6 unlined percolation basins
9. **Lined storage basin** for short term storage of noncompliant water

The facility has a design influent flow of 1.54 million gallons per day (mgd) average flow for the maximum month. An operator certified by the State of Washington for at least a Class III plant must be responsible for the daily operation of the WRF.

The facility design provides multiple barriers of public health protection. The facility operates to automatically divert flows that do not meet the Class A standards (noncompliant water) to the short term storage basin.

Beneficial use

The Quincy WRF produces Class A reclaimed water for the primary beneficial use of groundwater recharge and the ability to use the reclaimed water for irrigation. The city submitted a supplemental Reclaimed Water application with their State Waste Discharge Permit application for renewal on May 18, 2011. The city may add irrigation areas as a beneficial use of reclaimed water without submitting an application for modification.

Solid wastes/residual solids

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings) in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. The facility drains grit, rags, scum, and screenings, then transports them to a landfill for disposal. They dewater the biosolids and send them to Boulder Park biosolids facility in Douglas County under biosolids permit number BT5278.

B. Description of the geology and groundwater

The City of Quincy's reclaimed water facility is located in the Quincy Basin, in the western portion of the Columbia Basin. The Columbia Basin is located in the central part of eastern Washington and includes Adams, Douglas, Franklin, Grant, and Lincoln Counties. The Quincy Basin is bordered by Crater Coulee (north), Frenchman Hills (south), Babcock Ridge (west), the Ephrata Channel (east).

The city's facility lies in the northern portion of the Columbia plateau geologic province of Washington. Basaltic lava resulting from several events over a period of several million years is spread over large areas. During periods between the episodes of lava extrusion, alluvial sediment of river and lake origin were deposited in depressions on the basalt surfaces and along the periphery of the flows. The interbedded lava flows and sediment deposits are called the Columbia Basalt Group.

Above the basalt layers are the more recent sedimentary deposits of the Ringold formation. A caliche layer which was deposited within the last million lies over a wide area and forms a caprock above several facies of the Ringold. The caliche layer is 13-65 feet thick beneath, as recorded by HWA Geosciences during the drilling of the monitoring wells and may be a part of the Ringold.

The United States Bureau of Reclamation (USBR) installed a groundwater waste drain on the east side of basins 1-6 and on the west side of the south basins. The drain collects irrigation return water year round.

The city installed groundwater monitoring wells on the land application site in 1986. In general, the groundwater movement under the treatment plant site is to the east, with monthly variations to the northeast and southeast. Ground water elevations at WO-1 on average exceed the recharge basin wells by more than 5 feet. The highest and lowest groundwater elevations generally occur in the months of October and February, respectively. Percolation of reclaimed water, local irrigation, and groundwater discharge to the waste drain east of the site, influence local groundwater elevations and flow directions. Monitoring results from WO-1 represent background site conditions.

All wells have been sampled monthly over the last 13 years and Ecology has more adequate background data on the wells to support ending testing of Wells WS-1 and WS-2 and reduction of testing in the other wells.

The critical form of nitrogen of concern in groundwater is nitrate nitrogen. State groundwater regulations limit the maximum allowable groundwater nitrate concentration to 10 mg/L. High nitrate levels in general have been reported for groundwater in the Quincy Basin. In the previous fact sheet, it states that nitrate levels in the data collected from the groundwater wells were significantly higher than samples from the upgradient (background well). Over the last four years (1/2010-11/2014), nitrate samples in the effluent are well below the groundwater standard of 10 mg/L. During the same period of time, nitrate levels in the upgradient (background) well exceeded 10 mg/L 25 times out of 58 samples. In comparison, the five downgradient wells only exceeded the groundwater standard between 1-4 times out of 58 samples (W26-1; W54-4; W60-2; S1-1; S2-1).

Arsenic is mentioned as a pollutant of concern in the fact sheet written in 2001. The fact sheet states that the concentration level of arsenic in the upgradient (background) well was exceeding the EPA arsenic limit for drinking water and Ecology's Groundwater Standards (WAC 173-200).

Arsenic occurs naturally in rocks and soil, water, air, and plants and animals. It can be further released into the environment through natural activities such as volcanic action, erosion of rocks, and forest fires, or through human actions. Approximately 90 percent of industrial arsenic in the U.S. is used as a wood preservative, but arsenic is also used in paints, dyes, metals, drugs, soaps, and semi-conductors. Burning fossil fuels, paper production, cement manufacturing, and mining can also release arsenic into the environment. In the Quincy Basin area, the existence of arsenic in the groundwater is most likely the result of past practices of spraying for pests in fruit orchards.

