Ada County Highway District Stormwater Management Program

NPDES Phase I Permit #IDS027561

September 2022

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Acronyms

ACHD	Ada County Highway District
ACM	Alternative Control Measure
AU	Assessment Unit
AVL	Automatic Vehicle Location
BMP	Best Management Practice
BSU	Boise State University
CASQA	California Stormwater Quality Association
CGP	Construction General Permit
CSDC	Construction Site Discharge Control
CWA	Clean Water Act
DD3	Drainage District #3
GPS	Global Positioning System
EPA	Environmental Protection Agency
ESC	Erosion Sediment Control
FTE	Full Time Equivalent (position)
HOA	Homeowner Association
IGA	Intergovernmental Agreement
IDDE	Illicit Discharge Detection Elimination
IDEQ	Idaho Department of Environmental Quality
ITD	Idaho Transportation Department
LA	Load Allocation
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollution Discharge Elimination System
PCSM	Post-Construction Stormwater Management
ROW	Right of Way
SLD	Sheriff Labor Detail
SWMP	Stormwater Management Program
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
WLA	Waste Load Allocation
WQS	Water Quality Standards

Section 1

Introduction

Ada County Highway District's (ACHD) Stormwater Management Program (SWMP) Document describes the activities and control measures conducted to meet the terms and conditions of NPDES Permit #IDS027561. ACHD holds both a Phase I and Phase II Permit. This document addresses requirements of the Phase I Permit (IDS027561). The National Pollutant Discharge Elimination System (NPDES) permit program is a requirement of the federal Clean Water Act (CWA), which is intended to protect and restore waters for "fishable, swimmable" uses. The EPA has delegated permit authority to most state environmental agencies, and these agencies can set permit conditions in accordance with and in addition to the minimum federal requirements. Authority for issuing stormwater individual permits was delegated to Idaho Department of Environmental Quality (IDEQ) on July 1, 2021.

The Environmental Protection Agency, Region 10 (EPA) reissued a third cycle Phase I National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit (Permit) (No.IDS-027561), effective October 1, 2021, to Ada County Highway District, Ada County Drainage District #3 (DD3), Boise State University (BSU), City of Boise, City of Garden City, and the Idaho Transportation Department District (ITD) #3, (collectively "Permittees"), The current Permit is available at https://www.epa.gov/sites/default/files/2021-06/documents/r10-npdes-boise-garden-city-ms4s-ids027561-final-permit-2021.pdf and is implemented by each Permittee and collectively through the Partners for Clean Water https://www.partnersforcleanwater.org/.The Permit authorizes discharge of all MS4 outfalls in the permit area to waters of the United States, including the Boise River and its tributaries in accordance with the conditions and requirements of the Permit. The Phase I permit area includes the cities of Boise and Garden City. A map of the Phase I permit area is included in Figure 1 below. The Permit expires on September 30, 2026.

This SWMP document describes specific actions ACHD is taking, or planning to take, to ensure compliance with Permit requirements. The Permit requires ACHD to "maintain relevant regulatory mechanisms to control pollutant discharges into and from its MS4 and comply with the Permit." (Permit, 2.5.5). This SWMP document establishes the foundation on which ACHD will continue to build as best management practices (BMPs) are identified and implemented. Through the Permit required annual reporting process, ACHD will assess and report annually on the activities implemented and, their effectiveness, recommend enhancements to the program, and implement changes as necessary to ensure continued permit compliance. The SWMP document will be updated as needed. Annual reports will be submitted to the IDEQ no later than January 30 of each year.

Per the Permit ACHD is allowed to discharge stormwater runoff from the MS4 into waters of the United States, including the Boise River and its tributaries if programs are implemented to protect water quality by reducing the discharge of "nonpoint source" pollutants to the "maximum extent practicable" (MEP) through application of Permit-specified BMPs. The BMPs specified in the Permit are collectively referred to as the SWMP Document and grouped under the following SWMP components:

- Public Education and Outreach on Stormwater Impacts
- Illicit Discharge Detection and Elimination (IDDE)
- Construction Site Stormwater Runoff Control
- Post-Construction Stormwater Management for New Development and Redevelopment

- Stormwater Infrastructure and Street Management
- Industrial and Commercial Stormwater Discharge Management

1.1 Organization of Guidance Document

The contents of this document are based upon previous versions of ACHD's Phase I Stormwater Management Plan with updated content to address the third cycle NPDES Phase I requirements including updated effectiveness assessment strategies outlined in Section 1.6. The organization of this SWMP document is based on EPA's Example Template: Storm Water Management Program Document, provided in Appendix B.1 of the Permit:

- **Section 1** addresses basic SWMP information including ACHD's jurisdiction, staff organization, receiving waters, and program information and analyses.
- **Section 2** addresses MS4 description and mapping information.
- **Section 3** addresses Permit requirements for targeting pollutants of concern.
- **Section 4** addresses ACHD's legal authorities allowed under Idaho law to implement and enforce the requirements of the Permit.
- **Section 5** addresses how ACHD meets the required program requirements to reduce pollutants in the MS4 to the maximum extent practicable.

Each section includes a summary of the relevant Permit requirements and a description of current and planned compliance activities.

1.2 ACHD Jurisdiction and Regulated Area

Established in 1972 as an independent government entity, the ACHD is responsible for all short-range planning, construction, maintenance, operations, rehabilitation and improvements to Ada County's urban streets, rural roadways (excluding state highways) and bridges. ACHD is the only consolidated countywide highway district in the State of Idaho. Geographically, the ACHD's jurisdiction includes Boise, Eagle, Garden City, Kuna, Meridian, and Star. The Phase I permit area includes the city limits of Boise and Garden City, as shown in Figure 1. Although this SWMP document is specific to the Phase I permit, ACHD has also developed a SWMP document for the Phase II permit area that includes the 2010 U.S. Census based urbanized areas of Eagle, Meridian, and incorporated Ada County. This document is available on ACHD's website at https://www.achdidaho.org/Departments/Engineering/Stormwater/resources.aspx.

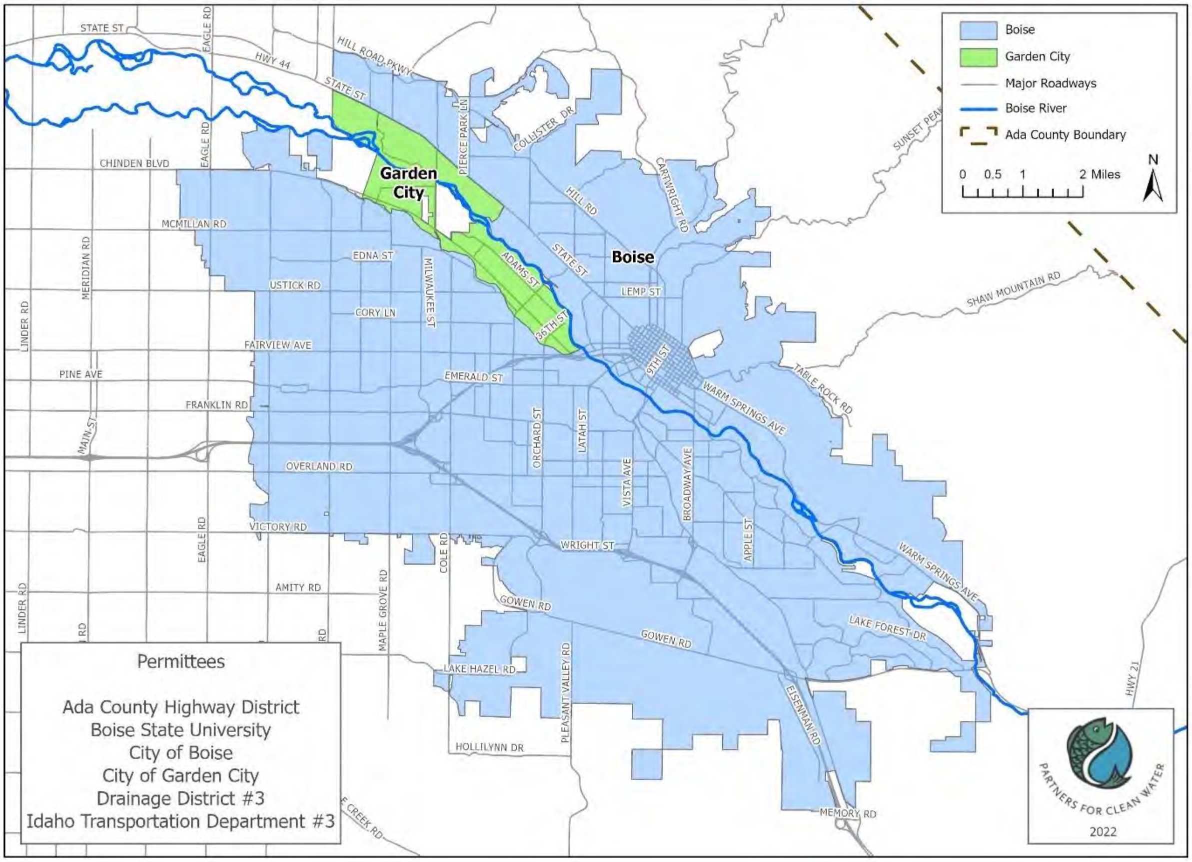

Figure 1. Phase I Permit Area

ACHD maintains and operates approximately 5,301 lane miles of roads and streets in Ada County, with an estimated value of three billion dollars. This infrastructure includes facilities that range from multi-lane, arterial streets with a computerized signal system, to narrow, farm-to-market roadways. To protect public safety and prevent property damage, ACHD designs and operates its stormwater drainage systems to prevent standing water on roadways. Roadways in urban settings typically have curbs and gutters that direct stormwater runoff to enclosed drainage systems, whereas stormwater from rural roadways typically flow to roadside ditches and swales. In recent years, ACHD has included Green Stormwater Infrastructure (GSI) BMPs into ACHD's stormwater management design standards and programmed funding for GSI implementation. All new, rebuilt, and retrofitted ACHD stormwater basins are vegetated to mitigate stormwater pollutants and GSI opportunities are explored for all new roadway projects.

1.3 Staff Organization

Five Commissioners govern the ACHD. Together, they are responsible for guiding the planning, development, and implementation of transportation facilities throughout the county. Elections are held every two years on a rotating basis, and each Commissioner represents a separate sub-district. A Commission appointed Director, who serves as chief administrator, manages the ACHD on a day-to-day basis.

Within the ACHD organization, the Environmental Department is the point of contact and Permit administrator for all MS4 NPDES Permit activities (Phase I and Phase II). The Environmental Department consists of nine full-time equivalent positions (FTEs) and one part-time student intern.

Environmental Department FTE positions include Environmental Manager (1), Environmental Engineer (1), Environmental Programs Coordinator (1), Stormwater Quality Supervisor (1), Stormwater Quality Program Coordinator (1), and Environmental Specialist (4). The Maintenance Division performs countywide MS4 maintenance activities and plays a significant role in ACHD's stormwater management activities. Stormwater related FTEs in the Maintenance Department include 14 FTEs dedicated to stormwater system cleaning and 26 FTEs dedicated to street sweeping activities. Stormwater Management Program responsibilities and activities are performed by various departments within the ACHD organization and are summarized in Table 1.

Table 1. ACHD Stormwater Management Program Responsibilities

ACHD Department/Section	Summary of Activities	SWMP Control Measures*
Development & Technical Services Environmental	• Administration of ACHD's NPDES Phase I and Phase II stormwater permits • Review and inspection of construction controls for ACHD projects and private work in ACHD right-of-way (ROW) • Education and outreach activities • Wet and dry weather monitoring • Outfall delineation and inspection • Illicit discharge inspection and response, stormwater bmp design standards • GSI implementation and basin revegetation • Administration of Industrial and Commercial Stormwater Management contracts.	Construction, Education and Outreach, Public Participation, Post-Construction Stormwater Management, Illicit Discharge, Stormwater Infrastructure and Street Management, Industrial and Commercial Stormwater Discharge Management
Development & Technical Services Development Review	• Development project review • Inspection of public roadways and storm drain system in private development e.g., subdivisions and developer sponsored roadway projects	Post-Construction Stormwater Management
Development & Technical Services Construction	• Issuance of Work in ROW permits, collection of fees • Private construction in ROW inspections • Distribution of pollution prevention educational brochures	Construction, Education and Outreach, Illicit Discharge
Development & Technical Services Project Inspection	• Inspection of ACHD projects for construction and new development controls • Construction General Permit administration for ACHD construction projects	Construction, Post-Construction Stormwater Management
Development & Technical Services Design	• Incorporation of construction and new development controls into ACHD roadway project plans	Construction, Post-Construction Stormwater Management

Table 1. ACHD Stormwater Management Program Responsibilities		
ACHD Department/Section	Summary of Activities	SWMP Control Measures*
Development & Technical Services Traffic Operations	• Implementation of pollution prevention activities in traffic operations (e.g., roadway stripping, signal construction/installation)	Stormwater Infrastructure and Street Management
Maintenance Operations Administration	• Administration and implementation of pollution prevention and good housekeeping at ACHD facilities and operation yards	Stormwater Infrastructure and Street Management
Maintenance Operations Cloverdale	• Maintenance of MS4 system including detention and retention ponds (ACHD and Homeowner Association (HOA)-owned) • Illicit discharge response • Storm drain system inspection and cleaning	Stormwater Infrastructure and Street Management, Illicit Discharge
Maintenance Operations Adams	• Maintenance of MS4 system • Illicit discharge response • Street sweeping	Stormwater Infrastructure and Street Management, Illicit Discharge
Planning and Project Management Capital Projects	• Incorporation of construction and new development controls into ACHD roadway project plans	Construction, New Development
Communications	• Development and implementation of stormwater education and outreach resources	Public Education, Outreach, and Public Involvement
Human Resources Training	• Implementation and tracking of Permit required internal training resources	Illicit Discharge, Construction, Post-Construction Stormwater Management, Stormwater Infrastructure and Street Management
Information Technology GIS	• Maintenance of the geographic information system storm drain layers and auxiliary tools.	Illicit Discharge, Construction, Post-Construction Stormwater Management

**See Section 5 of this document for a description of the SWMP control measures*

1.4 Permittee Organization

The Permittees' cooperative partnership spans more than twenty years and is based on established operating guidelines and intergovernmental agreements. These agreements have been amended and are currently being reviewed. Draft operating guidelines and intergovernmental agreements are provided in Appendix A and described below;

- **Intergovernmental Agreement (IGA) for Roles and Responsibilities under the NPDES Municipal Stormwater Permit (Permit #IDS-027561).** Historically, this IGA has been updated following the issuance of each Permit in 2001 and 2013. This document is currently being updated to reflect the 2021 Permit issuance. The purpose of this agreement is to detail the duties, roles, and responsibilities of the Permittees to comply with federal NPDES stormwater rules, regulations, and requirements, including establishing stormwater program lead agencies and apportionment of costs.

- **Renewal of Interagency Agreement for the Enforcement of Stormwater Management.** Enforcement agreements have been enacted between ACHD, ITD, DD3, and City of Boise. A second agreement exists between ACHD, ITD, and City of Garden City. These agreements allow the City of Boise and City of Garden City to enact police powers to enforce their stormwater ordinances on behalf of the other Permittees.
- **Interagency Agreement for the Inspection, Monitoring and Enforcement of Industrial and Commercial High-Risk Runoff.** Annually, ACHD coordinates with the City of Boise and the City of Garden City to mutually agree on a scope of work to conduct industrial and commercial stormwater inspections within the respective cities on behalf of ACHD. These inspections are conducted outside of the public right-of-way and therefore outside of ACHD jurisdiction. Agreements with both cities are currently being updated to reflect the 2021 Permit.

1.5 Receiving Waters

The waterbodies identified in Table 2 receive stormwater discharges from ACHD's MS4 outfalls in the Phase I permit area. The waterbodies designated in Idaho's water quality standards (IDAPA 58.01.02) include waterbody assessment units (AU) and assigned beneficial uses. More information associated with the AU's is available in Idaho's 2022 Integrated Report[1]. In addition to the waterbodies listed below, ACHD discharges to numerous conveyances including canals, laterals, and drains that are not within the AU database maintained by IDEQ. A complete list of Phase I Permit Receiving Waters and Outfall Ownership is available in Appendix B. Table 3 includes a list of the ACHD outfalls that discharge to the MS4 of another entity.

A map and description of the Phase I MS4 is included in Section 2 and Appendix C.

Table 2. 2021 Phase I Assessment Unit, Receiving Water, and Outfall Ownership Summary

Assessment Unit	Receiving Waterbody (per ACHD inventory)	ACHD Owned*	Non-ACHD Owned	Total Outfalls
ID17050114SW010_02	Eightmile Creek	6	0	6
	Fivemile Creek	21	10	31
	Fivemile Creek Trib.	8	3	11
	Threemile Creek	7	2	9
	Threemile Lateral	7	1	8
ID17050114SW010_03	Fivemile Creek	27	9	36
ID17050114SW011a_02	Boise City Canal	1	0	1
	Unnamed	5	0	5
ID17050114SW012_02	Boise City Canal	1	0	1
	Cottonwood Creek Trib.	1	0	1
	Crane Creek	18	0	18
	Crane Gulch	2	1	3
	Eagle Drain	1	0	1
	Farmers Union Canal	0	1	1

1 www.deq.idaho.gov

Table 2. 2021 Phase I Assessment Unit, Receiving Water, and Outfall Ownership Summary				
Assessment Unit	Receiving Waterbody (per ACHD inventory)	ACHD Owned*	Non-ACHD Owned	Total Outfalls
ID17050114SW012_02 continued	Hulls Gulch	4	2	6
	Penitentiary Canal	1	0	1
	Pierce Creek	4	0	4
	Pierce Gulch	1	0	1
	Polecat Gulch	15	0	15
	Stewart Gulch	8	0	8
ID17050114SW012_03	Cottonwood Creek	3	5	8
ID17050114SW005_06	Boise River	4	3	7
	Davis Drain	2	0	2
	Eureka Canal	0	1	1
ID17050114SW011a_06	Boise River	34	20	54
	Crane Creek	1	1	2
	Farmers Union Canal	5	0	5
	Logger Creek	12	13	25
	Unnamed	0	1	1
	Walling Creek	1	0	1
TOTAL	-	200	73	273

**ACHD Owned also includes partial ownership with another entity*

Table 3. 2021 ACHD Phase I MS4 to MS4 Connections Summary					
Receiving Waterbody Segments	WQS Classification	Impairment/Pollutant of Concern	TMDLs? (Yes/No)	Applicable WLAs (Yes/No)	No. of Discharging Outfalls
Drain A	N/A	N/A	No	No	17
Drain B	N/A	N/A	No	No	11
Drain B-1	N/A	N/A	No	No	1
Drain D	N/A	N/A	No	No	6
Drain E	N/A	N/A	No	No	4

1.6 SWMP Information, Analyses, and Assessment

A Permit required element of the SWMP is to “begin to assess, or participate in one or more efforts to assess, the understanding of the relevant messages and adoption of appropriate behaviors by their target audience(s). The resulting assessments must be used to direct future stormwater education and outreach resources most effectively.” (Permit, 3.1.5) Effectiveness assessment is a process that is used to evaluate whether stormwater management activities are producing desired outcomes.

This SWMP adopts an effectiveness assessment approach based on *A Strategic Approach to Planning for and Assessing the Effectiveness of Stormwater Programs*[2].

1.6.1 Outcome Levels

Six outcome levels are used to refer to the results of control measures and activities discussed in Sections 3 and 5 of this SWMP document and shown in Figure 2. Outcome levels help to categorize and describe the desired results or goals of programs and activities. For the purposes of this SWMP, Outcome Levels 1-5 are the primary focus. As the Phase I SWMP matures, Outcome Level 6 will become more relevant.

Each Outcome Level is described below:

- **Level 1 –Stormwater Program Activities** Level one outcomes provide direct feedback on whether the activities or control measures are being developed and implemented as planned and on schedule.
- **Level 2 – Barriers and Bridges to Action** Level two outcomes provide feedback on how effective the various control measures have been in raising awareness and changing attitudes of the target audiences.
- **Level 3 – Target Audience Actions** Level three outcomes provide feedback on how effective the activities and control measures have been in motivating target audiences to change their behaviors and implement appropriate BMPs.
- **Level 4 – Source Contributions** Level four outcomes provide feedback regarding reductions in the amounts of pollutants associated with the specific sources resulting from the implementation or enhancement of a BMP.
- **Level 5 – MS4 Characterization** Level five outcomes may be measured as reductions in one or more specific pollutants and may reflect effectiveness at a variety of scales ranging from site-specific to programmatic.
- **Level 6 – Receiving Water Conditions** Level six outcomes focus on compliance with water quality standards, protection of biological integrity, and beneficial use attainment.

Each outcome level is a building block to the next level. However, most often the outcome levels are presented in reverse order as shown in Figure 2. The reverse order allows planning and assessment activities to be developed by looking at the measured or observed effects and trying to establish the cause.

[2] https://www.casqa.org/resources/stormwater-effectiveness-assessment/guidance-document

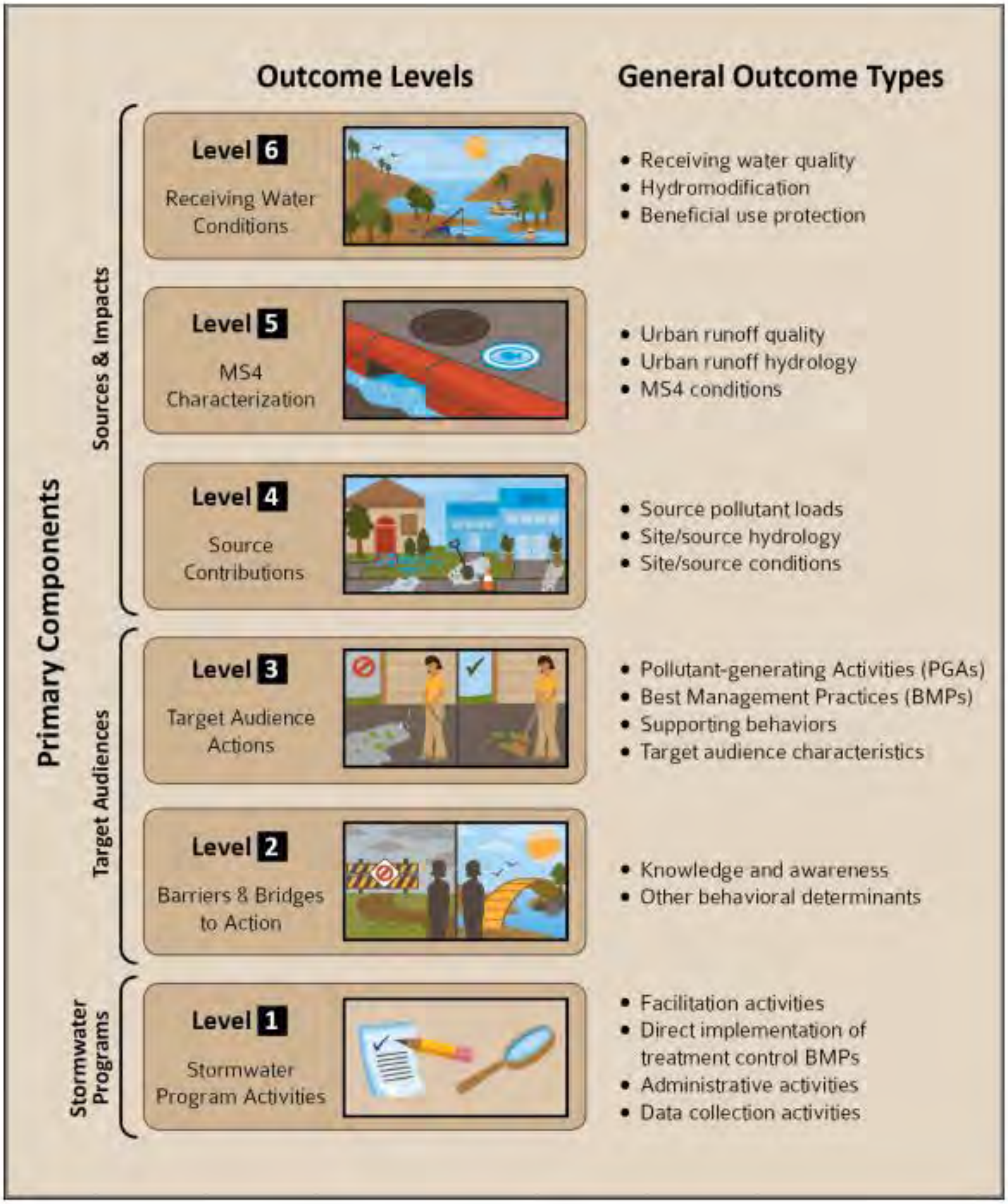

Figure 2. Six Outcome Levels and General Associated Outcome Type

(CASQA Stormwater Management Model, 2015)

1.6.2 Data Collection and Analysis Activities

Data collection and analysis provide the feedback necessary to plan and evaluate outcomes[3]. A range of data collection methods are used to meet specific desired outcomes and goals. The data collection methods used by ACHD depends on the activity being measured and intended outcome. Often, more than one data collection method will be used to collect meaningful data for a particular program or activity.

Internal Tracking by Stormwater Program *is the primary method ACHD will use to account for stormwater program activities which relies on good record keeping and can be used to document trends over time. An example is the number of catch basins cleaned or inspections completed in a year.*

Reporting to Stormwater Program *includes various types of program data reported to ACHD through citizen reports via the stormwater hotline, Tellus (ACHD's online portal), municipal staff, ACHD staff or IDEQ. Typically, these reports will require complaint investigations or site visits and involve potential illicit discharges and/or spill response.*

Interviews *will most often be performed in response to complaint investigations and inspection results. Interviews are useful to gain insight into current practices and assessing understanding of BMPs.*

Surveys *can be done via different methods and are designed to determine the knowledge, awareness, and behaviors of a specific population (school children, residents, etc.). For public education and involvement activities, surveys will be used to assess change in the public's awareness and attitudes regarding stormwater management.*

Inspections or Site Visits *- include any method used to directly observe or assess practices used by a target audience. They may be regulatory or part of an information gathering educational outreach effort. ACHD will document inspections of activities that can be visually assessed.*

Monitoring and Sampling *is performed as part of ACHD's phase I monitoring program. Both dry weather and wet weather monitoring programs provide data to assess ACHD's stormwater programs. Dry weather data collection is useful in detecting illicit discharges and source tracing when flow is present. These outcomes can be accomplished with relatively little data. In contrast, due to the variability of stormwater runoff and the resources needed to perform wet weather sample collection, long term data sets and extensive analysis are often needed to realize overall program improvement using wet weather monitoring data. ACHD is performing stormwater discharge characterization monitoring at five sites in the Phase I permit area. See Section 3 for additional information.*

Multiple data collection methods are used to meet specific desired outcomes and goals.
The applicability of data collection assessment methods to specific outcome levels are depicted in Table 4.

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[3] https://www.casqa.org/resources/stormwater-effectiveness-assessment/guidance-document

Table 4. Data Collection Methods

Outcome Level	Outcome Type	Methods					
		Internal Tracking	Reporting to Stormwater Program	Interviews	Surveys	Inspections or Site Visits	Monitoring & Sampling
1	Administrative activities	▪					
	Facilitation activities	▪					
	Data Collection	▪			▪		
2	Awareness knowledge & attitudes			▪	▪		
3	Information seeking	▪	▪	▪	▪	▪	▪
	Pollution reporting	▪	▪	▪			
	Participating and involvement	▪	▪	▪	▪	▪	
	Administrative and procedure behaviors	▪	▪	▪	▪	▪	
	Implementation of control measures	▪	▪	▪	▪	▪	▪
	Regulatory compliance	▪	▪	▪	▪	▪	▪
4	Source pollutant loads				▪	▪	▪
	Site/source hydrology				▪	▪	▪
5	Urban runoff quality					▪	▪
	Urban runoff hydrology					▪	▪
6	Receiving water quality					▪	▪
	Hydromodification impacts					▪	▪
	Beneficial use protection					▪	▪

1.6.3 Assessment Methods

Assessment methods are activities, actions, or processes used to obtain and evaluate assessment data or information[4]. Like data collection, the methods of assessment vary depending on the control measure. Control measures refer to any action, activity, BMP, or other method used to control the discharge of pollutants in MS4 discharges. Table 5 represents outcome levels achieved through implementation of the stormwater program control measures. As programs are implemented and data is collected, ACHD will evaluate the actual outcome of these implementation actions compared to the targeted outcome to determine the effectiveness of the action.

[4] https://www.casqa.org/resources/stormwater-effectiveness-assessment/guidance-document

Table 5. Applicable Assessment Methods for Specific Outcome Levels

Outcome Level	Stormwater Program Control Measure						
	Public Education & Outreach	Illicit Discharge Detection & Elimination	Construction Site Stormwater Runoff Control	Post-Construction Stormwater Management	Stormwater Infrastructure and Street Management	Industrial and Commercial Stormwater Discharge Management	Monitoring
Level 6 Receiving Water Conditions							• Pollution Reduction Activities
Level 5 MS4 Characterization		• Dry weather sampling program					• Wet weather sampling
Level 4 Source Contributions		• Mapping of MS4			• Catch basin inspection and cleaning • Street sweeping		• Subwatershed Monitoring • Pollutant load and reduction estimates
Level 3 Target Audience Actions	• Distribute educational messages to selected audiences	• Stormwater hotline • Illicit discharge complaint response	• Implement and enforce Construction Site Discharge Control Program	• Implement Policy 8000 (Drainage and Stormwater Management) 8200 Stormwater Design Manual	• Implement and update BMP manual for ACHD O&M activities	• Implement and enforce Commercial Stormwater Management Program	
Level 2 Barriers & Bridges to Action	• Assess audience's understanding		• Communicate with construction community	• Develop high priority inspection prioritization process		• Communicate with business owners and operators	
Level 1 Stormwater Program Activities	• Publicly available website	• Conduct dry weather inspections • ACHD Staff training	• Inspection prioritization • ACHD Staff training	• Require O&M Plans • Review of proposed subdivision and new development	• ACHD Staff training • Maintain facility SWPPPs	• Conduct site investigations	

1.7 Ownership, Operational Authority, or Responsibility for SWMP Implementation

Permit requirements include the implementation of control measures in all new areas added or transferred to ACHD's MS4, or areas for which ACHD becomes responsible for implementing stormwater quality controls, no later than one (1) year from the addition of the new areas.

ACHD implements the Phase I and Phase II SWMPs throughout Ada County. City annexations, if any, are included in annual mapping updates. Over time, city boundaries may change slightly, however this does not impact ACHD's overall jurisdiction nor implementation of control measures.

Section 2

Description of Separate Stormwater System

This section shows a map of the stormwater system and provides a detailed description of the setting and system.

2.1 Physical Setting and Climate

Ada County is part of the Treasure Valley located in the Snake River Plain of southwest Idaho. The Treasure Valley is bound by the Boise Mountains to the north and the Owyhee Mountains to the south. The Boise River runs approximately east to west in the northern half of the county while the Snake River bounds the county's southern border. The physical setting of the county is a semiarid high mountain desert, characterized by cold wet winters and hot dry summers. Annually the area receives an average of 12 inches of precipitation with the majority received between the months of November through May.

2.2 Existing Land Use and Growth

Ada County covers approximately 1,060 square miles in southwestern Idaho and is the most populous county in the state. According to the Community Planning Association of Southwest Idaho (COMPASS) estimates, Ada County has a population of 532,710 people in 2022, with the majority (87.6%) living in one of Ada County's six municipalities: Boise, Meridian, Eagle, Garden City, Kuna, and Star. The remaining 12.4% of residents live in unincorporated Ada County.[5] A population summary for Ada County by city is provided in Table 6.

Table 6. Ada County Population by City

City	2022 Population	% Of County Total
Boise	243,570	45.72%
Meridian	133,470	25.05%
Unincorporated	66,240	12.43%
Eagle	33,960	6.37%
Kuna	27,480	5.16%
Garden City	13,040	2.45%
Star	14,950	2.81%
Total	532,710	100.0%

Source: COMPASS 2022

[5] https://www.compassidaho.org/documents/prodserv/demo/2022PopulationEstimateOfficialHistoric.pdf

Recent projections by COMPASS suggest the population of Ada County could reach 674,000 people by 2040 — an increase of over 141,000 residents during the next 18 years. Growth in Ada County will be compounded by growth in neighboring counties. Together with Canyon County (expected to grow by over 340,000 residents by 2040), COMPASS predicts the region will be home to over 1 million people by 2040. Land uses in Ada County vary greatly by location. Most "urban" uses are found within the six municipalities located in north-central Ada County, while a more "rural" character pervades in the unincorporated areas. Irrigated agriculture, which was once a predominant feature in many areas of Ada County, has decreased as residential and other non-agricultural uses have become more prevalent. A unique feature of land use in Ada County is the prevalence of public lands (both federal and state owned and/or managed), which account for roughly 52% of the total land area. Within unincorporated Ada County, residential land uses are most common within Areas of City Impact, or one of four planned communities (Avimor, Cartwright Ranch, Dry Creek Ranch, or Hidden Springs) located in the northeastern part of Ada County. Much of southern Ada County remains undeveloped and falls within the Snake River Birds of Prey National Conservation Area, managed by the Bureau of Land Management, and/or within the Orchard Combat Training Center, used by the U.S. armed forces and Idaho National Guard for training and other military exercises.[6]

2.3 Description of Phase I MS4

The stormwater drainage system within the Phase I permit area is comprised of the ACHD owned and operated MS4 and privately owned on-site drainage facilities. To add complexity, numerous irrigation/drainage conveyance systems are connected to the MS4 and conversely, the MS4 is connected to the irrigation/drainage systems. The irrigation and drainage districts are privately owned and operated and are not subject to NPDES MS4 permitting regulations.

Water does not follow natural drainage paths in much of the lower Boise Valley. Historically, most natural waterways in the valley were deepened, lengthened, straightened, and diverted to serve primarily as irrigation conveyances to water agricultural crops and provide flood control. Drains, laterals, and canals were also constructed for agricultural purposes. Today, these conveyance systems are used and managed in much the same way as in the past with the exception that much of the water is now used to irrigate urban landscapes instead of agricultural fields and cropland.

The Phase I MS4 serves the cities of Boise and Garden City. The current inventory of stormwater facilities in the Phase I permit area is detailed in Table 7.

Table 7. Phase I Area Stormwater Facility Inventory

Structure Type	Inventory (updated 7/1/22)
Storm Drain Pipe (miles)	391
ACHD Outfalls	866
Non ACHD Owned Outfalls	328
Storm Drain Inlets	20,582
Sediment/Combo Boxes	2,799
Proprietary Hydrodynamic Separators	10
Seepage Beds	1,519

6 https://adacounty.id.gov/developmentservices/strategic-planning-division/comprehensive-plans/

Table 7. Phase I Area Stormwater Facility Inventory	
Structure Type	**Inventory** (updated 7/1/22)
Swales	166
Stormwater Tree Cell	47
Pervious Paver Installations	10
ACHD-owned Basins	62
Homeowner Association Basins (detention and retention)	267

Appendix D includes the outfall inventory for 2022 and the MS4 outfall locations identified as having dry weather flows caused by irrigation return flow or ground water seepage. More information is located under Dry Weather Outfall Screening Program in Section 5.2.2.4.

ACHD is responsible for all maintenance activities for ACHD owned stormwater basins. Additionally, ACHD provides heavy maintenance for privately-owned stormwater basins that receive stormwater runoff from the right-of-way. Distinctions between light and heavy maintenance responsibilities are described in ACHD Policy 8200. Light maintenance predominately addresses aesthetic features of the stormwater control facility such as landscaping, litter control, and erosion control, whereas heavy maintenance addresses functional aspects such as sediment removal, rebuild, or replacement.

2.4 Map of the Phase I MS4

The ACHD Phase I MS4 stormwater infrastructure maps are presented in Appendix C. The maps are divided into eight sections to show a more detailed view of stormwater drainage system features. In the legend of each map, a spatial grid index shows which section of the map is being viewed. The features of the map can be turned on and off in the Layers tab of the PDF document. This allows viewers to determine which features are visible. A table of waterbody use impairments by assessment unit is included with the map.

Section 3

Targeting Pollutants of Concern

The Phase I monitoring program is designed to meet Permit requirements by providing stormwater quality monitoring data to identify pollutants of concern. This monitoring data is used to characterize the stormwater discharging from ACHD's MS4 and assess the effectiveness of programs discussed in Sections 5.1 - 5.6. To provide the information, the following monitoring activities are/will be performed:

- Wet weather stormwater outfall monitoring/characterization
- Subwatershed monitoring
- Effectiveness evaluation of structural, non-structural and/or green stormwater infrastructure controls
- Dry weather outfall screening/monitoring

This section focuses on the Stormwater Monitoring and Evaluation Program which consists of wet weather stormwater outfall monitoring, subwatershed monitoring, and BMP effectiveness evaluation activities. Dry weather outfall screening and monitoring is discussed in greater detail in Section 5.2.1. Temperature monitoring to comply with Permit Section 4, Special Conditions, is described in Section 3.2. Final reports summarizing all the monitoring data collected during the report term and the Controls Effectiveness Evaluation Report will be submitted as an attachment to the Permit Renewal Application required by Permit Section 8.2, no later than April 3, 2026.

3.1 Stormwater Monitoring and Evaluation Program

The purpose of the Stormwater Monitoring and Evaluation Program is to continue to characterize the quality of stormwater discharges from the MS4, and to evaluate overall effectiveness of selected stormwater management practices. As stated in Permit Section 6.2, the Stormwater Monitoring and Evaluation Program is designed to:

- Broadly estimate reductions in annual pollutant loads of sediment, bacteria, phosphorus and temperature discharged to impaired receiving waters from the MS4, occurring as a result of SWMP activity implementation;
- Assess effectiveness and adequacy of the permanent stormwater controls and Green Infrastructure techniques and/or improve overall pollutant reduction in stormwater discharges; and
- Identify and prioritize portions of each Permittee's MS4 where additional controls can be accomplished to reduce the volume of stormwater discharged and/or reduce pollutants in MS4 discharges to waters of the U.S.

3.1.1 Wet Weather Stormwater Outfall Monitoring

The ACHD has led the Wet Weather Outfall Monitoring Program on behalf of the Permittees (Partners for Clean Water) since 1999. The Permittees are required to continue to conduct wet weather stormwater outfall monitoring and submit an updated Stormwater Outfall Monitoring Plan (SWOMP) as part of the Year I Annual Report by January 30, 2023.

The sampling design strategy consists of data collection at monitoring stations near the outfall of representative drainages throughout the MS4 to estimate the impact of pollution prevention efforts and the potential for pollutant loading reductions throughout the permit area. Data collected is site-specific but may include a combination of continuous rainfall data, continuous flow data from background sources and stormwater discharges, and stormwater quality data. Stormwater monitoring is conducted at a minimum frequency of three wet weather events per year at each of the four monitoring stations: Lucky, Whitewater, Main, and Americana. More information on the sampling process design, monitoring equipment, sampling procedures, maps, data management, and reporting are available on ACHD's website at https://www.achdidaho.org/Documents/Engineering/Stormwater/StormWaterOutfallMonitoringPlan.pdf

3.1.2 Subwatershed Monitoring

The Americana subwatershed is one of the largest urban subwatersheds on the lower Boise River and drains a significant portion of downtown Boise, the North End, and Foothills residential areas. Connections with natural surface waters, irrigation canals, and dewatering activities further complicate the profile of stormwater runoff and non-stormwater background flows. Stormwater runoff monitoring is currently conducted at the Americana monitoring station. Additional information is available in the SWOMP in Section 3.1.1.

The Americana Subwatershed Monitoring Plan is a complement to the SWOMP. Whereas the SWOMP is used to guide data collection at outfall locations, including the Americana outfall, the Americana Subwatershed Monitoring Plan is used to guide data collection at multiple locations throughout the storm drain network within the Americana subwatershed. This sampling approach is intended to yield results that present a picture of the amount, duration, and quality of wet weather and dry weather flows throughout various locations within the storm drain system. The Permit specifies the Permittees must continue to conduct monitoring in the Americana Subwatershed to better define wet weather and dry weather flow volumes, sources, and pollutant loads according to the Americana Subwatershed Monitoring Plan as updated December 28, 2020. Data collected includes a combination of continuous flow and level data, continuous rainfall data and water quality data. More information on the sampling design strategy, monitoring equipment, sampling procedures, maps, and data management and reporting are available on ACHD's website at https://www.achdidaho.org/Documents/Engineering/Stormwater/AmericanaSubwatershedMonitoringPlan.pdf.

3.1.3 Effectiveness Evaluation of Structural, Non-Structural and/or Green Stormwater Infrastructure Controls

The ACHD will conduct effectiveness evaluations of at least two different types of structural, non-structural, and/or green infrastructure stormwater management controls to determine whether the technique is effective at treating or preventing the discharge of sediment, bacteria, and/or nutrients into receiving waters. The specific controls to be evaluated have not been selected as of this SWMP document update but are expected to be determined in 2023. The ACHD evaluated effectiveness of silva cells, sand and grease traps and permeable pavers during the past Phase I Permit term.

3.2 Temperature Monitoring

The ACHD collects temperature data in all monitoring efforts including both stormwater and dry weather flows. Permit Part 4 includes a provision to monitor temperature in stormwater discharges from the MS4 to the Boise River, including the assessment units listed below. Two of the four stormwater outfalls monitored as part of the SWOMP discharge directly to the Boise River – Diversion Dam to Veterans Memorial Parkway (AU ID17050114SW011a_06), which is not currently 303D listed as impaired for temperature. These outfalls are outfall 3n2e09_024 located at

Americana Blvd. in Boise and outfall 3n2e04_010 located at Main St. in Boise. The ACHD collects continuous temperature and flow data to characterize both dry and wet weather flows from the watershed at outfall 3n2e09_024. Since outfall 3n2e04_010 is not impacted by continuous dry weather flows, temperature and flow data are only collected during targeted storm sampling events.

The ACHD operates and maintains six outfalls in the Phase I permit area that discharge to the Boise River assessment units specified in Permit Section 4.

- 17050114SW005_06, Veterans Memorial Parkway to Star Bridge – Six ACHD stormwater outfalls.
- 17050114SW005_06a, Star to Middleton – Not within the Phase I permit area.
- 17050114SW005_06b, Middleton to Indian Creek – Not within the Phase I permit area.

ACHD has selected a stormwater outfall located at 6553 W. Plantation Ln. to address stormwater temperature monitoring into the Boise River in assessment unit 17050114SW005_06. Monitoring station information is provided in Table 8.

Table 8. Water Temperature Monitoring Station Information

Station Information	
Outfall ID	4n2e30_012
Location	6553 W. Plantation Ln.
Station GPS Coordinates	43.657674, -116.270547
Subwatershed Area	18 ac.
Receiving Water	Boise River
Distance from Station to Outfall	331 ft
Pipe Construction	18 in, circular, concrete pipe
Power Source	Battery
Parking	W. Plantation Ln.
Equipment Location	In manhole

Section 4

Legal Authority and Enforcement

ACHD is the governing agency responsible for construction and maintenance of all local roads, including the storm drain system, in Ada County, Idaho. ACHD's legal authority is based upon the laws of the State of Idaho. Specific authority is found in Title 40, Idaho Code, Chapters 13 and 14 https://legislature.idaho.gov/statutesrules/idstat/title40/. Because of the limited purpose of ACHD, as defined by the State Code, such legal authorities and provisions are interpreted as intended for facilities and operation and maintenance within the jurisdictional right-of-way of ACHD. ACHD does not provide police or enforcement power and must rely on the powers of municipal government.

Specific legal authority granted to ACHD through state code includes the following:

- **Powers and Duties of Highway Commissioners, Idaho Code 40-1406** https://legislature.idaho.gov/statutesrules/idstat/title40/t40ch14/

  ACHD Commissioners are empowered to pass ordinances, rules, and regulations as necessary for carrying into effect or discharging all powers and duties conferred to a Countywide highway district by state code.
- **Drainage Authority, Idaho Code 40-1451(1)(d)** https://legislature.idaho.gov/statutesrules/idstat/title40/t40ch14/

  ACHD has authority over drainage where it is necessary for motorist safety or necessary for right-of-way maintenance. This code provision limits the extent and nature of authority in which ACHD is empowered.
- **Subdivision Plat Review, Acceptance and Approval, Idaho Code 40-1415(6)** https://legislature.idaho.gov/statutesrules/idstat/Title40/T40CH14/SECT40-1415/

  Subdivision plats are required to be submitted to ACHD for acceptance and approval for highway design, drainage provisions, and traffic conditions.
- Common Law Authority

  ACHD has certain common law authority to control discharges of stormwater into any storm drains which are located within the public right-of-way by means of ACHD's control and owner's interest in the public right-of-way.
- Authority as a Municipal Corporation

  ACHD may have certain inherent authority as a municipal corporation by virtue of its ordinance authority to regulate discharges of stormwater into ACHD's stormwater system.

ACHD implements the following ACHD policy sections and provisions to address stormwater system drainage and management, stormwater design, construction site illicit discharges and erosion and sediment control (respectively): *Section 8000 – Drainage & Stormwater Management, Section 8200 – Stormwater Design Manual, Section 6000 – Construction, Permits & Inspection, and Section 8300 – Construction Site Discharge Control Program* (http://www.achdidaho.org/AboutACHD/policyManual.aspx).

The municipal governments of Boise and Garden City have specific stormwater ordinances related to illicit discharge and construction site discharge control. ACHD coordinates with the City of Boise and City of Garden City for assistance, as needed, using the ordinances referenced below.

- City of Boise
  - Ordinance No. 10-6-2 – Discharge Regulations and Requirements https://codelibrary.amlegal.com/codes/boiseid/latest/boise_id/0-0-0-13536
  - Ordinance No. 9-14-2 – Erosion Control Regulations and Requirements https://codelibrary.amlegal.com/codes/boiseid/latest/boise_id/0-0-0-11723
- City of Garden City
  - Ordinance No. 4-14-5 – Discharge of Pollutants https://www.codepublishing.com/ID/GardenCity/#!/GardenCity04/GardenCity0414.html#4-14-5
  - Ordinance No. 4-15-2 – Erosion Control Regulations and Requirements https://www.codepublishing.com/ID/GardenCity/#!/GardenCity04/GardenCity0415.html#4-15-2

ACHD also works with other State and local entities to coordinate compliance addressing SWMP control measures provided in Table 9.

Table 9. Coordinated Compliance Activities

Agency	Summary of Activities	SWMP Control Measures*
City of Boise	• Enforcement assistance in illicit discharge, erosion, and sediment control	Illicit Discharge, Construction
City of Garden City	• Enforcement assistance in illicit discharge, erosion, and sediment control	Illicit Discharge, Construction
Idaho Department of Environmental Quality	• Enforcement assistance in illicit discharge response related to hazardous materials, petroleum products, and dust control (air quality) • IPDES compliance assistance	Illicit Discharge, Construction
Idaho Department of Water Resources	• Provide GIS coverage data and resources, information regarding irrigation/drainage districts and facilities, shallow/deep injection well program	Illicit Discharge, New Development
Idaho Department of Agriculture	• Enforcement assistance in illicit discharge response related to confined feeding operations waste in the right of way	Illicit Discharge
Irrigation and Drainage Districts	• Assist in locating drainage facilities, review roadway drainage plans	Illicit Discharge, New Development
ITD District 3	• Assist in locating stormwater facilities and illicit discharge activities • Erosion and sediment control on federally funded roadway projects	Illicit Discharge, Construction
Public	• Report illicit discharges, participate in education and activities	Education and Outreach, Public Participation, Illicit Discharge
Service Organizations	• Assist in storm drain marking, participate in education activities	Education and Outreach, Public Participation

**See Section 5 of this document for a description of the SWMP control measures*

Section 5

Stormwater Control Measures to Reduce Pollutants to the Maximum Extent Practicable

The following sections describe ACHD's program to reduce pollutants in the MS4 discharges to the maximum extent practicable, as required by Permit Part 3. Each section consists of a summary of the program and describes how ACHD meets each program component. The compliance and implementation status for each program component, Permit reference, and location of updated information (SWMP or Annual Report) is provided in Appendix E.

The stormwater control measures are:

- Public Education and Outreach on Stormwater Impacts
- Illicit Discharge Detection and Elimination
- Construction Site Stormwater Runoff Control
- Post-Construction Stormwater Management for New Development and Redevelopment
- Stormwater Infrastructure and Street Management
- Industrial and Commercial Stormwater Discharge Management

These measures are described in greater detail in the following sections:

5.1 Public Education and Outreach on Stormwater Impacts

To educate and involve members of the public about stormwater pollutants, ACHD must conduct, or contract with other entities to conduct, an ongoing education, outreach, and public involvement program based on stormwater issues of significance in the ACHD's jurisdiction. When applicable, ACHD must comply with State and local public notice requirements when conducting public involvement activities.

5.1.1 Permit Requirements

ACHD must, at a minimum, (MS4 Permit 3.1):

- ✓ Select at least one audience and focus its efforts on conveying relevant messages.
  - Distribute and/or offer at least eight (8) educational messages or activities over the permit term to selected audience(s) (3.1.3 and 3.1.4).
  - Begin to assess, and track, activities to gauge the audience's understanding of the relevant messages and adoption of appropriate behaviors (3.1.5 and 3.1.6).
- ✓ Target specific educational material to the construction/engineering/design community regarding construction site runoff control and permanent stormwater controls (3.1.7).
- ✓ Maintain and advertise a publicly accessible website to provide all relevant SWMP materials (3.1.8).

5.1.2 Current Compliance Activities

Environmental staff currently organizes and participates in public education and outreach efforts on a routine basis and distribute educational materials through a variety of programs and media. ACHD maintains a stormwater webpage on its website and updates with current reports and documents. Additionally, ACHD participates in the Partners for Clean Water education partnership with the Phase I Permittees. Details on Partners for Clean Water activities are identified in the City of Boise's SWMP document. ACHD's current educational activities include the following:

- ACHD Environmental staff distributes educational materials throughout the year in formal training events, public events, and informal settings such as complaint response.
- Outreach and targeted advertising include radio sponsorships, magazine advertisements, social media posts, public service announcements, digital billboards, commuter bus wraps, and a regularly maintained Partners for Clean Water website (Partners for Clean Water).
- ACHD regularly maintains and promotes its website at www.achdidaho.org. The website has a section dedicated to stormwater http://www.achdidaho.org/Departments/Engineering/Stormwater/stormwater.aspx where this NPDES Phase I SWMP document is posted along with the following required information.
  - Phone numbers and information to report illicit discharges, illicit connections, and illegal dumping activity.
  - Reports, plans, and documents relevant to the Permit and SWMP.
  - Information regarding policies and/or guidance documents related to ACHD's requirements for construction and permanent stormwater management control. This includes education opportunities, training, licensing, and permitting process for ACHD's jurisdiction.
  - ACHD contact information.

5.1.3 Planned 2022 Compliance Activities

ACHD conducts the Permit-required activities to limit stormwater pollution potential and has made necessary program updates to maintain compliance with the current Permit. Table 10 presents the work plan for 2022 SWMP activities related to Public Education and Outreach Activities.

Table 10. 2022 Public Education and Outreach on Stormwater Impacts Work Plan

Task Description	Lead ACHD Department	Supporting ACHD Department	Time Frame
Inform the public and seek involvement in the SWMP update	Environmental	Communications	12/1/2022
Update the Phase I Stormwater Management Program document.	Environmental	Communications	9/30/2022
Post SWMP to public website	Environmental	Information Technology	9/30/2022
Coordinate with City of Boise staff to implement the education and outreach program by distributing current educational resources to target audiences.	Environmental	Communications	Ongoing
Coordinate with City of Boise staff to update as needed current education and outreach materials to ensure priority topics and target audiences are addressed	Environmental	N/A	Ongoing
Update the ACHD stormwater webpage annually	Environmental	Information Technology	Ongoing

5.2 Illicit Discharge Detection and Elimination

To detect and eliminate illicit discharges into the MS4, ACHD must implement and enforce a program to the extent allowable under Idaho state law. The Illicit Discharge Detection and Elimination (IDDE) Program contains several SWMP elements detailed in Section 5.2.2. below.

5.2.1 Permit Requirements

No later than April 3, 2026, ACHD must update the existing illicit discharge management program as necessary to meet the following required program components (MS4 Permit 3.2):

- ✓ Maintain and update the MS4 map and outfall inventory (3.2.2).
- ✓ Enforce an ordinance that effectively prohibits illicit discharges into the MS4 (3.2.3).
- ✓ Respond to complaints or reports of illicit discharges from the public and track actions taken (3.2.4).
- ✓ Conduct MS4 outfall screening inspections during dry weather (3.2.5).
- ✓ Follow-up to determine the source of a recurring illicit discharge identified as a result of complaints, or of the dry weather screening investigations within thirty (30) days (3.2.6).
- ✓ Take appropriate action to address the source of an ongoing illicit discharge (3.2.6).
- ✓ Prevent and respond to spills to the MS4, as appropriate (3.2.7).
- ✓ Coordinate with other entities to educate employees and members of the public for the proper disposal of used oil and toxic materials (3.2.8).
- ✓ Ensure the appropriate Permittee staff is trained to conduct these activities (3.2.9).

5.2.2 Current Compliance Activities

ACHD currently conducts numerous IDDE compliance activities that include the following required components: MS4 Map and Outfall Inventory, Regulatory Mechanism, and Illicit Discharge Complaint Report and Response Program, Spill Response, and the Dry Weather Outfall Program as described in the following sections.

5.2.2.1 MS4 Map and Outfall Inventory

ACHD maintains and updates a GIS map and outfall inventory of the Phase I permit area MS4. This map and inventory are managed as follows:

- Update annually, the Phase I MS4 map to address new development, redevelopment, field verification, and maintenance activities.
- Maintain an inventory of identified MS4 outfalls including spatial location and general information regarding dimensions, shape, material, ownership, and receiving waters (Appendix D).
- Maintain an inventory of identified ongoing dry weather flows caused by irrigation return flows and/or groundwater seepage (Appendix D).

5.2.2.2 Regulatory Mechanism

Illicit discharges are prohibited via ACHD ordinance, as described in ACHD Policy 8015.2.1. Illicit discharge to any ACHD-owned storm drains in Ada County is prohibited and a violation of this ordinance unless the discharge is exempted as an allowed non-stormwater discharge described in Section 2.4 of the Phase I NPDES permit (#IDS028185).

5.2.2.3 Illicit Discharge Complaint Report and Response Program

ACHD responds to illicit discharge complaints received through the stormwater pollution hotline, public reports via the ACHD website (Tellus@achdidaho.org), anonymous tips, and other government agency referrals. ACHD performs the following:

- Conduct site assessments and evaluate impact to the storm drain system, waterways, and soil.
- As appropriate, coordinate with responsible parties, environmental cleanup contractors, and local agencies such as police, fire department, State Communications, and Idaho Department of Environmental Quality for proper cleanup and disposal.
- Provide assistance and education on proper cleanup, disposal, and best management practices.
- Implement and enforce Resolution 2151, *ACHD Policy for Right-of-Way Spill, Container, and Debris Response.*
- Implement and maintain the 2021 ACHD Spill Response Plan (Spill Plan) to guide ACHD spill response in the public ROW.
- Document illicit discharge and spill response activities.
- Provide on-call staff for after hour illicit discharge and spill response.

For the timeframe October 1, 2021 to July 1, 2022, ACHD received 34 stormwater reportable complaints in the Phase I permit area. These complaints are summarized in Table 11. Appendix F includes a location map depicting where the illicit discharges occurred, a list of complaints received, and a summary of follow-up actions taken.

Table 11. Complaints Received by Pollutant Type and Category

Pollutant Type	Category of Complaint				2021–2022
	Commercial	Construction	Residential	Industrial	
Concrete	0	3	0	0	3
Petroleum	2	1	7	0	10
Sediment	3	8	2	0	13
Sewage	0	0	1	1	2
Other*	6	0	0	0	6
Total	11	12	10	1	34

**Grey Water, Dairy Waste, Cooking Oil/Grease, Herbicide, and Leachate*

5.2.2.4 Dry Weather Outfall Screening Program

ACHD implements the Dry Weather Outfall Screening (DWOS) Plan available in Appendix G. This plan describes the overall approach to dry weather outfall screening and provides comprehensive guidance for outfall investigation efforts, including prioritization of outfalls, data collection efforts, recordkeeping, evaluation, and assessment. Specifically, ACHD accomplishes the following actions to support screening efforts:

- Implement the Dry Weather Outfall Screening Program that involves visual dry weather inspections and sampling of dry weather flows.

- Conduct dry weather inspections that include site evaluation, flow estimation, discharge water quality analysis, and flow source tracing.
- Conduct visual dry weather inspections on a randomized portion of the entire outfall inventory to determine if the outfall has dry weather flow. A minimum of 20% of all outfalls in the Phase I area are inspected annually.
- Inspect and sample outfalls with known dry weather discharges during three distinct time periods (pre-irrigation, during irrigation, and post- irrigation) to better characterize flow duration and pollutant loads.
- Collect dry weather flow samples and screen for total suspended solids, total phosphorus, dissolved orthophosphate, total chlorine, total phenols, total copper, detergents as surfactants, and *E. coli*.

5.2.3 Planned 2022 Compliance Activities

ACHD conducts the Permit-required activities to limit stormwater pollution potential and has made necessary program updates to maintain compliance with the current stormwater permit. Table 12 includes the illicit discharge detection and elimination work plan for the 2022 SWMP.

Table 12. 2022 Illicit Discharge Detection and Elimination Work Plan

Task Description	Lead ACHD Department	Supporting ACHD Department	Time Frame
Continue to conduct dry weather inspection and follow-up screening of 20% of the Phase I outfall inventory	Environmental	N/A	Ongoing
Continue to address right-of-way spills and illicit discharges to include proper cleanup, disposal, tracking, and reporting	Environmental	Maintenance	Ongoing
Annual review and update of Spill Response Plan	Environmental	Maintenance	7/30/22
Conduct Spill Response Plan Training for ACHD staff	Environmental	Maintenance	9/15/22
Update DWOS Plan to incorporate new Permit references	Environmental	N/A	12/30/22
Develop new table for annual report of investigation results and follow up actions for DWOS Program	Environmental	N/A	12/31/22
Continue illicit discharge training for new employees	Human Resources	Environmental	ongoing
Conduct biannual illicit discharge detection training	Environmental	Maintenance	9/15/22
Complete GIS map update of Phase I MS4 for inclusion in SWMP	Environmental	GIS	9/30/2022
Update Phase I Outfall Inventory for annual report	Environmental	N/A	9/30/22
Update list of dry weather flows caused by irrigation and groundwater for inclusion in SWMP	Environmental	N/A	9/30/22

5.3 Construction Site Stormwater Runoff Control

Through regulatory mechanism to the extent allowable under Idaho state law, ACHD must require erosion controls, sediment controls, and waste materials management controls to be used and maintained at construction projects from initial clearing through final stabilization (MS4 Permit 3.3). ACHD implements and enforces the Construction Site Discharge Control (CSDC) Program to fulfill Phase I Permit requirements and reduce the discharge of pollutants from public and private construction activity within ACHD's jurisdiction. The CSDC program regulates construction activities through the issuance of Temporary Highway Use Permits, construction contracts, activities performed by ACHD's Maintenance Department, capital improvement projects, and acceptance of public roads from new subdivision development.

5.3.1 Permit Requirements

To control the discharge of stormwater and pollutants from land disturbance during the construction phase, ACHD must:

- ✓ Require appropriate erosion, sediment, and waste management requirements for construction site activity that results in land disturbance of one (1) acre or more (3.3.3).
- ✓ Establish installation and use guidelines for required erosion/sediment/waste management during all phases of construction site activity (3.3.3).
- ✓ At a minimum, review preconstruction site plans for construction sites that will result in land disturbance of one (1) or more acres, using a checklist or similar process to consider and address potential water quality impacts from the site activities (3.3.4).
- ✓ Inspect and enforce erosion, sediment, and waste management requirements on construction sites (3.3.5).
- ✓ Establish an inspection prioritization plan (3.3.5).
- ✓ Establish an enforcement response policy (3.3.6).
- ✓ Ensure that Permittee staff is trained to conduct these activities (3.3.7).

5.3.2 Current Compliance Activities

ACHD currently implements numerous activities to provide runoff control and stormwater pollution prevention from construction sites. Oversight of the CSDC Program is the responsibility of the Environmental Department which includes an Environmental Specialist that specializes in erosion and sediment control. The CSDC Program Manual was developed to include all aspects of the CSDC Program from governing ordinances and policies to plan review and approval, construction site inspection, permit violations and enforcement, and education and training. This manual is available in Appendix H. Activities performed include:

- Implementation activities required by Policy 8300 (Construction Discharge Control Program) and Policy 6000 (Permits and Inspection) including plan review, inspection support, permit tracking, record keeping, and enforcement.
- Implementation and oversight of prioritized construction site inspections and assists construction site operators in correcting problems and policy violations.
- Inspection and enforcement are also performed by Zone Inspectors and Subdivision Inspectors within their areas of responsibility. ACHD Project Inspectors are responsible for oversight and implementation of the Stormwater Pollution Prevention Plan (SWPPP) by contractors on ACHD projects.

5.3.3 Planned 2022 Compliance Activities

ACHD conducts the Permit-required activities to limit stormwater pollution potential and has made necessary program updates to maintain compliance with the current stormwater permit. Table 13 presents work plan for 2022 SWMP activities related to construction site stormwater runoff control activities.

Table 13. 2022 Construction Site Stormwater Runoff Control Work Plan			
Task Description	Lead ACHD Department	Supporting ACHD Department	Time Frame
Review erosion and sediment control and dewatering plans for ACHD projects and projects impacting the public right-of-way	Environmental	N/A	Ongoing
Perform prioritized inspection of construction sites and enforcement of control measures for permitted work	Environmental	Development Services	Ongoing
Assist construction site operators in correcting problems and policy violations	Environmental	N/A	Ongoing
Investigate, track, and resolve complaints originating from construction sites in a timely and consistent manner	Environmental	N/A	Ongoing
Review and modify tracking procedures as needed to meet Permit requirements	Environmental	Development Services Engineering Services	6/1/22
Provide training and assistance to inspection staff to implement 2022 CGP	Environmental	Engineering Services	3/1/22
Coordinate with other agencies to update BMP field guide and provide Spanish translation	Environmental	N/A	12/31/22
Update Escalating Response Policy	Environmental	Legal	9/30/22
Update procedure guidance to address construction site runoff violations.	Environmental	N/A	12/31/22

5.4 Post-Construction Stormwater Management, New Development and Redevelopment

Through a regulatory mechanism to the extent allowable under Idaho state law, ACHD must require the installation and long-term maintenance of permanent stormwater controls at new development and redevelopment project sites. This section describes activities ACHD conducts or will implement to fulfill Phase I Permit requirements for a post-construction stormwater management (PCSM) program (MS4 Permit 3.4).

5.4.1 Permit Requirements

To control the discharge of stormwater and pollutants from land disturbing activities and after construction is completed, ACHD must:

✓ Require the installation and long-term maintenance of permanent stormwater controls at new development and redevelopment project sites that result from land disturbance of 1 acre or more (3.4.2).

- Permanent stormwater controls must be sufficient to retain onsite the runoff volume produced from a 24-hour, 95th percentile storm event; or sufficient to provide the level of pollutant removal greater than the pollutant removal expected by using onsite retention of runoff volume produced from a 24 hour, 95th percentile storm event.
- Alternatively, stormwater treatment requirements must be required that can attain an equal or greater level of water quality benefits as onsite retention of stormwater discharges from new development and redevelopment sites.
- Other alternatives may be allowed for projects to meet the onsite retention requirement at a particular project site based on technical infeasibility, and/or site constraints.

- ✓ Establish proper installation and use guidelines for permanent stormwater controls – the Permittee may establish different types of controls for different types and/or sizes of site development activity (3.4.3).
- ✓ At a minimum, review and approve preconstruction plans for permanent stormwater controls at new development and redevelopment sites that result from land disturbance of one (1) or more acres (3.4.4).
- ✓ Periodically inspect “high priority” permanent stormwater controls for proper installation and operation, using an inspection prioritization system (3.4.5).
- ✓ Maintain an inspection prioritization plan and enforcement response policy (3.4.5).
- ✓ Maintain a database inventory to track and manage the operational condition of permanent stormwater controls (3.4.6).
- ✓ Ensure the appropriate Permittee staff is trained to conduct these activities (3.4.7).

5.4.2 Current Compliance Activities

ACHD’s stormwater policy consists of Section 8000 Drainage and Stormwater Management and Section 8200 Stormwater Design Manual. Together these policies establish the standards for new stormwater facilities and retrofitting existing stormwater facilities. Policy updates adopted most recently included revised BMPs and Green Stormwater Infrastructure (GSI) BMPs. The policies include:

- A list of the approved BMPs
- Performance standards
- Design review submittal requirements
- Guidelines and checklists for creating Operations & Maintenance Plans
- Inspection checklists for landscape-based treatment facilities

5.4.2.1 PCSM Plan Review, Inspection, and Maintenance

The ACHD requires operators to install permanent stormwater facilities at new development and redevelopment sites. Project review and approval procedures, in part, are found in ACHD’s Development Policy Manual (Section 7000). Plan review, inspection, and maintenance of projects reviewed and approved by Development & Technical Services (DTS) staff are summarized as follows:

- Resident Engineer must inspect and ensure that roadway facilities, including roadway drainage facilities, are constructed correctly; and to ensure that a set of “record drawings”, which denote the final ACHD stormwater system, are delivered to ACHD.
- ACHD DTS staff review proposed subdivision and development plans to ensure compliance with ACHD policies and procedures. A review template is used that incorporates a plan review checklist of items that typically require comments, including a section on drainage. This template is drafted in a letter format so staff can send the checklist, complete with comments, to the applicant upon completion of the plan review.
- ACHD staff performs an inspection of the facilities before final approval of the constructed project. The inspection is documented and placed in the project file for future reference.
- Once new developments have been accepted by ACHD; following the warranty period, Maintenance staff perform ongoing maintenance and inspection of existing BMPs in the ACHD right-of-way.
- Stormwater basin and swale maintenance responsibilities are documented as conditions of approval in the required operation and maintenance manual for new subdivisions with public roadways that will be maintained by ACHD. See ACHD policy 8012.5.

- Homeowners' association basins are responsible for light maintenance that typically address aesthetic features such as landscaping, litter control and erosion control. ACHD provides heavy maintenance for private-owned stormwater basins that receive drainage from the right-of-way. Heavy maintenance addresses functional aspects such as sediment removal, rebuild, or replacement.
- Subsurface facilities e.g., seepage beds, storm drain inlets, pipes, and sand and grease traps, are maintained according to maintenance areas on a rotational basis.

5.4.2.2 ACHD Stormwater Facilities

Since adoption of ACHD Policy 8202.5 in 2015 and updates in 2017, all new and rebuilt ACHD stormwater basins are required to be vegetated and address Pollutants of Concern. Additionally, in 2016, ACHD Commission directed staff to begin retrofitting ACHD-owned stormwater basins. Currently, all ACHD stormwater facilities associated with roadways and intersections are built to address water quality and incorporate GSI where possible. The goal of these facilities is to establish native or naturalized vegetation with healthy soils that function to remove stormwater pollutants with added aesthetic and ecological benefits to the community. ACHD has implemented measures to increase the likelihood of successfully vegetated stormwater facilities that include the following:

- Environmental staff participate in an interdisciplinary project team of ACHD staff that review projects from conception to construction. Comments are submitted to an ACHD Project Manager for discussion with the project team and consultants.
- ACHD requires temporary irrigation for two to three growing seasons for establishing native/drought tolerant vegetation in ACHD-owned stormwater basins and swales.
- ACHD developed an *Ada County Highway District Stormwater Management Basin Revegetation Guidance Manual* and updated contract specifications related to plant material and soil amendments for use by design and contracting professionals.
- ACHD staff develop site specific Plant Establishment Plans for use by contractors during the warrantee period prior to ACHD accepting a vegetated stormwater facility. These plans provide maintenance guidance during the plant establishment phase of a GSI facility.
- Maintenance of new ACHD facilities by ACHD staff and contracted provider consist of an iterative stewardship approach that involves manual and mechanical weed removal, plant vegetation maintenance to maximize seed dispersal, erosion control, and trash and sediment removal. Maintenance and inspections are conducted once a month during early spring and twice monthly during the growing season. The plan establishment period for each project facility is typically three to four growing seasons.

5.4.2.3 Prioritization, Tracking, and Enforcement

ACHD conducts inspections on priority stormwater basins that receive right-of-way drainage and discharge directly to surface waterbodies. These inspections inform development of educational materials, inventory tracking, and maintenance, when necessary, as described below.

Prioritization

- Results of stormwater basin priority inspections are used to guide the development of education and outreach materials.
- Stormwater basin inspection follow-up actions are coordinated with the facility owner.
- ACHD will be reviewing the current inspection prioritization and determining strategies to develop an inspection prioritization and documentation process as required in Part 3.4.5. no later than April 3, 2026. Progress toward meeting this goal will be provided in annual work plan updates provided in Table 14.

Tracking

- Tracking of operation and maintenance of the permanent stormwater controls inventory is conducted using ArcGIS and work order processing software. ACHD regularly conducts a county-wide desktop analysis to update the stormwater basin inventory and attribute data. Quality assurance and quality control of the stormwater basin inventory will be an ongoing effort as new stormwater basins are built.

Enforcement

- Enforcement of permanent stormwater control upkeep includes verbal notice to the facility owner, written notice, legal notice, and finally billing the owner for maintenance action. An enforcement response policy will be developed and implemented as required in Part 3.3.6 no later than April 3, 2026. Progress toward meeting this goal will be provided in annual work plan updates provided in Table 14.

5.4.3 Planned 2022 Compliance Activities

ACHD conducts the Permit-required activities to limit stormwater pollution potential and has made program updates to maintain compliance with the current stormwater permit. Table 14 includes the work plan for 2022 SWMP activities related to post-construction stormwater management activities.

Table 14. 2022 Post-Construction Stormwater Management Work Plan

Task Description	Lead ACHD Department	Supporting ACHD Department	Time Frame
Prioritize, inspect, and conduct necessary follow-up on privately owned stormwater basins.	Environmental	Maintenance	9/30/2022
Review current regulatory mechanisms for PCSM enforcement	Environmental	N/A	7/30/2022
Draft an enforcement response policy for maintenance of permanent stormwater controls.	Environmental	Development Review Legal	12/31/2022
Review DTS staff PCSM training needs	Environmental	Development Review	12/31/2022
Begin to draft prioritization inspection process	Environmental	Development Review	8/30/2022
Continue to require and review permanent stormwater control plans	Development Review	Environmental	Ongoing
Continue to update and track the permanent stormwater control inventory.	Environmental	GIS	Ongoing

5.5 Stormwater Infrastructure and Street Management

This section describes activities ACHD conducts or will implement to fulfill Phase I Permit requirements for stormwater infrastructure and street management (MS4 Permit 3.5).

5.5.1 Permit Requirements

To control the discharge of stormwater pollutants from ACHD activities, ACHD must:

- ✓ Inspect catch basins and inlets at least once every five years or develop an inspection prioritization plan (3.5.2).
- ✓ Maintain or clean catch basins based on those inspections (3.5.2).
- ✓ If applicable, maintain O&M Procedures for Streets, Roads, Highways and Parking Lots, including specific schedules for inspection and maintenance, and appropriate pollution prevention/good housekeeping actions (3.5.3).
- ✓ Inventory and manage Street/Road Maintenance Materials (3.5.4).
- ✓ Use best practices to reduce the discharge of pollutants to the MS4 associated with the Permittee's application and storage of pesticides, herbicides, and fertilizers (3.5.4).
- ✓ Implement a Street, Road, Highway and Parking Lot Sweeping Management Plan (3.5.5).
- ✓ Maintain O&M Procedures for Other Municipal Areas and Activities to protect water quality
- ✓ Maintain inventory and/or map of all streets, roads, highways, and public parking lots owned, operated, or maintained by ACHD in the Permit Area and identify their selected sweeping frequency (3.5.5).
- ✓ Conduct O&M activities in a manner that reduces the discharge of pollutants through the MS4 to protect water quality. Review, and update as necessary, existing procedures for inspection and maintenance schedules to ensure pollution prevention and good housekeeping practices are conducted for listed activities (3.5.6).
- ✓ Develop site-specific Pollution Prevention Plans for Permittee-owned Facilities (3.5.8).
- ✓ Work cooperatively with other entities to control litter on a regular basis (3.5.9).
- ✓ Ensure the appropriate Permittee staff is trained to conduct these activities (3.5.10).

5.5.2 Current Compliance Activities

Operation and Maintenance are essential components of stormwater infrastructure and street management. Activities and programs tracked and evaluated within the Phase I permit area include:

- Street Sweeping (5.5.2.1)
- Storm Drain System Maintenance (5.5.2.2)
- Winter Maintenance (5.5.2.3)
- Pesticide, Herbicide, and Fertilizer Applications (5.5.2.4)
- Additional Pollution Prevention and Good Housekeeping for Municipal Operations (5.5.2.5)
- Operation and Maintenance include:
  - Fleet maintenance and vehicle washing operations
  - Building maintenance
  - Snow removal and snow disposal site operations and maintenance
  - Spill prevention and control for refueling facilities

In 2019, Environmental staff and consultants worked with Maintenance and Operations staff to update the ACHD Maintenance and Operations Stormwater Best Management Practices Manual. These BMPs, used in conjunction with specific activities ACHD performs, will enhance water quality and promote the reduction of pollutants entering the storm drain system.

ACHD works with Ada County residents and businesses to remove or eliminate pollutants in the environment through the Adopt-a-Highway and Commuteride programs.

In reporting year 2021-2022, Adopt-a-Highway volunteers successfully completed 71 roadside cleanup events, removing 7,040 pounds of debris.

In calendar year 2021, the Commuteride Program maintained an average of 77 commuter van routes and 484 participants resulting in 89,995 passenger trips, 2,781,340 total miles removed from roadways, and preventing 2,183 tons in CO_2 emissions across the Treasure Valley.

ACHD currently operates two maintenance yards, three gravel pits, and four equipment and material storage areas within the Phase I Permit area. The location of these facilities is included in the MS4 Stormwater Infrastructure Map in Appendix C. The SWPPPs associated with these facilities are in Appendix I. During 2022-2023, ACHD will continue development of three new sites: a traffic materials shop and storage area at 3341 Franklin Road in Boise, Idaho and a maintenance yard at 4377 S. Apple Street, Boise, Idaho and 3764 Ustick Road in Meridian, Idaho. The future Ustick Maintenance Yard is located within the Phase II permit area.

5.5.2.1 Street Sweeping

ACHD utilized 28 sweepers: 9 mechanical sweepers, 10 regenerative air sweepers, and 9 vacuum sweepers during the 2021-2022 permit year. The county is organized into nine sweeping zones to include residential sweeping routes, arterial/collector routes, and downtown routes. The nine sweeping zones are further subdivided into 228 maintenance areas to help the Maintenance and Operation staff track and communicate maintenance activities on a smaller scale. Mechanical sweepers are used primarily on residential streets, while vacuum sweepers are used on arterial/collector streets, residential streets, and downtown streets. ACHD staff sweeps the arterial/collector streets early in the morning and then moves to residential streets. All streets within a residential zone are completed before moving into the next zone. Downtown routes are swept at least twice a month and additional sweeping is done as needed. In the Phase I permit area, a total of 8,553 lane miles were swept between October 1, 2021 and July 1, 2022 adding to the countywide removal of an estimated 27,627 cubic yards of debris. Sweeping effectiveness is evaluated using written daily logs and digital tracking using a GPS based automatic vehicle location (AVL) service. The AVL data and reporting tools were used for the first time in 2021-2022 to summarize the progress of the Street Sweeping Program for this SWMP Document.

5.5.2.2 Storm Drain System Maintenance and Right-of-Way Cleaning

In the Phase I permit area, ACHD owns and operates a storm drain system currently composed of 224 miles of storm drain pipe, 8,728 storm drain inlets, 3,493 sand and grease traps (sediment tanks), and 38 detention and retention basins. ACHD is also responsible for providing heavy maintenance on 559 privately-owned stormwater basins. ACHD Maintenance staff performs right-of-way maintenance activities such as trash pickup, weed removal, and sidewalk cleaning with assistance from participants in the Sheriff Labor Detail Program (SLD). A summary of the drainage maintenance activities performed by ACHD crews and participants from the SLD Program during reporting year 2021-2022 (October 1, 2021-July 1, 2022) are provided in Tables 15 and 16, respectively.

Table 15. ACHD Drainage Maintenance Activities Summary October 1, 2021 – July 1, 2022	
Drainage Maintenance Activity	**Quantity**
Storm Drain Inlets Inspected/Cleaned	1,385
Manholes & Irrigation Boxes Inspected/Cleaned	650
Sediment Tanks Cleaned	195
Drains/Pipes Flushed (feet)	6,228
Debris Removed (cubic yards)	269
Drop Inlets Repaired or Installed*	20
Storm Drain Pipes Installed (feet)*	0
Irrigation Crossing Installed/Repairs (feet)*	970
Sink Hole/Cave-In Repairs*	6
Curb Replacement (feet)*	2,747
Basins Repaired or Installed*	0
Seepage Beds Repaired/Installed*	1
Drainage Complaint Investigation*	3

** Program activity include work conducted throughout Ada County*

Table 16. SLD Program Activities Summary* October 1, 2021 – July 1, 2022						
Description	**Debris (CY)**	**Bags (#)**	**Blocks (#)**	**Lane Miles**	**SLD Hours**	**ACHD Hours**
Right-of-way Weed Control & Cleaning	439	214	33	36	2,084	1,375
Alley Cleaning	369	82	595	0	1,669	1,038
Basin Cleaning	264	55	109[1]	0	1,039	1,134
Sidewalk Cleaning	313	175	264	113	2,066	1,242
Yard Work	37	257	217	0	875	661
TOTALS	1,422	783	1,518	149	7,733	5,450

**SLD Program activities include work conducted throughout Ada County*

[1]Number of basins cleaned

5.5.2.3 Winter Maintenance

Ada County Highway District maintenance staff is responsible for providing safe ACHD roadways for the traveling public. During winter maintenance, staff uses sand, salt, sand/salt mix, and magnesium chloride (MgCl) to address snow and ice conditions on ACHD roadways. Sand stored at the Adams and Cloverdale Maintenance yards is mixed with salt for storage purposes to prevent sand from freezing. The ratio of sand to salt used for winter maintenance varies based on weather conditions, grades, and traffic volume.

During 2021-2022, ACHD discontinued the practice of dyeing salt for winter maintenance applications due to the chemical makeup of the dye and the potential negative impact the dye may have on waterways. The ACHD has limited the use of previously dyed salt to rural areas of Ada County that do not have a direct connection to surface waters and groundwater.

A summary of snow and ice control materials applied to ACHD roads in reporting year (October 1, 2021– September 30, 2022) is included in Table 17. During this time, ACHD treated 15,955 lane miles of roadway and the National Weather Service at the Boise Airport recorded 22 inches of snow.

Table 17. Maintenance Materials Usage and Snowfall Total

Deicing Material	Total Material Applied* 2021-2022
Sand/Salt Mix (tons)	3,002
MgCl (gal)	481,659
Salt (tons)	1,953
Snowfall Total (inches)	22

**Total materials usage includes all of Ada County*

5.5.2.4 Pesticide, Herbicide and Fertilizer Application

The ACHD contracts with chemical applicators to address vegetation maintenance at ACHD facilities and the public right-of-way. The facilities vegetation maintenance contractor applies pesticide, herbicide, and fertilizer at the Adams Location (Administration building and Maintenance and Traffic Operations Yard) and one vegetated stormwater basin throughout the Phase I permit area. The right-of-way vegetation maintenance contractor applies herbicide to 1,088 miles of roadside throughout Ada County. The contract applicators record the type of material used, the location, and amount applied. Data collected from ACHD facilities in the Phase I permit area and county-wide roadside chemical applications during October 1, 2021– July 1, 2022 is summarized in Table 18.

Table 18. ACHD Facilities and Roadside Chemical Applications October 1, 2021 – July 1, 2022

Type	Application Amount Active Ingredient (lbs[6])				Application Totals (lbs[6])
	Location				Year
	Adams Location	Cloverdale Location	Vegetated Basins (1)	Roadsides (1,088 miles)	21-22
Organic fertilizer[3]	285	25	200	-	510
Turf weed control[2]	0	-	0	-	0
Tree/shrub, bed weed control[4]	17	9	5	164	195
Pre-emergent herbicide[1]	1	0	0	162	163
Insecticide[5]	1	2	1	-	4

[1]Flumigard; [2]Barricade, Merit; [3]16-16-16, 19-0-6 w/Barricade, 21-0-4 w/ Merit, Anderson 16-16-16; [4]Roundup Quick Pro, Credit 41 Extra; [5]440 Superior Spray Oil, Merit 2F; [6]Gallons to pounds conversion based on density of water (8lb/gal)

5.5.3 Planned 2022 Compliance Activities

ACHD conducts the Permit-required activities to limit stormwater pollution potential and has made necessary program updates to maintain compliance with the current stormwater permit. Table 19 includes the work plan for 2022 SWMP activities related to pollution prevention and good housekeeping.

Table 19. 2022 Pollution Prevention/Good Housekeeping Work Plan			
Task Description	Lead ACHD Department	Supporting ACHD Department	Time Frame
Analyze and report street sweeping activities using automatic vehicle location software. Continue refinement of sweeping data	Environmental	GIS	Ongoing
Continue to implement operation and maintenance programs and best management practices to reduce/prevent pollutant runoff from ACHD activities/operations	Maintenance	Environmental	Ongoing
Continue to conduct annual pollution prevention and good housekeeping training for maintenance employees	Environmental	Human Resources	Ongoing
Continue to implement street sweeping program	Maintenance	Environmental	Ongoing
Continue to implement storm drain cleaning	Maintenance	Environmental	Ongoing
Develop prioritization mapping options that identify areas that discharge to the MS4 or directly discharge to waterways	Environmental	Maintenance	12/31/22
Evaluate Sweeping and Inlet and Catch Basin Cleaning programs to establish what is needed to revise frequency and target inspection to specific areas of the MS4	Environmental	Maintenance	12/31/22
Continue to update and maintain the MS4 map	Environmental	GIS	Ongoing

5.6 Industrial and Commercial Stormwater Discharge Management

This section describes activities ACHD conducts or will implement to fulfill Phase I Permit requirements (MS4 Permit 3.6) for pollution prevention and good housekeeping practices.

5.6.1 Permit Requirements

To reduce the discharge of pollutants from industrial and commercial operations, ACHD must:

- ✓ Conduct educational and/or enforcement efforts to reduce the discharge of pollutants from those industrial and commercial locations which are considered to be significant contributors of phosphorus, bacteria, temperature, and/or sediment to receiving waters (3.6).
- ✓ Maintain an inventory of industrial and commercial facility/activity within the Permit Area (3.6.2).
- ✓ Prioritize and inspect selected industrial and commercial facilities/activities which discharge to receiving waters or the MS4.

5.6.2 Current Compliance Activities

The industrial and commercial inventory and inspection tracking activities include:

- Coordination with the City of Boise or the City of Garden City as appropriate to maintain a list of commercial and industrial facilities, conduct site inspections, and provide educational resources as needed within their jurisdictions.
  - The City of Boise and the City of Garden City each maintain commercial and industrial facility inventories to track the operational uses and environmental compliance of businesses operating within their respective jurisdictions.

    - Staff review new development and redevelopment applications and conduct field verification through daily operations to populate their industrial and commercial facility inventories.
    - Facility inspection data are tracked through the commercial and industrial facility inventory.
  - The updated commercial and industrial facility inventories are submitted electronically to ACHD annually.
- Evaluating and prioritizing the commercial and industrial facilities for inspection based on the following prioritization schedule:
  - Connection to the MS4
  - Environmental sensitive industries[7]
  - Compliance status
  - Watershed of interest
  - Most recent inspection greater than eight years.

ACHD's jurisdiction is limited to public right of way and does not include private property. To implement the commercial and industrial monitoring program, ACHD contracts with the City of Boise and the City of Garden City (The Cities) to track and maintain a comprehensive list of commercial and industrial facilities within their jurisdictions. ACHD applies a prioritization methodology to the facility inventories provided by The Cities to rate the individual properties for inspection. The Cities conducts the commercial and industrial facility inspections, provides educational materials, and issues corrective actions as appropriate on ACHD's behalf. The Cities develop inspection reports for ACHD to include site observations, maps, and photo documentation. This work cooperative will be formalized into updated Interagency Agreements with the respective cities beginning with the development of draft agreements in 2022.

5.6.3 Planned 2022 Compliance Activities

ACHD conducts the Permit-required activities to limit stormwater pollution potential and will continually optimize the industrial and commercial stormwater management program to maintain compliance with the current stormwater permit. Table 20 presents the work plan for 2022 SWMP activities related to industrial and commercial stormwater management.

Table 20. 2022 Industrial and Commercial Stormwater Management

Task Description	Lead ACHD Department	Supporting ACHD Department	Time Frame
Coordinate with the City of Boise and City of Garden City to update and share the updated industrial and commercial facility inventory.	Environmental	N/A	10/1/22
Develop a draft interagency agreement between ACHD and the City of Boise and the City of Garden City for the Inspection, Monitoring and Enforcement of Industrial and Commercial High-Risk Runoff	Legal	Environmental	12/30/2022
Contract with relevant cities to assist ACHD with industrial and commercial stormwater management requirements	Environmental	N/A	Ongoing

7 https://www.partneresi.com/sites/default/files/sba_sop_50_10_5j_naics_codes.pdf

Table 20. 2022 Industrial and Commercial Stormwater Management			
Task Description	Lead ACHD Department	Supporting ACHD Department	Time Frame
Prioritize the industrial and commercial facility inventory for annual inspections	Environmental	N/A	Ongoing

Section 6
References

Ada County. Code of Ordinances. (2021 December 21). Title 5, Ch. 2, Ord. No. 5-2-4-2B *https://codelibrary.amlegal.com/codes/adacountyid/latest/adacounty_id/0-0-0-1423*

Ada County Highway District. (2013 May 1). *Ada County Highway District Policy Manual. http://www.achdidaho.org/AboutACHD/policyManual.aspx*

Ada County Highway District. (2021, April 15). *Phase I Monitoring and Assessment Plan.*

California Stormwater Quality Association. (2015, February 15). *A Strategic Approach to Planning for and Assessing the Effectiveness of Stormwater Programs (pdf). https://www.casqa.org/resources/effectiveness-assessment/guidance-documents/strategic-approach*

City of Boise. Code of Ordinances. (2019). Title 10, Ch.6, Ord. No.2 https://codelibrary.amlegal.com/codes/boiseid/latest/boise_id/0-0-0-13536

City of Boise. Code of Ordinances. (2019). Title 9, Ch.14, Ord. No.2 https://codelibrary.amlegal.com/codes/boiseid/latest/boise_id/0-0-0-11723

City of Garden City. Code of Ordinances. (2021 August 9). Title 4, Ch.14, Ord. No. 5 https://www.codepublishing.com/ID/GardenCity/#!/GardenCity04/GardenCity0414.html#4-14-5

City of Garden City. Code of Ordinances. (2021 August 9). Title 4, Ch. 15, Ord. No.2 https://www.codepublishing.com/ID/GardenCity/#!/GardenCity04/GardenCity0415.html#4-15-2

State of Idaho, Ada County. (November 2016). *Ada County 2025 Comprehensive Plan (pdf). https://adacounty.id.gov/developmentservices/wp-content/uploads/sites/37/AdaCounty2025.pdf*

State of Idaho, Department of Environmental Quality. (2022). Idaho Administrative Code, *IDAPA 58.01.02.140.12. https://adminrules.idaho.gov/rules/current/58/580102.pdf*

State of Idaho, Department of Environmental Quality. (October 2020). *Idaho's 2018/2020 Integrated Report. https://www2.deq.idaho.gov/admin/LEIA/api/document/download/14890*

State of Idaho, Idaho Legislature. (2022). *Idaho Code Title 40. https://legislature.idaho.gov/statutesrules/idstat/title40/*

United States Environmental Protection Agency, Region10. (2021, June 22). *NPDES Stormwater Permit, Ada County Highway District MS4, #IDS028185 (pdf).* https://www.epa.gov/npdes-permits/npdes-stormwater-permit-ada-county-highway-district-ms4-idaho

Appendix A: Operating Guidelines and Intergovernmental Agreements

AMENDED AND RESTATED OPERATING GUIDELINES

THESE AMENDED AND RESTATED OPERATING GUIDELINES ("Amended and Restated Guidelines") are adopted this _____day of _________, 2022, by the CITY OF BOISE CITY, hereinafter called BOISE CITY; ADA COUNTY HIGHWAY DISTRICT, hereinafter called ACHD; ADA COUNTY DRAINAGE DISTRICT NO. 3, hereinafter called DD3; IDAHO TRANSPORTATION DEPARTMENT, DISTRICT 3, hereinafter called ITD; BOISE STATE UNIVERSITY, hereinafter called BSU; and the CITY OF GARDEN CITY, hereinafter called GARDEN CITY; collectively the "Permittees."

WHEREAS, the National Pollutant Discharge Elimination System, the provisions of the Clean Water Act, 33 U.S.C. § 151 et seq, as amended by the Water Quality Act of 1987, Public Law 100-4 ("Clean Water Act"), and the Rules Regulating the Idaho Pollutant Discharge Elimination System Program (IDAPA 58.01.25) ("Rules and Regulations") all govern the regulations for applications and permits for stormwater discharges; and

WHEREAS, these Rules and Regulations are designed to control pollutants associated with stormwater discharges through the use of the National Pollutant Discharge Elimination System ("NPDES"), which allows the lawful discharge of stormwater into the waters of the United States; and

WHEREAS, these Rules and Regulations are designed to require NPDES permits for discharges from Municipal Separate Storm Sewer Systems (MS4s) from a system-wide or jurisdiction-wide basis; and

WHEREAS, the Permittees received a NPDES Permit (Permit #IDS-02756-1) effective February 1, 2013, and administratively extended until October 1, 2021; and

WHEREAS, on July 1, 2021, the Idaho Department of Environmental Quality (IDEQ), with delegated authority from the U.S. Environmental Protection Agency ("EPA"), gained primacy and became responsible for issuing MS4 stormwater permits and assuring compliance with all permit requirements; and

WHEREAS, the Permittees received Idaho Pollutant Discharge Elimination System ("IPDES") Permit IDS027561 (the "Permit"), effective October 1, 2021;

WHEREAS, the Permit requires that the Permittees must maintain an intergovernmental agreement describing each organization's respective roles and responsibilities related to this permit;

WHEREAS, pursuant to the Permit, any previously signed intergovernmental agreement may be updated, as necessary, in accordance with this Permit. Any such agreement must be described in the Permittees' Stormwater Management Program ("SWMP") Document, and a copy of the agreement between the Permittees must be available to IDEQ upon request; and

WHEREAS, the Permittees entered into that certain *Intergovernmental Agreement for Roles and Responsibilities Under the NPDES Permit* ("Agreement"), dated June 26, 2013, which generally outlined the process by which the Permittees shall fund certain activities in compliance with the Permit;

WHEREAS, the Permittees previously entered into those certain Operating Guidelines dated October 17, 2006, which governed the Permittees' activities under a previous intergovernmental agreement dated October 21, 2001, based on the previous NPDES permit originally effective November 29, 2000.

WHEREAS, the Permittees have updated the intergovernmental agreement based on the Permit effective October 1, 2021, and this Amended and Restated Intergovernmental Agreement was executed on _________, 2022; and

WHEREAS, the Permittees, as public agencies, all have varying procedures concerning the setting of those entities' budgets and the time frame for the approval of those budgets;

WHEREAS, the Permittees desire these Amended and Restated Guidelines (including certain budget procedures) to guide the Permittees through the activities in which all share in the cost and/or administration of the program and to coincide with the new amendments and revisions under the Amended and Restated Intergovernmental Agreement;

NOW, THEREFORE, the Permittees agree as follows:

Section 1. These Amended and Restated Guidelines hereby repeal, replace, and supersede any previous guidelines, including those 2006 guidelines as described herein.

Section 2. The Permittees concur with the following process for:

A. The annual budget of costs to be shared by the Permittees pursuant to the Permit and the Amended and Restated Intergovernmental Agreement; and

B. The approval of activities and expenses.

Section 3. Schedule and Process:

Each January of each year of the Permit, the lead Permittee entity for the activities to be shared by all of the Permittees, shall present at a scheduled Permittee meeting, a proposed budget outlining the costs for the upcoming year as well as providing a comparison for similar activities within the previous year.

The Permittees shall consider such budget, provide comment, and the budget shall be approved at the Permittee meeting held in April of each year, upon motion and approval by a majority of the Permittees present.

Section 4. Program Administration and Management:

These Amended and Restated Guidelines identify four (4) categories for which the Permittees have agreed to apportion costs for those activities, including Program Administration and Management. By adoption of these Amended and Restated Guidelines, the Permittees have determined that the Program Administration and Management category should include those activities for which the Permittees are apportioning costs for certain planning and Permit compliance not related to any individual Permittee compliance activity. Such activities include the Permit reapplication process and required Permit document preparation.

Permittees also agree to consider other subcategories for which apportionment of costs would be appropriate under the Permit and to process budget requests and approvals. Any additional subcategories shall require an amendment to these Amended and Restated Guidelines.

Section 5. Budget Revisions:

Throughout the Permit year, revisions to the approved budget to reallocate funds among categories and classifications or to reduce the approved budget may be considered by the Permittees. Such reduction or reallocation shall be reviewed and approved by the Permittees' representatives at a duly noticed Permittee meeting. No overall increase in the budget or additional funds shall be authorized unless approved by the Permittees, upon motion and approval by a majority of the Permittees present, and each Permittee has budget authority for such revisions.

Section 6. Permittee Budget Approval:

Nothing herein shall affect the process or authority of each Permittee to obtain from its governing body the necessary approval for the budget as required by each Permittee's governing laws, regulations, or policy and each Permittee's own activities for which it is responsible under the Permit.

Section 7. Operating Guidelines:

Generally, the Permittee meetings shall be managed in such a manner to achieve the objectives of the Permit and the NPDES program. For those items previously approved by way of the budget, the lead Permittee shall provide sufficient notice of such expenditure prior to incurring the obligation. Provided, however, that the Permittees may dispense of this guideline by action taken at a regularly scheduled Permittee meeting. Approval of expenses and approval of certain programs shall occur at a regularly scheduled Permittee meeting, upon motion and approval by a majority of the Permittees present.

Permittee meetings will be conducted on an informal basis facilitated by the ACHD representative. The ACHD representative shall also be responsible for taking and distributing minutes, providing an agenda, and, to the greatest extent possible, forwarding information to the Permittees for consideration at the meeting. Any action to be taken shall be accomplished by motion and vote. To the greatest extent possible, Roberts Rules of Order shall govern the voting process.

Section 8. Effect:

These Amended and Restated Guidelines have been adopted by the Permittees at the Permittee meeting dated _______________, 2022. Nothing herein shall be deemed to infringe upon any Permittee's legal authority concerning the expenditure of public funds.

Section 9. Amendment:

These Amended and Restated Guidelines may be amended in writing, upon at least ten (10) days written notice of such amendment to each Permittee provided, however, said notice may be deemed waived by Permittee's written consent. Any amendment shall be approved by majority vote of the Permittees present at the meeting called for such purpose. Updated versions of these Amended and Restated Guidelines shall be included in the Amended and Restated Intergovernmental Agreement as an updated addendum to that document.

ADA COUNTY HIGHWAY DISTRICT

By: ________________________________
Its Permittee NPDES Representative

CITY OF BOISE CITY

By: ________________________________
Its Permittee NPDES Representative

CITY OF GARDEN CITY

By: ________________________________
Its Permittee NPDES Representative

BOISE STATE UNIVERSITY

By: ________________________________
Its Permittee NPDES Representative
IDAHO TRANSPORTATION DEPARTMENT,
DISTRICT #3

By: ________________________________
Its Permittee NPDES Representative

ADA COUNTY DRAINAGE DISTRICT No. 3

By: ________________________________
Its Permittee NPDES Representative

AMENDED AND RESTATED INTERGOVERNMENTAL AGREEMENT FOR ROLES AND RESPONSIBILITIES UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT (NPDES Permit #IDS-027561)

THIS AMENDED AND RESTATED INTERGOVERNMENTAL AGREEMENT ("Amended and Restated Agreement") is entered into this ___ day of __________, 2022, by and among the Ada County Highway District ("ACHD"), the city of Boise City ("Boise City"), city of Garden City ("Garden City"), Boise State University ("Boise State"), the Idaho Transportation Department, District #3 ("ITD"), and Ada County Drainage District No. 3 ("DD3"), individually a "Permittee" and collectively the "Permittees."

I. RECITALS

WHEREAS, this Amended and Restated Agreement is made for the purpose of complying with the National Pollutant Discharge Elimination System, the provisions of the Clean Water Act, 33 U.S.C. § 151 et seq, as amended by the Water Quality Act of 1987, Public Law 100-4 ("Clean Water Act"), and the Rules Regulating the Idaho Pollutant Discharge Elimination System Program (IDAPA 58.01.25) ("Rules and Regulations"); and

WHEREAS, the Rules and Regulations are designed to control pollutants associated with stormwater discharges through the use of the National Pollutant Discharge Elimination System ("NPDES") Municipal Separate Storm Sewer System (MS4) permits which allows the lawful discharge of stormwater into the waters of the United States; and

WHEREAS, the Rules and Regulations are designed to require NPDES permits for discharges from MS4s on a system-wide or jurisdiction wide basis; and

WHEREAS, the Permittees received NPDES Permit #IDS027561, effective February 1, 2013, and administratively extended until October 1, 2021; and

WHEREAS, on July 1, 2021, the Idaho Department of Environmental Quality ("IDEQ"), with delegated authority from the U.S. Environmental Protection Agency ("EPA"), took over primacy for the NPDES MS4 permits in Idaho, and became responsible for the issuing of permits and assuring compliance with all permit requirements; and

WHEREAS, the Permittees received National Pollutant Discharge Elimination System ("NPDES") Permit IDS027561 (the "Permit"), effective October 1, 2021; and

WHEREAS, the Permit requires that the Permittees must maintain an intergovernmental agreement describing each organization's respective roles and responsibilities related to this permit; and

WHEREAS, on June 18, 2013, the Permittees entered into an Intergovernmental Agreement for Roles and Responsibilities under the NPDES Municipal Stormwater Permit outlining roles and responsibilities of the Permittees under the Permit; and

WHEREAS, pursuant to the Permit any previously signed intergovernmental agreement may be updated, as necessary, in accordance with the Permit. Any such agreement must be described in the Permittees' Stormwater Management Program ("SWMP") Document and a copy of the agreement between the Permittees must be available to IDEQ upon request; and

WHEREAS, the Permittees have updated the intergovernmental agreement based on the Permit effective October 1, 2021. This Amended and Restated Agreement shall replace and supersede all previous intergovernmental agreements between the Permittees.

NOW, THEREFORE, the foregoing sets forth the agreement by and among the named Permittees.

II. AGREEMENT

1. PURPOSE OF AMENDED AND RESTATED AGREEMENT

The purpose of this Amended and Restated Agreement is to detail the duties, roles, and responsibilities of the Permittees with respect to compliance with the Rules and Regulations and the requirements set forth in Section 2.5.2, Joint Responsibility and Joint Agreements of the Permit. Each Permittee is individually responsible for Permit compliance related to portions of the MS4 owned or operated solely by that Permittee, or where the Permit requires a specific Permittee to take an action. Each Permittee is jointly responsible for Permit compliance as follows:

a. related to portions of the MS4 where operational or stormwater management control measures implementation authority has been transferred to one Permittee or another in accordance with this Amended and Restated Agreement between the Permittees; and

b. related to portions of the MS4 where Permittees jointly own or operate a portion of the MS4; and

c. related to the submission of reports or other documents required by Parts 3, 5, and 6 of the Permit; and

d. where the Permit requires the Permittees to take an action and a specific Permittee is not named; and

e. other areas as deemed necessary by the Permittees.

