Fact Sheet

NPDES Permit Number: IDS028126
Public Comment Period Start Date: May 17, 2021
Public Comment Period Expiration Date: June 16, 2021
Technical Contact: Misha Vakoc
(206) 553-6650 or (800) 424-4372
vakoc.misha@epa.gov

U.S. Environmental Protection Agency (EPA) Proposes to Modify the National Pollutant Discharge Elimination System (NPDES) Permit for Stormwater Discharges Issued to:

City of Nampa

EPA Region 10 proposes to modify the NPDES permit reissued on December 8, 2020, for discharges from the municipal separate storm sewer system (MS4) owned and/or operated by the City of Nampa, Idaho, hereinafter the "City" or "Permittee." Specifically, EPA proposes to modify specific provisions in Permit Part 3 to recognize Nampa's Asset Management schedule as integral to the implementation of their Stormwater Management Program. In addition, EPA proposes to modify Permit Parts 4 and 6.2 to require implementation of the Permittee's MS4 Stormwater Monitoring Plan and associated Quality Assurance Project Plan dated April 15, 2021 and submitted on April 16, 2021. See Appendices 2 and 3 to this document.

EPA will only accept public comment on the modified provisions described in this document.

This Fact Sheet includes:

- Information on public comment, public hearing, and appeal procedures, and
- A description and rationale for the modifications proposed.

State CWA Section 401 Certification

On October 7, 2020, the Idaho Department of Environmental Quality (IDEQ) certified Permit #IDS028126 pursuant to Clean Water Act (CWA) Section 401; a copy of the final certification is included in the Administrative Record for this action. On April 30, 2021, IDEQ confirmed that it does not need to recertify the Permit in light of this modification.

Public Comment and Opportunity for Public Hearing

Because of the COVID-19 virus, access to the Region 10 EPA building is limited. Therefore, EPA requests that all comments on the proposed permit modification or requests for a public hearing be submitted via email to Misha Vakoc (vakoc.misha@epa.gov). If you are unable to submit comments via email, please call 206-553-6650.

Persons wishing to comment on, or request a Public Hearing for, the proposed permit modification must do so in writing by the expiration date of the Public Comment period. A

request for Public Hearing must state the specific NPDES permit, 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 EPA as described in the Public Comments Section of the attached Public Notice.

After the comment period ends, and all comments have been considered, EPA's Regional Director for the Water Division will make a final decision regarding permit reissuance. If EPA receives no comments, the conditions in the proposed permit will become final, and the permit will become effective upon issuance. If comments are submitted, EPA will prepare an individual response to comments document and, if necessary, will make changes to the Permit. After making any necessary changes, EPA will issue the Permit with its response to comments document, unless issuance of a new draft Permit is warranted pursuant to 40 CFR § 122.14. The Permit modification will become effective no earlier than thirty (30) days after the issuance date, unless the Permit is appealed to the Environmental Appeals Board pursuant to 40 CFR § 124.19.

Documents Available for Review

The draft Permit, fact sheet and other information is available on EPA Region 10 website at: https://www.epa.gov/npdes-permits/stormwater-discharges-municipal-sources-idaho-and-washington OR https://www.epa.gov/npdes-permits/idaho-npdes-permits.

Because of COVID-19 response, there is no public access to the Region 10 EPA buildings at this time. Therefore, EPA cannot make hard copies available for viewing at our offices.

For technical questions regarding the Permits listed above or this Fact Sheet, contact Misha Vakoc at the phone number or E-mail listed above. Services for persons with disabilities are available by contacting Audrey Washington at (206) 553-0523.

Table of Contents

Acronyms

CFR	Code of Federal Regulations
CWA	Clean Water Act
CZARA	Coastal Zone Act Reauthorization Amendments
EFH	Essential Fish Habitat
ESA	Endangered Species Act
EPA	United States Environmental Protection Agency, Region 10
IDEQ	Idaho Department of Environmental Quality
MS4	Municipal Separate Storm Sewer System
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
QAPP	Quality Assurance Project Plan
US	United States
USC	United States Code
USFWS	U.S. Fish and Wildlife Service

1 Facility Information

The City of Nampa, Idaho ("City" or "Permittee") owns and/or operates a regulated small municipal separate storm sewer system (MS4) located in the Nampa Urbanized Area in Canyon County, Idaho.

EPA reissued the Nampa MS4 Permit on December 8, 2020; the Permit subsequently became effective on February 1, 2021 and will expire on January 31, 2026. The Permit authorizes Nampa's MS4 discharges to Indian Creek, Mason Creek, and other associated waters, and defines stormwater management control measures to reduce pollutants to the maximum extent practicable (MEP), protect water quality, and comply with other provisions of the Clean Water Act (CWA).

A general map of the Nampa MS4 Permit Area is provided in Appendix 1. Description of the Nampa MS4 and other background information can be found in EPA's Fact Sheet, dated September 1, 2020, in the Administrative Record for this modification.

2 Cause for Modification

Permit Part 2.6 (*Alternative Control Measure Requests*) allows the Permittee to request that EPA and IDEQ consider any alternative documents, plans, or programs that the Permittee believes to be equivalent to a required SWMP control measure or control measure component specified in Permit Part 3. For the purposes of the MS4 Permit, "Alternative Control Measures" or ACMs, also include actions developed by the Permittee that are required by Permit Part 4 (*Special Conditions for Discharges to Impaired Waters*). Part 2.6 also describes the required content of such submittals which allows EPA and IDEQ to review the adequacy of the request and consider whether the specific information should be included in the MS4 Permit.

Permit Part 4 requires the Permittee to submit a monitoring/assessment plan, and description of two (2) Pollutant Reduction Activities designed to reduce impairment pollutants from the MS4 to Indian Creek, Mason Creek, and tributary conveyances to the Boise River. The Permittee must submit these documents no later than February 1, 2023. Specific provisions in Part 4, related to temperature monitoring of MS4 discharges and the submittal of pollutant reduction activities to reduce impairment pollutants to Indian Creek, Mason Creek, and the Boise River, are conditions of IDEQ's *Final Clean Water Act §401 Water Quality Certification for the City of Nampa Municipal Separate Storm Sewer System; NPDES Permit # IDS028126*, dated October 7, 2020.

On April 16, 2021, the City submitted two separate ACM requests:

1. The City requests modification of specific Permit requirements to align certain implementation schedules according to the City's Asset Management Program. The City's Asset Management Program "*provides a systematic approach to inventory, monitor, evaluate and replace assets throughout the city. The City's assets are divided into seven (7) zones, A, B, C, D, E, F, and G, which the City progressively moves through a cycle of evaluating, prioritizing, designing, and constructing. The intent of this program is to maintain the level of service for the City's infrastructure assets.*" See Appendix 2 of this document for further City explanation of why certain schedules in the Permit should be modified, as well as the map and associated table defining the Nampa Asset Management Schedule.

2. The City also submitted its *NPDES MS4 Stormwater Outfall Monitoring Plan* (Monitoring Plan) as required by Permit Part 4.2. The Monitoring Plan, including the associated quality assurance project plan, is included as Appendix 3 of this document.

On April 27, 2021, the City met with IDEQ and EPA representatives to explain each submittal. EPA reviewed both documents and subsequently consulted with IDEQ.

Consistent with Permit Part 2.6.4, EPA determines that the City's request to revise certain implementation schedules to align with their existing Asset Management Program, and to conduct stormwater discharge monitoring as defined in the Monitoring Plan dated April 15, 2021 and submitted on April 16, 2021, meets the Permit requirements.

As discussed in Section 3 below, EPA proposes to modify relevant Permit text to acknowledge the Asset Management Program schedule and add a new Permit Appendix C containing the Asset Management Schedule as submitted.

EPA recognizes that the Nampa Asset Management Program divides the City into seven discrete zones, and that the City focuses its maintenance and operational efforts in a particular zone on a rotating annual schedule as set forth in the Nampa Asset Management Schedule. Specific requests for permit text modifications, detailed below, are based upon this rotational schedule.

EPA also proposes to require the City to conduct MS4 outfall monitoring as submitted in the Monitoring Plan.

3 Modified Permit Provisions

3.1 Cover Page

The cover page is revised to include an effective date for modified permit provisions at least 30 days after the modified Permit's issuance date.

3.2 Permit Part 3.2 Illicit Discharge Detection and Elimination

Permit Part 3.2.2 requires the Permittee to update, or develop if not already completed, a map of their MS4 and all associated outfall locations under its operational control within the Permit Area.

The City requests that Part 3.2.2 be modified to allow the City to update its MS4 Map and Outfall Inventory according to the Nampa Asset Management Schedule. EPA proposes to add the Asset Management Schedule as Permit Appendix C, and proposes to add the following text to Part 3.2.2:

> *The Permittee must update its MS4 Map and Outfall Inventory in identified zones of the City according to the Nampa Asset Management Schedule in Appendix C*.

EPA further revises the following sentence in Part 3.2.2.to clarify when the MS4 Map and Inventory must be submitted:

> No later than August 4, 2025, an electronic GIS version of the MS4 map *completed to date*, and the accompanying Outfall Inventory *completed to date*, must be submitted to EPA and IDEQ as part of the Permit Renewal Application required by Part 8.2.

Permit Part 3.2.5.2 requires the Permittee to conduct visual dry weather screening of their MS4 outfalls.

The City requests that Part 3.2.5.2 be modified to allow annual dry weather screening of a minimum of 50 outfalls in the zone specified in the Nampa Asset Management Schedule for a particular year.

EPA proposes to revise Part 3.2.5.2 to state:

> *The Permittee must screen at least 50 outfalls annually in the identified zone of the City according to the Nampa Asset Management Schedule in Appendix C.*

3.3 Permit Part 3.4 Post-Construction Stormwater Management for New Development and Redevelopment

Permit Part 3.4.5 requires the Permittee to inspect high priority permanent stormwater controls at certain sites throughout its jurisdiction that discharge into the MS4, to ensure proper installation, and long-term operation and maintenance, of such controls.

The City requests that this provision be modified to allow it to conduct inspections and necessary maintenance in the zone specified in the Nampa Asset Management Schedule for a particular year. .EPA proposes to add the following text to Part 3.4.5:

> *To comply with this requirement, the Permittee must conduct inspections and necessary maintenance in identified zones of the City according to the Nampa Asset Management Schedule in Appendix C.*

Permit Part 3.4.6 requires Operation and Maintenance of Permanent Stormwater Controls.

The City requests that this provision be modified to allow it to update its database inventory in the zone specified in the according to the Nampa Asset Management Schedule for a particular year.

EPA proposes to add the following text to Part 3.4.6:

> *The Permittee must update its database inventory by identified zones of the City according to the Nampa Asset Management Schedule in Appendix C.*

3.4 Permit Part 3.5 Pollution Prevention /Good Housekeeping for MS4 Operations

Permit Part 3.5.2 requires the Permittee to inspect and clean catch basins and inlets. The City requests that this provision be modified to allow such inspection and cleaning to occur each year in the zone specified in the according to the Nampa Asset Management Schedule for a particular year.

EPA proposes to add the following text to Part 3.5.2:

> *The Permittee must inspect catch basins and take appropriate maintenance or cleaning actions in identified zones of the City according to the Nampa Asset Management Schedule in Appendix C.*

Permit Part 3.5.5 requires the Permittee to sweep areas that discharge to the MS4 at least once annually. The City requests that this provision be modified to allow it to prioritize sweeping in the scheduled asset management zone each year, with other roads swept later in the year in order of priority. The City also notes that it conducts a quarterly ‘sweep through’ the City based on requests from its City staff and the community; the City also anticipates that it will develop its detailed sweeping management plan during Permit Year 2.

EPA proposes to add the following text to Part 3.5.5:

At a minimum, the Permittee must sweep in identified zones of the City according to the Nampa Asset Management Schedule in Appendix C.

3.5 Permit Part 4 Special Conditions for Discharges to Impaired Waters

Permit Part 4.1 requires the submittal of both a Monitoring/Assessment Plan and a description of Pollutant Reduction Activities no later than February 1, 2023.

On April 16, 2021, the City submitted the *City of Nampa NPDES MS4 Stormwater Outfall Monitoring Plan*, including the required quality assurance project plan, dated April 15, 2021; see Appendix 3 of this document. The City has not yet submitted its Pollutant Reduction Activities.

EPA proposes to revise Permit Part 4 to require the City to conduct the monitoring activities as submitted, to clarify reporting expectations, and preserve the original text for submittal of Pollutant Reduction Activities no later than February 1, 2023.

3.6 Permit Part 6.2 General Requirements for Monitoring/Assessment Activities

EPA proposes to revise Permit Parts 6.2.1 and 6.2.2 to recognize the City's Monitoring Plan dated April 15, 2021 and submitted on April 16, 2021.

3.7 Permit Part 6.4.2 Reporting Requirements

Permit Part 6.4.2 requires the Permittee report annually on the implementation of their Stormwater Management Program and establishes specific reporting periods and submittal deadlines.

As part of its Monitoring Plan, the City requested that EPA modify the reporting periods in order to align its anticipated MS4 outfall sampling with other stormwater sampling activities required by its obligations under the NPDES Multi-Sector General Permit (MSGP) at the Nampa Municipal Airport. The MS4 Permit's Annual Report submittal deadline (April 4 of each year, beginning in Year 2022) remains unchanged. EPA agrees to revise the reporting periods, and proposes to revise the reporting periods in Table 6.4.2 as follows:

	Reporting Period	**Due Date**
Year 1 Annual Report	*February 1, 2021 – December 31, 2021*	April 4, 2022
Year 2 Annual Report	*January 1, 2022 – December 31, 2022*	April 4, 2023
Year 3 Annual Report	*January 1, 2023 – December 31, 2023*	April 4, 2024
Year 4 Annual Report	*January 1, 2024 – December 31, 2024*	April 4, 2025
Year 5 Annual Report	*January 1, 2025 – January 30, 2026*	January 30, 2026

3.8 Other Editorial Changes

EPA is also correcting Appendix A.2 with the appropriate IDEQ Boise Regional Office contact information.

4 Other Legal Requirements

4.1 Environmental Justice

As part of the permit development process, EPA Region 10 conducted a screening analysis to determine whether this permit action could affect overburdened communities. "Overburdened" communities can include minority, low-income, tribal, and indigenous populations or communities that potentially experience disproportionate environmental

harms and risks. EPA uses 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.

Based on this screening, the Nampa Urbanized Area is identified as an area where potentially overburdened communities reside. To ensure that individuals in this area are able to participate meaningfully in the NPDES permit process, EPA will work to ensure that interested stakeholders in these areas, and throughout the state, are informed and able to provide their input on appropriate local stormwater management activities.

EPA encourages MS4 Permittees to review (and to consider adopting, where appropriate) *Promising Practices for Permit Applicants Seeking EPA-Issued Permits: Ways To Engage Neighboring Communities* as described in the EPA document available at https://www.federalregister.gov/articles/2013/05/09/2013-10945/epa-activities-to-promote-environmental-justice-in-the-permit-application-process#p-104.

For more information, see https://www.epa.gov/environmentaljustice and Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*.

4.2 Endangered Species Act

The Endangered Species Act (ESA) Section 7(a)(2) requires federal agencies to consult with the National Oceanic and Atmospheric Administration – National Marine Fisheries Service (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS) regarding potential effects an action may have on listed endangered species.

EPA reviewed available information from the NOAA Fisheries website and determined that there are no endangered or threatened species or designated critical habitat under the jurisdiction of NOAA Fisheries in the Nampa MS4 Permit Area. Modification of the Nampa MS4 Permit therefore has no effect on any of these listed endangered or threatened species or designated critical habitat, and consultation with NOAA Fisheries is not required.

On March 31, 2021, EPA reviewed available information from the USFWS' Information for Planning and Consultation website for the Nampa Urbanized Area, and slickspot peppergrass (*Lepidium papilliferum*) is identified as a threatened species in this portion of Canyon County. EPA reviewed the available information on slickspot peppergrass, including the USFWS' proposed critical habitat areas, and determines that modification of the Nampa MS4 Permit will have no effect on slickspot peppergrass; therefore consultation with USFWS is not required for this action.

