BOISE STATE UNIVERSITY

Phase I NPDES Municipal Separate Storm Sewer System Annual Report

FOR

Boise State University

Permit Year 2016-2017

NPDES Permit No. IDS-027561

Table of Contents

Appendices

Report Certification

Boise State University NPDES Municipal Separate Storm Sewer System Annual Report FOR Permit Year 2016-2017

Permit # IDS-027561

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

Mark Heil
Vice President for Finance and Administration
Boise State University

11/10/17
Date

1. Introduction

Environmental Protection Agency, Region 10 (EPA) issued a Phase I National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit (Permit) (No. IDS-027561) to Ada County Highway District (ACHD), Boise State University, City of Boise, Garden City, Ada County Drainage District #3, and Idaho Transportation Department District 3 on February 1, 2013. The Permit authorizes discharges of stormwater from Boise State University's MS4 outfalls to waters of the United States in accordance with the conditions and requirements of the Permit.

This report identifies the activities undertaken by Boise State University during the second permit year, and is submitted in accordance with the Permit, in particular Part IV.C.3c. The permit year, as defined in this report, covers the reporting period of October 1, 2016 – September 30, 2017. The annual report is submitted to EPA, Region 10 and the Idaho Department of Environmental Quality (IDEQ) annually by January 30 of each year.

2. Storm Water Management Program (IV.C.3.c.i.)

In accordance with permit requirements Part II.A.1, Boise State University is required to implement and enforce a storm water management program designed to reduce the discharge of pollutants from the MS4 to the maximum extent practicable and to protect the water quality in receiving waters. Boise State University has developed a Storm Water Management Program (SWMP) for the Phase I permit area under our jurisdiction. Boise State's SWMP outlines its priorities and activities for the years 2013-2018.

The SWMP establishes the foundation on which Boise State will continue to build, as new best management practices are identified and implemented. Boise State will assess and report annually on the effectiveness of the program activities, recommend enhancements to the program and implement changes as necessary to ensure continued permit compliance. Boise State University's SWMP will be updated annually and submitted to EPA as Appendix 1 of the Annual Report.

3. Control Measures – Status and Compliance (IV.C.3.c.ii.)

The status of implementing the permit-required control measures (Permit Part II.A and B and IV.C.3.ii) for specific second annual report requirements are described in the following sections.

3.1 Sub-watershed Planning

The Permittees are required to jointly complete at least two individual sub-watershed plans for areas served by the MS4 within the Permit area. For each plan document, the sub-watershed planning area must drain to at least one of the water bodies listed in Permit Table II.C. Through these activities the Permittees have selected the Americana and Main sub-watersheds for this permit requirement. Two completed sub-watershed plan documents shall be submitted to the EPA as part of the fifth year annual report.

A bid for sub-watershed planning documents will be sought to characterize the identified sub-watersheds based on Permit requirements. A map and additional information on sub-watershed planning activities is located in ACHD's SWMP.

3.2 Construction Site Runoff Program

The objective of the Construction Site Runoff Control Program is to reduce/eliminate construction site-related pollutant discharges to the MS4. A general description of Boise State's program and the status implementation are located in Boise State's SWMP (Appendix 1). Erosion and sediment control inspection and plan review data are summarized in Section 5.3 of this report.

3.3 Stormwater Management for Areas of New Development and Redevelopment

The objectives of the New Development and Redevelopment Program are to reduce the total volume of stormwater runoff to the MS4 and to reduce pollutant loading in discharges to the MS4. A general

description of Boise State's program and the status of implementation are located in Boise State's SWMP (Appendix 1).

3.4 Industrial and Commercial Stormwater Discharge Management

The objective of the Industrial and Commercial Stormwater Discharge Management Program is to actively engage dischargers in protecting the quality of runoff and managing facilities and activities to prevent the discharge of pollutants associated with industrial and commercial facilities and activities. Boise State University relies on ACHD, Garden City, and the City of Boise to fulfill these objectives using the appropriate ordinance or control.

3.5 Stormwater Infrastructure and Street Management

The objective of the Stormwater Infrastructure and Street Management Program is to optimize the approach to maintenance and operations in order to minimize discharge of pollutants from Boise State activities. A general description of activities and associated actions being implemented are located in Boise State's SWMP in Appendix 1. Detailed information on storage facilities for sand and salt and sweeping program follows.

3.5.1 Storage Facilities for Sand and Salt

Boise State University stores sand and salt materials at one location with the address 1110 Vermont Street in Boise, Idaho. The amount of sand stored at this site is never more than 20 cubic yards at one time, based on space availability. The volume of liquid calcium chloride on site is never more than a total of 6,000 gallons, which includes storage and material owned by Boise State University and contractor storage and material half of which is on site only during winter months (generally October through April). The storage facility is an entirely unpaved site which has no connection to the storm drain system for at least 200 yards, at which point it would discharge into the street which is ACHD's jurisdiction. All spills or discharges would be onto the pervious ground.

3.5.2 Sweeping Effectiveness

Boise State developed an Excel spreadsheet to calculate and track vacuum and mechanical sweeper volumes. The spreadsheet will be used in subsequent reporting periods until a more reliable database is developed. Data on volume of debris collected were collected and are summarized. A total of 2 parking garages and numerous other surface lots were swept in house by vacuum/sweeper. The volume of debris collected in house is approximately 3,200 cubic feet. Boise State University maintains paved roads and public parking lot maintenance responsibility and the following map shows the location of all types owned and operated by Boise State. The sweeping effectiveness of our SWMP will be addressed in each Annual Report. Please see Figure 1 for the current road and parking lot inventory and location relative to the main campus.

3.5.3 Stormwater Pollution Prevention Plan

Boise State University has developed and implemented a Storm Water Pollution Prevention Plan (SWPPP) for our own material storage facilities and maintenance yards located with the permit area and identified in the inventory required in Part II.B.4.a.vii on page 22 of the Permit. This SWPPP is included as Appendix 5 of this Annual Report. Subsequent SWPPPs will be updated and the link for viewing the most current document at http://operations.boisestate.edu/EHS/environmental-health/. Boise State does not discharge stormwater associated with industrial activity as defined by 40 CFR122.26(b)(14) due to our Standard Industrial Classification of 8221.

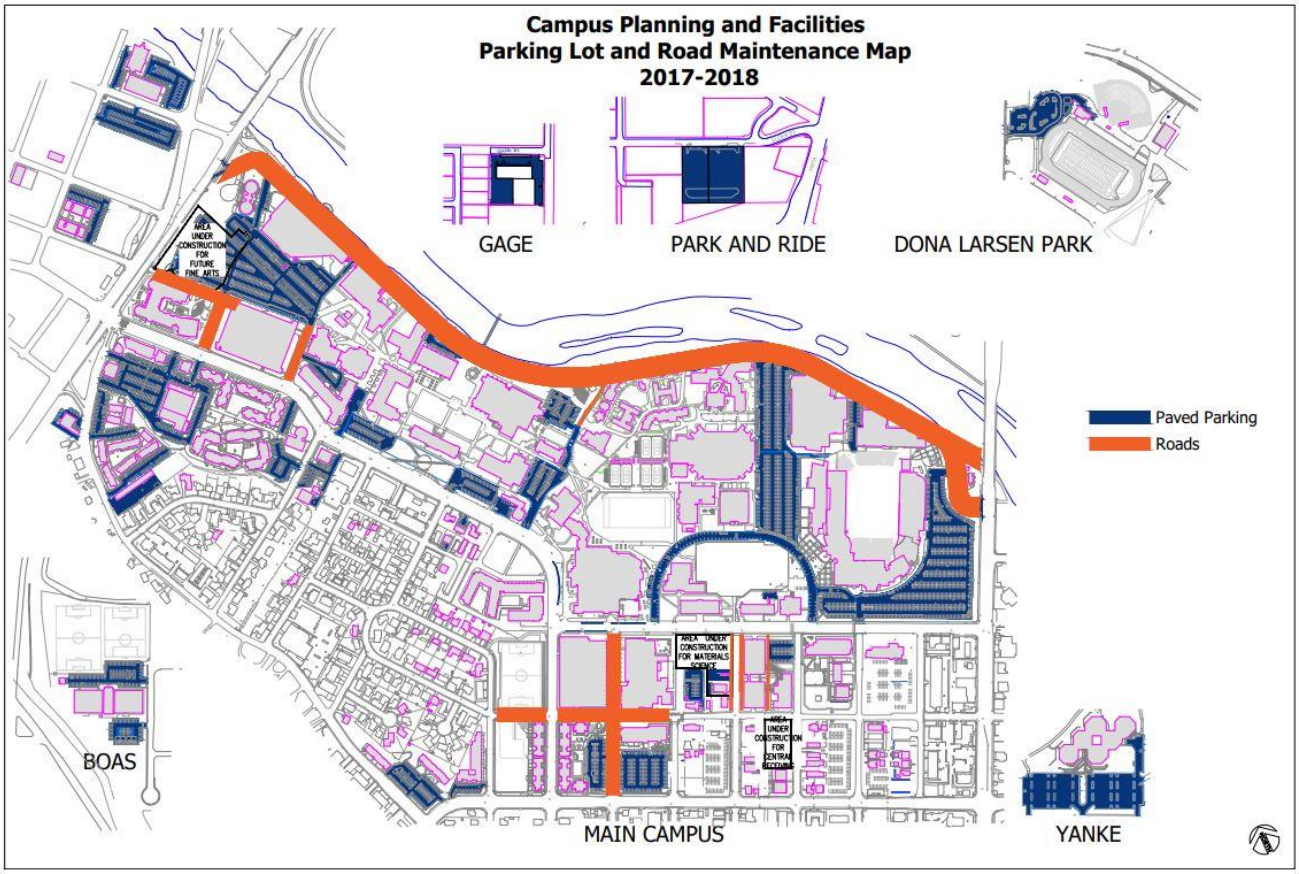


Figure 1. Current Road and Parking lot inventory map

3.6 Illicit Discharge Management

The objective of the Illicit Discharge Management Program is to eliminate illicit discharges and illicit connections to the MS4 and to receiving waters. Illicit discharge complaint response data from the fourth (2016-17) permit year are summarized in Section 5.1 of this report. Dry weather outfall inspections were performed this permit year and are described in Section 5.2.

3.7 Education, Outreach, and Public Involvement

The objective of the Education, Outreach, and Public Involvement Program is to proactively engage the public in stormwater management and protection by raising awareness about activities and practices that contribute to increased pollutant loading in stormwater runoff. A general description of activities and associated actions are located in the SWMP (Appendix 1). Boise State refers to the Public Education section of Boise City's annual report, as they are the lead agency for Public Education as designated in the Intergovernmental Agreement. Boise State University participates in the Public Education Program by participating in the Intergovernmental Agreement and cost sharing with the City of Boise.

The Boise State Stormwater Coordinator is a member of the Public Education Committee and participated in a number of educational activities with the other Permittees. Boise State participated in RiverSweep in September 2017 and also held multiple campus cleanup walks throughout the year. Additionally, Boise State Environmental Health, Safety, and Sustainability educates campus community members on proper household hazardous waste disposal, storm drain marker locations, stormwater management, and spill hotline number, along with ways to reduce environmental impact through sustainable actions.

4. Monitoring Activities and Results (IV.C.3.c.iii.)

A summary of the information collected and analyzed during the reporting period including those activities related to monitoring and evaluation are described in ACHD's Annual Report. ACHD is the designated lead agency in charge of performing routine monitoring requirements of the Permit. When dry weather screening of

Boise State owned outfalls shows visible discharge, Boise State University in coordination with ACHD will perform the required field and lab sampling analysis. Boise State University participates in the cost share outlined in the Intergovernmental Agreement.

5. Complaint Response, Inspection and Enforcement (IV.C.3.c.iv.)

A summary number and nature of complaints received, and follow-up actions taken; inspections, formal enforcement actions, and/or other similar activities performed are described in the following sections.

5.1 Complaint Response

Boise State is listed on the Complaint Response Matrix and Contact List.
Boise State continues to comply with a Spill Prevention, Control and Countermeasure (SPCC) plan for University facilities and maintains the plan by completing annual HAZWOPER refresher training for coordinators, and providing training to individuals potentially becoming involved in a spill incident. Boise State University re-certified the SPCC Plan in 2013 for another 5 year period.

Complaint Summary: Four complaints were received in the reporting period. See Table 1.

TABLE 1.

DATE	NOTIFICATION	SUBSTANCE	AMOUNT	CONTAINMENT MEASURE	CONTAINED
12/14/16	Call from SVQ about spill in 5 ADA spots at Alumni and Friends Center	Unknown liquid (TPS confirmed it was de-icer)	~2 gallons	Loose absorbent applied and disposed of in the trash.	Yes. None entered the storm drain.
8/30/17	Call from Dispatch about a motorcycle that tipped over in the Liberal Arts parking lot during a microburst and was leaking a small amount of fuel.	Fuel	~200 mL	Loose absorbent applied and disposed of in the trash.	Yes. None entered the storm drain.
9/6/17	Call from Dispatch about a motor oil spill in the Brady Garage	Motor Oil	~ 1 pt	Loose absorbent applied and disposed of in the trash. Garage floor cleaned by a contractor.	Yes. There were no storm drains nearby.
9/14/17	Call from Public Safety about a spill in a park spot in the east stadium lot.	Unknown liquid	~ 200-250 mL	Loose absorbent applied and disposed of in the trash.	Yes. None entered the storm drain.

5.2 Dry Weather Outfall Inspections

Boise State University performed visual inspection of all twelve active outfalls owned by Boise State University that discharge to either a tributary or the lower Boise River in July and September 2017. Two outfalls had observed flow and were sampled according to ACHDs Dry Weather Sampling protocol. Copies of completed outfall inspection field forms and sampling results performed in 2017 are included in Appendix 2. Dry weather analytical and field screening monitoring will be conducted once annually and assessed for

compliance with Part I.D of the Permit. If all results comply with the Permit, annual sampling at that outfall is no longer required.

5.3 Erosion and Sediment Control Inspections

Inspection activities related to construction site erosion control were performed during the reporting period. A total of two SWPPPs and one Erosion and Sediment Control Plan was reviewed.

5.4 Industrial and Commercial Inspections

Boise State University does not perform inspections of this nature and defers to the respective agency with appropriate jurisdictional authority to inspect and enforce ordinances for industrial and commercial dischargers.

6. New Guidance Materials Developed or Updated (IV.C.3.c.v.)

No new educational materials or policy updates were developed or updated in 2016 by Boise State University. Boise State relies on the City of Boise to fulfill public education guidance for permit requirements. All updated inventories will be included in Appendices 2-4.

7. Additional Controls and Practices Implemented (IV.C.3.c.vi.)

No additional controls or practices are identified at this time.

8. Notice of Implementation with Other Entities (IV.C.3.c.vii.)

Boise State University relies on ACHD for compliance with the Monitoring sections of the Permit and on the City of Boise for the Public Education obligations and pays a cost share to each entity based on the terms of the Intergovernmental Agreement which is available on the Boise State University Environmental Health, Safety and Sustainability website: http://operations.boisestate.edu/ehs/environmental-health/ and as Appendices of the SWMP. Additionally, an updated version of the Amended and Restated Operating Guidelines will be available electronically on the EHSS website. Boise State supplies all required documents to the City of Boise to be placed on the Partners for Clean Water website for public input and review at http://www.partnersforcleanwater.org/ .

9. Annual Expenditures and Estimated Budget (IV.C.3.c.viii.)

Boise State University

Storm Water Budget for 10/1/14 through 9/30/15

Activity	Budget
Operation and Maintenance of storm water structures	$2,500
Street and Parking Lot Sweeping	$3,200
Litter Control	$25,000
Infrastructure Improvements and SPCC maintenance	$3,000
Monitoring Cost Share	$12,424
Public Education and Outreach Cost Share	$3,648
Total	$49,782

The annual expenditures and budget for the year following this annual report will fall near $50,000 for the activities of: monitoring and public education cost share, litter control for events and year-round maintenance,

parking garage and surface lot sweeping, and maintenance of storm water structures. The budget for these activities is paid from general facilities' funds, and as such, no consistent funding source exists. Due to new and increased cost share and individual Permit requirements, the proposed budget of $50,000 is an approximation and subject to change. This figure does not include personnel costs for the year around activities of the Stormwater Coordinator.

BOISE STATE UNIVERSITY

Boise State University
Storm Water Management Program
NPDES Permit No.: IDS-027561

Contents

Acronyms

The following acronym list is provided for those reading the Boise State University Storm Water Management Program.

ACHD	Ada County Highway District
BMP	Best Management Practice
CGP	Construction General Permit
CWA	Clean Water Act
EPA	Environmental Protection Agency
ERP	Enforcement Response Policy
ESC	Erosion and Sediment Control
ESCP	Erosion and Sediment Control Plan
IDEQ	Idaho Department of Environmental Quality
LID	Low Impact Development
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
POC	Pollutant(s) of Concern
SPCC	Spill Prevention, Control and Countermeasure
SBOE	State Board of Education
SWMP	Storm Water Management Program
SWPPP	Storm Water Pollution Prevention Plan

1 Introduction

1.1 Scope and Purpose

Boise State University's Storm Water Management Program (SWMP) is a comprehensive program plan designed to reduce the discharge of pollutants from Boise State's Municipal Separate Storm Sewer System (MS4) to the Maximum Extent Practicable (MEP). The goals of the program are to restore and protect the quality of the Boise River and its tributaries through control measures, Best Management Practices (BMPs), stormwater drainage system design, and engineering methods to control and minimize the discharge of pollutants from the MS4.

1.2 Applicability

Boise State University holds authority with the other Boise metropolitan area jurisdictions to discharge stormwater and allowable non-stormwater from MS4 outfalls to the Boise River and its tributaries under the National Pollutant Discharge Elimination System (NPDES) Permit IDS-027561, in compliance with the Clean Water Act (CWA). The newly issued and revised Permit IDS-027561 became effective February 1, 2013, and includes next generation MS4 program requirements for incremental implementation and applies to Ada County Highway District (ACHD), Boise State University, City of Boise, Idaho Transportation Department #3, Garden City, and Drainage District #3. A copy of the NPDES Permit IDS-027561 is provided in Appendix A.

This program document outlines the SWMP activities to be developed and implemented by the new permit, including: inventory of MS4 facilities and outfalls Boise State owns and operates, the control measures and program activities implemented to reduce the discharge of pollutants to the Boise River and its tributaries, related regulatory controls, and Boise State's participation and cooperation with other jurisdictions under the permit to ensure compliance with the conditions of the permit. Boise State's roles and responsibilities under the MS4 permit have been established by the updated Intergovernmental Agreement and Operating Guidelines among the Permittees in Appendix B.

1.3 Program Administration

The SWMP for Boise State University shall undergo annual evaluation and update, and revised SWMP documentation shall be included in each Annual Report submitted to the Environmental Protection Agency (EPA) and the Idaho Department of Environmental Quality (IDEQ), and made available electronically via the Partners for Clean Water and Environmental Health, Safety and Sustainability websites. The first edition of the SWMP under the new permit was made available for public comment via online sources and was submitted in the first year Annual Report on January 30, 2014.

2 Physical Description of the Boise State University MS4

Boise State University is Idaho's metropolitan university located next to the south bank of the Boise River, near the center of downtown Boise. Boise State University's 215-acre main campus is bordered to the north by the Boise River, to the south by Beacon Avenue, to the east by Broadway Avenue, and to the west by Ann Morrison Park with the majority of parcels between Beacon, University and Boise Avenues. Boise State University also maintains and oversees operations at two off site locations. The Boas Tennis Complex (10.5 acres) on Highland Avenue and the Yanke Research Park (8 acres) on Parkcenter Boulevard, both of which have impervious surface and drain to either the Boise River or a surface water canal system. Boise State manages twelve active storm water outfalls which drain impervious surfaces such as parking lots and rooftops. Boise State has a number of onsite infiltration amenities for stormwater treatment on the premises rather than direct discharge to the storm drain system. Boise State University's main campus and off site areas are composed of buildings, maintained lawns, landscaped areas, concrete sidewalks, asphalt-paved driveways and parking areas, parking garages, certain streets owned by Boise State University, a sports stadium with roof areas and multiple artificial turf fields. A current map of the campus is included as Appendix C.

2.1 ACHD MS4 in Boise State University

All MS4 structures, facilities, and outfalls draining public streets and roadways adjacent to the campus and various streets and alleys within the interior campus are owned and operated by ACHD. ACHD is responsible for management, maintenance, and monitoring of the MS4 that are strictly in their right of way before they pass into the sections of the MS4 owned by Boise State University. The SWMP control measures designed specifically to accomplish the task of reducing pollutant discharges in the sections of the MS4 owned and operated by Boise State to the MEP are discussed in Section 3 of this SWMP. Additionally, the Intergovernmental Agreement and Operating Guidelines documents provide the necessary authority to manage, maintain, and monitor respective jurisdictional areas of responsibility.

2.2 Boise State University MS4

Separate from the ACHD MS4, Boise State University owns and operates municipal stormwater facilities and outfalls to the lower Boise River and its tributaries. Boise State currently has a total of twelve storm water outfalls which drain 233.5 impervious acres of surfaces such as parking areas, sidewalks, and rooftops. In addition, Boise State has a number of onsite infiltration amenities for stormwater treatment on the premises rather than direct discharge to the storm drain system. The main campus and both offsite locations at Highland Street and Parkcenter Boulevard, with drainage to the Boise River or a tributary, are comprised of ten sub-basin drainage areas which drain impervious surface to twelve separate outfalls. There are multiple permanent stormwater controls which are checked on a regular basis, including: five vortex treatment of sediment and debris, twenty-seven sand and grease separators, eight onsite infiltration systems, and 212 catch basins. Inspection frequency for all structures occurs on an annual basis and results of the inspections are included in the Annual Report. Structures are cleaned on an as-needed basis.

3 Storm Water Management Program Minimum Control Measures

This section describes the six minimum control measures that must be met by Boise State University's SWMP according to the NPDES permit Part II.B. The six minimum control measures are:

- Construction Site Runoff Control Program
- Storm Water Management for Areas of New Development and Redevelopment
- Industrial and Commercial Storm Water Discharge Management
- Storm Water Infrastructure and Street Management
- Illicit Discharge Management
- Education, Outreach, and Public Involvement

For each required control measure for which Boise State University holds responsibility, a description of existing or soon to be implemented activities that meet permit requirements are provided as well as schedules of implementation.

