



Montana Department of
ENVIRONMENTAL QUALITY

MEMO

TO: Katherine Orr, Hearing Examiner
Board of Environmental Review

FROM: Joyce Wittenberg, Board Secretary
Board of Environmental Review
P.O. Box 200901
Helena, MT 59620-0901

DATE: November 2, 2009

SUBJECT: Board of Environmental Review case, Case No. BER 2009-21 WQ

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW

OF THE STATE OF MONTANA

IN THE MATTER OF:
THE REQUEST FOR HEARING BY THE CITY
OF GREAT FALLS REGARDING THE DEQ'S
NOTICE OF FINAL DECISION FOR MPDES
PERMIT NO. MT0021920.

Case No. BER 2009-21 WQ

BER has received the attached request for hearing. Also attached is DEQ's administrative document(s) relating to this request.

Please serve copies of pleadings and correspondence on me and on the following DEQ representatives in this case.

Claudia Massman
Legal Counsel
Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901

Jenny Chambers, Chief
Water Protection Bureau
Permitting and Compliance Division
Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901

Attachments



CHAD G. PARKER
CITY OF GREAT FALLS
CITY ATTORNEY'S OFFICE
P.O. Box 5021
GREAT FALLS, MT 59403

October 29, 2009

Ms. Joyce Wittenberg
Secretary, Board of Environmental Review
Department of Environmental Quality
Metcalf Building
1520 East Sixth Avenue
P.O. Box 200901
Helena, MT 59620-0901

VIA FIRST CLASS MAIL
AND BY FACSIMILE TO
(406) 444-4386

Re: Appeal of Final Decision for the Department's MPDES Permit No. MT 0021920 and Request for Hearing before the Board

Dear Ms. Wittenberg:

This letter serves as the City of Great Falls' written appeal of and request for hearing on the Montana Department of Environmental Quality ("Department's") Notice of Final Decision regarding the above-referenced Montana Pollutant Discharge Elimination System (MPDES) Permit. The request is made pursuant to the provisions of Mont. Code Ann. § 75-5-403, for the purpose of petitioning the Board to reverse or modify the Department's action on that permit.

A separate background and discussion statement will follow this appeal and hearing request and will set forth the basis for the City of Great Falls' appeal and request for hearing.

Sincerely,

A large, stylized handwritten signature in black ink, appearing to read "Chad G. Parker".

Chad G. Parker
Acting City Attorney
City of Great Falls, MT

FILED this 30th day of
October AD 2009
at 10:21 o'clock A M
MONTANA BOARD OF
ENVIRONMENTAL REVIEW
by M. Grabe



BEK 2009-21 WC

**CHAD G. PARKER
CITY OF GREAT FALLS
CITY ATTORNEY'S OFFICE
P.O. Box 5021
GREAT FALLS, MT 59403**

October 29, 2009

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A separate background and discussion statement will follow this appeal and hearing request and will set forth the basis for the City of Great Falls' appeal and request for hearing.

Sincerely,

Chad G. Parker
Acting City Attorney
City of Great Falls, MT



Brian Schweitzer, Governor

P.O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • www.deq.mt.gov

September 30, 2009

Greg Doyon
Manager, City of Great Falls
PO Box 5021
Great Falls, MT 59403-5021

RE: Notice of Final Decision for Montana Pollutant Discharge Elimination System
Permit Number MT0022560

Dear Mr. Doyon:

In accordance with the Administrative Rules of Montana (ARM) 17.30.1377, enclosed is the Department of Environmental Quality (Department) Response to Comments and a copy of the proposed permit for the City of Great Falls Wastewater Treatment Plant issued to the City of Great Falls. The permit is issued by the Department under the authority of 75-5-402, Montana Code Annotated (MCA) and Sections 303 and 402 of the federal Clean Water Act.

The Response to Comments addresses issues that were identified during the public comment period. The public comment period closed August 26, 2009, Public Notice number MT-09-24. There has not been sufficient public interest to require a public hearing regarding the issuance of this permit.

The following changes were made in the proposed permit in response to comments received during the public comment period:

1. The mixing zone descriptions on page 3 of 39 of the Permit will be amended to read as follows:

Mixing Zone: The maximum extent of the chronic mixing zone in the named receiving waters is as follows: 50 feet upstream; 7,920 feet downstream to a point immediately below Black Eagle Dam for the following parameters: Total ammonia as nitrogen and total residual chlorine.

The maximum extent of the acute mixing zone in the named receiving waters is as follows: 50 feet upstream; 7,920 feet downstream to a point immediately below Black Eagle Dam for the following parameters: Total ammonia as nitrogen and total residual chlorine.

- The following changes will be made to the Permit page 4 of 39:

Outfall 003

Interim Limitations

Effective immediately and lasting through midnight, October 31, 2011, the quality of effluent discharged by the facility shall, as a minimum, meet the limitations as set forth below.

Parameter	Units	Average Monthly Limitation ⁽¹⁾	Average Weekly Limitation ⁽¹⁾	Maximum Daily Limitation ⁽¹⁾
5-Day Carbonaceous Biochemical Oxygen Demand (cBOD ₅)	mg/L	25	40	--
	lb/day	4,377	7,005	--
Total Suspended Solids (TSS)	mg/L	30	45	--
	lb/day	4,500	7,881	--
<i>Escherichia. coli</i> (<i>E. coli</i>) Bacteria ⁽²⁾	cfu/100 mL	11,590	23,180	--
Oil and Grease (O&G)	mg/L	--	--	10
Total Residual Chlorine (TRC) ⁽³⁾	mg/L	--	--	0.50

Footnotes: NA means not applicable.

(1) See Definition section at end of permit for explanation of terms.

(2) Report geometric mean if more than one sample is collected during the reporting period.

(3) Instantaneous Maximum Value.

3. The following changes will be made to the Permit page 5 of 39:

Effective November 1, 2011, and lasting through midnight, October 31, 2013, the quality of effluent discharged by the facility shall, as a minimum, meet the limitations as set forth below.

Parameter	Units	Average Monthly Limitation ⁽¹⁾	Average Weekly Limitation ⁽¹⁾	Maximum Daily Limitation ⁽¹⁾
cBOD ₅	mg/L	25	40	--
	lb/day	4,377	7,005	--
TSS	mg/L	30	45	--
	lb/day	4,500	7,881	--
<i>E. coli</i> Bacteria, summer ^(2, 3)	cfu/100 mL	126	252	--
<i>E. coli</i> Bacteria, winter ^(3, 4)	cfu/100 mL	630	1,260	--
Oil and Grease	mg/L	--	--	10
Total Residual Chlorine ⁽⁵⁾	mg/L	0.026	--	0.035

Footnotes: NA means not applicable.

- (1) See Definition section at end of permit for explanation of terms.
- (2) Summer period is April 1 through October 31.
- (3) Report geometric mean if more than one sample is collected during the reporting period.
- (4) Winter period is November 1 through March 31.
- (5) The Permittee will be in compliance with the applicable effluent limitation if each measured total residual chlorine concentration is less than 0.10 mg/L.

4. The following changes will be made to the Permit page 6 of 39:

Final Limitations

Effective November 1, 2013, and lasting through the term of the permit, the quality of effluent discharged by the facility shall, as a minimum, meet the limitations as set forth below.

Parameter	Units	Average Monthly Limitation ⁽¹⁾	Average Weekly Limitation ⁽¹⁾	Maximum Daily Limitation ⁽¹⁾
cBOD ₅	mg/L	25	40	--
	lb/day	4,377	7,005	--
TSS	mg/L	30	45	--
	lb/day	4,500	7,881	--
<i>E. coli</i> Bacteria, summer ^(2, 3)	cfu/100 mL	126	252	--
<i>E. coli</i> Bacteria, winter ^(3, 4)	cfu/100 mL	630	1,260	--
Oil and Grease	mg/L	--	--	10
Total Residual Chlorine ⁽⁵⁾	mg/L	0.026	--	0.035
Total Ammonia as N	mg/L	2.18	--	3.25
Arsenic, Total Recoverable	mg/L	--	--	0.010
Copper, Total Recoverable	mg/L	0.016	--	0.019
Selenium, Total Recoverable	mg/L	0.005	--	0.006
Thallium, Total Recoverable	mg/L	--	--	0.91
Bis(2-ethylhexyl) Phthalate	mg/L	--	--	0.006

Footnotes: NA means not applicable.
 (1) See Definition section at end of permit for explanation of terms.
 (2) Summer period is April 1 through October 31.
 (3) Report geometric mean if more than one sample is collected during the reporting period.
 (4) Winter period is November 1 through March 31.
 (5) The Permittee will be in compliance with the applicable effluent limitation if each measured total residual chlorine concentration is less than 0.10 mg/L.

5. The following changes will be made to the table on page 9 of 39:

Parameter	Unit	Sample Location	Sample Frequency	Sample Type ⁽¹⁾
Flow ⁽²⁾	mgd	Influent	Continuous	⁽²⁾
	mgd	Effluent	Continuous	⁽²⁾
5-Day Carbonaceous Biochemical Oxygen Demand (cBOD ₅)	mg/L	Influent	5/Week	Composite
	mg/L	Effluent	5/Week	Composite
	% Removal ⁽³⁾	Effluent	1/Month	Calculated
	lb/day	Effluent	1/Month	Calculated
Total Suspended Solids (TSS)	mg/L	Influent	5/Week	Composite
	mg/L	Effluent	5/Week	Composite
	% Removal ⁽³⁾	Effluent	1/Month	Calculated
	lb/day	Effluent	1/Month	Calculated
pH	s.u.	Effluent	1/Day	Instantaneous
Temperature	°C	Effluent	1/Day	Instantaneous
<i>E. coli</i> Bacteria	cfu/100 mL	Effluent	1/Day	Grab
Total Residual Chlorine ⁽⁴⁾	mg/L	Effluent	1/Day	Grab
Total Ammonia as N	mg/L	Effluent	3/Week	Composite
Nitrate + Nitrite as N	mg/L	Effluent	1/Week	Composite
Total Kjeldahl Nitrogen	mg/L	Effluent	1/Week	Composite
Total Nitrogen as N ⁽⁵⁾	mg/L	Effluent	1/Week	Calculated
	lb/day	Effluent	1/Month	Calculated
Total Phosphorus as P	mg/L	Effluent	1/Week	Composite
	lb/day	Effluent	1/Month	Calculated
Dissolved Oxygen	mg/L	Effluent	1/Day	Grab
Oil & Grease ⁽⁶⁾	mg/L	Effluent	1/Month	Grab
Total Dissolved Solids (TDS)	mg/L	Effluent	1/Quarter ⁽⁷⁾	Grab
Whole Effluent Toxicity, Acute	% Effluent	Effluent	1/Quarter ⁽⁷⁾	Composite

Footnotes:

- (1) See Definitions section at end of permit for explanation of terms.
- (2) Requires recording device or totalizer by November 1, 2011. Permittee shall report daily maximum and daily average flow on DMR. Current flow measurement and reporting procedures are acceptable until midnight, October 31, 2011.
- (3) Percent (%) Removal shall be calculated using the monthly average values
- (4) The Permittee is only required to sample for total residual chlorine if chlorine is used as a disinfectant in the treatment process. If chlorine is *not* used, write "NA" on the DMR for this parameter.
- (5) Calculated as the sum of Nitrate + Nitrite as N and Total Kjeldahl Nitrogen concentrations.
- (6) Use EPA Method 1664, Revision A: N-Hexane Extractable Material (HEM), or equivalent.
- (7) Quarterly samples shall be collected more than 60 days apart.

6. The following changes will be made to the table on page 10 of 39:

Parameter	Units	Sample Frequency	Sample Type ⁽¹⁾	ML/RRV
Arsenic, Total Recoverable ⁽²⁾	µg/L	1/Month	Composite	3
Copper, Total Recoverable ⁽²⁾	µg/L	1/Month	Composite	1
Selenium, Total Recoverable ⁽²⁾	µg/L	1/Month	Composite	1
Thallium, Total Recoverable ⁽²⁾	µg/L	1/Month	Composite	0.2
Aluminum, Dissolved ⁽²⁾	µg/L	1/Quarter ⁽³⁾	Composite	30
Antimony, Total Recoverable ⁽²⁾	µg/L	1/Quarter ⁽³⁾	Composite	3
Beryllium, Total Recoverable ⁽²⁾	µg/L	1/Quarter ⁽³⁾	Composite	1
Cadmium, Total Recoverable ⁽²⁾	µg/L	1/Quarter ⁽³⁾	Composite	0.08
Chromium, Total Recoverable ⁽²⁾	µg/L	1/Quarter ⁽³⁾	Composite	1
Lead, Total Recoverable ⁽²⁾	µg/L	1/Quarter ⁽³⁾	Composite	0.5
Mercury, Total Recoverable ⁽²⁾	µg/L	1/Quarter ⁽³⁾	Composite	0.01
Nickel, Total Recoverable ⁽²⁾	µg/L	1/Quarter ⁽³⁾	Composite	10
Silver, Total Recoverable ⁽²⁾	µg/L	1/Quarter ⁽³⁾	Composite	0.5
Zinc, Total Recoverable ⁽²⁾	µg/L	1/Quarter ⁽³⁾	Composite	10
Cyanide, Total ⁽⁴⁾	mg/L	1/Quarter ⁽³⁾	Grab	5
Phenols, Total ⁽⁴⁾	mg/L	1/Quarter ⁽³⁾	Grab	10
Bis(2-ethylhexyl)Phthalate ⁽⁵⁾	µg/L	1/Month	Composite	6
Bromodichloromethane ⁽⁵⁾	µg/L	1/Month	Composite	0.5
Chloroform ⁽⁵⁾	µg/L	1/Month	Composite	0.5
1,2-Dichloroethane ⁽⁵⁾	µg/L	1/Month	Composite	0.5
Toluene ⁽⁵⁾	µg/L	1/Month	Composite	0.5

Footnotes:

- (1) See Definition section at end of permit for explanation of terms.
- (2) Both influent and effluent samples must be analyzed as required. Metals shall be analyzed as total recoverable; use EPA Method (Section) 4.1.4 [EPA 600/4-79-020, March 1983] or equivalent, with the exception of aluminum which is measured in the dissolved form.
- (3) Quarterly samples shall be collected more than 60 days apart.
- (4) Both influent and effluent samples must be analyzed as required.
- (5) Both influent and effluent samples must be analyzed as required. 40 CFR 122, Appendix J, Table 2; use EPA Method 624 or 625 (as appropriate for analyte) or equivalent.

7. The following changes will be made to the table on page 11 of 39:

Parameter	Units	Sample Frequency	Sample Type ⁽¹⁾	ML ⁽²⁾
Volatile Organic Compounds ^(3, 4)	µg/L	2/Year	Composite	⁽²⁾
Semi-Volatile, Acid Compounds ^(3, 5)	µg/L	2/Year	Composite	⁽²⁾
Semi-Volatile, Base Neutral ^(3, 5)	µg/L	2/Year	Composite	⁽²⁾
Toxic Pollutants and Hazardous Substances ^(3, 6)	µg/L	1/Year	Composite	⁽²⁾

Footnotes:
 (1) See Definition section at end of permit for explanation of terms.
 (2) See approved method for minimum level (ML).
 (3) Both influent and effluent samples must be analyzed as required. This information will not be entered on the DMR form; a copy of the analytical laboratory report must be attached to the DMR for the applicable reporting period.
 (4) 40 CFR 122, Appendix J, Table 2; use EPA Method 624 or equivalent.
 (5) 40 CFR 122, Appendix J, Table 2, use EPA Method 625 or equivalent.
 (6) Both influent and effluent samples must be analyzed as required once per year in calendar years 2011 and 2013. 40 CFR 122 Appendix D, Table V.

8. The following language has been added on page 12 of 39:

Reporting Total Residual Chlorine (TRC) Results

On-site analysis of TRC using an approved method is required. The method must achieve a minimum detection level of 0.10 mg/L. The Permittee will be in compliance with the applicable effluent limitation if each measured TRC concentration value is less than 0.10 mg/L. When all measured TRC values are less than the analytical reporting level (0.10 mg/L), the Permittee shall report the analytical reporting level preceded by a less than symbol (<0.10 mg/L) on the DMR.

9. The special conditions on pages 14 and 15 of 39 will be changed as follows:

Final effluent limitations for *Escherichia coli* (*E. coli*) bacteria and Total Residual Chlorine will be effective starting November 1, 2011.

- i. Schedule: Starting with the first full calendar year of the permit cycle (2010) and lasting for the duration of the Special Condition, an annual report shall be submitted with the December Discharge Monitoring Report (by January 28th of each year). The reports shall describe the milestones accomplished and the steps planned for each year towards compliance with the final effluent limits.

Final effluent limitations for total ammonia as N, total recoverable arsenic, copper, selenium, thallium, and bis(2-ethylhexyl)phthalate will be effective starting November 1, 2013.

- i. **Schedule:** Starting with the first full calendar year of the permit cycle (2010) and lasting for the duration of the Special Condition, an annual report shall be submitted with the December Discharge Monitoring Report (by January 28th of each year). The reports shall describe the milestones accomplished and the steps planned for each year towards compliance with the final effluent limits.

Accurate influent and effluent flow measurement capabilities are required.

- i. **Schedule:** By May 1, 2010, the Permittee shall provide the Department with a written report that evaluates flow monitoring capabilities, procedures, and devices for both influent and effluent. This action shall consist of a complete engineering review of flow measurement at the Facility over the range of expected flows encountered by the Facility.
- ii. By November 1, 2010, determine improvements necessary to meet standards and requirements. Provide the Department with plans, specifications, and a construction schedule for installation of those improvements. Included in the report shall be recommended procedures for calibration and flow verification.
- iii. Any actions undertaken to meet the requirements of this Special Condition must be completed by November 1, 2011.

10. The following language will be added on page 34 of 39:

Toxicity Limitations: Change in the whole effluent protocol, or any other conditions related to the control of toxicants have taken place, or if one or more of the following events have occurred:

- a. Toxicity was detected late in the life of the permit near or past the deadline for compliance.
- b. The TRE/TIE results indicated that compliance with the toxic limitations will require an implementation schedule past the date of expiration.
- c. The TRE/TIE results indicated that the toxicant(s) represent pollutant(s) that may be controlled with specific numerical limitations.

Mr. Greg Doyon
September 30, 2009
Page 9 of 9

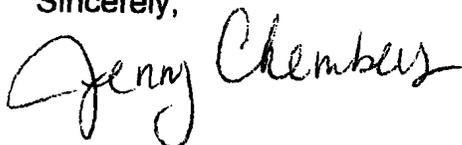
- d. Following the implementation of numerical controls on toxicants, a modified whole effluent protocol is needed to compensate for those toxicants that are controlled numerically.
- e. The TRE/TIE revealed other unique conditions or characteristics which, in the opinion of the Department, justify the incorporation of unanticipated special conditions in this permit.

In accordance with ARM 17.30.1378, the Department's final decision to issue the permit is effective 30 days after service of this notice. Under ARM 17.30.1370, the applicant may appeal this decision within the 30 day period in accordance with 75-5-403 and 75-5-611, MCA. Pursuant to 40 CFR 122.44, the Regional Administrator may object to or make recommendations for the proposed permit.

A copy of the permit should be made available to person(s) in charge of the operation of the wastewater treatment facilities so that person is aware of requirements in the permit. Please take note of any revised monitoring requirements specified in Part I of the permit. Also, the final permit contains special conditions requiring actions on the part of the permittee. Please refer to Part I of the permit for additional information. The preprinted Discharge Monitoring Report (DMR) forms will be sent soon.

If you have any questions, please contact the permit writer, Melee K. Valett, at (406) 444-7450.

Sincerely,



Jenny Chambers, Chief
Water Protection Bureau
Permitting and Compliance Division

Cc with enclosures: Jim Rearden, Public Works Director, City of Great Falls
Wayne Robbins, Plant Manager, Veolia North America,
1600 6th St. NE Great Falls, MT 59404
Rosemary Rowe, USEPA, Helena, MT
File

Enclosures: Proposed MPDES Permit MT0021920
Response to Comments

Major Mechanical
POTW w/ Pretreatment
Permit No. MT0021920

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

AUTHORIZATION TO DISCHARGE UNDER THE MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with Montana Water Quality Act, Title 75, Chapter 5, Montana Code Annotated (MCA) and the Federal Water Pollution Control Act (the "Clean Water Act"), 33 U.S.C. § 1251 *et seq.*,

City of Great Falls

is authorized to discharge from its **domestic wastewater treatment plant**

located at **1600 6th Street NE Great Falls, Montana**

to receiving waters named the **Missouri River**

in accordance with discharge point(s), effluent limitations, monitoring requirements and other conditions set forth herein. Authorization for discharge is limited to those outfalls specifically listed in the permit. The wasteload allocation specified herein support and serve to define the total maximum daily load for affected receiving water.

This permit shall become effective: **November 1, 2009.**

This permit and the authorization to discharge shall expire at midnight, **October 31, 2014.**

FOR THE MONTANA DEPARTMENT OF
ENVIRONMENTAL QUALITY



Jenny Chambers, Chief
Water Protection Bureau
Permitting & Compliance Division

Issuance Date: September 30, 2009

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I. EFFLUENT LIMITATIONS, MONITORING REQUIREMENTS & OTHER CONDITIONS

A. Description of Discharge Points and Mixing Zone

The authorization to discharge provided under this permit is limited to those outfalls specially designated below as discharge locations. Discharges at any location not authorized under an MPDES permit is a violation of the Montana Water Quality Act (Act) and could subject the person(s) responsible for such discharge to penalties under the Act. Knowingly discharging from an unauthorized location or failing to report an unauthorized discharge within a reasonable time from first learning of an unauthorized discharge could subject such person to criminal penalties as provided under Section 75-5-632 of the Montana Water Quality Act.

Outfall Description

003

Location: At the end of the pipe, discharging into the Missouri River, located at 47° 31' 04" N latitude, 111° 17' 59" W longitude.

Mixing Zone: The maximum extent of the chronic mixing zone in the named receiving waters is as follows: 50 feet upstream; 7,920 feet downstream to a point immediately below Black Eagle Dam for the following parameters: Total ammonia as nitrogen and total residual chlorine.

The maximum extent of the acute mixing zone in the named receiving waters is as follows: 50 feet upstream; 7,920 feet downstream to a point immediately below Black Eagle Dam for the following parameters: Total ammonia as nitrogen and total residual chlorine.

Treatment Works: Major, activated sludge mechanical treatment plant with chlorine disinfection, anaerobic sludge digestion, and an Industrial Pretreatment Program.

B. Effluent Limitations

Outfall 003

Interim Limitations

Effective immediately and lasting through midnight, October 31, 2011, the quality of effluent discharged by the facility shall, as a minimum, meet the limitations as set forth below.

Parameter	Units	Average Monthly Limitation ⁽¹⁾	Average Weekly Limitation ⁽¹⁾	Maximum Daily Limitation ⁽¹⁾
5-Day Carbonaceous Biochemical Oxygen Demand (cBOD ₅)	mg/L	25	40	--
	lb/day	4,377	7,005	--
Total Suspended Solids (TSS)	mg/L	30	45	--
	lb/day	4,500	7,881	--
<i>Escherichia. coli</i> (<i>E. coli</i>) Bacteria ⁽²⁾	cfu/100 mL	11,590	23,180	--
Oil and Grease (O&G)	mg/L	--	--	10
Total Residual Chlorine (TRC) ⁽³⁾	mg/L	--	--	0.50

Footnotes: NA means not applicable.
(1) See Definition section at end of permit for explanation of terms.
(2) Report geometric mean if more than one sample is collected during the reporting period.
(3) Instantaneous Maximum Value.

pH: Effluent pH from Outfall 003 shall remain between 6.0 and 9.0 standard units (instantaneous minimum and instantaneous maximum). For compliance purposes, any single analysis or measurement beyond this limitation shall be considered a violation of the conditions of this permit.

85 Percent (%) Removal Requirement for 5-Day Carbonaceous Biochemical Oxygen Demand (cBOD₅) The arithmetic mean of the cBOD₅ for effluent samples collected in a period of 30 consecutive days shall not exceed 15% of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85% removal). This is in addition to the concentration limitations on cBOD₅.

85 Percent (%) Removal Requirement for Total Suspended Solids (TSS): The arithmetic mean of the TSS for effluent samples collected in a period of 30 consecutive days shall not exceed 15% of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85% removal). This is in addition to the concentration limitations on TSS.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Effective November 1, 2011, and lasting through midnight, October 31, 2013, the quality of effluent discharged by the facility shall, as a minimum, meet the limitations as set forth below.

Parameter	Units	Average Monthly Limitation ⁽¹⁾	Average Weekly Limitation ⁽¹⁾	Maximum Daily Limitation ⁽¹⁾
cBOD ₅	mg/L	25	40	--
	lb/day	4,377	7,005	--
TSS	mg/L	30	45	--
	lb/day	4,500	7,881	--
<i>E. coli</i> Bacteria, summer ^(2, 3)	cfu/100 mL	126	252	--
<i>E. coli</i> Bacteria, winter ^(3, 4)	cfu/100 mL	630	1,260	--
Oil and Grease	mg/L	--	--	10
Total Residual Chlorine ⁽⁵⁾	mg/L	0.026	--	0.035

Footnotes: NA means not applicable.
(1) See Definition section at end of permit for explanation of terms.
(2) Summer period is April 1 through October 31.
(3) Report geometric mean if more than one sample is collected during the reporting period.
(4) Winter period is November 1 through March 31.
(5) The Permittee will be in compliance with the applicable effluent limitation if each measured Total Residual Chlorine concentration is less than 0.10 mg/L.

pH: Effluent pH from Outfall 003 shall remain between 6.0 and 9.0 standard units (instantaneous minimum and instantaneous maximum). For compliance purposes, any single analysis or measurement beyond this limitation shall be considered a violation of the conditions of this permit.

85 Percent (%) Removal Requirement for cBOD₅: The arithmetic mean of the cBOD₅ for effluent samples collected in a period of 30 consecutive days shall not exceed 15% of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85% removal). This is in addition to the concentration limitations on cBOD₅.

85 Percent (%) Removal Requirement for TSS: The arithmetic mean of the TSS for effluent samples collected in a period of 30 consecutive days shall not exceed 15% of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85% removal). This is in addition to the concentration limitations on TSS.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Final Limitations

Effective November 1, 2013, and lasting through the term of the permit, the quality of effluent discharged by the facility shall, as a minimum, meet the limitations as set forth below.

Parameter	Units	Average Monthly Limitation ⁽¹⁾	Average Weekly Limitation ⁽¹⁾	Maximum Daily Limitation ⁽¹⁾
cBOD ₅	mg/L	25	40	--
	lb/day	4,377	7,005	--
TSS	mg/L	30	45	--
	lb/day	4,500	7,881	--
<i>E. coli</i> Bacteria, summer ^(2, 3)	cfu/100 mL	126	252	--
<i>E. coli</i> Bacteria, winter ^(3, 4)	cfu/100 mL	630	1,260	--
Oil and Grease	mg/L	--	--	10
Total Residual Chlorine ⁽⁵⁾	mg/L	0.026	--	0.035
Total Ammonia as N	mg/L	2.18	--	3.25
Arsenic, Total Recoverable	mg/L	--	--	0.010
Copper, Total Recoverable	mg/L	0.016	--	0.019
Selenium, Total Recoverable	mg/L	0.005	--	0.006
Thallium, Total Recoverable	mg/L	--	--	0.91
Bis(2-ethylhexyl) Phthalate	mg/L	--	--	0.006
Footnotes: NA means not applicable.				
(1) See Definition section at end of permit for explanation of terms.				
(2) Summer period is April 1 through October 31.				
(3) Report geometric mean if more than one sample is collected during the reporting period.				
(4) Winter period is November 1 through March 31.				
(5) The Permittee will be in compliance with the applicable effluent limitation if each measured Total Residual Chlorine concentration is less than 0.10 mg/L.				

pH: Effluent pH from Outfall 003 shall remain between 6.0 and 9.0 standard units (instantaneous minimum and instantaneous maximum). For compliance purposes, any single analysis or measurement beyond this limitation shall be considered a violation of the conditions of this permit.

85 Percent (%) Removal Requirement for cBOD₅: The arithmetic mean of the cBOD₅ for effluent samples collected in a period of 30 consecutive days shall not exceed 15% of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85% removal). This is in addition to the concentration limitations on cBOD₅.

85 Percent (%) Removal Requirement for TSS: The arithmetic mean of the TSS for effluent samples collected in a period of 30 consecutive days shall not exceed 15% of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85% removal). This is in

addition to the concentration limitations on TSS.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

C. Monitoring Requirements

Outfall 003

As a minimum, upon the effective date of this permit, the following constituents shall be monitored at the frequency and with the type of measurement indicated; samples or measurements shall be representative of the volume and nature of the monitored discharge. If no discharge occurs during the entire monitoring period, it shall be stated on the Discharge Monitoring Report (DMR) form (EPA No. 3320-1) that no discharge or overflow occurred.

The EPA-approved analytical methods in 40 CFR Part 136 require Total Residual Chlorine (TRC) samples to be analyzed immediately. On-site analysis of TRC using an approved method is required. The method must achieve a minimum detection level of 0.10 mg/L. The Permittee will be in compliance with the applicable effluent limitation if each measured TRC concentration is less than 0.10 mg/L.

The Required Reporting Value (RRV) is the detection level that must be achieved in reporting surface water monitoring or compliance data to the Department. The RRV is the Department's best determination of a level of analysis that can be achieved by the majority of the commercial, university, or governmental laboratories using EPA-approved methods or methods approved by the Department.

Self-monitoring of effluent discharged at Outfall 003 shall be conducted at the discharge structure downstream of all draw off or recycle return flows. Influent samples shall be collected at a point representative of the total influent upstream of any draw off or recycle return flows.

Parameter	Unit	Sample Location	Sample Frequency	Sample Type ⁽¹⁾
Flow ⁽²⁾	mgd	Influent	Continuous	⁽²⁾
	mgd	Effluent	Continuous	⁽²⁾
5-Day Carbonaceous Biochemical Oxygen Demand (cBOD ₅)	mg/L	Influent	5/Week	Composite
	mg/L	Effluent	5/Week	Composite
	% Removal ⁽³⁾	Effluent	1/Month	Calculated
	lb/day	Effluent	1/Month	Calculated
Total Suspended Solids (TSS)	mg/L	Influent	5/Week	Composite
	mg/L	Effluent	5/Week	Composite
	% Removal ⁽³⁾	Effluent	1/Month	Calculated
	lb/day	Effluent	1/Month	Calculated
pH	s.u.	Effluent	1/Day	Instantaneous
Temperature	°C	Effluent	1/Day	Instantaneous
<i>E. coli</i> Bacteria	cfu/100 mL	Effluent	1/Day	Grab
Total Residual Chlorine ⁽⁴⁾	mg/L	Effluent	1/Day	Grab
Total Ammonia as N	mg/L	Effluent	3/Week	Composite
Nitrate + Nitrite as N	mg/L	Effluent	1/Week	Composite
Total Kjeldahl Nitrogen	mg/L	Effluent	1/Week	Composite
Total Nitrogen as N ⁽⁵⁾	mg/L	Effluent	1/Week	Calculated
	lb/day	Effluent	1/Month	Calculated
Total Phosphorus as P	mg/L	Effluent	1/Week	Composite
	lb/day	Effluent	1/Month	Calculated
Dissolved Oxygen	mg/L	Effluent	1/Day	Grab
Oil & Grease ⁽⁶⁾	mg/L	Effluent	1/Month	Grab
Total Dissolved Solids (TDS)	mg/L	Effluent	1/Quarter ⁽⁷⁾	Grab
Whole Effluent Toxicity, Acute	% Effluent	Effluent	1/Quarter ⁽⁷⁾	Composite

Footnotes:

- (1) See Definitions section at end of permit for explanation of terms.
- (2) Requires recording device or totalizer by November 1, 2011. Permittee shall report daily maximum and daily average flow on DMR. Current flow measurement and reporting procedures are acceptable until midnight, October 31, 2011.
- (3) Percent (%) Removal shall be calculated using the monthly average values
- (4) The Permittee is only required to sample for total residual chlorine if chlorine is used as a disinfectant in the treatment process. If chlorine is *not* used, write "NA" on the DMR for this parameter.
- (5) Calculated as the sum of Nitrate + Nitrite as N and Total Kjeldahl Nitrogen concentrations.
- (6) Use EPA Method 1664, Revision A: N-Hexane Extractable Material (HEM), or equivalent.
- (7) Quarterly samples shall be collected more than 60 days apart.

