Fact Sheet

U.S. Environmental Protection Agency
Region 10

The United States Environmental Protection Agency (EPA)
Plans to Issue a
National Pollutant Discharge Elimination System (NPDES) Permit to:

Applicant: City of Rigby
Wastewater Treatment Plant
158 West Femont
Rigby, Idaho 83442

Permit No.: ID0020010

Public Comment Period
Starts: **<date>**
Ends: **<date>**

Technical Contact
Name: Lindsay Guzzo
Phone: (206)553-0268
1-800-424-4372 ext.0268 (within Alaska, Idaho, Oregon, and Washington)
Email: guzzo.lindsay@epa.gov

EPA's Tentative Determination
EPA proposes to issue an NPDES permit to the City of Rigby Wastewater Treatment Plant. The draft permit places conditions on the discharge of pollutants from the Sewage Treatment Plant to Dry Bed Canal. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged.

This Fact Sheet includes:

•information on public comment, public hearing, and appeal procedures;
•a description of the facility and proposed discharge;
•a listing of proposed effluent limitations, and other conditions;
•a map and description of the discharge location; and
•detailed technical material supporting the conditions in the permit.

Public Comment and Public Hearings

Persons wishing to comment on the tentative determinations contained in the draft permit must do so, in writing, by the end date of this public comment period. All comments should include the name, address, and telephone number of the commenter, reference the facility name and NPDES permit number, and include a concise statement of the exact basis of any comment and the relevant facts upon which it is based.

Persons wishing to request that a public hearing be held may do so, in writing, by the end date of this public comment period. A request for a public hearing must state the nature of the issues to be raised, reference the facility name and NPDES permit number, and include the requester's name, address, and telephone number.

All written comments and requests should be submitted to the attention of the Director, Office of Water and Watersheds at the following address:

U.S. EPA, Region 10
1200 Sixth Avenue, M/S OWW-130
Seattle, Washington 98101

Comments may also be submitted electronically to the technical contact listed above.

After the Public Notice expires, and all comments have been considered, EPA's Director for the Office of Water and Watersheds in Region 10 will make a final decision regarding permit issuance. If no significant comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If comments are received, EPA will address the comments and issue the permit. The permit will become effective 30 days after the issuance date, unless the permit is appealed to the Environmental Appeals Board within 30 days.

Availability of Documents

The following documents are available at the EPA Region 10 Office, 1200 Sixth Ave, Seattle, Washington, between 8:30 a.m. and 4:00 p.m., Monday through Friday:

•permit application and any supporting data submitted by the permittee
•draft permit
•fact sheet
•documents referenced in fact sheet
•other documents (e.g., meeting reports, correspondence, trip reports, telephone memos, calculations, etc.)
•State of Idaho preliminary comments

Copies of the draft permit and fact sheet are also available at:

EPA Region 10's website: www.epa.gov/r10earth/waterpermits.htm

EPA Idaho Operations Office
1435 North Orchard Street
Boise, Idaho 83706
(206) 378-5746

State Certification

EPA is requesting that the Idaho Department of Environmental Quality (IDEQ) certify this NPDES permit for the **City of Rigby**, under section 401 of the Clean Water Act. The State provided preliminary comments on the draft permit, and those comments have been incorporated into this draft permit.

Persons wishing to comment on the State's intent to certify this permit should submit written comments by the end date of this public comment period to the Administrator of IDEQ, with a copy to EPA, at the following address:

Regional Administrator, State of Idaho
Department of Environmental Quality
Idaho Falls Regional Office
900 N. Skyline, Suite B
Idaho Falls, ID 83402

TABLE OF CONTENTS

LIST OF TABLES

ACRONYMS

BMPs	Best management practices
BOD	Biochemical oxygen demand
BOD_5	Biochemical oxygen demand, five-day
°C	Degrees Celsius
CFR	Code of Federal Regulations
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Department of Environmental Quality
lb	pounds
mg/L	milligrams per liter
mL	milliliter
MSWLF	Municipal solid waste landfill
N	Nitrogen
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NR	Not required
OWW	Office of Water and Watersheds
P	Phosphorus
POTW	Publicly owned treatment works
QAPP	Quality assurance project plan
sp.	Species
TRC	Total residual chlorine
TSD	Technical Support document (EPA, 1991)
TSS	Total suspended solids
TWTDS	Treatment works treating domestic sewage
USFWS	U.S. Fish and Wildlife Service
WET	Whole effluent toxicity
WQBEL	Water quality-based effluent limit
WWTP	Wastewater treatment plant

I. BACKGROUND

A. Applicant

City of Rigby
Wastewater Treatment Plant (WWTP)

Facility Location:
3930 East 500 North
Rigby, Idaho 83442

Mailing Address:
158 West Femont
Rigby, Idaho 83442

Facility Contact: John Anderson, Mayor
(208) 745-8111

B. Activity

The City of Rigby is located in Jefferson County, in southeastern Idaho. The City owns and operates a municipal wastewater treatment plant that provides secondary treatment and disinfection of wastewater prior to discharge in Dry Bed Canal, a tributary of the Snake River.

The plant receives domestic wastewater from residential and commercial sources; there are no significant industrial dischargers. The City has a population of approximately 3,000 people, and the facility's design flow is 0.53 million gallons per day (mgd). Details about the treatment process are discussed below and in Appendix A. A map showing the location of the facility is included in Appendix B.

C. Facility History

The existing WWTP consists of a wet well, a pump station, a Parshall flume followed by two aerated cells that can be operated in series or parallel, two non-aerated cells, and a chlorine contact chamber. The plant has had no major changes or upgrades since the last permit. The plant recently discovered an excessive inflow and infiltration (I & I) problem that contributes groundwater to the initial influent entering the plant. Although the plant was designed to meet

85% removal of BOD_5 and TSS, they are not consistently complying with removal limits due to the high I & I problem.

D. Plant Performance

A review of the Discharge Monitoring Reports (DMRs) for the past ten years shows that the existing plant has had difficulty complying with their effluent limits. A summary of the plant performance for the past ten years is provided in Table I-1.

