Weber State University

Storm Water Management Plan

August 2018

WEBER STATE UNIVERSITY

Prepared by
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Consulting Engineers

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STORM WATER MANAGEMENT PLAN

for

WEBER STATE UNIVERSITY

October 2018

prepared by

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LIST OF ACRONYMS

BMP	Best Management Practice
DEQ	Department of Environmental Quality
DWQ	Division of Water Quality
EPA	Environmental Protection Agency
HHW	Household Hazardous Waste
IDDE	Illicit Discharge Detection and Elimination
LID	Low Impact Development
MOU	Memorandum of Understanding
MS4	Municipal Separate Storm Sewer
NOI	Notice of Intent
NOT	Notice of Termination
PUAB	Public Utilities Advisory Board
RSI	Registered Storm Water Inspector
RSR	Registered Storm Water Reviewer
SOP	Standard Operating Procedure
SSO	Sanitary Sewer Overflows
SWMA	Storm Water Maintenance Agreement
SWMP	Storm Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan
TMDL	Total Maximum Daily Load
UDEQ	Utah Department of Environmental Quality
UDOT	Utah Department of Transportation
UPDES	Utah Pollutant Discharge Elimination System
USGS	United States Geological Survey

Introduction

CHAPTER 1

STORM WATER MANAGEMENT PLAN

CHAPTER 1

INTRODUCTION

WEBER STATE UNIVERSITY
STORM WATER MANAGEMENT PLAN

Purpose

The purpose of the Storm Water Management Plan (SWMP) is to revise, implement, and enforce a plan designed to reduce the discharge of pollutants from the Municipal Separate Storm Sewer (MS4), protect water quality, and satisfy the appropriate water quality requirements of the *Utah Water Quality Act*. The development and implementation of the SWMP is to fulfill requirements under the State of Utah Small MS4 General UPDES Permit No. UTR090000 (hereafter referred to as the General Permit) in accordance with Section 402(p)(3)(B) of the *Federal Clean Water Act*, and the State of Utah Storm Water Regulations (UAC R317-8-3.9). Weber State University is a renewal permittee and was required to submit a revised SWMP document by July 1, 2016.

This General Permit applies to cities and other public bodies with populations less than 100,000 located within or partially within, an urbanized area and that operate a MS4 which discharges to a water of the State of Utah. Urbanized areas are defined as population centers with greater than 50,000 people and densities of at least 1,000 people per square mile, and are based on the 2010 census. Weber State University (Permittee) falls under this requirement by way of being located in Weber County.

Responsible Person(s)

The responsible person for the Storm Water System is the current Assistant Vice President for Facilities Management:

Mark Halverson
1410 Ed Wilson St., Dept. 2301
Ogden, UT 84408-2301
Office: (801) 381-8269

The contact person for the Storm Water System is the current Director of Environmental Health and Safety:

Rich Wade
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Ogden, UT 84408-2601
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SWMP Implementation

Section 4.0 of the General Permit states: “Permittees covered under the previous General Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems, i.e. Renewal Permittees, are expected to have fully implemented all of the following six minimum control measures as required in the previous Permit term. A Renewal Permittee must continue to

implement its SWMP designed to reduce the discharge of pollutants from the MS4 as described in the application and submittals provided in accordance with the previous MS4 General Permit, while updating its SWMP document pursuant to this Permit. This Permit does not extend the compliance deadlines set forth in the previous MS4 General Permit unless specifically noted. All requirements contained in this renewal Permit are effective immediately unless an alternative timeframe is indicated."

SWMP Documentation, Review, and Modification

Section 4.1.2 of the General Permit states "Each Permittee shall have an ongoing documentation process for gathering, maintaining, and using information to conduct planning, set priorities, track the development and implementation of the SWMP, evaluate Permit compliance/non-compliance, and evaluate the effectiveness of the SWMP implementation." In an effort to comply with this requirement the University maintains a storm water map which shows all the existing piping, culverts, conveyance structures, catch basins, manholes, and outfalls. This map is updated on an ongoing basis and will be used to ensure permit compliance. The University will also begin using documents to track inspections required for permit compliance. These inspection forms and all other documentation used to show permit compliance will be kept in one central location, either in hard-copy files or electronically, where all employees can access them. All documentation will be kept for the entire permit term (five years).

This SWMP includes the Best Management Practices (BMPs) and measurable goals intended to reduce the quantity of storm water and the discharge of pollutants to the storm water system. The SWMP will be reviewed, at a minimum, on an annual basis, and any changes or modifications will be described and submitted to the Division of Water Quality as part of the Annual Report. This review will include the following:

- A review of the status of program implementation and compliance;
- A review of any revision or change of BMPs during the year and an assessment of the effectiveness of such revision;
- A review of all documentation collected including; number and type of inspections performed, official enforcement actions taken, and types of public education activities implemented;
- An overall assessment of the goals and direction of the SWMP and effectiveness of BMPs;
- A review of questions asked on the Annual Report and address deficient areas as part of the SWMP; and
- A review of the capital and operating and maintenance expenses and a determination of funds needed to comply with this requirement of the *Clean Water Act*.

Changes adding (but not subtracting or replacing) components, controls, or requirements to the SWMP document may be made at any time upon written notification to the Division of Water Quality. Changes replacing an ineffective or unfeasible BMP specifically identified in the SWMP document with an alternate BMP may be adopted any time provided the analysis is clearly outlined and subsequently approved by the Division of Water Quality. Further procedures for removing or replacing an ineffective or unfeasible BMP can be found in section 4.4 of the General Permit if the situation arises.

Staffing and Resource Allocations

Management and oversight of the SWMP is funded by the Facilities Management budget. Currently the University is not working with any other entities to implement the SWMP. The University is a member of a county storm water coalition in order to meet its public education goals.

Within the University, many staff will contribute toward meeting permit requirements. Currently the SWMP is primarily the responsibility of the Department of Environmental Health and Safety. In order for the SWMP to be successful, the support of the University administration is needed. Section 4.1.2.2 of the General Permit states that "Each Permittee must secure the resources necessary to meet all requirements of this permit. Each Permittee must conduct an annual analysis of the capital and operation and maintenance expenditures needed, allocated, and spent as well as the necessary staff resources needed and allocated to meet the requirements of this permit, including any development, implementation, and enforcement activities required. Each Permittee must submit a summary of its fiscal analysis with each annual report." University Administrators and the President's Council are primarily responsible for meeting the financial and administrative obligations required to make the Storm Water Management Plan successful.

System Overview

Established in 1889, Weber State University is located on the east bench of the Wasatch Mountains in Weber County. Enrollment is approximate 27,000 students with about 820 staff members. Weber State's Ogden campus covers more than 500 acres, houses 63 buildings and features residence halls that accommodate more than 1,000 students. A USGS map showing the campus is shown at the end of this section.

The storm drain system is composed of pipes, detention basins, and ditches. All drainage within the campus flows toward the west and into Ogden City's storm drain system. The overall concerns, priorities, and goals of the university and this SWMP are to protect the water quality of the storm water collected on campus.

Program Summary

Weber State University is a renewal permittee and plans to implement a program similar to what other MS4s have implemented for addressing the Six Minimum Control Measures. An outline of the proposed program and some future goals is found below:

- Public Education and Outreach
  - Participate in a county storm water coalition
  - Educational material such as: website
  - Training for university employees and contractors
  - Provide information to university departments

- Public Involvement and Participation
  - Storm drain inlet labeling projects

- Cleanup projects (student or staff)
- Give the public an opportunity to provide input during annual public meeting before policies and procedures or plans impacting storm water are adopted in President's Council Meetings.

- Illicit Discharge Detection and Elimination
  - Keep a storm drain system map in order to track illicit discharges and improper disposal of unapproved materials
  - Adopt a policy prohibiting illicit discharges and defining penalties for violations
  - Track illicit discharges in a geo-referenced computer system

- Construction Site Storm Water Runoff Control
  - Revise as necessary a construction site runoff Policy and land disturbance guidelines for sites greater than one acre
  - Perform a detailed review for sites greater than one acre or sensitive lands

- Long-Term Storm Water Management in New Development and Redevelopment (Post-Construction Storm Water Management)
  - Program that requires the evaluation of Low Impact Development measures
  - Standard that requires projects to manage rainfall on-site and prevent the off-site discharge of all rainfall event's less than or equal to the 90^{th} percentile rainfall event.

- Pollution Prevention and Good Housekeeping
  - Street sweeping program in place
  - Storm drain system maintenance program

The SWMP has been developed to meet the terms of the UPDES permit and consists of six minimum control measures established by EPA for Phase II storm water discharges, as well as meeting the special storm water needs within the University. Implementation of these control measures are expected to result in a reduction in the amount of pollutants discharged into receiving water bodies. These control measures are addressed in separate chapters.

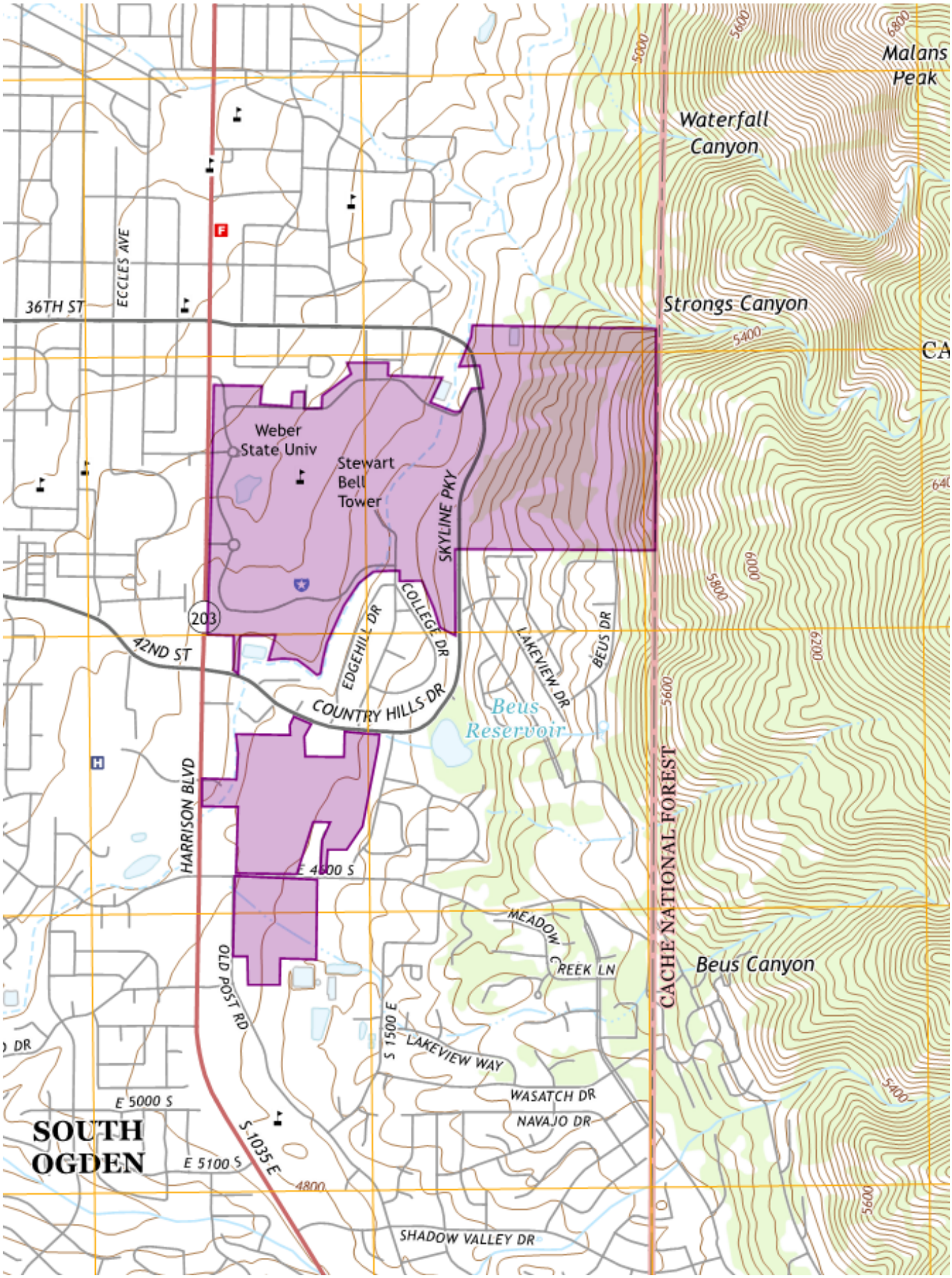
Each control measure contains tasks, measurable goals, and BMPs necessary for proper storm water management. The measurable goals contain specific tasks for meeting the objective of that control measure. The measurable goals are mandated by the EPA and a community must be showing improvement over time with these goals. This SWMP is intended to be continually revised (i.e., a living document) with tasks, goals, and BMPs added and deleted as new and better management practices arise and other management practices are found to be ineffective.