Parameter	Units	Sample Frequency	Sample Type ⁽¹⁾	ML/RRV
Arsenic, Total Recoverable ⁽²⁾	µg/L	1/Month	Composite	3
Copper, Total Recoverable ⁽²⁾	µg/L	1/Month	Composite	1
Selenium, Total Recoverable ⁽²⁾	µg/L	1/Month	Composite	1
Thallium, Total Recoverable ⁽²⁾	µg/L	1/Month	Composite	0.2
Aluminum, Dissolved ⁽²⁾	µg/L	1/Quarter ⁽³⁾	Composite	30
Antimony, Total Recoverable ⁽²⁾	µg/L	1/Quarter ⁽³⁾	Composite	3
Beryllium, Total Recoverable ⁽²⁾	µg/L	1/Quarter ⁽³⁾	Composite	1
Cadmium, Total Recoverable ⁽²⁾	µg/L	1/Quarter ⁽³⁾	Composite	0.08
Chromium, Total Recoverable ⁽²⁾	µg/L	1/Quarter ⁽³⁾	Composite	1
Lead, Total Recoverable ⁽²⁾	µg/L	1/Quarter ⁽³⁾	Composite	0.5
Mercury, Total Recoverable ⁽²⁾	µg/L	1/Quarter ⁽³⁾	Composite	0.01
Nickel, Total Recoverable ⁽²⁾	µg/L	1/Quarter ⁽³⁾	Composite	10
Silver, Total Recoverable ⁽²⁾	µg/L	1/Quarter ⁽³⁾	Composite	0.5
Zinc, Total Recoverable ⁽²⁾	µg/L	1/Quarter ⁽³⁾	Composite	10
Cyanide, Total ⁽⁴⁾	mg/L	1/Quarter ⁽³⁾	Grab	5
Phenols, Total ⁽⁴⁾	mg/L	1/Quarter ⁽³⁾	Grab	10
Bis(2-ethylhexyl)Phthalate ⁽⁵⁾	µg/L	1/Month	Composite	6
Bromodichloromethane ⁽⁵⁾	µg/L	1/Month	Composite	0.5
Chloroform ⁽⁵⁾	µg/L	1/Month	Composite	0.5
1,2-Dichloroethane ⁽⁵⁾	µg/L	1/Month	Composite	0.5
Toluene ⁽⁵⁾	µg/L	1/Month	Composite	0.5

Footnotes:

- (1) See Definition section at end of permit for explanation of terms.
- (2) Both influent and effluent samples must be analyzed as required. Metals shall be analyzed as total recoverable; use EPA Method (Section) 4.1.4 [EPA 600/4-79-020, March 1983] or equivalent, with the exception of aluminum which is measured in the dissolved form.
- (3) Quarterly samples shall be collected more than 60 days apart.
- (4) Both influent and effluent samples must be analyzed as required.
- (5) Both influent and effluent samples must be analyzed as required. 40 CFR 122, Appendix J, Table 2; use EPA Method 624 or 625 (as appropriate for analyte) or equivalent.

As a minimum, the following constituents shall be monitored in the influent and effluent at the frequencies and with the types of measurements indicated; samples or measurements shall be representative of the volume and nature of the monitored discharge.

Upon the effective date of the permit and lasting through midnight, December 31, 2011, the required annual sample and the first semi-annual samples shall be collected in the first calendar quarter of the year (the months of January, February, or March); the second semi-annual sample shall be collected in the third calendar quarter of the year (July, August, or September).

Effective January 1, 2012, and lasting through the term of the permit, the required annual sample and the first semi-annual sample shall be collected in the second calendar quarter of the year (during the months of April, May, or June); the second semi-annual sample shall be collected in the fourth calendar quarter of the year (October, November, or December).

This information will not be entered on the DMR form; a copy of the analytical laboratory report must be attached to the DMR for the applicable reporting period.

Parameter	Units	Sample Frequency	Sample Type ⁽¹⁾	ML ⁽²⁾
Volatile Organic Compounds ^(3, 4)	µg/L	2/Year	Composite	⁽²⁾
Semi-Volatile, Acid Compounds ^(3, 5)	µg/L	2/Year	Composite	⁽²⁾
Semi-Volatile, Base Neutral ^(3, 5)	µg/L	2/Year	Composite	⁽²⁾
Toxic Pollutants and Hazardous Substances ^(3, 6)	µg/L	1/Year	Composite	⁽²⁾
Footnotes: (1) See Definition section at end of permit for explanation of terms. (2) See approved method for minimum level (ML). (3) Both influent and effluent samples must be analyzed as required. This information will not be entered on the DMR form; a copy of the analytical laboratory report must be attached to the DMR for the applicable reporting period. (4) 40 CFR 122, Appendix J, Table 2; use EPA Method 624 or equivalent. (5) 40 CFR 122, Appendix J, Table 2, use EPA Method 625 or equivalent. (6) Both influent and effluent samples must be analyzed as required once per year in calendar years 2011 and 2013. 40 CFR 122 Appendix D, Table V.				

Reporting Requirements

Load Calculations

In addition to reporting the concentration values, the monthly loads expressed in pounds per day (lb/day) must be calculated and reported for BOD₅, TSS, total phosphorus as P, and total nitrogen. The weekly and monthly loads must be calculated using the average daily flow rate and daily average parameter concentration as shown in the following equations:

Load (lb/day) =
Parameter concentration (mg/L) x Effluent Flow Rate (gpm) x (0.012)

or

Parameter concentration (mg/L) x Effluent Flow Rate (mgd) x (8.34)

Percent (%) Removal

The percent removal shall be calculated using the following formula:

$$\% \text{ Removal} = \frac{[\text{Influent Concentration}] - [\text{Effluent Concentration}]}{[\text{Influent Concentration}]} \times 100$$

Where:

Influent Concentration = Corresponding 30-Day average influent concentration based on the analytical results of the reporting period.

Effluent Concentration = Corresponding 30-Day average effluent concentration based on the analytical results of the reporting period.

Reporting Total Residual Chlorine (TRC) Results

On-site analysis of TRC using an approved method is required. The method must achieve a minimum detection level of 0.10 mg/L. The Permittee will be in compliance with the applicable effluent limitation if each measured TRC concentration value is less than 0.10 mg/L. When all measured TRC values are less than the analytical reporting level (0.10 mg/L), the Permittee shall report the analytical reporting level preceded by a less than symbol (<0.10 mg/L) on the DMR.

Whole Effluent Toxicity Testing – Acute Toxicity

Starting in the first calendar quarter following the effective date of the permit, the Permittee shall, at least once each quarter, conduct an acute static replacement toxicity test on a composite sample of the effluent. Testing will employ two species per quarter and will consist of 5 effluent concentrations (100, 50, 25, 12.5, 6.25 percent effluent) and a control. Dilution water and the control shall consist of the receiving water. Samples shall be collected on a two day progression; i.e., if the first quarterly sample is on a Monday, the second quarterly sample shall be collected on a Wednesday, etc. Saturdays, Sundays and Holidays will be skipped in the progression.

The static toxicity tests shall be conducted in general accordance with the procedures set out in the latest revision of Methods for Measuring the Acute Toxicity of Effluent to Freshwater and Marine Organisms, EPA-600/4-90/027 and

the "Region VIII EPA NPDES Acute Test Conditions-State Renewal Whole Effluent Toxicity". The Permittee shall conduct an acute 48-hour static renewal toxicity test using *Ceriodaphnia dubia* and an acute 96-hour static renewal toxicity test using fathead minnows (*Pimephales promelas*) as the alternating species. The control of pH in the toxicity test utilizing CO₂ enriched atmospheres is allowed to prevent rising pH drift. The target pH selected must represent the pH value of the receiving water at the time of sample collection.

Acute toxicity occurs when 50 percent or more mortality is observed for either species at any effluent concentration. If more than 10 percent control mortality occurs, the test is considered invalid and shall be repeated until satisfactory control survival is achieved, unless a specific individual exception is granted by the Department. This exception may be granted if less than 10 percent mortality was observed at the dilutions containing high effluent concentrations.

If acute toxicity occurs in a routine test, an additional test (resample) shall be conducted within 14 days of the date of the initial sample. Should acute toxicity occur in the resample test, testing shall occur once a month until further notified by the Department. In all cases, the results of all toxicity tests must be submitted to the Department in accordance with Part II of this permit.

The quarterly results from the laboratory shall be reported along with the DMR form submitted for the end of the reporting calendar quarter (e.g., whole effluent testing results for the reporting quarter ending March 31 shall be reported with the March DMR due April 28th with the remaining quarterly reports submitted with the June, September, and December DMR). The format for the laboratory report shall be consistent with the latest revision of Region VIII Guidance for Acute Whole Effluent Reporting, and shall include all chemical and physical data as specified.

If the results for four consecutive quarters of testing indicate no acute toxicity, the Permittee may request a reduction to quarterly acute toxicity testing on only one species on an alternating basis. The Department may approve or deny the request based on the results and other available information without an additional public notice. If the request is approved, the test procedures are to be the same as specified above for the test species.

D. Special Conditions

1. Sewage Sludge:

The use or disposal of sewage sludge must be in conformance with the Environmental Protection Agency (EPA) General Permit MTG650000 or an equivalent permit issued pursuant to 40 CFR 503. A notice of intent must be filed with the EPA and the Department in accordance with the timeframes and procedures identified in the applicable permit. All materials required by

the General Permit to be submitted to the Department shall be signed in accordance with Part IV.G and sent to the address provided in Part II.D of this permit.

The Permittee shall not dispose of sewage sludge such that any portion thereof enters any state water, including ground water. The Permittee shall notify the Department in writing 45 days prior to any change in sludge management at the facility.

2. Toxicity Identification Evaluation / Toxicity Reduction Evaluation:

Should acute toxicity be detected in the required WET resample, a TIE/TRE shall be undertaken by the Permittee to establish the cause of the toxicity, locate the source(s) of the toxicity, and develop control or treatment for the toxicity. Failure to initiate or conduct an adequate TIE/TRE, or delays in the conduct of such tests, shall not be considered a justification for noncompliance with any whole effluent toxicity limitations contained in Part I.B of this permit. A TRE plan shall be submitted to the Department within 45 days after confirmation of the continuance of effluent toxicity (resample).

3. Water Quality-based Effluent Limitations

a. Final effluent limitations for *Escherichia coli* (*E. coli*) bacteria and Total Residual Chlorine will be effective starting November 1, 2011.

i. Schedule: Starting with the first full calendar year of the permit cycle (2010) and lasting for the duration of the Special Condition, an annual report shall be submitted with the December Discharge Monitoring Report (by January 28th of each year). The reports shall describe the milestones accomplished and the steps planned for each year towards compliance with the final effluent limits.

b. Final effluent limitations for total ammonia as N, total recoverable arsenic, copper, selenium, thallium, and bis(2-ethylhexyl)phthalate will be effective starting November 1, 2013.

i. Schedule: Starting with the first full calendar year of the permit cycle (2010) and lasting for the duration of the Special Condition, an annual report shall be submitted with the December Discharge Monitoring Report (by January 28th of each year). The reports shall describe the milestones accomplished and the steps planned for each year towards compliance with the final effluent limits.

4. Facility Flow Monitoring

a. Accurate influent and effluent flow measurement capabilities are required.

i. Schedule:

(A) By May 1, 2010, the Permittee shall provide the Department with a written report that evaluates flow monitoring capabilities, procedures, and devices for both influent and effluent. This action shall consist of a complete engineering review of flow measurement at the Facility over the range of expected flows encountered by the Facility.

(B) By November 1, 2010, determine improvements necessary to meet standards and requirements. Provide the Department with plans, specifications, and a construction schedule for installation of those improvements. Included in the report shall be recommended procedures for calibration and flow verification.

(C) Any actions undertaken to meet the requirements of this Special Condition must be completed by November 1, 2011,

E. Pretreatment Requirements:

1. Industrial Pretreatment Program - Contributing Industries and Pretreatment Requirements

a. The Permittee shall operate an Industrial Pretreatment Program in accordance with the following permit requirements developed pursuant to Section 402(b)(8) of the federal Clean Water Act, the General Pretreatment Regulations (40 CFR Part 403), and the approved pretreatment program submitted by the Permittee. The pretreatment program was approved on December 23, 1985 and has subsequently incorporated substantial modifications as approved by the Approval Authority. The approved pretreatment program, and any approved modifications thereto, is hereby incorporated by reference and shall be implemented in a manner consistent with the following requirements:

i. Industrial user information shall be updated at a minimum of once per year or at that frequency necessary to ensure that all Industrial Users are properly permitted and/or controlled. The records shall be maintained and updated as necessary;

ii. The Permittee shall sample and inspect each Significant Industrial User (SIU) at least once per calendar year [40 CFR Section 403.8(f)(2)(v)]. This is in addition to any industrial self-monitoring

activities. If the Permittee performs sampling for any SIU, then the Permittee shall perform any repeat sampling and analysis within 30 days of becoming aware of any violation [40 CFR Section 403.12(g)(2)];

- iii. The Permittee shall evaluate whether each SIU needs a plan to control Slug Discharges. SIUs must be evaluated within one (1) year of being designated as an SIU. Where needed, the Permittee shall require the SIU to prepare or update, and then implement the plan. Where a slug prevention plan is required, the Permittee shall ensure that the plan contains at least the minimum elements required in 40 CFR Section 403.8(f)(2)(vi). If required, the Permittee shall incorporate slug control requirements into the control mechanism for the SIU. [40 CFR, Section 403.8(f)(1)(iii)(B)(6)].;
- iv. The Permittee shall investigate instances of non-compliance with Pretreatment Standards and requirements indicated in reports and notices required under 40 CFR Section 403.12, or indicated by analysis, inspection, and/or surveillance activities.
- v. The Permittee shall enforce all applicable Pretreatment Standards and requirements and obtain remedies for noncompliance by any industrial user;
- vi. The Permittee shall control, through the legal authority in the approved pretreatment program, the contribution to the Publicly Owned Treatment Works (POTW) by each industrial user to ensure compliance with applicable Pretreatment Standards and requirements. In the case of industrial users identified as significant under 40 CFR Section 403.3(v), this control shall be achieved through permit, order, or similar means and shall contain, at a minimum, the following conditions:
 - (A) Statement of duration [in no case more than five (5) years];
 - (B) Statement of non-transferability without, at a minimum, prior notification to the Permittee and provision of a copy of the existing control mechanism to the new owner or operator;
 - (C) Effluent limits, including Best Management Practices, based on applicable Pretreatment Standards, Categorical Pretreatment Standards, local limits, and State and local law;
 - (D) Self-monitoring, sampling, reporting, notification and record keeping requirements, including an identification of the pollutants to be monitored, sampling location, sampling frequency, and

sample type, including documentation on BMP compliance, based on the applicable Pretreatment Standards in 40 CFR Part 403, Categorical Pretreatment Standards, local limits, and State and local law; and,

- (E) Statement of applicable civil and criminal penalties for violation of Pretreatment Standards and requirements, and any applicable compliance schedule. Such schedules may not extend the compliance date beyond deadlines mandated by federal statute or regulation.
 - (F) Requirements to control Slug Discharges, if determined by the POTW to be necessary.
- vii. The Permittee shall provide adequate staff, equipment, and support capabilities to carry out all elements of the pretreatment program as required by 40 CFR Section 403.8(f)(3);
 - viii. The approved program shall not be substantially modified by the Permittee without the approval of the EPA. Substantial and non-substantial modifications shall follow the procedures outlined in 40 CFR Section 403.18;
 - ix. The Permittee shall develop, implement, and maintain an enforcement response plan as required by 40 CFR Section 403.8(f)(5); and
 - x. The Permittee shall notify all Industrial Users of the users' obligations to comply with applicable requirements under Subtitles C and D of the Resource Conservation and Recovery Act (RCRA) as required by 40 CFR Section 403.8(f)(2)(iii).
- b. The Permittee shall establish and enforce specific local limits to implement the provisions of 40 CFR Section 403.5(a) and (b), as required by 40 CFR Section 403.5(c). The Permittee shall continue to develop these limits as necessary and effectively enforce such limits.

In accordance with EPA policy and with the requirements of 40 CFR sections 403.8(f)(4) and 403.5(c), the Permittee shall determine if technically based local limits are necessary to implement the general and specific prohibitions of 40 CFR sections 403.5(a) and (b).

This evaluation should be conducted in accordance with the latest revision of the "*EPA Region VIII Strategy for Developing Technically Based Local Limits*", and after review of EPA's "*Local Limits Development Guidance*" July 2004. Where the Permittee determines that revised or new local limits are necessary, the Permittee shall submit the proposed local limits to

the Approval Authority in an approvable form in accordance with 40 CFR Section 403.18.

- c. The Permittee shall analyze the treatment facility influent and effluent for the presence of the toxic pollutants listed in 40 CFR Part 122 Appendix D (NPDES Application Testing Requirements) Table II at least two (2) times per year as delineated in Part I.C. of this Permit and the toxic pollutants in Table III in 40 CFR Part 122 Appendix D at least once per quarter as delineated in Part I.C. of this Permit.

Based on information available to the permitting authority, there is reason to suspect the presence of toxic or hazardous pollutants listed in Table V in 40 CFR Part 122 Appendix D in quantities or concentrations known or suspected to adversely affect POTW operation, receiving water quality, or solids disposal procedures, analysis for all pollutants in Table V shall be performed at least once annually throughout the Permit cycle on both the influent and the effluent.

ii. Where the pollutants monitored in accordance with this section are reported as being above the method detection limit, the results for these pollutants shall be reported in the Permittee's pretreatment annual report.

In addition, bromodichloromethane, chloroform, 1,2-dichloroethane, and toluene have been identified as pollutants of concern by sampling and analysis of the Facility influent and/or effluent sludge during adherence to sampling requirements in the Permittee's Industrial Pretreatment Program. These pollutants of concern shall be sampled and analyzed in the influent and effluent at least once per month. These data will be reported on the Facility DMR.

- d. The Permittee shall analyze the treatment facility sludge (biosolids) prior to disposal, for the presence of toxic pollutants listed in 40 CFR 122 Appendix D (NPDES Application Testing Requirements) Table III at least once per year. If the Permittee does not dispose of biosolids during the calendar year, the Permittee shall certify to that in the Pretreatment Annual Report and the monitoring requirements in this paragraph shall be suspended for that calendar year.
 - i. The Permittee shall review the pollutants in 40 CFR Part 122, Appendix D, Tables II and V. If any of the pollutants in these tables were above detection in the influent samples during the previous two (2) years or the last two (2) analyses, whichever is greater, the Permittee shall sample and analyze its sewage sludge for these pollutants. The Permittee shall perform this evaluation and analysis at least once per year.

- ii. The Permittee shall use sample collection and analysis procedures as approved for use under 40 CFR Part 503 or specified in the EPA Region 8 General Permit for biosolids.
- iii. The Permittee shall report the results for these pollutants in the Permittee's pretreatment annual report, if required by EPA.
- e. All analyses shall be in accordance with test procedures established in 40 CFR Part 136. Where sampling methods are not specified, the influent and effluent samples collected shall be composite samples consisting of at least twelve (12) aliquots collected at approximately equal intervals over a representative 24-hour period and composited according to flow. Where automated composite sampling is inappropriate, at least four (4) grab samples shall be manually taken at equal intervals over a representative 24-hour period, and composited prior to analysis using approved methods; alternatively, the individual grab samples may be analyzed separately and the results from the respective grab samples mathematically combined based on flow (i.e., flow weighted) for the final result.
- f. The Permittee shall prepare annually a list of industrial users, which during the preceding twelve (12) months have significantly violated Pretreatment Standards or requirements. This list is to be published annually in a newspaper of general circulation in the Permittee's service area as required by 40 CFR Section 403.8(f)(2)(viii).

In addition, on or before March 28th of each year, the Permittee shall submit a pretreatment program annual report to the Approval Authority and the state permitting authority that contains the information requested by EPA or, at a minimum, the following information:

- i. An updated list of all SIUs as defined at 40 CFR 403.3(v). For each SIU listed the following information shall be included:
 - (A) All applicable Standard Industrial Classification (SIC) codes and categorical determinations, as appropriate. In addition, a brief description of the industry and general activities;
 - (B) Permit status. Whether each SIU has an unexpired control mechanism and an explanation as to why any SIUs are operating without a current, unexpired control mechanism (e.g. permit);
 - (C) A summary of all monitoring activities performed within the previous twelve (12) months. The following information shall be reported:

Total number of SIUs inspected; and
Total number of SIUs sampled.

- ii. For all industrial users that were in Significant Non-Compliance during the previous twelve (12) months, provide the name of the violating industrial user; indicate the nature of the violations, the type and number of actions taken (administrative order, criminal or civil suit, fines or penalties collected, etc.) and current compliance status. Indicate if the company returned to compliance and the date compliance was attained. Determination of Significant Non-Compliance shall be performed as defined at 40 CFR Section 403.8(f)(2)(viii)(A-H).
- iii. A summary of all enforcement actions not covered by the paragraph above conducted in accordance with the approved Enforcement Response Plan, as required in 40 CFR, Section 403.8(f)(5).
- iv. A list of all SIUs whose authorization to discharge was terminated or revoked during the preceding twelve (12) month period and the reason for termination;
- v. A report on any Interference, Pass Through, upset or NPDES permit violations known or suspected to be caused by non-domestic discharges of pollutant and actions taken by the Permittee in response;
- vi. Verification of publication of industrial users in Significant Non-Compliance;
- vii. Identification of the specific locations, if any, designated by the Permittee for receipt (discharge) of trucked or hauled waste, if modified;
- viii. Information as required by the Approval Authority or state permitting authority on the discharge to the POTW from the following activities:
 - (A) Ground water clean-up from underground storage tanks;
 - (B) Trucked or hauled waste; and,
 - (C) Groundwater clean-up from RCRA or Superfund sites.
- ix. A description of all changes made during the previous calendar year to the Permittee's pretreatment program that were not submitted as substantial or non substantial modifications to EPA.
- x. The Permittee shall evaluate actual pollutants loadings against the approved Maximum Allowable Headworks Loadings (MAHLs). Where the actual loading exceeds the MAHL, the Permittee shall

immediately begin a program to either revise the existing local limit and/or undertake such other studies as necessary to evaluate the cause(s) of the exceedence. The Permittee shall provide a summary of its intended action.

- xi. Other information that may be deemed necessary by the Approval Authority.
- g. The Permittee shall prohibit the introduction of the following pollutants into the POTW:
- i. Pollutants which create a fire or explosion hazard in the publicly owned treatment works (POTW), including, but not limited to, wastestreams with a closed cup flashpoint of less than sixty (60) degrees Centigrade (140 degrees Fahrenheit) using the test methods specified in 40 CFR Section 261.21;
 - ii. Pollutants which will cause corrosive structural damage to the POTW, but in no case discharges with pH lower than 5.0, unless the works are specifically designed to accommodate such discharges;
 - iii. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW, or other interference with the operation of the POTW;
 - iv. Any pollutant, including oxygen demanding pollutants (e.g., BOD), released in a discharge at a flow rate and/or pollutant concentration which will cause Interference with the POTW;
 - v. Heat in amounts which will inhibit biological activity in the POTW resulting in Interference but in no case heat in such quantities that the temperature at the POTW treatment plant exceeds forty (40) degrees Centigrade (104 degrees Fahrenheit) unless the Approval Authority, upon request of the POTW, approves alternate temperature limits;
 - vi. Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause Interference or Pass Through;
 - vii. Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems;
 - viii. Any trucked or hauled pollutants, except at discharge points designated by the POTW; and,
 - ix. Any specific pollutant that exceeds a local limitation established by the

POTW in accordance with the requirements of 40 CFR Section 403.5(c) and (d).

- x. Any other pollutant which may cause Pass Through or Interference.
- h. The Permittee shall provide the pretreatment Approval Authority with adequate notice of any substantial change in the volume or character of pollutants being introduced into the treatment works by any SIU introducing pollutants into the treatment works at the time of application for the discharge permit. For the purposes of this section, "substantial change" shall mean a level of change which has a reasonable probability of affecting the Permittee's ability to comply with its permit conditions or to cause a violation of stream standards applied to the receiving water.

Adequate notice shall include information on: (1) the quality and quantity of effluent to be introduced into the treatment works, and (2) any anticipated impact of the change on the quality or quantity of effluent to be discharged from the publicly owned treatment works.

- i. Section 309(f) of the Federal Clean Water Act provides that EPA may issue a notice to the POTW stating that a determination has been made that appropriate enforcement action must be taken against an industrial user for noncompliance with any Pretreatment Standards and requirements. The notice provides the POTW with thirty (30) days to commence such action. The issuance of such permit notice shall not be construed to limit the authority of the permit issuing authority or Approval Authority.
- j. The state permitting authority and/or the EPA retains, at all times, the right to take legal action against the industrial contributor for violations of a permit issued by the Permittee, violations of any Pretreatment Standard or requirement, or for failure to discharge at an acceptable level under national standards issued by EPA under 40 CFR, chapter I, subchapter N. In those cases where a MPDES permit violation has occurred because of the failure of the Permittee to properly develop and enforce Pretreatment Standards and requirements as necessary to protect the POTW, the state permitting authority and/or Approval Authority shall hold the Permittee responsible and may take legal action against the Permittee as well as the Indirect Discharger(s) contributing to the permit violation.

II. MONITORING, RECORDING AND REPORTING REQUIREMENTS

A. Representative Sampling

Samples taken in compliance with the monitoring requirements established under Part I of the permit shall be collected from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge. Sludge samples shall be collected at a location representative of the quality of sludge immediately prior to use-disposal practice.

B. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under Part 136, Title 40 of the Code of Federal Regulations, unless other test procedures have been specified in this permit. See Part I.C of this permit for any applicable sludge monitoring procedures. All flow-measuring and flow-recording devices used in obtaining data submitted in self-monitoring reports must indicate values within 10 percent of the actual flow being measured.

C. Penalties for Tampering

The Montana Water Quality Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$25,000, or by imprisonment for not more than six months, or by both.

D. Reporting of Monitoring Results

Effluent monitoring results obtained during the previous month(s) shall be summarized for each month and reported on a Discharge Monitoring Report Form (EPA No. 3320-1), postmarked no later than the 28th day of the month following the completed reporting period. Whole effluent toxicity testing (biomonitoring) results must be reported with copies of the laboratory analysis report on forms from the most recent version of EPA Region VIII's "Guidance for Whole Effluent Reporting". If no discharge occurs during the reporting period, "no discharge" shall be reported on the report form. Legible copies of these, and all other reports required herein, shall be signed and certified in accordance with the "Signatory Requirements" (see Part IV.G of this permit), and submitted to the Department at the following addresses:

(a) Montana Department of
Environmental Quality
Water Protection Bureau
PO Box 200901
Helena, Montana 59620-0901
Phone: (406) 444-3080

(b) U.S. Environmental Protection
Agency
10 West 15th Street
Suite 3200
Helena, MT 59626
Phone: (406) 457-5000

E. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any Compliance Schedule of this permit shall be submitted no later than 14 days following each schedule date.

F. Additional Monitoring by the Permittee

If the Permittee monitors any pollutant more frequently than required by this permit, using approved analytical methods as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharge Monitoring Report. Such increased frequency shall also be indicated.

G. Records Contents

Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements;
2. The initials or name(s) of the individual(s) who performed the sampling or measurements;
3. The date(s) analyses were performed;
4. The time analyses were initiated;
5. The initials or name(s) of individual(s) who performed the analyses;
6. References and written procedures, when available, for the analytical techniques or methods used; and
7. The results of such analyses, including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine these results.

H. Retention of Records

The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time. Data collected on site, copies of Discharge Monitoring Reports, and a copy of this MPDES permit must be maintained on site during the duration of activity at the permitted location.

I. Twenty-four Hour Notice of Noncompliance Reporting

1. The Permittee shall report any serious incidents of noncompliance affecting the environment as soon as possible, but no later than twenty-four (24) hours from the time the Permittee first became aware of the circumstances. The report shall be made to the Water Protection Bureau at (406) 444-3080 or the Office of Disaster and Emergency Services at (406) 841-3911. The following examples are considered serious incidents:
 - a. Any noncompliance which may seriously endanger health or the environment;
 - b. Any unanticipated bypass which exceeds any effluent limitation in the permit (See Part III.G of this permit, "Bypass of Treatment Facilities");
 - c. Any upset which exceeds any effluent limitation in the permit (See Part III.H of this permit, "Upset Conditions").
2. A written submission shall also be provided within five days of the time that the Permittee becomes aware of the circumstances. The written submission shall contain:
 - a. A description of the noncompliance and its cause;
 - b. The period of noncompliance, including exact dates and times;
 - c. The estimated time noncompliance is expected to continue if it has not been corrected; and
 - d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
3. The Department may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Water Protection Bureau, by phone, at (406) 444-3080.
4. Reports shall be submitted to the addresses in Part II.D of this permit, "Reporting of Monitoring Results".

J. Other Noncompliance Reporting

Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for Part II.D of this permit are submitted. The reports shall contain the information listed in Part II.I.2 of this permit.

K. Inspection and Entry

The Permittee shall allow the head of the Department or the Director, or an authorized representative thereof, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance, any substances or parameters at any location.

III. COMPLIANCE RESPONSIBILITIES

A. Duty to Comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The Permittee shall give the Department and the Regional Administrator advance notice of any planned changes at the permitted facility or of an activity which may result in permit noncompliance.

B. Penalties for Violations of Permit Conditions

The Montana Water Quality Act provides that any person who violates a permit condition of the Act is subject to civil or criminal penalties not to exceed \$25,000 per day or one year in prison, or both, for the first conviction, and \$50,000 per day of violation or by imprisonment for not more than two years, or both, for subsequent convictions. MCA 75-5-611(a) also provides for administrative penalties not to exceed \$10,000 for each day of violation and up to a maximum not to exceed \$100,000 for any related series of violations. Except as provided in permit conditions on Part III.G of this permit, "Bypass of Treatment Facilities" and Part III.H of this permit, "Upset Conditions", nothing in this permit shall be construed to relieve the Permittee of the civil or criminal penalties for noncompliance.