3.1 Construction Site Runoff Control Program

Boise State has implemented a program to reduce discharges of pollutants from all state owned construction activity occurring on the main campus or any of the satellite areas that are less than one acre. Projects which occur on state land and are greater than or equal to one acre are operated by the Division of Public Works and covered under the terms of the EPA issued *NPDES General Permit for Stormwater Discharge from Construction Activities in Idaho*, Permit #IDR12-0000 , which manages pollutants in discharges to meet Idaho water quality standards.

Boise State University's Erosion and Sediment Control Plan (ESCP) applies to all projects on state land less than 1 acre in size and contains the same elements of a SWPPP and enforcement authority is delegated by Boise State Policy number 9140. The *Catalog for Stormwater Best Management Practices*

for Cities and Counties produced by IDEQ serves as the required manual for construction storm water management controls. All ESCPs are reviewed for alignment with ESC protocols and approved through the Environmental Health, Safety and Sustainability office by an appropriately trained and educated Responsible Person / Plan Designer, documented by the training classes administered by the City of Boise. The Intergovernmental Agreement outlines the cost share agreement for activities related to Public Education and Outreach lead by the City of Boise and Boise State participates for all aspects related to education of stormwater policies, regulations and requirements.

3.2 Storm Water Management for Areas of New Development and Redevelopment

New development and redevelopment on land owned by the State of Idaho for Boise State University is required by state policy to be designed to manage stormwater runoff and shall include permanent controls to protect water quality and restrict discharges to surface waters of the MS4. In general, the rate of stormwater runoff from any proposed land development shall not exceed the runoff rate prior to the development regardless of the storm event evaluated.

The IDEQ *Catalog for Stormwater Best Management Practices for Cities and Counties* shall be the adopted manual for which construction projects on Boise State University property shall comply.

Along with the other Permittees, Boise State shall develop a strategy to incentivize the increased use of LID, and submit at least three pilot projects which meet the permit characteristics along with a strategy for pilot project evaluation.

Boise State will evaluate the feasibility of incorporating runoff reduction techniques into the repair of streets, roads or parking areas by using canopy interception, bioretention, soil amendments, evaporation, rainfall harvesting, engineering infiltration, rain gardens, infiltration trenches, extended filtration and/or evapotranspiration and/or a combination of the aforementioned practices. If any

practice is found to be feasible for a project with a start date after the effective date of this permit, all aspects of the project(s) will be reported in the 5th year Annual Report.

Developments with stormwater designs that require permanent controls are tracked and designated for inspection. Based on information gathered during the plan review process, permanent controls to be installed are included on an inventory of existing permanent stormwater controls within Boise State's jurisdictional control. Routine and final drainage system design inspections and reports are tracked and stored electronically on the network server. The summary of new structures incorporated in new projects is reported in the Annual Report.

To ensure that newly developed stormwater design systems and permanent controls are operated and maintained adequately, an Operation and Maintenance plan has been developed in conjunction with Boise State Landscape Services and Transportation and Parking Services. Inspection, cleaning, and sweeping frequency are based on best available technology and EPA related guidance. The table on the following page shows the department and associated responsibilities.

Responsible Department	Description	Implementation	
		Inspection	Maintenance
FO&M – Landscape Services	Drop Inlets	Monthly	Cleaned as needed, after storm events, and during annual inspection.
	Retention Basins	Annually	Cleaned as needed.
	Parking Lots and Grounds	Daily	Floatables picked up daily as needed. Trash containers emptied daily or as needed.
EHSS	Sand/grease Separators, AquaSwirls	Annually	Cleaned as needed. Use appropriate equipment to remove sand, grease, floatables, and sediment accumulations.
	Outfalls	Annually	Cleaned/repaired as needed.
	Catch Basins	Annually	Inspected for sediment depth and cleaned when appropriate.
	Outdoor Liquid Storage	Annually	Secondary containment present and sufficient.
Transportation and Parking Services	Parking Structures	Three times per year	Swept by vacuum street sweeper.
	Parking Lots	Three times per year	Swept by vacuum street sweeper – Spring Break, Christmas break, beginning or end of Summer Session, or as needed.

3.3 Industrial and Commercial Storm Water Discharge Management

Boise State University has no industrial or commercial facilities which discharge into or within the operational jurisdiction of the University's MS4. Boise State University, along with the other Permittees, participates in a cost-share agreement which entails strategy development with ACHD and City of Boise to inventory and track those facility types and provide targeted education to reduce the discharge of pollutants.

3.4 Storm Water Infrastructure and Street Management

Boise State University manages its stormwater infrastructure and facilities to reduce the discharge of pollutants to the MEP. Management includes an inspection of permanent stormwater controls and structures, performing any maintenance or cleaning tasks, and implementing stormwater pollution prevention BMPs. This program does not apply to the MS4 structures and roadways in and around Boise State that are under ACHD jurisdiction. A current inventory map of Boise State owned roads and public parking lots is located in the Annual Report as Figure 1.

The Environmental Health, Safety and Sustainability office inspects all permanent stormwater structures located on Boise State owned streets, parks, and facilities once annually. If inspections reveal that maintenance is required for any structures, such as sweeping, replacing filter media, or catch basin cleaning, a work order is generated. Boise State University Landscape Services performs general maintenance, sweeping, and facility trash collection. An outside contractor provides pumping of the oil and water separators and catch basins. If BMPs need to be implemented to prevent the discharge of pollutants from a University facility, the Environmental Health, Safety and Sustainability office prescribes the correct BMP with guidance of the IDEQ *Catalog for Stormwater Best Management Practices for Cities and Counties.*

To manage and report on the inspection and maintenance program for Boise State stormwater infrastructure, an inventory of Boise State facilities and the stormwater structures are kept in a spreadsheet and incorporated into facility maps. Inspections and maintenance activities are scheduled and tracked in the database to ensure an appropriate inspection frequency. All actions regarding stormwater management of Boise State's MS4 and facilities can be compiled and are summarized in the Annual Report. The current inventory of structures are: five Aqua-Swirls with vortex-type treatment of sediment and debris, twenty seven oil and water separators, eight onsite infiltration systems, and 158 catch basins.

Additional control measures intended to minimize or eliminate the discharge of pollutant from University facilities and operations include:

- Parking lot and pathway deicing – Boise State Landscape Services uses liquid magnesium chloride and pelletized ice melt during periods of ice and snow conditions and apply it in a manner which preserves safety and limits environmental impact. Solid deicing materials are stored inside and liquid deicer is stored in plastic dispensing system in a locked pervious yard.
- Pesticide, herbicide and fertilizer applications – Boise State Landscape Services is responsible for applications of pesticide, herbicide, and fertilizer on Boise State properties. All Landscape Services personnel are licensed and certified with the Idaho State Department of Agriculture. Pesticides are kept in secure indoor storage areas.
- Street and Parking lot repair – Street and parking lot repairs undertaken as a standalone project are overseen by Boise State project managers. All disturbances less than one acre are subject to completion of an ESCP and applicable BMPs. All Plans, whether for ESC or SWPPP are reviewed and approved by the Environmental Health, Safety and Sustainability office.

- Litter control – Boise State Landscape Services performs daily trash pickup on the main campus and satellite locations. Boise State is a committee member of the Boise RiverSweep which is an annual Boise River clean up event. In addition to daily pickup, trash is collected after major events occurring on the campus.
- Manage sand stockpiles – Boise State Landscape Services maintains a stockpile of sand only for use in traction control on sidewalks and parking lots. The stockpile is located in a single location and is comprised solely of sand (no salt added) and is contained in a three sided pen in a large pervious and locked yard. Any runoff would not reach any portion of the MS4 or a receiving waterbody.

3.5 Illicit Discharge Management

An illicit discharge is any discharge that is not composed entirely of storm water, except discharges authorized under an alternate NPDES permit and discharges resulting from firefighting activities. Illicit discharges are prohibited in Boise State's MS4 and any illicit discharges or activities with the potential for illicit discharge are addressed accordingly and prohibited. A Treasure Valley stormwater pollution prevention hotline exists to serve the entire watershed and illicit discharge complaints are routed to the appropriate agency holding the jurisdictional responsibility for the location of the incident. The stormwater phone matrix is periodically reviewed and updated for most current contacts at each agency in the watershed area. A log is compiled by ACHD and submitted in the Annual Report following the previous reporting period. A map will be developed among the Permittees to identify the location, type and relative quantity or severity of the non-stormwater discharge to the MS4.

Boise State University received coverage under a separate NPDES Groundwater Remediation Discharge Permit (Permit # IDG911006) from EPA with an effective date of September 15, 2014 for discharges containing covered pollutants. All conditions of that permit will be reported according to

those requirements and are not subject to reporting under conditions of the NPDES MS4 Phase 1 permit.

In addition to routine stormwater inspections, annual dry weather outfall screening serves to identify potentially problematic outfalls. In addition to visual observation inspections, field and lab samples will be taken in accordance with approved sampling protocol.

Boise State University also maintains a Spill Prevention, Control and Countermeasure Plan to identify all oil containing tanks or sources and maintains provisions to ensure accidental releases do not reach a navigable waterway.

3.6 Education, Outreach, and Public Involvement

Boise State University works with fellow Permittees to implement the requirements of the NPDES regarding education, outreach and public involvement. The Intergovernmental Agreement designates the City of Boise as the lead agency responsible for the Public Education program. To assist with program support, Boise State commits funding for its share of the annual costs associated with program administration, which is determined during the annual budget meeting held every January.

Working together under the name Partners for Clean Waters, the Permittees have developed a website to provide the general public and business partners' information regarding stormwater management, educational and volunteer opportunities, and to review the actions and activities completed annually by the Permittees at www.partnersforcleanwater.org . Boise State University also maintains a webpage dedicated to stormwater and environmental health documents, forms and resources located at http://operations.boisestate.edu/ehs/environmental-health/ . All applicable State and local public notice requirements are met by posting on multiple online sources.

Boise State University participates in various education and outreach activities to improve awareness and increase positive impacts within the community on the local watershed. The public involvement events focus around public health promotion, river cleanup, and educational conferences for which the Stormwater Coordinator actively participates.

4 Discharges to Water Quality Impaired Receiving Waters

In the IDEQ 2010 Integrated report, sections of the Boise River were found impaired by one or more of the following Pollutants of Concern (POC) for the purposes of this permit: total phosphorus, sediment, temperature, and E. coli. Boise State University prohibits all non stormwater discharges to the MS4 and each of the six minimum control measures described in Section 3 of this SWMP are designed to prohibit or reduce the discharge of any listed POC. The following table shows each control measure and the POC and applicable controls associated with each measure.

Control Measure	POC and their Controls
Construction Site Runoff Control Program	Sediment; Construction site inspections, ESCP and SWPPP review, Permit violation referrals, Enforcement Response Policy
Storm Water Management for Areas of New Development and Redevelopment	Total phosphorus, sediment, temperature, E. coli; ESCP and SWPPP review, On-site retention systems, *Catalog for Stormwater Best Management Practices* incorporated into projects, assess feasibility of LID techniques on repair of public streets, roads or parking lots
Industrial and Commercial Storm Water Discharge Management	Total phosphorus, sediment, E. coli; All non-stormwater discharges prohibited, updated prioritized inventory to control high-priority areas
Storm Water Infrastructure and Street Management	Total phosphorus, sediment, E. coli; Maintenance of updated structures inventory, routine cleaning, and quarterly frequency for sweeping of streets and parking areas

Illicit Discharge Management	Total phosphorus, sediment, temperature, E. coli; Dry weather screening, outfall sampling, SPCC Plan, Pollution Prevention Hotline participation
Education, Outreach, and Public Involvement	Total phosphorus, sediment, temperature, E. coli; Cost share agreement and participation in quarterly meetings to assess program goals associated with Distribution of Eddy Approved Fact sheets, Responsible Person/Plan Designer training sessions, Business Partners target audience

To evaluate the effectiveness of Boise State's SWMP in reducing the discharge of POC to the MEP, water quality monitoring data for sections of the Boise River impacted by Boise State University discharges from its outfalls will be periodically reviewed to detect any reductions or increases in levels of POC compared to 2010 data. Sources of monitoring data include the ACHD, IDEQ, and HDR surface water quality and outfall monitoring programs. Boise State will provide all relevant sampling data to ACHD to inform the pollutant loading reduction effectiveness.

5 Monitoring, Recordkeeping and Reporting Requirements

The Intergovernmental Agreement in Appendix B designates the ACHD as the lead agency responsible for the implementation of the MS4 monitoring program. To assist with program implementation, Boise State commits funding for its share of the annual cost of the monitoring program, which is determined during the annual budget meeting held every January.

The Environmental Health, Safety and Sustainability office at Boise State University retains records of all data and information used in the development and implementation of the SWMP. All records are stored electronically on the University's server and in hard copy format for a period not less than five years. All records are accessible to the IDEQ and EPA upon request to the Environmental Health, Safety and Sustainability office during normal business hours.

Each year Boise State compiles an Annual Report for the NPDES required reporting period of October 1 through September 30 of the previous year. The Annual Report is submitted to ACHD, the agency responsible for coordinating the preparation and submittal of all Permittees' Annual Reports to the IDEQ and EPA by January 30th of each term.

Boise State's Annual Report shall follow the guidelines established in the NPDES Permit Part IV.C.3.c. The tracking of plan reviews, inspections, enforcement actions, and stormwater infrastructure maintenance provide data and statistics that are included in the report. The Annual Report is used in assessing Boise state's compliance with permit conditions and implementation schedule.

6 Legal Authority

Each Permittee shall operate pursuant to legal authority established by statute, ordinance, or series of contracts. The prior Annual Reports used a state trespassing statute and water quality rules, cooperation with the campus police, and the Idaho Department of Environmental Quality for justification of sound legal authority to implement the Storm Water Management Plan.

Boise State University does not maintain the equivalent of a city code to regulate storm water discharges. However, the University does operate and maintain a storm water system which collects runoff from areas involved in a wide variety of uses including student housing, academic uses, research activities, science laboratories and recreational facilities.

The University has the authority to implement its storm water management programs and to control, regulate and enforce discharges to the storm water system through the statutory framework of the Idaho Code (I.C.). In particular, I.C. §33-105 grants to the Idaho State Board of Education (SBOE), Boise State University's governing authority, the power to "make rules for its own government and the government of its executive departments of office." Further, the SBOE, by its policies (Section I, subsection A(2) and Subsection E) grants to the President of Boise State University the power and

responsibility to organize, manage, direct and supervise the institution pursuant to the framework of the Board's Governing Policies and Procedures. Under this grant of authority to the President, the University has enacted a broad range of policies, including regulations for the operation, management and maintenance of the storm water system, as well as the power to control illicit discharges, spills and dumping. The current Environmental Health & Safety policy 9140 and State of Idaho contracts express this broad authority with reference to the University's obligations under the NPDES permit. In addition, through a contract between Boise State University and the City of Boise Police Department, administrators at the University are able to call City Police for assistance in enforcement. Boise State University has authority through the Intergovernmental Agreement in Appendix B to control pollutant discharges into and from its MS4 to meet requirements of the NPDES permit Part II.G. Below is a summary of the unique legal authorities which satisfy the five legal authority criteria specifically listed in the permit:

- Criteria 1: Must have authority to prohibit discharge of pollutants to the MS4 by illicit connections and discharges.

  Satisfying legal authority: I.C. §33-105 and Boise State Policy #9140

- Criteria 2: Must have authority to control the discharge to the MS4 of spills, dumping, or disposal of materials other than stormwater.

  Satisfying legal authority: Boise State Policy #9140

- Criteria 3: Must control through interagency agreements the contribution of pollutants from one portion of the MS4 to another portion of the MS4.

  Satisfying legal authority: Intergovernmental Agreement for Roles and Responsibilities under the NPDES MS4 Permit IDS-027561 and Operating Guidelines which are attached in Appendix B.

- Criteria 4: Must have authority to require compliance with conditions.

  Satisfying legal authority: Boise State Policy #9140

- Criteria 5: Must have authority to carry out all inspection, surveillance, and monitoring procedures necessary to determine compliance and non-compliance with Permit conditions including the prohibition on illicit discharges to the MS4.

  Satisfying legal authority: I.C. §33-105 and Boise State Policy #9140

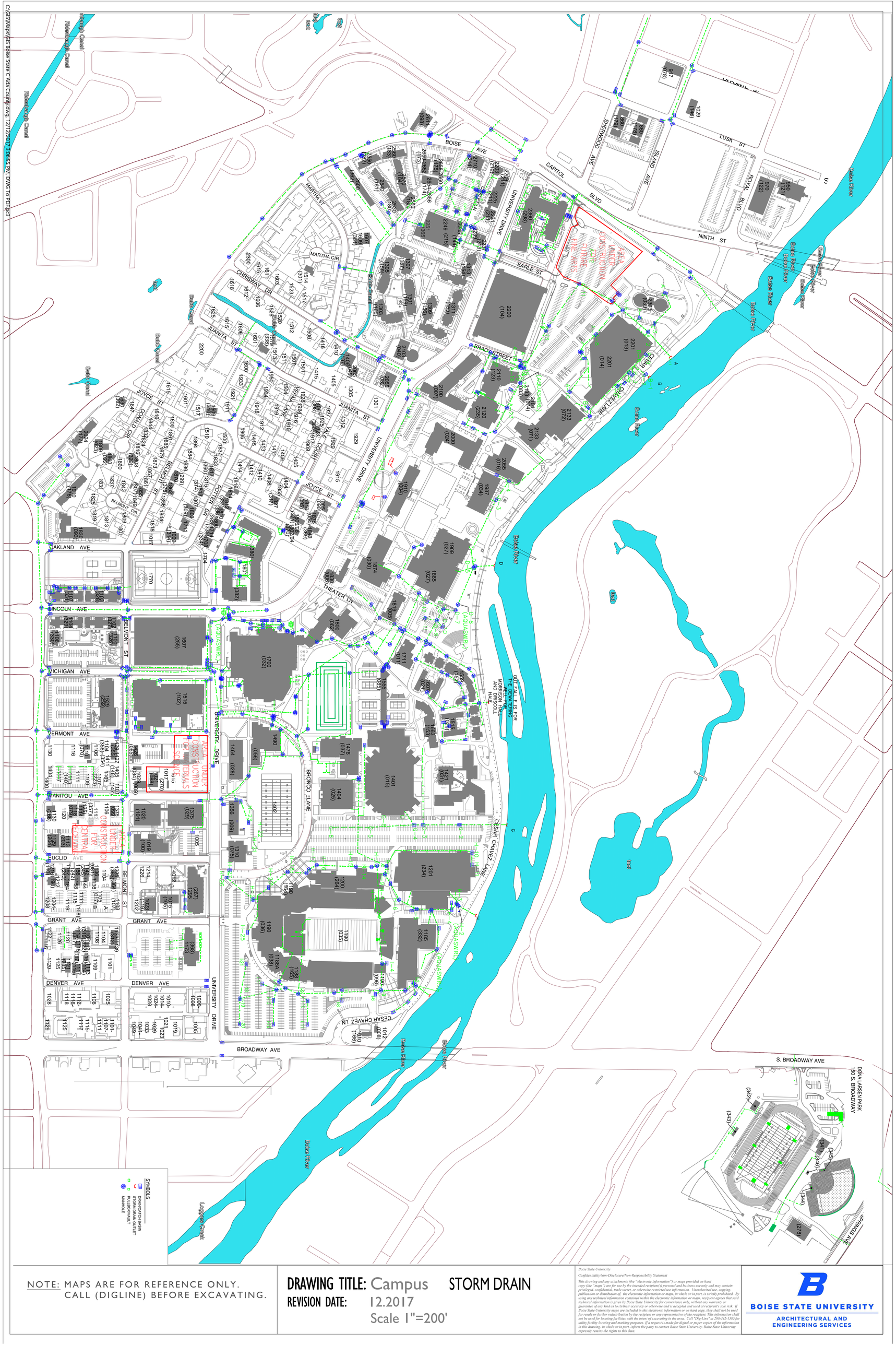
Appendix A: Authorization to Discharge Municipal Stormwater to the Boise River under the National Pollutant Discharge Elimination System (NPDES) Permit No.: IDS-027561

Available online at: http://operations.boisestate.edu/EHS/environmental-health/

Appendix B: Updated Intergovernmental Agreement among NPDES Permittees and Operating Guidelines

Available online at: http://operations.boisestate.edu/EHS/environmental-health/

Appendix C: Boise State University MS4 Map



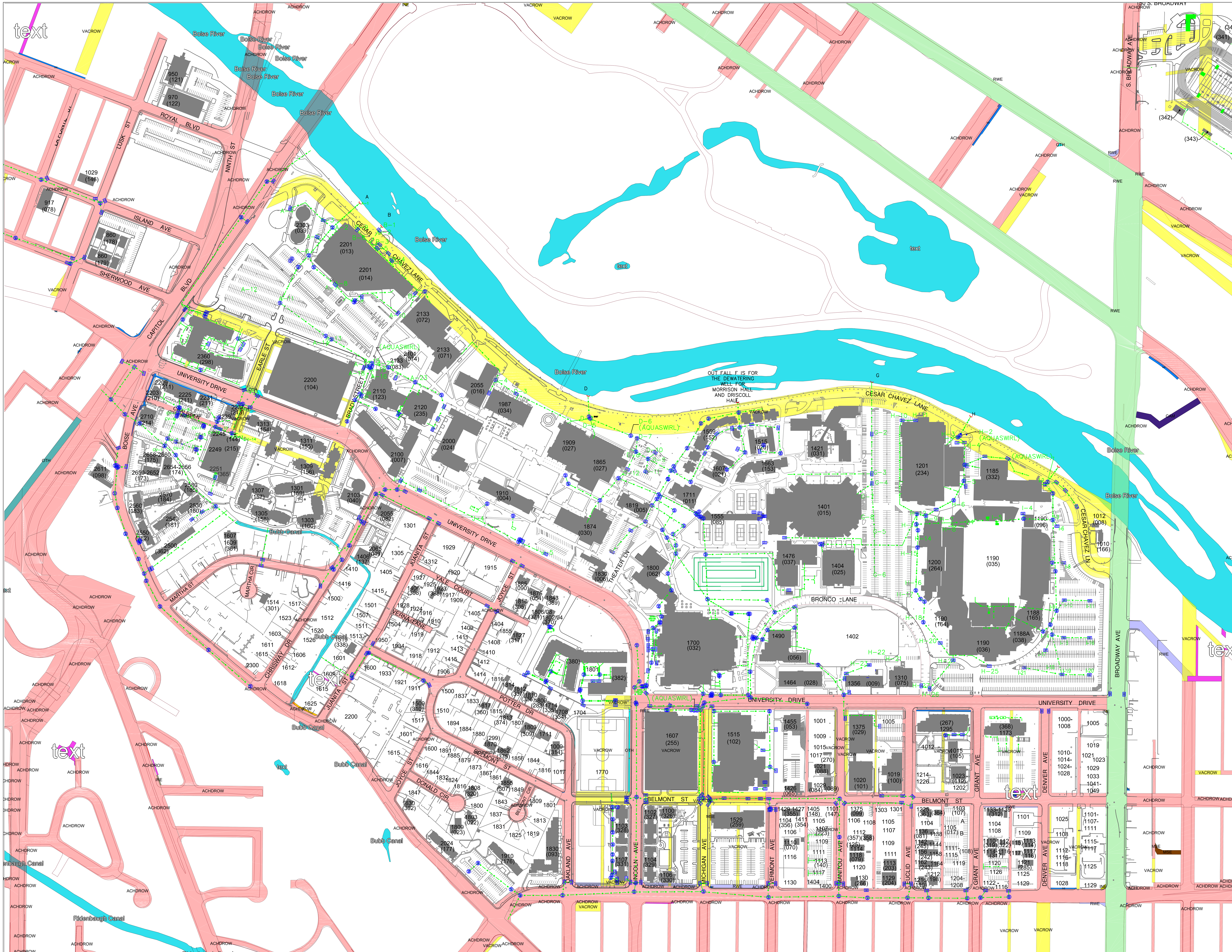
NOTE: MAPS ARE FOR REFERENCE ONLY.
CALL (DIGLINE) BEFORE EXCAVATING.