The city monitors for arsenic in the influent to the treatment plant and in the reclaimed water, as well as in each monitoring well. A review of the last four years of data shows one exceedance in Well S-1 in December 2011, which is most likely a lab error or data entry error. All other sample results are well below Ecology’s standard of 0.05 ug/L.

Ecology has a groundwater standard for Total Dissolved Solids (TDS) of 500 mg/L. The upgradient (background) well sampling results are below the standard. The downgradient wells have continued to rise since the city began accepting process wastewater from local data centers. There are currently four data centers that discharge to the municipal facility. Of the 4 data centers, Microsoft and Yahoo! discharge the highest TDS loadings. The facility is not designed to remove TDS (salt) before being distributed to the reclaimed water use of groundwater recharge. The salt creates a visible cake on the surface of the recharge basins during the summer months. The previous permit did not required TDS testing in the influent and effluent. The city voluntarily sampled for TDS in both the influent and effluent flow starting in 2007. They reported TDS test values for both influent and effluent consistently above the groundwater criteria of 500 mg/L for the last four years. The proposed permit will require a TDS management plan described later in this fact sheet.

C. Wastewater influent characterization

Quincy reported the concentration of influent pollutants in discharge monitoring reports (DMRs). The following table summarizes the influent characterization from January 1, 2010 through November 30, 2014.

Table 2: Wastewater Influent Characterization

| Parameter ^a | Units ^b | Average Value | Maximum Value |
|------------------------|--------------------|---------------|---------------|
| BOD ₅ | mg/L | 168 | 567 |
| BOD ₅ | lbs/day | 1,533 | 5,402 |
| TSS | mg/L | 172 | 2,164 |
| TSS | lbs/day | 1,545 | 20,833 |
| TKN | mg/L | 246 | 901 |
| TDS | mg/L | 624 | 1.130 |

| Parameter ^a | Units ^b | Average Value | Maximum Value |
|---|--------------------|---------------|---------------|
| ^a "BOD ₅ " = 5-day Biochemical Oxygen Demand "TSS" = Total Suspended Solids "TKN" = Total Kjeldahl Nitrogen "TDS" = Total Dissolved Solids ^b "mg/L" = milligrams per liter "lbs/day" = pounds per day | | | |

D. Reclaimed water quality characterization

Quincy reported the anticipated concentration of parameters in the reclaimed water in the permit application and in DMRs. The data in the following table represent the quality of the reclaimed water prior to distribution to the groundwater recharge basins.

Table 3: Reclaimed Water Characterization

| Parameter ^a | Units ^b | Average Value | Maximum Value |
|---|--------------------|---------------------------|---------------|
| BOD ₅ | mg/L | 5 | 32 |
| TSS | mg/L | 6 | 100 |
| Turbidity | NTU | 4 | 10 |
| Total Nitrogen, as N | mg/L | 6 | 33 |
| TDS | mg/L | 635 | 1,010 |
| Parameter | Units ^b | Minimum Value | Maximum Value |
| pH | standard units | 6.0 | 9.0 |
| | | 7-day Median ^c | Maximum Value |
| Total Coliform | MPN/100 mL | 1 | 61 |
| ^a "BOD ₅ " = 5-day Biochemical Oxygen Demand "TSS" = Total Suspended Solids "Total nitrogen" = total Kjeldahl nitrogen (TKN) + nitrate + nitrite "TDS" = Total Dissolved Solids ^b "mg/L" = milligrams per liter "lbs/day" = pounds per day "NTU" = nephelometric turbidity units MPN per 100 mL" = Most Probable Number per 100 milliliters ^c For daily reporting of the 7-day median for daily reporting, the Permittee use the values from the previous 7 days of total coliform analyses. The Permittee determines the 7-day median by listing these values in order from the lowest to highest value and then select the value in the middle of this list (the fourth value). | | | |

E. Summary of compliance with previous permit issued

The previous permit placed water quality limits on the following:

1. Flow
2. BOD₅
3. TSS
4. pH
5. Turbidity
6. Total Nitrogen
7. Total Coliform

Ecology assessed compliance based on review of the facility's information in the Ecology Permitting and Reporting Information System (PARIS), on DMRs, on facility inspections, and on Ecology's understanding of the facility's reclaimed water reliability provisions.