C. Need to Halt or Reduce Activity not a Defense

It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate

The Permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of the permit. However, the Permittee shall operate, as a minimum, one complete set of each main line unit treatment process whether or not this process is needed to achieve permit effluent compliance.

F. Removed Substances

Collected screenings, grit, solids, sludges, or other pollutants removed in the course of treatment shall be disposed of in such a manner so as to prevent any pollutant from entering any waters of the state or creating a health hazard. Sludge shall not be directly blended with or enter either the final plant discharge and/or waters of the United States. Any sludges removed from the facility shall be disposed of in accordance with 40 CFR 503, 258 or other applicable rule. EPA and MDEQ shall be notified at least 180 days prior to such disposal taking place.

G. Bypass of Treatment Facilities

1. Bypass not exceeding limitations. The Permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of Parts III.G.2 and III.G.3 of this permit.
2. Notice:
 - a. Anticipated bypass. If the Permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 60 days before the date of the bypass.
 - b. Unanticipated bypass. The Permittee shall submit notice of an unanticipated bypass as required under Part II.I of this permit, "Twenty-four Hour Reporting".
3. Prohibition of bypass:
 - a. Bypass is prohibited and the Department may take enforcement action against a Permittee for a bypass, unless:
 - 1) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 - 2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
 - 3) The Permittee submitted notices as required under Part III.G.2 of this permit.

- b. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three conditions listed above in Part III.G.3.a of this permit.

H. Upset Conditions

1. **Effect of an upset.** An upset constitutes an affirmative defense to an action brought for noncompliance with technology based permit effluent limitations if the requirements of Part III.H.2 of this permit are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review (i.e., Permittees will have the opportunity for a judicial determination on any claim of upset only in an enforcement action brought for noncompliance with technology-based permit effluent limitations).
2. **Conditions necessary for a demonstration of upset.** A Permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - a. An upset occurred and that the Permittee can identify the cause(s) of the upset;
 - b. The permitted facility was at the time being properly operated;
 - c. The Permittee submitted notice of the upset as required under Part II.I of this permit, "Twenty-four Hour Notice of Noncompliance Reporting"; and
 - d. The Permittee complied with any remedial measures required under Part III.D of this permit, "Duty to Mitigate".
3. **Burden of proof.** In any enforcement proceeding, the Permittee seeking to establish the occurrence of an upset has the burden of proof.

IV. GENERAL REQUIREMENTS

A. Planned Changes

The Permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

1. The alteration or addition could significantly change the nature or increase the quantity of pollutant discharged. This notification applies to pollutants which are not subject to effluent limitations in the permit; or
2. There are any planned substantial changes to the existing sewage sludge management practices of storage and disposal. The Permittee shall give the Department notice of any planned changes at least 180 days prior to their implementation.

B. Anticipated Noncompliance

The Permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

C. Permit Actions

This permit may be revoked, modified and reissued, or terminated for cause. The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

D. Duty to Reapply

If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit. The application must be submitted at least 180 days before the expiration date of this permit.

E. Duty to Provide Information

The Permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for revoking, modifying and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Department, upon request, copies of records required to be kept by this permit.

F. Other Information

When the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Department, it shall promptly submit such facts or information with a narrative explanation of the circumstances of the omission or incorrect submittal and why they weren't supplied earlier.

G. Signatory Requirements

All applications, reports or information submitted to the Department shall be signed and certified.

1. All permit applications shall be signed by either a principal executive officer or ranking elected official.
2. All reports required by the permit and other information requested by the Department shall be signed by a person described above or by a duly authorized representative of that person. A person is considered a duly authorized representative only if:
 - a. The authorization is made in writing by a person described above and submitted to the Department; and
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters. (A duly authorized representative may thus be either a named individual or an individual occupying a named position.)
3. Changes to authorization. If an authorization under Part IV.G.2 of this permit is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part IV.G.2 of this permit must be submitted to the Department prior to or together with any reports, information, or applications to be signed by an authorized representative.
4. Certification. Any person signing a document under this section shall make the following certification:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

H. Penalties for Falsification of Reports

The Montana Water Quality Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than \$25,000 per violation, or by imprisonment for not more than six months per violation, or by both.

I. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Department and the EPA. As required by the Clean Water Act, permit applications, permits and effluent data shall not be considered confidential.

J. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties to which the Permittee is or may be subject under Section 311 of the Clean Water Act.

K. Property or Water Rights

The issuance of this permit does not convey any property or water rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

L. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

M. Transfers

This permit may be automatically transferred to a new Permittee if:

1. The current Permittee notifies the Department at least 30 days in advance of the proposed transfer date;
2. The notice includes a written agreement between the existing and new Permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them;
3. The Department does not notify the existing Permittee and the proposed new Permittee of an intent to revoke or modify and reissue the permit. If this

notice is not received, the transfer is effective on the date specified in the agreement mentioned in Part IV.M.2 of this permit; and

4. Required annual and application fees have been paid.

N. Fees

The Permittee is required to submit payment of an annual fee as set forth in ARM 17.30.201. If the Permittee fails to pay the annual fee within 90 days after the due date for the payment, the Department may:

1. Impose an additional assessment consisting of 15% of the fee plus interest on the required fee computed at the rate established under 15-31-510(3), MCA, or
2. Suspend the processing of the application for a permit or authorization or, if the nonpayment involves an annual permit fee, suspend the permit, certificate or authorization for which the fee is required. The Department may lift suspension at any time up to one year after the suspension occurs if the holder has paid all outstanding fees, including all penalties, assessments and interest imposed under this sub-section. Suspensions are limited to one year, after which the permit will be terminated.

O. Reopener Provisions

This permit may be reopened and modified (following proper administrative procedures) to include the appropriate effluent limitations (and compliance schedule, if necessary), or other appropriate requirements if one or more of the following events occurs:

1. **Water Quality Standards:** The water quality standards of the receiving water(s) to which the Permittee discharges are modified in such a manner as to require different effluent limits than contained in this permit.
2. **Water Quality Standards are Exceeded:** If it is found that water quality standards or trigger values in the receiving stream are exceeded either for parameters included in the permit or others, the department may modify the effluent limits or water management plan.
3. **TMDL or Wasteload Allocation:** TMDL requirements or a wasteload allocation is developed and approved by the Department and/or EPA for incorporation in this permit.
4. **Water Quality Management Plan:** A revision to the current water quality management plan is approved and adopted which calls for different effluent limitations than contained in this permit.

5. **Sewage Sludge:** There have been substantial changes (or such changes are planned) in sludge use or disposal practices; applicable management practices or numerical limitations for pollutants in sludge have been promulgated which are more stringent than the requirements in this permit; and/or it has been determined that the Permittee's sludge use or disposal practices do not comply with existing applicable state or federal regulations.
6. **Toxic Pollutants:** A toxic standard or prohibition is established under Section 307(a) of the Clean Water Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit.
7. **Toxicity Limitations:** Change in the whole effluent protocol, or any other conditions related to the control of toxicants have taken place, or if one or more of the following events have occurred:
 - a. Toxicity was detected late in the life of the permit near or past the deadline for compliance.
 - b. The TRE/TIE results indicated that compliance with the toxic limitations will require an implementation schedule past the date of expiration.
 - c. The TRE/TIE results indicated that the toxicant(s) represent pollutant(s) that may be controlled with specific numerical limitations.
 - d. Following the implementation of numerical controls on toxicants, a modified whole effluent protocol is needed to compensate for those toxicants that are controlled numerically.
 - e. The TRE/TIE revealed other unique conditions or characteristics which, in the opinion of the Department, justify the incorporation of unanticipated special conditions in this permit.

V. DEFINITIONS

1. **"Act"** means the Montana Water Quality Act, Title 75, Chapter 5, MCA
2. **"Administrator"** means the administrator of the United States Environmental Protection Agency.
3. **"Acute Toxicity"** occurs when 50 percent or more mortality is observed for either species (See Part I.C of this permit) at any effluent concentration. Mortality in the control must simultaneously be 10 percent or less for the effluent results to be considered valid.
4. **"Annual Average Load"** means the arithmetic mean of all 30-day or monthly average loads reported during the calendar year for a monitored parameter.
5. **"Approval Authority"** means the EPA Regional Administrator.
6. **"Arithmetic Mean" or "Arithmetic Average"** for any set of related values means the summation of the individual values divided by the number of individual values.
7. **"Average Monthly Limitation"** means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.
8. **"Average Weekly Limitation"** means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.
9. **"BOD₅"** means the five-day measure of pollutant parameter biochemical oxygen demand.
10. **"Bypass"** means the intentional diversion of waste streams from any portion of a treatment facility.
11. **"CBOD₅"** means the five-day measure of pollutant parameter carbonaceous biochemical oxygen demand.
12. **"Composite Samples"** shall be flow proportioned. The composite sample shall, as a minimum, contain at least four (4) samples collected over the compositing period. Unless otherwise specified, the time between the collection of the first sample and the last sample shall not be less than six (6) hours nor more than 24 hours. Acceptable methods for preparation of composite samples are as follows:

- a. Constant time interval between samples, sample volume proportional to flow rate at time of sampling;
 - b. Constant time interval between samples, sample volume proportional to total flow (volume) since last sample. For the first sample, the flow rate at the time the sample was collected may be used;
 - c. Constant sample volume, time interval between samples proportional to flow (i.e. sample taken every "X" gallons of flow); and,
 - d. Continuous collection of sample, with sample collection rate proportional to flow rate.
13. **"Daily Discharge"** means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the average measurement of the pollutant over the day.
14. **"Daily Maximum Limitation"** means the maximum allowable discharge of a pollutant during a calendar day. Expressed as units of mass, the daily discharge is cumulative mass discharged over the course of the day. Expressed as a concentration, it is the arithmetic average of all measurements taken that day.
15. **"Department"** means the Montana Department of Environmental Quality (MDEQ). Established by 2-15-3501, MCA.
16. **"Director"** means the Director of the Montana Department of Environmental Quality.
17. **"Discharge"** means the injection, deposit, dumping, spilling, leaking, placing, or failing to remove any pollutant so that it or any constituent thereof may enter into state waters, including ground water.
18. **"EPA"** means the United States Environmental Protection Agency.
19. **"Federal Clean Water Act"** means the federal legislation at 33 USC 1251, *et seq.*
20. **"Geometric Mean"** means the value obtained by taking the Nth root of the product of the measured values.
21. **"Grab Sample"** means a sample which is taken from a waste stream on a one-time basis without consideration of flow rate of the effluent or without consideration for time.

22. **"Indirect discharger"** means a non-domestic discharger introducing pollutants to a publicly owned treatment works.
23. **"Instantaneous Maximum Limitation"** means the maximum allowable concentration of a pollutant determined from the analysis of any discrete or composite sample collected, independent of the flow rate and the duration of the sampling event.
24. **"Instantaneous Measurement"**, for monitoring requirements, means a single reading, observation, or measurement.
25. **"Interference"** means a discharge which, alone or in conjunction with other contributing discharges
 - a. Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and
 - b. Therefore causes a violation of any requirement of the POTW's MPDES permit (including an increase in the magnitude or duration of a violation) or causes the prevention of sewage sludge use or disposal in compliance with the following statutes and regulations: Section 405 of the Clean Water Act; 40 CFR Part 503 - Standards for the Use and Disposal of Sewage Sludge; Resource Conservation and Recovery Act (RCRA); 40 CFR Part 258 - Criteria for Municipal Solid Waste Landfills; and/or any State regulations regarding the disposal of sewage sludge.
26. **"Maximum Daily Discharge Limitation"** means the highest allowable daily discharge.
27. **"Minimum Level"** (ML) of quantitation means the lowest level at which the entire analytical system gives a recognizable signal and acceptable calibration point for the analyte, as determined by the procedure set forth at 40 CFR 136. In most cases the ML is equivalent to the Required Reporting Value (RRV) unless otherwise specified in the permit. (ARM 17.30.702(22))
28. **"Mixing Zone"** means a limited area of a surface water body or aquifer where initial dilution of a discharge takes place and where certain water quality standards may be exceeded.
29. **"Nondegradation"** means the prevention of a significant change in water quality that lowers the quality of high-quality water for one or more parameters. Also, the prohibition of any increase in discharge that exceeds the limits established under or determined from a permit or approval issued by the Department prior to April 29, 1993.

30. **"Pass Through"** means a discharge which exits the POTW into waters of the State of Montana in quantities or concentrations which, alone or in conjunction with other discharges, is a cause of a violation of any requirement of the POTW's MPDES permit (including an increase in the magnitude or duration of a violation).
31. **"POTW"** means a publicly owned treatment works.
32. **"Regional Administrator"** means the administrator of Region VIII of EPA, which has jurisdiction over federal water pollution control activities in the state of Montana.
33. **"Severe Property Damage"** means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
34. **"Sewage Sludge"** means any solid, semi-solid or liquid residue generated during the treatment of domestic sewage and/or a combination of domestic sewage and industrial waste of a liquid nature in a treatment works. Sewage sludge includes, but is not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the incineration of sewage sludge or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works.
35. **"Slug Discharge"** means any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge, which has a reasonable potential to cause Interference or Pass Through, or in any other way violate the POTW's regulations, local limits or Permit conditions.
36. **"TIE"** means a toxicity identification evaluation.
37. **"TMDL"** means the total maximum daily load limitation of a parameter, representing the estimated assimilative capacity for a water body before other designated uses are adversely affected. Mathematically, it is the sum of wasteload allocations for point sources, load allocations for non-point and natural background sources, and a margin of safety.
38. **"TRE"** means a toxicity reduction evaluation.
39. **"TSS"** means the pollutant parameter total suspended solids.

40. **"Upset"** means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations 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, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

City of Great Falls Wastewater Treatment Plant
MPDES Permit Number MT0021920
Response to Public Comment

On July 27, 2009, the Department of Environmental Quality (Department) issued Public Notice MT-09-24 stating that a tentative determination to issue a wastewater discharge permit to the City of Great Falls under the Montana Pollutant Discharge Elimination System (MPDES) had been made. The notice stated that the Department had prepared a draft permit and Fact Sheet. The notice required that all written comments be received or postmarked by August 26, 2009.

The Department received written comments from The Environmental Protection Agency (EPA) and Jim Rearden, Director of Public Works for the City of Great Falls. The Department has prepared this written response to all significant comments as required by ARM 17.30.1377. The Department has considered these comments in preparation of the proposed Permit and decision.

Comments (numbered 1 through 36) from Jim Rearden, Director of Public Works for the City of Great Falls. These comments are repeated verbatim from the electronic copy of the letter dated August 26, 2009 provided by the Commentor.

Comment 1. *Fact Sheet Page 2, Table FS-1*

- a. We request that the Duly Authorized Signatory reference the person filling the position of Director of Public Works as allowed in Paragraph IV.G.2 of the permit and not reference the person by name.
- b. The mailing and billing address are not the same as the Facility Address. The mailing and billing addresses are: P.O. Box 5021, Great Falls, MT 59403.

Response 1a. and b. These two corrections are noted. Table FS-1 has been updated, herein, to reflect these changes. Table FS-1 now reads as follows:

Table FS-1. Facility Information

Permittee	City of Great Falls
Name of Facility	City of Great Falls Wastewater Treatment Plant
Facility Address	1600 6 th Street NE Great Falls, MT 59404
	Cascade County
	Lat. 47°31'03"N Long. -111°18'03"W (Administrative Building)
Facility Contact, Title and Telephone Number	Wayne Robbins, Plant Manager, Veolia Water North America, (406)727-7004 ext.102
Duly Authorized Signatory to Certify, Sign, and Submit Reports	Director of Public Works, City of Great Falls
Mailing and Billing Address	P.O. Box 5021 Great Falls, MT 59403
Type of Facility	Conventional activated sludge, POTW
Major or Minor Facility	Major
Industrial Pretreatment Program	Yes
Number of Outfalls	1 (Outfall 003)
Receiving Waters	Missouri River

Comment 2. *Fact Sheet Page 2, Facility Description:* We don't believe the use of the terms "Primary Device" and "Secondary Device" are consistent with standard engineering nomenclature, therefore cannot assess the accuracy of the statements regarding flow metering. We reserve the right to comment on the accuracy of these statements at a later date, if necessary.

Response 2. The EPA defines primary and secondary devices in US EPA *NPDES Compliance Inspection Manual*, EPA 305-X-03-004, July 2004. Chapter 6.A. Evaluation of Permittee's Flow Measurement states "Primary devices are standard hydraulic structures, such as flumes and weirs, that are inserted in the open channel. Facilities use secondary devices in conjunction with primary devices to automate the flow measuring process. Typically, secondary devices measure the liquid depth in the primary device and convert the depth measurement to a corresponding flow, using established mathematical relationships. Examples of secondary devices are floats, ultrasonic transducers, bubblers, and transit-time flow meters."

In accordance with Administrative Rules of Montana (ARM) 17.30.1375 and the public notice sent to the applicant and the public, all persons, including the Permittee, who believe any condition in the draft Permit is inappropriate shall raise all reasonable ascertainable issues and submit all reasonable arguments supporting their position by the close of the public comment period. Any comment must have been submitted during the public comment period. No change will be made as a result of this comment.

Comment 3. *Fact Sheet Page 7, Table FS-5:* This table indicates that the existing permit requires both influent and effluent flow monitoring. We do not believe that both are required by the existing permit.

Response 3. The May 1993-issued Permit required continuous flow monitoring of the influent with a recorder based on an earlier Permit decision. The February 2000-issued Permit (existing Permit) requires continuous flow monitoring of the effluent with a recorder. However, the Discharge Monitoring Report (DMR) has been requiring the Permittee to report influent flow measurements only. There is no explanation in the 1993 or 2000 Fact Sheets or administrative record for these differences.

Although the Outfall 003 monitoring table in the existing Permit does not specify flow monitoring for the influent stream, the Permittee is required to collect twenty-four hour composite influent and effluent samples in order to comply with percent removal limitations for Biochemical Oxygen Demand (BOD₅) and Total Suspended Solids (TSS). In order to collect a flow-proportioned composite sample as required by Permit, flow monitoring capabilities for both the influent and effluent streams is necessary. The proposed Permit clearly states flow monitoring and reporting expectations for both influent and effluent streams and outlines a special condition addressing flow monitoring capabilities.

No change will be made as a result of this comment.

Comment 4. The Total Suspended Solids limits in the existing permit are 45/30 (7-d/30-d).

Response 4. This is a typographic error and the Fact Sheet has been corrected herein to read, "45/30". No change will be made as a result of this comment.

Comment 5. *Fact Sheet Page 13, Table FS-8:* This table, according to the prior paragraph, is a composite characterization of water quality using various sources. We request that the City be provided with the raw data used to generate this table, including the methodology and standards used in generating the values that appear in the table. The City reserves the right to comment on the validity of the data to generate the values in the table.

Response 5. Attached is the spreadsheet of USGS data utilized to characterize the receiving water condition and the sources of information for each characteristic (Attachment 1). In accordance with Administrative Rules of Montana (ARM) 17.30.1375 and the public notice sent to the applicant and the public, all persons, including the Permittee, who believe any condition in the draft Permit is inappropriate shall raise all reasonable ascertainable issues and submit all reasonable arguments supporting their

position by the close of the public comment period. Any comment on data utilized must have been submitted during the public comment period.

The Permittee has not provided any new information to correct or update the characterization of the Missouri River used for development of this Permit. For characterization of the receiving waters, as per 75-5-702(2), Montana Code Annotated (MCA), the Department shall use all currently available data, including information obtained from federal, state, and local agencies. The receiving water characterization will remain as is for the purposes of Permit limitation development.

If the Permittee chooses to submit an alternate characterization of the Missouri River in the area of discharge at Outfall 003 prior to any mixing with discharge at Outfall 003, the Permittee can apply for a major modification of Permit and the Department would consider the new information in accordance with ARM 17.30.1361. The methods utilized and the limitations developed in this Permit are appropriate for this discharge.

No change will be made as a result of this comment.

Comment 6. *Fact Sheet Page 14, first paragraph:* The second citation in the second line is incorrect – we believe it should be 17.30.507.

Response 6. This is a typographical error and the Fact Sheet citation has been corrected, herein, to read, "In accordance with ARM 17.30.507(1)(b)..." No change will be made as a result of this comment.

Comment 7. The selection of words for citations of 17.30.602 and 17.30.506 are incomplete such that the statements appear to suggest something more strict than the Rule.

Response 7. Citation 17.30.602 was shortened for clarity not to imply a more stringent condition. The omitted portion of the citation "...except that ammonia, chlorine, and dissolved oxygen may be present at concentrations so as to cause potentially toxic conditions in no more than 10% of the mixing zone provided that there is no lethality to aquatic organisms passing through the mixing zone", is addressed in the last paragraph of this section of the Fact Sheet.

This paragraph is a synopsis of the mixing zone rules (ARM 17.30.501 – 518) that apply in their entirety to the Permit development process. Any paraphrasing was intended for clarity not to imply more stringent conditions.

No change will be made as a result of this comment.

Comment 8. *Fact Sheet Page 15:* In the last sentence of the third paragraph the Department sets the available dilution flows for chronic limitations to zero for persistent toxic parameters, providing no legal citation or other reasoning for doing so.

It is apparent from the Attachments that this determination is being applied to Human Health Standards as well. To this, the City has the following observations and comments:

- ARM 17.30.507(1)(b) lists standards that are not to be exceeded in the mixing zone, listing only acute standards for aquatic life.
- ARM 17.30.507(1)(a) lists the standards that cannot be exceeded beyond the boundaries of the mixing zone, listing narrative water quality standards, standards for harmful substances, numeric acute and chronic standards for aquatic life, and standards based on human health.
- The City understands the intent of the phrase “beyond the boundaries of the mixing zone” to mean after substantial mixing of the effluent with the volume of the receiving stream.

It is the City’s understanding that Human Health standards are developed based on effects to an exposed individual that occur during a lifetime of exposure to the pollutant. We believe that no such individual is exposed to the effluent from the POTW prior to substantial mixing of the effluent with the receiving stream. We believe that a parallel analysis exists for chronic aquatic toxicity standards.

The Department’s actions in setting dilution flows to zero when considering chronic aquatic toxicity and Human Health standards seem to us to contradict the intent of ARM 17.30.507 and the scientific basis for the standards.

The City requests that the Department provide justification for its actions in setting the dilution flows for chronic aquatic toxicity standards and Human Health standards to zero.

Response 8. The Department will set the available dilution flow to achieve acute and chronic limitations as zero (no mixing zone) for persistent toxic parameters for the following reasons:

- The Permittee requested continuance of the existing mixing zone in the application. The existing mixing zone was assessed in the 1999-developed Fact Sheet for ammonia and total residual chlorine only. It is inappropriate to apply this mixing zone to the persistent pollutants of concern;
- “Beyond the boundaries of the mixing zone” does mean after substantial mixing of the effluent with a volume of the receiving stream. However, this does not always

mean that a large volume (or any volume for that matter) of receiving water flow is available for mixing. The rules go on to establish the applicable volume of the receiving water to use as the mixing volume (dilution flow) and how to determine that value [ARM 17.30.516]. For the Great Falls WWTP, the appropriate Missouri River dilution flow to apply for assessment of chronic effluent limitations is unknown. The Permittee has not provided the information for establishing a source specific mixing zone as required in ARM 17.30.515 and 518. This is outlined in the current Fact Sheet pages 14 and 15.

The Permittee may choose to perform a source specific mixing zone study. Depending on the design conditions for the study (presence of a diffuser on the discharge line), the results of the study may indicate that recalculation of final effluent limitations may be necessary. The Permittee may apply for a major modification of Permit. At that time they would supply any new information available regarding the discharge, receiving water, and mixing zone and the Department would re-assess reasonable potential for the effluent to exceed or contribute to an exceedance of a water quality standard. This process may, or may not, result in modified effluent limitations.

Human Health Standards for Surface Water in Circular DEQ-7 (February 2008), in compliance with 75-5-301, MCA and Section 303(c) of the Federal Clean Water Act, are predicated on footnote (3), on page 37 of 43, which states that "No surface water or groundwater sample concentration shall exceed these values". Therefore, a maximum daily limitation (instantaneous maximum value) for human health standards has been developed when reasonable potential to exceed a water quality standard is demonstrated.

No change will be made as a result of these comments.

Comment 9. *Fact Sheet Page 16, last paragraph:* The basis for not granting mixing for E. coli is flawed. There is no reasonable potential for access to the river along this stretch (the terrain doesn't allow it) and certainly no public beaches or swimming areas and no reasonable potential for any to be created. The only area where the terrain could accommodate public access is arguably too close to the dam to be safe.

Response 9. Although there are no public beaches or swimming areas in the vicinity of or downstream of the WWTP outfall, the Department disagrees that the public cannot access the river in this area. At least by means of swimming, boating, public trail, and a public park on the opposite shore, there are any number of locations at which the public can reach the water. The Fact Sheet clearly establishes the reasons for setting the dilution flow at zero for pathogenic bacteria. No changes will occur as a result of this comment.

Comment 10. *Fact Sheet Page 17, Table FS-9:* The acute ammonia limits are based on the receiving water pH. However, since limited mixing with the river (1%) is allowed, we believe it is appropriate to use a pH closer to the effluent for this measurement.

Response 10. Ammonia standards are developed for the condition of the receiving water, not the potentially impacted condition of the mixing zone. The water quality being protected is the receiving water, not the incomplete mixed effluent plume. The Department recognizes that the pH of the effluent may result in a lower pH in the vicinity of discharge and hence reduced toxicity due to ammonia. However, the pH of the receiving water will rebound downstream. Typical estimates of pH rebound vary from 0.2 to 0.5 standard units per mile.

As the pH of the receiving water rebounds to conditions more reflective of upstream conditions, ammonia toxicity increases. Maximum toxicity may occur between one to several miles downstream, therefore the use of conservative upstream values is justified. As a matter of practical science, it is typical to error on the side of resource protection when there is uncertainty in the estimate rather than to compromise the aquatic resource. The application of the upstream pH may be a conservative assumption, one that is protective of the resource.

No change will be made as a result of this comment.

Comment 11. Both the acute and chronic criteria are calculated using percentile values for pH. Circular DEQ-7 in note 7 requires that *"Because these formulas are non-linear in pH and temperature, the Standard is the average of separate evaluations of the formulas reflective of the fluctuations of flow, pH, and temperature within the averaging period; it is not appropriate to apply the formula to average pH, temperature and flow."* The City questions whether the Department's analysis presented in the Fact Sheet meets the requirements of DEQ-7.

Response 11. When calculating the applicable receiving water ammonia (or any parameter) standards to use when developing effluent limitations, the Department must establish the water quality for the critical condition of the stream. To do this, ideally, a data set would exist that was collected specifically when the low flow condition (7Q10) occurs, typically a summer minimum flow with maximum temperature scenario. However, it is most common that that type of data set is lacking and the Department must describe the critical condition using a variable data set. To do this, using non-parametric statistics, the 75th percentile and 95th percentile values are used for establishing the chronic and acute conditions, respectively.

Footnote (7) in Circular DEQ-7 clarifies that averaging of measured pH and temperature values over a one-hour or thirty day averaging period used to calculate the criterion maximum concentration (CMC) or the criterion continuous concentration (CCC) is

inconsistent with the equilibrium equation upon which the standard is based. In aqueous solution, ammonia exists in equilibrium between the more toxic, unionized, and the less toxic, ionized, form. Because the concentration of unionized ammonia is a function of instantaneous pH and temperature, and to a lesser extent, ionic strength, it is not appropriate to average measurements of pH and temperature for the averaging period. Rather, the standard (CMC or CCC) must be calculated based on the instantaneous measurements of pH and temperature. This footnote applies when multiple in stream samples are collected within a given averaging period to determine if the concentration of ammonia in the receiving water exceeds the applicable CMC or CCC value.

When deriving effluent limitations for ammonia, Footnote 7 does not apply because the critical pH and temperature conditions are defined in the fact sheet, CMC and CCC are calculated for that critical design condition, and then those values are utilized for WQBEL development.

No change will be made as a result of this comment.

Comment 12. The Chronic ammonia criteria are calculated using the assumption that early life stages of salmonids are present year round. The Montana Fisheries Information System database indicates that year round residence of salmonids is rare in this portion of the Missouri River. In addition, the 2006 303(d) list includes this segment as not supportive of aquatic life support and cold water fisheries-trout. The City requests the Department provide justification for the assumption that salmonids are present year round.

Response 12. The Fact Sheet clearly establishes that Class B-2 waters are to be maintained suitable for drinking, culinary, and food processing purposes, after conventional treatment; bathing, swimming and recreation; growth and marginal propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply [ARM 17.30.624(1)]. Although the salmonids may be rare in this section of the Missouri River, the water quality must nonetheless be maintained to be protective of salmonid species. The year-round presence of fish in early life stages is not restricted to salmonid species and is based on the Montana Department of Fish Wildlife and Parks, *Spawning Times of Montana Fishes*, D. Skaar, March 2001. No change will be made as a result of this comment.

Comment 13. *Fact Sheet Page 19, Item 3:* Two instances in this section, Metals and Organic Substances, refer to the samples not being analyzed using 40 CFR 136 accepted methods or not meeting the Circular DEQ-7 specified RRV. We request that the Department specify where, specifically, the shortcomings of these analyses occurred.

Response 13. In June of 2009, the Permittee provided the Department with copies of laboratory analyses for metals and organic substances for the period of record January 2004 through October 2008. Review of these documents showed numerous instances where 40 CFR 136 methods were not utilized and/or Circular DEQ-7 Required Reporting Values (RRV) were not met. It is not practical to present a detailed list of each exact instance where these criteria were not met in this document, and it is the Permittee's responsibility to assure sampling and reporting meet Permit monitoring and reporting requirements.

Examples, however, would be:

- For the sample collected April 5, 2004, only four of the 17 analyses performed were according to 40 CFR 136-accepted methods; and
- For the sample collected October 6, 2005, none of the metals analyses met the RRV.

A copy of the documents with Department editorial mark ups and notes are available in the administrative record for this Permit and can be made available to the Permittee if so desired. No change will be made as a result of this comment.

Comment 14. *Fact Sheet Page 22, first paragraph iii:* The administrative order pertains to the control of the generation of H₂S by the Malt Plant and has nothing to do with the discharge of toxic, carcinogenic and/or hazardous substances. We don't believe the existence of this Administrative order can be used as logic to require sampling for Table V compounds.

Response 14. The Administrative Order on Consent (AOC) establishes a failure on the part of the Industrial Pretreatment Program (IPP) to maintain compliance with Approval Authority requirements. As such, the IPP may not be protective of the WWTP performance which impacts the potential for toxicity, carcinogenic and/or hazardous substances in the effluent. No change will be made as a result of this comment.

Comment 15. Certain levels of toxic and hazardous substances are present in normal domestic and commercial sewage. We are aware of no reason to believe ours are out of the ordinary. We do not believe the mere existence of these compounds is justification for the very onerous requirement to sample all Table V compounds. *Page 22, first paragraph iv:* It is not clear what standard is being used to determine that these substances are categorized as pollutants of concern or the implications of this determination. During the Technically Based Local Limits development process that the City recently completed, these pollutants were not identified as Pollutants of Concern using EPA's standards for this designation. We request that the Department explain the standards used to make this determination.