TABLE I-1. SUMMARY OF PLANT PERFORMANCE (1994 – 2004)

Parameter	Average Plant Performance	# Reported Violations
Flow	.60 mgd	N/A
Effluent BOD_5	21.4 mg/L	15
	90 lbs/day	16
Effluent TSS	16.43 mg/L	14
	82.34 lbs/day	12
% Removal, BOD_5	70.2 %	15
Total Residual Chlorine	.49 mg/L	41
Fecal Coliform	10 colonies/100 mL	4
pH	6.4-8.9 s.u.	0

II. RECEIVING WATER

Dry Bed Canal, Idaho

The City of Rigby WWTP effluent discharges to Dry Bed Canal through outfall 001, located at latitude N43°42'8" and longitude W111°55'8". Dry Bed Canal is located in the Idaho Falls HUC watershed. The water running through the canal initially is diverted from the Snake River, it flows for several miles down Dry Bed Canal, and then returns to the Snake River.

The State of Idaho water quality standard's (IDAPA, 2003) currently lists Dry Bed Canal as a nondesignated surface water. Therefore, the canal must meet the requirement for undesignated surface waters which are as follows: Waters shall be protected for beneficial uses, which includes all recreational uses in and on the water and the

protection and propagation of fish, shellfish, and wildlife, wherever attainable (IDAPA 58.01.02.101). The criteria include cold water aquatic life criteria and primary or secondary contact recreation, as the IDEQ presumes that most waters in the state will support both.

III. EFFLUENT LIMITATIONS

Sections 101, 301(b), 304, 308, 401, 402 and 405 of the CWA provide the basis for the effluent limitations and other conditions in the draft permit. The EPA evaluates discharges with respect to these sections of the CWA and the relevant NPDES regulations in determining which conditions to include in the permit.

In general, EPA first determines which technology-based limits are required to be incorporated into the permit (40 CFR Part 122.44[a]), as well as best management practices or other requirements. Technology-based limits for municipal facilities are derived from secondary treatment standards (40 CFR Part 133.102) and based on end of pipe technology. However, the CWA also requires NPDES permitted discharges to demonstrate compliance with state water quality standards.

Water quality-based effluent limits are derived from state water quality standards to protect the designated or beneficial uses of state waters. Therefore, the effluent limitations are developed from the technology available to treat the pollutants (technology-based limits) and limits that are protective of the designated uses of the receiving water (water quality-based limits). The proposed permit will reflect whichever limits (technology-based or water quality-based) are more stringent.

A. Summary of Draft Permit Limitations

For wastewater treatment plants, technology-based limits cover three parameters: five-day Biochemical Oxygen Demand (BOD_5), total suspended solids (TSS) and pH. In their permit application, the City of Rigby identified the following additional pollutants as being present in their discharge: nitrogen, oil and grease, fecal coliform bacteria, temperature, chlorine, and phosphorus. The Idaho water quality standards list aquatic life criteria for nitrogen in the form of ammonia; however, to calculate the criteria the upstream temperature and pH of the receiving water is needed. Since there is no historical receiving water data no effluent limits for ammonia are proposed. However, the draft permit includes monitoring requirement for ammonia, pH, and temperature to assist in future calculations.

There are no numeric oil and grease limits in the Idaho water quality standards, so the narrative criteria for sheen will be considered protective of the water body. While fecal coliform limits have been used in past permits, the Idaho water

quality standards now require Escherichia coli (E. Coli) limits instead for protection of human health. The application does not make reference to dissolved oxygen (DO) as an additional pollutant, however, the Idaho water quality standards specify that DO concentration must exceed 6 mg/L at all times (IDAPA 58.01.02.250). Therefore, the draft permit is proposing effluent limitations for BOD_5, TSS, pH, E. Coli, DO, and total residual chlorine.

Table III-1 presents the City of Rigby's proposed effluent limitations for their WWTP. For comparison purposes, the table also shows the effluent limitations of the current permit.

TABLE III-1. PROPOSED EFFLUENT LIMITATIONS

Parameter	Units	Monthly Average		Weekly Average		Maximum Daily		Minimum Daily		Instantaneous Maximum
		Current	Draft	Current	Draft	Current	Draft	Current	Draft	
		1990	2005	1990	2005	1990	2005	1990	2005	
BOD_5[1]	mg/L	30	**30**	45	**45**	---	**---**	---	**---**	**---**
	lb/day[3]	133	**133**	199	**199**	---	**---**	---	**---**	**---**
E. Coli	Colonies/ 100 mL	---	**126**[2]	---	**---**	---	---	---	**---**	**406**
Total Residual Chlorine[4]	µg/L	500	**9.2**	---	---	---	**17.5**	**---**	**---**	**---**
	lb/day[3]		**0.041**				**0.077**	**---**	**---**	**---**
TSS[1]	mg/L	30	**30**	45	**45**	---	**---**	---	**---**	**---**
	lb/day[3]	133	**133**	199	**199**	---	**---**	**---**	**---**	**---**

1. The average monthly percent removal shall be greater than 85% and calculated from the arithmetic mean of the influent values and arithmetic mean of the effluent values for that month.

2. Based on a geometric mean of all samples taken in that month.

3. Loading in lb/day is calculated by multiplying the reported concentration in mg/L by the average daily flow in mgd and a conversion factor of 8.34.

4. The average monthly and maximum daily concentration limits for chlorine are not quantifiable using EPA approved test methods. The permittee will be in compliance with the effluent limits for chlorine provided the average monthly and maximum daily total chlorine residual levels are at or below the compliance evaluation level of 0.1 mg/L, with a loading at or below 0.44 lbs/day.

The pH range shall be between 6.5 - 9.0 standard units.

B. Mixing Zone

Per discussions with the State of Idaho concerning the low and variable flows in Dry Bed Canal at Rigby, Idaho, it was determined that no mixing zone was going to be used to establish effluent limitation for any effluent parameter in the draft permit. The low flow causes the creek to reduce the assimilative capacity to accept loadings of waste greater than criteria. Upstream monitoring including flow are included in the draft permit to assist with future evaluations.