Facility compliance data and assessment

Prior to the last year, Quincy WRF has consistently complied with the permit limits for the average monthly flow, maximum daily flow, average monthly BOD₅, and maximum daily BOD₅. The facility recently started exceeding their permit limits for flow, BOD, and TSS. . The city experienced significant growth, as well as new industries connecting to the municipal facility. The city is in the planning process for upgrades to meet current and future wastewater treatment needs for the continued economic growth of the community. .

The Water Reclamation and Reuse Standards (WRRS) require that reclaimed water facilities include reliability safeguards to ensure that partially treated or untreated wastewater does not flow to any beneficial use area such as a groundwater recharge basin. The Quincy WRF design includes alarm systems for a variety of conditions to automatically divert off spec water to the short term storage basin.

After temporary storage, allowing the operators time to restore the treatment process, off spec water from this basin flows to the plant drain and is pumped back to the head works of the treatment process. The operation and maintenance (O&M) manual provides the details for the diversion and alarm systems.

Table 4 summarizes the facility's permit limit exceedances during the most recent year of operations. Ecology does not necessarily consider each exceedance a threat to groundwater quality because the WRF automatically diverts the noncompliant water to temporary storage.

The facility does not have the ability to distinguish between noncompliant water that may reach the recharge basin under emergency conditions prior to the time at which flow is diverted, and noncompliant water that is diverted back through the treatment system and never flows to the recharge basins. Assessment of the compliance data must take the reliability safeguards into account.

Table 4: Permit Violations for the Previous Year (2014)

| Begin Date | Parameter | Statistical Base | Units | Value | Limit | Violation |
|------------|----------------|------------------|---------------------|-------|-------|----------------------------|
| 1/1/2014 | TSS | average monthly | Milligrams/L (mg/L) | 19 | 15 | Numeric effluent violation |
| 1/1/2014 | Total Nitrogen | average | Milligrams/L (mg/L) | 12.2 | 10 | Numeric effluent violation |
| 1/1/2014 | Total Nitrogen | maximum | Milligrams/L (mg/L) | 33 | 10 | Numeric effluent violation |
| 2/1/2014 | TSS | average monthly | Milligrams/L (mg/L) | 32 | 15 | Numeric effluent violation |
| 2/1/2014 | TSS | average weekly | Milligrams/L (mg/L) | 100 | 23 | Numeric effluent violation |
| 2/1/2014 | Total Nitrogen | average | Milligrams/L (mg/L) | 17.2 | 10 | Numeric effluent violation |
| 2/1/2014 | Total Nitrogen | maximum | Milligrams/L (mg/L) | 19 | 10 | Numeric effluent violation |
| 3/1/2014 | Total Nitrogen | average | Milligrams/L (mg/L) | 12.1 | 10 | Numeric effluent violation |
| 3/1/2014 | Total Nitrogen | maximum | Milligrams/L (mg/L) | 17 | 10 | Numeric effluent violation |
| 7/1/2014 | Flow | average | million gallons/day | 1.67 | 1.15 | Numeric effluent violation |
| 8/1/2014 | Flow | average | million gallons/day | 2.05 | 1.15 | Numeric effluent violation |
| 11/1/2014 | BOD | average monthly | Milligrams/L (mg/L) | 16 | 10 | Numeric effluent violation |
| 11/1/2014 | BOD | average weekly | Milligrams/L (mg/L) | 32 | 15 | Numeric effluent violation |

Facility inspection summary

Ecology performed a non sampling inspection on October 30, 2013. The American Water staff operates and maintains the treatment facilities. The biggest challenges for the city is the inability to treat the high levels of TDS currently discharged to the facility. Additionally due to economic growth, they do not have adequate capacity. The city permits various types of industries to discharge to the municipal system, however, the system was not designed to treat industrial wastes.

Commercial and industrial dischargers to the facility include schools, restaurants, data centers, a cattle feed producer, several fruit packers, and a cold storage.

Quincy is working with their contract operator, American Waters, and consultant, Brown & Caldwell, to move forward with upgrades to the facility to increase capacity. Upgrades

include designing and constructing an additional aeration basin. This upgrade should meet existing capacity requirements.

Quincy is adding reverse osmosis to the industrial treatment system. Upon completion, the industrial dischargers will move from the municipal to the industrial facility. The move would create some additional flow capacity, but more importantly, would eliminate non-municipal, high TDS flows discharging to the municipal facility.