DRAWING TITLE: Campus STORM DRAIN

REVISION DATE: 12.2017

Scale 1"=200'

BOISE STATE UNIVERSITY
ARCHITECTURAL AND ENGINEERING SERVICES



LEGEND

Easement

- Storm Water
- SIE (Sidewalk)
- RWE (Road)
- INE (Intersection)
- CAM (Cross Access)
- RC (River/Canal)
- MSE (Miscellaneous)
- DIE (Drainage Irrigation)

Right of Way

- ACHD
- ITD
- River Canal
- VAC
- OPUB (Public Agency)

- Ada County Water Features
- Bridges
- Edge of Pavement
- Ada County Parcels

SYMBOLS

- DRAIN/CATCH BASIN
- STORM DRAIN OUTLET
- PULLBOX/VAULT
- MANHOLE

BOISE STATE UNIVERSITY
ARCHITECTURE AND ENGINEERING SERVICES

DRAWING TITLE: Campus Right Of Way Storm Drain

REVISION DATE: 12.2017

Scale 1"=200'

NOTE: MAPS ARE FOR REFERENCE ONLY. CALL (DIGLINE) BEFORE EXCAVATING.

Appendix D: Boise State University Policy #9140 – Environmental Health and Safety

Available online at: http://policy.boisestate.edu/facilities-planning-campus-safety/policy-title-environmental-health-and-safety/

Phase I NPDES Municipal Separate Storm Sewer System Annual Report For Boise State University
Permit Year 2016-2017
NPDES Permit No. IDS-027561

Appendix 2

Dry Weather Outfall Inspection Summary

Checklist for Conducting Dry Weather Evaluation

Outfall ID: A1		**Inspection Date:**	9/12/2017
		Inspection Time:	8:10AM

General Characteristics

Location Description:	North of NW corner of Morrison Center and Cesar Chavez Lane		
Outfall Description:	Round concrete pipe with iron flap		**Side of Road:** North
Size: (in)	18		**Offset Distance:** 100'
Receiving Body of Water: Boise River			**GPS:** Yes
Boise River flow:	612 cfs		**Photo:** Yes

Physical Hydrologic/ Hydraulic Data

Time Since Last Rain:	>72 hours	**Quantity: (in)**	0.36
Flow Condition:	None	**Structural Condition:**	Good
Flow Observed:	None		

Depth of Flow: (in)	**Measured Veolcity: (ft/s)**	**Estimated Flow Rate: (cfs) .00035**

Qualitative Assessment		**Field Measured Parameters**
• Water Color:	normal	• Turbidity:
• Odor:	normal	• pH:
• Turbidity:	none	• Temperature:
• Vegetation:	normal	• Chlorine: Absent
• Floatables:	none	• Copper: Absent
• Sedimentation:	normal	• Phenols: Absent
• Staining:	no	

Inspection Notes:

ACHD performed field and lab sampling for permit compliance.

Inspector:	ACHD
Outfall Operation at Time of Inspection:	IN Compliance
Illicit Discharge at Time of Inspection:	No

Checklist for Conducting Dry Weather Evaluation

Outfall ID: B1		**Inspection Date:**	7/19/2017
		Inspection Time:	9:45AM

General Characteristics

Location Description:	North of Morrison Center and Cesar Chavez Lane		
Outfall Description:	Round light green plastic pipe		**Side of Road:** North
Size: (in)	12		**Offset Distance:** 50'
Receiving Body of Water: Boise River			**GPS:** Yes
Boise River flow:	1810 cfs		**Photo:** Yes

Physical Hydrologic/ Hydraulic Data

Time Since Last Rain:	>72 hours	**Quantity: (in)**	0.36
Flow Condition:	None	**Structural Condition**	Good
Flow Observed:	None		
Depth of Flow: (in)	**Measured Veolcity: (ft/s)**		**Estimated Flow Rate: (cfs)**

Qualitative Assessment	**Field Measured Parameters**
• Water Color: normal	• Turbidity:
• Odor: normal	• pH: 6.50
• Turbidity: none	• Temperature: 18.9 C
• Vegetation: normal	• Chlorine:
• Floatables: none	• Copper:
• Sedimentation: normal	• Phenols:
• Staining: no	

Inspection Notes:

Inspector:	Suzy Arnette
Outfall Operation at Time of Inspection:	IN Compliance
Illicit Discharge at Time of Inspection:	No

Checklist for Conducting Dry Weather Evaluation

Outfall ID: D1		**Inspection Date:**	9/12/2017
		Inspection Time:	8:32 AM

General Characteristics

Location Description:	North of Cesar Chavez Lane, just upstream of Friendship Bridge		
Outfall Description:	Square concrete, with weir gauge		**Side of Road:** North
Size: (in)	30 X 30		**Offset Distance:** 50'
Receiving Body of Water: Boise River			**GPS:** Yes
Boise River flow:	612 cfs		**Photo:** Yes

Physical Hydrologic/ Hydraulic Data

Time Since Last Rain:	>72 hours	**Quantity: (in)**	0.36
Flow Condition:	Steady	**Structural Condition**	Good
Flow Observed:	Yes		
Depth of Flow: (in)	**1.5**	**Measured Veolcity: (ft/s) 2.7**	**Estimated Flow Rate: (cfs) 0.2835**

Qualitative Assessment		**Field Measured Parameters**
• Water Color:	normal	• Turbidity: 4.29
• Odor:	normal	• pH: 8.25
• Turbidity:	none	• Temperature: 19.2° C
• Vegetation:	normal	• Chlorine: Absent
• Floatables:	none	• Copper: Absent
• Sedimentation:	normal	• Phenols: Absent
• Staining:	no	

Inspection Notes:

ACHD performed field and lab sampling for permit compliance.

Inspector:	ACHD	
Outfall Operation at Time of Inspection:	IN Compliance	
Illicit Discharge at Time of Inspection:	No	

Checklist for Conducting Dry Weather Evaluation

Outfall ID: F1		**Inspection Date:**	7/19/2017
		Inspection Time:	10:15 AM

General Characteristics

Location Description:	North of Taylor Hall sidewalk and Cesar Chavez Lane		
Outfall Description:	Round white PVC		**Side of Road:** North
Size: (in)	10		**Offset Distance:** 45'
Receiving Body of Water: Boise River			**GPS:** Yes
Boise River flow:	1810 cfs		**Photo:** Yes

Physical Hydrologic/ Hydraulic Data

Time Since Last Rain:	>72hours	**Quantity: (in)**	
Flow Condition:	None	**Structural Condition:**	
Flow Observed:	None		
Depth of Flow: (in)	**Measured Veolcity: (ft/s)**		**Estimated Flow Rate: (cfs)**

Qualitative Assessment		**Field Measured Parameters**
• Water Color:	normal	• Turbidity:
• Odor:	normal	• pH:
• Turbidity:	none	• Temperature:
• Vegetation:	normal	• Chlorine:
• Floatables:	none	• Copper:
• Sedimentation:	normal	• Phenols:
• Staining:	no	

Inspection Notes:

Groundwater discharge from Morrison and Driscoll Hall dewatering wells. Discharges occur under Permit IDG911006.

Inspector:	Suzy Arnette		
Outfall Operation at Time of Inspection:		IN Compliance	
Illicit Discharge at Time of Inspection:		No	

Checklist for Conducting Dry Weather Evaluation

Outfall ID: G1		**Inspection Date:**	9/12/2017
		Inspection Time:	9:29 AM

General Characteristics

Location Description:	North of NE corner of Chaffee Hall and Cesar Chavez Lane		
Outfall Description:	Round concrete pipe		**Side of Road:** North
Size: (in)	18		**Offset Distance:** 10' from light
Receiving Body of Water: Boise River			**GPS:** Yes
Boise River flow:	612 cfs		**Photo:** Yes

Physical Hydrologic/ Hydraulic Data

Time Since Last Rain:	>72 hours	**Quantity: (in)**	0.36
Flow Condition:	Trickle	**Structural Condition**	Good
Flow Observed:	Yes		
Depth of Flow: (in) 1.0	**Measured Veolcity: (ft/s)**		**Estimated Flow Rate: (cfs) 0.0027**

Qualitative Assessment		**Field Measured Parameters**
• Water Color:	normal	• Turbidity: 0.61 NTU
• Odor:	normal	• pH: 8.12
• Turbidity:	none	• Temperature: 22.30° C
• Vegetation:	normal	• Chlorine: Absent
• Floatables:	none	• Copper: Absent
• Sedimentation:	normal	• Phenols: Absent
• Staining:	no	

Inspection Notes:

ACHD performed field and lab sampling for permit compliance.

Inspector:	ACHD
Outfall Operation at Time of Inspection:	IN Compliance
Illicit Discharge at Time of Inspection:	No

Checklist for Conducting Dry Weather Evaluation

Outfall ID: H1		**Inspection Date:**	7/19/2017
		Inspection Time:	10:40 AM

General Characteristics

Location Description:	North of Caven-Williams Complex and Cesar Chavez Lane		
Outfall Description:	Concrete with metal flap		**Side of Road:** North
Size: (in)	24		**Offset Distance:** 150' from Aquaswirl
Receiving Body of Water: Boise River			**GPS:** Yes
Boise River flow:	1810 cfs		**Photo:** Yes

Physical Hydrologic/ Hydraulic Data

Time Since Last Rain:	>72 hours	**Quantity: (in)**	0.36
Flow Condition:	None	**Structural Condition**	Good
Flow Observed:	None		
Depth of Flow: (in)	**Measured Veolcity: (ft/s)**		**Estimated Flow Rate: (cfs)**

Qualitative Assessment		**Field Measured Parameters**
• Water Color:	normal	• Turbidity:
• Odor:	normal	• pH:
• Turbidity:	none	• Temperature:
• Vegetation:	normal	• Chlorine:
• Floatables:	none	• Copper:
• Sedimentation:	normal	• Phenols:
• Staining:	no	

Inspection Notes:			
Inspector:	Suzy Arnette		
Outfall Operation at Time of Inspection:		IN Compliance	
Illicit Discharge at Time of Inspection:		No	

Checklist for Conducting Dry Weather Evaluation

Outfall ID: I1		**Inspection Date:**	7/19/2017
		Inspection Time:	10:50 AM

General Characteristics

Location Description:	North of Bleymaier Football Complex		
Outfall Description:	Concrete with metal flap		**Side of Road:** North
Size: (in)	24		**Offset Distance:** 100'
Receiving Body of Water: Boise River			**GPS:** Yes
Boise River flow:	1810 cfs		**Photo:** Yes

Physical Hydrologic/ Hydraulic Data

Time Since Last Rain:	>72 hours	**Quantity: (in)**	0.36
Flow Condition:	None	**Structural Condition**	Good
Flow Observed:	None		
Depth of Flow: (in)	**Measured Veolcity: (ft/s)**		**Estimated Flow Rate: (cfs)**

Qualitative Assessment		**Field Measured Parameters**
• Water Color:	normal	• Turbidity:
• Odor:	normal	• pH:
• Turbidity:	none	• Temperature:
• Vegetation:	normal	• Chlorine:
• Floatables:	none	• Copper:
• Sedimentation:	normal	• Phenols:
• Staining:	no	

Inspection Notes:			
Inspector:	Suzy Arnette		
Outfall Operation at Time of Inspection:		IN Compliance	
Illicit Discharge at Time of Inspection:		No	

Checklist for Conducting Dry Weather Evaluation

Outfall ID: J1		**Inspection Date:**	7/19/2017
		Inspection Time:	11:00 AM

General Characteristics

Location Description:	West of Chrisway Dr.		
Outfall Description:	PVC		**Side of Road:** West
Size: (in)	12		**Offset Distance:** 0'
Receiving Body of Water: Drain A			**GPS:** Yes
Boise River flow:	1810 cfs		**Photo:** Yes

Physical Hydrologic/ Hydraulic Data

Time Since Last Rain:	>72 hours	**Quantity: (in)**	0.36
Flow Condition:	None	**Structural Condition**	Good
Flow Observed:	None		

Depth of Flow: (in)	**Measured Veolcity: (ft/s)**	**Estimated Flow Rate: (cfs)**

Qualitative Assessment		**Field Measured Parameters**
• Water Color:	normal	• Turbidity:
• Odor:	normal	• pH:
• Turbidity:	none	• Temperature:
• Vegetation:	normal	• Chlorine:
• Floatables:	none	• Copper:
• Sedimentation:	normal	• Phenols:
• Staining:	no	

Inspection Notes:

Outfall for Administration visitor lot, math learning center, and Gateway center drainage.

Inspector:	Suzy Arnette
Outfall Operation at Time of Inspection:	IN Compliance
Illicit Discharge at Time of Inspection:	No

Checklist for Conducting Dry Weather Evaluation

Outfall ID: Yanke East		**Inspection Date:**	7/19/2017
		Inspection Time:	11:20 AM

General Characteristics

Location Description:	10' to the west of Greenbelt map sign		
Outfall Description:	Corrugated metal, flap		**Side of Road:** North
Size: (in)	12"		**Offset Distance:** 30'
Receiving Body of Water: Boise River			**GPS:** Yes
Boise River flow:	1810 cfs		**Photo:** Yes

Physical Hydrologic/ Hydraulic Data

Time Since Last Rain:	>72 hours	**Quantity: (in)**	0.36
Flow Condition:	None	**Structural Condition**	Good
Flow Observed:	None		
Depth of Flow: (in)			**Estimated Flow Rate: (cfs)**
Qualitative Assessment			**Field Measured Parameters**
• Water Color:	normal		• Turbidity:
• Odor:	normal		• pH:
• Turbidity:	none		• Temperature:
• Vegetation:	normal		• Chlorine:
• Floatables:	none		• Copper:
• Sedimentation:	normal		• Phenols:
• Staining:	no		
Inspection Notes:			
Inspector:	Suzy Arnette		
Outfall Operation at Time of Inspection:		IN Compliance	
Illicit Discharge at Time of Inspection:		No	

Checklist for Conducting Dry Weather Evaluation

Outfall ID: Yanke West		**Inspection Date:**	7/19/2017
		Inspection Time:	11:30 AM

General Characteristics

Location Description:	24' west of Greenbelt marker SE 1.5		
Outfall Description:	Corrugated metal, no flap		**Side of Road:** North
Size: (in)	24"		**Offset Distance:** 50'
Receiving Body of Water: Boise River			**GPS:** Yes
Boise River flow:	1810 cfs		**Photo:** Yes

Physical Hydrologic/ Hydraulic Data

Time Since Last Rain:	>72 hours	**Quantity: (in)**	0.36
Flow Condition:	None	**Structural Condition**	Good
Flow Observed:	None		
Depth of Flow: (in)	**Measured Veolcity: (ft/s)**		**Estimated Flow Rate: (cfs)**
Qualitative Assessment			**Field Measured Parameters**
• Water Color:	normal		• Turbidity:
• Odor:	normal		• pH:
• Turbidity:	none		• Temperature:
• Vegetation:	normal		• Chlorine:
• Floatables:	none		• Copper:
• Sedimentation:	normal		• Phenols:
• Staining:	no		
Inspection Notes:			
Inspector:	Suzy Arnette		
Outfall Operation at Time of Inspection:		IN Compliance	
Illicit Discharge at Time of Inspection:		No	

Checklist for Conducting Dry Weather Evaluation

Outfall ID: Boas North		**Inspection Date:**	7/19/2017
		Inspection Time:	11:50 AM

General Characteristics

Location Description:	West of the concession stand		
Outfall Description:	White PVC		**Side of Road:** South
Size: (in)	12		**Offset Distance:** 100'
Receiving Body of Water: Bubb Canal			**GPS:** Yes
Boise River flow:	1810 cfs		**Photo:** Yes

Physical Hydrologic/ Hydraulic Data

Time Since Last Rain:	>72 hours	**Quantity: (in)**	0.36
Flow Condition:	None	**Structural Condition**	Good
Flow Observed:	None		
Depth of Flow: (in)	**Measured Veolcity: (ft/s)**		**Estimated Flow Rate: (cfs)**

Qualitative Assessment		**Field Measured Parameters**
• Water Color:	normal	• Turbidity:
• Odor:	normal	• pH:
• Turbidity:	none	• Temperature:
• Vegetation:	normal	• Chlorine:
• Floatables:	none	• Copper:
• Sedimentation:	normal	• Phenols:
• Staining:	no	

Inspection Notes:			
Inspector:	Suzy Arnette		
Outfall Operation at Time of Inspection:		IN Compliance	
Illicit Discharge at Time of Inspection:		No	

Checklist for Conducting Dry Weather Evaluation

Outfall ID: Boas South		**Inspection Date:**	7/19/2017
		Inspection Time:	12:00 PM

General Characteristics

Location Description:	West of oil/water interceptor, near the big tree		
Outfall Description:	Corrugated Metal pipe		**Side of Road:** South of Oakland Ave.
Size: (in)	12		**Offset Distance:** 50'
Receiving Body of Water: Bubb Canal			**GPS:** Yes
Boise River flow:	1810 cfs		**Photo:** Yes

Physical Hydrologic/ Hydraulic Data

Time Since Last Rain:	>72 hours	**Quantity: (in)**	0.36
Flow Condition:	None	**Structural Condition**	Good
Flow Observed:	None		
Depth of Flow: (in)	**Measured Veolcity: (ft/s)**		**Estimated Flow Rate: (cfs)**

Qualitative Assessment		**Field Measured Parameters**
• Water Color:	normal	• Turbidity:
• Odor:	normal	• pH:
• Turbidity:	none	• Temperature:
• Vegetation:	normal	• Chlorine:
• Floatables:	none	• Copper:
• Sedimentation:	normal	• Phenols:
• Staining:	no	

Inspection Notes:			
Inspector:	Suzy Arnette		
Outfall Operation at Time of Inspection:		IN Compliance	
Illicit Discharge at Time of Inspection:		No	

Form DW-1
DRY WEATHER OUTFALL INVESTIGATION FORM

Outfall Information

Outfall ID: OUTFALL A-1 (3N2E10-029)

Station Type: Outfall **Location:** CEDAR CHANNEL LN

Lat: _____ **Lon:** _____ **Receiving Water:** BOISE RIVER

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:** 18 (Inches)

Comments: Connecting manhole is stagnant. Opened lid on the outfall. Slightly surcharged w/ Boise River. Return after D-1 & G-1 to see if there is a positive flow. 9/12/17 1024 - No positive flow. No sample collected. ~~Lid on outfall was closed~~ I closed the outfall lid before leaving.

Drainage Area (acres): _____ **Land Use:** _____

Site Condition Information

Personnel: AVP **Date/Time On-site:** 9/12/17 0810 (MDT) / MST

Comments: _____

Field Quantitative Results

Component

Antecedent Dry Conditions Met: (Y) / N *(see notes for clarification)*

Previous Storm Date: 8/14/17 Storm Total: 0.14 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* Date/Time	QC- B *Field Blank* Date/Time	Labeled
E. coli - 250mL sterile plastic				☐
TSS – 5L plastic				☐
TP – 500mL plastic				☐
Detergents – 500mL plastic				☐
Ortho-P – 1L 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 as 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: 9/12/17 1630 (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-1
DRY WEATHER OUTFALL INVESTIGATION FORM

Outfall Information

Outfall ID: OUTFALL D-1 (3N2E10-031)

Station Type: Outfall **Location:** CEDAR CHANGE LN

Lat: _____ **Lon:** _____ **Receiving Water:** BOISE RIVER

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:** 36 (Inches)

Comments: _____

Drainage Area (acres): _____ **Land Use:** _____

Site Condition Information

Personnel: AVP **Date/Time On-site:** 9/12/17 0832 (MDT) / MST

Comments: Staff gauge reads 7.1" on 3'x3' box. Not enough flow to read w/ flow probe. Flow estimated closer to the river where flow consolidates. Observations of flow collection site are listed below.