4.3 Essential Fish Habitat

Essential Fish Habitat (EFH) is the waters and substrate necessary for fish spawning, breeding, feeding, or growing to maturity. The Magnuson-Stevens Fishery Conservation and Management Act requires EPA to consult with the NOAA Fisheries if a proposed action has the potential to adversely affect (by reducing the quality and/or quantity of) EFH. EPA reviewed the current NOAA Fisheries maps reflecting EFH for freshwater species, and there is no EFH located in the Nampa Urbanized Area. Therefore, consultation is not required for this action.

4.4 National Historic Preservation Act

Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to

take into account the effects of federal undertakings on historic properties listed on, or eligible for listing on, the National Register of Historic Places. The term federal "undertaking" in NHPA regulations to include a project, activity, or program of a federal agency that can result on changes in the character or use of historic properties, if any historic properties are located in the area of potential effects for that project, activity or program. See 36 CFR § 802(o) and 36 CFR §802(e). Federal undertakings include EPA's issuance of a NPDES permit.

EPA determined that the reduction of pollutants in runoff through compliance with a MS4 discharge permit will not result in the disturbance of any site listed or eligible for listing in the National Historic Register. Therefore, EPA believes that the actions associated with the Permit are also in compliance with the terms and conditions of the National Historic Preservation Act.

Pursuant to Permit Part 8.10, Permittees are reminded that they must comply with applicable state, Tribal and local laws, including those concerning protection of historic properties.

4.5 National Environmental Policy Act and Other Federal Requirements

Regulations at 40 CFR §122.49, list federal laws that may apply to the issuance of permits i.e., ESA, NHPA, the Coastal Zone Act Reauthorization Amendments (CZARA), NEPA, and Executive Orders, among others. The NEPA compliance program requires analysis of potential impacts, options to avoid or minimize impacts; and development and analysis of measures to mitigate adverse impacts.

EPA has not promulgated effluent limitation guidelines or new source performance standards specific to MS4 discharges. MS4 permits are not subject the NEPA.

Idaho is not located in the U.S. coastal zone, so CZARA does not apply to issuance of the Permit. In addition, the Permit will not authorize the construction of a water resources facility or the impoundment of any waterbody. No regulated small MS4s are located in designated Wild and Scenic River areas. Therefore, EPA determines that the Fish and Wildlife Coordination Act, 16 USC § 661 et seq., and Wild and Scenic Rivers Act, 16 USC § 470 et seq., do not apply to the modification of the Permit.

4.6 Permit Dates

The Nampa MS4 Permit was reissued on December 8, 2020 and became effective on February 1, 2021. The Permit's expiration date is January 31, 2026. EPA is not proposing to revise these dates. See Section 3.1.

4.7 State Certification of the Draft Permit

Section 401 of the CWA requires 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.

As previously noted, IDEQ certified the Nampa MS4 Permit on October 7, 2020. On April 30, 2021, IDEQ confirmed to EPA that it does not need to recertify the Nampa MS4 Permit in light of the pending modification.

Appendix 1 – Permit Area Maps: Nampa Urbanized Area

Nampa	Census 2000	http://www2.census.gov/geo/maps/urbanarea/uaoutline/UA2000/ua60976/
	Census 2010	http://www2.census.gov/geo/maps/dc10map/UAUC_RefMap/ua/ua60976_nampa_id/

The Nampa MS4 Permit covers all areas within the Nampa Urbanized Area served by the municipal separate storm sewer system (MS4) owned and/or operated by the City of Nampa.

Figure A.3.1: City Boundaries

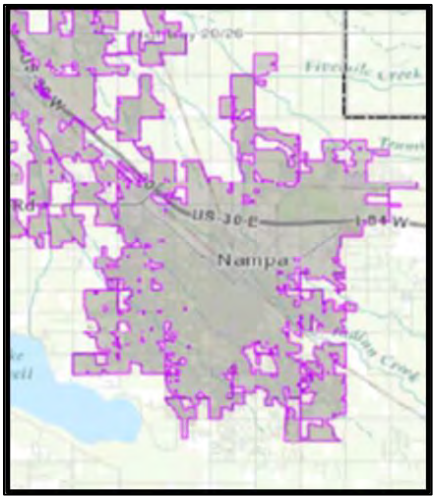
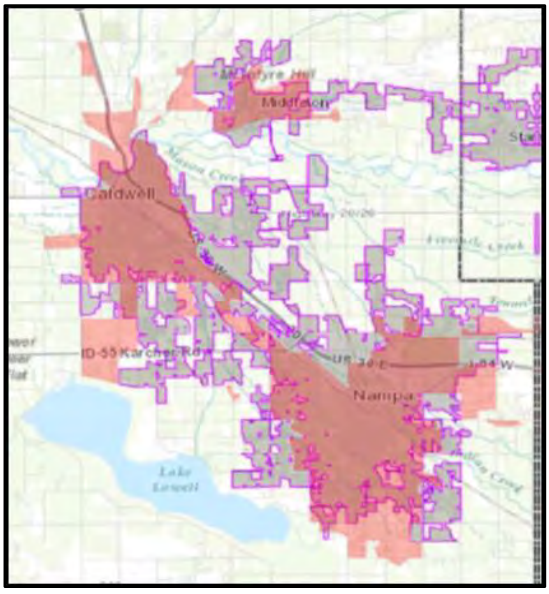
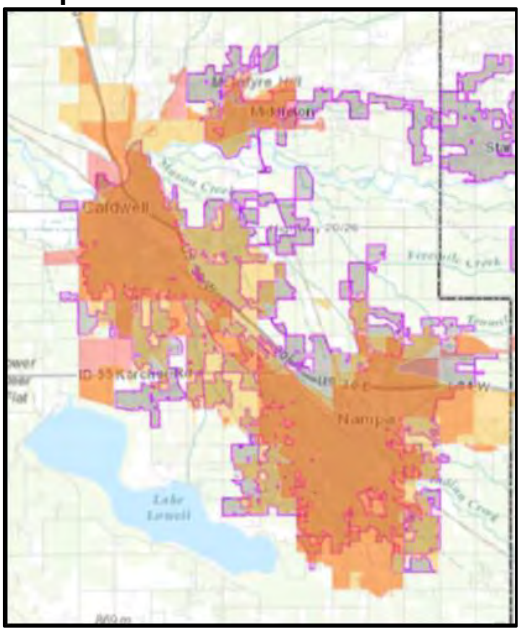


Figure A.3.2: City and Year 2000 UA Boundaries for the Nampa Urbanized Area

Figure A.3.3: Combined Year 2000 UA and Year 2010 UA Boundaries for the Nampa Urbanized Area





Appendix 2 – City of Nampa's Asset Management Program as submitted April 16, 2021

ENVIRONMENTAL COMPLIANCE
City of Nampa

April 15, 2021

Misha Vakoc
United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, Mail Code: 19-H16
Seattle, WA 98101

Submitted via email to: Vakoc.misha@epa.gov

Subject: Alternative Control Measure Request for the City of Nampa National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit #IDS028126.

Dear Ms. Vakoc:

This Alternative Control Measure (ACM) request from the City of Nampa (City) is being submitted to fulfil requirements from Part 2.6.1 of the City's NPDES Permit #IDS028126. In this ACM, the City is proposing to align several Permit requirements with the City's Asset Management Program.

The City's Asset Management Program provides a systematic approach to inventory, monitor, evaluate and replace assets throughout the city. The City's assets are divided into seven zones, A, B, C, D, E, F, and G, which the City progressively moves through a cycle of evaluating, prioritizing, designing, and constructing. The intent of this program is to maintain the level of service for the City's infrastructure assets. Meeting Permit requirements will require coordination with the existing Asset Management Program. Similar to other assets, stormwater assets should be part of the annual asset management process to continually assess upcoming needs, which will allow for the continual update of capital program needs and allow for the efficient investment of City resources. The City's current asset management schedule is included as Attachment A.

The City has significant areas available for development and moderate potential for infill or redevelopment. Rapid population growth in the City has led to a recent increase in residential and commercial development, which is expected to continue as the larger Treasure Valley area grows. As a result of the significant growth, the City needs to align the Permit schedule with the Asset Management Program to meet various Permit requirements in a strategic, efficient and cost-effective way, while also meeting regulatory drivers related to water quality improvement.

Integrating stormwater compliance with the City's existing Asset Management Program provides the following benefits to the City (EPA, 2008):

- Prolonged asset life and aid in rehabilitation/repair/replacement decisions through efficient and focused operations and maintenance
- Meeting consumer demands with a focus on system sustainability

- Budgeting focused on activities critical to sustained performance
- Meeting service expectations and regulatory requirements
- Improving security and safety of assets

The City recently developed a Stormwater Master Plan (SMP) to guide stormwater and drainage-related capital improvement projects (CIPs) and programs. The intent of the SMP is to outline the CIPs and programs needed to maintain the level of service for the City's infrastructure assets, while considering the City's water quality and permit requirements. The SMP addresses critical components identified by the City, including a subwatershed delineation of the City's Municipal Separate Storm Sewer System (MS4) area, flooding, aging infrastructure, water quality goals and permit compliance integration, and CIP identification to address deficiencies.

While simultaneously working through the problem areas identified in the SMP, the City is proposing to align the asset management schedule ('Utility Inspections' column of Attachment A) with the following Permit control measures:

Permit Part 3.2: Illicit Discharge Detection and Elimination

- MS4 Map and Outfall Inventory: The City will update GIS inventory on the asset management schedule.
- Dry Weather Outfall Screening Program: The City will screen, at a minimum, 50 outfalls in the current scheduled zone annually.

Permit Part 3.4: Post-Construction Stormwater Management for New Development and Redevelopment

- Permanent Stormwater Controls Inspection and Enforcement: The City will conduct inspections and necessary maintenance in accordance with the asset management schedule.
- Operation and Maintenance of Permanent Stormwater Controls: Database inventory will be updated in accordance with the asset management schedule.

Permit Part 3.5: Pollution Prevention/Good Housekeeping for MS4 Operations

- Inspection and Cleaning of Catch Basins: Each year, catch basins and inlets in the scheduled zone will be inspected and cleaned if necessary.
- Street, Road, Highway, and Parking Lot Sweeping: Priority of sweeping will be given to the scheduled asset management zone each year, with other roads swept later in the year in order of priority. A quarterly 'sweep through' is conducted through the city based on requests from dispatch and the community. A more detailed sweeping management plan will be developed during Permit Year 2.

Each individual plan for the control measures listed above will include the proposed schedule and actions to be performed by each division within the City. Thank you for the consideration of this ACM that will benefit the City and the City's residents.

Sincerely,

City of Nampa, Idaho
Evan Jenkins
Environmental Compliance Division Superintendent
208-565-5257

References

U.S. EPA. 2008. Asset Management: A Best Practices Guide. EPA 816-F-08-014. (Accessed April 5, 2021).

Attachments (1)

- Attachment A: City of Nampa Asset Management Schedule

Attachment A: Nampa Asset Management Schedule

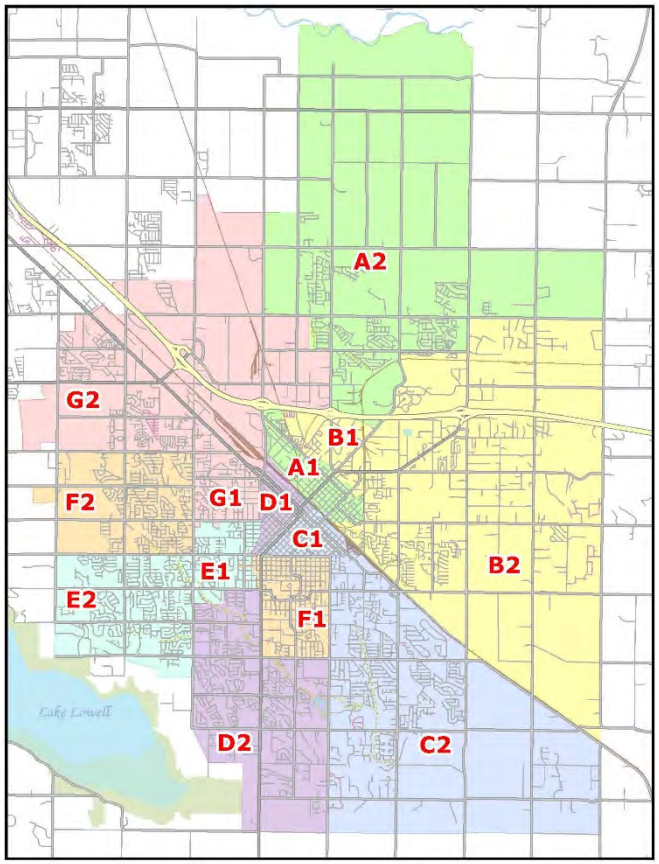
Public Works Asset Management Program

Schedule

Fiscal Year	CDBG Ped Ramps	Develop S/W LID	Construct S/W LID	Utility Inspections	Utility Modifications	Roadway Inspection & Report	Roadway Rehab & Rebuild	Roadway Chip Seal	Traffic Modifications	Master Plan
					Asset Management Zone					
2020	G	G	F	G	F	G	E - F	E	D	Sewer Collection
2021	A	A	G	A	G	A	G - F	F	E	Water (Domestic & PI)
2022	B	B	A	B	A	B	G - A	G	F	Fleet
2023	C	C	B	C	B	C	B - A	A	G	Transportation, Bike & Ped
2024	D	D	C	D	C	D	C - B	B	A	WWTP Facility
2025	E	E	D	E	D	E	C - D	C	B	Stormwater
2026	F	F	E	F	E	F	E - D	D	C	Airport
2027	G	G	F	G	F	G	E - F	E	D	Sewer Collection

Utility Inspections and Modifications Include:

Water
Irrigation
Sewer
Stormwater
Bridges & Culverts



Acronyms
CDBG - Community Development Block Grant
S/W LID - Sidewalk Local Improvement District

Contacts		
Tom Points	Public Works Director	(208) 468-5420
Jeff Barnes	Deputy PW Director (Transportation)	(208) 468-5420
Nate Runyan	Deputy PW Director (Water)	(208) 468-5420
Don Barr	Street Superintendent	(208) 468-5830
Andy Zimmerman	Wastewater Superintendent	(208) 468-5840
Keith Begay	Water Works Superintendent	(208) 468-5860
Evan Jenkins	Environmental Compliance Supt	(208) 468-5257
Daniel Badger	City Engineer	(208) 468-5409
Tiffany McCree	PW Public Involvement Coordinator	(208) 565-5262
Craig Tarter	GIS Supervisor	(208) 468-5463

6/1/2020

Appendix 3 – City of Nampa's Monitoring and Program as submitted April 16, 2021

ENVIRONMENTAL COMPLIANCE
City of Nampa

April 15, 2021

Misha Vakoc
United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, Mail Code: 19-H16
Seattle, WA 98101

Submitted via email to: Vakoc.misha@epa.gov

Subject: Alternative Control Measure Requests for the City of Nampa National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit #IDS028126.

Dear Ms. Vakoc:

This Alternative Control Measure (ACM) request from the City of Nampa (City) is being submitted to fulfil requirements from Part 6.2.2 of the City's NPDES Permit #IDS028126. Attached is the NPDES MS4 Stormwater Outfall Monitoring Plan that is designed to quantify pollutant loadings for impairment pollutants from the MS4 to Indian Creek, Mason Creek, and tributary conveyances to the Boise River as required by Part 4.2 (Attachment A).

The stormwater outfall monitoring locations represent stormwater discharge characteristics from mixed residential and commercially developed areas within the City. Long-term trends analysis of impairment pollutants at these locations allows the City to characterize MS4 runoff based on the upstream land uses and compare MS4 runoff quality with receiving water quality.

The City is aiming to integrate composite sampling into the monitoring activities by the end of Permit Year 3. The Plan may need additional language to support composite sampling methods, depending on equipment changes and sampling protocols.

To align MS4 stormwater outfall sampling with the Nampa Municipal Airport's Multi-Sector General Permit (MSGP), the Stormwater Outfall Monitoring Plan proposes an altered reporting period than described in Permit Table 6.4.2. The proposed schedule is as follows:

	Reporting Period	**Due Date**
Year 1 Annual Report	February 1, 2021 – December 31, 2021	April 4, 2022
Year 2 Annual Report	January 1, 2022 – December 31, 2022	April 4, 2023
Year 3 Annual Report	January 1, 2023 – December 31, 2023	April 4, 2024
Year 4 Annual Report	January 1, 2024 – December 31, 2024	April 4, 2025
Year 5 Annual Report	January 1, 2025 – January 31, 2026	January 30, 2026

Thank you for the consideration of this ACM to be implemented by the City.