2. GENERAL PROVISIONS

a. ACHD, Boise City, Garden City, Boise State, ITD and DD3 are Permittees in the Permit as provided in 40 CFR 122.26.

b. Each Permittee will be responsible for complying with any and all Permit conditions relating to discharges from those parts of the MS4 that it operates and maintains.

c. The Permittees will utilize available monitoring and enforcement mechanisms, in full cooperation with other Permittees, to control the contribution of pollutants from one MS4 to another.

d. Each Permittee to this Amended and Restated Agreement shall assign at least one representative to the Permittee group.

3. STORM WATER MANAGEMENT PROGRAM ROLES AND RESPONSIBILITIES

The roles and responsibilities of each Permittee are as established in the Permit and this Amended and Restated Agreement.

4. APPORTIONMENT OF COSTS

A. Program Administration and Management

The Stormwater Management Program Control Measures shall be administered by ACHD as the lead agency. Program administration and management consists primarily of:

1. Preparing the agenda, minutes, and other documents related to the quarterly meetings and special meetings of the Permittees; and

2. Compiling and coordinating material to and from the Permittees for the filing of the annual report and Permit reapplication, as necessary, with IDEQ; and

3. Coordinating the various activities among the Permittees under the Permit.

The Permittees shall reimburse ACHD or the Permittee providing services described in this subsection 4.A. for their share of the program administration costs in the following amounts:

ACHD:	65.3% of the total program administration costs
Boise City:	15.3% of the total program administration costs
Garden City:	7.7% of the total program administration costs
Boise State:	3.9% of the total program administration costs
ITD:	3.9% of the total program administration costs
DD3:	3.9% of the total program administration costs

Program administration shall also include expenses incurred by any Permittee in the drafting, preparation, and completion of certain agreements or other documents specifically related to the collective Permittees' activities required by the Permit, by way of example, but not by way of limitation, this Amended and Restated Agreement. Such expenses shall be shared as stated in this Subsection 4.A. and processed through ACHD as set forth herein. Such expenses shall not include any activity related to any Permittee's own compliance requirements under the Permit.

B. Stormwater Monitoring and Evaluation Program

Monitoring and evaluation required by the Permit shall be conducted by ACHD or its contractor as the lead agency. The monitoring and evaluation program ("Stormwater Monitoring and Evaluation Program") consists primarily of:

1. For the first year of the Permit, preparing an updated Stormwater Outfall Monitoring Plan as part of the first annual report required by Part 6.4.2 of the Permit. The requirements, set forth in Part 6.2.1-6.2.7, for the Stormwater Outfall Monitoring Plan are described in the Permit, and include the monitoring protocol, sampling, testing, reporting, and other activity through a consultant arrangement between ACHD and its selected consultant.

2. Implementing the Stormwater Monitoring and Evaluation Program as approved and adopted by the Permittees.

3. Temperature monitoring in stormwater discharges from the MS4 to the Boise River including assessment units.

4. Wet weather stormwater outfall monitoring according to the Storm Water Outfall Monitoring Plan.

5. Instituting the Americana Subwatershed Monitoring Plan and data reporting requirements.

6. Effectiveness Evaluation of Structural, Non-Structural, and/or Green Stormwater Infrastructure Controls pursuant to Part 6.2.3 of the Permit.

The Permittees shall reimburse ACHD for their share of the Stormwater Monitoring and Evaluation Program costs in the following amounts:

ACHD:	65.3% of the total Stormwater Monitoring and Evaluation Program Cost
Boise City:	15.3% of the total Stormwater Monitoring and Evaluation Program Cost
Garden City:	7.7% of the total Stormwater Monitoring and Evaluation Program Cost
Boise State:	3.9% of the total Stormwater Monitoring and Evaluation Program Cost
ITD:	3.9% of the total Stormwater Monitoring and Evaluation Program Cost
DD3:	3.9% of the total Stormwater Monitoring and Evaluation Program Cost

C. Public Education, Outreach, and Involvement Program

Boise City shall be the lead agency for the Public Education, Outreach, and Involvement Program pursuant to this Amended and Restated Agreement. The Public Education, Outreach, and Involvement Program includes the development of an education outreach program as required by the Permit. The Public Education, Outreach, and Involvement Program consists primarily of:

1. Conducting public outreach, education, and public involvement as

described in the NPDES permit; and

2. Assessing the understanding of the relevant messages and adoption of appropriate behaviors by target audiences related to the Public Education, Outreach, and Involvement Program; and

3. Tracking and maintaining records of their education, outreach, and public involvement activities, including a descriptive summary of activities in the annual report; and

4. Once per year, training to local audiences on the requirements for construction operators pertaining to the required construction site controls imposed by the Permittees and training to local audiences on the requirements of permanent stormwater management controls imposed by the Permittees; and

5. Maintaining and updating the Permittees' Partners for Clean Water website found at: https://www.partnersforcleanwater.org/.

The Permittees shall reimburse Boise City for their share of the Public Education, Outreach, and Involvement Program costs in the following amounts:

Boise City:	65.3% of the total Program Cost
Garden City:	15.3% of the total Program Cost
ACHD:	7.7% of the total Program Cost
Boise State:	3.9 % of the total Program Cost
ITD:	3.9 % of the total Program Cost
DD3:	3.9 % of the total Program Cost

D. IPDES Stormwater Fee

Boise City is charged IPDES permit fees to support implementation of IPDES program initiatives at the Lander Street Water Renewal Facility and the West Boise Water Renewal Facility. Boise City has estimated the proportionate cost of this IPDES permit fee attributable to stormwater is 1.28% of the total IPDES permit fee. The Permittees have initially agreed to share this cost equally at 17% per Permittee. However, this allocation is subject to change by the Permittees and may be allocated similarly to the other costs discussed in this Section II.4. of the Amended and Restated Agreement. Should the Permittees unanimously agree on a different allocation of these IPDES permit fees, the Permittees shall agree to such amendment in writing.

E. Timely Payments

All amounts due and owing for the costs outlined in this Section II.4. shall be paid within forty-five (45) days of invoice date by each respective Permittee.

F. Annual Review

The allocated percentages of the Permittees' charge shall be reviewed upon an annual basis and if necessary modified.

G. Operating Guidelines and Annual Budget

The Permittees have previously adopted a set of Operating Guidelines ("Guidelines") in July 2014. The Operating Guidelines have since been amended to reflect updates in process and procedure. A copy of the Amended and Restated Operating Guidelines are attached hereto as Addendum No. 1. The Guidelines address the process by which the annual budget is prepared, reviewed, and approved by the Permittees. In addition, the Guidelines also address the manner in which the Permittee meetings are conducted, and action is taken by the Permittees. The Guidelines may be amended as set forth therein and will be included in this Amended and Restated Agreement as a new addendum.

5. TERMINATION

Any Permittee under this Amended and Restated Agreement shall have the right to withdraw and terminate its responsibilities under this Amended and Restated Agreement by serving written notice upon all Permittees in the time and manner described herein. Such written notice shall be served upon all Permittees no later than the January meeting described in the Operating Guidelines, which meeting provides for the consideration of the budget for the following Permit Year. The written notice shall describe whether the withdrawal is in total for all activities set forth in this Amended and Restated Agreement or whether the withdrawal is limited to certain activities described in this Amended and Restated Agreement. The Permittee seeking withdrawal shall provide the specific reasons for withdrawal and provide proof that such withdrawal has been formally approved by the Permittee's governing body. If the withdrawal is not a total withdrawal, the Permittee shall remain responsible for its share of the allocated costs. In addition, the withdrawing Permittee shall provide the results of any activities or programs it acted as the lead agency on, including the preparation of any plans, reports, results, or record keeping, for inclusion in the Permittees' annual report. Such withdrawal shall be deemed effective the year following the service of the written notice upon the other Permittees.

Notwithstanding the right of a Permittee to withdraw from this Amended and Restated Agreement as described above, any responsibilities set out in the Permit with regard to the withdrawing Permittee shall not be affected by Permittee's withdrawal from this Amended and Restated Agreement.

Should any Permittee to this Amended and Restated Agreement seek to obtain a ruling from IDEQ that said Permittee is not an operator of an MS4 or that it is not subject to the Permit, such Permittee shall provide written notice to the other Permittees simultaneously with the filing of such request to IDEQ. The Permittee seeking such ruling shall provide the other Permittees with all documents filed with IDEQ and shall also provide the other Permittees of the decision or determination of IDEQ. Should the Permittee seeking withdrawal appeal the decision or determination of IDEQ or an appeal is filed by any other interested entity, the Permittee seeking such ruling shall provide the other Permittees with the documents related to said appeal and the decision or determination of the appellate body. Upon a final decision or determination of IDEQ or appellate body finding the Permittee is not required to participate in the Permit, the Permittee shall be allowed to withdraw from this Amended and Restated Agreement effective the following year after such final decision or determination of IDEQ or an appellate body. The Permittee seeking such ruling shall be responsible for all costs set forth in this Amended and Restated Agreement prior to final withdrawal. Nothing herein shall prevent any other Permittee from participating in the IDEQ or appellate process concerning the request by the Permittee seeking the determination or decision from IDEQ.

In the event of a withdrawal by a Permittee or a final decision or determination by IDEQ or an appellate body, such Permittee's costs as set forth in this Amended and Restated Agreement shall be reallocated among the other Permittees as may be mutually agreed by those other Permittees.

6. MODIFICATION IN WRITING

This Amended and Restated Agreement may be modified or amended in writing and effective when executed by all Permittees.

7. ATTORNEY FEES

Should any Permittee find it necessary to employ an attorney for representation in any action seeking enforcement of any of the provisions of this Amended and Restated Agreement, or to protect its interest in any matter arising under this Amended and Restated Agreement, or to recover damages for the breach of this Amended and Restated Agreement, or to resolve any disagreement in interpretation of this Amended and Restated Agreement, the unsuccessful Permittee(s), in any final judgment entered therein, agrees to reimburse the prevailing party or parties for all reasonable costs, charges, and expenses, including attorneys' fees expended or incurred by the prevailing party or parties in connection therewith and in connection with any appeal, and the same may be included in such judgment.

8. NOTICES AND CONTACTS

Any and all notices required to be given by any of the Permittees hereto shall be in writing and deemed delivered when either: (i) delivered personally, or (ii) sent by fax to the other parties at the fax telephone number as set forth, or (iii) deposited in the United States Mail, certified, return receipt requested, postage prepaid, addressed to the other Permittees at the address as set forth, or such other fax telephone number or mailing address as may be provided by written notice of such change given to the others in the same manner as above provided.

For the purpose of providing contact information under this Amended and Restated Agreement and to provide notice as required, the following are the contacts and addresses of each representative designated by each Permittee:

Ada County Highway District:
Stormwater Quality Supervisor
Ada County Highway District
318 E. 37th Street
Garden City, ID 83714
Phone: 208-387-6255
Fax: 208-387-6391
Email: mlowe@achdidaho.org

City of Boise:
Water Quality Manager
City of Boise
P.O. Box 500
Boise, ID 83701-0500
Phone: 208-608-7178
Fax: 208-433-5650
Email: kharris@cityofboise.org

City of Garden City:
Environmental Manager
Manager
City of Garden City
201 E. 50th Street
Garden City, ID 83714
Phone: 208-472-2900
Fax: 208-472-2998
Email: kwallis@gardencity.idaho.org

Boise State University:
Environmental Health Compliance

Boise State University
1910 University Drive
Boise, ID 83725
Phone: 208-426-3906

Email: ehs@boisestate.edu

Idaho Transportation Department, District #3:
Environmental Planner, Senior
8150 Chinden Boulevard
Boise, ID 83714
Phone: 208-334-8300
Fax: 208-334-8917
Email: greg.vitley@itd.idaho.gov

Ada County Drainage District #3:
Counsel for Drainage District #3
Elam & Burke
P.O. Box 1539
Boise, ID 83701
Phone: 208-343-5454
Fax: 208-384-5844
Email: rpa@elamburke.com

9. ENTIRE AGREEMENT

Except as provided otherwise herein, this instrument and any attachments or addendums hereto constitute the entire agreement among the Permittees concerning the subject matter hereof.

(signatures on following page)

IN WITNESS WHEREOF, the Permittees hereto have caused this Amended and Restated Agreement to be duly executed as of the day and year first above written.

ADA COUNTY HIGHWAY DISTRICT

By: ______________________________

____
President, ACHD Commission

____
Attest: ACHD Director

CITY OF BOISE CITY

By: ______________________________
Lauren McLean, Mayor

____
Attest: City Clerk

CITY OF GARDEN CITY

By: ______________________________
John Evans, Mayor

____
Attest: City Clerk

BOISE STATE UNIVERSITY

By: ______________________________

____
Vice President, University Affairs

IDAHO TRANSPORTATION DEPARTMENT,
DISTRICT #3

By: ______________________________
_______________, District Administrator

ADA COUNTY DRAINAGE DISTRICT No. 3

By: ________________________________
Steve Sweet, Chair

State of Idaho)
)ss
County of Ada)

On this ___ day of ___________, 2022, before me, ___________________________, a Notary Public in and for the state of Idaho, personally appeared ______________________ and ___________________________, known or identified to me to be the President and Director of Ada county Highway District who executed this instrument, and acknowledged to me that Ada County Highway District executed the same.

____
Notary Public for Idaho
Commission expires: ___________

State of Idaho)
)ss
County of Ada)

On this ___ day of ___________, 2022, before me, ___________________________, a Notary Public in and for the state of Idaho, personally appeared ________________ and ___________________, known or identified to me to be the Mayor and City Clerk of City of Boise who executed this instrument, and acknowledged to me that City of Boise executed the same.

____
Notary Public for Idaho
Commission expires: ___________

State of Idaho)
)ss
County of Ada)

On this ___ day of ___________, 2022, before me, ___________________________, a Notary Public in and for the state of Idaho, personally appeared _________________ and _________________ __________________, known or identified to me to be the Mayor and City Clerk of Garden City who executed this instrument, and acknowledged to me that Garden City executed the same.

____
Notary Public for Idaho
Commission expires: ___________

State of Idaho)
)ss
County of Ada)

On this ___ day of ___________, 2022, before me, ___________________________, a Notary Public in and for the state of Idaho, personally appeared _____________, known or identified to me to be the Vice President, University Affairs, of Boise State University, who executed this instrument, and acknowledged to me that Boise State University executed the same.

____
Notary Public for Idaho
Commission expires: ___________

State of Idaho)
)ss
County of Ada)

On this ___ day of ___________, 2022, before me, ___________________________, a Notary Public in and for the state of Idaho, personally appeared _____________________________, known or identified to me to be the ______________________________________, of Idaho Department of Transportation, who executed this instrument, and acknowledged to me that Idaho Department of Transportation executed the same.

____
Notary Public for Idaho
Commission expires: ___________

State of Idaho)
)ss
County of Ada)

On this ___ day of ___________, 2022, before me __________________________, a Notary Public in and for the state of Idaho, personally appeared Steve Sweet, known or identified to me to be the Chair of Ada County Drainage District # 3, who executed this instrument, and acknowledged to me that Ada County Drainage District #3 executed the same.

____
Notary Public for Idaho
Commission expires: ___________

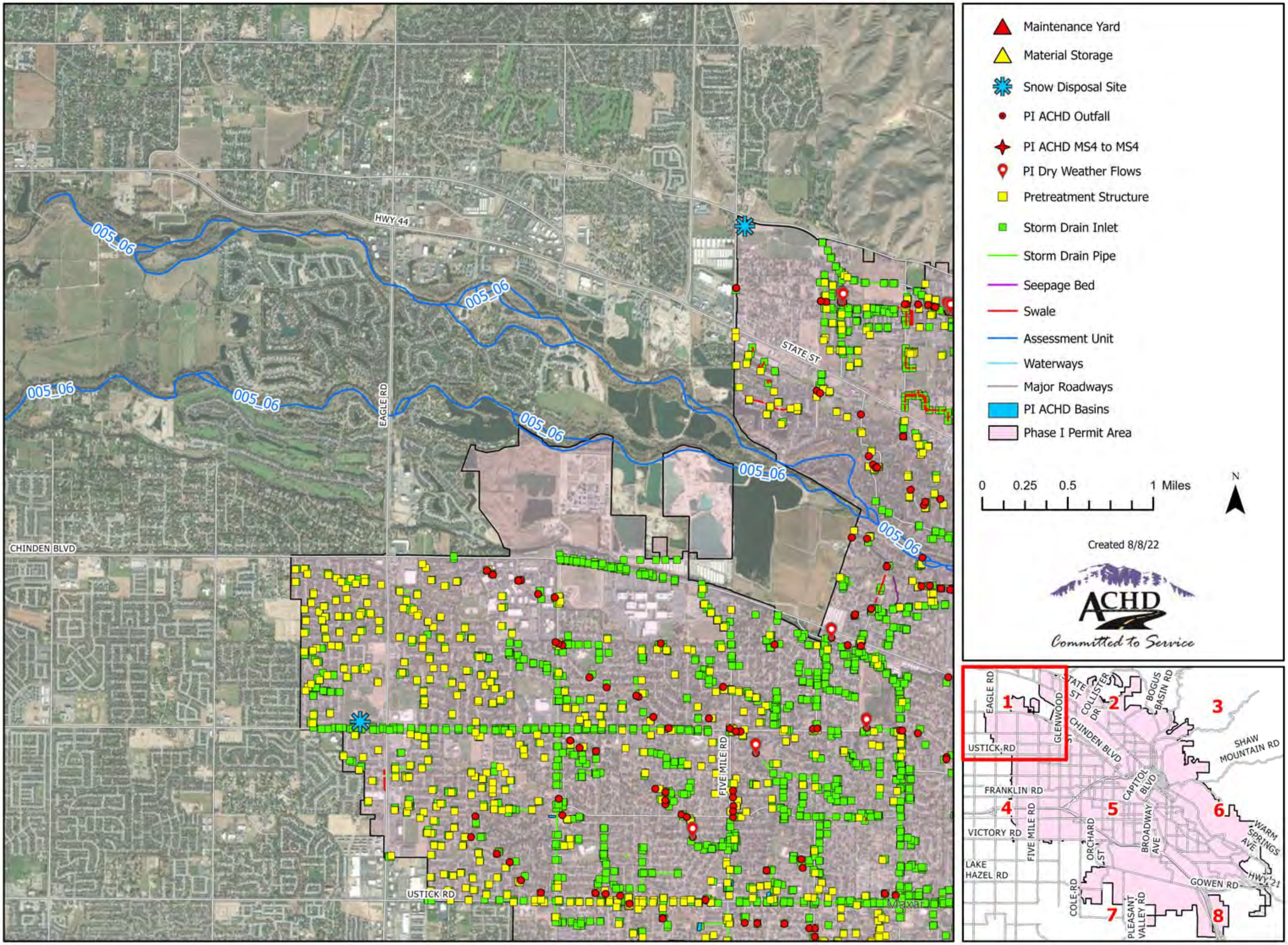
Appendix B: Phase I Receiving Waters and Outfall Ownership

Phase I Permit Area Receiving Waters and Outfall Ownership WY2022

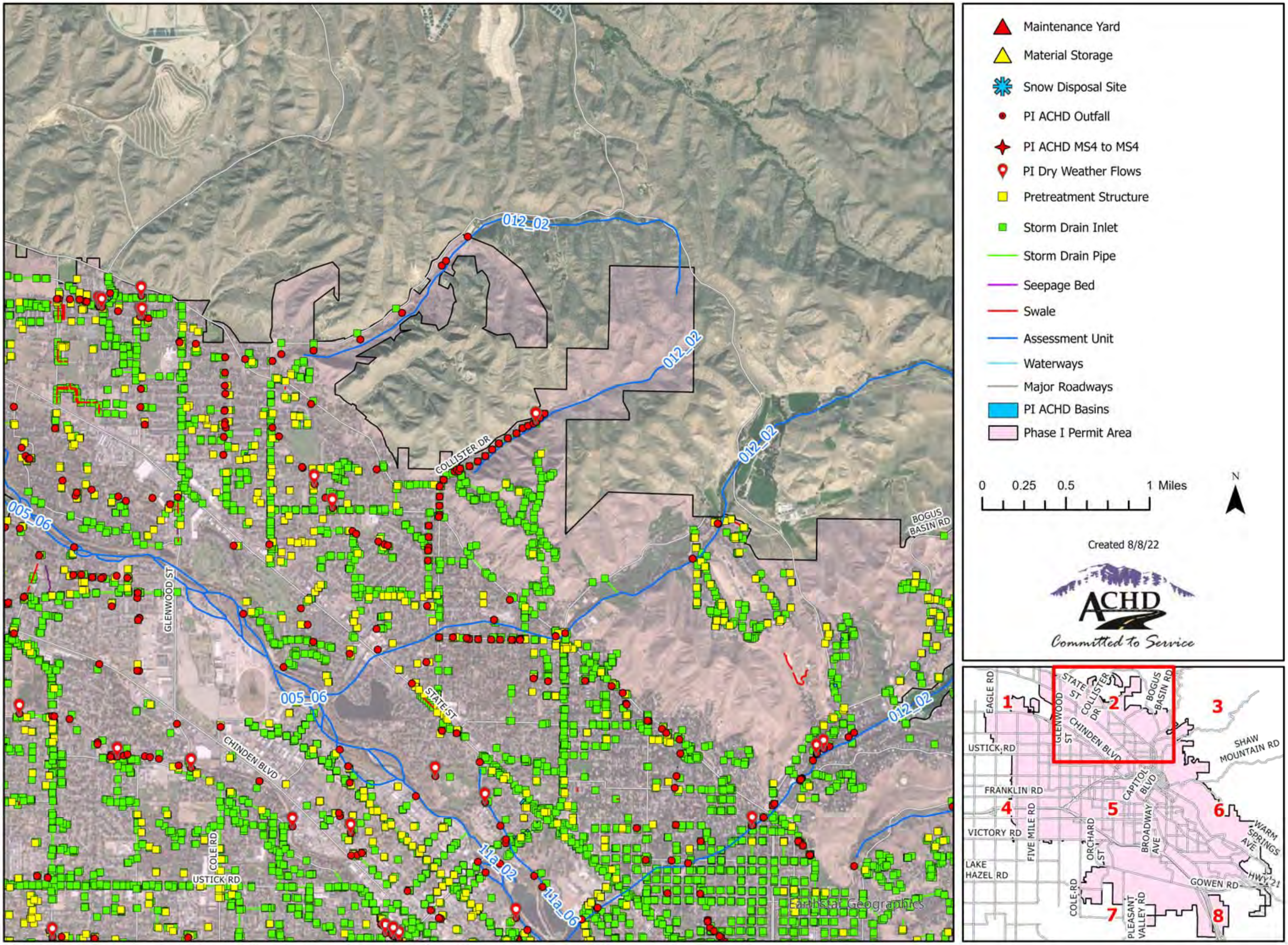
Receiving Water	ACHD Outfall	Non-ACHD Outfall	Outfall Total
Ash Lateral	2	0	2
Bennett Lateral	2	0	2
Boise City Canal	55	2	57
Boise City Canal-drain of	0	4	4
Boise River	40	24	64
Boise Valley Canal	3	4	7
Bubb Canal	7	3	10
Chaffin Drain	1	1	2
Cloverdale Lateral	1	2	3
Cottonwood Creek	3	5	8
Cottonwood Creek-Trib of	2	0	2
Crane Creek	22	2	24
Crane Gulch	2	1	3
Davis Drain	29	17	46
Drain A	0	2	2
Drain B	0	6	6
Drain D	0	3	3
Drain E	0	2	2
Dry Creek Canal	9	14	23
Eaggers Lateral	1	0	1
Eagle Drain	47	11	58
Eagle Drain-lateral of	3	0	3
Eggers Lateral	1	0	1
Eightmile Creek	6	0	6
Electric Light Lateral	3	2	5
Elmore Drain	12	2	14
Eureka Canal	0	8	8
Farmers Lateral	15	8	23
Farmers Union Canal	12	6	18
Finch Lateral	3	0	3
Fitz Lateral	1	0	1
Fivemile Creek	33	19	52
Fivemile Creek - Intermittent	4	0	4
Fivemile Creek-Trib. to	8	3	11
Gallagher Canal	1	0	1
Gruber Lateral	1	0	1
Helm Lateral	1	1	2
Hulls Gulch	8	2	10
Hulls Gulch-Lateral	1	0	1
Huntington Lateral	2	0	2
Hyatt Lateral	1	0	1

Receiving Water		ACHD Outfall	Non-ACHD Outfall	Outfall Total
Julia Davis Pond		3	10	13
Karnes Lateral		11	4	15
Lake Elmore		1	1	2
Lake Heron		1	3	4
Lake Heron Creek-north fork		0	4	4
Lake Heron Creek-south fork		1	2	3
Lake Heron-lateral of		1	2	3
Lateral 49		1	0	1
Logger Creek		12	15	27
Lowell Drain		1	0	1
McMillan #2 Lateral		2	0	2
McMillan Lateral		7	0	7
Milk Lateral		5	0	5
New York Canal		9	2	11
North Slough		70	15	85
Penitentiary Canal		5	0	5
Penninger Lateral		3	0	3
Pierce Creek		6	0	6
Pierce Gulch		1	0	1
Polecat Gulch		31	0	31
Powell Lateral		1	0	1
Ridenbaugh Canal		79	22	101
Ridenbaugh Ditch		10	4	14
Rust Lateral		4	1	5
Sargent Drain		9	0	9
Seaman Gulch		1	0	1
Settlers Canal		37	9	46
Shavrer Lateral		2	1	3
Snider Lateral		1	0	1
South Slough		16	30	46
Stewart Gulch		8	2	10
Threemile Creek		7	2	9
Threemile Lateral		7	1	8
Thurman Drain		1	0	1
Thurman Mill Canal		17	14	31
Thurman Mill Canal-Lateral		4	0	4
Tuttle Lateral		1	0	1
Unnamed		114	17	131
Walling Creek		1	0	1
Warm Springs Canal		18	13	31
Wilson Fruit Lateral		1	0	1
Zinger Lateral		14	0	14
Total	**82**	**866**	**328**	**1194**

Appendix C: MS4 Stormwater Infrastructure Maps



This Map is a representation of features on the ground and is not survey-grade accurate.



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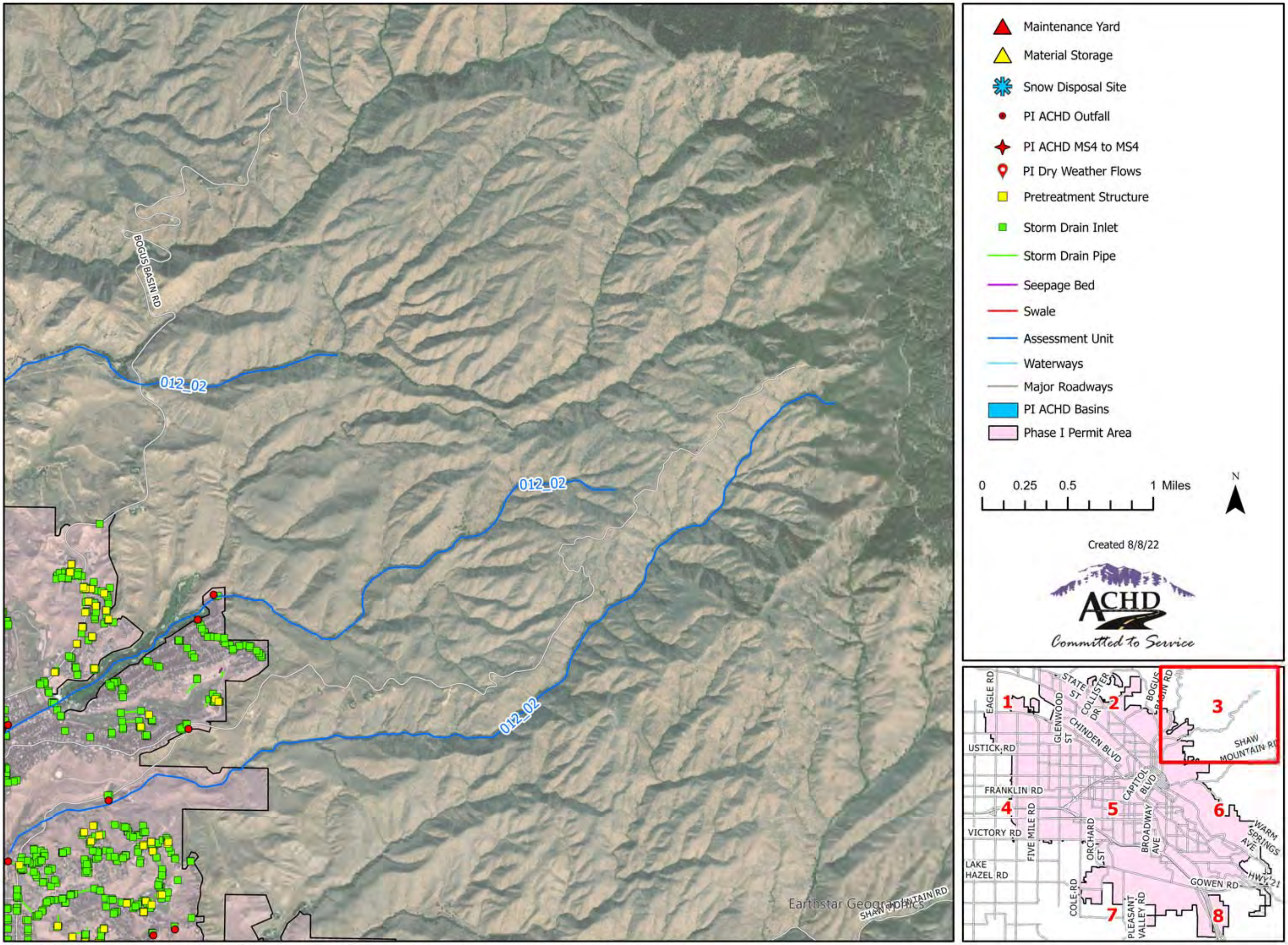

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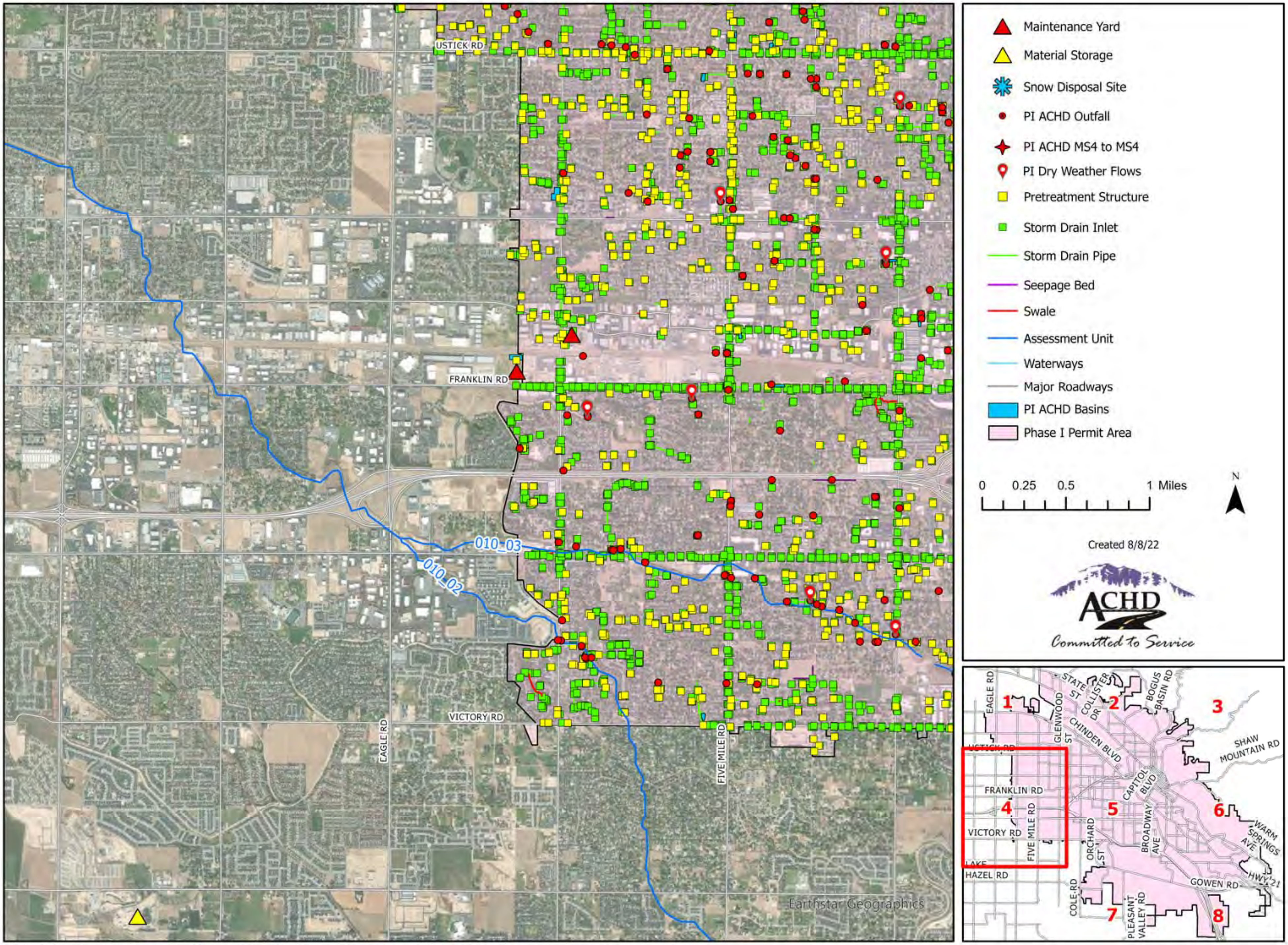

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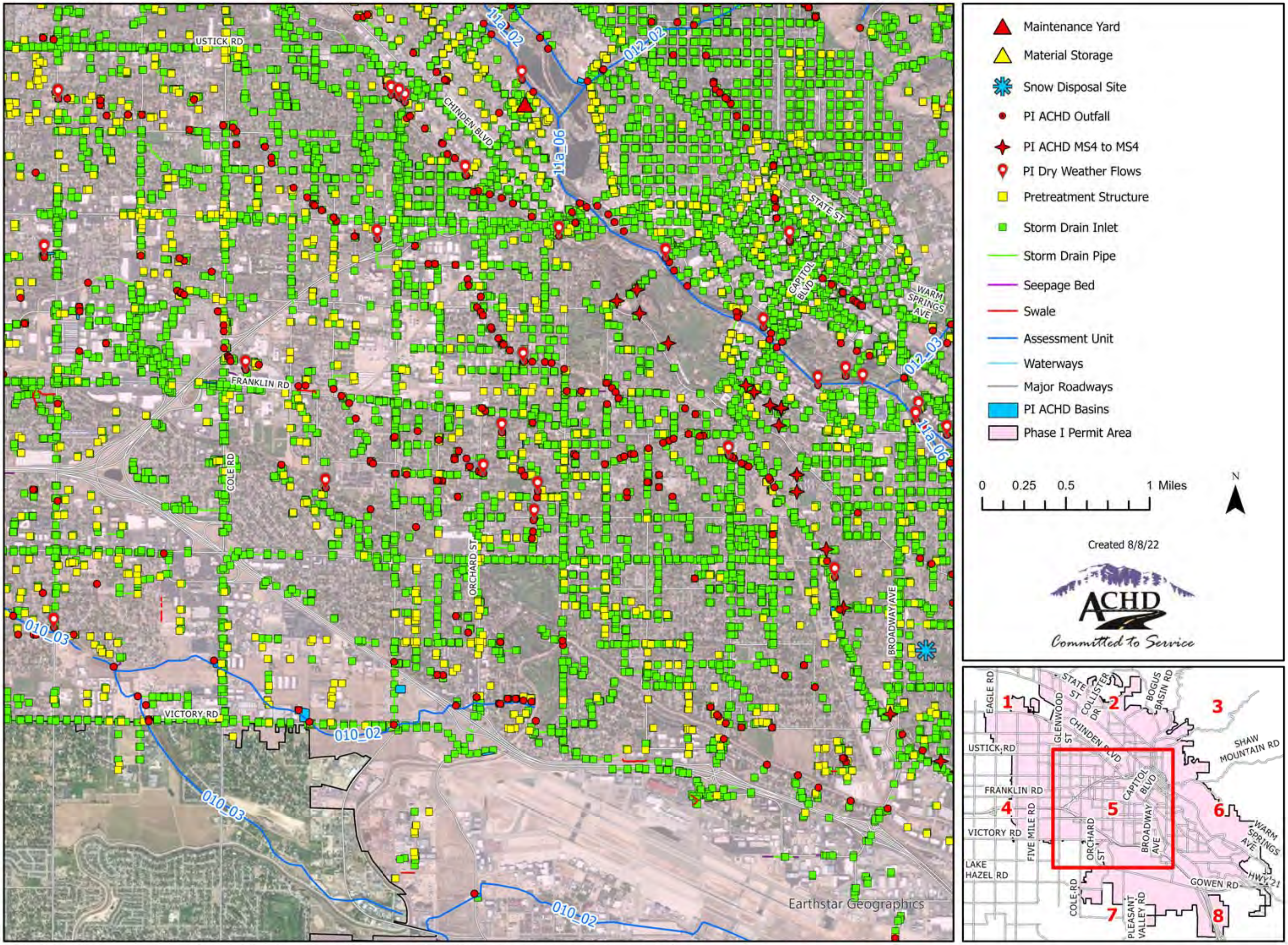

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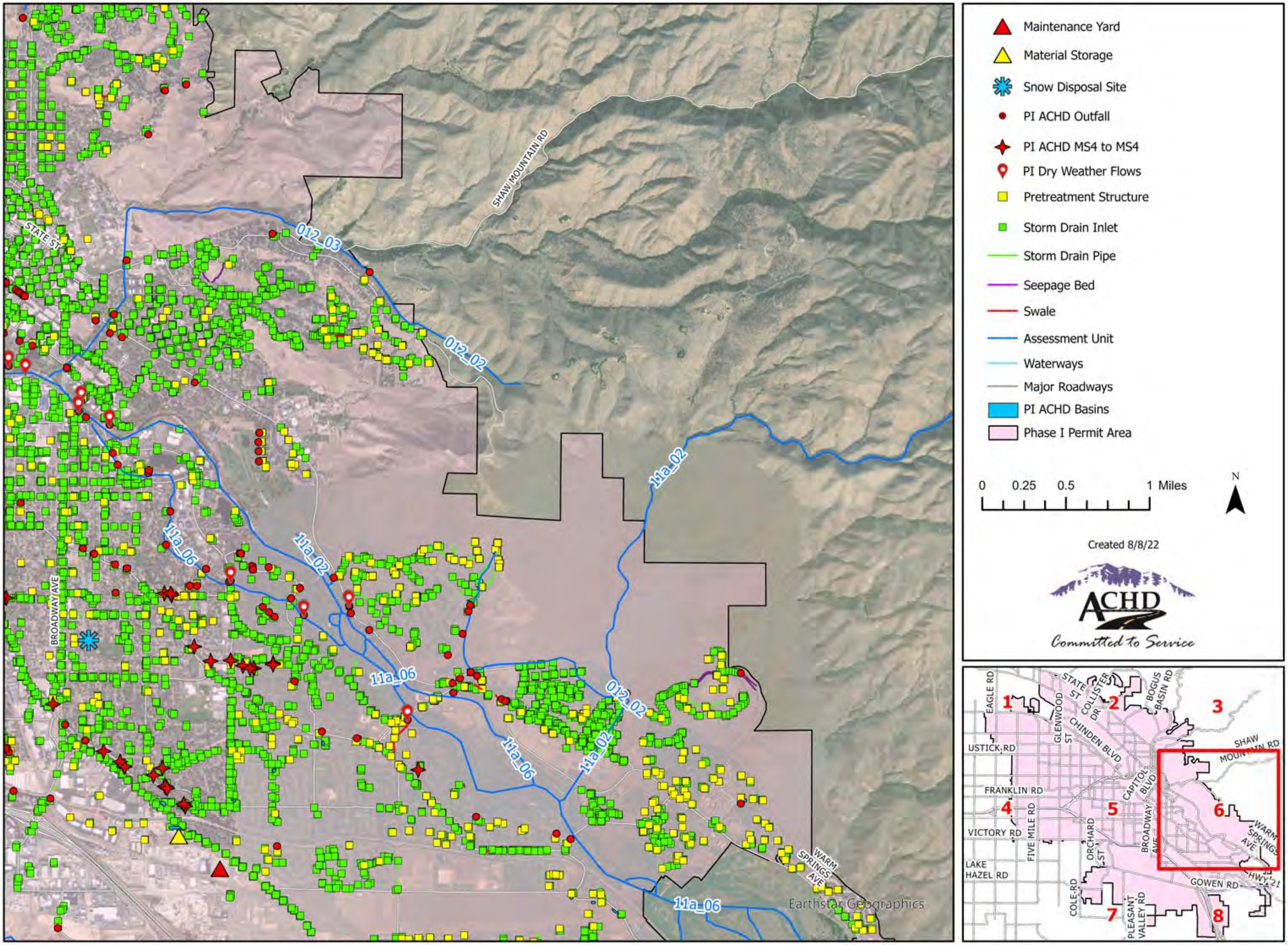

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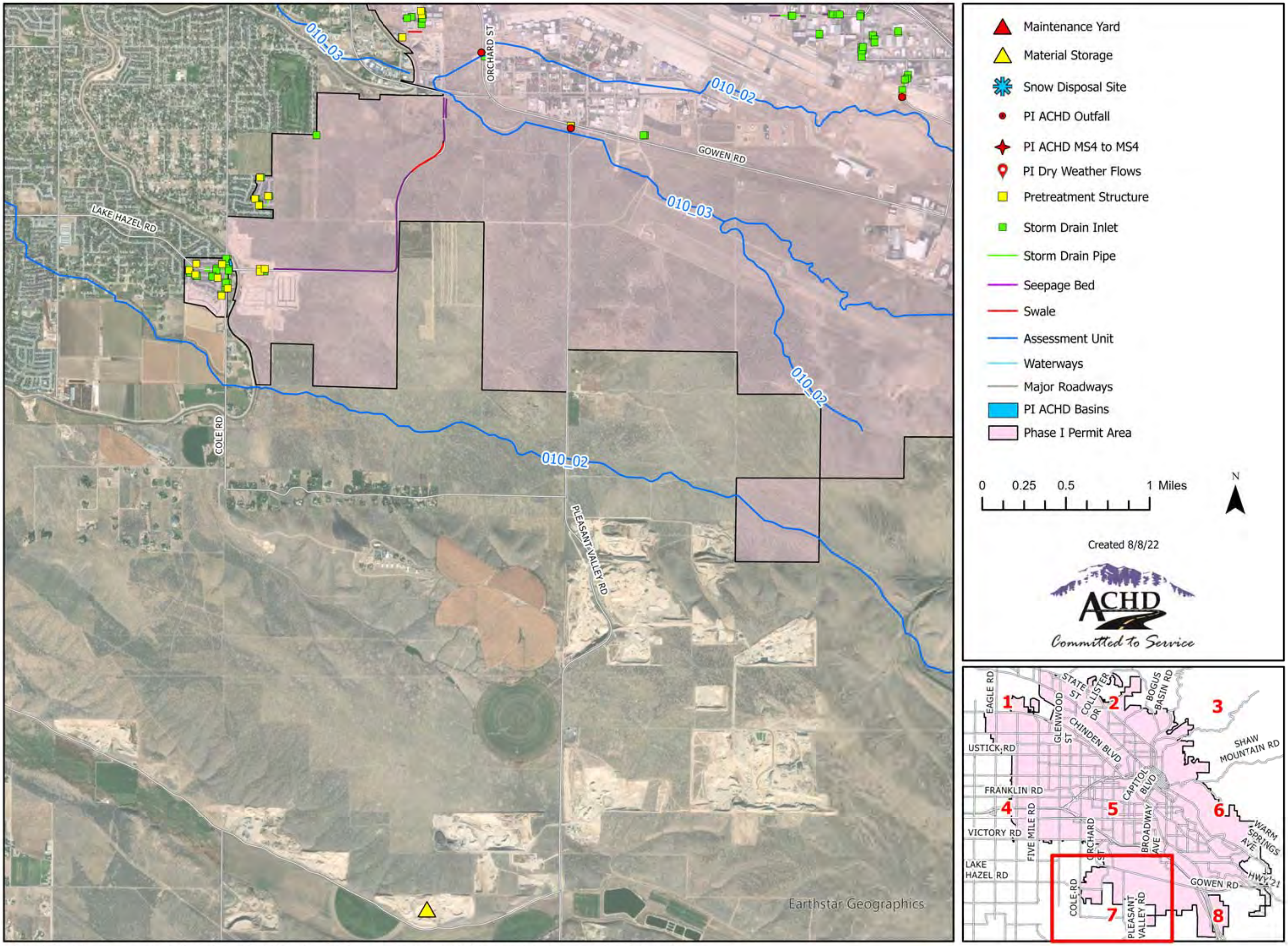
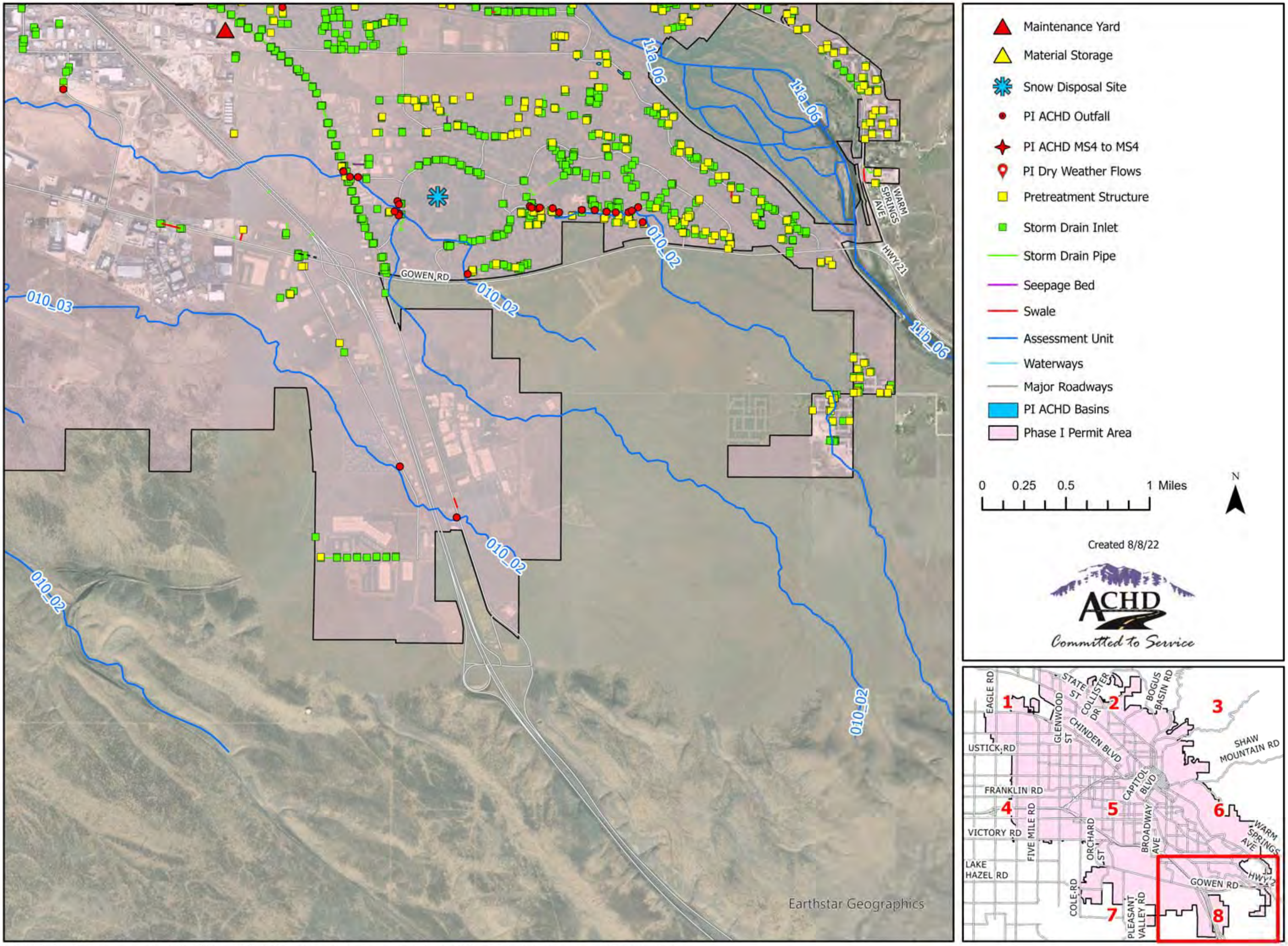


This Map is a representation of features on the ground and is not survey-grade accurate.



This Map is a representation of features on the ground and is not survey-grade accurate.

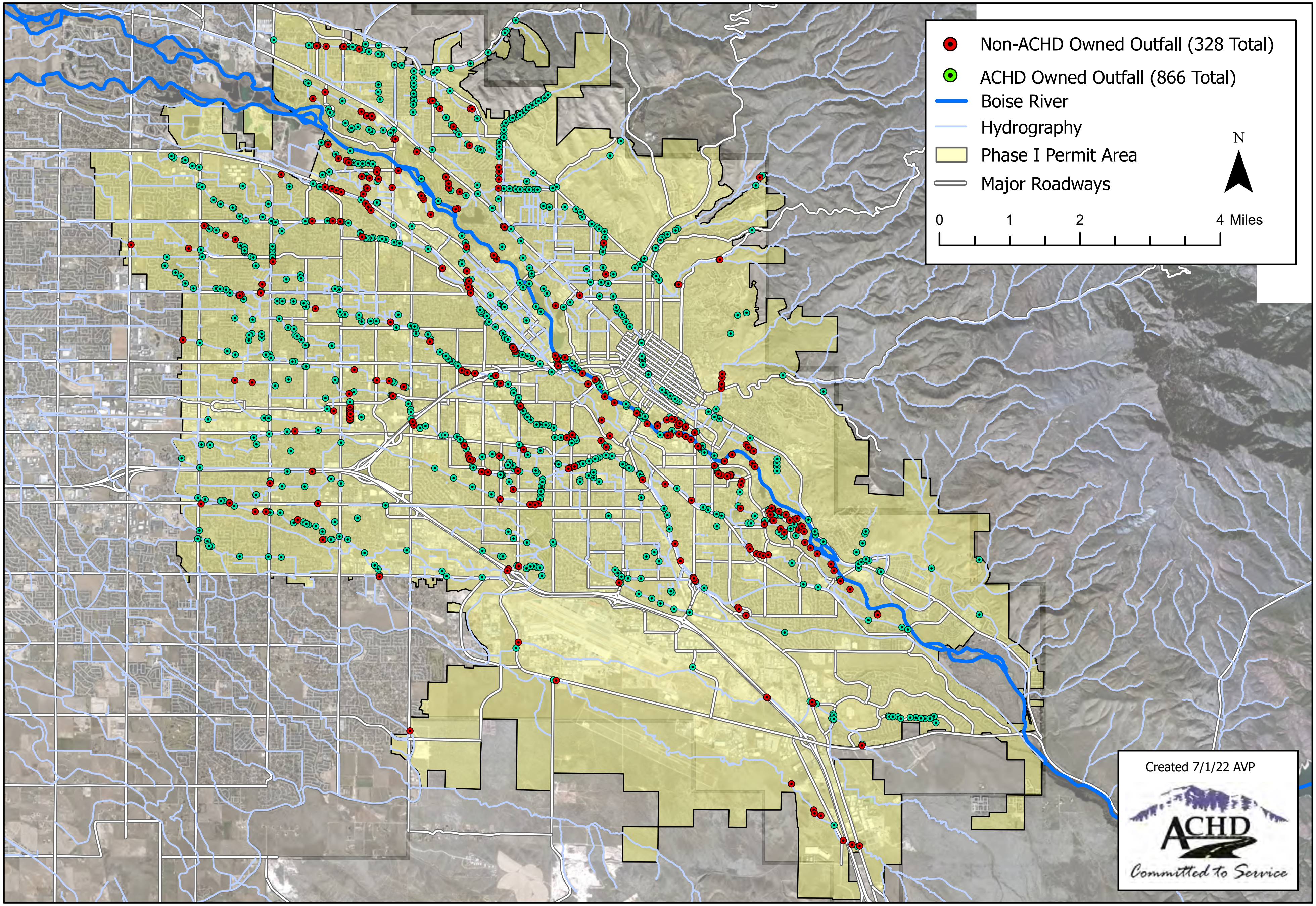
Table 1. 2022 Integrated Report Assessment Unit and Use Impairments

Receiving Water Body	Assessment Unit	Location	Use Impairment*	Assessment Unit Status Report
Boise River	ID17050114SW005_06	Boise River - Veterans Memorial Parkway to Star Bridge	Temperature	Link
	ID17050114SW011a_06	Boise River - Diversion Dam to Veterans Memorial Parkway	Temperature	Link
Fivemile Creek	ID17050114SW010_03	Fivemile Creek - 3rd order	Chlorpyrifos	Link
Tenmile Creek	ID17050114SW008_03	Tenmile Creek - 3rd order below Blacks Creek Reservioir	Chlorpyrifos	Link
Stewart Gulch, Cottonwood, and Crane Creeks	ID17050114SW012_02	Stewart Gulch, Cottonwood and Crane Creeks - 2nd order	Combined Biota/Habitat Bioassessments	Link
Cottonwood Creek	ID17050114SW012_03	Cottonwood Creek - 3rd order (Fivemile Creek to Boise River)	Combined Biota/Habitat Bioassessments	Link

*Use impairments are determined by the Idaho Department of Environmental Quality and have been reported in the Idaho 2022 Integrated Report.

Appendix D: Phase I Outfall Inventory, Map, and Dry Weather Irrigation and Groundwater Flows

Phase I Outfall Inventory
October 1, 2021 - July 1, 2022



2022 Outfall Inventory Phase I Permit Area Ada County, Idaho

#	OUTFALL ID	OWNERSHIP	RECEIVING WATER	PIPE DIAMETER	PIPE TYPE	LATITUDE	LONGITUDE
1	2n2e01_001	Private	Fivemile Creek	12	PVC	43.532954	-116.16541
2	2n2e06_001	Private	New York Canal	10	CMP	43.543632	-116.273911
3	2n2e12_001	Private	Fivemile Creek	0	Concrete Ditch	43.527801	-116.159262
4	2n2e12_002	Private	Fivemile Creek	36	Open Concrete Slot	43.526661	-116.157253
5	2n2e12_003	Private	Fivemile Creek	6	PVC	43.52711	-116.159054
6	2n3e06_001	ACHD	Fivemile Creek	24	RCP	43.541163	-116.145624
7	2n3e06_002	Private	Fivemile Creek	12	PVC	43.322814	-116.844449
8	2n3e07_001	Private	Fivemile Creek	12	CMP	43.52074	-116.14838
9	2n3e07_003	ACHD	Fivemile Creek	10	CMP	43.52466	-116.153504
10	2n3e07_004	Private	Fivemile Creek	36	CMP	43.520459	-116.146254
11	2n3e07_005	Private	Fivemile Creek	10	ADS	43.521553	-116.150884
12	2n3e07_006	ACHD, Private	Fivemile Creek	15	CMP	43.520282	-116.146716
13	3n1e01_001	ACHD	North Slough	12	CMP	43.629443	-116.293011
14	3n1e01_003	ACHD	North Slough	12	PVC	43.629154	-116.289212
15	3n1e01_004	ACHD	North Slough	10	PVC	43.628009	-116.288173
16	3n1e01_005	ACHD	Fitz Lateral	12	RCP	43.627214	-116.274478
17	3n1e01_006	ACHD	North Slough	12	CMP	43.628044	-116.284306
18	3n1e01_007	ACHD	North Slough	10	CMP	43.628041	-116.284129
19	3n1e01_008	ACHD	North Slough	10	RCP	43.62812	-116.285846
20	3n1e01_009	Private	Karnes Lateral	15	ADS	43.627914	-116.280152
21	3n1e01_010	ACHD	North Slough	24	RCP	43.629421	-116.294095
22	3n1e01_011	ACHD	North Slough	6	PVC	43.628071	-116.285832
23	3n1e01_012	ACHD	North Slough	12	PVC	43.626928	-116.278471
24	3n1e01_015	ACHD	Eggers Lateral	12	RCP	43.628918	-116.289175
25	3n1e01_016	ACHD, Irrigation	Eaggers Lateral	12	PVC	43.626803	-116.278482
26	3n1e01_017	ACHD	Unnamed	12	CMP	43.629466	-116.277957
27	3n1e01_018	ACHD	Unnamed	12	PVC	43.62944	-116.277993
28	3n1e02_001	ACHD	North Slough	12	CMP	43.632194	-116.312362
29	3n1e02_002	ACHD	North Slough	12	CMP	43.632125	-116.307832
30	3n1e02_003	ACHD	North Slough	12	CMP	43.631707	-116.30484
31	3n1e02_004	ACHD	North Slough	12	PVC	43.631755	-116.30433
32	3n1e02_005	ACHD	North Slough	12	RCP	43.619636	-116.307224
33	3n1e02_006	Irrigation	North Slough	0	open ditch	43.630625	-116.301532
34	3n1e02_008	ACHD	South Slough	24	CMP	43.619647	-116.307924
35	3n1e02_009	ACHD	North Slough	12	CMP	43.632136	-116.310906
36	3n1e02_010	ACHD	Milk Lateral	12	PVC	43.621233	-116.31454
37	3n1e02_011	ACHD	South Slough	10	CMP	43.620426	-116.314123
38	3n1e02_012	ACHD	North Slough	12	PVC	43.630827	-116.304226
39	3n1e02_013	ACHD	North Slough	12	PVC	43.629796	-116.294401
40	3n1e02_014	ACHD	North Slough	12	CMP	43.632078	-116.310905
41	3n1e02_031	Irrigation	Settlers Canal	12	CMP	43.63378	-116.317067
42	3n1e02_032	ACHD	Sargent Drain	10	PVC	43.623063	-116.304321
43	3n1e02_033	ACHD	Sargent Drain	12	PVC	43.623072	-116.304115
44	3n1e02_034	ACHD	Unnamed	12	CMP	43.623016	-116.296793
45	3n1e02_035	ACHD	Sargent Drain	12	CMP	43.624847	-116.306638
46	3n1e02_036	ACHD	Sargent Drain	15	CMP	43.6251	-116.307237
47	3n1e02_037	ACHD	Unnamed	0	S/G trap	43.626376	-116.307562
48	3n1e02_038	ACHD	Sargent Drain	12	CMP	43.626657	-116.309244
49	3n1e02_039	ACHD, Irrigation	Sargent Drain	12	PVC	43.628468	-116.311765
50	3n1e02_040	ACHD	Sargent Drain	12	PVC	43.624178	-116.305435
51	3n1e03_001	ACHD	North Slough	12	PVC	43.633697	-116.325983
52	3n1e03_002	Irrigation	North Slough	12	CMP	43.633252	-116.323236
53	3n1e03_003	Irrigation	North Slough	12	RCP	43.633229	-116.323039
54	3n1e03_004	Irrigation	North Slough	30	CMP	43.633296	-116.32281
55	3n1e03_007	ACHD	Milk Lateral	10	PVC	43.625193	-116.316777
56	3n1e03_008	ACHD	Milk Lateral	12	CMP	43.624515	-116.316755
57	3n1e03_009	ACHD	Milk Lateral	15	CMP	43.625317	-116.319503
58	3n1e03_010	ACHD	Settlers Canal	18	CMP	43.625019	-116.320295
59	3n1e03_011	ACHD	South Slough	8	PVC	43.620955	-116.324265
60	3n1e03_012	ACHD	South Slough	12	CMP	43.623412	-116.334284
61	3n1e03_013	ACHD	South Slough	8	RCP	43.621524	-116.326115
62	3n1e03_014	ACHD	Settlers Canal	12	CMP	43.623959	-116.320388
63	3n1e03_015	ACHD	Settlers Canal	12	CMP	43.628237	-116.3193
64	3n1e03_016	ACHD	Milk Lateral	12	PVC	43.62854	-116.324364
65	3n1e03_017	ACHD	South Slough	36	RCP	43.621049	-116.315621
66	3n1e03_018	ACHD, Private	Sargent Drain	12	RCP	43.632505	-116.32194
67	3n1e03_019	ACHD	Sargent Drain	12	RCP	43.632467	-116.321939
68	3n1e04_001	Irrigation	South Slough	18	PVC	43.623973	-116.339084
69	3n1e10_001	Private	Cloverdale Lateral	12	CMP	43.615289	-116.319308

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#	OUTFALL ID	OWNERSHIP	RECEIVING WATER	PIPE DIAMETER	PIPE TYPE	LATITUDE	LONGITUDE
70	3n1e10_002	Private	Cloverdale Lateral	6	PVC	43.615693	-116.324262
71	3n1e10_003	ACHD	Settlers Canal	6	CMP	43.607989	-116.315947
72	3n1e10_004	ACHD	Gruber Lateral	18	CMP	43.607587	-116.332032
73	3n1e10_006	ACHD	Settlers Canal	8	ADS	43.607906	-116.314438
74	3n1e10_007	ACHD	Settlers Canal	18	PVC	43.607924	-116.314398
75	3n1e10_009	ACHD	Settlers Canal	24	PVC	43.607927	-116.314468
76	3n1e11_001	ACHD	Ridenbaugh Canal	12	RCP	43.605546	-116.300505
77	3n1e11_002	ACHD	Chaffin Drain	12	RCP	43.609889	-116.29809
78	3n1e11_003	ACHD	South Slough	12	RCP	43.618679	-116.304297
79	3n1e11_004	ACHD	South Slough	24	RCP	43.61866	-116.303999
80	3n1e11_005	ACHD	Cloverdale Lateral	12	CMP	43.612191	-116.298458
81	3n1e11_007	ACHD	Ridenbaugh Canal	18	RCP	43.605228	-116.309309
82	3n1e11_008	Private	Chaffin Drain	12	PVC	43.609507	-116.296134
83	3n1e11_009	ACHD	Finch Lateral	15	SMP	43.615983	-116.29569
84	3n1e11_010	ACHD	Finch Lateral	15	PVC	43.615914	-116.295766
85	3n1e11_011	ACHD	Finch Lateral	12	CMP	43.615717	-116.29568
86	3n1e11_012	ACHD	South Slough	12	PVC	43.618695	-116.30429
87	3n1e11_013	Irrigation	Ridenbaugh Canal	24	RCP	43.605308	-116.307072
88	3n1e11_014	ACHD	Unnamed	12	PVC	43.614642	-116.312795
89	3n1e11_015	ACHD	Unnamed	12	PVC	43.615931	-116.309023
90	3n1e12_001	ACHD	South Slough	15	CMP	43.61452	-116.275677
91	3n1e12_002	Private	South Slough	0	open ditch	43.614617	-116.276343
92	3n1e12_003	ACHD	South Slough	16	CMP	43.61547	-116.279037
93	3n1e12_004	ACHD	South Slough	12	CMP	43.615688	-116.279576
94	3n1e12_005	ACHD	South Slough	12	RCP	43.615887	-116.284129
95	3n1e12_006	Private	South Slough	10	RCP	43.618025	-116.290365
96	3n1e12_008	ACHD	Ridenbaugh Canal	12	CMP	43.61342	-116.290592
97	3n1e12_009	ACHD, Railroad	South Slough	12	PVC	43.611481	-116.291438
98	3n1e12_010	Private, Irrigation	South Slough	18	RCP	43.609303	-116.291416
99	3n1e12_011	Private	South Slough	24	CMP	43.613115	-116.29178
100	3n1e12_012	Private	South Slough	12	RCP	43.608059	-116.291543
101	3n1e12_013	ACHD	South Slough	24	RCP	43.607713	-116.291462
102	3n1e12_014	Private	South Slough	12	CMP	43.607965	-116.291559
103	3n1e12_015	Private	South Slough	8	PVC	43.608734	-116.291542
104	3n1e12_016	Private	South Slough	8	PVC	43.6086	-116.291529
105	3n1e12_017	Private	South Slough	8	PVC	43.608948	-116.29152
106	3n1e12_018	Private	South Slough	8	PVC	43.609096	-116.291536
107	3n1e12_019	Private	South Slough	8	PVC	43.609295	-116.291547
108	3n1e12_020	Private	South Slough	8	PVC	43.610184	-116.291497
109	3n1e12_021	ACHD	Ridenbaugh Canal	8	PVC	43.61285	-116.279823
110	3n1e12_022	ACHD	Ridenbaugh Canal	12	RCP	43.612678	-116.279448
111	3n1e12_023	ACHD	Ridenbaugh Canal	12	RCP	43.612724	-116.279362
112	3n1e12_024	ACHD	Ridenbaugh Canal	18	RCP	43.61252	-116.279042
113	3n1e12_025	ACHD	Ridenbaugh Canal	15	RCP	43.611118	-116.274982
114	3n1e12_027	Private	South Slough	12	RCP	43.615886	-116.283926
115	3n1e12_028	ACHD	Ridenbaugh Canal	12	PVC	43.609911	-116.274268
116	3n1e12_029	ACHD	Ridenbaugh Canal	12	PVC	43.609395	-116.274243
117	3n1e12_030	ACHD	Ridenbaugh Canal	12	RCP	43.607977	-116.274198
118	3n1e12_031	Private	South Slough	12	PVC	43.610283	-116.291448
119	3n1e12_032	Private	South Slough	8	PVC	43.610065	-116.291412
120	3n1e12_033	Private	South Slough	8	PVC	43.609258	-116.29142
121	3n1e12_034	Private	South Slough	8	PVC	43.609174	-116.291443
122	3n1e12_035	Private	South Slough	8	PVC	43.609144	-116.291436
123	3n1e12_036	Private	South Slough	8	PVC	43.608924	-116.291325
124	3n1e12_037	Private	South Slough	8	PVC	43.608904	-116.291386
125	3n1e12_038	Private	South Slough	12	CMP	43.6088	-116.291426
126	3n1e12_039	Private	South Slough	8	PVC	43.608559	-116.291441
127	3n1e12_040	Private	South Slough	12	CMP	43.608262	-116.291439
128	3n1e12_041	Private	South Slough	8	PVC	43.607758	-116.291529
129	3n1e12_042	Private	South Slough	8	PVC	43.609439	-116.291527
130	3n1e12_043	Private	South Slough	8	PVC	43.609594	-116.291541
131	3n1e12_044	Private	South Slough	8	PVC	43.609816	-116.29153
132	3n1e12_045	Private	South Slough	8	PVC	43.610014	-116.291528
133	3n1e12_046	Private	Ridenbaugh Canal	8	RCP	43.612779	-116.279544
134	3n1e12_047	Private	Ridenbaugh Canal	12	PVC	43.612663	-116.27943
135	3n1e12_048	Private	Ridenbaugh Canal	12	CMP	43.612714	-116.279306
136	3n1e12_049	Irrigation	South Slough	12	CMP	43.365682	-116.164951
137	3n1e12_050	ACHD	South Slough	6	RCP	43.363981	-116.172917
138	3n1e12_051	ACHD	Unnamed	12	PVC	43.608289	-116.288269

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#	OUTFALL ID	OWNERSHIP	RECEIVING WATER	PIPE DIAMETER	PIPE TYPE	LATITUDE	LONGITUDE
139	3n1e13_002	ACHD	Farmers Lateral	12	CMP	43.603016	-116.293979
140	3n1e13_003	ACHD	Unnamed	12	PVC	43.594593	-116.293921
141	3n1e14_001	ACHD	Unnamed	15	CMP	43.596998	-116.301944
142	3n1e14_002	Irrigation	Unnamed	21	RCP	43.596991	-116.302176
143	3n1e14_005	ACHD	Huntington Lateral	12	CMP	43.593936	-116.310805
144	3n1e14_006	ACHD	Wilson Fruit Lateral	15	CMP	43.597	-116.309135
145	3n1e14_007	ACHD	Unnamed	10	CMP	43.601224	-116.308224
146	3n1e14_008	ACHD	Huntington Lateral	12	CMP	43.593911	-116.304217
147	3n1e14_009	Whitney Fire District	Farmers Lateral	12	PVC	43.590398	-116.300483
148	3n1e14_010	Private	Unnamed	12	CMP	43.35403	-116.185072
149	3n1e14_011	ACHD	Unnamed	12	PVC	43.35404	-116.18507
150	3n1e14_012	ACHD	Unnamed	12	CMP	43.594986	-116.314111
151	3n1e14_013	ACHD	Unnamed	0	Drop Inlet	43.354247	-116.185068
152	3n1e14_014	ACHD	Unnamed	0	Drop Inlet	43.595547	-116.296705
153	3n1e14_015	ACHD	Unnamed	0	Drop Inlet	43.595567	-116.296834
154	3n1e15_001	ACHD, Irrigation	Ridenbaugh Canal	12	CMP	43.603942	-116.318706
155	3n1e15_003	Irrigation	Fivemile Creek	18	RCP	43.590379	-116.325521
156	3n1e15_004	ACHD	Fivemile Creek	18	RCP	43.590816	-116.328195
157	3n1e15_005	ACHD	Fivemile Creek	12	CMP	43.591083	-116.332417
158	3n1e15_008	ACHD	Ridenbaugh Canal	16	CMP	43.602428	-116.331167
159	3n1e15_009	ACHD	Ridenbaugh Canal	12	RCP	43.604722	-116.314419
160	3n1e15_011	ACHD	Snider Lateral	24	RCP	43.597652	-116.333978
161	3n1e15_012	ACHD	Ridenbaugh Canal	15	CMP	43.602435	-116.333586
162	3n1e15_013	ACHD	Fivemile Creek	12	HDPE	43.352695	-116.194074
163	3n1e15_014	ACHD	Fivemile Creek	12	HDPE	43.352752	-116.193817
164	3n1e15_015	Irrigation	Fivemile Creek	15	PVC	43.590391	-116.32552
165	3n1e15_016	ACHD	Unnamed	0	Drop Inlet	43.592084	-116.318035
166	3n1e15_017	ACHD	Unnamed	0	Drop Inlet	43.592144	-116.317929
167	3n1e15_018	ACHD	Unnamed	12	CMP	43.602573	-116.317969
168	3n1e15_019	Irrigation	Fivemile Creek	12	PVC	43.590442	-116.325547
169	3n1e15_020	ACHD, Irrigation	Ridenbaugh Canal	0	Open Ditch	43.60232	-116.331132
170	3n1e16_003	ACHD	Ridenbaugh Canal	12	PVC	43.599271	-116.339224
171	3n1e16_013	ACHD	Fivemile Creek	24	PVC	43.591442	-116.334502
172	3n1e21_010	ACHD	Eightmile Creek	24	CMP	43.582972	-116.334509
173	3n1e22_001	ACHD	Fivemile Creek	24	PVC	43.588699	-116.314528
174	3n1e22_002	ACHD	Fivemile Creek	15	PVC	43.588646	-116.314659
175	3n1e22_003	Private	Fivemile Creek	30	RCP	43.588628	-116.318178
176	3n1e22_004	Irrigation	Ridenbaugh Canal	18	RCP	43.590223	-116.333447
177	3n1e22_005	Irrigation	Fivemile Creek	12	CMP	43.588639	-116.315191
178	3n1e22_006	ACHD	Eightmile Creek	12	PVC	43.581392	-116.331157
179	3n1e22_007	ACHD	Eightmile Creek	15	PVC	43.581496	-116.331259
180	3n1e22_008	ACHD	Eightmile Creek	12	PVC	43.582489	-116.33168
181	3n1e22_009	ACHD	Eightmile Creek	12	PVC	43.582947	-116.334128
182	3n1e22_010	ACHD	Ridenbaugh Canal	12	RCP	43.584704	-116.334011
183	3n1e22_011	ACHD	Fivemile Creek	14	PVC	43.589752	-116.324176
184	3n1e22_012	ACHD	Eightmile Creek	12	PVC	43.581477	-116.330502
185	3n1e22_013	ACHD	Unnamed	24	PVC	43.579345	-116.314405
186	3n1e22_014	ACHD	Unnamed	24	CMP	43.579376	-116.322529
187	3n1e23_001	ACHD	Fivemile Creek	15	PVC	43.588445	-116.311104
188	3n1e23_002	Private	Fivemile Creek	12	CMP	43.587012	-116.306102
189	3n1e23_003	ACHD	Fivemile Creek	12	PVC	43.586418	-116.307283
190	3n1e23_004	ACHD	Fivemile Creek	36	RCP	43.583658	-116.294261
191	3n1e23_005	ACHD	Farmers Lateral	12	PVC	43.586632	-116.295604
192	3n1e23_006	ACHD	Fivemile Creek	12	RCP	43.583006	-116.296361
193	3n1e23_007	ACHD	Fivemile Creek	12	RCP	43.583011	-116.296662
194	3n1e23_008	Irrigation	Fivemile Creek	12	ADS	43.582956	-116.299001
195	3n1e23_009	ACHD	Fivemile Creek	10	HDPE	43.584643	-116.299114
196	3n1e23_010	ACHD	Fivemile Creek	12	RCP	43.585759	-116.300995
197	3n1e23_011	ACHD	Fivemile Creek	12	RCP	43.586052	-116.303081
198	3n1e23_012	ACHD	Fivemile Creek	12	RCP	43.586219	-116.3037
199	3n1e23_013	ACHD	Fivemile Creek	12	CMP	43.58654	-116.304529
200	3n1e23_014	ACHD	Fivemile Creek	12	HDPE	43.583026	-116.298523
201	3n1e23_015	ACHD	Unnamed	36	PVC	43.579285	-116.310755
202	3n1e23_016	ACHD	Fivemile Creek	12	CMP	43.588456	-116.313941
203	3n1e24_001	ACHD	Threemile Creek	24	RCP	43.580884	-116.275158
204	3n1e24_002	ACHD	Fivemile Creek	18	PVC	43.575753	-116.282844
205	3n1e24_003	ACHD	Fivemile Creek	12	PVC	43.575755	-116.282934
206	3n1e24_004	ACHD	Fivemile Creek	12	PVC	43.575594	-116.282905
207	3n1e24_005	Private	Fivemile Creek	0	open ditch	43.57545	-116.282837

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#	OUTFALL ID	OWNERSHIP	RECEIVING WATER	PIPE DIAMETER	PIPE TYPE	LATITUDE	LONGITUDE
208	3n1e24_006	ACHD	Fivemile Creek	12	CMP	43.576993	-116.283236
209	3n1e24_007	ACHD	Fivemile Creek	24	CMP	43.577748	-116.28422
210	3n1e24_008	ACHD	Fivemile Creek	0	Open Ditch	43.580285	-116.287117
211	3n1e24_009	ACHD, Irrigation	Unnamed	0	Open Ditch	43.587442	-116.289168
212	3n1e24_010	ACHD	Farmers Lateral	12	PVC	43.583041	-116.291894
213	3n1e24_011	ACHD	Penninger Lateral	12	RCP	43.59012	-116.281232
214	3n2e02_001	ACHD	Unnamed	12	CMP	43.625948	-116.183577
215	3n2e02_002	ACHD	Unnamed	12	CMP	43.629759	-116.181601
216	3n2e02_003	ACHD	Unnamed	12	CMP	43.630274	-116.179077
217	3n2e03_001	ACHD	Boise City Canal	12	CMP	43.62822	-116.213226
218	3n2e03_002	ACHD	Boise City Canal	10	CMP	43.627307	-116.212157
219	3n2e03_007	ACHD	Boise City Canal	6	RCP	43.621019	-116.208697
220	3n2e03_008	ACHD	Boise City Canal	4	PVC	43.619429	-116.208457
221	3n2e03_009	ACHD	Boise City Canal	12	CMP	43.620389	-116.208596
222	3n2e03_015	ACHD	Boise City Canal	8	CMP	43.621235	-116.208818
223	3n2e03_016	ACHD	Boise City Canal	12	RCP	43.624076	-116.208876
224	3n2e03_017	ACHD	Boise City Canal	12	RCP	43.623974	-116.208874
225	3n2e04_001	ACHD	Unnamed	18	RCP	43.619001	-116.232353
226	3n2e04_002	Private	Unnamed	12	RCP	43.619182	-116.232484
227	3n2e04_003	ITD	Unnamed	12	RCP	43.61935	-116.232672
228	3n2e04_005	ACHD, Private	Unnamed	10	CMP	43.620162	-116.232909
229	3n2e04_007	Private	Unnamed	18	Open Concrete Slot	43.620685	-116.232904
230	3n2e04_008	ACHD	Boise River	10	RCP	43.620334	-116.231082
231	3n2e04_009	ACHD	Boise River	30	CMP	43.619709	-116.228496
232	3n2e04_010	ACHD	Boise River	36	RCP	43.620449	-116.229804
233	3n2e04_011	ACHD, ITD	Boise River	18	RCP	43.619047	-116.22758
234	3n2e04_012	Private	Boise River	18	RCP	43.620886	-116.230584
235	3n2e04_013	ACHD	Boise City Canal	12	CMP	43.630304	-116.215301
236	3n2e04_014	ACHD, ITD	Unnamed	42	RCP	43.618961	-116.232389
237	3n2e04_015	ACHD	Lowell Drain	15	CMP	43.633519	-116.217026
238	3n2e04_016	ACHD	Crane Creek	36	CMP	43.631227	-116.231048
239	3n2e04_017	ACHD	Boise City Canal	6	RCP	43.629361	-116.214057
240	3n2e04_018	ACHD	Boise City Canal	6	RCP	43.629723	-116.214426
241	3n2e04_019	ACHD	Boise City Canal	12	PVC	43.629827	-116.214571
242	3n2e04_020	ACHD	Boise City Canal	6	RCP	43.630578	-116.215781
243	3n2e04_021	ACHD	Boise City Canal	6	RCP	43.631108	-116.216054
244	3n2e04_022	ACHD	Boise City Canal	6	RCP	43.631241	-116.216065
245	3n2e04_023	ITD	Crane Creek	18	CMP	43.631559	-116.233323
246	3n2e04_024	ACHD	Crane Creek	12	RCP	43.632257	-116.229174
247	3n2e04_026	Private	Boise River	6	RCP	43.37167	-116.135994
248	3n2e04_027	ACHD	Crane Creek	15	PVC	43.632205	-116.229234
249	3n2e04_028	ACHD	Unnamed	12	PVC	43.633544	-116.220862
250	3n2e04_029	ACHD	Boise River	12	PVC	43.620661	-116.231888
251	3n2e05_001	ACHD	Davis Drain	24	SMP	43.62309	-116.245492
252	3n2e05_002	ACHD, Irrigation	Settlers Canal	16	CMP	43.624858	-116.24765
253	3n2e05_006	ACHD, Private	Thurman Mill Canal	0	Drop Inlet	43.631217	-116.247823
254	3n2e05_008	ACHD	Settlers Canal	12	CMP	43.62793	-116.252567
255	3n2e05_009	ACHD, Private	Davis Drain	12	CMP	43.627052	-116.250396
256	3n2e05_010	ACHD, Private	Davis Drain	12	CMP	43.625751	-116.248304
257	3n2e05_011	ACHD	Boise River	18	PVC	43.631328	-116.238889
258	3n2e05_012	ACHD	Thurman Mill Canal	0	open ditch	43.628441	-116.241564
259	3n2e05_013	ACHD	Settlers Canal	16	PVC	43.621688	-116.244544
260	3n2e05_014	ACHD, ITD	Davis Drain	12	PVC	43.621391	-116.242502
261	3n2e05_015	ACHD	Davis Drain	12	ADS	43.619599	-116.237613
262	3n2e05_017	ACHD, Private	Davis Drain	12	PVC	43.620727	-116.239858
263	3n2e05_018	ACHD, Private	Davis Drain	12	PVC	43.621137	-116.241176
264	3n2e05_019	ACHD	Davis Drain	15	RCP	43.621657	-116.24392
265	3n2e05_020	Private	Davis Drain	4	PVC	43.622551	-116.245023
266	3n2e05_021	Private	Davis Drain	4	PVC	43.622769	-116.2452
267	3n2e05_022	Private	Davis Drain	4	PVC	43.622368	-116.244875
268	3n2e05_023	ACHD	Davis Drain	12	PVC	43.622972	-116.2454
269	3n2e05_024	ACHD	Boise River	18	CMP	43.630338	-116.237409
270	3n2e05_025	ACHD	Thurman Mill Canal	12	RCP	43.631976	-116.249013
271	3n2e05_027	ACHD	Davis Drain	24	RCP	43.629319	-116.252786
272	3n2e05_028	ACHD	Thurman Mill Canal	12	RCP	43.633594	-116.251833
273	3n2e05_030	ACHD, Private	Davis Drain	12	PVC	43.372291	-116.144364
274	3n2e05_032	Private	Davis Drain	4	PVC	43.622895	-116.245321
275	3n2e05_033	Private	Davis Drain	4	PVC	43.622841	-116.245267
276	3n2e05_034	Private	Davis Drain	12	PVC	43.622794	-116.245218

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#	OUTFALL ID	OWNERSHIP	RECEIVING WATER	PIPE DIAMETER	PIPE TYPE	LATITUDE	LONGITUDE
277	3n2e05_035	Private	Davis Drain	4	PVC	43.622528	-116.24501
278	3n2e05_036	Private	Davis Drain	4	PVC	43.622491	-116.244983
279	3n2e05_037	Private	Davis Drain	4	PVC	43.622446	-116.244945
280	3n2e05_038	Private	Davis Drain	8	CMP	43.622032	-116.244638
281	3n2e05_039	ACHD	Davis Drain	10	CMP	43.62574	-116.248261
282	3n2e05_040	ACHD	Thurman Mill Canal	12	CMP	43.631294	-116.248022
283	3n2e05_041	ACHD	Thurman Mill Canal	12	CMP	43.631266	-116.248067
284	3n2e05_042	ACHD	Davis Drain	12	PVC	43.62811	-116.252168
285	3n2e05_043	ACHD	Davis Drain	12	PVC	43.624494	-116.246817
286	3n2e06_001	ACHD	North Slough	12	CMP	43.627157	-116.273281
287	3n2e06_002	ACHD	North Slough	12	CMP	43.626826	-116.272617
288	3n2e06_003	ACHD	Ash Lateral	0	open ditch	43.625533	-116.269439
289	3n2e06_006	ACHD	North Slough	12	CMP	43.623973	-116.26868
290	3n2e06_007	Private	North Slough	4	PVC	43.623979	-116.268923
291	3n2e06_008	ACHD	North Slough	18	CMP	43.621827	-116.266038
292	3n2e06_009	ACHD	Davis Drain	30	RCP	43.630707	-116.254993
293	3n2e06_010	ACHD, ITD	Davis Drain	30	RCP	43.630576	-116.254735
294	3n2e06_011	ACHD	Davis Drain	24	RCP	43.629828	-116.254616
295	3n2e06_012	ACHD	North Slough	36	RCP	43.620489	-116.263517
296	3n2e06_013	ACHD	North Slough	12	PVC	43.620413	-116.263605
297	3n2e06_014	ACHD	North Slough	0	Drop Inlet	43.620416	-116.263522
298	3n2e06_015	ACHD	North Slough	12	RCP	43.619966	-116.262662
299	3n2e06_016	ACHD	North Slough	24	RCP	43.619301	-116.261124
300	3n2e06_017	ACHD	North Slough	0	open ditch	43.621107	-116.264436
301	3n2e06_019	ACHD	Davis Drain	24	RCP	43.629699	-116.253481
302	3n2e06_020	ACHD	Davis Drain	12	RCP	43.629833	-116.25362
303	3n2e06_021	ACHD	Davis Drain	12	RCP	43.630286	-116.254381
304	3n2e06_022	ACHD	Ash Lateral	12	CMP	43.624451	-116.268696
305	3n2e06_023	ACHD	North Slough	0	Drop Inlet	43.625615	-116.272914
306	3n2e07_001	ACHD	North Slough	8	CMP	43.619021	-116.261046
307	3n2e07_002	Private	North Slough	0	open ditch	43.618036	-116.259838
308	3n2e07_003	Private	North Slough	12	CMP	43.617373	-116.256207
309	3n2e07_004	Private	North Slough	12	CMP	43.617629	-116.258278
310	3n2e07_005	ACHD	North Slough	12	PVC	43.617612	-116.258745
311	3n2e07_006	ACHD	Ridenbaugh Canal	0	open ditch	43.606483	-116.269997
312	3n2e07_009	ACHD, Railroad	Ridenbaugh Canal	24	CMP	43.606069	-116.271601
313	3n2e07_010	ACHD	Ridenbaugh Canal	12	CMP	43.606206	-116.27164
314	3n2e07_011	Private	Ridenbaugh Canal	0	open ditch	43.606689	-116.273355
315	3n2e07_012	ITD	Ridenbaugh Canal	36	RCP	43.607407	-116.273721
316	3n2e07_013	ACHD	Ridenbaugh Canal	10	CMP	43.607081	-116.273507
317	3n2e07_014	ACHD	Ridenbaugh Canal	10	CMP	43.607126	-116.273664
318	3n2e07_015	ACHD	Ridenbaugh Canal	8	PVC	43.60681	-116.273416
319	3n2e07_016	ACHD	North Slough	12	CMP	43.617705	-116.258735
320	3n2e07_019	ACHD	Ridenbaugh Canal	16	CMP	43.604728	-116.264476
321	3n2e07_020	ACHD	North Slough	30	CMP	43.617478	-116.25602
322	3n2e07_021	ACHD	Ridenbaugh Canal	18	PVC	43.607272	-116.273742
323	3n2e08_001	ACHD, Private	North Slough	12	CMP	43.611664	-116.24406
324	3n2e08_003	Private	North Slough	12	PVC	43.617048	-116.2502
325	3n2e08_004	ACHD	North Slough	24	CMP	43.617186	-116.251388
326	3n2e08_005	ACHD, Private	North Slough	12	CMP	43.364846	-116.14421
327	3n2e08_007	ACHD, Private	North Slough	12	CMP	43.611219	-116.243554
328	3n2e08_008	ACHD, Private	North Slough	0	Drop Inlet	43.611	-116.243288
329	3n2e08_009	ACHD	North Slough	12	PVC	43.608438	-116.240931
330	3n2e08_010	ACHD, Private	North Slough	4	PVC	43.608927	-116.241499
331	3n2e08_011	ACHD	North Slough	8	RCP	43.609736	-116.242289
332	3n2e08_012	ACHD	North Slough	10	CMP	43.609856	-116.242399
333	3n2e08_013	ACHD	North Slough	12	CMP	43.607925	-116.240104
334	3n2e08_014	ACHD	North Slough	15	CMP	43.606925	-116.237396
335	3n2e08_015	ACHD	North Slough	8	RCP	43.606904	-116.235543
336	3n2e08_016	ACHD	North Slough	6	CMP	43.606822	-116.235151
337	3n2e08_017	ACHD	North Slough	12	PVC	43.607081	-116.238706
338	3n2e08_018	ACHD	North Slough	12	PVC	43.606967	-116.238243
339	3n2e08_019	ACHD, Private	Settlers Canal	24	RCP	43.617969	-116.234202
340	3n2e08_020	ACHD	North Slough	10	CMP	43.615409	-116.249092
341	3n2e08_021	Private	North Slough	0	Drop Inlet	43.610684	-116.243063
342	3n2e08_022	Private	North Slough	0	Drop Inlet	43.61079	-116.243143
343	3n2e08_023	ACHD, Private	North Slough	24	CMP	43.611663	-116.243942
344	3n2e08_024	ACHD	North Slough	12	CMP	43.606277	-116.233544
345	3n2e08_025	ACHD	North Slough	12	RCP	43.615283	-116.246623

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#	OUTFALL ID	OWNERSHIP	RECEIVING WATER	PIPE DIAMETER	PIPE TYPE	LATITUDE	LONGITUDE
346	3n2e08_026	ACHD, Private	North Slough	10	CMP	43.615434	-116.249855
347	3n2e08_027	Private	North Slough	10	CMP	43.615424	-116.248842
348	3n2e08_028	ACHD	North Slough	12	CMP	43.613531	-116.245086
349	3n2e08_029	ACHD, Private	Tuttle Lateral	10	RCP	43.614039	-116.245213
350	3n2e08_030	ACHD	North Slough	12	PVC	43.608584	-116.241194
351	3n2e08_031	ACHD	North Slough	0	Drop Inlet	43.608384	-116.240877
352	3n2e08_032	Private	North Slough	0	Drop Inlet	43.610589	-116.243056
353	3n2e08_033	ACHD	North Slough	12	CMP	43.606925	-116.238533
354	3n2e08_034	ACHD	Unnamed	12	CMP	43.612525	-116.243614
355	3n2e09_007	Private	Drain E	0	open ditch	43.607957	-116.220052
356	3n2e09_014	ACHD	North Slough	6	RCP	43.604663	-116.227917
357	3n2e09_015	ACHD	North Slough	12	PVC	43.605137	-116.228683
358	3n2e09_016	Private	North Slough	0	Drop Inlet	43.604946	-116.228325
359	3n2e09_022	ACHD, ITD	Boise River	12	RCP	43.618267	-116.226634
360	3n2e09_023	Private	Boise River	12	PVC	43.616337	-116.221944
361	3n2e09_024	ACHD	Boise River	48	RCP	43.61601	-116.221631
362	3n2e09_025	ACHD	Boise River	42	RCP	43.615984	-116.221614
363	3n2e09_026	ACHD, Private	Boise River	10	RCP	43.615616	-116.221193
364	3n2e09_027	ACHD	Boise River	10	CMP	43.614434	-116.220098
365	3n2e09_028	ACHD	Boise River	24	RCP	43.613563	-116.219033
366	3n2e09_031	Drainage District 3	Boise River	0	open ditch	43.611599	-116.216459
367	3n2e09_032	Boise City	Boise River	6	CMP	43.612849	-116.219225
368	3n2e09_033	Boise City	Settlers Canal	0	open ditch	43.615301	-116.22336
369	3n2e09_034	Boise City	Boise River	24	CMP	43.617608	-116.225579
370	3n2e09_035	Boise City	Drain E	12	PVC	43.365586	-116.119755
371	3n2e09_037	ACHD	Unnamed	12	PVC	43.604371	-116.233319
372	3n2e09_038	ACHD	Unnamed	12	PVC	43.604372	-116.23157
373	3n2e09_039	Private	Unnamed	12	PVC	43.60436	-116.229927
374	3n2e10_001	ACHD, Private	Boise City Canal	10	PVC	43.617375	-116.206856
375	3n2e10_002	ACHD	Boise City Canal	15	PVC	43.617759	-116.206567
376	3n2e10_003	ACHD	Boise City Canal	15	RCP	43.613731	-116.201803
377	3n2e10_004	ACHD	Boise City Canal	12	RCP	43.614282	-116.202887
378	3n2e10_007	ACHD	Boise City Canal	0	Drop Inlet	43.611991	-116.198408
379	3n2e10_008	ACHD	Boise City Canal	0	Drop Inlet	43.612439	-116.199258
380	3n2e10_009	ITD	Julia Davis Pond	30	CMP	43.607369	-116.197912
381	3n2e10_010	ACHD	Julia Davis Pond	12	CMP	43.608006	-116.198771
382	3n2e10_011	ACHD	Julia Davis Pond	12	PVC	43.608673	-116.200669
383	3n2e10_012	ACHD	Boise River	30	CMP	43.605854	-116.200068
384	3n2e10_013	Boise City	Julia Davis Pond	3	PVC	43.60653	-116.196332
385	3n2e10_014	ITD, Private	Julia Davis Pond	24	CMP	43.606708	-116.196177
386	3n2e10_015	Boise City	Julia Davis Pond	8	PVC	43.608281	-116.200184
387	3n2e10_016	Boise City	Julia Davis Pond	12	PVC	43.607048	-116.204135
388	3n2e10_017	Boise City	Julia Davis Pond	12	PVC	43.606805	-116.204219
389	3n2e10_018	ACHD	Boise River	24	RCP	43.60877	-116.207704
390	3n2e10_019	ACHD, Private	Boise River	12	RCP	43.611214	-116.212838
391	3n2e10_020	ACHD	Boise River	15	CMP	43.610896	-116.213122
392	3n2e10_021	Boise City	Boise River	3	PVC	43.609439	-116.210167
393	3n2e10_022	ACHD	Boise River	72	SMP	43.610018	-116.209936
394	3n2e10_023	ACHD, Boise City	Boise River	15	RCP	43.6095	-116.209037
395	3n2e10_024	ACHD	Boise River	12	RCP	43.608964	-116.20919
396	3n2e10_025	ACHD	Boise River	14	PVC	43.60828	-116.20836
397	3n2e10_030	Boise State University	Boise River	12	PVC	43.607236	-116.207142
398	3n2e10_031	ACHD, BSU	Boise River	36	RCP	43.605027	-116.203384
399	3n2e10_032	Boise State University	Boise River	15	ADS	43.605005	-116.200531
400	3n2e10_033	Boise City	Julia Davis Pond	8	SMP	43.608074	-116.201554
401	3n2e10_034	Boise State University	Boise River	12	RCP	43.605192	-116.198043
402	3n2e10_035	Boise State University	Boise River	24	SMP	43.604708	-116.196153
403	3n2e10_037	ACHD	Boise City Canal	15	PVC	43.617288	-116.206897
404	3n2e10_038	ACHD	Boise City Canal	0	Drop Inlet	43.612281	-116.198945
405	3n2e10_039	ACHD	Boise City Canal	0	Drop Inlet	43.612168	-116.198731
406	3n2e10_040	Boise City	Julia Davis Pond	8	CMP	43.606896	-116.198345
407	3n2e10_041	Boise City	Julia Davis Pond	8	CMP	43.606949	-116.198362
408	3n2e10_042	ACHD	Boise City Canal	6	RCP	43.613008	-116.200436
409	3n2e10_043	ACHD	Boise City Canal	6	SMP	43.613143	-116.200511
410	3n2e10_044	Boise City	Julia Davis Pond	6	PVC	43.608125	-116.19926
411	3n2e10_045	ACHD	Boise City Canal	0	Drop Inlet	43.611911	-116.198177
412	3n2e10_046	ACHD, Private	Boise River	10	SMP	43.611332	-116.213146
413	3n2e10_047	ITD	Cottonwood Creek	12	PVC	43.361991	-116.113708
414	3n2e10_048	ACHD, IR	Julia Davis Pond	24	RCP	43.607667	-116.197204

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#	OUTFALL ID	OWNERSHIP	RECEIVING WATER	PIPE DIAMETER	PIPE TYPE	LATITUDE	LONGITUDE
415	3n2e10_049	Boise State University	Boise River	15	HDPE	43.60492372	-116.2013173
416	3n2e11_001	ACHD	Boise City Canal	10	RCP	43.60982	-116.189727
417	3n2e11_002	ACHD	Boise City Canal	24	RCP	43.608833	-116.187649
418	3n2e11_003	Boise City	Cottonwood Creek	18	CMP	43.614708	-116.18603
419	3n2e11_004	ACHD	Boise City Canal	24	SMP	43.608417	-116.186662
420	3n2e11_005	ACHD	Boise City Canal	15	RCP	43.604494	-116.177691
421	3n2e11_007	ACHD	Cottonwood Creek	12	PVC	43.363742	-116.111557
422	3n2e11_008	ACHD	Cottonwood Creek	12	PVC	43.36206	-116.113528
423	3n2e11_009	ACHD, Boise City	Cottonwood Creek	84	CMP	43.365422	-116.119785
424	3n2e11_010	Boise City	Cottonwood Creek	12	CMP	43.365586	-116.119755
425	3n2e11_011	Boise City	Cottonwood Creek	48	RCP	43.373383	-116.119125
426	3n2e11_014	Boise City	Cottonwood Creek	24	CMP	43.616812	-116.185912
427	3n2e12_004	ACHD	Cottonwood Creek-Trib of	12	RCP	43.614131	-116.157105
428	3n2e12_005	ACHD	Cottonwood Creek-Trib of	15	CMP	43.617391	-116.168752
429	3n2e13_001	Private	Lake Heron	12	CMP	43.590047	-116.171607
430	3n2e13_002	ACHD	Lake Heron	0	Drop Inlet	43.589774	-116.172083
431	3n2e13_003	ACHD	Boise City Canal	12	ADS	43.597655	-116.170066
432	3n2e13_004	ACHD	Boise City Canal	12	PVC	43.598539	-116.170183
433	3n2e13_005	ACHD	Boise City Canal	12	PVC	43.599343	-116.170179
434	3n2e13_006	ACHD	Boise City Canal	12	PVC	43.600139	-116.170144
435	3n2e13_007	Private	Lake Heron	12	CMP	43.589976	-116.17141
436	3n2e13_008	ACHD	Unnamed	0	Drop Inlet	43.589708	-116.172434
437	3n2e14_001	ACHD	Logger Creek	12	CMP	43.590402	-116.181274
438	3n2e14_002	ACHD	Logger Creek	12	CMP	43.593373	-116.180706
439	3n2e14_003	ACHD	Logger Creek	18	CMP	43.596635	-116.183308
440	3n2e14_004	Private	Logger Creek	15	RCP	43.594796	-116.180454
441	3n2e14_005	Private	Logger Creek	15	RCP	43.595586	-116.180073
442	3n2e14_008	Private	Boise River	6	SMP	43.598553	-116.176515
443	3n2e14_009	Private	Boise River	20	CMP	43.59924	-116.177215
444	3n2e14_010	Boise State University	Boise River	24	CMP	43.601013	-116.182976
445	3n2e14_012	ACHD	Boise River	42	CMP	43.600792	-116.187922
446	3n2e14_013	ACHD	Boise River	30	RCP	43.602823	-116.19136
447	3n2e14_015	Private	Boise River	15	RCP	43.602525	-116.192495
448	3n2e14_016	ACHD	Boise River	12	CMP	43.601412	-116.190823
449	3n2e14_017	ACHD, ITD	Boise River	24	RCP	43.601949	-116.191697
450	3n2e14_018	Drainage District 3	Logger Creek	36	CMP	43.598808	-116.188143
451	3n2e14_019	ACHD	Logger Creek	12	CMP	43.597324	-116.187016
452	3n2e14_020	Private	Logger Creek	12	CMP	43.597021	-116.186816
453	3n2e14_021	Private	Logger Creek	12	CMP	43.596745	-116.185988
454	3n2e14_022	Private	Logger Creek	12	CMP	43.596692	-116.184371
455	3n2e14_023	Private	Logger Creek	12	CMP	43.596718	-116.184208
456	3n2e14_024	Boise State University	Boise River	18	CMP	43.599614	-116.18516
457	3n2e14_025	Private	Boise River	19	CMP	43.59964	-116.185055
458	3n2e14_026	Private	Logger Creek	12	CMP	43.59678	-116.183464
459	3n2e14_027	ACHD, Boise City	Logger Creek	24	CMP	43.596865	-116.183256
460	3n2e14_028	ACHD	Bubb Canal	12	CMP	43.590076	-116.191096
461	3n2e14_029	Private	Boise City Canal-drain of	0	open ditch	43.601739	-116.176834
462	3n2e14_030	Private	Boise City Canal-drain of	0	open ditch	43.601863	-116.177173
463	3n2e14_031	Private	Boise City Canal-drain of	0	open ditch	43.602503	-116.178337
464	3n2e14_032	Private, Irrigation	Boise City Canal-drain of	0	open ditch	43.603089	-116.178989
465	3n2e14_033	Private	Logger Creek	18	ADS	43.596796	-116.186513
466	3n2e14_035	Drainage District 3	Logger Creek	0	open ditch	43.352365	-116.104995
467	3n2e14_036	ITD	Boise River	12	PVC	43.602698	-116.192701
468	3n2e14_037	ACHD	Logger Creek	24	RCP	43.598337	-116.187579
469	3n2e15_001	ACHD	Ridenbaugh Canal	10	CMP	43.596147	-116.208523
470	3n2e15_004	ACHD	Ridenbaugh Canal	18	RCP	43.596797	-116.209061
471	3n2e15_006	ACHD	Ridenbaugh Canal	12	CMP	43.598695	-116.213462
472	3n2e15_007	ACHD	Ridenbaugh Canal	12	RCP	43.598617	-116.213355
473	3n2e15_008	ACHD	Ridenbaugh Canal	12	CMP	43.597935	-116.211619
474	3n2e15_009	ACHD	Ridenbaugh Canal	8	CMP	43.598132	-116.21217
475	3n2e15_010	ACHD	Ridenbaugh Canal	12	CMP	43.598211	-116.212481
476	3n2e15_011	ACHD	Ridenbaugh Canal	10	CMP	43.596987	-116.2092
477	3n2e15_017	Boise State University	Boise River	24	SMP	43.604067	-116.194684
478	3n2e15_019	Private	Bubb Canal	8	CMP	43.591521	-116.194437
479	3n2e15_022	Private	Bubb Canal	8	CMP	43.594869	-116.201919
480	3n2e15_023	ACHD	Ridenbaugh Canal	0	Drop Inlet	43.598676	-116.213466
481	3n2e15_024	ACHD	Ridenbaugh Canal	0	Drop Inlet	43.598702	-116.21349
482	3n2e15_025	Irrigation	Ridenbaugh Canal	10	CMP	43.59575	-116.208344
483	3n2e15_029	ACHD, Irrigation	Unnamed	12	CMP	43.592071	-116.208709