Field Quantitative Results

Component

Antecedent Dry Conditions Met: (Y) / N *(see notes for clarification)*

Previous Storm Date: 8/14/17 Storm Total: 0.14 inches

Flow Depth: 1.5 inches Flow Width: 15" inches

Velocity (Flow Probe): 2.7 fps Flow: 0.2835 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: 19.3 C

Dissolved Oxygen: 8.42 mg/L

Conductivity: 163.5 uS

pH: 8.25 S.U. pH temp: 19.2 C

Total Chlorine: 0 mg/L

Total Copper: 0 mg/L

Phenols: 0 mg/L

Turbidity: 4.29 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

FLOW ESTIMATE: DEPTH OF 1.5" AND WATER PROFILE WIDTH OF 15" IS CHARACTERISTIC OF A 39" DIAMETER PIPE → 0.2835 CFS.

Form DW-1
DRY WEATHER OUTFALL INVESTIGATION FORM

Sample Collection Information

Component	Initial Grab Sample Date/Time	QC- A *Field Duplicate* Date/Time	QC- B *Field Blank* Date/Time	Labeled
E. coli - 250mL sterile plastic	9/12/17 0843			☒
TSS – 5L plastic	0841			☒
TP – 500mL plastic	0844			☒
Detergents – 500mL plastic	0842			☒
Ortho-P – 1L sterile plastic *(To be filtered)*	0846			☒
Ortho-P – 250mL sterile plastic *(Filtered Sample)*	0852			☒

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 as 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: ~~8/12~~ 9/12/17 0921 (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-1
DRY WEATHER OUTFALL INVESTIGATION FORM

Outfall Information

Outfall ID: OUTFALL G-1 (3N2E10_034)

Station Type: Outfall **Location:** WEST PARKING LOT OF ALBERTSONS STADIUM

Lat: _____ **Lon:** _____ **Receiving Water:** BOISE RIVER

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:** 12 (Inches)

Comments: _____

Drainage Area (acres): _____ **Land Use:** _____

Site Condition Information

Personnel: AVP **Date/Time On-site:** 9/12/17 0928 (MDT) / MST

Comments: _____

Field Quantitative Results

Component

Antecedent Dry Conditions Met: (Y) / N *(see notes for clarification)*

Previous Storm Date: 8/14/17 Storm Total: 0.14 inches

Flow Depth: 1.0 inches Flow Width: _____ inches

Velocity (Flow Probe): _____ fps Flow: 0.0027 cfs

Velocity (Bucket Method) volume used: *(circle one)* 500ml (1L) 5 gallon

Bucket Method Trial: 1: 13.28, 2: ~~13.12~~ AVP 13.12, 3: 12.58 sec.

Flow: _____ cfs *(see notes for flow calculation resource)*

Component

Temperature – DO Meter: 22.4 C

Dissolved Oxygen: 7.36 mg/L

Conductivity: 465.4 uS

pH: 8.12 S.U. pH temp: 22.3 C

Total Chlorine: 0 mg/L

Total Copper: 0 mg/L

Phenols: 0 mg/L

Turbidity: 0.61 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 Date/Time	QC- B Field Blank Date/Time	Labeled
E. coli - 250mL sterile plastic	9/12/17 0938			☒
TSS – 5L plastic	0933			☒
TP – 500mL plastic	0937			☒
Detergents – 500mL plastic	0935			☒
Ortho-P – 1L sterile plastic *(To be filtered)*	0940			☒
Ortho-P – 250mL sterile plastic *(Filtered Sample)*	0949			☒

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 as 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: 9/12/17 1014 (MDT) / MST (circle one)

* TRASH IS CLEARLY FROM THE RIVER ITSELF - NOT THE OUTFALL.

Investigation Event Qualitative Results (determined in office, post-inspection)

Component	Comments/Description (circle one)	
Compliance status	(IN compliance)	OUT of compliance

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 9/15/2017 7:14:22 AM
http://www.analyticallaboratories.com
These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1741604

Attn: ADAM VAN PATTEN
ACHD
3775 ADAMS ST
GARDEN CITY, ID 83714

Collected By: A. VAN PATTEN
Submitted By: A. VAN PATTEN

Source of Sample:
DWOS OUTFALL D-1

Time of Collection: 8:42
Date of Collection: 9/12/2017
Date Received: 9/12/2017
Report Date: 9/15/2017

PWS#:

Field Temp: Temp Rcvd in Lab: **PWS Name:**

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Surfactants	UR	<0.01	mg/L	.01	SM 5540	9/14/2017	MDM

CC: AVANPATTEN@ACHDIDAHO.ORG

9-18-17

Thank you for choosing Analytical Laboratories for your testing needs.

If you have any questions about this report, or any future analytical needs, please contact your client manager:

Brian McGovern

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

Analytical Laboratories, Inc.

1804 N. 33rd Street
Boise, Idaho 83703
Phone (208) 342-5515

Date Report Printed: 9/15/2017 7:14:22 AM
http://www.analyticallaboratories.com
These test results relate only to the items tested.

Laboratory Analysis Report

Sample Number: 1741605

Attn: ADAM VAN PATTEN
ACHD
3775 ADAMS ST
GARDEN CITY, ID 83714

Collected By: A. VAN PATTEN
Submitted By: A. VAN PATTEN

Source of Sample:
DWOS OUTFALL G-1

Time of Collection: 9:35
Date of Collection: 9/12/2017
Date Received: 9/12/2017
Report Date: 9/15/2017

PWS#:

Field Temp: Temp Rcvd in Lab: **PWS Name:**

Test Requested	MCL	Analysis Result	Units	MDL	Method	Date Completed	Analyst
Surfactants	UR	<0.01	mg/L	.01	SM 5540	9/14/2017	MDM

CC: AVANPATTEN@ACHDIDAHO.ORG

9-18-17

Thank you for choosing Analytical Laboratories for your testing needs.

If you have any questions about this report, or any future analytical needs, please contact your client manager:

Brian McGovern

MCL = Maximum Contamination Level
MDL = Method/Minimum Detection Limit
UR = Unregulated

CLIENT CODE=

CHAIN OF CUSTODY RECORD

CLIENT INFORMATION:		PROJECT INFORMATION:
Project Manager: Adam Van Patten		**Project Name:** DWOS
Company: Ada County Highway District		**PWS Number:**
Address: 3775 Adams Street		**Purchase Order Number:** 63037529
Garden City, ID 83714		**Required Due Date:**
Phone: 208.387-6268	**Fax:**	**E-mail Address:** avanpatten@achdidaho.org
Sampled by: *(Please print)* Adam Van Patten		**Transported by:** *(Please print)* Adam Van Patten

ANALYTICAL LABS, INC.
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

TESTS REQUESTED

Lab ID	Date Sampled	Time Sampled	Sample Description (Source)	Sample Matrix	SURF									Remarks:
41604	9/12/17	0842	OUTFALL D-1	Water	✓									
41605	9/12/17	0935	OUTFALL G-1	WATER	✓									

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:** Adam Van Patten	**Company:** ACHD	**Date:** 9/12/17	**Time:** 1128
Received By: *(Signature)*	**Print Name:**	**Company:**	**Date:**	**Time:**
Relinquished By: *(Signature)*	**Print Name:**	**Company:**	**Date:**	**Time:**
Received at Laboratory By: *(Signature)*	**Print Name:** Tom Saylor	**Company:** **Analytical Laboratories**	**Date:** 9/12/17	**Time:** 1128 ~~9289~~
SAMPLE RECEIPT **Total # of Containers:**	**Chains of Custody Seals** Y / N / NA	**Intact:** Y / N / NA **Temperature Received:**	**Condition:**	

REV. 2/19/10 WHITE: STAYS WITH SAMPLE(S) YELLOW: LA PINK: SAMPLER

SDL x2

Report Date: 09/22/2017 10:20

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
7AC0067-01	ACDWS	Outfall D-1	Water		09/12/2017	09/12/2017
7AC0067-02	ACDWS	Outfall G-1	Water		09/12/2017	09/12/2017

Report Date: 09/22/2017 10:20

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACDWS	Location Description:	Outfall D-1
Date/Time Collected:	09/12/2017 08:46	Sample Collector:	AVP
Lab Number:	7AC0067-01	Sample Matrix:	Water
Sample Type:	Grab		

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared Time	Analysis Time	Analyst Initials	Qual
Microbiology										
E. Coli	B7I1202	307.6	MPN/100 mL	1.0	1.0	Colilert	09/12/17 12:40	9/13/17 12:45	KMR	
Wet Chemistry										
Chlorine Screen	B7I1212	Absent				SM 4500-CL G-2000 mod	09/12/17	9/12/17 12:35	ASM	
Total Suspended Solids	B7I1304	4.65	mg/L	0.900	0.900	SM 2540 D-1997	09/13/17	9/13/17 9:05	CJP	
Dissolved Wet Chemistry										
Orthophosphate, as P	B7I1307	0.0231	mg/L	2.00E-3	2.00E-3	EPA 365.1	09/13/17	9/13/17 13:50	JAL	
Total Metals										
Phosphorus as P	B7I1302	0.0332	mg/L	9.54E-3	9.54E-3	EPA 200.7	09/13/17	9/14/17 13:46	AMO	

* The reported adjusted "MDL" is sample-specific. The anlaysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Report Date: 09/22/2017 10:20

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACDWS	Location Description:	Outfall G-1
Date/Time Collected:	09/12/2017 09:40	Sample Collector:	AVP
Lab Number:	7AC0067-02	Sample Matrix:	Water
Sample Type:	Grab		

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared Time	Analysis Time	Analyst Initials	Qual
Microbiology										
E. Coli	B7I1202	1.0	MPN/100 mL	1.0	1.0	Colilert	09/12/17 12:40	9/13/17 12:45	KMR	
Wet Chemistry										
Chlorine Screen	B7I1212	Absent				SM 4500-CL G-2000 mod	09/12/17	9/12/17 12:35	ASM	
Total Suspended Solids	B7I1304	<0.900	mg/L	0.900	0.900	SM 2540 D-1997	09/13/17	9/13/17 9:05	CJP	U
Dissolved Wet Chemistry										
Orthophosphate, as P	B7I1307	0.0392	mg/L	2.00E-3	2.00E-3	EPA 365.1	09/13/17	9/13/17 13:55	JAL	
Total Metals										
Phosphorus as P	B7I1302	0.0477	mg/L	9.54E-3	9.54E-3	EPA 200.7	09/13/17	9/14/17 13:51	AMO	

The reported adjusted "MDL" is sample-specific. The anlaysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Report Date: 09/22/2017 10:20

Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Date Analyzed	Analyst Initials	Qualifier
Microbiology									
Batch: B7I1202									
Blank (B7I1202-BLK1)									
E. Coli	Absent						09/13/2017	KMR	
LCS (B7I1202-BS1)									
E. Coli				Present			09/13/2017	KMR	
Duplicate (B7I1202-DUP1) Source ID: 7WB0517-06									
E. Coli					Pass	128	09/13/2017	KMR	
Wet Chemistry									
Batch: B7I1304									
Blank (B7I1304-BLK1)									
Total Suspended Solids	< 0.9	mg/L					09/13/2017	CJP	U
LCS (B7I1304-BS1)									
Total Suspended Solids			99.2	90-110			09/13/2017	CJP	
Duplicate (B7I1304-DUP1) Source ID: 7BB0575-02									
Total Suspended Solids					7.84	20	09/13/2017	CJP	
Dissolved Wet Chemistry									
Batch: B7I1307									
Blank (B7I1307-BLK1)									
Orthophosphate, as P	< 0.002	mg/L					09/13/2017	JAL	U
LCS (B7I1307-BS1)									
Orthophosphate, as P			95.3	90-110			09/13/2017	JAL	
Duplicate (B7I1307-DUP1) Source ID: 7AC0067-01									
Orthophosphate, as P					0.903	10	09/13/2017	JAL	
Matrix Spike (B7I1307-MS1) Source ID: 7AC0067-01									
Orthophosphate, as P			97.5	90-110			09/13/2017	JAL	
Matrix Spike Dup (B7I1307-MSD1) Source ID: 7AC0067-01									
Orthophosphate, as P			96.9	90-110	0.396	10	09/13/2017	JAL	

Report Date: 09/22/2017 10:20

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Date Analyzed	Analyst Initials	Qualifier
Total Metals									
Batch: B7I1302									
Blank (B7I1302-BLK1)									
Phosphorus as P	< 0.00954	mg/L					09/14/2017	AMO	U
LCS (B7I1302-BS1)									
Phosphorus as P			103	85-115			09/14/2017	AMO	
Duplicate (B7I1302-DUP1) Source ID: 7LS0312-02									
Phosphorus as P					0.729	20	09/14/2017	AMO	
Duplicate (B7I1302-DUP2) Source ID: 7WB0517-07									
Phosphorus as P					1.35	20	09/14/2017	AMO	
Matrix Spike (B7I1302-MS1) Source ID: 7LS0312-02									
Phosphorus as P			108	70-130			09/14/2017	AMO	
Matrix Spike (B7I1302-MS2) Source ID: 7WB0517-07									
Phosphorus as P			103	70-130			09/14/2017	AMO	
Matrix Spike Dup (B7I1302-MSD1) Source ID: 7LS0312-02									
Phosphorus as P			104	70-130	1.72	20	09/14/2017	AMO	
atrix Spike Dup (B7I1302-MSD2) Source ID: 7WB0517-07									
hosphorus as P			107	70-130	1.69	20	09/14/2017	AMO	

Report Date: 09/22/2017 10:20

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Notes and Definitions

Item	Definition
U	Analyte included in the analysis, but not detected

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846

Janet Finegan-Kelly
Water Quality Laboratory Manager

Stephen Quintero or Heather Rankin
QA/QC Coordinator

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: ~~63032641~~ 63037528 AVP
Project: DWOS - P1
Sampler(s): Adam Van Patten

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Matrix: Water	Type: Grab	Type: 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	Split 2L each Unless specified					VOCs — EPA 8260	Number of Containers
																								TrPH—1664 A SGT HEM	Organochlorine Pest.—EPA 8081	Organophosphate Pest.—EPA 8141	BNA—EPA 8270		
7ACC067-01	9/12/17 ~~9/12/17~~		0841	0846	OUTFALL D-1	X	X				X			X	X				X										4
-02	9/12/17		0933	0940	OUTFALL G-1	X	X				X			X	X				X										4

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
	9/12/17 1147	9-12-17 1149	7ACC067

Phase I NPDES Municipal Separate Storm Sewer System Annual Report For Boise State University
Permit Year 2016-2017
NPDES Permit No. IDS-027561

Appendix 3

Vortex Structure Inspection Summary

Boise State University Vortex Structure Inspections

Inspected by:	Suzy Arnette	**Date:**	6/13/2017					
Storm Water Structure	**Depth to static water level from rim**	**Depth to Bottom of Tank from rim**	**Depth of Water**	**Sediment Depth (Inches)**	**% of sediment depth to water depth**	**Requires Cleaning (Y/N)**	**Floatables (Y/N)**	**Location**
A-Drainage	55	91	36	4	11.1%	N	N	N. side of Multi Purpose Classroom (123)
D-Drainage	71	148	59	16	27.1%	N	Y	N. side of Albertson Library (027)
H-Drainage	77	170	80.5	12.5	15.5%	N	Y	NE of Caven-Williams Complex (234)
I-Drainage	94	148	53		0.0%	N	N	N. of Bleymeir Football Center (332)
Lincoln Garage	74	141	67	7	10.4%	N	N	N. side of Lincoln Ave. Garage (255)

Phase I NPDES Municipal Separate Storm Sewer System Annual Report For Boise State University
Permit Year 2016-2017
NPDES Permit No. IDS-027561

Appendix 4

Sand and Grease Structure Inspection Summary

	A	B	C	D	E	F
1	**Boise State University Sand and Grease Separators**					
2	Inspected by: Suzy Arnette					
3	Date: 5/10/2017					
4	**Structure**	**Location**	**Drainage**	**1° Sediment depth (in)**	**2° Sediment depth (in)**	**Comments**
5	Oil-water separator	Health Science Riverside - West	Health Science Riverside - West	5	0	Depth to invert - 42" in secondary
6	Oil-water separator	Health Science Riverside - East	Health Science Riverside - East	7	0	Depth to invert - 40" in 1°; 40" in 2°
7	Oil-water separator	Health Science Riverside - South	Health Science Riverside - South	23	4	Depth to invert - 41" in 1°; 40" in 2°
8						
9	J-2, oil-water separator	just east of sign shop, Chrisway Drive	J-drainage, Admin parking lot	16	15	
10						
11	Oil-water separator	Gateway Center, rear parking lot	Gateway Center, parking lot, roof?	2	0	Depth to invert - 41" in 1°; 41" in 2°
12	Oil-water separator	Gateway Center, northeast corner of east parking lot	Gateway Center, east parking lot	9	0	
13	Oil-water separator	University Square in east parking lot off southeast corner	east parking lot University Square	10	0	Depth to invert - 23" in 1°, 49" in 2°
14	Oil-water separator	University Square in landscape strip off southeast corner	west parking lot University Square	11	1	Depth to invert - 24.5" in 1°; 24.5" in 2°
15						
16	A-14, Oil-water separator	parking lot N of Brady parking garage	A-drainage, parking lot N of Brady parking garage	14	9	Depth to invert - 39"
17						
18	CV-8, Oil-water separator	Capitol Village, north side of Chalet	Chalet Drive & roof drains	6	0	
19	CV-6, Oil-water separator	Capitol Village, center of parking lot	University & Earle, Chalet Drive	44	10	Depth to invert - 55" in 2°
20	CV-4, Oil-water separator	Capitol Village, west of Bookstore warehouse, south unit	Capitol Village parking lot & roof drain Bookstore warehouse	14	0	Depth to invert - 45" in 1°/ 2°
21	CV-5, Oil-water separator	Capitol Village, west of Bookstore warehouse, center unit	Capitol Village parking lot & roof drain Bookstore warehouse	17	0	45" in 1° and 45" in 2°
22	CV-11, Oil-water separator	Capitol Village, west of Bookstore warehouse, north unit	Capitol Village parking lot	13	5	
23	Pump Chamber	Capitol Village, bookstore loading dock	Capitol Village, bookstore loading dock	2	0	Trough drainage to pump chamber, then west to wet well and french drain
24						
25	Oil-water separator	University Village, west of 2570	University Village Apartments parking lot	16	0	Floatable - grease Depth to invert - 36" in 1°; 66" in 2° Primary chamber has a catch pan
26	Oil-water separator	University Village, south of 2530	University Village Apartments parking lot	6	0	Depth to invert - 40" in 1°; 79" in 2° Primary chamber has a catch pan
27						
28	Oil-water separator	Lincoln Garage	West half of Lincoln Garage interior	10	0	32" in 1° and 2°
29						
30	Oil-water separator	Bookstore plaza in the sidewalk	SUB- Bookstore plaza and roof drainage	17	0	45" in 1° and 45" in 2°
31	Oil-water separator	SUB loading dock	Loading dock and roof drainage on expansion area	6	0	45" in 1° and 45" in 2°
32	Oil-water separator	SUB plaza area	West half of Bronco Circle	16	8	37" in 2°
33						
34	B-2, Oil-water separator	North of Morrison Center	Area B	7	4	Depth to invert - 45" in 1° and 2°
35						
36	Oil-water separator	Boas Tennis Center	Parking lot south	11	0	
37	Oil-water separator	Boas Tennis Center	End of parking lot south treatment	0	0	into ditch
38	Oil-water separator	Boas Tennis Center	Parking lot north	7	0	41" in 1°
39	Oil-water separator	Boas Tennis Center	Highland/Oakland intersection street drainage	11	0	42" in 1° and 38" in 2°
40						
41	Oil-water separator	University Park Apts	Lusk St.	7	0	42" in 1° and 38" in 2°

Phase I NPDES Municipal Separate Storm Sewer System Annual Report For Boise State University
Permit Year 2016-2017
NPDES Permit No. IDS-027561

Appendix 5

Boise State University's Storm Water Pollution Prevention Plan

BOISE STATE UNIVERSITY

Boise State University
Storm Water Pollution Prevention Plan
NPDES Permit No.: IDS-027561

Table of Contents

Acronyms

The following acronym list is provided for those reading the Boise State University Storm Water Pollution Prevention Plan.

ACHD	Ada County Highway District
BMP	Best Management Practice
CGP	Construction General Permit
CWA	Clean Water Act
EHSS	Environmental Health, Safety and Sustainability
EPA	Environmental Protection Agency
ESC	Erosion and Sediment Control
ESCP	Erosion and Sediment Control Plan
IDEQ	Idaho Department of Environmental Quality
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
POC	Pollutant(s) of Concern
SPCC	Spill Prevention, Control and Countermeasure
SWMP	Storm Water Management Program
SWPPP	Storm Water Pollution Prevention Plan

Background and General Requirements

Boise State University is covered as a Permittee under the National Pollutant Discharge Elimination System (NPDES) Phase I Municipal Stormwater Permit number IDS-027561 along with Ada County Highway District (ACHD), Boise City, Garden City, Idaho Transportation Department, and Drainage District #3. The NPDES program is a requirement of the federal CWA and is overseen by EPA, Region X. The Phase I Permit requires that all Permittees develop a storm water management program (SWMP) aimed at reducing the discharge of pollutants into the Permittees' municipal separate storm sewer system (MS4).

A required component of the SWMP is the implementation of an operations and maintenance (O&M) program designed to prevent or reduce pollutant runoff from municipal operations and from Permittee-owned stormwater facilities. One requirement of the O&M program is the development of a storm water pollution prevention plan (SWPPP) for all heavy equipment maintenance and storage yards, and material storage facilities.

This SWPPP has been developed to meet the O&M requirements outlined above. This SWPPP must be implemented on the main Boise State University campus for the Landscape Services facility located at 1110 Vermont St., Boise, ID 83725, with certain elements applicable to the Facilities, Operation and Maintenance facility, located at 1455 University Dr., Boise, ID 83725.

SWPPP Availability

A copy of this SWPPP will be kept at the Environmental Health, Safety and Sustainability office located at 1129 Euclid Ave., Boise, ID 83725 on the Boise State University campus. It will be made available to EPA personnel on request. A copy of this SWPPP will be made available to the public within a reasonable time frame on the Environmental Health, Safety and Sustainability website at http://operations.boisestate.edu/ehs/environmental-health/ .