Minimum Control Measures (MCMs)

The following six chapters of this document cover the Minimum Control Measures established by the EPA. All entities must address these measures. The Six Minimum Control Measures are as follows:

1. Public Education and Outreach on Storm Water Impacts
2. Public Involvement/Participation
3. Illicit Discharge Detection and Elimination (IDDE)
4. Construction Site Storm Water Runoff Control
5. Long-Term Storm Water Management in New Development and Redevelopment (Post Construction Storm Water Management)
6. Pollution Prevention and Good House Keeping for Municipal Operation

Each MCM is discussed in the order given with the associated tasks, measurable goals, BMPs, required resources, and the estimated implementation schedule. Much of the introductory information for each Minimum Control Measure has been gathered from the EPA's Storm Water Phase II Final Rule Fact Sheet Series which is an excellent resource for small MS4 operators. The fact sheets can be found at the following website: https://www.epa.gov/npdes/stormwater-phase-ii-final-rule-fact-sheet-series.


Malans Peak
Waterfall Canyon
Strongs Canyon
36TH ST
ECCLES AVE
Weber State Univ
Stewart Bell Tower
SKYLINE PKY
COLLEGE DR
EDGEHILL DR
LAKEVIEW DR
BEUS DR
42ND ST
COUNTRY HILLS DR
Beus Reservoir
HARRISON BLVD
E 4800 S
MEADOW CREEK LN
Beus Canyon
CACHE NATIONAL FOREST
OLD POST RD
S 1500 E
LAKEVIEW WAY
WASATCH DR
NAVAJO DR
E 5000 S
SOUTH OGDEN
E 5100 S
S-1035 E
SHADOW VALLEY DR
203

Public Education and Outreach

CHAPTER 2

STORM WATER MANAGEMENT PLAN

CHAPTER 2

PUBLIC EDUCATION AND OUTREACH

PUBLIC EDUCATION AND OUTREACH

The Public Education and Outreach program addresses increasing public and professional awareness of water quality concerns and BMPs that may be implemented with respect to protection of the storm water within Weber State University. These education and outreach training programs will introduce the UPDES program and focus on known contaminant sources and control of these sources.

An informed and knowledgeable community is crucial to the success of a storm water management program since it helps to ensure the following:

- ***Greater support*** for the program as the public gains a greater understanding of the reasons why it is necessary and important. Public support is particularly beneficial when operators of small MS4s attempt seek volunteers to help implement the program.

- ***Greater compliance*** with the program as the public becomes aware of the personal responsibilities expected of them and others in the community, including the individual actions they can take to protect or improve the quality of area waters.

Three main actions areas are important for successful implementation of a public education and outreach program:

- ***Forming Partnerships*** - Operators of regulated small MS4s are encouraged to utilize partnerships with other governmental entities to fulfill this minimum control measure's requirements. It is generally more cost-effective to use an existing program, or to develop a new regional or state-wide education program, than to have numerous operators developing their own local programs. Operators also are encouraged to seek assistance from non-governmental organizations (e.g., environmental, civic, and industrial organizations), since many already have educational materials and perform outreach activities.

- ***Using Educational Materials and Strategies*** - Operators of regulated small MS4s may use storm water educational information provided by their State, EPA Region, or environmental, public interest, or trade organizations instead of developing their own materials. Operators should strive to make their materials and activities relevant to local situations and issues, and incorporate a variety of strategies to ensure maximum coverage. Some examples include: brochures or fact sheets, websites, stickers, refrigerator magnets, posters, educational materials for community and school groups, and storm drain stenciling.

- ***Reaching Diverse Audiences*** - The public education program should use a mix of appropriate local strategies to address the viewpoints and concerns of a variety of audiences and communities. Directing materials or outreach programs toward specific departments likely to have significant storm water impacts is also recommended. For

example, information could be provided to the operations and maintenance department on the effects of dumping used oil into storm drains.

Measurable goals, which are required for each minimum control measure, are intended to gauge permit compliance and program effectiveness. The measurable goals, as well as the BMPs, should reflect the needs and characteristics of the operator and the area served by its small MS4. Furthermore, they should be chosen using an integrated approach that fully addresses the requirements and intent of the minimum control measure. Finally, they should allow the MS4 to make improvements to its program over each 5-year permit term by providing data on program successes and shortfalls. For example, an MS4 could encourage "do-it yourselfers" to recycle used motor oil by establishing and advertising a municipal drop-off center. The MS4 could measure progress toward this goal by tracking the amount of motor oil collected and correlating those data to the timing of public education efforts and other advertisements to see if their message is being received.

Weber State University is a member of the Golden Spike Storm Water Coalition.

Public Education and Outreach Strategy

The following is a summary table listing each minimum performance measure, activities or products, measurable goals, how documentation will be kept, target pollutant and audience, and responsible party as called for in the General Permit. The summary table is provided to meet the General Permit requirement 4.2.1.7.

PUBLIC EDUCATION AND OUTREACH			
TARGET AUDIENCE	(1) Residents (students and staff) (2) Operations and Maintenance Personnel (3) Architects & Contractors (4) University Staff (MS4-Owned or Operated Facilities)		
TARGET POLLUTANTS	(1) E Coli (2) Pet Waste (3) Sediment (4) Grass (5) Oil (6) Fertilizer	(7) Trash (8) Construction Site Waste (9) Septic Waste (10) Hydrocarbons (11) Automotive Fluids (12) Chlorinated Swimming Pool Water	(13) Wash Water (14) Household Hazardous Waste (15) Illicit Discharges & Spills (16) Landscaping Materials (17) Fuels (18) Non-emergency firefighting

Minimum Performance Measure 4.2.1.1 - Target specific pollutants and pollutant sources that impact or have the potential to impact the beneficial uses of receiving waters. Provide information which describes the potential impacts from storm water discharges. Provide methods for avoiding, minimizing, reducing, and/or eliminating the adverse impacts of storm water discharges. Provide actions individuals can take to improve water quality including participation in local environmental stewardship activities, based on land uses and target audiences found within the community.

Minimum Performance Measure 4.2.1.2 – Provide and document information given to the general public of the Permittee's prohibitions against and the water quality impacts associated with illicit discharges and improper disposal of waste. Provide information to the general public on maintenance of septic systems; effects of outdoor activities such as lawn care (use of pesticides, herbicides, and fertilizers); benefits of on-site infiltration of storm water; effects of automotive work and car washing on water quality; proper disposal of swimming pool water; and proper management of pet waste.

Activity/Product	**Measureable Goals**	**Documentation**	**Target Pollutant**	**Target Audience**	**Related BMPs**	**Resources Needed**	**Due Date/ Frequency**	**Responsible Party**
Installation of curb markers on catch basins or replace old or worn out ones	Have all inlets on campus marked with readable curb markers	University documents showing number of markers installed on a yearly basis.	1-18	1-4	SDSS IDC	8 hours $240	Annually	University
University website to address storm water impacts	Place information about storm water impacts on University website and social media	Completed website. Keep a document that shows the number of website hits each year	1-18	1-4	PEP	40 hours $1200	July 2021	University

Activity/Product	Measureable Goals	Documentation	Target Pollutant	Target Audience	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
Distribute information about storm water pollution in University newsletter or newspaper	Distribute article of information to all departments once per year and place on social media	Completed article with date recorded that information was sent out	1-18	1	PEP	5 hours $300	Annually	Storm Water Coalition & University

Minimum Performance Measure 4.2.1.3 – Provide and document information given to businesses and institutions annually of the Permittee's prohibitions against and the water quality impacts associated with illicit discharges and improper disposal of waste. Provide information to businesses and institutions on effects of outdoor activities such as lawn care (use of pesticides, herbicides, and fertilizers); benefits of on-site infiltration of storm water; building and equipment maintenance (proper management of waste water); use of salt or other deicing materials (cover/prevent runoff to storm system and contamination to ground water) proper storage of materials (emphasize pollution prevention) proper management of waste materials and dumpsters (cover and pollution prevention) and proper management of parking lot surfaces (sweeping).

Activity/Product	Measureable Goal	Documentation	Target Pollutant	Target Audience	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
Distribute brochures to departments within the University	Distribute one brochure, addressing a specific audience and potential pollutants from that audience each year and track number of brochures distributed	Finished brochure and documentation of number of brochures distributed	2,3,6 9-14,16,18	2	PEP	4 hours $240	Annually	Storm Water Coalition & University

Minimum Performance Measure 4.2.1.4 – Provide and document information given to engineers, construction contractors, developers, development review staff, and land use planners concerning the development of storm water pollution prevention plans (SWPPPs) and BMPs for reducing adverse impacts from storm water runoff from development sites.

Activity/Product	Measureable Goal	Documentation	Target Pollutant	Target Audience	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
Provide example SWPPP and Checklist	Track the number of hits the SWPPP information receives on the website when the webpage is complete	Completed website. Keep a list that shows the number of website hits each year	3,7,8,10,11, 13,15,17	3,4	PEP ET	16 hours $480	July 2021; annual tracking thereafter	University web administrator

Minimum Performance Measure 4.2.1.5 – Provide and document information and training given to employees of Permittee-owned or operated facilities concerning the Permittee's prohibition against and the water quality impacts associated with illicit discharges and improper disposal of waste. The Permittee must at a minimum consider the following topics: equipment inspection to ensure timely maintenance; proper storage of industrial materials (emphasize pollution prevention); proper management and disposal of wastes; proper management of dumpsters; minimization of use of salt and other de-icing materials (cover/prevent runoff to MS4 and ground water contamination); benefits of appropriate on-site infiltration (areas with low exposure to industrial materials such as roofs or employee parking); and proper maintenance of parking lot surfaces (sweeping).
Minimum Performance Measure 4.2.1.6 – Provide and document information and training given to MS4 engineers, development and plan review staff, land use planners, and other parties as applicable to learn about Low Impact Development (LID) practices, green infrastructure practices, and to communicate the specific requirements for post-construction control and the associated Best Management Practices (BMPs) chosen within the SWMP.

Activity/Product	Measureable Goal	Documentation	Target Pollutant	Target Audience	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
Registered storm water inspector training	Have at least one registered and trained storm water inspector for University inspections	Certification	1-18	4	ET	16 hours $680	July 2021	Storm Water Coalition & University
Storm water pollution prevention training for employees	Send one employee to attend at least 4 hours of storm water training each year	Attendance roll or receipt with number of hours attended	1-18	4	ET	4 hours $120	Annually	University
Monthly Storm Water Coalition Meetings	Attend 75% of monthly meetings	Coalition minutes and attendance roster	1-18	3,4	ET	3 hours $90	Monthly	Storm Water Coalition & University
Review, update and perform training using the Standard Operating Procedures (SOPs)	Review and update to reflect actual University procedures once per year. Train employees on SOPs at least once per year	SOP document is included in SWMP as Appendix H. Keep attendance roster for annual training.	1-18	4	ET	5 hours $240	Annually	Storm Water Coalition & University
Train operations and maintenance employees yearly on storm water issues	Train all employees on a yearly basis	Attendance roll	1-18	4	ET	30 hours $900	Annually	Public Works

Minimum Performance Measure 4.2.1.7 – The Permittee must identify methods used to evaluate the effectiveness of the educational messages and overall education program. Methods to evaluate effectiveness of the program must be tied to a defined goal of the program and overall objective of changes in behavior and knowledge.