Response 15. The sampling parameters and frequencies required in this section are established by the EPA, as adopted by reference at ARM 17.30 subchapter 14 and the Region VIII Guidance for Determining Monitoring Frequencies for the Pretreatment Program. Because of the potential failure of the IPP to be protective of plant performance and the documented presence of some of these toxic/hazardous compounds in the effluent, monitoring for the toxic pollutants and hazardous substances in Table V (40 CFR 122 Appendix D) has been included in this Permit cycle.

However, on concurrence with Rosemary Rowe of the EPA MT office (September 9, 2009), the frequency of analysis for Table V parameters will be reduced to one sample per year for both influent and effluent in the second and fourth full calendar years of the Permit cycle (2011 and 2013).

Footnote (6) in the table on page 11 of 39 of the Permit has been updated to read:

- (6) Both influent and effluent samples must be analyzed as required once per year in calendar years 2011 and 2013. 40 CFR 122 Appendix D. Table V.

Comment 16. *Fact Sheet Page 22, paragraph ii at the bottom of the page:* The EPA Administrative Order is being used to justify quarterly WET testing. The Administrative Order deals specifically with H₂S concentrations linked to discharge by the Malt Plant and has no relevance to WET testing.

Response 16. See Response 14, above. The status of the IPP may also impact the effluent water quality and therefore, the results of Whole Effluent toxicity testing. No change will be made as a result of this comment.

Comment 17. *Fact Sheet Page 23, first paragraph:* The last sentence indicates that the target pH selected must represent the pH value of the receiving water. We believe that, because little mixing is being allowed, the target pH should represent the conditions in the mixing zone.

Response 17. The water quality being protected is the receiving water, not the incomplete-mixed effluent plume. Therefore, it is appropriate to use the pH of the receiving water for the target pH as specified by *Methods for Measuring the Acute Toxicity of Effluent to Freshwater and Marine Organisms*, EPA 821/R-02/012. No change will be made as a result of this comment.

Comment 18. *Fact Sheet Page 23, Table FS-13:* This table proposes a limit that is well below the detection level of standard test methods. We request that a footnote be added

to this table to recognize this. We suggest "Sampling of effluent with analytical results less than 0.1 mg/L is considered in compliance with the chlorine limit."

Response 18. The addition of language addressing method detection capabilities for total residual chlorine (TRC) is appropriate for this Permit. The following will be added to page 8 of 39 of the Permit:

The EPA-approved analytical methods in 40 CFR Part 136 require total residual chlorine (TRC) samples to be analyzed immediately. On-site analysis of TRC using an approved method is required. The method must achieve a minimum detection level of 0.10 mg/L. The Permittee will be in compliance with the applicable effluent limitation if each measured TRC chlorine concentration is less than 0.10 mg/L.

Footnote (5) has been added to both the interim and final limitations tables on pages 5 and 6 of 39 of the Permit, respectively. The footnotes read:

- (6) The Permittee will be in compliance with the applicable effluent limitation if each measured total residual chlorine concentration is less than 0.10 mg/L.

For the purpose of clarity, the following language has been added to page 12 of 39 of the Permit:

Reporting Total Residual Chlorine (TRC) Results

On-site analysis of TRC using an approved method is required. The method must achieve a minimum detection level of 0.10 mg/L. The Permittee will be in compliance with the applicable effluent limitation if each measured TRC concentration value is less than 0.10 mg/L. When all measured TRC values are less than the analytical reporting level (0.10 mg/L), the Permittee shall report the analytical reporting level preceded by a less than symbol (<0.10 mg/L) on the DMR.

Comment 19. *Fact Sheet Page 23, Table FS-13:* This table proposes limitations for Arsenic that are lower than the In-Stream concentrations (listed in Attachment A-3). We understand 75-5-306 MCA to say that it is not necessary for this discharge to be treated to a purer condition than the background levels for this parameter. The City requests that the discharge limitation for this parameter be adjusted to be no less than the In-Stream concentrations or removed from the permit.

Response 19. 75-5-306, MCA states that "it is not necessary that wastes be treated to a purer condition than the natural condition of the receiving stream. "Natural" refers to conditions or material present from runoff or percolation over which man has no control or

from developed land where all reasonable land, soil, and water conservation practices have been applied”.

The impairment listing for this segment of the Missouri River specifically lists the 1996 probable causes of impairment as flow alteration, metals, nutrients, other inorganic substances, siltation, and suspended solids. The probable sources are listed as agriculture, irrigated crop production, natural sources, range land, stream-bank modification/destabilization; and upstream impoundment. The 2006 303(d) list cites the probable causes of impairment to be the metals total chromium, mercury, and selenium; PCBs, physical substrate habitat alteration; sedimentation/siltation; solids (suspended and bedload); and turbidity. Sources for these causes of impairment are listed as contaminated sediments; industrial point source discharge; industrial/commercial site storm water discharge (permitted); dam construction (other than upstream flood control projects); and irrigated crop production.

The Department believes that these causes and sources of impairment do not indicate a “natural” condition for the receiving water and the limitations developed are appropriate. No change will be made as a result of this comment.

Comment 20. *Fact Sheet Page 23, Table FS-13:* The values for Copper were based on a RP analysis using the 25th percentile value for the hardness data of the Missouri River. The City understands that several TMDL reports recently generated by the Department that calculate metals loadings based on the 50th percentile hardness. We believe, if the Department were to use the 50th percentile standard in this permit calculation, it would result in a determination of No Reasonable Potential. In addition, the toxicity of Copper varies with the hardness of the water and the Department, while assuming no mixing with the receiving, performs calculations for toxicity at the hardness of the stream rather than the hardness of the effluent. The City requests that the Department provide justification for its use of the 25th percentile values in this calculation. Additionally, if the Department believes that calculating toxicity with no mixing is appropriate, the City requests that the calculations be performed using the effluent’s quality parameters, rather than the river’s.

Response 20. As described above, the receiving water conditions, not the incomplete-mix effluent plume, are being protected when effluent limitations are developed. The critical condition for hardness, when there is no dilution flow or mixing allowed, is the lower bound of the inter-quartile range of the hardness measurements (the 25th percentile value) for the receiving water as close to the point of discharge as possible. The Department has utilized this value when developing limitations for hardness-based metals in a number of newly issued MPDES permits and will continue to use this value for determining hardness-based metals standards. No change will be made as a result of this comment.

Comment 21. *Fact Sheet Page 23, Table FS-13:* A number of the parameters appearing in this table have been developed using limited data sets. An example is thallium, where the data set consisted of five samples, three of which were below detection levels. Using the TSD methodology, when there are few samples and moderate variability, the required multiplier can result in expected values that are significantly elevated. We believe the process would be best served by having a more robust data set. The City requests that the metals and toxic pollutants be removed from this table pending additional sampling as required in Section I.C of the draft permit. Also please see Proposal #2 below, which requests that the City be allowed to determine if industrial sources of these pollutants exist prior to setting discharge limits for them.

Response 21. While the data set may not be extensive for metals and organic substances (in some cases as many as 17 data points, for others much more limited data sets with five data points) the data exist and RP must be assessed. Methodologies in place for analysis using the *Technical Support Document for Water Quality-based Toxics Control* (EPA/505/2-90-001, March 1991) take in to account the presence of less than values in the data set. Variability of an effluent quality for a parameter is part of the calculation used to develop limitations. No change will be made as a result of this comment.

Comment 22. *Fact Sheet Page 27, Table FS-16:* This table requires the City to perform monitoring for, among other things, Temperature, Nitrate + Nitrite, Total Kjeldahl Nitrogen, Total Dissolved Solids and Total Hardness. There is no discussion in the Fact Sheet regarding these parameters and why they are being required. Some of them have no water quality standards. We request the Department provide an explanation and justification for inclusion of these parameters in the permit and allow the City to review and respond.

Response 22. Nitrate + Nitrite as N and Total Kjeldahl Nitrogen are parameters that must be analyzed to provide the data for total nitrogen (TN) therefore these parameters must be monitored. As a major publicly-owned treatment works with a design flow greater than 0.1 mgd, the Permittee is required to provide Total Dissolved Solids data as part of the suite of conventional and non-conventional compounds [EPA Form 3510-2A (Rev. 1-99)] and this data has not been reported in past applications as required.

It is not necessary to obtain the effluent hardness value except as it pertains to potential metals toxicity in the effluent. The requirement to sample the hardness of the effluent has been removed from the Permit.

The table on page of 9 of 39 of the Permit has been updated to reflect this change as follows:

Parameter	Unit	Sample Location	Sample Frequency	Sample Type ⁽¹⁾
Flow ⁽²⁾	mgd	Influent	Continuous	⁽²⁾
	mgd	Effluent	Continuous	⁽²⁾
5-Day Carbonaceous Biochemical Oxygen Demand (cBOD ₅)	mg/L	Influent	5/Week	Composite
	mg/L	Effluent	5/Week	Composite
	% Removal ⁽³⁾	Effluent	1/Month	Calculated
	lb/day	Effluent	1/Month	Calculated
Total Suspended Solids (TSS)	mg/L	Influent	5/Week	Composite
	mg/L	Effluent	5/Week	Composite
	% Removal ⁽³⁾	Effluent	1/Month	Calculated
	lb/day	Effluent	1/Month	Calculated
pH	s.u.	Effluent	1/Day	Instantaneous
Temperature	°C	Effluent	1/Day	Instantaneous
<i>E. coli</i> Bacteria	cfu/100 mL	Effluent	1/Day	Grab
Total Residual Chlorine ⁽⁴⁾	mg/L	Effluent	1/Day	Grab
Total Ammonia as N	mg/L	Effluent	3/Week	Composite
Nitrate + Nitrite as N	mg/L	Effluent	1/Week	Composite
Total Kjeldahl Nitrogen	mg/L	Effluent	1/Week	Composite
Total Nitrogen as N ⁽⁵⁾	mg/L	Effluent	1/Week	Calculated
	lb/day	Effluent	1/Month	Calculated
Total Phosphorus as P	mg/L	Effluent	1/Week	Composite
	lb/day	Effluent	1/Month	Calculated
Dissolved Oxygen	mg/L	Effluent	1/Day	Grab
Oil & Grease ⁽⁶⁾	mg/L	Effluent	1/Month	Grab
Total Dissolved Solids (TDS)	mg/L	Effluent	1/Quarter ⁽⁷⁾	Grab
Whole Effluent Toxicity, Acute	% Effluent	Effluent	1/Quarter ⁽⁷⁾	Composite

Footnotes:

- (1) See Definitions section at end of permit for explanation of terms.
- (2) Requires recording device or totalizer by November 1, 2011. Permittee shall report daily maximum and daily average flow on DMR. Current flow measurement and reporting procedures are acceptable until midnight, October 31, 2011.
- (3) Percent (%) Removal shall be calculated using the monthly average values
- (4) The Permittee is only required to sample for total residual chlorine if chlorine is used as a disinfectant in the treatment process. If chlorine is *not* used, write "NA" on the DMR for this parameter.
- (5) Calculated as the sum of Nitrate + Nitrite as N and Total Kjeldahl Nitrogen concentrations.
- (6) Use EPA Method 1664, Revision A: N-Hexane Extractable Material (HEM), or equivalent.
- (7) Quarterly samples shall be collected more than 60 days apart.

Comment 23. *Fact Sheet Page 28, Table FS-17:* The monitoring frequency in this table for Total Hardness is inconsistent with the Table FS-16 requirement for the same parameter.

Response 23. This is a typographic error. However, the requirement to sample the hardness of the effluent has been removed from the Permit (see Response 22, above).

Comment 24. *Fact Sheet Page 29, Item IX. A.:* The City believes that, in addition to the parameters listed:

- a. We will likely be unable to meet the proposed requirements for *E. coli* limits as the current fecal limits are based on mixing with the river volume and the proposed limit include very limited mixing.

Response 24 a. Interim *E. coli* limitations will be based on the linear equivalent of the fecal coliform bacteria limitations in the existing Permit. The Department will give the Permittee time to meet the new *E. coli* bacteria limitations. The existing bacteria limitations are 18,400 organisms/100 mL as a 30-day geometric mean fecal coliform bacteria and 36,800 organisms/100 mL as a 7-day geometric mean fecal coliform bacteria.

These values translate to 11,590 colony forming units/100 mL and 23,180 cfu/100 mL *E. coli* bacteria as 30-day and 7-day geometric mean interim limitations, respectively. The interim limitations will apply through midnight October 31, 2011. The final *E. coli* bacteria limitations of 126 and 252 cfu/100 mL, as 30-day and 7-day geometric means, respectively, will be effective November 1, 2011.

The Permittee will be allowed these interim limitations for *E. coli* bacteria based on mixing through October 2011. This provides the Permittee time to assess compliance with the new limitations. Commensurately, the EPA comments that the timeline for meeting the more restrictive Total Residual Chlorine (TRC) limitations is too long (the draft Permit implemented TRC limits on October 1, 2013).

It is reasonable to expect the Permittee to address disinfection options and, therefore, to include compliance with the TRC limits in this assessment. If the Permittee chooses to conduct a source specific mixing zone study and apply for a major modification of Permit, the defined dilution flow may impact the final TRC limitations in the Permit. The final TRC limitations of 0.026 and 0.035 mg/L for 30-day and maximum daily limitations (instantaneous maximum value), respectively, will go into effect on November 1, 2011.

The following change will be made to the Permit page 4 of 39:

Outfall 003

Interim Limitations

Effective immediately and lasting through midnight, October 31, 2011, the quality of effluent discharged by the facility shall, as a minimum, meet the limitations as set forth below.

Parameter	Units	Average Monthly Limitation ⁽¹⁾	Average Weekly Limitation ⁽¹⁾	Maximum Daily Limitation ⁽¹⁾
5-Day Carbonaceous Biochemical Oxygen Demand (cBOD ₅)	mg/L	25	40	--
	lb/day	4,377	7,005	--
Total Suspended Solids (TSS)	mg/L	30	45	--
	lb/day	4,500	7,881	--
<i>E. coli</i> Bacteria ⁽²⁾	cfu/100 mL	11,590	23,180	--
Oil and Grease	mg/L	--	--	10
Total Residual Chlorine ⁽³⁾	mg/L	--	--	0.50

Footnotes: NA means not applicable.
 (1) See Definition section at end of permit for explanation of terms.
 (2) Report geometric mean if more than one sample is collected during the reporting period.
 (3) Instantaneous Maximum Value.

The following change will be made to the Permit page 5 of 39:

Effective November 1, 2011, and lasting through midnight, October 31, 2013, the quality of effluent discharged by the facility shall, as a minimum, meet the limitations as set forth below.

Parameter	Units	Average Monthly Limitation ⁽¹⁾	Average Weekly Limitation ⁽¹⁾	Maximum Daily Limitation ⁽¹⁾
cBOD ₅	mg/L	25	40	--
	lb/day	4,377	7,005	--
TSS	mg/L	30	45	--
	lb/day	4,500	7,881	--
<i>E. coli</i> Bacteria, summer ^(2, 3)	cfu/100 mL	126	252	--
<i>E. coli</i> Bacteria, winter ^(3, 4)	cfu/100 mL	630	1,260	--
Oil and Grease	mg/L	--	--	10
Total Residual Chlorine ⁽⁵⁾	mg/L	0.026	--	0.035

Footnotes: NA means not applicable.
 (1) See Definition section at end of permit for explanation of terms.
 (2) Summer period is April 1 through October 31.
 (3) Report geometric mean if more than one sample is collected during the reporting period.
 (4) Winter period is November 1 through March 31.
 (5) The Permittee will be in compliance with the applicable effluent limitation if each measured total residual chlorine concentration is less than 0.10 mg/L.

The special condition on page 14 of 39 of the Permit has been updated to reflect these changes as follows:

- i. Final effluent limitations for *E. coli* bacteria and Total Residual Chlorine will be effective starting November 1, 2011.

Schedule: Starting with the first full calendar year of the permit cycle (2010) and lasting for the duration of the Special Condition, an annual report shall be submitted with the December Discharge Monitoring Report (by January 28th of each year). The reports shall describe the milestones accomplished and the steps planned for each year towards compliance with the final effluent limits.

- b. We will likely be unable to consistently pass the WET testing requirements due to ammonia toxicity. Prior to the existing permit ammonia toxicity was identified as reason for reoccurring failures of the WET test. The draft permit language returns the testing methodology to the previous conditions.

Response 24 b. Although the Permittee states it has been known that ammonia levels in the effluent may have contributed to past failures of WET tests, it is not known if ammonia is the only toxicant of concern. No changes to WET testing will be made as a result of this comment.

If the effluent fails WET analysis in accordance with the Permit, the Permittee will be required to conduct the TIE/TRE investigation. If it is determined that ammonia is currently the sole cause of WET test failures, the Permittee can apply for a modification of the WET protocol as allowed in the reopener clause of the Permit.

However, standard Permit language allowing for reopening of the Permit was inadvertently omitted from the draft Permit. The following language will be added on page 34 of 39:

7. Toxicity Limitations: Change in the whole effluent protocol, or any other conditions related to the control of toxicants have taken place, or if one or more of the following events have occurred:
 - a. Toxicity was detected late in the life of the permit near or past the deadline for compliance.
 - b. The TRE/TIE results indicated that compliance with the toxic limitations will require an implementation schedule past the date of expiration.
 - c. The TRE/TIE results indicated that the toxicant(s) represent pollutant(s) that may be controlled with specific numerical limitations.
 - d. Following the implementation of numerical controls on toxicants, a modified whole effluent protocol is needed to compensate for those toxicants that are controlled numerically.
 - e. The TRE/TIE revealed other unique conditions or characteristics which, in the opinion of the Department, justify the incorporation of unanticipated special conditions in this permit.
- c. Although not a water quality standard, the City will also be unable to meet the requirements for influent and effluent monitoring that are proposed to go into effect upon permit issuance.

Response 24 c. The Permittee is required to collect composite influent and effluent samples in order to calculate and report percent removal for cBOD₅ and TSS. To support these Permit requirements and the expectations of the Industrial Pretreatment Program, the Facility must adequately monitor influent and effluent flows.

In order to collect a flow-proportioned composite sample as required by Permit, flow monitoring capability for both the influent and effluent streams is necessary. The proposed Permit clearly states flow monitoring and reporting expectations for both influent and effluent streams and outlines a special condition addressing flow monitoring capabilities.

The EPA states that allowing the Permittee until September 30, 2013 to complete upgrades is unacceptable for a requirement which the POTW should already have been meeting. The Permittee must have some time to assess flow monitoring needs and options. At the same time, the Permittee requests to have the special condition language simplified. The date for final compliance with flow monitoring requirements will be changed to November 1, 2011. This compliance date will coincide with the schedule for meeting bacteria and total residual chlorine limitations also.

The Department will change the compliance schedule in the Permit on page 15 of 39 as follows:

Accurate influent and effluent flow measurement capabilities are required.

- ii. Schedule: By May 1, 2010, the Permittee shall provide the Department with a written report that evaluates flow monitoring capabilities, procedures, and devices for both influent and effluent. This action shall consist of a complete engineering review of flow measurement at the Facility over the range of expected flows encountered by the Facility.
- iii. By November 1, 2010, determine improvements necessary to meet standards and requirements. Provide the Department with plans, specifications, and a construction schedule for installation of those improvements. Included in the report shall be recommended procedures for calibration and flow verification.
- iv. Any actions undertaken to meet the requirements of this Special Condition must be completed by November 1, 2011.

The Permittee shall continue to monitor and report flow as raw influent values as they have been doing until November 1, 2011 when the Permittee will be required to monitor flow continuously with totalizer/recorder capabilities for the both the influent and effluent streams. The following has been added to footnote 2 in the tables on page 9 of 39 of the Permit:

- (2) Requires recording device or totalizer by November 1, 2011. Permittee shall report daily maximum and daily average flow on DMR. Current flow measurement and reporting procedures are acceptable until that time.

Comment 25. Fact Sheet Page 29, Paragraph B.: This paragraph contains a lengthy discussion of flow monitoring. As stated previously, we don't believe the use of the terms "Primary Device" and "Secondary Device" are consistent with standard engineering nomenclature, therefore cannot assess the accuracy of these statements. We reserve the right to comment on the accuracy of these statements at a later date, if necessary.

Response 25. See Response 2, above. In accordance with Administrative Rules of Montana (ARM) 17.30.1375 and the public notice sent to the applicant and the public, all persons, including the Permittee, who believe any condition in the draft Permit is inappropriate shall raise all reasonable ascertainable issues and submit all reasonable arguments supporting their position by the close of the public comment period. Any comment on information utilized must have been submitted during the public comment period. No change will be made as a result of this comment.

Comment 26. Permit Page 3, Description of the Mixing Zone: The two paragraphs describe the mixing zones as beginning zero feet upstream of the Outfall. Examination of aerial photographs indicate that the plume, at times, extends upstream of the outfall. It is impossible with the information available to us to determine what this distance is, and we would expect that the distance would vary significantly depending on flow volumes and conditions in the river. We are concerned that the proposed phrase may be interpreted as a requirement that the City control the discharge such that it does not migrate upstream – a requirement that we believe is unrealistic and unnecessary. Therefore, the City requests the phrase "zero feet upstream" be replaced with an appropriate phrase that recognizes the natural actions of the plume in the river.

Response 26. The Fact Sheet establishes that the effluent plume does not readily mix with the Missouri River at the point of discharge. The Department agrees that river/reservoir conditions may impact the effluent plume as the Permittee describes.

However, the Fact Sheet establishes that the discharge qualifies for a source specific mixing zone. This mixing zone must be the smallest practicable size; have minimal effects on uses; and have definable boundaries [75-5-301(4), MCA]. The mixing zone description is not intended to require the Permittee to control the discharge from moving upstream but is clearly defining boundaries for the mixing zone.

Until such time as the Permittee chooses to define a source specific mixing zone for this discharge, the mixing zone descriptions on page 3 of 39 of the Permit will be amended to read as follows:

Mixing Zone: The maximum extent of the chronic mixing zone in the named receiving waters is as follows: 50 feet upstream; 7,920 feet downstream to a point immediately below Black Eagle Dam for the following parameters: Total ammonia as nitrogen and total residual chlorine.

The maximum extent of the acute mixing zone in the named receiving waters is as follows: 50 feet upstream; 7,920 feet downstream to a point immediately below Black Eagle Dam for the following parameters: total ammonia as nitrogen and total residual chlorine.

Comment 27. Permit Page 4, Interim Limitations: The City requests that *E. coli* limitations be replaced with the Fecal Coliform Bacteria limits from the existing permit. Please see Proposal #3 below.

Response 27. The Department will give the Permittee time to meet the new *E. coli* bacteria limitations. Interim *E. coli* limitations will be based on the linear equivalent of the fecal coliform bacteria limitations in the existing Permit.

The existing bacteria limitations are 18,400 organisms/100 mL as a 30-day geometric mean fecal coliform bacteria and 36,800 organisms/100 mL as a 7-day geometric mean fecal coliform bacteria. These values translate to 11,590 colony forming units/100 mL and 23,180 cfu/100 mL *E. coli* bacteria as 30-day and 7-day geometric mean interim limitations, respectively. The interim limitations will apply through midnight October 31, 2011. The final *E. coli* bacteria limitations of 126 and 252 cfu/100 mL, as 30-day and 7-day geometric means, respectively, will be effective November 1, 2011.

The Permittee will be allowed these interim limitations for *E. coli* bacteria based on mixing with the receiving water through October 2011. This provides the Permittee time to assess compliance with the new limitations.

Commensurately, the EPA comments that the timeline for meeting the more restrictive Total Residual Chlorine (TRC) limitations is too long (the draft Permit implemented TRC limits on October 1, 2013).

It is reasonable to expect the Permittee to address disinfection options and, therefore, to include compliance with the TRC limits in this assessment. If the Permittee chooses to conduct a source specific mixing zone study and apply for a major modification of Permit, the defined dilution flow may impact the final TRC limitations in the Permit. The final TRC limitations of 0.026 and 0.035 mg/L for 30-day and maximum daily limitations, respectively, will go into effect on November 1, 2011.

The following change will be made to the Permit page 4 of 39:

Outfall 003

Interim Limitations

Effective immediately and lasting through midnight, October 31, 2011, the quality of effluent discharged by the facility shall, as a minimum, meet the limitations as set forth below.

Parameter	Units	Average Monthly Limitation ⁽¹⁾	Average Weekly Limitation ⁽¹⁾	Maximum Daily Limitation ⁽¹⁾
cBOD ₅	mg/L	25	40	--
	lb/day	4,377	7,005	--
TSS	mg/L	30	45	--
	lb/day	4,500	7,881	--
<i>E. coli</i> Bacteria ⁽²⁾	cfu/100 mL	11,590	23,180	--
Oil and Grease	mg/L	--	--	10
Total Residual Chlorine ⁽³⁾	mg/L	--	--	0.50

Footnotes: NA means not applicable.
 (1) See Definition section at end of permit for explanation of terms.
 (2) Report geometric mean if more than one sample is collected during the reporting period.
 (3) Instantaneous Maximum Value.

The following change will be made to the Permit page 5 of 39:

Effective November 1, 2011, and lasting through midnight, October 31, 2013, the quality of effluent discharged by the facility shall, as a minimum, meet the limitations as set forth below.

Parameter	Units	Average Monthly Limitation ⁽¹⁾	Average Weekly Limitation ⁽¹⁾	Maximum Daily Limitation ⁽¹⁾
cBOD ₅	mg/L	25	40	--
	lb/day	4,377	7,005	--
TSS	mg/L	30	45	--
	lb/day	4,500	7,881	--
<i>E. coli</i> Bacteria, summer ^(2, 3)	cfu/100 mL	126	252	--
<i>E. coli</i> Bacteria, winter ^(3, 4)	cfu/100 mL	630	1,260	--
Oil and Grease	mg/L	--	--	10
Total Residual Chlorine ⁽⁵⁾	mg/L	0.026	--	0.035

Footnotes: NA means not applicable.
 (1) See Definition section at end of permit for explanation of terms.
 (2) Summer period is April 1 through October 31.
 (3) Report geometric mean if more than one sample is collected during the reporting period.
 (4) Winter period is November 1 through March 31.
 (5) The Permittee will be in compliance with the applicable effluent limitation if each measured total residual chlorine concentration is less than 0.10 mg/L.

The special condition on page 14 of 39 of the Permit has been updated to reflect these changes as follows:

- i. Final effluent limitations for *E. coli* bacteria and Total Residual Chlorine will be effective starting November 1, 2011.

Schedule: Starting with the first full calendar year of the permit cycle (2010) and lasting for the duration of the Special Condition, an annual report shall be submitted with the December Discharge Monitoring Report (by January 28th of each year). The reports shall describe the milestones accomplished and the steps planned for each year towards compliance with the final effluent limits.

Comment 28. *Permit Page 5, Final Limitations:* The City requests that this table be removed from the permit and replaced with language being proposed elsewhere in this letter. Please see Proposals #1, # 2 and #3 below .

Response 28. Final Effluent Limitations will remain in the Permit. The Fact Sheet clearly establishes the conditions under which a limitation is developed. Reasonable potential was assessed and limitations developed accordingly.

The Permittee can choose to increase sampling frequency to better characterize the effluent for these constituents; they may also perform a source specific mixing zone study to define the applicable dilution flow that may establish a mixing zone for these parameters that may differ from the dilution flows utilized to develop this Permit. After these data have been obtained, the Permittee can follow the ARM and Department procedures and apply for a major modification of Permit, provide any new information they have obtained on the receiving water quality, appropriate dilution flow, and effluent quality (as well as other information that may pertain to the modification process) and the Department may reassess the reasonable potential for the effluent to exceed or contribute to an exceedance of a water quality standard. This process may, or may not, result in new or changed effluent limitations. No change will be made as a result of this comment.

Comment 29. *Permit Table on Page 7:* There are a number of parameters with a sample frequency of 5/week. We understand this to recognize the difficulty of having lab analysis performed in coordination with weekends – when commercial labs and delivery services are typically unavailable. We request that the Department also recognize that this is true for Holidays, particularly Thanksgiving and Christmas. We request the Department provide an exception to the 5/week requirement during weeks containing official holidays.

Response 29. As a major mechanical treatment facility, sampling frequencies are established at, as a minimum, five days per week for the standard WWTP parameters

Response 29. As a major mechanical treatment facility, sampling frequencies are established at, as a minimum, five days per week for the standard WWTP parameters with effluent limitations. Holidays and weekends are not excluded, with the exception of WET test sampling. The Permittee must plan for sampling and analysis needs in order to meet the five-day per week sampling frequencies. No change will be made as a result of this comment.

Comment 30. Permit Table on Page 7: This table requires monitoring of both influent and effluent flows, however, as the Department points out in the Fact Sheet, monitoring capabilities do not exist for both. The City requests removal of the influent flow monitoring requirement and ask that the Department accept the current flow monitoring arrangement as an acceptable measurement of effluent flow until the flow metering requirement outlined in the special conditions, and the improvements that result from the study, are complete.

Response 30. The EPA comments that allowing the Permittee until September 30, 2013 to complete upgrades is unacceptable for a requirement which the POTW should already have been meeting. The Permittee must have some time to assess flow monitoring needs and options. At the same time, the Permittee requests to have the special condition language simplified (see Comment 35, below).

The date for final compliance with flow monitoring requirements will be changed to November 1, 2011. This compliance date will coincide with the schedule for meeting bacteria and total residual chlorine limitations also.

The Department will change the special condition in the Permit on page 15 of 39 as follows:

Accurate influent and effluent flow measurement capabilities are required.

- i. Schedule: By May 1, 2010, the Permittee shall provide the Department with a written report that evaluates flow monitoring capabilities, procedures, and devices for both influent and effluent. This action shall consist of a complete engineering review of flow measurement at the Facility over the range of expected flows encountered by the Facility.
- ii. By November 1, 2010, determine improvements necessary to meet standards and requirements. Provide the Department with plans, specifications, and a construction schedule for installation of those improvements. Included in the report shall be recommended procedures for calibration and flow verification.

- iii. Any actions undertaken to meet the requirements of this Special Condition must be completed by November 1, 2011.

The Permittee shall continue to monitor and report flow as raw influent values as they have been doing until November 1, 2011 when the Permittee will be required to monitor flow continuously with totalizer/recorder capabilities for both the influent and effluent streams. The following has been added to footnote 2 in the tables on page 9 of 39 of the Permit:

- (2) Requires recording device or totalizer by November 1, 2011. Permittee shall report daily maximum and daily average flow on DMR. Current flow measurement and reporting procedures are acceptable until that time.

Comment 31. *Permit Tables on Pages 8 and 9:* The monitoring requirements of these tables will be quite expensive. We request that language be incorporated into the permit that would allow a reduction or elimination of monitoring after an acceptable amount of data has been collected. We request that after four consistent quarters of non-detection that sampling be reduced to once per year for parameters listed on Page 8. For parameters listed on Page 9, we request that once four samples are collected that show no detect that monitoring be reduced to once per year.