SWPPP Update

This SWPPP will be reviewed annually and updated as necessary to reflect changed site conditions.

Objectives of the SWPPP

This document serves as the SWPPP for the Boise State University main campus for all heavy equipment maintenance and storage yards, and material storage facilities.

The objectives of this SWPPP are:

To identify locations of all materials that could cause pollution if spilled or otherwise released into the environment;

To identify all storm sewer conveyances, treatment facilities, and discharge points to aid in the isolation of contaminants should any be spilled into the system;

To identify locations of spill containment equipment and materials;

To implement and maintain best management practices (BMPs) that identify, reduce, eliminate, and/or prevent the discharge of stormwater pollutants;

To prevent violations of State surface water quality, groundwater quality, and sediment management standards; and

To eliminate unpermitted discharges and other illicit discharges to separate storm drainage systems.

Provide information to staff on BMPs for the O&M yards.

This document describes the methods and procedures that Boise State University will implement in order to reduce and/or eliminate the contamination of stormwater runoff and discharges of pollutants from Boise State facilities.

This SWPPP contains BMPs that Boise State facilities will implement to reduce or eliminate the release of pollutants to the MS4 and surface waters.

This document includes the following information:

Definition of SWPPP Coordinator requirements and responsibilities
Identification of Pollution Prevention Team personnel
Facility description and activities
Description of BMPs
Description of monitoring, inspection, and recordkeeping requirements

NPDES Permit Coverage

Boise State's stormwater discharges are authorized under the terms and conditions of the Phase I Permit; effective February 1, 2013, through January 30, 2018. Boise State is responsible for the operation and maintenance of the portions of the MS4 under our jurisdictional control, including all flow control and permanent stormwater BMP controls located at its facilities.

Integration with Other Coverage

Boise State University also operates under a separate NPDES permit for Groundwater Remediation Discharge Facilities in Idaho under Permit number IDG911000. The Permit became effective September 15, 2014 and will expire September 14, 2019. Any construction activities that occur on these sites will be assessed for NPDES CGP coverage requirements and integrated with this plan as appropriate.

Facility Assessment

Boise State University facilities requiring this SWPPP, according to NPDES Permit requirements, are:

1. Facilities, Operation and Maintenance (053) – a facility which contains a large dumpster roll off and stores deicing materials used on campus property

2. Landscape Services (070) – an operations and maintenance facility that maintains and stores heavy equipment and stores materials used on campus property.

Pollution Prevention Team

The pollution prevention team is responsible for developing the SWPPP and assisting in its implementation, maintenance, and modification. The activities and responsibilities of the pollution prevention team address all aspects of this SWPPP.
The responsibilities include:

Assigning individuals by name and title to be responsible for developing the SWPPP and assisting the SWPPP Coordinator in its implementation, maintenance, and modification;

Holding regular meetings to review the overall operation of the BMPs;

Establishing responsibilities for inspections, O&M, and emergency situations; and

Arranging the training of all team members in the operation, maintenance, and inspections of BMPs.

A list of team members, contact information, and a brief description of their primary area of responsibility regarding stormwater pollution is identified in Table 1.

Table 1. Pollution Prevention Team

Position	Name(s)	Phone Number(s)	Primary Responsibilities
SWPPP Coordinator (Interim)	Suzy Arnette – Director of EHSS	(208) 426-3906	Ensure that each facility employee is in compliance with the SWPPP regarding their operations; the coordinator must certify the completeness and accuracy of the SWPPP by signing a certification statement.
O&M Support	Gabe Bishop – Landscape Services manager	(208) 426-2342	Ensure that BMPs listed are in place, operative, and effective at all times in and around the areas where activities that impact stormwater are conducted. Maintain secondary containment and stockpiles. Report any accidental spills to the coordinator.
O&M Support	Jeremy Shaw – Central Receiving Storekeeper	(208) 426-4196	Ensure that BMPs listed are in place, operative, and effective at all times in and around the areas where activities that impact stormwater are conducted. Maintain secondary containment and report any accidental spills to the coordinator.

Operations and Maintenance

Activities conducted at the Boise State University main campus include:

Washing and pressure washing of vehicles, equipment and building structures
Loading and unloading of liquid or solid materials
Automotive repair and maintenance
Landscaping, lawn and vegetation management
Painting of buildings
Outdoor storage or transfer of solid raw materials, byproducts or finished products
Outdoor portable container storage
Storage of liquids in permanent aboveground tanks
Parking lot maintenance and storage of vehicles and equipment
Storage of bulk dirt, sand and rock
Storage of collected street waste solids and other stormwater facility solids
Storage of miscellaneous maintenance hand-held tools and equipment

Facility Maps

Operations Facility maps are included in Appendix A of this document. The Operations Facility maps identify the facility layouts; building spill kit locations; stormwater drainage system; heavy equipment maintenance and storage areas; and material storage areas.

Receiving Water and Wetlands

In general, stormwater runoff from Boise State facilities includes runoff from buildings, parking lots, a gravel storage yard/parking lots, and other paved areas. The stormwater runoff discussed in this SWPPP is conveyed to the MS4, specifically, through outfalls to the north of the facilities on the main campus. The maintenance yards listed in this Plan are all located either on pervious dirt lots, or on areas which drain directly into onsite seepage beds. A map is included in Appendix A that shows the receiving water in relation to the campus where on site drainage is not available.

Potential Pollutants of Concern

Table 2 below lists proper management utilization of the source control BMPs. These BMPs are from the Idaho Department of Environmental Quality Catalog of Stormwater Best Management Practices for Idaho Cities and Counties, version September 2005. The BMP numbers listed are specific to the Volume and Section from which they are excerpted. Each BMP lists the description, applications, limitations, targeted pollutants, guidelines and maintenance. BMPs identified in Table 2 are included in Appendix B of this document.

Table 2. List of Relevant BMPs

Idaho Department of Environmental Quality Catalog of Stormwater Best Management Practices for Idaho Cities and Counties

Volume 2: Erosion and Sediment Controls

Section 4: Housekeeping
- BMP 7: Dust Control
- BMP 8: Cover for Materials and Equipment
- BMP 9: Stockpile Management
- BMP 10: Spill Prevention and Control
- BMP 12: Waste Management

Volume 5: Commercial, Industrial, Residential Controls

Section 2: Industrial Facilities
- BMP 2: Equipment Yard Design Features
- BMP 3: Fleet or Equipment Fueling Design Features
- BMP 5: Non-Stormwater Discharges to Drains
- BMP 6: Vehicle and Equipment Fueling
- BMP 7: Vehicle and Equipment Cleaning
- BMP 8: Vehicle and Equipment Maintenance & Repair
- BMP 10: Outdoor Container Storage of Liquids
- BMP 12: Outdoor Storage of Raw Materials
- BMP 13: Waste Handling and Disposal
- BMP 15: Building and Grounds Maintenance
- BMP 17: Employee Training
- BMP 18: Spill Prevention Control and Cleanup

Section 3: Commercial Facilities
- BMP 20: Auto Repair and Maintenance Controls

Historical Spills and Leaks

Boise State University will retain spill history records and maintain a copy of their own spill records for a minimum of five years. A copy of the spill records will be available for review during business hours at the Environmental Health, Safety and Sustainability office. Records will include all of the significant spills or leaks of oils and toxic or hazardous pollutants that have occurred at areas either exposed to precipitation or that drain to a stormwater conveyance.

A significant spill or leak is defined as any quantity of contaminant that enters a storm drain or receiving water or contaminates soil and/or surface water at levels above state water quality

standards. Also, any spill of oil or gas that exceeds the reportable quantity as described by the US Department of Energy is considered significant and will be documented and reported as necessary. Reportable quantities of chemicals used at each facility can be determined by entering the chemical name or chemical abstract service (CAS) number into the reportable quantity calculator on the US Department of Energy website (http://homer/ornl.gov/rq/).

There has been one accidental glycol release which was noted in the Storm Water Annual Report in 2007. The heating system for the residence hall had leaked small quantities which entered the groundwater sump pump line and discharged into the Boise River via Outfall F in October 2006.

Monitoring Plan

Stormwater monitoring is not required for discharges leaving the Boise State facility.

Illicit Discharges

Illicit discharges are noted during annual dry weather outfall inspections occurring as part of the SWMP requirements of the MS4 Phase I Permit. When Permit required dry weather screening identifies an illicit discharge which necessitates sampling, Boise State will partner with ACHD to conduct the necessary grab samples identified in the Permit following the dry weather outfall screening guidelines established by ACHD, who leads all Permit-required monitoring.

Reporting and Recordkeeping

Records of all inspections, observations, and compliance records, as applicable, will be kept by the EHSS office on-site for a minimum of five years. Copies of these records shall be provided upon request.

Inspections

Staff identified in the pollution prevention team must regularly inspect all sites where heavy equipment maintenance or storage and material storage are exposed to stormwater and assess how well stormwater BMPs are operating. Complete, routine inspections must occur annually.

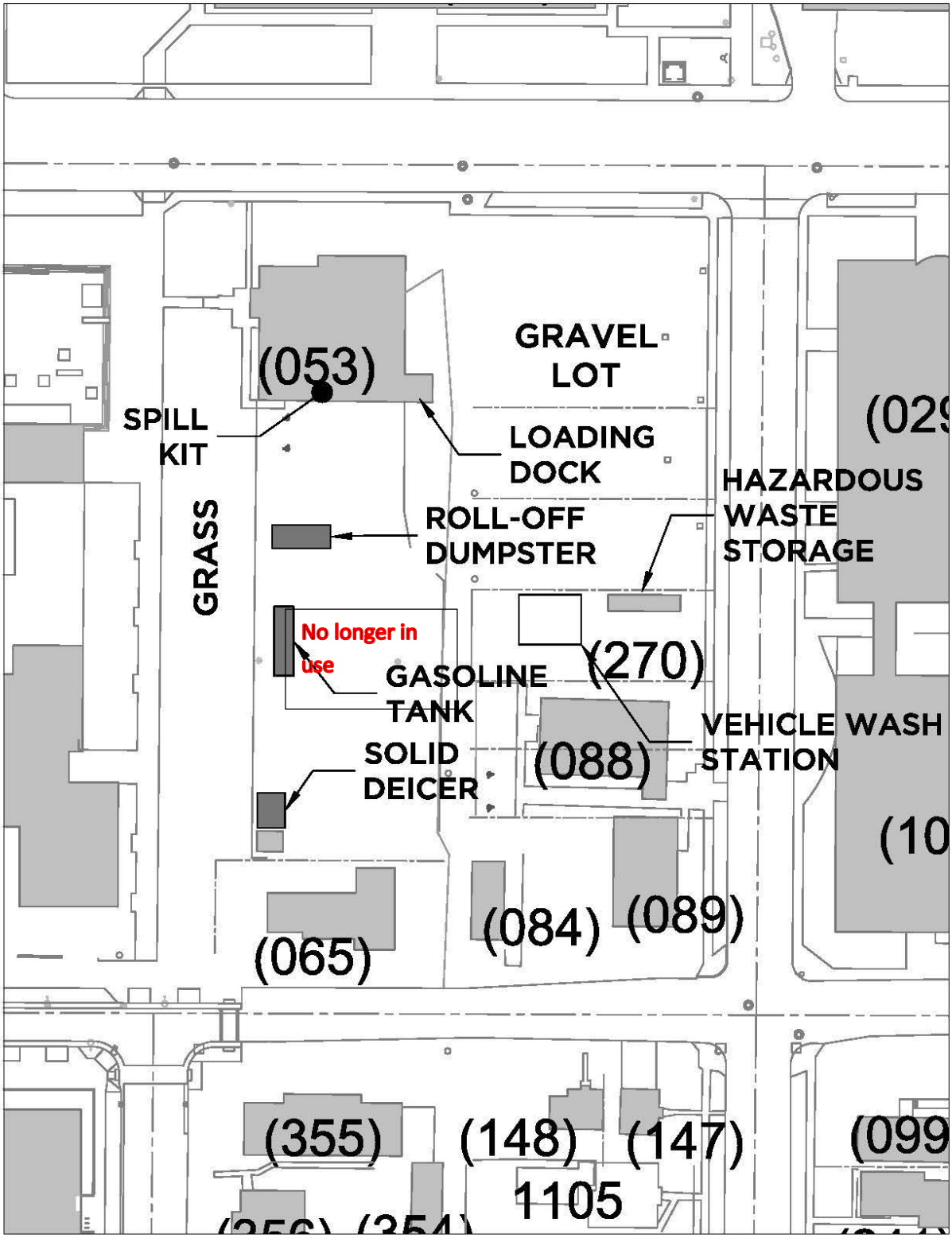
If at any time a BMP is not effective, it must be repaired or maintained before the next anticipated storm event. If maintenance prior to the next storm event is not possible, maintenance must be completed as soon as possible and documented on the form for the extended repair schedule. In the interim, back-up measures must be implemented to ensure that stormwater quality is not diminished.

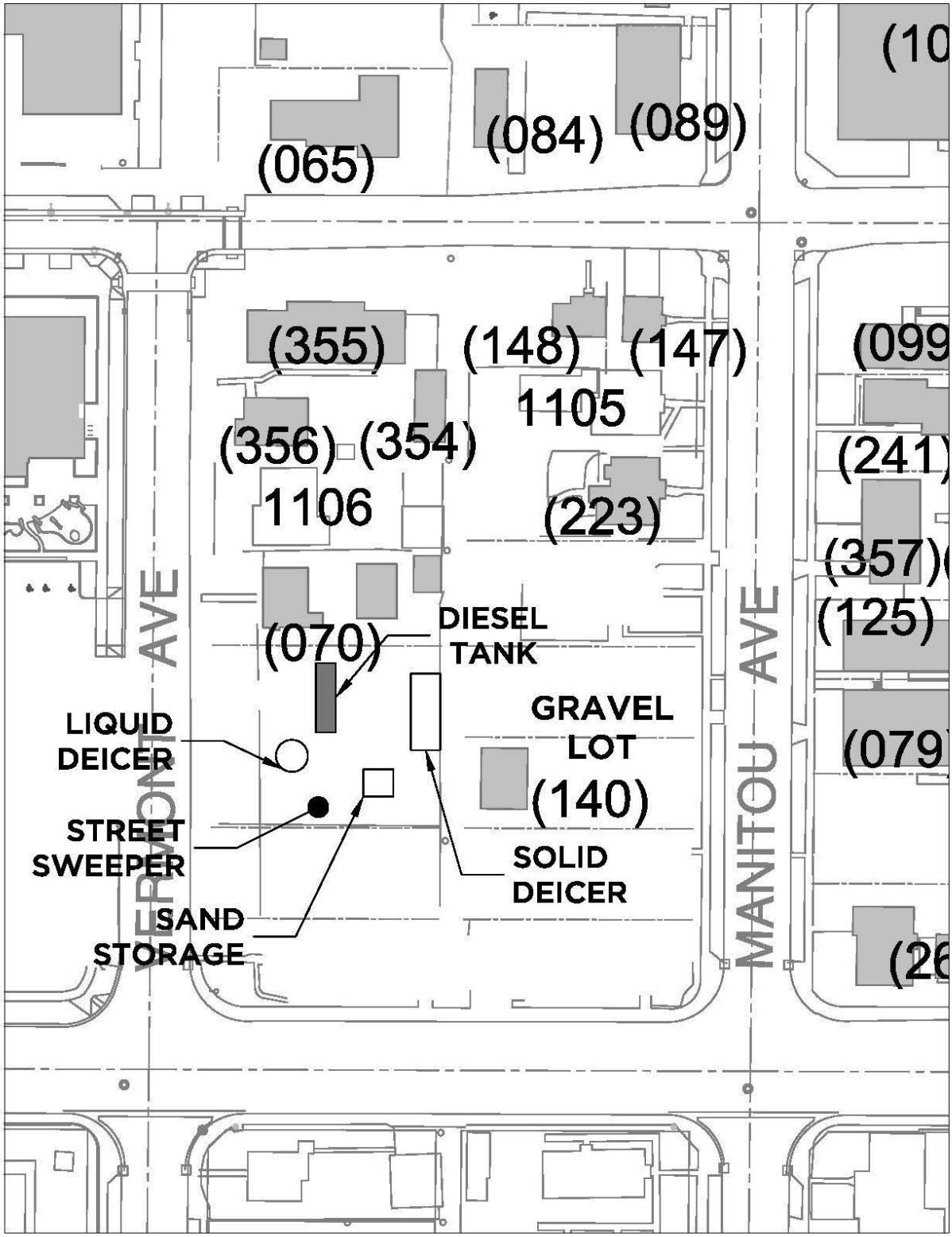
Concluding Statement

The intent of this SWPPP is to prevent the introduction of pollutants into stormwater from Boise State facilities. Full implementation of this plan includes regular staff training as well as compliance checks to ensure that BMPs are being utilized consistently and correctly.

This document is considered a 'living document', meaning that it can and should be updated as often as necessary to ensure that BMPs are employed to the MEP and minimize the discharge of pollutants from these facilities.

Appendix A – Facility Maps


(053)
GRAVEL LOT
SPILL KIT
LOADING DOCK
(029
HAZARDOUS WASTE STORAGE
GRASS
ROLL-OFF DUMPSTER
No longer in use
GASOLINE TANK
(270)
VEHICLE WASH STATION
SOLID DEICER
(088)
(10
(084)
(089)
(065)
(355)
(148)
(147)
(099
1105


(065)
(084)
(089)
(355)
(148)
(147)
1105
(356)
(354)
1106
(223)
(070)
DIESEL TANK
LIQUID DEICER
GRAVEL LOT
(140)
STREET SWEEPER
SOLID DEICER
SAND STORAGE
VERMONT AVE
MANITOU AVE
(241)
(357)
(125)
(079)

Appendix B – Facility Pollution Prevention BMPs

Idaho Department of Environmental Quality Catalog of Stormwater Best Management Practices for Idaho Cities and Counties

Volume 2: Erosion and Sediment Controls

Section 4: Housekeeping

- BMP 7: Dust Control
- BMP 8: Cover for Materials and Equipment
- BMP 9: Stockpile Management
- BMP 10: Spill Prevention and Control
- BMP 12: Waste Management

Volume 5: Commercial, Industrial, Residential Controls

Section 2: Industrial Facilities

- BMP 2: Equipment Yard Design Features
- BMP 3: Fleet or Equipment Fueling Design Features
- BMP 5: Non-Stormwater Discharges to Drains
- BMP 6: Vehicle and Equipment Fueling
- BMP 7: Vehicle and Equipment Cleaning
- BMP 8: Vehicle and Equipment Maintenance & Repair
- BMP 10: Outdoor Container Storage of Liquids
- BMP 12: Outdoor Storage of Raw Materials
- BMP 13: Waste Handling and Disposal
- BMP 15: Building and Grounds Maintenance
- BMP 17: Employee Training
- BMP 18: Spill Prevention Control and Cleanup

Section 3: Commercial Facilities

- BMP 20: Auto Repair and Maintenance Controls

Dust Control BMP 7

Description

This BMP describes products or measures used for reducing or preventing wind erosion by protecting the soil surface, roughening the surface, and reducing the surface wind velocity. Several dust control treatments are described below. Other methods are also available.

Vegetative Cover: For disturbed areas not subject to traffic, vegetation provides the most practical method of dust control (see BMP 21-Seeding and BMP 22-Sodding).

Mulch (including gravel mulch): When properly applied, mulch offers a fast, effective means of controlling dust (see BMP 15-Mulching).

Spray-On Adhesive: Asphalt emulsions, latex emulsions, or resin in water can be sprayed onto mineral soil to control dust (see BMP 16-Hydromulching).

Sprinkling: The site may be sprinkled with water until the surface is wet. Sprinkling is especially effective for dust control on haul roads and other traffic routes.

Stone: Stone or gravel used to stabilize construction roads and disturbed soils can also be effective for dust control and reduce soil losses from those areas by up to 80% .

Surface Roughening: Tilling or discing the surface of disturbed soils to produce a rough surface or ridges which when perpendicular to prevailing winds can reduce soil losses due to wind by 80% (see BMP 25-Slope Roughening).

Barriers: A board fence, wind fence, sediment fence, or similar barrier can control air currents and blowing soil. All of these fences are normally constructed of wood. Perennial grass and stands of existing trees may also serve as wind barriers. Barriers prevent erosion by obstructing the wind near the ground and preventing the soil from blowing off site.

Applications

The above measures for dust control should be used when open, dry areas of soil are anticipated on the site. Clearing and grading activities create the opportunity for large amounts of dust to become airborne. Therefore, one or several dust control measures should be considered prior to clearing and grading. In many cases, water erosion control measures incorporated into the project will indirectly prevent wind erosion. As a standard practice, any exposed area should be stabilized using vegetation to prevent both wind and water erosion. When rainfall is insufficient to establish vegetative cover, mulching is an effective way of conserving moisture, preventing surface crusting, reducing

runoff and erosion, and helping to establish vegetation. It is a critical treatment on sites with erosive slopes.

Limitations

Drainage area – N/A
Minimum bedrock depth – N/A
NRCS soil type – N/A
Drainage/flood control – no
Maximum slope – 5%
Minimum water table - N/A
Freeze/thaw – N/A

Vegetative measures may not be practical during dry periods unless a reliable supply of establishment water is available. Other methods should be stipulated in the project contract to ensure that dust control is not overlooked.
Barriers (such as walls or fences) can be part of the long-term dust control strategy in arid and semiarid areas, but they are not a substitute for permanent stabilization.

Targeted Pollutants

Sediment
Trace Metals
Hydrocarbons

Design Parameters

Dust Prevention: The best method of controlling dust is to prevent dust production. This can best be accomplished by limiting the amount of bare soil exposed at one time. In project design, identify all areas where ground disturbance will not be allowed. Design and locate haul roads, detours, and staging areas to avoid unnecessary exposure of bare ground and avoid using areas that are the most susceptible to wind erosion.

In the stormwater site plan, specify staging or work sequencing techniques that minimize the risk of wind erosion from bare soil. In most cases, this will require a change from traditional construction techniques that allow large areas to be disturbed at the outset of construction and to remain exposed for long periods of time.