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

Ecology uses the authority under chapter 90.46 RCW and chapter 90.48 RCW to permit water reclamation facilities. State regulations require that limits in a State Reclaimed Water permit be technology-based and water quality-based as described in the following.

1. Technology-based limits refer to limits based on treatment methods available to treat specific pollutants. Technology-based treatment methods that Ecology considers include adequate and reliable treatment (ART) as described in the WRRS, and all known, available, and reasonable treatment (AKART) as defined in chapter 173-221 WAC.
2. Water quality-based limits refer to conditions necessary to meet applicable water quality standards to preserve or protect the quality of groundwater. Ecology uses the state drinking water contaminant criteria (RCW 90.46.080) and the Groundwater Quality Standards (chapter 173-200 WAC) to determine permit requirements.
3. Operations and best management practices necessary to meet applicable water quality standards to preserve or protect beneficial uses for groundwater.
4. Applicable requirements of other local, state, and federal laws.

Ecology applies the most stringent of technology- and water quality-based limits to each parameter of concern and further describes the proposed limits below.

The limits in this permit reflect information received in the application and from supporting reports (engineering, hydrogeology, monitoring, and reclaimed water system distribution report). 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 water quality limits for all reported pollutants. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, and are not listed in regulation.

Ecology does not usually develop permit limits for pollutants not reported in the permit application but may be present in the product reclaimed water. The permit does not authorize the

distribution of non-reported pollutants. During the five-year permit term, the facility’s production conditions may change from those conditions reported in the permit application.

The facility must notify Ecology if significant changes occur. Until Ecology modifies the permit to reflect changes, the permitted facility could be violating its permit if significant changes occur.

A. Design criteria

Under WAC 173-216-110 (4), influent flows and waste loadings must not exceed approved design criteria. Ecology approved design criteria for this reclaimed water facility in the wastewater facilities plan and addendum (October 1996 and February 1997, respectively) prepared by Gray & Osborne, Inc. **Table 5** below includes design criteria from the referenced report.

Table 5: Influent Design Criteria

| Parameter ^a | Design Quantity ^b |
|---|------------------------------|
| Monthly average flow for Maximum Month | 1.54 mgd |
| Maximum Daily Flow | 2.11 mgd |
| Instantaneous peak flow | 2.81 mgd |
| BOD ₅ Influent Loading for Maximum Month | 2,000 lbs/day |
| TSS Influent Loading for Maximum Month | 2,000 lbs/day |
| TKN Influent Loading for Maximum Month | 412 lbs/day |
| ^a “BOD ₅ ” = 5-day Biochemical Oxygen Demand “TSS” = Total Suspended Solids “TKN” = Total Kjeldahl Nitrogen ^b “mgd” = million gallons per day “lbs/day” = pounds per day | |

B. Technology-based limits

The reclaimed water permit adopted the state waste discharge program procedures of Ecology’s Water Quality Program as the basis for preparing and issuing reclaimed water permits. Ecology approved the engineering report and addendum listed in the references.

Ecology determined that the facility meets the requirements demonstrating compliance with the AKART and the adequate and reliable treatment (ART) standards based on the WRRS provide that Quincy operates the system as described in the approved engineering report and any subsequent reports approved by Ecology.

AKART - All known, available and reasonable treatment required by WAC 173-221

Waste discharge permits issued by Ecology specify conditions requiring the facility to meet AKART before discharging to waters of the state (RCW 90.48). Ecology defines AKART for domestic wastewater facilities in chapter 173-221 WAC, Discharge Standards and Effluent Limits for Domestic Wastewater Facilities and in the Department of Health's design criteria (1994).

ART - Adequate and reliable treatment required for reclaimed water production

As described in Section I.B, the reclaimed water used for groundwater recharge by surface percolation must meet Class A requirements to ensure significant pathogen reduction levels. At a minimum, Class A reclaimed water is defined as oxidized, coagulated, filtered, and disinfected wastewater meeting required pathogen limits.

Class A water used for groundwater recharge projects must also provide an additional nitrogen removal process beyond the Class A requirements.

Ecology considers nitrogen removal to be a use-based treatment requirement, and a required technology as part of the biological oxidation process step to produce reclaimed water appropriate for groundwater recharge.