Response 31. The sampling parameters and frequencies required in this section are established by the EPA, as adopted by reference at ARM 17.30 subchapter 14 and the Region VIII Guidance for Determining Monitoring Frequencies for the Pretreatment Program. Because of the AOC and the status of the IPP; the documented presence of compounds in the effluent that the Permittee indicated were "Believed Absent" on the application; and the lack of characterization for these compounds, monitoring for the toxic pollutants and hazardous substances in Table V (40 CFR 122 Appendix D) has been included in this Permit cycle.

However, on concurrence with Rosemary Rowe of the EPA MT office (September 9, 2009), the frequency of analysis for Table V parameters will be reduced to one sample per year for both influent and effluent in the second and fourth full calendar years of the Permit cycle (2011 and 2013).

Footnote (6) in the table on page 11 of 39 of the Permit has been updated to read:

- (6) Both influent and effluent samples must be analyzed as required once per year in calendar years 2011 and 2013. 40 CFR 122 Appendix D. Table V. This information will not be entered on the DMR form; a copy of the analytical laboratory report must be attached to the DMR for the applicable reporting period.

To assure both influent and effluent are sampled as required in support of the IPP, footnote (3) in the table on page 11 of 39 was amended to read,

- (3) Both influent and effluent samples must be analyzed as required. This information will not be entered on the DMR form; a copy of the analytical laboratory report must be attached to the DMR for the applicable reporting period.

Comment 32. Proposal #1 – Mixing Zone/Ammonia Treatment Alternative Study
Discussion: The determination of the mixing zone plays an important role in determining final effluent concentrations in the permit. While we agree that the plume has a bank-hugging nature, we believe that the default values the Department is required to use are very conservative and result in lower numbers than are required to protect the receiving water. In addition, the City would like the opportunity to evaluate the installation of a diffuser, something the proposed permit language does not accommodate. The City would also take this opportunity to evaluate alternative ammonia removal approaches.

Proposal: The City requests that the table of final limitations be removed from the proposed permit and language requiring a study be inserted. Specifically, we propose the following language:

Compliance Schedule

The study should obtain the information necessary to predict, using modeling or actually measurements, the geometry and dilution characteristics of the initial mixing zone (near field mixing) and show the behavior of the discharge plume at larger distances from the discharge (far field mixing). Ambient conditions are described by the geometry of the receiving water including the shape, depth, and bottom topography of the receiving stream, especially near the discharge. The mixing zone study must address the requirements of ARM 17.30.506 and 507.

The facility shall submit a study plan to the Department for review and approval by May 1, 2010. An interim report describing progress on the study must be submitted after the first year of the two year study period. After the Department approves the study plan, the study shall be completed by December 31, 2011.

<i>Compliance Schedule for Study</i>	
<i>Milestone</i>	<i>Due Date</i>
<i>Study Plan</i>	<i>May 1, 2010</i>
<i>Interim Report</i>	<i>December 31, 2010</i>
<i>Final Study Report, including evaluating necessary plant improvements to meet water quality standards</i>	<i>December 31, 2011</i>

Response 32. The Permit will not contain a special condition requiring a mixing zone study. The Permittee indicated by telephone (personal communication with Mike

Depending on the design conditions for the study (presence of a diffuser on the discharge line), the results of the study may indicate that recalculation of final effluent limitations may be necessary. The Permittee may apply for a major modification of Permit. At that time they would supply any new information available regarding the discharge, receiving water, and mixing zone and the Department would reassess reasonable potential for the effluent to exceed or contribute to an exceedance of a water quality standard. This process may, or may not, result in modified effluent limitations.

No change will be made as a result of this comment.

Comment 33. Proposal #2 – Toxic Pollutant Source Investigation

Discussion: The Fact Sheet discusses a number of Metals and Toxic Pollutants for which Water Quality Based Effluent Limits are being proposed. There is a limited amount of data available to use to assess these parameters. The City would like the opportunity to gather additional data on these pollutants and have time to determine if there is an industrial source of these pollutants that can be eliminated.

Proposal: The City requests that the Metals and Toxic Pollutants be removed from the table listing Final Limitations and that appropriate language be inserted that requires the City to perform a study to determine whether excess levels of these pollutants are being introduced into the collection system by commercial or industrial sources. We believe that an approach similar to the mixing zone study – where a Study Plan, Interim Report and Final Report including recommended actions are required – is appropriate for this study as well.

Response 33. Final Effluent Limitations will remain in the Permit. The IPP has been in place since December 1985; the Permittee should have already identified and controlled any industrial sources of these pollutants contributing to the WWTP.

The Permittee can choose to increase sampling frequency to better characterize the effluent for these constituents; they may also perform a source specific mixing zone study to define the applicable dilution flow that may establish a mixing zone for these parameters that may differ from the dilution flows utilized to develop this Permit. After these data have been obtained, the Permittee can follow the ARM and Department procedures and apply for a major modification of Permit, provide any new information they have obtained on the receiving water quality, appropriate dilution flow, and effluent quality (as well as other information that may pertain to the modification process) and the Department may reassess the reasonable potential for the effluent to exceed or contribute to an exceedance of a water quality standard. This process may, or may not, result in new or modified effluent limitations.

No change will be made as a result of this comment.

contribute to an exceedance of a water quality standard. This process may, or may not, result in new or modified effluent limitations.

No change will be made as a result of this comment.

Comment 34. Proposal #3 – E.coli limits

Discussion: The proposed permit requires the City to meet E.coli limits immediately upon the effective date of the permit. According to the Fact Sheet, the effluent limits for fecal coliform in the existing permit were developed using full mixing of the river and the new E.coli limits were developed using no mixing. We do not have a good understanding of how the existing system will perform, so we are concerned that we will not be able to meet the new permit limits without performing plant improvements. We would like the opportunity to collect more data on required chlorine doses to achieve the new numbers and potentially evaluate alternative disinfection processes.

Proposal: The City requests that the table of Interim Limitations include the fecal coliform limits of the existing permit and the new E.coli limits remain as a requirement in the Final Limitations table, or, if our Proposal #1 is accepted, be developed in conjunction with the Mixing Zone Study.

Response 34. See Response 24 a., above

Comment 35. Proposal #4 – Flow metering

Discussion: The City understands that proper, accurate flow monitoring is required, not only for regulatory reasons, but for proper operation of the POTW. We also agree that the current flow monitoring situation leaves something to be desired. However, there is much language in the proposed permit that we either don't understand or don't agree with– we believe certain conditions are not possible to attain. We agree that an engineering analysis is appropriate, but prefer that the requirements be more general in nature so that we can discuss and come to agreement on the specific requirements outside the pages of the permit.

Proposal: The City requests that section I.D.4. discussing Facility Flow Monitoring be removed from the permit and replaced with a section requiring a comprehensive flow monitoring study. We believe the following Milestones to be appropriate:

Determine Standards and Requirements.

- We would need some time to hire a qualified engineer, but this step would not likely take very much time to achieve. We suggest 180 days after permit issuance.

Evaluate existing flow monitoring capabilities and condition of devices.

- Again, this could likely be done fairly quickly, perhaps 90 days after the Department accepts the previous milestone.
- *Final Report* – Determine improvements necessary to meet Standards and Requirements and provide a construction schedule for installation of those improvements. Included in the report could be recommended procedures for calibration and flow verification. We believe that 180 days after the Department accepts the evaluation report would be an appropriate amount of time to complete these duties.

Because we have not had time to consult with an engineering firm to determine if these time frames are realistic, we request that language be included to adjust the suggested milestone dates should we discover they are unrealistic.

Response 35. See Response 24 c., above.

Comment 36. *Proposal #5 – WET Testing.*

Discussion: The WET testing requirements in the draft permit eliminate the dilution allowance in the existing permit and return to requirements similar to previous permits. WET testing using these standards resulted in irregular compliance. Ammonia toxicity was determined to be the source of the failures. We fully expect that, if the analysis were performed as outlined in the draft permit, that failures due to ammonia toxicity will return. Because the draft permit addresses the ammonia issue, we believe there is little value in performing the additional WET testing and TIE/TRE analysis as described in the draft permit - not to mention the anticipation of placing ourselves in a violation status over and over again.

Proposal: The City requests that the Department include language in the permit that will allow the City to remove ammonia from samples prior to performing the WET testing on fathead minnows until plant improvements are made to address ammonia concentrations in the effluent. We would use a method approved by the Department, but suggest that the use of zeolite resin or air stripping at elevated pH as described in EPA TIE guidance may be appropriate.

Response 36. See Response 24 b., above.

Comments (numbered 37 through 45) from Rosemary Rowe for the EPA

EPA supports the changes made in the permit renewal as follows:

- Change in the 7Q10 and dilution flows.
 - No mixing zone for E. coli based on the proximity of recreational use to the discharge.
-

- The new limits for ammonia, total residual chlorine, and metals.
- The requirement to accurately measure influent and effluent flow.
- The need for these changes is well documented and demonstrated in the Fact Sheet.

Comment 37. Flow

EPA agrees that locations for monitoring influent and effluent flow and methods for monitoring flow are inadequate. However allowing the permittee until September 30, 2013 to complete upgrades is unacceptable for a requirement which the POTW should already have been meeting. EPA is particularly concerned about inadequate influent monitoring because it potentially impacts the City's compliance with their Maximum Allowable Headworks Load (MAHL) for the Pretreatment Program.

Response 37. See Response 24 c., above.

Comment 38. Whole Effluent Toxicity Testing (WET)

- a. There is no limit for acute toxicity in the permit renewal. Only monitoring is required. No Reasonable Potential analysis for WET is provided in the Fact Sheet. The definition of acute toxicity in the Fact Sheet (acute toxicity occurs when 50 percent or more mortality is observed for a test species at any effluent concentration) and the past WET data should be used to demonstrate reasonable potential. Based on a limited review by EPA, 50 percent or more mortality occurred in WET tests conducted on 5/11/06, 11/14/06 and 5/20/08. EPA did not review all WET tests conducted. This data demonstrates that reasonable potential for WET exists, and a limit for WET is required in the permit.

Response 38 a. The Permit contains chemical-specific effluent limitations. The Region VIII NPDES Whole Effluent Toxics Control Program, citing 40 CFR 122.44(d), states that numerical limitations can be substituted for WET limits if the "...chemical-specific limits for the effluent are sufficient to attain and maintain applicable numerical and narrative State water quality standards." The Department maintains that the limitations developed for this Permit are established to attain and maintain State standards; therefore a WET limit is not necessary. No change will be made as a result of this comment.

- b. The Fact Sheet needs to provide rationale for the use of alternating species and the control of pH with carbon dioxide.

Response 38 b. Permit template language in use in Montana has included the phrase, "as an alternating species" in MPDES permits because of the following Permit caveat, "If the results for four consecutive quarters of testing indicate no acute toxicity, the Permittee may request a reduction to quarterly acute toxicity testing on only one species on an alternating basis." The phrase will remain in the Permit to clarify which species shall be

used in the event such reduction of analysis is granted. Because it is known that ammonia is present in the effluent, the use of a CO₂ atmosphere to adjust for pH drift during the test is appropriate. No change will be made as a result of this comment.

- c. The following changes need to be made to the WET boilerplate in the permit as well as to other permits.

Whole Effluent Toxicity Testing – Acute Toxicity

Starting in the first calendar quarter following the effective date of the permit, the Permittee shall, at least once each quarter, conduct an acute static replacement [REDACTED] toxicity test on a composite sample of the effluent. Testing will employ two species per quarter and will consist of 5 effluent concentrations (100, [REDACTED], 50, 25, 12.5, 6.25 percent effluent) and a control. Dilution water and the control shall consist of the receiving water. Samples shall be collected on a two day progression; i.e., if the first quarterly sample is on a Monday, the second quarterly sample shall be collected on a Wednesday, etc. Saturdays, Sundays and Holidays will be skipped in the progression.

The static [REDACTED] toxicity tests shall be conducted in general accordance with the procedures set out in the latest revision of Methods for Measuring the Acute Toxicity of Effluent to Freshwater and Marine Organisms, EPA-600/4-90/027 [REDACTED] and the "Region VIII EPA NPDES Acute Test Conditions-State Renewal Whole Effluent Toxicity". The Permittee shall conduct an acute 48-hour static renewal toxicity test using *Ceriodaphnia dubia* and an acute 96-hour static renewal toxicity test using fathead minnows (*Pimephales promelas*) as the alternating species. The control of pH in the toxicity test utilizing CO₂ enriched atmospheres is allowed to prevent rising pH drift. The target pH selected must represent the pH value of the receiving water at the time of sample collection.

Acute toxicity occurs when 50 percent or more mortality is observed for either species at any effluent concentration. If more than 10 percent control mortality occurs, the test is considered invalid and shall be repeated until satisfactory control survival is achieved, unless a specific individual exception is granted by the Department. This exception may be granted if less than 10 percent mortality was observed at the dilutions containing high effluent concentrations.

If acute toxicity occurs in a routine test, an additional test (resample) shall be conducted within 14 days of the date of the initial sample. Should acute toxicity occur in the resample test, testing shall occur once a month until further notified by the Department. In all cases, the results of all toxicity tests must be submitted to the Department in accordance with Part II of this permit.

The quarterly results from the laboratory shall be reported along with the Discharge Monitoring Report (DMR) form submitted for the end of the reporting calendar quarter (e.g., whole effluent testing results for the reporting quarter ending March

31 shall be reported with the March DMR due April 28th with the remaining quarterly reports submitted with the June, September, and December DMR). The format for the laboratory report shall be consistent with the latest revision of Region VIII Guidance for Acute Whole Effluent Reporting, and shall include all chemical and physical data as specified.

If the results for four ~~consecutive quarters of testing indicate no acute toxicity, the Permittee may request a reduction. The Department may approve or deny the request based on the results and other available information without an additional public notice. If the request is approved, the test procedures are to be the same as specified above for the test species.~~ consecutive quarters of testing indicate no acute toxicity, the Permittee may request a reduction. The Department may approve or deny the request based on the results and other available information without an additional public notice. If the request is approved, the test procedures are to be the same as specified above for the test species.

Response 38 c. The EPA's suggested changes to the WET language for use in the Permit will not be implemented with this Permit renewal. Rather, the Department feels that the appropriate forum for addressing template and program language updating is during discussion of the State's WET implementation policy and Permit Writer's manual development. No changes will be made as a result of this comment.

Comment 39. Pretreatment

- a. Table FS-3 on page 5 of the Fact Sheet incorrectly lists Meadow Gold Dairy as a Categorical Industrial User.

Response 39 a. The Fact Sheet Table FS-5 is changed herein to identify Meadow Gold Dairy as a Significant Industrial User not a Categorical Industrial User.

- b. Table FS-6 on Page 8 of the permit – The sampling requirements for cyanide and phenols needs to be conducted at the influent and effluent (Pretreatment requirements). The sampling locations for these 2 parameters are unclear.

Response 39 b. To assure both influent and effluent are sampled as required in support of the IPP, footnote (3) in the table on page 11 of 39 was amended to read,

- (3) Both influent and effluent samples must be analyzed as required. This information will not be entered on the DMR form; a copy of the analytical laboratory report must be attached to the DMR for the applicable reporting period.

Footnote (6) in the table on page 11 of 39 of the Permit has been updated to read:

- (6) Both influent and effluent samples must be analyzed as required once per year in calendar years 2011 and 2013. 40 CFR 122 Appendix D. Table V. This information will not be entered on the DMR form; a copy of the analytical laboratory report must be attached to the DMR for the applicable reporting period.

Comment 40. Compliance Schedules

- a. Four years is too long to meet the dechlorination requirements.

Response 40 a. See Response 24 a., above

- b. There is no compliance schedule for the final effluent limitations on arsenic, copper, thallium, and bis(2-ethylhexyl)phthalate which are effective October 1, 2013. A compliance schedule is needed for these parameters.

Response 40 b. The following special condition will be added to page 14 of 39 of the Permit,

- ii. Final effluent limitations for total ammonia as N, total recoverable arsenic, copper, selenium, thallium, and bis(2-ethylhexyl)phthalate will be effective starting November 1, 2013.

Schedule: Starting with the first full calendar year of the permit cycle (2010) and lasting for the duration of the Special Condition, an annual report shall be submitted with the December Discharge Monitoring Report (by January 28th of each year). The reports shall describe the milestones accomplished and the steps planned for each year towards compliance with the final effluent limits.

Comment 41. Limits on Total Residual Chlorine (TRC) and Monitoring Requirements

The limits for TRC are lower than the method detection limits for most commonly used methods (0.50 mg/L for amperometric titration and 0.10 mg/L using the DPD spectrophotometric titration method). The permit should specify a method detection limit for the analysis of TRC and have a provision that any analysis below the specified method detection level will be considered to be in compliance with the permit limitations.

Response 41. See Response 18., above.

Comment 42. Effluent Limitations

The effluent limitations on arsenic and bis(2-ethylhexyl)phthalate are given as daily maximums. The compounds are considered to be carcinogenic and long term exposure is the concern for the specified water quality criteria. The effluent limits should include a 30 day average.

Response 42. Human Health Standards for Surface Water in Circular DEQ-7 (February 2008), in compliance with 75-5-301, MCA and Section 303(c) of the Federal Clean Water Act, are predicated on footnote (3) on page 37 of 43, which states that "No surface water or groundwater sample concentration shall exceed these values." Therefore, a maximum

daily limitation (instantaneous maximum value) for human health standards has been developed. There is no change to the Permit as a result of this comment.

Comment 43. E. coli

The existing permit had a seasonal limit of 36,800 organisms/100 ml for 7 day average and a 30 day average of 18,400 organisms/100 ml. The limit for E. coli upon the effective date of the permit is considerably lower. Can these limits be met immediately?

Response 43. See Response 24 a., above.

Comment 44. Selenium

Table FS-13 of the Fact Sheet proposes a WQBEL for selenium. However this WQBEL is not shown in Table FS-15 of the permit.

Response 44. A typographic error failed to include the selenium average monthly and maximum daily limitations in the final limitations table in the Permit. The full discussion of the development of the selenium limitations is in the Fact Sheet (pages 19 through 21, 39, and 46). The final limitations table on page 6 of 39 of the Permit has been changed to include these limitations as follows:

Parameter	Units	Average Monthly Limitation ⁽¹⁾	Average Weekly Limitation ⁽¹⁾	Maximum Daily Limitation ⁽¹⁾
cBOD ₅	mg/L	25	40	--
	lb/day	4,377	7,005	--
TSS	mg/L	30	45	--
	lb/day	4,500	7,881	--
<i>E. coli</i> Bacteria, summer ^(2, 3)	cfu/100 mL	126	252	--
<i>E. coli</i> Bacteria, winter ^(3, 4)	cfu/100 mL	630	1,260	--
Oil and Grease	mg/L	--	--	10
Total Residual Chlorine ⁽⁵⁾	mg/L	0.026	--	0.035
Total Ammonia as N	mg/L	2.18	--	3.25
Arsenic, Total Recoverable	mg/L	--	--	0.010
Copper, Total Recoverable	mg/L	0.016	--	0.019
Selenium, Total Recoverable	mg/L	0.005	--	0.006
Thallium, Total Recoverable	mg/L	--	--	0.91
Bis(2-ethylhexyl) Phthalate	mg/L	--	--	0.006

Footnotes: NA means not applicable.
 (1) See Definition section at end of permit for explanation of terms.
 (2) Summer period is April 1 through October 31.
 (3) Report geometric mean if more than one sample is collected during the reporting period.
 (4) Winter period is November 1 through March 31.
 (5) The Permittee will be in compliance with the applicable effluent limitation if each measured total residual chlorine concentration is less than 0.10 mg/L.

Comment 45. Influent and Effluent Monitoring

The FS and permit are not clear on where influent and effluent are currently being monitored. If influent CBOD is being measured after the primary clarifier, percent removal limits cannot be appropriately applied.

Response 45: Consultation with the Permittee on September 9, 2009 provided the following description of influent and effluent sample locations:

- Influent composite samples are collected at two separate locations:
 - the 6th Street Pump Station in the primary division structure post barscreen; and
 - the Raw Water Pump Station on-site in the channel post barscreen.

Both samples are flow proportioned over 24-hours and are combined in the laboratory prior to analysis, weighted according to the proportion of total flow from each pump station over the collection period.

- Effluent composite samples are flow proportioned over 24-hours and are collected from the discharge end of the process water pump. This pump collects effluent from the center of the channel post chlorine contact chamber just prior to the 54 inch discharge line.

These sample locations assure percent removal efficiencies are satisfactorily calculated as required by Permit until the flow monitoring capabilities are addressed. There is no change to the Permit as a result of this comment.

Attachment A

Missouri River at Great Falls (compilation of USGS @ GF D/S, near Fort Benton D/S and Sun River @ Vaughn)											
Date	Temp °C	pH	Total Hardness	Total Ammonia as N	TP	Nitrate/Nitrite as N	TN	As mg/L	Cu mg/L	Pb mg/L	Zn mg/L
10/9/1980	10		380								
10/15/1980	9.5	8.4	160	0.02	0.09						
11/14/1980	2		360								
11/19/1980	3.5		170	0.11	0.07						
12/15/1980	4		170	0.05	0.09						
12/16/1980	3.5		330								
1/16/1981	0		370								
1/21/1981	2		170	0.08	0.06						
2/20/1981	3		370								
2/24/1981	3		170	0.08	0.09						
3/20/1981	3		350								
3/31/1981	7		190	0.07	0.15						
4/16/1981	13.5		400								
4/28/1981	12	8.4	170	0.06	0.06						
5/21/1981	13		230								
5/24/1981	12.5	8.2	140	0.21	1						
6/18/1981	14		220								
6/23/1981	14.5	8.1	160	0.04	0.03						
7/9/1981	16		300								
7/22/1981	21.5	8.5	180	0.06	0.1						
8/20/1981	20.5		320								
8/19/1981	22	8.2	170	0.26	0.05						
9/4/1981	13		300								
9/16/1981	17		170	0.23	0.03						
10/8/1981	7		380								
10/20/1981	8.5	8.3	190	0.42	0.03						
11/4/1981	7		400			0.25					
12/1/1981	1.5	8	170	0.2	0.07	0.33					
12/16/1981	0										
1/12/1982	0	7.8	180	0.28	0.06						
1/28/1982	0		380			0.24					
2/23/1982	0	8.2	160	0.27	0.07						
3/11/1982	0.5		380			1.2					
4/7/1982	3	7.9	180	0.31	0.01						
4/21/1982	12.5		370			0.37					

Attachment A

5/17/1982	16	8.2	170	0.17	0.06						
5/27/1982	7.5		180			0.05					
6/16/1982	12.5										
6/28/1982	15					0.36					
6/28/1982	19	8.5	150	0.07	0.05						
7/1/1982	16		160			0.2					
8/9/1982	22	8.3	160	0.14	0.05						
8/10/1982	21.5		280			0.06					
9/20/1982	14	8.4	160	0.13	0.03						
9/22/1982	14		280			0.02					
11/2/1982			370								
11/8/1982	5.5	8.4	160		0.06	0.02					
12/13/1982	0.5		350								
12/3/1982	1	8.1	160		0.08	0.09					
1/25/1983	0		370								
3/7/1983	3.5	8.2	180		0.07	0.33					
4/19/1983	9		390								
4/21/1983	8.5		370			0.23					
5/23/1983	13.5	8.2	160		0.1						
5/31/1983	13.5		160			0.32					
7/5/1983	17.5	8.4	170		0.07						
7/13/1983	20.5		310			0.18					
8/15/1983	21	8.7	170		0.04						
8/24/1983	21.5		300			0.1					
10/4/1983	10	8.3	180		0.04						
11/4/1983	9		350								
11/17/1983	5.5										
12/11/1983	0		380			0.11					
1/17/1984	0	8.1	180		0.04						
1/26/1984	0		390			0.1					
2/21/1984	3										
3/8/1984	3		380			0.1					
3/21/1984	5.5	8	190		0.03						
4/16/1984	18		370								
5/9/1984	10	8.4	180		0.03						
5/30/1984	19		280								
6/18/1984	17	8.6	160		0.07						
6/21/1984	17										
6/22/1984	12										
7/5/1984	22										

Attachment A

1/4/1989			370	0.04			1.4		
3/8/1989			360	0.06			1.4		
3/23/1989	2		280						
4/13/1989			340						
4/19/1989			300	0.03			0.79		
5/5/1989	10.5		380						
5/23/1989			150						
6/7/1989			160	0.02					
6/13/1989	18		300						
7/24/1989	25		310						
8/10/1989			360						
8/21/1989			290	0.01			1.5		
9/28/1989	16		390						
10/19/1989	8		270						
10/25/1989									
11/27/1989	2		360						
12/13/1989			300						
1/10/1990	2.5								
2/20/1990	0.5		310						
2/22/1990	1.5		240						
2/27/1990			190	0.02			1.4		
4/2/1990	9								
4/5/1990	9								
5/1/1990			180	0.01					
5/17/1990			290						
5/22/1990	13.5								
6/21/1990			220	0.05			0.9		
6/29/1990	21.5		330						
7/10/1990	22.5								
7/30/1990	21		280						
8/3/1990			380						
8/20/1990	20		230						
8/21/1990	19		290						
9/10/1990			230	0.03			0.9		
9/12/1990			290						
9/25/1990	17.5		280						
10/15/1990			350	0.02		1	1.6		
11/5/1990	5								
11/8/1990	5		200						
11/15/1990	7		250						

Attachment A

12/11/1990			210	0.03		0.7	1			
1/14/1991	1									
2/26/1991	5									
3/5/1991	4		270	0.01		0.78	1.1			
4/5/1991			310							
4/24/1991	12.5		260							
4/25/1991	12		310							
5/7/1991			180	0.04		0.14	0.64			
5/22/1991	12									
6/3/1991	17		360							
6/6/1991	12.5		140							
6/11/1991			360	0.03		0.11	0.51			
7/12/1991			220							
7/16/1991	21.5									
7/18/1991	22		360							
7/24/1991			260							
8/19/1991	21.5		370							
8/21/1991	22.5									
9/10/1991			280	0.01		0.51	0.71			
10/9/1991	12		210							
10/10/1991	13		160							
10/24/1991										
11/15/1991	5									
11/21/1991	3		360							
1/8/1992	1									
2/26/1992	6									
2/27/1992	9									
4/8/1992	9		360							
4/9/1992	7									
5/20/1992	15									
5/21/1992	16		370							
7/1/1992	17		380							
7/2/1992	16									
8/19/1992	21		380							
8/20/1992	21		310							
9/1/1992	16		310							
9/22/1992	15.5									
10/7/1992	11		300							
10/8/1992	9.5									
11/18/1992	7		340							

Attachment A

10/6/1994	11.5	8.2	290					0.015	0.01	0.002	0.010
10/7/1994	10.5	8.3	290					0.019	0.004	0.001	0.010
11/2/1994	5.0										
11/3/1994	4		350								
12/14/1994	0										
12/15/1994	1.5										
2/1/1995	2.5										
3/14/1995	5		250								
3/16/1995	5										
4/26/1995	8.5										
6/16/1995	15		270								
6/14/1995	15.5		260								
7/25/1995	19.5										
7/27/1995	18.5										
9/5/1995	20.5		180								
9/7/1995	17.5										
10/17/1995	11										
10/18/1995	11										
11/29/1995	3.5		140								
1/24/1996	0.5		220								
3/12/1996	1										
3/21/1996	3.5										
5/8/1996	9		260								
5/10/1996	7										
6/12/1996	16										
7/19/1996	20.5		280								
8/15/1996	23										
9/5/1996	17										
10/8/1996	15										
11/4/1996	6.5										
11/26/1996	0.5										
1/14/1997	0.5										
3/8/1997	4.5										
3/11/1997	3										
6/16/1997	16.5										
6/18/1997	18										
8/21/1997	20.5										
11/19/1997	3.5										
11/3/1998	8										
12/16/1998	3										

Attachment A

5/31/2006	15.5										
6/21/2006	18										
8/9/2006	21.5										
8/24/2006	19.5										
10/12/2006	11										
10/20/2006	8										
1/23/2007	1.5										
2/21/2007	1.5										
3/7/2007	5.5										
3/28/2007	7										
4/12/2007	6										
5/16/2007	13.5										
5/23/2007	13.5										
6/7/2007	15.5										
6/22/2007	20										
7/26/2007	23										
8/29/2007	18										
10/11/2007	12										
1/24/2008	0.5										
3/5/2008	1.5										
4/2/2008	3.5										
4/18/2008	11.5										
5/28/2008	10										
7/16/2008	20.5										
9/10/2008	15										
3/24/2009				0.2	0.40	0.17	0.59	0.017	0.022		
n	368	56	216	49	46	27	26	18	18	17	17
mean	11.0		276	0.09	0.1	0.3	1.3	0.022	0.007	0.002	0.018
median	11.3	8.4	290	0.05	0.1	0.2	1.4	0.023	0.006	0.002	0.020
min	0.0	7.8	140	0.01	0.0	0.0	0.5	0.015	0.003	0.001	0.010
max	25.0	8.7	420	0.42	1.0	1.2	3.2	0.027	0.022	0.003	0.030
std dev	7.043							0.0031	0.0042	0.0007	0.0075
CV	0.639							0.1419	0.6364	0.2990	0.4264
25th %			190								
75th %	17.0	8.4		0.11	0.07	0.35	1.50	0.024	0.007	0.003	0.020
95th %		8.7		0.28	0.14	0.93	2.35	0.025	0.012	0.003	0.030
	Temp °C	pH	Total Hardness	Total Ammonia as N	TP	Nitrate/Nitrite as N	TN	As mg/L	Cu mg/L	Pb mg/L	Zn mg/L



National Water Information System: Web Interface

USGS Water Resources (Cooperator Access)

Data Category:

Water Quality

Geographic A

Montana

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Water Quality Samples for Montana

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To view additional data-quality attributes, output the results using these options: one result per row, expanded attributes. Additional precautions are at:

http://waterdata.usgs.gov/nwis/qwdata?help#Data_retrievals_precautions.

USGS 06090300 Missouri River near Great Falls MT

Available data for this site

Water-Quality: Field/Lab samples

GO

Cascade County, Montana
 Hydrologic Unit Code 10030102
 Latitude 47°35'04", Longitude 111°03'35" NAD27
 Drainage area 23,292 square miles
 Gage datum 2,807.21 feet above sea level NGVD29

Output formats

[Parameter Group Period of Record table](#)

[Inventory of available water-quality data for printing](#)

[Inventory of water-quality data with retrieval](#)

[Tab-separated data, one result per row](#)

[Tab-separated data one sample per row with remark codes con](#)

[Tab-separated data one sample per row with tab-delimiter for r](#)



National Water Information System: Web Interface

USGS Water Resources (Cooperator Access)

Data Category:

Water Quality

Geographic Area:

Montana

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Water Quality Samples for Montana

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To view additional data-quality attributes, output the results using these options: one result per row, expanded attributes. Additional precautions are at:

http://waterdata.usgs.gov/nwis/qwdata?help#Data_retrievals_precautions.

USGS 06090800 Missouri River at Fort Benton MT

Available data for this site

Water-Quality: Field/Lab samples

GO

Chouteau County, Montana
 Hydrologic Unit Code 10030102
 Latitude 47°49'03", Longitude 110°39'59" NAD27
 Drainage area 24,749 square miles
 Gage datum 2,614.05 feet above sea level NGVD29

Output formats

- [Parameter Group Period of Record table](#)
- [Inventory of available water-quality data for printing](#)
- [Inventory of water-quality data with retrieval](#)
- [Tab-separated data, one result per row](#)
- [Tab-separated data one sample per row with remark codes complete](#)
- [Tab-separated data one sample per row with tab-delimiter for remarks](#)
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Water Quality Samples for Montana

The data you have secured from the USGS NWISWeb database may include data that have not received Director's approval and as such are provisional and subject to revision. The data are released on the condition that neither the USGS nor the United States Government may be held liable for any damages resulting from its authorized or unauthorized use.

