Fact Sheet

**The U.S. Environmental Protection Agency (EPA)
Proposes to Reissue a National Pollutant Discharge Elimination System (NPDES) Permit to Discharge Pollutants Pursuant to the Provisions of the Clean Water Act (CWA) to:**

City of Meridian Wastewater Treatment Plant
3401 North Ten Mile Road
Meridian, ID 83646

Public Comment Start Date: July 23, 2015
Public Comment Expiration Date: September 21, 2015

Technical Contact: Brian Nickel
206-553-6251
800-424-4372, ext. 6251 (within Alaska, Idaho, Oregon and Washington)
Nickel.Brian@epa.gov

The EPA Proposes To Reissue an NPDES Permit
The EPA proposes to reissue the NPDES permit for the facility referenced above. The draft permit places conditions on the discharge of pollutants from the wastewater treatment plant to waters of the United States. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the facility.

This Fact Sheet includes:
- information on public comment, public hearing, and appeal procedures
- a listing of proposed effluent limitations and other conditions for the facility
- a map and description of the discharge location
- technical material supporting the conditions in the permit

State Certification
The EPA is requesting that the Idaho Department of Environmental Quality (IDEQ) certify the NPDES permit for this facility, under Section 401 of the Clean Water Act. Comments regarding the certification should be directed to:

Regional Administrator
Idaho Department of Environmental Quality
1445 North Orchard St.
Boise, ID 83706
(208) 373-0550

Public Comment
Persons wishing to comment on, or request a Public Hearing for the draft permit for this facility may do so in writing by the expiration date of the Public Comment period. A request for a Public Hearing must state the nature of the issues to be raised as well as the requester's name, address and telephone number. All comments and requests for Public Hearings must be in writing and should be submitted to the EPA as described in the Public Comments Section of the attached Public Notice.

After the Public Notice expires, and all comments have been considered, the EPA's regional Director for the Office of Water and Watersheds will make a final decision regarding permit issuance. If no substantive comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If substantive comments are received, the EPA will address the comments and issue the permit. The permit will become effective no less than 30 days after the issuance date, unless an appeal is submitted to the Environmental Appeals Board within 30 days pursuant to 40 CFR 124.19.

Documents are Available for Review
The draft NPDES permit and related documents can be reviewed or obtained by visiting or contacting the EPA's Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday at the address below. The draft permits, fact sheet, and other information can also be found by visiting the Region 10 NPDES website at "http://epa.gov/r10earth/waterpermits.htm."

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue OWW-191
Seattle, Washington 98101
(206) 553-0523 or
Toll Free 1-800-424-4372 (within Alaska, Idaho, Oregon and Washington)

The fact sheet and draft permits are also available at:

EPA Idaho Operations Office
950 West Bannock
Suite 900
Boise, ID 83702

Idaho DEQ Boise Regional Office
1445 N. Orchard St.
Boise, ID 83706
(208) 373-0550

Caldwell Public Library
1010 Dearborn St.
Caldwell, ID 83605
(208) 459-3242

Nampa Public Library
101 11th Ave. S.
Nampa, ID 83651
(208) 468-5800

Cherry Lane Library
1326 W. Cherry Ln.
Meridian, ID 83642
(208) 888-4451

Silverstone Branch Library
3531 E. Overland Rd.
Meridian, ID 83642
(208) 884-2616

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Acronyms

1Q10	1 day, 10 year low flow
7Q10	7 day, 10 year low flow
30B3	Biologically-based design flow intended to ensure an excursion frequency of less than once every three years, for a 30-day average flow.
30Q10	30 day, 10 year low flow
30Q5	30 day, 5 year low flow
ACR	Acute-to-Chronic Ratio
AML	Average Monthly Limit
AWL	Average Weekly Limit
BOD_5	Biochemical oxygen demand, five-day
BMP	Best Management Practices
°C	Degrees Celsius
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FR	Federal Register
HUC	Hydrologic Unit Code
IC	Inhibition Concentration
ICIS	Integrated Compliance Information System
IDEQ	Idaho Department of Environmental Quality
I/I	Infiltration and Inflow
LA	Load Allocation
lbs/day	Pounds per day
LTA	Long Term Average
mg/L	Milligrams per liter

ml	milliliters
ML	Minimum Level
µg/L	Micrograms per liter
mgd	Million gallons per day
MDL	Maximum Daily Limit or Method Detection Limit
MF	Membrane Filtration
MPN	Most Probable Number
N	Nitrogen
NOAA	National Oceanic and Atmospheric Administration
NOEC	No Observable Effect Concentration
NPDES	National Pollutant Discharge Elimination System
NWIS	National Water Information System
OWW	Office of Water and Watersheds
O&M	Operations and maintenance
POTW	Publicly owned treatment works
QAP	Quality assurance plan
RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
RWC	Receiving Water Concentration
SS	Suspended Solids
SSO	Sanitary Sewer Overflow
STORET	STOrage and RETrieval
s.u.	Standard Units
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TRC	Total Residual Chlorine
TRE	Toxicity Reduction Evaluation
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
TSS	Total suspended solids
TU_a	Toxic Units, Acute
TU_c	Toxic Units, Chronic

USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UV	Ultraviolet
WET	Whole Effluent Toxicity
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit
WQS	Water Quality Standards
WWTP	Wastewater treatment plant

I. Applicant

A. General Information

This fact sheet provides information on the draft NPDES permit for the following entity:

City of Meridian
Wastewater Treatment Plant
NPDES Permit #ID0020192

Physical Address:
3401 North Ten Mile Road
Meridian, ID 83646

Contact:
Tracy Crane, Wastewater Treatment Plant Superintendent

B. Permit History

The most recent NPDES permit for the City of Meridian Wastewater Treatment Plant (WWTP) was issued on September 30, 1999, became effective on November 2, 1999, and expired on November 2, 2004. An NPDES application for permit issuance was submitted by the permittee on April 19, 2004. The EPA determined that the application was timely and complete. Therefore, pursuant to 40 CFR 122.6, the permit has been administratively extended and remains fully effective and enforceable.

II. Facility Information

A. Treatment Plant Description

The City of Meridian owns, operates, and maintains a WWTP located in Meridian, Idaho. The secondary treatment plant has two outfalls that discharge treated municipal wastewater, one which discharges to Fivemile Creek (Outfall 001) and another which discharges to the Boise River (Outfall 002).

The collection system has no combined sewers. The WWTP was placed into service in 1978. Several upgrades and new processes have subsequently been constructed. The average design flow of the facility is 10.2 mgd. The facility serves a resident population of 77,570. Details about the wastewater treatment process and a map showing the location of the treatment facility and discharge are included in Appendix A.

B. Compliance History

In the past five years, the permittee has generally been in compliance with the effluent limits in the 1999 permit, except for two violations of the maximum daily effluent limit for fecal coliform.

III. Receiving Waters

The City of Meridian WWTP has two outfalls. Outfall 001 is adjacent to the WWTP and discharges to Fivemile Creek between Ten Mile Road and Black Cat Road, downstream

(west) of the confluence with Ninemile Creek. Outfall 002 discharges to the south channel of the Boise River at Linder Road, just downstream (west) of the Phyllis Canal diversion. Since the prior permit was issued in 1999, the City has primarily used the Fivemile Creek outfall (001).

A. Low Flow Conditions

The low flow conditions of a water body are used to assess the need for and develop water quality based effluent limits (see Appendix C of this fact sheet for additional information on flows).

Fivemile Creek

The City of Meridian was required under its 1999 permit to measure the flow rate of Fivemile Creek weekly, upstream from the discharge, for 24 months. This resulted in a total of 104 flow measurements for Fivemile Creek. The EPA used these flow data to estimate the low flow conditions for Fivemile Creek immediately upstream from the point of discharge.

The EPA has decided to estimate the critical low flows of Fivemile Creek on a seasonal basis. The estimated low flows for the irrigation season (May – September) are relatively high. Flows during the rest of the year (October – April) are relatively low. Table 1, below, presents the estimated low flow values for Fivemile Creek. The estimation of the critical low flows is described in detail in Appendix C.

Table 1: Estimated Low Flows in Fivemile Creek at the Meridian WWTP Outfall

Season	1Q10 (mgd)	7Q10 (mgd)	30Q5 (mgd)
October – April	0.91	1.18	1.30
May – September	18.1	23.6	25.9

Boise River

The United States Geological Survey (USGS) has a gauging station on the south channel of the Boise River at Eagle Road (station # 13206305), upstream of the City of Meridian outfall. Daily river flow data from this gauging station are available from November 1, 1999 through the present. However, the flows measured at Eagle Road are not representative of the flows at the City's outfall, at Linder Road, because, between Eagle Road and Linder Road, Thurman Drain flows into the South Channel of the Boise River, and the Phyllis Canal diverts water from the river.

Daily flows for the Phyllis Canal are available from the Idaho Department of Water Resources (IDWR). A total of 46 flow measurements were available for Thurman Drain from the USGS National Water Information System (NWIS). The EPA estimated the daily flows of the south channel of the Boise River at Linder Road by subtracting the contemporaneous daily flows of the Phyllis Canal and adding the monthly average flows of the Thurman Drain to the daily flows of the south channel of the Boise River measured at Eagle Road. The EPA then used the DFLOW computer program to calculate the critical low flows of the south channel of the Boise River from the estimated daily flows.

The EPA has decided to calculate the critical low flows of the south channel of the Boise River on a seasonal basis. The low flows for July – October are relatively high. Flows

during the rest of the year (November – June) are relatively low. Table 2, below, presents the low flow values for the south channel of the Boise River at Linder Road.

Table 2: Low Flows in the South Channel of the Boise River at Linder Road

Season	1Q10 (CFS)	7Q10 (CFS)	30Q5 (CFS)
November – June	44.9	67.1	105
July – October	104	116	141

B. Water Quality Standards

Overview

Section 301(b)(1)(C) of the Clean Water Act (CWA) requires the development of limitations in permits necessary to meet water quality standards. Federal regulations at 40 CFR 122.4(d) require that the conditions in NPDES permits ensure compliance with the water quality standards of all affected States. A State's water quality standards are composed of use classifications, numeric and/or narrative water quality criteria and an anti-degradation policy.

The use classification system designates the beneficial uses that each water body is expected to achieve, such as drinking water supply, contact recreation, and aquatic life. The numeric and narrative water quality criteria are the criteria deemed necessary by the State to support the beneficial use classification of each water body. The anti-degradation policy represents a three-tiered approach to maintain and protect various levels of water quality and uses.

Designated Beneficial Uses

This facility discharges to either Fivemile Creek or the south channel of the Boise River, both of which are in the Lower Boise watershed (HUC 17050114). Use designations for the Lower Boise watershed are found at IDAPA 58.01.02.140.12.

Fivemile Creek

At the point of discharge, Fivemile Creek (waterbody unit SW-10) is protected for the following designated uses:

- cold water aquatic life
- secondary contact recreation

Boise River

At the point of discharge, the Boise River (waterbody unit SW-5) is protected for the following designated uses:

- cold water aquatic life
- salmonid spawning
- primary contact recreation

In addition, the Idaho Water Quality Standards state that all waters of the State of Idaho are protected for industrial and agricultural water supply, wildlife habitats and aesthetics (IDAPA 58.01.02.100.03.b and c, 100.04 and 100.05).

Surface Water Quality Criteria

The criteria are found in the following sections of the Idaho Water Quality Standards:

- The narrative criteria applicable to all surface waters of the State are found at IDAPA 58.01.02.200 (General Surface Water Quality Criteria).
- The numeric criteria for toxic substances for the protection of aquatic life and primary contact recreation are found at IDAPA 58.01.02.210 (Numeric Criteria for Toxic Substances for Waters Designated for Aquatic Life, Recreation, or Domestic Water Supply Use).
- Additional numeric criteria necessary for the protection of aquatic life can be found at IDAPA 58.01.02.250 (Surface Water Quality Criteria for Aquatic Life Use Designations).
- Numeric criteria necessary for the protection of recreation uses can be found at IDAPA 58.01.02.251 (Surface Water Quality Criteria for Recreation Use Designations).
- Water quality criteria for agricultural water supply can be found in the EPA's *Water Quality Criteria 1972*, also referred to as the "Blue Book" (EPA R3-73-033) (See IDAPA 58.01.02.252.02)
- Site-specific water quality criteria for the affected reach of the Boise River for temperature, dissolved oxygen, copper, and lead can be found at IDAPA 58.01.02.278.

The numeric and narrative water quality criteria applicable to Fivemile Creek and the Boise River at the points of discharge are summarized in Appendix B of this fact sheet.

Antidegradation

The IDEQ has completed an antidegradation review which is included in the draft 401 certification for this permit. See Appendix G for the State's draft 401 water quality certification. The EPA has reviewed this antidegradation review and finds that it is consistent with the State's 401 certification requirements and the State's antidegradation implementation procedures. Comments on the 401 certification including the antidegradation review can be submitted to the IDEQ as set forth above (see State Certification).

C. Water Quality Limited Waters

Any waterbody for which the water quality does not, and/or is not expected to meet, applicable water quality standards is defined as a "water quality limited segment."

Section 303(d) of the Clean Water Act (CWA) requires states to develop a Total Maximum Daily Load (TMDL) management plan for water bodies determined to be water quality limited segments. A TMDL is a detailed analysis of the water body to determine its assimilative capacity. The assimilative capacity is the loading of a pollutant that a water body can assimilate without causing or contributing to a violation of water quality standards. Once the assimilative capacity of the water body has been determined, the TMDL will allocate that capacity among point and non-point pollutant sources, taking into account

natural background levels and a margin of safety. Allocations for non-point sources are known as "load allocations" (LAs). The allocations for point sources, known as "waste load allocations" (WLAs), are implemented through effluent limitations in NPDES permits. Effluent limitations for point sources must be consistent with applicable TMDL allocations.

Boise River

In January 2000, the EPA approved the *Lower Boise River TMDL: Subbasin Assessment, Total Maximum Daily Loads* ("Lower Boise River TMDL"). The Lower Boise River TMDL included wasteload allocations for TSS and bacteria for City of Meridian facility (IDEQ 1999).

On April 15, 2014, IDEQ granted a portion of the Lower Boise River TMDL's reserve for growth allocation to the City of Meridian. Specifically, IDEQ revised Table 15 of the *Sediment and Bacteria Allocation Addendum to the Lower Boise River TMDL* (IDEQ 2008) to allow Meridian an average monthly allocation of 2,550 lb/day and an average weekly allocation of 3,820 lb/day.

The permit includes water quality-based effluent limits for TSS and bacteria that are consistent with the revised wasteload allocations in the TMDL.

In addition to bacteria and sediment, the State of Idaho's 2012 Integrated Report Section 5 (the 303(d) list) lists the segment of the Boise River from River Mile 50 to the Star bridge as not supporting uses due to temperature, and the integrated report lists the segments of the Boise River from Middleton to Indian Creek and from Indian Creek to the mouth as impaired for temperature and total phosphorus (TP). IDEQ has completed a draft TMDL for TP, and the draft permit proposes effluent limits consistent with the assumptions and requirements of the WLAs in the draft TP TMDL. See Appendix F for more details about the proposed TP limits.

No TMDL has been completed for temperature. However, the EPA must nonetheless evaluate whether water quality-based effluent limits are necessary for temperature under CWA regulations at 40 CFR 122.44(d)(1)(i – iii), and assure that any such effluent limits are derived from and comply with applicable water quality standards (40 CFR 122.44(d)(1)(vii)(A)).

At this time, the EPA does not have sufficient data to determine whether or not the City of Meridian's discharge of heat to Fivemile Creek or the Boise River has the reasonable potential to cause or contribute to excursions above water quality standards for temperature in the receiving waters. The permit proposes continuous monitoring of the effluent and the receiving waters, for temperature.

Fivemile Creek

The State of Idaho's 2012 Integrated Report Section 5 (the 303(d) list) lists the segment of Fivemile Creek to which the City of Meridian discharges as being impaired due to chlorpyrifos, Escherichia coli, sedimentation and siltation, and an unknown cause (with nutrients suspected).

Although the *Lower Boise River TMDL* established load and wasteload allocations for sediment and bacteria for the City of Meridian, these allocations were developed to protect water quality in the Boise River as opposed to Fivemile Creek.

In April 2015, IDEQ issued the draft *Lower Boise River TMDL: 2015 Addendum*, addressing sediment and bacteria in tributaries to the Boise River, including Fivemile Creek. This draft TMDL proposed wasteload allocations for sediment and bacteria for the City of Meridian's discharge to Fivemile Creek. The proposed WLAs for the City of Meridian are in Table 26, on Page 47 of the draft *Lower Boise River TMDL: 2015 Addendum.* In addition, the State of Idaho's draft CWA §401 certification, states that IDEQ expects that the WLAs will be incorporated into the draft NPDES permit. The draft permit proposes effluent limits for TSS and E. coli that are consistent with the assumptions and requirements of the draft WLAs in the draft *Lower Boise River TMDL: 2015 Addendum*.

Regarding the impairment with an unknown cause, with nutrients suspected, as stated above, IDEQ has completed a draft TMDL for TP, for the Lower Boise River and the draft permit proposes effluent limits consistent with the assumptions and requirements of the WLAs in the draft TP TMDL. The EPA believes these effluent limits will protect water quality in Fivemile Creek as well as the Boise River. See Appendix F for more details about the proposed TP limits.

Chlorpyrifos is an organophosphate insecticide, acaricide and miticide used to control foliage and soil-borne insect pests on a variety of food and feed crops. Chlorpyrifos has not been tested for in the City of Meridian's effluent. The draft permit proposes twice-per-year effluent monitoring for chlorpyrifos at outfall 001. These effluent data will be used to determine if the City of Meridian's discharge of chlorpyrifos (if any) has the reasonable potential to cause or contribute to excursions above water quality standards in Fivemile Creek.

IV. Effluent Limitations

A. Basis for Effluent Limitations

In general, the CWA requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards applicable to a waterbody are being met and may be more stringent than technology-based effluent limits. The basis for the effluent limits proposed in the draft permit is provided in Appendix D.

B. Proposed Effluent Limitations

The following summarizes the proposed effluent limits that are in the draft permit.

1. The permittee must not discharge floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses.
2. Removal Requirements for BOD_5 and TSS: The monthly average effluent concentration must not exceed 15 percent of the monthly average influent concentration. Percent removal of BOD_5 and TSS must be reported on the Discharge Monitoring Reports (DMRs). For each parameter, the monthly average percent removal must be calculated from the arithmetic mean of the influent values and the

arithmetic mean of the effluent values for that month. Influent and effluent samples must be taken over approximately the same time period.

Tables 3 – 5, below, present the proposed effluent limits.

Table 3: Proposed Combined Loading Effluent Limits for Outfalls 001 (Fivemile Creek) and 002 (Boise River)

Parameter	Units	Effluent Limits[1]	
		Average Monthly Limit	Average Weekly Limit
Five-Day Biochemical Oxygen Demand (BOD_5)	lb/day	2,552	3,828
Total Suspended Solids (TSS)	lb/day	2,550	3,820
Total Phosphorus as P (May – September)	lb/day	8.5	20
Total Phosphorus as P (October – April)	lb/day	29.8	70.0

Notes:
1. The combined loading from outfalls 001 and 002 must not exceed these limits.