C. Evaluation of Effluent Limitations

1. Biochemical Oxygen Demand, five-day (BOD_5)

The City of Rigby WWTP is a secondary treatment facility that is subject to the federal technology-based requirements for BOD_5. These requirements state that the 30-day average shall not exceed 30 mg/L, the 7-day average shall not exceed 45 mg/L, and the 30-day average percent removal shall not be less than 85 percent. Furthermore, the Idaho water quality standards require that sewage wastewater discharges limit BOD to the equivalent of 85 percent removal but not more than a 30-day average concentration of 30 mg/L.

The draft permit proposes the following BOD_5 limits of 30 mg/L (133 lb/day) average monthly limit, 45 mg/L (199 lb/day) average weekly limit, and >85% removal, over a 30-day period.

2. Bacteria

In past permits, fecal coliform was used to measure the bacteria present in a facility's effluent. However, the standards have been changed and E. Coli is now used to measure the bacteria present (IDAPA 58.01.02.251). E.Coli is a non-pathogenic indicator species whose presence suggests the likelihood that pathogenic bacteria are present. Idaho water quality standards for primary contact recreation require that E.Coli bacteria shall not exceed 406 colonies/100 mL at any time, and a geometric mean of 126 colonies/100 mL based on a minimum of five samples taken every three to five days over a 30-day period.

The draft permit is proposing to eliminate the existing fecal coliform limits and add the following E. Coli limits: 406 colonies/100 mL maximum daily limit and 126 colonies/100 mL average monthly limit based on a geometric mean of all samples taken during the month.

3. Floating, Suspended or Submerged Matter

The Idaho water quality standards (IDAPA 58.01.02.200) require surface waters of the state to be free from floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses. This includes any petroleum products that cause a sheen or coating on the water surface.

The draft permit proposes the requirement that the facility meet a narrative standard for floating, suspended, or submerged matter. If a sheen occurs,

the size and extent of the sheen or coating should be documented in the facility's daily log book.

4. Toxic Substances

a. Narrative Criteria

The Idaho water quality standards (IDAPA 58.01.02.200) require surface waters of the state to be free from toxic substances in concentrations that impair designated beneficial uses. The draft permit requires the permittee to meet the narrative criteria of "no toxics in toxic amounts" be released to the environment.

b. Total Residual Chlorine (TRC)

A toxic TRC criterion for aquatic life has been added in the state of Idaho since the previous permit (IDAPA 58.01.02.210). Using the methods found in the Technical Support Document (EPA, 1991) and previous DMR data, the facility was found to have reasonable potential to violate the aquatic life criteria. The following limits were then calculated: 9.2 μg/L for an average monthly limit and 17.5 μg/L for a maximum daily limit. Calculations can be found in Appendix C.

The draft permit proposes the following TRC limits: 9.2 μg/L (0.041 lb/day) average monthly limit, and 17.5 μg/L (0.077 lb/day) maximum daily limit. The average monthly and maximum daily concentration limits for chlorine are not quantifiable using EPA approved test methods. The permittee will be in compliance with the effluent limits for chlorine provided the average monthly and maximum daily total chlorine residual levels are at or below the compliance evaluation level of 0.1 mg/L, with a loading at or below 0.44 lbs/day.

5. Nutrients

Nutrients consist of phosphorus, nitrogen and carbon compounds. The nutrients of concern for this facility are ammonia and phosphorus.

a. Narrative Criteria

Idaho water quality standards (IDAPA 58.01.02.200) require that surface waters of the United States within Idaho shall be free from excess nutrients that can cause visible slime growths or other

nuisance aquatic growths impairing designated beneficial uses. The draft permit requires the permittee to meet the narrative criteria of keeping waters free from excess nutrients.

b. Ammonia

Idaho water quality standards (IDAPA 58.01.02.250) do not list an ammonia standard. There is a toxic aquatic life criterion that can be calculated if the temperature and pH of the river, upstream of the plant, is known. There is no historical ammonia data for the plant's effluent, therefore, no data to perform a reasonable potential calculation with. Since there is not enough data to calculate the aquatic life criteria for ammonia, in Dry Bed Canal, the facility will monitor ammonia in the effluent and surface water to assist with future evaluations.

The draft permit proposes the facility monitor for ammonia.

c. Total Phosphorus

Phosphorus as phosphate is one of the major nutrients required for plant nutrition and is essential for life. In excess of critical concentration, phosphates stimulate plant growths. This excess growth can lead to noxious plant growth, especially in lakes and reservoirs, and eutrophication or aging of waters. There is no aquatic life criterion in the state of Idaho for total phosphorus, so no limit will be applied at this time. Monitoring will be required to ensure the effluent does not contain excess phosphate, which could contribute to excessive plant growth.

The draft permit proposes the facility monitor for phosphorus.

6. pH

The technology-based limitation for POTWs, based on federal regulations (40 CFR Part 133.102) is 6.0 to 9.0 standard units (s.u.). The Idaho water quality standards (IDAPA 58.01.02.250) for aquatic life gives an allowable pH range of 6.5 to 9.5 s.u.

Using the most stringent standards, the draft permit proposes to implement the pH limit of 6.5 to 9.0 s.u.

7. Total Residual Chlorine (TRC)

The WWTP uses chlorine for disinfection. The technology-based chlorine effluent limitation of 0.5 mg/L is derived from standard operating practices. The Water Pollution Control Federation's Chlorination of Wastewater (1976) states that a properly designed and maintained WWTP can achieve adequate disinfection if a 0.5 mg/L chlorine residual is maintained after 15 minutes of contact time. A treatment plant that provides adequate chlorination contact time can meet the 0.5 mg/L limit on a monthly average basis.

Although there is a technology-based limit for TRC, the Idaho water quality standards (IDAPA 58.01.02.210) also have a toxic aquatic life criterion for chlorine. The TRC toxicity limit is more stringent than the technology-based limit, therefore, will be protective of Idaho's water quality. The TRC limits listed in Toxic Substances (9.2 μg/L (0.041 lb/day) average monthly limit, and 17.5 μg/L (0.077 lb/day) maximum daily limit) are the proposed limits (See Appendix C for calculations).

