

Fact Sheet for NPDES Permit WA002106-7

Quincy Industrial 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 Quincy's Industrial 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 are available for public review and comment from **January 6, 2012** until **February 6, 2012**. For more details on preparing and filing comments about these documents, please see **Appendix A - Public Involvement Information**.

The City and Environmental Management Corporation (Operator) reviewed the draft fact sheet for factual accuracy. Ecology corrected any errors or omissions regarding the facility's location, history, 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 E - Response to Comments**, and publish it when issuing the final NPDES permit. Ecology will not revise the fact sheet in response to comments, but the full document will become part of the legal history contained in the facility's permit file. Ecology will annotate those fact sheet sections that Ecology changed as a result of responding to comments received from the Permittee during the public review period. The original fact sheet wording will not be changed in response to comments received during the public review period.

Summary

The City of Quincy owns an industrial wastewater treatment facility that treats process wastewater from a potato and vegetable processor and discharges to a U.S Bureau of Reclamation irrigation wasteway year around. No sanitary wastewater is discharged to the facility or irrigation wasteway. Environmental Management Corporation (EMC) operates the facility as per a service agreement. The City and EMC are Co-Permittees.

Water-quality based seasonal effluent limits for Biochemical Oxygen Demand (BOD₅), fecal coliform bacteria, chlorine, dissolved oxygen and temperature remain unchanged from the permit issued in 2006. Ecology included water quality-based limits for ammonia in this permit based on the wasteload allocation from a TMDL. The 2006 performance-based limits for total suspended solids were updated based on the past five years of discharge data.

The proposed permit requires the submittal of a discharge management plan that describes where the City of Quincy plans to discharge the final effluent after September 2015 when the contract with the U.S. Bureau of Reclamation expires and the point of discharge is eliminated. The proposed permit also requires the City of Quincy to submit an updated engineering report that describes the changes needed to re-route the discharge to another location and a new permit application for the authorization to discharge the wastewater to a new location.

Table of Contents

I.	Introduction.....	6
II.	Background Information.....	7
A.	Facility description.....	8
	History	9
	Wastewater Treatment processes	9
	Solid wastes	11
	Pretreatment Delegation.....	11
B.	Description of the receiving water.....	12
C.	Wastewater characterization	13
D.	Summary of compliance with previous permit Issued	14
III.	Proposed Permit Limits.....	15
A.	Design criteria	15
B.	Technology-based effluent limits	16
C.	Surface water quality-based effluent limits.....	18
	Numerical criteria for the protection of aquatic life and recreation.....	18
	Numerical criteria for the protection of human health.....	18
	Narrative criteria	18
	Antidegradation	19
	Mixing zones.....	19
D.	Designated uses and surface water quality criteria	23
E.	Water quality impairments.....	24
F.	Evaluation of surface water quality-based effluent limits for numeric criteria	26
G.	Human health.....	30
H.	Whole effluent toxicity.....	30
I.	Brine Water Discharge	30
J.	Comparison of effluent limits with the previous permit issued on October 13, 2006.....	31
IV.	Monitoring Requirements.....	33
A.	Lab accreditation	33
B.	Effluent limits which are near detection or quantitation levels.....	33
V.	Other Permit Conditions.....	34
A.	Reporting and record keeping	34
B.	Spill plan	34

C.	Solid waste control plan	34
D.	Operation and maintenance manual.....	34
E.	Leak Detection.....	35
F.	Plan for Stopping the Discharge to U.S. Bureau of Reclamation Wasteway DW237, W645W, and W645	35
G.	Application for Permit Renewal.....	35
H.	Engineering Report – Update	36
	Plans and Specifications	36
I.	General conditions	36
VI.	<i>Permit Issuance Procedures</i>	36
A.	Permit modifications.....	36
B.	Proposed permit Issuance	36
VII.	<i>REFERENCES FOR TEXT AND APPENDICES</i>	37
	<i>Appendix A - Public Involvement Information</i>	38
	<i>Appendix B - Your Right to Appeal.....</i>	39
	<i>Appendix C - Glossary</i>	40
	<i>Appendix D - Technical Calculations</i>	45
	<i>Appendix E - Response to Comments.....</i>	46
	<i>Appendix F - Graphs, Figures, Tables.....</i>	60
	 Table 1: General Facility Information	7
	Table 2: Wasteway DW237 Water Quality Data.....	13
	Table 3: Wastewater Characterization	14
	Table 4: Design Criteria for the Primary Treatment Plant.....	16
	Table 5: Design Flow Standards for the SBRs	16
	Table 6: Performance-based limits for TSS.....	17
	Table 7: Aquatic Life Uses and Associated Criteria.....	23
	Table 8: Recreational Uses and Associated Criteria.....	24
	Table 9: Seasonal Dilution Factors	26
	Table 10: TMDL BOD Loading	27
	Table 11: TMDL Ammonia Loading.....	27

Table 12: Comparison of Previous and Proposed Effluent Limits - Summer Season (April - October) 31

Table 13: Comparison of Previous and Proposed Effluent Limits - Winter Season (November - March)..... 32

Figure 1: Facility Location Map 8

Figure 2: Aerial photograph of primary facility 9

Figure 3: Aerial photograph of SBRs and sludge storage lagoons 10

Figure 4: Final Discharge Location Map 11

Figure 5: Columbia Basin Irrigation Project..... 12

Figure 6: Frenchman Hills Wasteway and Potholes Reservoir 25

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 municipal NPDES permits:

- Procedures Ecology follows for issuing NPDES permits (chapter 173-220 WAC)
- Water quality criteria for surface waters (chapter 173-201A WAC)
- Water quality criteria for ground waters (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 industrial 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 performance 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 E**.

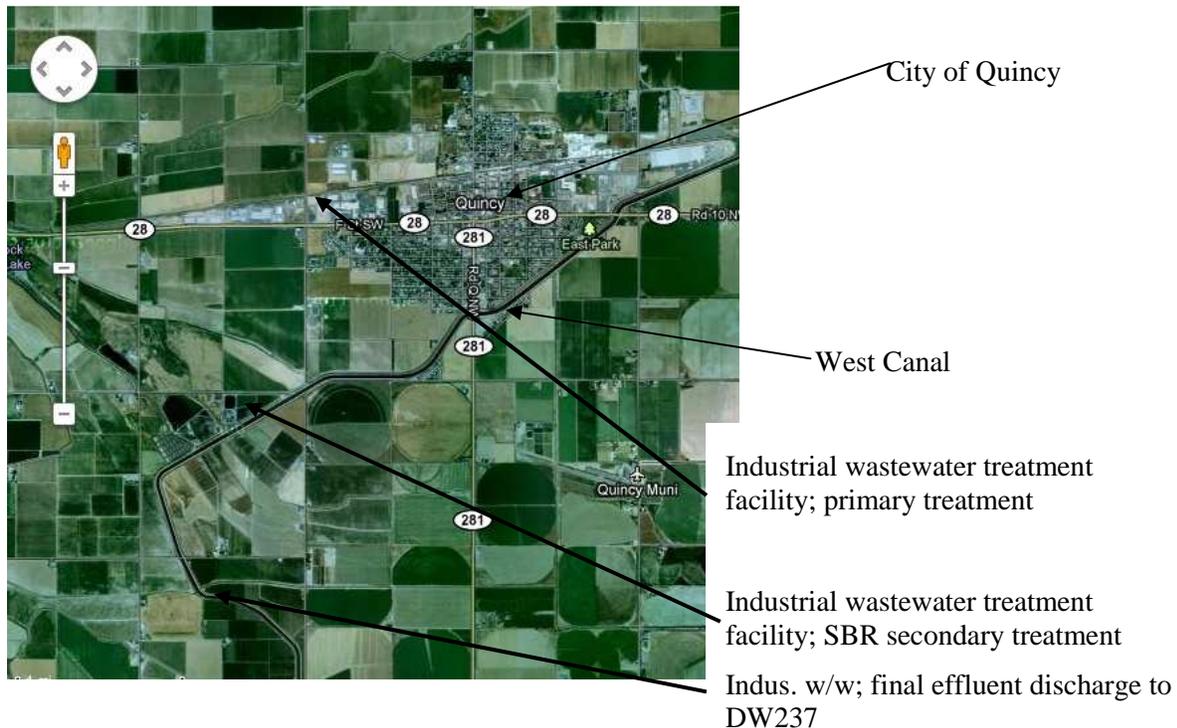
II. Background Information

Table 1: General Facility Information

Facility Information		
Applicant:	City of Quincy	Environmental Management Corporation
Facility Name and Address	P.O. Box 338 Quincy, WA 98848	P.O. Box 1249 Quincy, WA 98848
Contact at Facility	N/A	Jay Favor 509.787.2423
Responsible Official	Tim Snead City Administrator P.O. Box 338, Quincy, WA 509.787.3523	Randy Jones Regional Dir of Op's, EMC 1001 Boardwalk Springs Place Suite 100 O'Fallon, MO 63368 636.561.9400
Industry Type	City owned, privately operated treatment facility that receives process wastewater from a potato and vegetable processor	
Type of Treatment	Primary settling, anaerobic digestion, sequencing batch reactors, disinfection, summer season cooling, and re-aeration.	
SIC Codes	2037	
Facility Location (NAD83/WGS84 reference datum)	Primary treatment facility: Latitude: 47.234183 Longitude: 119.87395 SBR treatment facility: Latitude: 47.2162 Longitude: 119.8525	
Discharge Waterbody Name and Location (NAD83/WGS84 reference datum)	U.S. Bureau of Reclamation wasteway DW237 (Columbia Basin Irrigation Project) Latitude: 47.200883 Longitude: -119.88945	

Permit Status	
Renewal Date of Previous Permit	October 13, 2011
Application for Permit Renewal Submittal Date	May 5, 2011
Date of Ecology Acceptance of Application	September 22, 2011
Inspection Status	
Date of Last Non-sampling Inspection Date	October 26, 2010

Figure 1: Facility Location Map



A. Facility description

The City’s industrial wastewater facility receives process wastewater from a year around potato processor and a seasonal vegetable processor. The two separate waste streams discharge to the primary treatment facility that consists of screening, clarifiers and solids dewatering. The primary treated water is pumped to the secondary treatment system that is comprised of two sequencing batch reactors; SBR’s. The SBR effluent is pumped to a final treatment site that consists of disinfection, cooling (summer season), and re-aeration.

The City discharges the final effluent to a U.S. Bureau of Reclamation wasteway; DW237. Immediately after discharge and mixing, the wasteway flows beneath the W. Canal and becomes W645W, which later becomes W645 that discharges to the Potholes Reservoir. The entire receiving water system is part of the federal Columbia Basin Irrigation Project that began in the mid-1950s.