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#	OUTFALL ID	OWNERSHIP	RECEIVING WATER	PIPE DIAMETER	PIPE TYPE	LATITUDE	LONGITUDE
484	3n2e15_030	ACHD	Bubb Canal	12	RCP	43.593976	-116.198546
485	3n2e16_001	ACHD	Electric Light Lateral	12	SMP	43.603261	-116.22851
486	3n2e16_002	ACHD	North Slough	12	CMP	43.604249	-116.227414
487	3n2e16_003	ACHD	Electric Light Lateral	12	CMP	43.603749	-116.227101
488	3n2e16_004	Private	Ridenbaugh Canal	7	RCP	43.597898	-116.229413
489	3n2e16_005	ACHD	Ridenbaugh Canal	12	CMP	43.598079	-116.228733
490	3n2e16_006	All Saints Episcipal Church	Ridenbaugh Canal	8	CMP	43.59837	-116.227644
491	3n2e16_007	ACHD, Irrigation	Ridenbaugh Canal	12	CMP	43.598745	-116.226429
492	3n2e16_008	ACHD	Ridenbaugh Canal	8	RCP	43.598593	-116.226897
493	3n2e16_009	ACHD	Ridenbaugh Canal	10	CMP	43.598974	-116.225629
494	3n2e16_010	ACHD	Ridenbaugh Canal	10	RCP	43.598955	-116.225275
495	3n2e16_011	ACHD	Ridenbaugh Canal	36	CMP	43.599451	-116.223518
496	3n2e16_012	Private	Electric Light Lateral	8	CMP	43.603772	-116.220203
497	3n2e16_013	Irrigation	Electric Light Lateral	10	CMP	43.602418	-116.218708
498	3n2e16_014	ACHD	Electric Light Lateral	8	CMP	43.602977	-116.219268
499	3n2e16_016	ACHD	Ridenbaugh Canal	12	CMP	43.600316	-116.220562
500	3n2e16_018	ACHD, Irrigation	Ridenbaugh Canal	12	CMP	43.600105	-116.221066
501	3n2e16_019	ACHD	Ridenbaugh Canal	8	CMP	43.600523	-116.217306
502	3n2e16_021	ACHD	Ridenbaugh Canal	18	RCP	43.598877	-116.214001
503	3n2e16_022	ACHD	Ridenbaugh Canal	10	CMP	43.598845	-116.213881
504	3n2e16_023	ACHD	Ridenbaugh Canal	15	RCP	43.600586	-116.217017
505	3n2e16_024	Irrigation	Ridenbaugh Canal	10	CMP	43.598159	-116.228796
506	3n2e16_025	ACHD	Ridenbaugh Canal	18	RCP	43.600725	-116.218783
507	3n2e16_026	ACHD	Ridenbaugh Canal	24	CMP	43.59994	-116.221809
508	3n2e16_027	ACHD	Unnamed	12	PVC	43.602436	-116.217967
509	3n2e16_028	ACHD	Unnamed	12	RCP	43.595259	-116.22608
510	3n2e16_029	ACHD	Unnamed	8	RCP	43.595667	-116.226088
511	3n2e16_030	ACHD	Unnamed	12	RCP	43.595298	-116.220661
512	3n2e16_031	ACHD	Unnamed	12	PVC	43.596113	-116.222274
513	3n2e16_032	ACHD	Bennett Lateral	12	PVC	43.597168	-116.22228
514	3n2e16_033	ACHD	Unnamed	12	PVC	43.598922	-116.232393
515	3n2e16_034	ACHD	Unnamed	10	PVC	43.598791	-116.232198
516	3n2e16_035	ACHD	Unnamed	12	PVC	43.598791	-116.232198
517	3n2e16_036	ACHD	Unnamed	8	PVC	43.596526	-116.223516
518	3n2e16_037	ACHD	Unnamed	12	PVC	43.596529	-116.223672
519	3n2e17_002	ACHD	Ridenbaugh Canal	12	PVC	43.600868	-116.251082
520	3n2e17_003	Private	Ridenbaugh Canal	6	PVC	43.600454	-116.249114
521	3n2e17_004	ACHD	Ridenbaugh Canal	12	RCP	43.600202	-116.248491
522	3n2e17_005	ACHD	Ridenbaugh Canal	12	RCP	43.600099	-116.24849
523	3n2e17_006	ACHD	Ridenbaugh Canal	12	CMP	43.599164	-116.246153
524	3n2e17_007	ACHD	Ridenbaugh Canal	12	RCP	43.597785	-116.244823
525	3n2e17_008	ACHD	Farmers Lateral	6	PVC	43.592534	-116.251237
526	3n2e17_009	Private	Farmers Lateral	12	RCP	43.591459	-116.2488
527	3n2e17_010	ACHD	Rust Lateral	8	RCP	43.602595	-116.242779
528	3n2e17_011	Wright Community Church	Rust Lateral	12	CMP	43.60182	-116.242165
529	3n2e17_012	ACHD, Irrigation	Rust Lateral	0	Drop Inlet	43.600776	-116.2409
530	3n2e17_013	ACHD	Rust Lateral	24	RCP	43.600707	-116.240942
531	3n2e17_014	ACHD	Powell Lateral	12	RCP	43.597471	-116.238678
532	3n2e17_015	ACHD	Ridenbaugh Canal	10	CMP	43.597077	-116.23823
533	3n2e17_016	ACHD, Irrigation	Ridenbaugh Canal	10	PVC	43.597207	-116.24317
534	3n2e17_017	ACHD	Farmers Lateral	18	CMP	43.595719	-116.236695
535	3n2e17_019	ACHD	Farmers Lateral	18	RCP	43.595205	-116.236719
536	3n2e17_020	ACHD	Farmers Lateral	12	CMP	43.594329	-116.237036
537	3n2e17_021	ACHD, Private	Farmers Lateral	21	CMP	43.593305	-116.237014
538	3n2e17_022	ACHD	Farmers Lateral	15	RCP	43.593181	-116.237182
539	3n2e17_023	ACHD	Farmers Lateral	10	RCP	43.592245	-116.237231
540	3n2e17_024	ACHD	Farmers Lateral	8	CMP	43.5916	-116.237381
541	3n2e17_025	ACHD	Farmers Lateral	8	CMP	43.591599	-116.237353
542	3n2e17_026	Private	Farmers Lateral	0	Drop Inlet	43.590673	-116.237811
543	3n2e17_027	Private	Farmers Lateral	0	Drop Inlet	43.590433	-116.238699
544	3n2e17_028	Private	Farmers Lateral	0	Drop Inlet	43.590442	-116.239066
545	3n2e17_029	Private	Farmers Lateral	0	Drop Inlet	43.59044	-116.23963
546	3n2e17_030	Private	Farmers Lateral	0	Drop Inlet	43.590458	-116.240153
547	3n2e17_031	ACHD	Rust Lateral	0	Drop Inlet	43.602853	-116.243423
548	3n2e17_032	ACHD	Ridenbaugh Canal	18	CMP	43.598493	-116.245212
549	3n2e17_033	ACHD	Ridenbaugh Canal	10	RCP	43.597362	-116.24373
550	3n2e17_034	ACHD, Private	Ridenbaugh Canal	12	RCP	43.597285	-116.243434
551	3n2e17_035	Irrigation	Farmers Lateral	10	CMP	43.591596	-116.248744
552	3n2e17_036	Irrigation	Ridenbaugh Canal	10	CMP	43.597388	-116.24378

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#	OUTFALL ID	OWNERSHIP	RECEIVING WATER	PIPE DIAMETER	PIPE TYPE	LATITUDE	LONGITUDE
553	3n2e17_037	ACHD	Ridenbaugh Ditch	24	CMP	43.35497	-116.15132
554	3n2e17_038	ACHD	Ridenbaugh Ditch	12	PVC	43.354949	-116.158334
555	3n2e17_039	Private	Ridenbaugh Ditch	15	CMP	43.354928	-116.157615
556	3n2e17_040	ACHD	Ridenbaugh Ditch	0	Drop Inlet	43.354764	-116.145457
557	3n2e17_041	ACHD	Ridenbaugh Ditch	0	Drop Inlet	43.354757	-116.145308
558	3n2e17_042	ACHD	Ridenbaugh Ditch	12	CMP	43.35426	-116.144736
559	3n2e17_043	Private	Ridenbaugh Ditch	12	Unknown	43.353687	-116.14421
560	3n2e17_044	Private	Ridenbaugh Ditch	8	SMP	43.354948	-116.158027
561	3n2e17_045	ACHD	Ridenbaugh Ditch	12	CMP	43.596568	-116.248496
562	3n2e17_046	ACHD	Ridenbaugh Ditch	0	Drop Inlet	43.596573	-116.248695
563	3n2e17_047	ACHD	Ridenbaugh Ditch	15	CMP	43.596572	-116.248696
564	3n2e17_048	ACHD	Unnamed	12	CMP	43.601626	-116.23737
565	3n2e17_049	ACHD	Unnamed	12	PVC	43.598562	-116.246638
566	3n2e17_050	ACHD	Unnamed	10	PVC	43.598406	-116.246632
567	3n2e18_001	ACHD, Railroad	Ridenbaugh Canal	0	open ditch	43.604679	-116.265314
568	3n2e18_002	ACHD	Ridenbaugh Canal	36	RCP	43.603945	-116.260141
569	3n2e18_003	ACHD	Ridenbaugh Canal	8	CMP	43.603219	-116.259268
570	3n2e18_004	Private	Ridenbaugh Canal	12	CMP	43.602617	-116.25898
571	3n2e18_005	ACHD	Ridenbaugh Canal	12	CMP	43.601903	-116.25842
572	3n2e18_006	Private	Ridenbaugh Canal	8	PVC	43.600633	-116.257876
573	3n2e18_007	Private	Ridenbaugh Canal	3	PVC	43.600368	-116.257695
574	3n2e18_008	Private	Ridenbaugh Canal	6	RCP	43.599742	-116.257338
575	3n2e18_009	ACHD, Irrigation	Ridenbaugh Canal	10	PVC	43.600346	-116.253758
576	3n2e18_010	ACHD	Ridenbaugh Canal	8	CMP	43.60026	-116.253855
577	3n2e18_011	Private	Ridenbaugh Canal	8	PVC	43.599676	-116.257466
578	3n2e18_012	Irrigation	Ridenbaugh Canal	36	RCP	43.599566	-116.256638
579	3n2e18_013	ACHD	Farmers Lateral	15	SMP	43.595855	-116.261996
580	3n2e18_014	ACHD	Farmers Lateral	12	CMP	43.594014	-116.256643
581	3n2e18_015	ACHD	Farmers Lateral	12	PVC	43.597829	-116.267257
582	3n2e18_016	ACHD	Ridenbaugh Canal	12	CMP	43.604416	-116.261134
583	3n2e18_017	ACHD	Ridenbaugh Canal	8	CMP	43.600242	-116.253895
584	3n2e18_018	ACHD	Ridenbaugh Ditch	8	PVC	43.35536	-116.1524
585	3n2e18_019	ACHD	Ridenbaugh Ditch	6	CMP	43.355281	-116.152273
586	3n2e18_020	Private	Ridenbaugh Ditch	15	RCP	43.354972	-116.15144
587	3n2e19_002	ACHD	Unnamed	15	PVC	43.580866	-116.25368
588	3n2e19_003	ACHD	Threemile Creek	30	RCP	43.575593	-116.263723
589	3n2e19_004	ACHD	Threemile Creek	12	PVC	43.576656	-116.265068
590	3n2e20_002	ACHD	Penninger Lateral	10	CMP	43.584867	-116.246472
591	3n2e20_004	ACHD	Penninger Lateral	10	CMP	43.582661	-116.240959
592	3n2e20_005	Private	Threemile Creek	12	CMP	43.577742	-116.243354
593	3n2e20_006	ACHD	Threemile Creek	12	CMP	43.577787	-116.243782
594	3n2e20_007	Private	Threemile Creek	10	PVC	43.577162	-116.246228
595	3n2e20_008	ACHD	Threemile Lateral	10	CMP	43.577333	-116.241193
596	3n2e20_009	ACHD	Threemile Lateral	0	Drop Inlet	43.57774	-116.240158
597	3n2e20_010	ACHD	Threemile Lateral	0	Drop Inlet	43.577741	-116.24002
598	3n2e20_011	ACHD	Threemile Lateral	0	Drop Inlet	43.577721	-116.23923
599	3n2e20_013	ACHD	Threemile Lateral	12	PVC	43.577594	-116.2382
600	3n2e20_014	ACHD	Threemile Lateral	12	PVC	43.577504	-116.237287
601	3n2e20_015	ACHD	Threemile Lateral	24	CMP	43.577119	-116.246278
602	3n2e20_016	ACHD	Unnamed	12	CMP	43.583444	-116.244867
603	3n2e20_017	ITD	Threemile Lateral	0	Drop Inlet	43.576823	-116.246582
604	3n2e20_018	ACHD	New York Canal	8	PVC	43.582391	-116.233593
605	3n2e20_019	ACHD	Threemile Creek	0	Drop Inlet	43.577296	-116.240978
606	3n2e20_020	ACHD	Threemile Creek	0	Drop Inlet	43.577728	-116.23907
607	3n2e20_021	ACHD	Threemile Creek	18	RCP	43.343161	-116.151334
608	3n2e20_022	ACHD	Unnamed	15	RCP	43.579731	-116.247845
609	3n2e20_023	ACHD	Unnamed	12	PVC	43.579755	-116.248534
610	3n2e20_024	ACHD	Unnamed	12	CMP	43.575829	-116.23677
611	3n2e20_025	ACHD	New York Canal	12	PVC	43.582792	-116.233664
612	3n2e21_001	ACHD	Unnamed	5	PVC	43.57629	-116.215005
613	3n2e21_002	ACHD	Unnamed	4	PVC	43.576442	-116.215221
614	3n2e21_003	ACHD	Hyatt Lateral	0	Drop Inlet	43.588236	-116.217951
615	3n2e21_004	ACHD	Unnamed	24	CMP	43.57712	-116.215988
616	3n2e21_005	ACHD	Unnamed	12	RCP	43.575726	-116.21416
617	3n2e22_002	ACHD	Ridenbaugh Canal	15	RCP	43.588437	-116.201235
618	3n2e22_004	ACHD	Ridenbaugh Canal	12	RCP	43.585662	-116.200758
619	3n2e22_005	Private	Drain A	12	PVC	43.58257	-116.198994
620	3n2e22_006	Private	Drain A	12	RCP	43.579004	-116.197437
621	3n2e22_012	ITD	Ridenbaugh Canal	12	RCP	43.575476	-116.193628

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#	OUTFALL ID	OWNERSHIP	RECEIVING WATER	PIPE DIAMETER	PIPE TYPE	LATITUDE	LONGITUDE
622	3n2e22_013	ITD	Ridenbaugh Canal	12	PVC	43.575666	-116.193787
623	3n2e22_014	ACHD	Bennett Lateral	12	CMP	43.578898	-116.20354
624	3n2e22_016	ACHD	Ridenbaugh Canal	12	RCP	43.589794	-116.202175
625	3n2e22_017	ACHD	Unnamed	0	Drop Inlet	43.575374	-116.208644
626	3n2e22_018	ACHD	Unnamed	8	CMP	43.580785	-116.204884
627	3n2e22_019	ACHD	Unnamed	18	CMP	43.579868	-116.207153
628	3n2e22_020	ACHD	Unnamed	18	SHDPE	43.575385	-116.21231
629	3n2e23_001	ACHD	Logger Creek	12	CMP	43.587401	-116.173548
630	3n2e23_002	ACHD	Logger Creek	15	RCP	43.587332	-116.17347
631	3n2e23_003	ACHD	Logger Creek	12	CMP	43.587241	-116.173666
632	3n2e23_004	Private	Bubb Canal	12	RCP	43.586685	-116.173709
633	3n2e23_005	ACHD	Logger Creek	12	RCP	43.588347	-116.176418
634	3n2e23_006	ACHD	Bubb Canal	12	RCP	43.586872	-116.177458
635	3n2e23_007	ACHD	Bubb Canal	12	PVC	43.586885	-116.178343
636	3n2e23_013	ACHD	Bubb Canal	12	RCP	43.588368	-116.185822
637	3n2e23_014	ACHD	Bubb Canal	12	RCP	43.588691	-116.187278
638	3n2e23_015	ACHD	Bubb Canal	10	CMP	43.589622	-116.189701
639	3n2e23_016	ACHD, Private	Unnamed	12	CMP	43.586176	-116.187215
640	3n2e23_017	Private	Drain B	15	ADS	43.582024	-116.178021
641	3n2e23_019	Private	Drain B	15	ADS	43.581535	-116.177703
642	3n2e23_020	Private	Drain B	15	RCP	43.345004	-116.103326
643	3n2e23_021	Private	Drain B	15	ADS	43.580425	-116.174895
644	3n2e23_023	Private	Drain B	12	Open Concrete Slot	43.580205	-116.173977
645	3n2e24_002	Private	Drain B	18	PVC	43.58035	-116.172521
646	3n2e24_003	Private	Unnamed	24	CMP	43.58749	-116.171294
647	3n2e24_004	ACHD	Boise River	18	CMP	43.583144	-116.156937
648	3n2e24_005	ACHD	Boise River	12	CMP	43.584577	-116.159149
649	3n2e24_006	ACHD	Boise River	12	CMP	43.356875	-116.933662
650	3n2e24_007	ACHD	Boise City Canal	18	CMP	43.587545	-116.161031
651	3n2e24_008	Private	Lake Heron Creek-north fork	12	CMP	43.586381	-116.163253
652	3n2e24_009	Private	Lake Heron Creek-north fork	12	CMP	43.586321	-116.162993
653	3n2e24_010	Private	Lake Heron Creek-north fork	4	PVC	43.585216	-116.16239
654	3n2e24_011	Private	Lake Heron Creek-south fork	12	CMP	43.585533	-116.164015
655	3n2e24_012	Private	Logger Creek	12	CMP	43.582971	-116.162211
656	3n2e24_013	Private	Unnamed	18	CMP	43.58931	-116.172343
657	3n2e24_014	Private	Unnamed	12	CMP	43.588658	-116.171972
658	3n2e24_015	ACHD, Private	Lake Heron-lateral of	18	RCP	43.588489	-116.168924
659	3n2e24_016	Private	Lake Heron	10	PVC	43.589132	-116.168729
660	3n2e24_017	Private	Lake Heron-lateral of	12	RCP	43.588668	-116.167579
661	3n2e24_018	Private	Lake Heron-lateral of	12	RCP	43.587545	-116.16652
662	3n2e24_019	ACHD	Unnamed	0	Drop Inlet	43.588615	-116.170962
663	3n2e24_020	Private	Lake Heron Creek-south fork	12	CMP	43.587735	-116.165091
664	3n2e24_021	Private	Lake Heron Creek-north fork	12	CMP	43.5879	-116.164461
665	3n2e24_022	Private	Unnamed	12	RCP	43.587449	-116.17106
666	3n2e24_023	ACHD	Lake Heron Creek-south fork	12	RCP	43.586689	-116.165168
667	3n2e24_024	ACHD	Logger Creek	18	PVC	43.585845	-116.166261
668	3n2e24_025	ACHD	Logger Creek	21	PVC	43.584398	-116.164725
669	3n2e24_026	Private	Unnamed	12	CMP	43.585103	-116.168071
670	3n2e24_027	Private	Unnamed	12	CMP	43.585809	-116.16912
671	3n2e24_028	ACHD	Unnamed	12	CMP	43.584179	-116.168276
672	3n2e24_030	ACHD	Unnamed	12	RCP	43.584636	-116.168879
673	3n2e24_031	ACHD	Unnamed	12	RCP	43.585083	-116.169641
674	3n2e24_032	Private	Logger Creek	12	CMP	43.581848	-116.160595
675	3n2e24_033	Private	Logger Creek	12	CMP	43.580635	-116.158693
676	3n2e24_034	Private	Logger Creek	10	RCP	43.578507	-116.154747
677	3n2e24_035	Private	Logger Creek	10	RCP	43.577197	-116.153879
678	3n2e24_039	Private	Unnamed	12	CMP	43.588626	-116.171942
679	3n2e24_040	ACHD	Unnamed	0	Drop Inlet	43.58833	-116.170826
680	3n2e24_041	ACHD	Boise River	12	CMP	43.356376	-116.933447
681	3n2e24_042	ACHD	Gallagher Canal	12	PVC	43.578689	-116.165813
682	3n2e25_001	ACHD	Ridenbaugh Canal	12	RCP	43.574334	-116.162536
683	3n2e25_002	ACHD	Ridenbaugh Canal	18	CMP	43.573764	-116.158342
684	3n2e25_003	ACHD	New York Canal	12	ADS	43.564358	-116.167759
685	3n2e26_002	ACHD	Ridenbaugh Canal	12	CMP	43.573458	-116.190688
686	3n2e26_003	ACHD	Ridenbaugh Canal	12	RCP	43.574706	-116.193033
687	3n2e26_004	ACHD, ITD	Ridenbaugh Canal	12	RCP	43.574835	-116.193112
688	3n2e26_005	ITD	Ridenbaugh Canal	12	RCP	43.574976	-116.193278
689	3n2e26_009	Private	Drain D	8	PVC	43.56786	-116.17881
690	3n2e26_012	Private	Drain D	12	CMP	43.569182	-116.180809

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#	OUTFALL ID	OWNERSHIP	RECEIVING WATER	PIPE DIAMETER	PIPE TYPE	LATITUDE	LONGITUDE
691	3n2e26_015	Private	Drain D	0	Grated Manhole	43.5695	-116.181108
692	3n2e27_001	ACHD	New York Canal	6	CMP	43.572151	-116.209194
693	3n2e27_002	ACHD	New York Canal	12	CMP	43.571244	-116.205629
694	3n2e27_003	ACHD	New York Canal	10	CMP	43.570212	-116.20307
695	3n2e27_004	ACHD, ITD	New York Canal	15	CMP	43.569064	-116.199209
696	3n2e27_005	ACHD	New York Canal	24	CMP	43.568422	-116.194806
697	3n2e27_006	ACHD	Unnamed	6	RCP	43.572431	-116.199767
698	3n2e27_007	ACHD	Unnamed	10	CMP	43.572758	-116.199992
699	3n2e27_008	ACHD	Unnamed	10	CMP	43.572757	-116.200164
700	3n2e28_001	Private	New York Canal	8	PVC	43.574493	-116.214837
701	3n2e28_002	ACHD	New York Canal	12	RCP	43.574358	-116.214389
702	3n2e29_001	Boise City	Fivemile Creek	24	RCP	43.334348	-116.143576
703	3n2e32_001	ACHD, Boise City	Fivemile Creek	0	open ditch	43.560876	-116.24395
704	3n2e33_001	ACHD	Fivemile Creek	12	PVC	43.554335	-116.233274
705	3n2e33_002	Private	Fivemile Creek	24	CMP	43.554225	-116.23252
706	3n2e34_001	ACHD	Fivemile Creek	18	PVC	43.557247	-116.193785
707	3n2e36_001	ACHD	Fivemile Creek-Trib. to	12	PVC	43.54973	-116.159655
708	3n2e36_002	Private	Fivemile Creek-Trib. to	24	PVC	43.550066	-116.159862
709	3n2e36_003	ACHD	Fivemile Creek-Trib. to	18	RCP	43.54995	-116.16067
710	3n2e36_004	ACHD	Fivemile Creek-Trib. to	12	HDPE	43.547641	-116.153946
711	3n2e36_005	ACHD	Fivemile Creek-Trib. to	12	CMP	43.546504	-116.153755
712	3n2e36_006	ACHD	Fivemile Creek-Trib. to	48	CMP	43.546407	-116.153787
713	3n2e36_007	ACHD	Fivemile Creek-Trib. to	12	HDPE	43.54675	-116.154286
714	3n2e36_009	ACHD	Fivemile Creek-Trib. to	12	CMP	43.547373	-116.153713
715	3n2e36_010	ACHD	Fivemile Creek-Trib. to	0	open ditch	43.549713	-116.15868
716	3n2e36_011	ITD	Fivemile Creek-Trib. to	18	CMP	43.551002	-116.172751
717	3n2e36_012	ITD	Fivemile Creek-Trib. to	18	CMP	43.550884	-116.172549
718	3n2e36_013	Private	Fivemile Creek	16	ADS	43.549771	-116.15969
719	3n2e36_014	ACHD	Fivemile Creek	24	RCP	43.330652	-116.93751
720	3n3e19_001	ACHD	Walling Creek	15	RCP	43.577889	-116.147426
721	3n3e19_002	ACHD	Unnamed	12	RCP	43.575389	-116.152283
722	3n3e19_003	ACHD	Unnamed	12	PVC	43.577204	-116.141101
723	3n3e19_004	ACHD	Unnamed	24	PVC	43.577055	-116.14054
724	3n3e19_005	ACHD	Penitentiary Canal	12	PVC	43.579225	-116.144033
725	3n3e19_006	ACHD	Unnamed	12	RCP	43.579524	-116.144803
726	3n3e19_007	ACHD	Unnamed	18	CMP	43.585323	-116.144886
727	3n3e19_008	ACHD	Unnamed	15	CMP	43.584793	-116.145111
728	3n3e19_009	ACHD	Unnamed	12	CMP	43.582855	-116.145787
729	3n3e19_010	ACHD	Unnamed	18	CMP	43.581004	-116.147516
730	3n3e19_011	ACHD	Penitentiary Canal	24	CMP	43.578981	-116.146078
731	3n3e19_012	ACHD	Penitentiary Canal	24	CMP	43.578573	-116.146949
732	3n3e19_013	ACHD	Unnamed	24	PVC	43.577044	-116.14058
733	3n3e19_014	ACHD	Unnamed	24	PVC	43.57704	-116.140685
734	3n3e19_015	DD3	Boise River	46	CMP	43.575052	-116.152037
735	3n3e20_001	ACHD	Penitentiary Canal	12	CMP	43.577771	-116.126218
736	3n3e21_001	ACHD	Unnamed	18	PVC	43.579567	-116.112656
737	3n3e28_001	ACHD	Penitentiary Canal	12	PVC	43.568273	-116.112583
738	3n3e29_002	ACHD	Ridenbaugh Canal	12	CMP	43.565114	-116.132816
739	3n3e30_001	Private	Unnamed	12	PVC	43.573345	-116.149287
740	3n3e30_003	Private	Unnamed	8	PVC	43.56827	-116.141564
741	3n3e30_004	Private	Unnamed	15	PVC	43.568119	-116.141457
742	3n3e30_005	ACHD	Ridenbaugh Canal	12	RCP	43.5655	-116.134487
743	3n3e30_006	ACHD	Ridenbaugh Canal	12	PVC	43.567018	-116.144071
744	3n3e31_001	ACHD	Unnamed	15	RCP	43.54726	-116.138188
745	3n3e31_002	ACHD	Unnamed	18	RCP	43.547134	-116.137957
746	3n3e31_003	ACHD	Unnamed	18	RCP	43.547079	-116.137188
747	3n3e31_004	ACHD	Unnamed	12	HDPE	43.547142	-116.136987
748	3n3e31_005	ACHD	Unnamed	18	RCP	43.547095	-116.135486
749	3n3e31_006	ACHD	Unnamed	24	RCP	43.546741	-116.134706
750	3n3e32_001	ACHD	Fivemile Creek - Intermittent	12	PVC	43.324504	-116.729019
751	3n3e32_002	ACHD	Fivemile Creek - Intermittent	24	RCP	43.546958	-116.132017
752	3n3e32_003	ACHD	Unnamed	15	RCP	43.546951	-116.130463
753	3n3e32_004	ACHD	Unnamed	26	RCP	43.546815	-116.129053
754	3n3e32_005	ACHD	Unnamed	24	RCP	43.546765	-116.12796
755	3n3e32_006	ACHD	Fivemile Creek - Intermittent	26	RCP	43.546779	-116.126442
756	3n3e32_007	ACHD	Unnamed	30	RCP	43.546914	-116.12606
757	3n3e32_008	ACHD	Unnamed	24	PVC	43.547222	-116.125297
758	3n3e32_009	ACHD	Fivemile Creek - Intermittent	24	PVC	43.547221	-116.125296
759	4n1e13_001	ACHD	Eagle Drain	16	RCP	43.680795	-116.277478

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#	OUTFALL ID	OWNERSHIP	RECEIVING WATER	PIPE DIAMETER	PIPE TYPE	LATITUDE	LONGITUDE
760	4n1e13_002	ACHD	Eagle Drain	27	RCP	43.680862	-116.279254
761	4n1e13_003	Irrigation, Private	Eagle Drain	10	CMP	43.684676	-116.293933
762	4n1e13_004	ACHD	Eagle Drain	24	CMP	43.684654	-116.293871
763	4n1e13_005	Private	Eagle Drain	24	RCP	43.68417	-116.289638
764	4n1e13_006	ACHD	Eagle Drain	48	RCP	43.684065	-116.289281
765	4n1e13_007	ACHD	Eagle Drain	24	RCP	43.683954	-116.288836
766	4n1e13_008	ACHD	Eagle Drain	12	HDPE	43.683648	-116.286817
767	4n1e13_009	ACHD	Eagle Drain	12	HDPE	43.683156	-116.283737
768	4n1e13_010	ACHD	Eagle Drain	12	HDPE	43.683171	-116.28445
769	4n1e13_011	ACHD	Eagle Drain	12	Corr. PVC	43.683033	-116.283334
770	4n1e13_012	ACHD	Eagle Drain	15	PVC	43.680911	-116.279299
771	4n1e13_015	ACHD	Eagle Drain	12	RCP	43.684439	-116.290631
772	4n1e13_016	ACHD	Eagle Drain	12	RCP	43.684336	-116.290432
773	4n1e13_017	ACHD	Eagle Drain	12	RCP	43.68397	-116.289059
774	4n1e13_019	ACHD	Eagle Drain	12	CMP	43.684663	-116.292606
775	4n1e13_020	ACHD	Eagle Drain	12	CMP	43.684641	-116.291427
776	4n1e13_021	ACHD	Unnamed	10	PVC	43.684984	-116.284047
777	4n1e13_022	ACHD	Seaman Gulch	12	PVC	43.685208	-116.287779
778	4n1e14_001	ACHD	Eagle Drain	12	CMP	43.685961	-116.313853
779	4n1e14_002	ACHD	Eagle Drain	12	CMP	43.685804	-116.313845
780	4n1e14_003	Irrigation	Eagle Drain	12	CMP	43.684889	-116.301408
781	4n1e14_004	ACHD	Eagle Drain	24	CMP	43.684895	-116.30153
782	4n1e14_005	ACHD	Eagle Drain	12	CMP	43.684655	-116.294116
783	4n1e14_006	ACHD	Eagle Drain	30	RCP	43.684824	-116.301549
784	4n1e14_007	Irrigation	Eagle Drain	48	RCP	43.684698	-116.298974
785	4n1e14_008	Irrigation	Eagle Drain	18	CMP	43.684652	-116.294257
786	4n1e14_010	ACHD	Eagle Drain	12	PVC	43.684816	-116.301313
787	4n1e14_011	ACHD	Eagle Drain	12	CMP	43.684886	-116.303358
788	4n1e14_012	ACHD	Eagle Drain	12	CMP	43.684877	-116.303572
789	4n1e14_013	ACHD	Eagle Drain	12	PVC	43.684892	-116.30396
790	4n1e14_014	Irrigation	Eagle Drain	12	CMP	43.684768	-116.301731
791	4n1e23_001	ACHD	Dry Creek Canal	12	RCP	43.677148	-116.304038
792	4n1e23_002	ACHD	Elmore Drain	12	CMP	43.671594	-116.298287
793	4n1e23_003	ACHD	Elmore Drain	12	CMP	43.670788	-116.297299
794	4n1e23_004	ACHD	Elmore Drain	12	CMP	43.670768	-116.29742
795	4n1e23_005	ACHD	Elmore Drain	12	CMP	43.671045	-116.297733
796	4n1e23_006	Private	Warm Springs Canal	0	Drop Inlet	43.664502	-116.298379
797	4n1e23_007	ACHD	Warm Springs Canal	15	PVC	43.66477	-116.298353
798	4n1e23_008	ACHD	Warm Springs Canal	14	PVC	43.664769	-116.300061
799	4n1e23_009	ACHD	Dry Creek Canal	0	Grated Manhole	43.675313	-116.299173
800	4n1e23_010	Private	Dry Creek Canal	12	PVC	43.673903	-116.302646
801	4n1e23_013	Private	Dry Creek Canal	12	PVC	43.675264	-116.299153
802	4n1e23_014	ACHD	Dry Creek Canal	10	PVC	43.677272	-116.304379
803	4n1e23_015	Private	Warm Springs Canal	0	Drop Inlet	43.664422	-116.298312
804	4n1e23_016	ACHD	Dry Creek Canal	12	PVC	43.673447	-116.294232
805	4n1e24_001	ACHD	Eagle Drain-lateral of	12	RCP	43.676902	-116.284026
806	4n1e24_002	ACHD	Eagle Drain-lateral of	12	RCP	43.675342	-116.284069
807	4n1e24_003	ACHD	Eagle Drain-lateral of	12	RCP	43.67382	-116.283527
808	4n1e24_004	ACHD	Elmore Drain	10	CMP	43.667487	-116.282578
809	4n1e24_006	Private	Dry Creek Canal	6	RCP	43.671284	-116.288836
810	4n1e24_007	ACHD	Elmore Drain	0	open ditch	43.667597	-116.286655
811	4n1e24_008	ACHD	Elmore Drain	12	HDPE	43.666866	-116.280431
812	4n1e24_009	ITD	Elmore Drain	12	CMP	43.665655	-116.279453
813	4n1e24_010	ITD	Elmore Drain	18	PVC	43.665551	-116.278927
814	4n1e24_012	ACHD	Elmore Drain	12	CMP	43.667909	-116.291594
815	4n1e24_013	Private	Dry Creek Canal	8	RCP	43.670489	-116.285921
816	4n1e24_014	Private	Dry Creek Canal	10	CMP	43.670422	-116.285846
817	4n1e24_015	Private	Dry Creek Canal	10	CMP	43.670443	-116.287436
818	4n1e24_016	Private	Dry Creek Canal	10	CMP	43.670442	-116.287306
819	4n1e24_017	Private	Dry Creek Canal	10	CMP	43.671285	-116.288939
820	4n1e24_021	ACHD	Elmore Drain	12	PVC	43.668879	-116.29329
821	4n1e24_022	ACHD, ITD	Dry Creek Canal	22	RCP	43.667821	-116.279442
822	4n1e24_023	ACHD	Elmore Drain	12	PVC	43.667615	-116.291642
823	4n1e24_024	ACHD	Elmore Drain	12	PVC	43.668172	-116.289862
824	4n1e24_025	ACHD	Elmore Drain	12	CMP	43.667228	-116.285623
825	4n1e24_026	ACHD	Boise River	4	PVC	43.663181	-116.291881
826	4n1e24_027	Private	Dry Creek Canal	0	Unknown	43.67009	-116.285795
827	4n1e24_028	Private	Dry Creek Canal	0	Drop Inlet	43.670398	-116.28582
828	4n1e25_001	Private	Warm Springs Canal	18	PVC	43.661164	-116.292966

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#	OUTFALL ID	OWNERSHIP	RECEIVING WATER	PIPE DIAMETER	PIPE TYPE	LATITUDE	LONGITUDE
829	4n1e25_002	Private	Warm Springs Canal	18	PVC	43.660789	-116.292313
830	4n1e25_003	Private	Warm Springs Canal	18	PVC	43.661163	-116.29263
831	4n1e25_004	ACHD	Warm Springs Canal	18	PVC	43.66077	-116.291939
832	4n1e25_005	ACHD	Warm Springs Canal	6	PVC	43.660795	-116.291063
833	4n1e25_006	ACHD	Warm Springs Canal	12	PVC	43.660571	-116.289911
834	4n1e25_007	ACHD	Warm Springs Canal	12	CMP	43.660501	-116.288627
835	4n1e25_008	ACHD	Warm Springs Canal	12	PVC	43.660727	-116.286796
836	4n1e25_009	ACHD	Warm Springs Canal	8	PVC	43.660577	-116.285537
837	4n1e25_010	ACHD	Warm Springs Canal	12	PVC	43.660542	-116.285537
838	4n1e25_011	ACHD, Private	Warm Springs Canal	12	PVC	43.658738	-116.284412
839	4n1e25_012	Private	Warm Springs Canal	10	PVC	43.659364	-116.284313
840	4n1e25_013	ACHD	Warm Springs Canal	12	PVC	43.658091	-116.287344
841	4n1e25_014	Private	Warm Springs Canal	12	CMP	43.657614	-116.286397
842	4n1e25_015	ACHD, ITD	Warm Springs Canal	0	open ditch	43.657016	-116.284034
843	4n1e25_016	Private	Warm Springs Canal	16	PVC	43.657955	-116.288606
844	4n1e25_017	Private	Warm Springs Canal	8	PVC	43.655624	-116.287257
845	4n1e25_018	Private	Warm Springs Canal	10	ADS	43.65547	-116.171317
846	4n1e25_019	ACHD	Thurman Mill Canal	12	CMP	43.653163	-116.288783
847	4n1e25_020	Private	Thurman Mill Canal	18	CMP	43.654287	-116.288163
848	4n1e25_021	ACHD, ITD	Thurman Mill Canal	12	PVC	43.652527	-116.28405
849	4n1e25_022	ACHD, ITD	Thurman Mill Canal	12	PVC	43.652475	-116.284049
850	4n1e25_023	Private	Thurman Mill Canal	6	SMP	43.652374	-116.287447
851	4n1e25_024	Private	Thurman Mill Canal	6	SMP	43.651731	-116.286733
852	4n1e25_025	Private	Thurman Mill Canal	6	SMP	43.650976	-116.285932
853	4n1e25_028	ITD, Ada County	Eureka Canal	0	open ditch	43.659185	-116.278256
854	4n1e25_029	ACHD	Warm Springs Canal	12	CMP	43.660611	-116.288391
855	4n1e25_030	ACHD	Warm Springs Canal	10	RCP	43.659369	-116.284222
856	4n1e25_031	Private	Warm Springs Canal	10	PVC	43.658877	-116.284312
857	4n1e25_032	ACHD	Settlers Canal	30	CMP	43.648549	-116.29403
858	4n1e25_034	ACHD	Warm Springs Canal	0	open ditch	43.657119	-116.284039
859	4n1e25_035	ITD	Warm Springs Canal	0	Drop Inlet	43.657439	-116.283821
860	4n1e25_036	ACHD	Warm Springs Canal	12	RCP	43.659286	-116.28427
861	4n1e25_037	ACHD	Warm Springs Canal	10	RCP	43.393341	-116.173308
862	4n1e25_038	ACHD	Thurman Mill Canal	12	PVC	43.65254	-116.284267
863	4n1e25_039	ITD	Unnamed	12	PVC	43.655672	-116.279921
864	4n1e25_040	ACHD	Unnamed	0	Drop Inlet	43.656913	-116.284196
865	4n1e26_001	Private	Thurman Mill Canal	24	ADS	43.655286	-116.296885
866	4n1e26_002	ACHD	Thurman Mill Canal	12	PVC	43.655745	-116.298981
867	4n1e26_004	ACHD	Thurman Mill Canal	15	CMP	43.655713	-116.300406
868	4n1e26_005	ACHD	Settlers Canal	12	CMP	43.648695	-116.181443
869	4n1e26_006	Irrigation	Settlers Canal	12	CMP	43.648652	-116.303097
870	4n1e26_007	ACHD, Irrigation	Settlers Canal	0	open ditch	43.648756	-116.298262
871	4n1e26_008	Irrigation	Settlers Canal	12	CMP	43.64873	-116.296771
872	4n1e26_009	ACHD	Warm Springs Canal	12	RCP	43.662458	-116.295912
873	4n1e26_011	ACHD	Thurman Mill Canal-Lateral	12	CMP	43.658343	-116.299696
874	4n1e26_012	ACHD	Thurman Mill Canal-Lateral	12	CMP	43.658228	-116.299787
875	4n1e26_013	ACHD	Thurman Mill Canal-Lateral	12	CMP	43.658816	-116.297835
876	4n1e26_014	ACHD	Thurman Mill Canal-Lateral	12	CMP	43.658842	-116.297822
877	4n1e26_015	ACHD	Thurman Mill Canal	15	CMP	43.656635	-116.30267
878	4n1e26_017	ACHD	Helm Lateral	12	CMP	43.655749	-116.309112
879	4n1e26_021	ACHD	Settlers Canal	18	CMP	43.648654	-116.304438
880	4n1e26_022	Private	Thurman Mill Canal	8	PVC	43.654731	-116.294707
881	4n1e26_023	Private	Thurman Mill Canal	8	PVC	43.654778	-116.29492
882	4n1e26_024	Private	Thurman Mill Canal	8	PVC	43.65468	-116.294377
883	4n1e26_025	Private	Thurman Mill Canal	8	PVC	43.654635	-116.294224
884	4n1e26_026	Private	Thurman Mill Canal	8	PVC	43.655025	-116.295783
885	4n1e26_028	Private	Warm Springs Canal	16	PVC	43.661657	-116.295429
886	4n1e26_029	Private	Thurman Mill Canal	12	PVC	43.655704	-116.29903
887	4n1e26_030	ACHD	Settlers Canal	48	RCP	43.648556	-116.294369
888	4n1e26_031	Irrigation	Settlers Canal	15	CMP	43.648612	-116.294634
889	4n1e26_033	Private	Helm Lateral	15	CMP	43.658242	-116.311523
890	4n1e26_034	ACHD	Thurman Drain	42	RCP	43.655696	-116.298986
891	4n1e27_001	ACHD	Zinger Lateral	24	RCP	43.655566	-116.333865
892	4n1e27_002	ACHD	Zinger Lateral	12	RCP	43.65565	-116.334113
893	4n1e27_003	ACHD	Zinger Lateral	12	PVC	43.651256	-116.324957
894	4n1e27_004	ACHD	Zinger Lateral	10	PVC	43.651348	-116.325206
895	4n1e27_005	ACHD	Zinger Lateral	12	PVC	43.649546	-116.323197
896	4n1e27_006	ACHD	Zinger Lateral	12	CMP	43.648629	-116.314205
897	4n1e27_007	ACHD	Zinger Lateral	12	RCP	43.649297	-116.31677

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#	OUTFALL ID	OWNERSHIP	RECEIVING WATER	PIPE DIAMETER	PIPE TYPE	LATITUDE	LONGITUDE
898	4n1e27_008	ACHD	Zinger Lateral	12	CMP	43.652024	-116.328639
899	4n1e27_009	ACHD	Zinger Lateral	18	RCP	43.65286	-116.330687
900	4n1e27_012	ACHD	McMillan #2 Lateral	12	PVC	43.655784	-116.32239
901	4n1e27_013	ACHD	McMillan #2 Lateral	12	PVC	43.652132	-116.315092
902	4n1e27_014	ACHD	Zinger Lateral	18	PVC	43.648607	-116.32139
903	4n1e28_001	ACHD	Zinger Lateral	12	CMP	43.655808	-116.334553
904	4n1e28_002	ACHD	McMillan Lateral	12	RCP	43.659891	-116.336737
905	4n1e28_003	ACHD	McMillan Lateral	12	HDPE	43.661125	-116.338734
906	4n1e28_004	ACHD	McMillan Lateral	0	S/G Trap	43.661007	-116.339152
907	4n1e28_005	ACHD	McMillan Lateral	12	CMP	43.659624	-116.334788
908	4n1e28_006	ACHD	McMillan Lateral	12	CMP	43.661518	-116.342035
909	4n1e28_007	ACHD	McMillan Lateral	18	HDPE	43.66183	-116.342654
910	4n1e28_008	ACHD	McMillan Lateral	6	PVC	43.661842	-116.342745
911	4n1e33_001	ITD	North Slough	0	open ditch	43.643481	-116.354032
912	4n1e33_002	Private	Shavrer Lateral	0	open ditch	43.642835	-116.337634
913	4n1e33_003	ACHD	North Slough	24	RCP	43.641056	-116.344285
914	4n1e33_004	ACHD	North Slough	12	CMP	43.639246	-116.344372
915	4n1e33_005	ACHD	North Slough	15	CMP	43.637845	-116.341351
916	4n1e33_006	ACHD	North Slough	15	CMP	43.637141	-116.339842
917	4n1e33_007	ACHD	North Slough	10	CMP	43.635584	-116.338543
918	4n1e33_008	ACHD	North Slough	8	PVC	43.634636	-116.336201
919	4n1e34_001	Boise City	Karnes Lateral	10	PVC	43.647562	-116.333271
920	4n1e34_002	ACHD	Karnes Lateral	15	CMP	43.647503	-116.332879
921	4n1e34_003	ACHD	Karnes Lateral	12	PVC	43.646863	-116.331748
922	4n1e34_004	ACHD, Irrigation	Karnes Lateral	15	RCP	43.646635	-116.329859
923	4n1e34_005	Private	Karnes Lateral	10	CMP	43.645635	-116.327162
924	4n1e34_006	Private	Karnes Lateral	12	PVC	43.64468	-116.32442
925	4n1e34_007	ACHD	Shavrer Lateral	12	PVC	43.64259	-116.334171
926	4n1e34_008	ACHD	Karnes Lateral	15	RCP	43.642411	-116.321683
927	4n1e34_009	ACHD	Karnes Lateral	8	PVC	43.643236	-116.321697
928	4n1e34_010	ACHD	Karnes Lateral	12	CMP	43.64348	-116.322876
929	4n1e34_011	ACHD, Irrigation	Shavrer Lateral	0	open ditch	43.641169	-116.333719
930	4n1e34_014	ACHD	North Slough	24	CMP	43.634572	-116.32976
931	4n1e34_015	ACHD	North Slough	12	CMP	43.634509	-116.328593
932	4n1e34_016	ACHD	North Slough	18	CMP	43.634361	-116.326919
933	4n1e34_018	ACHD	Karnes Lateral	12	RCP	43.641253	-116.319738
934	4n1e34_019	ACHD	Karnes Lateral	15	RCP	43.639346	-116.3185
935	4n1e34_020	ACHD	Settlers Canal	12	PVC	43.634069	-116.316959
936	4n1e34_022	Irrigation	Settlers Canal	15	CMP	43.635543	-116.316691
937	4n1e34_023	ACHD	Karnes Lateral	12	RCP	43.642174	-116.321713
938	4n1e34_024	ACHD	Karnes Lateral	12	PVC	43.642505	-116.321726
939	4n1e34_025	ACHD	Karnes Lateral	0	open ditch	43.641021	-116.319174
940	4n1e35_001	ACHD	Zinger Lateral	12	ADS	43.646554	-116.311207
941	4n1e35_002	ACHD	Settlers Canal	8	PVC	43.642788	-116.313828
942	4n1e35_003	ACHD	Settlers Canal	8	CMP	43.641624	-116.313769
943	4n1e35_004	ACHD	Settlers Canal	12	PVC	43.641065	-116.313796
944	4n1e35_005	Irrigation	Settlers Canal	12	PVC	43.640273	-116.313687
945	4n1e35_006	ACHD	Settlers Canal	0	open ditch	43.642053	-116.313782
946	4n1e35_007	ACHD	Zinger Lateral	12	PVC	43.648385	-116.313065
947	4n1e35_008	ACHD	Zinger Lateral	12	PVC	43.648378	-116.313576
948	4n1e35_009	ACHD	Settlers Canal	12	RCP	43.643362	-116.313848
949	4n1e35_010	ACHD	Unnamed	12	PVC	43.637547	-116.305831
950	4n1e35_011	ACHD	Unnamed	12	PVC	43.637557	-116.304875
951	4n1e35_012	ACHD	Unnamed	12	PVC	43.634695	-116.296014
952	4n1e35_013	ACHD	Unnamed	12	PVC	43.634549	-116.294748
953	4n1e35_014	ACHD	Unnamed	0	Drop Inlet	43.636593	-116.309846
954	4n1e36_001	ACHD	Settlers Canal	15	CMP	43.648312	-116.292258
955	4n1e36_002	ACHD	Settlers Canal	12	CMP	43.646328	-116.288902
956	4n1e36_003	ACHD	Settlers Canal	10	CMP	43.646157	-116.28884
957	4n1e36_004	ACHD	Settlers Canal	10	CMP	43.645233	-116.287308
958	4n1e36_005	ACHD	Settlers Canal	10	CMP	43.645082	-116.287382
959	4n1e36_006	ACHD	Settlers Canal	24	CMP	43.645105	-116.286541
960	4n1e36_007	ACHD	Settlers Canal	16	PVC	43.645205	-116.285767
961	4n1e36_008	ACHD	Settlers Canal	12	CMP	43.645234	-116.285314
962	4n1e36_010	ACHD	Settlers Canal	12	CMP	43.645068	-116.282667
963	4n1e36_011	ACHD	Settlers Canal	10	CMP	43.644834	-116.281635
964	4n1e36_012	ACHD	Settlers Canal	18	CMP	43.644371	-116.279183
965	4n1e36_014	ACHD	Settlers Canal	48	CMP	43.644154	-116.277753
966	4n1e36_026	ACHD	Settlers Canal	0	open ditch	43.645113	-116.286821

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#	OUTFALL ID	OWNERSHIP	RECEIVING WATER	PIPE DIAMETER	PIPE TYPE	LATITUDE	LONGITUDE
967	4n1e36_028	Irrigation	Settlers Canal	10	SMP	43.645456	-116.288407
968	4n1e36_029	ACHD	Settlers Canal	12	CMP	43.645134	-116.283272
969	4n1e36_031	ACHD	Thurman Mill Canal	12	PVC	43.647966	-116.279487
970	4n2e17_001	ACHD, Private	Pierce Creek	0	open ditch	43.690285	-116.245117
971	4n2e17_002	ACHD	Pierce Creek	0	open ditch	43.688179	-116.247692
972	4n2e17_003	ACHD	Pierce Gulch	0	open ditch	43.687766	-116.248198
973	4n2e18_001	ACHD	Farmers Union Canal	15	CMP	43.679496	-116.271584
974	4n2e18_002	ACHD	Pierce Creek	12	CMP	43.679445	-116.268038
975	4n2e18_003	ACHD	Pierce Creek	15	CMP	43.680008	-116.267381
976	4n2e18_005	ACHD	Pierce Creek	15	CMP	43.681331	-116.257898
977	4n2e18_006	ACHD	Pierce Creek	12	CMP	43.683659	-116.252903
978	4n2e18_007	ACHD	Eagle Drain	15	RCP	43.679724	-116.274016
979	4n2e18_008	ACHD	Eagle Drain	12	PVC	43.67839	-116.274073
980	4n2e18_009	ACHD	Eagle Drain	12	CMP	43.680355	-116.263467
981	4n2e19_001	ACHD	Eagle Drain	12	PVC	43.67719	-116.273987
982	4n2e19_002	ACHD	Eagle Drain	12	PVC	43.676529	-116.273961
983	4n2e19_003	ACHD	Eagle Drain	12	PVC	43.675108	-116.273969
984	4n2e19_004	ACHD	Eagle Drain	8	CMP	43.67506	-116.274041
985	4n2e19_005	ACHD	Eagle Drain	12	PVC	43.674085	-116.273972
986	4n2e19_006	ACHD	Eagle Drain	0	open ditch	43.673606	-116.273892
987	4n2e19_007	ACHD	Farmers Union Canal	24	CMP	43.675683	-116.263736
988	4n2e19_008	Private	Lake Elmore	15	RCP	43.663049	-116.273022
989	4n2e19_009	ACHD	Lake Elmore	12	PVC	43.663407	-116.272848
990	4n2e19_010	ACHD	Eagle Drain	15	PVC	43.668754	-116.263258
991	4n2e19_011	ACHD	Eagle Drain	24	CMP	43.67012	-116.264626
992	4n2e19_012	Private	Eagle Drain	12	CMP	43.668337	-116.262665
993	4n2e19_013	ACHD	Eagle Drain	0	open ditch	43.667592	-116.261938
994	4n2e19_014	ACHD	Eagle Drain	24	PVC	43.666756	-116.261171
995	4n2e19_015	ACHD	Eagle Drain	12	PVC	43.664723	-116.258685
996	4n2e19_016	ACHD	Eagle Drain	12	CMP	43.66363	-116.254869
997	4n2e19_017	ACHD	Eagle Drain	15	CMP	43.663473	-116.254339
998	4n2e19_019	ACHD	Eagle Drain	12	CMP	43.663818	-116.255472
999	4n2e19_020	Boise School District	Eagle Drain	8	PVC	43.664441	-116.258027
1000	4n2e19_021	ACHD	Eagle Drain	30	CMP	43.664431	-116.258296
1001	4n2e19_022	ACHD	Farmers Union Canal	8	CMP	43.670077	-116.255856
1002	4n2e19_023	Private	Farmers Union Canal	12	CMP	43.672002	-116.257847
1003	4n2e19_024	Private	Farmers Union Canal	12	SMP	43.671949	-116.257324
1004	4n2e19_025	ACHD	Eagle Drain	12	CMP	43.673855	-116.274021
1005	4n2e19_026	ACHD	Eagle Drain	0	open ditch	43.670272	-116.264773
1006	4n2e19_027	Irrigation	Eagle Drain	15	CMP	43.672006	-116.266521
1007	4n2e19_028	ACHD	Eagle Drain	12	CMP	43.673628	-116.26834
1008	4n2e19_030	Irrigation	Eagle Drain	15	HDPE	43.673612	-116.268624
1009	4n2e19_031	Private	Eagle Drain	12	CMP	43.67357	-116.269276
1010	4n2e19_032	ACHD	Unnamed	30	RCP	43.672797	-116.274116
1011	4n2e19_033	ACHD	Unnamed	10	PVC	43.671246	-116.274151
1012	4n2e19_034	ACHD	Unnamed	10	PVC	43.663525	-116.268597
1013	4n2e19_035	ACHD	Eagle Drain	30	PVC	43.67287171	-116.2675294
1014	4n2e20_001	ACHD	Polecat Gulch	18	RCP	43.663335	-116.249553
1015	4n2e20_002	ACHD	Polecat Gulch	12	PVC	43.664278	-116.249542
1016	4n2e20_004	ACHD	Polecat Gulch	15	PVC	43.665233	-116.249554
1017	4n2e20_005	ACHD	Polecat Gulch	12	PVC	43.665999	-116.248369
1018	4n2e20_006	ACHD	Polecat Gulch	12	PVC	43.666083	-116.248309
1019	4n2e20_007	ACHD	Polecat Gulch	0	Drop Inlet	43.666155	-116.248312
1020	4n2e20_008	ACHD	Polecat Gulch	0	Drop Inlet	43.666957	-116.248307
1021	4n2e20_009	ACHD	Polecat Gulch	0	Drop Inlet	43.667754	-116.248291
1022	4n2e20_010	ACHD	Polecat Gulch	12	PVC	43.668649	-116.248291
1023	4n2e20_011	ACHD	Polecat Gulch	12	PVC	43.66864	-116.248277
1024	4n2e20_012	ACHD	Polecat Gulch	12	PVC	43.669205	-116.247816
1025	4n2e20_013	ACHD	Polecat Gulch	12	CMP	43.669928	-116.246527
1026	4n2e20_014	ACHD	Polecat Gulch	12	PVC	43.670063	-116.246251
1027	4n2e20_015	ACHD	Polecat Gulch	24	ADS	43.669962	-116.245988
1028	4n2e20_016	ACHD	Polecat Gulch	0	Drop Inlet	43.670197	-116.245862
1029	4n2e20_017	ACHD	Polecat Gulch	0	Drop Inlet	43.670416	-116.244756
1030	4n2e20_018	ACHD	Polecat Gulch	0	Drop Inlet	43.670822	-116.243763
1031	4n2e20_019	ACHD	Polecat Gulch	0	Drop Inlet	43.671286	-116.24287
1032	4n2e20_020	ACHD	Polecat Gulch	0	Drop Inlet	43.671857	-116.242058
1033	4n2e20_021	ACHD	Polecat Gulch	0	Drop Inlet	43.672383	-116.24126
1034	4n2e20_022	ACHD	Polecat Gulch	0	Drop Inlet	43.672832	-116.240201
1035	4n2e20_023	ACHD	Polecat Gulch	0	Drop Inlet	43.673262	-116.239168

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#	OUTFALL ID	OWNERSHIP	RECEIVING WATER	PIPE DIAMETER	PIPE TYPE	LATITUDE	LONGITUDE
1036	4n2e20_024	ACHD	Polecat Gulch	0	Drop Inlet	43.673711	-116.238461
1037	4n2e20_025	ACHD	Polecat Gulch	0	Drop Inlet	43.673913	-116.237776
1038	4n2e20_026	ACHD	Polecat Gulch	0	Drop Inlet	43.674122	-116.237141
1039	4n2e20_027	ACHD	Polecat Gulch	0	Drop Inlet	43.674281	-116.23685
1040	4n2e20_028	ACHD	Polecat Gulch	12	PVC	43.674269	-116.236843
1041	4n2e20_029	ACHD	Polecat Gulch	0	Drop Inlet	43.67462	-116.236388
1042	4n2e20_030	ACHD	Polecat Gulch	0	Drop Inlet	43.674861	-116.236164
1043	4n2e20_031	ACHD	Polecat Gulch	0	Drop Inlet	43.674979	-116.235847
1044	4n2e20_032	ACHD	Polecat Gulch	0	Drop Inlet	43.663087	-116.249624
1045	4n2e21_001	ACHD	Stewart Gulch	12	RCP	43.665577	-116.215134
1046	4n2e21_002	ACHD	Stewart Gulch	27	RCP	43.665544	-116.215058
1047	4n2e26_006	Private	Crane Gulch	10	CMP	43.658148	-116.175639
1048	4n2e26_008	ACHD	Crane Gulch	24	CMP	43.656544	-116.176573
1049	4n2e26_009	ACHD	Crane Gulch	10	CMP	43.658537	-116.174567
1050	4n2e28_001	ACHD	Boise City Canal	0	open ditch	43.64996	-116.225928
1051	4n2e28_002	ACHD	Boise City Canal	0	open ditch	43.649867	-116.225862
1052	4n2e28_003	ACHD	Boise City Canal	12	PVC	43.650856	-116.22648
1053	4n2e28_005	ACHD	Stewart Gulch	12	CMP	43.656056	-116.233207
1054	4n2e28_006	ACHD	Boise City Canal	0	Drop Inlet	43.648475	-116.223224
1055	4n2e28_007	ACHD	Boise City Canal	18	SMP	43.651811	-116.230849
1056	4n2e28_008	ACHD	Boise City Canal	18	RCP	43.651503	-116.227674
1057	4n2e28_009	ACHD	Boise City Canal	0	Drop Inlet	43.648477	-116.223373
1058	4n2e28_010	ACHD	Stewart Gulch	0	open ditch	43.662507	-116.218091
1059	4n2e29_001	ACHD	Boise City Canal	10	CMP	43.651837	-116.23524
1060	4n2e29_002	ACHD	Boise City Canal	12	PVC	43.651975	-116.236822
1061	4n2e29_003	ACHD	Stewart Gulch	15	CMP	43.657119	-116.241734
1062	4n2e29_004	ACHD	Eagle Drain	24	CMP	43.662233	-116.249638
1063	4n2e29_005	Irrigation	Farmers Union Canal	12	CMP	43.659078	-116.249633
1064	4n2e29_006	ACHD	Farmers Union Canal	12	CMP	43.658288	-116.24969
1065	4n2e29_007	Irrigation	Farmers Union Canal	30	RCP	43.655684	-116.249817
1066	4n2e29_008	ACHD	Boise Valley Canal	18	CMP	43.651615	-116.251442
1067	4n2e29_009	Private, Irrigation	Farmers Union Canal	18	PVC	43.660029	-116.249689
1068	4n2e29_011	ACHD	Lateral 49	12	CMP	43.658862	-116.239844
1069	4n2e29_012	Irrigation	Farmers Union Canal	12	RCP	43.65751	-116.249653
1070	4n2e29_013	ACHD	Stewart Gulch	12	ASTM	43.655761	-116.234354
1071	4n2e29_014	ACHD	Stewart Gulch	12	ASTM	43.655735	-116.234358
1072	4n2e29_015	ACHD	Boise City Canal	0	Drop Inlet	43.655503	-116.238561
1073	4n2e29_016	ACHD	Boise City Canal	18	PVC	43.655402	-116.238594
1074	4n2e29_017	ACHD	Unnamed	12	CMP	43.655409	-116.239446
1075	4n2e29_018	ACHD	Unnamed	12	CMP	43.655411	-116.239623
1076	4n2e29_019	ACHD	Unnamed	12	RCP	43.655415	-116.24098
1077	4n2e29_020	ACHD	Unnamed	12	RCP	43.655424	-116.242039
1078	4n2e29_021	ACHD	Unnamed	12	RCP	43.655438	-116.243597
1079	4n2e29_022	ACHD	Unnamed	12	PVC	43.655447	-116.244672
1080	4n2e29_023	ACHD	Unnamed	12	PVC	43.655531	-116.244985
1081	4n2e29_024	ACHD	Unnamed	12	PVC	43.655589	-116.246611
1082	4n2e29_025	ACHD	Farmers Union Canal	12	CMP	43.653437	-116.249756
1083	4n2e29_026	ACHD	Unnamed	12	PVC	43.655593	-116.248243
1084	4n2e30_001	Private	Stewart Gulch	12	PVC	43.651315	-116.261911
1085	4n2e30_003	Private	Dry Creek Canal	12	CMP	43.655629	-116.263835
1086	4n2e30_004	ACHD	Dry Creek Canal	15	CMP	43.654112	-116.258944
1087	4n2e30_006	Private	Dry Creek Canal	18	CMP	43.65489	-116.260771
1088	4n2e30_007	ACHD	Stewart Gulch	24	PVC	43.654486	-116.255588
1089	4n2e30_008	ACHD	Dry Creek Canal	18	ADS	43.658009	-116.264791
1090	4n2e30_009	ACHD	Boise Valley Canal	12	PVC	43.656218	-116.255768
1091	4n2e30_010	Private	Dry Creek Canal	12	PVC	43.65656	-116.263952
1092	4n2e30_011	ACHD	Dry Creek Canal	12	PVC	43.656609	-116.263969
1093	4n2e30_012	ACHD	Boise River	18	PVC	43.657519	-116.271655
1094	4n2e30_013	ACHD	Dry Creek Canal	12	CMP	43.655127	-116.263293
1095	4n2e30_014	ACHD	Boise River	12	PVC	43.652925	-116.266798
1096	4n2e30_015	Private	Dry Creek Canal	12	PVC	43.657922	-116.264686
1097	4n2e30_016	Ada County	Eureka Canal	30	RCP	43.650204	-116.268946
1098	4n2e30_017	Private	Stewart Gulch	24	PVC	43.651435	-116.261325
1099	4n2e30_018	Ada County	Eureka Canal	4	PVC	43.654165	-116.271769
1100	4n2e30_019	Ada County	Eureka Canal	6	ADS	43.653248	-116.270969
1101	4n2e30_020	Ada County	Eureka Canal	4	PVC	43.653659	-116.271288
1102	4n2e30_021	Ada County	Eureka Canal	4	PVC	43.653743	-116.271343
1103	4n2e30_023	Ada County	Eureka Canal	4	PVC	43.653807	-116.271397
1104	4n2e30_024	Ada County	Eureka Canal	4	PVC	43.654021	-116.271622

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#	OUTFALL ID	OWNERSHIP	RECEIVING WATER	PIPE DIAMETER	PIPE TYPE	LATITUDE	LONGITUDE
1105	4n2e31_001	ACHD	Thurman Mill Canal	12	CMP	43.647731	-116.27426
1106	4n2e31_003	ACHD	Settlers Canal	8	RCP	43.643047	-116.269596
1107	4n2e31_004	ACHD	Davis Drain	36	RCP	43.64297	-116.258834
1108	4n2e31_006	ACHD	Davis Drain	18	RCP	43.63863	-116.258577
1109	4n2e31_007	ACHD	Davis Drain	12	CMP	43.640055	-116.26001
1110	4n2e31_008	ACHD	Davis Drain	12	PVC	43.640343	-116.260091
1111	4n2e31_010	Irrigation	Settlers Canal	0	open ditch	43.63405	-116.257473
1112	4n2e31_011	ACHD	Davis Drain	15	RCP	43.636619	-116.257916
1113	4n2e31_012	ACHD, Private	Thurman Mill Canal	12	PVC	43.636583	-116.25848
1114	4n2e31_013	Private	Thurman Mill Canal	24	SMP	43.639146	-116.265504
1115	4n2e31_014	Private	Davis Drain	4	PVC	43.643556	-116.258744
1116	4n2e31_015	ACHD	Boise River	12	ADS	43.645814	-116.260055
1117	4n2e31_016	ACHD	Davis Drain	12	ADS	43.644374	-116.259024
1118	4n2e31_017	Private	Davis Drain	10	CMP	43.634675	-116.257543
1119	4n2e31_018	Private	Davis Drain	10	CMP	43.635131	-116.257857
1120	4n2e31_019	Private	Davis Drain	10	CMP	43.635233	-116.258133
1121	4n2e31_021	Private	Davis Drain	8	CMP	43.635903	-116.258424
1122	4n2e31_022	ACHD	Davis Drain	12	RCP	43.638661	-116.25867
1123	4n2e31_023	ACHD	Davis Drain	12	RCP	43.638588	-116.258518
1124	4n2e31_024	Private	Thurman Mill Canal	12	CMP	43.638983	-116.265554
1125	4n2e31_026	Private	Davis Drain	0	Drop Inlet	43.636555	-116.258094
1126	4n2e31_027	Private	Thurman Mill Canal	0	Drop Inlet	43.636434	-116.257947
1127	4n2e31_028	Private	Davis Drain	0	Drop Inlet	43.638539	-116.258571
1128	4n2e31_029	ACHD	Davis Drain	12	PVC	43.636867	-116.257348
1129	4n2e31_030	ACHD, Irrigation	Thurman Mill Canal	24	SMP	43.639125	-116.26562
1130	4n2e32_001	Private	Boise River	10	CMP	43.641737	-116.25087
1131	4n2e32_002	ACHD, Private	Boise River	6	SMP	43.641829	-116.250888
1132	4n2e32_003	Private	Boise River	10	CMP	43.64187	-116.250985
1133	4n2e32_006	ACHD	Boise River	12	SMP	43.636044	-116.243539
1134	4n2e32_007	ACHD	Boise River	18	CMP	43.635263	-116.242549
1135	4n2e32_008	ACHD	Boise River	36	CMP with lid	43.636008	-116.240817
1136	4n2e32_009	ACHD	Farmers Union Canal	12	RCP	43.637678	-116.24006
1137	4n2e32_010	ACHD	Farmers Union Canal	12	CMP	43.638154	-116.240064
1138	4n2e32_011	ACHD	Farmers Union Canal	15	CMP	43.639294	-116.240811
1139	4n2e32_012	ACHD	Farmers Union Canal	12	CMP	43.634954	-116.236776
1140	4n2e32_013	ACHD, Private	Crane Creek	8	CMP	43.634027	-116.235774
1141	4n2e32_014	ACHD	Farmers Union Canal	12	CMP	43.382884	116.143352
1142	4n2e32_015	ACHD	Boise River	24	RCP	43.643585	-116.248592
1143	4n2e32_016	ACHD	Farmers Union Canal	10	CMP	43.644824	-116.243311
1144	4n2e32_017	ACHD	Farmers Union Canal	12	CMP	43.647305	-116.24609
1145	4n2e32_018	Private	Boise River	12	CMP	43.641044	-116.250131
1146	4n2e32_021	Private	Boise Valley Canal	12	CMP	43.647841	-116.248233
1147	4n2e32_023	Private	Boise Valley Canal	10	PVC	43.647632	-116.247955
1148	4n2e32_024	Private	Boise Valley Canal	12	Metal	43.647653	-116.24799
1149	4n2e32_025	Private	Boise Valley Canal	12	Metal	43.647732	-116.248105
1150	4n2e32_026	ACHD	Boise Valley Canal	10	CMP	43.385162	-116.145314
1151	4n2e33_001	ACHD	Boise City Canal	8	RCP	43.636137	-116.218411
1152	4n2e33_002	ACHD	Boise City Canal	24	CMP	43.642679	-116.220067
1153	4n2e33_003	Private	Boise City Canal	12	CMP	43.638072	-116.219123
1154	4n2e33_004	ACHD	Boise City Canal	12	CMP	43.647753	-116.221601
1155	4n2e33_005	ACHD	Boise City Canal	12	CMP	43.647359	-116.221008
1156	4n2e33_006	Irrigation	Crane Creek	18	RCP	43.633696	-116.226463
1157	4n2e33_007	ACHD	Boise City Canal	12	CMP	43.64565	-116.219233
1158	4n2e33_008	Irrigation	Boise City Canal	6	PVC	43.6445	-116.219728
1159	4n2e33_009	ACHD	Boise City Canal	24	CMP	43.646988	-116.219641
1160	4n2e33_010	ACHD	Boise City Canal	6	PVC	43.643694	-116.219871
1161	4n2e33_011	ACHD	Unnamed	12	PVC	43.639147	-116.224564
1162	4n2e33_012	ACHD	Unnamed	12	PVC	43.636397	-116.223473
1163	4n2e33_013	ACHD	Unnamed	0	Drop Inlet	43.636371	-116.220391
1164	4n2e33_014	ACHD	Unnamed	12	PVC	43.638048	-116.216938
1165	4n2e33_015	ACHD	Boise City Canal	12	PVC	43.639448	-116.2199
1166	4n2e34_001	ACHD	Crane Creek	15	CMP	43.645042	-116.203675
1167	4n2e34_002	ACHD	Crane Creek	19	CMP	43.643581	-116.204911
1168	4n2e34_003	ACHD	Crane Creek	36	CMP	43.643386	-116.205159
1169	4n2e34_004	ACHD	Crane Creek	0	Drop Inlet	43.645603	-116.20316
1170	4n2e34_005	ACHD	Crane Creek	10	RCP	43.647506	-116.198763
1171	4n2e34_006	ACHD	Crane Creek	12	CMP	43.646949	-116.199858
1172	4n2e34_007	ACHD	Crane Creek	10	CMP	43.646353	-116.201707
1173	4n2e34_008	ACHD	Crane Creek	12	PVC	43.646073	-116.202277

2022 Outfall Inventory Phase I Permit Area Ada County, Idaho

#	OUTFALL ID	OWNERSHIP	RECEIVING WATER	PIPE DIAMETER	PIPE TYPE	LATITUDE	LONGITUDE
1174	4n2e34_010	Boise City	Hulls Gulch	12	ADS	43.63602	-116.198382
1175	4n2e34_011	ACHD	Crane Creek	8	CMP	43.640155	-116.209498
1176	4n2e34_012	ACHD	Crane Creek	9	CMP	43.639417	-116.210681
1177	4n2e34_014	ACHD	Crane Creek	18	RCP	43.641257	-116.208423
1178	4n2e34_015	ACHD	Crane Creek	0	Drop Inlet	43.641371	-116.208107
1179	4n2e34_016	ACHD	Crane Creek	0	Drop Inlet	43.643544	-116.204956
1180	4n2e34_017	ACHD	Crane Creek	0	Drop Inlet	43.64343	-116.205057
1181	4n2e34_018	ACHD	Crane Creek	0	Drop Inlet	43.645752	-116.203057
1182	4n2e34_019	ACHD	Crane Creek	15	CMP	43.645694	-116.203098
1183	4n2e34_020	ACHD	Crane Creek	8	CMP	43.640202	-116.209448
1184	4n2e34_021	ACHD	Hulls Gulch	36	ADS	43.635971	-116.198607
1185	4n2e34_022	ACHD	Crane Creek	36	CMP	43.639443	-116.210806
1186	4n2e34_023	ACHD	Hulls Gulch	18	RCP	43.381297	-116.121417
1187	4n2e34_024	ACHD	Hulls Gulch	10	PVC	43.381667	-116.121802
1188	4n2e34_025	ACHD	Hulls Gulch	10	PVC	43.381715	-116.121917
1189	4n2e34_026	ACHD	Hulls Gulch	12	RCP	43.381735	-116.121877
1190	4n2e34_027	ACHD	Hulls Gulch	0	Drop Inlet	43.637718	-116.204771
1191	4n2e34_028	ACHD	Hulls Gulch	36	CMP	43.381264	-116.12138
1192	4n2e35_001	ACHD	Hulls Gulch	12	RCP	43.641117	-116.186856
1193	4n2e35_002	Boise City	Hulls Gulch	12	RCP	43.641233	-116.186699
1194	4n2e35_004	ACHD	Hulls Gulch-Lateral	15	CMP	43.647301	-116.177147

Phase I Dry Weather Irrigation and Groundwater Flows WY 2022

#	OUTFALL ID	OWNERSHIP	RECEIVING WATER	PIPE DIAMETER	PIPE TYPE	LATITUDE	LONGITUDE	SOURCE CONFIRMED
1	3n1e01_010	ACHD	North Slough	24	RCP	43.629421	-116.294095	Irrigation, 2009
2	3n1e15_001	ACHD, Irrigation	Ridenbaugh Canal	12	CMP	43.603942	-116.318706	Irrigation, 2012
3	3n1e15_008	ACHD	Ridenbaugh Canal	16	CMP	43.602428	-116.331167	Irrigation, 2009
4	3n2e05_001	ACHD	Davis Drain	24	SMP	43.62309	-116.245492	Irrigation, 2012
5	3n2e05_027	ACHD	Davis Drain	24	RCP	43.629319	-116.252786	Irrigation, 2015
6	3n2e06_019	ACHD	Davis Drain	24	RCP	43.629699	-116.253481	Irrigation, 2009
7	3n2e07_009	ACHD, Railroad	Ridenbaugh Canal	24	CMP	43.606069	-116.271601	Irrigation, 2008
8	3n2e08_019	ACHD, Private	Settlers Canal	24	RCP	43.617969	-116.234202	Irrigation, 2003
9	3n2e17_017	ACHD	Farmers Lateral	18	CMP	43.595719	-116.236695	Irrigation, 2018
10	3n2e18_013	ACHD	Farmers Lateral	15	SMP	43.595855	-116.261996	Irrigation, 2009
11	3n2e22_002	ACHD	Ridenbaugh Canal	15	RCP	43.588437	-116.201235	Irrigation, 2011
12	3n2e24_006	ACHD	Boise River	12	CMP	43.356875	-116.933662	Groundwater, 2008
13	4n1e13_010	ACHD	Eagle Drain	12	HDPE	43.683171	-116.28445	Groundwater, 2017
14	4n1e14_006	ACHD	Eagle Drain	30	RCP	43.684824	-116.301549	Groundwater, 2010
15	4n1e26_007	ACHD, Irrigation	Settlers Canal	0	open ditch	43.648756	-116.298262	Irrigation, 2012
16	4n1e34_019	ACHD	Karnes Lateral	15	RCP	43.639346	-116.3185	Irrigation, 2011
17	4n1e35_001	ACHD	Zinger Lateral	12	ADS	43.646554	-116.311207	Irrigation, 2016
18	4n1e36_006	ACHD	Settlers Canal	24	CMP	43.645105	-116.286541	Irrigation, 2007
19	4n1e36_014	ACHD	Settlers Canal	48	CMP	43.644154	-116.277753	Irrigation, 2008
20	4n2e19_010	ACHD	Eagle Drain	15	PVC	43.668754	-116.263258	Groundwater and Irrigation, 2010
21	4n2e32_014	ACHD	Farmers Union Canal	12	CMP	43.382884	116.143352	Irrigation, 2009

Appendix E: Compliance and Implementation Status

Stormwater Management Program Compliance and Implementation Status - Phase I																
Stormwater Management Program Areas	Permit Reference	Stormwater Management Program Components	Permit Breakdown	Permit Compliance Date	ACHD Status											
					Completed	Ongoing	Update									
							2021-2022 Permit Year 1		2022-2023 Permit Year 2		2023-2024 Permit Year 3		2024-2025 Permit Year 4		2025 -2026 Permit year 5	
							SWMP	Annual Report	SWMP	Annual Report	SWMP	Annual Report	SWMP	Annual Report	SWMP	Annual Report
Stormwater Management Program	2.5.5	Maintain updated SWMP Documents	The Permittees must maintain a written SWMP document or documents that describes in detail how the Permittee complies with the required stormwater management control measures in this Permit. Each Permittee must submit their updated SWMP Documents with the Permit Renewal Application.	4/3/2026		X	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐
	2.5.5	Post SWMP on Website	Each Permittee's current SWMP Document must be available through the website(s) required in Part 3.1.8 (Publicly Accessible Website).	10/1/2022	9/30/2022 Update as needed	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	5	Required Response to Excursions Above Idaho Water Quality Standards	The Permittees will be presumed to be in compliance with Idaho Water Quality Standards if in compliance with Permit. If a discharge from the MS4s causes or contributes to an excursion, the Permittees remain in compliance with the Permit as long as SWMP control measures are implemented and the Permittee provides notification **within 30 days** of becoming aware that a discharge from the Permittee's MS4 is causing or contributing to a known or likely excursion above the Idaho Water Quality Standards.	within 30 days		X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	5.2	Adaptive Management Response (if required)	Based on the notification provided, IDEQ may notify the Permittee that an adaptive management response is required. If required, the Permittee will be required to provide the following: Adaptive Management Report (**within 60 days** of receiving a response from EPA and IDEQ), Review and Approval of Adaptive Management Report by IDEQ, Implementation of additional BMPs, Reporting on implementation, and Permit Revisions (if necessary).	within 60 days if required		X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	7.9	Twenty-Four Hour Notice of Noncompliance Reporting	The Permittee(s) must report to IDEQ the following occurrences of noncompliance by telephone **within 24 hours** from the time the Permittee becomes aware of the following circumstances: Any discharge to or from the MS4 which could result in noncompliance that may endanger human health or the environment; Any unanticipated bypass that results in or contributes to an exceedance of any effluent limitation in this Permit, Any upset that results in or contributes to an exceedance of any effluent limitation in this Permit. The Permittee(s) must also provide a written submission within five (5) business days of the time that the Permittee(s) becomes aware of a noncompliance event listed above.	24 hours		X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	8.2	Permit Renewal Application	If the Permittees intend to continue operational control and management of discharges from the MS4, the Permittees must apply for and obtain a new permit. The following attachments must be submitted: Updated SWMP document, MS4 Map and Outfall Inventory, list of MS4 outfall locations with dry weather flows, Enforcement Response Policy for Construction Site Runoff Control, Green Infrastructure Strategy document, Enforcement Response Policy for Permanent Stormwater Management Controls, Permittee's adaptive management actions to date, Wet Weather Stormwater Outfall Monitoring Report, Subwatershed Monitoring Report, and Stormwater Controls Effectiveness Evaluation Report.	4/3/2026		X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
PCM 1 Public Education and Outreach	3.1.2	Conduct Public Education, Outreach, and Involvement Program	The Permittees' joint education and outreach program must include coordination and educational efforts, targeting at least one of the four audiences listed in Part 3.1.4, that informs and engages interested stakeholders in Permittee's development and implementation of SWMP controls measures. Must include activities in 3.1.3 through 3.1.8.	4/3/2026		X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.1.3	Stormwater Education Activities	Permittees must offer at least eight education messages or activities over the permit term to selected audience(s).	4/3/2026	9/30/2022	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.1.4	Target Audience(s) and Topics	The Permittees must select at least one audience from the following: General Public, Business/Industrial/Commercial/Institutions, Construction/Development, or Elected Officials, Land Use Policy and Planning Staff.	4/3/2026	9/30/2022	X	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.1.5	Assessment	The Permittees must begin to assess the understanding of the relevant messages and adoption of appropriate behaviors by their target audience(s). Resulting assessment must be used to direct future stormwater education.	4/3/2026		X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.1.6	Tracking	The Permittees must track and maintain records of their education, outreach, and public involvement activities.	4/3/2026	9/30/2022	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.1.7.1	Education on SWMPP Control Measures: Construction	At least **once per year**, the Permittees must provide training to local audiences on the requirements for construction operators working in their jurisdiction.	Annually	2/1/2022	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.1.7.2	Education on SWMPP Control Measures: Permanent Stormwater Controls	At least **once per year**, the Permittees must provide training to local audiences on the requirements for permanent stormwater management controls.	Annually	9/15/2022	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.1.8	Publicly Accessible Website	The Permittees must maintain and promote at least one publicly accessible website with information on the SWMP implementation, points of contact, and education materials. Minimum features: Phone numbers, and/or other direction to assist the public to report illicit discharges, Reports, plans, strategies, or documents generated in compliance with this Permit, Information regarding policies and/or guidance documents related to requirements for construction and permanent stormwater management control, and Permits contact information.	4/3/2026	9/30/2022	X	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐

Stormwater Management Program Compliance and Implementation Status - Phase I																
Stormwater Management Program Areas	Permit Reference	Stormwater Management Program Components	Permit Breakdown	Permit Compliance Date	ACHD Status											
					Completed	Ongoing	Update									
							2021-2022 Permit Year 1		2022-2023 Permit Year 2		2023-2024 Permit Year 3		2024-2025 Permit Year 4		2025 -2026 Permit year 5	
							SWMP	Annual Report	SWMP	Annual Report	SWMP	Annual Report	SWMP	Annual Report	SWMP	Annual Report
PCM 2 Illicit Discharge Detection and Elimination	3.2.2	Municipal Separate Storm Sewer System Map and Outfall Inventory	The Permittees must update and maintain a map of their MS4(s) and all associated outfall locations under its operational control in the Permit Area. Must maintain an outfall and interconnection inventory to accompany the map(s) with outfall locations, physical condition, and a framework for inspections, dry weather discharge screenings, maintenance, and other activities. An electronic GIS version of the MS4 map, and the accompanying Outfall Inventory is to be submitted.	4/3/2026	9/30/2022	X	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.2.3	Ordinance and/or Other Regulatory mechanism	The Permittees must prohibit non-stormwater discharges into the MS4 (except those conditionally allowed by Part 2.4) through enforcement of a regulatory mechanism. The Permittees must implement appropriate enforcement procedures and actions, including a written policy of enforcement escalation procedures for recalcitrant or repeat offenders, to ensure compliance. The ordinance or regulatory mechanism must authorize the permittee to control and respond to the discharge of spills, prohibit illicit connections or dumping into the MS4, to prohibit/eliminate non stormwater discharges to the MS4.	4/3/2026	9/30/2022	X	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.2.4	Illicit Discharge Complaint Report and Response Program	The Permittees must respond in the following manner to reports of illicit discharges from the public: receipt of complaints or reports from the public (through a dedicated telephone number, email address, and/or other publicly available and accessible means), response to complaints or reports from the public (as soon as possible, but no later than **within two (2) working days**), and tracking of complaints or reports and actions taken (this information must be summarized for the relevant reporting period and included in each Annual Report).	4/3/2026	9/30/2022	X	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.2.5	Dry Weather Outfall Screening Program	The Permittees must conduct a dry weather analytical and field screening monitoring program to identity non-stormwater flows from MS4 outfalls during dry weather. The program must include the following: outfall identification and screening protocols, number of outfalls to be screened, monitoring of illicit discharges, and maintain records of dry weather outfall screening program.	4/3/2026	9/30/2022	X	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.2.6	Illicit Discharge Detection and Elimination Follow-up	Within **thirty (30) days** of its detection, the Permittees must investigate recurring illicit discharges identified as a result of complaints or identified as result of the dry weather screening investigations and sampling to determine the source of such discharge.	Within 30 days	9/30/2022	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.2.7	Prevention and Response to Spills	The Permittees must maintain written spill response procedures and must coordinate their own spill prevention containments, and response activities with the appropriate departments, programs, and agencies in the Permit Area.	4/3/2026	9/30/2022	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.2.7.1	Spill Reporting	The Permittees must immediately report all spills of hazardous material, deleterious material, or petroleum products which may impact waters (ground and surface) of the State, as directed in Part 7.9 (Twenty-Four Hour Notice of Noncompliance Reporting) and Appendix A.2 (Reporting of Discharges Containing Hazardous Materials or Deleterious Material).	4/3/2026	9/30/2022	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.2.8	Proper Disposal of Used Oil and Toxic Materials	The Permittees must continue to coordinate with appropriate local entities to educate the Permittee's employees and members of the public of the proper management, disposal, or recycling of used oil, vehicle fluids, toxic materials, and other household hazardous wastes in the Permittee's jurisdiction.	4/3/2026		X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.2.9	Illicit Discharge Detection and Elimination Training for Staff	The Permittee's construction inspectors, maintenance field staff, and code compliance officers must be sufficiently trained to conduct dry weather screening activities and to response to reports of illicit discharges and spills into the MS4. The Permittee must provide orientation and training for new staff within the first **six (6) months** of employment. Existing Permittee staff may comply with this training requirement by attending relevant training courses **at least every other year**. Outside parties must be trained or otherwise qualified. Trainings may be combined with Construction Runoff Control, Permanent Stormwater Control Training, and Stormwater Pollution Prevention/Good Housekeeping Trainings.	4/3/2026	9/30/2022	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
PCM 3 Construction Site Stormwater Runoff Control	3.3.1	Construction Site Stormwater Runoff Control	No later than April 3, 2026, the Permittees must update its existing construction site runoff control requirements, if necessary, to enact control measure components in Parts 3.3.2 through 3.3.7 below.	4/3/2026	ERP Updated 9/28/2022	X	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.3.2	Regulatory Mechanism	The Permittees must require erosion controls, sediment controls, and waste materials management controls to be used and maintained at construction projects. The Permittee's regulatory mechanism must require construction site operators to maintain effective controls to reduce pollutants in stormwater discharges. For construction projects in the Permittee's jurisdiction that disturb one or more acres (including projects that disturb less than one acre but are part of a common plan of development that disturbs one or more acres), the Permittee must refer project site operators to obtain NPDES permit coverage.	4/3/2026	9/30/2022	X	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.3.3	Construction Site Runoff Control Specifications	The Permittees must require construction site operators within their jurisdiction to use erosion, sediment, and waste material management controls as defined within manuals adopted by the Permittees. Construction site runoff control specifications must consist of: requirements for use of erosion controls, sediment control, and waste materials management/pollution prevention practices, sizing criteria, performance criteria, illustrations, design examples, and specifications for operation and maintenance, specifications for long term operation and maintenance of such construction site runoff control practices.	4/3/2026	9/30/2022	X	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐

Stormwater Management Program Compliance and Implementation Status - Phase I

Stormwater Management Program Areas	Permit Reference	Stormwater Management Program Components	Permit Breakdown	Permit Compliance Date	ACHD Status											
					Completed	Ongoing	Update									
							2021-2022 Permit Year 1		2022-2023 Permit Year 2		2023-2024 Permit Year 3		2024-2025 Permit Year 4		2025 -2026 Permit year 5	
							SWMP	Annual Report	SWMP	Annual Report	SWMP	Annual Report	SWMP	Annual Report	SWMP	Annual Report
PCM 3 Construction Site Stormwater Runoff Control	3.3.4	Pre-Construction Site Plan Review	The Permittees must review preconstruction site plans from construction project site activity within their jurisdictions. Permittees must ensure that the construction site operator is prohibited from commencing construction activity prior to receipt of written approval. Site plan review procedures must include consideration of the site's potential water quality impacts and must demonstrate compliance with the regulatory mechanism. Any preconstruction site plan contains site-specific measures that meet the Permittee's runoff control specifications. Permittees must document the review of each ESC plan and/or SWPPP using a checklist or similar process.	4/3/2026	9/30/2022	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.3.5	Construction Site Inspection and Enforcement	The Permittees must inspect construction sites in their jurisdiction to ensure compliance with the Permittee's applicable requirements. The Permittees must establish an inspection prioritization system to identify the minimum frequency and type of inspections. Follow-up actions must be taken to ensure compliance. Construction site inspections must include: As applicable, a check for coverage under the Construction General Permit, a review of the site plan to determine if the intended control measures were installed, implemented, and maintained, an assessment of the appropriateness of planned control measures and their effectiveness, an assessment of the site's compliance with the Permittee's requirements, visual observation of any existing or potential non-stormwater discharges, illicit connections, and/or discharge of pollutants from site, education or instruction to the construction site operator, and a written or electronic inspection report.	4/3/2026	9/30/2022	X	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.3.6	Enforcement Response Policy for Construction Site Runoff Control	Each Permittee must maintain and implement a written escalating enforcement response policy (ERP) or plan appropriate to its organization. The ERP must address enforcement of construction site runoff controls for all construction projects in their jurisdictions. Each ERP must address enforcement of construction site runoff controls for all construction projects in their jurisdictions and describe the Permittee's potential response to violations with appropriate educational or enforcement responses.	4/3/2026	9/30/2022	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.3.7	Construction Site Runoff Control Training for Staff	The Permittees must ensure that all persons responsible for preconstruction site plan review, site inspections, and enforcement of all the Permittee's requirements are trained. The Permittees must provide training for new staff working on construction runoff control issues in the **first six (6) months of employment.** If the Permittees use outside parties to review plans and/or conduct inspections outside parties must be trained or otherwise qualified. Trainings may be combined with Illicit Discharge, Permanent Stormwater Control Training, and Stormwater Pollution Prevention/Good Housekeeping Trainings.	4/3/2026	9/30/2022	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
PCM 4 Post-Construction Stormwater Management for New and Redevelopment	3.4.1	Compliance Dates	No later than April 3, 2026, the Permittees must update their existing controls, if necessary, to impose the required SWMP control measure components in Parts 3.4.2 through 3.4.7 below.	4/3/2026		X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.4.2	Regulatory Mechanism	At a minimum, the Permittees must implement and enforce a program to control stormwater runoff from new development and redevelopment projects that result in land disturbance of 5,000 square feet or more, excluding individual one- or two-family dwelling development or redevelopment and the infill or redevelopment of public pedestrian infrastructure projects. Each Permittee must continue to require the installation and long-term maintenance of permanent stormwater controls at new development and redevelopment project sites.	4/3/2026	9/30/2022	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.4.2.3	Green Infrastructure Strategy Implementation	The Permittees must continue the implementation of their Green Infrastructure Strategies, and report annually on progress to date. The Permittees must complete one update to the existing Strategy and incorporate consideration of options for additional innovative approaches to control stormwater quality and quantity. The Permittees must submit the updated document as part of the Permit Renewal Application	4/3/2026		X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.4.3	Permanent Stormwater Controls Specifications	The Permittees must specify permanent stormwater controls for project sites in their jurisdictions and may define appropriate controls for different types and/or sizes of site development activity occurring in their jurisdiction. The written specifications must include: specification for the use of site-based practices suitable to local soils and hydrologic conditions, acceptable control practices, and specifications for proper long-term operation and maintenance.	4/3/2026		X	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.4.4	Permanent Stormwater Controls Plan Review and Approval	The Permittees must review and approve preconstruction plans for permanent stormwater controls at new development and redevelopment sites that result in land disturbance of 5,000 square feet or more, excluding individual one- or two-family dwelling development or redevelopment sites and the infill or redevelopment of public pedestrian infrastructure projects. The permittee must review plans for consistency with the regulatory mechanism and specifications.	4/3/2026	9/30/2022	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.4.5	Permanent Stormwater Controls Inspection and Enforcement	The Permittees must implement an inspection program and define and prioritize new development and redevelopment sites for inspections of permanent stormwater management controls. The Permittees must identify certain permanent stormwater controls at new development and redevelopment sites as "high priority", and schedule associated inspections to occur at least **once annually**. The Permittees must use inspection checklists and maintain records of actions taken in response to inspections. The individual Permittee must implement an enforcement response policy sufficient to ensure and maintain the functional integrity of permanent stormwater controls in their jurisdiction. **Each Permittee must submit their ERP for permanent stormwater controls to IDEQ with the Permit Renewal Application.**	4/3/2026		X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

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PCM 4 Post-Construction Stormwater Management for New and Redevelopment	**3.4.6**	Operations and Maintenance of Permanent Stormwater Controls	The Permittee must maintain a database inventory to track and manage the operational condition of permanent stormwater controls in its jurisdiction. All available data on existing permanent controls known to the Permittee must be included in the database inventory. The Permittee must begin tracking at the time the Permittee takes ownership, using a database that incorporated geographic information system (GIS) information and/or developed in conjunction with the MS4 Map. The tracking system must also include reference to the type and number of permanent stormwater controls; O&M requirements; activity and schedule; responsible party; and any applicable self-inspection schedule.	4/3/2026		X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.4.6.1 & 3.4.6.2	Ownership by other parties	Where parties other than the Permittee are responsible for the O&M of permanent stormwater controls, the Permittee must require a legally enforceable and transferable O&M agreement with the responsible party, or other mechanism, that assigns permanent responsibility for maintenance of such permanent stormwater control practices. Where parties other than the Permittee are responsible for the O&M of permanent stormwater controls, the Permittee must schedule and complete inspections to evaluate the ongoing operation and maintenance of such practices. The Permittee may determine the regular intervals for conducting such inspections to ensure the effective long-term operation and maintenance of such controls.	4/3/2026		X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.4.7	Permanent Stormwater Controls Training for Staff	The Permittees must ensure that all persons responsible for reviewing site plans for permanent stormwater controls, and/or for inspecting the installation and operation of permanent stormwater controls, are trained, or otherwise qualified to conduct such activities. The Permittee must provide training for new staff and outside parties **in the first six (6) months of employment**. Trainings may be combined with Construction Runoff Control, Illicit Discharge Training, and Stormwater Pollution Prevention/Good Housekeeping Trainings.	4/3/2026	9/30/2022	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
PCM 5 Pollution Prevention & Good Housekeeping for Municipal Separate Storm Sewer System Operations	**3.5.2**	Inspection and Cleaning of Catch Basins and Inlets	The Permittee must inspect all Permittee-owned or operated catch basins and inlets in the MS4 at least **once every two (2) years** and take all appropriate maintenance or cleaning action based on those inspections to ensure the catch basins and inlets continue to function as designed. The Permittee may establish a catch basin inspection prioritization system, and establish alternate inspection frequency. Records reflecting catch basin and inlet inspection, and material removal/cleaning, must be maintained by the Permittee, and the actions taken during the latest reporting period must be summarized in each Annual Report.	4/3/2026		X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.5.3	O&M Procedures for Roads and Parking Lots	Where the Permittee is responsible for the O&M of streets, roads, highways, and/or parking lots, the Permittee must ensure those procedures are conducted in a manner to protect water quality and reduce the discharge of pollutants through the MS4. The Permittees must continue to implement appropriate O&M procedures for all streets, roads, highways, and parking lots with more than 3,000 square feet of impervious surface that are owned, operated, or maintained by the Permittees. The Permittee must establish specific schedules for inspection and maintenance, include practices to reduce road and parking lot debris/pollutants from entering the MS4, and must consider water conservation measures for landscaped areas.	4/3/2026		X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.5.4	Inventory and Management of Road Maintenance Materials	Where the Permittee is responsible for the O&M of streets, roads, highways, and/or parking lots, the Permittee must reduce pollutants in discharges to the MS4 and waters of the U.S. from street/road maintenance material storage stockpiles. The Permittees must maintain an inventory of street/road maintenance materials stored at locations within the Permit Area that drain into the MS4. The Permittee must assess the physical adequacy of each Material Storage Location to prevent potential adverse water quality impacts and must make any structural or nonstructural improvements as necessary to eliminate any such impacts.	4/3/2026	2/1/2022	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.5.5	Street Sweeping	Each Permittee with street, road, highway and/or public parking lot maintenance responsibilities must maintain and update as needed their respective sweepings management plans. Each plan must designate all streets, roads, and/or public parking lots that are owned, operated or maintained by that Permittee as residential, arterial and all other, or as public parking lots and must implement the sweeping schedule provided in 3.5.5.1.	4/3/2026	2/1/2022	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.5.6	O&M Procedures for Other Municipal Areas and Activities	The Permittees must conduct their municipal O&M activities in a manner that reduces the discharge of pollutants through the MS4 to protect water quality. The Permittee must review, and update as necessary, existing procedures for inspection and maintenance schedules to ensure pollution prevention and good housekeeping practices are conducted for the following activities: grounds/park and open space maintenance; fleet maintenance and vehicle washing operations; building maintenance; snow management and snow disposal site O&M; solid waste transfer activities; municipal golf course maintenance; materials storage; heavy equipment storage areas; hazardous materials storage; used oil recycling; and spill control and prevention measures for municipal refueling facilities.	4/3/2026	9/30/2022	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.5.7	Requirements for Pesticides, Herbicides, and Fertilizer Applications	The Permittees must implement practices to reduce the discharge of pollutants from the MS4 associated with the Permittee's application and storage of pesticides, herbicides, and fertilizer in the Permit Area. Such areas include the individual Permittee's public rights-of-way, and/or landscaped areas.	4/3/2026	9/30/2022	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