8. Total Suspended Solids (TSS)

The City of Rigby WWTP is a secondary treatment facility that is subject to the federal technology-based requirements for TSS. These requirements state that the 30-day average shall not exceed 30 mg/L, the 7-day average shall not exceed 45 mg/L, and the 30-day average percent removal shall not be less than 85 percent. Furthermore, the Idaho water quality standards require that sewage wastewater dischargers limit TSS to the equivalent of 85 percent removal but not more than a 30-day average concentration of 30 mg/L.

The draft permit proposes to retain the following TSS limits: 30 mg/L (133 lb/day) average monthly limit, 45 mg/L (199 lb/day) average weekly limit, and >85% removal, over a 30-day period.

9. Turbidity

The Idaho water quality standards (IDAPA 58.01.02.250) for cold water biota require that turbidity shall not exceed background turbidity by more than fifty Nephelometric Turbidity Units (NTU) instantaneously or more than twenty-five NTU for more than ten consecutive days. Since turbidity is directly related to total suspended solids, the TSS limit shall prove protective of this requirement.

No limit for turbidity is proposed in the draft permit.

10. Temperature

The Idaho water quality standards have temperature criteria for cold water biota and salmonid spawning. Waters designated for cold water biota are required to exhibit water temperatures at or below 22 degrees Celsius (^{0}C) with a maximum daily average of no greater than 19 ^{0}C. Alternatively, waters designated for salmonid spawning are required to exhibit water temperatures at or below 13 ^{0}C with a maximum daily average of no greater than 9 ^{0}C during the time periods for salmonid spawning and incubation for indicated species.

Since temperature has not historically been sampled for in the receiving water, no limits will be imposed on the facility. However, monitoring of temperature will be included as a condition of the permit to enable reasonable potential to be determined for the re-issuance of the permit.

D. Antidegradation

In proposing to reissue this permit, EPA has considered Idaho's antidegradation policy. This provision states that "the existing instream water uses and the level of water quality necessary to protect the existing uses will be maintained and protected." This policy is designed to protect existing water quality when the existing water quality is better than that required to meet the standard and to prevent water quality from being degraded below the standard when existing quality just meets the standard. The draft permit will result in a decreased amount of the authorized pollutant loadings to Dry Bed Canal. Therefore, the draft permit will not result in degradation of water quality and is consistent with Idaho's antidegradation policy.

E. No Discharge

No discharge will be allowed in Dry Bed Canal when the flow is shut off for any reason, including maintenance of diversion structure, to avoid adverse environmental impacts.

IV. MONITORING REQUIREMENTS

Section 308 of the CWA and federal regulation 40 CFR Part 122.44(i) require that monitoring be included in permits to determine compliance with effluent limitations. Additionally, monitoring may be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality. Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. The permittee is responsible for conducting the monitoring and for reporting results with Discharge Monitoring Reports (DMRs) to EPA.

A. Effluent Monitoring

Table IV-1 presents the effluent monitoring requirements for the draft permit. For comparison purposes, the table also includes the monitoring requirements of the current permit.

TABLE IV-1: EFFLUENT MONITORING FREQUENCY REQUIREMENTS

Parameter	Current Permit (1990)	Draft Permit (2004)
Ammonia as N	---	1/month
BOD_5	Monthly	1/month
E. Coli[1]	---	5/month
Flow	Continuous	Continuous
Temperature	---	Weekly
pH	Weekly	Weekly
Total Phosphorus as P	---	1/month
TSS	Monthly	1/month
Total Residual Chlorine (TRC)	Weekly	Weekly

1 Monthly limits are based on a minimum of five samples taken every 3-5 days within a calendar month.

B. Surface Water Monitoring

The purpose of surface water monitoring is to determine water quality conditions as part of the effort to evaluate the reasonable potential for the discharge to cause an instream excursion above water quality criteria. The draft permit requires the permittee to conduct quarterly surface water monitoring upstream of outfall 001. Upstream monitoring shall consist of ammonia, flow, pH, total phosphorus, and temperature.

V. SPECIAL CONDITIONS

A. Quality Assurance Plan (QAP)

Under 40 CFR Part 122.41(e), the permittee is required to ensure adequate laboratory controls and appropriate quality assurance procedures in order to properly operate and maintain all facilities which it uses. Therefore, this permit requires the permittee to develop a QAP that will assist in planning for the collection and analysis of samples in support of the permit and assist in explaining

data anomalies when they occur. The permittee is required to write their QAP within 60 days of the effective date of the final permit, and notify EPA that they have done so. The plan must be implemented within 120 days of the effective date of this permit. The QAP shall consist of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting.

Guidance for writing the QAP can be found in *Requirements for Quality Assurance Project Plans* (EPA/QA/R-5) http://www.epa.gov/quality/qs-docs/r5-final.pdf and *Guidance for Quality Assurance Project Plans* (EPA/QA/G-5) http://www.epa.gov/r10earth/offices/oea/epaqag5.pdf. The QAP must be prepared in the format, which is specified in these documents.

B. Best Management Practices (BMPs)

Section 402 of the CWA and federal regulation 40 CFR Part 122.44(k) authorize EPA to require best management practices (BMPs) in NPDES permits. BMPs are measures for controlling the generation of pollutants and their release to waterways. For municipal facilities, these measures are typically included in the facility Operation & Maintenance (O&M) plans. These measures are important tools for waste minimization and pollution prevention.

The draft permit requires that the permittee develop and implement their O&M plan including the implementation of BMPs within 60 days of permit issuance. EPA has a guidance manual (*Guidance Manual for Developing Best Management Practices* EPA, 1993) that may provide some assistance in the development of BMPs. Specifically, the permittee must consider spill prevention and control, optimization of chemical use, public education aimed at controlling the introduction of household hazardous materials to the sewer system and water conservation. Furthermore, it is considered a good management practice to maintain a log of daily plant operations and observations. Additionally, the BMP operating plan must be amended whenever there is a change in the facility or in the operation of the facility which materially increases the potential for an increased discharge of pollutants.

VI. OTHER LEGAL REQUIREMENTS

A. Endangered Species Act

The Endangered Species Act (ESA) requires federal agencies to consult with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) if the agency's actions could beneficially or adversely affect any threatened or endangered species. Therefore, EPA requested a list of

threatened or endangered species in the vicinity of the City of Rigby WWTP from NMFS and USFWS on September 27, 2004.