Vegetative Cover: Follow recommended seeding and planting specifications. If site conditions are favorable, use an extended seeding season to ensure that seeding becomes established over as much of the project as possible before winter shutdown or substantial completion. Specify the use of establishment water to accelerate vegetative stabilization if other means of long-term slope protection are not feasible.

Mulch: Apply according to the design parameter for BMP 16-Hydromulching.

Sprinkling: Apply at a rate of 3 gallons per acre so that the soil is wet but not saturated or muddy and so that no dust is being generated.

Stone: At ingress/egress to public highways, apply as indicated in BMP 5-Stabilization of Construction Entrance. For detours, haul roads, or temporary traffic routes through the construction site, provide a layer of fractured stone 2

to 4 in. thick and 1 to 2 in. in diameter.

Surface Roughening: Tilling or discing should leave 6 in. (minimum) furrows, preferably perpendicular to the prevailing wind direction, to gain the greatest reduction in wind erosion. If the surface cannot be furrowed perpendicular to the prevailing wind direction, roughening the surface by using a ripper/scarifier (grader) or a ripper (cat) will produce the desired result of a 6 in. irregular surface.

Barriers: A wind barrier generally protects soil downwind for a distance of 10 times the height of the barrier. If additional protection is needed, use other methods in conjunction with the barrier.

Construction Guidelines

Site Assessment: Assess the potential problem of wind erosion and dust generation at the project site. Consider the soil type, prevailing wind direction, and the effect of other prescribed erosion control measures.

Use Preventive Strategies Wherever Possible:

- Minimize amount of bare ground exposed at one time.
- Minimize amount of ground disturbance occurring when wind erosion is highest.

Implement Dust Control Measures as Needed:

- Provide stabilized roadway to minimize amount of dust generated by construction vehicles and highway traffic (gravel, pave, or moisten the bare areas of the highway or detour route).
- Apply protective materials to exposed areas (e.g., stone, mulch, adhesive/ emulsions).
- Install barriers to prevent dust from blowing off site.
- Establish vegetation at the earliest possible opportunity (using establishment water if necessary to ensure viability).
- Keep haul roads, detours, and other bare areas moist by sprinkling them with water.
- Perform street sweeping, as needed.

Maintenance

- Dust control requires constant attention: it is not a one-time or once-in-awhile activity. Dust control sprinkling may have to be done several times a day during hot, dry weather.
- Areas protected by mulch, adhesive emulsions, or barriers need to be checked at regular intervals according to the inspection schedule set forth in the stormwater plan. Remove sediments that accumulate behind any sediment fence or barrier when the accumulation reaches one half the height of the barrier. Dispose of the sediments only in an approved location (not in wetlands or where they will contribute to pollution at the disposal site).

Apply chemical controls (emulsions and resins) at the manufacturer's specified rates and in accordance with all federal, state, and local regulations governing their use. Chemical products should be stored, handled, and disposed of in accordance with all applicable regulations and department policies.

Cover for Materials and Equipment BMP 8

Description

This BMP includes partial or total physical enclosure of materials, equipment, process operations, or activities. Covering prevents stormwater from coming into contact with potential pollutants and reduces material loss from wind blowing. Tarpaulins, plastic sheeting, roofs, buildings, and other enclosures are examples of covering that are effective in preventing stormwater pollution. Covering can be temporary or permanent.

Applications

Covering is a simple, effective, and usually inexpensive way of reducing or preventing pollution. It is appropriate for outdoor material storage piles, such as stockpiles of dry materials, topsoil, spoils piles, gravel, sand, compost, sawdust, wood chips, and building materials. It is also effective where containers of liquids or solids are stored or transferred. Although it may be too expensive to cover or enclose all construction activities, the high-risk parts of a site can often be separated and covered. For example, chemical preparation areas, vehicle maintenance and washing areas, storage areas for chemically treated products and toxic wastes (e.g., used oils).

Limitations

Drainage area – N/A
Minimum bedrock depth – N/A
NRCS soil type – N/A
Drainage/flood control – no
Maximum slope – N/A
Minimum water table – N/A
Freeze/thaw – N/A

- Covering alone may not protect exposed materials from contact with stormwater runoff/run-on.
- Requires frequent inspections. Consider curbing or an elevated platform to prevent pollution from run-on water.

Targeted Pollutants

Sediment
Trace Metals
Hydrocarbons

Design Parameters

- In selecting an appropriate covering, evaluate the strength and longevity of the covering, as well as its compatibility with the materials or items being enclosed. Cost, aesthetics, weather conditions, drainage patterns, and size of the stockpiles or storage area are other factors affecting the choice of covering.
- In designing a covering for materials, remember to provide adequate access for loading, handling, and transfer. Cost considerations may justify a less-than-optimum access arrangement in some cases. For instance, tarpaulins and plastic sheeting have to be removed or rearranged to allow continued access as materials are depleted, but they are less expensive than a permanent structure such as a roof or shed.
- Climate or weather conditions also influence the choice or design of a covering. Tarpaulins and sheeting may be difficult to keep secured in

extremely windy areas.

- Where a permanent structure is indicated for a particular area or activity, consider building a roof instead of a complete enclosure. This will reduce costs and may also eliminate the need for ventilation and lighting systems that could be needed in a building.
- Consider the nature of the materials being enclosed, especially if they pose environmental or safety dangers. Materials that are biological, flammable, explosive, or chemically reactive require special ventilation and temperature control measures.
- Covering alone may not protect exposed materials from stormwater contact. Where stormwater run-on is a potential problem, place the material on an elevated, impermeable surface or build curbing around the outside of the materials to prevent pollution of stormwater from adjacent areas.

Construction Guidelines

Tarpaulins and Plastic Sheeting: Obtain enough fabric or sheeting to cover the indicated volume or area. Anchor the edges of the covering with stakes, tie-down ropes, large rocks, tires, or other readily available, heavy objects. Maintain an overlap of 3 ft along the borders and securely anchor the overlap area so that it does not separate (through wind or other causes).

Roofs, Sheds, and Buildings: Construct according to plans or drawings in accordance with existing building codes and departmental standards for such construction.

Maintenance

Frequently inspect coverings for damage and general wear. Repair or replace them immediately, as needed.

Stockpile Management BMP 9

Description

Stockpile management procedures and practices are designed to reduce or eliminate air and stormwater pollution from stockpiles of soil, paving materials such as Portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate sub base or pre-mixed aggregate, asphalt minder (so called "cold mix" asphalt), and pressure-treated wood.

Applications

Implement in all projects that stockpile soil and other materials.

Limitations

Drainage area – N/A
Minimum bedrock depth - N/A
NRCS soil type – N/A
Drainage/flood control – no
Maximum slope – N/A
Minimum water table - N/A
Freeze/thaw – good

Targeted Pollutants

Sediment

Construction Guidelines

General

- Locate stockpiles a minimum of 50 ft away from concentrated flows of stormwater, drainage courses, and inlets.
- Protect all stockpiles from stormwater run-on using a temporary perimeter sediment barrier such as berms, dikes, fiber rolls, silt fences, sandbags, or gravel bags.
- Implement wind erosion control practices as appropriate on all stockpiled material.
- Place bagged materials on pallets and under cover.

Protection of Non-Active Stockpiles

- Soil stockpiles: During the rainy season, soil stockpiles should be covered or protected with soil stabilization measures and a temporary perimeter sediment barrier at all times. During the non-rainy season, soil stockpiles should be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.
- Stockpiles of PCC rubble, AC, asphalt concrete rubble, aggregate base, or aggregate sub base: During the rainy season, the stockpiles should be covered or protected with a temporary sediment perimeter barrier at all times. During the non-rainy season, the stockpiles should be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.
- Stockpiles of "cold mix": During the rainy season, cold mix stockpiles should be placed on and covered with plastic or comparable material at all times. During the non-rainy season, cold mix stockpiles should be placed on and covered with plastic or comparable materials prior to the onset of precipitation.
- Stockpiles/storage of pressure-treated wood: During the rainy season, pressure-treated wood should be covered with plastic or comparable

material at all times. During the non-rainy season, pressure-treated wood should be covered with plastic or comparable material at all times.

Protection of Active Stockpiles

- All stockpiles should be protected with a temporary linear sediment barrier prior to the onset of precipitation.
- Stockpiles of "cold mix" should be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Maintenance

- Inspect and verify that BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are underway, inspect weekly during the rainy season and at 2-week intervals in the non-rainy season to verify continued BMP implementation.
- Repair and/or replace perimeter controls and covers as needed to keep them functioning properly.

Spill Prevention and Control BMP 10

Description

This BMP describes methods of minimizing exposure of pollutants to stormwater runoff by enclosing any drips, overflows, leaks, and other liquid material releases or by isolating pollutant spills from stormwater runoff. There are numerous spill containment methods, ranging from large structural barriers to simple, small drip pans. The benefits vary based on cost, maintenance requirements, and the size of spill control. Three possible options are discussed below:

Containment Diking: Temporary or permanent polyurethane or plastic berms, concrete berms, or retaining walls designed to hold spills. Diking is one of the best protective measures against stormwater pollution because it surrounds the area of concern and holds the spill, keeping spill materials separated from the stormwater outside of the diked area. Diking is one of the most common types of spill containment. Also see BMP 41-Earth Dike and BMP 43-Temporary Berms.

Curbing: Like containment diking, curbing is a barrier that surrounds an area of concern. It prevents spills or leaks from being released to the environment by routing runoff to treatment or control areas. The terms "curbing" and "diking" are sometimes used interchangeably, but curbing is usually small scale and cannot contain large spills like diking can. As with diking, common materials for curbing include earth, concrete, synthetic materials, metal, or other impenetrable materials. Asphalt is also a common material used in curbing.

Drip Pans: Pans used to contain very small volumes of leaks, drips, and spills. Drip pans can be depressions in concrete, asphalt, or other impenetrable materials, or they can be made of metals, plastic, or any material that does not react with the dripped chemicals. Empty or discarded containers may be used as drip pans. Catch drips so that the materials or chemicals can be cleaned up easily or recycled before they can contact stormwater. Drip pans can be a temporary or permanent measure.

Applications

Containment Diking: Diking can be used at any construction site, but it is most commonly used for controlling large spills or releases from liquid storage areas and liquid transfer areas. It is an effective containment method around tank truck loading and unloading areas. Proper diking contains spills, leaks, and other releases and prevents them from flowing into runoff conveyances, nearby streams, or infiltration into groundwater. It also allows for proper disposal and/or recycling of materials captured within the dike.

Curbing: Curbing is usually small scale; it cannot contain large spills like diking can. However, many facilities use curbing to contain small areas used for handling and transferring liquid materials.
Curbing is already a common practice. It is inexpensive, easy to install, and

provides excellent control of run-on. As with diking, materials spilled within a curbed area can be collected for proper disposal and/or recycling.

Drip Pans: Drip pans can be used at any site where valves and piping are present and the potential for small-volume leakage and dripping exist. Although leaks and drips should be repaired and eliminated as part of preventive maintenance programs, drip pans can provide a temporary solution where repair or replacement should be delayed. In addition, drip pans can be an added safeguard when they are positioned beneath areas where leaks and drips may occur.

Drip pans are inexpensive, easy to install, and simple to operate. They allow for reuse or recycling of the collected material.

Limitations

Drainage area - N/A
Maximum slope – N/A
Minimum bedrock depth – N/A
Minimum water table – N/A
NRCS soil type - N/A
Freeze/thaw – N/A
Drainage/flood control – no

Containment Diking:

- May be too expensive for some smaller facilities.
- Requires maintenance.
- Could collect polluted stormwater, with possible infiltration to ground water.

Curbing:

- Not effective for holding large spills.
- May require more maintenance than diking.

Drip Pans:

- Suitable only for small volumes.
- Should be inspected and cleaned frequently.
- Should be secured during poor weather conditions.
- Requires that personnel be trained in proper disposal methods so that contents are not disposed of improperly.

Targeted Pollutants

Trace Metals
Hydrocarbons

Design Parameters

Containment Diking:
Size: For tank truck loading and unloading operations, the diked area should be capable of holding an amount equal to any single tank truck compartment.

Materials: Materials used to construct the dike should be strong enough to safely hold spilled materials. The materials used usually depend on what is available on-site and the substance to be contained. Dikes may be made of earth (i.e., soil or clay), concrete, synthetic materials (liners), metal, or other impervious materials. Containment dikes may need to be designed with impervious materials to prevent leaking or pollution of stormwater, surface

water, and ground water supplies.

In general, strong acids and bases may react with metal containers, concrete, and some plastics. So where spills may consist of these substances, other alternatives should be considered. Some of the more reactive organic chemicals may also need to be contained with special liners. If uncertain about the suitability of certain dike construction materials, refer to the *Material Safety Data Sheet* (MSDS) for the chemical being contained.

Curbing: When using curbing for runoff control, protect the berm by limiting traffic and installing reinforced berms in areas of concern. Materials spilled within a curbed area can be tracked outside of that area when personnel and equipment leave the area. This tracking can be minimized by grading within the curbing to direct the spilled materials to a downslope side of the curbed area. This will keep the materials away from personnel and equipment that pass through the area. It will also allow the materials to accumulate in one area, making cleanup much easier. Manual or mechanical methods, such as those provided by sump systems, can be used to remove accumulated material from a curbed area.

Drip Pans: When using drip pans, consider local weather conditions, the location of the drip pans, materials used for the drip pans, and how the pans will be cleaned. The location of the drip pan is important. Because drip pans should be inspected and cleaned frequently, they should be easy to reach and remove. Take special care to avoid placing drip pans in precarious positions such as next to walkways or on an uneven surface. Drip pans in these locations are easily overturned and may present a safety or environmental hazard. Weather is also an important factor. Heavy winds and rainfall can move or damage drip pans because the pans are small and lightweight. To prevent this, secure the pans by installing or anchoring them. Drip pans may be placed on platforms or behind wind blocks or may be tied down.

Maintenance

Cleaning guidelines should be included in the maintenance plan for all methods of spill prevention and control.

Containment Diking: Inspect containment dikes during or after significant storms or spills to check for washouts or overflows. In addition, regular testing to ensure that dikes are capable of holding spills is recommended. Soil dikes may need to be inspected on a more frequent basis.

Changes in vegetation, inability of the structure to retain stormwater, dike erosion, or soggy areas indicate problems with the dike's structure. Damaged areas should be patched and stabilized immediately, where necessary. Earthen dikes may require special maintenance of vegetation, such as mowing and irrigation.

When evaluating the performance of the containment system, pay special attention to the overflow system, since it is often the source of uncontrolled leaks. If overflow systems do not exist, accumulated stormwater should be

released periodically. Polluted stormwater should be treated prior to release. Mechanical parts (such as pumps) or manual systems (slide gates, stopcock valves) may require regular cleaning and maintenance.

Curbing: Since curbing is sized to contain small spill volumes, frequent maintenance is needed to prevent overflow of any spilled materials. Inspect all curbed areas regularly and clean clogging debris. Repair the curb by patching or replacing it as needed to ensure effective functioning. Inspections should be conducted before forecasted rainfall events and immediately after storm events. If spilled or leaked materials are observed, cleanup should start immediately to allow space for future spills. In addition, prompt cleanup of spilled materials will prevent dilution by rainwater, which can adversely affect recycling opportunities.

Drip Pans: For drip pans to be effective, site operators should pay attention to the pans and empty them when they are nearly full. Because of their small holding capacities, drip pans will easily overflow if not emptied. Also, recycling efforts can be affected if stormwater accumulates in drip pans and dilutes the spilled material. It is important to have clearly specified and easily followed practices of reuse, recycle and/or disposal, especially the disposal of hazardous materials. Consider dumping the drip pan contents into a nearby larger-volume storage container and periodically recycling the contents of the storage container.

Frequent inspection of the drip pans is necessary due to the possibility of leaks in the pan itself. Also check for random leaking of piping or valves and for irregular, slow drips that may increase in volume. Conduct inspections before forecasted rainfall events to remove accumulated materials. Empty accumulations immediately after each storm event.

Waste Management BMP 12

Description

This BMP entails meeting the regulatory requirements of hazardous waste management that includes hazardous waste determination; acquiring an EPA identification number; accumulation; record keeping reporting; and transportation manifesting. Good housekeeping will minimize the contribution of pollutants to stormwater discharges by handling and storing hazardous materials on site in a clean and orderly manner.

Applications

Compliance with applicable regulations will protect human health and the environment from hazardous waste generated by construction activities, reduce liability, and prevent unnecessary interruptions to schedules (i.e., project shut down due to environmental investigations/enforcement actions). The first step in preventing pollution of stormwater runoff is to maintain a clean and orderly work environment. This will reduce the possibility of accidental spills.

Common sense is the simplest and most inexpensive method to utilize. Improving the operation and maintenance of industrial machinery, material storage practices, material inventory controls, routine and regular clean-up, maintenance activities in work areas, and providing educational programs for employees regarding these practices will assist in reaching these goals.

Limitations

Drainage area - N/A
Minimum bedrock depth - N/A
NRCS soil type - N/A
Drainage/flood control – no
Maximum slope – N/A
Minimum water table - N/A
Freeze/thaw – N/A

Carelessness and poor judgment often result in problems associated with the disposal of hazardous materials. Not being fully aware of all the hazards at the site could increase the potential for mishandling of such wastes, resulting in stormwater contamination.

Targeted Pollutants

Sediment
Trace Metals

Design Parameters

Select a designated waste collection area on site. Secure an adequate number of containers with lids or covers. If possible, provide a covered area or spill containment pallets. Arrange for waste collection before containers overflow (additional containers and more frequent pick-ups will be needed during the demolition phase). Provide immediate cleanup in case of a spill. Assure that waste is transported and disposed of at an approved facility. A liner, concrete pad, berm, etc., should be utilized to keep waste separated and to contain accidental spills so that stormwater runoff is not polluted. Provide labels and signs for the area to educate contractors about proper storage and handling and to comply with regulatory requirements.

Construction Guidelines

The best way to avoid polluting runoff from outside material storage areas is to prevent stormwater run-on or rain from coming in contact with the materials.

These are some of the methods that can be utilized to accomplish this:

- Identify, control, and enforce storage and disposal/stockpile areas
- Provide a barrier such as a liner, concrete pad or berm
- Protect the storage area by:
  - ✓ Storing the material indoors
  - ✓ Covering the area with a roof
  - ✓ Covering the material with a temporary covering
- Engineer safeguards such as:
  - ✓ Overflow protection devices
  - ✓ Protective guards around tanks, storage area, etc.

Maintenance

- Regularly pick up and dispose of all garbage and waste material.
- Make sure equipment is working properly.
- Routinely inspect for leaks or conditions that could lead to discharges of chemicals and contact with stormwater:
  - ✓ External corrosion and structural failure
  - ✓ Installation problems
  - ✓ Evidence of spills or overfills
- Locate storage areas away from direct traffic routes.
- Stack according to directions to avoid damage due to improper weight distribution.
- Store likes together, separate incompatible wastes.
- Assign hazardous material inventory to a limited number of people.
- Keep up-to-date inventory of all hazardous materials and wastes.
- Identify all chemical substances present at the work site.
- Label all containers with name, hazards, handling, and first-aid information.
- Mark those that require special instructions.
- Cleanup of liquid or dry material spills.
- Provide initial and annual training for employees on the hazards and the proper handling procedures.
- Do not mix products together unless specifically recommended.
- Use the entire product before disposing of container.
- Do not remove original product label from container.

Equipment Yard Design Features BMP 2

Description

Properly designed equipment yards can control stormwater pollution by reducing or eliminating pollutants entering stormwater.

Limitations

Space limitations may prevent facility work from being performed in covered areas.

Installation/ Application Guidelines

- Pave and grade the area to drain to a longitudinal drain or install curbs to direct all stormwater to a central collection point in the yard. Pave the surface with concrete, not asphalt, which may react with spilled liquids.
- Fit the inlet(s) with a sand filter or other oil control BMPs if you determine that the equipment yard contributes large amounts of oily materials to stormwater.
- Segregate the area where vehicles are serviced and install special permanent controls:
  - ✓ Drain the area to a single collection-point, preferably connected to a holding tank and then to the sanitary sewer. The drain may require an oil/water separator or sand/grease trap and should be approved by local wastewater treatment plant staff.
  - ✓ Grade the activity area higher than the parking lot or surround the activity area with a berm, curb, or dike to prevent stormwater run-on.
  - ✓ Construct a special area that segregates the "dirtiest" equipment (roof tar equipment, asphalt paving equipment, etc.) from other equipment. Use berms, curbs, or dikes to keep discharges, leaks, and runoff separate from other activity areas.
- Cover storage areas, maintenance areas, and process areas to prevent exposure to stormwater. The particular roof cover option used at a given site is subject to the site layout, available space, affordability, and limitations imposed by other regulations. The following are examples of storage options:
  - ✓ A prefabricated storage shed to enclose and cover materials (ensure these structures meet applicable building and fire codes).
  - ✓ A lean-to structure against an existing building to cover materials and prevent contact with rain.
  - ✓ A stand-alone canopy that provides cover but no walls.

Maintenance Requirements

Oil/water separators and sand/grease traps will need to be maintained regularly.

Fleet or Equipment Fueling Design Features BMP 3

Description

Properly designed fleet or equipment fueling areas can control stormwater pollution by reducing or eliminating pollutants entering stormwater.

Limitations

Retrofitting existing fueling areas to minimize stormwater exposure or spill runoff can be expensive. Good design should occur during initial installation of fueling areas.

Installation/ Application Guidelines

- Cover the fueling area to prevent rain from falling directly on the activity area. Install a roof over the fueling island, the area where vehicles park while fueling, and as much of the approach area as practical.
- Equip the storm drain and sewer inlets that drain the fueling area with a shutoff valve to keep fuel out of the drain in the event of a fuel spill. The valve should be kept closed at all times except during a rainfall. Curtail fueling activities when the shutoff valve should be open or use a large drip pan under the vehicle to capture any spilled fuel.
- Separate the fueling area from the rest of the facility, not only to contain any fuel spills, but also to prevent stormwater run-on. Select from the following drainage design guidelines:
  - ✓ Grade the fueling area so that it is either "mounded" or elevated. A mounded grading scheme is recommended.
  - ✓ Grade the entire fueling area to drain to a single collection point inlet. Design the grading to prevent run-on.
  - ✓ Install high berms around the area that will redirect water from a large storm to a single collection point inlet.
  - ✓ Install a holding tank that accumulated liquids can be pumped to.