Goal	Method of Evaluation
Education of Operations and Maintenance Personnel and University Staff Education	• Increase in the amount of curb markers installed by student service organizations • Document physical observations of activities such as proper use of pesticides, herbicides, and fertilizers; proper building and equipment maintenance; proper use of salt and de-icers; proper storage of materials; proper management of water materials and dumpsters; and proper management of parking lot surfaces (i.e. sweeping). • Increase in ability to enforce Storm Water Management Plan, including requiring SWPPP when necessary. • Lesser or no enforcement actions by State during inspection.

Minimum Performance Measure 4.2.1.8 – The Permittee must include written documentation or rationale as to why particular BMPs (Activities/Products) were chosen for its public education and outreach program. Note: Each activity or product has associated Best Management Practices (BMPs) that can be referenced as needed and are listed in Appendix I.

Install curb markers on catch basins or replace old or worn out ones	Many of the inlet boxes in the University are already marked with messages such as "Dumping is illegal, we all live downstream." This measure was chosen because it warns those who may dump pollutants downstream and educates the public about storm water impacts. This can also be done as part of an Eagle Scout or community service project. See Appendix B for example program using public service.

Pay fees for TV spots in cooperation with Salt Lake County as part of fees paid to Coalition	Every member pays a yearly fee to the Storm Water Coalition for television commercials. This was chosen because a portion of this fee goes towards television advertisements that educate the general public about the negative impact non-storm water discharges. Each year the message changes and is directed at different audiences.
University website to address storm water impacts	Many people visit the University website regularly. Providing information on the University website will help to educate the public about what they can do to work towards the goal of keeping the storm water clean.
Distribute information about storm water pollution in University newsletter or newspaper	This method was chosen because the mailer reaches a wide range of University students, staff, and personnel. This way the University can educate those University residents that may not be reached by other methods such as television advertisements or the University website.
Distribute brochures to departments within the University	These brochures will be developed by the Storm Water Coalition and will address potential pollution that is likely to be associated with different types of businesses and institutions. This task will educate a large audience by targeting a different type of business or institution each year.
Provide example SWPPP and Checklist on University website	This will serve as an educational resource for contractors, architects, and University personnel. They can reference a SWPPP template and a SWPPP checklist to ensure the SWPPP submitted meets the required guidelines. A SWPPP template can be found at: https://deq.utah.gov/legacy/permits/water-quality/utah-pollutant-discharge-elimination-system/storm-water-general-construction.htm . SWPPP templates for CGP and Common Plan are available. A SWPPP checklist can be found in Appendix C.
Registered storm water inspector training	Having a University employee trained as a registered storm water inspector will ensure that the requirements of the General Permit are met and that construction site inspections are being done correctly. Information about the Registered Storm Water Inspector Program can be found at: https://www.utahltap.org/stormwater/rsi.php
Storm water pollution prevention training for employees	Training University employees at least 4 hours per year will help to keep their registration as a storm water inspector current and will help to ensure that they are staying current on the latest topics and issues.
Monthly Storm Water Coalition Meetings	Monthly Storm Water Coalition Meetings are an excellent source of education. By attending employees are educated on the latest storm water issues and provide valuable input into the future direction of the program.
Review, update and perform training using the Standard Operating Procedures (SOPs)	The Storm Water Coalition developed Standard Operating Procedures (SOPs) activities which municipalities are likely to perform. These SOPs show University staff how to perform tasks without polluting the environment and storm water. The SOPs can be placed in areas where activities that have a high pollution risk take place (such as maintenance shops) and serve as a reminder of the proper way to perform daily tasks.

Public Participation and Involvement

CHAPTER 3

STORM WATER MANAGEMENT PLAN

CHAPTER 3

PUBLIC PARTICIPATION AND INVOLVEMENT

PUBLIC PARTICIPATION AND INVOLVEMENT

The public can provide valuable input and assistance to a regulated storm water management program and should be given opportunities to play an active role in both the development and implementation of the program. An active and involved community is crucial to the success of a storm water management program because it allows for:

- ***Broader public support*** since citizens who participate in the development and decision making process are partially responsible for the program and, therefore, may be less likely to raise legal challenges to the program and more likely to take an active role in its implementation

- ***Shorter implementation schedules*** due to fewer obstacles in the form of public and legal challenges and increased sources in the form of citizen volunteers

- ***A broader base of expertise*** and ***economic benefits*** since the community can be a valuable, and free, intellectual resource

Operators of regulated small MS4s should include the public in developing, implementing, updating, and reviewing their storm water management programs. The public participation program should make every effort to reach out and engage all economic and ethnic groups. There are challenges associated with public involvement. Nevertheless, these challenges can be addressed through an aggressive and inclusive program. Challenges and example practices that can help ensure successful participation are discussed below.

The best way to handle common notification and recruitment challenges is to know the audience and think creatively about how to gain its attention and interest. Traditional methods of soliciting public input are not always successful in generating interest, and subsequent involvement, in all sectors of the community. For example, municipalities often rely solely on advertising in local newspapers to announce public meetings and other opportunities for public involvement. Since there may be large sectors of the population who do not read the local press, the audience reached may be limited. Therefore, alternative advertising methods should be used whenever possible, including announcements in neighborhood newsletters.

In addition, advertising and soliciting help should be targeted at specific population sectors. The goal is to involve a diverse cross-section of people who can offer a multitude of concerns, ideas, and connections during the program development process.

There are a variety of practices that could be incorporated into a public participation and involvement program, such as:

- ***Public meetings/citizen panels*** allow citizens to discuss various viewpoints and provide input concerning appropriate storm water management policies and BMPs.

- ***Storm drain stenciling*** is an important and simple activity that concerned citizens, especially students, can do.

- ***Community clean-ups*** along local waterways, beaches, and around storm drains.

Measurable goals, which are required for each minimum control measure, are intended to gauge permit compliance and program effectiveness. The measurable goals, as well as the BMPs, greatly depend on the needs and characteristics of the operator and the area served by the small MS4. Furthermore, they should be chosen using an integrated approach that fully addresses the requirements and intent of the minimum control measure.

For example, a permittee could identify a certain section of town has an incident of used motor oil dumping. The area also has numerous automotive businesses including small repair shops, large auto dealerships, gas stations, and body shops. The university could organize a public meeting to not only educate students and staff about storm water issues and permit requirements, but also to ask for input regarding possible dumping areas and to determine if the community needs an oil recycling facility or some other way to safely dispose of used motor oil. In this way, the permittee might better understand who the target audience is for illegal dumping control while implementing a valuable service for the community.

Public Involvement and Participation Strategy

The following is a summary table listing each minimum performance measure, activities or products, measurable goals, how documentation will be kept, target pollutant and audience, and responsible party as called for in the General Permit.

PUBLIC INVOLVEMENT/PARTICIPATION			
TARGET AUDIENCE	(1) Residents (2) Industries, Commercial & Industrial Businesses (3) Trade Associations	(4) Environmental Groups (5) Homeowners Associations (6) Educational Organizations	
TARGET POLLUTANTS	(1) E Coli (2) Pet Waste (3) Sediment (4) Grass (5) Oil (6) Fertilizer	(7) Trash (8) Construction Site Waste (9) Septic Waste (10) Hydrocarbons (11) Automotive Fluids (12) Chlorinated Swimming Pool Water	(13) Wash Water (14) Household Hazardous Waste (15) Illicit Discharges & Spills (16) Landscaping Materials (17) Fuels (18) Non-emergency firefighting

Minimum Performance Measure 4.2.2.1 - Permittees shall adopt a program or policy directive to create opportunities for the public to provide input during the decision making processes involving the development, implementation and update of the SWMP document including development and adoption of all required Policy and Procedures or regulatory mechanisms.
Minimum Performance Measure 4.2.2.4 - The Permittee must at a minimum comply with State and Local public notice requirements when implementing a public involvement/participation program.

Activity/Product	**Measureable Goal**	**Documentation**	**Target Pollutant**	**Target Audience**	**Related BMPs**	**Resources Needed**	**Due Date/ Frequency**	**Responsible Party**
Matters relating to development, implementation, and updates to the SWMP, Policy and Procedures and resolutions will be discussed and passed in President's Council meetings with the public present. Noticing requirements will be met as necessary	Provide public notice as necessary and discuss all development, implementation, and updates of the SWMP with the public and address questions before updates or changes are made	President's Council meeting minutes PUAB meeting minutes	1-18	1-6	PEP	4 hours $120	As necessary	President's Office

Minimum Performance Measure 4.2.2.2 - Renewal Permittees shall make the revised SWMP document available to the public for review and input within 120 days from the effective date of this Permit.
Minimum Performance Measure 4.2.2.3 - A current version of the SWMP document shall remain available for public review and input for the life of the Permit. If the Permittee maintains a website, the latest version of the SWMP document shall be posted on the website to allow the public to review and provide input.

Activity/Product	Measureable Goal	Documentation	Target Pollutant	Target Audience	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
Place a copy of the SWMP at Campus Services for public review	Place copy of the most current SWMP at Campus Services	SWMP document	1-18	1-6	PEP	2 hours $140	July 2021; update as necessary	Environmental Health and Safety
Place SWMP on University website for public review	Always have the most current SWMP posted on the University website	SWMP on website	1-18	1-6	PEP	2 hours $140	July 2021; update as necessary	University web administrator

Illicit Discharge Detection and Elimination

CHAPTER 4

STORM WATER MANAGEMENT PLAN

CHAPTER 4

ILLICIT DISCHARGE DETECTION AND ELIMINATION

ILLICIT DISCHARGE DETECTION AND ELIMINATION

Federal regulations define an illicit discharge as "any discharge to an MS4 that is not composed entirely of storm water" with some exceptions. According to the General Permit these exceptions include the following:

- Water line flushing
- Landscape irrigation
- Diverted stream flows
- Rising ground waters
- Uncontaminated ground water infiltration
- Uncontaminated pumped ground water
- Discharges from potable water sources
- Fountain drains
- Air conditioning condensate
- Irrigation Water
- Springs
- Water from crawl space pumps
- Footing drains
- Lawn watering runoff
- Individual residential car washing
- Flows from riparian habitats and wetlands
- Dechlorinated swimming pool discharges
- Residual street wash water
- Dechlorinated water reservoir discharges
- Discharges/flows from emergency firefighting activity

Other discharges that are not composed entirely of storm water are considered illicit discharges because MS4s are not designed to accept, process, or discharge such non-storm water wastes.

Discharges from MS4s can include wastes and wastewater from non-storm water sources. Illicit discharges enter the system through either direct connections (e.g., wastewater piping either mistakenly or deliberately connected to the storm drains) or indirect connections (e.g., infiltration into the MS4 from cracked sanitary systems, spills collected by drain outlets, or paint or used oil dumped directly into a drain). The result is untreated discharges that contribute high levels of pollutants, including heavy metals, toxics, oil and grease, solvents, nutrients, viruses, and bacteria to receiving waterbodies. Pollutant levels from these illicit discharges have been shown in studies to be high enough to significantly degrade receiving water quality and threaten aquatic, wildlife, and human health.

Recognizing the adverse effects illicit discharges can have on receiving waters, permitted MS4s are required to develop, implement and enforce an illicit discharge detection and elimination program. This program must include the following:

- A storm sewer system map, showing the location of all outfalls and the names and location of all waters of the United States that receive discharges from those outfalls

- Through an Policy, or other regulatory mechanism, a prohibition (to the extent allowable under State or local law) on non-storm water discharges into the MS4, and appropriate enforcement procedures and actions

- A plan to detect and address non-storm water discharges, including illegal dumping, into the MS4

- The education of public employees, businesses, and the general public about the hazards associated with illegal discharges and improper disposal of waste

- The determination of appropriate best management practices (BMPs) and measurable goals for this minimum control measure.