History

The City of Quincy is located in central Washington (Grant Co.) and within the federal Columbia Basin Irrigation Project that supplies irrigation water from the Columbia River to approximately 500,000 acres of production agriculture. The City has owned and operated an industrial wastewater treatment system since the 1960's. The current system is designed to treat the process wastewater from a potato and vegetable processor; ConAgra Foods and Quincy Foods, respectively. ConAgra operates year around (average flow of 1.63 mgd) and Quincy Foods (average flow of 0.66 mgd) operates during the vegetable harvest season. Ecology permits both facilities under a state waste discharge permit that authorizes the discharges to the City's industrial system. No sanitary wastes are discharged into the industrial wastewater system.

In August 2009, Environmental Management Corporation took over operations of the City's entire wastewater system (industrial and sanitary) from Earth Tech, Inc. Ecology reviewed the EMC/City service agreement as required by Chapter 70.150.040(9) RCW and determined it was consistent with Chapter 90.48 RCW.

Wastewater Treatment processes

Primary facility: Process wastewater from both processors is piped separately to the primary treatment facility which is comprised of screening and a clarifier for each stream. Solids from the clarifiers are dewatered using centrifuges, and are trucked off-site for cattle feed. The clarifier effluent is pumped via an 18 inch force main approximately one mile to the secondary treatment site; SBR.

Figure 2: Aerial photograph of primary facility



Secondary treatment facility: The wastewater from the primary facility is directed to one of two earthen walled and geomembrane-lined sequencing batch reactor basins; Figure 2. Each reactor basin discharges to a geomembrane-lined, earthen walled flow equalization basin. Wastewater from the basin is pumped to the above ground disinfection contact chamber where sodium hypochlorite is added. The contact time is 20 minutes at the design flow (5 cfs).

Wastewater from the chlorine contact basin flows through a three-cell, fan forced-air cooling tower for temperature control. This system operates only during the summer months (April-October) when temperature discharge limits are in effect. Wastewater from the cooling tower is dechlorinated using sodium bisulfite and then pumped to a fine pore diffused aeration basin to increase the dissolved oxygen to meet permit discharge limits.

The cooling tower includes a temperature monitoring probe at the end of the tower that measures the temperature of the wastewater exiting the tower. If the temperature exceeds the permit limit, the water automatically diverts to lagoon #5.

The discharge from the re-aeration basin gravity flows approximately one mile in a 24 inch pipe prior to discharge to the Bureau of Reclamation's DW237 wasteway; Figure 3. Immediately after discharge the DW237 crosses the West Canal via a siphon and emerges as the W645W wasteway. The wasteway is part of the Bureau's irrigation return flow collection system that discharges to the Potholes Reservoir. Water from the reservoir is re-distributed to the southern portion of the irrigation project area.

Figure 3: Aerial photograph of SBRs and sludge storage lagoons

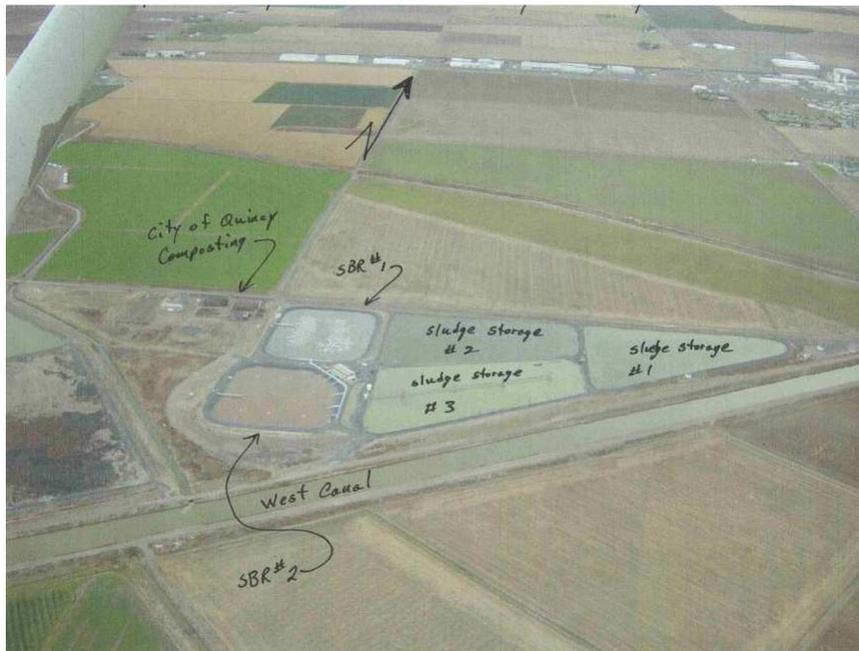
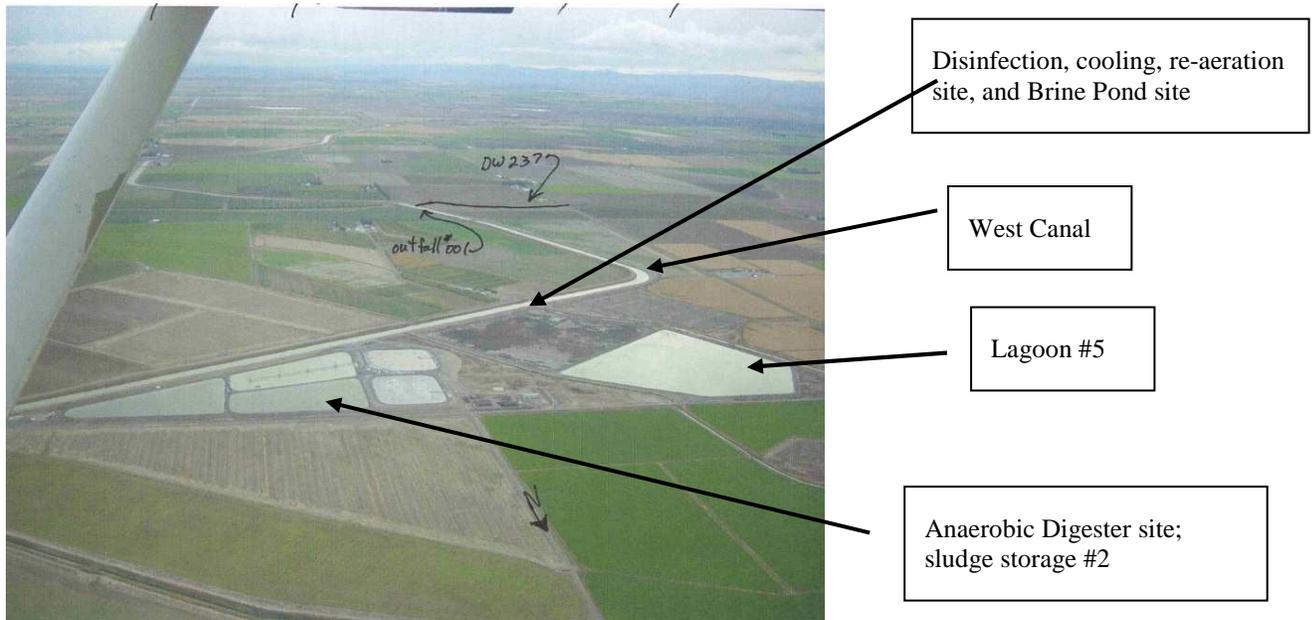


Figure 4: Final Discharge Location Map



Anaerobic Digestion

Beginning in January 2011, Quincy dewatered sludge lagoon #2 (Figure 3) to allow the construction of a 22 million gallon, High Density Polyethylene (HDPE) lined and covered anaerobic digester. The digester will replace the primary treatment facility (Figure 1) and help equalize the hydraulic and organic loading to the SBRs. The City plans to begin operation of the digester by the end of 2011.

Brine Ponds

Quincy plans to construct two double lined brine ponds with leak detection (1.25 MG each) in 2011/12 on land immediately adjacent to the disinfection/cooling/re-aeration site (Figure 3). The ponds are part of the City's brine management system that will receive brine regeneration water from a demineralization facility that will provide cooling water to privately owned data servers in Quincy.

Solid wastes

Waste sludge from the SBRs discharges to the onsite unlined storage lagoons; Figure 2. Liquid decanted from the lagoons is directed back to the SBR system.

Pretreatment Delegation

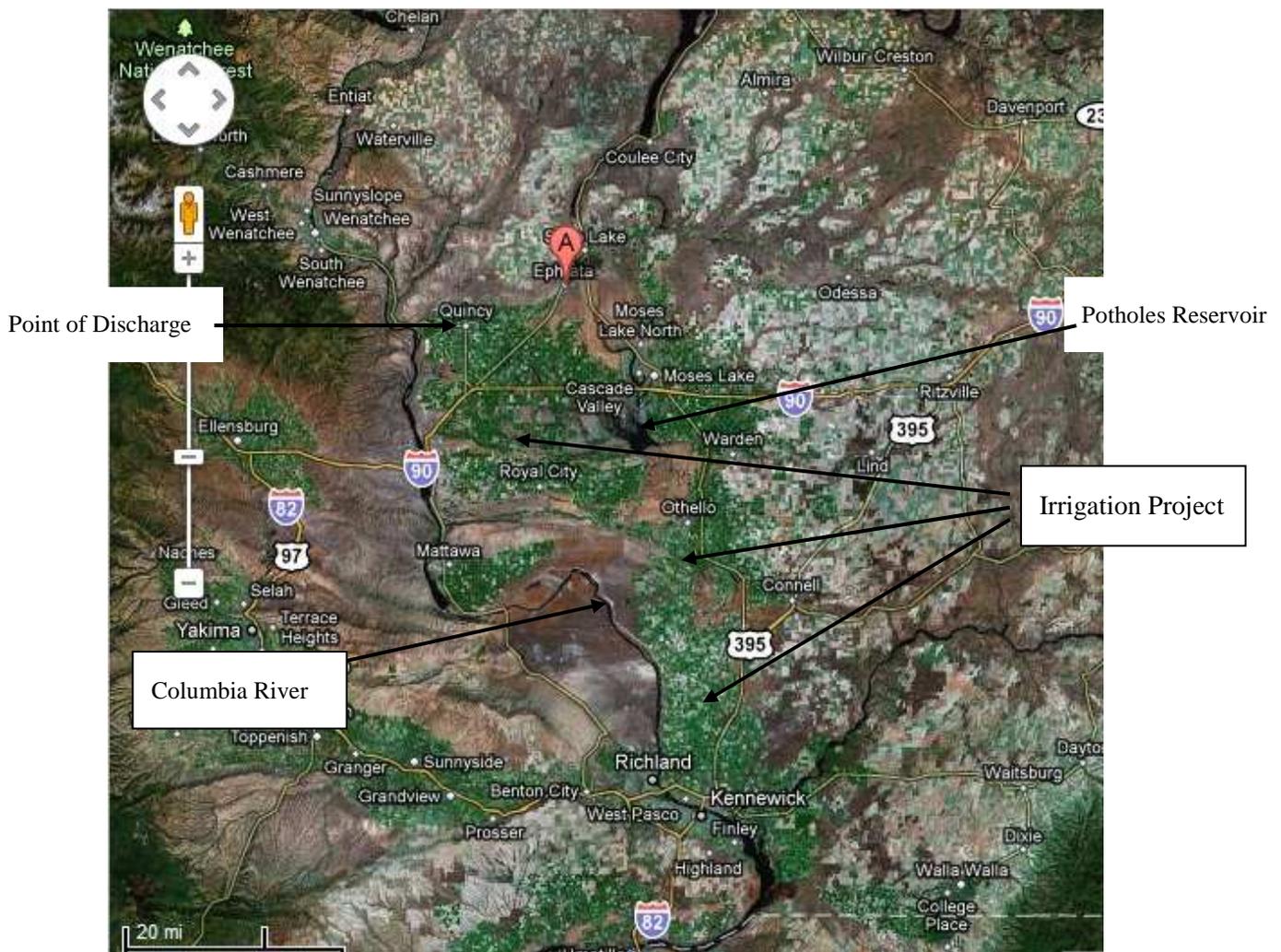
Ecology issued an administrative order to Quincy that required it to obtain pretreatment delegation authority and begin permit issuance by May 2012.