Table 4: Proposed Effluent Limits for Outfall 001 (Fivemile Creek)

Parameter	Units	Effluent Limits		
		Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit
Five-Day Biochemical Oxygen Demand (BOD_5)	mg/L	20	30	—
	lb/day	1,701	2,552	—
	% Removal	85% (min.)	—	—
Total Suspended Solids (TSS)	mg/L	30	45	—
	mg/L	4-month rolling average: 17.5		
	lb/day	4-month rolling average: 1489		
	% Removal	85% (min.)	—	—
pH	s.u.	6.5 – 9.0		
E. coli	#/100 ml	126 (geometric mean)	—	576 (instantaneous maximum)
Total Ammonia as N (October – April)	mg/L	0.307	—	1.25
	lb/day	26.1	—	106
Total Ammonia as N (May – September)	mg/L	0.405	—	1.65
	lb/day	34.4	—	140
Dissolved Oxygen	mg/L	6.0 minimum		
Bis (2-Ethylhexyl) Phthalate	µg/L	2.55	7.20	—
	lb/day	0.217	0.612	—
Copper, Total Recoverable (October – April)	µg/L	11.9	—	18.5
	lb/day	1.01	—	1.57
Copper, Total Recoverable (May – September)	µg/L	8.22	—	12.8
	lb/day	0.699	—	1.09
Cyanide, Weak Acid Dissociable (October – April)	µg/L	3.23	—	9.62
	lb/day	0.275	—	0.818
Cyanide, Weak Acid Dissociable (May – September)	µg/L	4.95	—	14.8
	lb/day	0.421	—	1.26

Table 4: Proposed Effluent Limits for Outfall 001 (Fivemile Creek)				
Parameter	**Units**	**Effluent Limits**		
		Average Monthly Limit	**Average Weekly Limit**	**Maximum Daily Limit**
Mercury, Total (October – April)	µg/L	0.010	—	0.022
	lb/day	0.00085	—	0.00019
Mercury, Total (May – September)	µg/L	0.015	—	0.033
	lb/day	0.0013	—	0.0028
Zinc, Total Recoverable (May – September)	µg/L	60.4	—	70.9
	lb/day	5.14	—	6.03

Table 5: Proposed Effluent Limits for Outfall 002 (Boise River)				
Parameter	**Units**	**Effluent Limits**		
		Average Monthly Limit	**Average Weekly Limit**	**Maximum Daily Limit**
Five-Day Biochemical Oxygen Demand (BOD_5)	mg/L	30	45	—
	lb/day	2,552	3,828	—
	% Removal	85% (min.)	—	—
Total Suspended Solids (TSS)	mg/L	30	45	—
	% Removal	85% (min.)	—	—
pH	s.u.	6.5 – 9.0		
E. coli	#/100 ml	126 (geometric mean)	—	406 (instantaneous maximum)
Total Ammonia as N (November – June)	mg/L	0.255	—	1.04
	lb/day	21.7	—	88.5
Total Ammonia as N (July – October)	mg/L	0.242	—	1.06
	lb/day	20.6	—	90.2
Dissolved Oxygen	mg/L	6.0 minimum		
	% saturation	75% minimum		
Bis(2-Ethylhexyl)Phthalate	µg/L	9.20	26.0	—
	lb/day	0.783	2.21	—
Cyanide, Weak Acid Dissociable (November – June)	µg/L	6.47	—	19.3
	lb/day	0.550	—	1.64
Cyanide, Weak Acid Dissociable (July – October)	µg/L	8.90	—	26.5
	lb/day	0.757	—	2.25
Mercury, Total (November – June)	µg/L	0.019	—	0.043
	lb/day	0.0016	—	0.0037
Mercury, Total (July – October)	µg/L	0.026	—	0.060
	lb/day	0.0022	—	0.0051

C. Schedules of Compliance

Schedules of compliance are authorized by federal NPDES regulations at 40 CFR 122.47 and by Section 400.03 of the Idaho Water Quality Standards. The Idaho water quality standards allow for compliance schedules "when new limitations are in the permit for the first time." The federal regulation allows schedules of compliance "when appropriate," and requires that such schedules require compliance as soon as possible. When the compliance schedule is longer than 1 year, federal regulations require that the schedule shall set forth interim requirements and the dates for their achievement. The time between the interim dates shall

generally not exceed 1 year, and when the time necessary to complete any interim requirement is more than one year, the schedule shall require reports on progress toward completion of these interim requirements. Federal regulations also generally require that interim effluent limits be at least as stringent as the final limits in the previous permit (40 CFR 122.44(l)(1)).

EPA policy states that, in order to grant a compliance schedule, a permitting authority must make a reasonable finding that the permittee cannot comply with the effluent limit immediately upon the effective date of the final permit (see the *US EPA NPDES Permit Writers' Manual* at Section 9.1.3). Some of the proposed effluent limits for total suspended solids, ammonia, bis (2-ethylhexyl) phthalate, copper, cyanide, mercury, phosphorus, and zinc are new limits that are in the permit for the first time. The EPA has evaluated the City of Meridian's effluent data to determine whether the City could consistently comply with the new water quality-based effluent limits in the draft permit. Table 6, below, summarizes the results of this evaluation.

Table 6: Immediate Achievability of New Water Quality-based Effluent Limits

Parameter	Outfall	Season	Achievable Immediately?
Total Suspended Solids (lb/day)	001 & 002	Year-Round	Yes
Total Suspended Solids (mg/L)	001	Year-Round	Yes
Ammonia	001	October – April	No
		May – September	No
	002	November – June	No
		July – October	No
Bis-2-ethylhexyl-phthalate	001	Year-round	No
	002	Year-round	No
Copper	001	October – April	No
		May – September	No
Cyanide	001	October – April	No
		May – September	No
	002	November – June	No
		July – October	No
Mercury	001	October – April	No
		May – September	Yes
	002	November – June	Yes
		July – October	Yes
Phosphorus	001 & 002	May – September	No
Phosphorus	001 & 002	October – April	No
Zinc	001	May – September	No

In its draft Clean Water Act Section 401 certification, the State of Idaho proposed to authorize compliance schedules for all of the effluent limits listed in Table 6, above, that the City could not comply with immediately. Consistent with federal regulations (40 CFR 122.47(a)(3)), the schedules of compliance include interim milestones and reports of progress. The State of Idaho also specified interim limits for phosphorus and ammonia, which apply during the terms of the compliance schedules.

D. Basis for Less-Stringent Effluent Limits

Flow

The draft permit proposes remove the 7.0 mgd flow limit that was in the 1999 permit. The prior permit's flow limit was based on the planned design flow of the POTW at the time the prior permit was issued (see the 1999 fact sheet at Pages 4 and C-2).

According to Section 7.2.2 of the *US EPA NPDES Permit Writers' Manual*, for permit conditions other than effluent limitations based on State standards, the permit writer should apply the anti-backsliding provisions in 40 CFR 122.44(l). This regulation states that the reissued permit's effluent limits must be at least as stringent as the final effluent limits in the previous permit, "unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute cause for permit modification or revocation and reissuance under 40 CFR 122.62." Material and substantial alterations or additions to the permitted facility or activity are cause for permit modification (40 CFR 122.62(a)(1)). The physical expansion of the POTW such that it has a larger design flow is a material and substantial alteration. Therefore, the 7.0 mgd flow limit from the 1999 permit may be revised.

The EPA does not typically establish effluent flow limits for POTWs. Rather, the EPA typically establishes effluent limits for both concentration and mass, consistent with 40 CFR 122.45(f). Therefore, the EPA has replaced the flow limit with effluent limits for mass, for all pollutants except those which cannot be expressed as mass, such as pH and E. coli. Note that the 1999 permit did not include any effluent limits for mass.

In general, the proposed mass effluent limits are calculated from the concentration limits, based on the design flow of the POTW, consistent with 40 CFR 122.45(b)(1). While the proposed permit does not limit the effluent flow, the mass limits, which are calculated based on the design flow, control the total loading of pollutants to the receiving waters. If effluent flows increase above the design flow, then the permittee must achieve effluent concentrations lower than the concentration effluent limits, in order to maintain compliance with the effluent loading limits. The mass limits will thus ensure that the discharge will not cause or contribute to excursions above water quality standards, even if the effluent flow increases above 10.2 mgd.

BOD_5 Limits for Fivemile Creek

The draft permit proposes less-stringent effluent limits BOD_5, for Fivemile Creek (outfall 001), relative to the prior permit.

The EPA has determined, based on receiving water data for temperature, dissolved oxygen, BOD_5 and flow collected by the City as required by its 1999 permit, that the prior permit's effluent limits for BOD_5, for dilution ratios greater than or equal to 4:1, will ensure compliance with water quality criteria for DO in Fivemile Creek, even if the dilution ratio is less than 4:1. Therefore, the draft permit proposes that the prior permit's effluent limits for BOD_5, for Fivemile Creek, for dilution ratios greater than or equal to 4:1, shall apply at all times, regardless of the dilution ratio.

The BOD_5 effluent limits for Fivemile Creek in the prior permit were water quality-based effluent limits. According to Section 7.2.2 of the *US EPA NPDES Permit Writers' Manual*,

for effluent limitations based on State standards, the permit writer should apply the anti-backsliding provisions of Clean Water Act Sections 303(d)(4) and 402(o). One of the exceptions to the general prohibition on less-stringent effluent limits is that water quality-based effluent limits may be revised if the revised effluent limits are subject to and consistent with the State's antidegradation policy (CWA Section 303(d)(4)(B)). The State of Idaho has determined that the revised effluent limits for BOD_5 are consistent with its antidegradation policy. Because the revised limits ensure compliance with water quality criteria and with the State's antidegradation policy, the revised limits ensure compliance with Idaho's water quality standards and therefore with Section 402(o)(3) of the CWA.

V. Monitoring Requirements

A. Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality.

The permit also requires the permittee to perform effluent monitoring required by parts B.6 and D of the NPDES Form 2A application, so that these data will be available when the permittee applies for a renewal of its NPDES permit.

The permittee is responsible for conducting the monitoring and for reporting results on DMRs or on the application for renewal, as appropriate, to the EPA.

B. Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples must be used for averaging if they are conducted using the EPA-approved test methods (generally found in 40 CFR 136) or as specified in the permit.

Tables 7, 8, and 9, below, present the proposed influent and effluent monitoring requirements for the City of Meridian. For effluent monitoring, the sampling location must be after the last treatment unit and prior to discharge to the receiving water. The samples must be representative of the volume and nature of the monitored discharge. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

Table 7: Effluent Monitoring Requirements for Outfall 001

Parameter	Units	Sample Frequency	Sample Type
Flow	mgd	Continuous	recording
Temperature	°C	Continuous	recording
BOD_5	mg/L	2/week	24-hour composite
	lb/day		calculation[1]
	% removal	1/month	calculation[2]
TSS	mg/L	2/week	24-hour composite
	lb/day		calculation[1]
	% removal	1/month	calculation[2]

Table 7: Effluent Monitoring Requirements for Outfall 001			
Parameter	**Units**	**Sample Frequency**	**Sample Type**
pH	standard units	5/week	grab
Dissolved Oxygen	mg/L	5/week	grab
E. Coli	#/100 ml	10/month	grab
Total Phosphorus as P	mg/L	2/week	24-hour composite
	lb/day		calculation[1]
Total Ammonia as N	mg/L	5/week	24-hour composite
	lb/day		calculation[1]
Bis (2-Ethylhexyl) Phthalate	mg/L	1/month	24-hour composite
	lb/day		calculation[1]
Copper, total recoverable	µg/L	1/month	24-hour composite
	lb/day		calculation[1]
Cyanide, weak acid dissociable	µg/L	1/month	24-hour composite
	lb/day		calculation[1]
Mercury, Total	µg/L	1/month	24-hour composite
	lb/day		calculation[1]
Zinc, total recoverable (May – September)	µg/L	1/month	24-hour composite
	lb/day		calculation[1]
Zinc, total recoverable (October – April)	µg/L	1/month	24-hour composite
Dissolved Orthophosphate as P	mg/L	1/month	24-hour composite
Nitrate + Nitrite	mg/L	1/month	24-hour composite
Total Kjeldahl Nitrogen	mg/L	1/month	24-hour composite
Arsenic, total	µg/L	2/year	24-hour composite
Cadmium, total recoverable	µg/L	2/year	24-hour composite
Chlorpyrifos	µg/L	2/year	24-hour composite
Chromium, total	µg/L	2/year	24-hour composite
Chromium VI, dissolved	µg/L	2/year	24-hour composite
Conductivity	µmhos/ cm	1/month	24-hour composite
Dissolved Organic Carbon	mg/L	1/month	24-hour composite
Hardness	mg/L as $CaCO_3$	1/month	24-hour composite
Lead, total recoverable	µg/L	2/year	24-hour composite
Nickel, total recoverable	µg/L	2/year	24-hour composite
Selenium	µg/L	2/year	24-hour composite
Silver, total recoverable	µg/L	2/year	24-hour composite
Whole Effluent Toxicity	TU_c	2/year	24-hour composite
NPDES Application Form 2A Expanded Effluent Testing	—	3x/5 years	—

Table 8: Effluent Monitoring Requirements for Outfall 002			
Parameter	**Units**	**Sample Frequency**	**Sample Type**
Flow	mgd	Continuous	recording
Temperature	°C	Continuous	recording
BOD_5	mg/L	2/week	24-hour composite
	lb/day		calculation[1]
	% removal	1/month	calculation[2]
TSS	mg/L	2/week	24-hour composite

Table 8: Effluent Monitoring Requirements for Outfall 002			
Parameter	**Units**	**Sample Frequency**	**Sample Type**
	lb/day		calculation[1]
	% removal	1/month	calculation[2]
pH	standard units	5/week	grab
Dissolved Oxygen	mg/L	continuous	recording
	% saturation		
E. Coli	#/100 ml	10/month	grab
Total Phosphorus as P	mg/L	2/week	24-hour composite
	lb/day		calculation[1]
Total Ammonia as N	mg/L	5/week	24-hour composite
	lb/day		calculation[1]
Bis (2-Ethylhexyl) Phthalate	mg/L	1/month	24-hour composite
	lb/day		calculation[1]
Copper, total recoverable	µg/L	2/year	24-hour composite
Cyanide, weak acid dissociable	µg/L	1/month	24-hour composite
	lb/day		calculation[1]
Mercury, Total	µg/L	1/month	24-hour composite
	lb/day		calculation[1]
Dissolved Orthophosphate as P	mg/L	1/month	24-hour composite
Nitrate + Nitrite	mg/L	1/month	24-hour composite
Total Kjeldahl Nitrogen	mg/L	1/month	24-hour composite
Arsenic	µg/L	2/year	24-hour composite
Cadmium, total recoverable	µg/L	2/year	24-hour composite
Chromium, total	µg/L	2/year	24-hour composite
Chromium VI, dissolved	µg/L	2/year	24-hour composite
Conductivity	µmhos/ cm	1/month	24-hour composite
Dissolved Organic Carbon	mg/L	1/month	24-hour composite
Hardness	mg/L as $CaCO_3$	1/month	24-hour composite
Lead, total recoverable	µg/L	2/year	24-hour composite
Nickel, total recoverable	µg/L	2/year	24-hour composite
Selenium	µg/L	2/year	24-hour composite
Silver, total recoverable	µg/L	2/year	24-hour composite
Whole Effluent Toxicity	TU_c	2/year	24-hour composite
Zinc, total recoverable	µg/L	2/year	24-hour composite
NPDES Application Form 2A Expanded Effluent Testing	—	3x/5 years	—

Table 9: Influent Monitoring Requirements				
Parameter	**Units**	**Sample Location**	**Sample Frequency**	**Sample Type**
BOD_5	mg/L	Influent	2/week	24-hour composite
TSS	mg/L	Influent	2/week	24-hour composite
Total Phosphorus as P	mg/L	Influent	1/month	24-hour composite
Bis (2-Ethylhexyl) Phthalate	µg/L	Influent	2/year	24-hour composite
Copper, total recoverable	µg/L	Influent	2/year	24-hour composite
Cyanide, weak acid dissociable	µg/L	Influent	2/year	24-hour composite
Mercury, total	µg/L	Influent	2/year	24-hour composite

Table 9: Influent Monitoring Requirements				
Parameter	**Units**	**Sample Location**	**Sample Frequency**	**Sample Type**
Zinc, total recoverable	µg/L	Influent	2/year	24-hour composite

Monitoring Changes from the Previous Permit

The draft permit proposes more frequent effluent monitoring for ammonia, bis-2-ethylhexyl phthalate, copper (for Outfall 001), cyanide, mercury, and zinc (for Outfall 001), in order to determine compliance with the new water quality-based effluent limits for these pollutants.

The prior permit had required monitoring of fecal coliform and E. coli five times per week. The fecal coliform limits and monitoring requirements in the prior permit have been replaced with effluent limits and monitoring requirements for E. coli. The Idaho WQS state that "waters designated for primary or secondary contact recreation are not to contain E. coli bacteria in concentrations exceeding a geometric mean of one hundred twenty-six (126) E. coli organisms per one hundred (100) ml based on a minimum of five (5) samples taken every three (3) to seven (7) days over a thirty (30) day period" (IDAPA 58.01.02.251.01.a). Sampling E. coli at a frequency of five times per week would require samples to be taken more frequently than once every three days. Therefore, the EPA has changed the E. coli sampling frequency to ten per month, which allows sampling at a frequency consistent with the WQS.

The draft permit proposes effluent monitoring for dissolved orthophosphate as P, nitrate+nitrite, total Kjeldahl nitrogen, arsenic, cadmium, chlorpyrifos, chromium, lead, nickel, selenium, and silver. All of these pollutants can be present in effluents from POTWs, and arsenic, lead, nickel, nitrate + nitrite, phosphorus, and silver have been measured in the City's effluent. Monitoring of these pollutants is necessary to characterize the effluent to determine if the discharge of any of these pollutants has the reasonable potential to cause or contribute to excursions above water quality standards, and whether effluent limits are therefore required.

The draft permit proposes effluent monitoring for chlorpyrifos (an organophosphate pesticide) for outfall 001, because the aquatic life uses of Fivemile creek are impaired due to chlorpyrifos. Effluent monitoring is necessary to determine if the discharge has the reasonable potential to cause or contribute to excursions above water quality standards for chlorpyrifos.

Continuous effluent monitoring for temperature is required in order to determine if the City of Meridian's discharge of heat has the reasonable potential to cause or contribute to excursions above water quality standards for temperature. The applicable water quality criteria for temperature, are stated as maximum allowable daily average, daily maximum and weekly maximum temperatures. Continuous monitoring for temperature will allow for accurate calculation of these statistics for the discharge.

Monitoring for conductivity and dissolved organic carbon is required so that, if the State of Idaho were to adopt water quality criteria for copper based on the biotic ligand model consistent with EPA recommendations, water quality criteria for copper can be evaluated.

C. Surface Water Monitoring

Tables 10 and 11, below, present the proposed surface water monitoring requirements for the draft permit for Fivemile Creek and the Boise River. Surface water monitoring results must be reported on the DMR. Downstream monitoring is required only if the City is discharging from the associated outfall at the time the upstream sample is taken.

Monitoring for conductivity and dissolved organic carbon is required so that, if the State of Idaho were to adopt water quality criteria for copper based on the biotic ligand model consistent with EPA recommendations, water quality criteria for copper can be evaluated.

Fivemile Creek

The EPA has decided not to repeat required receiving water monitoring for cadmium and cyanide in Fivemile Creek. All of the upstream results for these parameters submitted with the 2004 application were less than the quantification limits. Therefore, continued receiving water monitoring for cadmium and cyanide is unlikely to yield meaningful data.

Table 10: Surface Water Monitoring Requirements – Fivemile Creek

Parameter	Upstream Sampling Frequency	Downstream Sampling Frequency
Flow, CFS	1/week	—
BOD_5, mg/L	1/month	—
Dissolved Oxygen, mg/L	1/month	—
Ammonia, mg/L	1/quarter	—
Total Phosphorus, mg/L	1/month	1/month
Total Nitrogen, mg/L	1/month	1/month
Chlorophyll a	1/month	1/month
Temperature, °C	Continuous	Continuous
pH, standard units	1/month	1/month
Turbidity, NTU	1/month	1/month
Hardness as $CaCO_3$, mg/L	—	1/month
Arsenic, total, µg/L	1/quarter	—
Chromium, all oxidation states, dissolved, µg/L	1/quarter	—
Chromium VI, dissolved	1/quarter	—
Conductivity, µmhos/cm	—	1/quarter
Copper, dissolved µg/L	1/quarter	—
Dissolved organic carbon, mg/L	—	1/quarter
Lead, dissolved µg/L	1/quarter	—
Mercury, total µg/L	1/quarter	1/quarter
Nickel, dissolved µg/L	1/quarter	—
Silver, dissolved µg/L	1/quarter	—
Zinc, dissolved µg/L	1/quarter	—

Boise River

The EPA has decided not to repeat required receiving water monitoring for cadmium, chromium, and silver in the Boise River. All of the upstream results for these parameters submitted with the 2004 application were less than the quantification limits. Therefore,

continued receiving water monitoring for cadmium, chromium and silver would be unlikely to yield meaningful data.