Maintenance Requirements

- Inspect the holding tank regularly to ensure it is not overfilled.
- Test holding tank contents prior to discharge or disposal.
- Inspect and maintain berms, curbs, dikes, or slopes regularly.

Non-Stormwater Discharges to Drains BMP 5

Description

Eliminate non-stormwater discharges to the stormwater collection system. Examples of non-stormwater discharges are process wastewaters, cooling waters, wash waters, and sanitary wastewater.

Approach

The following approaches may help you identify non-stormwater discharges:

- Visual Inspection: The easiest method is to inspect each discharge point during dry weather. Drainage from a storm event can continue for three days or more and groundwater may infiltrate the underground stormwater collection system.
- Piping Schematic Review: A review of the "as-built" piping schematic is a way to determine if there are any connections to the stormwater collection system. The piping schematic is a map of pipes and drainage systems used to carry wastewater, cooling water, sanitary wastes, etc.
- Smoke Testing: Smoke testing of wastewater and stormwater collection systems is used to detect connections between the two systems. During dry weather, the stormwater collection system is filled with smoke and then traced to sources. The appearance of smoke at the base of a toilet indicates that there may be a connection between the sanitary and the stormwater systems.
- Dye Testing: A dye test can be performed by releasing a dye into either your sanitary or process wastewater system and examining the discharge points from the stormwater collection system for the dye color.
- Video Inspection: Mobile video cameras can be guided remotely through storm sewer lines to observe possible illicit connections into storm sewer systems and record observations on a videocassette or DVD. Public works staff can observe the videos and note any visible illegal connections.

Limitations

- Many facilities do not have accurate, up-to-date schematic drawings.
- TV and visual inspections can identify illicit connections to the storm sewer, but further testing is sometimes required (e.g. dye, smoke) to identify sources.

Additional Information

An illicit connection is any physical connection to a publicly maintained storm drain system composed of non-stormwater that has not been permitted by the public entity responsible for the operation and maintenance of the system. Facilities subject to EPA stormwater permit requirements should include a certification that the stormwater collection system has been tested or evaluated for the presence of non-stormwater discharges.

Non-stormwater discharges to the stormwater collection system may include any water used directly in the manufacturing process (process wastewater), air conditioning coolant, outdoor secondary containment water, vehicle and equipment wash water, sink and drinking fountain wastewater, sanitary wastes, or other wastewaters. See Appendix A, Disposal Alternatives table, for more

information.

To ensure that the stormwater system discharge contains only stormwater, you should:

- Locate and evaluate all discharges to the industrial storm sewer system (including wet weather flow) using one of the following:
  - ✓ "As built" pipeline schematics
  - ✓ Visual observation
  - ✓ Dye tests
  - ✓ TV camera
  - ✓ Chemical field test kits
  - ✓ Smoke tests
- Develop a plan to eliminate illicit connections:
  - ✓ Identify appropriate connection or disposal alternatives
  - ✓ Replumb sewer lines
  - ✓ Isolate problem areas
  - ✓ Plug illicit discharge points
- Document that non-stormwater discharges have been eliminated by recording tests performed, methods used, dates of testing, and any on-site drainage points observed.
- Provide well-marked proper disposal or collection sites for wastewater.
- Employee training should especially emphasize proper disposal of non-stormwater.
- Label all storm drains and catch basins with "Dump No Waste" stenciling so employees and customers know which inlets are part of the storm drain system.
- Periodically inspect and maintain storm drain inlets. Clean out catch basins so that accumulated pollutants do not wash down the storm drains.

Vehicle and Equipment Fueling BMP 6

Description

Prevent fuel spills and leaks from vehicle and equipment fueling, and reduce their impacts to stormwater (covers large-size gas station, single pump maintenance yard installation, and mobile fueling operations).

Approach

Design the fueling area to prevent stormwater run-on of and the spill runoff:

- Cover fueling area if possible.
- Use a perimeter drain or slope the pavement inward directing drainage to a holding tank.
- Pave fueling area with concrete rather than asphalt; asphalt can react with gasoline and other materials.
- Apply a suitable sealant that protects the asphalt from spilled fuels in areas where covering the asphalt is not feasible and the fuel island is surrounded by pavement.
- Install an oil/water separator to collect spills, if a dead-end holding tank is not used.
- Install vapor recovery nozzles to help control drips as well as air pollution.
- Discourage "topping off" of vehicle fuel or underground storage tanks. Topping off tanks increases the risk of spilling fuel onto the ground.
- Use secondary containment when transferring fuel from the tank truck to the fuel tank.
- Store and maintain appropriate spill cleanup materials in a location known to all employees near the fueling operation; ensure that employees are familiar with the site's spill control plan and proper spill cleanup procedures.
- Use absorbent materials on small spills and general cleaning rather than hosing down the area. Remove the absorbent materials promptly and dispose as hazardous waste.
- Use absorbent pillows in or around storm drain inlets to filter oily runoff. Use the pillows for short-term situations only.
- Obey all federal and state requirements regarding underground storage tanks or install above ground tanks.
- Avoid mobile fueling of industrial equipment around the facility; rather, transport the equipment to designated fueling areas.
- Train employees in proper fueling and cleanup procedures and have them check the area daily for vehicle or equipment leaks.

Limitations

- Oil/water separators are only effective if they are maintained regularly.
- The retrofitting of existing fueling areas to minimize stormwater exposure or spill runoff can be expensive. Good design should occur during the initial installation. An extruded curb up gradient from the fueling area is relatively inexpensive and prevents stormwater run-on.

Maintenance Requirements

- Regularly clean oil/water separators at the appropriate intervals.
- Keep ample supplies of spill cleanup materials on-site.

- Inspect fueling areas and storage tanks regularly.

Additional Information

Fueling vehicles or equipment or transferring fuels to a storage tank can be significant sources of pollution. Fuels carry contaminants that are harmful to humans and wildlife, such as heavy metals, toxic materials, and oil and grease. These contaminants are not easily removed by stormwater treatment controls. Consequently, source control is particularly important. Carefully designing the initial installation, retrofitting existing installations, and using proper spill control and cleanup procedures can also provide adequate control.

Design:
With new installations, design the fueling area to prevent stormwater run-on and spill runoff. Contour the site in such a way that it is contained. Covering the site is the best approach but may not be feasible if very large mobile equipment is to be fueled. Stormwater run-on can be diverted around the fueling area by an extruded curb; or with a "speed bump" if vehicle access is needed from this direction. Contain spills within the fueling area either by using a perimeter drain or by sloping the pavement inward with drainage to a holding tank. Pave the fueling area with concrete rather than asphalt, since asphalt will gradually disintegrate and wash from the site.

Spill Control:
The following spill control measures will reduce spilling or reduce the loss of spilled fuels from the site:

- Install vapor recovery nozzles.
- Avoid "topping off" tanks. Topping off tanks can increase the risk of spilling fuel onto the ground.
- Place secondary containment around the fuel truck when it is transferring fuel to the storage tank. The truck operator should remain with the truck while the transfer is in progress.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- Use dry methods to clean the fueling area whenever possible. If you periodically clean by using a pressure washer, place a temporary plug in the downstream drain and pump out the accumulated water. Properly dispose of the water.
- Train employees on proper fueling and cleanup procedures.

Designated Fueling Area:
If your facility has a large amount of mobile equipment and you currently use a mobile fuel truck to fuel the equipment, consider establishing a designated area for fueling. With the exception of tracked equipment such as bulldozers or small forklifts, most vehicles should be able to travel to a designated area with little lost time. Place temporary "caps", such as a bentonite mat or a spill mat, over nearby catch basins or manhole covers. If a spill occurs, the spilled fluid will not enter the storm drain. Upon completion, remove mat and dispose as hazardous waste.

Vehicle and Equipment Cleaning BMP 7

Description

Prevent or reduce the discharge of pollutants to stormwater from vehicle, equipment, and tool cleaning.

Approach

- Consider using off-site commercial washing and steam cleaning businesses.
- Use designated wash areas, that are covered and bermed to prevent contact with stormwater, to contain wash water.
- Discharge wash water to the sanitary sewer only after contacting local wastewater treatment plant staff to find out if pretreatment is required.
- Consider filtering and recycling wash water.

Limitations

Steam cleaning can generate significant pollutant concentrations and may require permitting, monitoring, pretreatment, and inspections. Contact local wastewater treatment plant staff for additional information. The guidelines described in this fact sheet are insufficient to address all the environmental impacts and compliance issues related to steam cleaning.

Maintenance Requirements

- Repair and patch berms as needed.
- Inspect and maintain holding tanks, oil/water separators, and on-site treatment or recycling units regularly.

Additional Information

- Washing vehicles and equipment outdoors or in areas where wash water flows onto the ground can pollute stormwater and ground water. If your facility washes or steam cleans a large number of vehicles or pieces of equipment, consider contracting out this work to a commercial business. These businesses are better equipped to handle and dispose of the wash water properly. Contracting out this work can also be economical by eliminating the need for a separate washing/ cleaning operation at your facility.
- Steam cleaning and washing should be conducted on-site only if the site is equipped to capture all the water and other wastes. If washing/cleaning must occur on-site, wash vehicles inside the building to direct the liquid to an area where it can be pretreated to remove pollutants and subsequently discharged to the sanitary sewer.
- Properly dispose of all sludge left in tanks, containers, trucks, and holding tanks. Avoid discharging sludge to the storm drain system. Limit the amount of water used and recycle wash water if possible.
- Conduct outside washing operations in a designated wash area. Make sure the area has the following:
  - ✓ It is designated clearly.
  - ✓ It is paved with concrete.
  - ✓ It is covered and bermed to prevent contact with stormwater.
  - ✓ It is sloped for wash water collection.
  - ✓ It is connected to the sanitary sewer or to a dead-end holding tank.
  - ✓ It is equipped with an oil/water separator.

Vehicle and Equipment Maintenance & Repair BMP 8

Description

Prevent or reduce the discharge of pollutants to stormwater from vehicle and equipment maintenance and repair by running a dry shop.

Approach

- Keep equipment and equipment yard clean, make sure oil and grease accumulations do not buildup excessively.
- Make sure incoming vehicles are checked for oil and fluid leaks.
- Use a drip pan underneath leaking vehicles and equipment when storing vehicles or performing maintenance.
- Store idle equipment under cover.
- Inspect equipment for leaks on a regular basis, particularly vehicles parked or stored long term.
- Use an indoor garage or vehicle maintenance area designed to prevent stormwater pollution. Avoid changing motor oil or performing equipment maintenance in non-appropriate areas.
- Use fewer solvents; switch to nontoxic chemicals or clean vehicles and equipment with a wire brush or bake oven when possible.
- Recycle greases, used oil or oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic fluids, and transmission fluids. Collect and store these recyclable materials separately. Provide secondary containment.
- Make sure oil filters are completely drained for at least 24 hours before recycling or disposing of them.
- Do not pour materials down storm drains or hose down work areas; sweep work areas instead.
- Use rags for small spills, a damp mop for general cleanup, and dry absorbent materials for larger spills. Avoid hosing down areas.
- Stencil “DO NOT DUMP WASTE” signs on storm drain inlets.
- Clean equipment yard storm drain inlet(s) regularly and especially after large storms.
- Train employees in spill prevention and cleanup procedures.

Limitations

- Vehicle and equipment maintenance and repair can generate significant pollutant concentrations and may require permitting, monitoring, pretreatment, and inspections. Contact your local wastewater treatment plant staff for additional information. The guidelines described in this fact sheet are insufficient to address all of the environmental impacts and compliance issues related to vehicle and equipment cleaning
- Space and time limitations may preclude all work being conducted indoors.
- It may be difficult to contain and clean up spills from vehicles or equipment brought on-site after working hours.
- Drain pans (usually 1 ft. X 1 ft.) are generally too small to contain antifreeze, so drip pans (3 ft. X 3 ft.) may have to be purchased or fabricated.
- Dry floor cleaning methods may not be sufficient for some spills.

- Engine leak identification may require using solvents.

Maintenance Requirements

Maintenance requirements should be low if guidelines are followed.

Additional Information

Vehicle or equipment maintenance and repair can be a potentially significant source of stormwater pollution. Activities that can contaminate stormwater include engine repair and service (parts cleaning, spilled fuel, oil, etc.), replacement of fluids, and outdoor equipment storage and parking (leaking engines).

Waste Reduction:

- Parts are often cleaned using solvents such as trichloroethylene, 1,1,1-trichloroethane or methylene chloride. Many of these cleaners are harmful and should be disposed of as hazardous waste. Cleaning without using liquid cleaners (e.g. using a wire brush) whenever possible reduces hazardous waste.
- Prevent spills and drips of solvents and cleansers to the shop floor.
- Use liquid cleaners at a centralized station so the solvents and residues stay in one area.
- Locate drip pans, drip boards, and drying racks to direct drips back into a solvent tank or fluid holding tank for reuse.

Safer Alternatives:

If possible, eliminate or reduce the amount of hazardous materials and waste by substituting non-hazardous or less hazardous materials:

- Use non-caustic detergents instead of caustic cleaning agents for parts cleaning (ask your supplier about alternative cleaning agents).
- Use detergent-based or water-based cleaning systems in place of organic solvent degreasers.
- Replace toxic solvents with nontoxic solvents.
- Choose cleaning agents that can be recycled.
- Reducing the number of solvents makes recycling easier and reduces hazardous waste management costs. Often, one solvent can perform a job as well as two solvents.

Recycling:

- Separating wastes allows for easier recycling and may reduce treatment costs. Collect leaking fluids in drip pans or containers and store separately for recycling. Keep hazardous and nonhazardous wastes separate. Avoid mixing recyclable used oil with non-recyclable solvents.
- Many products made of recycled (i.e., refined or purified) materials are available. Engine oil, transmission fluid, antifreeze, and hydraulic fluid are available in recycled form. Buying recycled products supports the market for recycled materials.

Good Housekeeping:

Consider using the following measures:

- Avoid hosing down your work areas. If work areas are hosed down, direct all wash water to the sanitary sewer. Contact local wastewater treatment

plant staff for more information.

- Keep a drip pan under the vehicle while you unclip hoses, unscrew filters, or remove other parts. Use a drip pan under any vehicle that might leak while you work on it to keep splatters or drips off the shop floor.
- Promptly transfer used fluids to the proper waste or recycling drums. Avoid leaving full drip pans or other open containers sitting out for extended periods of time.
- Do not pour liquid waste to floor drains, sinks, outdoor storm drain inlets, or other storm drains-or sewer connections. Used or leftover cleaning solutions, solvents, and automotive fluids and oil are toxic and should not be put in the sanitary sewer. Post signs at sinks to remind employees, and stencil outdoor drains to tell customers and others not to pour wastes down drains.
- Oil filters disposed of in trashcans or dumpsters can leak oil and contaminate stormwater. Drain excess oil by placing the oil filter in a funnel over a waste oil recycling or disposal collection tank for at least 24 hours before disposing of the filter. Oil filters can be recycled. Ask your oil supplier or recycler about recycling oil filters.
- Designate a special area to drain and replace motor oil, coolant, and other fluids where there are no connections to the storm drain or the sanitary sewer and drips and spills can be easily cleaned.
- Be careful with wrecked vehicles, as well as vehicles kept on-site for scrap or salvage. Wrecked or damaged vehicles often drip oil and other fluids for several days.
- Place drip pans under vehicles immediately after they arrive on the site, even if you believe that the fluids have leaked out before the vehicles reach the shop.
- Build a shed or temporary roof over areas where cars awaiting repair or salvage are parked. Build a roof over vehicles you keep for parts. Check vehicles and parts regularly for leaks.
- Drain all fluids, including air conditioner coolant, from wrecked vehicles and “part” cars. Also, drain engines, transmission, and other used parts.
- Store cracked batteries in a non-leaking secondary container, even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it in the containment area until you are sure it is not leaking.

Outdoor Container Storage of Liquids BMP 10

Description

Prevent or reduce the discharge of pollutants to stormwater from outdoor container storage areas by installing safeguards against accidental releases, installing secondary containment, conducting regular inspections, and training employees in standard operating procedures and spill cleanup techniques.

Approach

Protect materials from rainfall, run-on, runoff, and wind dispersal:

- Place tight fitting lids on all containers.
- Minimize stormwater run-on by enclosing the area or building a berm around it.
- Use a "doghouse" shed for storing small liquid containers. A doghouse shed consists of two solid structural walls and two canvas-covered walls. The floor is wire mesh and is above secondary containment.
- Use covered dumpsters for waste product containers.
- Store oil and hazardous materials to meet specific Federal and State standards including:
  - ✓ A Spill Prevention Control and Countermeasure (SPCC) Plan
  - ✓ Secondary containment
  - ✓ Integrity and leak detection monitoring
  - ✓ An emergency preparedness plan.
- Train employees on proper outdoor storage of liquids.
- Use safeguards against accidental releases:
  - ✓ Place drip pans or absorbent materials beneath all mounted taps and at all potential drip and spill locations during filling and unloading.
  - ✓ Install overflow protection devices to warn the operator or provide automatic shut down of transfer pumps.
- Install protection guards (bollards) around tanks and piping to prevent vehicle or forklift damage.
- Label containers or tanks clearly. Restrict access to valves to reduce human error.
- Store and maintain appropriate spill cleanup materials in a location near the storage area and train employees in spill cleanup procedures according to a site spill control plan.
- Berm or surround the tank or container with an appropriate secondary containment system. Dikes, liners, vaults, or double walled tanks (needs to be an impervious surface) are examples of secondary containment systems.
- Install an oil/water separator, if necessary, in facilities with "spill ponds." Facilities using spill ponds designed to intercept, treat, and/or divert spills should contact the appropriate regulatory agency regarding environmental compliance.
- Inspect tanks, containers, and containment holding tanks daily for leaks and spills. Replace leaking and/or deteriorating containers and collect all spilled liquids for proper disposal.

Limitations

Storage sheds often should meet building and fire code requirements.

Maintenance Requirements

Conduct routine weekly inspections.

Additional Information

Accidental releases of materials from above ground liquid storage tanks, drums, and dumpsters present the potential for contaminating storm and ground waters with many pollutants.

The following are the most common causes of unintentional releases:

- External corrosion and structural failure
- Installation problems
- Spills and overfills due to operator error
- Failure of piping systems (pipes, pumps, flanges, couplings, hoses, and valves)
- Leaks during pumping of liquids or gases from truck or railcar to a storage facility or vice versa.

Materials spilled, leaked or lost from storage containers and dumpsters may accumulate in soils or on surfaces and be carried away by stormwater runoff. Facilities should comply with fire codes regarding the storage of reactive, ignitable, or flammable liquids.

Container Management

To limit the possibility of stormwater pollution, containers used to store dangerous waste or other liquids should be kept inside a building unless this is impractical due to site constraints. If the containers are placed outside, the following procedures should be employed:

- Place dumpsters used to store items awaiting transfer to a landfill in a lean-to structure or otherwise covered. Keep dumpsters in good condition.
- Tell employees to avoid dumping liquids in dumpsters and make sure that dumpster lids are always closed.
- Place a fillet on both sides of the curb to facilitate moving the dumpster.
- Keep waste container drums in an area such as a service bay and ensure that the drums have tight fitting lids affixed at all times. If drums are kept outside, store them in a lean-to type structure, shed or wal- in container to keep rainfall from reaching the drums. The storage area should have berms and be paved with an appropriate material.

Facilities storing reactive, ignitable, or flammable liquids should comply with fire codes. In addition, the following practices should be employed:

- Place containers in a designated covered storage area.
- Ensure that designated areas are paved and free of cracks and gaps so that leaks and spills are contained.
- Surround liquid waste by a curb or dike. Provide an area large enough to contain 100% of the volume of the largest container plus the amount of rainwater equal to 25-year storm event. Contact the local fire department for more information.
- Slope the area, located inside the curb, to a drain. Install a dead-end holding tank in the drain for used oil or dangerous waste.
- Place containers used for removing liquid in a containment area. Use a drip pan at all times.
- Secure drums stored in areas where unauthorized persons may gain access

to prevent accidental spillage or unauthorized use.

- Ensure that employees trained in emergency spill cleanup procedures are present when dangerous waste, liquid chemicals, or other wastes are loaded or unloaded.

Operator Training/Safeguards

Employees should be familiar with the Spill Prevention Control and Countermeasure (SPCC) Plan and have the tools and knowledge to immediately begin cleaning up a spill if one should occur. Use engineering safeguards to reduce accidental releases of pollutants and prevent operator errors. The following safeguards can be used:

- Overflow protection devices on tank systems to warn the operator to shut down transfer pumps when the tank reaches full capacity.
- Protective guards (bollards) around tanks and piping to prevent vehicle or forklift damage.
- Clearly tagging or labeling all containers, tanks, and valves.

Secondary Containment

- Tanks should be bermed or surrounded by a secondary containment system with an impervious surface. Leaks can be detected more easily and spills can be contained when secondary containment systems are installed. Berms, dikes, liners, vaults, and double-wall tanks are examples of secondary containment systems. Roofing the containment system prevents rainwater from accumulating in open containers. Portable pumping systems can be used if water accumulates in open containers. Test the water to determine if the water contains hazardous chemicals that require treatment.
- Diking is one of the best protective measures against stormwater contamination. Containment dikes are berms or retaining walls that are designed to hold spills. Diking is also effective for preventing stormwater contamination in loading and unloading areas where above ground storage tanks and railcar or tank trucks are located. The dike surrounds the area and holds the spill, keeping spill materials separated from stormwater. Diking can be used in any industrial facility, but it is most commonly used for controlling large spills or releases from liquid storage transfer areas.
- Containment dikes should be large enough to contain 100% of the volume of the largest container plus the amount of rainwater equal to a 25-year storm event. Contact the local fire department for more information. For trucks, diked areas should be capable of holding an amount equal to the volume of the tank truck compartment.
- Dike construction material should be strong enough to safely hold spilled materials. Dike materials can consist of earth, concrete, synthetic materials, metal, or other impervious materials. Avoid using metal containers, concrete, and some plastics for dike materials if strong acids or bases will be stored outside. These dike materials could react with strong acids or bases if a spill occurs. Some of the more active organic chemicals may require special liners for dikes.