B. Description of the receiving water

The facility discharges to the U.S. Bureau of Reclamation's irrigation return drain DW237, that changes to wasteway W645W and W645 (Figure 1). Wasteway W645 discharges into the Frenchman Hills Wasteway that discharges to the Potholes Reservoir. The entire system is part of the federal Columbia Basin Irrigation Project that brings water from the Columbia River to approximately 500,000 acres in central Washington.

Wasteway drains are manmade and are part of the irrigation project that receive excess water from irrigated lands (sprinkler and rill irrigation) and field underdrain systems. There is essentially no riparian vegetation associated with wasteways.

Figure 5: Columbia Basin Irrigation Project



EMC submits monthly receiving water data in DMRs. Ecology summarized the data for Jan 2001 – July 2011. The data is based on grab samples once/month.

Table 2: Wasteway DW237 Water Quality Data

Parameter	Value
Temperature (highest annual 1-DADMax)	84 °F
Temperature (highest annual 7-DADMax)	84 °F
pH (Maximum / Minimum)	11 / 6.6 standard units
Dissolved Oxygen (average; max; min)	8.4; 12.4; 1.1 mg/L
Total Ammonia-N (average; max; min)	0.64; 14.5; 0.02 mg/L
Fecal Coliform (max; geometric mean)	156 /100 mL; 12 /100mL
Alkalinity (average)	165 mg/L as CaCO ₃
BOD (average)	4.9 mg/L
TKN (average)	1.2 mg/L
Flow (average; max; min)	11.9; 28.8; 2.2 cfs

U.S.Bureau of Reclamation Discharge Contract

The discharge of the treated industrial wastewater into the bureau’s wasteway (Figure 3) is allowed per an agreement between the City and the Bureau dated September 21, 1965 that expires in 2015. In a letter dated July 19, 2010, the Bureau informed the City they do not intend to renew the contract.

C. Wastewater characterization

The City/EMC 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 to wasteway DW237. The wastewater effluent is characterized as follows:

Table 3: Wastewater Characterization

Parameter	Units	# of Samples	Average Value	Maximum Daily Value
BOD	mg/L	52	19.6	59
	Lbs/day	52	230	695
TSS	mg/L	58	39	118
	Lbs/day	58	514	2039
Ammonia	mg/L	85	1.01	17
	Lbs/day	85	14	298
Total Residual Chlorine	mg/L	260	0	0
Temperature (summer)	°C	122	20.2	22.5
(winter)	°C	118	13.8	22.5
Flow	MGD	365	1.48	3.03

Parameter	Units	# of Samples	Average Value *	Maximum Daily Value *
Fecal Coliforms	#/ 100 mL	52	6	48

Parameter	Units	# of Samples	Minimum Value	Maximum Value
pH	standard units	233	6.0	8.6

* The units for the fecal coliform values are as presented in the permit application. The units are different from what are in the Fact Sheet boilerplate: monthly geometric mean; 7-Day geometric mean.

D. Summary of compliance with previous permit Issued

Ecology queried the agency’s permit tracking system (PARIS) for violations during the current permit cycle; Appendix E, Table 1. The City and EMC generally complied with the terms and conditions in the permit over the current permit cycle. All required reports have been submitted.

All violations of the effluent flow limit (3.23 MGD) occurred in 2007 and were minor exceedances. Many of the ammonia violations were due to problems with the SBR aeration system which the City replaced in 2009.

The City and EMC submitted a leak detection plan for the SBRs as required by the permit. The first submittal in 2008 was updated in 2010; EMC, 2010. The first leak survey was scheduled for February/March 2011. To date, the leak survey of the SBRs has not been done.

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 the engineering report dated 1997 and prepared by Montgomery Watson. The table below includes design criteria from the referenced report.

Table 4: Design Criteria for the Primary Treatment Plant

Parameter	Design Quantity
Peak monthly flow	4.89 MGD
Instantaneous peak flow	6.98 MGD
BOD ₅ influent loading	74,000 lb/day
TSS influent loading	66,400 lb/day
TKN influent loading	4700 lbs/day

The design influent values for the primary treatment facility were based on flows and concentrations in the influent from Lamb-Weston and J.R. Simplot (now Quincy Foods) during a 12 month period (November 95 – October 96).

Ecology obtained the design flow criteria for the SBRs and the 2005 upgrades from the amended engineering reports prepared by Earth Tech (2000; 2005) and are as follows:

Table 5: Design Flow Standards for the SBRs

Parameter	Design Quantity
Maximum daily flow	3.23 MGD
Maximum month daily flow	4.89 MGD

The maximum daily flow design value is based on meeting the requirements in the 1965 signed agreement between the City and the Bureau of Reclamation that allows the crossing of the Bureau's right of way with an industrial sewerage system and the discharge into the irrigation wasteway.

B. Technology-based effluent limits

The design of the industrial wastewater facility was based, in part, on the quality and quantity of process wastewater discharged from the potato and vegetable processor that discharge to the system, and meeting the discharge limits in the permit. Quincy upgraded the SBRs in 2000 to meet TMDL ammonia limits and upgraded in 2005 to meet water quality-based limits for dissolved oxygen, fecal coliforms, and temperature. Ecology included technology-based limits in the permit for TSS and pH.

TSS

Ecology used daily effluent TSS data (Jan 2007 – Sept 2011) provided by EMC to update the performance-based limits for TSS; Appendix D. The values for ‘Lognormal Transformed Mean’ and ‘Lognormal Transformed Variance’ in the performance-based calculations were determined from the daily TSS data for the summer (April – October) and winter (November – March) seasons. The analysis is also based on a discharge flow of 3.23 MGD.

The results of the performance-based analysis provided the following concentration and load limits.

Table 6: Performance-based limits for TSS

Proposed TSS Performance-Based Limits		
	Summer (April – October)	Winter (November – March)
Maximum Daily limit	114 mg/L; 3071 lbs/day	140 mg/L; 3771 lbs/day
Average Monthly limit	64 mg/L; 1724 lbs/day	72 mg/L; 1940 lbs/day

Current TSS Performance-Based Limits		
	Summer	Winter
Maximum Daily limit	218 mg/L (7272 lbs/day)	118 mg/L (3936 lbs/day)
Average Monthly limit	109 mg/L (3636 lbs/day)	59 mg/L (3636 lbs/day)

The TSS performance-based limits in the current permit are based on daily effluent data for June 02 – March 2006 (n = 196). The SBRs went online in February 2002, therefore the data base includes startup values. From Table 6 it can be seen that the updated winter season TSS limits (Jan 07 – Sept 11) are less stringent (i.e., lower concentration and load values) than the values in the current permit. If Ecology used the updated limit values, this action would be considered backsliding (40 CFR122.44(1)(1)) which is not allowed. Therefore, Ecology will extend the current winter season limits for TSS into the proposed permit.

However, the updated summer season TSS limits are more stringent than the current TSS limits. The updated summer season limits reflect the most up-to-date operational efficiency of the SBRs. Ecology has decided to include the updated TSS performance-based limits in the proposed permit.

Ecology compared the updated summer season TSS limits to actual effluent values for Jan 2007 – July 2011; Appendix F, Figs. 3 and 4. Effluent values were generally less than their respective limits. Compliance with the limits was best in 2010 and 2011 after replacement of the SBR aeration system.

C. Surface water quality-based effluent limits

The Washington State surface water quality standards (chapter 173-201A WAC) are designed to be protective of 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.

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 by the City and EMC 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 affects how far up in the water column a freshwater plume may rise. 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. 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: <http://www.ecy.wa.gov/biblio/92109.html>.

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.

The results of WET testing submitted with the permit application showed no acute or chronic toxicity for samples collected in September/October 2010 and January 2011.

Based on this information, 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 characteristic uses, result in damage to the ecosystem, or adversely affect public health if the permit limits are met.

5. 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.

Because of the above reasons, Ecology has effectively minimized the size of the mixing zone authorized in the proposed permit.

6. Maximum size of mixing zone.

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

7. Acute mixing zone.

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

Ecology determined the acute criteria will be met at 10% of the volume fraction of the chronic mixing zone.

- **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.

8. Overlap of Mixing Zones.

This mixing zone does not overlap another mixing zone.

D. Designated uses and surface water quality criteria

Applicable designated uses and surface water quality criteria are defined in chapter 173-201A WAC. In addition, the U.S. EPA set human health criteria for toxic pollutants (EPA 1992). The table included below summarizes the criteria applicable to this facility's discharge.

Washington updated the surface water criteria in 2006 (WAC 173-201A) and are now based on aquatic life and recreational use. The receiving water wasteway drains are not specifically listed in the standards for designated uses, therefore they must be protected for:

Table 7: 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	<ul style="list-style-type: none"> • 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.

Salmonid Spawning, Rearing, and Migration	
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 8: 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, commerce and navigation, boating, and aesthetics.

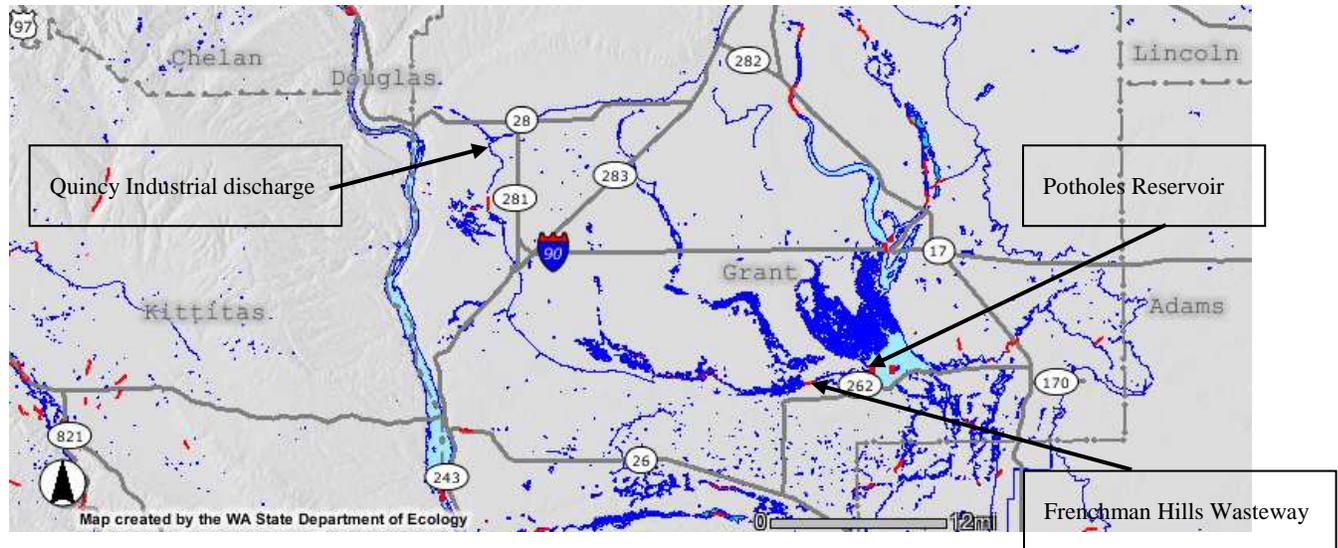
The current aquatic life and recreational use designations are somewhat equivalent to the Class A designation of surface water in the older version of the water quality standards. The TMDL was based on meeting the Class AA criteria.