In a letter dated October 6, 2004 (SP# 1-4-04-SP-0327), the USFWS stated that the proposed project is unlikely to adversely impact any species listed under the Endangered Species Act of 1973, as amended, in its jurisdiction in Dry Bed Canal. NMFS also responded in an email dated October 13, 2004 confirming that NMFS has no species listed as endangered or threatened under the Endangered Species Act in Jefferson County, Idaho. Therefore, it is determined that issuance of this permit is not likely to adversely affect any endangered or threatened species in the vicinity of the discharge. EPA will send a copy of the draft permit and fact sheet to USFWS and NMFS at the beginning of the public comment period to inform them of EPA's determination.

B. State Certification

Since this permit authorizes discharge to Idaho State waters, Section 401 of the CWA requires EPA to seek state certification before issuing a final permit. This certification by the state ensures that federally issued permits are in compliance with the laws of the state. EPA is requesting Idaho State officials to review and provide appropriate certification to this NPDES permit pursuant to 40 CFR Part 124.53. Additionally, in accordance with 40 CFR Part 124.10(C)(1), public notice of the draft permit has been provided to the State of Idaho agencies having jurisdiction over fish, shellfish, and wildlife.

C. Permit Expiration

This permit will expire five years from its effective date.

VII. REFERENCES

EPA. 1991. *Technical Support Document for Water Quality-based Toxics Control.* U.S. Environmental Protection Agency, Office of Water, EPA/505/2-90-001, March 1991.

EPA. 1993. *Guidance Manual for Developing Best Management Practices (BMP).* U.S. Environmental Protection Agency, Office of Water, EPA/833/B-93-004.

EPA. 1996. *U.S. EPA NPDES Permit Writer's Manual.* U.S. Environmental Protection Agency, Office of Water, EPA/833/B-96-003.

IDAPA. 2003. *Water Quality Standards and Wastewater Treatment Requirements.* Idaho Department of Health and Welfare Rules, Title 01, Chapter 02.

APPENDIX A

PROCESS DESCRIPTION

The City of Rigby currently operates a lagoon treatment system for the treatment of its municipal wastewater. The lagoon system consists of five cells (A-E) and a chlorine contact chamber, all shown in figure 1. Cells A and B are aerated cells and cells C, D, and E are facultative. All wastewater is pumped from a lift station located on the northwest side of the City through the influent metering station and into the wastewater treatment facility. The typical flow path through the treatment facility is A > B > C > D > E. Cells A and B can also be operated in parallel. After the wastewater flows through the treatment lagoons, it is chlorinated and then discharged to Dry Bed Canal.

The City relies on one lift station to transport all the wastewater into the treatment facility. In the event of a power outage, an onsite generator provides power to the lift station. In winter months when there are low flows in Dry Bed Canal, the City stores its' wastewater in the treatment cells until the stream flow rises, at which point they would discharge.