Continuous monitoring for dissolved oxygen concentration and percent of saturation is required in order to determine compliance with the site-specific water quality criteria for dissolved oxygen concentration and saturation in the Boise River downstream of Veterans Park (IDAPA 58.01.02.278.01).

Table 11: Surface Water Monitoring Requirements – Boise River

Parameter	Upstream Sampling Frequency	Downstream Sampling Frequency
BOD_5, mg/L	1/month	—
Dissolved Oxygen, mg/L	Continuous[1]	Continuous[1]
Dissolved Oxygen, % Sat.	Continuous[1]	Continuous[1]
Ammonia, mg/L	1/month	—
Total Phosphorus, mg/L	1/month	1/month
Total Nitrogen, mg/L	1/month	1/month
Chlorophyll a	1/month	1/month
Temperature, °C	Continuous	Continuous
pH, standard units	1/month	1/month
Turbidity, NTU	1/month	1/month
Hardness as $CaCO_3$, mg/L	—	1/month
Arsenic, total, µg/L	1/quarter	—
Conductivity, µmhos/cm	—	1/quarter
Copper, dissolved µg/L	1/quarter	—
Dissolved organic carbon, mg/L	—	1/quarter
Lead, dissolved µg/L	1/quarter	—
Mercury, total µg/L	1/quarter	1/quarter
Nickel, dissolved µg/L	1/quarter	—
Zinc, dissolved µg/L	1/quarter	—

Notes:
1. Continuous monitoring of dissolved oxygen is required for the final full calendar year of the effective period of the permit.

D. Monitoring and Reporting

The draft permit includes new provisions to require the permittee to submit DMR data electronically using NetDMR within six months of the effective date of the final permit. NetDMR is a national web-based tool that allows DMR data to be submitted electronically via a secure Internet application. NetDMR allows participants to discontinue mailing in paper forms under 40 CFR § 122.41 and § 403.12. The permittee may use NetDMR after requesting and receiving permission from the EPA Region 10.

Under NetDMR, reports required under the permit may be submitted to the EPA as electronic attachments to the DMRs. Once a permittee begins submitting reports using NetDMR, it is no longer required to submit paper copies of DMRs or most other reports to the EPA and IDEQ. However, because of their due dates, some reports must be submitted separately from the electronic DMRs.

The EPA currently conducts free training on the use of NetDMR. Further information about NetDMR, including upcoming trainings and contacts, is provided on the following website: www.EPA.gov/netdmr.

VI. Sludge (Biosolids) Requirements

The EPA Region 10 separates wastewater and sludge permitting. The EPA has authority under the CWA to issue separate sludge-only permits for the purposes of regulating biosolids. The EPA may issue a sludge-only permit to each facility at a later date, as appropriate.

Until future issuance of a sludge-only permit, sludge management and disposal activities at each facility continue to be subject to the national sewage sludge standards at 40 CFR Part 503 and any requirements of the State's biosolids program. The Part 503 regulations are self-implementing, which means that facilities must comply with them whether or not a permit has been issued.

VII. Other Permit Conditions

A. Mercury Minimization Plan

As explained in Appendix E, the City's discharge has the reasonable potential to cause or contribute to excursions above aquatic life water quality criteria for mercury in the water column. The proposed numeric water quality-based effluent limits for mercury in the draft permit are derived from and ensure compliance with the aquatic life criteria.

In addition to the numeric effluent limits for mercury based upon the aquatic life criteria for mercury in the water column, the draft permit proposes to require the City to develop and implement a mercury minimization plan (MMP). The objective of the plan is to identify potential sources of mercury loading to the POTW, and, in turn, the receiving water, in an effort to attain compliance with the State of Idaho's human health criterion for mercury in fish tissue (0.3 mg/kg).

On July 2, 2012, the Idaho Department of Health and Welfare issued a fish advisory for catfish caught from the lower Boise River, because of levels of mercury that could be dangerous to developing babies, children, and the general public, if eaten too often. In addition, the Snake River, in the Middle Snake-Payette watershed, downstream from the Boise River, is 303(d) listed in the State of Oregon's 2010 integrated report as being impaired for mercury due to high concentrations of mercury in fish tissue.

Quantifiable concentrations of mercury have been measured in the City's discharge. The EPA's *Guidance for Implementing the January 2001 Methylmercury Water Quality Criterion* ("EPA Methylmercury Guidance") recommends that, when there is a quantifiable discharge of mercury from a point source, and the concentration of methylmercury in fish tissue from the receiving water exceeds or is close to the criterion, the permitting authority should find that the discharge has the reasonable potential to cause or contribute to excursions above the fish tissue criterion. If there is no TMDL for mercury for the receiving water and it is not feasible to translate the fish tissue criterion to a water column concentration, the EPA Methylmercury Guidance recommends a permit requirement to develop and implement an

MMP, as well as effluent monitoring using a sufficiently sensitive analytical method to determine if the MMP is effective.

The State of Idaho has also published guidance for the implementation of its methylmercury fish tissue criterion, the *Implementation Guidance for the Idaho Mercury Water Quality Criteria* ("Idaho Mercury Guidance"). According to the Idaho Mercury Guidance, a source that has the reasonable potential to cause or contribute to an excursion above the fish tissue criterion or that has been assigned a mercury WLA in a TMDL is a "significant source." As explained above, the City's discharge has the reasonable potential to cause or contribute to an excursion above the fish tissue criterion, according to the EPA Methylmercury Guidance. Furthermore, the Idaho Mercury Guidance states that, prior to the development of a TMDL for mercury, "permit conditions for major and minor NPDES dischargers can parallel 'significant' or 'de minimis' requirements, respectively" (see Table 6-1, Page 92). That is to say, major NPDES discharges that discharge mercury are generally considered "significant" and have the reasonable potential to cause or contribute to excursions above WQS. The recommended permit conditions for significant municipal sources include mandatory best management practices (BMPs) and both effluent and fish tissue monitoring requirements.

The Idaho Mercury Guidance also recommends a no net increase requirement for mercury, for sources that have reasonable potential to cause or contribute to excursions above the fish tissue criterion (Section 6.3.1). However, in this case, the EPA believes that the numeric effluent limits for mercury, which are based on the aquatic life water quality criteria that are in effect for Clean Water Act purposes in Idaho, will ensure that there is no increase in mercury discharges from the facility. Therefore, the draft permit does not propose a no net increase provision.

The Idaho Mercury Guidance recommends an effluent monitoring frequency of quarterly until 12 samples are collected, and then semi-annually thereafter. However, in this case, numeric water quality-based effluent limits for mercury are necessary in order to ensure compliance with the aquatic life water quality criteria that are in effect for Clean Water Act purposes in Idaho, and more frequent (i.e., monthly) monitoring is necessary to determine compliance with these limits.

Consistent with the recommendations in the EPA Methylmercury Guidance and the Idaho Mercury Guidance, the EPA has proposed to require that effluent monitoring for mercury use sufficiently sensitive analytical methods. Furthermore, consistent with the recommendations of the Idaho Mercury Guidance, the draft permit proposes to require monitoring of fish tissue concentrations in the receiving water.

B. Quality Assurance Plan

The federal regulation at 40 CFR 122.41(e) requires the permittee to develop procedures to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. The City of Meridian is required to update the Quality Assurance Plan for the wastewater treatment plant within 90 days of the effective date of the final permit. The Quality Assurance Plan must include standard operating procedures the permittee will follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting. The plan must be retained on site and be made available to the EPA and the IDEQ upon request.

C. Operation and Maintenance Plan

The permit requires the City of Meridian to properly operate and maintain all facilities and systems of treatment and control. Proper operation and maintenance is essential to meeting discharge limits, monitoring requirements, and all other permit requirements at all times. The permittee is required to develop and implement an operation and maintenance plan for their facility within 90 days of the effective date of the final permit. The plan must be retained on site and made available to the EPA and the IDEQ upon request.

D. Emergency Response and Public Notification Plan for Sanitary Sewer Overflows and Proper Operation and Maintenance of the Collection System

Untreated or partially treated discharges from separate sanitary sewer systems are referred to as sanitary sewer overflows (SSOs). SSOs may present serious risks of human exposure when released to certain areas, such as streets, private property, basements, and receiving waters used for drinking water, fishing and shellfishing, or contact recreation. Untreated sewage contains pathogens and other pollutants, which are toxic. SSOs are not authorized under this permit. Pursuant to the NPDES regulations, discharges from separate sanitary sewer systems authorized by NPDES permits must meet effluent limitations that are based upon secondary treatment. Further, discharges must meet any more stringent effluent limitations that are established to meet the EPA-approved state water quality standards.

The permit contains language to address SSO reporting and public notice and operation and maintenance of the collection system. The permit requires that the permittee identify SSO occurrences and their causes. In addition, the permit establishes reporting, record keeping and third party notification of SSOs. Finally, the permit requires proper operation and maintenance of the collection system. The following specific permit conditions apply:

Immediate Reporting – The permittee is required to notify the EPA of an SSO within 24 hours of the time the permittee becomes aware of the overflow. (See 40 CFR 122.41(l)(6))

Written Reports – The permittee is required to provide the EPA a written report within five days of the time it became aware of any overflow that is subject to the immediate reporting provision. (See 40 CFR 122.41(l)(6)(i)).

Third Party Notice – The permit requires that the permittee establish a process to notify specified third parties of SSOs that may endanger health due to a likelihood of human exposure; or unanticipated bypass and upset that exceeds any effluent limitation in the permit or that may endanger health due to a likelihood of human exposure. The permittee is required to develop, in consultation with appropriate authorities at the local, county, tribal and/or state level, a plan that describes how, under various overflow (and unanticipated bypass and upset) scenarios, the public, as well as other entities, would be notified of overflows that may endanger health. The plan should identify all overflows that would be reported and to whom, and the specific information that would be reported. The plan should include a description of lines of communication and the identities of responsible officials. (See 40 CFR 122.41(l)(6)).

Record Keeping – The permittee is required to keep records of SSOs. The permittee must retain the reports submitted to the EPA and other appropriate reports that could include work orders associated with investigation of system problems related to a SSO, that describes the

steps taken or planned to reduce, eliminate, and prevent reoccurrence of the SSO. (See 40 CFR 122.41(j)).

Proper Operation and Maintenance – The permit requires proper operation and maintenance of the collection system. (See 40 CFR 122.41(d) and (e)). SSOs may be indicative of improper operation and maintenance of the collection system. The permittee may consider the development and implementation of a capacity, management, operation and maintenance (CMOM) program.

The permittee may refer to the Guide for Evaluating Capacity, Management, Operation, and Maintenance (CMOM) Programs at Sanitary Sewer Collection Systems (EPA 305-B-05-002). This guide identifies some of the criteria used by the EPA inspectors to evaluate a collection system's management, operation and maintenance program activities. Owners/operators can review their own systems against the checklist (Chapter 3) to reduce the occurrence of sewer overflows and improve or maintain compliance.

E. Industrial Waste Management Requirements

The EPA implements and enforces the National Pretreatment Program regulations of 40 CFR 403, per authority from sections 204(b)(1)(C), 208(b)(2)(C)(iii), 301(b)(1)(A)(ii), 301(b)(2)(A)(ii), 301(h)(5) and 301(i)(2), 304(e) and (g), 307, 308, 309, 402(b, 405, and 501(a) of the Federal Water Pollutant Control Act as amended by the CWA of 1977. Because Idaho does not have an approved state pretreatment program per 40 CFR 403.10, EPA is the Approval Authority for Idaho POTWs. Because the City does not have an approved POTW pretreatment program per 40 CFR 403.8, the EPA is also the Control Authority of industrial users that might introduce pollutants into the wastewater treatment plant.

Per 40 CFR 122.44(j)(1), all POTWs need to identify, in terms of character and volume of pollutants, any significant industrial users (SIUs) discharging into the POTW. This condition is included as Special Condition II.D.1 of the draft permit with a due date 180 days following the effective date of the permit.

Since the City does not have an approved pretreatment program, Special Conditions II.D.2 and 3 of the permit reminds the City that it cannot authorize discharges which may violate the national specific prohibitions of the General Pretreatment Program, which are applicable to all industrial users introducing pollutants into a publicly owned treatment works (40 CFR 403.5(b)).

F. Standard Permit Provisions

Sections III, IV and V of the draft permit contain standard regulatory language that must be included in all NPDES permits. Because these requirements are based directly on NPDES regulations, they cannot be challenged in the context of an NPDES permit action. The standard regulatory language covers requirements such as monitoring, recording, and reporting requirements, compliance responsibilities, and other general requirements.

VIII. Other Legal Requirements

A. Endangered Species Act

The Endangered Species Act requires federal agencies to consult with National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species. A review of the threatened and endangered species located in Idaho finds that there are no threatened or endangered species in the vicinity of the City of Meridian's discharge. Therefore the issuance of this permit will have no effect on any threatened or endangered species, and consultation is not required for this action.

B. Essential Fish Habitat

Essential fish habitat (EFH) is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires the EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect EFH (i.e., reduce quality and/or quantity of EFH).

The EFH regulations define an adverse effect as any impact which reduces quality and/or quantity of EFH and may include direct (e.g. contamination or physical disruption), indirect (e.g. loss of prey, reduction in species' fecundity), site specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

The EPA has determined that issuance of this permit will not adversely affect EFH in the vicinity of the discharge. Neither Fivemile Creek, Fifteenmile Creek, the Boise River nor the Snake River within the Middle Snake-Payette (HUC 17050115) and Brownlee Reservoir (HUC 17050201) watersheds downstream from the Boise River are designated as EFH. The permit is conditioned to meet water quality standards in Fivemile Creek and the Boise River. Thus, the discharge will not affect the distant downstream reaches of the Snake River that are designated as EFH.

The EPA has provided NOAA Fisheries with copies of the draft permit and fact sheet during the public notice period. Any comments received from NOAA Fisheries regarding EFH will be considered prior to reissuance of this permit.

C. State Certification

Section 401 of the CWA requires the EPA to seek State certification before issuing a final permit. As a result of the certification, the State may require more stringent permit conditions or additional monitoring requirements to ensure that the permit complies with water quality standards, or treatment standards established pursuant to any State law or regulation.

D. Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs each federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities." EPA strives to enhance the ability of overburdened communities to

participate fully and meaningfully in the permitting process for EPA-issued permits, including NPDES permits. "Overburdened" communities can include minority, low-income, tribal, and indigenous populations or communities that potentially experience disproportionate environmental harms and risks. As part of an agency-wide effort, EPA Region 10 will consider prioritizing enhanced public involvement opportunities for EPA-issued permits that may involve activities with significant public health or environmental impacts on already overburdened communities.[1]

As part of the permit development process, EPA Region 10 conducted a screening analysis to determine whether this permit action could affect overburdened communities using a nationally consistent geospatial tool that contains demographic and environmental data for the United States at the Census block group level. This tool is used to identify permits for which enhanced outreach may be warranted. The WWTP is not located within or near any Census block groups that are potentially overburdened.

The draft permit does not include any additional conditions to address environmental justice. However, the EPA encourages permittees to review (and to consider adopting, where appropriate) Promising Practices for Permit Applicants Seeking EPA-Issued Permits: Ways To Engage Neighboring Communities.[2] Examples of promising practices include: thinking ahead about community's characteristics and the effects of the permit on the community, engaging the right community leaders, providing progress or status reports, inviting members of the community for tours of the facility, providing informational materials translated into different languages, setting up a hotline for community members to voice concerns or request information, follow up, etc.

E. Permit Expiration

The permit will expire five years from the effective date. If the EPA receives a timely and complete application for reissuance of this permit, and the EPA, through no fault of the permittee, does not issue a new permit with an effective date on or before the expiration date of this permit, then the conditions of the expired permit will continue in force until the effective date of a new permit (see 40 CFR 122.6).

IX. References

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[1] For more information, please visit www.epa.gov/compliance/ej/plan-ej/.
[2] For more information, please visit www.federalregister.gov/articles/2013/05/09/2013-10945/epa-activities-to-promote-environmental-justice-in-the-permit-application-process#p-104

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Appendix A: Facility Information

General Information

NPDES ID Number:	ID0020192
Address:	3401 North Ten Mile Road Meridian, Idaho 83646
Facility Background:	The most recent NPDES for the City of Meridian Wastewater Treatment Plant (WWTP) was issued on September 30, 1999, became effective on November 2, 1999, and expired on November 2, 2004. An NPDES application for permit issuance was submitted by the permittee on April 19, 2004. The EPA determined that the application was timely and complete. Therefore, pursuant to 40 CFR 122.6, the permit has been administratively extended and remains fully effective and enforceable.

Facility Information

Type of Facility:	Publicly Owned Treatment Works (POTW)
Treatment Train:	Liquid stream: Screening, grit removal, primary clarification, aeration basins designed for biological nutrient removal, secondary clarification, cloth media filtration, post-aeration, ultraviolet disinfection. Solid stream: Anaerobic digestion, centrifuge dewatering.
Flow:	The design flow is 10.2 mgd. The average flow measured between December 1999 and May 2013 was 4.51 mgd and the maximum monthly average flow during that time span was 6.38 mgd.