Sincerely,

City of Nampa, Idaho
Evan Jenkins
Environmental Compliance Division Superintendent
208-565-5257

Attachments (1)

- Attachment A: City of Nampa NPDES MS4 Stormwater Outfall Monitoring Plan

Attachment A: Nampa MS4 Monitoring Plan

City of Nampa
NPDES MS4 Stormwater
Outfall
Monitoring Plan

Prepared for
City of Nampa

April 15, 2021

Table of Contents

List of Figures

List of Tables

Section 1
Introduction

The City of Nampa (City) was issued a National Pollutant Discharge Elimination System (NPDES) municipal separate storm sewer system (MS4) Permit #IDS028126 (Permit) to discharge from all outfalls in the City's MS4 area. In accordance with Permit requirements, the City is required to develop and implement a Monitoring/Assessment Plan that is designed to quantify, at a minimum, pollutant loadings for the impairment pollutants from the portions of the MS4 discharging into Indian Creek, Mason Creek, and tributary conveyances to the Boise River. Specific stormwater monitoring requirements for discharges to impaired waters are described in Part 4 of the Permit. Monitoring, recordkeeping, and reporting requirements are defined in Part 6.

The NPDES stormwater monitoring program requires monitoring and/or assessment, which includes overall monitoring of Stormwater Management Plan (SWMP) implementation as well as the actual collection and analysis of stormwater/surface water samples. Annual review of SWMP implementation allows the City to evaluate its compliance with the permit conditions, appropriateness of identified best management practices, and progress towards achieving the minimum control measures. In addition, the City will conduct field monitoring of stormwater discharges. Over the permit term, after sufficient data have been collected, use of stormwater monitoring information may indicate trends to evaluate the effectiveness of the City's stormwater program and stormwater controls. Based on the monitoring efforts, assuming enough data is collected to result in statistically robust results, one can attempt to quantitatively evaluate whether pollutant loads are being reduced in the MS4 system and hence from receiving waters. Continual monitoring will provide information to support overall program modifications and adjustments.

This Stormwater Outfall Monitoring Plan (Plan) outlines the City's methods for stormwater monitoring and quantifying pollutant loadings from its MS4 as required by the Permit. Monitoring elements are described in full in this Plan, while program elements applicable to all monitoring programs are addressed in the Quality Assurance Project Plan (QAPP). Field and laboratory activities will be conducted according to the QAPP, included as Appendix B.

Section 2
Annual Program Monitoring

Part 6 of the Permit defines the monitoring, recordkeeping, and reporting requirements for the City's MS4 program. At least once per year, the City must evaluate its compliance with the MS4 Permit conditions. This self-evaluation includes assessing progress toward implementing the SWMP measures in Part 3 of the Permit and implementing individual or collective actions to comply with any additional requirements in Part 4. The City will document this self-evaluation using the optional Annual Report format provided in Appendix B of the Permit.

The City will complete this evaluation during development of the annual report. Per Part 6.4.2, no later than April 4 of each year beginning in year 2022, the City must submit an annual report to the Environmental Protection Agency (EPA) and the Idaho Department of Environmental Quality (IDEQ). Copies of all annual reports must be made available to the public, at a minimum, through a City-maintained website. The following information must be contained in each annual report:

- Any summaries, descriptions, and/or other information the permittee uses to demonstrate compliance with the Permit during the relevant reporting period.
- A current website address where the permittee's SWMP document is available as an electronic portable data format (PDF) document.
- If applicable, notification to the EPA and IDEQ that the permittee is relying on another permittee or outside entity to satisfy any obligations under this Permit.
- Notification of any annexations, incorporations, or jurisdictional boundary changes resulting in an increase or decrease in the permittee's area of responsibility during the reporting period.
- Point(s) of contact responsible for SWMP implementation for the permittee and for authorization, certification, and signature pursuant to Part 8.5.

The schedule for annual reporting is included below.

Table 2 1. Annual Reporting Schedule

	Reporting Period	Due Date
Year 1 Annual Report	February 1, 2021–December 31, 2021	April 4, 2022
Year 2 Annual Report	January 1, 2022–December 31, 2022	April 4, 2023
Year 3 Annual Report	January 1, 2023–December 31, 2023	April 4, 2024
Year 4 Annual Report	January 1, 2024–December 31, 2024	April 4, 2025
Year 5 Annual Report	January 1, 2025–January 31, 2026	January 30, 2026

Section 3
Stormwater Outfall Monitoring

The Permit states that the City must monitor the quality of stormwater discharges from the MS4 and, no later than February 1, 2023, develop a Monitoring/Assessment Plan designed to quantify, at a minimum, pollutant loadings for the impairment pollutants from the portions of the MS4 discharging into Indian Creek, Mason Creek, and tributary conveyances to the Boise River. Part 6.2 of the Permit delineates requirements for stormwater monitoring activities. Specifically, the field monitoring must achieve the following:

- **Representative sampling.** Samples, measurements, and/or assessments conducted in compliance with this Permit must be representative of the monitored discharge or activity.
- **Quality assurance requirements.** The City must develop a QAPP for any monitoring or quantitative assessment activities conducted in compliance with the Permit (Attachment B).
- **Analytical methods.** Sample collection, preservation, and analysis must be conducted according to sufficiently sensitive methods/test procedures approved under 40 Code of Federal Regulations (CFR) Part 136, unless otherwise approved by the EPA, unless another method is required under 40 CFR subchapters N or O, or other test procedures have been specified in this Permit and/or approved by the EPA as an alternative test procedure under 40 CFR §136.5. Where an approved 40 CFR § 136 method does not exist, and other test procedures have not been specified, any available method may be used after approval from the EPA.

The City must submit a final report summarizing any/all monitoring/assessment data collected during the permit term as an attachment to the Permit Renewal Application required by Part 8.2.

3.1 Monitoring Requirements

To address the Permit-established monitoring objectives, the City is required to meet the monitoring requirements established in the Permit. Table 3-1 defines the minimum monitoring expectations:

Table 3 1. Minimum Monitoring/Assessment Expectations (Permit Table 4.2)

Locations	Pollutant Parameters
City of Nampa MS4 Discharges into Indian Creek, Mason Creek, and the tributary conveyances to the Boise River	Temperature *E. coli* Sedimentation/siltation Total phosphorus

Flow measurements will assist with the characterization of storm runoff, and the evaluation of control measures will also be continuously monitored as part of the monitoring program. The following paragraphs present a discussion of the rationale behind the inclusion of each of the monitored parameters.

Total Suspended Solids (TSS)

Rivers and streams in their natural state carry sediment loads. Solids can be present in the water column in a dissolved phase as well as the particulate, or suspended, phase. In general, TSS is

considered a pollutant when it significantly exceeds natural concentrations and has a detrimental effect on water quality and/or beneficial uses of the water body. Portions of TSS will settle out of the water column depending on the size of the particle and the velocity of the water. These settleable solids can blanket the bottom of water bodies and damage invertebrate populations, cover gravel spawning beds, clog the gill structures of young trout and salmon, change the pattern of the channel, and, in some cases, lead to the reduction of channel capacity. TSS may also result in fish stress, altering their behavior and movement patterns in turbid waters. Sediment that remains suspended in the water column diminishes light penetration, reducing the depth of the zone where primary production occurs and potentially reducing the amount of food available for fish. TSS near the surface can also cause an increase in water temperature, scatter light (as measured by turbidity), and reduce water clarity. TSS can create an environment where toxic heavy metals and organic compounds tend to sorb onto fine particulate matter. The Permit requires an estimate of the annual pollutant loads for TSS.

Nitrogen (Total Kjeldahl Nitrogen [TKN], Nitrate and Nitrite [nitrate+nitrite])

Nitrogen is used as a nutrient by algae and aquatic plans. With decomposition of plant cells, some nitrogen may be released immediately through bacterial action for recycling within the biotic community, while the remainder may be deposited with sediments. In nature, organic compounds (e.g., proteins, peptides, nucleic acids, urea) decay to ammonia and then to nitrate+nitrite.

Nitrogen can reach natural waters through the application of inorganic lawn fertilizers, agricultural fertilizers and animal waste, municipal/industrial wastewater, septic tanks, leachate from waste disposal in dumps or sanitary landfills, atmospheric fallout, nitrate discharges from automobile exhausts and other combustion processes, decay of vegetation, and natural sources such as the mineralized organic matter in soils. Nitrate is mobile and is usually difficult to treat using stormwater best management practices. The Permit requires an estimate of the annual pollutant loads for total nitrogen.

Total nitrogen is made up of organic nitrogen, ammonia nitrogen, nitrate+nitrite. TKN measures organic nitrogen and ammonia nitrogen. Nitrate+nitrite measures the nitrate and nitrite levels in the sample. The sum of the results from the two measurements (TKN and nitrate+nitrite) will be reported as total nitrogen.

Phosphorus

Phosphorus is taken up by algae and vascular aquatic plants and, when available in excess of the plant's immediate needs for metabolism and reproduction, can be stored in the cells. When plant materials decompose, phosphorous compounds are released. Some of these compounds are recycled within the biotic community. Other phosphorus compounds are relatively resistant to biodegradation and tend to sink to the bottom of the water. These compounds will degrade slowly over time. Non-point sources of phosphorous include lawn fertilizers, agricultural fertilizers and animal waste, leachate from septic tanks, waste disposal dumps, sanitary landfills, decay of vegetation, and natural sources such as the mineralized organic matter in soils. The Permit requires an estimate of the annual pollutant loads of total phosphorus.

Bacteria

E. coli is a bacterium that is present in the intestines and feces of warm-blooded animals. It is considered to be an indicator of human pathogens. Humans engaging in contact activities in pathogen-contaminated water may suffer eye and skin irritation from direct contact and gastrointestinal diseases from water ingestion. Sources of bacteria can include droppings from wild and domestic animals, leaking sewer pipes, and septic tank leachate. The Permit requires an estimate of the annual pollutant loads of *E. coli*.

Temperature

The temperature of receiving waters depends on atmospheric conditions, the source of stream water, the volume of flow, and the extent of shading by vegetation. Temperature levels are important for several

reasons: 1) they affect the ability of aquatic life to survive and reproduce effectively; 2) higher water temperatures reduce the solubility of oxygen in water, thus reducing the amount of dissolved oxygen levels; 3) increased temperatures accelerate the biodegradation of organic material, thereby increasing demands on dissolved oxygen resources; and 4) low dissolved oxygen levels resulting from increased water temperatures increase the toxicity and mobility of pollutants, such as heavy metals.

Flow

To aid in the quantification of pollutant load estimates, each sampling location is equipped with a permanently installed and maintained ISCO Signature Flow Meter. The ISCO Signature Flow Meter is equipped with an area velocity sensor that is mounted to the invert of the pipe. The area velocity sensor measures velocity of the water in the pipe using continuous wave Doppler technology by transmitting a continuous ultrasonic wave and measuring the frequency shift. Using this measurement and the continuity equation, the volumetric flow rate is determined. No field calibration of the velocity sensor is required or recommended by the manufacturer.

The ISCO Signature Flow Meter is configured with a 4G cell phone modem to access the server database remotely and to send automatic alarm messaging for more accurate operation of the flow meter. Depth should also be periodically field verified by checking the depth of water in the pipe when flow is present and comparing this depth to the recorded depth on the flow meter.

For storm sampling events, each flow meter will be downloaded and a fully charged battery will be installed. The flow meter will then be restarted to record continuous flow during the storm event.

3.2 Location of Outfall Monitoring Activities

To meet the monitoring requirements outlined in Section 3.1, the City will conduct stormwater (outfall) monitoring at locations within City limits. To accurately determine stormwater characteristics in a large, diverse study area, a strategic sampling program can use stations that sample relatively small and homogenous land use catchments (so called “single land use” or upland stations) and stations that sample relatively large catchments representing a composite of land uses (so called “mixed land use” stations).

Table 3-2 shows the land use distribution within the City’s drainage basin boundaries; Figure 3-1 depicts the City’s general zoning districts. These land use percentages are based on land use data for Nampa. The table shows that primary land uses within the City are residential (approximately 45 percent) and commercial (approximately 22 percent). Other significant land uses include multi-family residential, industrial, agricultural, and un-zoned areas constitute smaller portions of the total drainage area.

Table 3 2. City of Nampa Land Use

Land Use	Percent of Total
Residential	45.3
Agricultural	1.2
Commercial	22.3
Industrial	14.8
Multi-Family Residential	15.8
Unzoned	0.5
Total	**100**

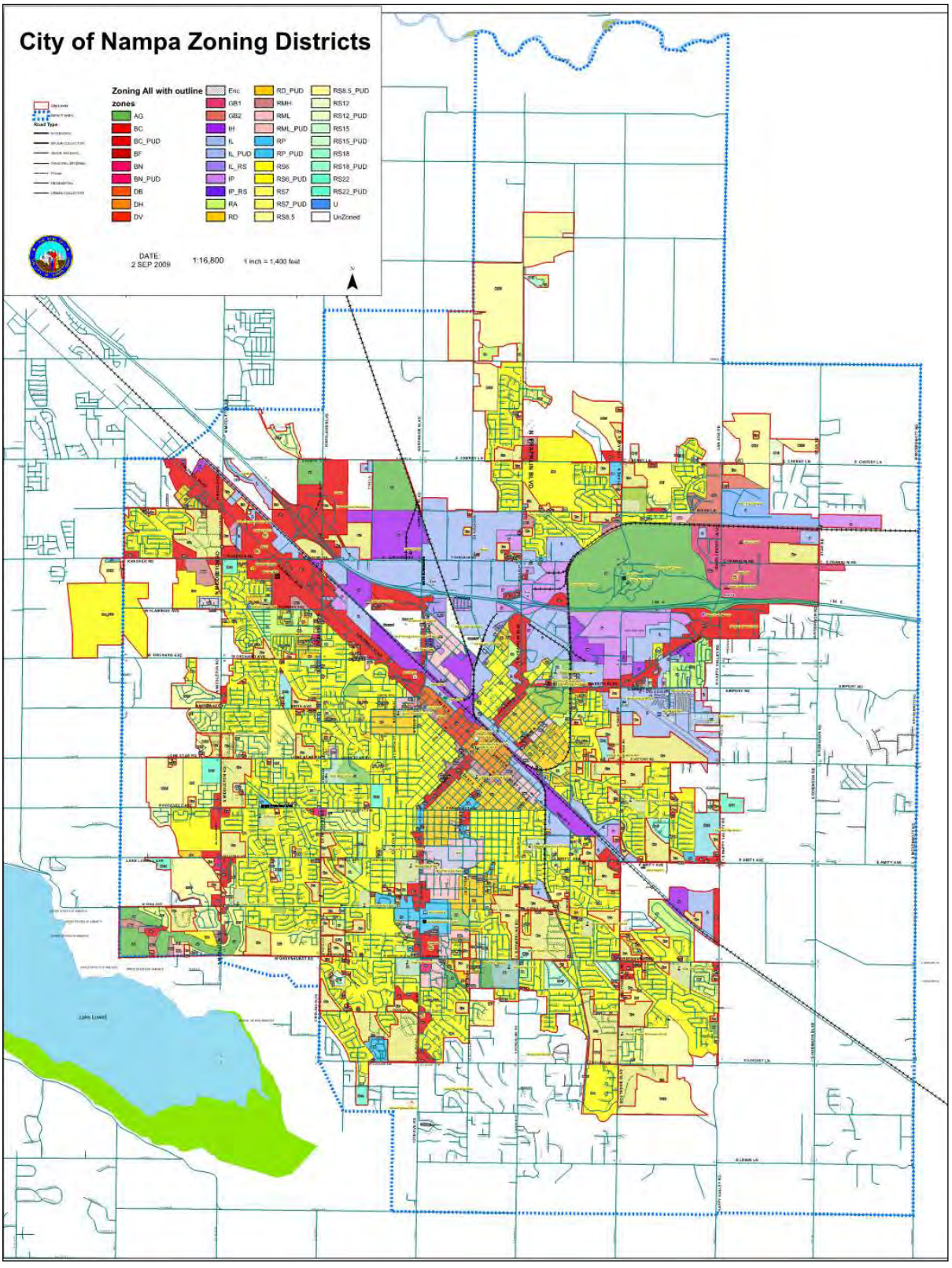


Figure 3-1. Nampa zoning map

Although a percentage of the lands are undeveloped (or vacant) or used for agricultural purposes, these land uses are not considered for direct land use sampling because an emphasis is placed on urban sources of pollution in this stormwater monitoring program. Conversely, commercial and industrial areas are candidates for direct sampling because previous studies in urban areas from across the country have shown that these land use types contribute a significant percentage of pollutants to stormwater runoff despite their small contributing area.