To view additional data-quality attributes, output the results using these options: one result per row, expanded attributes. Additional precautions are at: http://waterdata.usgs.gov/nwis/qwdata?help#Data_retrievals_precautions.

USGS 06089000 Sun River near Vaughn MT

Available data for this site

Cascade County, Montana Hydrologic Unit Code 10030104 Latitude 47°31'33", Longitude 111°30'40" NAD27 Drainage area 1,849 square miles Gage datum 3,340.02 feet above sea level NGVD29	Output formats
	Parameter Group Period of Record table
	Inventory of available water-quality data for printing
	Inventory of water-quality data with retrieval
	Tab-separated data, one result per row
	Tab-separated data one sample per row with remark codes combined with values
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**DEPARTMENT OF ENVIRONMENTAL QUALITY
PERMITTING and COMPLIANCE DIVISION
MONTANA POLLUTANT DISCHARGE ELIMINATION SYSTEM
(MPDES)**

Fact Sheet

PERMITTEE: City of Great Falls

PERMIT NUMBER: MT0021920

RECEIVING WATER: Missouri River

FACILITY INFORMATION:

Name: City of Great Falls Wastewater Treatment Plant

Location: 1600 6th St. NE
Great Falls, MT 59404

Mailing Address: 1600 6th St. NE
Great Falls, MT 59404

Contact: Wayne Robbins, Plant Manager, Veolia North America

Telephone: (406) 761-7004 extension 102

FEE INFORMATION:

Number of Outfalls: 1 (for fee determination purposes)

Type of Outfall: 003 – Major POTW with Industrial Pretreatment Program

I. Background

This Fact Sheet identifies the legal requirements and technical rationale that serve as the basis for the requirements for renewal of Montana Pollutant Discharge Elimination System (MPDES) permit, number MT0021920 (hereinafter referred to as the Permit). The City of Great Falls (hereinafter referred to as the Permittee) is the owner/operator of the City of Great Falls Wastewater Treatment Plant, a Publicly-Owned Treatment Works (POTW), hereinafter referred to as the Facility. For the purposes of this Permit renewal, references to the “discharger” or “permittee” in applicable federal and state laws, regulations, policy, plans, or implementation procedures are held to be equivalent to references to the Permittee.

II. Permit Status

The Facility is currently regulated under administrative extension by MPDES Permit number MT0021920 which became effective February 1, 2000 and expired December 31, 2004. For clarity, the term “existing Permit” will be used to refer to the February existing Permit that is undergoing

renewal.

The Permittee submitted an application for renewal of the Permit June 23, 2004. The Department of Environmental Quality (Department) determined the application to be incomplete and requested additional information July 22, 2004. The Department reviewed the additional application materials submitted July 28, 2004 and deemed the application complete September 19, 2004. At that time, the existing Permit was administratively extended until such time as the Department issued the renewal of MPDES Permit MT0021920. At the Department's request, an updated application package was submitted by the Permittee December 4, 2008 and deemed complete January 29, 2009. The January 2009 application is the application of record.

III. Facility Information

The following table summarizes general information related to the Facility.

Table FS-1. Facility Information

Permittee	City of Great Falls
Name of Facility	City of Great Falls Wastewater Treatment Plant
Facility Address	1600 6 th Street NE
	Great Falls, MT 59404
	Cascade County
	Lat. 47°31'03"N Long. -111°18'03"W (Administrative Building)
Facility Contact, Title and Phone	Wayne Robbins, Plant Manager, Veolia Water North America
Duly Authorized Signatory to Certify, Sign, and Submit Reports	Jim Reardon, Director of Public Works, City of Great Falls
Mailing Address	SAME
Billing Address	SAME
Type of Facility	Conventional activated sludge, POTW
Major or Minor Facility	Major
Industrial Pretreatment Program	Yes
Number of Outfalls	1 (Outfall 003)
Receiving Waters	Missouri River

A. Facility Description

The Facility serves the residents and businesses of the City of Great Falls, Town of Black Eagle, and Malmstrom Air Force Base with a current service area population of approximately 62,058 (Application, 2008). The Permittee maintains coverage under MPDES Permit MTR000452 for storm water discharges associated with activities at a POTW with greater than 1.0 mgd design flow.

The Facility is a conventional activated sludge treatment system with chlorine disinfection and anaerobic sludge digestion. It was built in 1974 to serve 120,000 people; average daily design flow is 21 million gallons per day (mgd) and peak hourly design flow is 60 mgd (Design Criteria, Black and Veatch, 1974). Raw wastewater enters the Facility from two separate force mains: the 6th Street Pump Station located on the opposite bank of the Missouri River from the Facility and the Raw Water Pump Station on site. Influent flows are monitored by secondary devices at these two

separate locations. There are no primary flow devices installed on influent flows. Effluent flow monitoring by a secondary device occurs at the Secondary Division Structure between the primary clarifiers and the aeration basins. Current daily plant effluent flow is reported at approximately 10 mgd. A Cipoletti weir with no staff gauge is installed on the effluent for flow measurement but is not used for reporting purposes. The Facility effluent structure at Outfall 003 passively discharges treated effluent to the Missouri River.

Table FS-2, below, is a summary of Facility Design Criteria obtained from the application, past MPDES permit Fact Sheet, Department Compliance Inspections and US EPA Pretreatment Audit (April 7 – 10, 2008) and Department Comprehensive Performance Evaluations.

Table FS-2. Facility Design Criteria Summary

Facility Description: Continuous discharge, conventional activated sludge treatment system utilizing chlorine disinfection and anaerobic digestion.	
Construction Date: 1974	Design Year: 1994
1974 Design Population: 120,000	2008 Population Served: 62,058
1974 Design Flow, Average (mgd): 21	1974 Design Flow, Peak Daily (mgd): 60
Minimum Detention Time (days): unknown	
Design BOD ₅ Removal (Percent): >85%	Design BOD ₅ Load (lb/day): 30,000 design 22,750 operating capacity
Design TSS Removal (Percent): >85%	Design TSS Load (lb/day): 30,000 design 22,750 operating capacity
Design TN Removal (Percent): NA	Design TN Load (lb/day): NA
Design TP Removal (Percent): NA	Design TP Load (lb/day): NA
Collection System: Combined [] Separate [X]	
SSO Events (Y/N): Y	Number: unknown
Bypass Events(Y/N): Y	Number: 3 reported as unanticipated
Inflow and Infiltration contribution (mgd): 1.1 (application value)	Source: storm water, subdivision hook ups, sump pumps, failing lift stations and sewer lines.
Disinfection: Yes	Type: Chlorine
Discharge Method: Continuous	
Effluent Flow Primary Device: none	
Effluent Secondary Flow Device: none	
Sludge Treatment/Storage: anaerobic digestion	
Sludge Disposal: licensed landfill	EPA Authorization Number: MTG650033

The Permittee contracts with Veolia, North America to maintain and operate the Facility and associated lift stations. Permittee personnel (City of Great Falls employees) maintain and operate the collections system and Industrial Pretreatment Program. The Facility accepts approximately 5,000 gallons per day of septage from area septic haulers (Compliance Inspection July 28, 2008). The Black Eagle Sewer District #84 and Malmstrom Air Force Base are considered to be satellite communities serviced by the Facility. Black Eagle can discharge up to two mgd to the Facility; Malmstrom is allowed to discharge up to one mgd in dry weather and two mgd as wet weather flows.

The separate collection system serves an area of about 17 square miles. It varies in age – less than 35 percent of the sewers are approximately 100 years old and more than 65 percent of the sewers are less than 50 years old. There are approximately 250 miles of sewer lines; 83 percent are gravity mains. There are 29 lift stations of which over half are less than 25 years old.

Sanitary Sewer Overflows (SSO) from the collection system are reported to be due to main and trunk obstructions from debris build up and root intrusion (Department Capacity, Management, Operation, and Maintenance Inspection, 2005). Collection system Inflow and Infiltration (I/I) contributions are reported on the application to be 1.1 mgd, primarily due to storm water, sump pumps, and failing sewer lines.

Sludge is treated under anaerobic digestion. The permittee maintains authorization number MTG650033 for disposal of Facility biosolids at a local landfill under the EPA Region VIII General Permit for Facilities/Operations that Generate, Treat, and/or Use/Dispose of Sewage Sludge by Means of Land Application, Landfill, and Surface Disposal under the National Pollutant Discharge Elimination System in the State of Montana *except for Indian Country* Permit Number MTG650000.

The Permittee maintains an EPA-approved Industrial Pretreatment Program (IPP), enacted December 23, 1985. The program is authorized, controlled, and enforced under Chapter 13.20 of the Official Code of the City of Great Falls. Currently, 10 Significant Industrial Users (SIU) are covered by industrial user permits of which two are identified as Categorical Industrial Users. Combined total permitted process wastewater flow (indirect discharge) to the POTW for all 10 SIU is approximately 2.2 mgd which is 22 percent of the current average daily influent flow at the Facility headworks. The US EPA Pretreatment Audit of the Permittee IPP conducted April 7 through April 10, 2008 reported combined SIU flow was 1.9 mgd during 2007 (19 percent of daily flow) with a commercial flow contribution of 3.4 mgd. The permitted SIU are identified in Table FS-3.

Table FS-3. City of Great Falls Industrial Pretreatment Program Permitted Discharges

Significant/Categorical Industrial Users	SIC* Code	40 CFR Categorical Standard	Average Total Process Wastewater Flow (gpd)	Facility Product(s)/Description
Burlington Northern Santa Fe	4011	--	Continuous 2,300	Groundwater remediation of past diesel fuel spills
Burlington Northern Santa Fe Company Shop	4011	--	Intermittent 500	Locomotive light maintenance and fueling operation
Malmstrom US Air Force Base	--	--	Continuous 375,100	Military operation and maintenance facility
Malteurop	2083	--	Continuous 1,528,000	Malt from barley
Meadow Gold Dairy	2024 2026 2037	405	Continuous 35,100	Milk products, fruit drinks, soft serve mix
Montana Refining Company	2911	419	Continuous 186,000	Petroleum oil refinery
Montana Specialty Mills	2076	--	Intermittent 300	Grain handling and oil seed processing
Montana Waste Systems	--	--	Intermittent unknown	Landfill leachate
National Laundry	7211 7213 7218	--	Intermittent 35,000	Commercial wet laundry washing/linen supply; dry cleaning process non-contact cooling water only
United Materials	3531 5032	--	Continuous 25,000	Concrete manufacturing

* Standard Industrial Classification - 1987 Office of Management and Budget Standard Industrial Classification Manual.

B. Description of Discharge Point and Previously-granted Mixing Zone

The passive-release bank side discharge at Outfall 003 is continuous through a culvert structure on the north bank of the Missouri River in the Black Eagle Reservoir approximately 1.5 miles above the Black Eagle Dam. The existing Permit granted a mixing zone defined as a segment of the Missouri River extending from the discharge point, downstream approximately 1.5 miles to a point immediately below Black Eagle Dam located in the NW ¼ of Section 5, Township 20 North, Range 4 East. This mixing zone was assessed in the 2000-Permit Fact Sheet using Best Professional Judgment for total residual chlorine, total ammonia as N, fecal coliform bacteria, and Whole Effluent Toxicity (WET). However, the Permit did not specify for which parameters the mixing zone was applicable.

The seven day average flow of the receiving water expected to occur on average once in 10 years (7Q10) flow value used to calculate limits in the existing Permit (3,220 cubic feet per second, cfs) was calculated from data collected at USGS gauging station 06090300, Missouri River near Great Falls (13 miles downstream of the outfall and five Missouri River dams, immediately below Morony Dam). In the case of WET limits, the dilution (mixing) flow was established as 10 percent of the 7Q10 or 322 cfs. For total residual chlorine, total ammonia as N, and fecal coliform bacteria, the full

7Q10 of the Missouri River flow (3,220 cfs) was utilized to calculate effluent limits.

Table FS-4, below, provides a description of the current active permitted feature (Outfall 003) at the Facility and the existing mixing zone. There are no changes in permitted features or receiving waters proposed with this Permit renewal. However, proposed changes to the mixing zone and dilution flows are discussed in Part V of this Fact Sheet.

Table FS-4. Description of Discharge Point and Existing Mixing Zone

Outfall	Latitude/ Longitude	Outfall/Effluent Description	Mixing Zone Description
003	47°31'05"N/ 111°17'43"W	Passive bank discharge of treated municipal wastewater with industrial flow contributions	A segment of the Missouri River extending downstream 1.5 miles to immediately below Black Eagle Dam located in the NW ¼ of Section 5, Township 20 North, Range 4 East.

C. Summary of Current Permit Requirements and Effluent Quality Data

Table FS-5, below, summarizes self-monitoring water quality data for Outfall 003, obtained from the Facility Discharge Monitoring Reports (DMR) for the period January 2004 through December 2008.

Table FS-5. Existing Permit Requirements and Effluent Quality Data

Parameter ⁽¹⁾	Location	Units	Previous Permit Limit (7-d/30-d)	Maximum 7-Day Average Value	Maximum 30-Day Average Value	Maximum Daily Value	Number of Samples
Flow, Daily Average	Influent	mgd	(2)	--	13.169	49.3	60
	Effluent ⁽³⁾	mgd	(3)	(3)	(3)	(3)	(3)
Carbonaceous Biochemical Oxygen Demand (BOD ₅)	Effluent	mg/L	40/25	20	17	--	60
	NA	% removal	>85	--	83.3 minimum value	--	60
	Effluent						
Total Suspended Solids (TSS)	Effluent	mg/L	40/25	18	10	--	60
	NA	% removal	>85	--	94.7 minimum value	--	60
	Effluent						
Fecal Coliform Bacteria (median geometric mean)	Effluent	Number per 100 mL	36,800/18,400 ⁽⁵⁾	8,531	925	--	33
pH (median minimum/maximum values)	Effluent	s.u.	6.0 to 9.0	--	--	7.2/7.7	60
Temperature	Effluent	°C	(6)	--	--	--	0
Total Residual Chlorine	Effluent	mg/L	0.5 ⁽⁷⁾	--	0.4	--	59
Total Ammonia as N	Effluent	mg/L	(2)	--	24.3	--	59
Total Kjeldahl Nitrogen	Effluent	mg/L	(2)	--	26.6	--	59
Nitrate + Nitrite as N	Effluent	mg/L	(2)	--	18.71	--	59
Total Nitrogen ⁽⁷⁾	Effluent	mg/L	(2)	--	29.0	--	59
Total Phosphorus as P	Effluent	mg/L	(2)	--	4.56	--	59
Dissolved Oxygen	Effluent	mg/L	(6)	--	--	--	0
Total Dissolved Solids	Effluent	mg/L	(6)	--	--	--	0
Oil and Grease	Effluent	mg/L	10 ⁽⁹⁾	--	--	--	0
WET, Acute	Effluent	TUa	5.75	--	--	2.69	19

Footnotes: NA means not available/not applicable
 (1) Conventional and Non-conventional Pollutants only, table does not include information on toxic pollutants.
 (2) No limit in previous permit, monitoring requirement only.
 (3) No effluent flow monitoring capabilities at this Facility.
 (4) Non-degradation allocation, annual average load (lb/d).
 (5) This limitation applies from the period beginning April 1 and ending October 31.
 (6) No limit or monitoring requirement in previous permit.
 (7) Instantaneous Maximum Limit when chlorination in use for disinfection purposes.
 (8) Calculated as the sum of TKN and Nitrite + Nitrate as N concentrations.
 (9) 30-Day Average Limit in previous permit with no monitoring requirement.

The Permittee sampled the effluent periodically for organic compounds and metals in support of the IPP. Effluent quality data for these toxic pollutants are presented in Table FS 6., below.

Table FS-6. Effluent Quality for Toxic Pollutants

Parameter	Units	Average Value	Maximum Daily Value	Number of Samples
Bis(2-ethylhexyl) Phthalate	µg/L	4.63	11.2	6
Bromodichloromethane	µg/L	0.23	0.4	6
Chloroform	µg/L	1.14	1.76	7
1,2-Dichloroethane	µg/L	0.28	0.62	6
Toluene	µg/L	0.42	0.49	7
Allyl chloride	µg/L	--	0.39	1
Methacrylonitrile	µg/L	--	0.44	1
Tetrahydrofuran	µg/L	--	2.39	1
Antimony ⁽¹⁾	µg/L	1.45	3	17
Arsenic ⁽¹⁾	µg/L	6.6	11.2	18
Beryllium ⁽¹⁾	µg/L	0.23	0.5	15
Cadmium ^(2, 3)	µg/L	<0.4	<1.0	18
Chromium ⁽²⁾	µg/L	1.7	1.8	2
Copper ⁽²⁾	µg/L	9.5	16.7	16
Lead ⁽²⁾	µg/L	1.4	3.2	11
Mercury ^(2, 3)	µg/L	0.09	0.098	3
Nickel ⁽²⁾	µg/L	3.8	6.8	15
Selenium ⁽¹⁾	µg/L	2.3	4.2	14
Silver ⁽¹⁾	µg/L	0.6	2.3	16
Thallium ⁽¹⁾	µg/L	0.32	0.53	5
Zinc ⁽¹⁾	µg/L	29.7	55.7	16

Footnotes:

- (1) Toxic or hazardous compound from 40CFR122, Appendix D, Table V, lacking a numeric water quality standard in Montana.
- (2) All metals are measured in the total recoverable form unless otherwise noted.
- (3) None of the reported data meet the required reporting value for Cd or Hg in Circular DEQ-7 (February 2008)

D. Compliance History

Review of the DMR data shows one violation of the permit limitation for greater than 85 percent removal of cBOD₅ at 83.3% in June 2005, reported by the Permittee to be due to a major storm event and increased I/I. Non-receipt of the WET test results DMR for September 2004 was resolved in January 2005.

Bypasses of raw sewage at the 6th Street Pump Station have been reported during the 2000 to 2009 permit cycle; June 10, 2002, 365,000 gallons of raw sewage and primarily storm water bypassed the lift station and discharged to the Missouri River due to pump failure; June 23, 2003, approximately 1,000 gallons of raw sewage was bypassed directly to the Missouri River due to equipment failure; and on August 23, 2004 an estimated 6,700 gallons of raw sewage was again bypassed due to equipment failure. These bypass events were reported as required by Permit.

On February 10, 2005, the Department issued a letter of violation for bypasses of the 6th Street Pump Station related primarily to the events of August 2004. The Permittee was required to identify and correct faulty control system components, develop and maintain a preventive maintenance program, and develop, implement, and maintain standard operating procedures. The Permittee responded on March 25, 2005 by providing an overview of the August 2004 bypass and presenting written summaries for the three required tasks. Subsequent upgrades to electrical components, Facility SCADA system, and communications between the lift station and the main Facility have reduced bypasses at the 6th Street Pump Station; none have been reported since 2004.

The USEPA Region 8 has the Permittee under two Orders for Compliance (Order) related to the City of Great Falls IPP. The first Order, CWA-08-2006-0002, was issued November 22, 2005 for a series of alleged violations related to the protection of human health and the presence of hydrogen sulfide gas in the collection system from an indirect discharge. CWA-08-2006-0022 was issued March 29, 2006 for the “failure to address the reoccurrence of extremely high levels of hydrogen sulfide in the city sewer”.

IV. Proposed Technology-based Effluent Limits (TBEL)

A. Applicability

The Board of Environmental Review has adopted by reference 40 CFR 133 which sets minimum treatment requirements for secondary treatment or equivalent for POTWs [ARM 17.30.1209]. National Secondary Standards (NSS) as described in 40 CFR 133 are incorporated into all municipal permits. Secondary treatment is defined in terms of effluent quality as measured by BOD₅, TSS, percent removal of BOD₅ and TSS, and pH. 40 CFR 133.105(e) allows for the parameter carbonaceous BOD₅ to be substituted for BOD₅.

B. TBEL

The Facility effluent TBELs for cBOD₅, TSS, percent removal of cBOD₅ and TSS, and pH TBEL have been based on the National Secondary Standards at 40 CFR 133. No changes are proposed for this Permit cycle.

C. Mass-based Limitations

ARM 17.30.1345 [40 CFR 122.45(f)(1)] requires that effluent limits must be expressed in terms of mass (mass/time), except for certain parameters, such as pH or temperature. These limits were developed for the 30-day average cBOD₅, TSS, as the annual average load in pounds per day (lb/d) for each pollutant.

To correctly apply ARM 17.30.1345(8)(a), the mass-based expression of the 7-day concentration limit must be developed for the effluent. Both the 7-day and 30-day load limits will be applied to the

effluent on an average weekly and average monthly basis, respectively in terms of lb/day.

The calculations for the 7-day condition are as follows:

$$\text{Load (lb/day)} = \text{Design Flow (mgd)} \times \text{Concentration Limit (mg/L)} \times 8.34 \text{ (lb}\cdot\text{L)/(mg}\cdot\text{gal)}$$

Average weekly cBOD₅ mass-based limitation:

$$7\text{-d Load} = 21 \text{ mgd} \times 40 \text{ mg/L} \times 8.34 = 7,005 \text{ lb/day.}$$

Average weekly TSS mass-based limitation:

$$7\text{-d Load} = 21 \text{ mgd} \times 45 \text{ mg/L} \times 8.34 = 7,881 \text{ lb/day}$$

D. Nondegradation Loads

The provisions of ARM 17.30.701, *et seq.*, (Nondegradation of Water Quality) apply to new or increased sources of pollution [ARM 17.30.702(18)]. Sources that are in compliance with the conditions of their permit and do not exceed the limits established in the permit or determined from a permit previously issued by the Department are not considered new or increased sources. Nondegradation load values for the Facility were calculated for cBOD₅, TSS, total nitrogen (TN) and total phosphorus as P (TP) as part of the renewal of the permit in 2000. The nondegradation load allocations and the actual full calendar year average loads discharged from the Facility (obtained from DMR) for January 2004 through December 2008 are presented below. These data indicate that the facility did not exceed the nondegradation load values calculated for cBOD₅, TSS, TN, and TP.

Table FS-6. Nondegradation and Actual Loads for January 2004 through December 2008

Parameter	Units	Nondegradation Load Values and Existing Permit Limits	Actual 30-Day Average Loads				
		Annual Average Load	2004	2005	2006	2007	2008
cBOD ₅	lb/day	4,377	829	644	581	616	506
TSS	lb/day	4,500	436	282	444	434	366
TN	lb/day	3,360	1,784	1,371	1,775	1,556	1,446
TP as P	lb/day	840	207	186	207	203	215

E. Proposed TBELs

Table FS-7. Outfall 003 Proposed TBELs

Parameter	Concentration (mg/L)		Load (lb/day)	
	Average Monthly ⁽¹⁾	Average Weekly ⁽¹⁾	Average Monthly ⁽¹⁾	Average Weekly ⁽¹⁾
cBOD ₅	25	40	4,377	7,005
TSS	30	45	4,500	7,881
pH, s.u	Within the range of 6.0 to 9.0 (instantaneous)			
cBOD ₅ Percent Removal ⁽¹⁾	85 %			
TSS Percent Removal ⁽¹⁾	85 %			
(1) .See Definition section at end of permit for explanation of terms				

V. Water Quality-based Effluent Limits (WQBELs)

A. Scope and Authority

The Montana Water Quality Act (Act) states that a permit may only be issued if the Department finds that the issuance or continuance of the permit will not result in pollution of any state waters [75-5-401(2), Montana Code Annotated (MCA)]. Montana water quality standards at ARM 17.30.637(2) require that no wastes may be discharged such that the waste either alone or in combination with other wastes will violate or can reasonably be expected to violate any standard. ARM 17.30.1344(1) adopts by reference 40 CFR 122.44 which states that MPDES permits shall include limits on all pollutants which will cause, or have a reasonable potential to cause an excursion of any water quality standard, including narrative standards. The purpose of this section is to provide a basis and rationale for establishing Facility effluent limits in this Permit, based on Montana water quality standards that will protect designated uses of the receiving stream.

The Act authorizes the issuance of point source discharge permits on a listed water body pending completion of a Total Maximum Daily Load (TMDL) provided that: 1) the discharge is in compliance with the provisions of 75-5-303 (Nondegradation Policy), MCA; 2) the discharge will not cause a decline in water quality for the parameters for which the water body is listed; and, 3) the minimum treatment requirements under 75-5-703(10), MCA are met.

B. Receiving Water

The Facility continuously discharges treated effluent to the Missouri River from Outfall 003 located in USGS Hydrologic Unit Code 10030102 and identified as Montana stream segment MT41Q001_011, Missouri River - Sun River to Rainbow Dam. The Missouri River in the area of the discharge is classified B-2 [ARM 17.30.610(1)(b)]. Class B-2 waters are to be maintained suitable for drinking, culinary, and food processing purposes, after conventional treatment; bathing, swimming and recreation; growth and marginal propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply [ARM 17.30.624(1)].

The 1996 303(d) list cites the segment of the Missouri River from the Sun River confluence to

Rainbow Dam as partially supportive of aquatic life support, cold water fisheries-trout, warm water fisheries, drinking water supply, swimming and recreation. Probable causes of impairment include flow alteration, metals, nutrients, other inorganic substances, siltation, and suspended solids. The probable sources are listed as agriculture, irrigated crop production, natural sources, range land, streambank modification/destabilization, and upstream impoundment.

The 2006 303(d) list includes the segment as fully supportive of agricultural and primary contact recreational uses. It is listed as partially supportive of industrial uses and not supportive of aquatic life support, cold water fisheries-trout, and drinking water. The 2006 list cites the probable causes of impairment to be the metals total chromium, mercury, and selenium; pentachlorobenzene; physical substrate habitat alteration; sedimentation/siltation; solids(suspended and bedload); and turbidity.

After review of the assessment summary for the 2006 303(d) listing, it was determined that an error in data entry was made when indicating impairment was due to pentachlorobenzene (R. Sada de Suplee of the Department, personal communication May 15, 2009). The actual contaminants of concern are various polychlorinatedbiphenyl (PCB) substances present in the invertebrate and fish tissue samples in the area of discharge. Sampling since 1969 and throughout the 1980's confirmed the presence of specifically Arochlors 1254 and 1260, although it noted levels were decreasing over that timeframe. Therefore, for the purposes of this Permit renewal, the impairment listing will be considered to be due to the presence of PCB compounds.

Sources for these causes of impairment are listed as contaminated sediments; industrial point source discharge; industrial/commercial site stormwater discharge (permitted); dam construction (other than upstream flood control projects); and irrigated crop production.

The 7Q10 flow value used in the existing Permit (3,220 cfs) was calculated from data collected at USGS gauging station 06090300, Missouri River near Great Falls. This flow is measured at a point immediately below Morony Dam, 13 miles downstream of the outfall, below the approximate 241 cfs contributed by Giant Springs, and after five Missouri River dams. Because of the regulated flows, even from these run-of-the-river dams, the downstream 7Q10 value is not appropriate for this Permit renewal.

The point of discharge is located nearly three miles downstream of the confluence with the Sun River and immediately downstream of Sacajawea Island, in the Black Eagle Dam Reservoir. For the purposes of limit development in this permit cycle, the 7Q10 will be based on upstream flow conditions; the combined 7Q10 values for the Missouri River at Ulm (USGS 06078200) and the Sun River at Vaughn (USGS 06089000) which equates to 2,734 cfs, the sum of 2,650 cfs (Missouri River 7Q10 at Ulm) and 84 cfs (Sun River 7Q10 at Vaughn). This value (2,734 cfs) will be used for the receiving water 7Q10 when dilution flow is utilized for limit development. The dilution ratio is 84:1 (1,766 to 21 mgd).

The Montana Department of Fish, Wildlife, and Parks (FWP) MFISH database describes this segment of the Missouri River as an area of substantial fisheries resource value for both habitat and sports classifications (November 2008). Common fish species present as year-round residents include the common carp and the white and longnose suckers. Rare year-round residents present are the black bullhead, brown and rainbow trout, Burbot, fathead minnow, flathead chub, freshwater

drum, longnose dace, mottled sculpin, mountain whitefish, pumpkinseed, stonecat, walleye, and yellow perch.

Ambient water quality data for the Missouri River above the Facility and below the confluence with the Sun River are lacking. In order to compile a characterization of the receiving water in the area of discharge, a composite description has been developed from USGS gauging stations both above and below the Facility, as well as data for the Sun River. These data were obtained from the USGS database for the following gauging sites: 06089000 Sun River near Vaughn, MT, 06090300 Missouri River near Great Falls, MT (only site with metals data) and 06090800 Missouri River at Fort Benton, MT (total hardness, pH and temperature only). PCB data from just above the point of discharge were provided by the permittee. A summary of the data is presented in Table FS-8.

Table FS-8. Receiving Water - Ambient Water Quality

Parameter	Units	Minimum Value	Maximum Value	Long Term Average	Number of Samples
pH, median value	s.u.	7.8	8.7	8.4	56
Temperature	°C	0	25	11	368
Total Ammonia as N	mg/L	<0.01	0.42	0.09	49
Nitrate + Nitrite as N	mg/L	<0.05	1.2	0.3	27
Total Nitrogen	mg/L	0.5	3.2	1.3	26
Total Phosphorus as P	mg/L	<0.05	1.0	0.1	46
Total Hardness as CaCO ₃	mg/L	140	420	276	216
Arsenic, Total Recoverable	µg/L	15	27	22	18
Copper, Total Recoverable	µg/L	<3	22	7	18
Lead, Total Recoverable	µg/L	<1	3	2	17
Zinc, Total Recoverable	µg/L	10	30	18	17
PCB - Arochlor 1016	µg/L	<0.035	<0.037	<0.036	2
PCB - Arochlor 1221	µg/L	<0.032	<0.039	<0.0355	2
PCB - Arochlor 1232	µg/L	<0.033	<0.048	<0.0405	2
PCB - Arochlor 1242	µg/L	<0.036	<0.043	<0.0395	2
PCB - Arochlor 1248	µg/L	<0.015	<0.035	<0.025	2
PCB - Arochlor 1254	µg/L	<0.014	<0.016	<0.015	2
PCB - Arochlor 1260	µg/L	<0.021	<0.030	<0.0255	2

C. Applicable Water Quality Standards

Discharges to surface waters classified B-2 are subject to the specific water quality standards of ARM 17.30.624 (March 31, 2006), Department Circular DEQ-7 (February 2008), as well as the general provision of ARM 17.30.635 through 637, 641, 645, and 646. In addition to these standards, dischargers are also subject to ARM 17.30 Subchapter 5 (Mixing Zones, March 2006) and Subchapter 7 (Nondegradation of Water Quality, March 2006).

ARM 17.30.635(4) requires that the design condition for disposal systems must be based on the 7Q10. More restrictive requirements may be necessary due to specific mixing zone requirements.