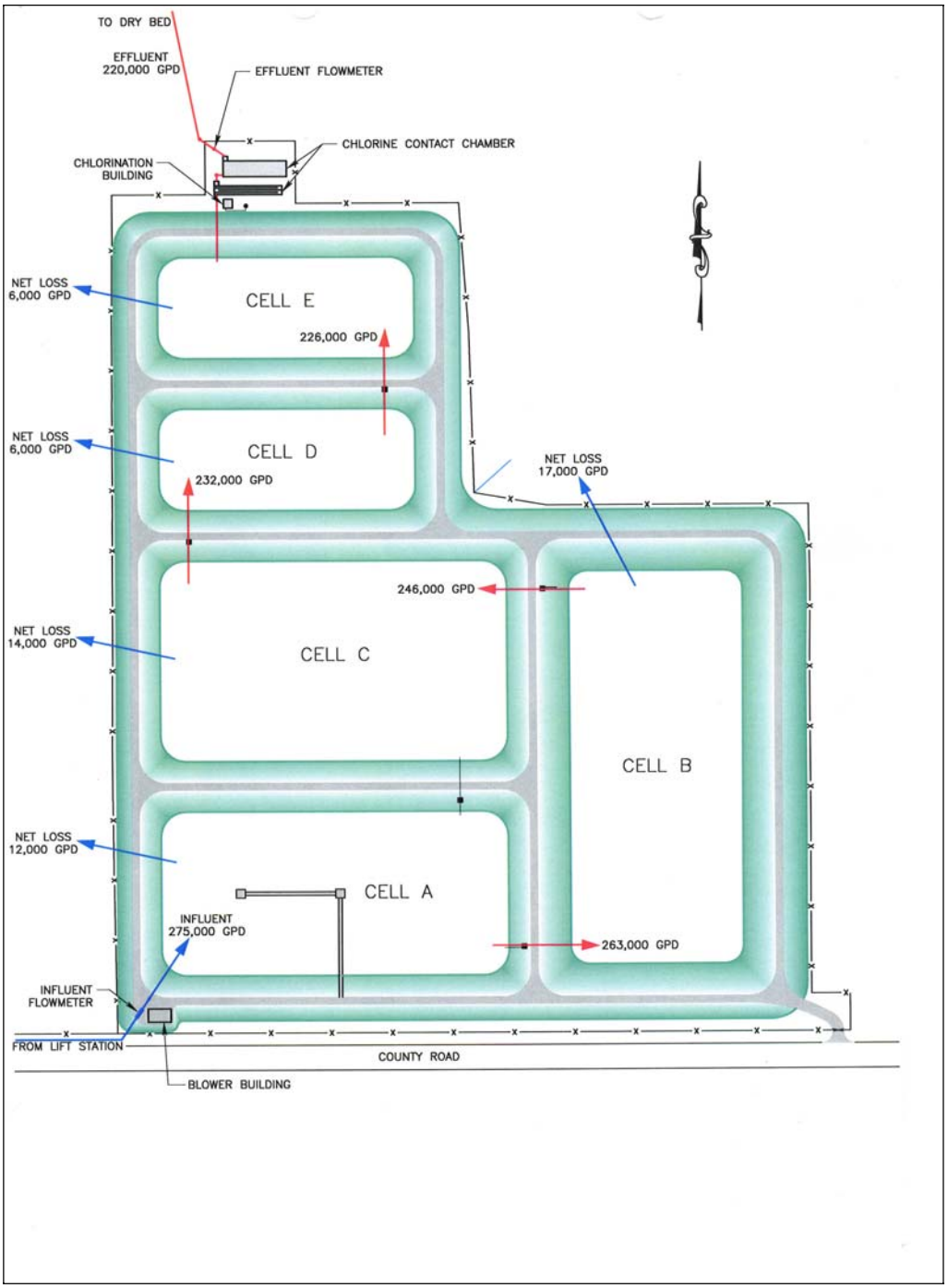

Figure 1. Plant Layout

APPENDIX B

MAPS

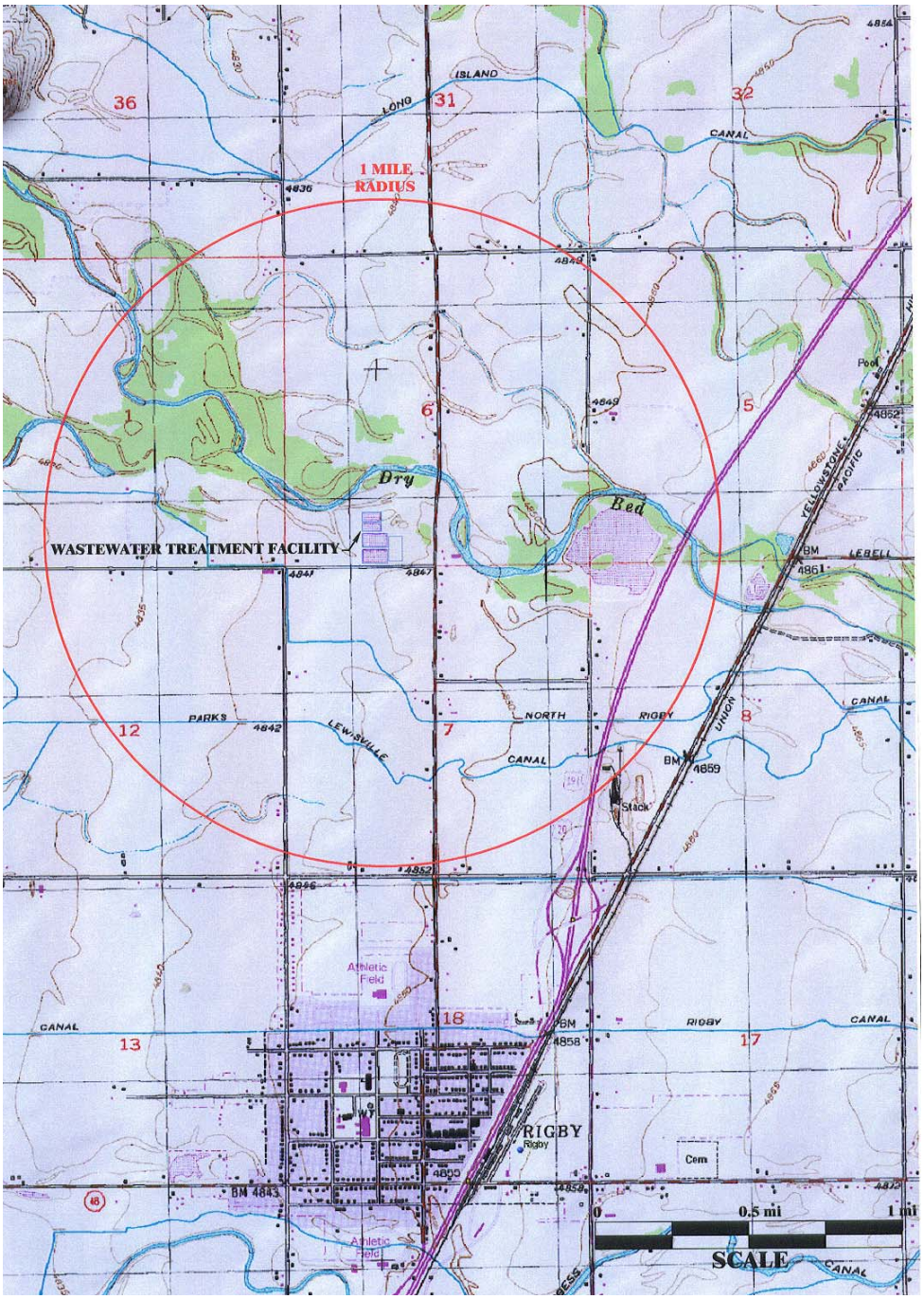

Figure 2. Area Map

APPENDIX C

CALCULATIONS

WATER QUALITY-BASED EFFLUENT LIMIT CALCULATIONS

This appendix discusses the calculations for the proposed water quality-based effluent limits in the draft permit. This section includes: a discussion of the calculations used to determine reasonable potential to cause or contribute to a violation of water quality standards (Section I); a discussion of the calculations used to develop wasteload allocations (Section II); and a discussion of the calculations used to develop water quality-based effluent limits (Section IV).

I. Reasonable Potential Calculations

To determine if there is "reasonable potential" to cause or contribute to an exceedence of water quality criteria for a given pollutant (and therefore whether a water quality-based effluent limit is needed), for each pollutant present in a discharge, EPA compares the maximum projected receiving water concentration to the criteria for that pollutant. If the projected receiving water concentration exceeds the criteria, there is "reasonable potential", and a limit must be included in the permit. EPA uses the recommendations in Chapter 3 of the TSD to conduct this "reasonable potential" analysis. This section discusses how reasonable potential is evaluated.

A. Maximum Projected Receiving Water Concentration

The maximum projected receiving water concentration is determined using the following mass balance equation.

$$C_d \times Q_d = (C_e \times Q_e) + (C_u \times Q_u) \qquad \text{(Equation 1)}$$

where,

C_d = maximum projected receiving water concentration
C_e = maximum projected effluent concentration
C_u = receiving water upstream concentration
Q_e = effluent flow
Q_u = receiving water upstream flow
Q_d = receiving water flow downstream of the effluent discharge $= (Q_e + Q_u)$

If a mixing zone is allowed and solving for C_d, the mass balance equation becomes :

$$C_d = \frac{[C_e Q_e + C_u (Q_u \times MZ)]}{[Q_e + (Q_u \times MZ)]} \qquad \text{(Equation 2)}$$

where, MZ is the percent dilution in the mixing zone based on receiving water flow.