The objective of the illicit discharge detection and elimination minimum control measure is to have regulated small MS4 operators gain a thorough awareness of their systems. This awareness allows them to determine the types and sources of illicit discharges entering their system; and establish the legal, technical, and educational means needed to eliminate these discharges. Permittees could meet these objectives in a variety of ways depending on their individual needs and abilities, but some general guidance for each requirement is provided below.

A storm sewer system map is meant to demonstrate a basic awareness of the intake and discharge areas of the system. It is needed to help determine the extent of discharged dry weather flows, the possible sources of the dry weather flows, and the particular waterbodies these flows may be affecting. It is also recommended that all existing information on outfall locations be collected and shown on the map.

Some permittees may have limited authority under state or local law to establish and enforce an Policy or other regulatory mechanism prohibiting illicit discharges. In such a case, the permittee is encouraged to obtain the necessary authority, if possible.

The plan to detect and address illicit discharges is the central component of this minimum control measure. The plan is dependent upon several factors, including the permittee's available resources, size of staff, and degree and character of its illicit discharges. As guidance only, the four steps of a recommended plan are outlined below:

1. **Locate Problem Areas -** It is recommended that priority areas be identified for detailed screening of the system based on the likelihood of illicit connections (e.g., areas with older sanitary sewer lines). Methods that can locate problem areas include: visual screening; water sampling from manholes and outfalls during dry weather; the use of infrared and thermal photography, cross-training field staff to detect illicit discharges, and public complaints.

2. **Find the Source -** Once a problem area or discharge is found, additional efforts usually are necessary to determine the source of the problem. Methods that can find the source of the illicit discharge include tracing the discharge upstream in the storm sewer and using video to inspect the storm sewers.

3. **Remove/Correct Illicit Connections -** Once the source is identified, the offending discharger should be notified and directed to correct the problem. Education efforts and working with the discharger can be effective in resolving the problem before taking legal action.

4. **Document Actions Taken** - As a final step, all actions taken under the plan should be documented. This illustrates that progress is being made to eliminate illicit connections and discharges. Documented actions should be included in annual reports and include information such as: the number of outfalls screened; any complaints received and corrected; the number of discharges and the quantities of flow eliminated.

Studies have shown that one of the most-cost effective and efficient techniques that can be employed to identify and correct inappropriate discharges is to use the citizens of a community to report suspicious activities. Public education and labeling of outfalls and other storm drain infrastructure is an important element of establishing a successful citizen hotline. Outreach to public employees, businesses, property owners, the general public, and elected officials regarding ways to detect and eliminate illicit discharges is an integral part of this minimum measure.

Suggested educational outreach efforts include:

- Developing informative brochures, and guidance for specific audiences (e.g., carpet cleaning businesses) and school curricula
- Designing a program to publicize and facilitate public reporting of illicit discharges
- Coordinating volunteers for locating, and visually inspecting, outfalls or to stencil storm drains
- Initiating recycling programs, or provide information on locations, for commonly dumped wastes, such as motor oil, antifreeze, and pesticides

Measurable goals, which are required for each minimum control measure, are intended to gauge permit compliance and program effectiveness. The measurable goals, as well as the BMPs, should reflect the needs and characteristics of the operator and the area served by its small MS4. Furthermore, they should be chosen using an integrated approach that fully addresses the requirements and intent of the minimum control measure.

For example, an MS4 could establish a measurable goal of responding to all complaints received by the citizen complaint hotline within 24 hours to minimize water quality impacts or recurrent dumping. A complaint tracking system could be used to log response and enforcement activity.

The educational outreach measurable goals for this minimum control measure could be combined with the measurable goals for the Public Education and Outreach minimum control measure.

Illicit Discharge Detection and Elimination Strategy

The General Permit states that "All Permittees shall revise as necessary, implement and enforce an IDDE program to systematically find and eliminate sources of non-storm water discharges from the MS4 and to implement defined procedures to prevent illicit connections and discharges according to the minimum performance measures listed below." The IDDE program must be described in writing, incorporated as part of the Permittee's SWMP document, and contain the elements detailed in this part of the Permit. The following is a summary table listing each minimum performance measure, activities or products, measurable goals, how documentation will be kept, and responsible party to meet the requirements of the General Permit.

Illicit Discharge Detection and Elimination						
Minimum Performance Measure 4.2.3.1 – Maintain a current storm sewer system map of the MS4, showing the location of all municipal storm sewer outfalls with the names and location of all State waters that receive discharges from those outfalls, storm drain pipe and other storm water conveyance structures within the MS4.						
Activity/Product	**Measureable Goal**	**Documentation**	**Related BMPs**	**Resources Needed**	**Due Date/ Frequency**	**Responsible Party**
Maintain and keep current a storm water system map.	Update the storm water system map on an ongoing basis	Current storm water system map kept with this SWMP. The current map is at the end of this chapter.	IDC	5 hours $300	Annually	GIS Department
Minimum Performance Measure 4.2.3.2 – Effectively prohibit, through Policy or other regulatory mechanism, non-storm water discharges to the MS4, including spills, illicit connections, illegal dumping and sanitary sewer overflows ("SSOs") into the storm sewer system, require removal of such discharges consistent with Part 4.2.3.6. of this Permit, and implement appropriate enforcement procedures and actions. The Permittee must have a variety of enforcement options in order to apply escalating enforcement procedures as necessary for the severity of violation and/or the recalcitrance of the violator. Exceptions are discharges pursuant to a separate UPDES Permit (other than the UPDES Permit for discharges from the MS4) and non-storm water discharges listed in Part 1.2.2.2. An SSO is a discharge of untreated sanitary wastewater. SSOs are illegal and must be eliminated. All SSOs must be reported to the Division of Water Quality and to the Permittee's local wastewater treatment plant. **Minimum Performance Measure 4.2.3.2.1 -** The IDDE program must have adequate legal authority to detect, investigate, eliminate and enforce against non-storm water discharges, including illegal dumping, into the MS4. Adequate legal authority consists of an effective Policy, by-law, or other regulatory mechanism. The documented IDDE program that is included in the Permittee's SWMP must include a reference or citation of the authority the Permittee will use to implement all aspects of the IDDE program.						
Activity/Product	**Measureable Goal**	**Documentation**	**Related BMPs**	**Resources Needed**	**Due Date/ Frequency**	**Responsible Party**
Update storm water Policy to address escalating enforcement procedures and other legal matters addressed in the General Permit	Update the storm water Policy to reflect the new General Permit requirements	Copy of updated Policy	IDC	80 hours $5,000	July 2021	Environmental Health and Safety

Minimum Performance Measure 4.2.3.3 – Implement a written plan to detect and address non-storm water discharges to the MS4, including spills, illicit connections, sanitary sewer overflows and illegal dumping. The plan shall include:

Minimum Performance Measure 4.2.3.3.1 – Develop and implement written systematic procedures for locating and listing the following priority areas likely to have illicit discharges (if applicable to the jurisdiction):

- Areas with older infrastructure that are more likely to have illicit connections;
- Industrial, commercial, or mixed use areas;
- Areas with a history of past illicit discharges;
- Areas with a history of illegal dumping;
- Areas with onsite sewage disposal systems;
- Areas with older sewer lines or with a history of sewer overflows or cross-connections;
- Areas upstream of sensitive waterbodies; and
- Other areas the Permittee determines to be likely to have illicit discharges.

The Permittee must document the basis for its selection of each priority area and create a list of all priority areas identified in the system. This priority area list must be updated annually to reflect changing priorities.

Minimum Performance Measure 4.2.3.3.2 – Field inspections of areas considered priority areas as identified in Part 4.2.3.3.1. Compliance shall be achieved by inspecting each priority area annually at a minimum. All field assessment activities shall utilize an inspection form to document findings. .

Minimum Performance Measure 4.2.3.3.3 – Dry weather screening activities for verifying outfall locations and detecting illicit discharges to receiving water. All outfalls shall be inspected at least once during the 5-year Permit term. Dry weather screening activities shall utilize an inspection form to document findings.

Minimum Performance Measure 4.2.3.3.4 – Notify DEQ if Permittee discovers or suspects that a discharger may need a separate UPDES permit (industrial, dewatering, etc.).

Activity/Product	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
A written plan will be developed to detect and address non-storm water discharges to the MS4. Priority areas will be identified. Outfall locations and priority areas will be identified.	1. Development of written plan 2. Identification of priority areas.	1. Priority areas will be shown on the storm water map. 2. All known outfall locations will be shown on the storm water map	IDC	20 hours $600	Annually	Environmental Health and Safety
Inspections of priority areas and all outfalls (see Appendix C for sample inspection form)	1. Inspect each priority area annually 2. Inspect at least 20% of all outfalls annually (all outfalls within 5-year Permit term) 3. Notify DEQ if suspect discharge	1. Outfall Reconnaissance Inventory/Sample Collection Field Sheet along with written procedures in Appendix C 2. Documented phone call or email to DEQ.	IDC	40 hours $1200	Annually	Environmental Health and Safety

Minimum Performance Measure 4.2.3.4 – Implement standard operating procedures (SOPs) or similar type of documents for tracing the source of an illicit discharge; including visual inspections, and when necessary, opening manholes, using mobile cameras, using field tests of selected chemical parameters as indicators of discharge sources, collecting and analyzing water samples for the purpose of determining sanctions or penalties, and/or other detailed inspection procedures.

Minimum Performance Measure 4.2.3.5 – Implement standard operating procedures (SOPs) or similar type of documents for characterizing the nature of, and the potential public or environmental threat posed by, any illicit discharges found by or reported to the Permittee by the hotline or other telephone number described in 4.2.3.9. These procedures shall include detailed instructions for evaluating how the discharge shall be immediately contained and steps to be taken for containment of the discharge. Compliance with this provision will be achieved by initiating an investigation immediately upon being alerted of a potential illicit discharge.

Minimum Performance Measure 4.2.3.5.1 – When the source of a non-storm water discharge is identified and confirmed, the Permittee must record the following information in an inspection report: the date the Permittee became aware of the non-storm water discharge, the date the Permittee initiated an investigation of the discharge, the date the discharge was observed, the location of the discharge, a description of the discharge, the method of discovery, date of removal, repair, or enforcement action; date, and method of removal verification. Analytical monitoring may be necessary to aid in the identification of potential sources of an illicit discharge and to characterize the nature of the illicit discharge. The decision process for utilizing analytical monitoring must be fully documented in the inspection report.

Minimum Performance Measure 4.2.3.6 –Implement standard operating procedures (SOPs) or similar type of documents for ceasing the illicit discharge, including notification of appropriate authorities; notification of the property owner; technical assistance for removing the source of the discharge or otherwise eliminating the discharge; follow-up inspections; and escalating enforcement and legal actions if the discharge is not eliminated. Illicit discharges to the MS4 are prohibited and any such discharges violate this Permit and remain in violation until they are eliminated. Upon detection, the Permittee shall require immediate cessation of improper disposal practices upon confirmation of responsible parties in accordance with its enforceable legal authorities established pursuant to Part 4.2.3.2.1of this Permit.

Activity/Product	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
A written plan or SOP will be developed to detect and address non-storm water discharges to the MS4.	All Illicit Discharge Detection and Elimination (IDDE) investigations will be thoroughly investigated and documented.	Illicit Discharge Hotline, Tracking Sheet, along with written procedures in Appendix C	IDC	On an as-needed basis	On an as-needed basis	Environmental Health and Safety

Minimum Performance Measure 4.2.3.7 – Permittees shall inform public employees, businesses, and the general public of hazards associated with illicit discharges and improper disposal of waste.