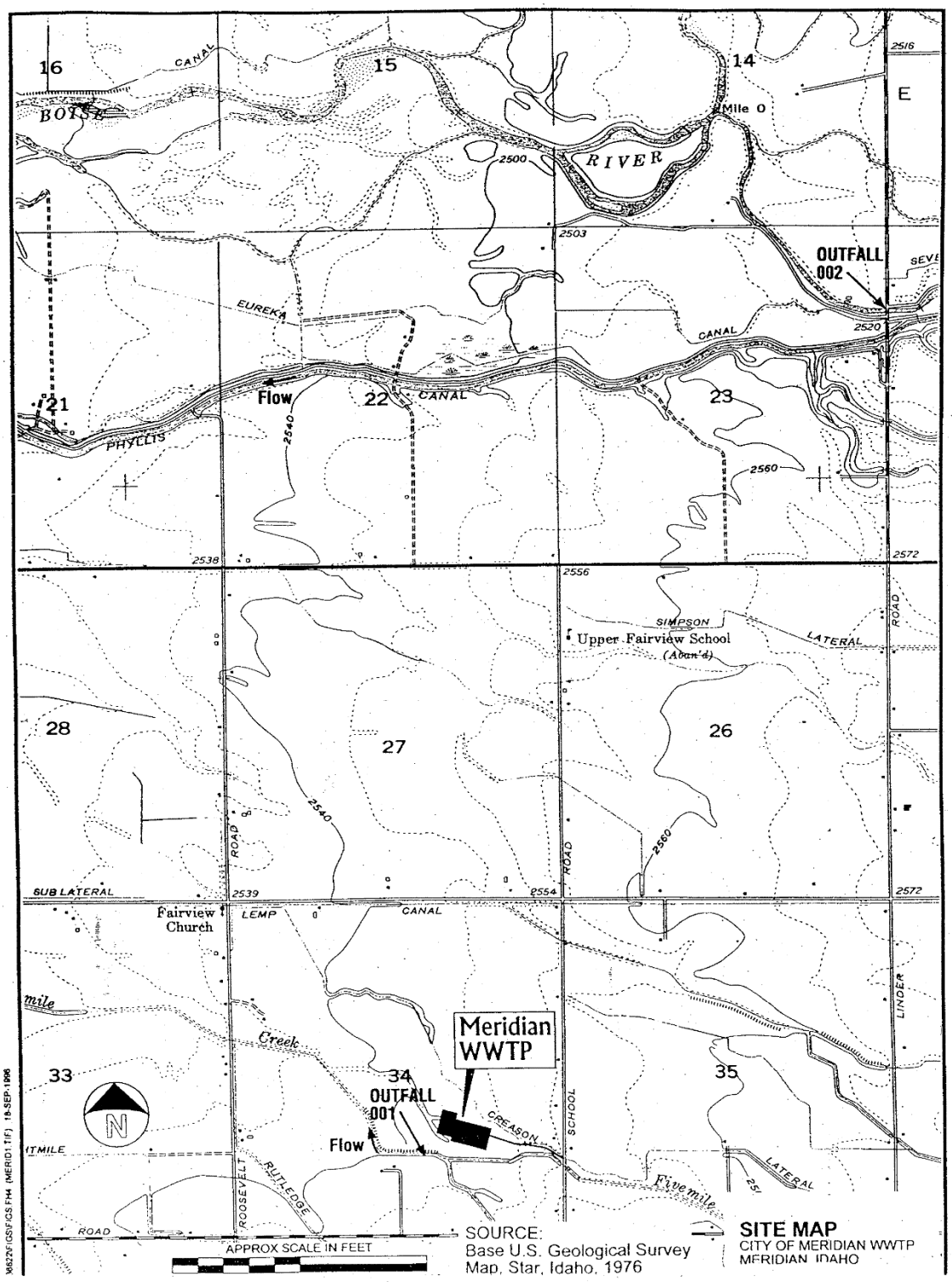
Receiving Water Information: Outfall 001

Receiving Water:	Fivemile Creek
Watershed:	Lower Boise (HUC 17050114)
Beneficial Uses:	Cold water aquatic life, secondary contact recreation, agricultural and industrial water supply, wildlife habitats, and aesthetics.
Outfall Location:	latitude 43° 38’ 15” north, longitude 116° 26’ 30” west

Receiving Water Information: Outfall 002

Receiving Water:	Boise River
Watershed:	Lower Boise (HUC 17050114)
Beneficial Uses:	Cold water aquatic life, salmond spawning, primary contact recreation, agricultural and industrial water supply, wildlife habitats, and aesthetics.
Outfall Location:	latitude 43° 40’ 27” north, longitude 116° 24’ 45” west

Figure A-1: Map



Appendix B: Water Quality Criteria Summary

This appendix provides a summary of water quality criteria applicable to Fivemile Creek and the Boise River.

Idaho water quality standards include criteria necessary to protect designated beneficial uses. The standards are divided into three sections: General Water Quality Criteria, Surface Water Quality Criteria for Use Classifications, and Site-Specific Surface Water Quality Criteria. The EPA has determined that the criteria listed below are applicable to Fivemile Creek and the Boise River at the points of discharge. This determination was based on (1) the applicable beneficial uses of the Boise River and Fivemile Creek, (2) the type of facility, (3) a review of the application materials submitted by the permittee, and (4) the quality of the water in Fivemile Creek and the Boise River.

A. General Criteria (IDAPA 58.01.02.200)

Surface waters of the state shall be free from:

- hazardous materials,
- toxic substances in concentrations that impair designated beneficial uses,
- deleterious materials,
- radioactive materials,
- floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses,
- excess nutrients that can cause visible slime growths or other nuisance aquatic growths impairing designated beneficial uses,
- oxygen demanding materials in concentrations that would result in an anaerobic water condition

Surface water shall not exceed allowable levels for:

- radioactive materials, or
- sediments

B. Numeric Criteria for Toxics (IDAPA 58.01.02.210)

This section of the Idaho Water Quality Standards provides the numeric criteria for toxic substances for waters designated for aquatic life, recreation, or domestic water supply use. Monitoring of the effluent has shown that the following toxic pollutants have been present at detectable levels in the effluent:

- Ammonia
- Arsenic (total)
- Bis(2-ethylhexyl) Phthalate
- Copper (total recoverable)
- Cyanide (weak acid dissociable)
- Lead (total recoverable)
- Mercury (total)
- Nickel (total recoverable)
- Nitrate + nitrite

- Phenol
- Silver (total recoverable)
- Zinc (total recoverable)

Hardness-Dependent Metals

The toxicities of some metals vary with the hardness of the water. Therefore, the water quality criteria for these metals also vary with hardness. EPA uses the hardness of the receiving water when mixed with the effluent to determine the water quality criteria for such metals. Toxicity decreases (and numeric water quality criteria increase) as hardness increases.

Fivemile Creek

The City of Meridian measured 19 hardness results both upstream and downstream of the outfall in Fivemile Creek between April 2000 and September 2001. The City generally discharges to Fivemile Creek instead of the Boise River, thus, the hardness values measured downstream from the outfall reflect the discharge's effect upon the hardness of Fivemile Creek. Therefore, the EPA has used the measured downstream hardness values to determine reasonable potential to exceed and, if necessary, to calculate effluent limits for metals.

The hardness values measured downstream from the City's outfall are lower from May – September than from October – April, and the difference is statistically significant ($P = 0.0094$). Furthermore, there is an inverse relationship between flow and hardness in Fivemile Creek, both upstream and downstream of the discharge. That is to say, the hardness tends to be lower at high stream flows and vice versa.

To account for the seasonal variation and the inverse relationship between hardness and flow, to calculate the values of metals water quality criteria for Fivemile Creek, the EPA has used the minimum hardness value measured when the creek flow was less than the median flow for the season of interest. These were 27.7 mg/L as $CaCO_3$ for May – September and 102 mg/L as $CaCO_3$ for October – April.

Boise River

The City of Meridian measured 19 hardness results both upstream and downstream of the outfall, in the south channel of the Boise River, between April 2000 and September 2001. The City generally discharges to Fivemile Creek instead of the Boise River, so the hardness values measured downstream from the outfall do not reflect the discharge's effect upon the hardness of the Boise River. Therefore, the EPA has calculated the hardness of the south channel of the Boise River at the edge of the chronic mixing zone from the measured upstream hardness and the measured effluent hardness.

The 5^{th} percentile measured upstream hardness is 27.6 mg/L as $CaCO_3$, and the 5^{th} percentile effluent hardness is 78.5 mg/L as $CaCO_3$. The mixed hardness from November – June is 52.3 mg/L as $CaCO_3$. The mixed hardness from July – October is 45.5 mg/L as $CaCO_3$.

C. Surface Water Criteria To Protect Aquatic Life Uses (IDAPA 58.01.02.250, 278)

1. pH: Within the range of 6.5 to 9.0

2. Total Dissolved Gas: <110% saturation at atm. pressure.

3. Dissolved Oxygen:

- The waters of the Boise River from Veterans State Park to its mouth will have dissolved oxygen concentrations of six (6) mg/l or seventy-five percent (75%) of saturation, whichever is greater, during the spawning period of salmonid fishes inhabiting those waters (IDAPA 58.01.02.278.01).
- Dissolved Oxygen Concentrations exceeding six (6) mg/l at all times (IDAPA 58.01.02.250.02.a).

4. Temperature:

- A maximum weekly maximum temperature of thirteen degrees C (13ºC) to protect brown trout, mountain whitefish, and rainbow trout spawning and incubation applies to the Boise River from November 1 through May 30 (IDAPA 58.01.02.278.04).
- Water temperatures of twenty-two (22) °C or less with a maximum daily average of no greater than nineteen (19) °C (IDAPA 58.01.02.250.02.b). These criteria apply to the Boise River from June 1 – October 31 and to Fivemile Creek year-round.

5. Ammonia:

Ammonia criteria are based on a formula which relies on the pH and temperature of the receiving water, because the fraction of ammonia present as the toxic, un-ionized form increases with increasing pH and temperature. Therefore, the criteria become more stringent as pH and temperature increase. The tables below detail the equations used to determine water quality criteria for ammonia.

Fivemile Creek

The City of Meridian collected pH and temperature data in Fivemile Creek upstream and downstream of the outfall between April 2000 and March 2002. These data were used to determine the appropriate pH and temperature values to calculate the ammonia criteria.

As with any natural water body, the pH and temperature of the water will vary over time. Therefore, to protect water quality criteria it is important to develop the criteria based on pH and temperature values that will be protective of aquatic life at all times. The EPA used the 95th percentile pH and temperature for the calculations. The 95th percentile upstream pH is 8.8 standard units. The 95th percentile upstream temperatures are 16.05 °C from October – April and 22.0 °C from May – September.

Table B-1: Water Quality Criteria for Ammonia in Fivemile Creek

	Acute Criterion[1]	**Chronic Criterion[2]**
Equations:	$\frac{0.275}{1+10^{7.204-pH}}+\frac{39}{1+10^{pH-7.204}}$	$\left(\frac{0.0577}{1+10^{7.688-pH}}+\frac{2.487}{1+10^{pH-7.688}}\right)\times MIN\left(2.85,1.45\times10^{0.028\times(25-T)}\right)$
Results October – April	1.23	0.599
Results May – September	1.23	0.408

1. No seasonal variation was assumed for pH, therefore, there is no seasonal variation in the acute criterion (which is a function of pH only).

Boise River

The City of Meridian collected pH and temperature data in the Boise River upstream and downstream of the outfall between April 2000 and March 2002. These data were used to determine the appropriate pH and temperature values to calculate the ammonia criteria.

Similar to Fivemile Creek, the EPA used the 95th percentile pH and temperature for the calculations. The 95th percentile upstream pH is 9.1 standard units. The 95th percentile upstream temperatures are 15.3 °C from November - June and 20.6 °C from July – October.

Table B-2: Water Quality Criteria for Ammonia in the Boise River

	Acute Criterion[1]	Chronic Criterion[2]
Equations:	$\frac{0.275}{1+10^{7.204-pH}}+\frac{39}{1+10^{pH-7.204}}$	$\left(\frac{0.0577}{1+10^{7.688-pH}}+\frac{2.487}{1+10^{pH-7.688}}\right)\times MIN\left(2.85,1.45\times10^{0.028\times(25-T)}\right)$
Results Nov. - June	0.759	0.402
Results July – October	0.759	0.286

1. No seasonal variation was assumed for pH, therefore, there is no seasonal variation in the acute criterion (which is a function of pH only).

6. Turbidity: Turbidity below any applicable mixing zone set by the Department shall not exceed background turbidity by more than 50 NTU instantaneously or more than 25 NTU for more than ten (10) consecutive days.

D. Surface Water Quality Criteria For Recreational Use Designation (IDAPA 58.01.02.251)

a. Geometric Mean Criterion. Waters designated for primary or secondary contact recreation are not to contain *E. coli* in concentrations exceeding a geometric mean of 126 *E. coli* organisms per 100 ml based on a minimum of 5 samples taken every 3 to 7 days over a 30 day period.

b. Use of Single Sample Values: This section states that that a water sample that exceeds certain "single sample maximum" values indicates a likely exceedance of the geometric mean criterion, although it is not, in and of itself, a violation of water quality standards. For waters designated for primary contact recreation, the "single sample maximum" value is 406 organisms per 100 ml (IDAPA 58.01.02.251.01.b.ii.). for primary and contact recreation.

Appendix C: Low Flow Conditions and Dilution

A. Low Flow Conditions

The low flow conditions of a water body are used to determine water quality-based effluent limits. In general, Idaho's water quality standards require criteria be evaluated at the following low flow receiving water conditions (See IDAPA 58.01.02.210.03) as defined below:

Table C-1: Critical Low Flows for use in Wasteload Allocation	
Acute aquatic life	1Q10 or 1B3
Chronic aquatic life	7Q10 or 4B3
Non-carcinogenic human health criteria	30Q5
Carcinogenic human health criteria	harmonic mean flow
Ammonia	30B3, 30Q5 or 30Q10

1. The 1Q10 represents the lowest one day flow with an average recurrence frequency of once in 10 years.
2. The 1B3 is biologically based and indicates an allowable exceedence of once every 3 years.
3. The 7Q10 represents lowest average 7 consecutive day flow with an average recurrence frequency of once in 10 years.
4. The 4B3 is biologically based and indicates an allowable exceedance for 4 consecutive days once every 3 years.
5. The 30Q5 represents the lowest average 30 consecutive day flow with an average recurrence frequency of once in 5 years.
6. The 30Q10 represents the lowest average 30 consecutive day flow with an average recurrence frequency of once in 10 years.
7. The harmonic mean is a long-term mean flow value calculated by dividing the number of daily flow measurements by the sum of the reciprocals of the flows.

Idaho's water quality standards do not specify a low flow to use for the 30-day average chronic ammonia criterion, however, the EPA's *Water Quality Criteria; Notice of Availability; 1999 Update of Ambient Water Quality Criteria for Ammonia; Notice* (64 FR 719769 December 22, 1999) identifies the appropriate flows to be used.

Fivemile Creek

There were not enough flow data for Fivemile Creek at the point of discharge to directly calculate the critical low flows. Therefore, the EPA estimated critical low flows of Fivemile Creek upstream of the discharge from 104 flow measurements taken by the City as required by its 1999 permit.

First, for each season, the harmonic and arithmetic mean flows were calculated directly from the available data. The arithmetic and harmonic mean flows are shown in Table C-2, below.

Table C-2: Seasonal Arithmetic and Harmonic Mean flows for Fivemile Creek Upstream of the City of Meridian Outfall			
Season	Harmonic Mean (mgd)	Arithmetic Mean (mgd)	Number of Measurements
October – April	3.98	10.5	60
May – September	40.3	42.6	44

The seasonal 7Q10 flows were then estimated from the seasonal harmonic and arithmetic mean flows. According to the TSD (Page 89), the harmonic mean flow (Q_{hm}) can be estimated from a known 7Q10 and arithmetic mean (Q_{am}) using the following equation:

$$Q_{hm} = [1.194 * (Q_{am})^{0.473}] * [(7Q10)^{0.552}], \quad \text{(Equation 1)}$$

This equation can be solved for the 7Q10 as follows, in order to estimate a 7Q10 flow from a known harmonic mean and arithmetic mean.

$$7Q10 = \left(\frac{Q_{hm}}{1.194 Q_{am}{}^{0.473}}\right)^{1/0.552} \quad \text{(Equation 2)}$$

The TSD states that "in the comparisons of flows for smaller rivers (i.e., low flow of 50 CFS), the 30Q5 flow was, on the average, only 1.1 times that of the 7Q10…" (Page 89). The chapter on "Stream Design Flow For Steady-State Modeling" from the *Technical Guidance Manual for Performing Wasteload Allocation: Book VI* (EPA 1986) states that the average ratio of the 7Q10 to the 1Q10 is 1.3:1 (Page 2-3).

Thus, once the 7Q10 has been estimated as described above, the 1Q10 and the 30Q5 can, in turn, be estimated from the 7Q10 as follows:

$$1Q10 = 7Q10 \div 1.3 \quad \text{(Equation 4)}$$

$$30Q5 = 7Q10 \times 1.1 \quad \text{(Equation 5)}$$

The estimated low flows for Fivemile Creek at the point of discharge are summarized in Table C-3.

Table C-3: Estimated Low Flows in Fivemile Creek Upstream of the City of Meridian Outfall

Season	1Q10 (mgd)	7Q10 (mgd)	30Q5 (mgd)	Harmonic Mean
October – April	0.91	1.18	1.30	N/A
May – September	18.1	23.6	25.9	N/A
Year Round	N/A	N/A	N/A	6.43

Boise River

The USGS has a gauging station on the south channel of the Boise River upstream of the City of Meridian outfall at Eagle Road (station # 13206305). Daily river flow data from this gauging station are available from November 1, 1999 through the present.

The flows measured at Eagle Road are not representative of the flows at the City's outfall, at Linder Road, because between Eagle Road and Linder Road, Thurman Drain flows into the South Channel of the Boise River, and the Phyllis Canal diverts water from the river.

Daily flows for the Phyllis Canal are available from the Idaho Department of Water resources (IDWR). A total of 46 flow measurements were available for Thurman Drain from the USGS National Water Information System (NWIS). The EPA estimated the daily flows of the south channel of the Boise River at the point of discharge by subtracting the contemporaneous daily flows of the Phyllis Canal and adding the monthly average flows of the Thurman Drain to the daily flows of the south channel of the Boise River measured at Eagle Road. The EPA then used the DFLOW computer program to calculate the critical low flows of the south channel of the Boise River from the estimated daily flows.

The EPA has decided to calculate the critical low flows of the south channel of the Boise River on a seasonal basis. The low flows for July – October are relatively high. Flows during the rest of the year (November – June) are relatively low. Table C-4, below, presents the low flow values for the south channel of the Boise River at Linder Road.

Table C-4: Low Flows in the South Channel of the Boise River at Linder Road

Season	1Q10 (CFS)	7Q10 (CFS)	30Q5 (CFS)	Harmonic Mean
November – June	44.9	67.1	105	N/A
July – October	104	116	141	N/A
Year-Round	N/A	N/A	N/A	201

B. Mixing Zones and Dilution

In some cases a dilution allowance or mixing zone is permitted. A mixing zone is an area where an effluent discharge undergoes initial dilution and is extended to cover the secondary mixing in the ambient water body. A mixing zone is an allocated impact zone where the water quality standards may be exceeded as long as acutely toxic conditions are prevented (EPA 1994). The federal regulations at 40 CFR 131.13 states that "States may, at their discretion, include in their State standards, policies generally affecting their application and implementation, such as mixing zones, low flows and variances."

The Idaho Water Quality Standards at IDAPA 58.01.02.060 provides Idaho's mixing zone policy for point source discharges. The policy allows the IDEQ to authorize a mixing zone for a point source discharge after a biological, chemical, and physical appraisal of the receiving water and the proposed discharge.

The following formula is used to calculate a dilution factor based on the allowed mixing.

$$D = \frac{Q_e + Q_u \times \%MZ}{Q_e}$$

Where:

D = Dilution Factor
Q_e = Effluent flow rate (set equal to the design flow of the WWTP)
Q_u = Receiving water low flow rate upstream of the discharge (1Q10, 7Q10, 30B3, etc)
%MZ = Percent Mixing Zone

The IDEQ proposes to authorize 25% mixing zones for ammonia, arsenic, bis(2-ethylhexyl) phthalate, copper, cyanide, lead, mercury, nickel, silver, zinc and whole effluent toxicity (WET). The EPA calculated dilution factors for seasonal critical low flow conditions. All dilution factors are calculated with the effluent flow rate set equal to the design flow of 10.2 mgd (15.8 CFS). The dilution factors are listed in Tables C-5 and C-6, below.

Table C-5 Dilution Factors for Fivemile Creek				
Season	**Acute DF**	**Chronic DF**	**Chronic Ammonia and Human Health Non-Carcinogen DF**	**Human Health Carcinogen DF**
October – April	1.022	1.029	1.033	N/A
May – September	1.44	1.58	1.63	N/A
Year Round	N/A	N/A	N/A	1.16

Table C-6: Dilution Factors for the South Channel of the Boise River					
Season	**Acute**	**Chronic**	**Chronic Ammonia**	**Human Health Non-Carcinogen**	**Human Health Carcinogen**
November – June	1.71	2.06	2.66	2.95	N/A
July – October	2.65	2.84	3.23	5.50	N/A
Year Round	N/A	N/A	N/A	N/A	4.18

C. References

EPA. 1986. *Technical Guidance Manual for Performing Wasteload Allocations: Book VI - Design Conditions: Chapter 1 - Stream Design Flow for Steady-State Modeling*. US Environmental Protection Agency. Office of Water. PB92-231178. September 1986. http://water.epa.gov/scitech/datait/models/dflow/upload/wlabook6chapter1.pdf

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Appendix D: Basis for Effluent Limits

The following discussion explains the derivation of technology and water quality based effluent limits proposed in the draft permit. Part A discusses technology-based effluent limits; Part B discusses water quality-based effluent limits.