Where no mixing zone is allowed,

$C_d = C_e$. (Equation 3)

B. Maximum Projected Effluent Concentration (C_e)

To better characterize the effects of effluent variability and reduce uncertainty in the process of deciding whether to require an effluent limit, EPA utilizes the statistical approach recommended in the TSD to project the 99th percentile of the effluent data. Since the monitoring data represents a subset of the true effluent concentrations, it is necessary to project the 99th percentile of the effluent data by multiplying the highest concentration in an effluent sample by a multiplier that takes into account effluent variability (i.e., the coefficient of variation or CV) and uncertainty in the effluent data. The 99th percentile concentration of the effluent is calculated using the following equation:

$C_e = MEC \times RPM$ (Equation 4)

where,

MEC = maximum measured effluent concentration
RPM = reasonable potential multiplier.

When there are not enough data to reliably determine a CV (less than 10 data points), the TSD recommends using 0.6 as a default value. Once the CV of the data is determined, the RPM is determined using the statistical methodology discussed in Section 3.3 of the TSD (alternately, Table 3-1 of the TSD may be used). If all the data was below detect, EPA assumes a RPM of 1.0.

$$RPM = \frac{\exp(2.326\sigma - 0.5\sigma^2)}{\exp(z_p\sigma - 0.5\sigma^2)}$$ (Equation 5)

where,

σ^2 = $\ln (CV^2 + 1)$
CV = coefficient of variation
z_p = statistical z-score for p_n
p_n = percentile of highest concentration = $(1 - 0.99)^{1/n}$
n = number of samples

C. Upstream Receiving Water Concentration (C_u)

The upstream receiving water concentration in the mass balance equation is based on a reasonable worst-case estimate of the pollutant concentration upstream from the discharge point. Where sufficient data exists, the 95th percentile of the receiving water data is generally used as an estimate of worst-case. When no data exists, EPA assumes an upstream concentration of zero.

D. Upstream Flow (Q_u)

The upstream flow used in the mass balance equation depends upon the criterion that is being evaluated. In accordance with the applicable federal and state regulations and the TSD guidance, the critical low flows used to evaluate compliance with the water quality criteria are:

- The 1-day, 10-year low flow (1Q10) is used for the protection of aquatic life from acute effects. It represents the lowest daily flow that is expected to occur once in 10 years.
- The 7-day, 10-year low flow (7Q10) is used for protection of aquatic life from chronic effects. It represents the lowest 7-day average flow expected to occur once in 10 years.
- The 30-day, 5-year low flow (30Q5) is used for the protection of human health and agricultural uses from non-carcinogens. It represents the 30-day average flow expected to occur once in 5 years.
- The harmonic mean flow is a long-term average flow and is used for the protection of human health and agricultural uses from carcinogens. It is the number of daily flow measurements divided by the sum of the reciprocals of the flows.

E. Mixing Zone (MZ)

Mixing zones are defined as a limited area or volume of water where the discharge plume is progressively diluted by the receiving water. Water quality criteria may be exceeded in the mixing zone as long as acutely toxic conditions are prevented from occurring and the applicable existing designated uses of the water body are not impaired as a result of the mixing zone. Mixing zones are allowed at the discretion of the State, based on the State waster quality standards regulations.

The Idaho water quality standards (IDAPA 58.01.02.060) allow for the use of mixing zones after a biological, chemical, and physical appraisal of the receiving water and the discharge. The standards allow water quality within a mixing zone to exceed chronic water quality criteria so long as chronic water quality criteria are met at the boundary of the mixing zone. Acute water quality criteria may be exceeded within a zone of initial dilution inside the chronic mixing zone.

F. Effluent Flow (Q_e)

The effluent flow used in the mass balance equation is the design flow for the facility.

II. Development of Wasteload Allocations (WLAs)

Once EPA has determined that a water quality-based effluent limit is required for a pollutant, the first step in deriving the effluent limit is development of a wasteload allocation (WLA) for the pollutant. A WLA is the concentration (or loading) of a pollutant that the permittee may discharge without causing or contributing to an exceedence of water quality standards in the receiving water. WLAs and permit limits are derived based on guidance in the TSD (EPA, 1991). WLAs for this permit were established based on meeting water quality criteria at the "end-of-pipe".

WLAs are calculated for each parameter for each criterion. Where the state authorizes a mixing zone for the discharge, the WLA is calculated as a mass balance, based on the available dilution, background concentration of the pollutant, and the water quality criterion.

Since the different criteria (acute aquatic life, chronic aquatic life, human health, agriculture) apply over different time frames and may have different mixing zones, it is not possible to compare the criteria, or the WLAs developed from the criteria, directly to determine which criterion results in the most stringent limits. For comparison between aquatic life criteria, human health criteria, and agricultural criteria, effluent limits must be derived for each, and the most stringent effluent limits apply to the discharge.

WLAs are calculated using the same mass balance equation used in the reasonable potential evaluation (see Equation 1) although, C_d becomes the criterion and C_e the WLA. Making these substitutions, Equation 1 is rearranged to solve for the WLA (or C_e), becoming:

$$WLA = C_e = \frac{[\text{criterion} \times (Q_e + (Q_u \times MZ)] - [C_u (Q_u \times MZ)]}{Q_e} \qquad \text{(Equation 6)}$$

Where no mixing zone is allowed, the criterion becomes the WLA (see Equation 6). Establishing the criterion as the WLA ensures that the permittee does not contribute to an exceedence of the criteria.

$$WLA = \text{criterion.} \qquad \text{(Equation 7)}$$

III. Derivation of Water Quality-based Effluent Limits

Because many criteria for protection of aquatic life have two criteria, acute and chronic, the effluent limits for each requirement yields different effluent treatment requirements

that cannot be compared to each other without calculating the long-term average performance level the facility would need to maintain in order to meet each requirement. Therefore, EPA develops effluent limits for aquatic life protection by statistically converting the WLAs to long-term average (LTA) concentrations and using the most stringent LTA to develop effluent limitations for protection of aquatic life. This procedure will allow the facility to design a treatment system for one level of effluent toxicity - the most limiting toxic effect.