Unlike urban areas in other parts of the country, the City has a relatively high number of stormwater outfalls given the City's relatively small surface area. To date, approximately 1,800 outfalls have been identified and entered into the City-wide stormwater system map. Considering the City's relatively small overall surface area of approximately 21,260 acres, this equates to an average catchment area per outfall of approximately 12 acres. In addition, past City stormwater drainage ordinances required site drainage such that gutter and conveyance swale flow shall be intercepted by underground conveyance or storage system every 750 ft. This resulted in significant additions to the overall MS4 system and segmenting of large drainage areas into much smaller areas. In addition, the City has required new development to retain the 100-year storm event on site since 2005. This requirement has resulted in a reduction of inflows to the MS4 from large impervious areas. Therefore, considering the number of outfalls and past City ordinance requirements, drainage areas to specific outfall locations will be relatively smaller than typical MS4 outfall monitoring locations.

3.2.1 Site Selection

The following criteria were used as guidelines in selecting the single land use and mixed land use sites:

- An outfall or discharge point had to be located on one of the primary surface water bodies through the City: Indian Creek, Mason Creek, and Wilson Drain.
- The catchment consists primarily of one of the targeted land use types or reflects typical land use for Nampa for the mixed land use stations.
- Surcharge from the receiving water is not evident at the outfall.
- A single outfall or discharge point for the catchment can be identified or is likely to exist.
- Access to the outfall or discharge point is safe and unimpeded.

The final set of stormwater outfall monitoring locations was selected based on the above criteria. Information for each site was obtained through discussions amongst City staff and field reconnaissance. The following technical and operational requirements were also considered during the final site selection process:

Catchment Area Characteristics

- The drainage system and boundaries are known
- Land use is known
- No interaction with the sanitary sewer system is known to occur in the system

Hydraulic Suitability

- Uniform flow conditions exist
- The channel or storm drain is soundly constructed and stable
- Well mixed conditions exist (i.e., located sufficiently downstream from any upstream stormwater inflows)
- The access point is not excessively deep (i.e., it is less than 20 feet and preferably less than 15 feet)

Crew Safety

- Site has good access
- Crew will be easily visible
- Minimal traffic hazards exist
- Station is in a relatively secure location
- Confined space entry can be performed safely and in compliance with regulations

Use of the above criteria will help to ensure that the stormwater data collected is reliable and of good quality, as well as meeting safety requirements. A description of the monitoring stations that were selected is presented in the following sections.

The permit requires the City to sample at least one stormwater outfall discharging to each of the following water bodies: Indian Creek, Mason Creek, and Wilson Drain. The three monitoring sites were selected to represent varying land use types, including specifically residential land use and mixed use composed of commercial, industrial, residential, and transportation uses. Figure 3-2 provides a map depicting locations of the monitoring sites within the MS4. Figures 3-3, 3-4, and 3-5 depict detailed views of monitoring locations: Indian Creek Outfall #IC 80, Wilson Drain Outfall #WC 42, and Mason Creek Outfall #MC 47, respectively.

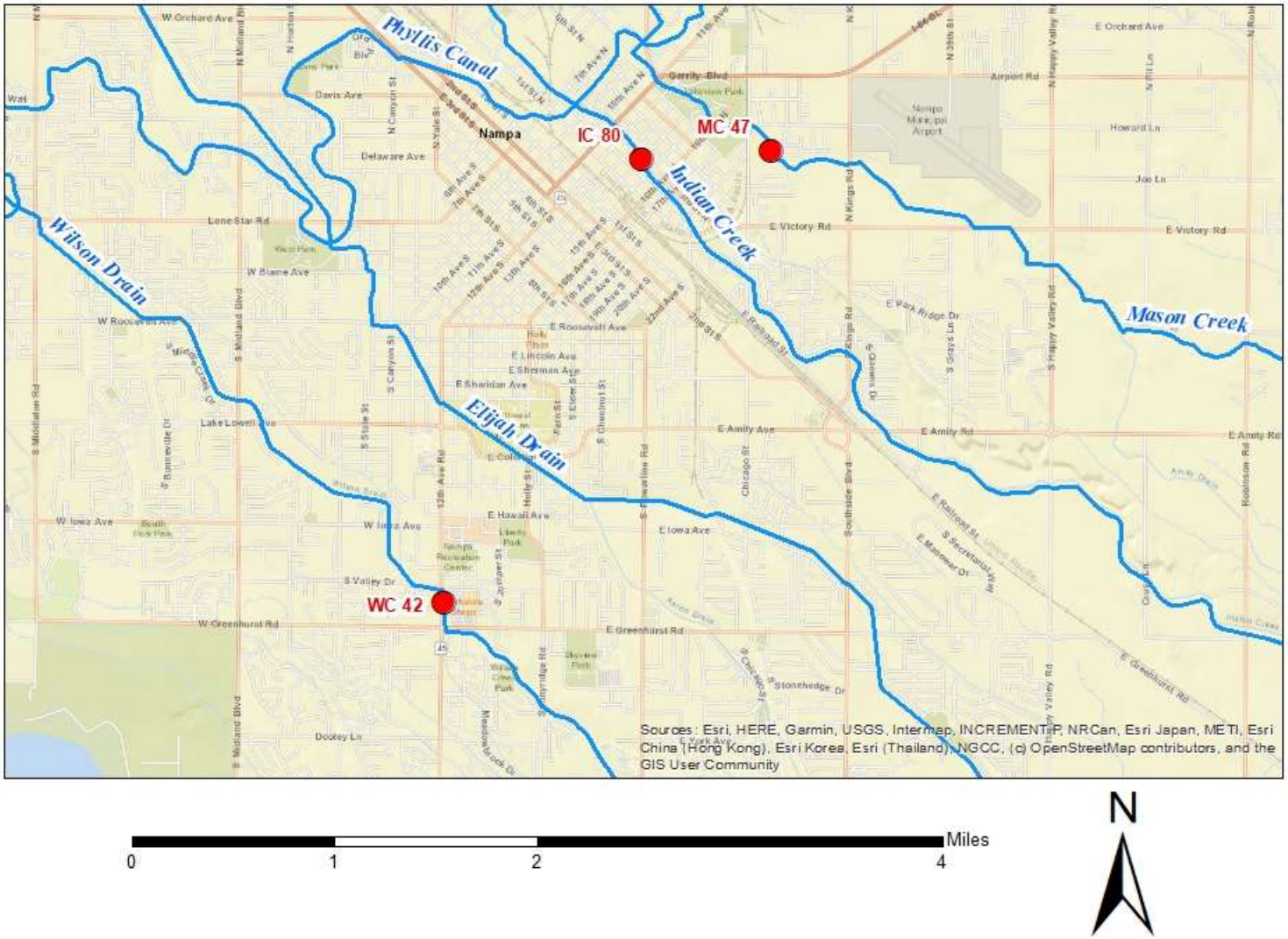


Figure 3-2. Map of monitoring locations (IC 80, MC 47, and WC 42)

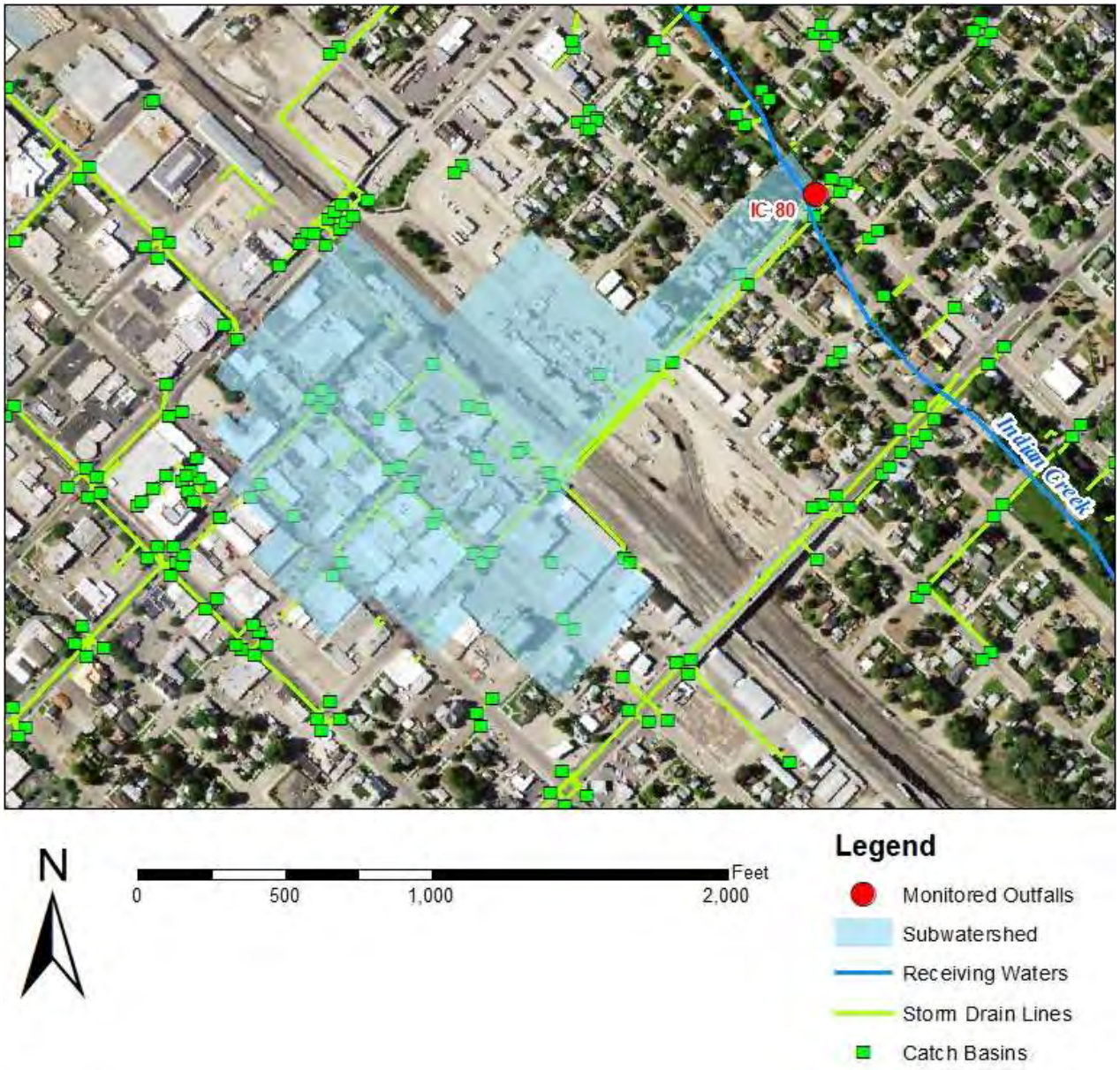


Figure 3-3. Map of Indian Creek Outfall #IC 80

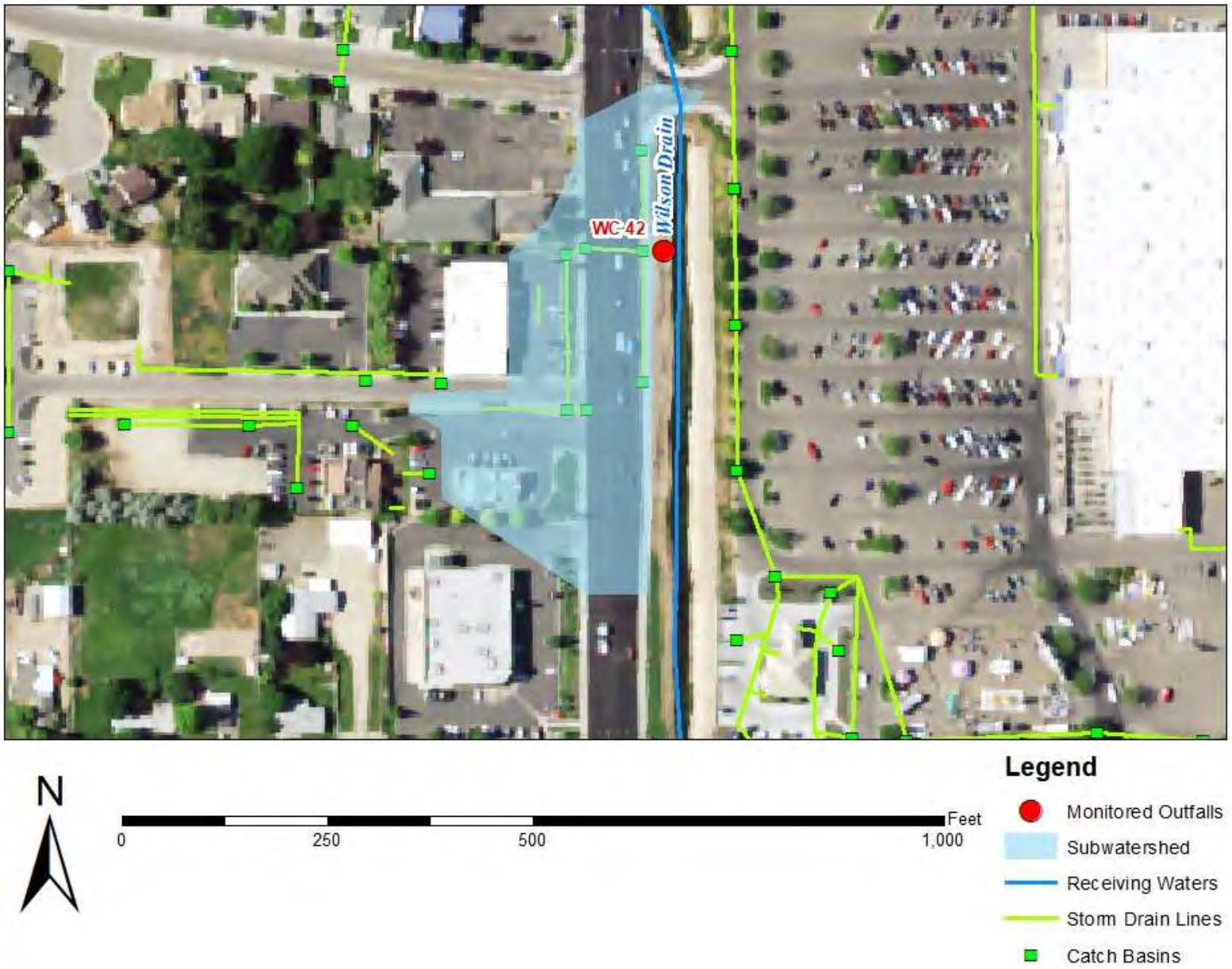


Figure 3-4. Map of Wilson Drain Outfall #WC 42

Figure 3-5. Map of Mason Creek Outfall #MC 47

3.2.2 Site Descriptions

A total of three compliance monitoring locations were identified, one location per receiving water. Each site is equipped with a dedicated ISCO Signature Flow Meter that will collect flow data during storm events to help estimate pollutant loads from the subwatershed. The Mason Creek and Wilson Drain monitoring locations are each equipped with an ISCO rain gauge. Site identification, location, land use type, and drainage area are presented in Table 3-3. In selecting sampling sites, the distribution of actual land use in the City drainage area was used to target areas representative of the City.

Table 3 3. City of Nampa Stormwater Monitoring Site Locations

Station ID	Location	Land Use Type	Drainage Area
Indian Creek Outfall #IC 80	14th Avenue North and 3rd Street North	Commercial 73% Industrial 20% Residential 7%	38.73 Acres
Wilson Drain Outfall #WC 42	12th Avenue Road and Greenhurst Road	Commercial 99% Industrial 1%	2.44 Acres
Mason Creek Outfall #MC 47	West of Denver Avenue	Residential 100%	7.30 Acres

The Indian Creek Outfall #IC 80

The Indian Creek Outfall #IC 80 monitoring location is on Indian Creek in the northeastern portion of the downtown area. The land use associated with this monitoring point includes mixed land use comprising industrial, commercial, and residential uses with a total drainage area of 38.73 acres. This site was selected because of its relatively large drainage area and the representative nature of the land uses for mixed land use areas within the City. Discharge from this area includes commercial runoff from buildings built in the early- to mid-1900s, residential properties developed in the 1920s–1950s, and right-of-way runoff.