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							SWMP	Annual Report	SWMP	Annual Report	SWMP	Annual Report	SWMP	Annual Report	SWMP	Annual Report
PCM 5 Pollution Prevention & Good Housekeeping for Municipal Separate Storm Sewer System Operations	3.5.8	SWPPPs for Permitee Facilities	Each Permittee must develop and implement site-specific SWPPPs to manage stormwater discharges from all Permittee-owned material storage facilities, heavy equipment storage areas, and maintenance yards identified in the inventory. Permittee-owned facilities discharging stormwater associated with industrial activity must obtain separate NPDES permit coverage.	4/3/2026	Adams Updated 7/2021 Cloverdale Updated 11/2020	X	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.5.9	Litter Control	Throughout the Permit term, the Permittees must implement methods to reduce litter in their jurisdiction. The Permittee must work to cooperatively with others to control litter on a regular basis, and after major public events.	4/3/2026		X	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.5.10	Pollution Prevention/Good Housekeeping Training for Staff	Each Permittee must ensure that all persons responsible for the stormwater infrastructure management and O&M activities as required by this Part are trained and otherwise qualified to conduct such activities. The Permittee must provide training for new staff working on infrastructure management and O&M activities **in the first six (6) months of employment.** Outside parties must be trained or otherwise qualified. Trainings may be combined with Construction Runoff Control, Permanent Stormwater Control Training, and Illicit Discharge trainings.	4/3/2026		X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.6.2	Inventory of Industrial and Commercial Facilities/Activities	The Permittees must maintain an inventory of industrial and commercial facility/activity within the Permit Area. A narrative description of the inventory, and a summary of the compliance assistance and inspection activities and any follow-up actions, must be included as part of the SWMP Document	4/3/2026	9/30/2022	X	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐
	3.6.3	Inspection of Industrial and Commercial Facilities/Activities	The Permittees must work cooperatively throughout the Permit term to continue prioritizing and inspecting selected industrial and commercial facilities/activities which discharge to receiving waters or to the MS4.	4/3/2026	9/30/2022	X	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐
Monitoring and Assessment	4	Temperature Monitoring	To ensure the permitted discharges will comply with temperature criteria for the protection of aquatic life the Permittees must monitor temperature in stormwater discharges from the MS4 to the Boise River to quantify stormwater impacts to this waterbody.	4/3/2026		X	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐
	6.1	Compliance Evaluation	**At least once per year**, each Permittee must evaluate their compliance with the requirements of this Permit. This self-evaluation includes assessment of progress toward implementing the SWMP control measures in Part 3, and implementation of individual or collective actions to comply with any additional requirements identified pursuant to Part 6.2.	Annually		X	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐
	6.2	Stormwater Monitoring and Evaluation Program	The Permittees must continue to conduct a wet weather monitoring and evaluation program that meets quality assurance objectives (6.2.6), broadly estimates reduction in annual pollutant loads, assesses the effectiveness of permanent stormwater controls/GIS, and identifies and prioritizes locations where additional controls could be implemented to reduce the volume of stormwater discharged and/or reduce pollutants in MS4 discharges to waters of the U.S.	4/3/2026	9/30/2022	X	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐
	6.2.1	Wet Weather Stormwater Outfall Monitoring	The Permittees must continue to conduct wet weather stormwater outfall monitoring. A report summarizing all data collected during the permit term must be submitted with the Outfall Monitoring Report (6.4.3).	4/3/2026		X	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐
	6.2.1	Update Stormwater Outfall Monitoring Plan	Permittees must submit an updated Stormwater Outfall Monitoring Plan as part of the Year 1 Annual Report (6.4.2).	1/30/2023	Monitoring Plan Updated 08/2022		☑	☐	☐	☐	☐	☐	☐	☐	☐	☐
	6.2.2	Subwatershed Monitoring	The Permittees must continue to conduct monitoring in the Americana Subwatershed to better define wet weather and dry weather flow volumes, sources, and pollutant loads. A report summarizing all data collected during the permit term must be submitted with Subwatershed Monitoring Report (6.4.4)	4/3/2026		X	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐
	6.2.3	Effectiveness Evaluation of Structural, Non-Structural and/or Green Stormwater Infrastructure Controls	The Permittees must continue to conduct effectiveness evaluations of at least two different types of structural, non-structural, and/or green infrastructure stormwater management controls to determine whether the technique is effective at treating or preventing the discharge of sediment, bacteria, and/or nutrients into receiving waters. The results of this effectiveness evaluation, and any recommendations for improved treatment performance, must be submitted to IDEQ with the Monitoring Report.	4/3/2026		X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	6.2.4	Representative Sampling	Samples, measurements and/or assessments conducted in compliance with this Permit must be representative of the nature of the monitored discharge or activity.	4/3/2026		X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	6.2.5	Additional Monitoring	The results of monitoring in excess to what is specified in the Permittees' Monitoring or Evaluation Plans must be included with the Monitoring Report submitted to IDEQ.	4/3/2026		X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	6.2.6	Quality Assurance Requirements	The Permittees must maintain a Quality Assurance Project Plan (QAPP) for any monitoring or quantitative assessment activities conducted in compliance with this Permit. Any existing QAPP may be modified to meet the requirements of this Part.	4/3/2026	QAPP Updated 01/2022	X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	6.2.7	Analytical Methods	Sample collection, preservation, and analysis must be conducted according to sufficiently sensitive methods/test procedures approved under 40 CFR Part 136.	4/3/2026	9/30/2022	X	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐
	6.3	Recordkeeping	The Permittees must retain records and information documenting implementation of all control measures required by this Permit for a period of at **least five years** in a format accessible to the EPA and IDEQ. Records should be made available to the public upon written request.	4/3/2026		X	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Stormwater Management Program Compliance and Implementation Status - Phase I

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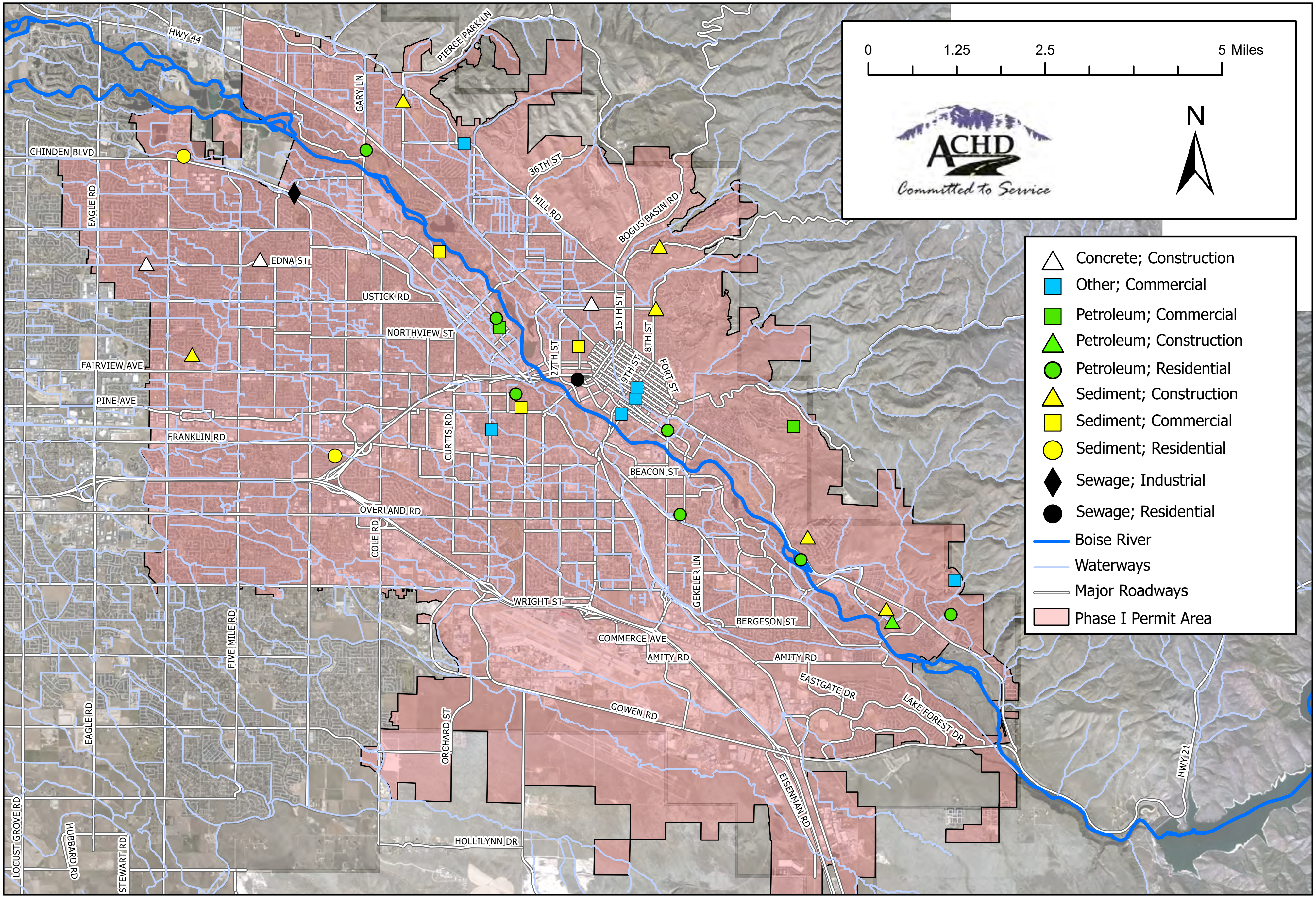
							SWMP	Annual Report	SWMP	Annual Report	SWMP	Annual Report	SWMP	Annual Report	SWMP	Annual Report
Reporting	6.4.2	Stormwater Management Program Annual Report	The Permitters must submit an Annual Report reflecting the status of the Permittee's implementation of the Permit requirements to IDEQ for the reporting periods specified in Table 6.4.2.	1/30 annually		X	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐
	6.4.3	Stormwater Outfall Monitoring Report	The Permittees must submit a final report summarizing all monitoring data collected during the permit term with the permit renewal application.	4/3/2026			☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	6.4.4	Subwatershed Monitoring Report	The Permittees must submit a report summarizing the subwatershed monitoring activities with the permit renewal application.	4/3/2026			☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	6.4.5	Structural, Nonstructural and/or Green Stormwater Infrastructure Controls Effectiveness Evaluation Report	The Permittees must submit a report summarizing the evaluation of selected structural, non-structural or green stormwater infrastructure controls with the permit renewal application.	4/3/2026			☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Appendix F: Phase I Illicit Discharge Map, Complaints Received and Follow-up

Phase I - Complaint Response
October 1, 2021 - July 1, 2022

Complaints - 34 Total



List of Complaints* Received and Summary of Follow-up Action
ACHD Phase I Permit Area, Idaho
October 1, 2021 - July 1, 2022

#	Date	City	Location	Latitude	Longitude	Responsible Party Type	Pollutant Type	Illicit Discharge	Summary of Actions
1	2/9/2022	Garden City	311 E 38th St	43.628809	-116.240915	Commercial	Petroleum	No	ACHD conducted multiple site visits to determine the source of the spill. ACHD coordinated with an environmental contractor for cleanup and disposal.
2	6/28/2022	Boise	320 N Orchard St	43.60791	-116.243007	Commercial	Other: Grey Water	Yes	ACHD provided general stormwater education and the Mobile Business fact sheet. City of Boise staff were informed of the incident for follow-up education, inspection, and cleanup of the storm drain system.
3	12/28/2021	Boise	8456 Brookview Dr.	43.602333	-116.287044	Residential	Sediment	Yes	ACHD provided general stormwater awareness to the homeowner. Source of the sediment could not be determined so ACHD conducted routine maintenance on the storm drain system.
4	12/22/2021	Boise	E Front St & S Broadway Ave	43.607972	-116.193388	Residential	Petroleum	Yes	ACHD coordinated with an environmental contractor for cleanup and disposal.
5	12/4/2021	Boise	E Warm Springs Ave & S Millbrook Way	43.569216	-116.129923	Construction	Diesel Fuel	No	ACHD coordinated with the contractor to cleanup the roadway and hire an environmental contractor to address impacted soils. ACHD notified IDEQ.
6	3/29/2022	Boise	N Pierce Park Ln & W Tobi Dr	43.675336	-116.268499	Construction	Sediment	No	ACHD coordinated with City of Boise to provide general stormwater education and best practices for construction site perimeter controls.
7	5/9/2022	Boise	S Brookride Way	43.571839	-116.131578	Construction	Sediment	No	ACHD coordinated with City of Boise to request the construction contractor install a construction entrance at the staging area and sweep the streets.
8	11/12/2021	Boise	S Capitol Blvd & W Main St	43.614443	-116.202402	Commercial	Other: Cooking Grease	Yes	City of Boise coordinated with appropriate parties to address cleanup and provided stormwater education and best practices for food and grease waste.
9	11/15/2021	Boise	12715 W Edna Ct	43.641628	-116.340591	Construction	Concrete Slurry	No	ACHD provided the homeowner and business owner with general stormwater education and best practices for concrete slurry. The contractor cleaned up the spill.
10	10/14/2021	Boise	1505 N 21 St	43.634084	-116.21507	Construction	Concrete Washout	Yes	ACHD provided concrete slurry education. No cleanup necessary.
11	6/10/2022	Boise	1926 N Cribbens St	43.623087	-116.32749	Construction	Sediment	Yes	ACHD coordinated with the construction site responsible person to remove the sediment from the street. A construction entrance was discussed, however, paving of the driveway is imminent.
12	11/23/2021	Boise	2115 Heights Dr	43.633005	-116.19692	Construction	Sediment	No	ACHD coordinated with City of Boise to provide general stormwater education and best practices for sediment trackout.
13	5/9/2022	Boise	2115 Heights Dr	43.633159	-116.1969	Construction	Sediment	No	ACHD coordinated with City of Boise to request the construction contractor replace necessary BMPs and remove materials from the right-of-way and sweep the street.
14	3/22/2022	Boise	246 N 8th St	43.616633	-116.202119	Commercial	Other: Cooking Oil	Yes	ACHD provided general stormwater education and best practices for spill cleanup and disposal. The business owner contacted with an environmental firm to address the spill. City of Boise was informed of the incident to provide additional education and outreach.
15	12/3/2021	Boise	2462 Starcrest Dr	43.581616	-116.155689	Residential	Radiator Fluid	No	ACHD provided the homeowner with general stormwater education and best practices for vehicle maintenance. No cleanup necessary.
16	6/29/2022	Boise	2550 E Varco Via Ct	43.608932	-116.157941	Commercial	Petroleum	Yes	ACHD provided general stormwater education and the Commercial Landscaping fact sheet. The contractor will be cleaning up the remaining used floor dry after it has fully absorbed the liquids.
17	2/28/2022	Boise	2813 E Hard Rock Dr	43.586454	-116.153796	Construction	Sediment	No	ACHD conducted the initial investigation and referred follow-up response to City of Boise.
18	4/14/2022	Boise	411 N 23rd St	43.625068	-116.218595	Commercial	Sediment	Yes	ACHD provided general stormwater education and best practices for sediment control. The homeowner coordinated with the construction contractor to remove materials from the right-of-way.
19	10/8/2021	Boise	4164 N Marcliffe Ave	43.642691	-116.308579	Construction	Grout washout	No	ACHD provided general stormwater education and best practices for handling concrete slurry. The contractor cleaned up the spill.
20	10/21/2021	Boise	4402 W Irving St	43.615248	-116.236225	Residential	Transmission Oil	No	ACHD provided general stormwater education and best practices for cleanup of automobile fluids. No cleanup necessary.
21	10/18/2021	Garden City	4830 W Mystic Cove Way	43.644295	-116.257987	Commercial	Sediment	No	ACHD provided general stormwater education and best practices for stockpiling in the street. The contractor must remove the materials from the street.
22	11/26/2021	Boise	5677 E Woodcross Dr	43.570547	-116.113363	Residential	Transmission Fluid	No	ACHD attempted to contact the resident but no response. No cleanup necessary.
23	3/24/2022	Boise	6325 W Lucky Ln	46.662996	-116.267909	Construction	Sediment	No	ACHD coordinated with the contractor to remove the material from the right-of-way.
24	1/28/2022	Garden City	6730 N Glenwood St	43.664991	-116.278823	Residential	Petroleum	No	ACHD coordinated with an environmental contractor for cleanup and disposal.
25	6/2/2022	Boise	705 W Fulton St	43.611246	-116.206554	Commercial	Other: Leachate	Yes	ACHD coordinated with City of Boise to work with the suspected party to get a lid for their dumpster. City of Boise did not want to pursue cleanup with the restaurant owner. ACHD Maintenance conducted cleanup and disposal.
26	3/1/2022	Boise	725 W High & View Dr	43.645832	-116.195954	Construction	Sediment	No	ACHD provided general stormwater education and best practices for cleanup and disposal of sediment and track-out mitigation.
27	6/10/2022	Boise	E Barber Dr & E Hootowl Dr	43.577545	-116.112315	Commercial	Other: Leachate	No	ACHD contacted Republic Services to cleanup the spill.
28	6/2/2022	Boise	Freemont St & N Wilson St	43.612485	-116.234765	Commercial	Sediment	No	ACHD coordinated with Suez Company to cleanup the sediment from the right-of-way.
29	10/13/2021	Boise	Joplin Rd	43.663484	-116.330264	Residential	Sediment	No	City of Boise responded. The homeowner must initiate site stabilization and cleanup sediment in the roadway.

#	Date	City	Location	Latitude	Longitude	Responsible Party Type	Pollutant Type	Illicit Discharge	Summary of Actions
30	2/28/2022	Garden City	N Adams St & E 39th St	43.630731	-116.24187	Residential	Petroleum	No	ACHD investigated but discovered no issue. No additional follow-up actions needed.
31	3/25/2022	Boise	S 17th St & Shoreline Rd	43.618281	-116.218833	Residential	Other: Litter/Debris	No	ACHD observed an odor and larger debris/trash in the right-of-way. The debris/trash was removed by ACHD Maintenance.
32	5/26/2022	Boise	S Colorado Ave & Williams St	43.59074	-116.189772	Residential	Petroleum	No	ACHD contained the spill and hired an environmental contractor for cleanup and disposal.
33	4/17/2022	Garden City	W Chinden Blvd & N Maple Grove Rd	43.656041	-116.299019	Government	Sewage	Yes	ACHD provided City of Boise staff general stormwater education and best practices for cleanup and disposal of sewage. Impacted Phase I NPDES permittees were notified of the incident for additional education and ensure cleanup was properly addressed. The IDEQ and Central District Health were notified.
34	4/11/2022	Boise	W Hill Rd & N Point Ave	43.666435	-116.251204	Commercial	Other: Herbicide	Yes	ACHD provided the Boise Fire Department with general stormwater education and best practices for spill cleanup and disposal. An environmental contractor was hired to clean and dispose of waste materials from the storm drain system. ACHD reported the spill to IDEQ and State Comm.

[*] A complaint is any report of a potential pollutant discharge in the right of way that requires an ACHD staff member to respond. Reports can originate from ACHD staff, members of the public, or outside agencies/departments.

Appendix G: Dry Weather Outfall Screening Plan (version 1.2)

Dry Weather Outfall Screening Plan

Prepared for

Ada County Highway District Boise, Idaho

November 20, 2017

Version 1.2

950 West Bannock Street, Suite 250

Boise, Idaho 83702

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List of Abbreviations

ACHD	Ada County Highway District
BOD	Biological Oxygen Demand – 5 day
CFR	Code of Federal Regulations
COC	Chain of Custody
DO	Dissolved Oxygen
DQI	Data Quality Indicator
DQO	Data Quality Objective
EPA	Environmental Protection Agency
MDL	Method Detection Limit
mL	Milliliter
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
NWS	National Weather Service
PMEP	Project Monitoring and Evaluation Plan
PRDL	Project Required Detection Limit
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Program Plan
RPD	Relative Percent Difference
SOP	Standard Operating Procedure
WQL	Boise City Water Quality Laboratory

Executive Summary

The National Pollutant Discharge Elimination System (NPDES) Phase I Permit No. IDS-027561 (Permit) was issued effective February 1, 2013, to Ada County Highway District (ACHD), Boise State University, City of Boise, City of Garden City, Drainage District #3, and the Idaho Transportation Department District #3, referred to as the "Permittees." Under this permit, the Permittees are required to implement and update as necessary, a dry weather analytical and field screening monitoring program consistent with the monitoring and evaluation program objectives as described in Permit Part IV.A.2 and the requirements outlined in Permit Part II.B.5.d "Dry Weather Outfall Screening Program". This Dry Weather Outfall Screening Plan has been developed to fulfill these permit requirements for outfalls owned by ACHD and outfalls of unknown ownership. The outfall inventory statistics and information documented in this plan are limited to outfalls under ACHD and unknown Ownership and do not account for all permittee owned outfalls.

This plan follows the general guidance of the Project Monitoring and Evaluation Plan (PMEP) (ACHD, 2013) and the Quality Assurance Program Plan for NPDES Storm Water Permit Monitoring (QAPP) (ACHD, 2014). The previous NPDES phase I permit, issued in 2000, focused on outfall identification, inventory development, and information verification. The current permit expands on that information to focus on analytical and field screening to detect and eliminate illicit discharges. This plan describes the overall approach to dry weather outfall screening and provides comprehensive guidance for outfall investigation efforts, including prioritization of outfalls, data collection efforts, recordkeeping, and reporting activities.

Certain Quality Assurance/Quality Control (QA/QC) procedures that have been identified using United States Environmental Protection Agency (EPA) guidance for QAPPs are also included in this plan. The QA/QC procedures are designed to ensure data collected meet specific data quality objectives developed specifically for Permit-required monitoring activities. The plan documents QC sampling procedures, data acceptance criteria, and data management details specific to the Dry Weather Outfall Screening Plan.

Section 1

Introduction

1.1 Basis for Dry Weather Outfall Screening Plan

The Permit requires that the Permittees implement a dry weather analytical and field screening monitoring program that emphasizes frequent, geographically widespread monitoring to detect illicit discharges and illegal connections and to reinvestigate potentially problematic outfalls. The Dry Weather Outfall Screening Plan is designed to be consistent with the monitoring and evaluation program objectives described in the PMEP. Permit requirements specific to the dry weather outfall screening program include the following:

- **Outfall Identification (Part II.B.5.d.i).** Update the stormwater outfall identification and screening plan including reconnaissance activities, information used to prioritize outfalls for screening, ACHD's approach to conducting analyses on identified flows, and the trigger thresholds for follow-up action.
- **Monitoring Illicit Discharges (Part II.B.5.d.ii).** Conduct monitoring at least once annually following the criteria outlined in the Permit.
- **Maintain Records of Dry Weather Screening (Part II.B.5.d.iii).** Keep detailed records of dry weather outfall screening activities and results and document follow-up activities.

1.2 Plan Objectives

The Dry Weather Outfall Screening Plan addresses the minimum permit requirements for dry weather outfall screening and outfall identification as described in Permit Part II.B.5.d. In addition the plan has been developed considering the level of service goals and objectives identified in the PMEP. This plan provides guidance for field reconnaissance activities, monitoring, and recordkeeping efforts performed by ACHD. To standardize ACHD's approach to addressing quality assurance recommendations by the EPA for all monitoring programs under the Permit, each quality assurance element is addressed as either a program element or a screening plan element.

Dry Weather Outfall Screening Plan elements are described in full in this document, while elements applicable to all monitoring programs under the Permit are addressed in the QAPP. Plan organization, responsibilities, and objectives are derived from the PMEP, which serves as guidance to standardize stormwater management under this Permit as a whole, including the approach to quality assurance and screening plan implementation. Monitoring program elements consist of the standardized monitoring components that all individual monitoring or screening plans developed under the Permit reference. A list of program and screening plan elements is included in Table 1-1.

Table 1-1. QAPP Element Document Reference		
EPA-Recommended QAPP Elements	Monitoring Program Element (Addressed in the QAPP)	Dry Weather Outfall Screening Plan Element; Section
Group A: Project Management		
A1 – Title and Approval Sheet	X	
A2 – Table of Contents	X	
A3 – Distribution List	X	
A4a – Project Organization	X	
A4b – Task Organization		X; 1.3
A5 – Problem Definition/Background	X	
A6 – Project/Task Description		X; 1.2
A7a – Quality Objectives and Criteria for Measurement Data	X	
A7b – Method-Dependent Criteria for Measurement Data		X; 5.2
A8 – Special Training Needs/Certification	X	
A9 – Documents and Records	X	
Group B: Data Generation and Acquisition		
B1 – Sampling Process and Design		X; 2
B2 – Sampling Methods		X; 3, 4.3
B3 – Sample Handling and Custody		X; 4.3.2
B4 – Analytical Methods		X; 4.3.1
B5a – Quality Control	X	
B5b – QA/QC Sampling Schedule		X; 5.1
B6 – Instrument/Equipment Testing, Inspection, and Maintenance		X; 3
B7 – Instrument/Equipment Calibration and Frequency		X; 3
B8 – Inspection/Acceptance of Supplies and Consumables	X	
B9 – Non-direct Measurements	X	
B10 – Data Management	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	

1.3 Task Organization

Key roles and job functions are described in the QAPP. The dry weather outfall screening program organization chart is presented in Figure 1-1.

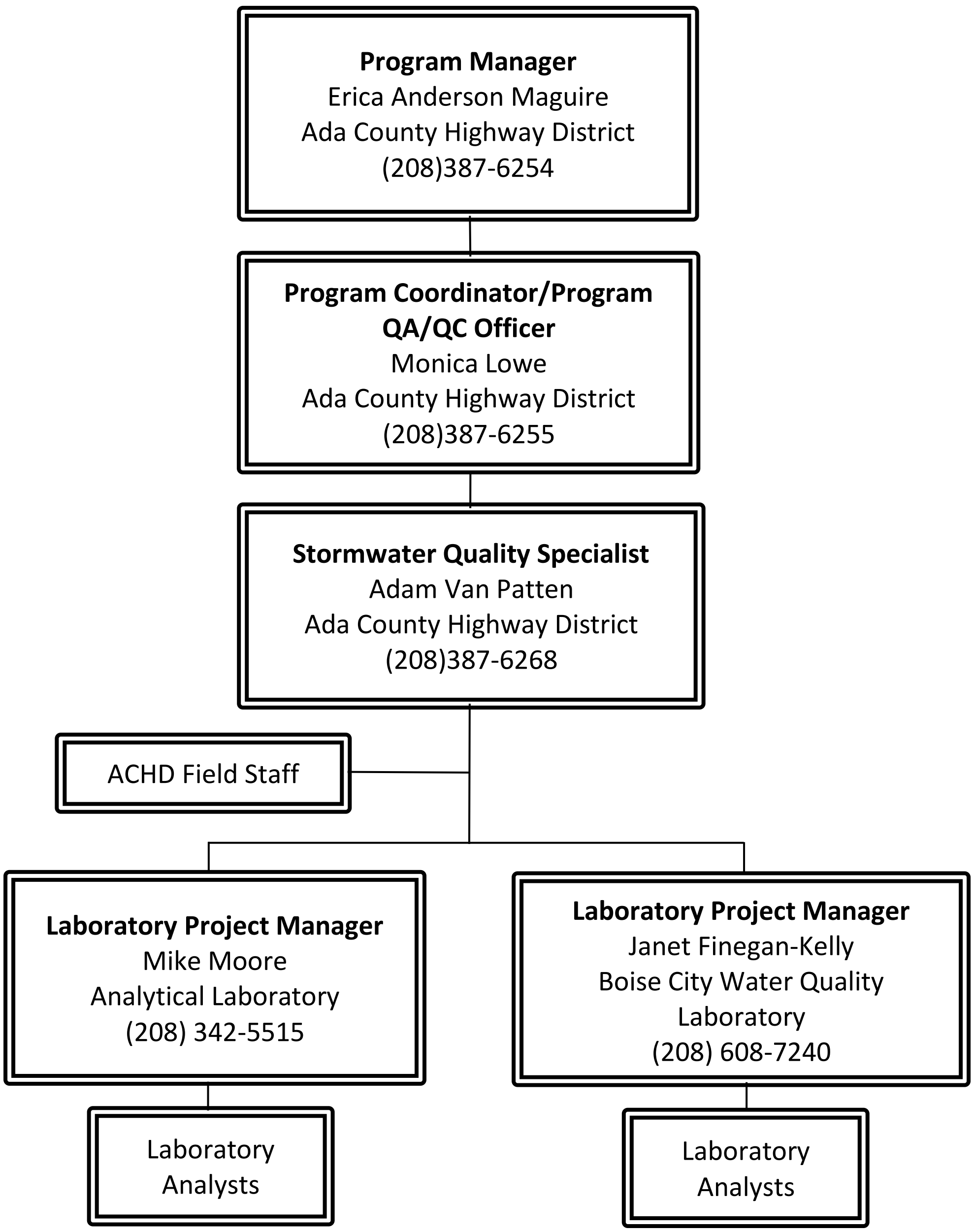

Figure 1-1. Dry weather outfall screening organization chart

Section 2

Screening Process Design

The screening process design consists of the planned and consistent approach to screening the outfalls of the Municipal Separate Storm Sewer System (MS4) to detect illicit discharges and illegal connections. The screening process has been developed to enable ACHD to inspect all outfalls owned by ACHD over the course of a five year period. The screening process includes provisions for prioritizing and sorting the outfalls to be screened such that investigations conducted each year are distributed across the Permit area and that all major land uses are represented.

Data collection includes qualitative characteristics of the outfalls, flow measurements, water quality data, and information useful in tracing flow to the source and eliminating illicit discharges and illegal connections. Section 2.1 provides a description of the information currently available for outfalls owned by ACHD. Section 2.2 describes ACHD's approach to prioritizing outfall screening in each year and across the five year period during which all outfalls owned by ACHD will be screened. This allows ACHD to meet the permit requirement of screening 20 percent or more of the total outfalls each year. Project details addressing data collection efforts including monitoring equipment used, outfall assessment procedures, and flow monitoring methods are included in sections 3 and 4.

2.1 Outfall Screening Locations

Ada County Highway District owns a total of 742 documented outfalls across the NPDES Phase I Permit area. Outfalls drain all major land uses within the Permit area and have the potential to convey illicit discharges to receiving waters. Figure 2-1 shows all Permittee-owned outfalls within the Permit area (Figures Section).

ACHD outfalls discharge to a total of 68 different Waters of the U.S. within the Permit area. Table 2-1 (Tables Section) includes a list of receiving waters in the Permit area and the number of outfalls discharging to each. Specific reaches of a number of the receiving waters are listed as impaired waters on the Idaho Department of Environmental Quality 303d list. These waters and the pollutants of concern associated with impairment are included in Table 2-2 (Tables Section).

2.2 Outfall Prioritization and Screening Schedule

Planned prioritization of outfalls selected for screening helps to ensure that Permit requirements are met in the outfalls screened each year. The prioritization levels described below have been established for use in selecting outfalls for screening each year. The requirements described in Permit Part II.B.5.d.ii for monitoring illicit discharges have been compared with the information summarized in Section 2.1 to prioritize the targeted outfalls and develop a schedule to screen 20 percent of the outfalls annually.

Figure 2-2 represents a summary of the approach ACHD has developed to conduct screening in accordance with the requirements of Permit part II.B.5.d.ii. The outfall screening schedule includes 20 percent of the total ACHD-owned outfalls each year, of which, at least 20 percent the outfalls discharge to impaired waters. At least one third of the outfalls will be screened during the June 1 to September 30 time frame of each year.

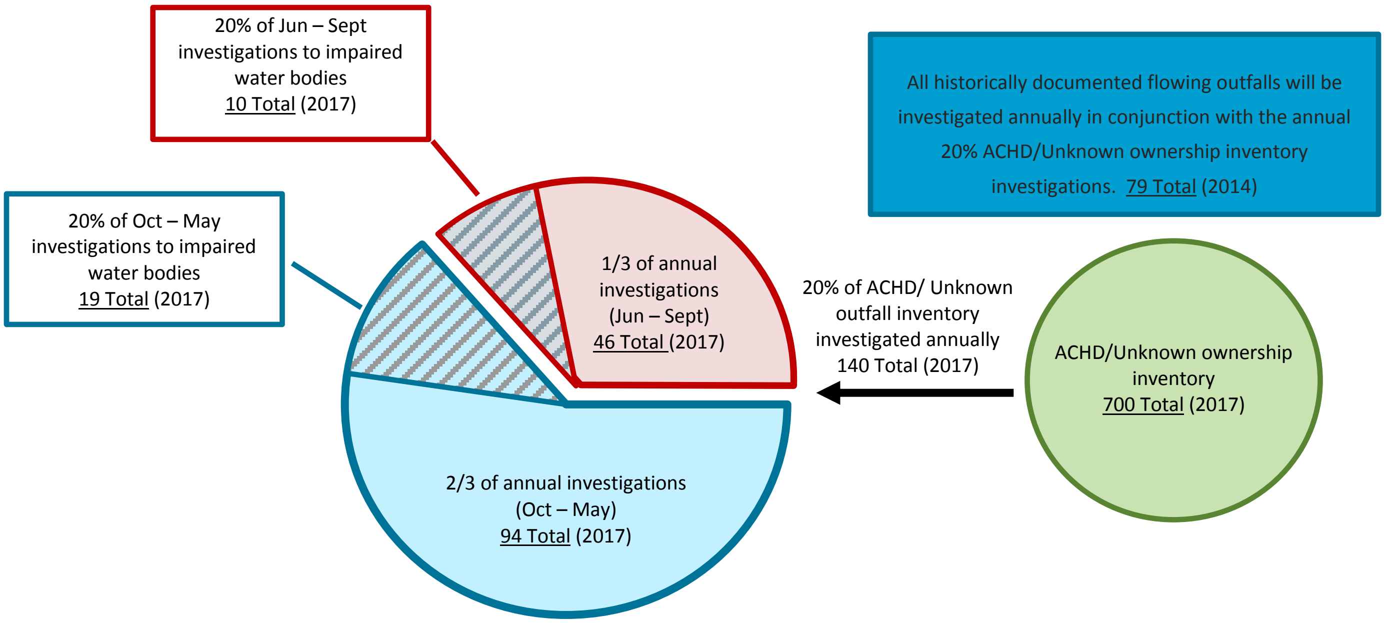

Figure 2-2 Outfall screening schedule organization

Prioritization

Outfalls given the highest priority include documented flowing outfalls and outfalls to impaired water bodies. Each year priority will be given to outfalls that are the subject of public complaints or that the ACHD personnel believe may have an increased illicit discharge potential whether or not they were originally scheduled for that given year. Examples of increased risk include identification of cross connections, problems with aging infrastructure, or activities and conditions in the drainage area likely to result in an illicit discharge. In these instances the outfalls originally scheduled for investigation will be rescheduled for a later date to maintain the goal of 20 percent of total outfalls screened each year.

Previously Documented Flows

Flowing outfalls discharging irrigation or groundwater seepage flows that have already been identified will be sampled annually to assess compliance with Permit Part I.D. ACHD has documented 79 outfalls discharging irrigation or groundwater flows within the Permit area. If analytical and field investigation results indicate that the flow is in compliance with Permit Part I.D, the outfall will be removed from the annual historical flow sampling list.

Investigations of previously documented flows are to be completed annually and are not limited to specific times of the year. However, ACHD has observed seasonal variation in these flows typically attributable to irrigation and high groundwater. The intent of ACHD's sampling approach is to address such flows by first assessing flow origin and date of observance.

Substantial flows that are believed to be continuous will be reinvestigated up to two times during the first year to collect additional flow measurements and to document the approximate duration of the year that the flows are present. Investigations will be scheduled in an attempt to determine the duration of the year the flows are present. Outfalls with lower flows or intermittent flows may be reinvestigated as time allows at a lower priority level. Previously documented flowing outfalls will only be counted as part of the 20 percent of total outfalls screened annually if there is an overlap between the flowing outfalls and the 20 percent selected for that year.

Each year, following preparation of the annual report, the schedule for investigation of flowing outfalls will be revised based on the previous year's results. This approach is described in greater detail in Section 6.3.2 Annual Reporting.

Screening Schedule

Appendix A is the screening schedule for all documented outfalls, which includes all ACHD-owned and unknown outfalls within the phase I Permit area. The screening schedule is based on geographic distribution and the prioritization methods described above. This schedule has been developed to ensure that Permit requirements for outfall screening are met for each year. The schedule will be updated at least once each year to reflect any changes in total number of outfalls and outfalls rescheduled due to prioritization needs during each year.

Section 3

Monitoring Equipment

This section provides an overview of the types of monitoring equipment planned for use in the dry weather outfall screening program. Standard Operating Procedures (SOPs) and procedure guidance documents are included in Appendix B and provide greater detail describing how equipment is used to accomplish the goals of the Dry Weather Outfall Screening Program. Manufacturers' recommendations for proper use and maintenance are either included in the SOPs or the equipment manuals referenced in the SOPs.

3.1 Stormwater Test Kit

ACHD utilizes the Hach Stormwater Test Kit for in-field chemical analysis of total chlorine, total copper, and total phenols. Chemical analyses are conducted according to the manufacturer's instructions (Appendix B) using colorimetric comparison of samples treated with reagents to estimate concentration of the constituents of concern. The test kit includes dissolvable, premeasured reagent packets specific to each chemical analysis, viewing tubes, and a color comparator, which holds the viewing tubes in line with a rotating color wheel. The kit also includes a long path viewing adaptor to accommodate the full range of targeted chemical analyses with an incremental accuracy of 0.1 mg/L.

Calibration and Maintenance

A check of reagent accuracy can be completed using a reagent specific standard solution. Accuracy will be tested for each packet of reagents used following the test procedures outlined in Appendix B. ACHD is responsible for calibration and maintenance and will keep a log in the monitoring shed for reference.

Color viewing tubes and containers and utensils used for mixing samples will be rinsed with deionized water immediately after sample results are recorded for each analysis. The stormwater test kit will be kept dry and reagent packets will be kept in water-resistant containers between uses.

3.2 Flow Probe

ACHD utilizes a Global Water FP111 Flow Probe for collecting velocity measurements used in estimating discharge volume of flowing outfalls. The velocity meter uses a propeller attached to a telescoping handle. The propeller is protected by a plastic shield that extends around the outer diameter of the propeller to avoid bumping the propeller against the bottom of the pipe/channel or other obstacles.

A small computer with an LCD screen is attached to the handle opposite the propeller. The computer displays velocity as an instantaneous measurement as well as the minimum, maximum, and average velocity readings. The flow probe computer is zeroed out immediately prior to collect new readings.

Discharge flow measurement using the Global Water Flow Probe is discussed in detail in Section 4.3.3. If another flow probe is substituted for the Global Water Flow Probe, the substitute will be verified to have the same or higher degree of sensitivity and accuracy.

Calibration and Maintenance

Per the manufacturer's recommendations the flow probe will be allowed to dry between uses and washed with soap as needed to maintain proper operation. The flow probe does not require routine maintenance or calibration other than being kept clean.

3.3 Handheld Field Parameter Instruments

During discharge sample collection, specific parameters will be measured directly in the field using a variety of handheld instruments to collect readings including: pH, conductivity, dissolved oxygen content, and temperature. Measurements of field parameters will be collected immediately after sample collection. If parameters are measured more than 15 minutes after sample collection the data will be qualified. Field parameter instruments will be rinsed with distilled water between measurements.

Handheld field parameter instruments may include the following specific instruments. If any other instrument is substituted for an instrument listed below, the substitute will be verified to have the same or higher degree of sensitivity to maintain data quality and program safety objectives. The following is a list of program approved instruments.

- Horiba D-51 pH/temperature meter
- YSI-85 DO/salinity/conductivity/temperature meter
- Hach 2100Q turbidity meter

Safety Monitoring Instruments:

- Hazardous vapor monitors including: Biosystems PhD Lite, Biosystems PHD6, and Sperian

Calibration and Maintenance

Maintenance will be conducted per manufacturers' recommendations and the procedures outlined in Appendix B, or more frequently as warranted by equipment performance. Instruments will be inspected and calibrated before each planned sampling event. ACHD is responsible for calibration and maintenance and will keep a log in the monitoring shed for reference.

Section 4

Screening and Sampling Procedures

4.1 Weather Information and Field Preparation

Permit requirements for dry weather outfall screening require an antecedent dry period of 72 hours or more of 0.10 inch or less of precipitation. In order to meet this criteria, staff will verify the antecedent dry period by accessing continuous weather observations published by the National Weather Service (NWS) for the weather monitoring station located at the Boise Airport. Observations may be obtained by visiting the NWS webpage for the local area or by calling the NWS Boise office. While confirming the antecedent dry period, staff will also check the forecast for the area where work is planned to ensure acceptable and safe weather conditions are present during screening.

Field equipment and supplies may vary based on the location and type of terrain expected to access outfall(s) planned for investigation. Prior to initiating investigation activities field staff will perform a cursory check of all equipment to be used to verify proper function and safe operation. Necessary supplies including field investigation forms and sampling and testing supplies will be restocked as necessary and kept in a clean and secure location between investigations.

4.2 Outfall Investigation

The dry weather outfall screening program is built around the information obtained during outfall investigation activities. Outfall screening and spill reporting are the main methods for discovery of illicit discharges to the MS4. A dry weather investigation consists of verification of the information ACHD has for the outfall and its conveyance as well as qualitative descriptions of the conditions present at the time of the investigation. Investigations also include a review of records from past visits to identify persistent or new conditions.

Upon arrival at the outfall, ACHD personnel will conduct physical observations in the order listed on the Dry Weather Outfall Investigation Form (Form DW1) included in Appendix C. Information to be collected for each outfall includes:

- Location in terms of a description of the nearby streets, receiving water, and other landmarks useful in identifying and locating the outfall.
- Description of major land uses in the outfall drainage area
- The configuration, construction, dimensions, material, and condition of the outfall
- Observations of the outfall and surrounding area including the staining, sedimentation, scour, and condition of vegetation
- Clarity, odor, color, floatables, and intensity of flow, where present
- Presence of trash in or from outfall (reference Form DW2 in Appendix C for trash assessment)
- Photographs of the outfall, surrounding area, flows, if present, and any other features or conditions useful or pertinent to the outfall inventory, screening activities, or reporting

If a discharge is present at the time of investigation, the flow volume will be measured as described in Section 4.3.3. Qualitative characteristics of the flow such as color, odor, and clarity will also be recorded. Sample collection will be scheduled for a later date due to advance notice requirements for the Boise City

Water Quality Laboratory (WQL). Sample collection and flow measurement methods are described in the discharge monitoring section below.

4.3 Discharge Monitoring

To accommodate holding time requirements for E. coli, advance notice is typically required before delivering samples to WQL. As such, discharges are not typically sampled at the time of first discovery. Following Permit requirements monitoring will be performed as described below at the earliest possible date, not to exceed 15 days from the time the new discharge was discovered.

4.3.1 Discharge Parameter Analysis

The analytical methods planned for use in discharge monitoring when flows are present are included in Table 4-1 below. The Permit requires that "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 EPA. Where an approved 40 CFR Part 136 method does not exist, and other test procedures have not been specified, any available method may be used after approval from EPA." As such, the methods identified below are the selected and preferred options. However, sample, laboratory, or instrument conditions may require the substitution of an alternate Part 136 method.

The analytical requirements for dry weather discharge samples are listed in the Permit. Water quality data will be collected using a combination of field parameter measurements using handheld meters, field analysis conducted by field screening staff, and laboratory analysis. Table 4-1 identifies the constituents to be identified, analytical method, and type of analysis.

Table 4-1. Analytical Methods for Dry Weather Discharge Constituents

Constituent	Sample Container	Analytical Method	Holding Time	Sample Analysis Type
pH	500 mL amber glass	EPA 150.1	15 minutes	Field Parameter
Temperature		EPA 170.1		
Turbidity		EPA 180.1		
Dissolved oxygen (DO)		SM 4500 G		
Conductivity		EPA 120.1		
Total chlorine	1 L sterilized plastic	DPD[1]	15 minutes	Field Analytical Test
Total copper		bicinchoninate hydrosulfide reduction	60 minutes	
Total phenols		4-aminoantipyrine	60 minutes	
E. coli	250 mL sterilized plastic	IDEXX Colilert	8 hours	Laboratory Analytical Test
Total suspended solids	4.3 L plastic	SM 2540 D	7 days	
Total phosphorus	500 mL plastic	EPA 200.7	28 days	
Dissolved orthophosphate	250 mL plastic	EPA 200.7	48 hours	
Surfactants (detergents)	1 L plastic	SM 5540 C	48 hours	

[1]DPD = N,N Diethyl-1,4 Phenylenediamine Sulfate

4.3.2 Discharge Sample Collection

Samples of discharges documented during investigations will be collected using grab sampling methodologies. Sample collection at each outfall will be accomplished by filling the sample container for each analysis from a point near the center of the flow at the outfall. Depending on outfall configuration, access constraints, and flow volume, the grab samples will be collected using a swing sampler or by hand

and safely positioning the sample bottle in the discharge stream. SOPs for grab sample collection are included in Appendix B. Immediately following sample collection; the field personnel will record the collection date and time for each sample on Form DW1.

Field Analytical Samples

Field analyses including total chlorine, total copper, and total phenols will be conducted using the Hach Stormwater Test Kit. Analysis will be completed within 30 minutes of sample collection. Each analysis will be conducted following the procedures outlined in the Hach Stormwater Test Kit manual. The specific test procedures from the manual have been incorporated into Appendix B. Results of field analyses will be recorded on Form DW1.

Field Parameters

Field parameters including temperature, pH, conductivity, DO, and turbidity will be measured in the field using handheld instruments to avoid changes that may occur between the time when the sample is collected and the time of analysis at the laboratory. Measurements from these field tests will be recorded on Form DW1.

Laboratory Analytical Samples

Samples will be collected for each constituent or suite of constituents in the containers listed in Table 4-1. Preservation techniques in the field are limited to cooling samples to a target sample temperature of less than 6°C, but above freezing. After the samples are collected, sufficient ice will be placed in coolers with the samples to maintain the samples at a maximum temperature of 6°C during transport to WQL.

Chemical preservation measures required for EPA standard methods are accomplished by laboratory personnel after samples are submitted. The EPA standard method for measurement of dissolved orthophosphate requires samples to be filtered within 15 minutes of sample collection. Samples for dissolved orthophosphate will be filtered in the field using a peristaltic pump and laboratory-prepared filters and tubing. Sample filtration will be performed following the procedures outlined in the field filtering SOP in Appendix B.

Chain of Custody Procedures

Standard chain of custody (COC) procedures will be followed for all analytical laboratory samples. COC forms, shown in Appendix C, will be completed prior to submittal of samples to the laboratory. Information recorded on the COC includes the following:

- Name of sampler
- Sample identification (outfall identification number from which the sample was collected)
- Analyses requested
- Sample time
- Sample date

A sample is considered to be “in custody” if it is either in actual physical possession of authorized personnel or in a secured area that is restricted to authorized personnel. Such areas include laboratory refrigerators, the monitoring shed at ACHD, ACHD office space, and ACHD vehicles. All transfers of custody will be recorded by signature, date, and time by both the individual relinquishing custody and the one receiving custody. This information is placed in the designated area on the bottom of standard COC forms.

Samples may be stored for short periods of time in coolers with ice at the ACHD monitoring shed or offices while awaiting submittal to WQL. In these instances, the COC forms will be reviewed and signed by the custody holder listed on the COC form. The COC forms will be kept with the samples at all times.

In most cases, laboratory personnel will be notified with at least one day of notice when samples will be submitted. If samples are submitted to the laboratory during business hours, samples are relinquished to laboratory personnel in person for immediate receipt with signature, date, and time. ACHD has after-hour access to the laboratory to accommodate sample submittal. When sample delivery occurs after hours, samples are placed in a locked refrigerator and the signed COC form is left in the locked laboratory for morning receipt by laboratory personnel.

Sample collection times for QC samples will be recorded as 12:00 on the COC form to maintain duplicates as laboratory blind samples. The actual collection time will be recorded on the field form. The QAPP includes details on the approach to data validation as it pertains to holding times and laboratory qualifiers for QC samples.

4.3.3 Discharge Flow Measurement

Flow measurements will be collected when discharges are present to properly document flows and to aid in pollutant loading estimates. Anticipated flow measurement methodologies include use of a velocity probe in conjunction with pipe dimensions, bucket testing, and visual qualitative assessment. A full description of each flow measurement method is included in the flow measurement section of Appendix B.

For relatively small discharges, a bucket flow test may be used in which a five gallon bucket is placed under the outfall to capture all flow from the outfall for an appropriate duration. This information is then used to calculate flow in cubic feet per second.

For higher flows, the velocity probe is used to obtain an average velocity measurement for the flow. The average velocity is combined with measurements of the area of the flow profile to calculate discharge in cubic feet per second. The SOP includes the measurement and calculation approach for circular pipes, elliptical pipes, and natural or irregular channels.

In situations where flow is present and the outfall is not physically accessible, a qualitative assessment of flow will be recorded and accompanied by a comment stating that the outfall was inaccessible for flow measurement. Qualitative flow assessment will be described using three descriptive categories: trickle, moderate, or substantial. Guidance in the flow measurement section of Appendix B defines each of the qualitative flow measurement terms that will be used and provides guidance for selecting the most appropriate descriptive term.

4.4 Flow Source Tracing

After completing the outfall investigation, discharges from flowing outfalls will be traced to the source of the flow. Finding the source of the discharge often provides important information to help determine whether the discharge is allowable under Permit Part 1.D. Allowable non-stormwater discharges include the following:

- Discharges covered under a separate NPDES permit
- Discharges resulting from a spill or from unusual and severe weather or an emergency
- Discharges consisting of uncontaminated water and not sources of pollution to waters of the U.S.

All documentation collected as part of the evaluation of discharges is required to be included in the Stormwater Management Plan. This includes the documentation and support for the discontinuation of discharge monitoring for outfalls that have allowable discharges.

4.4.1 Flow Source Tracing

Sources will be traced by following drop inlets and manholes upstream of the outfall using field maps showing the drainage system. Smoke testing, dye testing, and closed circuit TV will be used as appropriate to determine the source of the discharge.

Discharge sampling results can often be used to assist in identifying potential sources of pollution. The source tracing flow chart in Appendix D will be used in conjunction with analytical results, field observations, and drainage area analysis to identify likely source(s) of illicit discharges or illegal connections.

4.4.2 Discharge Thresholds

Previously documented flowing outfalls as described in Section 2.2 may be removed from the annual historical flows sampling list if the flow can be characterized as an allowable discharge. Thresholds based on analytical results and receiving waters have been developed to help make this determination. Appendix E includes a description of the thresholds for each monitored constituent of concern and the decision points to be used in evaluating compliance with Permit Part 1.D.

4.5 Escalation and Elimination

If a discharge is found to be illicit based on source tracing and/or chemical analysis, ACHD is required to take appropriate action to address the source of the ongoing discharge within 45 days of detection. To meet this requirement ACHD has established interagency agreements with the City of Boise and Garden City for enforcement of stormwater ordinances in City codes Title 8, Chapter 15 and Title 4, Chapter 14, respectively. Copies of these agreements can be found in the Stormwater Management Plan.

The agreements address enforcement of these ordinances to eliminate illicit discharges and illegal connections and contain escalation measures for application as necessary. ACHD may at any time provide the appropriate jurisdictional authority with evidence of the discharge and the source of flow. Public or private discharges may require action by the city; other discharges may require involvement from the Ada County Sheriff’s Office. If the source of the discharge cannot be determined, ACHD will provide available information to assist the jurisdictional authority in eliminating the discharge.

Section 5

Quality Assurance/Quality Control

5.1 QC Sampling Schedule

The QC sampling schedule developed for the dry weather outfall screening program consists of a combination of field QC samples and laboratory QC samples. QC sampling for this program is designed to assess field and laboratory analytical test procedures. QC sample types are fully described in the QAPP. QC sampling intervals will follow the schedule detailed in Table 5-1. Laboratory QC sample results are included in each analytical report.

Table 5-1. Field QC Sample Collection Schedule

QC Sample Method	Sampling Frequency2	Percent of Total Data Represented
Field Duplicate	1 suite per 20 samples	5%
Field Blank	1 suite per 20 samples	5%

[1]QC sample analysis will be performed on laboratory analytical samples only. Analyses conducted by ACHD in the field rely on calibration and accuracy check methods described in Section 3.

[2]Frequency is determined by number of screening program samples collected, regardless of result.

ACHD 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.

5.2 Data Quality Objectives (DQO)

Field screening efforts will provide data of sufficient quality and quantity in accordance with Permit requirements to detect and eliminate illicit discharges and illegal connections, estimate pollutant concentrations and loading associated with dry weather flows including flows associated with groundwater infiltration and irrigation drainage in the MS4, and support mapping and outfall inventory efforts to maintain accurate records.

Data Quality Indicators (DQIs)

DQIs 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. QA/QC samples provide input for several of the DQIs. QA/QC sample collection procedures are included in Section 2.1 of the QAPP.

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

- **Project Required Detection Limits (PRDL).** 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.

Analysis-specific data quality indicators include PRDLs and precision evaluated as relative percent difference (RPD). The target values for these indicators are listed in Table 5-2 below.

Table 5-2. Data Quality Indicator Targets

Constituent	Analytical Method	PRDL[1,2]	Units	Precision[3,4] (RPD)
Temperature	EPA 170.1	0.01	°C	NA
pH	EPA 150.1	0.01	S.U.	NA
Dissolved oxygen	SM 4500 G	0.01	mg/L	NA
Conductivity	EPA 120.1	0.1	µS/cm	NA
Turbidity	EPA 180.1	0.1	NTU	20%
Total chlorine	DPD[5]	0.1	mg/L	NA
Total copper	bicinchninate hydrosulfide reduction	0.1	mg/L	NA
Total phenols	4-aminoantipyrine	0.1	mg/L	NA
Total phosphorus	EPA 200.7	0.04	mg/L	20%
Dissolved orthophosphate	EPA 365.1 or SM 4500-P E	0.084	mg/L	20%
E. coli[6]	IDEXX Colilert	1.8	MPN/100 mL	20%
Total suspended solids	SM 2540 D	1.0	mg/L	20%
Surfactants (detergents)	SM 5540C	0.014	mg/L	20%

1Field instrument resolution values are listed in lieu of a PRDL for field parameter measurements.

2PRDL is defined as the effective method detection limit (MDL) as reported by the analytical laboratory.

3Precision calculations based on field duplicate samples.

4In cases where one value is reported at the MDL and the other value is less than five times the MDL, the samples will be considered within acceptable precision limits.

5N,N Diethyl-1,4 Phenylenediamine Sulfate

6Assessment of precision for E. coli is evaluated using the RPD of logarithmic parent and duplicate values.

Section 6

Data Management and Reporting

6.1 Data Acquisition Requirements (Non-Direct Measurements)

Weather forecasts and hourly precipitation totals will typically be obtained from the NWS Boise airport station website and used for confirmation of antecedent dry periods. Additional forecasts or weather reports may be obtained from local media, community, or commercial weather services, ACHD and Permittee-owned rain gauges.

6.2 Data Management System

Data associated with the dry weather outfall screening program will be stored in the Microsoft Access Outfall Database on the secure ACHD network at V:\9DrainageDivision\VanPattenAdam\Outfalls.adp. Data stored in the Outfall Database includes the following elements:

- Time since most recent precipitation event greater than 0.1 inches of rain
- Quantity of most recent rain event greater than 0.1 inches of rain
- Site description (conveyance type, dominant watershed land uses)
- Flow estimation (width of water surface, depth of water, approximate flow velocity, approximate flow rate)
- Visual qualitative observations (odor, color, clarity, floatables, deposits/staining, biology, condition of vegetation, structural condition of outfall, qualitative flow)
- Sample analytical results
- QA/QC results
- Narrative description of flow tracing, determination of discharge authorization (allowable or illicit), and documentation of any corrective measures including stopping the discharge, disconnecting illegal connections or other enforcement and escalation activities

6.3 Data Organization and Reporting

6.3.1 Investigation Results Organization

Upon returning to the office, data that has been collected in the field will be filed according to data type.

- Photographs taken will be downloaded and stored in a word document photo log for the event. The photo log will include the date and outfall number and will be filed under the outfall file on the secure ACHD server at V:\92OutfallPictures\OutfallPhotos. A link to the photo log will be included in the Access database for each investigation. Each picture will include a caption with a description of the subject and location of the picture as well as the vantage point.
- GPS data will be checked against existing data for outfall locations and corrected in GIS as necessary.
  - Coordinates of new outfalls encountered will be entered into the outfalls layer in GIS and subsequently researched to determine drainage area and incorporated into the outfall inventory.
  - In the event that the outfall to be investigated no longer exists, the outfall as an attribute will be reassigned to a separate shapefile and removed from the outfall inventory. Records of the outfall

will be retained for at least five years or the duration of the Permit. Records may be retained longer at the discretion of ACHD.

- Newly identified outfalls will be numbered according to the township, range, and section in which the outfall occurs. Outfalls located in the same section are numbered sequentially beginning with 001. Additionally, an individual file will be created in the Access database and on the server.
- Field data sheets and photographs will be scanned and filed under the corresponding reporting year on the server, and the hardcopies will be stored in the corresponding hardcopy file. Data from the field sheets will be entered in to Access intermittently throughout the year. ACHD is currently in the process of researching electronic field form options to replace the use of hardcopy field data sheets.

6.3.2 Annual Reporting

The annual report will include an updated map of ACHD-owned outfalls as well as any changes in water body designations. The map will include all reported and documented illicit discharges and illegal connections. The map will be made available as an electronic map file and a pdf.

The annual report will also contain an evaluation of compliance for the illicit discharge detection and elimination program. That evaluation will include a summary of the activities and progress of the dry weather outfall screening program. The total number of outfalls screened, including a count of outfalls discharging to impaired waters (at least 20 percent required), the number of flowing outfalls screened, and the number of outfalls screened between June 1 and September 30 (at least one third required).

Discharge Monitoring Results

Results of samples collected from monitored discharges will be summarized with each annual report. Discharge monitoring results will be used to evaluate flows associated with irrigation and groundwater seepage to determine whether the flows comply with Permit Part 1.D. Flows that are found to be in compliance with Permit Part 1.D (flows that are not sources of pollution to waters of the US) will be identified in the annual report and removed from the annual flow screening schedule for subsequent years. The rationale for removing these flows from annual screening schedules will also be recorded in the stormwater management plan.

Pollutant Loading Estimates

Discharge monitoring results will be used in conjunction with flow measurements to calculate pollutant loading estimates associated with the observed flows. Estimates of the duration of the year that flows were present at each outfall will be provided with the pollutant loading estimates when available. The duration of each flow during the year will be refined as more data is collected each year. Pollutant loading estimates will also be used to prioritize flows for evaluation of feasible actions necessary to eliminate flows that are not in compliance with Permit Part 1.D.

6.3.3 Evaluation and Assessment

Evaluation and assessment of the dry weather outfall screening data and the overall effectiveness of the Dry Weather Outfall Screening Program will be conducted in compliance with the general guidance identified in the PMEP. For the Dry Weather Outfall Screening Program, data will be compiled with the objective to eliminate illicit discharges and illegal connections to the MS4 and to evaluate the effectiveness of stormwater management efforts at reducing pollutant loads from the MS4.

Advancing illicit discharge detection and elimination is an iterative process. The dry weather outfall screening program will be annually evaluated for compliance with Permit requirements. Evaluation efforts will also assess how well the dry weather outfall screening program aligns with the Level of Service goals outlined in the ACHD Phase I Stormwater management plan. Changes and revisions to the program including updated methods or revised approaches will be integrated into the program as updates to this Dry Weather Outfall Screening Plan and/or the SOPs referenced herein.

Section 7

References

Ada County Highway District (ACHD), Project Monitoring and Evaluation Plan, 2013.

———, Quality Assurance Program Plan for NPDES Storm Water Permit Monitoring Boise and Garden City, Idaho, 2014.

Brown, Edward, Deb Caraco, and Robert Pitt. 2004. Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments. Center of Watershed Protection. Ellicot City, MD.

U.S. Environmental Protection Agency (EPA). *Methods for Chemical Analysis of Water and Wastes*, EPA-600/4-79-020, March 1983. Cincinnati, Ohio: U.S. Environmental Protection Agency Environmental Monitoring and Support Laboratory, 1983.

———, Guidance on Environmental Data Verification and Data Validation (EPA QA/G-8), EPA 240-R-02-004, Office of Environmental Information, 2002.

———, Guidance on Systematic Planning Using the Data Quality Objective Process, EPA Bulletin # EPA 240-B-06-001, 2006.

———, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act, Analysis and Sampling Procedures; Final Rule, Federal Register Vol. 77 No. 97. 40 CFR Parts 136, 260, et al., 2012.

Figures

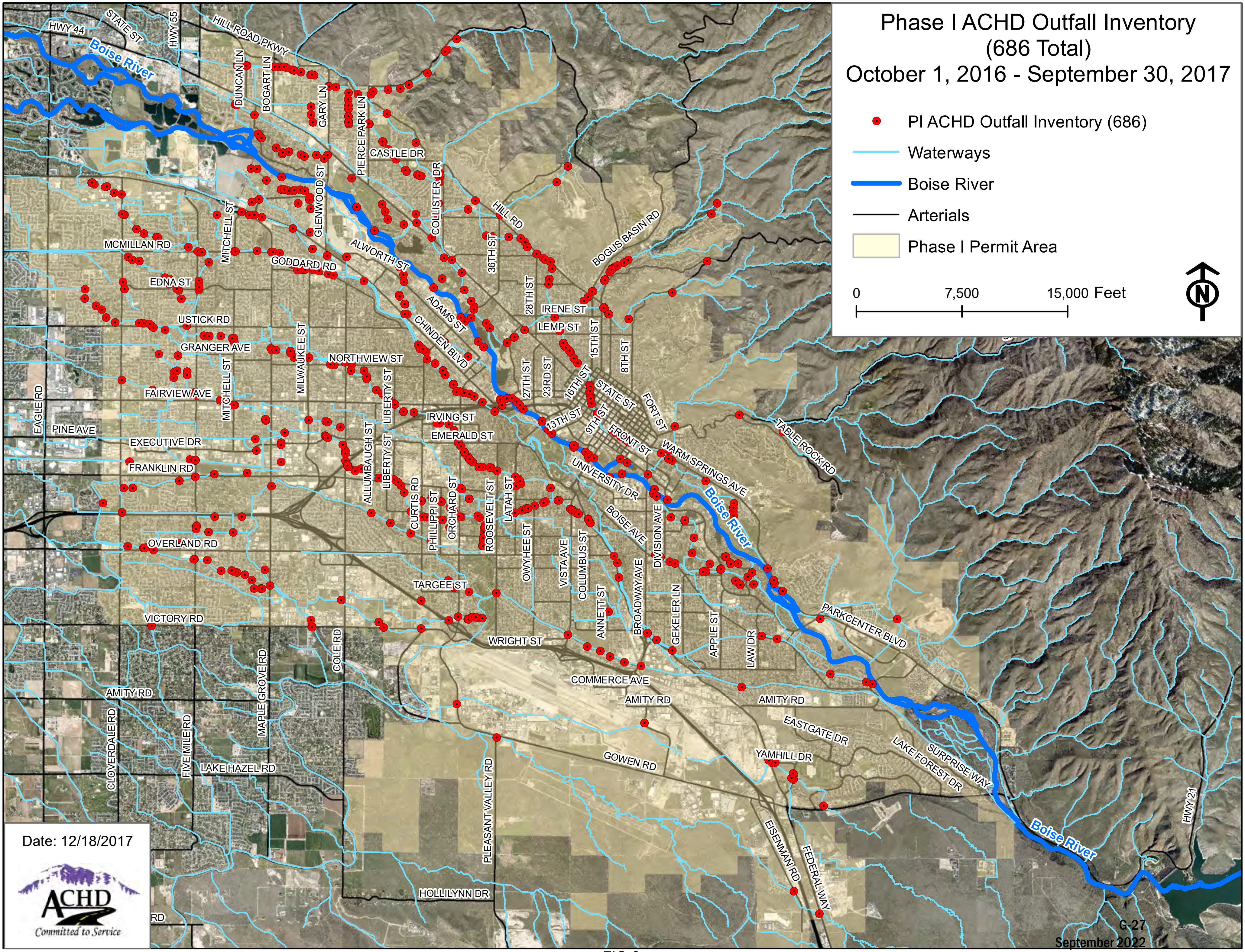
Phase I ACHD Outfall Inventory
(686 Total)
October 1, 2016 - September 30, 2017
PI ACHD Outfall Inventory (686)
Waterways
Boise River
Arterials
Phase I Permit Area
0
7,500
15,000 Feet
N
Date: 12/18/2017
ACHD
Committed to Service
Boise River
HWY 44
STATE ST
HWY 55
HILL ROAD PKWY
DUNCAN LN
BOGART LN
GARY LN
PIERCE PARK LN
CASTLE DR
GLENWOOD ST
COLLISTER DR
HILL RD
BOGUS BASIN RD
MCMILLAN RD
MITCHELL ST
ALWORTH ST
GODDARD RD
36TH ST
EDNA ST
ADAMS ST
28TH ST
IRENE ST
USTICK RD
CHINDEN BLVD
LEMP ST
15TH ST
8TH ST
GRANGER AVE
MILWAUKEE ST
NORTHVIEW ST
27TH ST
23RD ST
16TH ST
STATE ST
FORT ST
EAGLE RD
FAIRVIEW AVE
LIBERTY ST
PINE AVE
IRVING ST
13TH ST
9TH ST
TABLE ROCK RD
EXECUTIVE DR
EMERALD ST
FRONT ST
WARM SPRINGS AVE
FRANKLIN RD
ALLUMBAUGH ST
UNIVERSITY DR
CURTIS RD
PHILLIPPI ST
ORCHARD ST
ROOSEVELT ST
LATAH ST
BOISE AVE
DIVISION AVE
OWYHEE ST
VISTA AVE
COLUMBUS ST
OVERLAND RD
TARGEE ST
ANNETT ST
BROADWAY AVE
GEKELER LN
APPLE ST
LAW DR
PARKCENTER BLVD
VICTORY RD
COLE RD
WRIGHT ST
COMMERCE AVE
AMITY RD
MAPLE GROVE RD
EASTGATE DR
CLOVERDALE RD
FIVE MILE RD
LAKE HAZEL RD
GOWEN RD
YAMHILL DR
SURPRISE WAY
LAKE FOREST DR
PLEASANT VALLEY RD
EISENMAN RD
FEDERAL WAY
HWY 21
HOLLILYNN DR
RD

FIG-2

Tables

Table 2-1	
Receiving Water Body	Number of Outfalls
Ash Lateral	2
Bennett Lateral	1
Boise City Canal	58
Boise City Canal-drain of	0
Boise River	36
Boise River-Trib to	1
Boise Valley Canal	3
Bubb Canal	6
Chaffin Drain	1
Cloverdale Lateral	1
Collis Lateral	3
Cottonwood Creek	3
Cottonwood Creek-Trib of	2
Crane Creek	24
Davis Drain	26
Drain A	0
Drain B	0
Drain E	0
Dry Creek	2
Dry Creek Canal	6
Eagle Drain	46
Eagle Drain-lateral of	3
Eggers Lateral	1
Eightmile Creek	1
Elmore Drain	12
Eureka Canal	0
Farmer's Lateral	15
Farmer's Union Canal	12
Fitz Lateral	1
Fivemile Creek	30
Fivemile Creek-Trib. to	8
Gruber Lateral	1
Helm Lateral	1
Hulls Gulch	7
Hulls Gulch-Lateral of	1
Huntington Lateral	5
Julia Davis Pond	2
Karnes Lateral	11
Lake Elmore	1
Lake Heron	1
Lake Heron Creek-north fork	0
Lake Heron Creek-south fork	1
Lake Heron-lateral of	1
Logger Creek	13
Logger Creek-Lateral	1

Table 2-1 cont.	
Receiving Water Body	**Number of Outfalls**
Lowell Drain	1
McMillan Lateral	7
Milk Lateral	5
New York Canal	8
North Slough	74
Penitentiary Canal	1
Penninger Lateral	2
Penninger Secondary	1
Pierce Creek	7
Pierce Gulch	1
Powell Lateral	4
Ridenbaugh Canal	75
Ridenbaugh Ditch	7
Rust Lateral	4
Settler's Canal	33
Settler's Canal Lateral	6
Shavrer Lateral	2
South Slough	16
Stewart Gulch	6
Synder Lateral	2
Threemile Creek	7
Threemile Lateral	9
Thurman Mill Canal	17
Thurman Mill Canal-Lateral	4
Tuttle Lateral	1
Warm Springs Canal	18
Watson Drain	2
Watson Drain-Lateral	1
Wilson Fruit Lateral	2
Zinger Lateral	13
Total	**686**

Table 2-2 Clean Water Act §303 (d) listed Water Bodies and Pollutants of Concern		
Receiving Water Body	Assessment Unit Code	Pollutants of Concern Causing Impairments
Boise River – Diversion Dam to River Mile 50	ID17050114SW011a_06	Temperature
Boise River – River Mile 50 to Star Bridge	ID1705011SW005_06	Temperature, Sediment, E. coli
Boise River – Star to Middleton	ID17050114SW005_06a	Temperature, Total Phosphorus, Sediment
Boise River – Middleton to Indian Creek	ID17050114SW005_06b	Temperature, Total Phosphorus, Sediment (TSS), E. coli
Boise River – Indian Creek to the mouth	ID17050114SW001_06	Temperature, Total Phosphorus, Sediment
Tenmile Creek – 3rd order below Blacks Creek Reservoir	ID17050114SW008_03	Sediment (TSS), E. coli
Fivemile Creek – 1st & 2nd order tributaries	ID17050114SW010_02	E. coli
Fivemile Creek – 3rd order tributaries	ID1705114SW010_03	Sediment (TSS), E.Coli

Appendix A: Five-Year Outfall Screening Schedule

Outfall Screening Schedule 2017-2018

#	Outfall ID	Ownership	Receiving Water
1	2n3e06_001	ACHD	Fivemile Creek
2	3n1e01_001	ACHD	North Slough
3	3n1e01_003	ACHD	North Slough
4	3n1e01_013	ACHD	North Slough
5	3n1e02_001	ACHD	North Slough
6	3n1e03_001	ACHD	North Slough
7	3n1e03_007	ACHD	Milk Lateral
8	3n1e03_008	ACHD	Milk Lateral
9	3n1e03_009	ACHD	Milk Lateral
10	3n1e03_016	ACHD	Milk Lateral
11	3n1e12_005	ACHD	South Slough
12	3n1e12_009	ACHD, Railroad	South Slough
13	3n1e12_021	ACHD	Ridenbaugh Canal
14	3n1e12_028	ACHD	Ridenbaugh Canal
15	3n1e13_002	ACHD	Farmer's Lateral
16	3n1e14_006	ACHD	Wilson Fruit Lateral
17	3n1e14_007	ACHD	Unnamed Ditch
18	3n1e15_008	ACHD	Ridenbaugh Canal
19	3n1e23_004	ACHD	Fivemile Creek
20	3n2e03_006	ACHD	Boise City Canal
21	3n2e04_018	ACHD	Boise City Canal
22	3n2e04_022	ACHD	Boise City Canal
23	3n2e05_017	ACHD, Private	Davis Drain
24	3n2e05_018	ACHD, Private	Davis Drain
25	3n2e05_025	ACHD	Thurman Mill Canal
26	3n2e06_001	ACHD	North Slough
27	3n2e06_011	ACHD	Davis Drain
28	3n2e06_015	ACHD	North Slough
29	3n2e07_006	ACHD	Ridenbaugh Canal
30	3n2e07_013	ACHD	Ridenbaugh Canal
31	3n2e07_014	ACHD	Ridenbaugh Canal

#	Outfall ID	Ownership	Receiving Water
32	3n2e07_016	ACHD	North Slough
33	3n2e07_021	ACHD	Ridenbaugh Canal
34	3n2e08_007	ACHD, Private	North Slough
35	3n2e08_011	ACHD	North Slough
36	3n2e08_014	ACHD	North Slough
37	3n2e08_015	ACHD	North Slough
38	3n2e08_019	ACHD, Private	Settler's Canal
39	3n2e08_020	ACHD	North Slough
40	3n2e08_026	ACHD, Private	North Slough
41	3n2e08_033	ACHD	North Slough
42	3n2e09_014	ACHD	North Slough
43	3n2e09_015	ACHD	North Slough
44	3n2e09_022	ACHD, ITD	Boise River
45	3n2e10_005	ACHD	Boise City Canal
46	3n2e10_006	ACHD	Boise City Canal
47	3n2e10_018	ACHD	Boise River
48	3n2e10_019	ACHD, Private	Boise River
49	3n2e10_020	ACHD	Boise River
50	3n2e10_022	ACHD	Boise River
51	3n2e10_031	ACHD, BSU	Boise River
52	3n2e10_043	ACHD	Boise City Canal
53	3n2e11_007	ACHD	Cottonwood Creek
54	3n2e11_008	ACHD	Cottonwood Creek
55	3n2e12_001	ACHD	Cottonwood Creek-Trib of
56	3n2e13_003	ACHD	Boise City Canal
57	3n2e14_003	ACHD	Logger Creek
58	3n2e14_016	ACHD	Boise River
59	3n2e14_017	ACHD, ITD	Boise River
60	3n2e14_027	ACHD, Boise City	Logger Creek
61	3n2e15_007	ACHD	Ridenbaugh Canal
62	3n2e16_002	ACHD	North Slough

This five-year outfall screening schedule has been developed to meet the Permit requirements according to the scheduling and prioritization approaches described in Section 2.2 of the Dry Weather Outfall Screening Plan.

Outfall Screening Schedule 2017-2018 cont.

#	Outfall ID	Ownership	Receiving Water
63	3n2e16_003	ACHD	Powell Lateral
64	3n2e16_016	ACHD	Ridenbaugh Canal
65	3n2e16_018	ACHD, Irrigation	Ridenbaugh Canal
66	3n2e16_019	ACHD	Ridenbaugh Canal
67	3n2e17_004	ACHD	Ridenbaugh Canal
68	3n2e17_013	ACHD	Rust Lateral
69	3n2e17_014	ACHD	Powell Lateral
70	3n2e17_016	ACHD, Irrigation	Ridenbaugh Canal
71	3n2e17_017	ACHD	Farmer's Lateral
72	3n2e17_019	ACHD	Farmer's Lateral
73	3n2e17_022	ACHD	Farmer's Lateral
74	3n2e17_040	ACHD	Ridenbaugh Ditch
75	3n2e18_017	ACHD	Ridenbaugh Canal
76	3n2e19_002	ACHD	Threemile Lateral
77	3n2e19_003	ACHD	Threemile Creek
78	3n2e20_004	ACHD	Penninger Lateral
79	3n2e20_008	ACHD	Threemile Lateral
80	3n2e20_012	ACHD	Threemile Lateral
81	3n2e20_019	ACHD	Threemile Creek
82	3n2e22_002	ACHD	Ridenbaugh Canal
83	3n2e24_005	ACHD	Boise River
84	3n2e24_019	ACHD	Logger Creek-Lateral
85	3n2e36_001	ACHD	Fivemile Creek-Trib. to
86	4n1e13_006	ACHD	Eagle Drain
87	4n1e13_007	ACHD	Eagle Drain
88	4n1e13_012	ACHD	Eagle Drain
89	4n1e13_015	ACHD	Eagle Drain
90	4n1e14_005	ACHD	Eagle Drain
91	4n1e14_006	ACHD	Eagle Drain
92	4n1e14_010	ACHD	Eagle Drain
93	4n1e23_007	ACHD	Warm Springs Canal

#	Outfall ID	Ownership	Receiving Water
94	4n1e23_014	ACHD	Dry Creek Canal
95	4n1e24_003	ACHD	Eagle Drain-lateral of
96	4n1e24_022	ACHD, ITD	Dry Creek Canal
97	4n1e25_021	ACHD, ITD	Thurman Mill Canal
98	4n1e25_029	ACHD	Warm Springs Canal
99	4n1e25_032	ACHD	Settler's Canal
100	4n1e26_007	ACHD	Settler's Canal
101	4n1e26_012	ACHD	Thurman Mill Canal-Lateral
102	4n1e27_002	ACHD	Zinger Lateral
103	4n1e27_008	ACHD	Zinger Lateral
104	4n1e27_009	ACHD	Zinger Lateral
105	4n1e28_004	ACHD	McMillan Lateral
106	4n1e28_006	ACHD	McMillan Lateral
107	4n1e32_001	ACHD	North Slough
108	4n1e34_002	ACHD	Karnes Lateral
109	4n1e34_004	ACHD, Irrigation	Karnes Lateral
110	4n1e34_008	ACHD	Karnes Lateral
111	4n1e34_010	ACHD	Karnes Lateral
112	4n1e35_001	ACHD	Zinger Lateral
113	4n1e35_006	ACHD	Settler's Canal
114	4n1e36_003	ACHD	Settler's Canal
115	4n1e36_011	ACHD	Settler's Canal
116	4n2e17_003	ACHD	Pierce Gulch
117	4n2e18_001	ACHD	Farmer's Union Canal
118	4n2e18_002	ACHD	Pierce Creek
119	4n2e18_004	ACHD	Pierce Creek
120	4n2e18_008	ACHD	Eagle Drain
121	4n2e19_001	ACHD	Eagle Drain
122	4n2e19_010	ACHD	Eagle Drain
123	4n2e19_011	ACHD	Eagle Drain
124	4n2e19_016	ACHD	Eagle Drain

This five-year outfall screening schedule has been developed to meet the Permit requirements according to the scheduling and prioritization approaches described in Section 2.2 of the Dry Weather Outfall Screening Plan.

Outfall Screening Schedule 2017-2018 cont.

#	Outfall ID	Ownership	Receiving Water
125	4n2e19_029	ACHD	Eagle Drain
126	4n2e21_002	ACHD	Stewart Gulch
127	4n2e28_001	ACHD	Boise City Canal
128	4n2e28_002	ACHD	Boise City Canal
129	4n2e28_008	ACHD	Boise City Canal
130	4n2e30_004	ACHD	Dry Creek Canal
131	4n2e30_012	ACHD	Boise River
132	4n2e32_002	ACHD, Private	Boise River
133	4n2e32_012	ACHD	Farmer's Union Canal
134	4n2e32_014	ACHD	Farmer's Union Canal
135	4n2e32_016	ACHD	Farmer's Union Canal
136	4n2e33_001	ACHD	Boise City Canal
137	4n2e33_006	ACHD	Crane Creek
138	4n2e33_007	ACHD	Boise City Canal
139	4n2e34_007	ACHD	Crane Creek
140	4n2e35_004	ACHD	Hulls Gulch-Lateral of

This five-year outfall screening schedule has been developed to meet the Permit requirements according to the scheduling and prioritization approaches described in Section 2.2 of the Dry Weather Outfall Screening Plan.

Outfall Screening Schedule 2018-2019

#	Outfall ID	Ownership	Receiving Water
1	3n1e01_004	ACHD	North Slough
2	3n1e01_007	ACHD	North Slough
3	3n1e01_008	ACHD	North Slough
4	3n1e02_009	ACHD	North Slough
5	3n1e02_010	ACHD	Milk Lateral
6	3n1e10_006	ACHD	Settler's Canal Lateral
7	3n1e11_012	ACHD	South Slough
8	3n1e12_029	ACHD	Ridenbaugh Canal
9	3n1e14_008	ACHD	Huntington Lateral
10	3n1e14_011	ACHD	Huntington Lateral
11	3n1e15_002	ACHD	Fivemile Creek
12	3n1e15_003	ACHD	Fivemile Creek
13	3n1e15_011	ACHD	Synder Lateral
14	3n1e15_012	ACHD	Ridenbaugh Canal
15	3n1e23_003	ACHD	Fivemile Creek
16	3n1e23_006	ACHD	Fivemile Creek
17	3n1e23_009	ACHD	Fivemile Creek
18	3n1e24_001	ACHD	Threemile Creek
19	3n1e24_002	ACHD	Fivemile Creek
20	3n1e24_004	ACHD	Fivemile Creek
21	3n2e03_009	ACHD	Boise City Canal
22	3n2e03_010	ACHD	Boise City Canal
23	3n2e04_009	ACHD	Boise River
24	3n2e04_011	ACHD, ITD	Boise River
25	3n2e04_013	ACHD	Boise City Canal
26	3n2e04_019	ACHD	Boise City Canal
27	3n2e04_027	ACHD	Crane Creek
28	3n2e05_006	ACHD	Thurman Mill Canal
29	3n2e05_008	ACHD	Settler's Canal
30	3n2e05_014	ACHD, ITD	Davis Drain
31	3n2e05_023	ACHD	Davis Drain

#	Outfall ID	Ownership	Receiving Water
32	3n2e05_024	ACHD	Boise River
33	3n2e06_009	ACHD	Davis Drain
34	3n2e06_012	ACHD	North Slough
35	3n2e06_016	ACHD	North Slough
36	3n2e06_017	ACHD	North Slough
37	3n2e08_001	ACHD, Private	North Slough
38	3n2e08_004	ACHD	North Slough
39	3n2e08_013	ACHD	North Slough
40	3n2e08_031	ACHD	North Slough
41	3n2e10_004	ACHD	Boise City Canal
42	3n2e10_007	ACHD	Boise City Canal
43	3n2e10_011	ACHD	Julia Davis Pond
44	3n2e10_037	ACHD	Boise City Canal
45	3n2e10_045	ACHD	Boise City Canal
46	3n2e10_046	ACHD, Private	Boise River
47	3n2e11_005	ACHD	Boise City Canal
48	3n2e12_005	ACHD	Cottonwood Creek-Trib of
49	3n2e13_002	ACHD	Lake Heron
50	3n2e13_004	ACHD	Boise City Canal
51	3n2e13_008	ACHD	Logger Creek
52	3n2e15_006	ACHD	Ridenbaugh Canal
53	3n2e15_008	ACHD	Ridenbaugh Canal
54	3n2e16_011	ACHD	Ridenbaugh Canal
55	3n2e16_014	ACHD	Powell Lateral
56	3n2e16_021	ACHD	Ridenbaugh Canal
57	3n2e17_005	ACHD	Ridenbaugh Canal
58	3n2e17_008	ACHD	Farmer's Lateral
59	3n2e17_012	ACHD, Irrigation	Rust Lateral
60	3n2e17_020	ACHD	Farmer's Lateral
61	3n2e17_023	ACHD	Farmer's Lateral
62	3n2e17_038	ACHD	Ridenbaugh Ditch

This five-year outfall screening schedule has been developed to meet the Permit requirements according to the scheduling and prioritization approaches described in Section 2.2 of the Dry Weather Outfall Screening Plan.

Outfall Screening Schedule 2018-2019 cont.

#	Outfall ID	Ownership	Receiving Water
63	3n2e17_041	ACHD	Ridenbaugh Ditch
64	3n2e18_001	ACHD, Railroad	Ridenbaugh Canal
65	3n2e18_003	ACHD	Ridenbaugh Canal
66	3n2e18_005	ACHD	Ridenbaugh Canal
67	3n2e18_010	ACHD	Ridenbaugh Canal
68	3n2e18_013	ACHD	Farmer's Lateral
69	3n2e18_014	ACHD	Farmer's Lateral
70	3n2e18_018	ACHD	Ridenbaugh Ditch
71	3n2e20_002	ACHD	Penninger Lateral
72	3n2e20_013	ACHD	Threemile Lateral
73	3n2e20_014	ACHD	Threemile Lateral
74	3n2e20_015	ACHD	Threemile Lateral
75	3n2e20_016	ACHD	Penninger Secondary
76	3n2e20_018	ACHD	New York Canal
77	3n2e24_023	ACHD	Lake Heron Creek-south fork
78	3n2e24_024	ACHD	Logger Creek
79	3n2e26_003	ACHD	Ridenbaugh Canal
80	3n2e26_006	ACHD	Ridenbaugh Canal
81	3n2e28_002	ACHD	New York Canal
82	3n3e19_001	ACHD	Boise River-Trib to
83	3n3e30_005	ACHD	Ridenbaugh Canal
84	3n3e30_006	ACHD	Ridenbaugh Canal
85	4n1e13_002	ACHD	Eagle Drain
86	4n1e13_010	ACHD	Eagle Drain
87	4n1e13_017	ACHD	Eagle Drain
88	4n1e14_011	ACHD	Eagle Drain
89	4n1e23_004	ACHD	Elmore Drain
90	4n1e23_008	ACHD	Warm Springs Canal
91	4n1e23_009	ACHD	Dry Creek
92	4n1e24_021	ACHD	Elmore Drain
93	4n1e24_024	ACHD	Elmore Drain

#	Outfall ID	Ownership	Receiving Water
94	4n1e25_004	ACHD	Warm Springs Canal
95	4n1e25_005	ACHD	Warm Springs Canal
96	4n1e25_008	ACHD	Warm Springs Canal
97	4n1e25_013	ACHD	Warm Springs Canal
98	4n1e25_015	ACHD, ITD	Warm Springs Canal
99	4n1e25_019	ACHD	Thurman Mill Canal
100	4n1e25_022	ACHD, ITD	Thurman Mill Canal
101	4n1e26_001	ACHD	Thurman Mill Canal
102	4n1e26_011	ACHD	Thurman Mill Canal-Lateral
103	4n1e26_015	ACHD	Thurman Mill Canal
104	4n1e26_021	ACHD	Settler's Canal
105	4n1e26_030	ACHD	Settler's Canal
106	4n1e27_003	ACHD	Zinger Lateral
107	4n1e27_005	ACHD	Zinger Lateral
108	4n1e27_007	ACHD	Zinger Lateral
109	4n1e28_003	ACHD	McMillan Lateral
110	4n1e34_015	ACHD	North Slough
111	4n1e34_016	ACHD	North Slough
112	4n1e34_017	ACHD	North Slough
113	4n1e34_020	ACHD	Settler's Canal
114	4n1e34_024	ACHD	Karnes Lateral
115	4n1e35_008	ACHD	Zinger Lateral
116	4n1e36_014	ACHD	Settler's Canal
117	4n1e36_031	ACHD	Thurman Mill Canal
118	4n2e17_002	ACHD	Pierce Creek
119	4n2e18_009	ACHD	Eagle Drain
120	4n2e19_002	ACHD	Eagle Drain
121	4n2e19_008	ACHD	Lake Elmore
122	4n2e19_022	ACHD	Farmer's Union Canal
123	4n2e20_002	ACHD	Boise City Canal
124	4n2e26_004	ACHD	Crane Creek

This five-year outfall screening schedule has been developed to meet the Permit requirements according to the scheduling and prioritization approaches described in Section 2.2 of the Dry Weather Outfall Screening Plan.

Outfall Screening Schedule 2018-2019 cont.

#	Outfall ID	Ownership	Receiving Water
125	4n2e26_007	ACHD	Crane Creek
126	4n2e28_007	ACHD	Boise City Canal
127	4n2e29_003	ACHD	Stewart Gulch
128	4n2e30_013	ACHD	Dry Creek Canal
129	4n2e31_004	ACHD	Davis Drain
130	4n2e31_007	ACHD	Davis Drain
131	4n2e31_016	ACHD	Davis Drain
132	4n2e32_006	ACHD	Boise River
133	4n2e32_015	ACHD	Boise River
134	4n2e33_004	ACHD	Boise City Canal
135	4n2e33_009	ACHD	Boise City Canal
136	4n2e34_012	ACHD	Crane Creek
137	4n2e34_015	ACHD	Crane Creek
138	4n2e34_017	ACHD	Crane Creek
139	4n2e34_022	ACHD	Hulls Gulch
140	4n2e34_026	ACHD	Hulls Gulch

This five-year outfall screening schedule has been developed to meet the Permit requirements according to the scheduling and prioritization approaches described in Section 2.2 of the Dry Weather Outfall Screening Plan.

Outfall Screening Schedule 2019-2020

#	Outfall ID	Ownership	Receiving Water
1	3n1e01_010	ACHD	North Slough
2	3n1e01_012	ACHD	North Slough
3	3n1e01_014	ACHD	North Slough
4	3n1e01_015	ACHD	Eggers Lateral
5	3n1e02_003	ACHD	North Slough
6	3n1e02_004	ACHD	North Slough
7	3n1e02_008	ACHD	South Slough
8	3n1e02_013	ACHD	North Slough
9	3n1e03_010	ACHD	Settler's Canal
10	3n1e03_012	ACHD	South Slough
11	3n1e03_015	ACHD	Settler's Canal
12	3n1e10_003	ACHD	Settler's Canal Lateral
13	3n1e11_002	ACHD	Chaffin Drain
14	3n1e11_011	ACHD	Collis Lateral
15	3n1e12_013	ACHD	South Slough
16	3n1e15_004	ACHD	Fivemile Creek
17	3n1e16_003	ACHD	Synder Lateral
18	3n1e22_001	ACHD	Fivemile Creek
19	3n1e22_002	ACHD	Fivemile Creek
20	3n1e23_005	ACHD	Farmer's Lateral
21	3n1e23_012	ACHD	Fivemile Creek
22	3n1e23_014	ACHD	Fivemile Creek
23	3n1e24_003	ACHD	Fivemile Creek
24	3n2e03_008	ACHD	Boise City Canal
25	3n2e03_013	ACHD	Boise City Canal
26	3n2e04_001	ACHD	Settler's Canal Lateral
27	3n2e04_014	ACHD, ITD	Settler's Canal Lateral
28	3n2e05_002	ACHD, Irrigation	Settler's Canal
29	3n2e05_009	ACHD, Private	Davis Drain
30	3n2e05_010	ACHD, Private	Davis Drain
31	3n2e05_019	ACHD	Davis Drain

#	Outfall ID	Ownership	Receiving Water
32	3n2e05_041	ACHD	Thurman Mill Canal
33	3n2e06_002	ACHD	North Slough
34	3n2e06_003	ACHD	Ash Lateral
35	3n2e06_014	ACHD	North Slough
36	3n2e06_019	ACHD	Davis Drain
37	3n2e06_020	ACHD	Davis Drain
38	3n2e07_005	ACHD	North Slough
39	3n2e07_009	ACHD, Railroad	Ridenbaugh Canal
40	3n2e07_020	ACHD	North Slough
41	3n2e08_008	ACHD, Private	North Slough
42	3n2e08_010	ACHD, Private	North Slough
43	3n2e08_012	ACHD	North Slough
44	3n2e08_028	ACHD	North Slough
45	3n2e08_029	ACHD, Private	Tuttle Lateral
46	3n2e09_024	ACHD	Boise River
47	3n2e10_008	ACHD	Boise City Canal
48	3n2e10_023	ACHD, Boise City	Boise River
49	3n2e10_024	ACHD	Boise River
50	3n2e10_042	ACHD	Boise City Canal
51	3n2e11_001	ACHD	Boise City Canal
52	3n2e11_004	ACHD	Boise City Canal
53	3n2e11_009	ACHD, Boise City	Cottonwood Creek
54	3n2e12_004	ACHD	Cottonwood Creek-Trib of
55	3n2e13_006	ACHD	Boise City Canal
56	3n2e14_028	ACHD	Bubb Canal
57	3n2e15_009	ACHD	Ridenbaugh Canal
58	3n2e15_023	ACHD	Ridenbaugh Canal
59	3n2e15_024	ACHD	Ridenbaugh Canal
60	3n2e16_005	ACHD	Ridenbaugh Canal
61	3n2e16_007	ACHD, Irrigation	Ridenbaugh Canal
62	3n2e16_008	ACHD	Ridenbaugh Canal

This five-year outfall screening schedule has been developed to meet the Permit requirements according to the scheduling and prioritization approaches described in Section 2.2 of the Dry Weather Outfall Screening Plan.

Outfall Screening Schedule 2019-2020 cont.

#	Outfall ID	Ownership	Receiving Water
63	3n2e16_009	ACHD	Ridenbaugh Canal
64	3n2e16_022	ACHD	Ridenbaugh Canal
65	3n2e16_023	ACHD	Ridenbaugh Canal
66	3n2e17_018	ACHD	Farmer's Lateral
67	3n2e17_021	ACHD, Private	Farmer's Lateral
68	3n2e17_025	ACHD	Farmer's Lateral
69	3n2e17_034	ACHD, Private	Ridenbaugh Canal
70	3n2e18_009	ACHD, Irrigation	Ridenbaugh Canal
71	3n2e20_006	ACHD	Threemile Creek
72	3n2e22_014	ACHD	Bennett Lateral
73	3n2e23_013	ACHD	Bubb Canal
74	3n2e23_016	ACHD, Private	Unnamed Ditch
75	3n2e24_004	ACHD	Boise City Canal
76	3n2e24_030	ACHD	Watson Drain
77	3n2e24_041	ACHD	Boise River
78	3n2e25_001	ACHD	Ridenbaugh Canal
79	3n2e26_004	ACHD, ITD	Ridenbaugh Canal
80	3n2e27_003	ACHD	New York Canal
81	3n2e36_003	ACHD	Fivemile Creek-Trib. to
82	3n2e36_006	ACHD	Fivemile Creek-Trib. to
83	3n2e36_007	ACHD	Fivemile Creek-Trib. to
84	4n1e13_008	ACHD	Eagle Drain
85	4n1e13_016	ACHD	Eagle Drain
86	4n1e14_013	ACHD	Eagle Drain
87	4n1e23_005	ACHD	Elmore Drain
88	4n1e24_004	ACHD	Elmore Drain
89	4n1e25_010	ACHD	Warm Springs Canal
90	4n1e25_011	ACHD, Private	Warm Springs Canal
91	4n1e25_030	ACHD	Warm Springs Canal
92	4n1e25_034	ACHD	Warm Springs Canal
93	4n1e25_037	ACHD	Warm Spring Canal

#	Outfall ID	Ownership	Receiving Water
94	4n1e26_005	ACHD	Settler's Canal
95	4n1e26_014	ACHD	Thurman Mill Canal-Lateral
96	4n1e26_017	ACHD	Helm Lateral
97	4n1e27_001	ACHD	Zinger Lateral
98	4n1e28_007	ACHD	McMillan Lateral
99	4n1e28_008	ACHD	McMillan Lateral
100	4n1e33_003	ACHD	North Slough
101	4n1e33_004	ACHD	North Slough
102	4n1e33_006	ACHD	North Slough
103	4n1e34_007	ACHD	Shavrer Lateral
104	4n1e34_019	ACHD	Karnes Lateral
105	4n1e34_021	ACHD	Shavrer Lateral
106	4n1e35_007	ACHD	Zinger Lateral
107	4n1e36_002	ACHD	Settler's Canal
108	4n1e36_007	ACHD	Settler's Canal
109	4n1e36_010	ACHD	Settler's Canal
110	4n2e18_006	ACHD	Pierce Creek
111	4n2e19_004	ACHD	Eagle Drain
112	4n2e19_005	ACHD	Eagle Drain
113	4n2e19_014	ACHD	Eagle Drain
114	4n2e19_017	ACHD	Eagle Drain
115	4n2e19_025	ACHD	Eagle Drain
116	4n2e19_026	ACHD	Eagle Drain
117	4n2e26_005	ACHD	Crane Creek
118	4n2e26_008	ACHD	Crane Creek
119	4n2e28_005	ACHD	Stewart Gulch
120	4n2e28_009	ACHD	Boise City Canal
121	4n2e29_002	ACHD	Boise City Canal
122	4n2e29_007	ACHD	Farmer's Union Canal
123	4n2e30_008	ACHD	Dry Creek Canal
124	4n2e30_011	ACHD	Dry Creek Canal

This five-year outfall screening schedule has been developed to meet the Permit requirements according to the scheduling and prioritization approaches described in Section 2.2 of the Dry Weather Outfall Screening Plan.

Outfall Screening Schedule 2019-2020 cont.

#	Outfall ID	Ownership	Receiving Water
125	4n2e30_014	ACHD	Boise River
126	4n2e31_003	ACHD	Settler's Canal
127	4n2e31_012	ACHD, Private	Thurman Mill Canal
128	4n2e31_015	ACHD	Boise River
129	4n2e31_022	ACHD	Davis Drain
130	4n2e32_008	ACHD	Boise River
131	4n2e32_009	ACHD	Farmer's Union Canal
132	4n2e34_001	ACHD	Crane Creek
133	4n2e34_004	ACHD	Crane Creek
134	4n2e34_011	ACHD	Crane Creek
135	4n2e34_018	ACHD	Crane Creek
136	4n2e34_019	ACHD	Crane Creek
137	4n2e34_020	ACHD	Crane Creek
138	4n2e34_021	ACHD	Hulls Gulch
139	4n2e34_025	ACHD	Hulls Gulch
140	4n2e35_001	ACHD	Hulls Gulch

This five-year outfall screening schedule has been developed to meet the Permit requirements according to the scheduling and prioritization approaches described in Section 2.2 of the Dry Weather Outfall Screening Plan.

Outfall Screening Schedule 2020-2021

#	Outfall ID	Ownership	Receiving Water
1	2n3e07_003	ACHD	Fivemile Creek
2	3n1e01_006	ACHD	North Slough
3	3n1e02_002	ACHD	North Slough
4	3n1e02_011	ACHD	South Slough
5	3n1e02_014	ACHD	North Slough
6	3n1e03_004	ACHD	North Slough
7	3n1e03_011	ACHD	South Slough
8	3n1e03_014	ACHD	Settler's Canal
9	3n1e03_017	ACHD	South Slough
10	3n1e10_007	ACHD	Settler's Canal Lateral
11	3n1e10_009	ACHD	Settler's Canal
12	3n1e11_001	ACHD	Ridenbaugh Canal
13	3n1e11_003	ACHD	South Slough
14	3n1e11_010	ACHD	Collis Lateral
15	3n1e12_001	ACHD	South Slough
16	3n1e12_003	ACHD	South Slough
17	3n1e12_004	ACHD	South Slough
18	3n1e12_008	ACHD	Ridenbaugh Canal
19	3n1e12_025	ACHD	Ridenbaugh Canal
20	3n1e12_030	ACHD	Ridenbaugh Canal
21	3n1e15_001	ACHD, Irrigation	Ridenbaugh Canal
22	3n1e15_014	ACHD	Fivemile Creek
23	3n1e23_001	ACHD	Fivemile Creek
24	3n1e23_013	ACHD	Fivemile Creek
25	3n2e03_005	ACHD	Boise City Canal
26	3n2e03_015	ACHD	Boise City Canal
27	3n2e04_015	ACHD	Lowell Drain
28	3n2e04_016	ACHD	Crane Creek
29	3n2e04_020	ACHD	Boise City Canal
30	3n2e04_024	ACHD	Crane Creek
31	3n2e05_015	ACHD	Davis Drain

#	Outfall ID	Ownership	Receiving Water
32	3n2e06_010	ACHD, ITD	Davis Drain
33	3n2e06_022	ACHD	Ash Lateral
34	3n2e06_023	ACHD	North Slough
35	3n2e07_010	ACHD	Ridenbaugh Canal
36	3n2e07_015	ACHD	Ridenbaugh Canal
37	3n2e07_019	ACHD	Ridenbaugh Canal
38	3n2e08_005	ACHD, Private	North Slough
39	3n2e08_016	ACHD	North Slough
40	3n2e08_024	ACHD	North Slough
41	3n2e08_025	ACHD	North Slough
42	3n2e08_030	ACHD	North Slough
43	3n2e09_025	ACHD	Boise River
44	3n2e10_001	ACHD, Private	Boise City Canal
45	3n2e10_012	ACHD	Boise River
46	3n2e10_039	ACHD	Boise City Canal
47	3n2e14_001	ACHD	Logger Creek
48	3n2e14_012	ACHD	Boise River
49	3n2e14_013	ACHD	Boise River
50	3n2e14_019	ACHD	Logger Creek
51	3n2e15_001	ACHD	Ridenbaugh Canal
52	3n2e15_010	ACHD	Ridenbaugh Canal
53	3n2e15_011	ACHD	Ridenbaugh Canal
54	3n2e16_001	ACHD	Powell Lateral
55	3n2e17_007	ACHD	Ridenbaugh Canal
56	3n2e17_010	ACHD	Rust Lateral
57	3n2e17_015	ACHD	Ridenbaugh Canal
58	3n2e17_024	ACHD	Farmer's Lateral
59	3n2e17_031	ACHD	Rust Lateral
60	3n2e17_032	ACHD	Ridenbaugh Canal
61	3n2e17_033	ACHD	Ridenbaugh Canal
62	3n2e17_042	ACHD	Ridenbaugh Ditch

This five-year outfall screening schedule has been developed to meet the Permit requirements according to the scheduling and prioritization approaches described in Section 2.2 of the Dry Weather Outfall Screening Plan.

Outfall Screening Schedule 2020-2021 cont.