In order to meet reclaimed water requirements for groundwater recharge, the facility's treatment process must:

1. Oxidize the organic matter so that the five-day Biochemical Oxygen Demand (BOD₅) does not exceed 20 mg/L, the Total Suspended Solids (TSS) does not exceed 30 mg/L, and the reclaimed water contains dissolved oxygen.
2. Coagulate the wastewater prior to filtration by the addition of chemicals or by an equally effective method.
3. Filter the wastewater to meet operating turbidity limits in terms of nephelometric turbidity units (NTU).
4. Provide adequate disinfection so that the seven-day median number of total coliform organisms in the reclaimed water does not exceed 2.2 per 100 milliliters and the number of total coliform organisms does not exceed 23 per 100 milliliters in any sample.
5. Provide additional treatment for nitrogen reduction. The nitrogen concentration in the final reclaimed water is limited to 10 mg/L total nitrogen. Total nitrogen is the sum of total Kjeldahl nitrogen (TKN), nitrate, and nitrite.

Table 6 compares technology-based limits based on AKART for wastewater discharge to ground and based on ART for reclaimed water used to recharge groundwater. The proposed permit applies the most stringent of these limits to each parameter of concern.

Table 6: Comparison of Technology-Based Limits

| Parameter | Limit by AKART | Class A Limits (ART) for Groundwater Recharge |
|--|---|--|
| BOD ₅ | 30 mg/L monthly average for discharge | 20 mg/L monthly average at secondary effluent |
| TSS | 30 mg/L monthly average for discharge | 30 mg/L monthly average at secondary effluent |
| Dissolved Oxygen | N/A | Must be measurably present in secondary effluent |
| Turbidity | N/A | 0.2 NTU monthly average, 0.5 NTU sample maximum; prior to disinfection |
| pH | 6.0 – 9.0 standard units | 6.5 – 8.5 standard units after disinfection, for groundwater recharge |
| Fecal Coliform Bacteria | 200/100 mL monthly average, 400/100 mL weekly average | N/A |
| Total Coliform Bacteria | N/A | 2.2/100 mL 7-day median, 23/100 mL sample maximum after disinfection |
| Total Nitrogen ^a | N/A | 10 mg/L monthly average; after disinfection |
| ^a Total nitrogen = total Kjeldahl nitrogen (TKN) + nitrate + nitrite. | | |

C. Groundwater quality limits evaluation

Applicability to reclaimed water facilities

In accordance with the reclaimed water statute (chapter 90.46 RCW), reclaimed water may be beneficially used for groundwater recharge via surface percolation provided the product water meets the state drinking water quality standards (maximum contaminant levels). Drinking water standards generally require the highest water quality limits. Providing protection to the level of drinking water standards protects a great variety of existing and future beneficial uses.

The reclaimed water statute does not specifically state that reclaimed water must meet the state’s groundwater quality standards (chapter 173-200 WAC). However, Ecology uses its discretion subject to other existing, applicable laws to require that reclaimed water used to recharge groundwater meet the state groundwater quality standards.

Ecology bases its position on its broad statutory mandate to protect and preserve the water quality of state waters under RCW 90.48.010, RCW 90.54.020(3) and WAC 173-200-030. These regulations direct Ecology to apply the groundwater quality standards to permits issued under RCW 90.48 and also to “other departmental permits” (WAC 173-200-100[3]).

Ecology does not interpret the applicability of these regulations to be in conflict with chapter 90.46 RCW.

Based on Ecology's interpretation of these regulations, both the state drinking water quality standards and the state groundwater quality standards apply to reclaimed water used to recharge groundwater.

Applicability to Quincy WRF

Ecology must develop permit requirements to ensure that the permit will only authorize activities that comply with the groundwater quality standards including the antidegradation and nondegradation policies. You can obtain more information about the state's requirements by referring to the *Implementation Guidance for the Ground Water Quality Standards*, Ecology Publication #96-02 (available at <https://fortress.wa.gov/ecy/publications/SummaryPages/9602.html>).

As described in Section II.B of this fact sheet, the city's downgradient monitoring well sampling results show increasingly high levels of TDS in excess of the groundwater standard and the upgradient (background) well. The increase in monitoring well TDS correlates with addition of industrial discharge to the city facility. Discharges that cause pass through affects resulting in exceedance of permit limits must provide pretreatment to eliminate the effects.

The city's contract operator, American Waters, uses a management practice of blending demineralized process water from the Microsoft facility with the effluent discharge after the sand filtration and before the UV disinfection. This practice is intended to decrease the TDS to the groundwater recharge basins.

The proposed permit includes a requirement for Quincy to complete a TDS Management Plan. The plan will contain milestones for achieving compliance with WAC 173-200 groundwater criteria for TDS.