Wilson Creek Outfall #WC 42

The Wilson Creek Outfall #WC 42 monitoring location is on Wilson Creek in the southern portion of the urbanized area near 12th Avenue Road and Greenhurst Road. The land use associated with this monitoring location is commercial and transportation land use with a total drainage area of approximately 2.44 acres. This site was selected because it reflects an area of concentrated commercial and right-of-way runoff and includes a focal point of year-round fish and wildlife (duck) populations. Commercial retail businesses in this area are fairly new as most were developed in the 1990s.

Mason Creek Outfall #MC 47

Mason Creek Outfall #MC 47 monitoring location is on Mason Creek in the northeastern portion of the urbanized area just West of Denver Avenue. The land use associated with this monitoring location is residential land use with a total drainage area of approximately 7.30 acres. This site was selected due to the site accessibility, since a majority of Mason Creek flows through private property. Discharge from this outfall is composed of mostly residential runoff with some drainage from residential streets. Development in this area happened around the 1970s.

Supplemental rainfall data may also be collected from the Nampa Wastewater Treatment Plant (WWTP) rain gauge and the Bureau of Reclamation AgriMet precipitation gauge in Nampa.

3.3 Sampling Process and Design

The stormwater (outfall) monitoring locations represent stormwater discharge characteristics from mixed residential and commercially developed areas within the City. Long-term trends analysis of these locations will allow the City to characterize MS4 runoff based on the upstream land uses and compare MS4 runoff quality with receiving water quality.

Sampling coordination is the responsibility of the Nampa Environmental Compliance Division (ECD). The ECD superintendent manages stormwater monitoring staff and oversees monitoring activities including sample collection schedule, field sampling activities, and transfer of samples to the appropriate analytical testing location. Appendix A provides standard operating procedures for collecting grab samples.

Sampling will be conducted at these locations four times per year during storm events. Storm event characteristics associated with the monitored storm event will be targeted to include the following:

- "Storm event" for the purposes of this monitoring plan is defined as precipitation greater than 0.10 inch in magnitude which occurs at least 72 hours from the previously measurable (greater than 0.10-inch rainfall) event.

3.3.1 Analytical Sample Collection Frequency

Samples, measurements, and/or assessments conducted in compliance with the Permit must be representative of the nature of the monitored discharge or activity. Stormwater outfall monitoring will be conducted, at a minimum, four times per Permit reporting year (January 1–December 31). Emphasis will be placed on targeting storms during four quarters (January–March, April–June, July–September, October–December) to capture seasonal variability. As a Permit requirement, one of these monitored wet weather events will occur during September–October, unless prevented by weather conditions.

3.3.2 Weather Forecasting, Storm Selection, and Storm Initiation

Weather forecasting and storm selection is an important aspect of monitoring in an arid, high desert environment. This environment produces convective rain events for the warmer months of the year. Convective storm events are more isolated and variable and therefore difficult to predict. For this reason, the City has adopted the program criteria used by other NPDES Phase I and Phase II permittees in the area. The following storm forecast analysis will help the City identify storms that have a greater probability of producing measurable rain events greater than 0.10 inch.

- Have a 60 percent or greater probability of measurable precipitation.
- Have a predicted precipitation amount of greater than 0.10 inch within a 24-hour period, in the Nampa area.
- Occurs at least 72 hours from the previously measurable (greater than 0.10-inch rainfall) event.

A daily review of weather forecasts from the Boise National Weather Service (NWS) for the zip code 83651 will be recorded. In situations in which the forecasters anticipate a storm event that meets the above criteria, the City will determine whether the event should be targeted. All decisions associated with selection or disqualification of a rain producing weather pattern will be documented and stored for annual reporting use. In the event the City determines a forecasted storm is to be targeted, the storm monitoring crew will begin the initiation process.

3.3.3 Storm Initiation

If all current storm selection criteria appear to be met, the City will call the NWS-Boise office and speak with the lead forecaster on shift to obtain detailed forecast information on the approaching storm. This forecast often includes the following information:

- Anticipated start time of the storm
- Expected storm intensity and duration
- Amount of precipitation expected
- Storm tracking information and recorded observations
- Agreement and trends of various forecasting models

To allow sufficient time for equipment and station setup, the decision to sample a forecasted storm must be made at least 6 hours prior to the estimated precipitation start time. If a storm is estimated to begin after standard business hours or early the next morning, a decision must be made by 2:00 p.m. the day before the storm is forecasted. If a storm is forecasted to occur during the weekend, City stormwater staff will confer on the Friday before the weekend to arrange a schedule for discussing forecast updates and possible station setup.

Once a stormwater monitoring event is initiated, the following storm monitoring responsibilities will be performed:

- Record weather forecast and other pertinent information and email to sampling members and laboratory personnel
- Monitor weather information with increased frequency on the Internet and from the NWS meteorologist as the storm approaches
- Identify and notify the grab sample collection member(s) when precipitation begins
- Review post-storm data to determine whether the storm satisfies the permit requirements and cooperatively decide if storm tracking should continue after insufficient precipitation is received within the expected timeframe

Note: the most resource-intensive element of water quality monitoring is storm sampling. Because of the difficulty in identifying suitable storms, and then mobilizing in a timely manner to allow for characterizing the storm, storm sampling can require a large time commitment. Staff are assigned other responsibilities in addition to monitoring. To ensure that monitoring doesn't consume inordinate resources at the expense of activities that reduce pollution, the following limitations apply to the commitments made in this plan related to storm sampling:

- If a storm is forecasted that looks like it may be sufficient for sampling, City staff will clear work and/or personal schedules up to ten times to allow for mobilization. Actual mobilization for a storm will occur up to five times. Once this level of effort has been made, the City considers the stormwater (outfall) monitoring commitment for the year to have been met.

3.4 Sample Collection Methods

3.4.1 Station Setup

Once composite sampling is achieved in Permit Year 3, City staff will set up and program flow meters and automatic samplers at the three monitoring stations prior to a sampling event following the procedures listed in Standard Operating Procedure (SOP) 4 (Appendix A). Because of the timing of the storm events (often after sunset and before sunrise), setup can occur during off hours and on the weekends.

The Environmental Compliance Superintendent (or designee) will be responsible for ensuring that adequate supplies are available for sampling and notify the laboratory of the possible sampling event.

Monitoring station setup activities include the following (* for activities as automated samplers are integrated):

- Flushing the low density polyethylene sampler intake line with a dilute hydrochloric acid solution*
- Checking the condition of samplers and the sampler humidity indicator*
- Inspecting electrical and tubing connections for tightness*
- Installing recharged batteries
- Freeing sampler tubing of twists, pinches, or cracks and replacing if needed*
- Loading bottles and ice for automatic samplers*
- Programming the samplers* and flow meters
- Initiating the sampling program*
- Recording setup information on field data sheets

The station setup process requires the completion of two phases of preparation before mobilization can begin. Once a storm meets the criteria to be targeted, the following tasks should be performed:

- Ensure field boxes are stocked with necessary sampling supplies
- Ensure sampling coolers are stocked with appropriate containers
- Ensure charged computer is available for connection to field instruments
- Ensure adequate field staff are available for sampling event
- Ensure sampling and setup forms are available for setup personnel

Upon completion of these tasks the Environmental Compliance Superintendent and/or designee(s) will initialize set up of the monitoring locations. The following activities will be conducted at each site prior to the start of measured runoff:

- Observe and document if dry weather flow is present at the outfall
- Ensure flow meter is recording depth, velocity, and temperature measurements
- Download the flow meter
- Restart the flow meter
- Check the battery

3.4.2 Flow Meter Programming

Once flow-weighted composite sampling is conducted, predicted rainfall totals will be used to calculate the runoff volume expected at each station. The expected runoff volume will be divided by the planned number of sample aliquots, and the resulting value is used as the trigger volume for programming the flow meter. The trigger volume is the amount of flow that will be measured before the automatic sampler is triggered to collect a subsample. Therefore, the number of samples collected over the course of a storm is a result of the runoff volume expected for the total storm as forecasted at the time of station setup.

Calculating the total estimated runoff is a function of the weighted rainfall amount expected and the site-specific runoff coefficient. Precipitation amounts are weighted by multiplying the predicted rainfall amount by the probability of precipitation as forecasted by the NWS. The site-specific runoff

coefficients are derived from the percentage of impervious ground cover in the subwatershed and empirical values from observed storm data.

Several variables factor in to the actual volume of runoff measured at each monitoring station. Refining runoff coefficients to produce a reliable estimate of runoff volumes is an ongoing effort. Runoff coefficients will continue to be revised as more information is gathered through monitoring, mapping, and other stormwater management efforts.

Historical data suggests that variability in the size, duration, and intensity of a storm, along with variability within the drainage area, including soil moisture, temperature, snow cover, and a multitude of other smaller variables, all contribute to the actual volume of runoff discharging at each monitoring station. Actual runoff volumes recorded during storms will be used to refine runoff coefficients between events and over the course of the program to more accurately predict runoff and produce trigger volumes that will most consistently result in composite samples of adequate volume and are representative of the storm.

3.4.2.1 Maintenance and Calibration

Routine maintenance of flow meters, including calibration, will be performed semi-annually by the City and the consultant. More frequent maintenance or calibration will be performed as warranted by equipment performance. Calibrating the level requires only offsetting the initial depth of water, if applicable. Typically, no field calibration of the velocity sensor is required. Additional checks on the accuracy of the velocity meter can, however, be conducted using a manual current meter to measure velocity. Depth can be checked by simple measurement and comparison to the recorded value. Readings showing deviations can be corrected using the flow meter interface while in the field.

3.4.3 Sample Collection

Samples for *E. coli*, TSS, TKN, and nitrate+nitrite will be collected as discrete grab samples. The samples will be collected directly in the appropriate sample container. Each sample container will then be capped, labeled (time, date, and site name), and stored in a cooler on ice. Sample collection procedures are outlined in the QAPP (Appendix B).

When composite sampling begins, TSS, TKN, and nitrate+nitrite will be collected as composite samples. After composite sample initiation, *E. coli* grab samples will not be required to be collected in the first 120 minutes due to the high variability of *E. coli* samples, supported by historical data and peer reviewed studies.

The measurement of chemical constituents at the trace level is often difficult due to inherent properties of environmental samples, field sampling techniques, and analysis techniques. A detailed QAPP has been prepared to facilitate the collection of valid data. Key features of that plan include the following information:

- Establishment of Data Quality Objectives
- Written standard operating procedures for field and laboratory tasks
- Routine instrument calibration and equipment maintenance
- Field quality assurance/quality control (QA/QC) samples for monitoring data quality
- Standardized data recording forms
- Sample chain-of-custody procedures and forms
- Use of standard analytical procedures
- Data management and validation

Descriptions of some of the basic features are presented in the following sub-sections for use by sampling technicians in the field.

3.4.4 Sample Handling Procedures

The required types of containers and holding times of samples are dependent upon the components to be analyzed. Table 3-4 includes container types and holding times for each parameter group. Preservation techniques in the field include cooling samples to a target sample temperature of less than 6 degrees Celsius (°C), but above freezing, or around 4°C, as well as sulfuric acid preservation for nutrients.

Table 3 4. Preservation Methods

Test	Minimum Sample Volume (mL)	Sample Container	Preservation Equipment	Maximum Holding Time Recommend/Regulated
Total suspended solids	200	Plastic or glass	Refrigerated 4°C	7 days
Total phosphorus	100	Plastic or glass	H_2SO_4; pH < 2 Refrigerate 4°C	28 days
Total nitrogen	500	Plastic or glass	H_2SO_4; pH < 2 Refrigerate 4°C	7 days/28 days
E. coli	100	7 days/28 days	Refrigerate 4°C	24 hours

Section 4
Quality Assurance/Quality Control

4.1 Field QA/QC

Field QA/QC grab samples include field blanks and field duplicate samples. A field blank is a sample prepared in the field using Type I deionized water and the appropriate preservatives. It is transported in the same cooler as the field samples and serves as a check on the cleanliness of field conditions. A field duplicate is a second sample collected at the same time and in the same manner as the first sample. Field duplicate pairs provide information about the repeatability of sampling and analysis. For this project, field duplicates will be partially "blind," i.e., they will be assigned arbitrary sample names and collection times, making it more difficult for the laboratory to identify the duplicate pairs. Specific naming conventions are outlined in the QAPP. The stormwater monitoring QA/QC schedule is listed on the back of grab sample forms, and included in Appendix A.

Equipment QA/QC samples are taken for composite samples and consist of equipment blanks and rinsate blanks. Equipment blank samples are prepared with Type I deionized water after the installation of new contacting materials of sampling equipment such as pump and sample tubing and provide information about any contamination that may be introduced by these materials. Rinsate blanks are prepared with Type I reagent water prior to replacing contacting equipment materials and after performing a standard decontamination procedure. Rinsate blanks provide information as to the efficacy of the standard decontamination procedure. Specific naming conventions are outlined in the QAPP.

4.2 Laboratory QA/QC

Laboratory analysis will be conducted by the WWTP and the Boise City Water Quality Laboratory (WQL). Analytical Laboratories Inc. may be used as a backup when needed. The WWTP will serve as the primary laboratory used for this program. The WQL will be used in a supplemental role. Both laboratory QAPPs are attached to the Stormwater QAPP.

4.3 Data Quality Objectives

The data quality objectives for stormwater outfall monitoring are summarized by the following statement:

Monitoring efforts will provide data of sufficient quality and quantity in accordance with Permit requirements to accurately estimate pollutant concentrations and loading trends, evaluate effectiveness of permanent stormwater controls, and support the health of local surface waters.

4.3.1 Data Quality Indicators (DQIs)

DQIs have been established to set measurable qualitative and quantitative goals for data acceptance that meet the program data quality objectives described above. Each DQI is described below. DQIs are the basis for addressing field and laboratory analytical instrument performance, as well as sample collection and handling procedures. QA/QC samples provide input for several of the DQIs.

DQIs are described fully in Section 1.8.1 of the QAPP. A brief description of each DQI is included in the list below.

- **Project Required Detection Limits:** Achieving appropriate reported constituent concentration results at values that allow for comparison to baseline data and water quality standards.
- **Accuracy:** The accuracy of the data is a measure of the extent to which a measured value represents the true value.
- **Precision:** Precision is a measurement of the reproducibility of the analytical data.
- **Bias**: Bias is minimized by using standard data collection and analytical methods and protocols, as well as standard sample preservation, transport, and storage procedures.
- **Representativeness:** Representativeness is a measure of the degree to which data accurately and precisely indicate environmental conditions.
- **Comparability**: The comparability of a data set is the extent to which data accurately and precisely indicate environmental conditions.
- **Completeness:** Completeness is a comparison between the amount of usable data collected versus the total amount of data collected.
- **Sufficiency:** Data set sufficiency is the amount of data required to perform the level or type of analysis necessary for each monitoring element.

Section 5
Documentation and Recordkeeping

5.1.1 Data Management

All data collected as part of this monitoring program will be stored in electronic format for easy retrieval, data interpretation, graphing, and amendment with future data collection results. Initially, the analytical data will be manually entered into spreadsheets on the City's server. Electronic data files will be required from the lab and stored on a secure server with the PDF versions of the lab analytical reports. Precipitation and flow data, as well as instrument diagnostic data, will be collected, quality checked, and stored initially in Teledyne's Flowlink Pro/Global software.

The following data will be collected as part of the sampling program:

- Precipitation data
- Runoff rates, including:
  - Velocity
  - Diagnostic data including Velocity Signal, Velocity Spectrum, and Velocity Spectrum Ratio
  - Level
  - Flow
- Runoff volumes
- Runoff coefficients
- Sampling event data:
  - Time, date, and location of samples
  - Sampling personnel
  - Field conditions
- Laboratory analytical data
- QA/QC results

5.1.2 Reporting and Recordkeeping

Formal recordkeeping and reporting requirements are found in Parts 6.3 and 6.4 of the Permit, respectively. Additional program specific record keeping requirements and expectations are outlined in detail in the accompanying QAPP for this program.