#	Outfall ID	Ownership	Receiving Water
63	3n2e18_016	ACHD	Ridenbaugh Canal
64	3n2e18_019	ACHD	Ridenbaugh Ditch
65	3n2e19_004	ACHD	Threemile Creek
66	3n2e20_009	ACHD	Threemile Lateral
67	3n2e20_011	ACHD	Threemile Lateral
68	3n2e20_020	ACHD	Threemile Creek
69	3n2e20_021	ACHD	Threemile Creek
70	3n2e22_004	ACHD	Ridenbaugh Canal
71	3n2e23_002	ACHD	Logger Creek
72	3n2e23_005	ACHD	Logger Creek
73	3n2e23_007	ACHD	Bubb Canal
74	3n2e24_006	ACHD	Boise River
75	3n2e24_007	ACHD	Boise City Canal
76	3n2e24_015	ACHD, Private	Lake Heron-lateral of
77	3n2e24_031	ACHD	Watson Drain
78	3n2e27_001	ACHD	New York Canal
79	3n2e27_004	ACHD, ITD	New York Canal
80	3n2e32_001	ACHD	Fivemile Creek
81	3n2e33_001	ACHD	Fivemile Creek
82	3n3e20_001	ACHD	Penitentiary Canal
83	4n1e13_009	ACHD	Eagle Drain
84	4n1e13_011	ACHD	Eagle Drain
85	4n1e21_001	ACHD, Private	Thurman Mill Canal
86	4n1e23_001	ACHD	Dry Creek
87	4n1e23_002	ACHD	Elmore Drain
88	4n1e23_003	ACHD	Elmore Drain
89	4n1e24_008	ACHD	Elmore Drain
90	4n1e24_012	ACHD	Elmore Drain
91	4n1e24_026	ACHD	Boise River
92	4n1e25_006	ACHD	Warm Springs Canal
93	4n1e25_007	ACHD	Warm Springs Canal

#	ID_OFPT	OWNERSHIP	REC_WATER
94	4n1e25_009	ACHD	Warm Springs Canal
95	4n1e25_027	ACHD	Thurman Mill Canal
96	4n1e26_002	ACHD	Thurman Mill Canal
97	4n1e26_013	ACHD	Thurman Mill Canal-Lateral
98	4n1e26_016	ACHD	Thurman Mill Canal
99	4n1e26_020	ACHD	Thurman Mill Canal
100	4n1e27_006	ACHD	Zinger Lateral
101	4n1e28_001	ACHD	Zinger Lateral
102	4n1e28_002	ACHD	McMillan Lateral
103	4n1e33_005	ACHD	North Slough
104	4n1e34_003	ACHD	Karnes Lateral
105	4n1e34_009	ACHD	Karnes Lateral
106	4n1e34_011	ACHD, Irrigation	Shavrer Lateral
107	4n1e34_018	ACHD	Karnes Lateral
108	4n1e35_002	ACHD	Settler's Canal
109	4n1e35_004	ACHD	Settler's Canal
110	4n1e36_004	ACHD	Settler's Canal
111	4n1e36_006	ACHD	Settler's Canal
112	4n1e36_012	ACHD	Settler's Canal
113	4n1e36_026	ACHD	Settler's Canal
114	4n1e36_029	ACHD	Settler's Canal
115	4n2e17_001	ACHD, Private	Pierce Creek
116	4n2e19_006	ACHD	Eagle Drain
117	4n2e19_015	ACHD	Eagle Drain
118	4n2e19_019	ACHD	Eagle Drain
119	4n2e19_030	ACHD, Irrigation	Eagle Drain
120	4n2e20_001	ACHD	Boise City Canal
121	4n2e21_001	ACHD	Stewart Gulch
122	4n2e26_003	ACHD	Crane Creek
123	4n2e26_009	ACHD	Crane Creek
124	4n2e28_003	ACHD	Boise City Canal

This five-year outfall screening schedule has been developed to meet the Permit requirements according to the scheduling and prioritization approaches described in Section 2.2 of the Dry Weather Outfall Screening Plan.

Outfall Screening Schedule 2020-2021 cont.

#	Outfall ID	Ownership	Receiving Water
125	4n2e28_006	ACHD	Boise City Canal
126	4n2e29_001	ACHD	Boise City Canal
127	4n2e29_008	ACHD	Boise Valley Canal
128	4n2e30_009	ACHD	Boise Valley Canal
129	4n2e31_001	ACHD	Thurman Mill Canal
130	4n2e31_008	ACHD	Davis Drain
131	4n2e31_011	ACHD	Davis Drain
132	4n2e32_007	ACHD	Boise River
133	4n2e32_013	ACHD, Private	Crane Creek
134	4n2e32_026	ACHD	Boise Valley Canal
135	4n2e33_002	ACHD	Boise City Canal
136	4n2e34_003	ACHD	Crane Creek
137	4n2e34_008	ACHD	Crane Creek
138	4n2e34_016	ACHD	Crane Creek
139	4n2e34_024	ACHD	Hulls Gulch
140	4n2e35_003	ACHD	Hulls Gulch-Lateral of

This five-year outfall screening schedule has been developed to meet the Permit requirements according to the scheduling and prioritization approaches described in Section 2.2 of the Dry Weather Outfall Screening Plan.

Outfall Screening Schedule 2021-2022

#	Outfall ID	Ownership	Receiving Water
1	2n3e07_006	ACHD, Private	Fivemile Creek
2	3n1e01_005	ACHD	Fitz Lateral
3	3n1e01_011	ACHD	North Slough
4	3n1e02_005	ACHD	North Slough
5	3n1e02_012	ACHD	North Slough
6	3n1e03_013	ACHD	South Slough
7	3n1e10_004	ACHD	Gruber Lateral
8	3n1e11_004	ACHD	South Slough
9	3n1e11_005	ACHD	Cloverdale Lateral
10	3n1e11_007	ACHD	Ridenbaugh Canal
11	3n1e11_009	ACHD	Collis Lateral
12	3n1e12_022	ACHD	Ridenbaugh Canal
13	3n1e12_023	ACHD	Ridenbaugh Canal
14	3n1e12_024	ACHD	Ridenbaugh Canal
15	3n1e12_050	ACHD	South Slough
16	3n1e14_001	ACHD	Wilson Fruit Lateral
17	3n1e14_005	ACHD	Huntington Lateral
18	3n1e14_012	ACHD	Huntington Lateral
19	3n1e14_013	ACHD	Huntington Lateral
20	3n1e15_005	ACHD	Fivemile Creek
21	3n1e15_009	ACHD	Ridenbaugh Canal
22	3n1e15_013	ACHD	Fivemile Creek
23	3n1e23_007	ACHD	Fivemile Creek
24	3n1e23_010	ACHD	Fivemile Creek
25	3n1e23_011	ACHD	Fivemile Creek
26	3n1e24_006	ACHD	Fivemile Creek
27	3n2e03_001	ACHD	Boise City Canal
28	3n2e03_002	ACHD	Boise City Canal
29	3n2e03_007	ACHD	Boise City Canal
30	3n2e04_005	ACHD, Private	Settler's Canal Lateral
31	3n2e04_008	ACHD	Boise River

#	Outfall ID	Ownership	Receiving Water
32	3n2e04_010	ACHD	Boise River
33	3n2e04_017	ACHD	Boise City Canal
34	3n2e04_021	ACHD	Boise City Canal
35	3n2e05_001	ACHD	Davis Drain
36	3n2e05_011	ACHD	Boise River
37	3n2e05_012	ACHD	Thurman Mill Canal
38	3n2e05_013	ACHD	Settler's Canal
39	3n2e05_027	ACHD	Davis Drain
40	3n2e05_028	ACHD	Thurman Mill Canal
41	3n2e05_030	ACHD, Private	Davis Drain
42	3n2e05_039	ACHD	Davis Drain
43	3n2e05_040	ACHD	Thurman Mill Canal
44	3n2e06_006	ACHD	North Slough
45	3n2e06_008	ACHD	North Slough
46	3n2e06_013	ACHD	North Slough
47	3n2e06_021	ACHD	Davis Drain
48	3n2e07_001	ACHD	North Slough
49	3n2e08_009	ACHD	North Slough
50	3n2e08_017	ACHD	North Slough
51	3n2e08_018	ACHD	North Slough
52	3n2e08_023	ACHD, Private	North Slough
53	3n2e09_027	ACHD	Boise River
54	3n2e09_028	ACHD	Boise River
55	3n2e10_002	ACHD	Boise City Canal
56	3n2e10_003	ACHD	Boise City Canal
57	3n2e10_010	ACHD	Julia Davis Pond
58	3n2e10_038	ACHD	Boise City Canal
59	3n2e11_002	ACHD	Boise City Canal
60	3n2e13_005	ACHD	Boise City Canal
61	3n2e14_002	ACHD	Logger Creek
62	3n2e15_004	ACHD	Ridenbaugh Canal

This five-year outfall screening schedule has been developed to meet the Permit requirements according to the scheduling and prioritization approaches described in Section 2.2 of the Dry Weather Outfall Screening Plan.

Outfall Screening Schedule 2021-2022 cont.

#	Outfall ID	Ownership	Receiving Water
63	3n2e16_010	ACHD	Ridenbaugh Canal
64	3n2e17_002	ACHD	Ridenbaugh Canal
65	3n2e17_006	ACHD	Ridenbaugh Canal
66	3n2e17_037	ACHD	Ridenbaugh Ditch
67	3n2e18_002	ACHD	Ridenbaugh Canal
68	3n2e18_015	ACHD	Farmer's Lateral
69	3n2e20_010	ACHD	Threemile Lateral
70	3n2e22_016	ACHD	Ridenbaugh Canal
71	3n2e23_001	ACHD	Logger Creek
72	3n2e23_003	ACHD	Logger Creek
73	3n2e23_006	ACHD	Bubb Canal
74	3n2e23_014	ACHD	Bubb Canal
75	3n2e23_015	ACHD	Bubb Canal
76	3n2e24_025	ACHD	Logger Creek
77	3n2e24_028	ACHD	Watson Drain-Lateral
78	3n2e24_040	ACHD	Logger Creek
79	3n2e25_002	ACHD	Ridenbaugh Canal
80	3n2e25_003	ACHD	New York Canal
81	3n2e26_002	ACHD	Ridenbaugh Canal
82	3n2e27_002	ACHD	New York Canal
83	3n2e27_005	ACHD	New York Canal
84	3n2e34_001	ACHD	Fivemile Creek
85	3n2e36_004	ACHD	Fivemile Creek-Trib. to
86	3n2e36_005	ACHD	Fivemile Creek-Trib. to
87	3n2e36_009	ACHD	Fivemile Creek-Trib. to
88	3n2e36_010	ACHD	Fivemile Creek-Trib. to
89	3n2e36_014	ACHD	Fivemile Creek
90	3n3e29_002	ACHD	Ridenbaugh Canal
91	4n1e13_001	ACHD	Eagle Drain
92	4n1e13_004	ACHD	Eagle Drain
93	4n1e13_019	ACHD	Eagle Drain

#	Outfall ID	Ownership	Receiving Water
94	4n1e13_020	ACHD	Eagle Drain
95	4n1e14_004	ACHD	Eagle Drain
96	4n1e14_012	ACHD	Eagle Drain
97	4n1e24_001	ACHD	Eagle Drain-lateral of
98	4n1e24_002	ACHD	Eagle Drain-lateral of
99	4n1e24_007	ACHD	Elmore Drain
100	4n1e24_023	ACHD	Elmore Drain
101	4n1e24_025	ACHD	Elmore Drain
102	4n1e25_036	ACHD	Warm Springs Canal
103	4n1e26_004	ACHD	Thurman Mill Canal
104	4n1e26_009	ACHD	Warm Springs Canal
105	4n1e27_004	ACHD	Zinger Lateral
106	4n1e28_005	ACHD	McMillan Lateral
107	4n1e33_007	ACHD	North Slough
108	4n1e33_008	ACHD	North Slough
109	4n1e34_014	ACHD	North Slough
110	4n1e34_023	ACHD	Karnes Lateral
111	4n1e34_025	ACHD	Karnes Lateral
112	4n1e35_003	ACHD	Settler's Canal
113	4n1e36_001	ACHD	Settler's Canal
114	4n1e36_005	ACHD	Settler's Canal
115	4n1e36_008	ACHD	Settler's Canal
116	4n2e18_003	ACHD	Pierce Creek
117	4n2e18_005	ACHD	Pierce Creek
118	4n2e18_007	ACHD	Eagle Drain
119	4n2e19_003	ACHD	Eagle Drain
120	4n2e19_013	ACHD	Eagle Drain
121	4n2e19_021	ACHD	Eagle Drain
122	4n2e19_028	ACHD	Eagle Drain
123	4n2e26_002	ACHD	Crane Creek
124	4n2e28_010	ACHD	Stewart Gulch

This five-year outfall screening schedule has been developed to meet the Permit requirements according to the scheduling and prioritization approaches described in Section 2.2 of the Dry Weather Outfall Screening Plan.

Outfall Screening Schedule 2021-2022 cont.

#	Outfall ID	Ownership	Receiving Water
125	4n2e29_004	ACHD	Eagle Drain
126	4n2e29_006	ACHD	Farmer's Union Canal
127	4n2e29_011	ACHD	Boise City Canal
128	4n2e30_007	ACHD	Stewart Gulch
129	4n2e31_006	ACHD	Davis Drain
130	4n2e31_023	ACHD	Davis Drain
131	4n2e32_010	ACHD	Farmer's Union Canal
132	4n2e32_011	ACHD	Farmer's Union Canal
133	4n2e32_017	ACHD	Farmer's Union Canal
134	4n2e33_005	ACHD	Boise City Canal
135	4n2e33_010	ACHD	Boise City Canal
136	4n2e34_002	ACHD	Crane Creek
137	4n2e34_005	ACHD	Crane Creek
138	4n2e34_006	ACHD	Crane Creek
139	4n2e34_014	ACHD	Crane Creek
140	4n2e34_023	ACHD	Hulls Gulch

This five-year outfall screening schedule has been developed to meet the Permit requirements according to the scheduling and prioritization approaches described in Section 2.2 of the Dry Weather Outfall Screening Plan.

Appendix B: Standard Operating Procedures and Procedure Guidance for Dry Weather Outfall Screening

SOP110 – Discrete Grab Sample Collection

SOP111 – Low Flow Grab Sample Collection

SOP112 – Large Volume Grab Sample Collection

SOP114 – Field Filtering Procedures

SOP116 – Outfall Discharge Estimation – Bucket Method

SOP312 – YSI Model 85 Multi-parameter Meter – Operation, Calibration and Maintenance

SOP313 – pH Meter – Operation, Calibration and Maintenance

SOP318 – Flow Probe Operation

PG116 – Visual Flow Qualification

Hach Stormwater Test Kit User Manual

PHD6 Gas Monitor User Manual

Hach 2100q Turbidity Meter User Manual

SOP110 - Discrete Grab Sample Collection

A discrete grab sample is defined as an aliquot representative of a specific location at a given point in time. The sample is collected all at once at one particular point in the sample medium.

Application:

This standard operating procedures (SOP) is intended to assist sampling personnel in the collection of a single discrete grab sample of water. This SOP is to describe procedures for collecting a discrete grab sample from flowing water in a conveyance. The sample collection should be taken through a manhole, at an outfall or point of discharge. This SOP is not appropriate for low flow conditions or large volume containers where multiple grabs are needed to fill a sample bottle. See SOP111 and SOP112 for these specific applications.

Considerations:

Due to the variable nature of field work, advance planning and preparation is necessary. Consider the following:

- Discrete grab sample collection may be performed during all weather conditions, day or night.
- Dress appropriately for weather and traffic conditions.
- Keep work areas lit to reduce accidents and prevent contamination.
- Visit the sampling location prior to sampling to determine the best sampling approach.
- Most often the sampling location will be established and documented in a sampling plan. If this is not the case, assess sampling location and conditions to determine the best approach for sample collection.
  - Is a swing sampler needed or can the sample be safely collected by hand?
  - Is traffic control needed to access the sample location? If so, a two-person crew is required.
- What supplies will be needed?
- Pre-label sample containers, when possible.
- Prepare extra sampling containers in case a cap is dropped or container breakage.
- Extensive documentation is required if deviations from the standard operating procedures are required.
- Ensure that all required sample equipment is present.
- Be careful to minimize influence on ambient water quality conditions.

Procedures:

If sample collection will be performed using a swing sampler, follow swing sampler grab steps 1-13. If sample will be collected directly by hand, proceed to hand grab steps 1-9. Procedure should be followed in the order presented here, to prevent contamination of samples.

Discrete Grab with Swing Sampler

1. Put on one pair of sanitary disposable nitrile gloves.
2. Extend the sampling pole to the length appropriate to reach the sample location.

3. Attach sample container to the swing sampler securely, depending on flow conditions.
    - Slow to moderate flow, use 2-3 heavy duty rubber bands;
    - Fast flow, use zip ties;
    - When in doubt, use more supplies to keep from losing sampling jars.
4. Remove the sample bottle lid to a safe and clean area.
    - If single sampler, place cap face down on cooler lid or other stable surface.
    - If two-member sampling team, assistant should hold cap face down.
5. Lower the sample container attached to the swing sampler towards the flow making sure not to touch the surroundings with the sampling bottle.
    - Take extra care not to disturb sides of manhole with swing sampler. Debris can easily be dislodged and fall into the sample container.
6. Maneuver the sampling pole so flow contacts the sample container opening directly, and opening is oriented upstream [figure 1].
7. Plunge the sample bottle to the middle of the flow depth, if possible. If water is too deep, sample should be collected just below the surface of water. Slowly raise the swing sampler.
8. If cascading flow, collect sample in middle of flow as it cascades, discharging into the water body.
9. If sampling inside a manhole, collect the sample from the inlet pipe if the configuration allows.
10. If sampling for *E.coli* fill the sample container to the specified fill line.
11. For all other samples completely fill the sample container to minimize air in the sample container.
12. Raise the pole and carefully cap sample container.
    - If single sampler, slide hands up the swing sample, keeping the sample container level, until capping container is within reach.
    - If two-member sampling team, assistant can easily cap sample bottle.
13. Label sample container with sample name and collection date and time with black sharpie or *"Rite in the Rain"®* pen.
14. Record sample information on field form.
15. Place sample container in cooler on ice.
16. Repeat steps 2-12 for collection of additional samples.
17. Deliver samples to laboratory with completed chain of custody.

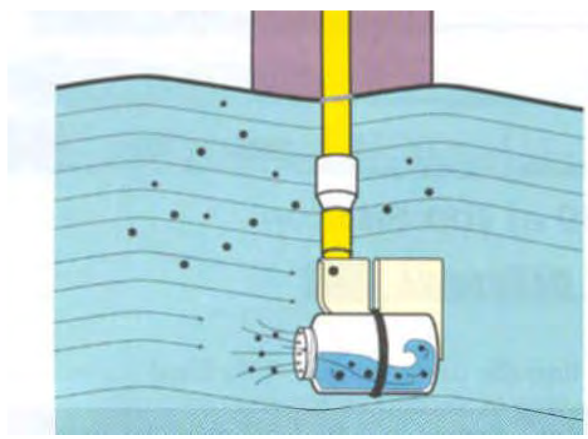

Figure 1 Swing Sampler Positioning

Discrete Grab by Hand

1. Put on one pair of sanitary disposable nitrile gloves.
2. Remove the sample bottle lid to a safe and clean area.
    - If single sampler, place cap face down on cooler lid or other stable surface.
    - If two-member sampling team, assistant should hold cap face down.
3. Orient bottle with opening opposite direction of flow and gloved hand behind bottle.
    - Water should flow directly into sample bottle opening, without flowing over bottle or hand. [Figure 2]
4. If cascading flow, collect sample in middle of flow as it cascades, discharging to water body.
5. Plunge the sample bottle to the middle of the flow depth, if possible. If water is too deep, sample should be collected just below the surface of water.
6. If sampling for *E.coli* fill the sample container to the specified fill line.

7. For all other samples completely fill the sample container to minimize air in the sample container.
8. Carefully cap sample container.
9. Label sample container with sample name and collection date and time with black sharpie or *"Rite in the Rain"®* pen.
10. Record sample information on field form.
11. Place sample container in cooler on ice.
12. Repeat steps 1-9 for collection of additional samples.
13. Deliver samples to the laboratory with completed chain of custody.

Figure 2: Container orientation by hand. Water flows into container directly. Gloved hand behind container.

Prepared by Monica Lowe, ACHD, Stormwater Quality Specialist Monica O. Lowe ______________________________

Revised by Monica Lowe, ACHD, Stormwater Quality Specialist Monica O. Lowe ______________________________

Reviewed by Ted Douglass, Brown and Caldwell, Project Manager______________________________

SOP111- Low Flow Grab Sample Collection

A Low flow grab sample is operationally defined as multiple aliquots collected consecutively, with minimal lag time between aliquots, when flow conditions prevent a single aliquot sample.

Application:

This SOP is intended as a reference for sampling personnel in the collection of grab samples when a discrete grab sample (single aliquot of sample in a single point of time) is not possible due to low flow conditions. Low flow situations occur when the volume of flow is such that collecting an entire sample volume with one discrete grab sample aliquot is not possible. During these situations, ACHD and the Boise WQL will identify designated bottles to be used to transfer small aliquots of sample into a second container, until sufficient volume is achieved for laboratory analyses.

Considerations:

Due to the variable nature of field work, advance planning and preparation is necessary. Consider the following:

* Low flow grab sample collection may be performed during all weather conditions, day or night;
* Dress appropriately for weather and traffic conditions;
* Keep work areas lit to reduce accidents and prevent contamination;
* Visit the sampling location prior to sampling to determine the best sampling approach for sample collection;
    - Is a swing sampler needed or can the sample be safely collected by hand?
    - Is traffic control needed to access the sample location? If so, a two-person crew is required.
* Prepare extra sampling containers in case a cap is dropped or container breakage.
* Be prepared for low flow grab sample collection. Know which designated bottles will be used as transfer containers.
* Extensive documentation is required if deviations from the standard operating procedures are required.
* Ensure that all required sample equipment is present.
* Be careful to minimize influence on ambient water quality conditions.

Procedures:

If sample collection will be performed using a swing sampler, follow swing sampler grab steps 1-19. If sample will be collected directly by hand, proceed to hand grab steps 1 - 27. Procedure should be followed in the order presented here, to prevent contamination of samples.

Low Flow Grab with Swing Sampler

1. Put on one pair of sanitary disposable nitrile gloves.
2. Extend the sampling pole to the length appropriate to reach the sample location.
3. Position receiving container on a flat surface, within reach of the sample location.
    - Setting the receiving container in an open cooler works well to stabilize the sample container during sample transfers.
4. Select designated sample container for transfer.

- The transfer container should be appropriate for the analysis performed according to 40 CFR 136. The transfer container should be identified by ACHD or WQL and should be labeled accordingly;
- As a general rule, use the same type of transfer bottle as the one you will be submitting for analyses;
- The transfer container should be prepared by the laboratory in the same manner as the sample container being filled. If in doubt, contact the laboratory where the sample will be submitted.

5. Attach sample container to the swing sampler securely, with 2-3 heavy duty rubber bands.
6. If single sampler, loosen cap of receiving bottle and set lid loosely on top to cover opening.
7. Maneuver the sampling pole so flow contacts the sample container opening directly and opening is oriented upstream [Figure 1].
8. Plunge the sample bottle to the middle of the flow depth, if possible. If water is too deep, sample should be collected just below the surface of water. Slowly raise the swing sampler.
9. If cascading flow, collect sample in middle of flow as it cascades, discharging into the water body.
10. If two-member sampling team, have assistant remove the lid on the receiving container.
11. Slowly pour transfer bottle contents into the receiving container while still attached to swing sampler.
    - If single sampler, slide hands down pole to transfer container and stabilize pole to pour into receiving container.
    - If two-member sample team, sampler should gently swing sampler over to assistant who will stabilize the swing sampler and transfer bottle and pour sample into receiving container.
12. Loosely cap receiving container.
13. Label receiving container with sample name and collection start time.
14. Repeat collecting aliquots of sample until bottle is full or adequate sample volume for analysis. This should be done as quickly as possible to minimize lag time between sample aliquots.
15. Tightly cap receiving container.
16. Label receiving container with sample end time.
17. Record sample information on field form.
18. Place sample container in cooler on ice.
19. Deliver samples to laboratory with completed chain of custody.

Low Flow Grab by Hand

1. Put on one pair of sanitary disposable nitrile gloves.
2. Position receiving container on a flat surface, within reach of the sample location.
    a. Setting the receiving container in an open cooler works well to stabilize the sample container during sample transfers.
3. Select designated sample container for transfer.
    a. The transfer container should be appropriate for the analysis performed according to 40 CFR 136. The transfer container should be identified by ACHD or WQL and should be labeled accordingly;
    b. As a general rule, use the same type of transfer bottle as the one you will be submitting for analyses;
    c. The transfer container should be prepared by the laboratory in the same manner as the sample container being filled. If in doubt, contact the laboratory where the sample will be submitted.
4. If single sampler, loosen cap of receiving bottle and set lid loosely on top to cover opening.
5. Maneuver the sampling pole so flow contacts the sample container opening directly and opening is oriented upstream [Figure 1].

6. Plunge the sample bottle to the middle of the flow depth, if possible. If water is too deep, sample should be collected just below the surface of water. Slowly raise the swing sampler.
7. If cascading flow, collect sample in middle of flow as it cascades, discharging into the water body.
8. If two-member sampling team, have assistant remove the lid on the receiving container.
9. Carefully pour sample aliquot into receiving container.
20. Loosely cap receiving container.
21. Label receiving container with sample name and collection start time.
22. Repeat collecting aliquots of sample until bottle is full or adequate sample volume for analysis.
23. Tightly cap receiving container.
24. Label receiving container with sample end time.
25. Record sample information on field form.
26. Place sample container in cooler on ice.
27. Deliver samples to laboratory with completed chain of custody.

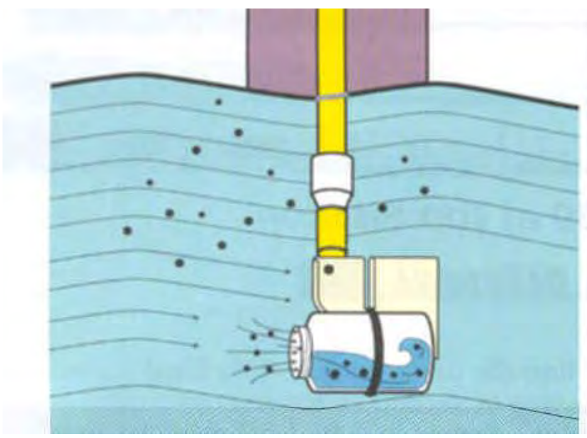

Figure 1: Swing sampler container orientation. Water flows directly into the sample container.

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Revised by Monica Lowe, ACHD, Stormwater Quality Specialist ________________________

Reviewed by Ted Douglass, Brown and Caldwell, Program Manager________________________

SOP112- Large Volume Grab Sample Collection

A large volume grab sample is operationally defined as multiple aliquots of sample collected consecutively, with minimal lag time between aliquots, when laboratories request a larger volume for analysis than can be collected in a single container.

Application:

This standard operating procedure (SOP) is intended for sampling personnel in the collection of large volume grab samples when a discrete grab sample (single aliquot of sample in a single point of time) is not possible due to large sample volumes required by the laboratory. A discrete grab sample is preferred, but for certain analysis, a large volume of sample is needed by the laboratory to achieve desired detection limits. The large container, (Volumes > 1L) is often too cumbersome for a discrete grab sample, and too large to attach to a swing sampler. Therefore, a large container is filled by transferring small aliquots collected consecutively, with minimal lag time between aliquots, to achieve a large volume grab sample. ACHD and the Boise WQL will identify designated bottles to be used to transfer aliquots of sample into the large volume container.

Considerations:

Due to the variable nature of field work, advance planning and preparation is necessary. Consider the following:

* Large volume flow grab sample collection may be performed during all weather conditions, day or night;
* Dress appropriately for weather and traffic conditions;
* Keep work areas lit to reduce accidents and prevent contamination;
* Visit the sampling location prior to sampling to determine the best sampling approach for sample collection;
    - Is a swing sampler needed or can the sample be safely collected by hand?
    - Is traffic control needed to access the sample location? If so, a two-person crew is required.
* Prepare extra sampling containers in case a cap is dropped or container breakage.
* Be prepared for large volume grab sample collection. Know which designated bottles will be used as transfer containers.
* Extensive documentation is required if deviations from the standard operating procedures are required.
* Ensure that all required sample equipment is present.
* Be careful to minimize influence on ambient water quality conditions.

Procedures:

If sample collection will be performed using a swing sampler, follow swing sampler grab steps 1-19. If sample will be collected directly by hand, proceed to hand grab steps 1 - 27. Procedure should be followed in the order presented here, to prevent contamination of samples.

<u>Large Volume Grab Sample with Swing Sampler</u>

1. Put on one pair of sanitary disposable nitrile gloves.

2. Extend the sampling pole to the length appropriate to reach the sample location.
3. Position receiving container on a flat surface, within reach of the sample location.
    - Setting the receiving container in an open cooler works well to stabilize the sample container during sample transfers;
    - 10 L carboys are often double bagged with polyethylene bags at the laboratory. Untie bags and push bags down around the outside of the container, so not to interfere with opening of the container.
4. Select designated sample container for transfer.
    - The transfer container should be appropriate for the analysis performed according to 40 CFR 136. The transfer container should be identified by ACHD or WQL and should be labeled accordingly;
    - As a general rule, use the same type of transfer bottle as the one you will be submitting for analyses;
    - The transfer container should be prepared by the laboratory in the same manner as the sample container being filled. If in doubt, contact the laboratory where the sample will be submitted.
5. Attach sample container to the swing sampler securely, depending on flow conditions.
    - Slow to moderate flow, use 2-3 heavy duty rubber bands;
    - Fast flow, use zip ties;
    - When in doubt, use more supplies to keep from losing sampling jars.
6. If single sampler, loosen cap of receiving bottle and set lid loosely on top to cover opening.
7. Maneuver the sampling pole so flow contacts the sample container opening directly, and opening is oriented upstream [Figure 1].
8. Plunge the sample bottle to the middle of the flow depth. If water is too deep, sample should be collected just below the surface of water. Slowly raise the swing sampler.
9. If cascading flow, collect sample in middle of flow as it cascades, discharging into the water body.
10. If two-member sampling team, have assistant remove the lid on the receiving container.
11. Slowly pour transfer bottle contents into the receiving container while still attached to swing sampler.
    - If single sampler, slide hands down pole to transfer container and stabilize pole to pour into receiving container.
    - If two-member sample team, sampler should gently swing sampler over to assistant who will stabilize the swing sampler and transfer bottle and pour sample into receiving container.
12. Loosely cap receiving container.
13. Label receiving container with sample name and collection start time.
14. Repeat collecting aliquots of sample until bottle is full or adequate sample volume for analysis. This should be done as quickly as possible to minimize lag time between sample aliquots.
15. Tightly cap receiving container.
16. Label receiving container with sample end time.
17. Record sample information on field form.
18. Place sample container in cooler on ice.
19. Deliver samples to laboratory with completed chain of custody.

<u>Large Volume Grab by Hand</u>

1. Put on one pair of sanitary disposable nitrile gloves.
2. Position receiving container on a flat surface, within reach of the sample location.
    a. Setting the receiving container in an open cooler works well to stabilize the sample container during sample transfers.
3. Select designated sample container for transfer.

a. The transfer container should be appropriate for the analysis performed according to 40 CFR 136. The transfer container should be identified by ACHD or WQL and should be labeled accordingly;
b. As a general rule, use the same type of transfer bottle as the one you will be submitting for analyses;
c. The transfer container should be prepared by the laboratory in the same manner as the sample container being filled. If in doubt, contact the laboratory where the sample will be submitted.

4. If single sampler, loosen cap of receiving bottle and set lid loosely on top to cover opening.
5. Maneuver the sampling pole so flow contacts the sample container opening directly [Figure 1].
6. Plunge the sample bottle to the middle of the flow depth. If water is too deep, sample should be collected just below the surface of water. Slowly raise the swing sampler.
7. If cascading flow, collect sample in middle of flow as it cascades, discharging into the water body.
8. If two-member sampling team, have assistant remove the lid on the receiving container.
9. Carefully pour sample aliquot into receiving container.
20. Loosely cap receiving container.
21. Label receiving container with sample name and collection start time.
22. Repeat collecting aliquots of sample until bottle is full or adequate sample volume for analysis.
23. Tightly cap receiving container.
24. Label receiving container with sample end time.
25. Record sample information on field form.
26. Place sample container in cooler on ice.
27. Deliver samples to laboratory with completed chain of custody.

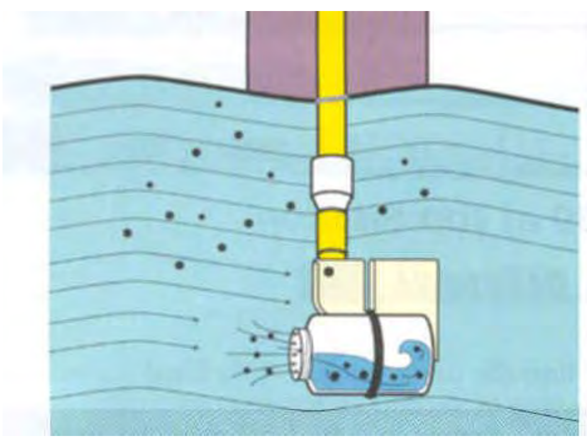

Figure 1: Swing sampler container orientation. Water flows directly into the sample container.

Prepared by Monica Lowe, ACHD, Stormwater Quality Specialist Monica O. Lowe

Revised by Monica Lowe, ACHD, Stormwater Quality Specialist Monica O. Lowe

Reviewed by Ted Douglass, Brown and Caldwell, Program Manager

SOP116 - Outfall Discharge Estimation – Bucket Method

The Bucket Method is a simple approach to estimating discharge in gallons per minute (GPM) from an outfall with low flow using a container of known volume and a stopwatch. GPM can then be converted to cubic feet per second (cfs) to match the standard flow measurement rate of the program.

Application:

This standard operating procedures (SOP) is a step by step protocol designed to assist sampling personnel in estimating discharge from an outfall with low flow. An outfall is the point where a stormwater conveyance discharges to a surface water body. The Bucket Method is simply the measurement of time needed to fill a container of known volume as it flows from an outfall. The Bucket Method is best utilized when site conditions are appropriate to allow for collection of the entire discharge without the container filling too quickly to obtain an accurate reading.

Considerations:

Due to the variable nature of field work, advance planning and preparation is necessary. Consider the following:

- Dress appropriately for weather, traffic, and outfall access.
- Visit the sampling location and review available mapping prior to sampling to determine the best sampling approach and outfall access.
- Ideally a two-person sampling team is needed; One person to hold the bucket securely, and one person to operate the stopwatch.
- What supplies will be needed?

Procedures:

Note: This procedure specifies the use of a five-gallon bucket which is most commonly used. However, any container with a known volume can be used if it is of sufficient size to capture the entire flow.

1. Ensure the five-gallon bucket is marked clearly with the five-gallon volume indicated.
2. Put on one pair of sanitary disposable nitrile gloves.
3. Depending on the outfall access, position yourself just above the outfall discharge (preferred) or in the receiving water in front of the outfall discharge.
4. Communicate with a sampling partner (Timer) to start and stop the stopwatch as necessary.
5. Insert the bucket into the discharge such that the entire flow is being captured.
6. Once the level in bucket reaches the five-gallon volume mark, alert the timer to stop the stop watch.
7. The Timer will record the time in seconds it takes to fill the bucket on the appropriate field form.
8. Empty the bucket.
9. Repeat steps five through eight to attain three successful readings.
10. Calculate the average time to fill the bucket by adding the three times together and dividing the sum by three. Record the average time in seconds on the field form. See example calculations below for steps 10-12.

11. Convert average time in seconds to minutes by dividing the average time in seconds by 60 seconds per minute.
12. Calculate the GPM by dividing 5 gallons by the averaged time calculation in minutes from step 11. Record the value in GPM on the field form.

Calculating the Discharge – Example

A clean 5 gallon bucket was placed under the flow of a discharge pipe. The bucket was filled three consecutive times resulting the in following times: 15 seconds, 18 seconds and 14 seconds.

Calculate average time:
Add the three recorded times together and divide by three to obtain the average fill time.

$$\text{Average time} = \frac{15 + 18 + 14}{3} = 15.7 \text{ sec}$$

Convert average time in seconds to minutes:
Divide average time by 60 to convert time to minutes.

$$\text{Average time} = \frac{15.7 \text{ sec}}{60} = 0.26 \text{ min}$$

Calculate the site discharge in GPM:
Divide the volume of the container (gallons) by the average time needed to fill the container (minutes).

$$\text{Discharge} = \frac{5 \text{ gal}}{0.26 \text{ min}} = 19.2 \text{ gpm}$$

Convert the site discharge to cfs:
Multiply discharge in GPM by 0.00223 to obtain discharge in cfs.
Discharge = 19.2 gpm x 0.00223 = 0.043

Report discharge in cfs.

References:

Estimation Discharge and Stream Flows: A Guide for Sand and Gravel Operators, July 2005 Department of Ecology.

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Revised by Monica Lowe, ACHD, Stormwater Quality Coordinator Monica O. Lowe

Reviewed by Ted Douglass, Brown and Caldwell, Stormwater Quality Project Manager________________

SOP318 - Flow Probe Operation

The Flow Probe by Global Water Instrumentation is designed to measure the average velocity (V) in a flow stream. The cross-sectional area (A) can be measured by manually measuring the depth of flow at several points across the flow. With these two values, flow (Q) = VA, can be estimated.

Application:

This standard operating procedure (SOP) is intended for sampling personnel for measurement of flow in a stream channel using a Flow Probe (probe) by Global Water. The probe measures velocity of stream flow. Due to the variability in velocity measurements discussed below, an average velocity reading will be calculated by the probe during a set interval of time. To obtain the most accurate velocity reading, three procedures are outlined below depending on the size of the stream.

The following procedure outlines how to record an average velocity (V). To calculate flow (Q=VA) the cross-sectional area must also be determined. The cross-sectional area is measured by manually measuring the width and depth of the stream at several points across the flow [Figure 1] and constructing a diagram of the cross section.

The volumetric flow rate of water, which is commonly called discharge (Q), is the product of multiplying the average velocity (V) by the total cross-sectional area (A). The **velocity-area method** measurement is made by subdividing a stream cross-section into segments (sometimes referred to as sections, verticals, profiles, panels, or ensembles) and by measuring the depth and average velocity in a vertical profile within each segment.

By dividing the stream width into subsections (streams less than 10 feet in width have 10 subsections, and streams greater than 10 feet in width have 20 subsections), total discharge is equal to the sum of the individual discharge measurements in each subsection. Individual point velocity (V) is measured at each subsection, and the subsection discharge is equal to the product of the point velocity and cross-sectional area (a) within the subsection. The cross-section is defined by depths at verticals 1,2,3,4,....*n*.

Considerations:

Due to the variable nature of field work, advance planning and preparation is necessary. Consider the following:

- Dress appropriately for weather and traffic conditions;
  - Is traffic control needed to access the sample location? If so, a two-person crew is required.
  - Should waders and/or personal floatation device (PFD) be used? If risk of drowning, a PDF is required. Use caution when wading in streams due to hazards of wet, unstable footing of stream bed and flowing water. A two-person crew is required.
- Visit the sampling location prior to sampling to determine the best approach for flow measurements.
  - Will an extension pole be needed if collecting measurements from a bridge?
  - Is there a relatively straight section of flow with little turbulence?
  - Is the stream shallow enough to wade?
  - Is there access within the public right-of-way or private property issued to address?
  - What is the best way to determine subsections if the stream is wide?

Flowing water varies in velocity for two main reasons:

- Velocities vary across the cross-section. In general, the velocities are greater in the center of the flow and lesser near the bottom and sides of the channel.

* The water surges in velocity with time. In a smooth running stream the velocity at a specific point can easily vary 1-2 feet per second over the period of a minute. The pulsating or surging of the flow should be averaged to get a good average flow reading.

Procedures: The following procedures are based on manufacturer recommendations. The user's manual is available in Appendix B or at www.**global**w.com/downloads/**flow**probe/**flow**probe_**manual**_past.pdf.

Obtaining an Average Velocity Reading

1. Remove the probe from the protective case by unscrewing the top cap. Case can also be opened by releasing the side latch if the top cap is difficult to unscrew.
2. Blow air strongly through the flow propeller [Figure 2] in the direction of the arrow to ensure the propeller can spin freely.
3. Lower the flow propeller into the water column oriented so the flow of water is the same direction as the black arrow on the flow propeller.
4. Press and hold button located on top of the display [Figure 3] labeled "Reset" for six seconds to zero the instrument.

A. Small Streams and Pipes (probe can be moved slowly and smoothly throughout the flow)

5. Press the bottom button "MODE" on the flow probe computer. Average velocity is displayed as "AVGSPEED" and maximum velocity is displayed as "MAXSPEED".
6. Move the probe smoothly and evenly back and forth across the flow and from top to bottom of the water column so that the probe stays on each point in the flow for the same amount of time. (The motion is like applying an even coat of spray paint over the entire surface.)
7. Measure the depth of flow using a measuring stick or measuring tape in the center of the area where the average velocity reading was recorded.

B. Large Streams and Rivers (divide width of flow into 2-3 foot subsections)

5. Press the bottom button "MODE" on the flow probe computer. Average velocity is displayed as "AVGSPEED" and maximum velocity is displayed as "MAXSPEED".
6. Move the probe vertically from the surface of the water to the bottom slowly and smoothly.
7. Move the probe up and down for 40 seconds to obtain a good average. Repeat step 7 every subsection across the stream.
8. The average velocity multiplied by the area of the subsection is the flow for the subsection. Add all the subsection flows to obtain the total stream flow [Figure 4].

C. Alternate Method

The probe can also be used for the "6 tenths method". Procedure B is the recommended procedure for large streams that is recommended by the manufacturer.

5. The probe is held at the center of the subsection at a depth (from the surface) of 0.6 of the total depth. The 0.6 of the total depth is assumed to be the average velocity point for the vertical profile. It is therefore the average velocity for the subsection as in procedure B above.
6. Press the bottom button "MODE" on the flow probe computer. Average velocity is displayed as "AVGSPEED" and maximum velocity is displayed as "MAXSPEED".
7. Average the velocity over a 40 second period.
8. Repeat step 7 every 2-3 foot subsections across the stream. Add all the subsection flows to obtain the total stream flow [Figure 4].

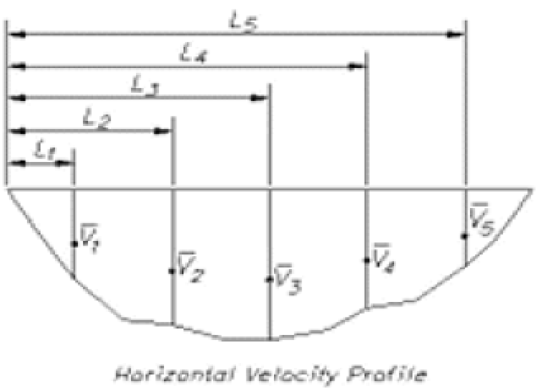
Deviations

The nature of instream flow monitoring may require deviations from the aforementioned standard operating procedures. In the event that deviations from these standard operating procedures is required, the field team will document and describe in detail the specific deviations conducted during the event.

Figure 1: Sampling Multiple points across a transect

Figure 2: Flow Probe Propeller

Figure 3: Flow Probe Computer



$$q_{3\text{-}4} = \left[\frac{\nabla_3 + \nabla_4}{2}\right]\left[\frac{D_3 + D_4}{2}\right](L_4 - L_3)$$

q = the discharge in cubic feet per second (ft^3/s) for a partial area
Q = total discharge
∇ = the mean velocity associated with the partial area
a = partial area of total cross section
L_1, L_2,... L_n = distance to vertical measurement locations in feet from an initial point to vertical station
ΔL = the distance in feet between consecutive vertical measurement stations
∇_1, ∇_1,..... ∇_n = the respective mean velocities in feet per second at vertical measurement stations
D_1, D_2,... D_n = the water depths in feet at verticals
n = the number of verticals related to the partial area

Figure 4: Velocity Profile Segments and Discharge Calculation
Source: US Department of Interior Bureau of Reclamation, Water Management Manual, Revised reprinted 2001.

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Reviewed by Adam Van Patten, ACHD, Stormwater Quality Specialist________________________________

Reviewed by Ted Douglass, Brown and Caldwell, Project Manager___________________________

Appendix A

Calculations for Partially Filled Round Pipes

XI. Appendix B: Calculations for Flow in Partially Filled Pipes

B	C	B	C
0.01	0.0013	0.51	0.4027
0.02	0.0037	0.52	0.4127
0.03	0.0069	0.53	0.4227
0.04	0.0105	0.54	0.4327
0.05	0.0147	0.55	0.4426
0.06	0.0192	0.56	0.4526
0.07	0.0242	0.57	0.4625
0.08	0.0294	0.58	0.4723
0.09	0.0350	0.59	0.4822
0.10	0.0409	0.60	0.4920
0.11	0.0470	0.61	0.5018
0.12	0.0534	0.62	0.5115
0.13	0.0600	0.63	0.5212
0.14	0.0668	0.64	0.5308
0.15	0.0739	0.65	0.5404
0.16	0.0811	0.66	0.5499
0.17	0.0885	0.67	0.5594
0.18	0.0961	0.68	0.5687
0.19	0.1039	0.69	0.5780
0.20	0.1118	0.70	0.5872
0.21	0.1199	0.71	0.5964
0.22	0.1281	0.72	0.6054
0.23	0.1365	0.73	0.6143
0.24	0.1449	0.74	0.6231
0.25	0.1535	0.75	0.6318
0.26	0.1623	0.76	0.6404
0.27	0.1711	0.77	0.6489
0.28	0.1800	0.78	0.6573
0.29	0.1890	0.79	0.6655
0.30	0.1982	0.80	0.6736
0.31	0.2074	0.81	0.6815
0.32	0.2167	0.82	0.6893
0.33	0.2266	0.83	0.6969
0.34	0.2355	0.84	0.7043
0.35	0.2450	0.85	0.7115
0.36	0.2546	0.86	0.7186
0.37	0.2644	0.87	0.7254
0.38	0.2743	0.88	0.7320
0.39	0.2836	0.89	0.7384
0.40	0.2934	0.90	0.7445
0.41	0.3032	0.91	0.7504
0.42	0.3130	0.92	0.7560
0.43	0.3229	0.93	0.7612
0.44	0.3328	0.94	0.7662
0.45	0.3428	0.95	0.7707
0.46	0.3527	0.96	0.7749
0.47	0.3627	0.97	0.7785
0.48	0.3727	0.98	0.7816
0.49	0.3827	0.99	0.7841
0.50	0.3927	1.00	0.7854

H= Height of water; D= Diameter of pipe (in feet)

H/D = Column B

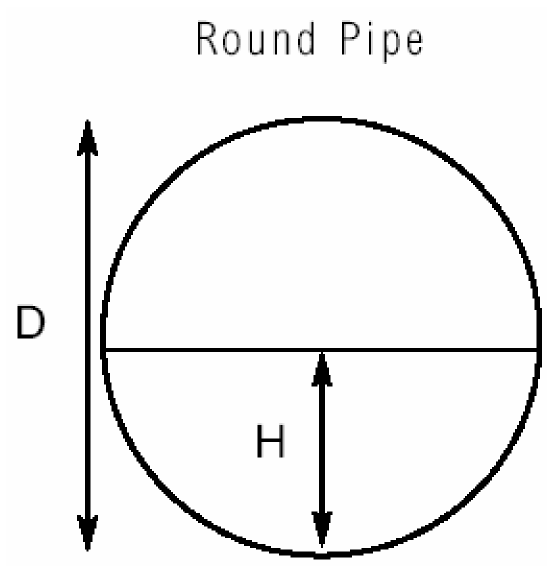
Read Column C adjacent to your pipe's B

C x D2 = Filled area, A (sq.ft.)

A x Average Velocity = Volumetric flow (CFS)

CFS x 448.83 = Gallons/minute (GPM)

GPM x 1440 = Gallons/day (GPD)



Appendix B

FP101-FP201 Global Flow Probe
User's Manual

Global Water
800-876-1172 • globalw.com

FP101-FP201 Global Flow Probe

User's Manual

Global Water

The Leader in Water Instrumentation

Visit Our Complete Online Catalog www.globalw.com
Call (800) 876-1172, 7:30 AM to 4 PM Pacific Time
International: US (916) 638-3429 • FAX: (916) 638-3270
E-mail: globalw@globalw.com
11390 Amalgam Way, Gold River CA 95670 USA

Level • Flow • Samplers • Water Quality • Weather • Remote Monitoring • Control

1/20/04

Global Water
800-876-1172 • globalw.com

Congratulations on your purchase of the Global Water Flow Probe. This instrument has been quality tested and approved for providing accurate and reliable measurements. We are confident that you will find the sensor to be a valuable asset for your application. Should you require assistance, our technical staff will be happy to help.

Table of Contents

I. Flow Probe Checklist

a. Flow Probe

b. Flow Probe Manual

II. Inspection

a. Your Flow Probe was carefully inspected and certified by our Quality Assurance Team before shipping. If any damage has occurred during shipping, please notify Global Water Instrumentation, Inc. and file a claim with the carrier involved.

   Use the checklist to ensure that you have received everything needed to operate the Flow Probe.

III. General Instructions

a. Make sure the Flow Probe's propeller turns freely by blowing strongly on the prop.
b. Point the propeller directly into the flow you wish to measure. Face the arrow inside the prop housing downstream. The FP101 probe handle is a two piece rod expandable from 3' to 6', and the FP201 is a three section rod expandable from 5' to 15'. To expand the rod for correct placement in flow, loosen the locking nut on the handle, pulling out the top piece and retightening the nut.
c. Use the bottom button to scroll through the functions until "AVGSPEED" appears. The top number is the instantaneous velocity to the nearest .5 ft/second. The lower display is the average velocity. Pressing the top button for 3 seconds will clear the average and start a new reading. While taking an average reading the maximum velocity will also be recorded. Pushing the bottom button until "MAXSPEED" is displayed causes the lower display to indicate this value. While on this screen, pressing the top button for 3 seconds will clear this value. While on the average or maximum screens pressing the top button for 5 seconds will clear both of these functions.
d. To make a measurement, place the propeller at the desired measuring point and hold the top button for 3 seconds to clear the value or 5 seconds to clear both average and maximum values. Hold the probe in place until the reading becomes steady and remove the probe from the water. The average and maximum velocities remain in their respective screens. These values are only updated while the propeller is turning. See the Average Velocity section for more information.
e. Measure/calculate the cross-sectional area of your flow stream in square feet. If you are measuring flow in round pipes, measure the depth of water and use the enclosed tables to determine cross-sectional area (see Appendix B: Calculations for Flow in Partially Filled Pipes). If you are measuring flow in another channel type, manually measure water depth at several points across the flow. These measurements are most easily recorded by drawing a diagram on graph paper with a scale of 1 square foot per graph paper square. Cross-sectional area (in square feet) can then be found by counting the number of squares in the stream.

f. The average velocity (calculated with the Flow Probe in feet/second) times the cross-sectional area (square feet) equals flow in cubic feet per second (cfs), or Q = V x A.
g. If the propeller gets fouled while measuring flow, clean it until the prop turns freely and start over.

IV. Average Velocity

The Flow Probe is used to measure the average water velocity. Streamflow velocity varies for two reasons:

a. The velocities vary throughout the flow's cross-section. In general, the velocities are greater in the center of the flow and less near the bottom and sides of the channel.

b. The water surges in velocity with time. In a smooth running stream, the velocity at a specific point can easily vary 1-2 feet per second over the period of a minute. This pulsating or surging of flow should be averaged to obtain an accurate average flow reading (leave the probe in the flow through a series of flow surges).

The Flow Probe can be used in three ways to determine average velocity in a stream.

a. For small streams and pipes, the probe can be moved slowly and smoothly throughout the flow during average velocity measurement. Move the probe smoothly and evenly back and forth from top to bottom of the flow so that the probe stays at each point in the flow for approximately the same amount of time. Keep moving the probe for 20-40 seconds to obtain an accurate average value that accounts for surging. (Move the probe as if you were spray painting and attempting to get an even coat of paint over the entire surface.)

The Flow Probe uses true velocity averaging. When the average and maximum velocities are zeroed by pushing the top button, a running average is started. As long as the probe remains in the flow, the averaging continues. One reading is taken per second, and a continuous average is displayed. For example, after 10 seconds, 10 readings are totaled and then divided by 10 and this average is displayed. Once the average reading becomes steady, the true average velocity of the stream is obtained. When you pull the probe from the water, this average value is frozen on the display until it is reset.

b. For larger streams and rivers where the Flow Probe can't easily be moved throughout the flow, divide the stream into subsections 2-3 feet wide. We recommend dividing subsections on your graph paper diagram of the flow profile. Run a measuring tape across the stream for reference. Obtain a vertical flow profile at the center of each subsection: zero the averaging function and move the Flow Probe vertically from the surface to the bottom, up and down, slowly and smoothly for 20-40 seconds to obtain a good average. The average velocity (obtained with the Flow Probe) times the area of the subsection (use your graph paper diagram) equals the flow for the subsection (Q=VxA).Once the flow of each subsection is obtained, add all of the subsection flows to obtain the Total Streamflow.

c. For the USGS "6 tens method", the Flow Probe is placed at the center of the subsection at a depth from the surface of 0.6 of the total depth. The Flow Probe is held in place and the average velocity is obtained over a period of 40 seconds. The 0.6 depth is assumed to be the average velocity point for the vertical profile. Therefore, this average is similar to that obtained in technique 2 (above) however; we feel that technique 2 is more accurate.

V. Computer Operation

a. The Flow Probe is calibrated at the factory. When you receive the product, you may wish to set the computer's clock (see Computer Set-up), otherwise you should not have to alter any of your computer settings. You will have to recalibrate the computer when you change the unit's battery (See Appendix A: Computer Setup). Normal battery life for the Flow Probe is 3 years or more.

b. The Flow Probe computer has a simple 2-button operation. The bottom button scrolls between functions and the top button resets the function's value. Pressing the top button for 3 seconds zeros the average and maximum velocities. With a little practice, the buttons can be pushed with the hand holding the top of the probe.

c. The computer functions are as follows:
   - Velocity: The upper display number is the instantaneous velocity to the nearest .5 foot (or meter, depending on units being used) per second.
   - The lower display number is used for the following functions: average velocity(AVGSPEED), maximum velocity(MAXSPEED), stop watch(STPWATCH) and CLOCK.
   - The bottom button scrolls between these functions, and also DIST/DAY, RIDETIME, TRIP UP, and TOTALODO which are not used for this application.
   - Push the top button for 3 seconds to reset the displayed function. Push for 5 seconds to reset all velocity functions.
   - Stop watch: While STPWATCH is displayed, pressing the top button once will start the stop watch. Pressing a second time stops the watch. Holding the button for 3 seconds clears it.
   - Clock: The computer returns to the clock function after a period of inactivity for the probe.

VI. Specifications

Range:	0.3-15 FPS (0.1-4.5 MPS)
Accuracy:	0.1 FPS
Averaging:	True digital running average. Readings taken once per second.
Display:	LCD
Sensor Type:	Protected Turbo-Prop propeller with electro-magnetic pickup.
Weight:	2 Lbs (10 lbs. U.S., 14 lbs. international shipping weight)
Size:	Length: FP101 3' to 6'; FP201 5' to 15'
Materials:	PVC, anodized aluminum, stainless steel bearing
Power:	Internal watch type batteries/1 year life
Operating Temperature:	0° to 120° F
Carrying Case:	The Flow Probe is shipped in a padded carrying case.

VII. Maintenance

a. Probe Handle:
When the Flow Probe expansion joint becomes submerged, water will enter the Probe handle. After use, dry the Probe by separating the two handle sections, draining the water inside the Probe handle, and letting the handle dry out in a warm place before reassembling. The Flow Probe handle can be cleaned with mild soap and water. DO NOT submerge the top of the pole and the computer. If the computer gets submerged, remove it from the Flow Probe, DRY IMMEDIATELY with a soft cloth; remove the battery and place in a warm place overnight to dry.

b. Battery Replacement:
The Computer is held onto the head of the Probe by a twist lock connection. To remove, turn Computer ¼ turn to the left and pull off. To remove the battery use a small coin to twist the battery cover on

the back of the computer, ¼ turn to the left. Replace battery, + side toward battery cover, using a CR2032, 3 volt lithium cell. After replacing battery the calibration numbers will require resetting. (See Appendix A: Computer Setup)

c. Cleaning:
   Make sure the Turbo Prop turns freely before and after your measurements. Blow on the prop in the direction of flow. The prop should turn freely. If not, rinse the probe in clean water and remove any visible strings or hair materials from the prop bearing. This should correct the problem. If the prop still does not turn freely, remove the prop screw and the prop, and wash them in clean water or soap and water. Replace prop and screw. Tighten screw firmly but make sure prop still spins freely.

VIII. Trouble Shooting

Issue: Computer reading incorrectly

a. Blow on the propeller. The prop should spin freely and make a noise (chatter) when you blow on it. The prop should be loose on the shaft when you push it with your finger. If prop does not spin freely, rinse it with clean water or soak it in mild soapy water.
b. A small metal magnet covered with clear adhesive is installed on the back side of the prop on one blade. Be sure the magnet is in place and has not been removed. This magnet is necessary to make the signal for the computer.
c. Remove the computer holder from the pole handle by pulling the holder up away from the pole. The holder should come off with a popping sound. Make sure there is no moisture around the plug or socket. If the plug and socket are wet, dry the parts off and place both in a warm place overnight. Push the computer holder back on to handle HARD until you hear a "pop" or "snap" sound. If you don't hear this sound, the holder is not on all the way or you have a defective socket connector. Zero the "av" mode and blow on the prop for 5 to 7 seconds. You should see a number in "av" if the unit is working.
d. The computer can be removed from the holder by turning it ¼ turn to the left and lifting. Check the two electrical contacts on computer holder and the mating spring contacts on the computer. Make sure they are clean and dry.
e. Reinstall the computer on the computer head in the opposite manner that it was removed. Spin the propeller, by blowing on it, and check for an average reading. If there is still no reading contact Global Water.
f. If the display becomes weak or does not light up at all, replace the battery.

Other issues

a. Call Global Water for tech support: 800-876-1172 or 916-638-3429 (many problems can be solved over the phone). Fax: 916-638-3270 or Email: globalw@globalw.com.

   When calling for tech support, please have the following information ready;

1. Model #.
2. Unit serial number.
3. P.O.# the equipment was purchased on.
4. Our sales number or the invoice number.
5. Repair instructions and/or specific problems relating to the product.

Be prepared to describe the problem you are experiencing including specific details of the application, installation, and any additional pertinent information.

b. In the event that the equipment needs to be returned to the factory for any reason, please call to obtain a RMA# (Return Material Authorization). Do not return items without a RMA# displayed on the outside of the package.

Clean and decontaminate the FP101/201 if necessary.

Include a written statement describing the problems.

Send the package with shipping prepaid to our factory address. Insure your shipment; Global Water's warranty does not cover damage incurred during transit.

IX. Warranty

c. Global Water Instrumentation, Inc. warrants that its products are free from defects in material and workmanship under normal use and service for a period of one year from date of shipment from factory. Global Water's obligations under this warranty are limited to, at Global Water's option: (I) replacing or (II) repairing; any products determined to be defective. In no case shall Global Water's liability exceed the products original purchase price. This warranty does not apply to any equipment that has been repaired or altered, except by Global Water Instrumentation, Inc., or which has been subject to misuse, negligence or accident. It is expressly agreed that this warranty will be in lieu of all warranties of fitness and in lieu of the warranty of merchantability.

d. The warranty begins on the date of your invoice.

X. Appendix A: Computer Setup

The BC1200 has the capability to switch between 2 different calibration factors. To change between the calibrations remove the computer from the flow probe head by twisting 45 degrees counter clockwise and lifting. The indented gray button in the upper left corner on the back is to switch between CAL I and CAL II. In the upper left corner of the display, I is displayed for CAL I and II is displayed for CAL II.

Note:
I = ft/sec, calibration # = 0053
II = m/sec, calibration # = 0016
The indented gray button on the upper right is used to enter the calibration mode. Press and hold it for 5 seconds to enter calibration mode.

TO RESET THE CALIBRATION:
(Calibration #'s are factory set. Resetting is only required after changing the battery.)

- Press bottom button until CLOCK or TOTALODO is not displayed on screen.
- Press the left indented gray button to select CAL I.
- Turn computer over and press and hold the right indented gray button for 5 seconds and "set language" flashes on display.
- Press top button to select language.
- Press bottom button to accept.
- Press top button until "SET M" is displayed.
- Press bottom button to accept. The calibration factor is now displayed.
- Pressing the top button will change the value of the flashing digit.
- Pressing the bottom button will accept this value and move to the next digit.
- Set the calibration factors as follows:
    - Feet/second: 0053 (CAL I)
    - Meters/second: 0016 (CAL II)
- Press indented right button on back for one second to store.

Repeat above procedure for Cal II. (Only the cal number will be required)

(NOTE: after battery replacement and additional screen displaying SET ODO will follow the forth digit of the cal number. Ignore this and press the indented gray button to store settings)

TO SET CLOCK

- Press bottom button until clock appears at the bottom of the screen.
- Turn computer over and press and hold the right indented gray set button (S) for 5 seconds or until clock flashes.
- Press top button until hour is reached.
- Press bottom button to move to minutes.
- Press top button until desired number is reached.
- Press bottom button to move to single minutes.
- Press top button until desired single minute is reached.
- Turn computer over and press right indented gray set button for 1 second to save.

PG 116– Visual Flow Qualification

A visual flow qualification is a description of the amount of flow observed from an outfall. The varying amount of flow observed is grouped into three categories: Trickle, Moderate, or Substantial.

Application:

This guidance contains examples of varying flow amounts to assist sampling personnel with visually qualifying outfall discharges into three categories: Trickle, Moderate, or Substantial. Visual qualification of flow will be observed during all outfall investigations. Flow observations are best made from the outfall point where it discharges into the receiving water but if access does not allow, observations can be taken from the nearest accessible drainage pipe.

Considerations:

Due to the variable nature of field work, advance planning and preparation is necessary. Consider the following:

- Dress appropriately for weather, traffic, and outfall access.
- Review available mapping prior to the investigation to determine the safest approach for outfall access.
- What supplies will be needed?

Procedures:

1. Gain access to the outfall following one of the three following options. Safety takes precedence over access and efficiency – do not put yourself at risk of injury.
    a. Preferably, observations would be made from the bank opposite the outfall, allowing for full visual of the flow exiting the outfall.
    b. Observations can be made from the bank adjacent the outfall as well, but this approach may limit the observer’s ability to see the flow as it exits the outfall.
    c. If outfall access is not possible, flow can be observed from the nearest connecting drainage feature such as a drop inlet, manhole, open ditch, pond, or irrigation box. Accessing flow from connecting drainage features may require special tools such as a manhole puller, hammer, pry bar, gas meter, and flashlight.
2. Visually categorize the outfall discharge based on the following criteria:
    a. Trickle: very narrow stream of water
    b. Moderate: steady stream of flow, but very shallow depth
    c. Substantial: steady stream of flow with depth.

<u>Trickle</u>: narrow stream

<u>Moderate</u>: steady stream, but shallow

<u>Substantial</u>: steady stream with depth

3. Record the flow category on the appropriate field form.

Resources:

Brown, E., D. Caraco, and R. Pitt. 2004. Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments. Center of Watershed Protection. Ellicot City, MD.

SOP 312 – YSI Model 85 Multi-parameter Meter – Operation, Calibration and Maintenance

Dissolved Oxygen (DO), conductivity, and temperature measurements are collected from water samples using YSI Model 85 Multi-parameter Meters. These parameters are often measured in conjunction with other field parameters (pH and temperature) when manually collecting "grab" water samples. Meters need to be properly maintained and calibrated to ensure accurate measurements while in the field.

Application:

This standard operating procedure (SOP) is intended for stormwater personnel who are responsible for taking field measurements of DO and conductivity, typically in conjunction with collecting manual grab samples. SOP 110 will be followed to obtain a field parameter grab sample.

Ada County Highway District currently has YSI Model 85 meters to measure DO and conductivity. The YSI Model 85 Operations Manual is available at

S:\STORMWATER\SW Monitoring Manuals\YSI-Model-85-Operations-Manual-RevE.pdf

Considerations:

Due to the variable nature of field work, advance planning and preparation is necessary. Consider the following:

* DO, conductivity and temperature measurements may be performed during all weather conditions, day or night.
* Dress appropriately for weather and traffic conditions.
* Keep work areas lit to reduce accidents and ensure accurate measurements.
* Follow SOP 110 to collect the field parameter sample to be measured.
* Ensure that the correct sampling container is used. Generally, field parameters are taken using a clean, 500 mL amber glass container supplied by the water quality lab.
* Bring an extra sampling container in case of container breakage.
* Ensure that the meter has been properly maintained and calibrated prior to going out to the field.
* Ensure that nitrile gloves are worn during calibration and maintenance procedures.
* Bring extra batteries (6 AAs).

Procedures:

<u>Prior to Sampling Event</u>

1. Check sponge in Calibration/Storage Chamber to make sure it is moist (Figure 1).
2. Turn unit on by pressing down on the On/Off button.
3. Press LIGHT button, to ensure batteries and backlight are functioning.

   Note: The LCD will display a "LO BAT" message when the

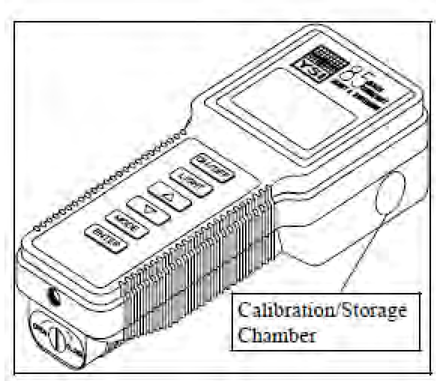


Figure 1. YSI 85

batteries need to be replaced.

4. Inspect membrane cap for damage. Change if necessary.

   Note: For correct probe operation the gold cathode should always be bright. If tarnished it can be cleaned at the factory or a cleaning kit ordered. See manual for details.

Field Sampling

1. Upon arriving on site, open instrument case and turn on instrument by pressing the **ON/OFF** button on the front panel.
2. Press the **MODE** button slowly (allowing the instrument to respond) until dissolved oxygen in mg/L is displayed.
3. Allow the temperature reading to stabilize prior to calibration of DO.
4. Follow steps provided on laminated sheet adhered to inside cover of the instrument case to calibrate the DO probe.

   NOTE: Conductivity calibration is rarely required because of the factory calibration performed. Conductivity calibration will be verified annually.
5. Proceed with grab sample collection according to **SOP 110**.
6. Remove probe from storage on side of meter by pulling the probe in an outward direction away from the meter.
7. Lower the probe into the sample taking care to submerge the probe deep enough to cover the two ports on top of the probe.

   NOTE: The top of the cord where the probe attaches will be partially submerged. Ideally the probe is suspended in the sample and is not touching the sides or bottom of the container.
8. With gentle, slow movements, slightly agitate the probe in a circular direction.

   NOTE: Create enough movement so the sample at the tip of the probe is representative of ambient conditions, but not too much movement that oxygen is added to the sample.
9. The numbers on the display will slowly decrease until a point is reached where the number appears to stabilize before slightly increasing. The display presents measurements to the nearest hundredth. The reading has stabilized when the variability in the hundredths does not change the reading in the tenths.

   NOTE: Stabilization typically takes several minutes.
10. Record the value in mg/L on the data log form with the corresponding temperature.
11. Press the **MODE** button to display conductivity in µS/cm.
12. Record the value in µS/cm and the corresponding temperature on the data log form.
13. Spray and rinse the probe thoroughly with distilled water.
14. Push probe back into the storage chamber on the side of the meter.
15. Push the **ON/OFF** button on the front panel to turn off the meter.
16. Return meter to the instrument case.
17. Secure latches.

Following a Sampling Event

1. Wipe the unit clean using a damp cloth or paper towel.
2. Ensure unit is off, prior to storage

Annually

1. Once a year a calibration should be performed for conductivity. See Section 5.2 of the Instruction Manual.

Prepared by: Monica Lowe, ACHD Stormwater Quality Coordinator________________________________

Reviewed by: Ted Douglass, Brown and Caldwell, Project Manager ________________________________

SOP 313 - pH Meter – Operation, Calibration and Maintenance

pH Meters are used to record the pH level and temperature during the manual collection of grab samples. pH levels and temperature will generally be recorded in conjunction with other field parameters (dissolved oxygen and conductivity) when manually collecting water samples. pH meters need to be properly maintained and calibrated to ensure accurate measurements while in the field.

Application:

This standard operating procedure (SOP) is intended for stormwater personnel who are responsible for obtaining field parameter measurements in conjunction with collecting manual grab samples. SOP 110 will be followed to obtain a field parameter grab which will be used to measure pH.

Ada County Highway District currently has Horiba D series handheld pH meters. The Horiba Instruction Manual is available at http://www.coleparmer.com/Assets/manual_pdfs/58702-20.pdf or at S:\STORMWATER\SW Monitoring Manuals\HoribaDSeries_pHMeter.pdf

Considerations:

Due to the variable nature of field work, advance planning and preparation is necessary. Consider the following:

* Field pH measurements may be performed during all weather conditions, day or night.
* Dress appropriately for weather and traffic conditions.
* Keep work areas lit to reduce accidents and ensure accurate measurements.
* Follow SOP 110 to collect the field parameter sample to be measured.
* Ensure that the correct sampling container is used. Generally, field parameters are taken using a clean, 500 mL amber glass container supplied by the water quality lab.
* Bring an extra sampling container in case of container breakage.
* Ensure that the meter has been maintained and calibrated prior to going out to the field.
* Ensure that nitrile gloves are worn during calibration and maintenance procedures.
* Bring extra batteries (2AAs).

Procedures:

Prior to Sampling Event

1. Connect electrode and temperature connection to the unit.
2. Thoroughly rinse the electrode with distilled water or reagent water and blot dry with tissue paper.
3. Check to ensure the internal reference solution of the electrode is full. Fill if needed.

   NOTE: This solution is concentrated KCl. Be sure to wear gloves and safety glasses when using this solution.
4. Ensure that the internal solution filler port is open when taking measurements. This port is also where the internal reference solution is filled or removed.

5. Calibrate with standard solutions (pH 4.00, pH 7.00 and pH 10.00) according to the steps outlined in the Instruction Manual.
6. Fill protective cap with fresh distilled water and place electrode in the cap for storage.

Field Sampling

NOTE: If field parameter measurements include dissolved oxygen (DO), as well as pH using the same grab sample, take the DO measurement first to ensure oxygen is not added to the sample by the stirring action called for in Step 7.

1. Open instrument case and turn on instrument by pressing the **ON/OFF** button on the front panel.

   NOTE: A "Y" connector connects the electrode probe and temperature probe to the meter. The electrode probe has a plastic covering that threads onto the meter where the cord and meter connect. The temperature probe has an o-ring that must be securely pressed into the meter to take an accurate temperature reading. Check to make sure the electrodes are securely attached to the meter.
2. Remove probe from plastic storage container by pulling in an outward direction.
3. Set plastic storage container upright in instrument case so the distilled water/storage solution does not spill.
4. Slide open the port on side of the probe.
5. Lower probe into the field parameter grab sample collected according to SOP 110, taking care NOT to submerge the probe too deep. **Do not allow any of the grab sample to enter the open port on the side of the probe.**
6. Gently stir probe in a circular direction taking care NOT to touch the sides or bottom of the sample container.
7. Press the **MEAS** key.
8. **HOLD** will flash in the display.
9. The **HOLD** will stop flashing and remain lit in the display when the value has stabilized.
10. Once **HOLD** remains lit and does not flash, record the pH value and temperature on the data form.

    NOTE: If 25° C is displayed for temperature, double check to ensure the temperature probe and o-ring are securely engaged. 25°C is a default temperature reading generally indicating the temperature probe is not engaged.
11. Slide cover to close port on side of probe.
12. Rinse the probe thoroughly using distilled water.
13. Return probe into plastic storage container.
14. Place probe and meter in instrument case.
15. Secure latches.

Following a Sampling Event

1. Wipe the unit clean using a damp cloth or paper towel.
2. Thoroughly rinse the electrode and protective cap with distilled or deionized water.
3. Disconnect electrode and temperature connection from the unit for storage.

Semi-Annually

1. Replace the internal solution in electrode with fresh 3.33 M KCL solution. Change the internal solution more frequently if calibration is slow.

Soak sponge in the bottom of the protective cap in a dilute chlorox solution, if mold growth occurs.

Prepared by Monica Lowe, ACHD, Stormwater Quality Coordinator________________________________

Reviewed by Ted Douglass, Brown and Caldwell, Program Manager______________________________

DOC326.97.00024

Storm Water Test Kit

11/2013, Edition 1

User Manual

General information

In no event will the manufacturer be liable for direct, indirect, special, incidental or consequential damages resulting from any defect or omission in this manual. The manufacturer reserves the right to make changes in this manual and the products it describes at any time, without notice or obligation. Revised editions are found on the manufacturer's website.

Safety information

NOTICE

The manufacturer is not responsible for any damages due to misapplication or misuse of this product including, without limitation, direct, incidental and consequential damages, and disclaims such damages to the full extent permitted under applicable law. The user is solely responsible to identify critical application risks and install appropriate mechanisms to protect processes during a possible equipment malfunction.

Please read this entire manual before unpacking, setting up or operating this equipment. Pay attention to all danger and caution statements. Failure to do so could result in serious injury to the operator or damage to the equipment.

Make sure that the protection provided by this equipment is not impaired. Do not use or install this equipment in any manner other than that specified in this manual.

Use of hazard information

DANGER

Indicates a potentially or imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

Indicates a potentially or imminently hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation that may result in minor or moderate injury.

NOTICE

Indicates a situation which, if not avoided, may cause damage to the instrument. Information that requires special emphasis.

Precautionary labels

Read all labels and tags attached to the instrument. Personal injury or damage to the instrument could occur if not observed. A symbol on the instrument is referenced in the manual with a precautionary statement.

Electrical equipment marked with this symbol may not be disposed of in European public disposal systems after 12 August of 2005. In conformity with European local and national regulations (EU Directive 2002/96/EC), European electrical equipment users must now return old or end-of-life equipment to the Producer for disposal at no charge to the user.

***Note:** For return for recycling, please contact the equipment producer or supplier for instructions on how to return end-of-life equipment, producer-supplied electrical accessories, and all auxiliary items for proper disposal.*

Product overview

WARNING

Chemical exposure hazard. Obey laboratory safety procedures and wear all of the personal protective equipment appropriate to the chemicals that are handled. Refer to the current safety data sheets (MSDS/SDS) for safety protocols.

Environmental Protection Agency (EPA) studies show that storm water runoff carries pollutants to nearby lakes, rivers and streams. To protect receiving waters, the EPA issued regulations* in November 1990 which apply to both municipalities and industrial storm water discharges.

Part 1 of the NPDES (National Pollutant Discharge Elimination System) application requires municipalities to do field screening with grab samples collected from dry weather flows. These samples will be analyzed for pH, total chlorine, total phenols, total copper and detergents.

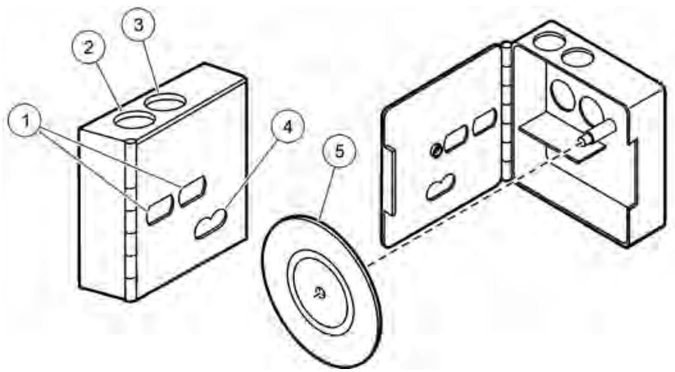
Use this test kit on-site or in a laboratory to identify the pH level and the concentrations of total chlorine, total phenols, total copper and detergents in storm sewer outflow and industrial discharge. Refer to Table 1 for the test kit parameters.

A color comparator box and color discs are used to identify the concentration of total chlorine, total phenols, total copper and detergents. Refer to Figure 1. The Pocket Pro pH tester is used to identify the pH level.

Table 1 Test kit parameters

Parameter	Range	Number of tests	Type of test	Sensitivity
pH	0–14	Refer to packaging	Ion selective electrode	Refer to packaging
Chlorine, total	0–3.4 mg/L	100	DPD	0.1 mg/L
Copper, free and total	0–4 mg/L	100	Bicinchoninate Hydrosulfite reduction	0.1 mg/L
Phenol	0–4	100	4-aminoantipyrine	0.1 mg/L
Detergents	0–1.2 mg/L	32	Toluidine Blue-O	0.05 mg/L

Figure 1 Color comparator box



1	Color matching windows	**4**	Scale window
2	Opening for tube with untreated sample	**5**	Color disc
3	Opening for tube with prepared sample		

* Federal Register, November 16, 1990.

Product components

Make sure that all components have been received. Refer to the list that follows. If any items are missing or damaged, contact the manufacturer or a sales representative immediately.

- Pocket Pro™ pH tester
- Color discs (4x)
- Color viewing tubes with caps (4x)
- Color comparator box
- Carrying case
- Chloroform, ACS grade
- Detergents Test Solution
- Wash Water Buffer (2x)
- Hardness 1 Buffer Solution
- Filtering thimble
- Test tube, 10-mL (2x)
- Draw-off pipet
- Stopper for color viewing tubes
- Phenol Reagent Powder Pillows
- Hydrosulfite Reagent Powder Pillows
- Free Copper Reagent Powder Pillows
- EDTA Reagent Powder Pillows
- DPD Total Chlorine Reagent Powder Pillows
- Potassium Persulfate Powder Pillows
- pH 7.0 SINGLET™ buffer solution packs
- Dropper
- Beaker, 100-mL
- Demineralizer bottle
- Glass wool for detergents test

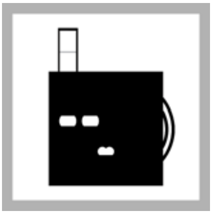
Total Chlorine

Test preparation

- Assemble the color comparator. Put the DPD Chlorine color disc on the center pin with the lettering facing out.
- Use sunlight or a fluorescent light source to compare colors.
- Rinse all viewing tubes with the sample water before testing and between tests.
- Accuracy is not affected by undissolved powder.
- If the disc becomes wet, carefully open the plastic case. Dry the case and the color insert with a soft cloth. Assemble the case when the parts are completely dry.

Total Chlorine (0–3.4 mg/L) test procedure

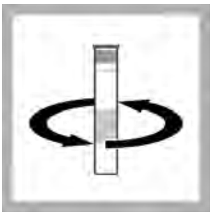
1. Fill one color viewing tube to the lower edge of the frosted area (5-mL mark) with clear water.



2. Put the tube into the left opening on the top of the comparator.

3. Fill a second color viewing tube to the lower edge of the frosted area (5-mL mark) with the water sample.

4. Add the contents of one DPD Total Chlorine Reagent Powder Pillow.



5. Swirl to mix.

6. A color will develop if chlorine is present in the sample. Wait 3–6 minutes for full color development.

7. Put the tube into the right opening on the top of the comparator. Hold the comparator in front of a light source. Turn the disc to find a color match.

8. Read the mg/L total chlorine (Cl_2) from the scale window. If the result is between two values, use the value halfway between the two printed numbers.

Replacement items

***Note:** Product and Article numbers may vary for some selling regions. Contact the appropriate distributor or refer to the company website for contact information.*

Description	Unit	Item no.
Color comparator box	1	173200
Color viewing tubes with caps	4/pkg	4660004
DPD Chlorine disc, 0–3.4 mg/L	1	990200

Description	Unit	Item no.
DPD Total Chlorine Reagent Powder Pillows	100/pkg	1407699
Caps for color viewing tubes	4/pkg	4660014

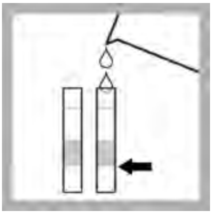
Total Copper

Test preparation

This test procedure identifies the concentration of free or complexed copper. Free copper refers to any free or weakly chelated copper ion in solution. Complexed (chelated) copper is tightly bound, as in Cu (EDTA). Free copper plus complexed copper gives the total dissolved copper.

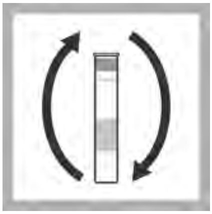
- Assemble the color comparator. Put the copper color disc on the center pin with the lettering facing out.
- Use sunlight or a fluorescent light source to compare colors.
- Rinse all viewing tubes with the sample water before testing and between tests.
- Accuracy is not affected by undissolved powder.
- Refer to Table 2 on page 9 for interfering substances.
- If the disc becomes wet, carefully open the plastic case. Dry the case and the color insert with a soft cloth. Assemble the case when the parts are completely dry.

Free and Total Copper (0-4 mg/L) test procedure



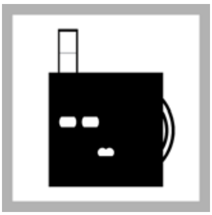
1. Fill two color viewing tubes to the lower edge of the frosted area (5-mL mark) with the water sample.

2. Add the contents of one Free Copper Reagent Powder Pillow to one of the tubes.



3. Put a stopper in the tube with the powder. Invert the tube several times to mix.

4. A purple color will develop if free copper is present in the sample. Wait 2 minutes for full color development.

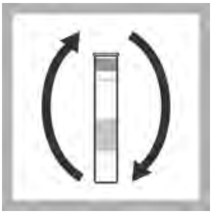


5. Put the untreated sample tube into the left opening on the top of the comparator.

6. Put the prepared sample tube into the right opening on the top of the comparator. Hold the comparator in front of a light source. Turn the disc to find a color match.

7. Read the mg/L free copper (Cu) from the scale window. If the result is between two values, use the value halfway between the two printed numbers.

8. To identify the concentration of total dissolved copper present, add the contents of one Hydrosulfite Reagent Powder Pillow (clear pillow) to the tube.



9. Put a stopper in the tube. Remove the tube from the comparator. Invert the tube several times to mix.

10. Wait 2 minutes for full color development.

11. Put the prepared sample tube back into the right opening on the top of the comparator. Hold the comparator in front of a light source. Turn the disc to find a color match.

12. Read the mg/L total dissolved copper (free copper and complexed copper) from the scale window. If the result is between two values, use the value halfway between the two printed numbers.

13. To identify the concentration of complexed copper present in the sample, subtract the amount of free copper from the amount of total dissolved copper.

Interferences

Table 2 Interfering substances

Interfering substance	Interference level
Cyanide	More than 2 mg/L inhibits color development Add three drops of Formaldehyde Solution before the viewing tube is put into the comparator box. Wait 3 minutes and then read the mg/L free copper.

Accuracy check

Periodically identify the reagent accuracy with a reliable standard such as Copper Standard Solution 10-mg/L.

1. Prepare a 2 mg/L free copper solution.
   a. Carefully measure 1 mL of Copper Standard Solution 10-mg/L into a sample tube.
   b. Add deionized water to the sample tube to the 5 mL mark.
2. Identify the concentration of copper that is present in the standard. Refer to Free and Total Copper (0-4 mg/L) test procedure on page 8.

Replacement items

Note: *Product and Article numbers may vary for some selling regions. Contact the appropriate distributor or refer to the company website for contact information.*

Description	Unit	Item no.
Color comparator box	1	173200
Color viewing tubes with caps	6/pkg	173006
Copper color disc	1	9263300
Free Copper Reagent Powder Pillow	100/pkg	2182369
Hydrosulfite Reagent Powder Pillow	100/pkg	2118869
Stoppers for viewing tubes	6/pkg	173106

Optional items

Description	Unit	Item no.
Copper Standard Solution 10 mg/L	100 mL MDB	12932
Formaldehyde Solution	100 mL SCBD	205932

Detergents

Test preparation

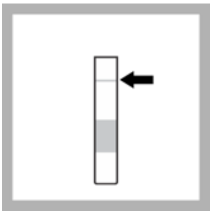
- Assemble the color comparator. Put the Detergents color disc on the center pin with the lettering facing out.
- Use sunlight or a fluorescent light source to compare colors.
- Rinse all viewing tubes with the sample water before testing and between tests.
- If the disc becomes wet, carefully open the plastic case. Dry the case and the color insert with a soft cloth. Assemble the case when the parts are completely dry.

Filter the chloroform layer

If the water sample is turbid, filter the chloroform layer at step 13.

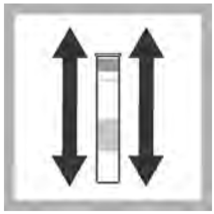
1. Put a small ball (about the size of a large pea) of glass wool in the filter thimble.
2. Use the draw-off pipet to remove the chloroform. Filter the chloroform through the glass wool and into an unused, glass test tube.

Detergents (0–1.2 mg/L) test procedure



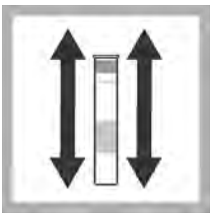
1. Fill one test tube to the upper mark (20 mL) with the water sample.

2. Add 12 drops of Detergent Test Solution.



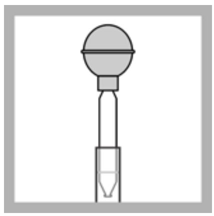
3. Put the stopper in the tube. Shake to mix.

4. Add chloroform to the lowest mark (5 mL). Chloroform is heavier than water and will go to the bottom of the tube.



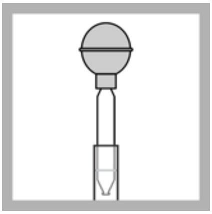
5. Put the stopper in the tube. Shake vigorously for 30 seconds.

6. Do not touch the tube for 1 minute to let the chloroform separate.

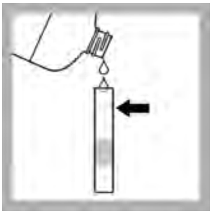


7. Use the draw-off pipet to remove the water from the tube. Discard the water.

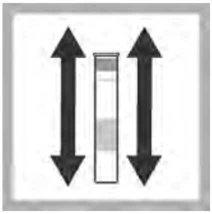
8. Add Wash Water Buffer to the upper mark (20 mL).



9. Use the draw-off pipet to remove the Wash Water Buffer. Discard the buffer.
Note: *This step washes away the remaining water sample.*



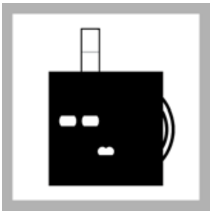
10. Add Wash Water Buffer to the upper mark (20 mL).



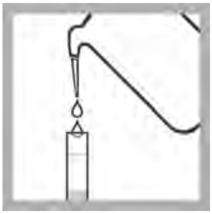
11. Put the stopper in the tube. Shake vigorously for 30 seconds.

12. Do not touch the tube for 1 minute to let the chloroform separate.

13. If the water sample is turbid, filter the chloroform layer.



14. Put the prepared sample tube into the right opening on the top of the comparator.

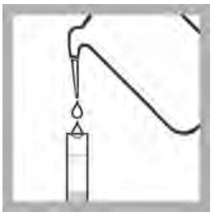


15. Fill a second test tube with deionized water.

16. Put the deionized water tube into the left opening on the top of the comparator. Hold the comparator in front of a light source. Turn the disc to find a color match.

17. Read the ppm Detergents (LAS and/or ABS) from the scale window. If the result is between two values, use the value halfway between the two printed numbers. If the color is darker than the highest reading on the color disc, do steps 18–20 to make a 20-to-1 dilution.

18. Discard the contents of the prepared sample tube (in the right opening). Rinse the tube with deionized water. Use the dropper to add 1 mL of the water sample to the tube.



19. Add deionized water to the upper mark (20 mL).

20. Do steps 2–17 and multiply the results by 20.

Replacement items

Note: *Product and Article numbers may vary for some selling regions. Contact the appropriate distributor or refer to the company website for contact information.*

Description	Quantity	Item no.
Bulb for draw-off pipette	1	178600
Color comparator box	1	173200
Color viewing tubes with caps, 5 mL and 20 mL marks	6/pkg	173606
Chloroform, ACS grade (approximately 100 tests)	500 mL	1445849
Detergents color disc, 0–1.2 mg/L	1	9265700
Detergents reagent	100 mL MDB	105932
Dropper, 0.5 mL and 1.0 mL marks	5/pkg	1419700
Filtering thimble	1	51200
Glass tube for draw-off pipette	1	221800
Glass wool	5 g	252074
Test tube	10/pkg	56510
Wash Water Buffer (approximately 32 tests)	500 mL	99949

pH

Refer to the documentation supplied with the Pocket Pro™ pH tester to do a pH measurement.

Phenols

Test preparation

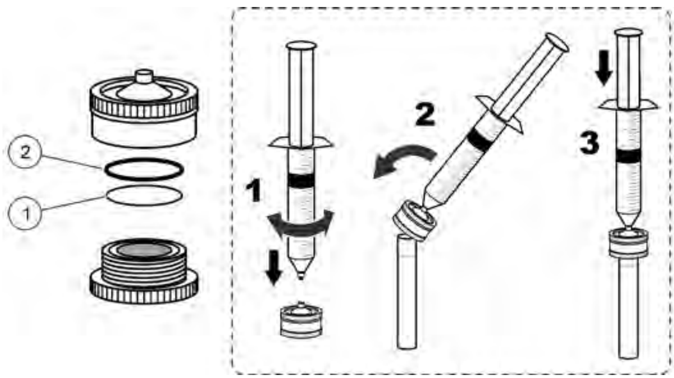
- Assemble the color comparator. Put the Phenols color disc on the center pin with the lettering facing out.
- Use sunlight or a fluorescent light source to compare colors.
- Rinse all viewing tubes with the sample water before testing and between tests.
- If the disc becomes wet, carefully open the plastic case. Dry the case and the color insert with a soft cloth. Assemble the case when the parts are completely dry.

Filter the sample

If the sample is turbid, it may be necessary to filter the sample.

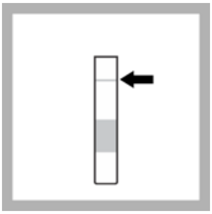
1. Install a 0.45 micron filter disc in the filter holder. Refer to Figure 2. Make sure that the holder is closed tight after the disc is installed.
2. Fill the 30-cc syringe with the turbid sample.
3. Attach the filter holder to the syringe with a twisting motion.
4. Filter the sample directly into the viewing tubes from the syringe. Use the filtered sample in the test procedure.

Figure 2 Assemble the filter assembly



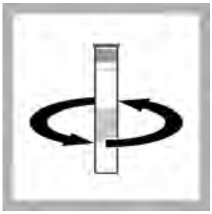
1 Filter disc	**2** O-ring

Phenols (0–4 mg/L) test procedure



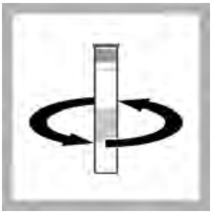
1. Fill two color viewing tubes to the upper mark (20 mL) with water sample.

2. Add the contents of one EDTA Reagent Powder Pillow to each tube.

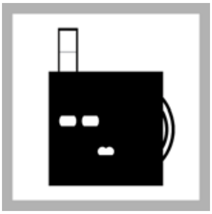


3. Put the cap on each tube and swirl until the powder is dissolved.

4. Add 15 drops of Hardness 1 Buffer Solution to each tube.

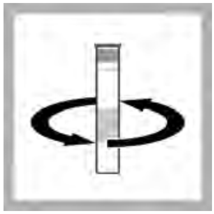


5. Put the cap on each tube and swirl.



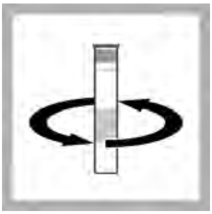
6. Put one of the tubes into the left opening on the top of the comparator.

7. Add the contents of one Phenol Reagent Powder Pillow for non-extraction method to the second tube.



8. Put the cap on the tube and swirl until the powder is dissolved.

9. Add the contents of one Potassium Persulfate Powder Pillow for Phosphonate to the second tube.



10. Put the cap on the tube and swirl until the powder is dissolved.

11. Put the second tube into the right opening on the top of the comparator. Hold the comparator in front of a light source. Turn the disc to find a color match.

12. Read the result in mg/L from the scale window. If the result is between two values, use the value halfway between the two printed numbers.

Replacement items

Note: *Product and Article numbers may vary for some selling regions. Contact the appropriate distributor or refer to the company website for contact information.*

Description	Quantity	Item no.
Color comparator box	1	173200
Color viewing tubes	4/pkg	4660004

Description	Quantity	Item no.
Clippers for powder pillows	1	93600
EDTA Reagent Powder Pillows	50/pkg	700599
Hardness 1 Buffer Solution	50 mL	42426
Phenol Reagent Powder Pillows (nonextraction)	100/pkg	2481569
Potassium Persulfate Powder Pillows for Phosphonate	100/pkg	2084769

Optional items

Description	Quantity	Item no.
Filter discs, 25 mm, 45 micron	25/pkg	2209525
Filter holder for Luer-Lok	1	246800
Syringe, 30 cc, Luer-Lok tip	1	2225800

Reference Manual

Honeywell

PHD6™ Gas Detector

G-101
September 2022

⚠WARNING

PHD6 PERSONAL PORTABLE GAS DETECTORS HAVE BEEN DESIGNED FOR THE DETECTION AND MEASUREMENT OF POTENTIALLY HAZARDOUS ATMOSPHERIC CONDITIONS

IN ORDER TO ASSURE THAT THE USER IS PROPERLY WARNED OF POTENTIALLY DANGEROUS ATMOSPHERIC CONDITIONS, IT IS ESSENTIAL THAT THE INSTRUCTIONS IN THIS REFERENCE MANUAL BE READ, FULLY UNDERSTOOD, AND FOLLOWED.

PHD6™
Reference Manual
Part Number 13-322
Version 3

Honeywell reserves the right to correct typographical errors.
Specifications are subject to change without notice.

Table of Contents

Certification Information

The PHD6 carries the following certifications:

QPS Class I Division 1 Groups A,B,C,D Temp Code T3C (Approved to UL 913)
QPS USTC Class II Division 1 Groups E,F,G (Approved to UL 913)
QPS USTC Class III (Approved to UL 913)

CSA Class I, Division 1 Groups A,B,C,D Temp Code T3C
ONLY THE COMBUSTIBLE GAS DETECTION PORTION OF THIS INSTRUMENT HAS BEEN ASSESSED FOR PERFORMANCE.

ATEX: Ex d ia IIC 170 °C (T3)
IECEx: Ex d ia IIC 170 °C (T3)
CE Mark

Operating Temperature and Humidity Limits

⚠WARNING The PHD6's operating temperature range is printed on the label on the back of the instrument. Use of Honeywell Gas Detectors outside of the instrument's specified operating temperature range may result in inaccurate and potentially dangerous readings.

Signal Words

The following signal words, as defined by ANSI Z535.4-1998, are used in the PHD6 Reference Manual.

⚠DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION indicates a potentially hazardous situation, which if not avoided, may result in moderate or minor injury.

CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Warnings and Cautions

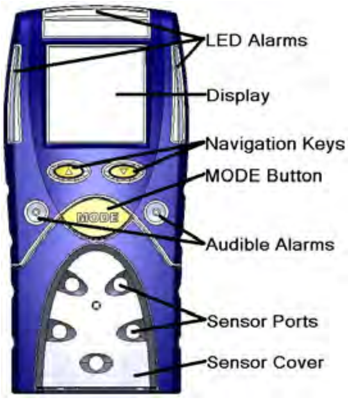
1. **⚠WARNING The PHD6 personal, portable gas detector has been designed for the detection of dangerous atmospheric conditions. An alarm condition indicates the presence of a potentially life-threatening hazard and should be taken very seriously. Failure to immediately leave the area may result in serious injury or death.**
2. **⚠WARNING In the event of an alarm condition it is important to follow established procedures. The safest course of action is to immediately leave the affected area, and to return only after further testing determines that the area is once again safe for entry. Failure to immediately leave the area may result in serious injury or death.**
3. **⚠WARNING The PHD6 must be located in a non-hazardous location whenever alkaline batteries are removed from the alkaline battery pack. Removal of the alkaline batteries from the battery pack in a hazardous area may impair intrinsic safety.**
4. **⚠WARNING Use only Duracell MN1500 or Ultra MX1500, Eveready Energizer E91-LR6, Eveready EN91 batteries in the alkaline battery pack. Substitution of batteries may impair intrinsic safety.**
5. **⚠WARNING To reduce the risk of explosion, do not mix old or used batteries with new batteries and do not mix batteries from different manufacturers.**
6. **⚠WARNING Do not charge the PHD6 with any charger other than the appropriate PHD6 charger. Standard versions of the PHD6 must be charged with the UL/CSA-approved charger, which is part number 54-49-103-1. European versions of the PHD6 must be charged with the ATEX-approved charger, which is part number 54-49-103-5.**
7. **⚠WARNING The PHD6 must be located in a non-hazardous location during the charging cycle. Charging the PHD6 in a hazardous location may impair intrinsic safety.**
8. **⚠WARNING PHD6 rechargeable battery packs are supplied with Panasonic CGR18650D Lithium-Ion batteries. The Li-Ion batteries in the battery packs may not be replaced by the user. The rechargeable pack must be obtained from Honeywell and replaced as a complete assembly to maintain intrinsic safety.**
9. **⚠WARNING The accuracy of the PHD6 should be checked periodically with known concentration calibration gas. Failure to check accuracy can lead to inaccurate and potentially dangerous readings.**

(The Canadian Standards Association (CSA) requires an accuracy check using known concentration calibration gas prior to each day's use.)

10. **⚠WARNING** Fresh air/zero calibrations may only be performed in an atmosphere that is known to contain 20.9% oxygen, 0.0% LEL and 0 PPM toxic gas.
11. **⚠WARNING** The accuracy of the PHD6 should be checked immediately following any known exposure to contaminants by testing with known concentration test gas before further use. Failure to check accuracy can lead to inaccurate and potentially dangerous readings.
12. **⚠WARNING** A sensor that cannot be calibrated or is found to be out of tolerance should be replaced immediately. An instrument that fails calibration may not be used until testing with known concentration test gas determines that accuracy has been restored, and the instrument is once again fit for use.
13. **⚠WARNING** Do not reset the calibration gas concentration unless you are using a calibration gas concentration that differs from the one that is normally supplied by Honeywell for use in calibrating the PHD6.
    Customers are strongly urged to use only Honeywell calibration materials when calibrating the PHD6. Use of non-standard calibration gas and/or calibration kit components can lead to dangerously inaccurate readings and may void the standard Honeywell warranty.
14. **⚠WARNING** Use of non-standard calibration gas and/or calibration kit components when calibrating the PHD6 can lead to inaccurate and potentially dangerous readings and may void the standard Honeywell warranty.
    Honeywell offers calibration kits and long-lasting cylinders of test gas specifically developed for easy PHD6 calibration. Customers are strongly urged to use only Honeywell calibration materials when calibrating the PHD6.
15. **⚠WARNING** Substitution of components may impair intrinsic safety.
16. **⚠WARNING** For safety reasons this equipment must be operated and serviced by qualified personnel only. Read and understand this reference manual before operating or servicing the PHD6.
17. **⚠WARNING** A rapid up-scale reading followed by a declining or erratic reading may indicate a hazardous combustible gas concentration that exceeds the PHD6's zero to 100 percent LEL detection range.
18. **⚠WARNING** The PHD6 is not designed for use in oxygen enriched atmospheres.
19. **⚠WARNING** Do not use the PHD6 pump for prolonged periods in an atmosphere containing a concentration of solvent or fuel that may be greater than 50% LEL.
20. **⚠WARNING** Do not unplug the NDIR-CH^4 or NDIR-CO^2 sensors in an explosive atmosphere. Unplugging IR sensors in an explosive atmosphere may impair intrinsic safety.