IV. Monitoring Requirements

Ecology requires monitoring, recording, and reporting (WAC 173-216-110) to verify that the treatment processes function correctly, that the reclaimed water meets applicable criteria and that it complies with the permit's limits and conditions.

A. 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).

B. Wastewater and reclaimed water monitoring

Ecology details the proposed monitoring schedules in Permit Condition R2. Specified monitoring frequencies take into account the quantity and variability of the waste stream and the reclaimed water, the treatment method, 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) and the 1997 WRRS.

C. Sludge monitoring

Monitoring of sludge quantity and quality is necessary to determine the appropriate uses of the sludge. Biosolids monitoring is required by the current state and local solid waste management program and also by EPA under 40 CFR 503.

D. Groundwater monitoring

Ecology requires groundwater monitoring at the site in accordance with the state's groundwater quality standards. The permit requires the city to monitor groundwater according to the proposed schedule at its existing monitoring wells.

V. Other Permit Conditions

A. Reporting and recordkeeping

The Reclaimed Water Program has adopted the procedures of the wastewater discharge permit unit as the basis for preparing and issuing reclaimed water permits. Ecology based Permit Condition R3 on its authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-216-110).

B. Prevention of facility overloading

Overloading of the WRF is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-216-110 require Quincy to do the following.

1. Provide a plan for expansions or modifications to Ecology that address the plant reaching 85% of capacity.
2. Report and correct conditions that could result in new or increased discharges of pollutants.

Reclaimed water Permit Condition R4.A restricts the amount of influent loading to the facility. The proposed permit requires Quincy to submit annual reports comparing the actual flow and waste loadings to the design criteria for the facility.

Discharges from industrial sources are causing the facility to near or exceed 85% of the design capacity of the plant. When the plant reaches 85% of its flow capacity, a plan for maintaining adequate capacity is required to be completed and submitted to Ecology. The plans should discuss modifications or improvements to manage plant capacity.

C. Operations and maintenance

Ecology requires the City of Quincy to take all reasonable steps to properly operate and maintain their wastewater collection system and WRF in accordance with state regulations.

Implementation of the procedures in the O&M manual ensures the facility's compliance with the terms and limits in the permit and ensures the facility provides AKART and ART.

The City has an O&M manual that Ecology approved when the WRF was first constructed (Gray & Osborne, Inc., November 2002). There have been subsequent additions to the manual for upgrades. The proposed permit requires the city to annually review the manual to determine if an update is necessary, and to confirm this review by letter to Ecology.

D. Reclaimed water distribution and use

The WRF produces reclaimed water appropriately treated for direct beneficial reuse for irrigation, industrial and commercial uses, and for indirect beneficial reuse such as groundwater recharge. Quincy plans to continue to use its reclaimed water to recharge the local groundwater. The city also may use reclaimed water for irrigation purposes.

The proposed permit will maintain the existing permit requirement for monthly reporting of reclaimed water distribution activities.

E. Pretreatment and source wastewater protection

The WRRS require that the generators of reclaimed water either have an Ecology-delegated pretreatment program or that all industries discharging into the WRF have current waste discharge permits issued by Ecology to assure source wastewater protection. The City of Quincy pretreatment program was approved in January 2013 with specific requirements in Order No. 9665. This permit renewal for the WRF contains the pretreatment requirements from the order which will be amended to exclude the WRF.

Duty to enforce discharge prohibitions

This provision prohibits the Quincy sewage collection system and the WRF (collectively known as the publicly owned treatment works or POTW) from authorizing or permitting an industrial discharger to discharge certain types of waste into the sanitary sewer.

1. 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.
2. 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 cause pass through interference with the WRF.

- g. Discharges that are high in TDS or other constituents not treated by the WRF.
- h. Contain too much petroleum-based oils, mineral oil, or cutting fluid.
- i. 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.

1. 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.

Industrial user survey

This provision requires the POTW to submit an updated list of existing and proposed significant industrial users (SIUs) and potential significant industrial users (PSIUs). This provides Ecology with notice of any new or proposed industrial users in the POTW's service area without a more rigorous formal Industrial User Survey. This level of effort is often sufficient for small municipalities (with wastewater flows less than 1 mgd) which have not seen any adverse effects potentially attributable to industries, have loadings commensurate with domestic flows, and have a small proportion of industrial flow.

F. Solid Wastes

To prevent water quality problems the facility is required 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 Grant County Health District.

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.

G. General conditions

Ecology bases the standardized general conditions on state law and regulations. They are included in all reclaimed water permits issued by Ecology.