A. Technology-Based Effluent Limits

Federal Secondary Treatment Effluent Limits

The CWA requires POTWs to meet performance-based requirements based on available wastewater treatment technology. Section 301 of the CWA established a required performance level, referred to as "secondary treatment," which all POTWs were required to meet by July 1, 1977. The EPA has developed and promulgated "secondary treatment" effluent limitations, which are found in 40 CFR 133.102. These technology-based effluent limits apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by application of secondary treatment in terms of BOD_5, TSS, and pH. The federally promulgated secondary treatment effluent limits are listed in Table D-1.

Table D-1: Secondary Treatment Effluent Limits
(40 CFR 133.102)

Parameter	30-day average	7-day average
BOD_5	30 mg/L	45 mg/L
TSS	30 mg/L	45 mg/L
Removal for BOD_5 and TSS (concentration)	85% (minimum)	—
pH	within the limits of 6.0 - 9.0 s.u.	

Mass-Based Limits

The federal regulation at 40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, if possible. The regulation at 40 CFR 122.45(b) requires that effluent limitations for POTWs be calculated based on the design flow of the facility. The mass based limits are expressed in pounds per day and are calculated as follows:

$$\textit{Mass based limit (lb/day)} = \textit{concentration limit (mg/L}^{[1]}\textit{)} \times \textit{design flow (mgd)} \times 8.34^{[2]}$$

Since the design flow for this facility is 10.2 mgd, the technology based mass limits for BOD_5 and TSS are calculated as follows:

Average Monthly Limit = 30 mg/L × 10.2 mgd × 8.34 = 2,552 lbs/day

Average Weekly Limit = 45 mg/L × 10.2 mgd × 8.34 = 3,828 lbs/day

[1] mg/L is equivalent to parts per million.
[2] 8.34 is a conversion factor equal to the density of water in lb/gallon.

Chlorine

The Meridian WWTP uses ultraviolet (UV) disinfection. Therefore, there are no technology-based chlorine limits applicable to the discharge.

B. Water Quality-based Effluent Limits

Statutory and Regulatory Basis

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards. Discharges to State or Tribal waters must also comply with limitations imposed by the State or Tribe as part of its certification of NPDES permits under section 401 of the CWA. Federal regulations at 40 CFR 122.4(d) prohibit the issuance of an NPDES permit that does not ensure compliance with the water quality standards of all affected States.

The NPDES regulation (40 CFR 122.44(d)(1)) implementing Section 301(b)(1)(C) of the CWA requires that permits include limits for all pollutants or parameters which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State or Tribal water quality standard, including narrative criteria for water quality, and that the level of water quality to be achieved by limits on point sources is derived from and complies with all applicable water quality standards.

The regulations require the permitting authority to make this evaluation using procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation.

Reasonable Potential Analysis

When evaluating the effluent to determine if the pollutant parameters in the effluent are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State/Tribal water quality criterion, the EPA projects the receiving water concentration (downstream of where the effluent enters the receiving water) for each pollutant of concern. The EPA uses the concentration of the pollutant in the effluent and receiving water and, if appropriate, the dilution available from the receiving water, to project the receiving water concentration. If the projected concentration of the pollutant in the receiving water exceeds the numeric criterion for that specific pollutant, then the discharge has the reasonable potential to cause or contribute to an excursion above the applicable water quality standard, and a water quality-based effluent limit is required.

Sometimes it may be appropriate to allow a small area of the receiving water to provide dilution of the effluent. These areas are called mixing zones. Mixing zone allowances will increase the mass loadings of the pollutant to the water body and will decrease treatment requirements. Mixing zones can be used only when there is adequate receiving water flow volume and the concentration of the pollutant in the receiving water is less than the criterion necessary to protect the designated uses of the water body. Mixing zones must be authorized by the State. The dilution provided by a mixing zone may be considered in a reasonable potential analysis when appropriate (40 CFR 122.44(d)(1)(ii)).

The reasonable potential analysis for ammonia, arsenic, bis (2-ethylhexyl) phthalate, copper, cyanide, lead, mercury, nickel, nitrate + nitrite, silver, zinc and whole effluent toxicity (WET) was based on a mixing zone of 25%, which was proposed in the IDEQ's draft certification. If IDEQ revises the allowable mixing zone in its final certification of this permit, the reasonable potential analysis will be revised accordingly.

Procedure for Deriving Water Quality-based Effluent Limits

The first step in developing a water quality-based effluent limit is to develop a wasteload allocation (WLA) for the pollutant. A wasteload allocation is the concentration or loading of a pollutant that the permittee may discharge without causing or contributing to an exceedance of water quality standards in the receiving water. Wasteload allocations are determined in one of the following ways:

TMDL-Based Wasteload Allocation

Where the receiving water quality does not meet water quality standards, the wasteload allocation is generally based on a TMDL developed by the State. A TMDL is a determination of the amount of a pollutant from point, non-point, and natural background sources that may be discharged to a water body without causing the water body to exceed the criterion for that pollutant. Any loading above this capacity risks violating water quality standards.

To ensure that these waters will come into compliance with water quality standards Section 303(d) of the CWA requires States to develop TMDLs for those water bodies that will not meet water quality standards even after the imposition of technology-based effluent limitations. The first step in establishing a TMDL is to determine the assimilative capacity (the loading of pollutant that a water body can assimilate without exceeding water quality standards). The next step is to divide the assimilative capacity into allocations for non-point sources (load allocations), point sources (wasteload allocations), natural background loadings, and a margin of safety to account for any uncertainties. Permit limitations are then developed for point sources that are consistent with the wasteload allocation for the point source.

In January 2000, the EPA approved a TMDL for the lower Boise River. The TMDL included wasteload allocations for TSS and bacteria for the facility. The wasteload allocations for TSS for the City of Meridian in the original TMDL were 710 lb/day average monthly and 1,065 lb/day average weekly (see the TMDL at Table 15, on Page 62).

On April 15, 2014, IDEQ granted a portion of the Lower Boise River TMDL's reserve for growth allocation to the City of Meridian. IDEQ revised Table 15 of the *Sediment and Bacteria Allocation Addendum to the Lower Boise River TMDL* (IDEQ 2008) to allow Meridian an average monthly allocation of 2,550 lb/day and an average weekly allocation of 3,820 lb/day. In the draft permit, the EPA has proposed effluent limits for TSS which are identical to these revised wasteload allocations.

The Lower Boise River TMDL included monthly, weekly, and daily wasteload allocations for bacteria for the City of Meridian facility. The WLAs were based on fecal coliform concentrations because, at the time the TMDL was developed, the Idaho water quality standards used fecal coliform as the indicator organism for bacteria for the protection of contact recreation. However, the TMDL also stated that if Idaho's bacteria criteria were revised to require E. coli as the indicator organism rather than fecal coliform then "…compliance with the load allocations in this TMDL could be demonstrated using E. Coli samples, rather than fecal coliform," and that

"…[i]f E. Coli are used as the new Idaho criteria for contact recreation when the permits are re-issued, the new E. Coli criteria should be incorporated into the permits in place of fecal coliform requirements." (see Lower Boise River TMDL; Page 74).

The effluent limits apply the current Idaho water quality criteria for E. coli at the end-of-pipe. The Idaho water quality standards state that waters of the State of Idaho, that are designated for recreation, are not to contain E. coli bacteria in concentrations exceeding 126 organisms per 100 ml based on a minimum of five samples taken every three to seven days over a thirty day period. Therefore, the draft permit contains a monthly geometric mean effluent limit for E. coli of 126 organisms per 100 ml (IDAPA 58.01.02.251.01.a.).

The Idaho water quality standards also state that a water sample that exceeds certain "single sample maximum" values indicates a likely exceedance of the geometric mean criterion, although it is not, in and of itself, a violation of water quality standards. For waters designated for primary contact recreation (e.g. the Boise River), the "single sample maximum" value is 406 organisms per 100 ml, and for waters designated for secondary contact recreation (e.g. Fivemile Creek), the "single sample maximum" value is 576 organisms per 100 ml (IDAPA 58.01.02.251.01.b.).

The goal of a water quality-based effluent limit is to ensure a low probability that water quality standards will be exceeded in the receiving water as a result of a discharge, while considering the variability of the pollutant in the effluent. Because a single sample value exceeding 406 to 576 organisms per 100 ml indicates a likely exceedance of the geometric mean criterion, the EPA has imposed an instantaneous (single grab sample) maximum effluent limit for E. coli of 406 organisms per 100 ml for outfall 002 and 576 organisms per 100 ml for outfall 001, in addition to a monthly geometric mean limit of 126 organisms per 100 ml, which directly implements the water quality criterion for E. coli. This will ensure that the discharge will have a low probability of exceeding water quality standards for E. coli.

Regulations at 40 CFR 122.45(d)(2) require that effluent limitations for continuous discharges from POTWs be expressed as average monthly and average weekly limits, unless impracticable. Additionally, the terms "average monthly limit" and "average weekly limit" are defined in 40 CFR 122.2 as being arithmetic (as opposed to geometric) averages. It is impracticable to properly implement a 30-day geometric mean criterion in a permit using monthly and weekly arithmetic average limits. The geometric mean of a given data set is equal to the arithmetic mean of that data set if and only if all of the values in that data set are equal. Otherwise, the geometric mean is always less than the arithmetic mean. In order to ensure that the effluent limits are "derived from and comply with" the geometric mean water quality criterion, as required by 40 CFR 122.44(d)(1)(vii)(A), it is necessary to express the effluent limits as a monthly geometric mean and an instantaneous maximum limit.

In addition to bacteria and sediment, the State of Idaho's 2012 Integrated Report Section 5 (the 303(d) list) lists the segment of the Boise River from River Mile 50 to the Star bridge as not supporting uses due to temperature, and the integrated report lists the segments of the Boise River from Middleton to Indian Creek and from Indian Creek to the mouth as impaired for temperature and total phosphorus (TP). IDEQ has completed a draft TMDL for TP, and the draft permit proposes effluent limits consistent with the assumptions and requirements of the WLAs in the draft TP TMDL. See Appendix F for more details about the proposed TP limits.

The State of Idaho's 2012 Integrated Report Section 5 (the 303(d) list) lists the segment of Fivemile Creek to which the City of Meridian discharges as being impaired due to chlorpyrifos, Escherichia coli, sedimentation and siltation, and an unknown cause (with nutrients suspected).

Although the Lower Boise River TMDL established load and wasteload allocations for sediment and bacteria for the City of Meridian, these allocations were developed to protect water quality in the Boise River as opposed to Fivemile Creek.

In April 2015, IDEQ issued the draft Lower *Boise River TMDL: 2015 Addendum*, addressing sediment and bacteria in tributaries to the Boise River, including Fivemile Creek. This draft TMDL proposed wasteload allocations for sediment and bacteria for the City of Meridian's discharge to Fivemile Creek. The proposed WLAs for the City of Meridian are in Table 26, on Page 47 of the draft *Lower Boise River TMDL: 2015 Addendum*. In addition, the State of Idaho's draft CWA §401 certification, states that IDEQ expects that the WLAs will be incorporated into the draft NPDES permit. The draft permit proposes effluent limits for TSS and E. coli that are consistent with the assumptions and requirements of the draft WLAs.

Regarding the impairment with an unknown cause, with nutrients suspected, as stated above, IDEQ has completed a draft TMDL for TP, for the Lower Boise River and the draft permit proposes effluent limits consistent with the assumptions and requirements of the WLAs in the draft TP TMDL. The EPA believes these effluent limits will protect water quality in Fivemile Creek as well as the Boise River. See Appendix F for more details about the proposed TP limits.

Chlorpyrifos is an organophosphate insecticide, acaricide and miticide used to control foliage and soil-borne insect pests on a variety of food and feed crops. Chlorpyrifos has not been tested for in the City of Meridian's effluent. The draft permit proposes twice-per-year effluent monitoring for chlorpyrifos at outfall 001. These effluent data will be used to determine if the City of Meridian's discharge of chlorpyrifos (if any) has the reasonable potential to cause or contribute to excursions above water quality standards.

Mixing zone based WLA

When the State authorizes a mixing zone for the discharge, the WLA is calculated by using a simple mass balance equation. The equation takes into account the available dilution provided by the mixing zone and the background concentrations of the pollutants. The WLAs for ammonia, bis (2-ethylhexyl) phthalate, copper, cyanide, mercury, and zinc were derived using a mixing zone.

Criterion as the Wasteload Allocation

In some cases a mixing zone cannot be authorized, either because the receiving water is already at, or exceeds, the criterion, the receiving water flow is too low to provide dilution, or the facility can achieve the effluent limit without a mixing zone. In such cases, the criterion becomes the wasteload allocation. Establishing the criterion as the wasteload allocation ensures that the effluent discharge will not contribute to an exceedance of the criteria.

Calculation of Effluent Limits from the Wasteload Allocation

Once the wasteload allocation has been developed, the EPA generally applies the statistical permit limit derivation approach described in Chapter 5 of the *Technical Support Document for Water Quality-Based Toxics Control* (EPA/505/2-90-001, March 1991, hereafter referred to as

the TSD) to obtain monthly average, and weekly average or daily maximum permit limits. This approach takes into account effluent variability, sampling frequency, and water quality standards.

Summary - Water Quality-based Effluent Limits

The water quality based effluent limits in the draft permit are summarized below.

Total Phosphorus

As described in Appendix F, EPA has proposed water quality-based effluent limits for total phosphorus in the draft permit which are consistent with the assumptions and requirements of the draft *Lower Boise River TMDL: 2015 Total Phosphorus Addendum*.

Ammonia

The EPA has determined that the City of Meridian's discharge has the reasonable potential to cause or contribute to excursions above water quality standards for ammonia. Therefore, the draft permit proposes water quality-based effluent limits for ammonia. See Appendix E for reasonable potential and effluent limit calculations for ammonia.

pH

The Idaho water quality standards at IDAPA 58.01.02.250.01.a, require pH values of the river to be within the range of 6.5 to 9.0.

The upper bound of Idaho's pH criterion is identical to the upper bound of the technology-based effluent pH limit for pH (9.0). Thus, the upper bound pH limit must be met at the points of discharge.

Although the pH of the receiving waters upstream from the outfalls is consistently higher than the minimum allowed by the WQS, the minimum alkalinity is low in Fivemile Creek and in the Boise River, upstream from the outfalls. Thus, the receiving waters cannot provide dilution of discharges with a pH lower than 6.5, such that the lower bound pH criterion (6.5) would be met at the edge of a mixing zone encompassing 25% of the 1Q10 flows of the receiving waters. Thus, the lower bound pH criterion must be met at the points of discharge as well.

Dissolved Oxygen

The EPA has carried forward the effluent limits for dissolved oxygen (DO) that were in the prior permit, consistent with the anti-backsliding provisions of the Clean Water Act (CWA Sections 303(d)(4) and 402(o)). These were a minimum DO concentration of 6.0 mg/L for Outfall 001 and a minimum DO saturation of 75% for Outfall 002.

Because the dissolved oxygen criteria for the Boise River specifies a minimum DO concentration of 6 mg/L or 75% of saturation, whichever is greater, the draft permit also proposes a minimum DO limit of 6.0 mg/L for Outfall 002, in addition to the prior permit's 75% of saturation limit.

Biochemical Oxygen Demand

Boise River

The EPA has determined that the technology-based effluent limits for BOD_5, in combination with the effluent limits for dissolved oxygen, are adequately stringent to ensure compliance with water quality standards for dissolved oxygen in the Boise River.

Fivemile Creek

In general, the water quality-based effluent limits for BOD_5 in the previous permit have been carried forward under the anti-backsliding provisions of the Clean Water Act. However, the EPA has determined, based on receiving water data for temperature, dissolved oxygen, BOD_5 and flow collected by the City as required by its 1999 permit, that the prior permit's effluent limits for BOD_5, for dilution ratios greater than or equal to 4:1 will ensure compliance with water quality criteria for DO in Fivemile Creek, even if the dilution ratio is less than 4:1. Therefore, the draft permit proposes that the prior permit's effluent limits for BOD_5, for Fivemile Creek, for dilution ratios greater than or equal to 4:1, shall apply at all times, regardless of the dilution ratio.

Hardness-Dependent Metals

The EPA has determined that the City of Meridian's discharge has the reasonable potential to cause or contribute to excursions above water quality standards for copper and zinc, for Outfall 001. Therefore, the draft permit proposes water quality-based effluent limits for these metals. See Appendix E for reasonable potential and effluent limit calculations for hardness-dependent metals.

Cyanide

The EPA has determined that the City of Meridian's discharge has the reasonable potential to cause or contribute to excursions above water quality standards for cyanide. Therefore the draft permit proposes water quality based effluent limits for cyanide. The State of Idaho's criteria for cyanide are expressed as weak acid dissociable cyanide (see footnote j to Section 210 of the Idaho WQS). Thus, the effluent limits for cyanide are expressed as weak acid dissociable cyanide. See Appendix E for reasonable potential and effluent limit calculations for cyanide.

Mercury

The EPA has determined that the City of Meridian's discharge has the reasonable potential to cause or contribute to excursions above water quality standards for mercury in the water column.

On December 12, 2008, the EPA disapproved Idaho's removal of its aquatic life criteria for mercury in the water column. The aquatic life water column criteria for total recoverable mercury that the EPA approved in 1997 remain in effect for Clean Water Act purposes. These are an acute criterion of 2.1 µg/L and a chronic criterion of 0.012 µg/L. The effluent limits for mercury in the draft permit are based on these criteria. See Appendix E for reasonable potential and effluent limit calculations for mercury.

Because the City discharges quantifiable concentrations of mercury and there are elevated concentrations of mercury in fish tissue in the Boise and Snake rivers, the discharge also has the reasonable potential to cause or contribute to excursions above water quality criteria for methylmercury in fish tissue. Therefore, in addition to the numeric effluent limits on mercury, the City of Meridian is required to develop a mercury minimization plan and to sample fish tissue for mercury.

Bis (2-Ethylhexyl) Phthalate

The EPA has determined that the City of Meridian's discharge has the reasonable potential to cause or contribute to excursions above Idaho's human health water quality criterion for bis (2-

ethylhexyl) phthalate, for the consumption of organisms. Bis (2-ethylhexyl) phthalate is a manufactured chemical that is commonly added to plastics to make them flexible. It is a colorless liquid with almost no odor (ATSDR 2002).

Because bis (2-ethylhexyl) phthalate is a probable human carcinogen, the EPA has used the harmonic mean flow rates of the receiving waters to determine dilution and calculate effluent limits for bis (2-ethylhexyl) phthalate, consistent with the recommendations of the TSD (Section 4.6.2).

Consistent with the recommendations of the TSD for human health criteria (Section 5.4.4), the EPA has set the average monthly limits for bis (2-ethylhexyl) phthalate equal to the wasteload allocations.

Federal regulations state that effluent limitations for POTWs that discharge continuously shall be stated as average weekly and average monthly discharge limitations for POTWs, unless impracticable (40 CFR 122.45(d)(2)). Therefore, in addition to the average monthly limits, the EPA has also established average weekly effluent limits for bis (2-ethylhexyl) phthalate.

Residues

The Idaho water quality standards require that surface waters of the State be free from floating, suspended or submerged matter of any kind in concentrations impairing designated beneficial uses. The draft permit contains a narrative limitation prohibiting the discharge of such materials.

Temperature

Because there are no recent continuous receiving water data for temperature in Fivemile Creek or the Boise River in the vicinity of the discharges, and no continuous temperature data for the discharge, the EPA cannot determine if the City of Meridian's discharge of heat has the reasonable potential to cause or contribute to excursions above water quality criteria for temperature in Fivemile Creek or the Boise River. The draft permit proposes to require continuous monitoring of the effluent and the Boise River (both upstream and downstream of the outfall) for temperature. These data will be used to determine if the discharge has the reasonable potential to cause or contribute to excursions above water quality standards for temperature when the permit is reissued.