E. Water quality impairments

Ecology reviewed the most current 303(d) list for impaired waters (2008 Water Quality Assessments) and found none of the wasteway drains that directly receive wastewater from the industrial facility are listed as impaired waters.

However, the Frenchman Hills Wasteway and the Potholes Reservoir that are further downstream in the system are listed.

Figure 6: Frenchman Hills Wasteway and Potholes Reservoir



Both waterbodies are listed as a category 5 which means the waters are impaired by a pollutant and needs a TMDL. The listed parameters for each are:

Frenchman Hills Wasteway: temperature and pH

Potholes Reservoir: dieldrin, 2,3,7,8-TCDD, 4-4'-DDE, and PCB

As seen in Figure 6, the travel distance from the discharge and the wasteway and reservoir is large and the influence of the discharge on these water bodies is most likely negligible.

In October 1998, EPA approved a seasonal TMDL for the receiving water (DW237 and W645) for BOD, ammonia nitrogen, and fecal coliforms. Seasonal limits were determined in recognition that flows in the receiving water varies with the irrigation season.

Ecology determined the TMDL values for BOD and ammonia (Pelletier, 1994) using the QUAL2E model developed by EPA. Calibration and verifications were done using data from a receiving water study (CH₂M Hill, 1992).

Quincy upgraded the SBR system in 2000 to meet the TMDL-based ammonia discharge limits, and upgraded in 2005 to meet the TMDL-based limits for dissolved oxygen, fecal coliforms, and temperature.

Ecology based the TMDL and the water quality-based limits on now defunct receiving water Class AA (Extraordinary) criteria, which now equates to the following uses: water supply (domestic, industrial, agricultural); stock watering; fish migration; fish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation. Water quality of this class must markedly and uniformly exceed the requirements for all or substantially all uses.

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 biological oxygen demand (BOD) 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.

A mixing zone is authorized for each season in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and is defined as follows:

The mixing zone must not extend more than 300ft downstream from the effluent’s entry into drain DW237; 25% of the stream flow shall be allowed to meet chronic criteria and 2.5% of the flow shall be allowed to meet acute criteria.

Ecology determined the seasonal dilution factors for the receiving water (Pelletier, 1994) based on chemical and flow data measured during a receiving water study (CH₂M Hill, 1992).

Table 9: Seasonal Dilution Factors

	Acute	Chronic
Aquatic Life		
Ammonia (summer)	1.1	2.1
Ammonia (winter)	1.0	1.1

Ecology summarized the effluent maximum and minimum pH values (Jan 07 – Sept 11) and compared the values to the water-quality based discharge limits; Appendix F, Fig 1 and 2. With few exceptions, the effluent complied with the pH limits for the summer and winter season.

Dissolved Oxygen--BOD₅ 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 (BOD₅) 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 in the receiving water.

Ecology modeled the impact of BOD₅ and ammonia on the receiving water using critical conditions; Pelletier, 1994.

TMDL BOD:

Ecology determined values to protect the receiving water for a dissolved oxygen concentration of 8 mg/L. At the time of the modeling, Ecology determined that this dissolved oxygen concentration would protect the beneficial uses of the receiving stream. Load values were based on an effluent flow of 4 MGD.

Table 10: TMDL BOD Loading

	<u>Monthly Average</u>	<u>Daily Maximum</u>
Winter (Nov-March)	65 mg/L; 2168 lbs/day	130 mg/L; 4337 mg/L
Summer (Apr-Oct)	51.1 mg/L; 1705 lbs/day	95.2 mg/L; 3176 lbs/day

TMDL Ammonia:

The ammonia values originally determined by Pelletier were updated by Ecology during the preparation of the 1996 discharge permit to reflect new EPA criteria. The updated values were made part of the TMDL.

Table 11: TMDL Ammonia Loading

	<u>Monthly Average</u>	<u>Daily Maximum</u>
Winter (Nov-March)	1.45 mg/L; 48.2 lbs/day	2.90 mg/L; 96.7 mg/L
Summer (Apr-Oct)	1.19 mg/L; 39.8 lbs/day	2.39 mg/L; 79.8 lbs/day

The proposed permit includes the current discharge limits for BOD and ammonia that Ecology based on the TMDL values.

pH - Compliance with the technology-based limits of 6.0 to 9.0 will assure compliance with the water quality standards of surface waters because of the high buffering capacity of marine water.

Fecal Coliform - Under critical conditions, modeling predicted no violation of the water quality criterion for fecal coliform; Pelletier, 1994. Therefore, the proposed permit retains the current daily maximum limit of 50/100 mL, which Ecology based on Class AA receiving water standards in the older version of the surface water quality standards.

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

With the exception of ammonia and chlorine, Ecology has no information to show or suggest the presence of toxic pollutants in the effluent.

The 2005 upgrade included the construction of a chlorine disinfection basin and an injection system to add sodium bisulfite in the cooling tower effluent for de-chlorination to meet water quality-based criteria: acute = 19 ug/L; chronic = 11 ug/L. The proposed permit retains these limits.

Temperature - The current 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.

At locations and times when background temperatures are cooler than the assigned threshold criterion, point sources are permitted to warm the water by only a defined increment. These increments are permitted only to the extent doing so does not cause temperatures to exceed either the annual maximum or supplemental spawning criteria.

At locations and times when a threshold criterion is being exceeded 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.

- 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 2005 upgrade of the treatment facility included the construction of a cooling tower to reduce the temperature of the effluent during the summer months. Ecology determined a reasonable potential to exceed the water quality criteria for a Class AA waterbody during the development of the 2001 discharge permit. Ecology used effluent data for 1997-2000 to conduct reasonable potential. The design of the cooling tower was based on meeting an effluent temperature of 22.5°C during the summer. Ecology determined this temperature limit based on meeting the Class AA water quality at the mixing zone boundary. The proposed permit retains this limit.

Wasteway TMDL

EPA approved the TMDL to irrigation drain DW237 and W645W on October 7, 1998 for BOD, ammonia-nitrogen, and fecal coliforms. Ecology based the 1998 TMDL, in part, on surface water standards that it changed in 2006.

The current water quality standards require that any surface water that does not have defined designated uses, such as DW237 and W645W, must be protected for, “Salmonid spawning rearing, and migration; primary contact recreation; domestic, industrial, and agricultural water supply; stock watering; wildlife habitat; harvesting; commerce and navigation; boating; and aesthetic values”. In addition, because the wasteways ultimately discharge to the Potholes Reservoir, the permit must also protect “core summer salmonid habitat; and extraordinary primary contact recreation” because the reservoir has a detention time greater than 15 days; (WAC 173-201A-600).

The agreement between the City and the Bureau that allows the treated wastewater from the industrial treatment system to discharge into the wasteway system expires in September 2015. Ecology has decided not to update the current TMDL, but to instead extend the TMDL and water quality-based discharge limits, and require the City to submit to Ecology a plan to remove the industrial wastewater from the wasteways by 2015.

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 applicant's discharge (1) is unlikely to contain chemicals regulated to protect human health, and (2) does not contain chemicals of concern based on existing effluent data or knowledge of discharges to their system. Ecology will reevaluate this discharge for impacts to human health at the next permit reissuance.

H. 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.

Test results submitted by the City/EMC for the most recent WET sampling events (April/May 2008, September/October 2010, and January 2011) showed no acute or chronic toxicity at 100% effluent. Based on these results, Ecology determined that toxic effects caused by unidentified pollutants in the effluent are unlikely. Therefore, this permit does not require WET testing is allowed by WAC 173-205-030 (5)(b).

I. Brine Water Discharge

Ecology recently modified the permit (October 2011) to allow the discharge of reverse osmosis (RO) and ion exchange brine reject water to one of two double lined evaporation ponds built near the disinfection/cooling/re-aeration site (Figure 2).

Both ponds were designed to be non-discharging. The proposed permit continues to authorize the discharge of RO/ion exchange brine reject water.

J. Comparison of effluent limits with the previous permit issued on October 13, 2006

Table 12: Comparison of Previous and Proposed Effluent Limits - Summer Season (April - October)

Parameter	Basis of Limit	Previous Effluent Limits: Outfall # 001		Proposed Effluent Limits: Outfall # 001	
		Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
Flow	Design	4.89 MGD	3.23 MGD	4.89 MGD	3.23 MGD
Biochemical Oxygen Demand (5-day)	TMDL	51.1 mg/L; 1705 lbs/day	95.2 mg/L; 3176 lbs/day	Same	Same
Total Suspended Solids	Performance based	109 mg/L; 3636 lbs/day	218 mg/L; 7272 lbs/day	64 mg/L; 1724 lbs/day	114 mg/L; 3071 lbs/day
Total Ammonia Nitrogen	TMDL	1.19 mg/L; 39.8 lbs/day	2.39 mg/L; 79.8 lbs/day	Same	Same
Dissolved Oxygen	TMDL	Shall be not less than 8.0 mg/L or saturation ^a		Same	
Temperature	TMDL	*****	22.5°C	*****	Same
Residual Chlorine	Water quality-based	8 ug/L	20 ug/L	Same	Same
Parameter	Basis of Limit	Monthly Geometric Mean Limit	Maximum Daily	Monthly Geometric Mean Limit	Maximum Daily
Fecal Coliform Bacteria	TMDL	*****	50/ 100 mL	*****	Same
Parameter	Basis of Limit	Daily Minimum	Daily Maximum	Daily Minimum	Daily Maximum
pH	Technology	6.0	9.0	Same	Same

(NOTE: See Appendix E, Response to Comments, Comment #1 from the Bureau of Reclamation for changes to this table)

Table 13: Comparison of Previous and Proposed Effluent Limits - Winter Season (November - March)

Parameter	Basis of Limit	Previous Effluent Limits: Outfall # 001		Proposed Effluent Limits: Outfall # 001	
		Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
Flow	Design	4.89 MGD	3.23 MGD	4.89 MGD	3.23 MGD
Biochemical Oxygen Demand (5-day)	TMDL	65 mg/L; 2168 lbs/day	130 mg/L; 4337 lbs/day	Same	Same
Total Suspended Solids	Performance based	59 mg/L; 3636 lbs/day	118 mg/L; 3936 lbs/day	Same	Same
Total Ammonia Nitrogen	TMDL	1.45 mg/L; 48.2 lbs/day	2.90 mg/L; 96.7 lbs/day	Same	Same
Dissolved Oxygen	TMDL	Shall be not less than 8.0 mg/L or saturation ^a		Same	
Temperature	TMDL	*****	*****	Same	Same
Residual Chlorine	Water quality-based	8 ug/L	20 ug/L	Same	Same

Parameter	Basis of Limit	Monthly Geometric Mean Limit	Maximum Daily	Monthly Geometric Mean Limit	Maximum Daily
Fecal Coliform Bacteria	TMDL	*****	50/ 100 mL	*****	Same

Parameter	Basis of Limit	Daily Minimum	Daily Maximum	Daily Minimum	Daily Maximum
pH	Technology	6.0	9.0	Same	Same

(NOTE: See Appendix E, Response to Comments, Comment #1 from the Bureau of Reclamation for changes to this table)

Bureau of Reclamation Contract

The City of Quincy entered into a 50-year agreement with the Bureau of Reclamation on September 21, 1965 that authorized the city to discharge treated wastewater from its industrial wastewater treatment facility to the bureau's wasteway system. The Bureau has informed the city the agreement will not be extended when it expires in 2015.