5.1.2.1 Monitoring/Assessment Report

As required by Section 6.4.3 of the Permit, a final report summarizing any/all monitoring and/or assessment data collected during the Permit term will be submitted as an attachment to the Permit Renewal Application. The final monitoring report must summarize and evaluate the following collected information:

- The date, exact place, and time of sampling or measurements.
- The name(s) of the individual(s) who performed the sampling or measurements.
- The date(s) analyses were performed.

- The names of the individual(s) who performed the analyses.
- The analytical techniques or methods used.
- The results of such analyses, including both visual and narrative summary interpretation of the data collected, a discussion of any quality assurance issues, and a narrative discussion comparing data collected to any previously collected or historical information, as appropriate. Raw monitoring data must be submitted in a spreadsheet or text-format electronic file.

5.1.2.2 Individual Storm Event Reports

After each storm event, the data collected during the event will be managed by the City. The City stormwater designee will create a flow report for each site using site files downloaded into ISCO Flowlink software. The report will include precipitation, level, velocity, flow, instrument diagnostics, and flow meter program settings.

After each storm event, this data will be validated and downloaded to a City computer that is consistently backed up. The following set of forms will be scanned and stored in a folder for that event:

- Copies of Grab Sample and Composite Sample field notes
- Copies of chain-of-custody forms
- Electronic copies of weather forecasts and storm targeting notes
- Electronic files downloaded from the flow meters
- Storm event details, including forecast information, storm characteristics, total rainfall recorded, and total flow recorded

To meet field portions of these requirements, a log will be maintained that outlines the following items affiliated with each sampling activity during each monitoring event:

- Date and time sample collected
- Location of sample collection
- Who performed the collection

Completion of a chain-of-custody form should be completed in the field in accordance with each sample collected. SOPs related to completion and submittal of the chain-of-custody form will be developed by the City.

In addition to the information provided above, if any modifications to the monitoring plan are proposed in conjunction with adaptive management, such modifications shall be outlined in the annual report. Additionally, information that has been gathered and interpreted from literature reviews, as well as insightful results from field screening programs and program monitoring that is conducted, shall also be reported so that the information can be reviewed and interpreted as a whole.

Pollutant loading estimates for each event will be calculated using the following formula when complete runoff volume measurements are available.

$$L = 6.24E^{-5} \times F \times C$$

Where:

L = Event load (pounds)

F = Event runoff (cubic feet)

C = Pollutant concentration (mg/L)

6.24 E-5 = Unit conversion factor

When runoff volume must be estimated due to incomplete flow measurements, the Simple Method approved by the EPA for simple pollutant loading estimations for urban stormwater will be used. The following equation will be used to estimate the event pollutant loads if measured flow volumes are not available or are incomplete.

Simple Method

$$L = 0.226 \times R \times C \times A$$

Where:

L = Event load

R = Event runoff (inches)

C = Pollutant concentration (mg/L)

A = Area (acres)

0.226 = Unit conversion factor

Runoff Calculation

$$R = P \times Pj \times Rv$$

Where:

R = Event runoff (inches)

P = Event rainfall (inches)

Pj = Fraction of annual rainfall events that produce runoff (0.9)

Rv = Runoff coefficient

The site-specific runoff coefficient (Rv), as presented in the EPA formula, is equal to the percent of impervious surface in the drainage area represented as a decimal. However, this does not account for impervious areas in areas without curb and gutter, canopy cover and interception, or stormwater controls in the drainage area. Therefore, the runoff coefficient variable in the equation will be refined as understanding of the drainage area is expanded.

Appendix A: Standard Operating Procedures for Stormwater Sampling

SOP A-1: Grab Sampling Procedures

SOP A-2: Chain of Custody Records

SOP A-3: Transporting Samples from Field to Lab

SOP A-4: Composite Sampling Procedures (to be developed in water year 2021)

SOP A-5: ISCO Signature Flow Meter Setup (to be developed in water year 2021)

SOP A-6: ISCO 6712 Automatic Sampler Setup (to be developed in water year 2021)

SOP A-7: ISCO Flowlink Pro/Global Data Management (to be developed in water year2021)

Appendix A

SOP A-1: Grab Sampling Procedures

Set up a safety zone, if appropriate (this may include placing traffic cones, etc.).

Then provide access to the sample collection point. Make notes in a field notebook regarding site conditions and sampling.

Put on a new pair of nitrile gloves prior to opening sample containers.

Grab Sampling

The grab sampling technique is described as follows:

1. Collect grab samples within the first 120 minutes of targeted storm event flow to capture first flush characteristics. This requirement does not apply for *E. coli*.
2. Place the sample bottle in the middle of the flow stream. If the sample collection location is deep, a long-handled sample collection pole or rope with bailer will be needed. One can also "zip tie" the bottle onto the pole and collect the sample in the bottle. *E. coli* samples must be collected directly into the sample bottle.
3. Once the bottle is filled to the proper level, replace the lid on the sample bottle; fill out the bottle label to identify sample location, date, and time; and place it in the cooler with ice.
4. Record the sample collection time and other relevant information in the field notebook.

Table A 1. Stormwater Sample Preservation Techniques

Test	Min. Sample Volume	Sample Container	Preservation Requirement	Maximum Holding Times Recommended/Regulated
E. coli	100	Plastic	Refrigerate 4°C Sodium Thiosulfate	8 hours
Total suspended solids	200	Plastic or glass	Refrigerated 4°C	7 days
Total phosphorus	100	Plastic or glass	H_2SO_4; pH < 2 Refrigerate 4°C	28 days
Total nitrogen	500	Plastic or glass	H_2SO_4; pH < 2 Refrigerate 4°C	7 days/28 days

SOP A-2: Chain-of-Custody Records

A chain-of-custody (COC) record is a legal document designed to track samples and persons who are responsible for them during preparation of the sample container, sample collection, sample delivery, and sample analysis. These forms are supplied by the stormwater coordinator.

The procedures for filling out these forms are as follows.

Prior to Sampling

A bottle inventory check should be conducted before leaving for the field. Table A-1 contains a sample bottle inventory checklist.

After bottles are inventoried, they should be labeled and placed in coolers with ice, the following general information should be included on the COC form:

- Source/location
- Persons sampling
- Type of sample (composite or grab)
- Parameters desired for analysis

Place the COC in a Ziploc bag in the cooler or in another secure location.

After Sampling is Complete

After sampling has been completed, fill out the remainder of the COC including the following information:

- Time and date that sampling was conducted
- Special instructions, if any, in the comment block of the COC

At Laboratory or Upon Transfer to Another Person

Whenever custody of the samples is relinquished, provide signature, date, and time.

Relay special instructions, if any.

SOP A-3: Transporting Samples from Field to Lab

1. Keep the chain-of-custody record form with the samples.
2. Pack samples well within the ice chest to prevent breakage or leakage.
3. As was stated previously, samples should be packed in ice or an ice substitute to maintain a sample temperature of 4 degrees Celsius during transport. Acquire more ice at a convenience store, if necessary.
4. If samples are collected overnight, they should be stored securely in the sample refrigerator at the City of Nampa Wastewater Treatment Plant Laboratory and repacked in the cooler for delivery to the Boise City Water Quality Laboratory the following morning. The chain-of-custody record will be photocopied and returned to the Nampa Wastewater Treatment Plant, and the original chain-of-custody stays with the samples in the refrigerator.
5. Samples must be delivered to the Boise City Water Quality Laboratory within 6 hours of bacteria sample collection.
6. Samples will be preserved by laboratory personnel upon arrival.

Appendix B: Quality Assurance Project Plan

Quality Assurance Project Plan for NPDES Storm Water Permit Monitoring City of Nampa, Idaho

NPDES Permit No. IDS028126
City of Nampa

April 15, 2021

Prepared by:
Brown and Caldwell

Section 1

Group A: Project Management

Group A elements describe general project management, project objectives, and the roles of participants.

1.1 Element A1 Signature Page

Quality Assurance Project Plan (QAPP)

For NPDES Storm Water Permit Monitoring

NPDES Permit No. IDS028126

April 15, 2021

City of Nampa

_____ Date: _____

Tom Points, Public Works Director

_____ Date: April 15, 2021

Evan Jenkins, Environmental Compliance Division Superintendent

Brown and Caldwell

_____ Date: April 15, 2021

Andrea Leonard, Project Manager, Brown and Caldwell

1.2 Element A2 Table of Contents

List of Figures

List of Tables

List of Abbreviations

BC	Brown and Caldwell
DQI	data quality indicator
DQO	data quality objective
ECD	Environmental Compliance Division
EPA	Environmental Protection Agency
HAZWOPER	hazardous waste operations and emergency response
MDL	method detection level
MPN	most probable number
NPDES	National Pollutant Discharge Elimination System
pdf	portable document format
PRDL	project required detection limit
QA	quality assurance
QAPP	Quality Assurance Project Plan
QA/QC	quality assurance/quality control
QC	quality control
NWWTP	Nampa Wastewater Treatment Plant
RO	reverse osmosis
RPD	relative percent difference
SOP	standard operating procedure
WQL	Boise City Water Quality Laboratory

1.3 Element A3 – Distribution List

Copy 1 Nampa Environmental Compliance Division (ECD)

Copy 2 Evan Jenkins, Nampa ECD Superintendent

Copy 3 Nampa Wastewater Treatment Plant (NWWTP) Laboratory

Copy 4 Environmental Protection Agency (EPA) Region 10 Headquarters

Copy 5 Idaho Department of Environmental Quality

All recipients on the distribution list will be issued numbered copies of the Quality Assurance Project Plan (QAPP). Revisions to the QAPP will be made using document control procedures with revised, dated pages to be inserted into the QAPP. When necessary, the QAPP will be reissued in full to all parties on the distribution list.

Minor administrative changes to the QAPP will be addressed by issuing revised pages on an as-needed basis. A record of these changes will be maintained with each QAPP using Table 1-1. Major revisions will be tracked using the next consecutive whole number, and minor changes will be tracked using the next consecutive decimal number. A new QAPP will be reissued whenever major changes are necessary.

Table 1 1. Changes to QAPP Since Last Major Revision

Revision Number	Date	Pages Reissued	Revision Made	Pages Sent to QAPP Recipients (Y/N)	Program Manager Signature
V1.0	2010	All	Full Version Issue	Y	
V1.1	2011	All	Full Version Issue	Y	
V2.0	2021	All	Full Version Issue	Y	

1.4 Element A4a – Project Organization

This QAPP is intended to cover the monitoring requirements of National Pollutant Discharge Elimination System (NPDES) Permit #IDS028126 (Permit), a copy of which is provided in Appendix A. The permittee is the City of Nampa (City). The permittee received this permit on December 8, 2020, effective on February 1, 2021.

EPA-Required QAPP elements are addressed as either program elements or elements of individual monitoring plans. Program elements are described in full in this QAPP document. Program elements consist of the standardized monitoring components that all individual monitoring plans reference. Monitoring plan elements are those components that contain details specific to each individual monitoring plan. A list of program and monitoring plan elements is included in Table 1-2.

Table 1 2. QAPP Element Document Reference		
EPA Recommended QAPP Elements	Program Element	Individual Plan Element
Group A: Project Management		
A1 – Title and Approval Sheet	X	
A2 – Table of Contents	X	X
A3 – Distribution List	X	
A4a – Project Organization	X	
A4b – Task Organization	X	
A5 – Problem Definition/Background	X	X
A6 – Project/Task Description		X
A7a – Quality Objectives and Criteria for Measurement Data	X	
A7b – Method Dependent Criteria for Measurement Data		X
A8 – Special Training Needs/Certification	X	
A9 – Documents and Records	X	X
Group B: Data Generation and Acquisition		
B1 – Sampling Process and Design		X
B2 – Sampling Methods		X
B3 – Sample Handling and Custody		X
B4 – Analytical Methods	X	
B5a – Quality Control	X	
B5b – QA/QC Sampling Schedule		X
B6 – Instrument/Equipment Testing, Inspection, and Maintenance		X
B7 – Instrument/Equipment Calibration and Frequency		X
B8 – Inspection/Acceptance of Supplies and Consumables	X	
B9 – Non-direct Measurements	X	
B10 – Data Management	X	X
Group C: Assessment and Oversight		
C1 – Assessments and Response Actions	X	
C2 – Reports to Management	X	
Group D: Data Validation and Usability		
D1 – Data Review, Verification, and Validation	X	
D2 – Verification and Validation Methods	X	
D3 – Reconciliation and User Requirements	X	

1.5 Element A4b – Task Organization

The program monitoring activities are summarized in elements A5 and A6 below and are described in detail in individual monitoring plans for each monitoring task. Nampa performs its own monitoring and contracts with a consultant responsible for assisting the monitoring process. The NWWTP and the Boise City Water Quality Laboratory (WQL) will provide laboratory services. Key roles or job functions for this project are described below and are included in the overall program organization chart in

Figure 1-1. Organization charts specific to each monitoring program are provided in individual monitoring plans.

Nampa Task Organization

- The Nampa *ECD Superintendent* has overall responsibility for managing the Permit monitoring programs.
- The *Stormwater Program Inspector* is responsible for coordinating and implementing the City's stormwater monitoring programs as related to the NPDES and total maximum daily loads federal regulations.
- The *Stormwater Program Inspector* will also serve as *Program Quality Assurance/Quality Control (QA/QC) Officer* reviewing project data for conformance to the project objectives and ensuring that corrective action is taken, where appropriate. The Program Coordinator may delegate selected responsibilities to the Stormwater Quality Specialist (Monitoring).
- The *Stormwater Program Inspector* is responsible for day-to-day project operations for specific monitoring programs. He or she will direct subcontractors; maintain project records, including program data, forms, and documents; calibrate and maintain test instruments; and maintain an adequate stock of field supplies.
- The *Stormwater Program Inspector* will conduct field monitoring activities and field maintenance activities under the direction of the ECD Superintendent.

Consultant Task Organization

- The *Project Manager* is responsible for all tasks contracted to a consultant. This role will coordinate with other consultant personnel to assure monitoring crews are available when necessary, report results, advise the Program Coordinator as requested, and schedule personnel as appropriate to meet project deadlines.
- The Project Manager will also serve as *QA/QC Officer* reviewing project data for conformance to the project objectives and ensuring that corrective action is taken, where appropriate.
- The *Technical Director* is responsible for providing senior technical review of all deliverables to the City. The technical director will provide technical guidance throughout the project as necessary.
- The *Field Coordinator* is responsible for conducting monitoring events. This role will oversee and participate in collecting samples, reporting storm event results, and maintaining field-located sampling equipment. The *Field Coordinator* will also serve as the *Site Safety Officer* during monitoring events.
- *Field Staff* will conduct field monitoring activities and field maintenance activities under the direction of the *Field Coordinator*.
- The *Project Quality Assurance Officer* will assist the *Project Manager* with QA/QC issues and advise the *Program QA/QC Officer* to ensure that project data conform with program requirements.

Laboratory Task Organization

- *Laboratory Assistant Superintendent* has responsibility for ensuring that sample analyses are performed and reported according to project requirements. The person is also responsible for scheduling the availability of laboratory staff, receiving and filling sample container requests, and scheduling sampling events, when applicable.
- *Laboratory Technicians* will conduct laboratory analyses and prepare sampling containers under the direction of their respective *Laboratory Assistant Superintendents*.