Summary of Effluent Limit Bases

The following table summarizes the general statutory and regulatory bases for the limits in the draft permit.

Table D-2: Summary of Effluent Limit Bases

Limited Parameter	Basis for Limit
BOD_5 Outfall 001	Clean Water Act (CWA) Sections 303(d)(4) and 402(o) (anti-backsliding)
BOD_5 Outfall 002 and Combined Load	Clean Water Act (CWA) Section 301(b)(1)(B), 40 CFR 122.45 (f), 40 CFR 133 (technology-based, mass limits)
TSS Monthly Average and Weekly Average Concentration and Removal Rate	CWA Section 301(b)(1)(B), 40 CFR 122.45(f), 40 CFR 133 (technology-based)
TSS Load	CWA Section 301(b)(1)(C), 40 CFR 122.44(d)(1)(vii)(B) (water quality-based, TMDL[1])
TSS 4-month Average Concentration (Outfall 001)	CWA Section 301(b)(1)(C), 40 CFR 122.44(d)(1)(vii)(B) (water quality-based, TMDL[1])
Floating, Suspended or Submerged Matter	CWA Section 301(b)(1)(C), 40 CFR 122.44(d), IDAPA 58.01.02.200.05 (water quality-based)
pH	CWA Section 301(b)(1)(C), 40 CFR 122.44(d), IDAPA 58.01.02.250.01.a (water quality-based)
E. Coli	CWA Section 301(b)(1)(C), 40 CFR 122.44(d)(1)(vii)(B), IDAPA 58.01.02.251.01 (water quality-based, TMDL)
Ammonia	CWA Section 301(b)(1)(C), 40 CFR 122.44(d), IDAPA 58.01.02.060, IDAPA 58.01.02.250.02.d (water quality-based, with mixing zone)
Total Phosphorus	CWA Section 301(b)(1)(C), 40 CFR 122.44(d)(1)(vii)(B) (water quality-based, TMDL[2])
Bis (2-ethylhexyl phthalate), copper, cyanide, and zinc	CWA Section 301(b)(1)(C), 40 CFR 122.44(d), IDAPA 58.01.02.060, IDAPA 58.01.02.210.01 (water quality-based, with mixing zone)
Mercury Effluent Limits	CWA Section 301(b)(1)(C), 40 CFR 122.44(d), 40 CFR 131.21, IDAPA 58.01.02.060 (water quality-based, previously approved State water quality standards, with mixing zone)
Mercury Minimization Plan	40 CFR 122.44(k)(3 – 4), IDAPA 58.01.02.210.01 (best management practices)

Notes:
1. The proposed TSS 4-month average loading and concentration limits for Outfall 001 are based on the draft *Lower Boise River TMDL: 2015 Addendum*. Limits in the final permit will be based on the WLAs in the final, EPA-approved TMDL.
2. The proposed TP limits in the draft permit are based on the draft *Lower Boise River TMDL: 2015 Total Phosphorus Addendum*. Limits in the final permit will be based on the WLAs in the final, EPA-approved TMDL.

C. References

ATSDR. 2002. *Fact Sheet*. Di(2-ethylhexyl) phthalate (DEHP). CAS # 117-81-7. Division of Toxicology ToxFAQs. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry. September 2002. www.atsdr.cdc.gov/tfacts9.pdf

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Appendix E: Reasonable Potential and Water Quality-Based Effluent Limit Calculations

Part A of this appendix explains the process the EPA has used to determine if the discharge authorized in the draft permit has the reasonable potential to cause or contribute to a violation of Idaho's federally approved water quality standards. Part B demonstrates how the water quality-based effluent limits (WQBELs) in the draft permit were calculated.

A. Reasonable Potential Analysis

The EPA uses the process described in the *Technical Support Document for Water Quality-based Toxics Control* or TSD (EPA 1991) to determine reasonable potential. To determine if there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria for a given pollutant, the EPA compares the maximum projected receiving water concentration to the water quality criteria for that pollutant. If the projected receiving water concentration exceeds the criteria, there is reasonable potential, and a water quality-based effluent limit must be included in the permit. This following section discusses how the maximum projected receiving water concentration is determined.

Mass Balance

For discharges to flowing water bodies, the maximum projected receiving water concentration is determined using the following mass balance equation:

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

where,

- C_d = Receiving water concentration downstream of the effluent discharge (that is, the concentration at the edge of the mixing zone)
- C_e = Maximum projected effluent concentration
- C_u = 95th percentile measured receiving water upstream concentration
- Q_d = Receiving water flow rate downstream of the effluent discharge = Q_e+Q_u
- Q_e = Effluent flow rate (set equal to the design flow of the WWTP)
- Q_u = Receiving water low flow rate upstream of the discharge (1Q10, 7Q10 or 30B3)

When the mass balance equation is solved for C_d, it becomes:

$$C_d = \frac{C_e \times Q_e + C_u \times Q_u}{Q_e + Q_u} \qquad \text{Equation 2}$$

The above form of the equation is based on the assumption that the discharge is rapidly and completely mixed with 100% of the receiving stream.

If the mixing zone is based on less than complete mixing with the receiving water, the equation becomes:

$$C_d = \frac{C_e \times Q_e + C_u \times (Q_u \times \%MZ)}{Q_e + (Q_u \times \%MZ)} \qquad \text{Equation 3}$$

Where:

% MZ = the percentage of the receiving water flow available for mixing.

If a mixing zone is not allowed, dilution is not considered when projecting the receiving water concentration and,

$$C_d = C_e \qquad \text{Equation 4}$$

A dilution factor (D) can be introduced to describe the allowable mixing. Where the dilution factor is expressed as:

$$D = \frac{Q_e + Q_u \times \%MZ}{Q_e} \qquad \text{Equation 5}$$

After the dilution factor simplification, the mass balance equation becomes:

$$C_d = \frac{C_e - C_u}{D} + C_u \qquad \text{Equation 6}$$

If the criterion is expressed as dissolved metal, the effluent concentrations are measured in total recoverable metal and must be converted to dissolved metal as follows:

$$C_d = \frac{CF \times C_e - C_u}{D} + C_u \qquad \text{Equation 7}$$

Where C_e is expressed as total recoverable metal, C_u and C_d are expressed as dissolved metal, and CF is a conversion factor used to convert between dissolved and total recoverable metal.

The above equations for C_d are the forms of the mass balance equation which were used to determine reasonable potential and calculate wasteload allocations.

Maximum Projected Effluent Concentration

When determining the projected receiving water concentration downstream of the effluent discharge, the EPA's TSD recommends using the maximum projected effluent concentration (C_e) in the mass balance calculation. To determine the maximum projected effluent concentration (C_e) the EPA has developed a statistical approach to better characterize the effects of effluent variability. The approach combines knowledge of effluent variability as estimated by a coefficient of variation (CV) with the uncertainty due to a limited number of data to project an estimated maximum concentration for the effluent. Once the CV for each pollutant parameter has been calculated, the reasonable potential multiplier (RPM) used to derive the maximum projected effluent concentration (C_e) can be calculated using the following equations:

First, the percentile represented by the highest reported concentration is calculated.

$$p_n = (1 - \text{confidence level})^{1/n} \qquad \text{Equation 8}$$

where,
p_n = the percentile represented by the highest reported concentration
n = the number of samples
confidence level = 99% = 0.99

and

$$RPM = \frac{C_{99}}{C_{P_n}} = \frac{e^{Z_{99} \times \sigma - 0.5 \times \sigma^2}}{e^{Z_{P_n} \times \sigma - 0.5 \times \sigma^2}} \qquad \text{Equation 9}$$

Where,

σ^2 = $\ln(CV^2 + 1)$
Z_{99} = 2.326 (z-score for the 99th percentile)
Z_{Pn} = z-score for the P_n percentile (inverse of the normal cumulative distribution function at a given percentile)
CV = coefficient of variation (standard deviation ÷ mean)

The maximum projected effluent concentration is determined by simply multiplying the maximum reported effluent concentration by the RPM:

$$C_e = (RPM)(MRC) \qquad \text{Equation 10}$$

where MRC = Maximum Reported Concentration

Reasonable Potential

The discharge has reasonable potential to cause or contribute to an exceedance of water quality criteria if the maximum projected concentration of the pollutant at the edge of the mixing zone exceeds the most stringent criterion for that pollutant.

Results of Reasonable Potential Calculations

The results of the calculations are presented in Tables E-1 and E-2 of this appendix.

B. WQBEL Calculations

The following calculations demonstrate how the water quality-based effluent limits (WQBELs) in the draft permit were calculated. The WQBELs for ammonia, copper, cyanide, mercury, WET and zinc are intended to protect aquatic life criteria. The following discussion presents the general equations used to calculate the water quality-based effluent limits. The calculations for all WQBELs based on aquatic life criteria are summarized in Tables E-3 and E-4.

Calculate the Wasteload Allocations (WLAs)

Wasteload allocations (WLAs) are calculated using the same mass balance equations used to calculate the concentration of the pollutant at the edge of the mixing zone in the reasonable potential analysis (Equations 6 and 7). To calculate the wasteload allocations, C_d is set equal to the acute or chronic criterion and the equation is solved for C_e. The calculated C_e is the acute or chronic WLA. Equation 6 is rearranged to solve for the WLA, becoming:

$$C_e = WLA = D \times (C_d - C_u) + C_u \qquad \text{Equation 11}$$

Idaho's water quality criteria for some metals are expressed as the dissolved fraction, but the Federal regulation at 40 CFR 122.45(c) requires that effluent limits be expressed as total recoverable metal. Therefore, the EPA must calculate a wasteload allocation in total recoverable

metal that will be protective of the dissolved criterion. This is accomplished by dividing the WLA expressed as dissolved by the criteria translator, as shown in equation 12, below. As discussed in Appendix B, the criteria translator (CT) is equal to the conversion factor, because site-specific translators are not available for this discharge.

$$C_e = WLA = \frac{D \times (C_d - C_u) + C_u}{CT} \qquad \text{Equation 12}$$

The next step is to compute the "long term average" concentrations which will be protective of the WLAs. This is done using the following equations from the EPA's *Technical Support Document for Water Quality-based Toxics Control* (TSD):

$$LTA_a = WLA_a \times e^{(0.5\sigma^2 - z\,\sigma)} \qquad \text{Equation 13}$$

$$LTA_c = WLA_c \times e^{(0.5\sigma_4^2 - z\sigma_4)} \qquad \text{Equation 14}$$

where,

σ^2 = $\ln(CV^2 + 1)$
Z_{99} = 2.326 (z-score for the 99th percentile probability basis)
CV = coefficient of variation (standard deviation ÷ mean)
σ_4^2 = $\ln(CV^2/4 + 1)$

For ammonia, because the chronic criterion is based on a 30-day averaging period, the Chronic Long Term Average (LTA_c) is calculated as follows:

$$LTA_c = WLA_c \times e^{(0.5\sigma_{30}^2 - z\sigma_{30})} \qquad \text{Equation 15}$$

where,

σ_{30}^2 = $\ln(CV^2/30 + 1)$

The LTAs are compared and the more stringent is used to develop the daily maximum and monthly average permit limits as shown below.

Derive the maximum daily and average monthly effluent limits

Using the TSD equations, the MDL and AML effluent limits are calculated as follows:

$$MDL = LTA \times e^{(z_m\sigma - 0.5\sigma^2)} \qquad \text{Equation 16}$$

$$AML = LTA \times e^{(z_a\sigma_n - 0.5\sigma_n^2)} \qquad \text{Equation 17}$$

where σ, and σ^2 are defined as they are for the LTA equations above, and,

σ_n^2 = $\ln(CV^2/n + 1)$
z_a = 1.645 (z-score for the 95th percentile probability basis)
z_m = 2.326 (z-score for the 99th percentile probability basis)
n = number of sampling events required per month. With the exception of ammonia, if the AML is based on the LTA_c, i.e., $LTA_{minimum} = LTA_c$), the value of ''n'' should is set at a minimum of 4. For ammonia, In the case of ammonia, if the AML is based on the LTA_c, i.e., $LTA_{minimum} = LTA_c$), the value of ''n'' should is set at a minimum of 30.

Tables E-3 and E-4, below, detail the calculations for water quality-based effluent limits.

Table E-1: Reasonable Potential Calculations for Fivemile Creek (Outfall 001)

Effluent Percentile value	99%																
				State Water Quality Standard		Max concentration at edge of…											
Parameter	Metal Criteria Translator as decimal Acute	Metal Criteria Translator as decimal Chronic	Ambient Concentration (metals as dissolved) *ug/L*	Acute *ug/L*	Chronic *ug/L*	Acute Mixing Zone *ug/L*	Chronic Mixing Zone *ug/L*	LIMIT REQ'D?	*Pn*	Max effluent conc. measured (metals as total recoverable) *ug/L*	Coeff Variation *CV*	*s*	# of samples *n*	Multiplier	Acute Dil'n Factor	Chronic Dil'n Factor	COMMENTS
Ammonia May - Sep (mg/L)	1.000	1.000	0.283	1.23	0.41	19.7	17.4	YES	0.996	38.4	1.33	1.01	1076	0.74	1.44	1.63	
Ammonia Oct - April (mg/L)	1.000	1.000	0.283	1.23	0.60	27.6	27.4	YES	0.996	38.4	1.33	1.01	1076	0.74	1.02	1.03	
Arsenic May - Sep	1.000	1.000		340	150	3.07	2.81	NO	0.720	3.00	0.23	0.22	14	1.48	1.44	1.58	
Arsenic Oct - Apr	1.000	1.000		340	150	4.33	4.30	NO	0.720	3.00	0.23	0.22	14	1.48	1.02	1.03	
Bis(2-Ethylhexyl) Phthalate	1.000	1.000			2.20		78.53	YES	0.631	4.36	3.04	1.52	10	20.85		1.16	
Copper May - Sep	0.960	0.960		8.51	6.05	16.6	15.2	YES	0.924	14.0	0.72	0.65	58	1.79	1.44	1.58	
Copper Oct - April	0.960	0.960		17.3	11.5	23.5	23.4	YES	0.924	14.0	0.72	0.65	58	1.79	1.02	1.03	
Cyanide May - Sep	1.000	1.000		22.0	5.20	25.79	23.59	YES	0.901	11.00	1.71	1.17	44	3.38	1.44	1.58	
Cyanide Oct - April	1.000	1.000		22.0	5.20	36.42	36.19	YES	0.901	11.00	1.71	1.17	44	3.38	1.02	1.03	
Lead May - Sep	0.898	0.898	0.55	28.7	1.12	0.49	0.50	NO	0.681	0.41	0.13	0.12	12	1.26	1.44	1.58	Only Post-2008 Data Considered
Lead Oct-Apr	0.788	0.788	0.55	66.0	2.57	0.41	0.41	NO	0.681	0.41	0.13	0.12	12	1.26	1.02	1.03	Only Post-2008 Data Considered
Mercury (May - Sep)	1.000	1.000		2.10	0.0120	0.024	0.022	YES	0.681	0.0098	0.77	0.68	12	3.54	1.44	1.58	
Mercury (Oct - Apr)	1.000	1.000		2.10	0.0120	0.034	0.034	YES	0.681	0.0098	0.77	0.68	12	3.54	1.02	1.03	
Nickel May - Sep	0.998	0.997		251	27.9	25.47	23.27	NO	0.720	12.0	0.72	0.64	14	3.07	1.44	1.58	
Nickel Oct - Apr	0.998	0.997		476	52.9	35.97	35.70	NO	0.720	12.0	0.72	0.64	14	3.07	1.02	1.03	
Nitrate + Nitrite Oct - Apr (mg/L)	1.000	1.000	2.7		100		21.42	NO	0.956	17.8	0.35	0.34	103	1.24		1.03	
Nitrate + Nitrite Oct - Apr (mg/L)	1.000	1.000	2.7		100		14.53	NO	0.956	17.8	0.35	0.34	103	1.24		1.63	
Phenol May - Sep	1.000	1.000			1700000		24.07	NO	0.215	7.00	0.60	0.55	3	5.62		1.63	
Phenol Oct - Apr	1.000	1.000			1700000		38.14	NO	0.215	7.00	0.60	0.55	3	5.62		1.03	
Silver May - Sep	0.850		0.085	0.97		0.20		NO	0.681	0.06	1.05	0.86	12	4.96	1.44		Only Post-2008 Data Considered
Silver Oct - Apr	0.850		0.085	3.57		0.25		NO	0.681	0.06	1.05	0.86	12	4.96	1.02		Only Post-2008 Data Considered
WET May - Sep	1.000	1.000		3.00	1.00	0.69	0.63	NO	0.398	1			5	1.00	1.44	1.58	
WET Oct - Apr	1.000	1.000		3.00	1.00	0.98	0.97	NO	0.398	1			5	1.00	1.02	1.03	
Zinc May - Sep	0.978	0.986	48.0	63	63	70	68	YES	0.794	57	0.24	0.24	20	1.42	1.44	1.58	Ambient conc. from Mod STORET
Zinc Oct - Apr	0.978	0.986	48.0	119	120	79	79	NO	0.794	57	0.24	0.24	20	1.42	1.02	1.03	Ambient conc. from Mod STORET

Table E-2: Reasonable Potential Calculations for the Boise River (Outfall 002)

Effluent Percentile value	99%																
				State Water Quality Standard		Max concentration at edge of...											
Parameter	Metal Criteria Translator as decimal Acute	Metal Criteria Translator as decimal Chronic	Ambient Concentration (metals as dissolved) *ug/L*	Acute *ug/L*	Chronic *ug/L*	Acute Mixing Zone *ug/L*	Chronic Mixing Zone *ug/L*	LIMIT REQ'D?	*Pn*	Max effluent conc. measured (metals as total recoverable) *ug/L*	Coeff Variation *CV*	*s*	# of samples *n*	Multiplier	Acute Dil'n Factor	Chronic Dil'n Factor	COMMENTS
Ammonia July - Oct (mg/L)	1.000	1.000	0.367	0.76	0.29	10.9	9.0	YES	0.996	38.4	1.33	1.01	1076	0.74	2.65	3.23	
Ammonia Nov - June (mg/L)	1.000	1.000	0.367	0.76	0.40	16.7	10.8	YES	0.996	38.4	1.33	1.01	1076	0.74	1.71	2.66	
Arsenic July - Oct	1.000	1.000	3.0	340	150	3.54	3.50	NO	0.720	3.00	0.23	0.22	14	1.48	2.65	2.84	
Arsenic Nov - June	1.000	1.000	3.0	340	150	3.83	3.69	NO	0.720	3.00	0.23	0.22	14	1.48	1.71	2.06	
Bis(2-Ethylhexyl) Phthalate	1.000	1.000			2.2000		21.73	YES	0.631	4.36	3.04	1.52	10.00	20.85		4.18	
Copper July - Oct	0.960	0.960	7.5	20.9	14.9	13.7	13.3	NO	0.924	14.0	0.72	0.65	58	1.79	2.65	2.84	
Copper Nov - June	0.960	0.960	7.5	23.8	16.8	17.2	15.5	NO	0.924	14.0	0.72	0.65	58	1.79	1.71	2.06	
Cyanide July - Oct	1.000	1.000		22.0	5.20	14.06	13.12	YES	0.901	11.00	1.71	1.17	44	3.38	2.65	2.84	
Cyanide Nov - June	1.000	1.000		22.0	5.20	21.76	18.05	YES	0.901	11.00	1.71	1.17	44	3.38	1.71	2.06	
Lead July - Oct	0.906	0.906	0.49	55.6	2.2	0.48	0.48	NO	0.681	0.41	0.13	0.12	12	1.26	2.65	2.84	Only Post-2008 Data Considered
Lead Nov - June	0.886	0.886	0.49	64.9	2.5	0.47	0.47	NO	0.681	0.41	0.13	0.12	12	1.26	1.71	2.06	Only Post-2008 Data Considered
Mercury July - Oct	1.000	1.000		2.10	0.0120	0.013	0.012	YES	0.681	0.01	0.77	0.68	12	3.54	2.65	2.84	
Mercury Nov - June	1.000	1.000		2.10	0.0120	0.020	0.017	YES	0.681	0.01	0.77	0.68	12	3.54	1.71	2.06	
Nickel July - Oct	0.998	0.997	1.0	241	26.7	14.51	13.59	NO	0.720	12	0.72	0.64	14	3.07	2.65	2.84	
Nickel Nov - June	0.998	0.997	1.0	270	30.0	21.90	18.32	NO	0.720	12	0.72	0.64	14	3.07	1.71	2.06	
Nitrate + Nitrite July - Oct (mg/L)	1.000	1.000	4.1		100		9.21	NO	0.956	17.8	0.35	0.34	103	1.24		3.50	
Nitrate + Nitrite Nov - June (mg/L)	1.000	1.000	4.1		100		10.18	NO	0.956	17.8	0.35	0.34	103	1.24		2.95	
Phenol July - Oct	1.000	1.000			1700000		11.24	NO	0.215	7.00	0.60	0.55	3.00	5.62		3.50	
Phenol Nov - June	1.000	1.000			1700000		13.35	NO	0.215	7.00	0.60	0.55	3.00	5.62		2.95	
Silver July - Oct	0.850			0.89		0.10		NO	0.681	0.06	1.05	0.86	12	4.96	2.65		Only Post-2008 Data Considered
Silver Nov - June	0.850			1.13		0.15		NO	0.681	0.06	1.05	0.86	12	4.96	1.71		Only Post-2008 Data Considered
WET July - Oct	1.000	1.000		3.00	1.00	0.38	0.35	NO	0.398	1			5	1.00	2.65	2.84	
WET Nov - June	1.000	1.000		3.00	1.00	0.58	0.48	NO	0.398	1			5	1.00	1.71	2.06	
Zinc July - Oct	0.978	0.986	7.0	60	61	34	33	NO	0.794	57	0.24	0.24	20	1.42	2.65	2.84	
Zinc Nov - June	0.978	0.986	7.0	68	68	49	42	NO	0.794	57	0.24	0.24	20	1.42	1.71	2.06	