- Dikes should be inspected during and after significant storms or spills to check for washouts or overflows. Earthen dikes may require special maintenance of vegetation. Dike erosion, soggy areas, or changes in vegetation indicate problems with earthen dike structures. Damaged areas should be patched and stabilized immediately.
- Curbing is common at many facilities in small areas where handling and transfer of liquid materials occur. Curbing is usually small scale and does not contain large spills like diking does. Curbing can redirect contaminated stormwater away from the storage area and can be used in areas where liquid materials are transferred from one container to another. Asphalt is a common material used for curbing; however, earth, concrete, synthetic materials, metal, or other impenetrable materials may also be used. Curbs should have manually controlled pump systems rather than common drainage systems for collection of spilled materials. The curbed area should be inspected regularly to clear clogged debris and maintained frequently to prevent overflow of any spilled materials.

Maintenance

Conduct weekly inspections for the following:

- Check for accumulated rainfall in the secondary containment system (remove and discharge properly).
- Check for external corrosion and structural failure.
- Check for spills and overfills due to operator error.
- Check for failure of piping system (pipes, pumps, flanges, coupling, hoses, and valves).
- Check for leaks or spills during pumping of liquids or gases from truck or rail car to a storage facility or vice versa.
- Inspect new tank or container installation for loose fittings, poor welding, and improper or poorly fitted gaskets.
- Inspect tank foundations, connections, coatings, and tank walls and piping system. Look for corrosion, leaks, cracks, scratches, and other physical damage that may weaken the tank or container system. Problems or potential problems should be corrected as soon as possible.

Inspect tank systems and test the integrity of the tanks regularly. Problem areas can often be detected by inspecting the tanks frequently. Registered and specifically trained professional engineers can identify and correct potential problems such as loose fittings, poor welding, and improperly or poorly fitted gaskets on newly installed tank systems.

Outdoor Storage of Raw Materials BMP 12

Description

Prevent or reduce the discharge of pollutants to stormwater from outdoor material and product storage areas by enclosing or covering materials, installing secondary containment, and preventing stormwater run-on.

Approach

Protect materials from rainfall, run-on, runoff, and wind dispersal:

- Store material indoors.
- Cover the storage area with a roof.
- Build a berm around the area to minimize stormwater run-on.
- Cover the material at all times with a temporary covering made of polyethylene, polypropylene, or hypalon and secure it with weighted tires or sandbags.
- Use a "doghouse" shed for storing small liquid containers. A doghouse shed consists of two solid structural walls and two canvas-covered walls. The floor is wire mesh and is above secondary containment.
- Sweep parking lots or other areas near bulk materials storage areas periodically to remove debris that has blown or washed from the storage area.
- Sweep paved storage areas monthly. Do not hose down the area to a storm drain. Dispose of waste in trash.
- Keep liquids in a designated area on a paved surface within secondary containment.
- Keep outdoor storage containers in good condition, check regularly for leaks and ensure storage container lids are on tightly.
- Use catch basin sand filters.
- Stock cleanup materials such as brooms, dustpans, and vacuum sweepers near the storage area.
- Use drip pans and/or absorbent materials where needed.

Limitations

- Space limitations may prevent storing some materials indoors.
- Storage sheds should meet building and fire code requirements.

Maintenance Requirements

Berm and curbing repair and patching may be necessary.

Additional Information

- Raw materials, by-products, finished products, containers, and material storage areas exposed to rain or runoff can pollute stormwater. Stormwater can become polluted when contaminants in raw materials wash off or dissolve into water or runoff.
- Slope paved areas to minimize the pooling of water on the site. A minimum slope of 1.5 % is recommended. Minimizing water pooling is particularly important with materials that may leach pollutants into stormwater or ground water, such as compost, logs, and wood chips. Prevent run-on and runoff with berms or curbing.
- Place curbing along the perimeter of the area to prevent the run-on of uncontaminated stormwater from adjacent areas and the runoff from stockpile areas. Design the storm drain system to minimize catch basins in

the interior of the area as catch basins in the interior tend to fill rapidly with manufacturing material. The area should be sloped either to drain stormwater to the perimeter where it can be collected or to internal drainage alleyways where material is not stockpiled. If the raw material, by-product, or product is a liquid, see BMP 10, Outdoor Container Storage of Liquids, for more information.

Waste Handling and Disposal BMP 13

Description

Prevent or reduce the discharge of pollutants to stormwater from waste handling and disposal by tracking waste generation, storage, and disposal; reducing waste generation and disposal through source reduction, reuse, and recycling; and preventing run-on and runoff from waste management areas.

Approach

Prevent waste generation on your site:

- Maintain usage inventory.
- Use substitute materials with less toxic substances.
- Modify processes or equipment to generate less waste.
- Plan and sequence production.

Track waste generated from your site:

- Characterize every waste stream.
- Evaluate the process that generates the waste.
- Prioritize waste streams using: manifests, biennial reports, permits, environmental audits, SARA Title III reports, emission reports, and NPDES monitoring reports.
- Prepare inventory reports.
- Maintain data on chemical spills.
- Track emissions.
- Check for expiration dates of stored chemicals.
- Review design data: process flow diagram, materials and applications diagram, piping and instruction, equipment list, and plot plan.
- Review raw material and production data: composition sheets, material safety data sheets (MSDS), batch sheets, product or raw material inventory records, production schedule, and operator data log.
- Review economic data:
  - ✓ Waste treatment and disposal costs
  - ✓ Product utility and economic costs
  - ✓ Operation and maintenance labor costs.
- Recycle materials whenever possible.
- Maintain a list of materials and the amounts of materials that have been disposed.
- Use waste segregation and separation.
- Cover storage containers with leakproof lids and cover all waste piles.
- Install a paved floor with curbing to contain spills in waste storage areas. Slope the floor to direct flow to a lined holding tank to prevent spilled liquids and/or contaminants from mixing with surface and ground water.
- Cover, enclose, or berm industrial wastewater management areas whenever possible to prevent contact with run-on or runoff.
- Equip waste transport vehicles with anti-spill equipment.
- Completely drain empty drums and sealed them properly so they are watertight; ship them as soon as possible to a drum reconditioner.
- Inspect storage containers for leaks and spills regularly. Replace any leaking and/or deteriorating containers.

- Ensure that sediments or wastes are prevented from being tracked off-site.
- Sweep and clean the storage area monthly. If the storage area is paved, avoid hosing down the area to a storm drain.
- Dispose of rinse and wash water from contained cleaning into a sanitary sewer in accordance with local wastewater treatment plant requirements.
- Store and maintain appropriate spill cleanup materials in a location known to all employees; ensure that employees are familiar with the site spill control plan and proper cleanup procedures.
- Stencil storm drains on the facility's property with "DO NOT DUMP WASTE."
- For a quick reference on disposal alternatives for specific wastes, see Appendix A, Disposal Alternatives table.

Limitations

Hazardous wastes that cannot be reused or recycled should be disposed of by a licensed hazardous waste handler.

Additional Information

Industrial waste management activities, such as waste pumping, treatment, chemicals storage, mixing, aeration, clarification, and solids dewatering occur in areas that can contaminate stormwater. Examples of these areas are landfills, waste piles, wastewater and solid waste treatment and disposal, hazardous and nonhazardous waste storage, and land application.

Waste Reduction

- Waste spilled, leaked, or lost from waste management areas or outside manufacturing activities may build up in soils or in other surfaces and be carried away by stormwater runoff. Likewise, liquid waste from lagoons or surface impoundments can overflow to surface waters or soak into the soil and contaminate surface or ground water. Reducing wastes from manufacturing activities is the best way to reduce the potential of stormwater contamination from waste management areas.
- Reducing the amount of industrial waste generated on a site can be accomplished by using source controls:
  - ✓ Production planning and sequencing
  - ✓ Process or equipment modification
  - ✓ Raw material substitution or elimination
  - ✓ Loss prevention and housekeeping
  - ✓ Waste segregation and separation
  - ✓ Closed loop recycling.
- Starting a waste reduction program is economically beneficial because of reduced raw material purchases and lower waste disposal fees. Also, implementing a material tracking system to increase awareness about material usage can reduce spills, reducing the amount of waste produced.
- To reduce wastes at your facility, first assess process activities where wastes can be reduced. Assessing process activities will not only help determine where waste can be eliminated or reduced, but also where emissions and environmental damage can be minimized. Assessing process activities involves collecting process specific information, setting pollution prevention targets, and developing, screening, and selecting waste reduction options for further study.

Spill/Leak Control

- Prevent waste from contaminating stormwater by inspecting waste management areas for leaking containers or spills. Corroded or damaged containers can leak at any time. Transfer waste from these damaged containers into safe containers.
- Ensure that all containers are properly sealed with tight fitting lids. Cover dumpsters to prevent rain from washing waste out of holes or cracks in the bottom of the dumpster. Repair leaking equipment (valves, lines, seals, or pumps) promptly.
- Ensure that vehicles that transport waste have spill prevention equipment. Examples of spill prevention equipment on vehicles are baffles for liquid waste or sealed gates and spill guards for solid waste.
- Loading or unloading wastes can contaminate stormwater when the wastes are spilled during the transfer. Operate loading system to minimize spills and fugitive emission losses (such as dust or mist). Using vacuum transfer systems can also minimize waste loss.

Run-on and Runoff Prevention

Prevent stormwater run-on from entering the waste management area by enclosing the area or building a berm around the area. In addition, the following source controls can also reduce stormwater pollution:

- Protect waste materials from direct contact with rain.
- Move the activity indoors after ensuring that all safety concerns such as fire hazards and ventilation are addressed.
- Cover the area with a permanent roof.
- Cover waste piles with temporary covering material such as reinforced tarpaulin, polyethylene, polyurethane, polypropylene or hypalon.
- Store waste materials on a paved surface that is bermed or drains to a dead-end holding tank.
- To avoid tracking materials off-site, keep the waste management area clean by sweeping and cleaning up spills immediately. Vehicles should never drive through spills. If necessary, wash vehicles in designated areas before the vehicles leave the site. Collect and dispose of the wash water properly.

Minimizing polluted stormwater runoff from on-site land application of industrial waste can be accomplished by implementing the following guidelines:

- Avoid applying waste to the site when it is raining, when the ground is frozen, or when the ground is saturated with water.
- Grow vegetation on land disposal areas to stabilize soils and reduce the volume of surface water runoff from the site.
- Maintain adequate barriers between the land application site and the receiving waters. Planted strips are particularly good.
- Use erosion control techniques. Refer to construction site BMPs.
- Perform routine maintenance to ensure the erosion control or site stabilization measures are working.
- For specific information on land applying industrial wastes, contact the

nearest regional office of the Idaho Department of Environmental Quality.

Building and Grounds Maintenance BMP 15

Description

Prevent or reduce the discharge of pollutants to stormwater from buildings and grounds maintenance by washing and cleaning up with as little water as possible, preventing and cleaning up spills immediately, keeping debris from entering the storm drains, and maintaining the stormwater collection system.

Approach

- Leave or plant drought-tolerant vegetation to reduce water, fertilizer, and pesticide needs.
- Use pesticides and fertilizers carefully. Train employees on proper pesticide use.
- Store and maintain appropriate spill cleanup materials in a location known to all employees; ensure employees are trained in the site spill control plan and spill cleanup procedures.
- Implement integrated pest management (IPM) techniques, where appropriate.
- Sweep parking lots, storage areas, driveways, and sidewalks monthly to collect dust, waste, and debris. Avoid hosing down the area to a storm drain.
- Clean the storm drain system (roof gutters, inlets, lines, catch basins, etc.) regularly.
- Dispose of wash water, sweepings, and sediments properly. See Appendix A for disposal alternatives.
- Ensure that rooftop drains drain directly to your on-site storm drain system or a grass-covered area.
- For a quick reference on disposal alternatives for specific wastes, see Appendix A.

Additional Information

Common maintenance activities can generate wastes that should be disposed of properly. Buildings and grounds maintenance involves taking care of landscaped areas around a facility, cleaning parking lots and pavement (other than in the area of industrial activity), and cleaning the storm drain system. Painting and other building repairs are covered in BMP 16, Building Repair, Remodeling, and Construction.

Pesticide and Fertilizer Management

- Landscape maintenance can involve using a large amount of pesticides or fertilizers. Properly using these chemicals reduces the risk of stormwater contamination.
- Avoid applying these chemicals during the wet season as they may be carried away from the site by the next storm.
- When irrigating landscaped areas, avoid over-watering. Over-watering wastes water and increases the risk that any water that has been contaminated with pesticides or fertilizers will flow into a storm drain.
- If you have large vegetated areas, consider using integrated pest management (IPM) techniques to reduce pesticide use.
- Properly store pesticides and application equipment and dispose of the

used pesticide containers responsibly, consistent with state regulations. Personnel who use pesticides should be trained in their use.
- The Idaho Department of Agriculture licenses pesticide dealers, certifies pesticide applicators, and conducts on-site inspections. Contact the Idaho Department of Agriculture (208/332-8600) for more information.

Parking Area and Storm Sewer Maintenance

- Evaluate any parking area that drains to the same storm drain system for suitable BMPs. Sweeping the parking area periodically and cleaning the catch basins (if they are part of the drainage system) are suitable BMPs. A vacuum sweeper is the best method of sweeping, rather than mechanical brush sweeping. Mechanical brush sweeping does not remove fine particulates as effectively as a vacuum sweeper.
- Catch basins in parking lots generally need to be cleaned every 6 to 12 months, or whenever the holding tank is 1/2 full. A holding tank that is more than 1/2 full is not effective at removing additional particulate pollutants from the stormwater. If the storm drain lines have a low gradient, (less than 0.5 feet in elevation drop per 100 feet of line), material may settle in the lines during small, frequent storms. If you have not cleaned the storm drain system recently, check the lines. If the lines are not cleaned, the catch basins will likely fill up (during the next significant storm) with material washed from the lines. Also, install "turndown" elbows or similar devices on the outlets of the catch basins to retain floatables or oil and grease.
- Sediments from parking areas and storm sewer maintenance are generally low in metals and other pollutants. However, to ensure that metals or other pollutants are not present, the material should be tested. If contaminant concentrations are high, then other BMPs may be needed to eliminate or reduce pollutants.
- Using a vactor truck to clean the storm drain system will generate dirty water. This water should be disposed of properly.

Storm Drain Stenciling

Clearly mark the storm drain inlets, either with a color code (to distinguish from process water inlets if present) or with a painted stencil. The stencil should read "DO NOT DUMP WASTE." Ensuring that storm drain inlets are clearly marked will reduce inadvertent dumping of liquid wastes.

Employee Training BMP 17

Description

Employee training, like equipment maintenance, is not so much a best management practice as it is a method by which to implement BMPs. Train employees in these BMPs because a single employee's mistake can lead to a costly pollution incident. Train employees to routinely inspect industrial activities and equipment that may be exposed to stormwater. A weekly walk-through can help identify potential difficulties before they become major problems.

Approach

Consider the following when training employees:

- Integrate stormwater training with existing training programs that are required for your business by other regulations such as the Hazardous Waste Operations and Emergency Response (HAZWOPER) standard (29 CFR 1910.120) and the Spill Prevention Control and Countermeasure (SPCC) Plan (40 CFR 112).
- Use Appendix A, Disposal Alternatives table, to train employees in proper and consistent methods for disposal.
- Check employees' work practices periodically to ensure that BMPs are being properly implemented. Post informational and reminder signs and stencil "DO NOT DUMP WASTE" messages at storm drains.
- Be aware that site owners are also responsible for customer activities. Ask customers to avoid discarding liquids into trashcans or liquids or solids into storm drains.

Spill Prevention Control and Cleanup BMP 18

Description

Prevent or reduce the discharge of pollutants to stormwater from accidental spills by preventing spills and leaks, quickly responding to control any spill, and conducting appropriate and thorough cleanups.

Approach

- Maintain a regular inspection and repair schedule to correct potential spill situations before they occur.
- Prepare and post spill response procedures in areas that might be exposed to stormwater.
- Train all employees in proper spill response procedures.
- Notify authorities, as required in the emergency response plan, if a hazardous material spill has occurred on your site.
- Contain spills immediately to prevent them from spreading. Use rags (store used rags in a covered rag bin) to clean up small spills, dry absorbent material, or wet-dry vacuums for nonvolatile materials for larger spills. In addition, you may have to plug storm drain inlets to keep a spill from entering the storm drain system. Keep temporary plugs on hand and train employees in their use.
- Stencil storm inlets so employees are aware of areas to protect during spills.

Limitations

An experienced spill cleanup company may be required for certain types of spills.

General Information

- The best way to prevent pollutants from reaching stormwater is to prevent spills and leaks, maintain a regular inspection and repair schedule, and correct potential spill situations before a spill can occur. In addition, you should respond quickly when a spill occurs. Develop spill procedures that address all circumstances from small, minor releases to large emergency spills, including whom to call for response before the situation gets out of hand. These procedures should be facility-specific.
- Small spills are those that can be wiped up with a shop rag. Avoid putting wet rags in a dumpster with the shop trash. Instead, store them in a covered ragbin. A ragbin similar to the type service stations use is suitable. Do not saturate rags with gasoline, solvents, or other volatile liquids unless appropriate storage facilities are present and allowed by local code.
- Medium spills are too large to wipe up with a rag and require more attention. Contain and soak up the liquid using dry absorbent material such as vermiculite, specially prepared sawdust, or cat litter. Absorbent “snakes” may be used as temporary booms to contain and soak up the liquid. Sweep up the used absorbent and snakes and dispose of them appropriately. Another option is to use a wet-dry shop vacuum cleaner to collect spills, and dispose of the liquid with your liquid or hazardous wastes. Do not use vacuums for gasoline, solvents or other volatile fluids because the enclosed vacuum may become an explosion hazard.

- Large spills should first be contained and then cleaned up. For food waste or other nonhazardous liquid spills, contain and clean up the liquid. Minimize the wash water used in cleanup. Shut off or plug storm drain inlets or sewer inlets where the spill may enter. If necessary, keep temporary plugs on hand to fit the inlets and train employees on how to use them. For hazardous materials spills, immediately contact the local fire department and then initiate emergency procedures.

Auto Repair and Maintenance Controls BMP 20

Description

Many common vehicle maintenance and washing routines contribute to environmental pollution. Businesses that are unable to comply with the guidelines should have their vehicles washed at a commercial establishment that conforms to the specifications, or by a mobile washer that conforms to specifications.

General Information

Interior Shop Area Cleaning

- Do not hose down your shop floor into streets or parking lots. It is best to dry sweep regularly.
- Use nontoxic cleaning products. Baking soda paste works well on battery heads, cable clamps and chrome; mix the soda with a mild, biodegradable dishwashing soap to clean wheels and tires; for windows, mix white vinegar or lemon juice with water.
- To reduce or eliminate the generation of waste, fix sources of drips or leaks where possible. Routinely inspect the engine compartment, and regularly replace worn seals on equipment.
- To avoid or control spills and leaks do the following:
  - ✓ Prepare and use easy to find spill containment and cleanup kits. Include safety equipment and cleanup materials appropriate to the type and quantity of materials that could spill.
  - ✓ Pour kitty litter, sawdust, or cornmeal on spills.
  - ✓ NEVER sweep or flush wastes into a sanitary sewer or storm drain.
- Change fluids carefully. Use a drip pan to avoid spills. Prevent fluid leaks from stored vehicles. Drain fluids such as unused gas, transmission and hydraulic oil, brake and radiator fluid from vehicles or parts kept in storage. Implement simple work practices to reduce the chance of spills.
- Use a funnel when pouring liquids (like lubricants or motor oil) and place a tray underneath to catch spills. Place drip pans under the spouts of liquid storage containers. Clean up spills immediately.

Fleet Vehicle Washing

It is allowable to rinse down the body of a vehicle with just cold water without implementing any BMPs. Designated wash areas should be well marked with signs indicating where and how washing should be done. Any inlets to the storm drain should be marked DUMP NO WASTE.

If you use soaps or detergents, or heated water, or if you wash/rinse the engine compartment or the underside of the vehicle, you should use one of the following BMPs:

- Use a storm drain cover or other effective method of preventing all wash and rinse water from entering a storm drain or other drainage feature. All runoff from the activity should be collected for proper disposal in a sanitary sewer. There are several products commercially available that enable collection of runoff. This guideline also applies to mobile vehicle washing services.

- Wash water runoff and excess soapy water should be collected and pumped or otherwise discharged as follows:
  - ✓ Sanitary sewer - Pump into sanitary system clean out/sink or into an on-site private sanitary sewer manhole; verify with the facility manager that it is not a storm drain manhole. Solids separation will be required before disposal to prevent clogging the system.
  - ✓ Landscape or soil area (Note: Be aware that soapy wash water may adversely affect landscaping) - Discharge should be directed to an area sufficient to contain all the water. Discuss the practices with property owner. Acceptable for minimum discharge flows only. Repetitive use of the same area or excessive wash volume to the same area may be illegal.
- If disposal to the sanitary sewer and/or to a landscaped area is not possible, then contract with a company capable of hauling the wash water off-site to an authorized disposal site.
- There may be some unavoidable evaporation from paved surfaces. If a significant amount of washwater runoff evaporates at the site before it can be collected, and the site is routinely used for this purpose, the paved area itself should be cleaned every six months, or at the end of the wash service contract, whichever comes first. Any wash water used during this procedure should be collected and discharged to a sanitary sewer.

Cleaning/Degreasing Engines, Equipment, and Auto/Truck Drive Trains

- Clean with or without soap, no storm drain disposal is allowed.
- Requires treatment before discharge to the sanitary sewer system is allowed. Because it is likely that pollutants (petroleum products and metals) are concentrated in these wash waters, the local wastewater treatment plant will require some type of treatment before discharge into the sanitary sewer. Contact the local wastewater treatment plant for requirements and additional information.
- If a sanitary sewer is not available or treatment of the washwater is not feasible, then contact a company capable of hauling (i.e., tanker truck) the washwater off-site to dispose of it at an authorized site.