One of the conditions of the agreement is the BOD concentration of the discharge shall not exceed 15 mg/l.

The BOD limits in the proposed permit are based on meeting the EPA approved TMDL requirements for dissolved oxygen and exceed the limit required in the Bureau/city agreement.

Ecology will reissue the permit based on its approval of the City's treatment facility providing AKART (all known available and reasonable methods of treatment) as required by RCW 90.48. That AKART is protective of water quality and the permit's effluent limits are based on the EPA approved TMDL for the wasteway. The permit does not authorize the City of Quincy to violate any terms or conditions of any contract agreement. Reference to the City's responsibilities to comply with other laws and statutes is also given in General Condition G6 of the permit.

A second condition of the agreement is the limitation of flow to 3.23 MGD. The maximum daily flow limit in Section S1 (3.23 MGD) is based on the agreement and the average monthly flow limit (4.89 MGD) is based on the design of the industrial wastewater facility. The industrial wastewater facility has been upgraded (flow equalization basin) not to exceed the 3.23 MGD limit. In recognition of the difference in the basis for the two flow values, Section S1 will show the 3.23 MGD limit and Section S7 (Facility Loading) will show the design value of 4.89 MGD.

(Note: Please see Response to Comments section, Comment #1 from the Bureau of Reclamation for the addition of this language to the fact sheet.)

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.

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.

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). Ecology accredited the laboratory at this facility for: ammonia-N, BOD, COD, nitrate, nitrite, pH, total residual chlorine, TSS, fecal and total coliforms.

B. Effluent limits which are near detection or quantitation levels

The water quality-based effluent concentration limits for total residual chlorine are near the limits of current analytical methods to detect or accurately quantify. The method detection level (MDL) 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 is the level at which a laboratory can reliably report concentrations with a specified level of error. Estimated concentrations are the values between the MDL 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. When calculating average monthly concentrations, the facility must use all the effluent concentrations measured below the quantitation level but above the method 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). (**NOTE:** Please see ‘Response to Comments’ section, Comment 7 for changes made to the language in permit Section S3 for reporting and record keeping)

B. Spill plan

This facility stores sodium hypochlorite (12.5%) and sodium bisulfite (38%) in above ground tanks at the disinfection/cooling/reaeration site; Figure 3. Both tanks are surrounded by containment structures. The facility has not identified any other chemicals or materials stored on site that have the potential to cause water pollution if accidentally released. Ecology can require a facility to develop best management plans to prevent this accidental release [Section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080].

The proposed permit does not require the submittal of a spill plan.

C. Solid waste control plan

When Quincy begins operation of the anaerobic digester in late 2011, it will discontinue use of the primary treatment facility (clarifiers and sludge vacuum filter). Thereafter, the facility will generate solid wastes from the digester and SBR’s. The proposed permit requires an update to the O&M manual that includes the new digester and a solid waste plan for the solids from the SBRs and the digester. The facility will update the O&M manual in lieu of preparing a solid waste plan.

D. Operation and maintenance manual

Ecology requires industries to take all reasonable steps to properly operate and maintain their wastewater treatment system in accordance with state and federal regulations [40 CFR 122.41(e) and WAC 173-220-150 (1)(g)]. The facility has prepared and submitted an operation and maintenance manual (City of Quincy, 2005) as required by state regulation for the construction of wastewater treatment facilities (WAC 173-240-150). It has submitted updates to Ecology in 2007 and 2009. Implementation of the procedures in the operation and maintenance manual ensures the facility’s compliance with the terms and limits in the permit.

The proposed permit will require the manual to be updated to include:

1. The O&M of the anaerobic digester including the management of solid wastes.
2. Management of solid wastes from the SBRs.

3. Any specific handling requirements of the brine water and disposal requirements brine residue after evaporation.

E. Leak Detection

SBRs

EMC submitted the most recent leak detection plan for the SBRs in 2010 in a one page document that includes the complete draining of each basin, a visual inspection followed by an electronic leak detection survey. The facility has not completed the first inspection/survey scheduled for February/March 2011.

Ecology understands the difficulty in taking the SBRs off line for an extended period of time because the survey must coincide with reduced flows from the two processors. The proposed permit requires the City/EMC to provide Ecology with a schedule for completion of the first inspection/survey to be conducted in 2012.

Anaerobic Digester

EMC submitted a leak detection plan (2011) for the digester (a/k/a biogas facility) based on a comparison of the known inputs versus the known outputs; i.e., water balance. It plans to conduct the test over a five day period when it can isolate the digester from the waste stream. Any volume lost and not accounted for by moisture in the biogas is due to leakage. EMC defined a significant loss as greater than 0.25 inches over the five days, or 5000 gallons per day. The plan identifies a list of actions to complete if/when this occurs.

An experienced vendor installed the single 60-mil liner and completed an electronic leak survey following installation. The structure includes a 100-mil HDPE cover and it has no mechanical moving parts. Based on this Ecology will require a leak test of the digester during the fourth year of the permit; 2015.

F. Plan for Stopping the Discharge to U.S. Bureau of Reclamation Wasteway DW237, W645W, and W645

As described previously, the City/EMC must terminate the discharge of treated process wastewater from the industrial treatment facility to wasteway DW237, W645W, and W645 by September 2015. The proposed permit requires the City/EMC to submit a plan to Ecology describing what steps it will take and an associated timeline to remove the outfall from the wasteways. (**NOTE:** Please see Response to Comments section, Comment #6 for changes)

G. Application for Permit Renewal

The proposed permit continues to allow the discharge of treated and disinfected wastewater to the U.S. Bureau of Reclamation wasteway until October 1, 2015. The City/EMC must submit an application for the discharge of the wastewater after October 2015.

To allow Ecology sufficient time to reissue the permit, the permit requires the submittal of an application six months before the expiration of the permit; March 2015.

H. Engineering Report – Update

The termination of the discharge of process wastewater to the bureau's wasteway in 2015 will most likely require changes to the infra-structure of the treatment system. The proposed permit requires the City/EMC to submit an updated engineering report no later than one year before the termination of discharge to the bureau's wasteway; September 2014. Ecology will use this information to prepare a new discharge permit.

Plans and Specifications

The City and EMC will be required to submit for review and approval plans and specifications for the removal of the industrial wastewater discharge to the bureau's wasteway.

I. General conditions

Ecology bases the standardized General Conditions on state and federal law and regulations. They are included in all individual industrial 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 ground waters, after obtaining 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 includes 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

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1992. *Receiving Water and Effluent Mixing Study*. October

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2011. *Quincy Industrial Facility – Revised Lagoon #2 Liner Leak Detection Plan Submittal*. July

2010. *SBR Leak Detection Plan*. Email from Travis Kirk, EMC, Quincy. March

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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.

Montgomery Watson.

1997. *City of Quincy Industrial Wastewater Treatment Facility Engineering Report, Facilities Plan, Water Quality-Based Effluent Limitations Compliance*, October.

Pelletier, Greg.

1994. *BOD Loading from Quincy Industrial Wastewater Treatment System*. January.

Washington State Department of Ecology.

November 2010. *Permit Writer's Manual*. Publication Number 92-109
(<http://www.ecy.wa.gov/biblio/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/wastewater/index.html>)

Appendix A - Public Involvement Information

Ecology proposes to reissue the permit to the City of Quincy and EMC. The permit includes wastewater discharge limits and other conditions. This fact sheet describes the facility and Ecology's reasons for requiring permit conditions.

Ecology placed a Public Notice of Application on September 28 and October 5, 2011 in the Columbia Basin Herald to inform the public about the submitted application and to invite comment on the reissuance of this permit.

Ecology will place a Public Notice of Draft Permit on January 6, 2012 in the Columbia Basin Herald to inform the public and to invite comment on the proposed draft National Pollutant Discharge Elimination System permit and fact sheet.

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.
- Urges people to submit their comments, in writing, before the end of the Comment Period
- Tells how to request a public hearing of comments about the proposed NPDES permit.
- Explains the next step(s) in the permitting process.

Ecology has published a document entitled *Frequently Asked Questions about Effective Public Commenting* which is available on our website at <http://www.ecy.wa.gov/biblio/0307023.html>.

You may obtain further information from Ecology by telephone at (509) 329-3524 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

The primary author of this permit and fact sheet is Don Nichols.

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
<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

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).

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

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.

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.

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).

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 -- See Method Detection Level.

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%.

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.

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.

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.

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- period, expressed as a daily or hourly average.

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

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.

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).

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 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 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>.