Activity/Product	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
See Public Education and Outreach Chapter Minimum Performance Measures 4.2.1.1 – 4.2.1.3 for this information						

Minimum Performance Measure 4.2.3.8 – Permittees shall promote or provide services for the collection of household hazardous waste.

Activity/Product	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
Promote services for the collection of Student housing. See included information in Appendix A for advertising examples	Post information on disposal locations on university website once or place article in university newsletter annually	University website or newsletter article	HWM	5 hours $150	Website by July 2021 or newsletter annually	Environmental Health and Safety

Minimum Performance Measure 4.2.3.9 – Permittees shall publicly list and publicize a hotline or other local telephone number for public reporting of spills and other illicit discharges. A written record shall be kept of all calls received, all follow-up actions taken, and any feedback received from public education efforts.
Minimum Performance Measure 4.2.3.9.1 - The Permittee must develop a written spill/dumping response procedure, and a flow chart for internal use, that shows the procedures for responding to public referrals of illicit discharges, the various responsible agencies and their contacts, and who would be involved in illicit discharge incidence response, even if it is a different entity other than the Permittee. The procedure and list must be incorporated as part of the IDDE program and incorporated into the Permittee's SWMP document. The list must be maintained and updated as changes occur.

Activity/Product	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
Publicize hotline for the public to report an illicit discharge, and dumping into the storm drain system.	Track the number of calls each year. All calls to be addressed and resolved.	Complete Illicit discharge report form in Appendix C	IDC PEP	30 hours $900	July 2021	Environmental Health and Safety
A written spill/dumping response document and flow chart will be developed.	Completed spill response document	An example spill/dumping response document can be found in Appendix C	IDC	1 hour $30	July 2021	Environmental Health and Safety

Minimum Performance Measure 4.2.3.10 – Permittees shall adopt and implement procedures for program evaluation and assessment which includes maintaining a database for mapping, tracking of the number and type of spills or illicit discharges identified; and inspections conducted.

Activity/Product	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
A database will be kept which includes hard files or electronic documents of all inspections, and a storm water map showing outfalls and spill or illicit discharge locations. All data will be used to evaluate compliance with requirements	Keep all documents relating to spills or illicit discharges and all inspections conducted in one location where all employees can access the information	Illicit discharge tracking sheet (Appendix C), construction site inspection form (Appendix D), and outfall inspection form (Appendix C)	IDC	4 hours $120	July 2021	Environmental Health and Safety

Minimum Performance Measure 4.2.3.11 – Permittees shall, at a minimum, annually train employees about the IDDE program including identification, investigation, termination, cleanup, and reporting of illicit discharges including spills, improper disposal, and illicit connections. Permittees shall provide training to all field staff that as part of their normal job responsibilities might come into contact with or otherwise observe an illicit discharge or illicit connection to the MS4. Permittees shall also train office personnel who might receive initial reports of illicit discharges. Training shall include how to identify a spill, an improper disposal, or an illicit connection to the MS4 and proper procedures for reporting the illicit discharge.

Activity/Product	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
Training will be provided for new hires and employees including field staff and office personnel on how to handle a spill or illicit discharge	1. Annually provide training to university staff who are likely to encounter an illicit discharge as part of their job duties 2. Immediately train new hires	Training sign in sheet or similar proof of training	PEP	12 hours $750	1.All employees: July 2021; annually thereafter 2. New hires: Immediately upon hire; annually thereafter	Environmental Health and Safety

Insert Storm Water System Map

Construction Site Runoff Control

CHATPER 5

STORM WATER MANAGEMENT PLAN

CHAPTER 5

CONSTRUCTION SITE RUNOFF CONTROL

CONSTRUCTION SITE STORM WATER RUNOFF CONTROL

Polluted storm water runoff from construction sites often flows to MS4s and ultimately is discharged into local rivers and streams. Pollutants of concern are; sediment, solid and sanitary wastes, oil and grease, concrete truck washout, construction chemicals, and constructions debris. Of the pollutants listed, sediment is usually the main pollutant of concern. During a short period of time, construction sites can contribute more sediment to streams than can be deposited naturally during several decades. The resulting siltation, and the contribution of other pollutants from construction sites, can cause physical, chemical, and biological harm to surrounding waters. For example, excess sediment can quickly fill rivers and lakes, requiring dredging and destroying aquatic habitats.

An operator of a regulated small MS4 is required to develop, implement, and enforce a program to reduce pollutants in storm water runoff to their MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. The small MS4 operator is required to:

- Have an Policy or other regulatory mechanism requiring the implementation of proper erosion and sediment controls, and controls for other wastes, on applicable construction sites

- Have procedures for site plan review of construction plans that consider potential water quality impacts

- Have procedures for site inspection and enforcement of control measures

- Have sanctions to ensure compliance (established in the Policy or other regulatory mechanism)

- Establish procedures for the receipt and consideration of information submitted by the public

- Determine the appropriate best management practices (BMPs) and measurable goals for this minimum control measure. Suggested BMPs (i.e., the program actions/activities) and measurable goals

Further explanation and guidance for each component of a regulated small MS4's construction program is provided below:

1. **Regulatory Mechanism** - Through the development of an Policy or other regulatory mechanism, the small MS4 operator must establish a construction program that controls polluted runoff from construction sites with a land disturbance of greater than or equal to one acre.

2. **Site Plan Review** - The small MS4 operator must include in its construction program requirements for the implementation of appropriate BMPs on construction sites to control

erosion and sediment and other waste at the site. To determine if a construction site is in compliance with such provisions, the small MS4 operator should review the site plans submitted by the construction site operator before ground is broken. Site plan review aids in compliance and enforcement efforts since it alerts the small MS4 operator early in the process to the planned use or non-use of proper BMPs and provides a way to track new construction activities. The tracking of sites is useful not only for the small MS4 operator's recordkeeping and reporting purposes, which are required under their NPDES storm water permit, but also for members of the public interested in ensuring that the sites are in compliance.

3. **Inspections and Penalties -** Once construction commences, BMPs should be in place and the small MS4 operator's enforcement activities should begin. To ensure that the BMPs are properly installed, the small MS4 operator is required to develop procedures for site inspection and enforcement of control measures to deter infractions. Procedures could include steps to identify priority sites for inspection and enforcement based on the nature and extent of the construction activity, topography, and the characteristics of soils and receiving water quality. Inspections give the MS4 operator an opportunity to provide additional guidance and education, issue warnings, or assess penalties. A website has been developed to use as a tool for builders and developers (www.cicacenter.org). Inspectors can use the Web site to find plain language explanations of the major environmental laws affecting the construction industry as well as guidance that can be distributed developers and construction site operators. To conserve staff resources, one possible option for small MS4 operators is to have inspections performed by the same inspector that visits the sites to check compliance with health and safety building codes.

Measurable goals, which are required for each minimum control measure, are intended to gauge permit compliance and program effectiveness. The measurable goals, as well as the BMPs, should reflect the needs and characteristics of the operator and the area served by its small MS4. Furthermore, they should be chosen using an integrated approach that fully addresses the requirements and intent of the minimum control measure.

Measurable Goals Guidance for Phase II MS4s has been developed that is designed to help program managers comply with the requirement to develop measurable goals. The guidance presents an approach for MS4 operators to develop measurable goals as part of their storm water management plan. For example, an MS4 program goal might be to educate at least 80 percent of all construction site operators and contractors about proper selection, installation, inspection, and maintenance of BMPs by the end of the permit term, which will help to ensure compliance with erosion and sediment control requirements. This goal could be tracked by documenting attendance at local, State, or Federal training programs. Attendance can be encouraged by decreasing permitting fees for those contractors who have been trained and provide proof of attendance when applying for permits.

Construction Site Runoff Control Strategy

The General Permit states that "All Permittees shall revise as necessary, implement and enforce a program to reduce pollutants in any storm water runoff to the MS4 from construction sites with a land disturbance of greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale according to the minimum performance measures listed below. Public and private projects, including projects proposed by the Permittee's own departments and agencies, shall comply with these requirements." The following is a summary table listing each minimum performance measure, activities or products, measurable goals, how documentation will be kept, and responsible party to meet the requirements of the General Permit.

Construction Site Runoff Control

Minimum Performance Measure 4.2.4.1 – Revise as necessary and enforce an Policy or other regulatory mechanism that requires the use of erosion and sediment control practices at construction sites. The Policy or other regulatory mechanism shall, at a minimum, be equivalent with the technical requirements set forth in the UPDES Storm Water General Permit for Construction Activities, UTRC00000, and UPDES General Storm Water Permit for Construction Activity Connected with Single Lot Housing Projects, UTRH00000, which both can be found at http://www.deq.utah.gov/Permits/water/updes/stormwatercon.htm. The Policy or other regulatory mechanism shall include sanctions to ensure compliance. The Policy or other regulatory mechanism shall apply, at a minimum, to construction projects disturbing greater than or equal to one acre and to construction projects of less than one acre that are part of a larger common plan of development or sale. Existing local requirements to apply storm water controls at smaller sites shall be retained.

Minimum Performance Measure 4.2.4.1.1 – The Policy or other regulatory mechanism shall, at a minimum, require construction operators to prepare a Storm Water Pollution Prevention Plan (SWPPP) and apply sediment and erosion control BMPs as necessary to protect water quality, reduce the discharge of pollutants, and control waste such as, but not limited to, discarded building materials, concrete truck washout, chemicals, litter and sanitary waste at the construction site that may cause adverse impacts to water quality. The SWPPP requirements must be, at a minimum, equivalent with the SWPPP requirement set forth in the UPDES General Permit for Discharges from Construction Activities, UTRC00000, or UPDES General Storm Water Permit for Construction Activity Connected with Single Lot Housing Projects, UTRH00000.

Minimum Performance Measure 4.2.4.1.2 – Permittee shall ensure construction operators obtain and maintain coverage under the current UPDES Storm Water General Permits for Construction Activities for the duration of the project. Coverage can be obtains by completing an NOI as well as renewed at: https://secure.utah.gov/account/log-in.html.

Minimum Performance Measure 4.2.4.1.3 – The Policy shall include a provision for access by qualified personnel to inspect construction storm water BMPs on private properties that discharge to the MS4.

Activity/Product Related BMPs	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
The University will revise as necessary a storm water Policy that addresses requirements for construction sites that are one acre or greater or part of a common plan of development.	Storm water Policy that reflects the General Permit requirements	Copy of Policy		See Minimum Performance Measure 4.2.3.2 & 4.2.3.2.1 in Chapter 4	July 2021; update as necessary	Facilities management

Minimum Performance Measure 4.2.4.2 – Develop a written enforcement strategy and implement the enforcement provisions of the Policy or other regulatory mechanism which shall include:
Minimum Performance Measure 4.2.4.2.1 – Standard operating procedures (SOPs) or similar type of documents that include specific processes and sanctions to minimize the occurrence of, and obtain compliance from violators which shall include appropriate, escalating enforcement procedures and actions.
Minimum Performance Measure 4.2.4.2.2 – Documentation and tracking of all enforcement actions.

Activity/Product	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
Preliminary SOPs have been developed and can be found in Appendix H. These will be updated to reflect what is realistic in the University.	Updated SOPs. Documentation of all enforcement actions including verbal warnings	Updated SOP document and documentation of enforcement actions	ET	4 hours $120	July 2021; Update as necessary	Facilities management

Minimum Performance Measure 4.2.4.3 – Develop and implement SOPs or similar type of documents for pre-construction Storm Water Pollution Prevention Plan (SWPPP) review and keep records for, at a minimum, all construction sites that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, to ensure plans are complete and in compliance with State and Local regulations. Permittees shall keep records of these projects for five years or until construction is completed, whichever is longer. Prior to construction, the Permittee shall:
Minimum Performance Measure 4.2.4.3.1 – Conduct a pre-construction SWPPP review which includes a review of the site design, the planned operations at the construction site, planned BMPs during the construction phase, and the planned BMPs to be used to manage runoff created after development.
Minimum Performance Measure 4.2.4.3.2 – Incorporate into the SWPPP review procedures the consideration of potential water quality impacts and procedures for pre-construction review which shall include the use of a checklist.
Minimum Performance Measure 4.2.4.3.3 –Identify priority construction sites considering the following factors at a minimum: soil erosion potential; site slope; project size and type; sensitivity of receiving water bodies; proximity to receiving waterbodies; and non-storm water discharges and past record of non-compliance by the operators of the construction site.