Table E-3: Water Quality-based Effluent Limit Calculations for Fivemile Creek (Outfall 001)

Statistical variables for permit limit calculation		Dilution (Dil'n) factor is the inverse of the percent effluent concentration at the edge of the acute or chronic mixing zone.
LTA Probability Basis	99%	
MDL Probability Basis	99%	
AML Probability Basis	95%	

	Permit Limit Calculation Summary										Waste Load Allocation (WLA) and Long Term Average (LTA) Calculations						
	Acute Dil'n Factor	Chronic Dil'n Factor	Metal Criteria Translator	Metal Criteria Translator	Ambient Concentration	Water Quality Standard Acute	Water Quality Standard Chronic	Average Monthly Limit (AML)	Maximum Daily Limit (MDL)	Comments	WLA Acute	WLA Chronic	LTA Acute	LTA Chronic	Limiting LTA	Coeff. Var. (CV)	# of Samples per Month
PARAMETER			Acute	Chronic	*ug/L*	*ug/L*	*ug/L*	ug/L	ug/L		*ug/L*	*ug/L*	*ug/L*	*ug/L*	*ug/L*	*decimal*	*n*
Ammonia May - Sep (mg/L)	1.44	1.63	1.00	1.00	0.283	1.23	0.41	**0.405**	**1.65**		1.65	0.49	0.26	0.29	0.26	1.33	20
Ammonia Oct - Apr (mg/L)	1.02	1.03	1.00	1.00	0.283	1.23	0.60	**0.307**	**1.25**		1.25	0.61	0.20	0.36	0.20	1.33	20
Copper May - Sep	1.44	1.58	0.96	0.96		8.51	6.05	**8.22**	**12.8**		12.79	9.95	3.49	4.68	3.49	0.72	1
Copper Oct - Apr	1.02	1.03	0.96	0.96		17.3	11.5	**11.9**	**18.5**		18.5	12.4	5.04	5.82	5.04	0.72	1
Cyanide May - Sep	1.44	1.58	1.00	1.00		22.0	5.20	**4.95**	**14.8**		31.8	8.21	4.14	1.92	1.92	1.71	4
Cyanide Oct - Apr	1.02	1.03	1.00	1.00		22.0	5.20	**3.23**	**9.62**		22.5	5.35	2.93	1.25	1.25	1.71	4
Mercury May - Sep	1.44	1.58	1.00	1.00		2.1	0.01	**0.015**	**0.033**		3.03	0.019	0.78	0.01	0.01	0.77	4
Mercury Oct - Apr	1.02	1.03	1.00	1.00		2.1	0.01	**0.010**	**0.022**		2.15	0.012	0.55	0.01	0.01	0.77	4
Zinc May - Sep	1.44	1.58	0.978	0.986	48	62.8	63.3	**60.4**	**70.9**		70.9	73.2	42.19	55.92	42.19	0.24	1

Table E-3: Water Quality-based Effluent Limit Calculations for the Boise River (Outfall 002)

Statistical variables for permit limit calculation		Dilution (Dil'n) factor is the inverse of the percent effluent concentration at the edge of the acute or chronic mixing zone.
LTA Probability Basis	99%	
MDL Probability Basis	99%	
AML Probability Basis	95%	

	Permit Limit Calculation Summary										Waste Load Allocation (WLA) and Long Term Average (LTA) Calculations						
	Acute Dil'n Factor	Chronic Dil'n Factor	Metal Criteria Translator	Metal Criteria Translator	Ambient Concentration	Water Quality Standard Acute	Water Quality Standard Chronic	Average Monthly Limit (AML)	Maximum Daily Limit (MDL)	Comments	WLA Acute	WLA Chronic	LTA Acute	LTA Chronic	Limiting LTA	Coeff. Var. (CV)	# of Samples per Month
PARAMETER			Acute	Chronic	*ug/L*	*ug/L*	*ug/L*	ug/L	ug/L		*ug/L*	*ug/L*	*ug/L*	*ug/L*	*ug/L*	*decimal*	*n*
Ammonia Nov - June (mg/L)	1.71	2.66	1.00	1.00	0.367	0.76	0.40	**0.255**	**1.04**		1.04	0.46	0.16	0.27	0.16	1.33	20
Ammonia July - Oct (mg/L)	2.65	3.23	1.00	1.00	0.367	0.76	0.29	**0.242**	**1.06**		1.40	0.29	0.22	0.17	0.17	1.33	30
Cyanide Nov - June	1.71	2.06	1.00	1.00		22.0	5.20	**6.47**	**19.3**		37.6	10.7	4.90	2.51	2.51	1.71	4
Cyanide July - Oct	2.65	2.84	1.00	1.00		22.0	5.20	**8.90**	**26.5**		58.2	14.8	7.58	3.46	3.46	1.71	4
Mercury Nov - June	1.71	2.06	1.00	1.00		2.1	0.012	**0.019**	**0.043**		3.6	0.02	0.93	0.01	0.01	0.77	4
Mercury July - Oct	2.65	2.84	1.00	1.00		2.1	0.012	**0.026**	**0.060**		5.6	0.03	1.44	0.02	0.02	0.77	4

Effluent Limit Calculations for Bis(2-ethylhexl) Phthalate for Outfalls 001 and 002

AML Probability Basis	95%							
MDL Probability Basis	99%							
	Ambient Concentration	Water Quality Criteria for Protection of Human Health	LIMIT REQ'D?	Expected Number of Compliance Samples per Month	AVERAGE MONTHLY EFFLUENT LIMIT	AVERAGE WEEKLY EFFLUENT LIMIT	Coeff Variation	Dilution Factor
Parameter	µg/L	µg/L			ug/L	ug/L	CV	
Bis-2-ethylhexyl-phthalate 001		2.20	YES	1.00	2.55	7.20	3.038	1.16
Bis-2-ethylhexyl-phthalate 002		2.20	YES	1.00	9.20	26.0	3.038	4.18

C. References

EPA. 1991. *Technical Support Document for Water Quality-based Toxics Control*. US Environmental Protection Agency. Office of Water. EPA/505/2-90-001. March 1991. www.epa.gov/npdes/pubs/owm0264.pdf

Appendix F: Total Phosphorus Reasonable Potential and Limits

A. Limits Consistent with the draft Lower Boise River TMDL 2015 Total Phosphorus Addendum

Federal regulations state that NPDES permits must include effluent limits consistent with the assumptions and requirements of any available wasteload allocation (WLA) in a total maximum daily load (TMDL) for the discharge prepared by the State and approved by the EPA pursuant to 40 CFR 130.7 (40 CFR 122.44(d)(1)(vii)(A)).

At this time, there is no approved TMDL for total phosphorus in Fivemile Creek or the Lower Boise River. However, the Idaho Department of Environmental Quality has prepared the draft *Lower Boise River TMDL: 2015 Total Phosphorus Addendum*, ("2015 Draft TP TMDL") which was issued for public review and comment on June 5th, 2015. The 2015 Draft TP TMDL includes WLAs for the City of Meridian. The EPA anticipates that IDEQ will finalize the 2015 Draft TP TMDL in the near future, and that the final TMDL will subsequently be approved by the EPA. Thus, in the draft permit, the EPA is proposing effluent limits for TP that are consistent with the proposed WLAs in the 2015 Draft TP TMDL.

The EPA intends to issue a final NPDES permit to the City of Meridian after the 2015 Draft TP TMDL is finalized by IDEQ and approved by the EPA. The WLAs in the final, approved TMDL may be different from those in the 2015 Draft TP TMDL. The EPA intends to establish TP limits in the final permit that are consistent with the assumptions and requirements of the WLAs in the final, approved TMDL.

The draft WLAs are 8.5 lb/day from May 1 – September 30 (see Table 28, Page 94) and 29.8 lb/day from October 1 – April 30 (see Table 35, Page 110). Federal regulations state that effluent limits for publicly owned treatment works (POTWs) that discharge continuously shall be stated as average weekly and average monthly discharge limitations, unless impracticable (40 CFR 122.45(d)(2)). For both the May – September and October – April WLAs, the 2015 Draft TP TMDL states that "DEQ intends that wasteload allocations are to be expressed as average monthly limits, with higher weekly average limits based on the coefficient of variation, in NPDES permits." Thus, the proposed average monthly limits for TP are identical to the WLAs.

Average weekly limits for TP were calculated by adapting the ratio shown in Table 5-3 of the EPA's *Technical Support Document for Water Quality-based Toxics Control* or "TSD" (EPA 1991) to calculate an average weekly limit instead of a maximum daily limit, using the required sampling frequency of twice per week, the 95th percentile probability basis for the average monthly limit, the 99th percentile probability basis for the average weekly limit. Attainment of the proposed average monthly effluent limits for TP will require upgrades to the POTW. The coefficient of variation, based on recent effluent data, is 0.94. Attainment of the proposed average monthly effluent limits for TP will require upgrades to the POTW. Therefore, the historic effluent variability for TP may not be representative of future effluent variability. The TSD states that typical values of the CV for effluent data usually range from 0.2 to 1.2 (see TSD at Page E-3). Because the recent effluent data indicate relatively high variability, the EPA has assumed that the coefficient of variation (CV) is equal to 1.2, which is the upper bound of the typical range. This results in a ratio between the average monthly and average weekly limit of 2.35:1. Thus, the proposed average weekly limits are:

May – September: $8.5 \text{ lb/day} \times 2.35 = 20 \text{ lb/day}$

October – April: 29.8 lb/day × 2.35 = 70.0 lb/day

B. Potential Alternative Limits based on Idaho's Narrative Water Quality Criterion for Nutrients

As explained above, IDEQ has completed the 2015 Draft TP TMDL, which includes wasteload allocations for the City of Meridian facility. However, unless and until the TMDL is finalized by IDEQ and approved by the EPA, the regulation requiring that the EPA establish effluent limits that are "consistent with the assumptions and requirements of any available wasteload allocation for the discharge prepared by the State *and approved by EPA pursuant to 40 CFR 130.7"* (emphasis added) is inapplicable to the City of Meridian's permit.

If the TMDL is not finalized by IDEQ and approved by the EPA, effluent limits for nutrients would need to be derived directly from Idaho's narrative criterion for excess nutrients (IDAPA 58.01.02.200.06). Such limits would also need to comply with applicable federal regulations, notably 40 CFR 122.44(d)(1)(vi – vii).

Since modeling shows that nuisance levels of periphyton (> 150 mg/m^2 chlorophyll a) can occur under existing phosphorus loading conditions in at least one Boise River segment in every month of the year except May, June and July (see the 2015 Draft TP TMDL at Figure 32, Page 120), when reductions in TP in the Boise River are necessary to meet the 70 µg/L load allocation in the Snake River Hells Canyon TMDL (IDEQ and ODEQ 2004), TP limits would need to be established for all times of the year.

In addition, such limits would likely be more stringent than the limits consistent with the WLA in the 2015 Draft TP TMDL (described above). The 2015 Draft TP TMDL establishes load and wasteload allocations for numerous point and nonpoint sources in the Lower Boise watershed. Unless and until the TMDL is finalized by IDEQ and approved by the EPA, there is no assurance that the other point and nonpoint sources of TP in the Lower Boise watershed will reduce their TP loading, as planned by the TMDL. If the other sources of TP in the watershed do not reduce TP loading, effluent limits more stringent than limits consistent with the WLA in the 2015 Draft TP TMDL (described above) would likely for be necessary for any specific NPDES permit, in order to ensure a level of water quality that is derived from and complies with all applicable water quality standards, as required by 40 CFR 122.44(d)(1)(vii)(A).

The EPA is not proposing specific effluent limits for TP derived directly from Idaho's narrative criterion for excess nutrients at this time. Should the EPA decide to do so in the future, the EPA will reopen the public comment period for this draft permit to propose and take comments on such limits.

C. References

EPA. 1986. *Quality Criteria for Water 1986*. Environmental Protection Agency. Office of Water. Regulations and Standards. Washington, DC. May 1, 1986. EPA-440-5-86-001. http://water.epa.gov/scitech/swguidance/standards/criteria/aqlife/upload/2009_01_13_criteria_goldbook.pdf

EPA. 1991. *Technical Support Document for Water Quality-based Toxics Control*. US Environmental Protection Agency. Office of Water. EPA/505/2-90-001. March 1991. http://www.epa.gov/npdes/pubs/owm0264.pdf

IDEQ and ODEQ. 2004. *Snake River – Hells Canyon Total Maximum Daily Load (TMDL).* Idaho Department of Environmental Quality and Oregon Department of Environmental Quality. Revised June 2004. http://www.deq.state.or.us/wq/tmdls/docs/snakeriverbasin/tmdlrev.pdf

IDEQ. 2015. *Lower Boise River TMDL: 2015 Total Phosphorus Addendum.* Idaho Department of Environmental Quality. Boise, ID. Draft. June 2015. http://www.deq.idaho.gov/media/60176655/lower-boise-river-tmdl-total-phosphorus-addendum-draft-0615.pdf

Appendix G: Draft Clean Water Act Section 401 Certification

Idaho Department of Environmental Quality

Draft §401 Water Quality Certification

June 5, 2015

NPDES Permit Number(s): ID-0020192, City of Meridian WWTP

Receiving Water Body: Fivemile Creek, Boise River

Pursuant to the provisions of Section 401(a)(1) of the Federal Water Pollution Control Act (Clean Water Act), as amended; 33 U.S.C. Section 1341(a)(1); and Idaho Code §§ 39-101 et seq. and 39-3601 et seq., the Idaho Department of Environmental Quality (DEQ) has authority to review National Pollutant Discharge Elimination System (NPDES) permits and issue water quality certification decisions.

Based upon its review of the above-referenced permit and associated fact sheet, DEQ certifies that if the permittee complies with the terms and conditions imposed by the permit along with the conditions set forth in this water quality certification, then there is reasonable assurance the discharge will comply with the applicable requirements of Sections 301, 302, 303, 306, and 307 of the Clean Water Act, the Idaho Water Quality Standards (WQS) (IDAPA 58.01.02), and other appropriate water quality requirements of state law.

This certification does not constitute authorization of the permitted activities by any other state or federal agency or private person or entity. This certification does not excuse the permit holder from the obligation to obtain any other necessary approvals, authorizations, or permits.

Antidegradation Review

The WQS contain an antidegradation policy providing three levels of protection to water bodies in Idaho (IDAPA 58.01.02.051).

- Tier 1 Protection. The first level of protection applies to all water bodies subject to Clean Water Act jurisdiction and ensures that existing uses of a water body and the level of water quality necessary to protect those existing uses will be maintained and protected (IDAPA 58.01.02.051.01; 58.01.02.052.01). Additionally, a Tier 1 review is performed for all new or reissued permits or licenses (IDAPA 58.01.02.052.07).
- Tier 2 Protection. The second level of protection applies to those water bodies considered high quality and ensures that no lowering of water quality will be allowed unless deemed necessary to accommodate important economic or social development (IDAPA 58.01.02.051.02; 58.01.02.052.08).
- Tier 3 Protection. The third level of protection applies to water bodies that have been designated outstanding resource waters and requires that activities not cause a lowering of water quality (IDAPA 58.01.02.051.03; 58.01.02.052.09).

DEQ is employing a water body by water body approach to implementing Idaho's antidegradation policy. This approach means that any water body fully supporting its beneficial uses will be considered high quality (IDAPA 58.01.02.052.05.a). Any water body not fully supporting its beneficial uses will be provided Tier 1 protection for that use, unless specific circumstances warranting Tier 2 protection are met (IDAPA 58.01.02.052.05.c). The most recent federally approved Integrated Report and supporting data are used to determine support status and the tier of protection (IDAPA 58.01.02.052.05).

Pollutants of Concern

The City of Meridian WWTP discharges the following pollutants of concern: five day biochemical oxygen demand (BOD_5), total suspended solids (TSS), total phosphorus (TP), *E. coli*, ammonia, bis(2-ethylhexyl) phthalate, copper, cyanide, mercury, zinc, nitrate + nitrite, total Kjeldahl nitrogen (TKN), arsenic, cadmium, chlorpyrifos, chromium, lead, nickel, selenium, silver and whole effluent toxicity (WET). Effluent limits have been developed for BOD_5, TSS, TP, *E. coli*, ammonia, bis(2-ethylhexyl) phthalate, copper, cyanide, mercury, and zinc. No effluent limits are proposed for nitrate + nitrite, TKN, arsenic, cadmium, chlorpyrifos, chromium, lead, nickel, selenium, silver and whole effluent toxicity (WET), however monitoring requirements are included in the permit so that reasonable potential to exceed WQS can be determined for future permits.

Receiving Water Body Level of Protection

The City of Meridian WWTP discharges to Fivemile Creek within the Lower Boise Subbasin assessment unit (AU) ID17050114SW010_03 (Fivemile Creek – 3rd order). This AU has the following designated beneficial uses: cold water aquatic life and secondary contact recreation. In addition to these uses, all waters of the state are protected for agricultural and industrial water supply, wildlife habitat, and aesthetics (IDAPA 58.01.02.100).

The cold water aquatic life use in Fivemile Creek is not fully supported due to excess sedimentation/siltation, chlorpyrifos and cause unknown (nutrients suspected) (2012 Integrated Report). The secondary contact recreation beneficial use is not fully supported due to excess *E. coli* bacteria. As such, DEQ will provide Tier 1 protection only for the aquatic life use and recreation beneficial uses (IDAPA 58.01.02.051.02; 58.01.02.051.01).