Performance-based TSS limits – Summer (April – October)

PERFORMANCE-BASED EFFLUENT LIMITS	
USE EXCEL TO PERFORM THE LOGNORMAL TRANSFORMATION AND CALCULATE THE TRANSFORMED MEAN AND VARIANCE	
LOGNORMAL TRANSFORMED MEAN =	3.3924
LOGNORMAL TRANSFORMED VARIANCE =	0.3325
NUMBER OF SAMPLES/MONTH FOR COMPLIANCE MONITORING =	2
AUTOCORRELATION FACTOR(ρ)(USE 0 IF UNKNOWN) =	0
E(X) =	35.1158
V(X) =	486.403
VARn	0.1800
MEANn=	3.4686
VAR(Xn)=	243.201
MAXIMUM DAILY EFFLUENT LIMIT =	113.708
AVERAGE MONTHLY EFFLUENT LIMIT =	64.494

Performance-based TSS limits – Winter (November – March)

PERFORMANCE-BASED EFFLUENT LIMITS	
USE EXCEL TO PERFORM THE LOGNORMAL TRANSFORMATION AND CALCULATE THE TRANSFORMED MEAN AND VARIANCE	
LOGNORMAL TRANSFORMED MEAN =	3.3097
LOGNORMAL TRANSFORMED VARIANCE =	0.4917
NUMBER OF SAMPLES/MONTH FOR COMPLIANCE MONITORING =	2
AUTOCORRELATION FACTOR(ρ)(USE 0 IF UNKNOWN) =	0
E(X) =	35.0078
V(X) =	778.415
VARn	0.2758
MEANn=	3.4177
VAR(Xn)=	389.208
MAXIMUM DAILY EFFLUENT LIMIT =	139.880
AVERAGE MONTHLY EFFLUENT LIMIT =	72.354

Appendix E - Response to Comments

Quincy-Columbia Basin Irrigation District Response to Comments on the Draft NPDES Permit No. WA-0021067-7 and associated Fact Sheet

A copy of the original comment letter is attached to this fact sheet.

DRAFT PERMIT COMMENTS

Comment 1: Reporting and Recordkeeping

The District requests that the Reporting and Recordkeeping Requirements section of the draft permit be updated to include mailing and email addresses as indicated below:

Quincy-Columbia Basin Irrigation District
Water Quality Programs
PO Box 188
Quincy, WA 98848

cgyselinck@qcbid.org

Response to Comment 1

Section S3.A of the permit (Reporting and recordkeeping requirements, Reporting) has the district's mailing address for all monthly discharge monitoring reports. Ecology has edited this section of the permit to require the city to begin submitting electronic DMRs by September 2012. Until then the city will continue to send paper copies to the District. After September, the District can obtain the monthly data by using the following link:
www.ecy.wa.gov/programs/wq/permits/wwdischargepermits.html.

Comment 2: Reporting and Recordkeeping

Additionally, the District requests to be included in Section 3(E) of the draft permit and to be notified of any violations of the conditions of this permit.

Response to Comment 2

Ecology will add to Section S3.E (Reporting permit violations) the phone number of the irrigation district for the Permittee to immediately report failures of the disinfection system and collection system overflows.

Quincy-Columbia Basin Irrigation District: 509.787.3591

Comment3:

A correction should be noted regarding the “receiving Water” and “Water Quality Impairments” as described in the permit. Treated water from the Facility discharges into the DW237 which flows into the W645W and W645. The W645 discharges into the Frenchman Hills Wasteway (FH WW) before being received by the Potholes Reservoir. On the most current 303(d) list for impaired waters (2008 Water Quality Assessments) the FH WW is listed as a category 5 polluted water for pH and temperature.

Response to Comment 3

Ecology has added language to the following sections in the Fact Sheet:

1. Section B (Description of the receiving water) that explains the entire wasteway drainage from the receiving water (DW237) to the Potholes Reservoir.
2. Section E (Water quality impairments) has been edited to show a map of the drainage area and the location of the 303(d) listed waterbodies; Frenchman Hills and Potholes Reservoir.

Bureau of Reclamation Response to Comments on the Draft NPDES Permit No. WA-0021067-7 and associated Fact Sheet

A copy of the original comment letter is attached to this fact sheet.

DRAFT PERMIT COMMENTS

Comment 1:

The volume of water being discharged by the IWTF into the receiving water DW237 is concerning. The contract allows for 5 cfs, or 3.23 MGD, as per the capacity and structural integrity of the constructed facility. In the draft permit and fact sheet, the flow set for the Maximum Daily allowance is 3.23 MGD; however, Ecology also allows for a monthly average of 4.89 MGD. The 3.23 MGD should not be exceeded for any given day to protect the federal irrigation facilities from potential injury related with the increased volumes of water, as well as to protect public health and safety.

Monthly average limits for the biological oxygen demand (BOD) in the permit and fact sheet are set at 51.1 mg/L in the summer and 65 mg/L in the winter, and daily maximum limits are set at 95.2 mg/l in the summer and 130 mg/L in the winter, while the contract Reclamation has with the City allows for a daily maximum of 15 mg/l of BOD in the effluent.

Response to Comment 1:

Section III.J of the fact sheet will be edited to reflect the following:

Ecology is aware of the contract between the city and the bureau regarding the discharge limitations for the industrial treated effluent to the wasteway system that are in the agreement. With regard to the BOD limit in the agreement, Ecology is reissuing the permit based on its approval of the city's treatment facility providing AKART (all known available and reasonable methods of treatment) as required by RCW 90.48, and water quality is being protected by the permit's effluent limits that are based on the EPA approved TMDL for the wasteway. The permit does not authorize the City of Quincy to violate any terms or conditions of any agreement or contract

Regarding the Bureau's flow limit in the agreement, the maximum daily flow limit in Section S1 (3.23 MGD) is based on the value set in the agreement. The average monthly flow limit in S1 (4.89 MGD) is based on the influent design loading of the industrial wastewater facility. The industrial wastewater facility is and has been operated to not exceed the 3.23 MGD effluent limit. The city has installed a flow equalization basin to help insure this value is not exceeded. In recognition of the difference in basis for the two flow values, Section S1 will show the 3.23 MGD limit and Section S7 (Facility Loading) will show the design value of 4.89 MGD.

Comment 2:

Reclamation would like to reiterate its concerns with the proximity of the brine ponds to the West Canal; in the event of a severe leak or breach there could be catastrophic consequences in the immediate and downstream areas of the canal. Reclamation also feels the acceptable volume of leakage from the brine ponds could impact the groundwater beneath the ponds belonging to Reclamation.

Response to Comment 2:

We appreciate your concern but based on information presented in the engineering report for the ponds, the site for the brine ponds is approximately 300ft from the West Canal. This is well beyond the right of way for the West Canal. Each pond is double lined with 60-mil HDPE with a leak detection geocomposite between the two liners. Any water that is collected between the liners gravity flows to a leak detection standpipe at each pond. Section S2.A of the permit requires daily measurements for the presence and volume of water in the standpipes, and 4/year testing of the collected water. The monitoring provides an indicator of potential issues. In addition, both ponds were built below grade so there is no chance of breaching. Additionally, both ponds were built according to Ecology's guidance for storage ponds.

Comment 3:

Reclamation is concerned that no groundwater and soil sampling/monitoring has been included in the NPDES Permit requirements. Reclamation believes that groundwater and soil sampling should be incorporated into the permit requirements. Samples should be extracted from along the perimeter of the ponds in order to monitor how saturated the groundwater and soils are becoming, as well as tracking any leaching that may occur as a result of the acceptable leakage. The introduction of high concentrations of salts into irrigation water (the groundwater beneath the ponds) may impact crop production in the surrounding area and possibly downstream. Other

monitoring Reclamation feels is being overlooked for the DW237 Wasteway concerns the chemicals being used in the treatment facility for disinfection and dechlorination, as well as a full work up for nutrients, not just Total Kjeldahl Nitrogen (TKN).

Response to Comment 3:

Ecology will not add groundwater and soil sampling/monitoring for the area around the brine ponds, and will not require a full workup for nutrients in the effluent. It is Ecology's position that the double lined leak detection construction of both brine ponds makes the potential for groundwater and soil impacts from the ponds very minimal. The leak detection system monitoring can alert EMC of a potential problem with the liner(s) and allow for a timely repair.

According to the approved plans and specifications for the disinfection system, sodium bisulfite is used for dechlorination. The point of injection downstream of the chlorine contact basin is dependent on the season; before the re-aeration basin (winter season) and before the cooling tower (summer season). The use of sodium bisulfite is a widely accepted method to dechlorinate before discharging into a surface water. More information can be read on the subject in EPA's *Wastewater Technology Fact Sheet, Dechlorination*, September 2000, EPA 832-F-00-022.

The DW237 wasteway collects surface and subsurface drainage water from fertilized irrigated crop lands upstream from the point where the industrial effluent discharges. Ecology is unaware of any nutrient related problems in the wasteway downstream of the point of discharge. It is Ecology's understanding that the nutrient load in the wasteways and the resulting plant/weed growth is managed by the bureau/irrigation district by routinely using chemicals to keep the wasteway system free flowing. The nutrient load contributed from the discharge would be managed by the current operations and maintenance of the wasteway.

Comment 4:

Reclamation is very interested in the spill plan the Data Centers and the City are engineering. If a spill or leak from the conveyance system of the brine water were to occur there could be devastating effects to both crops and the land.

Response to Comment 4:

Brine water from the reverse osmosis and demineralization facilities will be truck transported to the ponds. Until the brine water is piped to the ponds, Ecology will not require a spill plan. Ecology will require an Engineering Report and designs and specifications prior to the installation of the pipeline. Ecology will discuss the need for leak detection for the pipeline with the facility during review of these documents.

Comment 5:

On page one of the Fact Sheet, there is mention of the proposed permit requiring the submittal of a discharge management plan describing the City's plan for discharge of wastewater after September 2015. Reclamation would like to request a copy of any engineering plans submitted to Ecology on behalf of this project, as well as to be kept apprised of the City's intentions for relocating the discharge, due to the number of federal facilities in the region.

Response to Comment 5:

Ecology agrees to edit the requirements in Section S8 of the permit to require that a copy of the city's plan to stop discharging to the wasteway be sent to the Bureau and the Irrigation District.

Comment 6:

Reclamation has been receiving the monthly discharge monitoring reports (DMR's) from the IWTF, and would like to request that they remain a recipient of the DMR's until such time that there is no longer any discharge entering Reclamation facilities from the IWTF.

Response to Comment 6:

Ecology is requiring all dischargers to begin using their newly developed electronic data entering system, WAWebDMR. Once the data has been entered by the Permittee, it can be viewed and downloaded by the public.

Ecology will edit Section S3 of the permit to add updated permit shell language that requires the Permittee to begin using WAWebDMR by September 1, 2012. Until then, paper copies of the DMRs shall be sent to the Bureau and Irrigation District.

The Bureau and Irrigation District can access the WAWebDMR data from Ecology's main permit tracking system (PARIS) at:

<http://www.ecy.wa.gov/programs/wq/permits/wwdischargepermits.html>

American Water Contract Services Re: Environmental Management Corp Response to Comments on the Draft NPDES Permit No. WA-0021067-7 and associated Fact Sheet

A copy of the original comment letter is attached to this fact sheet.

DRAFT PERMIT COMMENTS

Comment 1:

The draft permit identifies a new summer outfall TSS limit for both mg/L and lbs/day. The new TSS limit affects both Average Monthly and Maximum Daily parameters.

EMC objects to the new TSS limits for the following reasons:

1. The IWTF has not had any improvements or capital upgrades since the last permit cycle to address the lower effluent TSS permit requirements.
2. Based on the Facility Loading Design Monthly Maximum of 66,400 lbs/day and the lower permit parameter for daily maximum daily discharge of 3,071 lbs/day. The new parameter requires the IWTF to operate at a 95 percent reduction rate.