Activity/Product	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
A SWPPP checklist & Storm Water Construction Activity Permit have been developed and can be found in Appendix D. The preconstruction process will be re-evaluated to better address storm water issues including identifying priority construction sites, etc.	Develop a SOP that addresses pre-construction storm water issues.	Finished SOP		8 hours $240	July 2021	Facilities management

Minimum Performance Measure 4.2.4.4 – All Permittees shall develop and implement SOPs or similar type of documents for construction site inspection and enforcement of construction storm water pollution control measures. The procedures must clearly define who is responsible for site inspections as well as who has authority to implement enforcement procedures. The Permittee must have the authority to the extent authorized by law to impose sanctions to ensure compliance with the local program. These procedures and regulatory authorities must be written and documented in the SWMP. The construction site storm water runoff control inspection program must provide:
Minimum Performance Measure 4.2.4.4.1 – Inspections of all new construction sites with a land disturbance of greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale at least monthly by qualified personnel using the Construction Storm Water Inspection Form (Checklist) found

on the Division's website at http://www.deq.utah.gov/Permits/water/updes/stormwatercon.htm. The checklist can also be found in Appendix D.

Minimum Performance Measure 4.2.4.4.2 – The Permittee must inspect all phases of construction: prior to land disturbance, during active construction, and following active construction. The Permittee must include in its SWMP document a procedure for being notified by construction operators/owners of their completion of active construction so that verification of final stabilization and removal of all temporary control measures may be conducted.

Minimum Performance Measure 4.2.4.4.3 – Inspections by the MS4 of priority construction sites defined in Part 7.36 must be conducted at least biweekly using the Construction Storm Water Inspection Form (Checklist) found on the Division's website at http://www.deq.utah.gov/Permits/water/updes/stormwatercon.htm. The checklist can also be found in Appendix C.

Minimum Performance Measure 4.2.4.4.4 – Based on-site inspection findings, the permittee must take all necessary follow-up actions (i.e., re-inspection, enforcement) to ensure compliance in accordance with the permittee's enforcement strategy. These follow-up and enforcement actions must be tracked and documented.

Minimum Performance Measure 4.2.4.4.5 – Permittee shall publicly provide and publicize a hotline for public reporting of storm water related issues on construction sites. Records of violations, enforcement actions, and corrective actions taken shall be tracked and documented.

Activity/Product	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
A SOP will be developed which addresses who will be responsible for construction site inspections as well as who has enforcement authority according to the Policy. All phases of construction will be inspected.	Develop a SOP that addresses construction site inspections. Inspect all required construction sites monthly and during all phases of construction. Identify priority construction sites. Use Construction Storm Water Inspection Form for inspections.	Finished SOP. Construction Storm Water Inspection Form		Initial 4 hours - $120 Ongoing (monthly) 32 hours $960	SOP by July 2021; inspections monthly	Facilities management
Provide and publicize hotline for reporting of storm water related issues on construction sites.	1. Establish hotline. 2. Require on-site notice to include phone number.	1. Hotline established. 2. Requirement added to University standards.		2 hours - $200	July 2021	Facilities management

Minimum Performance Measure 4.2.4.5 – The Permittee must ensure that all staff whose primary job duties are related to implementing the construction storm water program, including permitting, plan review, construction site inspections, and enforcement, are trained annually to conduct these activities. New hires shall be trained immediately, then annually thereafter. The training can be conducted by the MS4 or outside training can be attended. Such training must extend to third-party inspectors and plan reviewers as well. The training records to be kept include dates, activities or course descriptions, and names and positions of staff in attendance.

Activity/Product	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
Staff whose job duties are related to the storm water will be trained on the construction program	Have all related staff attend at least one training per year	Attendance roll, training invoice	ET	24 hours $720	Annually	Facilities management

Minimum Performance Measure 4.2.4.6 – All Permittees shall adopt and implement a procedure to maintain records of all projects disturbing greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale. Permittees shall keep records which include but are not limited to, site plan reviews, SWPPPs, inspections and enforcement actions including verbal warnings, stop work orders, warning letters, notices of violation, and other enforcement records. Permittees shall keep records of these projects for five years or until construction is completed, whichever is longer.						
Activity/Product	**Measureable Goal**	**Documentation**	**Related BMPs**	**Resources Needed**	**Due Date/ Frequency**	**Responsible Party**
Keep records of all SWPPP reviews, inspections, and all enforcement actions	Keep accurate records of all required items in a central spot	SWPPP Checklist see Appendix D		5 hours $150	July 2021; As needed	Facilities management

Long-Term Storm Water Management

CHAPTER 6

STORM WATER MANAGEMENT PLAN

CHAPTER 6

LONG-TERM STORM WATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT (POST-CONSTRUCTION RUNOFF CONTROL)

LONG-TERM STORM WATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT (POST-CONSTRUCTION RUNOFF CONTROL)

Post-construction storm water management in areas undergoing new development or redevelopment is necessary because runoff from these areas has been shown to significantly affect receiving waterbodies. Studies indicate that prior planning and design for the minimization of pollutants in post-construction storm water discharges is the most cost-effective approach to storm water quality management.

There are generally two forms of substantial impacts of post-construction runoff. The first is caused by an increase in the type and quantity of pollutants in storm water runoff. As runoff flows over areas altered by development, it picks up harmful sediment and chemicals such as oil and grease, pesticides, heavy metals, and nutrients (e.g., nitrogen and phosphorus). These pollutants often become suspended in runoff and are carried to receiving waters, such as lakes, ponds, and streams. Once deposited, these pollutants can enter the food chain through small aquatic life, eventually entering the tissues of fish and humans. The second kind of post-construction runoff impact occurs by increasing the quantity of water delivered to the waterbody during storms. Increased impervious surfaces (e.g., parking lots, driveways, and rooftops) interrupt the natural cycle of gradual percolation of water through vegetation and soil. Instead, water is collected from surfaces such as asphalt and concrete and routed to drainage systems where large volumes of runoff quickly flow to the nearest receiving water. The effects of this process include streambank scouring and downstream flooding, which often lead to a loss of aquatic life and damage to property.

Requirements

An operator of a regulated small MS4 is required to revise as necessary, implement, and enforce a program to address post-construction storm water runoff to their MS4 from new development and redevelopment projects that result in the land disturbance of greater than or equal to 1 acre or that are part of a common plan of development. The small MS4 operator is required to:

- Develop and implement strategies which include a combination of structural and/or non-structural best management practices (BMPs);

- Have an Policy or other regulatory mechanism requiring the implementation of post-construction runoff controls to the extent allowable under State or local law, including the evaluation of Low Impact Development (LID) and on-site retainage of the 90^{th} percentile rainfall event;

- Develop and define specific hydrologic method(s) for calculating runoff volumes and rates to ensure consistent sizing of structural BMPs in their jurisdiction;

- Ensure adequate long-term operation and maintenance of controls; and

- Determine the appropriate best management practices and measurable goals for this minimum control measure.

The storm water requirements apply to "redevelopment" projects that alter the "footprint" of an existing site or building in such a way that there is a disturbance of equal to or greater than 1 acre of land. Redevelopment projects do not include such activities as exterior remodeling. Because redevelopment projects may have site constraints not found on new development sites, the requirements provide flexibility for implementing post-construction controls on redevelopment sites.

BMPs

Structural and non-structural BMPs can be used to satisfy the requirements of the post-construction control measure. It is important to recognize that many BMPs are climate-specific and not all BMPs can be used in every geographic area. Because the requirements of this measure are closely tied to the requirements of the construction site runoff control minimum measure it is recommended that small MS4 operators develop and implement these two measures in tandem.

- **Non-Structural BMPs**

  - **Planning Procedures**. Runoff problems can be addressed efficiently with sound planning procedures. Local master plans, comprehensive plans, and zoning Policy and Procedures can promote improved water quality in many ways, such as guiding the growth of a community away from sensitive areas to areas that can support it without compromising water quality.

  - **Site-Based BMPs**. These BMPs can include buffer strip and riparian zone preservation, minimization of disturbance and imperviousness, and maximization of open space.

- **Structural BMPs**

  - **Storm Water Retention/Detention BMPs.** Retention and detention BMPs control storm water by gathering runoff in wet ponds, dry basins, or multichamber catch basins and slowly releasing it to receiving waters or drainage systems. These practices can be designed to both control storm water volume and settle out particulates for pollutant removal.

  - **Infiltration BMPs**. Infiltration BMPs are designed to facilitate the percolation of runoff through the soil to ground water, and, thereby, result in reduced storm water runoff quantity and reduced mobilization of pollutants. Examples include infiltration basins/trenches, retention basins, dry wells, and porous pavement.

  - **Vegetative BMPs**. Vegetative BMPs are landscaping features that, with optimal design and good soil conditions, remove pollutants, and facilitate percolation of runoff, thereby maintaining natural site hydrology, promoting healthier habitats, and

increasing aesthetic appeal. Examples include grassy swales, filter strips, artificial wetlands, and rain gardens.

Measurable goals, which are required for each minimum control measure, are intended to gauge permit compliance and program effectiveness. The measurable goals, as well as the BMPs, should reflect needs and characteristics of the operator and the area served by its small MS4. Furthermore, the measurable goals should be chosen using an integrated approach that fully addresses the requirements and intent of the minimum control measure.

For example, an MS4 program goal might be to reduce by 30 percent the road surface areas directly connected to storm sewer systems (using traditional curb and gutter infrastructure) in new developments and redevelopment areas over the course of the first permit term. Using "softer" storm water conveyance approaches, such as grassy swales, will increase infiltration and decrease the volume and velocity of runoff leaving development sites. Progress toward the goal could be measured by tracking the linear feet of curb and gutter not installed in development projects that historically would have been used.

Long-Term Storm Water Management in New Development and Redevelopment (Post-Construction Storm Water Management Strategy)

The General Permit states that "All Permittees shall revise as necessary, implement and enforce a program to address post-construction storm water runoff to the MS4 from new development and redevelopment construction sites disturbing greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, according to the minimum performance measures listed below. The objective of this control measure is for the hydrology associated with new development to mirror the pre-development hydrology of the previously undeveloped site or to improve the hydrology of a redeveloped site and reduce the discharge of storm water. The water quality considerations of this minimum control measure do not replace or substitute for water quantity or flood management requirements implemented on the local level for new developments. The water quality controls may be incorporated into the design of structures intended for flow control; or water quality control may be achieved with separate control measures. The program must apply to private and public development sites, including roads." The following is a summary table listing each minimum performance measure, activities or products, measurable goals, how documentation will be kept, and responsible party to meet the requirements of the General Permit.