1. Description

The PHD6 is a multi-sensor gas detector that can be configured to meet a wide variety of user requirements. This chapter provides an overview of many of the features of the PHD6. More detailed descriptions of the specific features of the PHD6 are contained in the subsequent chapters of this manual.



1.1 Methods of sampling

The PHD6 may be used in either diffusion or sample-draw mode. In either mode, the gas sample must reach the sensors for the instrument to register a gas reading. The sensors are located at the lower front of the instrument.

⚠WARNING **The sensor ports must be kept free of obstruction. Blocked sensor ports can lead to inaccurate and potentially dangerous readings.**

In diffusion mode, the atmosphere being measured reaches the sensors by diffusing through the sensor ports at the front of the instrument. Normal air movements are enough to carry the sample to the sensors. The sensors react quickly to changes in the concentrations of the gases being measured. Diffusion-style operation monitors only the atmosphere that immediately surrounds the detector.

The PHD6 can also be used to sample remote locations with its hand-aspirated sample-draw kit or with its motorized, continuous sample draw pump. During remote sampling, the gas sample is drawn into the sensor compartment through the probe assembly and a length of tubing. Remote sampling operations only monitor the atmosphere at the end of the sample draw probe.

Use of the hand-aspirated sample draw kits is covered in section 3.1.

Use of the motorized sample draw pump is covered in section 3.2.

A detailed description of the PHD6 probe assembly is given in section 6.5

1.2 Multi-sensor capability

The PHD6 can be configured to simultaneously monitor oxygen, combustible gases and vapors, volatile organic compounds (VOCs), and a wide variety of toxic gases. All sensors are replaceable in the field.

Note: The accuracy of the PHD6 must be verified by calibration with known concentration test gas whenever a change is made to the sensors installed in the instrument.

Calibration procedures are discussed in detail in Chapter 4.

The PHD6 can utilize a variety of sensor types to detect atmospheric contaminants including electrochemical sensors, PID (Photo Ionization Detector) sensors, NDIR (Non-Dispersive Infra-Red Absorbance) sensors and catalytic hot-bead LEL sensors.

Different measurement units are used depending on the gas being measured.

Type of Hazard	Measurement unit
Oxygen (O_2)	Percentage by volume
Combustible gas (LEL Sensor)	Percentage of lower explosive limit (%LEL) or %/Vol CH_4
Hydrocarbon-specific combustible gas sensor (NDIR – CH_4)	Percentage of lower explosive limit (%LEL) or %/Vol CH_4
Volatile Organic Compounds (VOCs) (PID Sensor)	Parts-per-million (PPM) or tenths of a part-per-million (0.1PPM)
Toxic Gases (by electrochemical sensor	Parts-per-million (PPM) – some sensors capable of tenths of a part-per-million (0.1PPM)
Toxic Gas by NDIR – CO_2 sensor	%/Vol CO_2

Table 1.2. PHD6 Units of Measurement.

1.3 Calibration

The PHD6 detector features fully automatic fresh air and gas calibration.

⚠WARNING **The accuracy of the PHD6 should be checked periodically with known concentration calibration gas. Failure to check accuracy can lead to inaccurate and potentially dangerous readings. (The Canadian Standards Association (CSA) requires an accuracy check using known concentration calibration gas prior to each day's use.)**

Calibration procedures are discussed in detail in Chapter 4.

Recommended calibration frequency is discussed in Appendix B.

1.4 Alarm logic

PHD6 gas alarms can be adjusted manually using the PHD6's built in menu functions, with BioTrak II software via IrDA interface, or with the IQ Database Manager Program through the IQ6 Dock. (See Chapter 6 for direct menu programming instructions). Alarms may be set anywhere within the nominal range of the specific sensor. When an alarm set point is exceeded a loud audible alarm sounds, and the bright red LED alarm lights flash.

1.4.1 Atmospheric hazard alarms

⚠WARNING **PHD6 portable gas detectors have been designed for the detection of deficiencies of oxygen, accumulations of flammable gases and vapors, and accumulations of specific toxic gases. An alarm condition indicating the presence of one or more of these potentially life-threatening hazards should be taken very seriously. Failure to immediately leave the area may result in serious injury or death.**

⚠WARNING In the event of an alarm condition it is important to follow established procedures. The safest course of action is to immediately leave the affected area, and to return only after further testing determines that the area is once again safe for entry. Failure to immediately leave the area may result in serious injury or death.

⚠WARNING A rapid up-scale reading followed by a declining or erratic reading may indicate a hazardous combustible gas concentration that exceeds the PHD6's zero to 100 percent LEL detection range. Failure to immediately leave the area may result in serious injury or death.

The combustible gas alarms are activated when the reading for combustible gases exceeds one of the alarm setpoints. Combustible gas readings are typically given in terms of percent of LEL (Lower Explosive Limit), but may also be shown in terms of percent-by-volume methane (CH_4). The PHD6 includes Warning and Danger alarms for the both the LEL sensor and the NDIR-CH_4 sensor.

Two oxygen alarm set points have been provided; a low alarm for oxygen deficiency and a high alarm for oxygen enrichment.

Up to four alarm set points are provided for the PID sensor and for each toxic gas sensor: Warning, Danger, STEL (Short Term Exposure Limit) and TWA (Time Weighted Average).

Appendix A discusses Warning, Danger, STEL and TWA alarms.

1.4.2 Low battery alarms

The PHD6 includes multi-staged alarms for both the Li-Ion and alkaline battery packs to let the user know that the battery is running low.

For detailed information concerning the low battery alarms, see section 2.5.5.

⚠WARNING Use only Duracell MN1500 or Ultra MX1500, Eveready Energizer E91-LR6, Eveready EN91 batteries. Substitution of batteries may impair intrinsic safety.

1.4.3 Sensor over range alarms

The PHD6 will go into alarm if a sensor is exposed to a concentration of gas that exceeds its established range. In the case of an LEL or NDIR-CH_4 sensor reading that exceeds 100% LEL, the sensor channel will be automatically disabled by the instrument and the instrument will remain in constant alarm until it is turned off, brought to an area that is known to be safe, and then turned back on. The display will show a vertical arrow with two heads in place of the sensor reading for any channel that has gone into over range alarm.

See section 2.5.2 for further details.

⚠WARNING In the event of an LEL overrange alarm the PHD6 must be turned off, brought to an area that is known to be safe and then turned on again to reset the alarm.

1.4.4 PID lamp out alarm

The PHD6 monitors the status of the PID lamp to ensure that it is functioning properly. Alarms are generated if the PHD6 determines that the lamp is out. See section 2.5.3 for further details

1.4.5 LEL response failure due to lack of O_2 alarm

The PHD6 features automatic warning against LEL sensor response failure due to lack of oxygen. See section 2.5.4 for details.

1.4.6 Security beep/flash

The PHD6 includes a security beep function that is designed to notify the user that the instrument is powered up and running. Once enabled the PHD6 will emit a short audible beep and give a short flash on the LED at a user-defined interval.

The security beep/flash can be enabled manually through the Main Menu (see chapter 5), with BioTrak II software or through the IQ6 Dock.

1.4.7 Latching alarms

The PHD6's alarms are self-resetting unless the alarm latch is enabled. With the PHD6's alarm latch enabled, the audible and visible alarms will continue to sound after the atmospheric hazard has cleared. To reset the alarms, simply press the MODE button. If the alarm latch is disabled and the alarm condition is no longer present, the instrument will automatically return to normal operation, and the visible and audible alarms cease without further input from the user.

Latching alarms can be enabled manually through the Main Menu (see chapter 5), with BioTrak II software or through the IQ6 Dock.

1.4.8 Fault detection

PHD6 software includes a number of additional alarms designed to ensure the proper operation of the instrument. When the PHD6 detects that an electronic fault or failure condition has occurred, the proper audible and visible alarms are activated and an explanatory message is displayed.

Faults and other electronic safeguards are discussed in detail in section 2.5.

⚠WARNING The PHD6 is designed to detect potentially life threatening atmospheric conditions. Any alarm condition should be taken seriously. The safest course of action is to immediately leave the affected area, and return only after further testing determines that the area is once again safe for entry.

1.5 Other electronic safeguards

Several automatic programs prevent tampering and misuse of the PHD6 by unauthorized persons. Each time the detector is turned on, the PHD6 automatically tests the LED alarm lights, audible alarm, internal memory and pump status (if so equipped). The battery is monitored continuously for proper voltage. The PHD6 also monitors the connection of sensors that are currently installed. The detection of any electronic faults causes the activation of the audible and visible alarms and causes the display of the appropriate explanatory message.

1.6 Sensors

The PHD6 can be configured to simultaneously monitor oxygen, combustible gases and vapors, volatile organic compounds (VOCs) and a number of toxic gases. The sensor configuration of the PHD6 may be specified at the time of purchase, or changed in the field by appropriately trained personnel.

The PHD6 must be calibrated following any sensor replacement.

Replacement sensor part numbers and sensor ranges are given in Appendix C.

⚠**WARNING** A sensor that cannot be calibrated or is found to be out of tolerance must be replaced immediately. An instrument that fails calibration may not be used until testing with known concentration test gas determines that accuracy has been restored, and the instrument is once again fit for use.

Calibration procedures are discussed in detail in Chapter 4.

1.6.1 Cross Sensitivity

Sensor cross-sensitivity figures are given in Appendix D.

The CO channel in the Duo-Tox sensor in the PHD6 may exhibit high levels of cross sensitivity to organic vapors (VOCs). For best performance in an atmosphere known to contain VOCs, use a dedicated CO sensor.

1.7 Optional sample draw pump

A motorized sample-draw pump is available for the PHD6 for situations requiring continuous "hands free" remote monitoring.

⚠**WARNING** **The PHD6 continuous sample draw pump (part number 54-54-102) is the only pump that can be used with the PHD6.**

The pump contains a pressure sensor that detects restrictions in airflow caused by water or other obstructions being drawn into the unit and immediately acts to turn the pump off in order to protect the sensors, pump, and other PHD6 components from damage.

Pump status is continuously monitored by the PHD6 microcontroller. When the pump is active and functioning properly, the spinning pump icon is displayed in the status bar at the bottom of the display. Low flow or other pump fault conditions activate audible and visible alarms and cause the display of the appropriate explanatory message.

1.7.1 Special precautions when using the PHD6 pump

The rubber material used in the PHD6 diaphragm pump is susceptible to temporary compromise by exposure to high levels of flammable fuel and solvent vapors. If the PHD6 is being used to sample atmospheres that exceed 50% LEL, test the pump frequently to ensure that pump function has not been compromised.

To test the pump, block the end of the sampling line (probe) inlet with a finger. The pump should quickly go into alarm, which indicates proper function. If the pump fails to go into alarm while the inlet is blocked, it is not working properly; and the PHD6 may not be providing an accurate reading. If the pump test fails, the safest course of action is to immediately leave the affected area and to return only after further testing with known, functional detection equipment confirms that the area is once again safe for entry.

⚠**WARNING** **Do not use the pump to sample for prolonged periods in conditions where the concentration of solvent or fuel vapors may be greater than 50% LEL.**

1.8 Data storage

The PHD6 includes a black box data recorder and an event logger as standard features. A full datalogger is available as an upgrade at any time.

1.8.1 Black box data recorder

A black box data recorder is a standard feature in the PHD6. The “black box” is continually in operation whether the user is aware of it or not. The black box stores important information such as gas readings, turn-on times, turn-off times, temperatures, battery conditions, the most recent calibration date and settings, types of sensors currently installed, sensor serial numbers, warranty expiration and service due dates, and current alarm settings.

There is a finite amount of memory storage available in the black box data recorder. Once the memory is “full”, the PHD6 will begin to write the new data over the oldest data. The black box data recorder will store a minimum of 63 hours of data in one-minute increments before it begins to write new data over the oldest data. In this way, the newest data is always conserved.

To extract the information from the black box data recorder, the PHD6 must be returned to Honeywell. Once the data is downloaded from the instrument, a report will be generated. The unit and the report will then be returned to the user. Simply call Honeywells’ Instrument Service Department to obtain a return authorization number. There is no charge for the downloading service, but the user is responsible for any freight charges incurred.

The “black box” data recorder in the PHD6 can be upgraded to a fully enabled datalogger at any time. All that is required is the activation code that corresponds to the serial number of the PHD6 and the PHD6 Upgrade Utility Program.

1.8.2 Event logger

The event logger in the PHD6 stores data associated with alarm conditions. Each (alarm) event includes the following data for each of the installed sensors:

- Sensor type
- Max reading
- Average reading
- Start time
- End time
- Duration of the event.

The PHD6 stores the data from the 20 most recent alarm events. Once 20 events have been stored, the PHD6 will begin to systematically overwrite the data from the oldest event in memory with data from new events. One event may be a combination of different alarms occurring simultaneously or in immediate succession. The event logger may be downloaded using BioTrak II software. The PC must be equipped with IrDA to provide a connection.

1.9 PHD6 design components

1. **Case:** The instrument is enclosed in a solid PC (polycarbonate) case with TPE (rubber) overmold.

2. **Front face:** The front face of the instrument houses the MODE button, navigation keys, LCD (liquid crystal display), LED alarm lights, and audible alarm ports.
3. **Display:** A liquid crystal display (LCD) shows readings, messages, and other information.
4. **Alarm LEDs:** Top, front and side-mounted LED (light emitting diode) alarm lights provide a visual indication of alarm state.
5. **Infrared Port:** The infrared port is located at the bottom of the instrument and is used for communication between the PHD6 and a PC.
6. **On / Off "MODE" button:** The large black push-button on the front of the instrument is the "MODE" button. The MODE button is used to turn the PHD6 on and off as well as to control most other operations, including the initiation of the automatic calibration adjustment.
7. **Navigation Keys:** The up and down navigation keys are located between the MODE button and the display.
8. **Sensor compartment cover:** The sensors are located in a vented compartment at the bottom of the instrument.
9. **Audible alarm ports:** Two cylindrical ports extending through the front of the instrument on opposing sides of the MODE button house the loud audible alarms. The waterproof audible alarms seat directly to the rubber inner-liner to protect the instrument against leakage or exposure to liquids.
10. **Battery pack:** Two types of interchangeable battery packs (rechargeable Lithium Ion (Li-Ion) and disposable alkaline) are available for use. Li-Ion battery packs are recharged with the pack installed on the PHD6.
11. **Battery charger connector:** A water-resistant connector at the bottom of the case assembly is used to connect the PHD6 to the “drop in” style charger.
12. **Battery Compartment / Clip:** The battery inserts from the back of the instrument. A sturdy clip attached to the battery allows the user to wear the PHD6 on a belt or other article of clothing.

1.10 PHD6 standard accessories

Standard accessories included with every PHD6 include calibration adapter, additional tubing for use during calibration, manual sample draw kit, reference manual and quick reference card. The manual sample draw kit consists of a sample draw / calibration adapter, squeeze bulb, replacement sample probe filters, ten feet/three meters of tubing and a sample probe.

Standard configurations of the PHD6 are delivered in a cardboard box with cardboard inserts.

1.10.1 Alkaline PHD6 detectors

If the PHD6 has been purchased as an alkaline instrument, the standard accessories include an alkaline battery pack and a set of 3 disposable AA alkaline batteries.

1.10.2 Li-Ion PHD6 detectors

If the PHD6 has been purchased as a Li-Ion rechargeable instrument, the standard accessories include Li-Ion battery pack and a slip-in PHD6 charger.

1.11 PHD6 kits

PHD6 detectors may also be purchased as part of a complete kit that includes calibration gas, fixed-flow regulator and a hard-shell carrying case.

1.11.1 PHD6 Confined Space Kits

In addition to the standard accessories listed above, Confined Space Kits also include calibration fittings, fixed-flow regulator with pressure gauge, and appropriate large cylinder(s) of calibration gas in a foam-lined, waterproof hard-shell carrying case.

1.11.2 PHD6 Value Packs

PHD6 Value Packs include an alkaline PHD6, all standard accessories, calibration fittings, small cylinder of calibration gas, and fixed flow regulator in a foam-lined non-waterproof hard-shell carrying case.

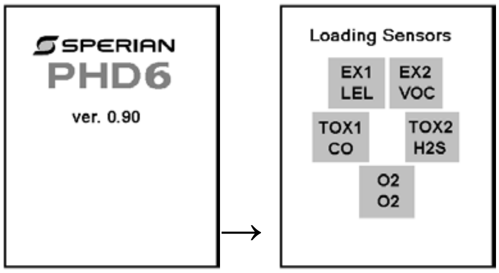
2. Basic Operations

The PHD6 is a three-button gas detector. Most day-to-day functions are initiated solely with the MODE button. The MODE button controls:

- Turning the PHD6 on and off
- Turning on the backlight
- Viewing the MAX, STEL and TWA reading screens
- Initiating the calibration sequence

2.1 Turning the PHD6 On

To turn the PHD6 on, press and hold the MODE button for one second. The introduction screen is followed by a screen showing a list of installed sensors and the sensor ports they occupy. The PHD6 has 5 sensor ports, but can display readings for as many as 6 distinct gases.



The serial number will then be shown. If the detector has a fully enabled datalogger, the interval and memory capacity will be shown.

The sampling interval is given in minutes and seconds. The datalogger samples continuously, so the data stream must be broken into intervals to be recorded. The datalogging interval defines the frequency of the breaks in the data stream. The capacity is the number of hours and minutes it will take to completely fill the datalogger’s memory. Once the memory is filled, the PHD6 will start to write new data over the oldest data in order to conserve that most recent data.

The sampling interval in the fully enabled datalogger may be modified using BioTrak II Software, the IQ Systems or manually through the Main Menu.

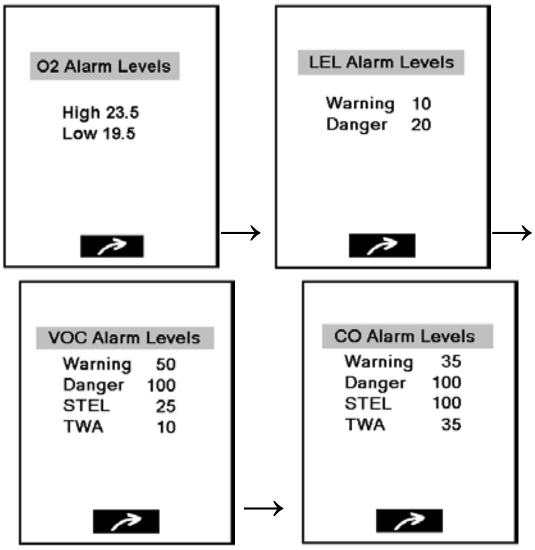
If the PHD6 is equipped with the standard black box datalogger, it will show Black Box.

In the PHD6, a one-minute sampling interval will result in the ability to store a minimum of 63 hours of readings before the oldest data is overwritten by new data.

If fewer than 5 sensors are used, the capacity will increase.

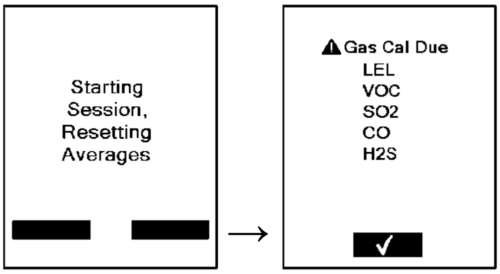
As the instrument performs a basic electronic self test, the date, time, temperature and battery type will be displayed. During the self-test, the PHD6 performs a system memory check and tests to see if a motorized pump is attached to the instrument. If a pump is detected, it will be briefly activated during the self-test. For details on start up procedures for pump-equipped PHD6 instruments see section 2.1.1 below.

The PHD6 will then display each installed sensor along with any associated alarms levels.



For more information concerning atmospheric hazard alarms, see section 2.4.

After the alarm screens, the PHD6 will show that "Starting Session, Resetting Averages" followed by the calibrations status screen. Whenever the PHD6 is turned on, it automatically starts a new operating session and resets STEL and TWA calculations. The MAX reading is also reset for the new session.



If calibration is due and the calibration due warning is enabled, the user will need to acknowledge the calibration due status by pressing the MODE button. Once the MODE button is pressed, the PHD6 will continue to the current gas readings screen and the appropriate calibration due icons will flash to remind the user that the instrument is past due for calibration. If calibration is not due, the number of days until the next calibration will be shown before the instrument proceeds to the current gas readings screen.

2.1.1 Start up with pump

PHD6 instruments that are equipped with a built-in motorized sample draw pump will have a slightly longer start up sequence. After the calibration status screens, the PHD6 will prompt you to leak test the pump.

See section 3.2 for further instructions on using the PHD6 pump.

2.1.2 Start up with PID or IR sensor

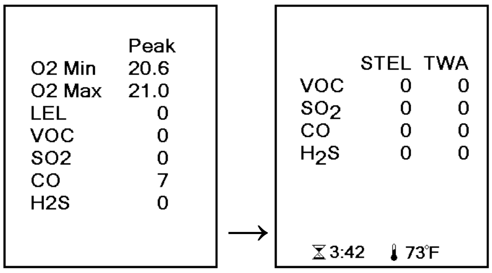
When a PID or IR sensor is installed in the PHD6, there will be a warm-up period during which the hourglass icon and either "PID" or "IR" will be shown. The VOC gas type and reading are shown in reverse text.

⚠WARNING PID and IR readings that are displayed during the sensor warm up period should not be considered accurate. The use of the PHD6 to monitor for compounds detected by the PID or IR sensor during the warm up period may lead to inaccurate and potentially dangerous readings.

2.2 Operating Logic

Once the PHD6 has completed the start up sequence, the current gas readings screen will be shown. The status bar at the bottom of the display shows time plus calibration, pump and battery status.

To turn on the backlight press the MODE button once. To view the peak readings screen, press the MODE button a second time. Press the MODE button a third time to view the Short Term Exposure Limit (STEL) and Time Weighted Averages (TWA) for the operating session.



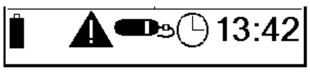
Screens that are accessible with the MODE button (including the Peak and STEL/TWA screens) are selectable by the user. See section 5.2.6 for details.

Note: The PHD6 must be in continuous operation for at least 15 minutes before it will be able to calculate STEL or TWA values. For the first 15 minutes of any operating session, the screen will show the length of time that the instrument has been operating instead of the STEL and TWA values.

2.2.1 Status Bar

The status bar at the bottom of the current gas readings shows general information including:

- Battery Status
- Heartbeat (instrument status)
- Pump Status
- PID Hourglass (PID warmup period)
- PID Lamp Status (shows "Check Sen.")
- Bump Due Warning
- Calibration Due Warning
- Time



Battery Status Icon

The battery status icon is located at the far lower left of the screen. The battery icon gives an indication of how much power is left in the battery.

When the battery icon is empty, it is considered a low battery condition and the user should take the appropriate steps to either recharge the Li-Ion battery or replace the alkaline batteries.

For more information on the low battery alarms, see section 2.5.5.

IR Hourglass Symbol

The hourglass symbol along with IR are shown in the status bar during the IR sensor's 1-minute warm-up period. Once the warm-up period is over, the hourglass will no longer be shown.

PID Hourglass Symbol

The hourglass symbol along with PID are shown in the status bar during the PID sensor's 5-minute warm-up period. Once the warm-up period is over, the hourglass will no longer be shown.

When a PHD6 is equipped with both an IR and a PID sensor, the PID hourglass is shown since the PID sensor takes longer to warm up than the IR sensor.

Heartbeat Symbol

When the instrument is properly charged, calibrated and functioning normally, the heartbeat symbol will flash in the status bar.

Pump Status Icon

If the pump is attached and functioning, the moving fan icon will appear in the status bar.

Calibration and Bump Due Warnings

If the PHD6 is due for calibration the calibration bottle icon and triangular warning symbol will be flash in the status bar.

Time

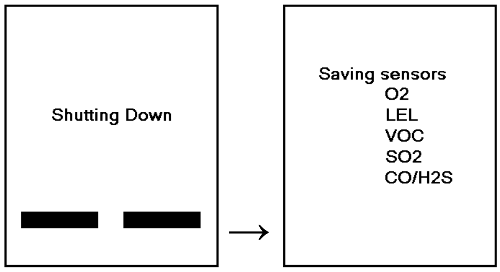
The time is shown on the current gas readings screen at the lower right.

2.2.2 Screen Flip

The screen orientation of the PHD6 may be flipped (so that it can be read looking down from above instead of up from below) by pressing the up and down arrows simultaneously at the Current Gas Readings screen.

2.3 Turning the PHD6 Off

To turn the PHD6 off, press and hold the MODE button until the display reads "Release MODE to shut down". Then release the MODE button. The display will briefly show "Shutting Down" and "Saving Sensors" before the display goes blank.



2.4 Atmospheric Hazard Alarms

The PHD6 is configured with a series of alarms that are designed to warn the user of hazardous atmospheric conditions.

⚠WARNING The PHD6 is designed to detect potentially life threatening atmospheric conditions. Any alarm condition should be taken seriously. The safest course of action is to immediately leave the affected area, and return only after further testing determines that the area is once again safe for entry.

2.4.1 O2 Alarms

The PHD6 is equipped with both high and low alarms for oxygen. Fresh air contains 20.9% oxygen.

The low oxygen alarm indicates oxygen deficiency and is normally set at 19.5% at the factory.

The high alarm indicates oxygen enrichment and is normally set at 23.5% at the factory.

2.4.2 Combustible Gas Alarms

The PHD6 is equipped with a 2-stage alarm for concentrations of combustible gas.

The default LEL warning alarm setting is 10% LEL. The default LEL danger alarm setting is 20% LEL.

The default warning alarm for NDIR-CH_4 sensors is 10% LEL or 0.5%/vol CH_4. The default danger alarm is 20% LEL or 1.0%/vol CH_4.

2.4.3 Toxic and VOC sensor alarms

The PHD6 is equipped with up to four different alarms for toxic gases and volatile organic compounds (VOCs). The combination of alarms is designed to protect the user from both chronic and acute toxic hazards.

Current alarm settings are shown during the startup sequence, and can also be accessed through the Alarms Menu.

2.4.4 Alarm Descriptions

Warning Alarms

Warning alarms indicate a hazardous atmospheric condition that has not yet risen to the level necessary to initiate the danger alarms.

Warning alarms can be temporarily silenced by pressing the MODE button.

Danger Alarms

Danger alarms indicate a significantly hazardous condition. The danger alarms cannot be silenced by the user.

STEL Alarms

STEL (Short Term Exposure Limit) alarm values represent the average concentration of instrument readings for the target gas for the most recently completed 15 minutes of operation.

TWA Alarms

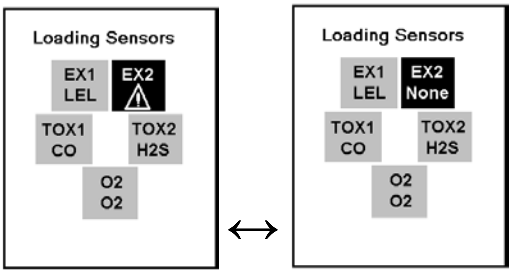
TWA (Time Weighted Average) values are calculated by taking the sum of exposure to a particular toxic gas in the current operating session in terms of parts-per-million-hours and dividing by an eight-hour period.

2.5 Other Alarms

The PHD6 will display warnings or error messages when it detects problems during operation.

2.5.1 Missing Sensor Alarms

During startup, if the PHD6 fails to detect a sensor that was present when the instrument was last turned off, it will show the sensor channel with "None" and the triangular warning symbol at the Loading Sensors screen.



Press MODE to acknowledge the missing sensor

If the PHD6 loses connection with a sensor during an operating session, it will immediately go into alarm and show an "X" in the space on the display allotted for the sensor reading. The PHD6 must be turned off to reset the missing sensor alarm.

2.5.2 Sensor Overrange alarm

The PHD6 will show a vertical double-headed arrow and go into alarm if a sensor is exposed to a concentration of gas that exceeds its established range. In the case of an LEL reading that exceeds 100% LEL, the LEL channel will be automatically disabled by the instrument and the alarm will latch (remain on) until the instrument is turned off. The PHD6 must be turned off, brought to an area that is known to be safe (containing 20.9% oxygen, 0% LEL and 0 PPM toxic gases), and then turned back on. The display will show a vertical arrow with two heads in place of the sensor reading for any channel that has gone into over range alarm.

⚠WARNING A combustible sensor overrange alarm indicates a potentially explosive atmosphere. Failure to leave the area immediately may result in serious injury or death!

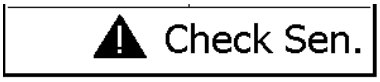
⚠WARNING In the event of an LEL overrange alarm the PHD6 must be turned off, brought to an area that is known to be safe (containing 20.9% oxygen, 0% combustible gases and 0 PPM toxic gases), and then turned on again to reset the alarm.

2.5.3 PID Lamp Out Alarm

The PID sensor in the PHD6 uses a lamp to ionize the gas sample and generate a reading.

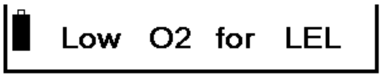
If the lamp fails to light during instrument startup, the PHD6 will attempt to start it for the duration of the warm-up cycle. If the lamp lights, the PHD6 will complete the warm-up cycle and then enter standard operating mode. If the lamp fails to light by the end of the 5-minute warm-up cycle, the instrument will display an X in the PID channel and the instrument will go into alarm. The status bar at the bottom of the screen will also show "Check Sen." to let the user know that the PID sensor is not functioning.

The PHD6 also tests the lamp in the PID sensor at regular intervals during normal operation. If the PHD6 determines that the lamp has gone out, the X will appear on the display in the PID channel, the instrument will go into alarm and the status bar will show "Check Sen."



2.5.4 O_2 Too Low for LEL Alarms

The LEL sensor in the PHD6 requires a certain amount of oxygen to function properly. When oxygen levels fall below 11% by volume, the PHD6 will show "X" in place of the LEL reading and will indicate the oxygen levels are too low.



2.5.5 Low Battery Alarms

When the battery icon in the LCD appears empty, it means that a low battery condition exists. Leave the area immediately.

If the PHD6 is equipped with an alkaline battery pack, proceed to an area that is known to be safe area (containing 20.9% oxygen, 0% combustible gases and 0 PPM toxic gases) and change the batteries.

⚠WARNING The PHD6 must be located in a non-hazardous location whenever alkaline batteries are removed from the alkaline battery pack. Removal of the alkaline batteries from the battery pack in a hazardous area may impair intrinsic safety.

CAUTION Always turn the PHD6 off prior to removing the battery pack. Removal of the battery pack with the instrument turned on may cause corruption of stored data in the PHD6.

If the PHD6 is equipped with a Li-Ion battery pack, proceed to an area that is known to be safe and recharge the battery pack.

If the PHD6 continues to be used during a low battery condition, it will eventually go into a low battery alarm, and the warning alarm will sound and the screen will display the low battery warning. To silence the alarms, the user will need to acknowledge the low battery condition by pressing the MODE button before the instrument will resume monitoring. Once the MODE button is pressed, the empty battery cell and the caution icon will flash. After 5 minutes the warning will sound again. This cycle will continue until the battery reaches a "very low battery" condition, when the instrument will go into alarm for the last time, notify the user that it is shutting itself and proceed to turn itself off.

Alkaline battery replacement and Li-Ion battery charging instructions are contained in sections 6.2 and 6.3.

⚠WARNING The PHD6 must be located in a non-hazardous location during the charging cycle. Charging the PHD6 in a hazardous location may impair intrinsic safety.

2.5.6 Calibration Due Warning

If the PHD6 is due for calibration, the triangular warning symbol and span bottle icons will flash in the status bar at the bottom of the LCD once per second as a reminder.

2.5.7 Out of Temperature Range

If the operating temperature falls outside of the normal operating range of a sensor in the PHD6, the instrument will go into alarm and the thermometer icon will be shown on the display at the sensor.

2.6 PC Connection via Infrared Port

PHD6 instruments that are equipped with a fully enabled datalogger can be downloaded to a PC using BioTrak II or IQ software through the PHD6's infrared port. The IrDA port is located on the bottom of the instrument towards the back.

1. If the PHD6 is turned off, hold the MODE button down for about 5 seconds until "Communication Mode" is shown. If the PHD6 is on already, proceed to step 2.
2. Align the infrared port on the PHD6 with the PC's infrared port to complete the connection.

Note: For further instructions concerning the download procedure for the PHD6, see the BioTrak II or IQ System manual as appropriate.

2.7 PID Sensor Correction Factors

The PHD6 may be equipped with a PID (Photo Ionization Detector) sensor designed to detect Volatile Organic Compounds. The PID sensor employs an ultraviolet lamp to ionize the VOCs in the sample. The detector is then able to measure the level of the VOCs and generate a reading.

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PID sensors are broadband in nature. This means that they are inherently non-specific. Any gas or vapor that is ionized at the UV lamp energy will give a response.

⚠**WARNING** It must be understood that the selection of a particular VOC or gas from the onboard PID library in the PHD6 does **not** imply that the detector will only respond to that material. It only means that the sensitivity scale (and default alarms) has been set to approximate the target material.

Regardless of the library material selected, the PID sensor always remains broadband in nature and therefore will respond to any gases/vapors in the ambient environment that are present and are ionized at the UV lamp energy. This consideration is particularly important when trace or hard to detect materials (higher correction factor (CF) are present in highly contaminated backgrounds. In this case the PID would be a poor choice for detection of the target gas/vapor.

⚠**WARNING** Correction factors in the PHD6 onboard PID library for various, common VOCs and gases should be considered as approximate. The PHD6 with PID has been fully tested and validated only for performance with isobutylene.

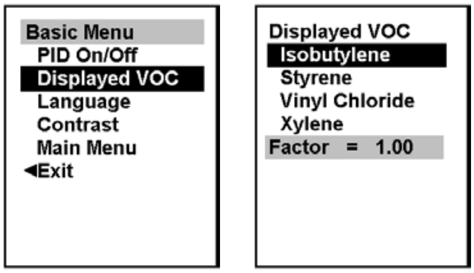
For other materials requiring verified accuracy it is necessary to calibrate the detector to the gas/vapor to be monitored directly. Further if using remote sample draw and/or physical conditions in the field that differ from ambient, to perform calibrations as close to the physical and actual setup conditions as possible.

The convention in the gas detection industry is to calibrate the PID sensor to a known concentration of isobutylene and (as required) to use response factors or to select the scale of target gas from a pre-programmed menu. Sensitivity scale is displayed on the channel with 7 character designation whether it is isobutylene or another material.

2.7.1 Displayed VOC

To change the displayed VOC, first enter the Basic Menu by holding the MODE button to turn the PHD6 off. When "Release MODE to Shut Down" is shown, continue to hold the MODE Button until the Basic Menu is shown.

At the Basic Menu press the down arrow once to select "Displayed VOC". A list of Volatile Organic Compounds will be shown. Use the navigation arrows to highlight the appropriate VOC and press MODE to select it. The new VOC will be shown when the PHD6 is restarted.



2.7.2 Specified VOC Calibration Gas

To change the calibration gas for PID sensor, follow the instruction in section 5.2.1 to reach the Main Menu. Then access the Calibration Menu followed by the Gas Values submenu. Once in the Gas Values submenu, select the VOC sensor. Then select Cal Gas Type and specify the appropriate compound and amount for calibration.

2.8 Special Instructions for NDIR sensors

Two NDIR sensors are available for the PHD6: One for the detection of carbon dioxide (CO_2), and one for the detection of methane (CH_4).

2.8.1 Special Calibration Requirement for NDIR CO_2 (Carbon Dioxide) Sensor

Unlike most sensors the Infrared CO_2 sensor requires two different gas sources to fully calibrate the instrument. The reason for this is that it is effectively impossible to zero calibrate a CO_2 detector in ambient air because there is an unknown and varying amount of background CO_2 present in the atmosphere.

See section 4.4 for more details.

2.8.2 Special Consideration for IR CH_4 Methane sensor gas calibration

The NDIR-CH_4 sensor is designed specifically for the detection of methane. Gas calibration should always be done with methane calibration gas at the actual amount of methane shown on the cylinder. See section 4.5 for details.

2.8.3 Hydrogen Warning for IR CH_4 Methane Sensor

Unlike other types of sensors used to measure combustible gases and vapors, the IR CH_4 sensor used in the PHD6 does not respond to hydrogen.

⚠WARNING Do not use the NDIR CH_4 sensor for the detection of hydrogen. Unlike catalytic hot-bead LEL sensors, the NDIR CH_4 sensor in the PHD6 does not respond to hydrogen. Use the of the NDIR CH_4 for the detection hydrogen may lead to property damage, personal injury or death.

3. Sampling

The PHD6 may be used in either diffusion or sample-draw mode. In either mode, the gas sample must reach the sensors for the instrument to register a gas reading. The sensors are located on the front of the instrument near the bottom in a vented compartment.

⚠WARNING The sensor ports must be kept free of obstruction. Blocked sensor ports can lead to inaccurate and potentially dangerous readings.

In diffusion mode, the atmosphere being measured reaches the sensors by diffusing through vents in the instrument. Normal air movements are enough to carry the sample to the sensors. The sensors react quickly to changes in the concentrations of the gases being measured. Diffusion-style operation monitors only the atmosphere that immediately surrounds the detector.

The PHD6 can also be used to sample remote locations with either the hand-aspirated sample-draw kit, or with the motorized sample draw pump. During remote sampling, the gas sample is drawn into the sensor compartment through the probe assembly and a length of tubing.

⚠WARNING The PHD6 is delivered with a sample draw kit that contains 10 feet/3 meters of polyester urethane (fuel-resistant) tubing part number 53-001. This material is completely compatible with common combustible gases/vapors, and the toxic gases CO and H_2S. When using the PHD6 with a sample draw pump or kit to sample with any of the gas types and tubing lengths listed in the chart below, FEP-Lined Tubing (part number 53-036) should be used.

Gas Type	Tubing Length
CL_2, CLO_2	**Up to 10 ft/3m Max.**
HCN	**Up to 100 ft/30m Max.**
PID, SO_2, NO, NO_2, PH_3, NH_3	**> than 10 ft/3m up to 100 ft/30m Max.**

Standard polyester urethane (fuel-resistant) tubing (part number 53-001) can be used otherwise. Use of other types of tubing may cause inaccurate and potentially dangerous readings that could result in serious injury or death.

For sampling using a PID sensor please refer to the Application Note titled “Usage and Applications of PID sensors version B1” included with your PhD documentation or contact customer service at 800-711-6776 to request a copy.

⚠WARNING Do not use the NDIR CH_4 sensor for the detection of hydrogen. Unlike catalytic hot-bead LEL sensors, the NDIR CH_4 sensor in the PHD6 does not respond to hydrogen. Use of the NDIR CH_4 for the detection of hydrogen may lead to property damage, personal injury or even death.

3.1 Manual sample draw kit

The manual sample draw kit is comprised of a sample draw probe, 2 sections of tubing, a squeeze bulb and an adapter that is used to connect the sample draw accessories system to the PHD6.

Note: The maximum amount of tubing that can be used with the manual sample draw kit is 50 feet/15 meters.

3.1.1 Manual sample draw kit usage

⚠WARNING The PHD6's manual sample draw kit may not be used for the detection of chlorine (Cl_2) or chlorine dioxide (ClO_2) due to the reactive properties of these gases.

To use the manual sample draw kit:

1. Connect the short section of hose that comes off the squeeze bulb to the sample draw adapter.
2. To test the seals in the sample draw system, cover the end of the sample draw probe with a finger, and squeeze the aspirator bulb. If there are no leaks in the sample draw kit components, the bulb should stay deflated for a few seconds.
3. Secure the calibration adapter (with the sample draw assembly attached) to the PHD6 by inserting the tab and tightening the knurled screw into the brass nut at the bottom of the adapter.
4. Insert the end of the sample probe into the location to be sampled.
5. Squeeze the aspirator bulb to draw the sample from the remote location to the sensor compartment.

   To ensure accurate readings while using the manual sample draw kit, it is necessary to squeeze the bulb once for every one foot of sampling hose for the sample to first reach the sensors, and then to continue squeezing the bulb once per second for an additional 45 seconds or until readings stabilize. As an example, if 10 feet/3 meters of tubing is used, it will be necessary to draw the sample in by squeezing the bulb continuously for a minimum of 55 seconds or until readings stabilize.
6. Note the gas measurement readings.

CAUTION: Hand-aspirated remote sampling only provides continuous gas readings for the area in which the probe is located while the bulb is being continuously squeezed. Each time a reading is desired, it is necessary to squeeze the bulb a sufficient number of times to bring a fresh sample to the sensor compartment.

3.2 Motorized sample draw pump

⚠WARNING The PHD6 continuous sample draw pump (part number 54-54-102) is the only pump that can be used with the PHD6.

A motorized sample-draw pump is available for the PHD6 for situations requiring continuous "hands free" remote monitoring. The pump is powered by the PHD6 battery. When the pump is attached to the instrument, the spinning fan icon will be shown on the display in the current gas readings screen.

Note: The maximum amount of tubing that can be used with the motorized sample draw pump is 100 feet/30 meters.

To ensure accurate readings while using the continuous sample pump, it is necessary to allow the pump to draw the sample for one second for every one foot of sampling hose plus an additional 45 seconds or until readings stabilize. For example, with 10 ft/3m of tubing, it will be necessary to allow a minimum of 55 seconds for the sample to be drawn into the sensor chamber and for the readings to stabilize.

PHD6 instruments are designed to automatically recognize the pump whenever it is attached to the instrument. If the pump is attached when the PHD6 is turned off, the instrument will automatically initiate the pump start up sequence when the instrument is turned on. If the pump is attached while the instrument is running, the PHD6 will automatically initiate the pump test sequence before returning to the current gas readings screen.

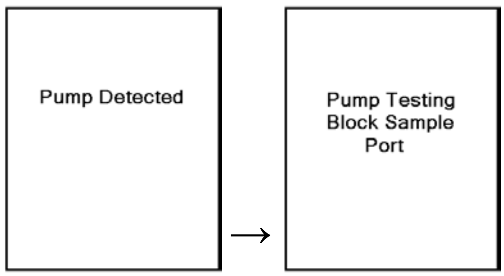
⚠WARNING Do not use the PHD6 pump for prolonged periods in an atmosphere containing a concentration of solvent or fuel that may be greater than 50% LEL.

3.2.1 Starting the motorized sample pump

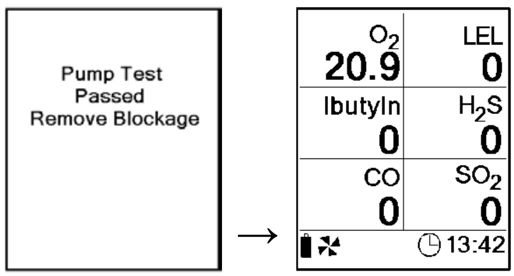
First attach the probe and tubing to the pump, then secure the pump (with the sample draw assembly attached) to the PHD6 by hooking the tabs on the pump into the corresponding slots on the back of the PHD6. Once the pump is in position over the sensors, tighten the knurled screw on the adapter into receptor at the center of the sensor cover.

Note: The sample probe assembly must be attached to the pump when the pump is attached to the instrument.

Once the pump is recognized, the pump test sequence will be initiated automatically. The instrument will instruct you to block the sample inlet.



Block the sampling inlet by placing a finger over the end of the sample probe assembly. Once the blockage is detected, the PHD6 will indicate that the test has been passed and instruct you to remove the blockage. Once the blockage is removed, it will proceed to the current gas readings screen and the pump icon will be shown in the status bar.

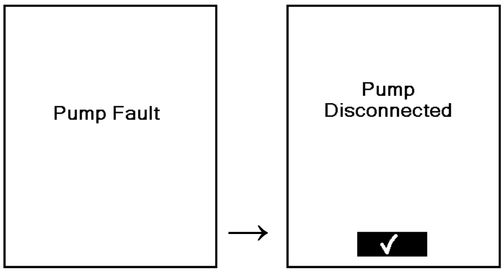


If the instrument is unable to detect the vacuum resulting from the pump blockage within 30 seconds, the test will fail, the instrument will go into alarm and you will be directed to remove the pump.

Remove the pump and press the MODE button to resume diffusion operation.

3.2.2 Turning off the pump

To turn off the pump, simply remove the pump from the bottom of the instrument. The screen will show “Pump Fault” followed by “Pump Disconnected”. Press MODE to continue without the pump.

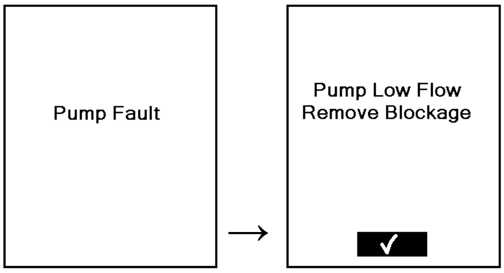


3.2.3 Pump low flow alarm

The PHD6 Pump contains a pressure sensor that continuously monitors for restrictions in airflow caused by water or other fluids being drawn into the unit and immediately acts to turn the pump off in order to protect the sensors, pump, and other PHD6 components from damage.

CAUTION: Never perform remote sampling with the PHD6 without the sample probe assembly. The sample probe handle contains replaceable filters designed to block moisture and remove particulate contaminants. If the pump is operated without the probe assembly in place, contaminants may cause damage to the pump, sensors and internal components of the PHD6

When the pump is active and functioning properly, the moving pump icon is shown on the lower status bar on the display. Low flow or other pump fault conditions activate audible and visible alarms and cause the display of the appropriate explanatory message.



Press MODE once the blockage has been cleared to restart the pump.

The pressure sensor in the sample draw pump is designed to detect pressure changes while the sample-draw probe is being held in a vertical position. If the probe is held horizontally or at a low angle while inserted into a fluid, a pressure drop sufficient to cause the pump to shut down may not be generated, and water could be drawn into the pump assembly causing damage to the pump, sensors and internal components of the PHD6.

CAUTION: Insertion of the sample draw tube into a fluid horizontally or at a low angle may lead to water ingress and may cause damage to the sensors and internal components of the PHD6.

If the PHD6 determines that a significant increase in pressure has occurred, it will go into alarm and notify the user that there is a blockage of the pump. The display will alternate between the following two screens.

Remove the blockage and press the MODE button to acknowledge the alarm and resume sampling.

3.3 Sample draw probe

The PHD6’s sample draw probe is the standard probe assembly from Honeywell. The sample probe handle contains moisture barrier and particulate filters designed to remove contaminants that might otherwise harm the instrument.

Particulate contaminants are removed by means of a cellulose filter. The hydrophobic filter includes a Teflon™ barrier which blocks the flow of moisture as well as any remaining particulate contaminants.

Sample probe filters should be replaced whenever visibly discolored due to contamination.

See section 6.5 for a probe diagram and a list of available sample probe filter replacement kits.

4. Calibration

The accuracy of the PHD6 should be verified on a regular basis. Verification can be as simple as performing a bump test, which is described below in section 4.1. If the instrument fails the fresh air test, then it must be fresh air calibrated before use. If the instrument fails the bump test with calibration gas, it must be successfully span calibrated before use.

Note: The NDIR-CO_2 sensor used in the PHD6 cannot be zero calibrated in fresh air. For specific instructions on calibrating the CO_2 sensor, proceed to section 4.4.

Note: The NDIR-CH_4 sensor used in the PHD6 must be calibrated with methane calibration scale to the actual amount of methane in the cylinder in terms of percent volume methane. See section 4.5 for details.

*** ⚠WARNING The Canadian Standards Association (CSA) requires combustible gas sensors to be bump tested prior to each day’s use with calibration gas containing between 25% and 50% LEL. The functional (bump) test procedure is covered in section 4.1.**

**** ⚠WARNING The Canadian Standards Association (CSA) requires combustible gas sensors to undergo calibration when the displayed value during a bump test fails to fall between 100% and 120% of the expected value for the gas.**

For Honeywells’ official recommendations concerning calibration frequency, see Appendix B.

4.1 Functional (Bump) testing

The accuracy of the PHD6 may be verified at any time by a simple functional (bump) test.

To perform a functional (bump) test, do the following:

1. Turn the PHD6 on and wait at least three minutes to allow the readings to fully stabilize. If an IR or PID sensor is in use, wait until the stabilization period ends before proceeding. If any of the sensors have just been replaced, the new sensor(s) must be allowed to stabilize prior to use. See section 6.4 for further details on sensor stabilization requirements.
2. Make sure the instrument is located in fresh air.

Figure 4.1 Bump Test / Gas calibration set up

3. Verify that the current gas readings match the concentrations present in fresh air. The oxygen (O_2) sensor should read 20.9%/vol. (+/-0.2%/vol.). The readings for the LEL sensor should be 0% LEL. The PID, NDIR-CH_4 and toxic sensors should read 0 parts-per-million (PPM) in fresh air. For the NDIR-CO_2 sensor, a carbon dioxide level between 0.03% and 0.10% is considered normal in fresh air. If the readings deviate from the expected levels in a fresh air environment, proceed to section 4.2 and perform the fresh air calibration adjustment then proceed to step 4.
4. Attach the calibration adapter and connect the calibration cylinder to the PHD6 as shown in figure 4.1. Flow gas to the sensors.
5. Wait for the readings to stabilize. (Forty-five seconds to one minute is usually sufficient.)
6. Note the readings. Toxic, VOC and combustible gas sensor readings are considered accurate in a bump test if they are between 90%* and 120% of the expected reading as given on the calibration cylinder. If the readings are considered accurate, then the instrument may be used without further adjustment. If the readings do not fall within 90%* and 120% of the expected reading as given on the calibration cylinder, then readings are considered inaccurate. If readings are considered inaccurate, proceed to section 4.3 and perform the gas calibration.

***Note: The Canadian Standards Association (CSA) requires combustible gas sensors to undergo calibration when the displayed value during a bump test fails to fall between 100% and 120% of the expected value for the gas.**

Honeywell multi-calibration gas mixtures contain approximately 18% oxygen. During the bump test the oxygen sensor should read within +/-0.5% of the level given on the calibration cylinder.

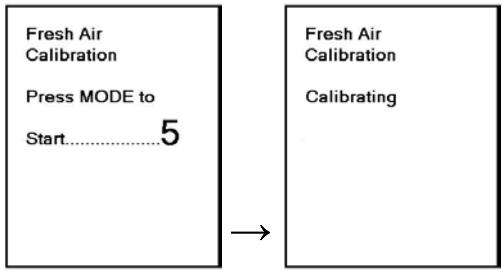
4.2 Fresh Air/Zero Calibration

Note: The NDIR-CO_2 sensor in the PHD6 may not be zero calibrated in fresh air. See section 4.4 for further instructions.

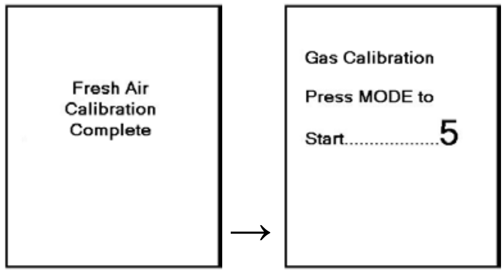
⚠WARNING Fresh air/zero calibrations may only be performed in an atmosphere that is known to contain 20.9% oxygen, 0.0% LEL and 0 PPM toxic gas.

To initiate the fresh air/zero calibration:

1. Press the MODE button three times within two seconds to begin the fresh air/zero calibration sequence. The PHD6 will briefly display AUTO CAL and then begin a 5-second countdown.
2. Press the MODE button before the end of the 5-second countdown to begin the fresh air/zero calibration. The fresh air/zero calibration is initiated when the PHD6 shows "Calibrating" on the screen.



3. The PHD6 will indicate when the fresh air/zero calibration is complete. It will then proceed to a second 5-second countdown for the gas calibration. If gas calibration is not required, allow the countdown to reach 0 without pressing the MODE button.



For instructions on the Gas Calibration, proceed to section 4.3.

4.2.1 Fresh air calibration failure

In the event of a fresh air calibration failure, the alarms will be activated and the instrument will display the following screen. Note that the sensor(s) that fail the zero calibration are shown (in this case, CO)

After 3 seconds, the PHD6 will return to the current gas readings screen and the visual and audible alarms will cease.

When calibration is due, the triangular warning symbol along with the span bottle icon the PHD6's status bar will show

If a successful fresh air calibration is not performed prior to instrument shut down, the PHD6 will note that Fresh Air Calibration is due during instrument start up.

Possible causes and solutions

1. The atmosphere in which the instrument is located is contaminated (or was contaminated at the time the instrument was last fresh air calibrated.
2. A new sensor has just been installed.
3. Instrument has been dropped or banged since last turned on.
4. There has been a significant change in temperature since the instrument was last used.

Recommended action:

Take the instrument to fresh air and allow readings to stabilize. Perform the fresh air/zero adjustment again. If the manual fresh air/zero procedure fails to correct the problem, perform the manual fresh air / zero calibration procedure as described in section 4.2.2 below.

4.2.2 Forced fresh air calibration

The PHD6 includes safeguards to prevent fresh air calibration in contaminated environments. If the standard fresh air calibration fails a second time, the instrument may be "forced" to accept the fresh air calibration by performing the manual fresh air calibration.

⚠WARNING Fresh air calibrations may only be performed in an atmosphere that is known to contain 20.9% oxygen, 0.0% LEL and 0 PPM toxic gas. Performing a fresh air calibration in a contaminated atmosphere may lead to inaccurate and potentially dangerous readings.

1. Initiate the standard fresh air / zero calibration sequence by pressing the MODE button three times in rapid succession. The 5-second countdown will begin.
2. Press and hold the down arrow key and then press the MODE button before the end of the 5-second countdown. Continue to hold the down arrow.
3. The fresh air/zero calibration is complete when the instrument begins another 5-second countdown for the gas calibration. If gas calibration is not required, allow the countdown to reach 0 without pressing the MODE button.

If the PHD6 still fails to calibrate after this procedure is attempted, contact Honeywell.

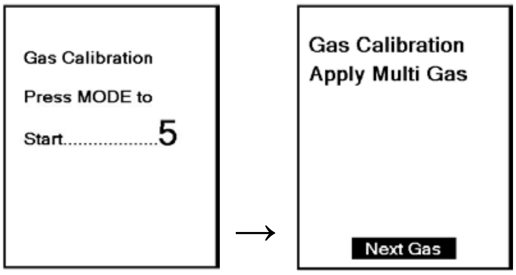
4.2.3 Fresh air calibration in a contaminated atmosphere

To fresh air calibrate the PHD6 in a contaminated atmosphere, connect a cylinder of "zero air" containing 20.9% oxygen and no contaminants to the PHD6 and flow gas to the instrument. Then perform the fresh air calibration. See figure 4.1 above for setup.

4.3 Gas Calibration

Once the fresh air / zero calibration has been successfully completed, the PHD6 will automatically proceed to the automatic gas calibration countdown screen.

Press the MODE button before the countdown is complete to initiate the gas calibration. The screen will immediately show "APPLY GAS" and then list the sensors for calibration and the expected levels of calibration gas.



Note: Honeywell recommends the use of multi-component calibration gas for calibrating the PHD6.

Apply calibration gas. The readout will change to a numerical display almost immediately and show the current readings along with the expected calibration gas value.

If multiple cylinders are required to complete the calibration, the PHD6 will prompt the user to apply the next cylinder as needed.

As sensors are calibrated, the PHD6 will briefly show the reserve values for each sensor. The reserve values give an indication of the remaining sensitivity of the sensors. When the reserve value for a specific sensor reaches 0%, it is time to replace the sensor.

The oxygen sensor is tested for response to diminished oxygen levels during gas calibration. Honeywell multi-gas calibration cylinders contain approximately 18.0% oxygen. In order to pass the gas calibration, the PHD6 must register an oxygen reading below 19.5% during gas calibration. If the detector fails to register the reduced oxygen levels during the gas calibration, it will show "Check O2 Sensor Response". Press MODE to acknowledge.

See section 4.3.2 below if the oxygen sensor does not detect the drop in oxygen level and fails the gas calibration.

Note: Disconnect the calibration assembly as soon as the calibration is complete.

4.3.1 Gas calibration failure: All sensors except oxygen

When there is a gas calibration failure, the display will show CAL Error and display the sensor whose calibration has failed.

If the instrument fails to recognize the correct type or concentration of calibration gas, it will show "no GAS".

When gas calibration is due, the PHD6's display will show the warning symbol while intermittently displaying the calibration bottle in the gas readings screen.

The PHD6 will also display a "Needs Cal" message for any sensors that are currently due for calibration during instrument start-up.

Possible causes of gas calibration failure and remedies:

1. Empty calibration gas cylinder. Verify that there is calibration gas in the cylinder.
2. Expired calibration gas cylinder. Verify that the expiration date on the cylinder has not passed.
3. Calibration gas setting does not correspond to calibration gas concentration. If the values on the calibration cylinder differ from the calibration gas settings in the PHD6, the PHD6's calibration gas settings must be changed to match the new values. Changing the calibration gas settings can be done manually through the MODE button or through BioTrak II using an IrDA link to the instrument.
4. LEL only: Type of calibration gas (standard) has changed significantly. LEL calibration gas may be based on several different response standards. Methane, propane and pentane are the most common. If using a new cylinder of calibration gas, make sure that the type and amount of combustible gas is identical to that of the previous bottle. Honeywell offers calibration gases in Methane, Propane Equivalent and Pentane Equivalent.
5. Dead sensor. Replace sensor.
6. Instrument problem. Return the instrument to Honeywell. Call the phone number on the front of this manual.

4.3.2 Gas calibration failure: Oxygen sensors

Honeywell multi calibration gas cylinders contains approximately 18.0% oxygen. The reduced oxygen level in the calibration gas cylinder allows the oxygen sensor's response to be tested in the same manner as the toxic and LEL sensors.

If the O2 sensor fails to register a reading below 19.5% during the gas calibration, the display will show "Check O2 Sensor Response". Press MODE to continue.

If the oxygen sensor fails to register the drop in oxygen during the gas calibration while being challenged with calibration gas containing less than 19.0% oxygen, it should be considered out of tolerance and retired from service immediately.

See section 5.2.4 under Gas Values for more information on the O2 sensor check.

⚠**WARNING A sensor that cannot be calibrated or is found to be out of tolerance should be replaced immediately. An instrument that fails calibration may not be used until testing with known concentration test gas determines that accuracy has been restored, and the instrument is once again fit for use.**

Possible causes and remedies for oxygen sensor failure:

1. Calibration gas cylinder does not contain a reduced level of oxygen. Verify that the cylinder contains less than 19.0% oxygen.

   To challenge the oxygen sensor without calibration gas, hold your breath for about 10 seconds and then **slowly** exhale directly onto the face of the sensor (in the same way you would attempt to fog up a piece of glass). If the descending oxygen alarm is set to 19.5%, the instrument should go into alarm after a few seconds. If the oxygen sensor fails to go into alarm during the exhalation test, the oxygen sensor must be replaced.
2. Oxygen sensor has just been replaced and has not had time to stabilize.
3. Oxygen sensor failure.

4.4 Special Calibration Instruction for NDIR CO_2 sensor

The Infrared CO_2 sensor requires two different gas sources for full calibration. The reason for this is that it is effectively impossible to zero calibrate a CO_2 sensor in ambient air because there is an unknown and varying amount of background CO_2 present in the atmosphere.

4.4.1 CO_2 Sensor True Zero

To determine if the CO_2 sensor requires zero calibration, connect the PHD6 to a cylinder of calibration gas that contains 0.00% CO_2 while the instrument is in normal operation.

If the reading shows 0.00% CO_2, then the CO_2 sensor does not require zero calibration. Disconnect the cylinder from the PHD6.

If the reading shows anything other than 0.00% CO_2, leave the calibration gas on and press the MODE button three times within two seconds to initiate the zero calibration sequence. Press MODE again when prompted to begin the zero calibration. Instruments equipped with a CO_2 sensor will automatically show the message "Press MODE if applying Zero Air" with another 5-second countdown. Press MODE again to begin the true zero calibration and follow the instructions given on the screen. Once the zero calibration is complete, remove the zero air cylinder from the instrument and proceed to the gas calibration (if necessary).

The gas calibration of the CO_2 sensor is performed during the standard gas calibration that is described above in section 4.3. The PHD6 will automatically prompt the user to apply the CO_2 calibration gas during the standard gas calibration sequence.

4.5 Special Calibration Instructions for NDIR-CH_4 Sensor

In many ways, the NDIR-CH_4 sensor used in the PHD6 is similar to a hot bead LEL sensor. For the purpose of calibration, they are very different. While LEL sensors can be calibrated with a number of other gases when properly configured, The NDIR-CH_4 sensor must be calibrated with methane to the exact amount shown on the calibration gas cylinder. (This is different from LEL sensors, where methane may be used for calibration, but is often done at a scale that makes the readings mimic those given by a specific amount of propane or pentane).

⚠**WARNING The NDIR CH_4 sensor in the PHD6 must be calibrated using methane (CH_4) calibration gas at the actual amount shown on the cylinder. The default calibration gas value for the NDIR-CH_4 sensor is 50% LEL. The appropriate calibration gas level for the 50% LEL default calibration gas setting is 2.50%/vol. CH_4. Use of inappropriate calibration gas may lead to inaccurate and potentially dangerous readings.**

5. Menu Options

The PHD6 operating firmware includes two menu options: the Basic Menu and the Main Menu.

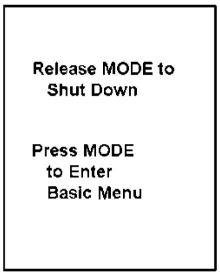
5.1 Basic Menu

The Basic Menu is a shortened version of the Main Menu that offers immediate access to a few key functions including:

- PID On/Off (enable or disable the PID sensor)
- Displayed VOC (select the target compound for the VOC sensor)
- Contrast (display's light vs. dark setting)
- Main Menu access

5.1.1 Entering the Basic Menu

To access the Basic Menu, with the PHD6 on and the current gas readings screen shown, hold the MODE button down until the PHD6 beeps four times and the "Release MODE to Shut Down" is shown. Then continue to hold the MODE Button until the Basic Menu is shown.



To navigate through the menu options, use the up and down navigation arrows to highlight the desired submenu and press MODE to enter the submenu.

5.2 Main Menu

The PHD6 is fully configurable through the Main Menu. The Main Menu contains 6 sub menus that lead to controls for the individual instrument functions.

To navigate through the menu options, use the up and down navigation arrows to highlight the desired submenu and press MODE to enter the submenu.

To navigate through the menu options, use the up and down navigation arrows to highlight the desired submenu and press MODE to enter the submenu.

- Main Menu
  - Alarms
    - Current Alarms
    - Default Alarms
    - Alarm Latch
    - Temp Alarms
    - Event History
  - Calibration
    - Fresh Air Calibration
    - Gas Calibration
    - O2 Gas Calibration
    - Gas Values
    - Reminders/Lock
      - Cal on Startup
      - Cal Reminder
      - Cal Lock
      - Bump Reminder
      - Service Interval
      - Service Done
    - Cal History
  - Configuration
    - Security Beep
    - Basic Passcode
    - Main Passcode
    - Display Formats
      - Sensor Readings
      - Temperature
    - Date/Time
  - Screen
    - Contrast
    - Orientation
    - Backlight Mode
    - Backlight Time
    - Enable Screens
  - Information
    - Versions
    - Service Info
  - Datalogger
    - Interval
    - Sessions
    - Clear Datalog
    - Select User
    - Select Location
    - User on Startup

Main Menu Options Diagram

5.2.1 Entering the Main Menu

There are two paths into the main menu.

If the instrument is **on**, press and hold the MODE button down for three seconds until “Shutting Down” is shown, then release the MODE button. The next screen will show “shutting down…” along with two black blocks at the bottom of the screen. Press and hold the two arrow keys while the two blocks are shown to enter the main menu.

If the instrument is **off**, press the MODE button to start the instrument. When “Starting Session, Resetting Averages” is shown along with two black blocks, press and hold the two arrow keys while the two blocks are shown to enter the main menu.

The Main Menu is the access point to 6 submenus that control virtually every aspect of the PHD6’s functionality.

NOTE: Changes made in the Main Menu can have a direct affect on the PHD6’s functionality and should only be made by those who are trained in proper gas detection and monitoring techniques.

5.2.2 Using the submenus.

In the Main Menu and the sub-menus, use the up and down arrows to navigate between the options and press MODE to enter. Three buttons will appear on the display to show the

functions of the MODE button and the two navigation keys on any screen that allows instrument setup changes.

5.2.3 Alarms Menu

The Alarms Menu contains the following 6 submenus (options in parenthesis). Description follows (as needed).

- **Current Alarms** (select any sensor to view current sensor alarm settings, then select any current sensor alarm to make changes)
- **Default Alarms** (scroll to view default sensor alarms for each recognized sensor plus option to Set Default Alarms for all sensors
- **Alarm Latch** (set on or off)

  The PHD6’s alarms are self-resetting unless the alarm latch is enabled. With the PHD6’s alarm latch enabled, the audible and visible alarms will continue to sound after the atmospheric hazard has cleared. Press the MODE button to reset the alarms. If the alarm latch is disabled and the alarm condition is no longer present, the instrument will automatically return to normal operation, and the visible and audible alarms cease without further input from the user.
- **Temp Alarms** (enable or disable high and low temperature alarms)

  If the operating temperature falls outside of the operating range of the PHD6, the instrument will go into alarm and the thermometer icon will be shown on the display.
- **Event History** (use up and down arrows to scroll through saved alarm events – includes time, duration and peak and average sensor readings during the event)

- **Vibrator** (if equipped) (enable or disable the vibrating alarm)

5.2.4 Calibration Menu

- **Fresh Air Cal** (initiates Fresh Air Calibration sequence)

⚠WARNING Fresh air/zero calibrations may only be performed in an atmosphere that is known to contain 20.9% oxygen, 0.0% LEL and 0 PPM toxic gas.

- **Gas Calibration** (initiates Gas Calibration sequence (calibration gas required)
- **O_2 Gas Cal** (initiates true O_2 Zero Calibration sequence)

  Note that this procedure requires a cylinder of calibration gas that contains 0.0% oxygen.

- **Gas Values** (select any sensor to view or change current calibration gas values).

  Note: The selection of the calibration gas for the PID sensor is NOT linked to the displayed substance. A ratio is used to calculate readings for various VOCs against the calibration standard. See section 2.7 for more details on the PID gas values.

  Note: In the case of the oxygen sensor, the O_2 gas setting can be used to enable or disable the oxygen sensor check that takes place during gas calibration with multi calibration gas. To disable the oxygen sensor check, select "No".

⚠WARNING Disabling the oxygen sensor check may result in the failure to recognize an oxygen-deficient atmosphere.

Always use a multi cal gas cylinder containing 18% oxygen to calibrate the PHD6.

- **Reminders/Lock** (access to submenus below)

  Cal on Startup (enable or disable)

  When enabled, calibration is automatically initiated whenever the instrument is turned on. The calibration can be bypassed (unless Cal Due Lock is enabled) by letting the clock run out and proceeding to the current gas readings screen. Cal on Startup is usually disabled on new instruments and must be enabled by the user.

  Cal Reminder: (adjust between every day and every 180 days). The default setting for standard instruments leaving the factory is 30 days.

  To disable the cal reminder, set the value to 0.

  Cal Lock: (enable or disable)

  Enable to require calibration when the Cal Reminder is on. PHD6 automatically shuts down if Cal Lock is enabled, and calibration is due but not performed. Cal Lock is usually disabled on new instruments and must be enabled by the user.

  Bump Reminder: (enable, disable and adjust between every day and every 30 days)

  Used exclusively with the IQ6 Dock. Reminds the user to process the instrument in the dock. To disable set the value to 0. The Bump Reminder is usually disabled on new instruments and must be enabled by the user.

  Service Interval (enable, disable and adjust between every day and every 730 days (2 years)

  The service interval is a reminder that tells the user when the instrument is due for service. The Service Interval is usually disabled on new instruments and must be enabled by the user.

  Service Done (reset service date)

  Used to reset the service interval following instrument service.

- **Cal History** (scroll through recent calibrations, includes span reserve listing – which allows for predictive maintenance)

5.2.5 Configuration Menu

- **Security Beep** (enable or disable)

  Once enabled the PHD6 will emit a short audible beep and give a short flash on the LEDs at a user-defined interval to notify the user that the instrument is powered up and running. The Security Beep is usually disabled on new instruments and must be enabled by the owner.

- **Basic Passcode** (enable, disable and change passcode)

  Enable to require the entry of a passcode to access the Basic Menu. The Basic Passcode is usually disabled on new instruments and must be enabled by the owner. To permit access to the Basic Menu, and restrict it from the Main Menu, the Basic Passcode must differ from the Main Passcode.

- **Main Passcode** (enable, disable and change passcode)

  Enable to require the entry of a passcode to enter the Main Menu. The Main Passcode is usually disabled on new instruments and must be enabled by the owner. The Main Passcode can be used to enter both the Main Menu and the Basic Menu.

- **Display Formats** (contains submenus for sensor readings, sensor clamping and temperature)
  - **Sensor readings** (for toxic gases select PPM (XX) or tenths-of-a-PPM (X.X) for sensors with this capability (such as H_2S). For NDIR-CH_4 choose between LEL and CH_4 (the CH_4 reading will display in

    %/Vol.) Sensors that cannot be adjusted will show "Fixed".
  - **Temperature** (select display in Celsius or Fahrenheit) Most PHDs leave the factory configured to read temperature in Fahrenheit unless the customer requests otherwise.
- **Language** (select English, French or Spanish). Most PHDs leave the factory configured in English unless the customer requests otherwise.
- **Date/Time** (set time and date)

5.2.6 Screen Menu

- **Contrast** (screen contrast setting)
- **Orientation** (shifts display to be viewable from top or bottom of the instrument)

- **Backlight Mode** (select continuous, Timed Off or Time Auto)

  Select **Continuous** to have the backlight on at all times,

  Select **Timed Off** to require a MODE press or an alarm condition to activate the backlight. The default setting for most new PHD6 instruments when leaving the factory is to turn the backlight off after 20 seconds.

  Select **Time Auto** to enable the automatic backlight for low light conditions.
- **Backlight Time** (set the time before the backlight turns off in Time Off Mode)
- **Enable Screens** (select the screens that are accessible by sequentially pressing the MODE button including: Peak, Average, STEL and TWA screens.

5.2.7 Information Menu

- **Versions** (view instrument serial number, software version, and time and date of instrument manufacture)
- **Service Info** (view Honeywells' phone contact numbers).

5.2.8 Datalogger Menu

- **Interval** (set datalogger interval between 1 second and 1 hour) (menu option only not available in Black Box Datalogger versions)

  The datalogger samples continuously, so the data stream must be broken into intervals to be recorded. The datalogging interval defines the frequency of the breaks in the data stream. The interval may be set anywhere between one second and one hour by using the navigation arrows as detailed below. The default datalogging interval is 1 minute. At a one-minute interval, the PHD6 will log a minimum of 63 hours of data before the oldest data is overwritten by newer data.
- **Sessions** (view datalogger session data including date, time, interval, temperature and sensor minimum and maximum readings)
- **Clear Datalog** (clears all information from the datalogger)
- **Select User** (User name will be saved in the session data)

  Users' names must be entered in BioTrak II to appear in the user list.
- **Select Location** (Location name will be saved in the session data)

  Location names must be entered in BioTrak II to appear in the location list.
- **User on Startup** (enable or disable a prompt to select user and location at startup)

  User and location names must be entered into the instrument via BioTrak II before this option can be enabled.

6. Maintenance

⚠WARNING **To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing any parts in the PHD6.**

6.1 Batteries

The PHD6 is powered by interchangeable alkaline and Li-Ion rechargeable battery packs.

To remove the battery pack first loosen the top center screw on the back of the instrument, then gently pull the top of the battery away from the instrument. The battery is hinged from below. Remove the battery once the top clears the upper housing by pulling up and away.

CAUTION Always turn the PHD6 off prior to removing the battery pack. Removal of the battery pack with the instrument turned on may cause corruption of stored data in the PHD6.

Note: Center screw on ATEX / European version may be slightly different.

6.2 Replacing alkaline batteries

The alkaline battery pack contains three AA alkaline batteries.

⚠WARNING **The PHD6** must be located in a non-hazardous location whenever alkaline batteries are removed from the alkaline battery pack. Removal of the alkaline batteries from the battery pack in a hazardous area may impair intrinsic safety.

⚠WARNING **Use only Duracell MN1500 or Ultra MX1500, Eveready Energizer E91-LR6, Eveready EN91 batteries. Substitution of batteries may impair intrinsic safety.**

To replace the alkaline batteries:

1. Remove the battery pack from the PHD6 as discussed in above in section 6.1.
2. Loosen the two screws at the top of the battery pack by turning each ¼ turn counterclockwise.
3. Remove the three alkaline batteries and replace them. Be sure to align the positive and negative ends in accordance with the diagram under each battery.
4. Reinstall the back cover plate that was removed in step 2.
5. Return the battery pack to the PHD6 and re-tighten the top center screw. The PHD6 will automatically turn itself on once the battery pack is reinstalled.

6.3 Maintaining Li-Ion battery packs

The PHD6 may be equipped with a rechargeable Li-Ion (Lithium Ion) battery pack.

6.3.1 Storage guidelines for the Li-Ion battery

Never store Li-Ion -version PHD6 instruments at temperatures above 30 degrees Celsius (86 degrees Fahrenheit). Li-Ion batteries may suffer deterioration resulting in damage to the internal components when stored at high temperatures. The battery may be irretrievably damaged resulting in reduced battery capacity and voltage.

Honeywell recommends leaving PHD6 instruments with Li-Ion rechargeable batteries on the charger when not in use.

6.3.2 Charging guidelines for Li-Ion battery

The Li-Ion battery in the PHD6 should never be charged at temperatures lower than 5 degrees Celsius (40 degrees Fahrenheit) or higher than 30 degrees Celsius (86 degrees Fahrenheit. Charging at temperature extremes can permanently damage the PHD6 Li-Ion battery.

⚠WARNING The PHD6 must be located in a non-hazardous location during the charging cycle. Charging the PHD6 in a hazardous location may impair intrinsic safety.

6.3.3 Charging procedure for Li-Ion battery

⚠WARNING Do not charge the PHD6 with any charger other than the appropriate PHD6 charger manufactured by Honeywell. Standard versions of the PHD6 must be charged with the UL/CSA-approved charger, which is part number 54-54-001. European versions of the PHD6 must be charged with the ATEX-approved PHD6 charger.

1. Verify that the instrument is turned off. (If it is not, press the MODE button for three seconds until the message "Release Button" appears.)
2. Plug the power supply in. The red LED is labeled “Power” and will be lit whenever the charger is plugged into a power source.
3. Insert the PHD6 into the charging cradle bottom side down with the display facing forward. The green LED on the charger is labeled “Charge” and will blink while the battery is charging.
4. When the battery is fully charged, the green “Charge” LED will be lit and not blinking.

See section 5.3.4 for battery troubleshooting guidelines.

6.3.4 Charging with the pump attached

The PHD6 with pump attached may be charged according to the instruction given in section 6.3.3 above.

6.3.5 Battery troubleshooting

If the green “Charge” LED on the charger fails to light when the PHD6 with Li-Ion battery pack is placed in the charger, remove the instrument from the charger and press the MODE button to attempt to start the instrument.

If the battery has been inserted into the charger without the instrument, return it to the instrument prior to attempting the restart.

1. If the PHD6 starts and the battery icon if full, then the battery is fully charged and may be used as is. In this case, the charger has recognized that the battery is charged and will not charge it any further.
2. If the PHD6 fails to turn on, then the battery may be severely discharged and should be returned to the charger. The charger will then begin a very slow recharge in order to protect the battery. The green “Charge” LED may not be lit during the first four hours of the slow recharge. If the “Charge” LED has still not been lit after four hours, the battery pack or charger is probably damaged.
3. If the PHD6 starts and any battery level other than full is indicated, then either the battery is damaged or the charger is damaged. Call Honeywell for further instructions.

6.4 Sensors

6.4.1 Sensor replacement

The sensors in the PHD6 are located in a vented compartment at the bottom of the instrument.

To install a sensor:

1. Turn the PHD6 off.
2. Remove the battery pack as described in section 6.1. This will automatically disconnect power from the instrument.
3. Remove the four screws that are located below the battery pack insertion from the back face of the PHD6.
4. Turn the instrument over to reveal the front face and gently remove the sensor cover.
5. Remove the sensor that is to be replaced.
6. Insert the new sensor into the appropriate location on the sensor board.
7. Reinstall the sensor cover by aligning it properly over the sensors and securing it with the four screws that were removed in step 3.
8. Reattach the battery pack and re-tighten the top center screw.
9. New sensors must be allowed to stabilize prior to use according to the following schedule. The detector must be powered off and a functional battery pack must be installed for the sensor to stabilize.

Sensor	Stabilization Period
Oxygen (O_2)	1 hour
LEL	none
PID	5 minutes
NDIR-CH_4 or NDIR-CO_2	1 minute
All Toxic Sensors except NO	15 minutes
NO (nitric oxide)	24 hours

Note: Steps 9 and 10 assume that the sensor stabilization period has passed.

10. Perform the Fresh Air/Zero calibration and the Gas calibration as discussed in sections 4.2 and 4.3.

6.4.2 Care and maintenance of PID sensors

The two critical components of a PID sensor are the electrode stack and the lamp. The electrode stack can be replaced in the field. The lamp can be cleaned or replaced in the field. The frequency of maintenance to both items will vary with the type of usage and the nature of the contaminants to which the sensor is exposed.

As a general rule, baseline shifts tend to be caused by the electrode stack and losses of sensitivity tend to be caused by the lamp.

6.4.2.1 Troubleshooting the PID

When to replace the electrode stack:

1. Baseline reading climbs following fresh air zeroing of the sensor.
2. PID sensor becomes sensitive to humidity.
3. Baseline becomes generally unstable.
4. Baseline shifts when the instrument is in motion.

When to clean the PID lamp

Loss of sensitivity in the sensors as shown during bump-testing (reading will be low).

When to replace the PID lamp

If the cleaning of the lamp fails to correct a loss of sensitivity, the lamp should be replaced.

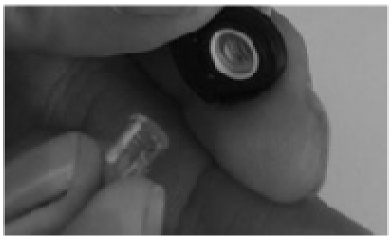
6.4.2.2 Cleaning and replacing PID components

To remove the lamp and stack

1. Wash your hands thoroughly.
2. On a clean surface, remove the PID sensor from the PHD6 as described above (section 6.4.1 steps 1-5).
3. Place one finger on top of the sensor and insert the stack removal tool into the two slots at the top side of the sensor body. Squeeze gently until the spring releases and the stack can be removed from the top of the sensor. The lamp is spring-loaded against the stack, so keeping a finger on top of the stack prevents their ejection from the sensor body.
4. Gently remove the stack and pull the lamp and spring out of the sensor body. Do not touch the top of the lamp window with bare fingers.
5. Set the spring aside.

To replace the stack or lamp

1. Discard the used lamp, stack or both as needed and rebuild with replacement part(s).
2. Drop the spring into the center of the sensor body.
3. When reinserting the lamp and electrode stack, it is essential to make sure that the lamp is fit snugly into the o-ring slot on the electrode stack – NOTE PICTURE BELOW. When inserting the lamp into the o-ring slot, it is recommended that a twisting motion is used. When properly assembled, the lamp should then be flush against the stack, and should be fully supported.



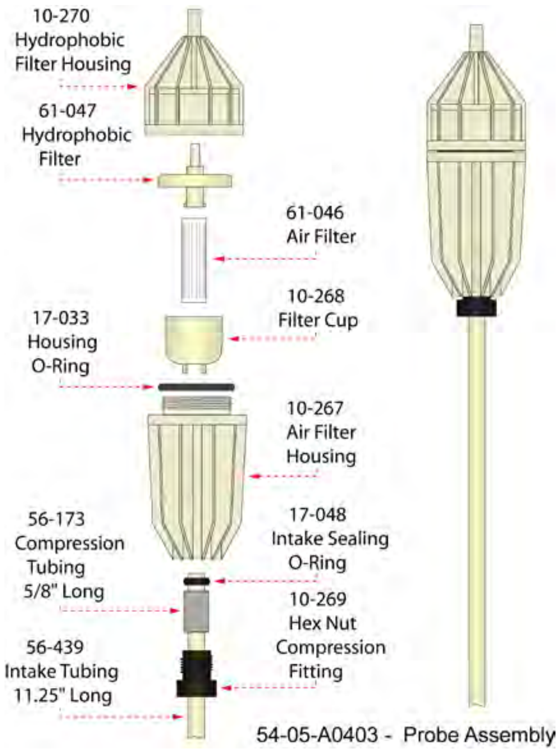
4. Snap the stack with lamp attached on to the sensor body so that the sensor is whole again and the stack cannot be removed without the removal tool.
5. The sensor should have a gasket and a filter on it. If necessary, install a sensor filter and gasket on top of the sensor.
6. Reinstall the sensor into the PHD6.
7. Reassemble the PHD6.
8. Calibrate the PID prior to use after the 5 minute warm up periods ends.

To clean the lamp

1. Follow the directions above to remove the lamp from the instrument.
2. Make sure your hands are clean.
3. Coat the cotton swab in a thin layer of lamp cleaning powder of 0.1 to 0.25 μm α-alumina.
4. Pick up the lamp with the other hand. Do not touch the top of the lamp window with bare fingers.
5. Using the cotton swab dipped in the cleaning powder, polish the top of the lamp with a swirling motion. Cleaning typically takes about 30 seconds and is finished when the swab starts to squeak.
6. Reassemble the sensor and the PHD6. See steps 2-8 above in the directions to replace the stack or lamp.

6.5 Sample probe assembly

The PHD6's sample draw probe is the standard probe assembly from Honeywell. The illustration below gives a breakdown of all parts in the sample draw probe with part numbers. The sample probe handle contains moisture barrier and particulate filters designed to remove contaminants that might otherwise harm the instrument.



Sample probe filters should be replaced whenever visibly discolored due to contamination.

CAUTION: Never perform remote sampling without the sample probe and hose assembly. The sample probe handle contains replaceable filters designed to block moisture and remove particulate contaminants. If the pump is operated without the probe assembly in place, contaminants may cause damage to the pump, sensors and internal components of the PHD6.

Particulate contaminants are removed by means of a cellulose filter. The hydrophobic filter includes a Teflon™ barrier which blocks the flow of moisture as well as any remaining particulate contaminants.

6.5.1 Changing sample probe filters

The threaded sample probe handle is accesses the filters. The particulate filter is held in place by means of a clear filter cup. To replace the particulate filter, remove the old filter and cup, insert a new filter into the cup, and slide the cup back into place in the probe handle. The hydrophobic barrier filter fits into a socket in the rear section of the probe handle. (The narrow end of the hydrophobic barrier filter is inserted towards the rear of the handle.)

To avoid accidentally introducing particulate contaminants into the system, turn the sample probe upside-down prior to removing either the hydrophobic filter or the particulate filter.

The following replacement filter kits are currently available from Honeywell:

Part No.	Kit	#Parti-culate	#Hydro-phobic
54-05-K0401	Standard	10	3
54-05-K0402	Economy	10	0
54-05-K0403	Economy	30	10
54-05-K0404	Bulk	0	25
54-05-K0405	Bulk	100	0

6.5.2 Changing sample probe tubes (wands)

The standard 11.5” long butyrate probe tube is held in place with a hex-nut compression fitting and compression sleeve. The standard probe tube can be interchanged with other custom length sections of 1/4” OD tubing, or probe tubes made of other materials (such as stainless steel).

Probe tubes are exchanged by loosening the hex-nut compression fitting, removing the old tube, sliding the compression sleeve into place around the new tube, inserting the new tube into the probe handle, then replacing and tightening the hex-nut.

Note: The sample probe must be checked for leakage (as discussed in Section 3.1.1) whenever filters or probe tubes are exchanged or replaced before being returned to service.

6.6 PHD6 Pump Maintenance

PHD6 pumps are fairly maintenance free with the exception of the replacement of the pump filters on a regular basis.

6.6.1 Replacing pump filters

1. Remove the two screws that hold the inlet port to the pump.
2. Gently pull the dust filter holder free of the pump.
3. Remove and replace the dust filter that is located in the holder.
4. The hydrophobic filter is located beneath the inlet port in the pump housing. Use a small screwdriver or other object to punch through the filter and remove it. The gasket that sits between the inlet port and the filter should come out with the filter.
5. Place the new hydrophobic filter with the filter side down in place of the one removed in step 4. The gasket should be located on top of the filter and should sit against the dust filter holder, which will be reinstalled in step 6.
6. Replace the dust filter holder (which now has a new filter in it) and secure it with the two screws removed in step 1.

Appendices

Appendix A Toxic gas measurement – Warning, Danger, STEL and TWA alarms

Many toxic substances are commonly encountered in industry. The presence of toxic substances may be due to materials being stored or used, the work being performed, or may be generated by natural processes. Exposure to toxic substances can produce disease, bodily injury, or death in unprotected workers.

It is important to determine the amounts of any toxic materials potentially present in the workplace. The amounts of toxic materials potentially present will affect the procedures and personal protective equipment that must be used. The safest course of action is to eliminate or permanently control hazards through engineering, workplace controls, ventilation, or other safety procedures. Unprotected workers may not be exposed to levels of toxic contaminants that exceed Permissible Exposure Limit (PEL) concentrations. Ongoing monitoring is necessary to insure that exposure levels have not changed in a way that requires the use of different or more rigorous procedures or equipment.

Airborne toxic substances are typically classified on the basis of their ability to produce physiological effects on exposed workers. Toxic substances tend to produce symptoms in two time frames.

Higher levels of exposure tend to produce immediate (acute) effects, while lower levels of long-term (chronic) exposure may not produce physiological symptoms for years.

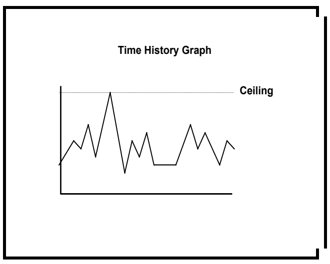
Hydrogen sulfide (H_2S) is a good example of an acutely toxic substance which is immediately lethal at relatively low concentrations. Exposure to a 1,000 ppm (parts per million) concentration of H_2S in air produces rapid paralysis of the respiratory system, cardiac arrest, and death within minutes.

Carbon monoxide (CO) is a good example of a chronically toxic gas. Carbon monoxide bonds to the hemoglobin molecules in red blood cells. Red blood cells contaminated with CO are unable to transport oxygen. Although very high concentrations of carbon monoxide may be acutely toxic, and lead to immediate respiratory arrest or death, it is the long term physiological effects due to chronic exposure at lower levels that take the greatest toll of affected workers. This is the situation with regards to smokers, parking garage attendants, or others chronically exposed to carbon monoxide in the workplace. Exposure levels are too low to produce immediate symptoms, but small repeated doses reduce the oxygen carrying capacity of the blood over time to dangerously low levels. This partial impairment of the blood supply may lead over time to serious physiological consequences.

Because prudent monitoring programs must take both time frames into account, there are two independent exposure measurements and alarm types built into the PHD6 design.

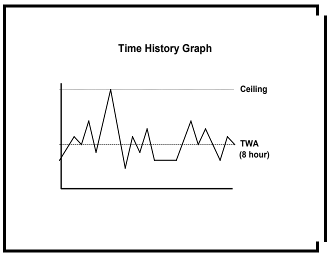
1. Warning and Danger Alarms

OSHA has assigned some, but not all, toxic substances with a ceiling level which represents the highest concentration of a toxic substance to which an unprotected worker should ever be exposed, even for a very short time. The default Warning and Danger alarm levels in the PHD6 are less than or equal to the OSHA-assigned ceiling levels for both CO and H_2S. **Never enter an environment even momentarily when concentrations of toxic substances exceed the level of either the Warning or the Danger Alarm**.



2. Time Weighted Average (TWA)

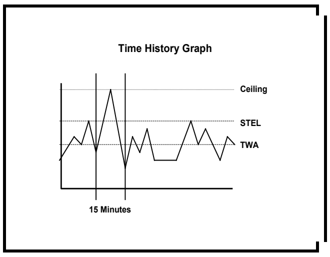
The maximum average concentration to which an unprotected worker may be exposed over an eight hour working day is called the Time Weighted Average or TWA value. TWA values are calculated by taking the sum of exposure to a particular toxic gas in the current operating session in terms of parts-per-million-hours and dividing by an eight-hour period.



3. Short Term Exposure Limits (STEL)

Toxic substances may have short term exposure limits which are higher than the eight hour TWA. The STEL is the maximum average concentration to which an unprotected worker may be exposed in any fifteen minute interval during the day. During this time, neither the eight hour TWA or the ceiling concentration may be exceeded.

Any fifteen minute periods in which the average STEL concentration exceeds the permissible eight hour TWA must be separated from each other by at least one hour. A maximum of four of these periods are allowed per eight hour shift.



Appendix B Calibration Frequency Recommendation

One of the most common questions that we are asked at Honeywell is: ***"How often should I calibrate my gas detector?"***

Sensor Reliability and Accuracy

Today's sensors are designed to provide years of reliable service. In fact, many sensors are designed so that with normal use they will only lose 5% of their sensitivity per year or 10% over a two-year period. Given this, it should be possible to use a sensor for up to two full years without significant loss of sensitivity.

Verification of Accuracy

With so many reasons why a sensor can lose sensitivity and given the fact that dependable sensors can be key to survival in a hazardous environment, frequent verification of sensor performance is paramount.

There is only one sure way to verify that a sensor can respond to the gas for which it is designed. That is to expose it to a known concentration of target gas and compare the reading with the concentration of the gas. This is referred to as a "bump" test. This test is very simple and takes only a few seconds to accomplish. **The safest course of action is to do a "bump" test prior to each day's use**. It is not necessary to make a calibration adjustment if the readings fall between 90%* and 120% of the expected value. As an example, if a CO sensor is checked using a gas concentration of 50 PPM it is not necessary to perform a calibration unless the readings are either below 45 PPM or above 60 PPM.

***The Canadian Standards Association (CSA) requires the instrument to undergo calibration when the displayed value during a bump test fails to fall between 100% and 120% of the expected value for the gas.**

Lengthening the Intervals between Verification of Accuracy

We are often asked whether there are any circumstances in which the period between accuracy checks may be lengthened.

Honeywell is not the only manufacturer to be asked this question! One of the professional organizations to which Honeywell belongs is the Industrial Safety Equipment Association (ISEA). The "Instrument Products" group of this organization has been very active in developing a protocol to clarify the minimum conditions under which the interval between accuracy checks may be lengthened.

A number of leading gas detection equipment manufacturers have participated in the development of the ISEA guidelines concerning calibration frequency. Honeywell procedures closely follow these guidelines.

If your operating procedures do not permit daily checking of the sensors, Honeywell recommends the following procedure to establish a safe and prudent accuracy check schedule for your Honeywell instruments:

1. During a period of initial use of at least 10 days in the intended atmosphere, check the sensor response daily to be sure there is nothing in the atmosphere that is poisoning the sensor(s). The period of initial use must be of sufficient duration to ensure that the sensors are exposed to all conditions that might have an adverse effect on the sensors.
2. If these tests demonstrate that it is not necessary to make adjustments, the time between checks may be lengthened. The interval between accuracy checking should not exceed 30 days.
3. When the interval has been extended the toxic and combustible gas sensors should be replaced immediately upon warranty expiration. This will minimize the risk of failure during the interval between sensor checks.
4. The history of the instrument response between verifications should be kept. Any conditions, incidents, experiences, or exposure to contaminants that might have an adverse effect on the calibration state of the sensors should trigger immediate re-verification of accuracy before further use.
5. Any changes in the environment in which the instrument is being used, or changes in the work that is being performed, should trigger a resumption of daily checking.
6. If there is any doubt at any time as to the accuracy of the sensors, verify the accuracy of the sensors by exposing them to known concentration test gas before further use.

Gas detectors used for the detection of oxygen deficiencies, flammable gases and vapors, or toxic contaminants must be maintained and operated properly to do the job they were designed to do. Always follow the guidelines provided by the manufacturer for any gas detection equipment you use!

If there is any doubt regarding your gas detector's accuracy, do an accuracy check! All it takes is a few moments to verify whether or not your instruments are safe to use.

One Button Auto Calibration

While it is only necessary to do a "bump" test to ensure that the sensors are working properly, all current gas detectors offer a one-button auto calibration feature. This feature allows you to calibrate a Honeywell gas detector in about the same time as it takes to complete a "bump" test. The use of automatic bump test and calibration stations can further simplify the tasks, while automatically maintaining records.

Don't take a chance with your life. Verify accuracy frequently!

Appendix C PHD6 Sensor Information

Part No.	Description	Range	Resolution
54-54-80	LEL Combustible Gas	0 – 100% LEL	1% LEL
54-54-90	O_2 Oxygen	0 – 30% by Volume	0.1%
54-54-01	CO Carbon Monoxide	0 – 1000 PPM	1 PPM
54-54-19	CO-H CO Minus, reduced sensitivity to H_2	0 – 1000 PPM	1 PPM
54-54-05	CO+ CO Plus dual purpose CO / H_2S (Provides a non-specific readout for CO and H_2S)	CO: 0 – 1000 PPM H_2S: 0 – 200 PPM	1 PPM
54-54-02	H_2S Hydrogen Sulfide	0 – 200 PPM	1 PPM
54-54-14	Duo-Tox Dual Channel CO/H_2S Provides substance specific readouts for CO & H_2S	CO: 0 – 1000 PPM H_2S: 0 – 200 PPM	1 PPM 1 PPM
54-54-03	SO_2 Sulfur dioxide	0 – 25 PPM	0.1 PPM
54-54-21	NH_3 Ammonia	0 – 100 PPM	1 PPM
54-54-18	Cl_2 Chlorine (specific)	0 – 50 PPM	0.1 PPM
54-54-20	ClO_2 Chlorine dioxide (specific)	0 – 5 PPM	0.01 PPM
54-54-06	NO Nitric oxide	0 – 350 PPM	1 PPM
54-54-09	NO_2 Nitrogen dioxide	0 – 50 PPM	0.1 PPM
54-54-23	HCN Hydrogen cyanide	0 – 100 PPM	0.2 PPM
54-54-13	PH_3 Phosphine	0 – 20 PPM	0.1 PPM
54-54-50	NDIR CO_2 Carbon dioxide	0 – 5.00%/vol.	0.025%*
54-54-51	NDIR CH_4 Methane	0 – 5.00%/vol.	0.05%
54-54-52	PID Volatile Organic Compound (VOCs)	0 – 3000 PPM	.1PPM

*The CO_2 sensor has an internal resolution of 0.025% but displays readings rounded to the nearest 0.01%. It will, therefore, display steps of 0.03%, 0.05%, 0.08%, 0.10%, etc.

Appendix D Electrochemical Toxic Sensor Cross-Sensitivity

The table below provides the cross-sensitivity response of the PHD6 electrochemical toxic gas sensors to common interference gases. The values are expressed as a percentage of the primary sensitivity, or the reading of the sensor when exposed to 100ppm of the interfering gas at 20ºC. These values are approximate. The actual values depend on the age and condition of the sensor. Sensors should always be calibrated to the primary gas type. Cross-sensitive gases should not be used as sensor calibration surrogates without the express written consent of Honeywell.

SENSOR	CO	H2S	SO2	NO	NO2	Cl2	ClO2	H2	HCN	HCl	NH3	C2H4	C2H2
Carbon Monoxide (CO)	100	10	5	10	-15	-5	-15	50	15	3	0	75	250
Carbon Monoxide (CO+)	100	350	50	30	-60	-60	-120	50	n/d	n/d	0	75	250
Carbon Monoxide (CO-H)	100	2	0.5	3	-0.5	-0.5	-1.5	5	n/d	n/d	0.1	35	(+)
Hydrogen Sulfide (H2S)	0.5	100	20	2	-20	-20	-60	0.2	0	0	0	n/d	n/d
Sulfur Dioxide (SO2)	1	0	100	<8	-100	-70	-150	0.2	n/d	n/d	<0.1	15	100
Nitrogen Dioxide (NO2)	<0.1	-40	-2.5	<0.5	100	100	270	<0.1	n/d	n/d	<0.1	n/d	0.1
Nitric Oxide (NO)	0.1	**≤15**	**≤10**	100	**≤30**	15	n/d	0.1	n/d	n/d	n/d	n/d	n/d
Chlorine (Cl2) (specific)	0	-3	<1	n/d	12	100	20	0	0	0	0	0	0
Chlorine (Cl2) (non-specific)	0	-20	<5	0	120	100	300	0	n/d	n/d	0	n/d	n/d
Chlorine Dioxide (ClO2) (specific)	0	-25	-5	n/d	n/d	60	100	0	0	0	n/d	0	0
Chlorine Dioxide (ClO2) (non-specific)	0	-7	<2	0	40	<35	100	0	n/d	n/d	0	n/d	n/d
Ammonia (NH3)	<1	<10	2	n/d	0	0	n/d	0	0	0	100	0	0
Phosphine (PH3)	0.5	25	20	n/d	(-)	(-)	(-)	0.1	n/d	n/d	n/d	1	0.5
Hydrogen Cyanide (HCN) (old style 54-54-10)	0.5	200	100	-5	-70	-50	-150	0	100	65	-5	0	n/d
Hydrogen Cyanide (HCN) (new style 54-54-23)	0	0**	n/d	n/d	-70	n/d	n/d	0	100	n/d	n/d	n/d	n/d

** Sensor manufacturer rates Cross Sensitivity for (54-54-23) HCN sensor to H2S as follows for 20 PPM exposure at 20°C: "Short gas exposure in minute range; after filter saturation: ca. 40 PPM reading".

n/d = no data

Honeywell Warranty Gas Detection Products

General

Honeywell warrants gas detectors, sensors and accessories manufactured and sold by Honeywell, to be free from defects in materials and workmanship for the periods listed in the tables below.

Damages to any Honeywell products that result from abuse, alteration, power fluctuations including surges and lightning strikes, incorrect voltage settings, incorrect batteries, or repair procedures not made in accordance with the Instrument's Reference Manual are not covered by the Honeywell warranty.

The obligation of Honeywell under this warranty is limited to the repair or replacement of components deemed by the Honeywell Instrument Service Department to have been defective under the scope of this standard warranty. To receive consideration for warranty repair or replacement procedures, products must be returned with transportation and shipping charges prepaid to Honeywell, or to a Honeywell Authorized Warranty Service Center. It is necessary to obtain a return authorization number from Honeywell prior to shipment.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY AND ALL OTHER WARRANTIES AND REPRESENTATIONS, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. HONEYWELL WILL NOT BE LIABLE FOR LOSS OR DAMAGE OF ANY KIND CONNECTED TO THE USE OF ITS PRODUCTS OR FAILURE OF ITS PRODUCTS TO FUNCTION OR OPERATE PROPERLY.

Instrument & Accessory Warranty Periods

PHD6™	2 years from date of purchase
ToxiPro®, MultiPro™	2 years from date of purchase
Battery packs and chargers, sampling pumps and other components, which by their design are consumed or depleted during normal operation, or which may require periodic replacement	One year from the date of purchase

Sensor Warranty Periods

PHD6™, Cannonball3™, Multi Vision™, MultiPro™, Toxi Vision™, ToxiPro®	O_2, LEL**, CO, CO+, H_2S & Duo-Tox	2 Years
	All Other Sensors	1 Year
All Others	All Sensors	1 Year

**** Damage to combustible gas sensors by acute or chronic exposure to known sensor poisons such as volatile lead (aviation gasoline additive), hydride gases such as phosphine, and volatile silicone gases emitted from silicone caulks/sealants, silicone rubber molded products, laboratory glassware greases, spray lubricants, heat transfer fluids, waxes & polishing compounds (neat or spray aerosols), mold release agents for plastics injection molding operations, waterproofing formulations, vinyl & leather preservatives, and hand lotions which may contain ingredients listed as cyclomethicone, dimethicone and polymethicone (at the discretion of Honeywells' Instrument Service department) void Honeywells' Standard Warranty as it applies to the replacement of combustible gas sensors.**

DOC022.97.80041

2100Q and 2100Q*is*

04/2013, Edition 2

Basic User Manual
Manuel d'utilisation de base
Manual básico del usuario
Manual Básico do Usuário
基本用户手册
基本取扱説明書
기본 사용 설명서

G-131
September 2022

Specifications

Specifications are subject to change without notice.