D. Mixing Zone for Water Quality Standards

A mixing zone is an area where the effluent mixes with the receiving water and certain water quality standards may be exceeded [ARM 17.30.502(6)]. In accordance with ARM 17.30.517(1)(b), acute water quality standards for aquatic life may not be exceeded in any portion of the mixing zone unless the Department finds that allowing minimal initial dilution will not threaten or impair existing uses. An effluent in its mixing zone may not block passage of aquatic organisms nor may it cause acutely toxic conditions [ARM 17.30.602(16)]. Aquatic life-chronic and acute and human health standards may not be exceeded outside of the mixing zone [ARM 17.30.507(1)(a)]. Acute standards may not be exceeded in any part of the mixing zone [ARM 17.30.507(1)(b)]. No mixing zone will be granted that will impair beneficial uses [ARM 17.30.506(1)].

The discharge must also comply with the general prohibitions of ARM 17.30.637(1) which require that state waters, including mixing zones, must be free from substances which will:

- a. settle to form objectionable sludge deposits or emulsions beneath the surface of the water or upon adjoining shorelines;
- b. create floating debris, scum, a visible oil film (or be present in concentrations at or in excess of 10 mg/L) or globules of grease or other floating materials;
- c. produce odors, colors or other conditions as to which create a nuisance or render undesirable tastes to fish flesh or make fish inedible;
- d. create concentrations or combinations of materials which are toxic or harmful to human, animal, plant or aquatic life; and
- e. create conditions which produce undesirable aquatic life.

The Department must determine the applicability of currently granted mixing zones [ARM 17.30.505(1)]. Mixing zones allowed under a permit issued prior to April 29, 1993 will remain in effect unless there is evidence that previously allowed mixing zones will impair existing or anticipated uses [ARM 17.30.505(1)(c)]. No mixing zone was defined in the Permit in effect in April of 1993.

In the existing Permit, the Department established the mixing zone as a segment of the Missouri River extending downstream 1.5 miles to immediately below Black Eagle Dam using the full 7Q10 flow of the receiving water for dilution. There was no technical basis for this mixing zone delineation, no parameters to which the mixing zone applied were specified in the Permit, and the mixing zone did not adhere to the mixing zone rules at ARM 17.30.501-518. Therefore, the existing mixing zone is inappropriate for this discharge.

A standard mixing zone may be granted for facilities which discharge less than one mgd or when mixing is nearly instantaneous [ARM 17.30.516(3)]. Nearly instantaneous mixing is assumed:

- a. if the discharge is through an effluent diffuser that extends across the entire stream width at low flow;
- b. when the mean daily flow exceeds 7Q10 flow (dilution ratio <1); or
- c. the permittee demonstrates through a Department approved study plan that the discharge is nearly instantaneous.

The Facility design discharge flow is greater than 1.0 mgd (21 mgd) and mixing is not nearly

instantaneous. Therefore, the discharge does not qualify for a standard mixing zone utilizing the full 7Q10 flow and the Permittee must apply for a source specific mixing zone in accordance with ARM 17.30.518. The proposed source specific mixing zone must conform to the requirements of 75-5-301(4), MCA which states that mixing zones must be the smallest practicable size; have minimal effects on uses; and have definable boundaries.

The Permittee has requested continuance of the existing mixing zone with this Permit renewal. Review of aerial photographs (<http://maps2.nris.state.mt.us/scripts/esrimap>) in the area of discharge shows the passive, bank-hugging nature of the discharge from Outfall 003 and that the incomplete mixing of the effluent with the receiving water persists downstream. In the absence of a source specific mixing zone study to establish the applicable dilution flow and to determine if a source specific mixing zone is appropriate for this discharge, an alternative or modified mixing zone, as defined by the Department, may be granted [ARM 17.30.515(1)(d)].

The Department will maintain the length of the mixing zone as a segment of the Missouri River extending downstream 1.5 miles to immediately below Black Eagle Dam. However, the dilution flow utilized to develop acute and chronic limitations (end of pipe compliance) for specific parameters that will naturally dissipate in the receiving water, such as Total Residual Chlorine (TRC), Dissolved Oxygen (DO), and/or total ammonia as N, will be established at one percent (1%) of the 7Q10 (27.34 cfs) for acute conditions and 10% of the 7Q10 (273.4 cfs) for chronic conditions. The Department will set the available dilution flow to achieve acute and chronic limitations as zero (no mixing zone) for persistent toxic parameters.

E. Basis and Proposed Water Quality-based Effluent Limits

Parameters typically present in municipal wastewater that may cause or contribute to a violation of water quality standards include the conventional pollutants such as biological material (as measured by cBOD₅ at this Facility), suspended solids, oil & grease, pathogenic bacteria, and pH; the non-conventional pollutants such as total residual chlorine, total ammonia as N, total nitrogen, and total phosphorus; and the carcinogenic and toxic pollutants such as volatile organic carbon substances and metals which can include, but is not limited to, arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc.

ARM 17.30.1345 requires WQBELs to be developed for any pollutant for which there is Reasonable Potential (RP) for discharges to cause or contribute to exceedences of instream numeric or narrative water quality standards. RP calculations utilize the receiving water concentrations, the projected maximum effluent concentrations, the design flow of the Facility, and the applicable receiving water flow.

The Department uses a mass balance equation (*Equation 1*) to determine RP:

$$C_{RP} = \frac{C_E Q_E + C_S Q_S}{Q_E + Q_S} \quad (\text{Equation 1})$$

Where:

C_{RP} = receiving water concentration (RWC) after mixing, mg/L
 C_E = projected maximum effluent concentration, mg/L
 C_S = RWC upstream of discharge, mg/L
 Q_S = applicable receiving water flow, cfs
 Q_E = facility design flow rate, cfs

The projected maximum effluent concentration is obtained following the method recommended by the EPA *Technical Support Document for Water Quality-based Toxics Control* (TSD, 1991). A multiplier is determined using Table 3-2 in the TSD (based on the data set coefficient of variation and sample size at the 95% confidence interval.) The projected maximum effluent concentration is the multiplier times the maximum reported effluent concentration.

1. Conventional Pollutants

Carbonaceous Biochemical Oxygen Demand (cBOD₅) and Total Suspended Solids (TSS) – the Permit has maintained cBOD₅ and TSS TBEL based on National Secondary Standards. The Facility provides significant reduction in biological material and solids through secondary treatment. No additional WQBEL will be required for these parameters.

pH – Pursuant to ARM 17.30.624(2)(c), the induced variation of hydrogen ion concentration within the range of 6.5 to 9.0 must be less than 0.5 pH units. Natural pH outside this range must be maintained without change. Natural pH above 7.0 must be maintained above 7.0. The existing Permit applied the TBEL for pH. This limit will be maintained with this Permit renewal.

Oil and Grease (O&G) – The existing permit limited O&G in the effluent to 10 mg/L for a 30-day average. No monitoring for this parameter was required. The Permittee did not submit O&G data with the original renewal application submitted in 2004. The standard at ARM 17.30.637(1)(b) reads that state surface waters must be free from substances that will create...a visible oil film (or be present in concentrations at or in excess of 10 mg/L). Therefore, the effluent limit will be changed to a maximum daily concentration of less than 10.0 mg/L and monthly effluent monitoring for O&G will be conducted.

***Escherichia coli* (*E. coli*) Bacteria** – The existing Permit had seasonal (effective April 1 through October 31) fecal coliform bacteria limits of 36,800 organisms per 100 milliliters (mL) and 18,400 organisms/100 mL as 7-day and 30-day averages (applied as geometric mean values), respectively. These limits were developed utilizing dilution with the full 7Q10 flow of the Missouri River.

ARM 17.30.505(2) states that if the Department determines that a mixing zone may interfere with or threaten a beneficial use, discharge limitations will be modified and if necessary, require the applicable numeric water quality criteria to be met at the end of the discharge pipe. The Department is not granting a mixing zone for pathogenic bacteria as measured by the presence of *Escherichia coli* (*E. coli*) bacteria based on the following considerations: 1) the bank-hugging nature of the discharge; 2) the potential for public recreation [ARM 17.30.506(2)(b) and the proximity to the City of Great Falls public River Trail system, recreational area means a public beach or swimming area and adjacent streams or lakes]; and 3) ARM 17.30.637(1)(e) which requires that state waters must be free

from substances that are harmful or toxic to humans. Therefore, no mixing zone is granted for pathogenic bacteria and the effluent will be required to meet the water quality standards at end of the pipe discharging at Outfall 003.

The permit will incorporate the applicable Montana state standards for *E. coli* bacteria, effective February 1, 2006:

- a. April 1 through October 31, of each year, the geometric mean number of the microbial species *E. coli* bacteria must not exceed 126 colony forming units (cfu) per 100 milliliters (mL), nor are 10% of the total samples during any 30-day period to exceed 252 cfu/100 mL [ARM 17.30.624(2)(a)(i)]; and
- b. November 1 through March 31, of each year, the geometric mean number of *E. coli* bacteria shall not exceed 630 cfu/100 mL and 10% of the samples during any 30-day period may not exceed 1,260 cfu/100 mL [ARM 17.30.624(2)(a)(ii)].

2. Nonconventional Pollutants

Total Ammonia as Nitrogen – The existing permit did not limit ammonia because the effluent limits were developed utilizing dilution with the full 7Q10 flow of the Missouri River. Dilution flows for this permit cycle are established as 27.34 cfs and 273.4 cfs for the acute and chronic conditions, respectively (see Section V.D., above). Total ammonia as N limits are developed based on standards that account for a combination of pH and temperature of the receiving stream, the presence or absence of salmonid species, and the presence or absence of fish in early life stages (Circular DEQ-7). Salmonid fishes and their early life stages are presumed present year-round.

Table FS-9 presents the total ammonia as N water quality standards for the Missouri River in the area of discharge using the ambient water quality data presented in Table FS-8.

Table FS-9. Total Ammonia as N Water Quality Standards for Receiving Water.

Condition	Salmonids Present	Early Life Stages Present	Ambient Condition		Water Quality Standard (mg/L) ⁽¹⁾
			pH (s.u.)	Temperature (°C)	
Acute	Yes	NA	8.70 ⁽²⁾	NA	1.47
Chronic	NA	Yes	8.40 ⁽³⁾	17.0 ⁽³⁾	1.10

Footnotes: NA – Not Applicable

(1) Acute - maximum daily concentration; Chronic - 30-day average concentration.

(2) Based on 95th percentile of annual data.

(3) Based on 75th percentile of annual data.

To determine if the total ammonia as N concentrations in the effluent will contribute to or create an exceedence of the state standards in the Missouri River after appropriate mixing, an RP analysis was completed using *Equation 1* (presented in Attachment A-1). The resulting downstream mixed concentration, 15.2 mg/L total ammonia as N, exceeds both the acute and chronic standards for total

ammonia as N. RP is shown to exist for this parameter and applicable limits will be developed in this Permit renewal.

Attachment B-1 presents the calculated Maximum Daily Limit (MDL), 3.25 mg/L and Average Monthly Limit (AML), 2.18 mg/L. These WQBEL were developed using the long term average of the data set and the long term average multipliers for the 95th percentile based on the statistics of that data set (TSD, 1991). The limits take into account the variability of the effluent quality and the available mixing zone dilution flow. They apply to the effluent prior to mixing with the receiving water at Outfall 003 (end of pipe compliance). The Permittee will be required to monitor the effluent for total ammonia as N on a weekly basis. A special condition in the Permit will allow the Permittee time to optimize treatment performance to consistently comply with the total ammonia limitations.

Nutrients [Total Nitrogen (TN) and Total Phosphorus as P (TP)] - Currently, there are no numeric water quality standards for nutrients that apply to the Missouri River in the area of the WWTP discharge. This segment of the receiving water is not listed as impaired due to nutrients therefore no limits are necessary at this time.

Total Residual Chlorine (TRC) - The existing Permit limited chlorine in the discharge to 0.5 mg/L and required daily monitoring of the effluent for TRC. The current numeric water quality acute standard for TRC is 0.019 mg/L; the chronic standard is 0.011 mg/L (Circular DEQ-7).

To determine if the TRC concentrations in the effluent will contribute to or create an exceedence of the state standards in the Missouri River after appropriate mixing, an RP analysis of the acute condition was completed using *Equation 1* (presented in Attachment A-2). The resulting downstream mixed concentration, 0.43 mg/L TRC, exceeds both the acute and chronic standards for TRC. RP is shown to exist for this parameter and limits will be developed in this Permit renewal.

Attachment B-2 presents the calculated MDL, 0.035 mg/L and AML, 0.026 mg/L. These WQBEL were developed using the long term average of the data set and the long term average multipliers for the 95th percentile based on the statistics of that data set (TSD, 1991). These limits take into account the variability of the effluent quality and the available mixing zone dilution flows. They apply to the effluent prior to mixing with the receiving water at Outfall 003 (end of pipe compliance). The Permittee will be required to monitor the effluent for TRC on a daily basis when chlorine is used for disinfection purposes.

Dissolved Oxygen (DO): DO standards are characterized by the type of fishery (cold- or warm-water) and by the presence or absence of fish in early life stages (DEQ Circular DEQ7, February 2008). They are presented in Table FS-10, below. Standards are further defined based on a specific period of time and required in-stream DO levels. This waterbody is classified as supporting cold-water fisheries (salmonids) and all life stages are assumed to be present year-round. Typically, facilities that provide significant removal of organic material, as measured by cBOD₅, do not require effluent limits for DO. However, no DO monitoring of the effluent has been required for this Facility in order to assess RP. The Permittee will be required to monitor DO levels in the effluent.

Table FS-10. Receiving Water Dissolved Oxygen (DO) Standards

Dissolved Oxygen (mg/L)	For Waters Classified A-1, B-1, B-2, C-1, and C-2			
	30-Day Mean	7-Day Mean	7-Day Mean Minimum ³	1-Day Minimum ³
Early Life Stages ^{1,2}	NA	9.5 (6.5)	NA	8.0 (5.0)
Other Life Stages	6.5	NA	5.0	4.0

Footnotes:
 1. These are water column concentrations recommended to achieve the required inter-gravel DO concentrations shown in parentheses. For species that have early life stages exposed directly to the water column, the figures in parentheses apply.
 2. Includes all embryonic and larval stages and all juvenile forms of fish to 30-days following hatching.
 3. All minima should be considered as instantaneous concentrations to be achieved at all times.

Turbidity – the Missouri River in the area of discharge is listed as impaired for turbidity primarily due to storm water and industrial runoff. The existing Permit did not address turbidity as a pollutant of concern for the Facility. There is a lack of effluent and receiving water data to support an RP analysis. Historically, the Department has held that the cBOD₅ and TSS TBEL based on National Secondary Standards for treatment of domestic wastewater are protective of the receiving waters for turbidity. No limit or monitoring of the effluent for turbidity will be implemented with this Permit cycle.

3. Toxic Pollutants

ARM 17.30.623(2)(h) states that concentrations of carcinogenic, bio-concentrating, toxic, or harmful parameters which would remain in the water after conventional treatment may not exceed the applicable standards specified in Department Circular DEQ-7 (February 2008).

Metals (Total Recoverable) - The receiving water is listed as impaired for the following metals in the total recoverable form: chromium, mercury, and selenium. The Facility has collected effluent data for total recoverable metals (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc) in support of the industrial pretreatment program (see Table FS-6). However, some of these data were not analyzed using 40 CFR 136-accepted methods or did not meet Department Required Reporting Values (RRV) (specifically cadmium, chromium and mercury).

The RRV is the detection level that must be achieved in reporting surface water monitoring or compliance data to the Department as listed in Circular DEQ-7 (February 2008). The RRV is the Department's best determination of a level of analysis that can be achieved by the majority of the commercial, university, or governmental laboratories using EPA-approved methods or methods approved by the Department. Where data are sufficient, RP will be assessed.

The applicable aquatic life and human health surface water quality standards for the total recoverable metals analyzed are summarized below in Table FS-11. Water quality data compiled for the Missouri River indicates that the total hardness 25th percentile value is 190 mg/L as CaCO₃. This value will be used when required in metals-based standards calculations to be protective of the

receiving water year-round.

Table FS-11. Missouri River Metals Surface Water Standards (Circular DEQ-7, Feb. 2008)

Parameter	Units	Required Reporting Value (RRV)	Human Health Standard	Bio-concentration Factor	Aquatic Life Standard ⁽¹⁾	
					Acute	Chronic
Antimony	mg/L	0.003	0.0056	1	--	--
Arsenic	mg/L	0.003	0.010	44	0.341	0.150
Beryllium	mg/L	0.001	0.004	19	--	--
Cadmium ^(1,2)	mg/L	0.00008	0.005	64	0.004	0.0004
Chromium, all forms	mg/L	0.001	0.100	--	--	--
Chromium, hexavalent ⁽²⁾	mg/L	0.005	--	16	0.016	0.011
Chromium, trivalent ^(1,2)	mg/L	--	--	16	3.05	0.146
Copper ⁽¹⁾	mg/L	0.001	1.30	36	0.0256	0.016
Lead ⁽¹⁾	mg/L	0.0005	0.015	49	0.0185	0.007
Mercury ⁽²⁾	mg/L	0.00001	0.00005	5,500	0.0017	0.0009
Nickel ⁽¹⁾	mg/L	0.010	0.100	47	0.81	0.09
Selenium	mg/L	0.001	0.050	4.8	0.020	0.005
Silver ⁽¹⁾	mg/L	0.001	0.100	0.5	0.012	0.005
Thallium	mg/L	0.0002	0.910	119	--	--
Zinc ⁽¹⁾	mg/L	0.010	2.00	47	0.206	0.206

Footnotes:
 (1) Applicable total recoverable metals standards calculated using the 25th percentile upstream total hardness value of 190 mg/L as CaCO₃
 (2) Data reported failed to meet the specified RRV.

To determine if the concentrations of these specific metals in the effluent will contribute to or create an exceedence of the state standards in the Missouri River after appropriate mixing, an RP analysis of the acute condition for each metal was completed using the projected maximum effluent concentrations and *Equation 1* (presented in Attachment A-3). Dilution flows for the above toxic parameters are established at zero cfs (see Section V.D., above).

RP does not exist for the following total recoverable metals: antimony; beryllium; lead; nickel; silver; and zinc. No limits will be developed for these parameters.

The resulting downstream mixed concentrations for arsenic and thallium exceed the human health standard for each metal. RP is shown to exist for these parameters and limits will be developed in this Permit renewal. The MDL is the human health standard set forth in Table FS-11, where no value shall exceed the human health numeric water quality standard.

For total recoverable copper and selenium, the downstream mixed conditions exceed the chronic aquatic life standards; RP is shown to exist for these parameters and limits will be developed in this Permit renewal. Attachment B-3 presents the calculated MDL and AML for total recoverable copper and selenium.

All final effluent metals limits developed herein are presented in Table FS-12 (see Section V. F. below). They apply to the effluent prior to mixing with the receiving water at Outfall 003 (end of pipe compliance). The Permittee will monitor the effluent for total recoverable arsenic, copper, selenium, and thallium on a monthly basis. Other metals will be monitored as required to support the industrial pretreatment program.

Organic Substances – The receiving water is listed as impaired due to the presence of PCB compounds in invertebrate and fish tissue samples collected from the receiving waters. The Permittee sampled and analyzed for organic compounds and PCB substances in support of the industrial pretreatment program. Some of these samples were not analyzed using 40 CFR 136-accepted methods or did not meet the Circular DEQ-7 specified RRV. Non-quantified PCB data supplied are presented in Table FS-8.

Quantifiable effluent data are available for five different organic compounds for which Montana has numeric water quality standards: bis(2-ethylhexyl) phthalate (carcinogen); bromodichloromethane (carcinogen), chloroform (carcinogen); 1,2, dichloroethane; and toluene (toxic) (see Table FS-8). The applicable surface water quality standards for these compounds are summarized below in Table FS-12.

Table FS-12. Organic Compound Numeric Water Quality Standards (DEQ-7, February 2008)

Parameter	Units	Required Reporting Value (RRV)	Human Health Standard	Bio-concentration Factor
Bis(2-ethylhexyl) Phthalate	mg/L	0.006	0.006	130
Bromodichloromethane	mg/L	0.0005	0.0055	3.75
Chloroform	mg/L	0.0005	0.057	3.75
1,2 Dichloroethane	mg/L	0.0005	0.0038	1.2
Toluene	mg/L	0.0005	1.00	10.7

An additional three toxic or hazardous compounds, all of which lack numeric water quality standards in Montana, were quantified in the October 2007 effluent sample: allyl chloride, methacrylonitrile, and tetrahydrofuran.

To determine if the concentrations of any of the five quantified organic compounds will contribute to or cause an exceedence of the state numeric standards after appropriate mixing, an RP analysis of the acute condition was completed for each of the compounds using the projected maximum effluent concentrations, the applicable dilution flows (zero for toxic, carcinogenic, or hazardous parameters) and *Equation 1* (presented in Attachment A-3 Dilution flows for the above toxic parameters for this analysis are established at zero cfs (see Section V.D., above).

RP was shown to exist for Bis(2-ethylhexyl) Phthalate as the downstream mixed conditions exceed the human health standard (see Attachment A-4); limits will be developed with this Permit renewal. The MDL is the human health standard set forth in Table FS-12, above, where no value shall exceed the human health numeric water quality standard. Monitoring for this compound will be performed on a monthly basis.

Monitoring of the influent and effluent for organic compounds will be required in support of the industrial pretreatment program as required by the EPA, as adopted by reference at ARM 17.30.14 and the Region VIII Guidance for Determining Monitoring Frequencies for the Pretreatment Program. For a Facility with a design flow between 15 and 50 mgd, the Permittee is required to sample the influent and effluent for parameters listed in 40 CFR 122 Appendix D as follows:

- i. Priority Pollutants listed in Table II (volatiles, acid compounds, base/neutral compounds, and pesticides) will be sampled twice each year (once in each semi-annual reporting period);
- ii. Other Toxic Pollutants (Metals and Cyanide) and Total Phenols will be sampled quarterly;
- iii. Because of the status of the pretreatment program (under an EPA Administrative Order for Compliance) and the unaccounted for presence of toxic, carcinogenic, and/or hazardous substances in the effluent, the permittee will be required to sample the influent and effluent for all of the compounds listed in Table V at least once annually throughout the Permit cycle; and
- iv. In addition, bromodichloromethane, chloroform, 1, 2-dichloroethane, and toluene have been identified as pollutants of concern by sampling and analysis of your influent and effluent during chemical monitoring. These pollutants of concern shall be sampled and analyzed in the influent and effluent at least once per month.

WET Limitation –ARM 17.30.637(1)(d) requires that state waters be free from substances attributable to municipal waste that create conditions which are harmful or toxic to human, animal, plant or aquatic life; except the Department may allow limited toxicity in a mixing zone provided that there is no acute lethality to organisms. The existing Permit placed a limit of 5.75 Toxic Units acute (TUa) on the effluent with dilution using the full 7Q10 value. The Permittee has conducted effluent acute WET testing on alternating species during the previous Permit cycles with dilution. They have passed all WET tests in the POR.

The WET limitation in the existing Permit is inconsistent with ARM 17.30.507(1)(b) and 17.30.635(1)(d) which prohibit acute toxicity in state surface water and, therefore, has been removed from the draft Permit. The Department does not presently utilize dilution or TUa when developing toxicity limitations for WWTP effluents. The Department will remove the WET limit of 5.75 TUa. The draft Permit includes chemical specific limitations to be protective of the receiving water against acutely toxic conditions. Standard WET testing language will be included in the Permit.

The Permittee will be required to perform quarterly acute WET testing of the effluent due to:

- i. the nature of the discharge (incomplete mixing);
- ii. the number of industrial indirect dischargers to the Facility and the compliance status of the industrial pretreatment program with the EPA (under an EPA Administrative Order for Compliance);
- iii. the presence of toxics metals and organic compounds (some with high bio-concentration factors) and ammonia in potentially toxic amounts in the Facility effluent; and
- iv. the lack of a source-specific mixing zone study defining the permanent acute and chronic mixing zone conditions (appropriate dilution flows).

In a WET test, acute toxicity occurs when 50 percent or more mortality is observed for a test species at any effluent concentration. The permittee shall conduct an acute 48-hour static renewal toxicity test using *Ceriodaphnia dubia* and an acute 96-hour static renewal toxicity test using fathead minnows (*Pimephales promelas*) as the alternating species. The control of pH during the toxicity test, utilizing CO₂ enriched atmospheres, is allowed to prevent rising pH drift. The target pH selected must represent the pH value of the receiving water at the time of sample collection.

F. Proposed WQBEL

Table FS-13 presents the final effluent WQBEL applied to the discharge at Outfall 003 prior to mixing with the receiving water.

Table FS-13. Outfall 003 Proposed WQBELs

Parameter	Units	Limitation	
		Maximum Daily, MDL ⁽¹⁾	Average Monthly, AML ⁽¹⁾
Total Ammonia as N	mg/L	3.25	2.18
Total Residual Chlorine	mg/L	0.035	0.026
<i>E. coli</i> Bacteria, summer ⁽²⁾	cfu/100 mL	252	126
<i>E. coli</i> Bacteria, winter ⁽³⁾	cfu/100 mL	1,260	630
Arsenic ⁽⁴⁾	mg/L	0.010	--
Copper ⁽⁴⁾	mg/L	0.019	0.016
Selenium ⁽⁴⁾	mg/L	0.006	0.005
Thallium ⁽⁴⁾	mg/L	0.91	--
Bis (2-ethylhexyl) Phthalate	mg/L	0.006	--

(1) See Definition section at end of permit for explanation of terms.
 (2) Summer period is April 1 through October 31.
 (3) Winter period is November 1 through March 31.
 (4) All metals are measured in the total recoverable form unless otherwise noted.

VI. Proposed Interim and Final Effluent Limitations

Outfall 003

Interim Limitations

The following interim effluent limitations will be applied to the discharge at Outfall 003 upon the effective date of the permit and remain in effect until midnight September 30, 2013.

Table FS-14 Outfall 003 Interim Limitations

Parameter	Units	Average Monthly Limit ⁽¹⁾	Average Weekly Limit ⁽¹⁾	Maximum Daily Limit ⁽¹⁾
cBOD ₅	mg/L	25	40	--
	lb/day	4,377	7,005	--
TSS	mg/L	30	45	--
	lb/day	4,500	7,881	--
<i>E. coli</i> Bacteria, summer ^(2, 3)	cfu/100 mL	126	252	--
<i>E. coli</i> Bacteria, winter ^(3, 4)	cfu/100 mL	630	1,260	--
Oil and Grease ⁽⁵⁾	mg/L	--	--	<10
Total Residual Chlorine	mg/L	--	--	0.50

Footnotes: NA means not applicable.
 (1) See Definition section at end of permit for explanation of terms.
 (2) Summer period is April 1 through October 31.
 (3) Report geometric mean if more than one sample is collected during the reporting period.
 (4) Winter period is November 1 through March 31.
 (5) Instantaneous maximum value.

pH: Effluent pH from Outfall 003 shall remain between 6.0 and 9.0 standard units (instantaneous minimum and instantaneous maximum). For compliance purposes, any single analysis or measurement beyond this limitation shall be considered a violation of the conditions of this permit.

85 Percent (%) Removal Requirement for cBOD₅: The arithmetic mean of the cBOD₅ for effluent samples collected in a period of 30 consecutive days shall not exceed 15% of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85% removal). This is in addition to the concentration limitations on cBOD₅.

85 Percent (%) Removal Requirement for TSS: The arithmetic mean of the TSS for effluent samples collected in a period of 30 consecutive days shall not exceed 15% of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85% removal). This is in addition to the concentration limitations on TSS.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Final Limitations

The following final effluent limitations will be applied to the discharge at Outfall 003, effective October 1, 2013 and remain in effect for the duration of the permit cycle.

Table FS-15. Outfall 003 Final Limitations

Parameter	Units	Average Monthly Limit ⁽¹⁾	Average Weekly Limit ⁽¹⁾	Maximum Daily Limit ⁽¹⁾
cBOD ₅	mg/L	25	40	--
	lb/day	4,377	7,005	--
TSS	mg/L	30	45	--
	lb/day	4,500	7,881	--
<i>E. coli</i> Bacteria, summer ^(2,3)	cfu/100 mL	126	252	--
<i>E. coli</i> Bacteria, winter ^(3,4)	cfu/100 mL	630	1,260	--
Oil and Grease ⁽⁵⁾	mg/L	--	--	<10
Total Residual Chlorine	mg/L	0.026	--	0.035
Total Ammonia as N	mg/L	2.18	--	3.25
Arsenic, Total Recoverable	mg/L	--	--	0.010
Copper, Total Recoverable	mg/L	0.016	--	0.019
Thallium, Total Recoverable	mg/L	--	--	0.91
Bis(2-ethylhexyl) Phthalate	mg/L	--	--	0.006

Footnotes: NA means not applicable.
 (1) See Definition section at end of permit for explanation of terms.
 (2) Summer period is April 1 through October 31.
 (3) Report geometric mean if more than one sample is collected during the reporting period.
 (4) Winter period is November 1 through March 31.
 (5) Instantaneous maximum value.

pH: Effluent pH from Outfall 003 shall remain between 6.0 and 9.0 standard units (instantaneous minimum and instantaneous maximum). For compliance purposes, any single analysis or measurement beyond this limitation shall be considered a violation of the conditions of this permit.

85 Percent (%) Removal Requirement for cBOD₅ and TSS: The arithmetic mean of the cBOD₅ and TSS values for effluent samples collected in a period of 30 consecutive days shall not exceed 15% of the arithmetic mean of the commensurate values for influent samples collected at approximately the same times during the same period (85% removal). This is in addition to the concentration limitations on cBOD₅ and TSS.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

VII. Self-Monitoring Requirements

All analytical procedures must comply with the specifications of 40 CFR Part 136. Samples shall be collected, preserved and analyzed in accordance with approved procedures listed in 40 CFR 136. Self-monitoring of effluent discharged at Outfall 003 shall be conducted at the discharge structure and samples will reflect the nature and effect of the discharge. Influent samples shall be collected at a point representative of the total influent upstream of any recycle return flows.

The Required Reporting Value (RRV) is the detection level that must be achieved in reporting surface water monitoring or compliance data to the Department as listed in Circular DEQ-7, February 2008. The RRV is the Department's best determination of a level of analysis that can be achieved by the majority of the commercial, university, or governmental laboratories using EPA-approved methods or methods approved by the Department.

Increased monitoring frequencies are in place to assess compliance with daily maximum, 7-day, and 30-day limitations. Self-monitoring requirements for influent and effluent are presented in Tables FS-16 and FS-17.