Long-Term Storm Water Management in New Development and Redevelopment (Post-Construction Storm Water Management)						
Minimum Performance Measure 4.2.5.1 – Develop and adopt an Policy or other regulatory mechanism that requires long-term post-construction storm water controls at new development and redevelopment sites. The Policy or other regulatory mechanism shall apply, at a minimum, to new development and redevelopment sites that discharge to the MS4 and that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale. The Policy or other regulatory mechanism shall, at a minimum, be equivalent with the technical requirements set forth in the UPDES Storm Water General Permit for Construction Activities, UTRC00000 which can be found at http://www.deq.utah.gov/Permits/water/updes/stormwatercon.htm. Existing local requirements to apply storm water controls at smaller sites shall be retained. The Policy or other regulatory mechanism shall require BMP selection, design, installation, operation and maintenance standards necessary to protect water quality and reduce the discharge of pollutants to the MS4.						
Activity/Product Related BMPs	**Measureable Goal**	**Documentation**	**Related BMPs**	**Resources Needed**	**Due Date/ Frequency**	**Responsible Party**
University Storm Water Policy. The Policy will be completed and ensure that it addresses the most current General Permit requirements.	Storm Water Policy to reflect the General Permit requirements	Copy of updated Policy		See Minimum Performance Measure 4.2.3.2 & 4.2.3.2.1 in Chapter 4	July 2021	Facilities management

Minimum Performance Measure 4.2.5.2 – Implement an enforcement strategy and implement the enforcement provisions of the Policy or other regulatory mechanism. Procedures for enforcement of BMPs include:
Minimum Performance Measure 4.2.5.2.1 – Procedures that include specific processes and sanctions to minimize the occurrence of, and obtain compliance from, chronic and recalcitrant violators which shall include appropriate, escalating enforcement procedures and actions.
Minimum Performance Measure 4.2.5.2.2 – Documentation on how the requirements of the Policy or other regulatory mechanism will protect water quality and reduce the discharge of pollutants to the MS4. Documentation shall include:

- How long-term storm water BMPs were selected;
- The pollutant removal expected from the selected BMPs; and
- The technical basis which supports the performance claims for the selected BMPs.

Activity/Product	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
Enforcement strategy BMPs to help address long-term storm water BMPs, pollutant removal from BMPs, and the technical basis for the BMPs	Completed enforcement strategy BMP	Written enforcement strategy with documentation	IDC LUPM	12 hours $720	July 2021	Facilities management

Minimum Performance Measure 4.2.5.3 – The Permittee's new development/redevelopment program must have requirements or standards to ensure that any storm water controls or management practices for new development and redevelopment will prevent or minimize impacts to water quality.
Minimum Performance Measure 4.2.5.3.1 – The Permittee's new development/redevelopment program should include non-structural BMPs such as requirements and standards to minimize development in areas susceptible to erosion and sediment loss; to minimize the disturbance of native soils and vegetation; to preserve areas in the municipality that provide important water quality benefits; to implement measures for flood control; and to protect the integrity of natural resources and sensitive areas.
Minimum Performance Measure 4.2.5.3.2 – For new development or redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, the program shall include a process which requires evaluation of a Low Impact Development (LID) approach which encourages the implementation of structural BMPs, where practicable, that infiltrate, evapotranspire or harvest and use storm water from the site to protect water quality. Structural controls may include green infrastructure practices such as rainwater harvesting, rain gardens, permeable pavement, and vegetated swales. If an LID approach cannot be utilized, the Permittee must document an explanation of the reasons preventing this approach and the rationale *for the chose alternative controls* on a case by case basis for each project.
Minimum Performance Measure 4.2.5.3.3 – The Permittee must develop a plan to retrofit existing developed sites that are adversely impacting water quality. The retrofit plan must be developed to emphasize controls that infiltrate, evapotranspire or harvest and use storm water discharges. The plan must include a ranking of control measures to determine those best suited for retrofitting as well as those that could later be considered for retrofitting. The Permittee must include the following when developing the criteria for the retrofit plan:

- Proximity to waterbody
- Status of waterbody to improve impaired waterbodies and protect unimpaired waterbodies
- Hydrologic condition of the receiving waterbody
- Proximity to sensitive ecosystem or protected area
- Any upcoming sites that could be further enhanced by retrofitting storm water controls

Minimum Performance Measure 4.2.5.3.4 – Each Permittee shall develop and define specific hydrologic method or methods for calculating runoff volumes and flow rates to ensure consistent sizing of structural BMPs in their jurisdiction and to facilitate plan review. New development or redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale must manage rainfall on-site, and prevent the off-site discharge of the

precipitation from all rainfall events less than or equal to the 90th percentile rainfall event. This objective must be accomplished by the use of practices that are designed, constructed, and maintained to infiltrate, evapotranspire and/or harvest and reuse rainwater. The 90th percentile rainfall event is the event whose precipitation total is greater than or equal to 90 percent of all storm events over a given period of record. If meeting this retention standard is technically infeasible, a rationale shall be provided on a case by case basis for the use of alternative design criteria. The project must document and quantify that infiltration, evapotranspiration and rainwater harvesting have been used to the maximum extent technically feasible and that full employment of these control are infeasible due to site constraints.

Activity/Product	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
Develop SOPs that address the impacts to water quality by identifying sensitive areas, evaluating LID approaches, identifying possible retrofit areas, specify post-construction BMP design criteria, etc.	SOPs in place to address permit requirements by due date	Written SOPs kept in SWMP	LUPM DIDM	40 hours $2800	July 2021	Facilities management
Develop a list of LID measures acceptable to the University.	List of acceptable LID measures/ practices	List of acceptable LID measures/ practices in University standards		12 hours $1200	July 2021; update as needed	Facilities management
Develop and define specific hydrologic method(s) for calculating runoff volumes and flow rates	Development of specific hydrologic method	Incorporate specific hydrologic method into University standards		12 hours $1200	September 2016	Facilities management

Minimum Performance Measure 4.2.5.4 – All Permittees shall adopt and implement procedures for site plan review which incorporate consideration of water quality impacts. The procedures shall apply through the life of the project from conceptual design to project closeout. Prior to construction, Permittees shall:

Minimum Performance Measure 4.2.5.4.1 – Review post-construction plans for, at a minimum, all new development and redevelopment sites that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, to ensure that the plans include long-term storm water management measures that meet the requirements of this minimum control measure.

Minimum Performance Measure 4.2.5.4.2 – Permittees shall provide developers and contractors with preferred design specifications to more effectively treat storm water for different development types such as industrial parks, commercial strip malls, retail gasoline outlets, restaurants, parking lots, automotive service facilities, street and road construction, and projects located in, adjacent to, or discharging to environmentally sensitive areas.

Minimum Performance Measure 4.2.5.4.3 – Permittees shall keep a representative copy of information that is provided to design professionals; and if information is distributed to a large number of design professionals at once, the dates of the mailings and lists of recipients.

Activity/Product	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
SOPs for site plan review to consider the water quality impacts including: post-construction plans review, giving contractors & developers information regarding preferred design methods, keeping documentation	SOPs to address permit requirements. Develop and keep a copy of information given to design professionals	Written procedure. Copy of design information given to design professionals		20 hours $1400	July 2021	Facilities management

Minimum Performance Measure 4.2.5.5 – All Permittees shall adopt and implement SOPs or similar type of documents for site inspection and enforcement of post-construction storm water control measures. These procedures must ensure adequate ongoing long-term operation and maintenance of approved storm water control measures.

Minimum Performance Measure 4.2.5.5.1 – The Policy or other regulatory mechanism shall include provisions for both construction-phase and post-construction access for Permittees to inspect storm water control measures on private properties that discharge to the MS4 to ensure that adequate maintenance is being performed. The Policy or other regulatory mechanism may, in lieu of requiring g that the Permittee's staff inspect and maintain storm water controls on private property, instead require private property owner/operators or qualified third parties to conduct maintenance and provide annual certification that adequate maintenance has been performed and the structural controls are operating as designed to protect water quality. In this case, the Permittee must require a maintenance agreement addressing maintenance requirements for any control measures installed on site. The agreement must allow the Permittee to conduct oversight inspections of the storm water control measures and also account for transfer of responsibility in leases and/or deeds. The agreement must also allow the Permittee to perform necessary maintenance or corrective actions neglected by the property owner/operator, and bill or recoup costs from the property owner/operator as needed.

Minimum Performance Measure 4.2.5.5.2 – Permanent structural BMPs shall be inspected at least once during installation by qualified personnel. Upon completion, the Permittee must verify that long-term BMPs were constructed as designed.

Minimum Performance Measure 4.2.5.5.3 – Inspections and any necessary maintenance must be conducted annually by either the Permittee or through a maintenance agreement, the property owner/operator. On sites where the property owner/operator is conducting maintenance, the Permittee shall inspect those storm water control measures at least once every five years, or more frequently as determined by the Permittee to verify and ensure that adequate maintenance is being performed. The Permittee must document its findings in an inspection report which includes the following:

- Inspection date;
- Name and signature of inspector;
- Project location
- Current ownership information
- A description of the condition of the storm water control measure including the quality of: vegetation and soils; inlet and outlet channels and structures; catch basins; spillways; weirs, and other control structures; and sediment and debris accumulation in storage as well as in and around inlet and outlet structures;
- Specific maintenance issues or violations found that need to be corrected by the property owner or operator along with deadlines and reinspection dates.

Activity/Product	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
SOPs will be developed to address post-construction issues – see Appendix E Procedure Relating to MS4 Regulation 4.2.5.5.1.	Completed SOPs	Completed SOPs Draft SOPs can be found in Appendix H.		See Minimum Performance Measure 4.2.3.2 & 4.2.3.2.1 in Chapter 4	July 2021	Facilities management

Minimum Performance Measure 4.2.5.6 – Permittees shall provide annual training for all staff involved in post-construction storm water management, planning and review, and inspections and enforcement. New hires shall be trained upon hire and before commencing storm water related duties. Training shall be provided or made available for staff in the fundamentals of long-term storm water management through the use of structural and non-structural control methods. The training records to be kept include dates, activities or course descriptions, and names and positions of staff in attendance.

Activity/Product	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
Staff whose job duties are related to the storm water will be trained on the post-construction program	Have all related staff attend training	Attendance roll, training invoice	ET	24 hours $720	Annually	Facilities management

Minimum Performance Measure 4.2.5.7 – The Permittee must maintain an inventory of all post-construction structural storm water control measures installed and implemented at new development and redeveloped sites that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale. This inventory shall include both public and private sector sites located within the Permittee's service area.

Minimum Performance Measure 4.2.5.7.1 – Each entry to the inventory must include basic information on each project, such as project's name, owner's name and contact information, location, start/end date, etc. In addition, inventory entries must include the following for each project:

- Short description of each storm water control measure (type, number, design or performance specifications);
- Short description of maintenance requirements (frequency of required maintenance and inspections); and
- Inspection information (date, findings, follow up activities, prioritization of follow-up activities, compliance status).

Minimum Performance Measure 4.2.5.7.2 – Based on inspections conducted pursuant to Part 4.2.5.5., the Permittee must update the inventory as appropriate where changes occur in property ownership or the specific control measures implemented at the site.

Activity/Product	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
Maintain an inventory of all post-construction storm water controls for required sites, update the inventory as necessary	Inventory of all post-construction storm water controls. Update the inventory as required	Inventory forms with required information		4 hours $120	July 2021; as needed thereafter	GIS Environmental Health and Safety

Pollution Prevention / Good Housekeeping

CHAPTER 7

STORM WATER MANAGEMENT PLAN

CHAPTER 7

POLLUTION PREVENTION/GOOD HOUSEKEEPING

POLLUTION PREVENTION/GOOD HOUSEKEEPING

The Pollution Prevention/Good Housekeeping for municipal operations minimum control measure is a key element of the small MS4 storm water management program. This measure requires the small MS4 operator to examine and subsequently alter their own actions to help ensure a reduction in the amount and type of pollution that: (1) collects on streets, parking lots, open spaces, and storage and vehicle maintenance areas and is discharged into local waterways; and (2) results from actions such as environmentally damaging land development and flood management practices or poor maintenance of storm sewer systems.

While this measure is meant primarily to improve or protect receiving water quality by altering municipal or facility operations, it also can result in a cost savings for the small MS4 operator, since proper and timely maintenance of storm sewer systems can help avoid repair costs from damage caused by age and neglect.

Recognizing the benefits of pollution prevention practices, the rule requires an operator of a regulated small MS4 to:

- Develop and implement an operation and maintenance program with the ultimate goal of preventing or reducing pollutant runoff from municipal operations into the storm sewer system

- Include employee training on how to incorporate pollution prevention/good housekeeping practices into municipal operations such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and storm water system maintenance. To minimize duplication of effort and conserve resources, the MS4 operator can use training materials that are available from the EPA, the State, or County Storm Water Coalitions

- Determine the appropriate best management practices (BMPs) and measureable goals for this minimum control measure.