VI. Permit Issuance Procedures

A. Permit modifications

Ecology may modify this permit if necessary to comply with water quality standards for groundwater, or based on new information from sources such as inspections, monitoring, or engineering and scientific studies.

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

B. Proposed permit issuance

This proposed permit meets all statutory requirements for Ecology to authorize the production and distribution of reclaimed water. 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 5 years.

VII. References for Text and Appendices

Gray & Osborne, Inc.

2000. *City of Quincy Comprehensive Domestic Sewer and Wastewater Facilities Plan*.
HWA Geosciences. *Hydrogeologic Evaluation City of Quincy Domestic Wastewater Treatment Plant (prepared for Gray & Osborne, Inc., included in the above referenced document)*.

Earth Tech Consultants

2000. *Engineering Report and Facility Plan Amendment, for The City of Quincy Water Reclamation Plant*.

CH2M Hill

1994. *Hydrogeologic Study for Domestic Wastewater Treatment Plant and Effluent Application Site*.

Laws and Regulations

<http://www.ecy.wa.gov/laws-rules/index.html>

Permit and Wastewater Related Information

<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>

Washington State Department of Ecology.

2005. *Implementation Guidance for the Ground Water Quality Standards*. Ecology Publication Number 96-02. <https://fortress.wa.gov/ecy/publications/SummaryPages/9602.html>
2008. *Criteria for Sewage Works Design*. Ecology Publication Number 98-37. <http://www.ecy.wa.gov/biblio/9837.html>
2011. *Permit Writer's Manual*. Ecology Publication Number 92-109. <https://fortress.wa.gov/ecy/publications/SummaryPages/92109.html>

Washington State Department of Ecology and Department of Health.

1997. *Water Reclamation and Reuse Standards*. Ecology Publication Number 97-23. <http://www.ecy.wa.gov/biblio/97023.html>

Washington State Department of Health.

1994. *Design Criteria for Municipal Wastewater Land Treatment Systems for Public Health Protection*. http://www.ecy.wa.gov/programs/wq/wastewater/municipal_land_treatment_design_criteria.pdf

Appendix A - Public Involvement Information

Ecology proposes to issue a reclaimed water permit to the City of Quincy. The permit includes reclaimed water 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 October 28, 2015 in the Columbia Basin Herald to inform the public and to invite comment on the proposed draft reclaimed water permit and fact sheet.

The notice:

1. 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).
2. Offers to provide the documents in an alternate format to accommodate special needs.
3. Urges people to submit their comments, in writing, before the end of the 30 day comment period.
4. Tells how to request a public hearing of comments about the proposed reclaimed water permit.
5. Explains the next step in the permitting process.

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 509-329-3400 or by writing to the address listed below.

Water Quality Permit Coordinator
Department of Ecology
Eastern Regional Office
4601 North Monroe Street
Spokane, WA 99205-1295

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.) Email 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 |
|--|---|
| <p>Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503</p> <p>Pollution Control Hearings Board 1111 Israel RD SW STE 301 Tumwater, WA 98501</p> | <p>Department of Ecology Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608</p> <p>Pollution Control Hearings Board PO Box 40903 Olympia, WA 98504-0903</p> |

Appendix C - Glossary

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.

ART -- The acronym for “adequate and reliable treatment” as used for reclaimed water production. The Washington State Water Reclamation and Reuse Standards (1997) define ART requirements that water reclamation facilities must meet at all times for various uses of the reclaimed water. The ART requirements are in addition to and generally more stringent than the AKART requirements for most conventional wastewater treatment facilities.

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 BOD₅ 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.

CBOD₅ -- The five day carbonaceous biochemical oxygen demand. The CBOD₅ of reclaimed water is used as an indication of the pollutant removal from wastewater. CBOD₅ is a method defined test measured by the depletion of dissolved oxygen by biological organisms in a body of water in which the contribution from nitrogenous bacteria has been suppressed.

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

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.

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 -- See Method Detection Level.

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 a subgroup of the total coliform bacteria group. Fecal coliform 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 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 stormwater 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.

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) -- 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.

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 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 Groundwater 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 $(1, 2, \text{ or } 5) \times 10^n$, 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.

Reclaimed water – Reclaimed water is a new water supply derived from highly treated domestic wastewater and is put to one or more beneficial uses.

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).

Reuse -- The deliberate application of reclaimed water for a beneficial use.

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.