Table FS-16. Outfall 003 Monitoring Requirements

Parameter	Unit	Sample Location	Sample Frequency	Sample Type ⁽¹⁾
Flow	mgd	Influent	Continuous	⁽²⁾
	mgd	Effluent	Continuous	⁽²⁾
5-Day Carbonaceous Biochemical Oxygen Demand (cBOD ₅)	mg/L	Influent	5/Week	Composite
	mg/L	Effluent	5/Week	Composite
	% Removal ⁽³⁾	Effluent	1/Month	Calculated
	lb/day	Effluent	1/Month	Calculated
Total Suspended Solids (TSS)	mg/L	Influent	5/Week	Composite
	mg/L	Effluent	5/Week	Composite
	% Removal ⁽³⁾	Effluent	1/Month	Calculated
	lb/day	Effluent	1/Month	Calculated
pH	s.u.	Effluent	1/Day	Instantaneous
Temperature	°C	Effluent	1/Day	Instantaneous
<i>E. coli</i> Bacteria	cfu/100 mL	Effluent	1/Day	Grab
Total Residual Chlorine ⁽⁴⁾	mg/L	Effluent	1/Day	Grab
Total Ammonia as N	mg/L	Effluent	3/Week	Composite
Nitrate + Nitrite as N	mg/L	Effluent	1/Week	Composite
Total Kjeldahl Nitrogen	mg/L	Effluent	1/Week	Composite
Total Nitrogen as N ⁽⁵⁾	mg/L	Effluent	1/Week	Calculated
	lb/day	Effluent	1/Month	Calculated
Total Phosphorus as P	mg/L	Effluent	1/Week	Composite
	lb/day	Effluent	1/Month	Calculated
Dissolved Oxygen	mg/L	Effluent	1/Day	Grab
Oil & Grease ⁽⁶⁾	mg/L	Effluent	1/Month	Grab
Total Dissolved Solids (TDS)	mg/L	Effluent	1/Quarter	Grab
Total Hardness as CaCO ₃	mg/L	Effluent	1/Month	Grab
Whole Effluent Toxicity, Acute	% Effluent	Effluent	1/Quarter	Composite

Footnotes:

- (1) See Definitions section at end of permit for explanation of terms.
- (2) Requires recording device or totalizer; permittee shall report daily maximum and daily average flow on DMR.
- (3) Percent (%) Removal shall be calculated using the monthly average values
- (4) The permittee is only required to sample for total residual chlorine if chlorine is used as a disinfectant in the treatment process. If chlorine is *not* used, write "NA" on the DMR for this parameter.
- (5) Calculated as the sum of Nitrate + Nitrite as N and Total Kjeldahl Nitrogen concentrations.
- (6) Use EPA Method 1664, Revision A: N-Hexane Extractable Material (HEM), or equivalent.

Table FS-17. Influent and Effluent Monitoring Requirements

Parameter	Unit	Sample Frequency	Sample Type ⁽¹⁾	ML/RRV
Aluminum, Dissolved	µg/L	1/Quarter	Composite	30
Antimony, Total Recoverable ⁽²⁾	µg/L	1/Quarter	Composite	3
Arsenic, Total Recoverable ⁽²⁾	µg/L	1/Month	Composite	3
Beryllium, Total Recoverable ⁽²⁾	µg/L	1/Quarter	Composite	1
Cadmium, Total Recoverable ⁽²⁾	µg/L	1/Quarter	Composite	0.08
Chromium, Total Recoverable ⁽²⁾	µg/L	1/Quarter	Composite	1
Copper, Total Recoverable ⁽²⁾	µg/L	1/Month	Composite	1
Lead, Total Recoverable ⁽²⁾	µg/L	1/Quarter	Composite	0.5
Mercury, Total Recoverable ⁽²⁾	µg/L	1/Quarter	Composite	0.01
Nickel, Total Recoverable ⁽²⁾	µg/L	1/Quarter	Composite	10
Selenium, Total Recoverable ⁽²⁾	µg/L	1/Month	Composite	1
Silver, Total Recoverable ⁽²⁾	µg/L	1/Quarter	Composite	0.5
Thallium, Total Recoverable ⁽²⁾	µg/L	1/Month	Composite	0.2
Zinc, Total Recoverable ⁽²⁾	µg/L	1/Quarter	Composite	10
Bis(2-ethylhexyl)Phthalate ⁽³⁾	µg/L	1/Month	Composite	6
Bromodichloromethane	µg/L	1/Month	Composite	0.5
Chloroform	µg/L	1/Month	Composite	0.5
1,2-Dichloroethane	µg/L	1/Month	Composite	0.5
Toluene	µg/L	1/Month	Composite	0.5
Cyanide, Total	mg/L	1/Quarter	Grab	5
Phenols, Total	mg/L	1/Quarter	Grab	10
Hardness, Total (as CaCO ₃)	mg/L	1/Quarter	Grab	10
Volatile Organic Pollutants ⁽⁵⁾	µg/L	2/Year	Composite	⁽⁴⁾
Semi-Volatile, Acid Compounds ⁽⁶⁾	µg/L	2/Year	Composite	⁽⁴⁾
Semi-Volatile, Base Neutral ⁽⁶⁾	µg/L	2/Year	Composite	⁽⁴⁾
Toxic Pollutants and Hazardous Substances ⁽⁷⁾	µg/L	1/Year	Composite	⁽⁴⁾

Footnotes:

- (1) See Definition section at end of permit for explanation of terms.
- (2) Both influent and effluent samples must be analyzed as required. Metals shall be analyzed as total recoverable; use EPA Method (Section) 4.1.4 [EPA 600/4-79-020, March 1983] or equivalent, with the exception of aluminum which is measured in the dissolved form.
- (3) Both influent and effluent samples must be analyzed as required. 40 CFR 122, Appendix J, Table 2; use EPA Method 624 or equivalent.
- (4) See approved method for minimum level (ML).
- (5) Both influent and effluent samples must be analyzed as required. This information will not be entered on the DMR form; a copy of the analytical laboratory report must be attached to the DMR for the applicable reporting period. 40 CFR 122, Appendix J, Table 2; use EPA Method 624 or equivalent.
- (6) Both influent and effluent samples must be analyzed as required. 40 CFR 122, Appendix J, Table 2, use EPA Method 625 or equivalent. This information will not be entered on the DMR form; a copy of the analytical laboratory report must be attached to the DMR for the applicable reporting period.
- (7) Both influent and effluent samples must be analyzed as required. 40 CFR 122 Appendix D, Table V. This information will not be entered on the DMR form; a copy of the analytical laboratory report must be attached to the DMR for the applicable reporting period.

VIII. Nonsignificance Determination

The proposed effluent limits and discharge flows for the Facility have been maintained below the nondegradation levels and do not constitute a new or increased source of pollutants pursuant to ARM 17.30.702(16). Therefore, a nonsignificance analysis is not required [ARM 17.30.705(1)].

IX. Special Conditions/Compliance Schedule

ARM 17.30.1342(8) requires that the permittee furnish to the Department, within a reasonable time, any information to determine compliance with this permit. The following conditions must be met within the given timeframes:

A. Water Quality-based Effluent Limits (WQBEL)

Review of the DMR data shows that the discharge cannot meet proposed WQBEL for Total Residual Chlorine (TRC) and Total Ammonia as N with current operational strategies and, potentially, treatment technologies in place.

- i. Authority: The Act at 75-5-402, MCA states that the Department shall issue permits for sewage discharges to state water consistently with rules made by the Board of Environmental Review. The general treatment standards at ARM 17.30.635 state that the degrees of wastewater treatment required to maintain the quality of the receiving water shall be based on surface water quality standards, present and anticipated beneficial uses, and the quality and nature of the receiving water. The general prohibitions at ARM 17.30.637(2) state that no wastewater may be discharged that will violate any of the water quality standards.
- ii. Schedule: The permittee shall meet final effluent limits by September 30, 2013. Annual reports through completion of the special condition are due with the submittal of the December Discharge Monitoring Reports. The reports shall describe the milestones accomplished and the steps planned for each year towards compliance with the final effluent limits.

B. Facility Flow Monitoring

Compliance monitoring of the effluent and in some cases influent (e.g., percent removal, pretreatment program samples, etc.) is required in this Permit. As a major mechanical Facility with indirect discharges, the Permit requires that the volume and nature of the discharge be monitored using 24-hour flow-proportional composite samples. Accurate influent and effluent flow measurement capabilities are required to meet this permit expectation.

On August 31, 2004, the Permittee provided the following description of "actual flow measurement capabilities and procedures" at the Facility as requested by the Department MPDES compliance inspector:

"...the reported values (for effluent flow) are measured at the Secondary Division Structure using a Milltronics OCM-3 Open Channel Monitor that was installed December 12, 1993. The meter has consistently been within the permit required 10% limit of the actual flow being measured as indicated by the attached flow verification logs. Draw and fill tests are performed

on the meter 3 to 4 times per year on average. The only adjustment made on the actual reading is subtraction of the wasting flow and corresponding process water flow that is pumped from the effluent following flow measurement. This sludge and water is pumped to the Dissolved Air Flotation Unit and is subsequently returned to the influent in a recycle stream and thus must be subtracted out of the flow measured with the Milltronics at the division structure. The subtracted flow is based on the average wasting of 90 GPM and water flow from the DAF of 150 GPM. The corrected flow reading is then reported on the DMR."

"Back up flow measurement is currently conducted using the combination of influent flows from two stations – the 6th Street Pump Station and the Raw Wastewater Pump Station on site. If the flow meter in the secondary division structure was inoperable, the combined flow of these two meters would be used as the required reportable flow on the DMR. This has occurred a couple times since the secondary meter was installed and for a short period of time. This flow measurement requires the subtraction of two in plant flows from the Raw Wastewater Pump Station flow reading – the flow from the DAF and the flow from the Primary Sludge Pumps - both of which are recycled through the RWWPS..."

"As indicated by the attached Flow Verification Logs, the secondary meter compares favorably with the backup meters, at least from the standpoint of being within the required plus or minus 10%. The addition of new meters in the RWWPS should further improve this comparison.

There is some confusion concerning which flow meter reading is required, with the DMR requesting plant influent flow and the permit requiring the effluent flow measurement readings. In reality, both flow values should be the same. All in plant re-cycle flows and pertinent sludge flows are subtracted as described above, resulting in very similar readings both at the influent and at the effluent (secondary). The permits allows for up to a 10% deviation from actual flow, so reporting either of these flow rates should be adequate to meet the requirements, whether it is influent or effluent."

This letter provides a description of secondary flow monitoring and verification procedures, and indicates agreement between secondary flow devices (influent and effluent). However, it does not adequately show that flow measurements are accurate to the degree required for collection of compliance monitoring samples (within 10% of the actual flow being measured) to meet flow reporting requirements.

The Facility lacks primary flow measuring devices associated with the Facility flow sources for verification of secondary device accuracy and precision. The effluent secondary device is located upstream of the aeration basins, final clarifiers, recycle flow returns, process water draw off and the chlorine contact chamber; this flow rate represents flow to the secondary system not effluent flow rate. The chlorine contact chamber and effluent weir are not utilized; chlorine is added to the secondary clarifier effluent weirs. No explanation is available for the discontinued use of the effluent weir for verification of the secondary flow device installed at the Secondary Division Structure. Facility bypasses at the 6th Street Pump Station and of the primary and/or secondary stages of the Facility under high flow conditions, may not have adequate flow monitoring under the current procedures in place.

Average values for recycle flows (process water draw off and return flows) are subtracted from metered flow values to estimate the effluent flow reported on the DMR. These values are an average flow subtracted from a real-time value. They do not take into account the potential solids content (if applicable) of the flows involved. The “actual flow” verification draw and fill procedure is reliant upon the availability of unused tankage at the Facility (an empty aeration basin or clarifier) and has not been performed at the full range of flows encountered at this Facility. Nighttime flows may be quite low as compared to peak storm event flows into the plant.

- i. Authority: The Act at 75-5-402, MCA states that the Department shall clearly specify in any permit any limitations imposed as to the volume, strength, and other significant characteristics of the waste to be discharged. 75-5-602(3), MCA gives the Department authority to require a Permittee to install, use and maintain monitoring equipment. The Permittee must install a flow measuring system that has the capability of routine flow verification by the Permittee or appropriate regulatory personnel (NPDES Compliance Inspection Manual, July 2004).
- ii. Schedule: By midnight September 30, 2011, the Permittee shall provide the Department with a written report that certifies and demonstrates to the Department’s satisfaction that flow measurement devices and procedures at the Facility are satisfactory to meet influent and effluent flow measurement precision and accuracy expectations to within 10 percent of the actual flow being measured over the expected range of flows encountered by the Facility. This action shall consist of a complete engineering review of flow measurement at the Facility over the range of expected flows (nighttime low flow condition versus peak flow during storm events and during wet weather primary or secondary bypass events) with certification by a Professional Engineer that the method in use meets the 10 percent precision and accuracy expectations of the Permit.

This final report shall include, but is not limited to:

- a. completion of a comprehensive flow monitoring study at the Facility, including addressing independent measurement of influent flow to quantify actual flows to the Facility and to verify actual Facility effluent flow;
- b. explanation of the status of the effluent Cipolletti weir (installed primary device) for flow measurement and secondary device performance verification;
- c. explanation of the installation of effluent flow monitoring secondary devices at the current location versus the effluent stream with either plans to install effluent flow monitoring capability or reasons for not;
- d. development of a procedure for annual calibration of all flow meters by a qualified independent party;
- e. development of a procedure and schedule for flow measurement verification by Facility personnel over the range of expected flows;

- f. installation of flow monitoring for accurate quantification of side stream inputs to monitored influent and effluent flow;
 - g. installation of primary devices for influent sources and effluent with development of procedures for flow measurement verification by Facility personnel between the primary and secondary devices over the range of expected flows; and
 - h. the Permittee may propose engineering solutions that may include, but are not limited to installation of primary devices or Facility upgrades to meet flow measuring requirements.
- iii. By midnight September 30, 2012, the Permittee shall submit a plan and schedule for upgrades to the Facility to meet effluent flow measurement requirements if deemed necessary by the Department.
- iv. Any actions undertaken to meet the requirements of this Special Condition must be completed by midnight September 30, 2013.

X. Other Information

On September 21, 2000, a US District Judge issued an order stating that until all necessary total maximum daily loads (TMDLs) under Section 303(d) of the Clean Water Act are established for a particular water quality limited segment, the State is not to issue any new permits or increase permitted discharges under the MPDES program. The order was issued under the lawsuit Friends of the Wild Swan vs. US EPA, et al., CV 97-35-M-DWM, District of Montana, Missoula Division.

The renewal of this permit does not conflict with Judge Molloy's order because the permit includes effluent limits that prohibit any increases above previously-allowed authorized amounts.

XI. Information Sources

1. Administrative Rules of Montana Title 17 Chapter 30 - Water Quality
 - a. Sub-Chapter 2 - *Water Quality Permit and Application Fees*, March 2006.
 - b. Sub-Chapter 5 - *Mixing Zones in Surface and Ground Water*, March 2006.
 - c. Sub-Chapter 6 - *Montana Surface Water Quality Standards and Procedures*, March 2006.
 - d. Sub-Chapter 7- *Nondegradation of Water Quality*, March 2006.
 - e. Sub-Chapter 10 - *Montana Ground Water Pollution Control System*, June 2006.
 - f. Sub-Chapter 12 - *Montana Pollutant Discharge Elimination System (MPDES) Standards*, March 2007.
 - g. Sub-Chapter 13 - *Montana Pollutant Discharge Elimination System (MPDES) Permits*, June 2006.
2. Clean Water Act § 303(d), 33 USC 1313(d) *Montana List of Waterbodies in Need of Total Maximum Daily Load Development*, 1996 and 2006.

3. Federal Water Pollution Control Act (Clean Water Act), 33 U.S.C. §§ 1251-1387, October 18, 1972, as amended 1973-1983, 1987, 1988, 1990-1992, 1994, 1995 and 1996.
4. Montana Code Annotated Title 75 - Environmental Protection Chapter 5 - Water Quality, October 2002.
5. Montana Department of Environmental Quality Circular DEQ-2, *Design Standards for Wastewater Facilities*, September 1999.
6. Montana Department of Environmental Quality Circular DEQ-7, *Montana Numeric Water Quality Standards*, February 2008.
7. Montana Department of Fish Wildlife and Parks, *Spawning Times of Montana Fishes*, March 2001.
8. Montana Pollutant Discharge Elimination System (MPDES) Permit Number MT0021920
 - a. Administrative Record.
 - b. Renewal Application Form 2A, September 2004.
 - c. Updated Renewal Application Form 2A, January 2009.
9. US Code of Federal Regulations, 40 CFR Parts 122-125, 130-133, & 136.
10. US Code of Federal Regulations, 40 CFR Part 403 – *General Pretreatment Regulations for Existing and New Sources of Pollution*.
11. US Code of Federal Regulations, 40 CFR Part 503 – *Standards for the Use or Disposal of Sewage Sludge*.
12. US Department of the Interior US Geological Survey, *Statistical Summaries of Streamflow in Montana and Adjacent Areas, Water Years 1900 through 2002*, Scientific Investigations Report 2004-5266, 2004.
13. US EPA Letter to Permittee Regarding Pretreatment Program, November 1985.
14. US EPA *Technical Support Document for Water Quality-based Toxics Control*, EPA/505/2-30-001, March 1991.
15. USEPA Region VIII *Mixing Zones and Dilution Policy*, September 1995.
16. US EPA NPDES *Permit Writers' Manual*, EPA 833-B-96-003, December 1996.
17. US EPA Region VIII NPDES *Whole Effluent Toxics Control Program*, August 1997.
18. US EPA *CSOs: Guidance for Monitoring and Modeling*, EPA 832-B-99-002, January 1999.
19. US EPA *NPDES Compliance Inspection Manual*; EPA 305-X-03-004, July 2004.

20. US EPA *NPDES Permit Writers' Course Manual*, EPA-833-B-91-001, March 2009.

Completed – July 20, 2009, MK Valett

Attachment A-1

Reasonable Potential Analysis for Total Ammonia as N
 Great Falls WWTP Effluent

Q_d	Discharge Flow	cfs	Design Q	32.5	Design Q	32.5
C_d	Concentration in Discharge	mg/L	C_{95}	27.9	C_{95}	27.9
Q_s	Stream Dilution Flow	cfs	1%	27.34	10%	273.4
C_s	Concentration in Stream	mg/L	75th %	0.11	75th %	0.11
C_r	Concentration Down Stream	mg/L	result		result	
	Stream Standard	mg/L	CMC 1-h	1.47	CCC 30-d	1.10
	RP			YES		YES
CV			0.26			
n			59			
[max], mg/L			24.3			
TSD multiplier (95/95)			1.15			
projected [max], mg/L = ([max] * TSD multiplier)						

Attachment A-2

Reasonable Potential Analysis for Total Residual Chlorine
 Great Falls WWTP Effluent

Q_d	Discharge Flow	cfs	Design Q	32.5	Design Q	32.5
C_d	Concentration in Discharge	mg/L	C₉₅	0.79	C₉₅	0.79
Q_s	Stream Dilution Flow	cfs	1%	27.34	10%	273.4
C_s	Concentration in Stream	mg/L	* assumed	0	* assumed	0
C_r	Concentration Down Stream	mg/L	result		result	
	Stream Standard	mg/L	CMC 1-h	0.019	CCC 30-d	0.011
	RP			YES		YES
* assumed because TRC normally dissipates in environmental waters						
	CV			0.485		
	n			59		
	[max] mg/L			0.4		
	TSD multiplier (95/95)			1.985		
	projected [max] mg/L = ([max] * TSD multiplier)			0.79		

Attachment A-3

Reasonable Potential Analysis for Total Recoverable Metals
 Great Falls WWTP Effluent

Reasonable Potential Analysis for Total Recoverable Metals							
Great Falls WWTP Effluent							
Q _d	Discharge Flow (cfs)	design	32.50	design	32.50	design Q	32.50
C _d	Concentration in Discharge (mg/L)	projected max	0.0039	projected max	0.0134	projected max	0.0007
Q _s	Stream Dilution Flow (cfs)	no mixing zone	0	no mixing zone	0	no mixing zone	0
C _s	Concentration in Stream (mg/L)	75 th %	0	75 th %	0.024	75 th %	0
C _r	Concentration Down Stream (mg/L)	result		result		result	
	Stream Standard (mg/L)	hh (no sample shall exceed)	0.006	hh (no sample shall exceed)	0.010	hh (no sample shall exceed)	0.004
		Acute		Acute	0.340	Acute	
		Chronic		Chronic	0.150	Chronic	
	RP		NO	hh (no sample shall exceed)	YES	hh	NO
CV			0.428		0.310		0.539
n			17		18		15
[max] mg/L			0.003		0.0112		0.0005
TSD multiplier (95/95)			1.31		1.2		1.43
projected [max] mg/L = ([max] * TSD multiplier)			0.0039		0.0134		0.0007

Attachment A-3

Reasonable Potential Analysis for Total Recoverable Metals
 Great Falls WWTP Effluent

Q _d	Discharge Flow (cfs)	design	32.50	design	32.50	design	32.50
C _d	Concentration in Discharge (mg/L)	projected max	0.0192	projected max	0.0051	projected max	0.0087
Q _s	Stream Dilution Flow (cfs)	no mixing zone	0	no mixing zone	0	no mixing zone	0
C _s	Concentration in Stream (mg/L)	75 th %	0.007	75 th %	0.003	75 th %	0.000
C _r	Concentration Down Stream (mg/L)	result		result		result	
	Stream Standard (mg/L)	hh (no sample shall exceed)	1.3	hh (no sample shall exceed)	0.015	hh (no sample shall exceed)	0.100
		Acute	0.026	Acute	0.185	Acute	0.81
		Chronic	0.016	Chronic	0.0072	Chronic	0.09
	RP	Chronic	YES		NO		NO
CV			0.260		0.495		0.386
n			16		11		15
[max] mg/L			0.0167		0.0032		0.0068
TSD multiplier (95/95)			1.15		1.6		1.285
projected [max] mg/L = ([max] * TSD multiplier)			0.0192		0.0051		0.0087

Attachment A-3

Reasonable Potential Analysis for Total Recoverable Metals
 Great Falls WWTP Effluent

Reasonable Potential Analysis for Total Recoverable Metals							
Great Falls WWTP Effluent							
Q _d	Discharge Flow (cfs)	design	32.50	design	32.50	design	32.50
C _d	Concentration in Discharge (mg/L)	projected max	0.0068	projected max	0.004	projected max	1.1130
Q _s	Stream Dilution Flow (cfs)	no mixing zone	0	no mixing zone	0	no mixing zone	0
C _s	Concentration in Stream (mg/L)	75 th %	0.000	75 th %	0.000	75 th %	0
C _r	Concentration Down Stream (mg/L)	result		result		result	
	Stream Standard (mg/L)	hh (no sample shall exceed)	0.050	hh (no sample shall exceed)	0.100	hh (no sample shall exceed)	0.910
		Acute	0.020	Acute	0.012	Acute	
		Chronic	0.0050	Chronic	0.005	Chronic	
	RP	Chronic	YES		NO	hh	YES
CV			0.322		0.909		0.518
n			14		16		5
[max] mg/L			0.00423		0.0023		0.53
TSD multiplier (95/95)			1.6		1.7		2.1
projected [max] mg/L = ([max] * TSD multiplier)			0.0068		0.0039		1.1130

Attachment A-3

Reasonable Potential Analysis for Total Recoverable Metals
 Great Falls WWTP Effluent

Q _d	Discharge Flow (cfs)	design	32.50
C _d	Concentration in Discharge (mg/L)	projected max	0.061
Q _s	Stream Dilution Flow (cfs)	no mixing zone	0
C _s	Concentration in Stream (mg/L)	75 th %	0.020
C _r	Concentration Down Stream (mg/L)	result	
	Stream Standard (mg/L)	hh (no sample shall exceed)	2.0
		Acute	0.206
		Chronic	0.206
	RP		NO
CV			0.220
n			16
[max] mg/L			0.0557
TSD multiplier (95/95)			1.1
projected [max] mg/L = ([max] * TSD multiplier)			0.0613

Attachment A-4.

Reasonable Potential Analysis for Organic Compounds
 Great Falls WWTP Effluent

Reasonable Potential Analysis for Organic Compounds							
Great Falls WWTP Effluent							
Parameter	Value	Standard	Comparison	Value	Standard	Comparison	Value
Q _d Discharge Flow	32.5			32.50			32.50
C _d Concentration in Discharge	23.5			0.84			3.52
Q _s Stream Dilution Flow	0			0			0
C _s Concentration in Stream	assumed			0	assumed		0
C_r Concentration Down Stream	result			result			result
Stream Standard	hh (no sample shall exceed)	6		hh (no sample shall exceed)	5.5		hh (no sample shall exceed) 57
		YES			NO		NO
CV	0.6			0.6			0.6
n	6			6			7.0
[max] ug/L	11.2			0.4			1.8
TSD multiplier (95/95)	2.1			2.1			2.0
projected [max] ug/L = ([max] * TSD multiplier)	23.52			0.84			3.52

Attachment A-4.

Reasonable Potential Analysis for Organic Compounds
 Great Falls WWTP Effluent

Q _d	Discharge Flow		32.50		32.50
C _d	Concentration in Discharge		1.302		0.98
Q _s	Stream Dilution Flow		0		0
C _s	Concentration in Stream	assumed	0	assumed	0
C _r	Concentration Down Stream	result		result	
	Stream Standard	hh (no sample shall exceed)	3.8	hh (no sample shall exceed)	1000
			NO		NO
CV			0.6		0.6
n			6		7
[max] ug/L			0.62		0.49
TSD multiplier (95/95)			2.1		2
projected [max] ug/L = ([max] * TSD multiplier)			1.302		0.98

Attachment B-1. Outfall 003 WQBEL Calculations

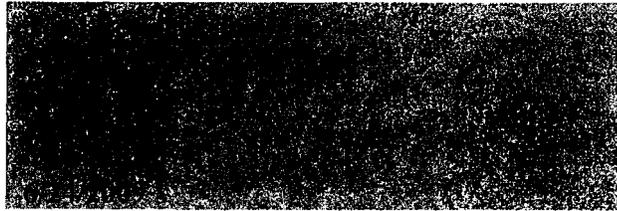
Parameter:
 Facility:
 MPDES Permit Number:
 Receiving Water:
 Date:



Condition		%	Chronic	Acute	Other
Acute Std, mg/L					
Chronic Std, mg/L					
ACR					1.34
Mixing Zone					
7Q10	cfs				
Chronic MZ	cfs		273.4		
Acute MZ	cfs			27.34	
Effluent Flow	cfs				
Water Quality Std.	mg/L				
Background Conc.	mg/L				
Wasteload Allocation (from mass balance)					
WLA _c	mg/L		9.18		
WLA _a	mg/L			2.58	
Long-Term Average -Calc.					
Coeff. Variation (CV)	na				
Percentile	%				
LTAc, multiplier Table 5-1					
LTAa, multiplier Table 5-1					
LTAc	mg/L		7.52		
LTAa	mg/L			1.78	
LTA=min(LTAc, LTAa)	mg/L		1.78	1.78	
AML, multiplier Table 5-2					
MDL, multiplier Table 5-2					
			AML	MDL	
Final Effluent Limit, AL	mg/L		2.18	3.25	

Attachment B-2. Outfall 003 WQBEL Calculations

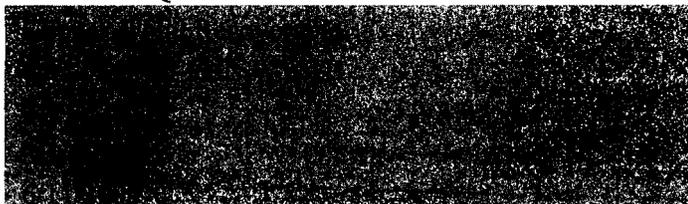
Parameter:
 Facility:
 MPDES Permit Number:
 Receiving Water:
 Date:



Condition		%	Chronic	Acute	Other
Acute Std, mg/L					
Chronic Std, mg/L					
ACR					1.73
Mixing Zone					
7Q10	mgd				
Chronic MZ	cfs		273.4		
Acute MZ	cfs			27.34	
Effluent Flow	cfs				
Water Quality Std.	mg/L				
Background Conc.	mg/L				
Wasteload Allocation (from mass balance)					
WLAc	mg/L		0.10		
WLAa	mg/L			0.03	
Long-Term Average -Calc.					
Coeff. Variation (CV)	na				
Percentile	%				
LTAc, multiplier Table 5-1			0.085		
LTAa, multiplier Table 5-1				0.02	
LTAc	mg/L		0.07		
LTAa	mg/L			0.02	
LTA=min(LTAc, LTAa)	mg/L		0.02	0.02	
AML, multiplier Table 5-2			0.026		
MDL, multiplier Table 5-2				0.035	
Final Effluent Limit, AL			AML	MDL	
mg/L			0.026	0.035	

Attachment B-3. Outfall 003 WQBEL Calculations

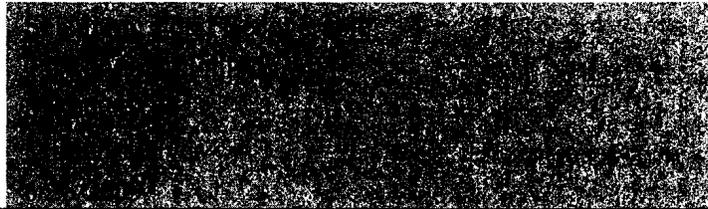
Parameter:
 Facility:
 Permit Number:
 Receiving Water:
 Date:



Condition		%	Chronic	Acute	HH
Human Health	mg/L				
Aquatic Life	mg/L				
ACR				1.6	
Mixing Zone					
7Q10	cfs				
Chronic MZ	cfs		0		
Acute MZ	cfs			0	
Human Health	cfs				0
Effluent Flow	cfs				
Water Quality Std.	mg/L		0.0161	0.0256	1.3
Background Conc.	mg/L				
Wasteload Allocation (from mass balance)					
WLA _c	mg/L		0.0161		
WLA _a	mg/L			0.0256	
WLA(hh)	mg/L				1.300
Long-Term Average -Calc.					
Coefficient of Variation (CV)	na				
Percentile	%				
LTAc, multiplier Table 5-1					
LTAa, multiplier Table 5-1					
LTAc	mg/L		0.0132		
LTAa	mg/L			0.0153	
LTA=min(LTAc, LTAa)	mg/L		0.0132	0.0132	
Sample Size				NA	
AML, multiplier Table 5-2					
MDL, multiplier Table 5-2					
MDL/AML multiplier, Table 5-3					1.415
			AML	MDL	
Final Effluent Limit, AL	mg/L		0.0160	0.0192	

Attachment B-4. Outfall 003 WQBEL Calculations

Parameter:
 Facility:
 Permit Number:
 Receiving Water:
 Date:



Condition		%	Chronic	Acute	HH
Human Health	mg/L				
Aquatic Life	mg/L				
ACR				4.0	
Mixing Zone					
7Q10	cfs				
Chronic MZ	cfs		0		
Acute MZ	cfs			0	
Human Health	cfs				0
Effluent Flow	cfs				
Water Quality Std.	mg/L		0.0050	0.020	0.1
Background Conc.	mg/L				
Wasteload Allocation (from mass balance)					
WLA _c	mg/L		0.0050		
WLA _a	mg/L			0.0200	
WLA(hh)	mg/L				0.050
Long-Term Average -Calc.					
Coeff. Variation (CV)	na				
Percentile	%				
LTAc, multiplier Table 5-1			0.0040		
LTAa, multiplier Table 5-1				0.0129	
LTAc	mg/L		0.0040		
LTAa	mg/L			0.0129	
LTA=min(LTAc, LTAa)	mg/L		0.0040	0.0040	
Sample Size				NA	
AML, multiplier Table 5-2			1.27		
MDL, multiplier Table 5-2				1.56	
MDL/AML mult., Table 5-3					1.51
			AML	MDL	
Final Effluent Limit, AL	mg/L		0.0050	0.0062	