Specification	Details
Measurement method	Ratio turbidimetric determination using a primary nephelometric light scatter signal (90°) to the transmitted light scatter signal.
Regulatory	**2100Q:** Meets EPA Method 180.1 **2100Q*is*:** Meets ISO 7027
Lamp source	**2100Q:** Tungsten filament lamp **2100Q*is*:** Light-emitting diode (LED) at 860 nm
Range	0–1000 NTU (FNU)
Accuracy	±2% of reading plus stray light from 0–1000 NTU (FNU)
Repeatability	±1% of reading or 0.01 NTU (FNU), whichever is greater
Resolution	0.01 NTU on lowest range
Stray light	≤ 0.02 NTU (FNU)
Signal averaging	Selectable on or off
Detector	Silicon Photodiode
Reading modes	Normal (Push to Read), Signal Averaging or Rapidly Settling Turbidity™
Calibration options	Single step RapidCal™ for Low-Level Regulatory Reporting from 0–40 NTU (FNU) Full range calibration from 0–1000 NTU (FNU) Calibration to degrees of turbidity
Calibration logger	Records the last 25 successful calibrations
Verification logger	Logs the last 250 successful verifications
Data logger	500 records
Power requirement	AC 100–240 V , 50/60 Hz (with power or USB/power module) 4 AA alkaline batteries Rechargeable NiMH (for use with USB/power module)
Operating conditions	Temperature: 0 to 50 °C (32 to 122 °F) Relative Humidity: 0–90% at 30 °C, 0–80% at 40 °C, 0–70% at 50 °C, noncondensing
Storage conditions	–40 to 60 °C (–40 to 140 °F), instrument only
Interface	Optional USB
Sample required	15 mL (0.5 oz.)
Sample cells	Round cells 60 x 25 mm (2.36 x 1 in.) borosilicate glass with screw caps
Dimensions	22.9 x 10.7 x 7.7 cm (9.0 x 4.2 x 3.0 in.)
Weight	530 g (1.17 lb) without batteries 620 g (1.37 lb) with four AA alkaline batteries
Meter enclosure rating	IP67 (closed lid, battery and module compartment excluded)
Protection class	Power supply: Class II
Certification	CE certified
Warranty	1 year (EU: 2 years)

General information

In no event will the manufacturer be liable for direct, indirect, special, incidental or consequential damages resulting from any defect or omission in this manual. The manufacturer reserves the right to make changes in this manual and the products it describes at any time, without notice or obligation. Revised editions are found on the manufacturer's website.

Safety information

NOTICE

The manufacturer is not responsible for any damages due to misapplication or misuse of this product including, without limitation, direct, incidental and consequential damages, and disclaims such damages to the full extent permitted under applicable law. The user is solely responsible to identify critical application risks and install appropriate mechanisms to protect processes during a possible equipment malfunction.

Please read this entire manual before unpacking, setting up or operating this equipment. Pay attention to all danger and caution statements. Failure to do so could result in serious injury to the operator or damage to the equipment.

Make sure that the protection provided by this equipment is not impaired. Do not use or install this equipment in any manner other than that specified in this manual.

Use of hazard information

⚠ DANGER

Indicates a potentially or imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

Indicates a potentially or imminently hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

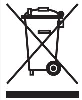
Indicates a potentially hazardous situation that may result in minor or moderate injury.

NOTICE

Indicates a situation which, if not avoided, may cause damage to the instrument. Information that requires special emphasis.

Precautionary labels

Read all labels and tags attached to the instrument. Personal injury or damage to the instrument could occur if not observed. A symbol on the instrument is referenced in the manual with a precautionary statement.

	This is the safety alert symbol. Obey all safety messages that follow this symbol to avoid potential injury. If on the instrument, refer to the instruction manual for operation or safety information.
	This symbol indicates that a risk of electrical shock and/or electrocution exists.
	Electrical equipment marked with this symbol may not be disposed of in European public disposal systems after 12 August of 2005. In conformity with European local and national regulations (EU Directive 2002/96/EC), European electrical equipment users must now return old or end-of-life equipment to the Producer for disposal at no charge to the user. ***Note:** For return for recycling, please contact the equipment producer or supplier for instructions on how to return end-of-life equipment, producer-supplied electrical accessories, and all auxiliary items for proper disposal.*

Certification

Canadian Radio Interference-Causing Equipment Regulation, IECS-003, Class A:

Supporting test records reside with the manufacturer.

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de classe A répond à toutes les exigences de la réglementation canadienne sur les équipements provoquant des interférences.

FCC Part 15, Class "A" Limits

Supporting test records reside with the manufacturer. The device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

1. The equipment may not cause harmful interference.

2. The equipment must accept any interference received, including interference that may cause undesired operation.

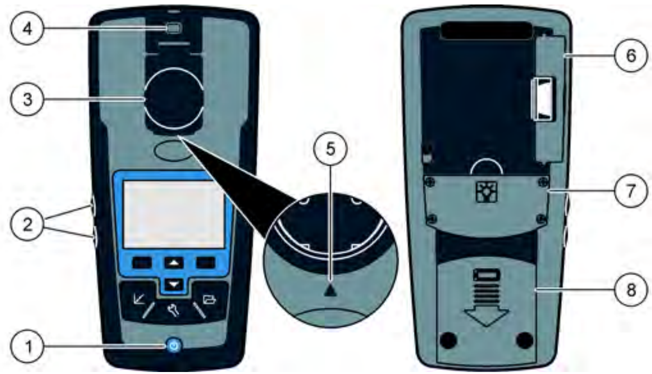
Changes or modifications to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at their expense. The following techniques can be used to reduce interference problems:

1. Disconnect the equipment from its power source to verify that it is or is not the source of the interference.
2. If the equipment is connected to the same outlet as the device experiencing interference, connect the equipment to a different outlet.
3. Move the equipment away from the device receiving the interference.
4. Reposition the receiving antenna for the device receiving the interference.
5. Try combinations of the above.

Product overview

The 2100Q and 2100Q*is* portable turbidimeters measure turbidity from 0 to 1000 NTU (FNU). Primarily for field use, the portable meter operates on four AA batteries. Data can be stored and transferred to a printer, computer or USB storage device.

Figure 1 Product overview

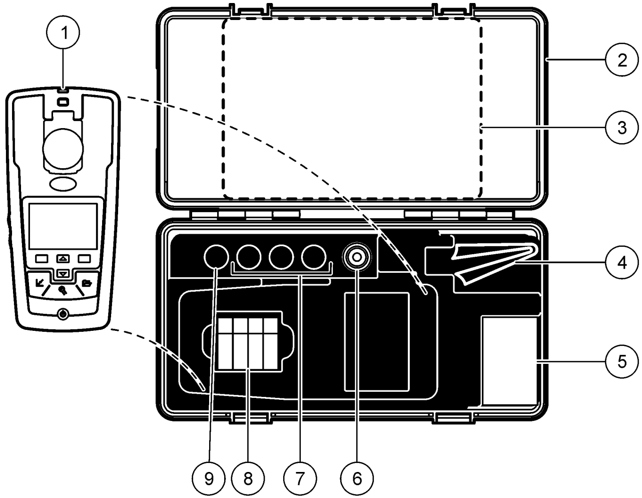


1	Power on or off	5	Alignment arrow
2	Backlight keys (+ and -)	6	Module
3	Sample cell holder with lid	7	Lamp compartment
4	Attachment for lanyard	8	Battery compartment

Product components

Refer to Figure 2 to make sure that all components have been received. If any of these items are missing or damaged, contact the manufacturer or a sales representative immediately.

Figure 2 2100Q and 2100Q*is* components



1	2100Q or 2100Q*is* turbidimeter	**6**	Silicone oil
2	Carrying case	**7**	20, 100 and 800 NTU StablCal calibration standards
3	User manual and Quick reference guide	**8**	AA alkaline batteries (pk/4)
4	Oiling cloth	**9**	StablCal 10 NTU verification standard
5	1" sample cell (10 mL) with cap (pk/6)		

Installation

⚠ CAUTION

Multiple hazards. Only qualified personnel must conduct the tasks described in this section of the document.

Install the battery

⚠ WARNING

Explosion hazard. An expired battery can cause hydrogen gas buildup inside the instrument. Replace the battery before it expires. Do not store the instrument for long periods with a battery installed.

⚠ WARNING

Potential fire hazard. Use only alkaline or nickel metal hydride batteries (NiMH) in the meter. Other battery types or incorrect installation can cause a fire. Never mix battery types in the meter.

NOTICE

The battery compartment is not waterproof. If the battery compartment becomes wet, remove and dry the batteries and dry the interior of the compartment. Check the battery contacts for corrosion and clean them if necessary.

NOTICE

When using nickel metal hydride (NiMH) batteries, the battery icon will not indicate a full charge after freshly charged batteries have been inserted (NiMH batteries are 1.2 V versus 1.5 V for alkaline batteries). Even though the icon does not indicate complete charge, 2300 mAH NiMH batteries will achieve 90% of instrument operation lifetime (before recharge) versus new alkaline batteries.

NOTICE

To avoid potential damage to the meter from battery leakage, remove the meter batteries prior to extended periods of non-use.

The meter can be powered with AA alkaline or rechargeable NiMH batteries. To conserve battery life, the meter will power off after 10 minutes of inactivity, the backlight powers off after 30 seconds. This time can be changed in the Power Management menu.

Note: *Rechargeable batteries will only be recharged with the USB/power module. Refer to the module documentation for further information.*

For battery installation refer to Figure 3.

1. Remove the battery cover.
2. Install 4 AA alkaline or 4 AA nickel metal hydride (NiMH) batteries. Make sure that the batteries are installed in the correct orientation.
3. Replace the battery cover.

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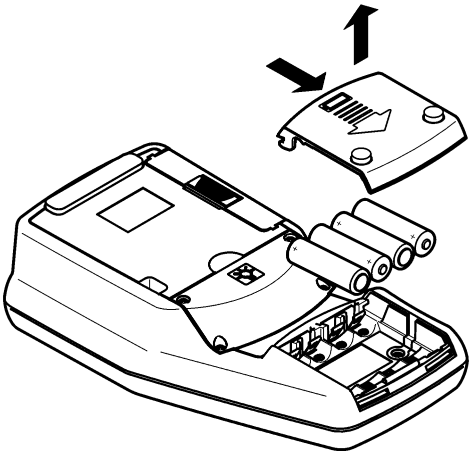
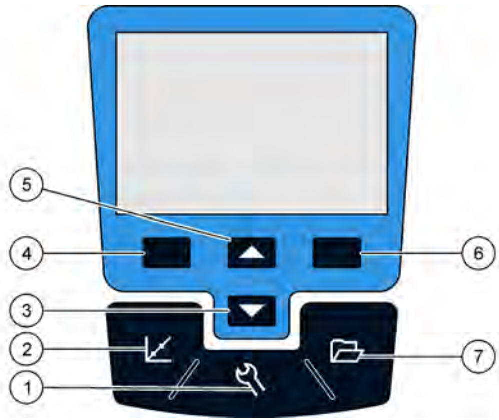
Figure 3 Battery installation



User interface and navigation

User interface

Figure 4 Keypad description

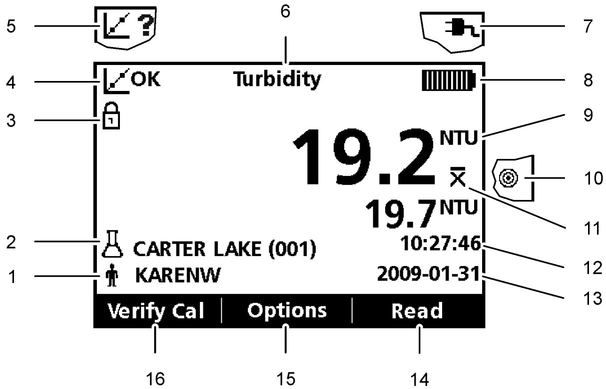


1 **SETTINGS** key: select menu options for setting up the meter	**5** **UP** key: scroll through menus, enter numbers and letters
2 **CALIBRATION** key: shows calibration screen, start calibration, select cal options	**6** **RIGHT** key (contextual): read turbidity sample, selects or confirms options, opens/jumps to sub-menus
3 **DOWN** key: scroll through menus, enter numbers and letters	**7** **DATA MANAGEMENT** key: view, delete or transfer stored data
4 **LEFT** key (contextual): access for calibration verification, cancels or exits the current menu screen to the previous menu screen	

Display description

The measurement screen shows the turbidity, unit, calibration status, date and time, operator ID (if setup) and sample ID (if setup). Refer to Figure 5.

Figure 5 Single screen display



1 Operator identification	**9** NTU (Nephelometric Turbidity Unit) or FNU (Formazin Turbidity Unit)
2 Sample identification	**10** Reading mode: Rapidly Settling Turbidity (Target icon)
3 Stability or display lock indicator	**11** Reading mode: Signal Average (X-bar icon)
4 Calibration status indicator (Calibration OK=pass)	**12** Time
5 Calibration status indicator (Calibration ?=fail)	**13** Date
6 Parameter title	**14** Read (contextual: OK, Select)
7 AC power icon	**15** Options (contextual)
8 Battery icon	**16** Verification calibration

Navigation

The meter contains a Settings menu, Reading Options menu, Calibration Options menu and Calibration Verification Options menu to change various options. Use the **UP** and **DOWN** keys to highlight different options. Push the **RIGHT** key to select an option. There are two ways to change options:

1. Select an option from a list: Use the **UP** and **DOWN** keys to select an option. If check boxes are shown, more than one option can be selected. Push the **LEFT** key under Select.

   ***Note:** To deselect check boxes, push the **LEFT** key under Deselect.*
2. Enter an option value using the arrow keys:
   Push the **UP** and **DOWN** keys to enter or change a value.
3. Push the **RIGHT** key to advance to the next space.
4. Push the **RIGHT** key under **OK** to accept the value.

Startup

Turn the meter on and off

Push the **ON/OFF** key to turn on or turn off the meter. If the meter does not turn on, make sure that the batteries, or the module, are properly installed or that the AC power supply is properly connected to an electrical outlet.

***Note:** The Auto-Shutoff option can also be used to turn off the meter. Additional information is available on the manufacturer's website.*

Change the language

There are three options to set the language:

- The display language is selected when the meter is powered on for the first time.
- The display language is selected when the power key is pushed and held.
- The language can be changed from the Settings menu.

1. Select a language from the list. Confirm with **OK**.
2. Push **Done** when the update is complete.

Change the date and time

The date and time can be changed from the Date & Time menu.

1. Push the **SETTINGS** key and select Date & Time.
2. Update the time and date information:

Option	Description
Format	Select one of the formats for the date and time: yyyy-mm-dd 24h yyyy-mm-dd 12h dd-mm-yyyy 24h dd-mm-yyyy 12h mm/dd/yyyy 24h mm/dd/yyyy 12h
Date	Enter the current date
Time	Enter the current time

The current date and time will be shown on the display.

After the date and time setup, the meter is ready to take a reading.

Standard operation

Use a sample ID

The sample ID tag is used to associate readings with a particular sample location. If assigned, stored data will include this ID.

1. Select **Sample ID** in the Settings menu.
2. Select, create or delete a sample ID:

Option	Description
Current ID	Select an ID from a list. The current ID will be associated with sample data until a different ID is selected.
Create a New Sample ID	Enter a name for a new sample ID.
Delete Sample ID	Delete an existing sample ID.

Use an operator ID

The operator ID tag associates readings with an individual operator. All stored data will include this ID.

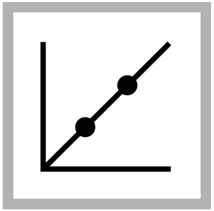
1. Select **Operator ID** in the Settings menu.
2. Select, create or delete an operator ID:

Option	Description
Current ID	Select an ID from a list. The current ID will be associated with sample data until a different ID is selected.
Create a New Operator ID	Enter a name for a new operator ID (maximum 10 names can be entered).
Delete Operator ID	Delete an existing operator ID.

Advanced operation

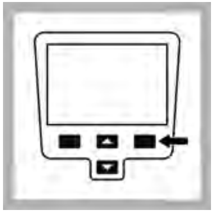
Calibrate the turbidimeter with StablCal® Standards

Note: *For best accuracy use the same sample cell or four matched sample cells for all readings during calibration. Insert the sample cell in the instrument cell compartment so the diamond or orientation mark aligns with the raised orientation mark in front of the cell compartment.*



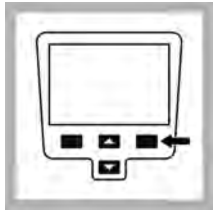
1. Push the **CALIBRATION** key to enter the Calibration mode. Follow the instructions on the display.
Note: *Gently invert each standard before inserting the standard.*

2. Insert the 20 NTU StablCal Standard and close the lid.
Note: *The standard to be inserted is bordered.*

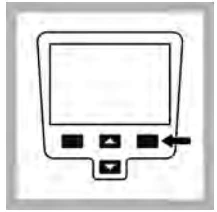


3. Push **Read**. The display shows Stabilizing and then shows the result.

4. Repeat Step 2 and 3 with the 100 NTU and 800 NTU StablCal Standard.
Note: *Push **Done** to complete a 2 point calibration.*



5. Push **Done** to review the calibration details.



6. Push **Store** to save the results.
After a calibration is complete, the meter automatically goes into the Verify Cal mode. Additional information is available on the manufacturer's website.

Reading modes

1. Push the **UP** or **DOWN** key to enter the Reading Options menu.
2. Select Reading Mode to select one of the following options:

Option	Description
Normal (Default setting)	The normal mode reads and averages three readings. The result is shown after the reading.

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Option	Description
Signal Average	The Signal Average mode compensates for reading fluctuations caused by drifting of sample particles through the light path. The X-bar icon is shown on the display when signal averaging is on. The Signal Average mode measures 12 times and starts to show the average after three readings. The final result is the average of all 12 readings.
Rapidly Settling Turbidity™ (RST)	The Rapidly Settling Turbidity (RST) mode calculates and continuously updates the turbidity reading of the sample to a confidence of 95%, based on the accumulated trend of the real time measured values. The RST mode is best used on samples that settle rapidly and continuously change in value. The reading is based on a correctly prepared sample that is homogeneous at the beginning of the reading. It is best applied to samples that are greater than 20 NTU. The sample must be mixed thoroughly by inversion immediately before inserting it into the meter. The target icon is shown on the display when the Rapidly Settling Turbidity is on. The Rapidly Settling Turbidity reads and calculates five readings while showing intermediate results.

Maintenance

⚠ CAUTION
Multiple hazards. Only qualified personnel must conduct the tasks described in this section of the document.

Clean the meter

The meter is designed to be maintenance-free and does not require regular cleaning for normal operation. Exterior surfaces of the meter may be cleaned as necessary.

Note: *Do not clean the meter with solvents to avoid damaging the material.*

1. Clean the meter with a dust- and lint-free dry or slightly damp cloth. A mild soap solution can also be used for liposoluble contamination.

Apply silicone oil to a sample cell

Sample cells and caps must be extremely clean and free from significant scratches. Apply a thin coating of silicone oil on the outside of the sample cells to mask minor imperfections and scratches that may contribute to light scattering.

Note: *Use only the provided silicone oil. This silicone oil has the same refractive index as the sample cell glass.*

1. Clean the inside and outside of the cells and caps by washing with a laboratory glass cleaning detergent. Follow with multiple rinses with distilled or demineralized water.

2. Apply a small bead of silicone oil from the top to the bottom of the cell.

3. Use the provided oiling cloth to spread the oil uniformly. Wipe off the excess so that only a thin coat of oil is left. Make sure that the sample cell is almost dry with little or no visible oil.

Note: *Store the oiling cloth in a plastic storage bag to keep the cloth clean.*

Store the sample cells

NOTICE

Do not air dry the sample cells.

Note: *Always store the sample cells with caps on to prevent the cells from drying.*

1. Fill the sample cells with distilled or demineralized water.
2. Cap and store the sample cells.
3. Wipe the outside of the sample cells dry with the a soft cloth.

Replace the battery

⚠ WARNING

Explosion hazard. An expired battery can cause hydrogen gas buildup inside the instrument. Replace the battery before it expires. Do not store the instrument for long periods with a battery installed.

⚠ WARNING

Potential fire hazard. Use only alkaline or nickel metal hydride batteries (NiMH) in the meter. Other battery types or incorrect installation can cause a fire. Never mix battery types in the meter.

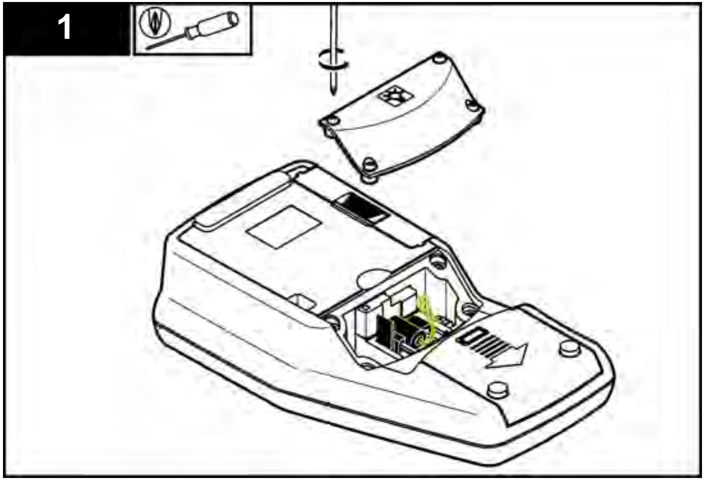
For battery replacement refer to Install the battery on page 6.

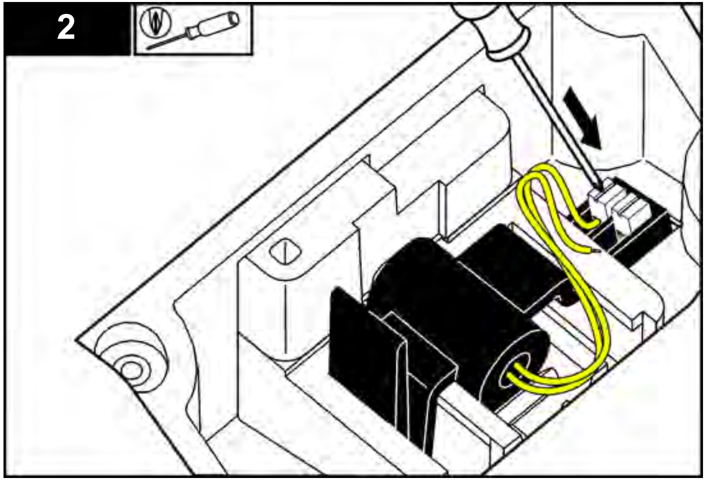
1. Remove the battery cover.
2. Remove the batteries.
3. Install 4 AA alkaline or 4 AA nickel metal hydride (NiMH) batteries. Make sure that the batteries are installed in the correct orientation.
4. Replace the battery cover.

Replace the lamp

⚠ CAUTION

Burn Hazard. Wait until lamp cools down. Contact with the hot lamp can cause burns.


1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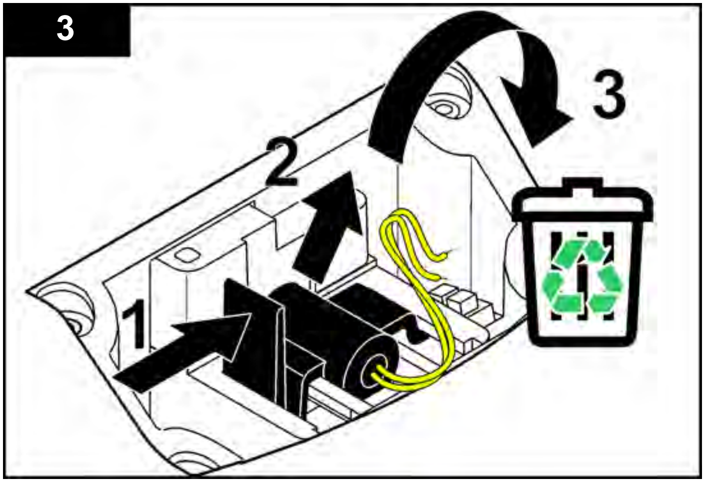
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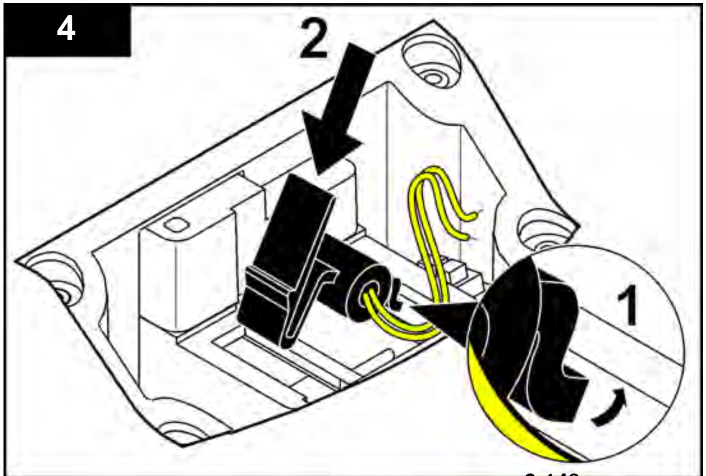
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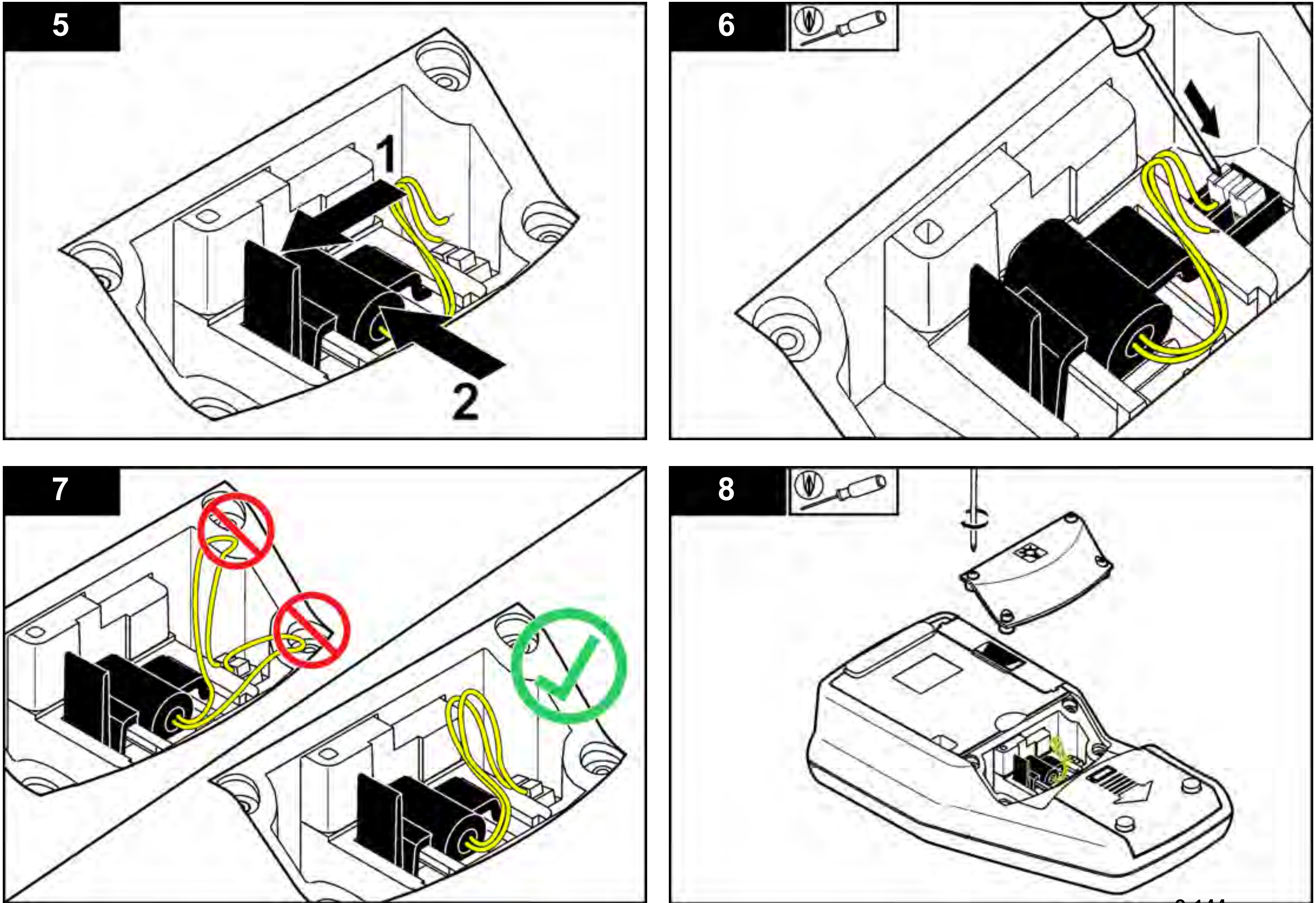
5
1
2
6
7
8

Troubleshooting

Refer to the following table for common problem messages or symptoms, possible causes and corrective actions.

Error/Warning	Description	Solution
Close lid and push Read.	The lid is open or lid detection failed.	Make sure that the lid is closed during reading and re-read.
Low Battery!	Battery is low.	• Insert new batteries • Connect USB/power module if rechargeable batteries are used
ADC Failure!	Hardware error causing reading to fail.	Repeat the reading.
Detector signal too low!	Insufficient light on the 180° detector.	• Check for obstructed light path. • Check the lamp.
Overrange!	Turbidity too high-caused probably by calibrating with RapidCal™ only.	• Calibrate the upper range. • Dilute the sample.
Underrange!	The measured absorbance is below the calibration range.	Repeat calibration
Please check the lamp!	Signals are too low on the 90° and 180° detector.	**2100Q:** The lamp is defective. Change the lamp (refer to Replace the lamp on page 12). **2100Q*is*:** Contact technical support.
Temperature too high! Switch off instrument.	Temperature has exceeded the meter limits (>60 °C or >140 °F).	Turn off the meter and let it cool down.
RST: Average value!	Solids are settling too slowly. The reading mode is not suitable for this sample.	Select Normal or Signal Average reading mode.
Confidence level is < 95%	The reading mode Rapidly Settling Turbidity did not meet the range of ≥ 95% confidence.	• Invert the sample several times so that the solids allocate. Repeat the reading again. • Switch to the Normal reading mode if the sample is stable and does not have settable solids.
Standard value out of range. Insert standard and push Read	Used incorrect standard value for the reading.	Insert the appropriate standard and read again.
ID already in use. Enter new ID	The Operator or Sample ID is unavailable as it is already assigned.	Create a new ID.
Error - Security Please set password before activating security	No password is created.	Create a new password.
Please enter at least one character.	Password must contain minimum of one character.	Create a password of at least one character.
Password incorrect. Please retry.	Incorrect password was entered.	Enter the appropriate password.

Error/Warning	Description	Solution
Please disconnect the USB cable from your computer.	Data storage does not respond while connected to the meter and the computer.	Disconnect the USB cable from the meter and try sending data again.
USB module memory full. Delete data and try again.	Data storage is full.	**1.** Connect USB/power module to the computer. **2.** Download the stored data to the computer. **3.** Delete Data Log on the module.
Delete Last Reading Failed!	Error in the data storage.	Turn the meter off and on. If the error message still occurs, contact technical support.
Delete Data Log failed!		
Can't read data set!		
Can't store data!		
Can't store to the Reading Log!		
Can't store to the Verify Cal Log!		
Error storing data!		
Error reading data!		

Appendix C: Field Data Sheets and Chain of Custody Forms

Form DW1 – Dry Weather Outfall Investigation Form

Form DW2 – Trash Assessment Form

Chain-of-Custody Form – Boise City Water Quality Laboratory

Chain-of-Custody Form – Analytical Labs, Inc.

Form DW-1
DRY WEATHER OUTFALL INVESTIGATION FORM

Outfall Information

Outfall ID:________________________

Station Type: _Outfall_ **Location:** ____________________________________

Lat: ______________ **Lon:**_______________ **Receiving Water**: ____________________________

Station Config.: (circle one) Box culvert Circular DI structure Elliptical Manhole Open ditch, lined Open ditch, unlined

Material: (circle one) ADS CMP Concrete Earthen PVC Rip rap RCP SMP **Size**: ______ (Inches)

Comments: ____

____

____

____

Drainage Area (acres):________________ **Land Use:**______________________________________

Site Condition Information

Personnel: _____________________ **Date/Time On-site:** _________________________________ MDT / MST

Comments: ____

____

____

____

Field Quantitative Results

Component

Antecedent Dry Conditions Met: **Y / N** (see notes for clarification)

Previous Storm Date: _____________ Storm Total: __________ inches

Flow Depth: ____________ inches Flow Width: ___________ inches

Velocity (Flow Probe): ____________ fps Flow: ________________ cfs

Velocity (Bucket Method) volume used: (circle one) 500ml 1L 5 gallon

Bucket Method Trial: 1: __________, 2: __________, 3: __________ sec.

Flow: __________ cfs (see notes for flow calculation resource)

Component

Temperature – DO Meter: _____________ C

Dissolved Oxygen: __________________ mg/L

Conductivity: _______________________ uS

pH: _________S.U. pH temp:_________ C

Total Chlorine: _____________________ mg/L

Total Copper: _____________________ mg/L

Phenols: _________________________ mg/L

Turbidity: _________________________ NTU

Notes: Antecedent dry conditions require >72 hours of < 0.10 inches of precipitation.
Flow Calculator - \\APPWSUS\ACHDFiles\Groups\ROWDS\STORMWATER\OUTFALL INSPECTION\DWOS\Dry WX Flow Calcs_151123

Form DW-1
DRY WEATHER OUTFALL INVESTIGATION FORM

Sample Collection Information

Component	Initial Grab Sample Date/Time	*QC-__A__ Field Duplicate* *(fill in appropriate sequential number)* Date/Time	QC-__B__ Field Blank *(fill in appropriate sequential number)* Date/Time	Labeled
E. coli - 250mL sterile plastic	________	________	________	☐
TSS – 5L plastic	________	________	________	☐
TP – 500mL plastic	________	________	________	☐
Detergents – 500mL plastic	________	________	________	☐
Ortho-P – 500mL sterile plastic *(To be filtered)*	________	________	________	☐
Ortho-P – 250mL sterile plastic *(Filtered Sample)*	________	________	________	☐

Notes: Date/Time recorded on the Lab COC for QC samples will be the collection date at 12:00. Field Blanks will be filled with ultra-pure water from WQL.

Investigation Event Qualitative Results

Observed?	Component	Comments/Description (circle one, if appropriate)				
☐	**GPS**					
☐	**Photos**					
☐	**Sedimentation**					
☐	**Staining**	Oily	Flow line	Paint		
☐	**Flow observed**	Trickle	Moderate	Substantial		
☐	**Odor**	Sewage	Sulfide	Rancid/Sour	Petroleum	
	Color	Clear	Green	Brown	Orange	Other
☐	**Vegetation**	Excessive	Inhibited			
☐	**Floatables** (trash NOT included)	Sewage	Suds	Petroleum		
	Structural condition	Good	Fair	Poor		
	Clarity	Clear	Cloudy	Silty		
	Illicit discharge	Unlikely	Potential	Obvious		
	Trash observed	No	Yes – see Trash Assessment Form (Form 2)			

Date/Time Off-site: ____________________ MDT / MST (circle one)

Investigation Event Qualitative Results (determined in office, post-inspection)

Component	Comments/Description (circle one)	
Compliance status	IN compliance	OUT of compliance

FORM DW-2
TRASH ASSESSMENT FORM

Outfall Information

Outfall ID:________________________

Station Type: Outfall **Location:** ____

Lat: ____________ **Lon:** ____________ **Receiving Water:** ____________________________

Comments: ____

____

____

Personnel:__________________

Date/Time On-site: ___________________ MDT / MST (circle one) Note: This is the "Start Date/Time"

Component	**Value**	**Unit**
Antecedent dry period	________________________________	**Hours**
Total precipitation - previous storm	______________ **Inches**	**Result/Analysis Date:** ___________

Trash Evaluation Includes: ☐ MS4 ☐ Receiving Water ☐ Both		
Component	**Observed?** (check (✓) if yes)	**Comments/Description** (circle one, if appropriate)
Photos	☐	____
Trash observed	☐	Optimal – No trash observed on first glance. Close examination yields <10 pieces.
	☐	Suboptimal- On first glance, little or no trash observed. Close examination yields 10-50 pieces.
	☐	Marginal – Trash evident in low to medium levels (51-100 pieces).
	☐	Sub marginal – Trash distracts the eye on first glance. Litter and debris >100-400 pieces. Evidence of human use apparent: cans, bottles, clothes, food wrappers, blankets.
	☐	Poor – Site is significantly impacted by trash. Evidence of excessive dumping. Littler observed >400 pieces.

FORM DW-2
TRASH ASSESSMENT FORM

Type of Trash	*Rank 1, Most - 12, Lest	Potential Route (check up to 2)				Potential Source (check up to 2)						
		Dumping	Littering	Upstream	Unable to Determine	Household	Construction	Commercial	Industrial	School	Transient	Unable to Determine
Automotive												
Biohazard												
Business												
Cigarette Butts												
Construction												
Fabric/Clothing												
Food Packaging												
Food Waste												
Household												
Shopping Cart												
Toxic												
Yard Waste												

*Only rank types of trash present in evaluated area from 1 through 12 (1 is most prevalent, 12 is least prevalent).Do not rank types of trash that are not present in evaluated area.

Comments:____

Date/Time Off-site:________________________ MDT / MST (circle one)

Ada County Highway District

Attn: Adam Van Patten
3775 Adams Street
Garden City, Idaho 83714–6418
Tel. (208) 387–6268
Fax (208) 387–6391

Purchase Order:
Project: DWOS
Sampler(s):

						Matrix	Type		Components																							
																									Split 2L each Unless specified							
Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Water	Grab	Composite	BOD_5—SM 5210B	COD—Hach 8000	TSS—SM 2540D	TDS—SM 2540C	TKN—PSTORP PAI-DK01	TP—EPA 200.7	Orthophosphate—EPA 365.1	Oil & Grease—EPA 1664	Total As, Cd, Cu, Pb, Hg, Ni, Zn, Cr—EPA 200.7	Diss. Cd, As, Cu, Pb, Hg, Ni, Cr —EPA 200.8	Hardness—SM 2340B	E. Coli—SM 9213D	D.O.—4500 – O G	NO_3+NO_2 / NO_2—EPA 353.2	NH_3—SM 4500 NH_3 - F			TrPH—1664 A SGT HEM	Organochlorine Pest.—EPA 8081	Organophosphate Pest.—EPA 8141		BNA—EPA 8270	VOCs — EPA 8260	Number of Containers
						X	X				X			X	X					X												4

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:

CLIENT CODE=

CHAIN OF CUSTODY RECORD

CLIENT INFORMATION:		PROJECT INFORMATION:	ANALYTICAL LABS, INC.
Project Manager:		**Project Name:** DWOS	1804 N. 33rd Street • Boise, ID 83703 (208) 342-5515 • Fax: (208) 342-5591 • 1-800-574-5773 Website: www.analyticallaboratories.com E-mail: ali@analyticallaboratories.com
Company: Ada County Highway District		**PWS Number:**	
Address: 3775 Adams Street		**Purchase Order Number:**	**TESTS REQUESTED**
Garden City, ID 83714		**Required Due Date:**	
Phone:	**Fax:**	**E-mail Address:**	
Sampled by: *(Please print)*	**Transported by:** *(Please print)*		

Lab ID	Date Sampled	Time Sampled	Sample Description (Source)	Sample Matrix										Remarks:
				Water	✔	☐	☐	☐	☐	☐	☐	☐	☐	
					☐	☐	☐	☐	☐	☐	☐	☐	☐	
					☐	☐	☐	☐	☐	☐	☐	☐	☐	
					☐	☐	☐	☐	☐	☐	☐	☐	☐	
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					☐	☐	☐	☐	☐	☐	☐	☐	☐	
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					☐	☐	☐	☐	☐	☐	☐	☐	☐	
					☐	☐	☐	☐	☐	☐	☐	☐	☐	

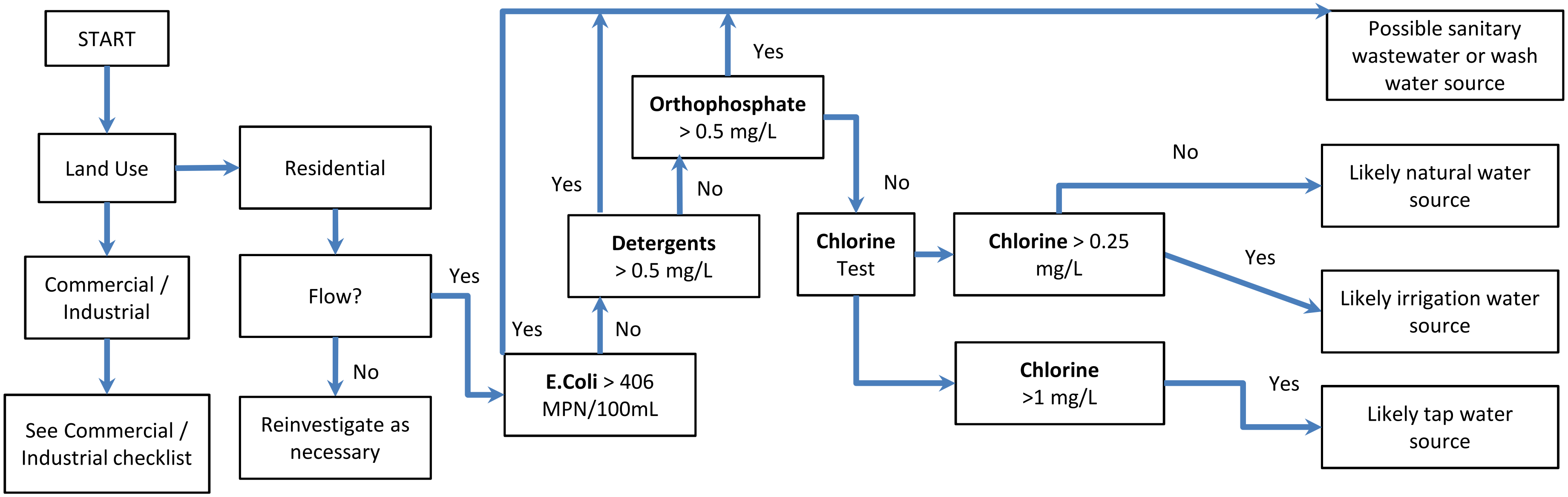
Invoice to: *(If different than above address)*	**Special Instructions:**

ALLOCATIONS OF RISK: Analytical Laboratories, Inc. will perform preparation and testing services, obtain findings and prepare reports in accordance with Good Laboratory Practices (GLP). If, for any reason, Analytical Laboratories, Inc. errors in the conduct of a test or procedure their liability shall be limited to the cost of the test or procedure completed in error. Under no circumstance will Analytical Laboratories, Inc. be liable for any other cost associated with obtaining a sample or use of data.

Note: Samples are discarded 21 days after results are reported. Hazardous samples will be returned to client or disposed of at client expense.

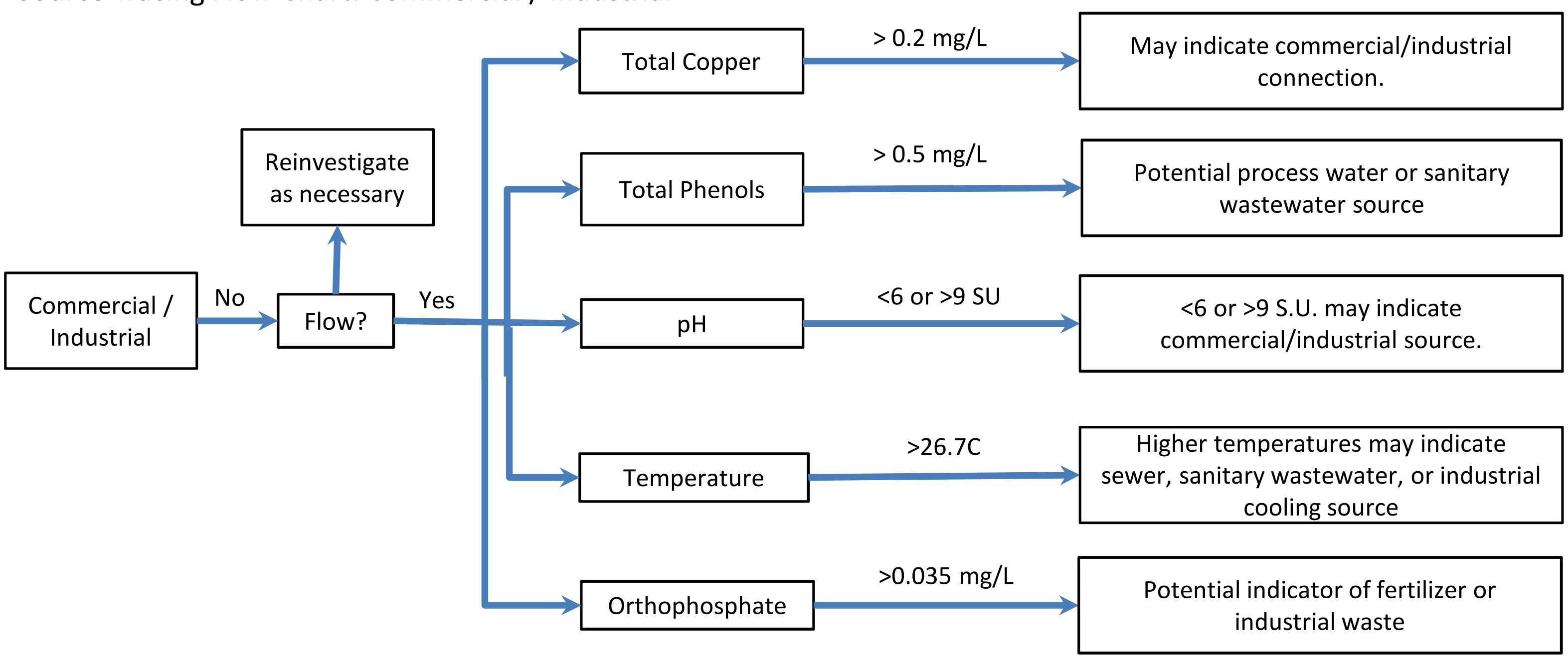
Relinquished By: *(Signature)*	**Print Name:**	**Company:** ACHD	**Date:**	**Time:**
Received By: *(Signature)*	**Print Name:**	**Company:**	**Date:**	**Time:**
Relinquished By: *(Signature)*	**Print Name:**	**Company:**	**Date:**	**Time:**
Received at Laboratory By: *(Signature)*	**Print Name:**	**Company:** Analytical Laboratories	**Date:**	**Time:**
SAMPLE RECEIPT **Total # of Containers:**	**Chains of Custody Seals** Y / N / NA	**Intact:** Y / N / NA **Temperature Received:**	**Condition:**	G-153

Appendix D: Source Tracing Flow Chart



Source Tracing Flow Chart: Residential

Source Tracing Flow Chart: Commercial / Industrial



Appendix E: Thresholds for Documented Flowing Outfalls

Specific water quality thresholds will be used in conjunction with loading calculations, specific source information, and other program criteria to make the determination whether to discontinue monitoring at any individual previously documented flowing outfall. As defined in the Permit "the sample results must be evaluated to identify feasible actions necessary to eliminate such flows and ensure compliance of Part 1.D of the Permit". If sample analytical results are in exceedance of any of the thresholds listed in Table E-1 for a given outfall, then they must be evaluated to identify feasible actions necessary to eliminate flows. Annual sampling is required until justification exists that the discharge complies with Part 1.D of the permit. If sample analytical results are not in exceedance of any thresholds listed in Table E-1 for a given outfall, then the outfall is considered an allowable discharge and does not require additional sampling or evaluation. Outfalls with allowable discharges and outfalls with no observed flow are to be reinvestigated on a five year rotation.

Table E-1. Thresholds for Water Quality Parameters

Constituent	Threshold	Basis	Source
pH	6.5 - 9.0	Idaho Aquatic Life	IDAPA 58.01.02.250.01.a
Temperature	22 C 19 C	Salmonid Spawning – Peak Salmonid Spawning - Max. daily average	IDAPA 58.01.02.250.02b
Turbidity	Not to exceed 50 NTU greater than background - instantaneous	Idaho Aquatic Life	IDAPA 58.01.02
Dissolved oxygen (DO)	6.0 mg/L	Salmonid Spawning	IDAPA 58.01.02.278.01.0 2.278.01
Conductivity	>50 and <1500	Typical US River Observations	EPA
Total chlorine	0.019 mg/L CMC 0.011 mg/L CCC	Idaho Aquatic Life	IDAPA 58.01.02
Total copper	1.3 mg/L 1.0 mg/L	National Primary Drinking Water National Secondary Drinking Water	IDAPA 58.01.02
Total phenols	21 mg/L	Idaho Human Health Consumption (Water/Organism)	IDAPA 58.01.02
E. coli	406 CFU/100 mL	Idaho Criterion for Primary Contact Recreation; single sample	IDAPA 58.01.02.251.01.c
Total suspended solids	80 mg/L (14 day)	Idaho Aquatic Life; Lower Boise River TMDL 14-day target	Lower Boise River TMDL (1999)
Total phosphorus	0.07 mg/L	Eutrophication	Boise River TMDL
Dissolved orthophosphate	0.07 mg/L	Guideline threshold – no specific criteria	
Detergents as Surfactants	Presence	Indicative of illicit connection – should not be present in dry weather flows	

ACHD may continue or increase the sampling frequency of an outfall until sufficient data exist to determine that a discharge is allowable under the permit requirements and will no longer require annual sampling.

Appendix H: CSDC Program Manual

Ada County Highway District

3775 Adams Street
Garden City, Idaho 83714

Phone: 208 387 6264
Fax: 208 387 6391

Committed to Service

CONSTRUCTION SITE DISCHARGE CONTROL PROGRAM MANUAL

November 2018

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APPENDICES

Boise City - Construction Site Erosion Control Ordinance Chapter 8-17
Garden City – Erosion and Sediment Control Ordinance Chapter 15
Ada County Code

Appendix J. Procedure Guidance

ESC Plan Review
Dewatering
ESC Violations

1.0 INTRODUCTION

In compliance with the 1987 reauthorization of the Clean Water Act (CWA), the Environmental Protection Agency (EPA) was required to issue National Pollutant Discharge Elimination System (NPDES) permits to all point sources and stormwater dischargers. EPA issued a Phase I NPDES Municipal Separate Storm Sewer System (MS4) Permit (No. IDS-027561) to ACHD and five Co-Permittees within the Boise Area which include: Boise City, Garden City, Idaho Transportation Department District 3, Ada County Drainage District #3, and Boise State University in November 2000 and a second cycle permit in December 2012. The Permit requires the Co-Permittees to develop programs and regulations to control the quality of stormwater runoff from construction sites. The EPA issued a Phase II NPDES MS4 Permit (No IDS. 028185) in October 2002 to ACHD that includes the cities of Eagle, Meridian, and urbanized unincorporated Ada County. ACHD's Construction Site Discharge Control (CSDC) Program is implemented throughout Ada County due to complexities associated with implementing different standards based on permit boundaries. Countywide implementation provides consistent expectations for the regulated community wherever they may be working within Ada County in the public Right of Way (ROW). The Phase I and Phase II NPDES Permits are located in Appendix A.

To meet NPDES requirements, ACHD has adopted CSDC Program Policy Section 8300. Policy 8300 is used in conjunction with Policy 6000 – Permits and Inspection (Appendix B) to govern projects affecting ACHD's right-of-way. The CSDC Manual was developed to outline the procedures and support policies for implementation of the CSDC Program.

2.0 CSDC GOALS AND OBJECTIVES

The purpose of the CSDC Program is to meet NPDES MS4 permit requirements by reducing to the Maximum Extent Practicable (MEP) the discharge of pollutants from public and private construction activity within ACHD's jurisdiction. This program is implemented through ordinances, policies, manuals describing construction stormwater management and specifications, plan review and approval, construction site inspections, enforcement response policy for construction site management program, construction general permit violation referrals, and construction program education and training.

ACHD specifically regulates the following construction activities subject to the CSDC program:

- Temporary Highway Use Permits;
- Implementation of construction contracts;
- Activities performed by ACHD's Maintenance Department;
- Capital improvement projects, and
- Acceptance of new roads that are part of subdivisions.

Program specific objectives include:

- Review of erosion and sediment control and dewatering plans for ACHD projects or projects impacting the ROW;
- Prioritized inspection of construction sites and enforcement of control measures for permitted work;
- Investigating, tracking, and resolving complaints originating from construction sites in a timely and consistent manner;
- Assisting in construction site operators in correcting problems and violations of the policy;
- Coordination with other agencies in an efficient manner and avoid duplication;

- Review of dewatering plans for internal ACHD projects or contractor permitted work; and
- Review of license agreement applications for direct storm drain connections.

3.0 DEFINITIONS

Words and phrases as used in this section when capitalized are defined as follows:

"ACHD" or "Ada County Highway District" is a body politic and corporate of the state of Idaho, which has jurisdiction over and is specifically responsible for all county secondary and city Highways in Ada County.

"ACHD Spill Response Plan" a document providing ACHD Staff guidance on responsibilities, operating procedures, implementation, and training, associated with spill response in the ACHD right-of-way by ACHD staff or ACHD contractor.

"Adjoining Property" means property where erosion, sedimentation, or construction material impacts are occurring and the cause of impact is directly related to a Construction Activity or Land Disturbing Activity adjoining or upstream from such property.

"Approved ESC Plan" means either a Small Project ESC Plan or a Site-Specific ESC Plan approved by ACHD and attached to the Permit issued to Permittee.

"Best Management Practices (BMPs)" means physical, structural, and/or managerial practices that, when used alone or in combination, control activities including, but not limited to, site run-off, spillage and leaks, and waste disposal, and prevent or reduce the discharge of pollutants directly or indirectly to waters of the United States. BMPs may include activity schedules, prohibition of practices, design standards, educational activities, and treatment requirements.

"CGP SWPPP" means a Stormwater Pollution Prevention Plan that meets all the requirements outlined in the EPA issued Construction General Permit. This permit regulates construction site stormwater discharges.

"Co-Permittees" mean Boise City, Garden City, Idaho Transportation Department District 3, Ada County Drainage District #3, Boise State University, City of Eagle, City of Meridian, and urbanized unincorporated Ada County.

"Construction Activity" means activities related to a construction project, including, but not limited to, Land Disturbing Activities, crushing, screening, and hauling of soil and rock, explosive and abrasive blasting, implosion, handling of building materials, concrete, stone and tile cutting, operation of motorized and non-motorized machinery, operation of motor vehicles on the site, staging areas, parking areas, storage areas, or any access routes to the construction site.

"Dewatering" means the discharge of surplus water from a Land Disturbing Activity or Construction Activity into ACHD storm drain system or MS4.

"General Dewatering" means simple potable or uncontaminated water flushing's such as fire hydrants, where minimal BMP's are necessary to minimize impacts to the storm water system.

"Construction Dewater" means dewatering required because of construction and land disturbing activities.

"Environmentally Sensitive Sites" means any construction or building site with one or more of the following characteristics:

- All right-of-way work in areas where the predevelopment grades are greater than 10 percent;
- Ground disturbance of natural vegetative buffer within 50 feet of a wetland and or water body;
- Land Disturbing Activity or dewatering activities near or on known sites contaminated by listed Pollutants or listed by the federal Environmental Protection Agency or the Idaho State Department of Environmental Quality as a "Superfund" or a "brownfield" or site of concern as those terms are used by the governing agencies.

"Erosion and Sediment Control (ESC) Plan" means a plan, either a "Small Project ESC Plan" or a "Site Specific ESC Plan" containing provisions, at a minimum, addressing Material containment, Pollutant spill prevention and setting forth BMPs to be utilized during Construction Activity or Land Disturbing Activity.

"ESC Specialist" or "CSDC Staff" means erosion and sediment control personal or consultant who provides technical support and assistance to ACHD Staff and permit holders.

"Grading" means excavating, filling (including hydraulic fill) or stockpiling of earth material or any combination thereof, including the land in its excavated or filled condition.

"Highways" or "Highway" shall have the meaning as set forth in Idaho Code section 40- 109(5), together with all public rights-of-way as defined in Idaho Code section 40-117(6), as those code sections may be amended from time to time, which highways are under the jurisdiction of ACHD, and as are now existing and as the same may be laid out, widened, relocated, acquired and vacated or otherwise transferred in the future.

"Land Disturbing Activity" means the use of any land by any person that results in a change in the natural cover or topography that may cause erosion and contributes to or alters the quality and or quantity of stormwater runoff.

"Landscaping" means mowing, seeding, sodding and other landscaping activities that are not Land Disturbing Activities.

"Material" means soils, sand, gravel, clay, or any other organic or inorganic material that is not municipal, refuse, or defined elsewhere in this policy.

"Maximum Extent Practicable" (MEP) shall mean the technology-based discharge standard for municipal separate storm sewer systems established by the Federal Water Pollution Control Act, as Amended by the Clean Water Act of 1977, particularly §402(p).

"MS4" means a municipal separate storm sewer system as defined in 40 C.F.R. 122.26(b)(8), as updated and amended from time to time, that is under the jurisdiction of either ACHD or a Co-Permittee of a current NPDES Permit and any related structural or nonstructural connections.

“NPDES Permit” means National Pollutant Discharge Elimination System Permit issued by the Environmental Protection Agency.

“Permittee” shall mean an Applicant to whom a Temporary Highway Use Permit is issued.

“Person” shall have the meaning set forth in Idaho Code Section 40-117(1).

“Plan Designer” means an individual who has received certification from the City of Boise (https://pds.cityofboise.org/building/bld/erosion/training/) or another general purpose government entity who is a Co-Permittee with ACHD in a NPDES Permit and whose certification is derived either through successful completion of a Plan Designer Certification program or demonstrated competence.

“Policy” means the Construction Site Discharge Control Program Policy.

“Pollutant” means objects including, but not limited to, dredged soils, solid waste, incinerate residue, sewage, garbage, sewage sludge, munitions, chemical waste, biological materials, radioactive materials, wrecked or discarded equipment, rock, sand, silt, clay, dust, cellar dirt, industrial, municipal and agricultural waste, gases entrained in water, paints, oil, and other automotive fluids, soil, rubbish, trash, debris, refuse, heavy metals, hazardous waste, road sanding materials, yard waste from commercial landscaping operations, animal waste, materials that result from the process of constructing a building or structure, and nauseous or offensive matter of any kind, which, when discharged to water, cause or contribute to water pollution.

“Responsible Person” means any Person with operational control over site activities and day-to-day operational control of Plan requirements and Permit conditions at the site of any Construction Activity or Land Disturbing Activity who has received certification from the City of Boise or another general-purpose government entity who is a Co-Permittee with ACHD in a NPDES Permit.

“Sediment” means solid material, either mineral or organic, that is or has been in suspension or is being moved from its site of origin due to erosion.

“Sedimentation” means the process or action of depositing sediment.

“Site Specific Erosion and Sediment Control Plan” or “Site Specific Plan” means an Erosion and Sediment Control Plan required for land disturbing activities less than an acre for a specific location wherein Construction Activity is to take place and is not eligible for consideration and approval under a Small Project ESC Plan. The Site-Specific Plan shall include such standard requirements as may from time to time be adopted by ACHD.

“Small Project Erosion and Sediment Control Plan” or “Small Project Plan” means an Erosion and Sediment Control (ESC) Plan required under this section for routine activities (e.g., maintenance) disturbing an area of less than 600 square feet, with no more than 50 feet of lineal trench in the right-of-way, which does not impact any Environmentally Sensitive Sites. The Small Project Plan shall include such standard requirements as may from time to time be adopted by ACHD.

“Temporary Highway Use Permit” shall mean a permit issued by ACHD pursuant to the ACHD Policy Manual to any Person who desires to perform any work on a Highway, or encroaches on a Highway unless the area under ACHD jurisdiction is nominal and adjacent to property under the jurisdiction, authority and control of a general purpose government entity who is a Co-Permittee with ACHD in a NPDES Permit and requires an Erosion and Sediment Control Plan pursuant to a Construction Site Discharge Control Program for the adjacent property.

“Variance” means a modification of the requirements of the Policy based on hardship.

“Waiver” means being excused from compliance with this Policy by ACHD for a specific Construction Activity or Land Disturbing Activity.

4.0 CONSTRUCTION SITE DISCHARGE CONTROL PROGRAM

ACHD’s NPDES Permits authorize the discharge of storm water associated with construction activity (as defined in 40 CFR 122.26(b) (14) (x) and (b) (15)), from the MS4, only when such discharges are authorized under an appropriate NPDES permit. ACHD’s Construction Site Discharge Control Program was developed to meet the requirements of Construction Site Runoff Control Program section of the NPDES permits.

5.0 CONSTRUCTION RUNOFF ORDINANCES/REGULATORY MECHANISMS

5.1 Applicable Policies

ACHD manages the CSDC Program through both policy Section 8300 – Construction Discharge Control Program and policy Section 6000 – Permits and Inspection.

5.2 Application of Policies

Policy Section 8300 applies to <u>all</u> construction activity and <u>all</u> land disturbing activity, within the right of way under the jurisdiction of ACHD, within the corporate limits of Ada County. Through policy Section 6000, specifically policy Section 6007, ACHD monitors all construction and maintenance activities under ACHD jurisdiction and in subdivision developments through a comprehensive construction contract administration process.

5.3 Joint Inspection /Enforcement

ACHD implements the Construction Site Discharge Control Program throughout Ada County; however, enforcement capabilities and contacts vary depending on jurisdiction. ACHD’s Erosion Sediment Control (ESC) Specialist coordinates with other entities to address ESC issues when needed.

To meet NPDES Phase I MS4 Permit requirements, the City of Boise and Garden City have implemented their own Erosion and Sediment Control Programs within their respective corporate city limits. Each city has adopted a Construction Site Erosion Control Ordinance. Other cities within Ada County such as Meridian, Eagle, Star, Kuna, and the remaining unincorporated Ada County, do not have specific ESC ordinances. Instead, these areas that are covered under the NPDES MS4 Phase II Permit rely on Code Enforcement and nuisance ordinances to address ESC problems. Appendix E contains an MS4 Contact List that includes government agencies, irrigation districts and sewer districts contact information that is useful in addressing ESC issues.

6.0 CONSTRUCTION STORMWATER MANAGEMENT

6.1 Adopted Manuals/Documents

ACHD has adopted the Idaho Department of Environmental Quality’s *Catalog of Stormwater Best Management Practices for Idaho Cities and Counties* for erosion and sediment control practices. Additionally, the *Idaho Construction Site Erosion and Sediment Control field guide* is a quick reference for commonly used erosion and sediment control practices. This guide is distributed to persons involved in land disturbing activities i.e. homebuilders, general contractors, planners, designers, and inspectors. These documents are available in Appendix C.

6.2 Erosion and Sediment Control Requirements

An ESC Plan must be prepared and signed by a Plan Designer in a format set forth by ACHD. It shall describe the proposed Construction Activity or Land Disturbing Activity and the proposed Best Management Practices (BMPs) to be employed to prevent and control water quality impacts during and after construction. BMPs, as applicable to the site, shall be provided for control of sediment, flow conveyance, tracking, non-storm water management, waste management, and final site stabilization. Provisions for maintenance, inspection, and repair of controls and protection of Adjoining Property, as well as Material containment and Pollutant spill prevention must also be included as applicable.

6.3 Dewatering Requirements

Dewatering is separated into three types: construction dewatering, general dewatering, and utility vault dewatering. The following is a description of each activity and associated requirements.

6.31 Construction Dewatering

A construction dewatering permit requires a Dewatering Plan that consists of a site-specific narrative and map and must address the discharge of uncontaminated water into the ACHD storm drain system. Policy 6007.12.8 outlines the specific required elements of a Dewatering Plan. If construction dewatering continues for longer than 30 days, analytical monitoring is required for pollutants of concern and turbidity. Appendix D includes the Construction Dewatering Review Checklist.

6.32 General Dewatering

General dewatering is typically simple potable water flushing activities such as fire hydrants, where minimal Best Management Practices (BMPs) are necessary to prevent pollutants from entering the storm water system. General dewatering permits usually cover many locations throughout Ada County where the setup and procedures are the same for all locations. A General Dewatering Permit (Appendix D) consists of a list of requirements the permit holder agrees to meet by signing the form.

6.33 Utility Vault Dewatering

The dewatering permit for utility vaults allows surplus water from utility vaults to be discharged into ACHD's storm drain system. Laboratory analytical results from a minimum of three representative samples must be submitted to ACHD for review, prior to permit issuance. The analytical parameters and method required for submittal and list of BMPs are included on the Dewater/Discharge Permit for Utility Vaults, available in Appendix D.

6.34 Exempted Activities – Allowable Non-Stormwater Discharges

Non-stormwater discharges do not consist entirely of stormwater. The NPDES Permits allow some non-stormwater discharges that include:

- Water line flushing or other potable water sources
- Landscape irrigation and lawn water
- Rising groundwater
- Uncontaminated pumped groundwater
- Foundation and footing drains
- Water from crawl space pumps
- Residential air condition condensation
- Springs
- Individual residential car washes
- Flows from riparian habitats and wetlands
- Flows from firefighting activities and training
- Building wash down
- Street sweeping

7.0 PERMITS, PLANS AND ADMINISTRATION

7.1 Types of Permits

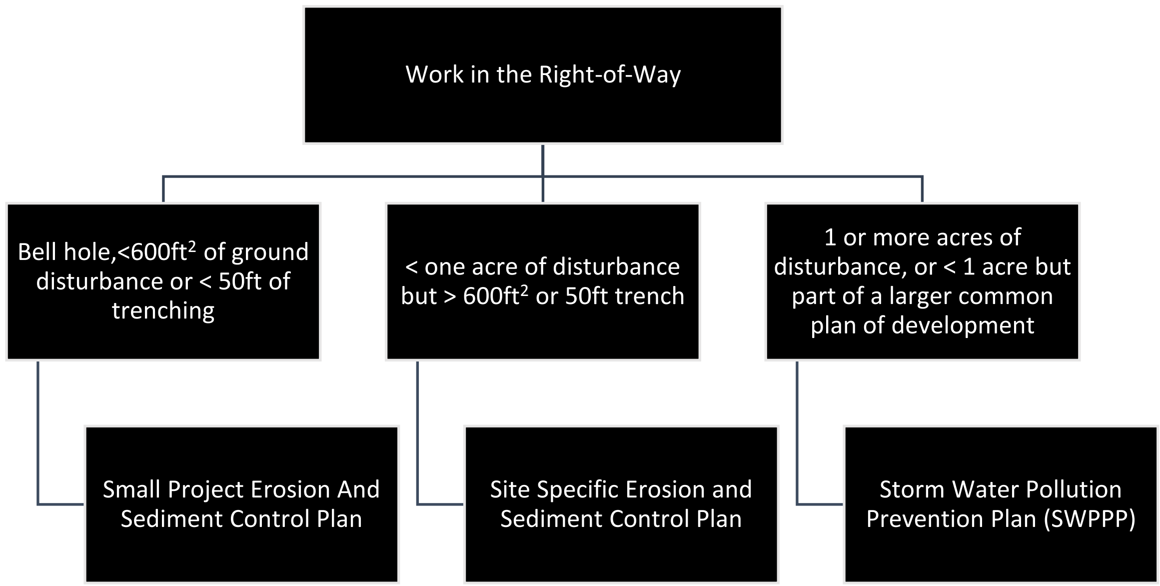
A permit is required to perform any work within ACHD's public ROW within Ada County.

- *Temporary Highway Use Permit* - Permits issued by ACHD pursuant to Section 6008 of ACHD Policy Manual to any person who desires to perform any work on a highway, or encroaches on a highway. Appendix D of this document includes a copy of a Temporary Highway Use Permit application as reference. A Temporary Highway Use Permit is also issued for work that is considered routine activities, such as maintenance, disturbing an area of less than 600 square feet with no more than 50 feet of lineal trench in the right-of-way, which does not impact any Environmentally Sensitive Sites.
- *Dewatering Permit*- Permits issued by ACHD that allows the holder to discharge uncontaminated water (both stormwater and non-stormwater) into ACHD's storm drain system provided that the discharges are not a source of pollution to waters of the United States and the type of water discharged is authorized and remains at all times compliant with ACHD's NPDES Permits. For more description of the types of dewatering permits and requirements see section 6.3.
- *Construction General Permit (CGP) NPDES Permit*- A permit issued by EPA Region 10 that is currently required for construction sites equal to or greater than one acre or for projects part of larger common plan of development that discharge or have the potential to discharge to water of the U.S. (Appendix A). Application for these permits is made directly to EPA Region 10.

7.2 Types of Erosion and Sediment Control Plans

An Erosion and Sediment Control Plan is required as part of ACHD's Temporary Highway Use Permit and before beginning any construction activity in the ACHD ROW unless it is specifically exempted in ACHD Policy 8300. Landscaping performed by any person under license to ACHD is exempted so long as pollutants or materials will not enter the storm drain system. The Temporary Highway Use Permit holder is responsible for ensuring his contractor and/or subcontractor and all other persons entering the site abide by the conditions of the permit. There are three different types of ESC plans ACHD accepts outlined in Figure 1 below.

Figure 1. Types of Erosion and Sediment Control Plans



- *Small Project Erosion and Sediment Control Plan* – An ESC plan for work that disturbs less than 600 square feet with no more than 50 feet of lineal trench in the right-of-way, and does not impact any Environmentally Sensitive Sites. These plans do not require review by an ESC Specialist. A Small Project ESC Plan (Appendix D) consists of a list of required BMPs that covers the work authorized by a valid Temporary Highway Use Permit. The Small Project ESC Plan is signed by the Temporary Highway Use Permit holder stating all requirements of the ESC plan will be met.

- *Site Specific Erosion and Sediment Control Plan* - An ESC plan required for a specific location where construction activity is to take place with less than one acre of disturbance, greater than 600 square feet, or 50 feet of lineal trench. The specific requirements of the plan are included in Appendix D, *ESC Plan/ SWPPP Review Checklist.* Site Specific ESC Plans require review by an ESC specialist and are a requirement of a Temporary Highway Use Permit.

- *Storm Water Pollution Prevention Plan (SWPPP*) – An ESC plan for construction sites that disturb one or more acres or are a part of a larger common plan over one acre of disturbance. The SWPPP identifies potential sources of storm water pollution at a construction site and describes storm water controls to reduce or eliminate pollutants in storm water discharges, and identifies procedures the contractor will implement to comply with the terms and conditions of the CGP. A SWPPP meets ACHD's CSDC program requirements for a Site Specific ESC Plan and may be submitted in lieu of a Site Specific ESC Plan.

7.3 Permit Application Process and Submittals

The Permit application process is addressed by three separate processes, depending on project type (Zone, Subdivision, or Capital project) described below. ACHD has designated Inspectors for each project type. Section 8.1 provides specific information on roles and responsibilities.

ESC/SWPPP plans can be assigned to the ESC Specialist through TRAKiT (a database for tracking permits, inspections and violations), emailed, delivered digitally on a CD, or provided on paper copies. Plans that are emailed, delivered digitally on a CD, or provided by paper copies will be scanned then loaded onto the TRAKiT System

7.31 Zone

Any work in the ROW will be managed by the Construction desk. Plans submitted to the Construction Administrative Specialist will be assigned to an ESC Specialist though TRAKiT for review and approval.

7.32 Subdivision

Any development with newly constructed public roads will be managed by the Planning and Development Services desk. Plans submitted to the Planning and Development Services desk will be assigned to an ESC Specialist though TRAKiT for review and approval.

7.33 Capital Projects

Capital projects are projects where funding comes from the state or federal level. Plans for Capital projects are received through the Capital Projects Construction Administrator and have their own paper-based system that is kept with the Capital Projects desk, not associated with TRAKiT. The administrator will deliver three paper copies to the ESC Specialist which then will be reviewed for completeness using the CSDC review checklist. When plan review is completed and approved, the project name and acreage of the project is entered into a spreadsheet named "Plan Reviews.xlsm" and is kept in the current ESC Specialists staff folder on the S drive.

7.4 Permit Revocation

Temporary Highway Use Permits may be suspended or revoked if the construction activity is not in full compliance with ACHD policies. If a Temporary Highway Use Permit is suspended, revoked, or has expired, all work covered by the Temporary Highway Use Permit shall cease until a new permit is issued. A detailed description of the revocation process is defined in Policy 6000 Section 6007.21.2 - Modification or Revocation of Permit.

7.5 Variance and Waivers

ACHD may grant a variance or waiver based on Policy 8300. Requests for a variance or waiver must be in writing, set forth by factual basis to support the request, and must comply with the goals of the NPDES MS4 permits. ACHD may place conditions on a variance or waiver based on the topography of the construction site, the planned method of construction, or any other conditions necessary for the protection of the storm drain system. These are unusual & should be utilized sparingly.

7.51 Variances

Variances are only granted upon showing undue hardship because of characteristics of the site and the variance request is not in conflict with the public interest.

7.52 Waivers

7.522 Small Construction Waiver/Low Erosivity Waivers (CGP)

EPA's stormwater regulations allow NPDES permitting authorities to waive NPDES permitting requirements for stormwater discharges from small construction sites if:

- The construction site disturbs less than five acres, but more than one acre, and
- The rainfall erosivity factor ("R" in the revised universal soil loss equation, or RUSLE value) is less than five during the period of construction activity.

If a LEW waiver is granted, the developer is no longer required to have a full SWPPP; however, ACHD's requirements for a site-specific ESC still apply.

7.523 ESC Plan Waivers

A site-specific ESC Plan Waiver is available to bonded contractors awarded ACHD contracts to perform work in the ROW. The types of projects that may be eligible for this waiver include:

- Crackseals
- Thin Lift Overlays with rotomill and without rotomill
- Miscellaneous concrete such as replacement of broken sidewalk and curb
- Miscellaneous Pedestrian Ramps including installation of new ramps and replacement of old ramps

8.0 **PLAN REVIEW, APPROVALS, AND INSPECTIONS**

8.1 Roles and Responsibilities

The roles and responsibilities associated with ESC plan review, approval and inspection of construction sites vary based on the project type and roles within ACHD. Descriptions of the work ACHD staff perform related to the CSDC Program and the roles and responsibilities they fulfill are described below.

- ESC Specialist - ESC Specialists perform implementation activities required by Policy 8300 including ESC plan review, approval, inspection, inspection support, permit tracking, record keeping, and enforcement. Zone Inspectors and Subdivision Inspectors will also carry out inspection and enforcement activities within their areas of responsibility. The ESC Specialist provides technical support and assistance to ACHD Staff, Temporary Highway Use Permit holders, and the general public.

- ACHD Project Inspectors are responsible for oversight and implementation of the SWPPP by contractors on ACHD Capital projects. Project Inspectors conduct site visits and perform testing of roads. While doing these inspections they also inspect the sites for stormwater compliance. Depending on the severity of the findings, ESC problems can be addressed by the inspector, contractor, or forwarded to the ESC Specialist to address.

- Subdivision inspectors are responsible for inspecting new subdivision construction where the roads being built will be accepted by ACHD at the end of the project. Subdivision Inspectors conduct site visits and do testing of roads, as well as make observations for stormwater compliance. Depending on the severity of the findings the problems can either be addressed by the Inspectors, Responsible Person, or forwarded to ESC Specialist.

- Zone Inspectors are responsible for inspecting all Temporary Highway Use Permits in the Right-of-Way in designated sections of Ada County. They conduct site checks and do testing to ensure all rules are being followed and roads or sidewalks are being replaced correctly. While doing these inspections they also inspect the sites for stormwater compliance. Depending on the severity of the findings the problems can either be addressed by the Inspectors, Responsible Person, or forwarded to ESC Specialist to address.

8.2 Plan Requirements

All ESC Plans must be prepared and signed by a Plan Designer in a format set forth by ACHD. The plan must describe the proposed Construction Activity or Land Disturbing Activity and the proposed Best Management Practices (BMPs) to be employed to prevent and control water quality impacts during and after construction. BMPs, as applicable to the site, shall be provided for control of sediment, flow conveyance, tracking, non-storm water management, waste management, final site stabilization, maintenance, inspection, and repair of controls and protection of Adjoining Property. Provisions for Material containment as well as Pollutant spill prevention must also be included.

Required Elements of ESC Plan Include:

- A site drawing of existing and proposed conditions including:
- North arrow, scale, date
- Excavations, grades, paved areas, pond elevations, structures and utilities
- Property boundaries and lot lines
- Drainage easements
- Benchmark
- Surface water and wetlands, drainage patterns, and watershed boundaries, if present
- Location of existing vegetative cover

- Location and types of BMPs
- Location and schedule of soil disturbance
- A BMP inspection and maintenance schedule
- Final stabilization measures

The ESC Specialist will use the Erosion and Sediment Control Plan/SWPPP Review Checklist, Appendix D, to ensure all required elements have been included in the ESC plan. Plan deficiencies will be noted on the form and communicated to the Responsible Person via email or phone communication.

8.3 Routing, Plan Review, and Inspection Procedures by Project Type

8.31 Zone

Any work in the ROW will be managed by the Construction desk.

8.311 Routing

ESC Plans submitted to the Construction Administrative Specialist will be assigned to an ESC Specialist though TRAKiT for review and approval.

8.312 Plan Review and Approval Process

Each Zone ESC plan must meet the requirements outlined in Section 8.2. The ESC Specialist completes the review of the ESC plan and uses the CSDC Inspection Prioritization Criteria to determine a total numerical value from 0-10 that determines how frequently a site will be inspected. This process is outlined in Appendix D. The ESC Specialist enters the prioritization number and attaches the plan review checklist into TRAKiT for all permits. The ESC Specialist uses TRAKiT to document and record all aspects of the plan routing, review, and approval process. A Procedure Guidance (PG) detailing the Zone plan routing, review and approval process is available in Appendix J.

8.313 Inspection

ACHD has the right to inspect any ACHD-permitted construction site or any construction site that requires a Temporary Highway Use Permit or Dewatering Permit.

Zone Inspectors visit sites as time allows, typically two times during the period of construction. Zone Inspectors will make general site observations to determine if ESC problems are occurring. If Zone inspectors see ESC problems that need corrected and need assistance, the ESC Specialist will be contacted.

The ESC Specialist schedules zone permit inspections based on the frequency determined by the Inspection Prioritization Criteria described in section 8.312.The ESC Specialist will also conduct inspections based on complaints received, referrals, and problems observed, when warranted.

8.32 Subdivision

Any development with newly constructed public roads will be managed by the Planning and Development Services desk.

8.321 Routing

Plans submitted to the Planning and Development Services desk will be assigned to an ESC Specialist though TRAKiT for review and approval. Digital Plans too large for submitting over email can be submitted to ACHD's Dropbox FileShare. The procedures for communication between the ESC Specialist and the ROWDS Administrative Assistant to verify if a subdivision plan set has been accepted and setup for review is included in the PG detailing subdivision plan routing, review, and approval process in Appendix J.

8.322 Plan Review and Approval Process

Each Subdivision ESC/SWPPP must meet the requirements outlined in Section 8.2. The ESC Specialist completes the review of the ESC plan and uses the CSDC Inspection Prioritization Criteria to determine a total numerical value from 0-10 that determines how frequently a site will be inspected. This process is outlined in Appendix D. The ESC Specialist enters the prioritization number and attaches the plan review checklist into TRAKiT for all permits. The ESC Specialist uses TRAKiT to document and record all aspects of the plan review and approval process.

8.323 Inspection

ACHD has the right to inspect any ACHD-permitted construction site or any construction site that is requiring a Temporary Highway Use Permit or Dewatering Permit.

Subdivision Inspectors make ESC observations during subdivision inspections. All inspections are initiated by the contractor and dictated by work being schedules on the project site. Not all projects follow the timeline given on the permit. Issues may arise that accelerate or halt construction. If Subdivision Inspectors see ESC problems needing assistance, inspectors will contact an ESC specialist.

The ESC Specialist schedules subdivision permit inspections based on the frequency determined by Inspection Prioritization Criteria described in section 8.312. Subdivisions often require more frequent inspections due to the length of time construction is occurring and large area of disturbance. The ESC Specialist will also conduct inspections based on complaints received, referrals, and problems observed, when warranted.

8.33 Capital Projects

8.331 Routing

Capital Projects do not use the TRAKiT system. Instead, paper copies of ESC/SWPPP's are submitted to the Capital Projects Construction Administrator from the Contractor. The Administrator delivers three paper copies to the ESC Specialist for review. Once approved and stamped by the ESC Specialist, one copy is retained by Construction Administration, one copy is for the contractor, and one copy remains on the construction site in the job trailer. A Procedure Guidance (PG) detailing the Capital Projects plan routing, review, and approval process is available in Appendix J.

8.332 Plan Review and Approval Process

Each Capital Project ESC/SWPPP plan must meet the requirements outlined in Section 8.2. A Construction Site Discharge Control Prioritization Score will be assigned by the ESC Specialist during plan review based on the criteria in Appendix D. The SWPPP is reviewed by ESC Specialist to ensure that it consists of all required SWPPP elements. If additions/corrections are to be made the ESC Specialist will directly contact the Contractor. When the ESC/SWPPP has met all of ACHD's requirements all three copies are stamped for approval and the CSDC Prioritization Score is handwritten on the front cover of the plans. The ESC Specialist tracks all of the reviews by priority score and disturbed acres electronically at S:\STORMWATER\Staff\ Plan_Reviews.xlsm. The paper copies are returned back to the Construction Administrator.

8.333 Inspection

Capital Projects Inspectors conduct stormwater inspections weekly and after 0.25" rainfall events, in conjunction with the contractor. Currently, the Inspection Prioritization Score is not used by Capital Projects to determine frequency of inspections. The Inspector submits the Stormwater Construction Site Inspection Report (located in Appendix D) to the Capital Projects Construction Supervisor who signs and delivers the inspection reports to the Construction Administrator. The Construction Administrator retains a copy of the inspection report in the construction project folder and provides the original to the contractor for the official SWPPP binder.

The ESC Specialist typically does not inspect Capital Project sites. Most often if complaint warrants an inspection, the ESC Specialist will contact the Project Inspector. The ESC Specialist will assist as requested.

8.334 NOI/NOT/SWPPP Requirements

The Construction General Permit (CGP) outlines a set of provisions construction operators must follow to comply with the requirements of the NPDES stormwater regulations. The CGP covers any site one acre and above that discharge to impaired waters of the U.S, including smaller sites that are part of a larger common plan of development or sale.

Construction projects that disturb one or more acres are subject to three major requirements. The contractor must:

- Submit a permit application or Electronic Notice of Intent (eNOI) prior to the start of construction.
- Develop, submit, and fully implement an approved erosion and sediment control plan or approved Storm Water Pollution Prevention Plan (SWPPP) prior to initiating any on-site earth disturbing activities. This plan specifies the measures that will be put in place to prevent and/or control erosion and sediment run-off.
- Submit a Notice of Termination (NOT) when the following criteria have been met:
  - Final stabilization of the site has been achieved as defined in the permit;
  - All temporary erosion and sediment controls have been removed; and
  - No potential remains for construction-related sediment discharge to surface waters.

The Contractor must apply for coverage under the CGP and ensure and document that discharges are not likely to jeopardize the continued existence of any federally listed endangered or threatened species or result in the adverse modification or destruction of habitat that is federally-designated as critical under the Endangered Species Act (ESA), or Historical Landmarks through the Idaho State Historical Society (SHPO).

The contractor must also determine whether an EPA approved or established TMDL exists that specifically addresses its discharge and if so, take necessary actions to be consistent with the assumptions and requirements of the approved TMDL. To make this determination, the operator will need to: (1) determine the water body the construction site discharges into and has the potential to impact; (2) identify if there is an approved TMDL for that water body; (3) determine if that TMDL includes specific requirements (e.g., waste load allocation or load allocation) applicable to its construction site; and (4) if so incorporate TMDL requirements into the SWPPP and implement necessary steps to comply.

A SWPPP is prepared for construction staff, contractors, and regulators. The purpose of the SWPPP is to identify potential pollutant sources that may affect the quality of discharges associated with construction activity, to identify non-stormwater discharges, and to design the use and placement of BMPs to effectively prohibit the entry of pollutants from the construction site into the storm drain system during construction. Erosion and sediment source control BMPs must be considered for both active and inactive (previously disturbed) construction areas. The plan is designed to show the contractor when, how, and where physical BMPs will be installed. It also demonstrates to the regulators what methods will be used to achieve compliance with water quality laws. A template is available online for informational purposes to assist contractors in preparing a SWPPP. The template was designed using potential narrative discussion and listing BMPs. The template does not cover every conceivable situation that may be applicable to the project. Available technical resources should be consulted as needed to address unique conditions.

The two major parts of a SWPPP include the narrative section and Site-Specific Maps. The plan sheets are the most important part of the erosion control plan. All temporary and permanent erosion control features shall be shown on the contract plans and, as necessary, specified in the contract provisions. In addition to the BMPs, plan sheets shall show the clearing and grubbing limits, cut and fill slope lines, topography, impervious surfaces, drainage features, environmentally sensitive areas and associated buffer zones, receiving waters, and stormwater treatment areas. The plan sheets will be used by the contractor to install the physical BMPs, and by the regulators in evaluating the site for compliance.

Prior to the commencement of any clearing, grading, or excavation of any project subject to the CGP, a SWPPP must be prepared, approved and implemented.

8.4 ESC Inspection Procedures

ESC Specialist inspections are conducted in response to observations by local government personnel, citizens' complaints, request by Project Inspectors, and scheduled based on the CSDC Inspection Prioritization Criteria. All inspections where deficiencies are found are entered into TRAKiT as well as corrective action and follow up inspection. Deficiencies are documented and communicated to the Responsible Person. In accordance with the NPDES Permit (II.B.d.i.), Inspections of construction sites must include, but not be limited to:

- As applicable, a check for coverage under the CGP by reviewing any authorization letter or Notice of Intent (NOI) during initial inspections;
- Review applicable ESC plan/SWPPP to determine if control measures have been installed, implemented, and maintained as approved;

- Assessment of compliance with the Co-Permittees' ordinances/requirements related to storm water runoff, including the implementation and maintenance of required control measures;
- Assessment of the appropriateness of planned control measures and their effectiveness;
- Visual observation of non-storm water discharges, potential illicit connections, and potential discharge of pollutants in storm water runoff;
- Education or instruction related to storm water pollution prevention practices, as needed or appropriate; and
- A written or electronic inspection report.

Situations will arise where earthwork is being done for a project for which no ESC Plan has been submitted and no Temporary Highway Use Permit has been obtained. These situations should be reported to the Construction Services Desk: 208-387-6280 or to the corresponding Inspector.

If an Inspector observes a problem, a deviation from the ESC Plan, or a violation of the Temporary Highway Use Permit, the Responsible Person listed on the permit should be contacted. If that individual is not available on the site, the person in charge at that time should be made aware of the situation and given a time frame for correcting all problems as listed in the Compliance Schedule, Table 1, below.

COMPLIANCE SCHEDULE	
VIOLATION	**COMPLIANCE DEADLINE**
Drop inlet protection	24 hours
Spill Containment	Immediately
Dust Abatement	End of business
Construction Entrance/ Access Control	48 hours
Track out	End of business
Slope Stabilization	48-72 hours (size dependent)
Erosion Control	48 hours
Sediment Control	24 hours

TABLE 1 COMPLIANCE SCHEDULE

Deficiencies should be documented with a Notice of Violation. The Notice of Violation (NOV) and NOV Fact Sheet (Appendix G) should be given directly to the Responsible Person. If the Responsible Person (RP) is not on site, the NOV should be posted at the construction entrance with the Notice of Intent (NOI) and SWPPP. The RP should be contacted by telephone, if possible. An entry should be made in TRAKiT for the inspection, NOV, compliance deadline, and subsequent compliance/ noncompliance.

If the Plan deviation was a result of unanticipated conditions, such as a change in the construction schedule, failure of a BMP, or unexpected site conditions, the Inspector and RP may agree to modifications at that time. Such changes should be annotated on the Permittee's plan by the RP or their agent. ACHD inspectors should not modify Permittee's plans unless ACHD is the owner/operator. Other documentation may be collected during an inspection in the form of photographs or copies of the site plan. Collect documentation proportionate to the potential seriousness of the violations observed and compliance history. All violations and verbal warning are recorded in TRAKiT. Photos are stored at S:\STORMWATER\Stormwater Quality Pictures\Erosion and Sediment.

When a construction site is found to be in non-compliance during a follow-up inspection conducted within the timeframe identified, a second Notice of Violation should be issued and the RP contacted. Section 9, Enforcement, describes the escalating enforcement response policy and factors in selecting the appropriate enforcement response. Policy 8300 allows for a stop work order and permit revocation. Prior to issuing a stop Work Order the ESC Specialist should coordinate with development services staff, zone inspection staff, or other senior staff who have been involved with the development or construction site.

8.5 Reviewer/Inspector Qualifications

ESC Specialist and ACHD Inspectors are trained and knowledgeable in erosion and sediment control and have completed their Responsible Person and/or Plan Designer training through Boise City. See section 11.0 Construction Program Education and Training for more information. ACHD is required to use qualified individuals, knowledgeable in the technical review of ESC plans/SWPPPs, to conduct such reviews (NPDES Phase I Permit II.B.1.c.iii and g).

9.0 ENFORCEMENT

9.1 Enforcement Response Policy (ERP)

Enforcement is integral for program success and required by the Phase I NPDES Permit. The Phase I NPDES Permit requires Co-Permittees to develop and implement a written escalating enforcement response policy (ERP) appropriate to their organization. The ERP must address repeat violations through progressively stricter responses as needed to achieve compliance. Each ERP must describe how the Co-Permittee will implement the following types of enforcement response, as available, based on the type of violation:

- Verbal Warnings: Verbal warnings are primarily consultative. At a minimum, verbal warnings must specify the nature of violation and required corrective action.
- Written Notices: Written notices must stipulate the nature of the violation and the required corrective action, with deadlines for taking such action.
- Escalated Enforcement Measures: The organization must have the legal ability to employ any combination of enforcement actions below (or their functional equivalent):
- The ERP must indicate when to initiate a Stop Work Order. Stop work orders must require that construction activities be halted, except for those activities directed at cleaning up, abating discharge, and installing appropriate control measures.

Co-Permittees must also include use of other escalating measures under local or state legal authorities, such as assessing monetary penalties. The CSDC ERP is implemented through policy Section 6007.

9.2 Factors in Selecting the Appropriate Enforcement Response

The basic approach in making a violation determination involves using the language in the policy and/or permit condition as a guide to determine whether the information collected demonstrates that a violation has occurred. The inspector should, at this point, have a good understanding of what regulatory requirement was violated, and how. The Notice of Violation (NOV) is used initially to inform a contractor of noncompliance after an initial verbal warning. Deadlines for compliance are provided in sections 9.31-9.33. Compliance determinations must be based solely on the factual information collected and professional judgment. A determination of the appropriate enforcement action is based on the nature and severity of the violation and other relevant factors. These factors must be considered when a violation has occurred to promote consistent and timely use of enforcement remedies. Factors that will determine the appropriate enforcement action include:

Factors relating to impact

- Magnitude of the violation;
- Imminent endangerment to human health/welfare or to the environment;
- Duration of the violation;
- Effect of the violation on the receiving water;
- Whether circumstances beyond the control of the responsible party exist, such as unpredictable accidents or unexpected Acts of Nature.
- Causes a violation of the NPDES permit;
- Has a toxic effect on the aquatic life uses of the receiving water body; and
- Duration of non-compliance.

Factors relating to responsible party

- Compliance history of the responsible party;
- Economic benefit realized by the responsible party while operating in noncompliance with the requirements;
- Chronic violations by responsible party;
- Good faith of the responsible party; and
- Honest intention to remedy noncompliance coupled with actions that support intention.

9.3 Enforcement Options

The types of administrative enforcement options for the CSDC program include:

- Inspector-initiated corrective action;
- A verbal warning, with a deadline for correction. Verbal warnings should be documented in TRAKiT;
- A Notice of Violation, with specifications of corrections, a deadline, and a warning about the consequences of noncompliance. A NOV Fact sheet should be provided with all first time offenders. The NOV should also be logged into TRAKiT; and
- Revoking the Temporary Use Permit which is comparable to a stop-work order, with a warning about the consequences of noncompliance.

Section 8300 of ACHD's Policy Manual provides, "In the event the provisions set forth under the Approved Site Plan have not been met, the Responsible Person will be given a written notice of the violation and a time period in which to correct the deficiencies causing the violation. If the corrections have not been made within the designated time period or additional violations occur, ACHD may issue a stop work order". The Notice of Violation (NOV) notifies the Permittee or the designated Responsible Person of the problem. The notification document also describes the required corrective action and provides a time period in which the corrective action must be completed. A NOV does not require a signature from the Responsible Person.

If the corrective action is not completed in the specified time period, the Temporary Use Permit may be revoked. If the corrections are not made within the time period or additional violations have occurred, ACHD may issue a stop work order. The policy further provides that ACHD may issue a stop work order for failure to comply with the Approved Site Plan, independently of any other violations that may have occurred under the Temporary Highway Use Permit.

ACHD can initiate corrective action and assess the actual and administrative costs against the permit holder. The violator may be required to pay all costs of investigation, administrative overhead, out-of-pocket expenses, the cost of administrative hearings, the costs of suit, and reasonable attorney's fees. If no reasonable effort at corrective action is occurring, or if the situation is an emergency, the inspector may initiate corrective action and assess the actual and administrative costs against the permit holder.

Additionally, with coordination of permit staff, the permit holder's bond can be sought or revoked to pay for cleanup costs and to prevent the contractor from starting new jobs.

Table 2 lists the appropriate enforcement response initiated by the ESC Specialist based on the type of violation.

Enforcement Responses	
Type of Violation	**Response**
Minor violation - relatively minor or infrequent	Phone call or site visit with verbal warning
Violation of permit condition, plan, or standards	Notice of Violation
Failure to correct problem or repeated violations	Revoke Temporary Use Permit
Significant Violation	Revoke Temporary Use Permit
Emergency Situation	Temporary or permanent injunction

TABLE 2 ENFORCEMENT RESPONSES

9.31 Verbal Warnings

Verbal Warnings may be provided and a contractor given 2 to 3-day period to correct all problems.

9.32 Written Notices

If a Notice of Violation is issued, the contractor has a 48-hour period to correct all problems.

9.33 Escalated Enforcement

A Stop Work Order written on a NOV is effective immediately as outlined in section 6007.18.3. Additional remedies can be civil penalties outlined in Section 6007.22.1. If the severity of the situation warrants the inspector may escalate the ERP as quickly as needed as outline in Policy Section 6007.18.3.

9.4 Joint Enforcement Actions

Situations may arise when a problem affects more than one jurisdiction or when ACHD may lack the enforcement authority or options to address a problem. In these cases, ACHD may respond in coordination with another entity depending on the severity of the issue. See Section 5.3 for more information.

9.5 Complaint Response

Complaints may be received from a variety of sources ranging from the general public, contractor, government agencies, or ACHD staff. Complaint responses are addressed via telephone or email for resolution. If a complaint does not involve ACHD permitted or ACHD owned projects, the complaint is referred to the appropriate entity using the MS4 Contact List in Appendix E.

One way complaints regarding erosion and sediment can be initiated from the general public is through a form on the ACHD website, called *Tellus*. These complaints are first received through the Public Relations Department, directed to the appropriate Department, and assigned to the appropriate staff. Once the problem is addressed, a response is sent back in reverse order. A second common way complaints are received is through the Telanswer Stormwater Hotline. The caller is connected directly to the ESC Specialist. These complaints are logged under the Illicit Discharge Program unless the complaint is about an active site with a Temporary Highway Used Permit. In this case, the complaint is logged in TRAKiT. Lastly, complaints can be referred to the ESC Specialist from other agencies, the front desk, and other ACHD employees. These complaints are addressed and then the ESC Specialist will follow-up by notifying the person/agency filing the complaint what was done to address the problem.

If a complaint is found to be associated with a Zone or Subdivision permitted project, a site inspection should be conducted. If the complaint is regarding an ACHD Capital Project, depending on the severity, the Project Inspector, the Capital Projects Construction Coordinator, or the Capital Projects Construction Supervisor will be contacted depending on who is lead of the project with the complaint.

9.6 CGP General Permit Violation Referrals

For construction projects which are subject to the NPDES Construction General Permit and do not respond to educational efforts and joint enforcement actions, section 5.3, ACHD may provide to EPA information regarding construction project operators which cannot demonstrate that they have appropriate NPDES Permit coverage and/or site operators deemed by ACHD as not complying with the NPDES Construction General Permit. Information may be submitted to the EPA NPDES Compliance Hotline in Seattle, Washington, by telephone, at (206) 553-1846, and include, at a minimum, the following information:

- Construction project location and description;
- Name and contact information of project owner/ operator;
- Estimated construction project disturbance size; and
- An account of information provided by the Permittee to the project owner/ operator regarding NPDES filing requirements.

Prior to reporting GCP violation to EPA, discuss the violation with the Stormwater Quality Supervisor.

10.0 DATABASE AND RECORD KEEPING

ACHD records CSDC program information in various ways, including NPDES annual reports, TRAKiT, and review and inspection checklists.

10.1 Annual Reporting and Tracking

Information relating to permits and inspections are tracked on an ongoing basis through TRAKiT and compiled annually. Training attendance records for training activities are maintained by stormwater staff and reported annually in the NPDES annual report. Stormwater Quality Staff is responsible for compiling the following data for the annual reports as stated in the NPDES Phase I MS4 Permit (IV.C.3.iv) and NPDES Phase II Permit (IV.B.2.c-d):

Phase I - A summary of the number and nature of public education programs; the number and nature of complaints received by the Co-Permittee(s), and follow-up actions taken; and the number and nature of inspections, formal enforcement actions, or other similar activities as performed by the Co-Permittee(s) during the reporting period.

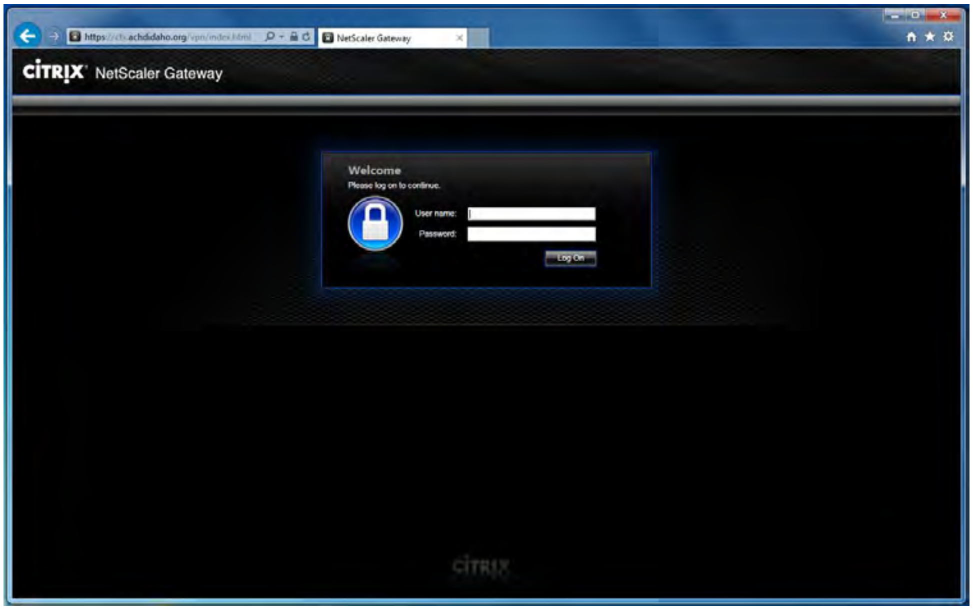
Phase II – A summary of the number and nature of inspection, formal enforcement actions, and/or other similar activities performed. A summary list of any water quality compliance-related enforcement actions received from regulatory agencies other than EPA. Such actions include, but are not limited to, formal warning letters, notices of violation, field citations, or similar actions. This summary should include dates, project synopsis, and actions taken to address the compliance issue(s).