In addition, the City of Meridian WWTP can also discharge to the Boise River within the Lower Boise Subbasin assessment unit (AU) ID17050114SW005_06 (Boise River – Veteran's Memorial Parkway to Star Bridge). This AU has the following designated beneficial uses: cold water aquatic life, salmonid spawning and primary contact recreation. In addition to these uses, all waters of the state are protected for agricultural and industrial water supply, wildlife habitat, and aesthetics (IDAPA 58.01.02.100).

The cold water aquatic life use in the Boise River is not fully supported due to excess sedimentation/siltation, temperature, low flow alterations and physical substrate habitat alterations (2012 Integrated Report). The primary contact recreation beneficial use is not fully supported due to excess fecal coliform bacteria. As such, DEQ will provide Tier 1 protection only for the aquatic life use and recreation beneficial uses (IDAPA 58.01.02.051.02; 58.01.02.051.01).

Protection and Maintenance of Existing Uses (Tier 1 Protection)

As noted above, a Tier 1 review is performed for all new or reissued permits or licenses, applies to all waters subject to the jurisdiction of the Clean Water Act, and requires demonstration that existing uses and the level of water quality necessary to protect existing uses shall be maintained and protected. In order to protect and maintain designated and existing beneficial uses, a permitted discharge must comply with narrative and numeric criteria of the Idaho WQS, as well as other provisions of the WQS such as Section 055, which addresses water quality limited waters. The numeric and narrative criteria in the WQS are set at levels that ensure protection of designated beneficial uses. The effluent limitations and associated requirements contained in the City of Meridian WWTP permit are set at levels that ensure compliance with the narrative and numeric criteria in the WQS.

BOD_5

The draft permit proposes less-stringent BOD_5 effluent limits for Fivemile Creek relative to the current permit. Effluent limits in the previous permit were based on receiving water dilution ratios, with more stringent limits for dilution ratios less than 4:1. Based on receiving water data for temperature, dissolved oxygen, BOD_5 and flow, the EPA has determined the current permit's effluent limits for BOD_5, ensures compliance with water quality criteria for dissolved oxygen in Fivemile Creek, even when the dilution ratio is less than 4:1. Therefore, the draft permit proposes that the prior permits effluent limits for dilution ratios greater than or equal to 4:1 in Fivemile Creek and shall apply at all times regardless of the dilution ratio. The BOD_5 effluent limits for Fivemile Creek were water quality based limits. An exception to the general provision on less stringent limits is that water-quality based effluent limits may be revised if the revised limits are consistent with the State's antidegradation policy. The increased loads of these pollutants in the draft permit do not exceed narrative or numeric criteria in the Idaho WQS, which meets the requirements for Tier 1 protection (IDAPA 58.01.02.051.01.)

Water bodies not supporting existing or designated beneficial uses must be identified as water quality limited, and a total maximum daily load (TMDL) must be prepared for those pollutants causing impairment. A central purpose of TMDLs is to establish wasteload allocations (WLAs) for point source discharges, which are set at levels designed to help restore the water body to a condition that supports existing and designated beneficial uses. Discharge permits must contain limitations that are consistent with WLAs in the approved TMDL.

Temperature

The Meridian WWTP has an outfall that discharges to the Boise River (AU 17050114SW005_06), which is impaired for temperature; however a TMDL has not yet been completed. Prior to the development of the TMDL, the WQS require the application of the antidegradation policy and implementation provisions to maintain and protect uses (IDAPA 58.01.02.055.04). At this time, there is not sufficient data to determine whether or not the discharge of heat to the Boise River has the reasonable potential to cause or contribute to excursions above the water quality standards for temperature. Continuous temperature monitoring of the effluent and receiving water are permit requirements and will allow assessment of potential impacts of the discharge on temperature of the lower Boise River.

Total Phosphorus

The Boise River AU 17050114SW001_06 (Boise River - Indian Creek to mouth), approximately 15 miles downstream from the Boise River outfall, is impaired for TP. The City of Meridian WWTP discharge has the potential to cause or contribute to excursions above water quality standards for nutrients (TP); therefore, the permit proposes water quality based effluent limits for TP. The *Lower Boise River TMDL 2015 Total Phosphorus TMDL Addendum* is under development to address TP impairment in the Lower Boise River. Water quality monitoring and modeling completed since 2012 have determined the extent of impairment in the Boise River as well as WLAs expected to restore beneficial uses in the Boise River. The WLAs developed in the TMDL for the City of Meridian WWTP are proposed as limits in this NPDES permit. The effluent limitations in the permit will result in a decrease of TP in the Boise River.

Fivemile Creek (AU 17050114SW010_03) is listed for cause unknown (nutrients suspected). The water body was first listed for nutrients on the 1994 §303(d) list, which was promulgated by EPA as part of a TMDL lawsuit. For the 2002 cycle, because DEQ had not identified the limiting nutrient impairing the water body, EPA and DEQ agreed that the nutrient listing would be changed to "cause unknown" with the comment "nutrients suspected." However, during the 2010 cycle, cause unknown was delisted and replaced with sediment-overlooking the fact that cause unknown was a placeholder for nutrients. Since DEQ did not provide a rationale that demonstrated nutrients were no longer impairing beneficial uses, DEQ was obligated to relist this segment for cause unknown (nutrients suspected). Therefore, the 2012 Integrated Report lists this segment for cause unknown (nutrients suspected) in Category 5 until such time that either: (1) water quality data demonstrates beneficial uses are no longer impaired by nutrients; (2) a TMDL is developed; or, (3) readily available data and information show the original listing was made in error. The draft permit includes TP effluent limits based on the design flow of the facility, regardless of the outfall used. The effluent limits are consistent with the draft *Lower Boise River TMDL 2015 Total Phosphorus TMDL Addendum* currently out for public comment and are based on supporting beneficial uses in the Boise River. The effluent limitations in the permit will result in a decrease of TP in Fivemile Creek and the Boise River.

The Hells Canyon segment of the Snake River is also impaired due to excess nutrients. The *Snake River Hells Canyon* (SR-HC) *TMDL* (DEQ 2003) established a load allocation for the Boise River based upon a TP concentration of 0.07 mg/L at the mouth of the Boise River. The draft TMDL for TP under development for the Boise River ensures that the load allocation for the SR-HC TMDL will be achieved. DEQ believes the permit will ensure compliance with the TMDL and the applicable narrative criteria.

Sediment and *E. coli* Bacteria

Fivemile Creek (AU 17050114SW010_03), is also impaired for sediment and bacteria. The City of Meridian WWTP discharge meets technology-based limits for sediment (TSS) and water quality-based bacteria limits in its current permit and has similar requirements in the draft permit. The *Lower Boise River TMDL 2015 Sediment and Bacteria Addendum* is under development to address sediment impairment in Fivemile Creek. This TMDL is expected to be submitted for approval by EPA in June 2015. DEQ expects the TMDL WLAs for the City of Meridian WWTP will be incorporated into the proposed NPDES permit.

The *Lower Boise River TMDL 2015 Sediment and Bacteria Addendum E. coli* wasteload allocations are based on a bacteria concentration of 126 cfu/100 mL, collected as a 5-sample geometric mean over 30 days; which is consistent with current permit limits. Sediment wasteload allocations are based on 20 mg/L, less 2.5 mg/L for natural background (TMDL section 5.4.6), and are expressed as 4-month averages. This TMDL is concentration based, so the WLAs are based on the design flow:

E. coli WLA (in 10^9 cfu/day) = $Q \times 4.76$

Sediment WLA (in kg/day) = $Q \times 66.2$

Where Q is the design flow of the facility in million gallons per day (mgd).

The coefficients are simply a collection of conversion constants:

$$\textit{E. coli}: 126\ cfu/100\ mL \times \frac{3.785\ L/gal \times 10^6\ gal/million\ gal}{0.1L/100mL \times 10^9} = \mathbf{4.76} \times 10^9 cfu/day/mgd$$

$$\text{Sediment:} \quad \frac{(20-2.5)mg}{L} \times \frac{3.785\ L/gal \times 10^6\ gal/million\ gal}{10^6\ mg/kg} = \mathbf{66.2}\ kg/day/mgd$$

If the design flow were to increase in the future, then the WLAs would correspondingly increase. The present design flows and WLA are shown in the *Lower Boise River TMDL 2015 Sediment and Bacteria Addendum* Table 27. To ensure consistency with this TMDL, DEQ expects this and future permits to contain a 4-month average effluent limit of 17.5 mg/l TSS with an associated load based on the permitted design flow of the facility and *E. coli* average monthly effluent limits of 126 cfu/100ml and maximum daily limits of 576 cfu/100 ml.

At both the Boise River outfall and the confluence of Fifteenmile Creek (the receiving water body of Fivemile Creek), the Boise River (AU 17050114SW005_06a, Boise River – Star to Middleton) is impaired for sediment and bacteria. The EPA-approved *Lower Boise River TMDL* (DEQ 1999) and TMDL Addendum (2008) establish WLAs for sediment and bacteria for the City of Meridian WWTP and load allocations for sediment and bacteria at the mouth of Fifteenmile Creek. In accordance with the procedure outlined in the sediment TMDL, the City of Meridian requested an increase in their WLA from the sediment TMDL reserve for growth; their design flow has increased from 2.82 million gallons per day (MGD) at the time of TMDL development to 10.2 MGD. The requested WLA increase would result in a decrease in the allowed concentration of TSS, but an increase in the mass load allocation in the Lower Boise River TMDL. DEQ has approved the requested sediment WLA increase and has adjusted the remaining reserve for growth accordingly. These sediment and bacteria allocations are designed to ensure the Boise River will achieve the water quality necessary to support its existing and designated aquatic life beneficial uses and comply with the applicable numeric and narrative criteria. The effluent limitations and associated requirements contained in the City of Meridian WWTP permit are set at levels that comply with these allocations.

In sum, the effluent limitations and associated requirements contained in the City of Meridian WWTP permit are set at levels that ensure compliance with the narrative and numeric criteria in the WQS and the WLAs established in the draft *Lower Boise River TMDL 2015 Total Phosphorus TMDL Addendum*, draft *Lower Boise River TMDL 2015 Sediment and Bacteria Addendum*, and EPA-approved *Lower Boise River TMDL* and *SR-HC TMDL*. Therefore, DEQ

has determined the permit will protect and maintain existing and designated beneficial uses in the Boise River and Fivemile Creek in compliance with the Tier 1 provisions of Idaho's WQS (IDAPA 58.01.02.051.01 and 58.01.02.052.07).

Compliance Schedules

Pursuant to IDAPA 58.01.02.400.03, DEQ may authorize compliance schedules for water quality–based effluent limits issued in a permit for the first time. City of Meridian WWTP cannot immediately achieve compliance with the effluent limits for TP, ammonia, copper, zinc, cyanide, mercury, and bis(2-ethylhexyl) phthalate; therefore, DEQ authorizes a compliance schedule and interim requirements as set forth below. This compliance schedule provides the permittee a reasonable amount of time to achieve the final effluent limits as specified in the permit. At the same time, the schedule ensures that compliance with the final effluent limits is accomplished as soon as possible.

A nine (9) year and 11 month (two-permit-cycle) compliance schedule is authorized for constituents with new effluent limits that cannot be immediately achieved. No conventional treatment options exist to meet some of these effluent limits (metals and bis(2-ethylhexyl) phthalate). Further, the compliance schedule and annual reporting requirements will allow for site specific data to fill data gaps bis(2-ethylhexyl) phthalate) and allow a more accurate assessment of treatment performance for all constituents. It is anticipated that the addition of enhanced biological nutrient removal and improved tertiary filtration implemented for phosphorus and ammonia removal will provide some level of enhanced removal for organics and metals as general effluent quality is improved. Improvements to enhance removals of phosphorus and nitrogen through process enhancements, such as longer solids retention time (SRT) in the biological treatment process, effluent filtration improvements to reduce effluent solids, solids side-stream controls to reduce loadings, recycling back to the liquid stream, and sustained and stable operational performance will all contribute to improved effluent quality.

A schedule of compliance is authorized only for the following effluent limits, outfalls and seasons:

Outfall 001 – Fivemile Creek

- Phosphorus, Total as P (TP)
- Ammonia, Total as N (ammonia)
- Bis(2-Ethylhexyl) Phthalate
- Copper, Total Recoverable (copper)
- Cyanide, Weak Acid Dissociable (cyanide)
- Mercury, Total (mercury) (October-April)
- Zinc, Total Recoverable (zinc) (May-September)

Outfall 002 – Boise River

- Phosphorus, Total as P (TP)
- Ammonia, Total as N (ammonia)
- Bis(2-Ethylhexyl) Phthalate
- Cyanide, Weak Acid Dissociable (cyanide)

While the schedules of compliance are in effect, the City of Meridian WWTP must comply with the following interim requirements:

- The City of Meridian WWTP must comply with the interim effluent limitations (Table 1 and Table 2) and monitoring requirements in Part I.B. of the Permit.
- Until compliance with the final effluent limitations are achieved, the City of Meridian WWTP must complete the tasks listed in Table 3, as required under the schedules of compliance.
- In addition, the City of Meridian must submit an annual progress report outlining progress made towards reaching the final compliance dates for the effluent limitations. The annual progress report based on data gathered through December 31st must be submitted to the EPA and DEQ annually by February 15th of the subsequent year. The first report through December 31, 2015 is due on February 15, 2016 and annually thereafter, until compliance with effluent limitations is achieved. See also the Permit Part III.K., "Compliance Schedules." At a minimum, the annual progress report must include:
    1. An assessment of the previous year's TP, ammonia, copper, zinc, cyanide, mercury and bis(2-ethylexyl) phthalate effluent data and comparison to the final effluent limitations in the permit. This includes an evaluation of improvements in toxic pollutant concentrations that result from treatment process optimization and side-stream projects. Any improved treatment from these processes should be considered in decision making for final upgrades to meet final TP and ammonia effluent limits.
    2. A description of progress made towards meeting the final effluent limitations, including the applicable deliverables required under in Table 3. Include any exceedances of interim permit limits or anticipated challenges for compliance within the next year. This may include a technological explanation and/or a request to modify the permit.
    3. A description of actions and milestones targeted for the upcoming year towards meeting the final effluent limitations.

- The City of Meridian WWTP must achieve compliance with the final effluent limits of the Permit Part I.B.I within nine years and eleven months after the effective date of this permit (EDP).
- The City of Meridian WWTP must provide written notification to the EPA and the DEQ within fourteen (14) days upon completion of each of the above-mentioned tasks at the addresses provided in the Permit Part III.J (also See Part III.K).

Table 1. City of Meridian Interim Effluent Limitations and Schedule for TP and Ammonia for Outfall 001 and Outfall 002.

Parameter	Unit	Average Monthly Limit	Maximum Daily Limit	Period
Phosphorus, Total as P	mg/L	Seasonal average 2.5		EDP to 4 years and 11 months after EDP
	mg/L	Seasonal Average 1.0		From 5 years to 9 years and 11 months after EDP
Ammonia, Total as N	mg/L	12	20	9 years and 11 months after EDP

Table 2. City of Meridian Interim Effluent Limitations for Copper, Cyanide, Zinc, Mercury, and Bis(2-Ethylhexyl) Phthalate.

Parameter	Unit	Average Monthly Limit	Maximum Daily Limit	Period	Outfall
Copper, Total Recoverable	µg/L	13.3	18.5	Year Round	Outfall 001
Cyanide, Weak Acid Dissociable	µg/L	No interim limit[1]	No interim limit[1]	Year Round	Outfall 001 and Outfall 002
Zinc, Total Recoverable	µg/L	No interim limit[1]	No interim limit[1]	May - September	Outfall 001
Mercury, Total	µg/L	0.015	0.033	October - April	Outfall 001
Bis(2-Ethylhexyl) Phthalate	µg/l	No interim limit[1]	No interim limit[1]	Year Round	Outfall 001 and Outfall 002

[1] For pollutants with no interim limit, there is no limit in effect until the end of the compliance schedule.

Table 3. Tasks Required Under the Schedules of Compliance.

Task No.	Completion Date	Task Activity
1	Feb 15, 2016 and annually thereafter	Annual Progress Report including an assessment of the previous calendar year's treatment performance and comparison to the final effluent limitations for TP, ammonia, copper, zinc, cyanide, mercury and bis(2-ethyhexyl) phthalate.
2	Two (2) years after the Effective Date of the Permit (EDP)	Amended Facility Planning: Evaluate treatment options to achieve both final TP and ammonia limits. Deliverable: Permittee must provide DEQ with an amended facility plan for approval within 2 years of the EDP.
3	Five (5) years after EDP	Implementation of Treatment Enhancements: • Process optimizations for ammonia removal • Centrate equalization and side-stream treatment design and construction • Evaluation of recycled water program • Phase 2 fermentation evaluation • Evaluation of tertiary filtration enhancements Deliverable: Provide DEQ and EPA a schedule of design upgrades required to achieve compliance with final limits within 5 years of the EDP.
4	Five (5) years after EDP	Achieve TP interim limit not to exceed 1.0 mg/L (seasonal average).
5	Six (6) years after EDP	BNR Design Phase: The Permittee will have completed the detailed design for upgrades to the BNR process to meet the final ammonia and TP limitations. Deliverable: Permittee must provide EPA with written notice that the final design report has been completed within 6 years of the EDP.
6	Eight (8) years after EDP	BNR Construction Phase: The Permittee will have completed the construction for the BNR to meet the final ammonia and TP limitations. Deliverable: Permittee must provide DEQ and EPA with written notice that the facility construction has been completed within 8 years of the EDP.
7	Nine (9) years after EDP	Tertiary Filtration Construction and Process Optimization: The Permittee will have completed the construction of tertiary filtration and begun process optimization to meet the final ammonia and TP limitations. Deliverable: Permittee must provide DEQ and EPA with written notice that the facility construction has been completed within 9 years of the EDP.
8	Nine (9) years and eleven months after EDP	Process optimization and achieve final effluent limitation (nine years and eleven months after the effective date of the permit). Deliverable: Permittee must achieve compliance with the final effluent limitations within 9 years and 11 months of the EDP and must submit written notice of compliance to DEQ and EPA.

Mixing Zones

Pursuant to IDAPA 58.01.02.060, DEQ authorizes the mixing zones summarized in Table 4.

Table 4. Authorized Mixing Zones.

Pollutant	Outfall	Receiving Water	Season	Authorized % Critical Flow Mixing Zone
Ammonia	Outfall 001	Fivemile Creek	Year Round	25%
	Outfall 002	Boise River		
Bis(2-Ethylhexyl) Phthalate	Outfall 001	Fivemile Creek	Year Round	25%
	Outfall 002	Boise River		
Copper	Outfall 001	Fivemile Creek	Year Round	25%
	Outfall 002	Boise River		1%
Cyanide	Outfall 001	Fivemile Creek	Year Round	25%
	Outfall 002	Boise River		
Mercury	Outfall 001	Fivemile Creek	Year Round	25%
	Outfall 002	Boise River		
Nickel	Outfall 001	Fivemile Creek	May-Sept	14%
Zinc	Outfall 001	Fivemile Creek	May-Sept	25%

Other Conditions

This certification is conditioned upon the requirement that any material modification of the permit or the permitted activities—including without limitation, any modifications of the permit to reflect new or modified TMDLs, wasteload allocations, site-specific criteria, variances, or other new information—shall first be provided to DEQ for review to determine compliance with Idaho WQS and to provide additional certification pursuant to Section 401.

Right to Appeal Final Certification

The final Section 401 Water Quality Certification may be appealed by submitting a petition to initiate a contested case, pursuant to Idaho Code § 39-107(5) and the "Rules of Administrative Procedure before the Board of Environmental Quality" (IDAPA 58.01.23), within 35 days of the date of the final certification.

Questions or comments regarding the actions taken in this certification should be directed to Lance Holloway, DEQ Boise Regional Office at 208.373.0564 or Lance.Holloway@deq.idaho.gov.

DRAFT

Aaron Scheff
Regional Administrator
Boise Regional Office