3. Algae can grow in the EQ basin after the SBR process during low flow periods typically occurring in the summer months. The lower TSS parameter may require capital improvement by the city to meet the new discharge limit.

Accordingly, the draft NPDES permit should be revised to reflect the current permit TSS parameters.

Response to Comment 1:

Ecology will not change the summer season limits for TSS.

Figure 3 and 4 in the Fact Sheet compares the updated limits to values reported in the DMRs during the current permit cycle. The IWTP would have exceeded the updated maximum and average summer TSS concentration and load limits once during the last permit cycle. There is every indication the IWTP can comply with updated summer limits.

With regards to algae growth contributing to the TSS concentration in the effluent, Ecology suggests the Permittee make note of this in the monthly DMR. A digital picture of algal growth or other contributing factors to high TSS can be attached to the WAWebDMR. The following formats can be attached to a WAWebDMR: ".xls", ".xlsx", ".doc", ".docx", ".txt", ".gif", ".jpeg", ".jpg", ".bmp", ".pdf", ".tif"

Comment 2: Special Condition S1.B, Brine Water Discharge.

Special condition S1.B needs to be changed to, “..the Permittee is authorized to discharge wastewater with a TDS concentration in excess of 500 mg/L from the local industries to the non discharging lined brine ponds located on the industrial wastewater treatment site.”

Response to Comment 2:

Ecology agrees to edit the conditions in Section S1.B of the permit.

Ecology reviewed the engineering report for the brine ponds. The ponds will manage brine waste generated by the demineralization facility located at Microsoft, and “..potentially other brine wastes produced by City customers.” In addition, the approved engineering report for the brine waste ponds stated a TDS concentration of 35,000 mg/L or 3.5 percent solids.

The changes made to S1.B are:

Beginning on the effective date of the permit and lasting through the expiration date, **brine water from the Microsoft – Columbia Data Center’s ion exchange demineralization process/reverse osmosis system, and from brine wastes produced by city customers, not to exceed 35,000 mg/L, the Permittee is authorized to be discharged** ~~discharge brine water from the reverse osmosis/ion exchange system that is located at the Microsoft – Columbia Data Center~~ to non discharging lined brine ponds located on the industrial wastewater facility site.

Comment 3: Special Condition S8

Permittee should be changed from “EMC” to the “City of Quincy”. This requirement would be a City of Quincy responsibility as owner of the facility – EMC is the contract operator of the IWTP.

Response to Comment 3:

Ecology will not change the language in Section S8.

The phrase, ‘The Permittee...’ is consistently used throughout the permit and does not specifically identify either of the co-permittees. Ecology will leave the issue of the responsible party to the language in the service agreement.

Comment 4: Special Condition S9

Please remove the reference to EMC from this section. EMC should not be a party to this requirement. EMC is the contract operator of the IWTP, not the owner.

Response to Comment 4:

Based on the response to Comment 3, Ecology will edit the language in S9 to read: “No later than September 1, 2013, the Permittee ~~the City and EMC~~ must submit to Ecology.....”

Comment 5: Special Condition S9.A

Please remove the reference to EMC from this section. EMC should not be a party to this requirement. EMC is the contract operator of the IWTP, not the owner.

Response to Comment 5:

Based on the response to Comment 3, Ecology will edit the language in S9.A to read: “The Permittee ~~The City and EMC~~ must submit to Ecology.....”

Comment 6: Special Condition G13

Permittee should be changed from “EMC” to the “City of Quincy”. This requirement would be a City of Quincy responsibility as owner of the facility. EMC is the contract operator of the IWTP.

Response to Comment 6:

Based on the response to Comment 3, the language in G13 will not be changed.

Quincy-Columbia Basin Irrigation District

Telephone (509) 787-3591 Fax (509) 787-3906

Post Office Box 188

Quincy, Washington 98848

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JAN 12 2012

DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

January 10, 2012

Mr. Don Nichols
Department of Ecology
4601 N. Monroe Street
Spokane, WA 99205

RE: Draft National Pollutant Discharge Elimination System Waste Discharge (NPDES) Permit No. WA - 002106-7; Quincy Industrial Wastewater Treatment Facility

Dear Mr. Nichols:

The Quincy-Columbia Basin Irrigation District (District) appreciates the opportunity to comment on Ecology's draft NPDES Permit and Fact Sheet for the Quincy Industrial Wastewater Treatment Facility (Facility).

On January 5th 2012, the District received a Determination of Nonsignificance from the City of Quincy to construct a packing and storage operation. It was proposed that packing line water would be discharged into the Facility. It is expected, upon successful approval of the proposed development activity, that this discharge will be properly permitted into the current NPDES Waste Discharge Permit.

The District requests that the Reporting and Recordkeeping Requirements section of the draft permit be updated to include the corrected mailing and email addresses as indicated below:

Quincy-Columbia Basin Irrigation District
Water Quality Programs
PO Box 188
Quincy, WA 98848

cgyselinck@qcbid.org

Additionally, the District requests to be included in Section 3(E) of the draft permit to be notified of any violations of the conditions of this permit. Violation of discharge limits may negatively affect the District's compliance with state and federal water quality standards, downstream water quality irrigation delivery, and District monitoring programs.

A correction should be noted regarding the "Receiving Water" and "Water Quality Impairments" as described in the permit. Treated water from the Facility discharges into the DW237 which flows into the

W645W and W645. The W645 discharges into the Frenchman Hills Wasteway (FH WW) before being received by the Potholes Reservoir. On the most current 303(d) list for impaired waters (2008 Water Quality Assessments) the FH WW is listed as a category 5 polluted water for pH and temperature.

Please contact me at (509) 787-3591 if you have questions regarding these comments.

Sincerely,



Craig Gyselink
Water Quality Programs Manager

Co: Darwin Fales – QCBID Secretary Manager
Troy Freeman – QCBID O&M Assistant Manager
Roger Sonnichsen – QCBID – Technical Services Assistant Manager
Stephanie Utter – Ephrata Field Office Manager
Tim Snead – City of Quincy
Jay Favor – Environmental Management Corporation



IN REPLY REFER TO:
EPH-2212
ENV-8.00

United States Department of the Interior
BUREAU OF RECLAMATION
Ephrata Field Office
P.O. Box 815
Ephrata, Washington 98823



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FEB 03 2012

DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

FEB - 2 2012

Mr. Don Nichols
Washington State Department of Ecology
4601 N. Monroe Street
Spokane, WA 99205

Subject: Draft National Pollution Discharge Elimination System (NPDES) Permit No. WA-002106-7 for the City of Quincy (City) Industrial Wastewater Treatment Facility located in Quincy, Washington, Columbia Basin Irrigation Project

Dear Mr. Nichols:

The Bureau of Reclamation appreciates the opportunity to comment on the Department of Ecology's (Ecology) draft NPDES Permit and Fact Sheet for the City's Industrial Wastewater Treatment Facility. Ecology is proposing to re-issue an NPDES Permit to the City for its Industrial Wastewater Treatment Facility (IWTF) located in Quincy, Washington.

In the draft Fact Sheet for NPDES Permit WA-002106-7, Ecology references the contract Reclamation has with the City for their discharge of non-agricultural wastewater from the IWTF into the DW237, W645W, and W645 Wasteways, then onto the Frenchman Hills Wasteway, ultimately ending up in Potholes Reservoir. The City has been unable to meet their contractual obligations with Reclamation, concerning the established water quality parameters set forth in the above mentioned contract, which will expire September 21, 2015.

The volume of water being discharged by the IWTF into the receiving water DW237 is concerning. The contract allows for 5cfs, or 3.23 MGD, as per the capacity and structural integrity of the constructed facility. In the draft permit and fact sheet, the flow set for the Maximum Daily allowance is 3.23 MGD; however, Ecology also allows for a monthly average of 4.89 MGD. The 3.23 MGD should not be exceeded for any given day to protect the federal irrigation facilities from potential injury related with increased volumes of water, as well as to protect public health and safety.

Monthly average limits for the biological oxygen demand (BOD) in the permit and fact sheet are set at 51.1mg/L in the summer and 65 mg/L in the winter, and daily maximum limits are set at 95.2 mg/L in the summer and 130 mg/L in the winter, while the contract Reclamation has with the City allows for a daily maximum of 15 mg/L of BOD in the effluent.

Reclamation would like to reiterate its concerns with the proximity of the brine ponds to the West Canal; in the event of a severe leak or breach there could be catastrophic consequences in the immediate and downstream areas of the canal. Reclamation also feels the acceptable volume of leakage from the brine ponds could impact the groundwater beneath the ponds belonging to Reclamation.

Reclamation is concerned that no groundwater and soil sampling/monitoring has been included in the NPDES Permit requirements. Reclamation believes that groundwater and soil sampling should be incorporated into the permit requirements. Samples should be extracted from along the perimeter of the

ponds in order to monitor how saturated the groundwater and soils are becoming, as well as tracking any leaching that may occur as a result of the acceptable leakage. The introduction of high concentrations of salts into irrigation water (the groundwater beneath the ponds) may impact crop production in the surrounding area and possibly downstream. Other monitoring Reclamation feels is being overlooked for the DW237 Wasteway concerns the chemicals being used in the treatment facility for disinfection and dechlorination, as well as a full work up for nutrients, not just Total Kjeldahl Nitrogen (TKN).

Reclamation is very interested in the spill plan the Data Centers and the City are engineering. If a spill or leak from the conveyance system of the brine water were to occur there could be devastating effects to both crops and the land.

On page one of the Fact Sheet, there is mention of the proposed permit requiring the submittal of a discharge management plan describing the City's plan for discharge of wastewater after September 2015. Reclamation would like to request a copy of any engineering plans submitted to Ecology on behalf of this project, as well as to be kept apprised of the City's intentions for relocating the discharge, due to the number of federal facilities in the region.

Reclamation has been receiving the monthly discharge monitoring reports (DMR's) from the IWTF, and would like to request that they remain a recipient of the DMR's until such time that there is no longer any discharge entering Reclamation facilities from the IWTF.

In regards to the previously mentioned circumstances, Reclamation requests that Ecology give thoughtful consideration to these comments concerning the City of Quincy's Industrial Wastewater Treatment Plant NPDES Permit.

If there are any questions concerning these comments, please direct them to Ms. Gina Hoff, Water Quality Specialist, at 509-754-0254.

Sincerely,



Stephanie Utter
Ephrata Field Office Manager

cc: Mr. Darvin Fales
Quincy-Columbia Basin Irrigation District
P.O. Box 188
Quincy, WA 98848

Mr. Craig Gyselink
Quincy-Columbia Basin Irrigation District
P.O. Box 188
Quincy, WA 98848

Mr. Richard Lemargie, Attorney
Columbia Basin Irrigation Districts
P.O. Box 965
Ephrata, WA 98823

Mr. James Bellatty, Water Quality Section Manager
Eastern Regional Office, Department of Ecology
4601 N. Monroe Street
Spokane, WA 99205



AMERICAN WATER
Contract Services Group

1001 Boardwalk Springs Place P 636.561.9400
Suite #100 F 636.561.9481
O'Fallon, MO 63368
www.amwater.com

January 31, 2012

Mr. Don Nichols
Permit Manager
Water Quality Section
Washington State Department of Ecology
4601 N. Monroe Street
Spokane, WA 99205-1295

Subject: Draft NPDES Permit No. WA-002106-7

Dear Mr. Nichols:

With regard to the subject draft permit, Environmental Management Corp. (EMC) provides the following comments.