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 BOD₅ -- 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 BOD₅ 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 BOD₅ 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 stormwater 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 – Total coliform bacteria are an indicator of drinking water quality.

Total coliform bacteria are found in the soil or vegetated environment and do not naturally occur in groundwater, but can live within the biofilm formed by naturally occurring groundwater microorganisms.

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

Total suspended solids (TSS) -- Total suspended solids means 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.

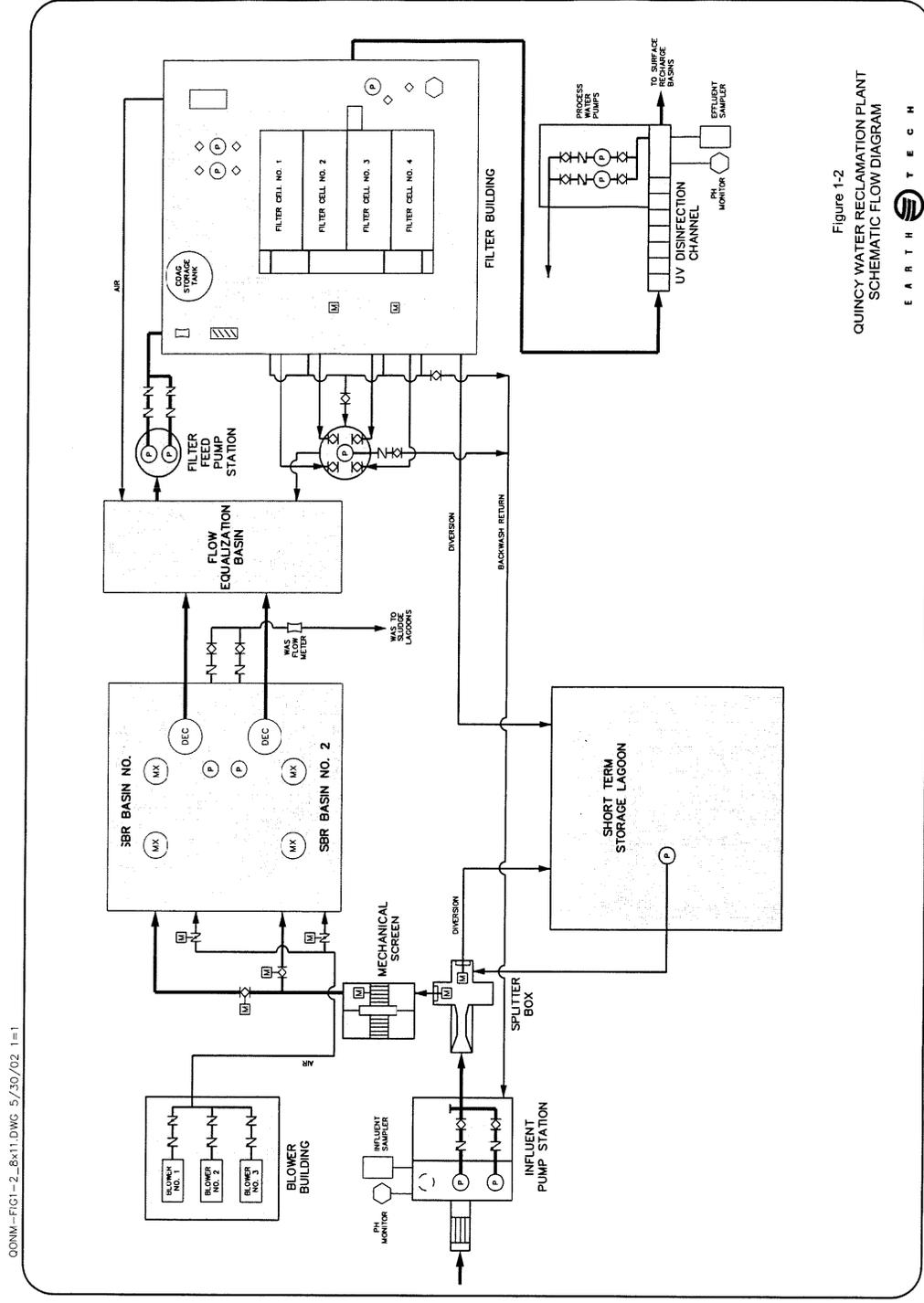
Upset -- An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limits because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed 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 - Facility Site Plan



Appendix E - Process Schematic



Appendix F – Response to Comments

[Ecology will complete this section after the public notice of draft period.]