A. Long-term Average Concentrations (LTAs) for Aquatic Life Criteria

The conversion of a WLA to a LTA is dependent upon the coefficient of variation (CV) of existing effluent data and the selected probability distribution of the effluent. The probability distribution corresponds to the percentile of the estimated effluent concentration. EPA uses a 99th percentile probability distribution for calculating a long-term average, as recommended in the TSD (EPA, 1991). The following equation from Chapter 5 of the TSD is used to calculate the LTA concentrations (alternately, Table 5-1 of the TSD may be used):

$$LTA = WLA \times \exp[0.5\sigma^2 - z\sigma] \qquad \text{(Equation 8)}$$

where,

σ^2 = $\ln(CV^2 + 1)$ for acute aquatic life criteria
= $\ln(CV^2/4 + 1)$ for chronic aquatic life criteria
CV = coefficient of variation
z = 2.326 for 99th percentile occurrence probability.

B. Effluent Limits Based on Aquatic Life Criteria

Once the LTA concentration is calculated for each criterion, the most stringent LTA concentration is then used to develop the maximum daily (MDL) and monthly average (AML) permit limits. The MDL is based on the effluent variability (i.e., CV of the data) and the selected probability distribution, while the AML is dependent upon these two variables as well as the monitoring frequency. As recommended in the TSD, EPA used the 95th percentile as the selected probability distribution for the AML calculation and the 99th percentile for the MDL calculation. The MDL and AML are calculated using the following equation from the TSD (alternately, Table 5-2 of the TSD may be used):

$$MDL \text{ or } AML = LTA\ \sigma \exp[z\sigma - 0.5\sigma^2] \qquad \text{(Equation 9)}$$

for the MDL:

σ^2 = $\ln(CV^2 + 1)$
z = 2.326 for the 99th percentile occurrence probability

for the AML:

σ^2 = $\ln(CV^2/n + 1)$
n = number of sampling events required per month

z = 1.645 for the 95th percentile occurrence probability.

C. Effluent Limits Based on Human Health and Agricultural Criteria

Developing permit limits for pollutants affecting human health and agriculture is somewhat different from setting limits for aquatic life because the exposure period is generally longer than one month and the average exposure, rather than the maximum exposure, is usually of concern. Because compliance with permit limits is normally determined on a daily or monthly basis, it is necessary to set human health and agriculture permit limits that meet a given WLA for every month.

If the procedures described previously for aquatic life protection were used for developing permit limits for human health and agriculture, both MDLs and AMLs would exceed the WLA necessary to meet criteria concentrations in the receiving water. Thus, even if a facility was discharging in compliance with permit limits calculated using these procedures; it would be possible to constantly exceed the WLA.

In addition, the statistical derivation procedure is not applicable to exposure periods more than 30 days. Therefore, the recommended statistical approach for setting water quality-based limits for human health and agriculture protection is to set the AML equal to the WLA, and then calculate the MDL based on effluent variability and the number of samples per month using the multipliers provided in Table 5-3 of the TSD. These multipliers are the ratio of the MDL to the AML as calculated by the following relationship:

$$\frac{MDL}{AML} = \frac{\exp[z_m\sigma - 0.5\sigma^2]}{\exp[z_a\sigma_n - 0.5\sigma_n^2]} \qquad \text{(Equation 10)}$$

where,

σ_n^2 = $\ln (CV^2/n + 1)$
σ^2 = $\ln (CV^2 + 1)$
CV = see Table D-7
n = number of samples per month
z_m = 2.326 for the 99th percentile exceedance probability of the MDL
z_a = 1.645 for the 95th percentile exceedance probability of the AML.

As stated above, EPA used the 95th percentile as the selected probability distribution for the AML and the 99th percentile for the MDL in this calculation

Chlorine

Waste load allocations (WLA): Criteria applied at the end of pipe

WLA_{acute} = 19 µg/L

$WLA_{chronic}$ = 11 µg/L

Calculate long term averages (LTA)

$LTA_a = WLA_a * \exp(0.5\sigma^2 - z\sigma)$ (*Technical Support Document for Water Quality Based Toxics Control* EPA, 1991, Table 5-1 Acute)

CV = 0.534 ratio of standard deviation to mean

σ^2(acute) = 0.2509 $\ln(CV^2/n + 1)$

z = 2.326 (99th percentile)

LTA_{acute} = **6.718**

$LTA_a = WLA_c * \exp(0.5\sigma_4^2 - z\sigma_4)$ (*Technical Support Document for Water Quality Based Toxics Control* EPA, 1991, Table 5-1 Chronic)

$CV_{chronic}$ = 0.534 ratio of standard deviation to mean

σ_n^2 = 0.0689 $\ln(CV^2/n + 1)$ n = number of samples per month

z = 2.326 (99th percentile)

$LTA_{chronic}$ = **6.184**

Lowest LTA = LTA_c = 6.184

Calculate Maximum Daily Limit (MDL) concentration and loading

$MDL = LTA * \exp(z\sigma - 0.5\sigma^2)$ (*Technical Support Document for Water Quality Based Toxics Control* EPA, 1991, Table 5-2 Maximum Daily Limit)

MDL loading = MDL(mg/L)*design flow(mgd)* 8.34

Design flow = **0.53** mgd

MDL =	**17.5**	**µg/L**
MDL loading =	**0.077**	**lb/day**

Calculate Average Monthly Limit AML concentration and loading

$AML = LTA * \exp(z\sigma_n - 0.5\sigma_n^2)$ (*Technical Support Document for Water Quality Based Toxics Control* EPA, 1991, Table 5-2 Average Monthly Limit)

n = 4 (# of samples per month)

z = 1.645 (95th percentile)

Design flow = 0.53 mgd

AML loading = MDL(mg/L)*design flow (mgd)*8.34

AML =	**9.2**	**µg/l**
AML loading =	**0.041**	**lb/day**