General

The draft permit identifies a new summer outfall TSS limit for both mg/L and lbs/day. The new TSS limit affects both Average Monthly and Maximum Daily parameters.

EMC objects to the new TSS limits for the following reasons:

- The IWTP has not had any improvements or capital upgrades since the last permit cycle to address the lower effluent TSS permit requirements.
- Based on the Facility Loading Design Monthly Maximum of 66,400 lbs/day and the lower permit parameter for daily maximum daily discharge of 3,071 lbs/day. The new parameter requires the IWTP to operate at a 95 percent reduction rate.
- Algae can grow in the EQ basin after the SBR process during low flow periods typically occurring in the summer months. The lower TSS parameter may require a capital improvement by the city to meet the new discharge limits.

Accordingly, the draft NPDES permit should be revised to reflect the current permit TSS parameters.

Special Conditions-S1.B.

Brine Water Discharge

Special condition S1.B needs to be changed to, "... the Permittee is authorized to discharge wastewater with a TDS concentration in excess of 500 mg/L from the local industries to the non discharging lined brine ponds located on the industrial wastewater facility site."

Proprietary and Confidential:

Special Conditions-S8

Plan for stopping the discharge to U.S Bureau of Reclamation wasteway DW 237, W645W, and W645.

Permittee should be changed from "EMC" to the "City of Quincy". This requirement would be a City of Quincy responsibility as owner of the facility - EMC is the contract operator of the IWTP.

Special Conditions-S9

Engineering Report-Update

Please remove the reference to EMC from this section. EMC should not be a party to this requirement. EMC is the contract operator of the IWTP, not the owner.

Special Conditions-S9.A

Plans and Specifications

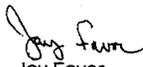
Please remove the reference to EMC from this section. EMC should not be a party to this requirement. EMC is the contract operator of the IWTP, not the owner.

Special Conditions-G13

Payment of Fees

Permittee should be changed from "EMC" to the "City of Quincy". This requirement would be a City of Quincy responsibility as owner of the facility. EMC is the contract operator of the IWTP.

I thank you for consideration of EMC comments, and look forward to answering any questions or comments that you have. Please feel to contact me at 509/797-3053.


Jay Favor
Project Manager
Quincy, WA

cc:
City of Quincy
R. Jones, American Water

Appendix F - Graphs, Figures, Tables

Table 1. Permit violations

Quincy Industrial						
Permit Violations (Jan 07 - July 2011)						
3/1/2007	Flow	Maximum	MGD	3.24 -	3.23	Numeric effluent violation
4/1/2007	Flow	Maximum	MGD	3.55 -	3.23	Numeric effluent violation
6/1/2007	Flow	Maximum	MGD	3.24 -	3.23	Numeric effluent violation
7/1/2007	Flow	Maximum	MGD	3.24 -	3.23	Numeric effluent violation
8/1/2007	Flow	Maximum	MGD	3.24 -	3.23	Numeric effluent violation
12/1/2007	Ammonia, Total	Average	Milligrams/L (mg/L)	2.92 -	1.45	Numeric effluent violation
12/1/2007	Ammonia, Total	Maximum	Lbs/Day	121.6 -	96.7	Numeric effluent violation
12/1/2007	Ammonia, Total	Average	Lbs/Day	51.1 -	48.2	Numeric effluent violation
12/1/2007	Ammonia, Total	Maximum	Milligrams/L (mg/L)	7.48 -	2.9	Numeric effluent violation
7/1/2009	Ammonia, Total	Average	Milligrams/L (mg/L)	1.39 -	1.19	Numeric effluent violation
11/1/2010	Ammonia, Total	Maximum	Lbs/Day	297.8 -	96.7	Numeric effluent violation
11/1/2010	Ammonia, Total	Maximum	Milligrams/L (mg/L)	17.45 -	2.9	Numeric effluent violation
11/1/2010	Ammonia, Total	Average	Milligrams/L (mg/L)	1.56 -	1.45	Numeric effluent violation
7/1/2009	Temperature	Maximum	Degrees C	24.7 -	22.5	Numeric effluent violation
9/1/2009	Temperature	Single Sample	Degrees F	-	-	Analysis not Conducted

Fig. 1 Summer season effluent pH compliance

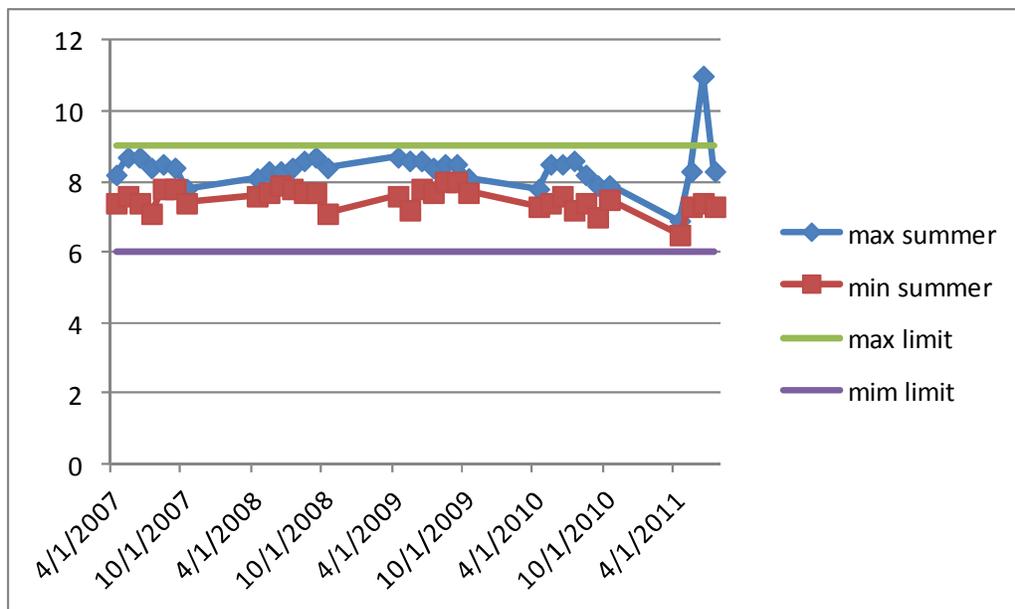


Fig. 2 Winter season effluent pH compliance

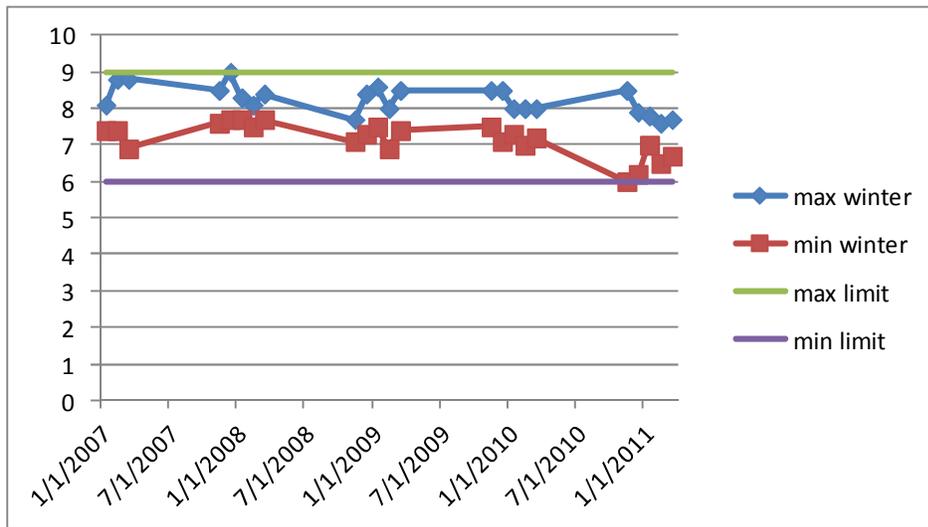


Fig. 3. Actual Effluent TSS vs Updated Limits (mg/L) – Summer season

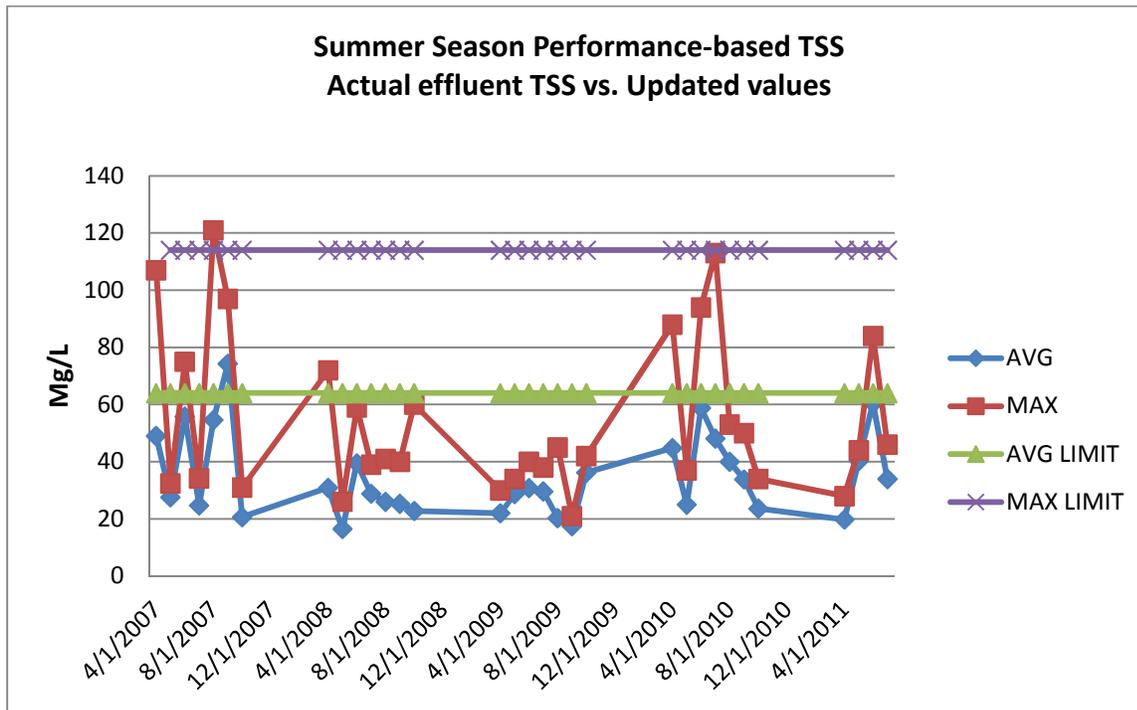


Fig. 4. Actual Effluent TSS vs Updated Limits (lbs/day) – Summer season