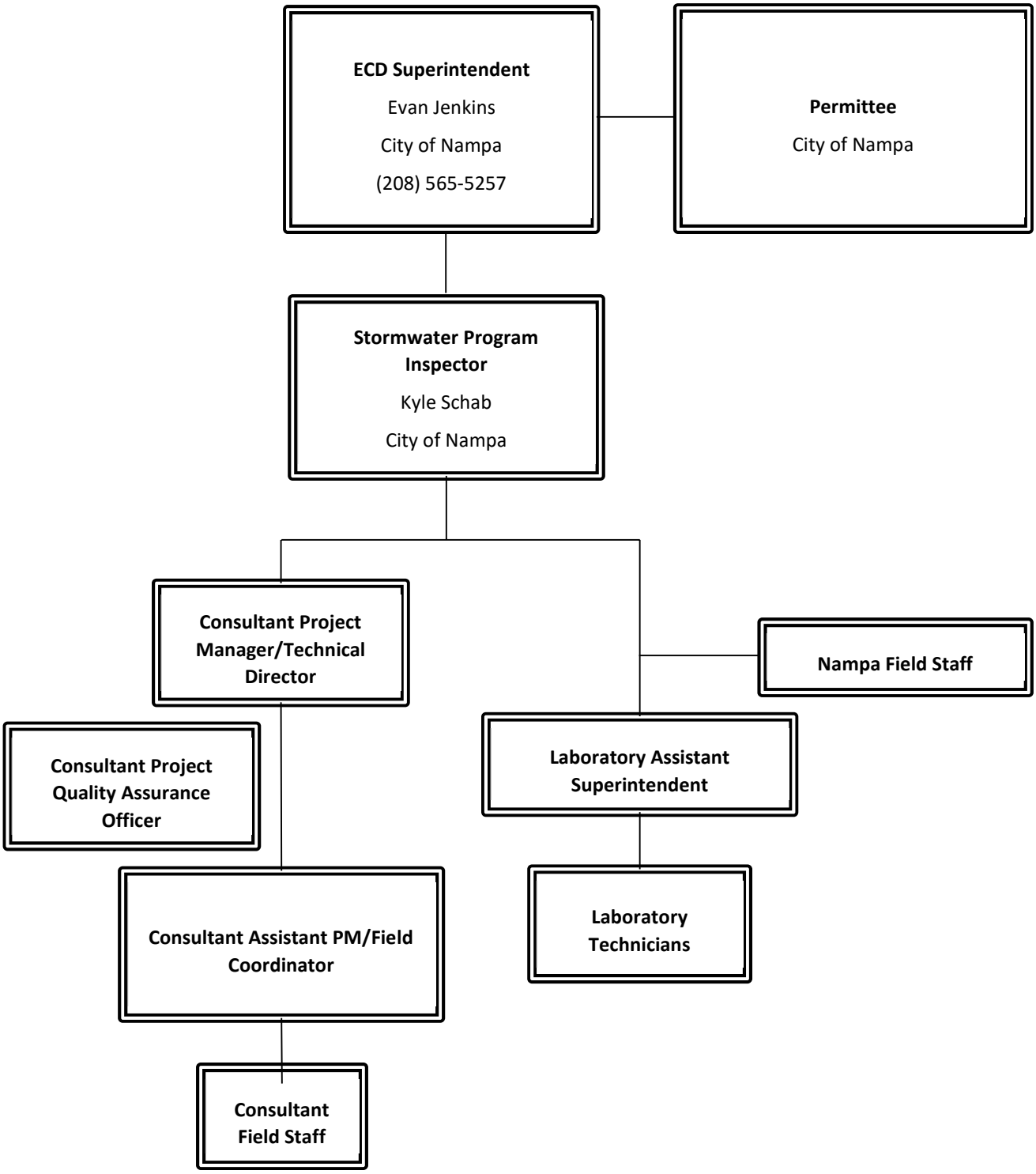


Figure 1-1. Monitoring organization chart

1.6 Element A5 – Problem Definition/Background

This QAPP includes all monitoring activities required by the Permit. The Permit authorizes discharges to waters of the United States from municipal separate storm sewer systems owned or operated by the permittees within the corporate boundaries of the City of Nampa, Idaho. As described in Parts 3, 4, and 6 of the Permit, monitoring includes stormwater outfall monitoring and dry weather screening for illicit discharges.

Data gathered to support the Permit will be used in the assessment of pollutant reduction to satisfy the permit general requirements. Data collected through monitoring activities might also be used to estimate stormwater loadings for comparison with waste load allocations and total maximum daily loads or support watershed and land use management. Data collected by the City over the course of the previous permit, along with data from the U.S. Geological Survey or others, may be used for these purposes.

Data collection efforts addressed in the QAPP and in individual monitoring plans are guided by the goals and objectives described in the Stormwater Management Plan. Throughout the duration of the Permit, program evaluations will be used to update the QAPP and individual monitoring plans.

1.7 Element A6 – Task Description and Schedule

Monitoring and assessment/evaluation task descriptions have been incorporated into the individual monitoring plan for each monitoring program. Monitoring plan descriptions include a summary of the work to be performed as well as monitoring schedules, monitoring site descriptions, and specific tasks associated with data collection efforts.

1.8 Element A7a – Quality Objectives and Criteria for Measurement Data

The data quality objectives (DQOs) for this program have been developed following the processes outlined in EPA guidance document QA/G-4 Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA 2006. This process acts to inform the development and implementation of adequate procedures to ensure the collection of representative data of acceptable and known quality that meets performance criteria for the project.

1.8.1 DQOs

Monitoring efforts will provide data of sufficient quality and quantity in accordance with permit requirements to broadly estimate reductions in annual pollutant loads, evaluate effectiveness of best management practices and green stormwater infrastructure projects, and support watershed and land use management initiatives.

Data quality indicators (DQI) have been established to set measurable qualitative and quantitative goals for data acceptance that meet the program DQOs described above. Each DQI is described below. DQIs are the basis for addressing field and laboratory analytical instrument performance as well as sample collection and handling procedures.

1.8.1.1 Project-Required Detection Limits and Sensitivity

The sensitivity of the entire sampling and analysis system must be adequate to detect the required constituents at levels comparable to Idaho's in-stream water quality standards, as applicable to the Boise River, the ultimate receiving water. Although the stormwater data are not directly compared to water quality standards, DQOs dictate that project-required detection limits (PRDLs) should be at a

similar level so that upstream sources of various constituents to the Boise River can be evaluated if needed. It is not necessary to accurately measure constituent concentrations substantially below in-stream water quality standards. Laboratory method detection limits (MDLs) will generally fall below those standards, and samples are expected to be free of interferences at those levels. For this program, the more conservative MDLs serve as adequate PRDLs. These PRDLs are included in the Data Quality Indicators Table in each individual monitoring plan.

1.8.1.2 Accuracy

The accuracy of the data is a measure of the extent to which a measured value represents the true value. Analytical accuracy is assessed by analyzing spiked samples with known standards and measuring the percent recovery. Laboratory accuracy is measured against quantitative matrix spike and surrogate spike recovery and is deemed acceptable if it is within an established range. Accuracy testing results will be used by the laboratory to assess analytical instrument performance.

1.8.1.3 Precision

Precision is a measurement of the reproducibility of the analytical data. Precision will be evaluated using field duplicate and laboratory duplicate samples. Precision criteria are included in the Data Quality Indicators Table in each individual monitoring plan. Poor sample performance in precision testing may be indicative of problems with sample homogeneity, matrix interferences, poor sample handling, contamination, or inadequate sensitivity of analytical methods. Precision testing results will be used to guide sample collection, handling, and analysis efforts in the event that deficiencies are reported for sample performance.

1.8.1.4 Bias

Another DQO is to minimize sample bias. Bias is typically a systematic error that results in a tendency to produce or report data in one direction. In this program, bias is controlled by using standard data collection, sample preservation, sample transport, and sample storage procedures to reduce most sources of sample bias. The laboratory uses standard quality control procedures applicable to each specific analytical method. These procedures include analysis of method blanks, matrix spikes and duplicates, surrogate analyses, and check standards analysis. Reported values that are qualified as having the potential for bias, will be considered estimated and use will be limited.

1.8.1.5 Representativeness

The representativeness is a measure of the degree to which data accurately and precisely indicate environmental conditions. For the monitoring programs covered under this QAPP, the selected analytical parameters have been identified as constituents of interest or concern based on typical constituents that have been previously observed in stormwater and urban runoff. The data will be considered to be representative if they meet precision limits.

Representativeness is also maintained by designing sample collection procedures to collect samples that represent actual discharge conditions. Manufacturers' specifications and site configuration are also considered when using, maintaining, and installing/deploying monitoring equipment to ensure data provide an accurate representation of site conditions. Other factors that affect representativeness for specific monitoring programs are addressed in each individual monitoring plan.

1.8.1.6 Comparability

The comparability of a data set is the extent to which the data set can be compared to others. For this program, comparability is established through the use of standard analytical methodologies and reporting formats. The data sets generated through this program will be used to evaluate trends over

time, meet the requirements of the Permit, estimate pollutant concentrations and loadings, evaluate structural controls and green stormwater infrastructure, and support watershed and land use management initiatives.

1.8.1.7 Completeness

Completeness is a comparison between the amount of usable data collected versus the total amount of data collected. Completeness is measured as the percentage of total samples collected and analyzed overall for individual parameters and for individual sites that are not rejected, compared to the number of samples collected. All data will undergo a data review and validation process that includes reviewing data for holding times, evaluating data with respect to laboratory qualified samples, and evaluating data with respect to field QA/QC samples. Grab sample data, field parameter data, and rainfall data are generally more susceptible to problems and interference affecting completeness. Completeness of flow data and laboratory analytical data are typically high.

Diligent sample handling and preservation procedures and timely sample processing help to maximize completeness. Usable data comparisons will be conducted with each annual report to determine completeness percentages for each monitoring year. An overall program goal of 95 percent has been established for completeness.

1.8.1.8 Sufficiency

Data objectives for sufficiency are based on the amount of useable data required to perform the level or type of analysis necessary for each monitoring element. The project data set will be considered meeting the DQOs for sufficiency when enough useable data have been collected to meet the requirements of the Permit. The goal for sufficiency is 100 percent. Each data set will be evaluated individually as the data are reported, and adjustments will be made to subsequent sampling events as needed to ensure that the provisions of the permit are adequately addressed.

1.9 Element A7b – Method Dependent Criteria for Measurement Data

DQIs specific to analytical methods include project-required detection limits and precision limits, which are summarized in the Data Quality Indicators Table located in the QA/QC Section of each individual monitoring plan.

1.10 Element A8 – Special Training Requirements/Certification

All field personnel must be familiar with general environmental sampling procedures and confined space “awareness” and must read the Standard Operating Procedures (SOPs) manual for the monitoring program(s) in which they participate. In addition, all field personnel must sign the Field Work Safety Plan for the monitoring program(s) in which they participate.

All consultant personnel working in areas where hazardous chemicals or fumes have an increased potential to occur will have received Hazardous Waste Operations and Emergency Response (HAZWOPER) training. In addition, they will have attended confined space “awareness” training and an annual safety review distinctive to this project. Routine monitoring activities are not expected to encounter conditions necessitating HAZWOPER training. Personnel assigned to maintenance tasks that require bodily entry into a manhole will also have completed a course in Confined Space Entry. Training records for consultant personnel will be maintained by the consultant’s Health and Safety Officer.

General health and safety and SOP training will be conducted annually for each monitoring program. This will allow the monitoring teams to identify health and safety issues that need to be addressed and ensure compliance with program SOPs.

1.11 Element A9 – Documentation and records retention

All program-related records will be maintained as described in Permit Part 6. Project documentation will include:

- QAPP
- Storm Water Management Plan
- Storm Water Outfall Monitoring Plan
- Task guidance documents and Standard Operating Procedures
- Annual Reports
- Sampling Event Reports
- Weather forecasts and precipitation records
- Field notes (generally recorded on preprinted forms)
- Maintenance forms
- Instrument calibration and maintenance records
- Chain-of-custody records
- Laboratory reports
- Dry Weather Outfall Screening Plan

Project documents will be stored on the secured City network in the file system or on in the ISCO Flowlink flow data management system. The following provides an overview of the process and responsibilities for maintenance of documents and records.

Project Planning Documents

The Program Coordinator will ensure that project plans (QAPP, Storm Water Management Plan, Monitoring Plans, and SOPs) are revised as needed. The revision date will be printed in the footer on each page of these documents. Copies of the plan documents will be distributed to the consultant Project Manager and Field Coordinator, laboratory personnel, and permittees as needed. Electronic copies of the plans will be stored on the City network.

Climatological Data

Weather information and forecasts will typically be obtained from the National Weather Service Caldwell airport station website for storm forecasting. Electronic files downloaded from flowmeters, automatic samplers, rain gauges, data loggers, and any other monitoring equipment will be stored on the City network, by water year. Future implementation of a secure cloud-based database may be used for electronic data files.

Documentation in the Field

Field notes, maintenance records, and instrument calibration results will normally be recorded on preprinted forms. Each page will be dated and initialed. At a minimum, field notes will include the name(s) of the person(s) conducting the subject activities, sample numbers and locations, maps and diagrams (where appropriate), equipment used, local weather conditions, and any observations deemed unusual by field personnel. Chain-of-custody records will document transmission of the samples from field to laboratory. They will also indicate the analyses requested, including specification

of batch quality assurance (QA) samples. If changes to the request are made, they will be documented in writing. The Stormwater Program Inspector will be the custodian of paper and electronic records. Data, forms, and records will be transmitted to the consultant Program Manager as needed.

Laboratory Analytical Reports

Laboratory reports will consist of analytical results for all field samples and tables summarizing laboratory QA results. Where available, laboratory reports will include electronic data deliverable files of analytical results and portable document format (pdf) files. Where only paper laboratory reports are delivered, the paper report may be scanned to generate pdf files. Electronic files will be stored on the City network, by water year, laboratory, and then program area. Paper and electronic copies of laboratory reports will be transmitted to the consultant Program Manager as needed.

Documentation of Deviations

In the event that general field practices or other standard procedures deviated from normal procedures, documentation will be made on field forms, in reports, or in field notebooks. These documentations will also include the methods used or suggested to resolve noncompliance. The Stormwater Program Inspector will maintain these records.

Section 2

Group B: Measurement/Data Acquisition

Elements in Group B cover aspects of the measurement system design and implementation. Group B elements B1 through B3 are addressed and included in each individual monitoring plan. These elements are listed below:

- Element B1 – Sampling Process Design
- Element B2 – Sampling Methods
- Element B3 – Sample Handling and Custody

2.1 Element B4 – Analytical Methods

2.1.1 Stormwater Monitoring Master Test List

The following tests will be performed as per requirements set forth in Nampa's municipal separate storm sewer system permit:

Table 2 1. Master Test List

Parameter	Responsible Party	Standard Method
Flow (cubic feet per second)	Stormwater Staff	Portable Flow Meter Staff Gauge
Total suspended solids	NWWTP	SM 2540 D
Total phosphorus	NWWTP	Hach 3036 SM 4500-P EPA 365.4
Total nitrogen	WQL	Calculated from EPA 353.2 and EPA 351.2
E. coli	NWWTP	SM 9223 B-Colilert

2.1.2 Stormwater Sampler Preservation Techniques

Table 2-2 lists the sampling protocol to be followed during collection of the stormwater discharge for analysis. All samples will be delivered to the NWWTP laboratory within 6 hours of bacteria sample collection and packed on ice to maintain a sample temperature of 4 degrees Celsius during transport. Any deviation in the sampling protocol will be reported immediately and corrective action will be taken. A replacement sample will be taken if possible, and no samples will be analyzed if they are determined to be invalid.

Table 2 2. Preservation Methods				
Test	Minimum Sample Volume (mL)	Sample Container	Preservation Equipment	Maximum Holding Time Recommend/Regulated
Total suspended solids	200	Plastic or glass	Refrigerated 4° C	7 days
Total phosphorus	100	Plastic or glass	H2SO4; pH <2 Refrigerate 4° C	28 days
Total nitrogen	500	Plastic or glass	H2SO4; pH <2 Refrigerate 4° C	7 days/28 days
E. coli	100	7 days/28 days	Refrigerate 4° C	24 hours

2.2 Element B5a – Quality Control Requirements

2.2.1 QC Validation

Field QA/QC samples include field blanks, field duplicate samples, laboratory duplicate samples, equipment blanks, and rinsate blanks. QA/QC sample definitions and procedure descriptions are listed below.

A field blank is a sample prepared in the field using type I reagent grade deionized water and the appropriate preservatives, if applicable. It is transported in the same cooler as the field samples and serves as a check on the cleanliness of field conditions at the time of sampling. Field blanks are collected alongside grab samples. The blank sample is typically prepared immediately following collection of the parent sample.

A field duplicate is a second aliquot of sample collected at the same time and in the same manner as the first aliquot. Duplicate pairs provide information about the repeatability of sampling and analysis. Field duplicates are collected alongside grab samples.

A rinsate blank is prepared by rinsing the decontaminated sampling equipment with type I reagent grade deionized water and collecting a portion of the rinsate into sample bottles with any applicable preservatives. This type of sample serves as a check on equipment decontamination procedures. Collection of rinsate blanks typically occurs after sample collection and decontamination of the sampling equipment, except for when sampling is planned to coincide with maintenance events as in the case of composite samples.