In preparation for the annual report, a summary report is generated in TRAKiT for all permits that were assigned to the ESC Specialist for the reporting year, September 30th – October 1st. A pivot table is created to review the data. The column titles available through the report generated in TRAKiT are; Attachment Total, Conditions Total, Notes Total, Restrictions Total, Fees Due, Restrictions Summary, Loc_RecordID, Record_Type, Record_Status, Site_Addr, Tgroup, ACTIVITYNO, CONTACT, DATE_DUE, DATE_DUE_DATETIME, DATE_RECEIVED, DATE_RECEIVED_DATETIME, DATE_SENT, DATE_SENT_DATETIME, LOCKID, NOTES, RECORDID, REMARKS, REVIEWGROUP, REVIEWTYPE, STATUS, DESCRIPTION, and SITE_SUBDIVISION. The data is used to quantify required elements of the CSDC Program.

10.2 TRAKiT

ACHD has integrated TRAKiT into the development review and permitting process. The CSDC program utilizes TRAKiT for program documentation such as plan reviews, plan approvals, inspection documentation, and providing information for annual reports.

To log onto the TRAKiT System an ESC Specialist will need a Citrix Login (https://ctx.achdidaho.org/vpn/index.html) user name and password.



Once access is gained through Citrix a TRAKiT Login user name and password is necessary.

A detailed Procedure Guidance (PG) for navigating ESC plan routing, review, and approval in TRAKiT is available in Appendix J. A PG for conducting ESC inspections is currently being developed.

11.0 CONSTRUCTION PROGRAM EDUCATION AND TRAINING

11.1 Training and Outreach

All training and outreach are tracked and reported annually to the EPA in compliance with the NPDES MS4 permits. Information and education activities of the CSDC Program include technical assistance provided as an ongoing part of program activities. Technical assistance efforts can include:

- Performing site visits;
- In-person and telephone consultations, with follow-up as needed;
- Development and distribution of Fact Sheets;
- Assistance with permitting requirements; and
- Referrals to other local, state or federal agencies for relevant information.

11.2 Erosion and Sediment Control/Storm Water Inspectors

Storm Water Inspectors at a minimum must obtain Responsible Person (RP) training through Boise City. RP certification is valid for 3 years. The ESC Specialist also conducts in-house training for ACHD staff, as needed, to keep certifications current.

11.3 ACHD Construction Inspectors

CSDC Staff provide annual power point training to ACHD staff on best management practices and procedures for notifying appropriate personnel of noncompliance.

11.4 Plan Reviewers

Plan Reviewers must obtain a Plan Designer (PD) Certification offered through the Boise City Planning and Development Department, Erosion and Sediment Control Program.

11.5 Third-Party Inspectors and Plan Reviewers

Training and certification for third-party Inspectors is available through the Boise City Program. RP and PD certifications are offered through the Boise City Planning and Development Department, Erosion and Sediment Control Program. Receipt of the Boise City certifications based on other training courses is at the discretion of Boise City staff.

11.6 Construction Operator Education

Training and certification for construction site operators is conducted through the Boise City Program. Construction projects are required to have an RP directly in charge of all sites of construction activity regulated by Policy 8300. The individual who prepares the plan must obtain a PD certification. RP and PD certifications are offered through the Boise City Planning and Development Department, Erosion and Sediment Control Program. Receipt of the Boise City certifications based on other training courses is at the discretion of Boise City staff.

In addition, CSDC staff distributes Fact Sheets summarizing erosion and sediment control requirements and BMPs to the regulated community. These Fact Sheets are available in Appendix H and address:

- Commercial Landscaping
- Concrete Cuttings and Slurry
- Crawl Space and Groundwater Dewatering
- Mobile Business

- Parking Lots and Sidewalks
- Sidewalk Cleaning
- Sidewalk Construction and Concrete Waste Management
- Swimming Pools and Hot Tubs

Appendix I: ACHD Facility SWPPPs

Stormwater Pollution Prevention Plan

Ada County Highway District
Adams Street Maintenance Facility
3700 & 3730 Adams Street
Garden City, Idaho 83714

March 2021
SWPPP CONTACT

Ada County Highway District
3775 Adams Street
Garden City, Idaho 83714
(208) 373-6100
Monday-Friday 8AM to 4:30PM

ACHD
Committed to Service

ACHD
Committed to Service

Revisions

Date	Revision Number	Description
December 2015	Rev 0	See old SWPPP
November 2019	Rev 1	Update for current site conditions
March-July 2021	Rev 2	Site specific updates

This SWPPP is a living document that is intended to replace the 2015 SWPPP. As such, it can be modified as facility operations are altered. Alterations include but are not limited to new structures, construction, or additional BMPs. Any modifications should be documented in the above revision section. Additionally, the SWPPP will be updated if new information regarding facility compliance or documentation is deemed necessary.

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Section 1: Facilities Description and Contact Information

1.1 Facility Background

Ada County Highway District (ACHD) is a permittee under the National Pollutant Discharge Elimination System (NPDES) Phase I and Phase II Municipal Storm Sewer System (MS4) permits. The NPDES permits require permittees develop and implement Storm Water Pollution Prevention Plans (SWPPPs) for all permittee-owned material storage facilities and maintenance yards located within the permit area. Both the Adams and Cloverdale Maintenance Facilities are located within the Phase I permit area and are covered under Permit No: IDS-027561 (Permit). This SWPPP is intended to meet Permit requirement II.B.4.f of the Boise Area NPDES MS4 Permit and prevent the discharge of stormwater pollutants into receiving waters through the implementation of site-specific Best Management Practices (BMPs).

1.1.1 Facility Information

Facility Name:	Ada County Highway District Adams Street Maintenance Facility
Facility Street Address:	3700 & 3730 Adams Street Garden City, Idaho 83717
Facility Mailing Address:	3775 Adams Street Garden City, Idaho 83714
Facility Phone Number During Working Hours:	[8*am-4:30pm*] (208) 387-6100
Owner Name:	Ada County Highway District
Owner Address:	3775 Adams Street Garden City, Idaho 83714
Operator Company Name:	Ada County Highway District
Operator Company Address:	3775 Adams Street Garden City, Idaho 83714
Latitude/Longitude:	43°37’46.56” N 116°114’18.78” W
River Drainage Basin:	Boise River (Hydrologic Unit Code – HUC 170501)
Receiving Water Bodies:	Boise River- 33ft north, from northern boundary

1.2 Site Description

The Ada County Highway District (ACHD) facility located in Garden City, Idaho, is a distribution and maintenance facility that serves Ada County, Idaho. Located on approximately 11 acres, the facility is surrounded on three sides with residential homes and light use industrial/commercial properties. The northern boundary of the facility is the Boise River.

The Adams Street facility meets the requirements under the Spill Prevention Control and Counter measures (SPCC) Oil Pollution Prevention regulations by having an aboveground oil storage capacity exceeding 1,320 gallons. The Adams facility retains an updated SPCC plan that outlines the procedures, methods and equipment used at the facility to prevent and respond to spills of liquid materials. A copy of the SPCC plan and corresponding documents is in the Adams Superintendent's office, the on-call superintendents go bag, on the Q drive of ACHD's server, and at the facilities maintenance building. The Adams Street facility is also required to have an Accidental Spill Prevention Plan (ASPP) by Garden City as part of an Indirect Discharge Permit to discharge into the sanitary sewer from the decant and wash stations. A copy of the ASPP is also available in the Adams Superintendents office, on the Q drive of ACHD's server, and the facilities maintenance building.

1.3 Site Maps

Please see Appendix A for the vicinity map, Appendix B for site outfalls and drainage areas, and Appendix C for site specifics.

1.4 Contact Information and Responsible Parties

The following people are involved in implementing and modifying the SWPPP.

Responsible Officials:

Deputy Director of Maintenance 208-387-6322 (o)

Responsibilities: Ensure overall compliance of all ACHD owned maintenance facilities within the county.

Maintenance Manager 208-387-6319 (o) 208-919-4623 (c)

Responsibilities: Maintain coordination between maintenance staff and environmental staff, ensures consistent environmental compliance, and provide budget when needed for compliance related issues.

Maintenance Superintendent 208-387-6327 (o) 208-484-0389 (c)

Responsibilities: Direct, coordinate and ensure that BMPs are implemented; budget for construction of new BMPs, modification of existing BMPs and maintenance of existing BMPs. Direct and educate employees working at the Adams facility of their roles and responsibilities in implementing this SWPPP. Participate in compliance evaluations and inspections of the facility.

Traffic Superintendent 208-387-6192 (o) 208-860-6655 (c)

Responsibilities: Direct, coordinate and ensure that BMPs are implemented; budget for construction of new BMPs, modification of existing BMPs and maintenance of existing BMPs. Direct and educate employees working at the Adams facility of their roles and responsibilities in implementing this SWPPP. Participate in compliance evaluations and inspections of the facility, as needed.

Environmental Programs Coordinator 208-387-6279 (o) 208-608-3983 (c)

Responsibilities: Initial development of the SWPPP and updates, as needed, for compliance support. Participate in compliance evaluations and inspections of the facility as needed.

Broom Crew Chief 208-387-6337 (o) 208-919-5694 (c)

Responsibilities: Monthly inspections and documentation. Maintenance and implementation of BMPs, as needed, around the facility.

1.5 Drainage Areas

Stormwater at the Adams facility is drained by multiple catch basins, storm drains, and channels. All drainage areas at this facility drain to one of the two outfalls, infiltrates onsite, or are discharged via the sanitary sewer. There are three (3) distinct drainage areas that make up the facility site. The majority of stormwater from the facility enters into a piped system on the western border discharging into the Boise River, this outfall is referred to as Adams Outfall #1 (AOF1). Stormwater from the area on the west side of the Broom Shed, A-14, drains to a system discharging to the Boise River through an outfall referred to as Adams Outfall #2 (AOF2). A site map showing the drainage areas and outfalls is in located in Appendix B (areas labeled as D1, D2, and D3).

- Drainage Area 1 consists of the Carpentry Shop (A-11) on the east side of the facility and the surrounding area. Surface water near the shop flows into a storm drain inlet which is connected to perforated pipe that is 12-feet long and runs parallel to the east fence line. Collected stormwater from this drainage area seeps into the surrounding soil via a perforated pipe. This area is predominately impervious excluding the area adjacent to the A-11 which is primarily highly compacted soil and gravel.

  Potential pollutants in this area include:
  - Sediment from erosion of unpaved areas
  - Traffic paints and solvents

- Drainage Area 2 consists of roof drains from the Broom Shed (A-14) and a small area to the north and south of A-14. There are two catch basins in this system, one of which is now covered by a roof and the other on the northwest corner of A-14. This area is conveyed to AOF2 on the northeast property boundary.

  Potential pollutants in this area include:
  - Oil from vehicle/equipment leaks and wash bay area
  - Sediment from track out and wash bay area
  - Roof runoff from adjacent buildings
  - Traffic paints
  - Material storage runoff

- Drainage Area 3 is the largest area of the yard which conveys stormwater through a series of catch basins and sand and grease traps to the main storm drain outfall, AOF1, on the northwest perimeter of the facility. Stormwater runoff from this area is combined with upstream effluent from approximately 85 acres prior to being discharged into the Boise River. Materials and equipment stored in this drainage area consist of material stockpiles, equipment/fleet storage, paint storage, decant & wash area, sand & salt shed, sander racks, vehicle refueling area, secondary containment areas, and magnesium chloride tanks. Portions of this drainage area are paved, rotomilled, or remain as gravel. The decant and wash bay areas are located within this drainage area. If an overflow or a spill were to occur from the decant and wash bay area, the water would be conveyed to adjacent catch basins. The western and northern perimeters have raised berms or Eco blocks to retain stormwater onsite. See Appendix B, Drainage Areas and Outfall Map, of this document for additional information.

Potential pollutants in this area include:

- Oil from vehicle or equipment leaks
- Oil from mechanics shop tanks
- Overflow from secondary containment areas
- Sediment from stockpiles, decant & wash bay area, and unpaved surfaces
- Gas and diesel from fuel dispensing stations
- Traffic paint & solvents
- Chlorides from sand/salt stockpile and raw salt stored in shed
- Material storage runoff
- Roof runoff from adjacent buildings

1.6 Discharge Locations

The Adams Street facility has two stormwater outfalls conveying directly into the Boise River. The primary outfall (AOF1) is located approximately 35 feet north of the facilities northwest corner and consists of an 18" PVC pipe recessed in the riverbank (Photo 1). This outfall takes drainage from the facility as well as the adjacent 85 acres. The second outfall (AOF2) discharges approximately 550 feet upstream from of AOF1 through a 16" corrugated metal pipe (Photo 2).

Photos 1 & 2. From left to right, AOF1 and AOF2

1.6.1 Unauthorized Non-stormwater Discharge Documentation

There are no known unauthorized non-stormwater discharge locations onsite. ACHD commits the manpower, equipment, and materials required to expeditiously control and remove any quantity of spills that could potentially be harmful to health or the environment. If an unauthorized non-stormwater discharge is observed, the responsible person will document said event on the monthly inspection. Documentation will include the source, amount discharged, cleanup activities, how to prevent future occurrences, and other pertinent reportable information defined in the SPCC and the ASPP. For further information regarding spill response within the facility, refer to the SPCC, ASPP, and ACHDs overall Spill Response Plan, file paths for the documents are located in Section 7. References and Resources.

Section 2: Potential Pollutant Sources

2.1 Potential Pollutants Associated with Industrial Activity

Throughout the facility there are potential pollutants that could spill, leak, or drip. Below are industrial activities that occur at the facility and their potential pollutant.

Table 1. Adams Industrial Activities and Associated Pollutants

Industrial Activity	Associated Pollutants
Fueling and Vehicle Maintenance	Oil, gas, diesel, or hydraulic fluid
Salt Stockpiling	Chlorine
Stockpiling of construction debris, sand, sweeper debris, dirt, riprap, or rubble	Sediment, Oil, Gas, Diesel, or bacteria
Street Sweeper and Vehicle Washing	Sediment or Bacteria
Decant and Wash Bay Area	Sediment, Oil, Gas, Diesel, Hydraulic Fluid or Bacteria
Yard Drum Storage (A-18) and Secondary Containment Area	Oils, tackifiers, or petroleum products
Paint & Solvent Storage	Potentially Hazardous Liquids

2.2 Spills and Leaks

Throughout the facility there are areas that have the potential to have leaks or spills. Spills and leaks that are observed during the site walks are documented on the inspection reports. Minor hydraulic drips occur from the removal of the sanders racks. Staff are trained to clean up any spills or leaks observed onsite.

Table 2. Industrial Activity and Correlated Discharge Point

Location	Discharge Point
Decant Water Treatment	AOF1 and AOF2
Fueling Station	AOF1
Sander Racks	AOF1
Vehicle Storage	AOF1 and AOF2
Yard Drum Storage (A-18)	AOF1
Secondary Containment Area	AOF1
Paint & Solvent Storage	AOF1

2.3 Monitoring Requirements & Effluent Limits for Stormwater Discharges

The Boise River, in parts, is a 303(d) listed river. Due to its listing, the river has three Total Maximum Daily Loads (TMDLs) for sediment, total and dissolved phosphorus, and bacteria. Discharge limits are set forth by IDAPA 58.01.02 Surface Water Quality Criteria for Primary Contact Recreation.

Table 3. Boise River Monitoring Requirements

TMDL	Pollutant of Concern	Discharge Limit
Sediment	Total Suspended Solids	50 mg/L
Phosphorus	Total Phosphorus Dissolved Phosphorus	0.07 mg/L 0.07 mg/L
Bacteria	E-Coli	Instantaneous- 406MPN/100 mL Chronic- 126 MPN/100mL

Following the NPDES Phase 1 Permit, ACHD is required to conduct an outfall investigation on 20% of the ACHD outfall inventory, requiring one site visit for each outfall over the permit term. If flow is observed, sampling and chemical analysis is completed. Monitoring pollutants of concern includes turbidity, pH, temperature, dissolved oxygen, dissolved and total phosphorus, total suspended solids, E. Coli, chlorine, total copper, phenols, and detergents. All flow observations are monitored during three different irrigation time periods set by the Dry Weather Outfall Screening Plan. If a flow is above program benchmarks for one or more irrigation time periods, sampling every five to seven days over a 30-day time period is enacted. This will continue until quality has improved or flow has been eliminated. Past monitoring of the outfalls is documented in Tables 4 and 5, Dry Weather Monitoring at AOF1 & AOF2. Additionally, both outfalls are visually monitored monthly and observations are documented on the Stormwater Routine Facility Inspection Report.

Table 4. Dry Weather Monitoring at AOF1 (ACHD Inventory No. 3n2E05_11)

Date	Flow	Sampling Completed	Sampling Results	
5/15/2009	Moderate	No	NA	
1/27/2015	Dry	No	NA	
5/5/2015	0.217 CFS	Yes	Temperature (°C)	12.2
			Dissolved Oxygen (mg/L)	8.56 mg/L @ 13°C
			Conductivity (uS/cm)	46.0 @ 13°C
			Turbidity (NTU)	3.65
			pH (s.u.)	7.85 s.u.
			Total Chlorine (mg/L)	0 mg/L
			Total Copper (mg/L)	0 mg/L
			Phenols (mg/L)	0 mg/L
1/25/2016	Dry	No	NA	
8/27/2019	Moderate	Yes	Temperature (°C)	18.63 °C
			Dissolved Oxygen (mg/L)	7.62
			Conductivity (uS/cm)	61.96

			Turbidity (NTU)	1.67
			pH (s.u.)	7.85
			Total Chlorine (mg/L)	0
			Total Copper (mg/L)	0
			Phenols (mg/L)	0
			E. Coli (MPN)	17.1
			TSS (mg/L)	24.1
			ORP (mg/L)	0.0158
			Total P (mg/L)	0.0228
			Detergents (mg/L)	0.01
5/25/2020	0.0018 CFS	Yes	Temperature (°C)	15.75
			Dissolved Oxygen (mg/L)	7.09
			Conductivity (uS/cm)	79.7
			Turbidity (NTU)	2.83
			pH (s.u.)	7.9
			Total Chlorine (mg/L)	0
			Total Copper (mg/L)	0
			Phenols (mg/L)	0
			E. Coli (MPN)	54.8
			TSS (mg/L)	6.03
			ORP (mg/L)	0.0276
			Total P (mg/L)	0.0535
			Detergents (mg/L)	0.05

Table 5. Dry Weather Monitoring at AOF2 (3n2E05_24)

Date	Flow	Sampling Completed	Sampling Results
5/15/2009	Dry	No	NA
8/28/2013	Dry	No	NA
5/2/2019	Dry	No	NA

2.4 Facility Features and Structure Descriptions

2.4.1 A-7

The administrative office, A-7, is used for office purposes. The SWPPP and copies of the ASPP & SPCC are in the superintendent's office. Roof runoff from this area drains to drainage area 3 with outfall to the Boise River, AOF1.

2.4.2 A-8

The mechanics shop, A-8, is located adjacent to the administrative office building is used for general mechanical maintenance of vehicles and equipment. This building also houses the oil storage room containing four (4) above ground storage tanks (ASTs) containing various grades of motor oil. The oil room acts as secondary containment and has no discharge outlet. The concrete floor of the mechanic shop drains into a trough that lies along the axis of the shop. The trough is connected to the sanitary sewer system through a series of oil separator tanks. Spills within the mechanic shop tend to be small and cleaned up immediately by ACHD personnel. Located within an outdoor secondary containment structure along the north wall of the building is a 720-gallon used oil AST. The containment structure is open to the atmosphere with no drain. The roof drains on this building are connected to the storm drain system on the East and West and discharge via drainage area 3 to AOF1. There is an ice machine located on the eastern side of the building with an outfall to an injection well.

Photos 3 &4 From left to right, A-7 & A-8

2.4.3 A-9

A small portion of traffic operations is in building A-9. Roof runoff from this area drains to drainage area 3 and is conveyed to the Boise River via AOF1.

2.4.4 A-10

The main location for traffic operations is in structure A-10. This structure contains administration offices, the TMC, sign shop, and a storage area. Roof runoff from this area drains to drainage area 3 and ultimately the Boise River via AOF1.

2.4.5 A-11

A-11 is the Traffic Operations primary storage location for chemicals and paints. Flammable containment storage lockers located within A-11 provide storage for flammable chemicals such as paints, as well as other potentially harmful chemicals. Along the outside wall of A-11 is a metal storage locker used to store fuel and Honda generators.



Photos 5-7 From left to right, A-9, A-10, and A-11

2.4.6 A-12, A-12.1, and adjacent

Building A-12 contains a bay which holds up to sixteen 250-gallon totes of marking paint. The totes are stored within an asphalt containment berm that measures 19-feet by 20-feet and is 3-inches high (total capacity of 710 gallons). The floor of the bay is constructed of impervious material. Roof runoff from this area drains to the Boise River via drainage area 3. An outdoor impervious three-walled secondary containment area is located to the north of A-12; the area is approximately 22-feet by 86-feet and at the low point 2-inches high. The area is sloped to the northeast with approximate capacity of 1800 gallons. If containment berms were to fail, runoff from this area would discharge the Boise River via drainage area 3 and outfall AOF1. A-12.1 houses the Satellite Accumulation Area (SAA) and Waste Storage Area (WSA) for paint related waste from products such as methanol.

Photos 8-10 From left to right, A-12, A-12.1, and adjacent

2.4.7 A-13

Building A-13 stores daily used chemicals for the paint crew, parts washer, and approximately 20 gallons of methanol stored within the striper truck during the off season. Roof runoff from this area drains to drainage area 3 discharging to the Boise river.

2.4.8 A-14

This structure contains all sweeper brooms, there is a spill kit located on the southeast corner outside of the building. Within the striper bay of the building, approximately 20 gallons of methanol is stored within the paint striper during the off season. Roof runoff from this building drains to either drainage area 2 or 3 with outfalls to the Boise River via AOF1 or AOF2.

Photos 11-12 From left to right, A-13 and A-14

2.4.9 A-15

A 500-gallon propane AST is located on the north side of the building. The double-walled tank is protected on three sides by jersey barriers and bollards, and the building on the 4th side. There is an emergency shut off switch for the tank's pump located on the east side of the building (at least 25 feet away from tank), with signage directing where the shut off switch is located. The covered shed is mainly used as an indoor materials storage location. Depending on the time of year, products such as Elastoflex may be stored in the southern part of the building. Outdoor storage of Elastoflex may occur to the to the west of A-20. Drainage from this area flows to drainage area 3 with outfall to the Boise River.

2.4.10 A-16 through A-20, excluding A-18

This area houses multiple small machines, traffic lighting, and miscellaneous parts. The area is covered to prevent surface water runoff, however roof runoff from this area either drains to drainage area 2 or 3 with outfall to the Boise River via AOF1 and AOF2.

2.4.11 A-18

A-18 is located along the northern fence line and adjacent to A-17 and A-19. The covered shed houses products such as drums of oils, used Flashphalt, Slide, and other types of hazardous waste depending on the time of year. 55-gallon drums (plastic and steel) and 5-gallon pails (plastic) are stored within the shed on containment decks which act as secondary containment. If containment were to fail from this area it would drain to drainage area 3 with outfall to the Boise river via AOF1.

Photos 13-14 from left to right, A-15 and A-20-17

2.4.12 A-21

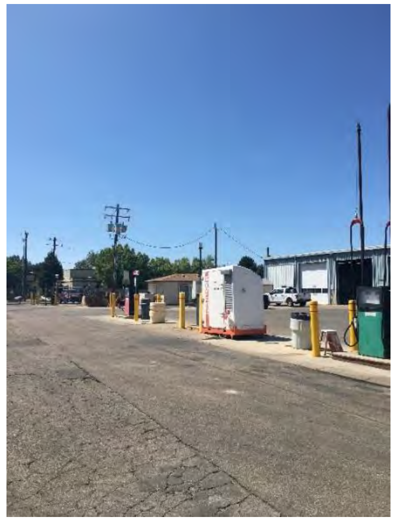
Structure A-21 contains multiple sand and salt stockpiles as well as blue dye. The structure was installed in December of 2017 and is approximately 13,200 square feet. The shed has an asphalt berm along the east edge to prevent runoff. If the berm was to fail, runoff would be discharged into the Boise River via drainage area 3.

2.4.13 Fueling Stations

There are two fuel dispensing stations within the Adams facility. A diesel pump with Underground Storage Tank (UST) and gasoline pump with UST are both located between the A-8, mechanics shop, and A-10, traffic operations, total storage between the two structures is 20,000 gallons. Both fueling islands are equipped with spill kits and are controlled through a centrally located keypad. The fueling stations are not covered and the area is graded to prevent runoff. There is a ½ inch deep, three-inch wide channel that has been cut into the asphalt in a 10-foot perimeter outside the fueling islands to catch any small spills that may occur during the fueling of vehicles. This area drains to the main storm drain system discharging through AOF1 and drainage area 3.

2.4.14 Magnesium Chloride Tanks

The Adams Street facility houses six (6) 10,500-gallon magnesium chloride tanks. The tanks are stored in concrete secondary containment with drain valves remaining closed. Drain valves are to only be opened after careful inspection to ensure there are no contaminants in the collected rainwater. Inflow and outflow of the tanks is metered, and volume continuously monitored. Inspections of tanks occurs at least once a month or daily during winter operation season. If containment were to fail, liquids from this area would discharge to either the sanitary sewer via the wash bay & decant station, see section 2.4.17, or to the Boise River via drainage areas 2 or 3.


Photos 15-17 from left to right, A-21, fueling islands, and magnesium chloride tanks

2.4.15 Sanders Racks, Water Trucks, and Portable Tanks

Sander racks house the sand and sand/salt dispersing equipment (spreaders) that can be attached to dump trucks. The spreaders are operated by hydraulics and occasionally residual hydraulic oil may seep out of the lines. It is the operator's responsibility to ensure hydraulic lines on the spreaders are fully empty before storage. If any drips are encountered, absorbent pads or floor dry will be used to clean up and disposed of properly. ACHD also has multiple water trucks capable of containing 1300 or 3000 gallons of product and portable tanks capable of containing 100, 160, 200, or 6000 gallons of product. Runoff from these areas enters the adjacent storm drain system in drainage area 3 discharging to the Boise river via AOF1.

2.4.16 Material Storage Piles

Material storage stockpiles are located on the northwest side of the site. Examples of materials stored include sand, gravel chips, fill, rock, woody debris, excavated materials, and sediment debris pile. Storage of erodible materials should be located away from storm drains and be kept in a neat organized fashion. A berm was installed that wraps around the stockpiles to ensure runoff does not enter the adjacent storm drain system. Stormwater runoff that is collected from this area is removed using sweeper trucks periodically when pooling is observed. If the berm was to fail, runoff the area would enter the adjacent storm drain system in in drainage area 3 discharging to the Boise river via AOF1.

Photos 18-19 from left to right, sanders rack and material storage piles

2.4.17 Wash Bays & Decant Station

The facility has a wash bay & truck decant station located to the east of building A-15 and north of the magnesium chloride tanks. Liquid waste from this system is conveyed to discharge to Garden City's Sanitary Sewer System. Liquid and solid waste from sweepers and vacuum trucks are removed from the equipment at the decant station which then passes through a rock filter prior to being conveyed to the pump and treatment system. When deemed necessary, by the Broom Crew Chief, solids that settle at the bottom of the decant station are collected, dried, and hauled off-site to the appropriate disposal location. A max fill line is painted along the walls of the decant structure, to depict when to stop using the station and reduce the risk of an overflow event. The wash bay station includes the area just north of the magnesium chloride tanks. The area is used to washout sweeper trucks after dropping larger sediment at the decant station. The decant and wash bay liquid waste, wastewater, is comingled in structure 18 prior to being pumped in the 18,000 gallon above ground weir tank. The weir tank was installed in November of 2018 to increase settling time of liquids prior to being discharge to the Garden City Sanitary Sewer. Liquids from this operation are designed to drain to the treatment system and ultimately the sanitary sewer. It is important staff demonstrate good housekeeping to ensure runoff stays contained and does not discharge to the storm drain system. In general, if wastewater or stormwater runoff was to bypass the installed system, runoff from this area would either discharge to AOF1 or AOF2 depending on exact location and flow direction.

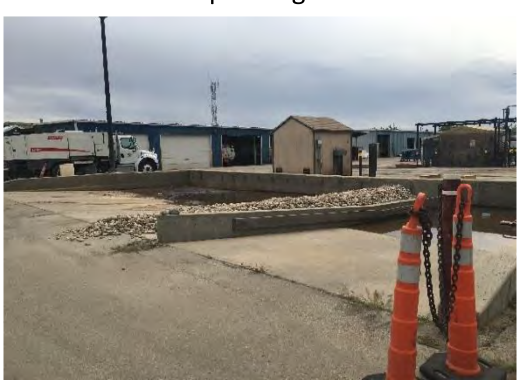


Photo 20. Decant Station

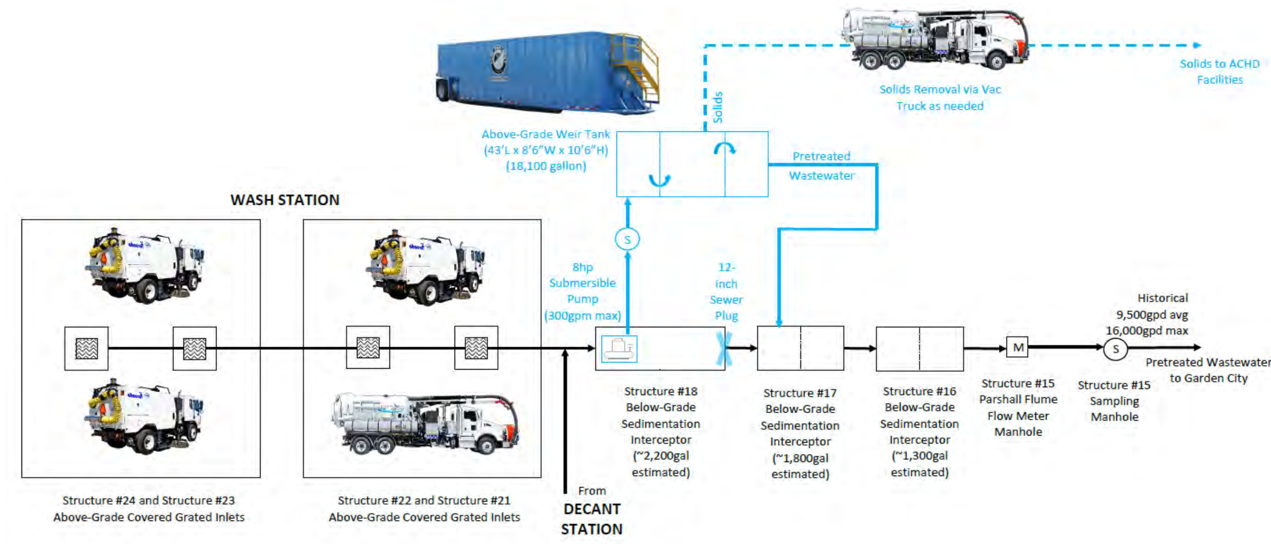


Figure 1. Decant & Wash Bay Treatment System Process Flow Diagram

2.4.18 Pump Shed

A pump shed is located between the decant station and magnesium chloride tanks. This shed has a well that can pump an upwards of 400 gallons a minute. Operators use the shed to fill and washout out their equipment throughout the day.

2.4.19 Containment Areas

There are two outdoor containment areas located on the western border of the facility. Both areas contain chip seal related equipment. During the winter, equipment is stored empty. However, during chip seal season, equipment trailers may contain up to 250 gallons of differing types of chipping oil. The containment berm is designed to store up to approximately 3,400 gallons of liquid. Distributor trucks only contain minor residual and are stored on drip pad. If there was a containment failure, these areas would discharge to drainage area 3 and ultimately the Boise River via AOF1.

Photos 21 and 22. Distributor truck pad on the left and containment pad on the right

Section 3: Stormwater Control Measures

This section discusses the day-to-day operations, procedures, and Best Management Practices (BMPs) implemented at the facility for good housekeeping and pollution prevention.

3.1 Minimize Exposure

The following structural controls and BMPs are used to minimize the exposure of industrial activities to rain, snow, snowmelt, and runoff.

3.1.1 Non-Stormwater Discharges to Drains

Storm drains within the facility are regularly inspected and cleaned out to reduce potential sediment entering the area. Discharges to Waters of the State can occur via the storm drain system.

- Storm drains within the facility should have fabric catch basin inserts (witches' hats) or above grate protection.
- Above grate protection and catch basin inserts should be inspected monthly and replaced or cleaned if excess sediment has built up. Sediment buildup around the catch basins should be regularly inspected and removed.
- Ensure stockpiles and adjacent materials are properly contained to limit the amount of non-stormwater discharging to the system.

Depending on the spilt material, if a non-stormwater discharge is observed related to petroleum, staff is to reference the SPCC, ASPP, and Spill Response Plan for appropriate procedures, documentation, and reporting requirements.

3.1.2 Outdoor Storage of Raw Materials

Raw materials that are stored outside on the site include soil, chips, debris, spoils, aggregate. To minimize exposure and protect materials during rain, snow, and wind the following are to be considered:

- Sweep paved areas weekly and as needed to reduce sediment accumulation.
- Stockpiles should not be placed adjacent to catch basins. If placed adjacent to catch basins, berms shall be installed around the pile to reduce runoff potential.
- Spill kits with clean up materials shall be stored adjacent to outdoor storage areas.
- Prior to rain event, stockpiles may be covered to reduce run-off.
- Salt shall always be stored within the salt storage shed, A-21.

3.2 Good Housekeeping

The following BMPs are implemented onsite to reduce exposed areas and ensure the site maintains good housekeeping practices.

3.2.1 Vehicle and Equipment Fueling

Vehicle and equipment fueling are closely regulated to reduce the potential of gas or diesel from entering the system. A ½ inch deep, 3-inch wide channel has been cut into the asphalt in a 10-foot perimeter outside the fueling islands to catch small spills that may occur during the fueling of vehicles.

The following shall be maintained to minimize employee exposure and ensure good housekeeping procedures are following:

- There are spill kits located at the fueling station to mitigate leaks or drips.
- Spill kit contents includes absorbent pads, booms, pillows, quick-dry, goggles, gloves, and disposal bag.
- Additional spill kit supplies are in the mechanics shop or weld shop for floor dry.
- Employees are instructed to stay with the vehicle while fueling, avoid topping off, and are trained yearly in proper fueling and cleanup procedures. Additionally, a SOP for fueling has been created and is available for employee viewing.
- Additional spill prevention and tanker delivery procedures are in the Adams SPCC plan (section 9.0).

3.2.2 Vehicle and Equipment Cleaning

Vehicles and equipment are cleaned at the wash bay and decant station. Water from this system is discharged to the sanitary sewer system.

- The area is paved, regularly swept, and sloped for wash water collection.

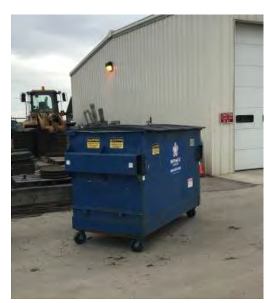
3.2.3 Outdoor Loading and Unloading of Materials

Below are the minimum considerations for loading and unloading material.

- Ensure forklifts operators are trained in proper loading and unloading to prevent spills.
- Maintain tidiness of disposal and storage areas.
- Limit delivery vehicle contents when storm drains are adjacent.
- If leaks occur during transfer, contain the leak using appropriate spill cleanup materials with nearby spill kit, and report and record or report as necessary according to the SPCC, ACHDs Spill Response Plan, other relevant regulations, and the Stormwater Routine Facility monthly inspection.
- During dry weather, move stockpiles slowly to reduce generating dust or spray water.

3.2.4 Waste Handling and Disposal

An important part of the facilities operations includes waste tracking including generation, storage, disposal, recycling, and reuse. Waste streams are characterized prior to disposal and tracking logs are located in the SWPPP binder onsite.



- Chemicals, materials, quantities, and Safety Data Sheets (SDS) are stored onsite either with Fleet, Traffic, or locatable in the Q drive.
- Storage containers are inspected regularly to determine container integrity, identify any leaks or spills, labeled and ensure lids are secure.
- If stored outside, scrap metal and other waste shall be stored in a covered container.

- Less toxic substitute materials shall be used when deemed possible by the waste handling contractor.
- Chemical specific SOPs have been generated by the waste handling contractor and are in the Superintendent's office for review.
- The Facilities Coordinator has records of the waste manifests for the yard.

3.2.5 Contaminated or Erodible Surface Areas

Sediment can be transported to receiving waters through erosion of unpaved areas of the facility, permanent sand and gravel storage and temporary stockpiles. The following activities are to be performed to address potential pollutants from contaminated and/or erodible surface areas:

- Keep erodible material as far away as possible from catch basins.
- Consider use of check dams to dissipate sediment in channelized areas.
- Consider covering piles with plastic tarps or installing berms around the perimeter if sediment discharge is observed.
- Inspect and maintain catch basin inserts that are collecting sediment.
- Maintain raised berms around the perimeter to keep stormwater onsite.
- Contaminated material shall be sampled prior to disposal and stored appropriately.

3.3 Maintenance

The following procedures and BMPs are in place to maintain site equipment and reduce the potential of spills and leaks. Maintenance records are maintained digitally through Asset Works and must be maintained for five years.

3.3.1 Vehicle and Equipment Maintenance and Repair

Vehicles and equipment maintenance and repair is necessary for an organized facility. Vehicles and heavy machinery go through a rigorous maintenance screening prior to use to ensure the equipment is functioning as designed and there are no leaks. The following practices are implemented when performing equipment and vehicle repair:

- Prior to use, vehicles and equipment are inspected for leaks and drips.
- When vehicle maintenance is required, vehicles are stored inside the mechanics shop.
- Drip pans may be placed under vehicles or equipment if leaks are a concern.
- Drip pans associated with this activity should be properly disposed of in a timely fashion.
- Spill kit materials are located in the mechanics shops and placed throughout the facility for use as needed.

3.3.2 Building and Ground Maintenance

Building and ground maintenance practices are important to reduce potential stormwater runoff impacts. Keeping areas clean will prevent the spread of pollutant containing material. Extra attention to surfaces can significantly reduce pollutant wash-off. In addition, an orderly work environment will also reduce the chance for inadvertent spills. The following good housekeeping practices are employed onsite:

- Keep outdoor work areas neat and organized.
- Drums, containers, and chemicals will be stored with lids closed, labeled, and located in the secondary containment area or by storage methods discussed in the applicable Safety Data Sheets (SDS) and relevant waste handling SOPs.
- Sediment residue will be swept in a timely fashion to reduce potential contact with stormwater run-off and reduce vehicle tracking. If vehicle or machinery tracking becomes an issue, the Broom Crew Chief will be notified, and a sweeper will clean the area.
- Trash, floatables, and debris will be contained with lid shut and regularly disposed of.
- Vehicles and equipment are regularly maintained to ensure no leaks or drips.
- Absorbent material will be used on minor drips and leaks around the facility and disposed of properly.
- During the summer if dust generation becomes an issue, vehicles and machinery will reduce speeds. If the problem continues, stockpiles may be sprayed down with clean water.
- Paved areas around the facility are swept weekly to reduce vehicle tracking with addition rounds as needed throughout the week.

3.3.3 Building Repair, Remodeling, & Construction

While buildings are under construction it will be important to remember the following:

- BMPs should be installed prior to construction and removed once the area has been re-stabilized.
- Cover stockpiles as necessary to reduce soil exposure.
- Place all liquid or hazardous materials in secondary containment sized appropriately, and store according to SDS and relevant waste handling SOPs.
- Reduce runoff from area by implementing appropriate BMPs such as straw wattles, sandbags, silt fence, etc…
- If track out is identified, manually sweep the area or request a street sweeper to clean the area.
- Protect catch basins using inlet protection and avoid hosing the area down with water.
- Appropriately store and dispose of waste materials. No waste material is allowed in storm drain.

3.4 Spill Prevention and Response

ACHD is responsible for spill prevention and response at the Facility. If an unauthorized non-stormwater discharge is observed, the spill will be handled in accordance with ACHD's Spill Response Plan. All spills shall be documented and included in the monthly inspection (form located in Appendix D). If the spill source is of a petroleum product, the Spill Prevention Control and Countermeasures (SPCC) plan should be referenced to ensure appropriate reporting and cleanup occurs. Additionally, if the spill or leak is related to one of the UST, the Idaho Department of Environmental Quality (DEQ) should be notified immediately. For further information regarding spills, clean up, and reporting procedures within the facility, refer to ACHD's Spill Response Plan, the Spill Prevention Control and Countermeasures Plan, (SPCC) and the Accidental Spill Prevention Plan (ASPP). Copies of the plans are in the superintendent's office and in the Q drive.

3.5 Erosion and Sediment Controls

Erosion and Sediment Control BMPs are implemented around the site as deemed necessary.
BMPs implemented onsite include but are not limited to:

- Non-stormwater Discharges to Drain see section 3.1.1.
- Outdoor Storage of Raw Materials see section 3.1.2.
- Contaminated or Erodible Surfaces see section 3.2.5.

If channelized flows are observed, check dams may be installed to dissipate sediment and reduce flow velocity. If at any point operations at the facility are modified, additional BMPs may be installed as necessary and the SWPPP will be modified to include the changes.

3.6 Management of Runoff

Stormwater from the facility is conveyed to the Boise River via catch basin and sand and grease traps throughout the paved areas. Section 1.5. includes the specific regarding the drainage areas and section 1.6. for discharge locations. Catch basins are inspected monthly and will be cleaned as needed by the broom crew or drainage crew. Berms are placed around storage piles to limit potential stormwater runoff.

3.7 Storage of Winter Maintenance Materials

Salt and salt with sand mixture is used on roadways as deicer. When this material is exposed to stormwater it can transport chloride pollution to waterways and into groundwater.
The following practices can help keep salt and sand/salt piles from being transported by stormwater:

- Keep raw salt in covered salt shed.
- Sweep any salt seen migrating outside of the covered shed back into a covered area.
- Consider a door or berms on the salt shed to keep materials inside.
- Keep sand/salt piles as far away as possible from catch basins.

All salt and salt with sand mixture is stored in structure A-21, see section 2.4.12 for structure specifics.

3.8 Dust Generation and Vehicle Tracking

During summer months moving stockpiles may generate dust and become an air quality issue. Additionally after rain events, vehicle tracking may be noticeable.
See section 3.3.2. Building and Ground Maintenance for specific procedures in place at the facility to reduce the possibility of dust generation and vehicle tracking.

3.9 Employee Training

Annually, staff are trained in Pollution Prevention and Good Housekeeping for Municipal Operations. This training covers the following topics:

- Cloverdale and Adams Facility SWPPP requirements and BMPs
- Good Housekeeping
- Spill Prevention and Response
- Vehicle Fueling

- Vehicle and Equipment Maintenance
- Vehicle and Equipment Washing
- Vehicle Tracking
- Materials Management
- Waste Management
- Municipal Facility Maintenance
- Parking Lots and Streets
- Storm Drain System Cleaning
- Landscaping and Grounds Maintenance
- Working over or Near Waters
- Air quality conditions for the day

Training will be coordinated with the Training Specialist, the Stormwater Quality Specialist, and/or other qualified individuals and must be documented and recorded in the ACHD training compliance database. Training records must be retained for five years. Training records are retained by the Training Specialist as well as the Stormwater Quality Specialist.

Section 4: Inspections and Records

4.1 Inspections and Assessments

Monthly inspections are conducted to ensure BMPs are being implemented and are adequate for preventing stormwater pollutants discharging offsite. The Maintenance Superintendent, Crew Chief, or Leadworker are responsible for conducting the inspections or delegating inspection responsibilities to qualified staff members.

Inspections are conducted to:

- Verify that the description of the storm drain system in section 1.5 Drainage Areas and Appendices B and C are accurate. If additional BMPs are installed, modify figures as necessary for accuracy.
- Verify that BMPs are being implemented, maintained, and are functioning adequately.
- Inspect all drainage structures including outfalls for defects and maintenance needs.
- List observations of floating materials, oil and grease, turbidity, odor, etc. in drainage structures.

Inspections will be documented and recorded on Stormwater Routine Facility Inspection Report in Appendix D. If at any time a BMP is not effective, it must be repaired or maintained before the next anticipated storm event. If maintenance prior to the next storm event is not possible, maintenance must be completed as soon as possible and documented on the inspection form for the extended repair schedule. In the interim, alternative measures must be implemented to ensure that water quality is not degraded by stormwater discharges from the facility. Inspections must be retained for five years.

4.2 Record Retention

Per NPDES requirements records must be retained for a minimum of five (5) years. Adams Facility records will be retained by the Adams Maintenance Superintendent or as otherwise documented below. Records to be retained include, but are not limited to:

- Inspection Forms
- Maintenance Records
- Waste Disposal Records
- Monthly Analytical Reports for Indirect Discharge Permit
- The Facilities Coordinator will maintain the Waste Manifest Logs
- Training records are maintained by the Training Specialist and Stormwater Quality Specialist

Section 5: Corrective Actions

All corrective actions will be documented in monthly inspections and the SWPPP will be modified to include all new or updated BMPs and any other pertinent information.

Section 6: SWPPP Modifications

This SWPPP is a living document that is intended to replace the 2015 SWPPP. As such, it can be modified as facility operations are altered. Alterations include but are not limited to new structures, construction, or additional BMPs. Any modifications should be documented in the revision section. Additionally, the SWPPP will be updated if new information regarding facility compliance or other documentation is deemed necessary. Reporting of modifications to the Environmental Programs Coordinator is the responsibility of the Superintendent. The SWPPP will be updated by the Environmental Programs Coordinator as modifications are provided by the Superintendent, noted on monthly inspection forms, or observed.

Section 7: References & Resources

ACHD Accidental Spill Prevention Plan, November 2020, link-
Q:\Maintenance\Adams Maintenance\2020 Adams Yard Submittals to Garden City

ACHD Spill Prevention, Control, and Countermeasures Plan (SPCC), September 2019, link-
Q:\Maintenance\Adams Maintenance\ ACHD Garden City SPCC Sep 2019

ACHD Spill Response Plan, February 2021, link-
Q:\Maintenance\Spill Response_Spill Response Plan\2021

Environmental Protection Agency. *EPA Industrial SWPPP Template.* 2015.
https://www.epa.gov/sites/production/files/2015-11/msgp2015_swppptemplate.docx.

Environmental Protection Agency. *When are You Required to Report an Oil Spill and Hazardous Substance Release.* 14 March, 2017. www.epa.gov/emergency-response/when-are-you-required-report-oil-spill-and-hazardous-substance-release.

State of Idaho, Department of Environmental Quality. *Catalog of Stormwater Best Management Practices for Idaho Cities and Counties*. 2005. http://www.deq.idaho.gov/media/622263-Stormwater.pdf.

State of Idaho, Department of Environmental Quality. *Idaho Catalog of Storm Water Best Management Practices, draft.* 2019. https://www.deq.idaho.gov/media/60183104/idaho-catalog-storm-water-bmps-draft-0719.pdf

Stormwater Pollution Prevent Plan

Ada County Highway District
Cloverdale Maintenance Facility
440 North Cloverdale
Boise, Idaho 83713

November 2020
SWPPP Contact:

Ada County Highway District
3775 Adams Street
Garden City, Idaho 83714
(208) 373-6100
Monday-Friday 8AM to 4:30PM

ACHD
Committed to Service

Revisions

Date	Revision Number	Description
October 2015	Rev 0	See old SWPPP
October 2019	Rev 1	Update for current site conditions
November 2020	Rev 2	Updated drainage areas and site conditions

This SWPPP is a living document that is intended to replace the 2015 SWPPP. As such, it can be modified as facility operations are altered. Alterations include but are not limited to new structures, construction, or additional BMPs. Any modifications should be documented in the above revision section. Additionally, the SWPPP will be updated if new information regarding facility compliance or documentation is deemed necessary.

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Table of Contents

Section 1: Facilities Description and Contact Information

1.1 Facility Background

Ada County Highway District (ACHD) is a permittee under the National Pollutant Discharge Elimination System (NPDES) Phase I and Phase II Municipal Storm Sewer System (MS4) permits. The NPDES permits require permittees develop and implement Storm Water Pollution Prevention Plans (SWPPPs) for all permittee-owned material storage facilities and maintenance yards located within the permit area. Both the Adams and Cloverdale Maintenance Facilities are located within the Phase I permit area and are covered under Permit No: IDS-027561 (Permit). This SWPPP is intended to meet Permit requirement II.B.4.f of the Boise Area NPDES MS4 Permit and prevent the discharge of stormwater pollutants into receiving waters through the implementation of site-specific Best Management Practices (BMPs).

1.1.1 Facility Information

Facility Name:	Ada County Highway District Cloverdale Maintenance Facility
Facility Street Address:	440 North Cloverdale Road Boise, Idaho 83713
Facility Mailing Address:	440 North Cloverdale Road Boise, Idaho 83713
Facility Phone Number **During Standard Working Hours:**	(208) 387-6100 8am-4:30pm, Monday - Friday
Owner Name:	Ada County Highway District
Owner Address:	3775 Adams Street Garden City, Idaho 83714
Operator Company Name:	Ada County Highway District
Operator Company Address:	3775 Adams Street Garden City, Idaho 83714
Latitude/Longitude:	43°36’33.27” N 116°20’02.70” W
River Drainage Basin:	Boise River (Hydrologic Unit Code – HUC 170501)
Receiving Water Bodies:	Evans Drain, Fivemile Creek

1.2 Site Description

The ACHD Cloverdale Maintenance Facility (Facility) located in Boise, Idaho, is a construction, distribution and maintenance facility that is used to service the public roadways in Ada County, Idaho. The Facility is located on 15.5 acres in west Boise. The Facility consists of twelve structures used for general office, vehicle maintenance, and storage. Fuel dispersing islands, two underground storage tanks (USTs), and a wastewater decant system are also located on the Facility.

The land immediately surrounding the Facility includes commercial warehouse properties on the east and west sides, Union Pacific Railroad (UPRR) track right-of-way to the south, and west of W. Executive Drive to the north. There are two entrances along N. Cloverdale Road and one along W. Executive Drive.

1.2.1 Additional Facility Environmental Plans

Located centrally within the Facility campus are two underground storage tanks (USTs) located beside the fuel dispersing islands which store a total of 20,000-gallons. The Cloverdale Facility meets the requirements of a Tier I self-regulating facility under the Spill Prevention Control and Counter measures (SPCC) Oil Pollution Prevention regulations. The SPCC plan, prepared by a professional engineer, meets requirements for both a Tier I and Tier II facility. The SPCC Plan outlines the procedures, methods and equipment used at the Facility to prevent and respond to spills of liquid materials. A copy of the SPCC plan and corresponding documents are in the Cloverdale Superintendent's office, the on-call go bag, and in the maintenance facilities office.

1.3 Facility Site Maps

Cloverdale Facility site maps are located in Appendices A-C. Appendix A contains the general vicinity map, Appendix B site stormwater outfall locations and drainage areas, and Appendix C consists of the Facility site map.

1.4 Contact Information and Responsible Parties

The following people are involved in implementing and modifying the SWPPP.

Responsible Officals-

Deputy Director of Maintenance 208-387-6322 (office)

Responsibilities: Ensure overall compliance of all ACHD owned maintenance facilities within the county.

Maintenance Manager 208-387-6319 (office) 208-919-4623 (cell)

Responsibilities: Maintain coordination between maintenance staff and environmental staff, ensure consistent environmental compliance, and provide budget when needed for compliance related issues.

Cloverdale Superintendent 208-387-6352 (office) 208-484-0416 (cell)

Responsibilities: Direct, coordinate and ensure that BMPs are implemented; budget for construction of new BMPs, modification of existing BMPs and maintenance of existing BMPs. Direct and educate employees working at the Cloverdale facility of their roles and responsibilities in implementing this SWPPP. Participate in compliance evaluations and inspections of the facility.

Environmental Programs Coordinator 208-387-6279 (office) 208-608-3983 (cell)

Responsibilities: Initial development of the SWPPP and updates, as needed, for compliance support and facility changes. Participate in compliance evaluations and inspections of the facility as needed.

Drainage Crew Chief 208-387-6357 (office) 208-488-0561 (cell)
Responsibilities: Monthly inspections and documentation. As well as, maintenance and implementation of BMPs as needed around the facility.

1.5 Drainage Areas

Stormwater at the Cloverdale Facility consists of either onsite retention or discharge to the Evans Drain. A site map showing the drainage areas, outfalls, and site features are in Appendix B and C (drainage areas labeled as D-1 through D-9).

- Drainage Area 1(D-1) – Drainage area 1 is approximately 5.78 acres and includes the southern portion of the Facility. The area drains to the west through a series of catch basins and underground pipes to a bioretention swale, BRS-1, along N. Cloverdale Road. Portions of this area are paved with asphalt, rotomilled asphalt (an uncompacted recycled asphalt material), or gravel. Materials stored in this drainage area consist of stockpiles of sand, aggregates, sweeper debris, construction debris, salt/sand mixture within the salt shed, sander racks, and magnesium chloride tanks, as well as general construction equipment.
  Potential pollutants in this area include:
    - Oil from vehicle/equipment leaks
    - Sediment from stockpiles and unpaved surfaces
    - Chlorides from salt/sand shed
- Drainage Area 2 (D-2) – Drainage area 2 is approximately 2.72 acres. The area drains to the west through a series of catch basins and underground pipes to two bioretention swales, BRS-2 and BRS-3, along N. Cloverdale Road. This area has both impervious asphalt, concrete, and rotomilled asphalt. The guest parking lot along the Cloverdale Rd entrance is composed of permeable pavers (BMP ID# PP-1) to manage stormwater. Specific industrial activities in the drainage area include equipment storage, employee vehicle parking, and vehicle refueling at the fuel islands.
  Potential pollutants in this area include:
    - Oil from vehicle/equipment leaks
    - Gasoline and diesel drips or spills from vehicle fueling islands
- Drainage Area 3 (D-3) – Drainage area 3 is approximately 1.54 acres. The area drains the north portion of the Facility. This area contains the decant water treatment system, decant basins, sand filter, hose sheds, and water storage tanks. Stormwater from this area as well as wastewater drains into the decant treatment system for reuse during cleaning of equipment onsite or is discharged to the Boise City sanitary sewer system. Additionally along the eastside of the property there is a stormwater outfall that discharges (12-inch corrugated metal pipe) to Evans Drain. Currently the outfall pipe is plugged however, the piping remains with potential discharge to Cloverdale Outfall 1 (COF1). The outfall is plugged at the manhole adjacent to the water tanks.
  Potential pollutants in this area include:
    - Sediments from swept and vacuumed catch basin material
    - Bacteria from swept and vacuumed catch basin material

- Other pollutants from swept and vacuumed catch basin material
- Drainage Area 4 (D-4)- Drainage area 4 is approximately 3.22 acres. The majority of this area is rotomilled asphalt or remains as gravel and compacted soil. Specific industrial activities in the drainage area include stockpiling, vehicle parking, and secondary containment for petroleum products. Stormwater from this area ultimately drains to the north and is conveyed to a bioretention swale, BRS-4, via a catch basin adjacent to Executive Drive.
  Potential pollutants in this area include:
  - Sediments from tracking vehicles and chip storage area
  - Petroleum from vehicle/equipment leaks
  - Overflow of containment areas containing petroleum products
- Drainage Area 5 (D-5)- Drainage area 5 is 0.54 acres. This area is asphalt paved with curb and gutter along the north side for stormwater conveyance to two catch basins. The catch basins are located along the northern curb to convey stormwater into adjacent bioretention swales, BRS- 5 and BRS-6. There are no industrial activities associated with this area, this area is used as the entrance and exit to employee parking.
- Drainage Areas 6 and 7 (D-6 and D-7)- Drainage areas 6 and 7 are used for employee parking. There are no industrial activities associated with these areas. Drainage area 6 is 0.59 acres and drainage area 7 is 0.32 acres. Both areas are graded to allow stormwater to infiltrate in bioretention swales, BRS-7 through BRS-10 via curb cuts.
- Drainage Areas 8 and 9 (D-8 and D-9)- Drainage areas 8 and 9 are used for employee parking. There are no industrial activities associated with these areas. Drainage area 8 is 0.39 acres and drainage area 9 is 0.38 acres. Both areas are graded to collect stormwater in catch basins along north and western curbs for conveyance into adjacent bioretention swales, BRS-11 and BRS-12.

1.6 Stormwater Discharge Locations

In 2017 the Facility was redesigned to reduce the potential of offsite stormwater discharges. Facility updates modified existing drainage areas to convey stormwater to onsite bioretention swales along N. Cloverdale Road and Executive Drive. Drainage areas 1, 2, 8, and 9 discharge to bioretention swales located on N. Cloverdale Road. Drainage areas 4, 5, and 9 discharge to bioretention swales along Executive Drive. Drainage areas 6 and 7 drain to bioretention swales via curb cuts to allow stormwater to infiltrate within each individual area. Drainage area 3 includes the decant system which was designed to overflow from two 20,000-gallon storage tanks into a 12 inch corrugated metal pipe on the eastern border of the property. The pipe flows south and discharges to the Evans Drain via COF1 (Photo 3). Evans Drain connects to Fivemile Creek approximately 2.5 miles downstream. Currently the outfall pipe is plugged at the manhole structure next to the water tanks. Water from the decant system is discharged to the Boise City sanitary sewer through a temporary hose connection or reused within the decant system for cleaning equipment.

Appendix B includes the bioretention swales, outfalls, and permeable pavers, as well as storm drain inlets and seepage beds adjacent to the Facility in case of an overflow event. Table 1 specifies the BMP type and BMP identification number per each drainage area.

Table 1. Structural BMPs within each Drainage Area

Drainage Area	BMP Type	BMP Identification Number
1	Bioretention Swale	BRS-1
2	Bioretention Swales	BRS-2
		BRS-3
	Permeable Pavers	PP-1
4	Bioretention Swales	BRS-4
5		BRS-5
		BRS-6
6		BRS-7
		BRS-8
7		BRS-9
		BRS-10
8		BRS-11
9		BRS-12

Photos 1-3 from left to right. Drainage area 1 bioretention swale (BRS-1), drainage area 4 bioretention Swale (BRS-4) and Evans Drain outfall (COF1).

1.6.1 Unauthorized Non-stormwater Discharges Documentation

ACHD is responsible for spill prevention and response at the Facility. If an unauthorized non-stormwater discharge is observed, the spill will be handled in accordance with ACHD's Spill Response Plan. All spills shall be documented and included in the monthly inspection (form located in Appendix D) and reported to applicable agencies, if deemed necessary. If the spill is a petroleum product, the Spill Prevention Control and Countermeasures (SPCC) plan should be referenced to ensure appropriate reporting and cleanup occurs. If the spill or leak is related to a UST, the Idaho Department of Environmental Quality (DEQ) should be notified immediately. The SPCC file path and DEQ website are located in Section 7. References & Resources.

Section 2: Potential Pollutant Sources

2.1 Potential Pollutants Associated with Industrial Activity

Throughout the Facility there are potential pollutants that could spill, leak, or drip. Below are industrial activities that occur at the facility and their associated pollutants.

Table 2. Cloverdale Industrial Activities and Associated Pollutants

Industrial Activity	Associated Pollutants
Fueling and Vehicle Maintenance	Oil, gas, diesel, or hydraulic fluid
Salt Stockpiling	Chlorides (NaCl and MgCl)
Stockpiling of sand, dirt, riprap, or rubble	Sediment
Street Sweeper and Vehicle Washing	Sediment or Bacteria
Vacuum Truck and Sweeper Waste Decanting	Sediment or Bacteria

2.2 Spills and Leaks

Throughout the Facility there are areas that are more prevalent to leaks or spills. Spills and leaks that are observed during the site inspection are documented on the inspection reports. Minor drips occur from the removal of the spreaders from the sander racks (see 2.4.13 for additional information). Staff are trained to clean up any spills or leaks observed onsite.

Table 3. Industrial Activity and Correlated Discharge Area and End Point Structure

Location	Discharge Area	End Point Structure (BMP Structure No.)
Sanders Racks	Drainage Area 1	BRS-1
Fueling Station	Drainage Area 2	BRS-2, BRS-3
Decant Water Treatment	Drainage Area 3	COF1, BRS-2, BRS-3,BRS-4
Vehicle Storage	Drainage Areas 1,2, & 4	BRS-1, BRS-2, BRS-3 BRS-4

2.3 Monitoring Requirements and Effluent Limits

Currently there are three types of scheduled monitoring conducted at the Cloverdale Facility:

1. Stormwater effluent monitoring is currently not performed. If the plug within the Evans drain outfall is removed, then sampling would be performed. While the plug remains, there is no stormwater effluent monitoring completed on the site.
2. Solid waste sampling occurs quarterly to ensure sweeper and vacuum waste stored onsite meets Ada County Landfill disposal requirements.
3. Health and Safety sampling is completed monthly to ensure reuse water from the decant system is within appropriate bacteria limits to be utilized by staff for cleaning equipment. Wastewater samples are collected from the hose sheds.

2.4 Facility Features and Structure Descriptions

2.4.1 Structure C-1

The administrative office, C-1, is used for office purposes. The mechanics shop located adjacent to the administrative office building is used for general mechanical maintenance of vehicles and equipment. The structure is approximately 12,520 SF. This building also houses the oil storage room. The concrete floor of the mechanic shop drains into a trough that lies along the axis of the shop. The trough is connected to the storm drain system; however, the connection was plugged in 2015. This plug should remain in place until the connection can be removed during future renovations. Spills within the mechanic shop tend to be small and are cleaned up immediately by ACHD personnel. For detail on the oil handling, storage and spill response refer to the Cloverdale SPCC Plan, as well as relevant waste handling SOPS or BMPs for work activities. The roof drains on this building are connected to the storm drain system on the north and south which discharge into Drainage Area 1 and 2. Vehicles and machinery enter the yard portion of the facility via the gates to the north of the Administrative offices and mechanics shops. The entrances are paved and are regularly swept if sediment accumulates. The covered portion of this area houses salt dye, old rags, degreaser, asphalt and other general supplies. Materials needing secondary containment are kept under cover with appropriate secondary containment. The visitor parking area contains permeable pavers which are identified in Appendix B and C.

2.4.2 Structure C-2

Structure C-2 is mainly used for vacuum truck storage. The structure is approximately 3500 SF. There are six vacuum trucks and one vacuum sweeper stored inside.

Photos 4-5. From left to right Structures C-1 and C-2.

2.4.3 Structure C-3

Structure C-3 contains the weld shop and a secondary containment concrete storage area. The weld shop houses welding materials, oxygen and acetylene tanks, and is approximately 3,300 SF. The secondary containment area contains hazardous waste storage. Products typically stored in this area are related to chipseal waste and include products such as Slide (New and Used) and FlashPhalt (Used) . The containment capacity for the area is approximately 950 gallons. FlashPhalt products are no longer in use and transition to a Slide product is occurring.

2.4.4 Structure C-4

Structure C-4 is mainly used for specific maintenance crew equipment and materials storage, a wood shop, and vehicle storage. The structure is approximately 13,350 SF. The crew sheds have a concrete liner. Materials stored include vegetation crew supplies like, glyphosate and 2 stroke oil, and vehicle storage.

Photos 6-7. From left to right, Structures C-3 and C-4.

2.4.5 Structure C-5 and Wastewater Decant System

Structure C-5 houses the hydraulic equipment that runs the wastewater decant system on the east side of the property. This structure consists of a pump house, two 20,000-gallon water tanks that are plumbed to store wastewater from the four decant bays and adjacent sand filter. Structure C-5 and the decant system work in line with each other to treat wastewater from vacuum and sweeper trucks as well as general equipment washing. Wastewater collected in this system is from material that is vacuumed from storm drainage structures or swept from roadways within the county. The wastewater is released onto a large pad that is designed to drain excess water away from the solids, which then gravity conveys to a 3,200 SF settling basin that is divided into four cells. Wastewater is slowly routed through each of the cells to help facilitate maximum settling of any solids. Settled water is then sprayed over the surface of a 2,800 SF sand filter designed to remove any suspended pollutants in the water. The sand filter contains a pipe that is plumbed into an adjacent manhole where it is treated with chlorine and is then pumped to two aboveground 20,000-gallon storage tanks. In this manhole there is a plug that blocks the discharge into the Evans Drain outfall (CO1). The treated water is used to clean trucks and equipment in the yard.

Stormwater runoff from this area is contained by berms. Runoff from the decant pad and decant basins is retained in the decant system itself. Grades and berms are maintained to prevent stormwater runoff from this area from reaching other drainage areas in the facility. Dried waste materials from the decant pad are disposed of at the Ada County Landfill and documented on the Waste Manifest Log with amount, date, and time by each employee.


Photos 8-10. From left to right, structure C-5, settling basins, and initial decant area.

2.4.6 Structure C-6

The truck wash building, C-6, consists of two wash bays, one being for vehicles with oil, grease, and tar and the other for all other vehicles. The wash bays contain pressure washing equipment used to clean vehicles and equipment and drain to an oil water separator prior to discharge to the sanitary sewer.

2.4.7 Structure C-7

Structure C-7 is used to store road crew traffic supplies. Supplies include traffic signs, cones, flagging materials, and construction information posters.


Photos 11 and 12. From left to right Structures C-6 and C-7.

2.4.8 Structure C-8

Sodium chloride (NaCl), salt, is stored in covered building, C-8, located on the southern border of the Facility and is approximately 12,000 SF. ACHD also stores the sand/salt mixture in the storage shed. There are berms located on both sides of the structure to limit tracking and potential discharge during rain events.

2.4.9 Structure C-9

Building shed C-9 is located adjacent to the magnesium chloride (MgCl) tanks (see 2.4.12 for additional information) in the southwest section of the Facility. The shed contains a pump, miscellaneous electrical and spare parts, as well as an eyewash station.

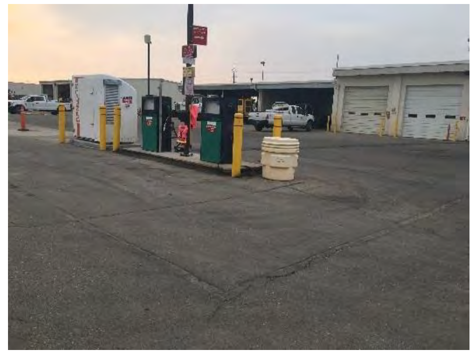
Photos 13 and 14. From left to right, Structures C-8 and C-9.

2.4.10 Hose Sheds

Hose Sheds 1, 2, and 3 are located adjacent to the wastewater decant system. The hose sheds are used for sweepers, vacuum trucks, and other equipment to utilize either with recycled reuse water from the decant system or potable water from Suez for washing equipment.

2.4.11 Fueling Stations

There are two fuel dispensing stations within the Facility. A diesel pump with an underground storage tank and gasoline pump with an underground storage tank are both located between the mechanics shop (Structure C-2) and covered vehicle storage area (Structure C-3). The total storage between the two UST structures is 20,000 gallons. Both fueling islands are controlled through a centrally located keypad and are equipped with spill kits. The fueling stations are not covered. To contain minor drips and spills, a 1-inch deep, 3-inch wide channel has been cut into the asphalt. The fuel station area drains to the storm drain system that discharges into bioretention swales, BRS-2 and BRS-3, located in drainage area 2.



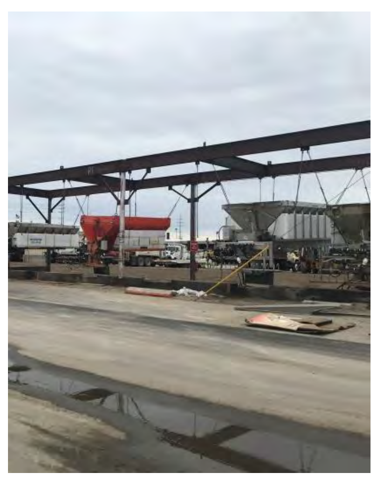
Photos 15 and 16. From left to right, hose shed and diesel fueling station.

2.4.12 Magnesium Chloride Tanks

The Facility houses eight 10,000-gallon magnesium chloride tanks. The tanks are stored in a concrete secondary containment structure with drain valves that are closed during day to day operations. Secondary containment for the tanks consists of a concrete berm; the bermed area has the capacity to store approximately 25,000 gallons. Drain valves are used to discharge rainwater that has collected in the containment structure. The drain valves are to be opened only after careful inspection to ensure there are no contaminants in the collected rainwater. Inflow and outflow of the tanks are metered, and volume can be monitored continuously. Inspections of the tanks occur at least once a month or daily, as needed, during winter operations.

2.4.13 Sander Racks

Sander racks house the salt and sand/salt dispersing equipment (spreaders) that can be attached to dump trucks. The spreaders are operated with hydraulics and residual hydraulic oil may seep out of the lines. It is the operator’s responsibility to ensure hydraulic lines on the spreaders are empty before storage. If drips are encountered, absorbent pads or floor dry will be used to clean up and disposed of properly.



Photos 17 and 18. From left to right magnesium chloride tanks and sanders racks.

2.4.14 Material Storage Piles

There are two material storage pile areas located within drainage areas 1 and 4. Examples of materials stored include sand, gravel chips, fill, rock, woody debris, excavated materials, sweeper and vacuum debris. Storage of erodible materials is to be located away from storm drains. Storage areas and piles are to be kept in a neat organized fashion.

Photos 19 and 20. Material Storage Pile Areas

2.4.15 Outdoor Secondary Containment Areas

There are two outdoor secondary containment areas for oil related products. Both are located in drainage area 4. Each secondary containment area is composed of sufficiently impervious material per SPCC regulations and should be been sized for the largest single container with sufficient freeboard for precipitation. Distributor trucks are parked in a third containment area, SC-3. Distributor trucks are to be parked empty eliminating the requirement to have an area sufficiently impervious and sized for the largest single container with sufficient freeboard for precipitation. This area was designed for minor drips that may occur from the spray bars on the trucks.

Photo 21 through 23. From left to right, SC-1, SC-2, and SC-3.

Section 3: Stormwater Control Measures

This section discusses the day-to-day operations, procedures, and Best Management Practices (BMPs) implemented at the facility for good housekeeping and pollution prevention.

3.1 Minimize Exposure

The following structural controls and BMPs are used to minimize the exposure of industrial activities to rain, snow, snowmelt, and runoff.

3.1.1 Non-Stormwater Discharges to Waterways

Portions of the Facility site were remodeled in 2017 to build a new sand/salt shed, retain stormwater runoff on site using green stormwater infrastructure, and install new employee parking. During this process the storm drain inlets within the Facility were rerouted to bioretention swales along N. Cloverdale Road and W. Executive Drive, Appendix B includes site specifics as they relate to drainage areas. Storm drains within the Facility are inspected monthly and cleaned out to reduce sediment entering the area. Discharges to the Waters of the US can occur through Structure C-5 and the water decant system, by means of a leaking plug, or if there is an overflow of the bioretention swales along Executive Rd or Cloverdale Rd from drainage areas 1, 2, 8, or 9.

- Storm drains within the Facility are to be covered with fabric catch basin inserts (aka witches hats) or above grate protection.
- Above grate protection and catch basin inserts are to be inspected monthly and replaced or cleaned, if excess sediment has built up. This includes sediment/debris build up around the surface of the catch basin.

Depending on the spilt material, if a non-stormwater discharge is observed related to petroleum, staff is to reference the SPCC for appropriate procedures, documentation, and reporting requirements.

3.1.2 Outdoor Storage of Raw Materials

Raw materials that are stored outside and uncovered on the site include soil, chips, debris, spoils, and aggregate. To minimize exposure and protect materials during rain, snow, and wind the following are required unless stated otherwise:

- Sweep paved areas at a minimum weekly with additional sweeping as necessary to eliminate sediment accumulation.
- Stockpiles shall not be placed adjacent to catch basins.
- Spill kits with clean-up materials are adjacent to fuel pumps and outdoor storage areas.
- Reduce offsite run-on potential by sloping the area away from the side and/or adding berms.
- Prior to rain event, consider covering stockpiles to reduce run-off or ensure material will not flow into storm drains.
- Salt shall always be stored within the salt storage shed, Structure C-8.

3.2 Good Housekeeping

The following BMPs are implemented onsite to reduce areas exposed to precipitation/wind and ensure the site is maintained using good housekeeping practices.

3.2.1 Vehicle and Equipment Fueling

Vehicle and equipment fueling are managed to reduce the potential of gas or diesel from entering the system through the implementation of the following practices. Additionally, a 1-inch deep, 3-inch wide channel has been cut into the asphalt to catch small spills that may occur during the fueling of vehicles. The following shall be maintained to minimize employee exposure and ensure good housekeeping procedures are following:

- Spill kits are located at the fueling station to mitigate leaks or drips.
- Spill kit contents includes absorbent pads, booms, pillows, quick-dry, goggles, gloves, and disposal bag.
- Additional spill kit supplies are located in the mechanics shop, Structure C2.
- Employees are instructed to stay with the vehicle while fueling, avoid topping off fuel tanks, and are trained yearly in proper fueling and cleanup procedures.
- Additional spill prevention and tanker delivery procedures are located in the Cloverdale SPCC plan (Section 9.0)

3.2.2 Vehicle and Equipment Cleaning

There are two wash areas at this Facility where vehicles and equipment are cleaned at the truck wash building (C-6 structure) and decant system (adjacent to C-5 structure). Water from both systems is discharged to the sanitary sewer system.

- Both structures are paved or concreted and sloped to ensure wastewater collection occurs within each structure.
- Maintenance staff are to sweep the site weekly or additionally as needed.
- There is an oil/water separator in structure C-6 to pretreat wash water prior to discharging to the sanitary sewer.   The oil/water separator is cleaned yearly and additionally as needed by a vendor.

3.2.3 Outdoor Loading and Unloading of Materials

Below are the minimum activities to be implemented for loading and unloading material.

- Ensure forklifts operators are trained in proper loading and unloading to prevent spills.
- Maintain clean disposal locations in drainage areas 1-4.
- Limit delivery vehicle unloading where storm drains are present or nearby.
- If leaks occur during transfer, contain, use appropriate spill cleanup materials with nearby spill kit, and report and record or report as necessary according to the SPCC and other relevant regulations and the Stormwater Routine Facility monthly inspection.
- During dry weather, move stockpiles slowly to reduce generating dust or spray water.

3.2.4 Waste Handling and Disposal

An important part of facilities operations addresses waste handling, disposal and tracking. Activities tracked include generation, storage, disposal, recycling, and reuse. Waste streams are characterized

prior to disposal and tracking logs are located in the SWPPP binder in the superintendent's office or as documented below and must be retained for five years.

- Chemicals, materials, quantities, and Safety Data Sheets (SDS) are stored onsite.
- Storage containers are inspected regularly to determine container integrity, identify any leaks or spills, labeled and ensure lids are secure.
- If stored outside, scrap metal and other waste shall be stored in a covered container.
- Less toxic substitute materials shall be used when deemed possible by the waste handling contractor.
- Chemical specific SOPs for disposal have been generated by the waste handling contractor and are located in the superintendent's office for review.
- The Facilities Coordinator has records of the waste manifests for the yard.

3.2.5 Contaminated or Erodible Surface Areas

Sediment can be transported to receiving waters through erosion of unpaved areas of the Facility, permanent sand and gravel storage and temporary soil piles. The following activities are to be performed to address potential pollutants from contaminated and/or erodible surface areas:

- Keep erodible material as far away as possible from catch basins.
- Consider use of check dams to dissipate sediment in channelized areas.
- Consider covering piles with plastic tarps or installing berms around the perimeter if sediment discharges continues to be observed.
- Inspect and maintain catch basin inserts.
- Maintain raised berms around the perimeter to keep stormwater onsite.

3.3 Maintenance

The following procedures and BMPs are in place to maintain site equipment and reduce the potential of spills and leaks. Maintenance records are maintained digitally through Asset Works and must be maintained for five years.

3.3.1 Vehicle and Equipment Maintenance and Repair

Vehicles and equipment maintenance and repair are integral to successfully accomplishing ACHD's mission. Vehicles and heavy machinery go through a maintenance screening prior to use to ensure the equipment is functioning as designed and there are no leaks. The following practices are implemented when performing equipment and vehicle repair:

- Prior to each use, vehicles and equipment are inspected for leaks and drips.
- When vehicle maintenance is required, vehicles are stored inside the mechanics shop (C-2).
- Drip pans are to be placed under vehicles or equipment if leaks are a concern.
- Drip pans associated with this activity are properly disposed of in a timely fashion.
- Additional spill kit materials are located in the mechanics shops for use as needed.

3.3.2 Building and Grounds Maintenance

Building and grounds maintenance practices are important to reduce potential stormwater runoff impacts. Keeping areas clean will prevent the spread of pollutant containing material. Extra attention to surfaces can significantly reduce pollutant wash-off. In addition, an orderly work environment will also reduce the chance for inadvertent spills. The following good housekeeping practices are employed onsite:

- Keep outdoor work areas neat and organized.
- Drums, containers, and chemicals will be stored with lids closed, labeled, and located in the secondary containment area or by storage methods discussed in the applicable Safety Data Sheets (SDS) and relevant waste handling SOPs.
- Sediment residue will be swept in a timely fashion to reduce potential contact with stormwater run-off and reduce vehicle tracking. If vehicle or machinery tracking becomes an issue, the Broom Crew team will be notified, and a sweeper will clean the area.
- Trash, floatables, and debris will be contained with lid shut and regularly disposed of.
- Vehicles and equipment are regularly maintained to ensure no leaks or drips.
- Absorbent material will be used on minor drips and leaks around the facility, swept up, and disposed of properly.
- During the summer, if dust generation becomes an issue, vehicles and machinery will reduce speeds. If the problem continues, stockpiles may be sprayed down with clean water (not reuse water).
- Paved areas around the facility are swept weekly to reduce vehicle tracking with additional sweeping done as needed throughout the week.

3.3.3 Building Repair, Remodeling, & Construction

These BMPs are essential for reducing discharge of pollutants to stormwater related to repair, remodel, and construction. While a building is under construction it will be important to remember the following:

- BMPs should be installed prior to construction and removed once the area has been stabilized.
- Cover stockpiles as necessary to reduce soil exposure.
- Place all liquid or hazardous materials in secondary containment sized appropriately, and store according to SDS and waste handling SOPs.
- Reduce runoff from area by implementing appropriate BMPs such as straw wattles, sandbags, silt fence, etc…
- If track out is identified, manually sweep the area or request a street sweeper to clean the area.
- Protect catch basins using inlet protection and avoid hosing the area down with water.
- Appropriately store and dispose of waste materials. No waste material is allowed in storm drain.

3.4 Spill Prevention and Response

ACHD is responsible for spill prevention and response at the Facility. If an unauthorized non-stormwater discharge is observed, the spill will be handled in accordance with ACHD's Spill Response Plan. All spills shall be documented and included in the monthly inspection (form located in Appendix D). If the spill source is of a petroleum product, the Spill Prevention Control and Countermeasures (SPCC) plan should be referenced to ensure appropriate reporting and cleanup occurs. Additionally if the spill or leak is related to one of the UST, the Idaho Department of Environmental Quality (DEQ) should be notified immediately.

3.5 Erosion and Sediment Controls

Erosion and Sediment Control BMPs are implemented around the Facility site.
BMPs implemented onsite include but are not limited to:

- Non-stormwater Discharges to Drain, see section 3.1.1.
- Outdoor Storage of Raw Materials, see section 3.1.2.
- Contaminated or Erodible Surfaces, see section 3.2.5.

If channelized flows are observed, check dams may be installed to dissipate sediment and reduce flow velocity. If at any point operations at the Facility are modified, additional BMPs may be installed as necessary.

3.6 Management of Runoff

Stormwater from around the site has been designed to infiltrate in drainage areas 1,2, and 4 through 9. Permanent Stormwater BMPs are listed in section 1.6 in table 1 and included in Appendix B. The permanent stormwater BMPs are maintained using the following practices:

- Bioretention swales in drainage areas 1, 2, 4,5, 8 and 9 located along Cloverdale Rd and Executive Way are mowed, as needed, throughout the year by a contractor.
- Curb cuts in drainage areas 6 and 7 that lead into the bioretention swales are inspected during the monthly inspection. If maintenance is required or debris observed, the drainage crew will address the issue.
- Catch basins throughout the facility are inspected monthly. Those that need to be cleaned are documented on the inspection form. The Drainage Crew is responsible for the cleaning of the catch basins.
- Permeable pavers in the guest parking area are located at the entrance of the Facility in drainage area 2 along Cloverdale Rd. Inspections occur monthly and the drainage crew ensures the permeable pavers are maintained.

3.7 Winter Maintenance Materials Storage

Salt and salt with sand mixture is used on roadways as deicer. When this material is exposed to stormwater it can transport chlorides and sediment to waterways and into groundwater.
The following practices can help keep salt and sand/salt piles from being transported by stormwater:

- Keep salt in covered salt shed.
- Sweep any salt that is outside of the covered shed back into the covered shed.
- A berm is located on both sides of the salt shed to keep materials inside.
- All salt and salt with sand mixture is stored in structure C-8, see section 2.4.8 for structure specifics.

3.8 Dust Generation and Vehicle Tracking

During summer months moving stockpiles may generate dust and become an air quality issue. Additionally, after rain events, vehicle tracking may be noticeable. See section 3.3.2. Building and Ground Maintenance for specific procedures in place at the facility to reduce the possibility of dust generation and vehicle tracking.

3.9 Employee Training

Annually, staff are trained in Pollution Prevention and Good Housekeeping for Municipal Operations. This training covers the following topics:

- Cloverdale and Adams Facility SWPPP requirements and BMPs
- Good Housekeeping
- Spill Prevention and Response
- Vehicle Fueling
- Vehicle and Equipment Maintenance
- Vehicle and Equipment Washing
- Vehicle Tracking
- Materials Management
- Waste Management
- Municipal Facility Maintenance
- Parking Lots and Streets
- Storm Drain System Cleaning
- Landscaping and Grounds Maintenance
- Working over or Near Waters
- Air quality conditions for the day

Training will be coordinated with the Training Specialist, the Stormwater Quality Specialist, and/or other qualified individuals and must be documented and recorded in the ACHD training compliance database. Training records must be retained for five years. Training records are retained by the Training Specialist as well as the Stormwater Quality Specialist.

Section 4: Inspections and Records

4.1 Inspections and Assessments

Monthly inspections are conducted to ensure BMPs are being implemented and are adequate for preventing stormwater pollutants discharging offsite. The Maintenance Superintendent, Crew Chief, or Lead Worker are responsible for conducting the inspections or delegating inspection responsibilities to qualified staff members.

Inspections are conducted to:

- Verify that the description of the storm drain system in Section 1.5 Drainage Areas and Appendix B and C are accurate. If additional BMPs are installed, modify figures as necessary for accuracy.

- Verify that BMPs throughout the facility are being implemented, maintained, and are functioning adequately.
- Inspect all drainage structures including outfalls for defects and maintenance needs.
- List observations of floating materials, non-stormwater discharges, oil and grease, turbidity, odor, etc. in drainage structures.

Inspections must be documented and recorded on Stormwater Routine Facility Inspection Report provided in Appendix D. If at any time a BMP is not effective, it must be repaired or maintained before the next anticipated storm event. If maintenance prior to the next storm event is not possible, maintenance must be completed as soon as possible and documented on the inspection form for the extended repair schedule. In the interim, alternative measures must be implemented to ensure that water quality is not degraded by stormwater discharges from the facility. Inspections must be retained for five years.

4.2 Record Retention

Per NPDES requirements records must be retained for a minimum of five (5) years. Cloverdale Facility records will be retained by the Cloverdale Maintenance Superintendent or as otherwise documented below.

Records to be retained include, but are not limited to:

- Inspection Forms
- Maintenance Records
- Waste Disposal Records
- Analytical Reports for Lab Analysis of Reuse Water
- The Facilities Coordinator will maintain the Waste Manifest Logs
- Training records are maintained by the Training Specialist and Stormwater Quality Specialist

Section 5: Corrective Actions

All corrective actions will be documented in monthly inspections and the SWPPP will be modified to include all new or updated BMPs and any other pertinent information.

Section 6: SWPPP Modifications

This SWPPP is a living document that is intended to replace the 2015 SWPPP. As such, it can be modified as facility operations are altered. Alterations include but are not limited to new structures, construction, or additional BMPs. Any modifications should be documented in the revision section. Additionally, the SWPPP will be updated if new information regarding facility compliance or other documentation is deemed necessary. Reporting of modifications to the Environmental Programs Coordinator is the responsibility of the Superintendent. The SWPPP will be updated by the Environmental Programs Coordinator as modifications are provided by the Superintendent, noted on monthly inspection forms, or observed.

Section 7: References & Resources

ACHD Spill Prevention, Control, and Countermeasures Plan (SPCC) link-

S:\STORMWATER\Municipal Pollution Prevention\Cloverdale Yard\SPCC

Environmental Protection Agency. *EPA Industrial SWPPP Template.* 2015.

https://www.epa.gov/sites/production/files/2015-11/msgp2015_swppptemplate.docx.

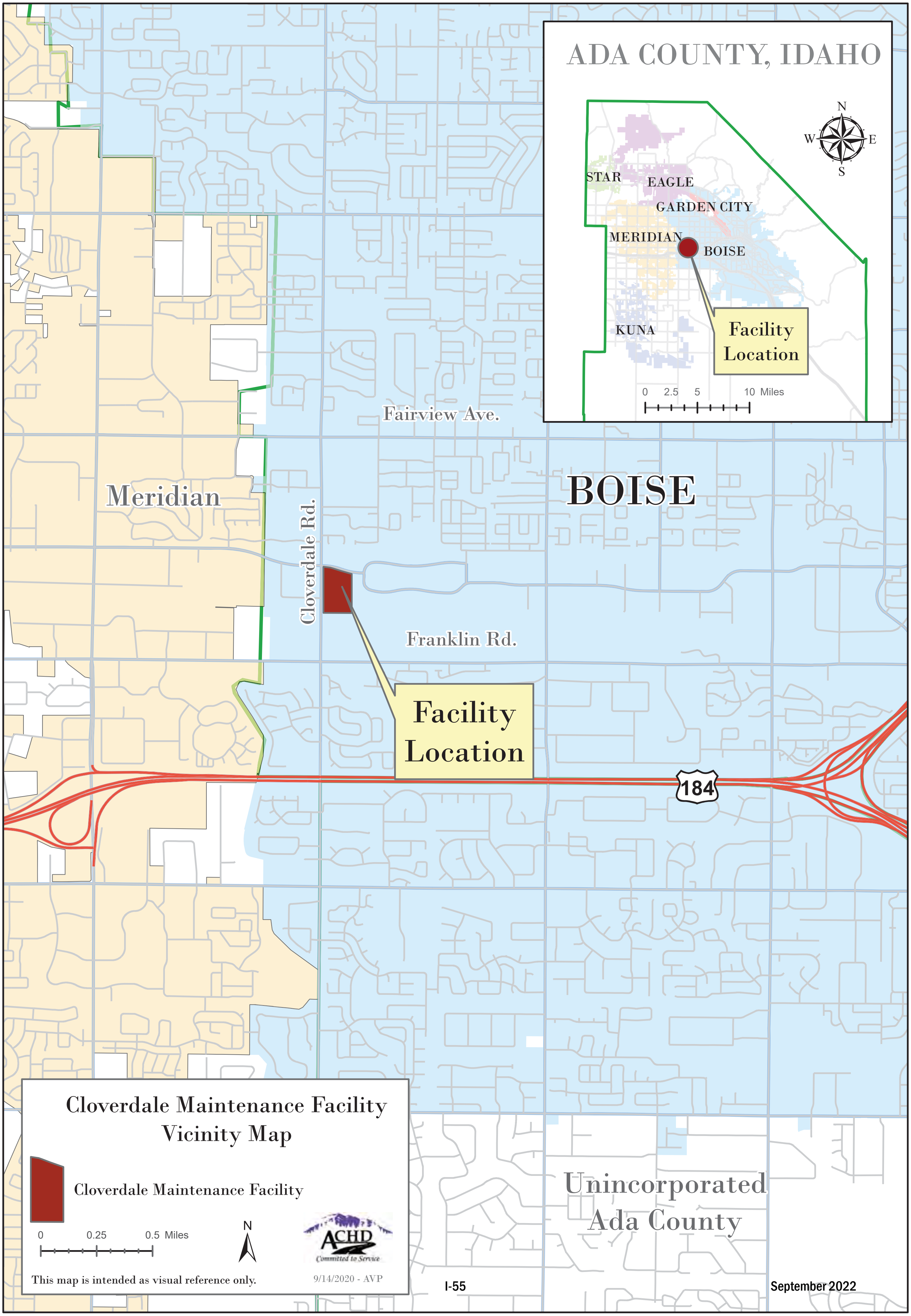
Environmental Protection Agency. *When are You Required to Report an Oil Spill and Hazardous Substance Release.* 14 March, 2017. www.epa.gov/emergency-response/when-are-you-required-report-oil-spill-and-hazardous-substance-release.

Idaho Department of Environmental Quality. *Catalog of Stormwater Best Management Practices for Idaho Cities and Counties*. 2005. http://www.deq.idaho.gov/media/622263-Stormwater.pdf.

Idaho Department of Environmental Quality- Underground Storage Tanks in Idaho. https://www.deq.idaho.gov/waste-mgmt-remediation/storage-tanks/underground-storage-tanks/

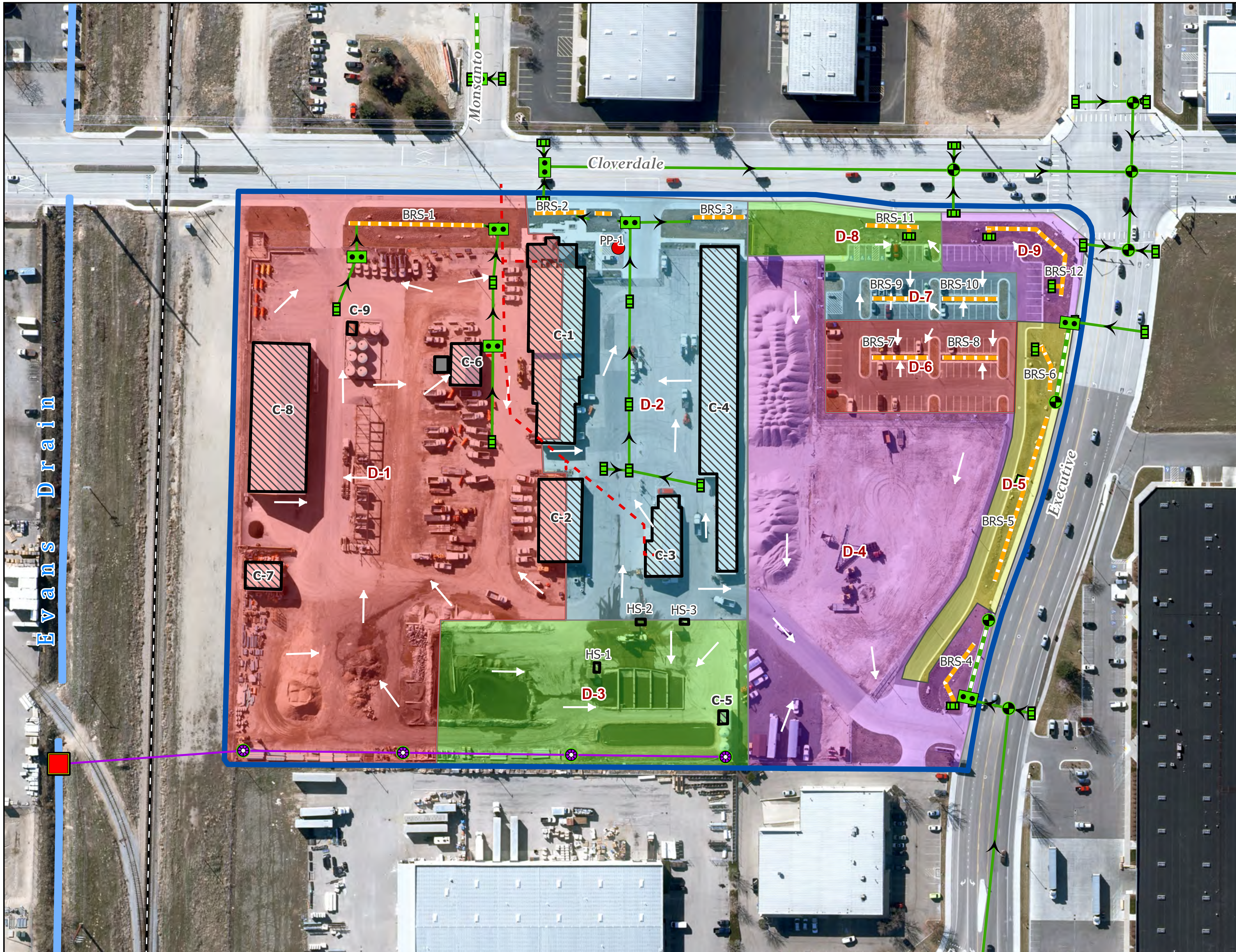
State of Idaho, Department of Environmental Quality. *Idaho Catalog of Storm Water Best Management Practices, draft.* 2019. https://www.deq.idaho.gov/media/60183104/idaho-catalog-storm-water-bmps-draft-0719.pdf

Appendix A. Vicinity Map



ADA COUNTY, IDAHO
N
W
E
S
STAR
EAGLE
GARDEN CITY
MERIDIAN
BOISE
KUNA
Facility Location
0 2.5 5 10 Miles
Fairview Ave.
BOISE
Meridian
Cloverdale Rd.
Franklin Rd.
Facility Location
184
Cloverdale Maintenance Facility
Vicinity Map
Cloverdale Maintenance Facility
0 0.25 0.5 Miles
N
ACHD
Committed to Service
This map is intended as visual reference only.
9/14/2020 - AVP
Unincorporated
Ada County

Appendix B. Drainage Areas and Outfall Map



ACHD Cloverdale Maintenance Facility Drainage Areas and Outfall

440 Cloverdale Rd
Boise, ID 83713

Outfall (Cof1)
Manhole
Drop Inlet
Pretreatment
Storm Drain Pipe
Seepage Bed Pipe
Bioretention Swale (BRS-1 - BRS-12)
Sewer
Tank Overflow Pipe
Tank Overflow Manhole
Surface Flow Direction
Union Pacific Railroad
Evans Drain
Buildings (C1 - C9; HS-1 - HS-3)
Radio Tower
Permeable Pavers (PP-1)
Cloverdale Facility Boundary

Drainage Area

D-1; D-6
D-2; D-7
D-3; D-8
D-4; D-9
D-5

0 62.5 125 250 US Feet

Date Created: 11/19/2020

ACHD Committed to Service

Appendix C. Facility Site Map

ACHD Cloverdale Maintenance Facility SITE MAP

440 Cloverdale Rd
Boise, ID 83713

- Spill Kit
- Evans Drain Outfall (Cof1)
- Diesel / Gas Pump
- Recycling Receptor
- Magnesium Chloride Area
- Sanders Rack
- Stock Pile Area
- Water Decant Area
- Water Tank Area
- Straw Wattle
- Gravel
- Buildings (C1 - C9; HS-1 - HS-3)
- Impervious Area / Rotomilled Area
- Fuel Trench (FT-1 - FT-2)
- Secondary Containment (SC-1 - SC-3)
- Access
- Tank Overflow
- Cloverdale Facility Boundary
- Union Pacific Railroad
- Evans Drain

DRAINAGE STRUCTURAL BMPS

- Bioretention Swale (BRS-1 - BRS-12)
- Permeable Pavers (PP-1)

0 50 100 200 Feet

2019 Cloverdale Site Imagery

September 2022

Document Path: G:\StormDrain\CaitlinStevens\Cloverdale Maintenance\CloverdaleBoundary_SWPPP.mxd

Appendix D. Stormwater Routine Facility Monthly Inspection Form

Stormwater Routine Facility Inspection Report

General Information			
Facility Name	Cloverdale Rd Maintenance Facility		
Date of Inspection		**Start/End Time**	
Inspector's Name(s)			
Inspector's Title(s)			

Weather Information
Weather at time of this inspection? ❑ Clear ❑Cloudy ❑ Rain ❑ Sleet ❑ Fog ❑ Snow ❑ High Winds ❑ Other: Temperature:
Have any previously unidentified discharges of pollutants occurred since the last inspection? ❑Yes ❑No **If yes, describe:**
Are there any discharges occurring at the time of inspection? ❑Yes ❑No **If yes, describe:**

Control Measures

- *Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.*

	Structural Control Measure	Control Measure is Operating Effectively?	If No, In Need of Maintenance, Repair, or Replacement?	**Corrective Action Needed and Notes** (identify needed maintenance and repairs, or any failed control measures that need replacement)
1	**Drop Inlet Protection**	❑Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	
2	**Bioretention Swales**	❑Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	
3	**Gasoline Spill Kit**	❑Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	
4	**Diesel Spill Kit**	❑Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	
5	**Secondary Containment**	❑Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	
6	**Site Perimeter**	❑Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	
7	**Evans Drain Outfall**	❑Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	
8	**Permeable Pavers**	❑Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	
9		❑Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	
10		❑Yes ❑No	❑ Maintenance ❑ Repair ❑ Replacement	

Areas of Industrial Materials or Activities exposed to stormwater
Below are some general areas that should be assessed during routine inspections. Customize this list as needed for the specific types of industrial materials or activities at your facility.

	Area/Activity	Inspected?	Controls Adequate (appropriate, effective, and operating)?	Corrective Action Needed and Notes
1	**Sander Racks**	❑Yes ❑No ❑ N/A	❑Yes ❑No	
2	**Decant System**	❑Yes ❑No ❑ N/A	❑Yes ❑No	
3	**Fueling Areas**	❑Yes ❑No ❑ N/A	❑Yes ❑No	
4	**Vehicle and Equipment Washing Areas**	❑Yes ❑No ❑ N/A	❑Yes ❑No	
5	**Waste Handling and Disposal Areas**	❑Yes ❑No ❑ N/A	❑Yes ❑No	
6	**Erodible Areas/Construction**	❑Yes ❑No ❑ N/A	❑Yes ❑No	
7	**Sand & Salt Shed**	❑Yes ❑No ❑ N/A	❑Yes ❑No	
8	**Material Storage Piles**	❑Yes ❑No ❑ N/A	❑Yes ❑No	
9	**Magnesium Chloride Tanks and Secondary Containment**	❑Yes ❑No ❑ N/A	❑Yes ❑No	
10	**Secondary Containment**	❑Yes ❑No ❑ N/A	❑Yes ❑No	
11	**Dust Generating & Vehicle Tracking**	❑Yes ❑No ❑ N/A	❑Yes ❑No	
12		❑Yes ❑No ❑ N/A	❑Yes ❑No	

Describe any incidents of non-compliance observed and not described above:
Additional Control Measures (Describe any additional control measures needed to comply with the permit requirements):
Notes (Use this space for additional notes or observations from the inspection):