An equipment blank is prepared by running type I reagent grade deionized water through new sampling equipment and collecting the water into sample bottles with any applicable preservatives. This type of sample serves as a check for the presence of contaminants on new and unused equipment. Equipment blank samples are collected when new sampling equipment is ready for use but has not yet been in contact with a program sample.

A laboratory duplicate is a duplicate split by the laboratory. This type of sample serves as a check on the lab's ability to representatively split a composite sample and is a test of analytical precision.

Project-specific QA/QC procedures are outlined in the appropriate monitoring plan.

2.2.2 Field, Equipment, and Rinsate Blanks

When one of the analytical parameters is detected in a blank, all analytical results associated with that blank batch, exhibiting a concentration of less than five times the concentration detected in the blank, will be qualified. The qualification will indicate the analytical results may be biased high for the

samples collected. All concentrations above five times the blank value will be considered valid because any blank contamination is well below the sample concentration.

Blanks will be prepared using type I reagent grade deionized water generated by the WQL. This water is obtained from a private well and treated by reverse osmosis (RO), ion exchange, and ultraviolet disinfection. Their minimum criterion for acceptability is 18.3 megaohms, referred to as type I reagent grade deionized. The use of the type I reagent grade deionized water in blanks is to ensure that the equipment is not picking up constituents of concern from the use of retail-grade distilled water.

2.2.3 Duplicate

Field duplicate pairs provide information about the repeatability of sampling and analysis. For all samples (excluding bacterial analyses) where laboratory analyses indicate a sample concentration of less than five times the MDL, the difference between the concentrations of the field duplicates will be considered acceptable if it is within an amount equal to the MDL. For all samples with concentrations greater than five times the MDL, the relative percent differences (RPDs) for each analyte will be considered acceptable if they are within 20 percent for water matrix samples and 35 percent for solids samples.

Relative Percent Difference Equation

$$RPD = \frac{|x_1 - x_2|}{((x_1 + x_2)/2)} \times 100\%$$

Where:

RPD = Relative Percent Difference

x_1 = Duplicate

x_2 = Parent

The inherent variability associated with bacteria analyses from grab samples requires a different set of criteria to verify sample collection results. To qualify and identify outliers for this analyte, the logarithmic RPD_{log} will be calculated by the Program Coordinator. The variability associated with extremely low numbers indicates little to no association between most probable number (MPN) with a concentration of less than 10 MPN/100 milliliters (mL). All sample pairs that are both less than 10 MPN/100 mL will be automatically included in the database without qualifier flags. For values where the parent and the duplicate concentrations are greater than 100 MPN/100 mL, the RPD_{log} will be calculated and will be considered acceptable if calculated RPD is 40 percent or less. In the event the RPD is higher, the data will still be used because of the variable nature of *E. coli*. However, the samples should be flagged and qualified as not meeting quality control requirements.

Logarithmic Relative Percent Difference Equation

$$RPD_{\log} = \frac{|\log(x_1) - \log(x_2)|}{((\log(x_1) + \log(x_2))/2)} \times 100\%$$

Where:

RPD_{log} = Relative Percent Difference of Log Values

x_1 = Duplicate

x_2 = Parent

2.2.4 QC Management

In the event that insufficient volume is available in a single QC sample for all of the scheduled QC analyses, additional QC samples may be collected and submitted for analysis.

The laboratory(ies) will perform additional internal QA/QC determinations as documented in their QAPP document included in Appendices C and D.

The normal laboratory data package will include analytical results for field samples and field QA samples and sample comments. Limited QA data will also be included, as appropriate. However, raw data, laboratory notebook pages, and similar supporting data will be maintained at the laboratory and available at the City's request. A more detailed reporting package will be requested and reviewed in the event of a change in laboratories, a major change in methods, or to troubleshoot potential data problems.

2.2.4.1 Sample Naming Conventions for the Chains-of-Custody

Quality control (QC) samples for a given sampling event will be given names that are similar but not identical to the other analytical samples so that QC samples cannot be easily distinguished by the laboratory, to ensure that all samples are handled and analyzed in the same manner. Additionally, sample collection times for QC samples will be recorded on the Chain of Custody as 12:00. Actual QC sample collection times will be recorded on the field form.

Equipment blanks and rinsate blanks are not associated with a particular sampling event and will not be submitted as laboratory blind samples. These samples will be named for the monitoring station followed by the two-letter abbreviation appropriate to the QC sample type (Indian Creek-EB and Indian Creek-RB, for example).

2.3 Element B5b – QA/QC Sampling Schedule

Random number generation will be used to develop a QA/QC sample schedule for each individual water year. The schedule will be used to establish the targeted QC site for each event, as well as an alternate QC site with the goal of collecting one set of QC samples for each event. Each site is assigned a number, and a random number generator equation is run for each event. In the event that the selected site cannot be sampled for any given event, the predetermined alternate site will be used. The alternate site selection process will be reproduced to provide additional levels of alternate sites for each event as needed. Detailed QA/QC sample collection schedules will be identified in each individual monitoring plan.

The City may choose to conduct additional QA/QC to address data discrepancies, potential sample contamination, or other QA/QC issues. These events will be handled on an as-needed basis, depending on the particular issue(s) involved.

2.4 Element B6 – Instrument/Equipment Testing, Inspection, and Maintenance Requirements

Field instruments will be visually inspected and tested before use to ensure that they are in good working order. Maintenance and cleaning will be performed in accordance with manufacturers' instructions. Each individual monitoring plan includes a list of the specific instruments used in the monitoring program. The City will conduct the testing, inspection, and maintenance and will keep a log of all maintenance at Nampa ECD's headquarters.

2.5 Element B7 – Instrument Calibration and Frequency

Instrument calibration procedures and frequencies are outlined in the manufacturer's equipment manuals for each instrument. Procedures in the guidance manual are based on manufacturer specifications and City experience. Calibration frequency may be conducted more frequently as warranted by equipment performance. Calibration records will be part of the project documentation maintained by the Program Coordinator.

2.6 Element B8 – Inspection/Acceptance Requirements for Supplies and Consumables

Plastic bags and grocery store deionized water will be food grade (i.e., purchased from a grocery store). Supplies will be visually inspected for evidence of cleanliness, and any items showing visible contamination or damage will be discarded unused.

RO water will be prepared and bottled by WQL in a clean carboy in the amount requested by the City for each project need. In order to maintain sample integrity, the City will not retain unused RO water for future use. Carboys obtained from the lab will be visually inspected for evidence of cleanliness, and any items showing visible contamination or damage will be discarded unused.

Sample containers will be provided to the City by the NWWTP and/or WQL prior to each event. Upon receipt, all sample containers will be visually inspected by the Program Coordinator or designee and returned if they appear to be contaminated or otherwise compromised.

Nitrile gloves and other disposable sampling equipment will be inspected for contamination upon receipt.

2.7 Element B9 – Data Acquisition Requirements (Non-Direct Measurements)

Additional information from third parties may be obtained to support the monitoring program objectives. All data from outside sources will be reviewed against the acceptance criteria prior to use. An example of an outside data source typically utilized by the program is the meteorological data obtained from the National Weather Service. Each monitoring plan will include the identification of potential outside sources to be used in the program. Non-Direct Measurement data will be identified and described in each monitoring plan that relies on this data.

2.8 Element B10 – Data Management

As described in element A4, the *Stormwater Program Inspector* will store original field data sheets, chains-of-custody, and laboratory reports in binders at ECD headquarters. Field form pdfs, electronic laboratory data and chains-of-custody, and electronic data downloaded from field equipment are stored electronically on the City network.

Software programs specific to monitoring equipment will be used to download and interface with flowmeters and rain gauges. Rainfall, flow, depth, and velocity data and sample history will be processed using the ISCO Flowlink software. ArcGIS and the ESRI collector app will be used for mapping applications as well as the dry weather outfall screening program.

Section 3

Group C: Assessment/Oversight

Group C elements address the activities for assuring that the project is being implemented as designed and in accordance with the Permit.

3.1 Element C1 – Assessments and Response Actions

3.1.1 Event and Data Completeness

The Program Coordinator will review the analytical data from each sampling event against the DQIs listed in Section 1.8, within 2 weeks of receiving the lab analytical results. This review will include the following activities:

- Review field data sheets for completeness and for circumstances which might adversely affect data quality (such as apparently erroneous field measurements or unclear writing).
- Confirm that all samples, including QA/QC samples, were collected as specified.
- Confirm that all samples were delivered to the laboratory promptly.
- Confirm that the appropriate analyses were performed on all samples.
- Confirm that analytical reports on all samples were received.
- Confirm that all qualified data have been correctly identified.

The analytical data, along with QA/QC data from each sampling event, will be entered into the spreadsheet used in the generation of annual reports. Appendix B contains the Monitoring Program QA/QC Checklist that will be filled out and signed by the Program Coordinator to ensure the completeness of this process. Any deviations from the monitoring plan or issues associated with data from any particular event will be documented in the event report described in section 3.2.

Based on the review of analytical data from each sampling event, changes to subsequent sampling events may be made to ensure that at the end of the year, sufficient data will be available to meet DQOs and permit conditions. This may include additional sampling events for one or more parameters, additional QA/QC samples to investigate data issues or other changes.

At the end of each sampling season, the ECD Superintendent, Stormwater Program Inspector, and consultant Project Manager will meet and discuss the sampling completed during the water year, any problems that were encountered, and any changes that are needed prior to the next sampling year. Changes to the QAPP will be made as needed at that time.

Additional QA/QC checks may be instituted from time to time to assess procedures or investigate apparent problems. These checks will generally be undertaken if data generated by the sampling program is significantly different from data previously generated, or QA/QC data indicate potential problems with one or more analytical parameters.

3.2 Element C2 – Reports to Management

Sampling event field sheets, data, and laboratory reports will be prepared by the Stormwater Program Inspector and will be transmitted to the consultant Program Manager after each event. The consultant Program Manager will then utilize consultant staff to QA/QC monitoring event data and produce and

deliver a Storm Event Monitoring Report to the ECD Superintendent. These reports will be stored in folders, separated by event date, at ECD headquarters. The NPDES annual reports to the EPA will incorporate all monitoring data for the water year as defined in the Permit.

Section 4

Group D: Data Validation and Usability

The elements in Group D, performed after data collection is complete, ensure that the data conform to the specified criteria in the Permit and produce valid, defensible data that align with the DQOs.

4.1 Element D1 – Data Review, Validation, and Verification Requirements

Analytical data must meet the laboratories' ordinary internal QA/QC requirements, as described in their respective QA plans. The Stormwater Program Inspector will examine the field forms and laboratory reports to verify that all data are complete, sample holding times were met, all samples were analyzed for desired parameters, and detection limits are appropriate (allowing for dilution or matrix interference, as necessary) to meet Permit limitations. The Stormwater Program Inspector will also confirm that the laboratory QA samples meet the laboratory's stated control limits and samples are qualified where necessary. Deficiencies will be referred to the laboratory for the corrective actions specified in their QA plan (such as reanalysis). The laboratories update their control limits on a regular basis by adding the results of recent Laboratory Control Standards to a statistical analysis. The Project Manager may also delegate any duties to appropriate consultant staff.

Analytical data associated with field QA/QC samples (field blanks, rinsate blanks, and duplicates) will be validated using the methods and criteria described in Section 2.1 and will be qualified where necessary.

Rejection of data in any form will always be based upon professional judgment with consideration given to all aspects of collection, analysis, and management of the specific data point or set in question. Criteria for considering rejection of data includes, but will not be limited to, the following list:

- Broken chain of custody
- High cooler temperature upon laboratory receipt of samples
- Improper chemical preservation of samples
- Excessive holding time exceedances

Special handling considerations are included in the monitoring plans to identify the selected approach to specific constituents or situations where it is not feasible to fully execute the procedures required by the EPA approved analytical methods. Special handling considerations will typically address the approach the City will take when holding times, filtration requirements, and other method requirements are not expected to be met due to the logistical limitations of a specific monitoring program.

4.2 Element D2 – Validation and Verification Methods

After receipt of laboratory analytical reports, the Stormwater Program Inspector will fill out and sign the Monitoring Program QA/QC Checklist that includes a validation review of the elements listed below;

this form is included in Appendix B. This documentation indicates that the validation process was done properly and should include any notes pertinent to the use of the data in the annual reports.

Because all QC samples are submitted to the lab with a time of 12:00, it is the City's responsibility to review laboratory reports and actual sample collection times to evaluate holding time qualifications for QC samples. It is understood that the lab is required to qualify data according to the information provided by the City, and laboratory analytical reports will report any holding time qualifiers as measured from the 12:00 time on the chain-of-custody form.

4.2.1 Validation and Verification Procedures

Data validation and verification will be performed by the consultant Project Manager. Procedures will include, at a minimum, the following actions:

- Review field data sheets for completeness and accuracy and address inconsistencies or need for clarification with sampling team member(s) or validation of instrument performance.
- Check that sample collection was conducted in accordance with standard operation procedures.
- Check that all analytical reports have been received from the lab.
- Review chain-of-custody forms and laboratory reports to confirm that all samples were extracted and analyzed for the desired constituents by the correct methods within the appropriate holding time. Holding time considerations for QC samples are discussed in the paragraph following this list.
- Confirm that results of all method blanks, laboratory duplicates, laboratory control samples, and spikes fall within the limits set by the laboratories.
- Consult with the laboratory and possible raw data review in the event of outliers or unexpected values.
- Confirm that appropriate analytical methods were used.
- Ensure that all data flagged by the laboratory is properly entered into DataSight along with all appropriate flags and data qualifiers.
- Review all data together with field QA/QC samples and assign data qualifiers where necessary.
- Consult with the consultant Project QA Officer or Project Manager to determine whether samples that are qualified by the laboratory should be submitted in the annual report and what qualifiers should be added to help define the data.
- Confirm that all DQOs were achieved.

4.2.2 Flagging and Qualifiers

Flags and qualifiers will be assigned to data to denote specific quality or usability considerations for the user of the data as part of the data validation and verification process. All data is reviewed and validated after entry into the spreadsheet. Any data stored in the database has the potential to be qualified or flagged. Specific qualifiers will be retained with the raw data import files. The raw data import files will be saved as an attachment in the audit log for each monitoring program.

Flagging will be used to track data that has been qualified as well as to assist users with data organization and review. The following list outlines the flagging structure to be used for the database.

- **Qualified, estimated (yellow flag).** Data is qualified but still usable with the understanding that it is an estimate. This type of data is associated with the J qualifier as it pertains to water quality data. The yellow flag may apply to any variable under the Level 2 data types that is qualified and is still useful for calculations and reporting.

- **Qualified, estimated under MDL (orange flag)**. Data is qualified but still usable with the understanding that it is an estimate (associated with the UJ qualifier). This flag will apply only to analytical data that is reported below the MDL and is still useful for calculations and reporting.
- **Rejected, data is not usable (red flag)**. This flag will apply to data rejected due to sufficiently high concerns for quality and representativeness of the data based on the DQOs described in the QAPP (associated with the R qualifier). This data is included for recordkeeping and reporting purposes only and is not useful for analysis or calculations in any capacity.
- **Unreviewed (purple flag).** All data will be reviewed after it has been entered/imported. When data is manually entered it will be flagged during the manual data entry process. After data has been reviewed and the data import/entry was found to be successful (i.e., data is correct and usable as is) the purple flag will be removed.
- **Needs further review (blue flag).** During review, data may be identified as needing a more in-depth review or other action before it can be accepted in the database without qualification. In these instances, the purple flag will be replaced with a blue flag until the additional review has been completed.
- **QC sample data (green flag).** QC sample data such as results reported for field duplicates, equipment blanks, and others will be assigned this flag to distinguish these results from parent sample results.

In the event that a data entry has more than one applicable flag/qualifier, the data will be flagged with the most pertinent flag and a note regarding the other qualifiers will be added to the comments.

4.3 Element D3 – Reconciliation with DQOs

The activities specified in the Data Completeness and Validation portion of each event report will be used to assess the degree to which the DQOs have been met. This information will be summarized in the annual report. The ECD Superintendent will initiate appropriate corrective action in the event that DQOs have not been met.

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Appendix A: NPDES Permit #IDS028126

Appendix B: Monitoring Program QA/QC Checklist

(To be developed for composite sampling)

Appendix C: NWWTP QAP

Appendix D: City of Boise Water Quality Laboratory QAP