The intent of this control measure is to ensure that existing municipal, State or Federal operations are performed in ways that will minimize contamination of storm water discharges. The small MS4 operator to consider the following components when developing their program for this measure:

- ***Maintenance activities, maintenance schedules, and long-term inspection procedures*** for structural and non-structural controls to reduce floatables and other pollutants discharged from the separate storm sewers

- ***Controls for reducing or eliminating the discharge of pollutants*** from areas such as roads and parking lots, maintenance and storage yards (including salt/sand storage and snow disposal areas), and waste transfer stations. These controls could include programs

that promote recycling (to reduce litter), minimize pesticide use, and ensure the proper disposal of animal waste

- ***Procedures for the proper disposal of waste*** removed from separate storm sewer systems and areas listed in the bullet above, including dredge spoil, accumulated sediments, floatables, and other debris

- ***Ways to ensure that new flood management projects assess the impacts on water quality*** and examine existing projects for incorporation of additional water quality protection devices or practices. EPA encourages coordination with flood control managers for the purpose of identifying and addressing environmental impacts from such projects

The effective performance of this control measure hinges on the proper maintenance of the BMPs used, particularly for the first two bullets above. For example, structural controls, such as grates on outfalls to capture floatables, typically need regular cleaning, while non-structural controls, such as training materials and recycling programs, need periodic updating.

Measurable goals, which are required for each minimum control measure, are meant to gauge permit compliance and program effectiveness. The measurable goals, as well as the BMPs, should consider the needs and characteristics of the operator and the area served by its small MS4. The measurable goals should be chosen using an integrated approach that fully addresses the requirements and intent of the minimum control measure. For example, an MS4 program goal might be to incorporate the use of road salt alternatives for highway deicing and reduce traditional road salt use by 50 percent in the first year of the permit term.

Pollution Prevention and Good Housekeeping for Municipal Operations Strategy

The General Permit states that "All Permittees shall implement a program for Permittee-owned or operated facilities, operations and structural storm water controls that includes standard operating procedures (SOPs), pollution prevention BMPs, storm water pollution prevention plans or similar type of documents, and a training component that have the ultimate goal of preventing or reducing the runoff of pollutants to the MS4 and Waters of the State. All components of the program shall be included in the SWMP document and must identify the department (and where appropriate, the specific staff) responsible for performing each activity described in this section. The Permittee must develop an inventory of all such Permittee-owned or operated facilities. The Permittee must review this inventory annually and update as necessary."

Pollution Prevention and Good Housekeeping for Municipal Operations

Minimum Performance Measure 4.2.6.1 – Permitees shall develop and keep current a written inventory of Permittee-owned or operated facilities and storm water controls that may include but is not limited to: Composting facilities Equipment storage and maintenance facilities; Fuel farms; Hazardous waste disposal facilities; Hazardous waste handling and transfer facilities ; Incinerators; Landfills; Landscape maintenance on municipal property; Materials storage yards; Pesticide storage facilities; Public buildings, including libraries, police stations, fire stations, municipal; buildings, and similar Permittee-owned or operated buildings; Public parking lots; Public golf courses; Public swimming pools; Public works yards; Recycling facilities; Salt storage facilities; Solid waste handling and transfer facilities; Street repair and maintenance sites; Vehicle storage and maintenance yards; and Permittee-owned and/or maintained structural storm water controls. Facilities covered under the General UPDES Permit for Storm Water Discharges Associated with Industrial Activities do not need to develop an O & M program but must instead maintain the Storm Water Pollution Prevention Plan (SWPPP) required by that permit.

Minimum Performance Measure 4.2.6.2 – All Permittees shall assess the written inventory of Permittee-owned or operated facilities, operations and storm water controls identified in Part 4.2.6.1. for their potential to discharge to storm water the following typical urban pollutants: sediment, nutrients, metals, hydrocarbons (e.g., benzene, toluene, ethylbenzene and xylene), pesticides, chlorides, and trash. Other pollutants may be associated with, but not generated directly from, the municipally-owned or operated facilities, such as bacteria, chlorine, organic matter, etc. Therefore, the Permittee must determine additional pollutants associated with its facilities that could be found in storm water discharges. A description of the assessment process and findings must be included in the SWMP document.

Minimum Performance Measure 4.2.6.3 – Based on the assessment required in Part 4.2.6.2., the Permittee must identify as "high-priority" those facilities or operations that have a high potential to generate storm water pollutants. Among the factors that must be considered in giving a facility a high priority ranking is the amount of urban pollutants stored at the site, the identification of improperly stored materials, activities that must be performed outside (e.g., changing automotive fluids), proximity to waterbodies, poor housekeeping practices, and discharge of pollutant(s) of concern to impaired water(s).

Activity/Product Related BMPs	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
Create a list of University owned facilities. Assess the list for each facilities potential to discharge pollutants and identify any high priority facilities	Written list of each facility the University owns with associated pollutants, listing any facilities that are high priority. Update the list as new facilities are built	Written document that is kept in this SWMP		3 hours $90	Review Annually	Environmental Health and Safety

Minimum Performance Measure 4.2.6.4 – Permittee shall develop and implement a Storm Water Pollution Prevention Plan (SWPPP) or similar type document for each "high-priority" Permittee-owned or operated facility. The SWPPP shall identify potential sources of pollution that may reasonably be expected to affect the quality of storm water discharges associated with activity from the facility. The SWPPP shall describe and ensure the implementation of standard operating practices (SOPs) that are to be used to reduce the pollutants in storm water discharges associated with activity at the facility and to ensure compliance with the terms and conditions of this Permit. This document shall be tailored and retained at all "high priority" facility locations. The SWPPP shall include a site map showing the information listed in paragraph 4.2.6.4.

Activity/Product Related BMPs	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
Develop and implement SWPPP for each "high-priority" Permittee-owned or operated facility.	Have SWPPP developed and implemented	SWPPP onsite		15 hours / facility $1500/facility	September 2016; update as needed	Facility management

Minimum Performance Measure 4.2.6.5 – The following inspections shall be conducted at "high priority" Permittee-owned or operated facilities:

Minimum Performance Measure 4.2.6.5.1 – Weekly visual inspections: The Permittee must perform weekly visual inspections of "high priority" facilities in accordance with the developed SOPs to minimize the potential for pollutant discharge. The Permittee must look for evidence of spills and immediately clean them up to prevent contact with precipitation or runoff. The weekly inspections must be tracked in a log for every facility and records kept with the SWMP document. The inspection log should also include any identified deficiencies and the corrective actions taken to fix the deficiencies.

Minimum Performance Measure 4.2.6.5.2 - Quarterly comprehensive inspections: At least once per quarter, a comprehensive inspection of "high priority" facilities, including all storm water controls, must be performed, with specific attention paid to waste storage areas, dumpsters, vehicle and equipment maintenance/fueling areas, material handling areas, and similar pollutant-generating areas. The quarterly inspection results must be documented and records kept with the SWMP document. This inspection must be done in accordance with the developed SOPs. An inspection report must also include any identified deficiencies and the corrective actions taken to remedy the deficiencies.

Minimum Performance Measure 4.2.6.5.3 - Quarterly visual observation of storm water discharges: At least once per quarter, the Permittee must visually observe the quality of the storm water discharges from the "high priority" facilities (unless climate conditions preclude doing so, in which case the Permittee must attempt to evaluate the discharges four times during the wet season). Any observed problems (e.g., color, foam, sheen, turbidity) that can be associated with pollutant sources or controls must be remedied to prevent discharge to the storm drain system. Visual observations must be documented and records kept with the SWMP document. This inspection must be done in accordance with the developed SOPs. The inspection report must also include any identified deficiencies and the corrective actions taken to remedy the deficiencies.

Activity/Product Related BMPs	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
Perform weekly visual inspections of "high priority" facilities.	Perform weekly inspections	Track in log to be kept with SWMP		2 hours/wk $120/wk	Weekly	Facility management
At least once per quarter, perform a comprehensive inspection of "high priority" facilities.	Perform quarterly inspections	Inspection report to be kept with SWMP		12 hours/qtr $720/quarter	Quarterly	Facility management
At least once per quarter, visually observe the quality of the storm water discharges from the "high priority" facilities.	Perform quarterly inspections	Inspection report to be kept with SWMP		2 hours/qtr $120/quarter	Quarterly	Facility management

Minimum Performance Measure 4.2.6.6 – Each "high priority" facility identified in Part 4.2.6.3. must develop facility-specific standard operating procedures (SOPs) or similar type of documents. The SOPs shall include BMPs that, when applied to the municipal operation, facility or storm water control will protect water quality and reduce the discharge of pollutants to the MS4. Low impact development (LID) techniques should be considered for all new and redeveloped Permittee-owned or operated facilities. The SOPs shall include appropriate pollution prevention and good housekeeping procedures for all of the following types of facilities and/or activities listed below:

Minimum Performance Measure 4.2.6.6.1 – Buildings and facilities: The O & M program shall address, but is not limited to: Permittee-owned or operated offices, police and fire stations, pools, parking garages, and other Permittee-owned or operated buildings or utilities. The SOPs must address the use, storage and disposal of chemicals and ensure through employee training, that those responsible for handling these products understand and implement the SOPs. All Permittee-owned or operated facilities must develop and ensure that spill prevention plans are in place, if applicable, and coordinate with the local fire department as necessary. The SOPs must address dumpsters and other waste management which includes, but is not limited to, cleaning, washing, painting and other maintenance activities. The O & M program must include schedules and SOPs for sweeping parking lots and keeping the area surrounding the facilities clean to minimize runoff of pollutants. Within 180 days of receiving coverage from this Permit, all Permittees must maintain an inventory of all floor drains inside all Permittee-owned or operated buildings. The inventory must be kept current. The Permittee must ensure that all floor drains discharge to appropriate locations. Within 180 days of receiving coverage from this Permit, all Permittees must develop an inventory including a map of all storm drains located on the property of all Permittee-owned or operated buildings and facilities. The Permittee must ensure that only storm water is allowed into these drains and that the appropriate BMPs are in place to minimize pollutants from entering the MS4.

Minimum Performance Measure 4.2.6.6.2 – Material storage areas, heavy equipment storage areas and maintenance areas. Permittees shall develop and implement SOPs to protect water quality at each of these facilities owned or operated by the Permittee and not covered under the General UPDES Permit for Storm Water Discharges Associated with Industrial Activities.

Minimum Performance Measure 4.2.6.6.3 – Parks and open space. The O & M program shall address, but is not limited to: SOPs for the proper application, storage, and disposal of fertilizer, pesticides, and herbicides including minimizing the use of these products and using only in accordance with manufacturer's instruction; sediment and erosion control; evaluation of lawn maintenance and landscaping activities to ensure practices are protective of water quality such as, proper disposal of lawn clippings and vegetation, and use of alternative landscaping materials such as drought tolerant plants. The SOPs must address the management of trash containers at parks and other open spaces which include scheduled cleanings and establishing a sufficient number of containers, and for placing signage in areas concerning the proper disposal of pet wastes. The SOPs must also address the proper cleaning of maintenance equipment, building exterior, trash containers and the disposal of the associated waste and wastewater. Permittees shall implement park and open space maintenance pollution prevention/good housekeeping practices at all park areas, and other open spaces owned or operated by the Permittee.

Minimum Performance Measure 4.2.6.6.4 – Vehicle and Equipment. The O & M program shall address, but it not limited to: SOPs that address vehicle maintenance and repair activities that occur on Permittee-owned or operated vehicles. BMPs should include using drip pans and absorbents under or around leaky vehicles and equipment or storing indoors where feasible. Fueling areas for Permittee-owned or operated vehicles shall be evaluated. If possible, place fueling areas under cover in order to minimize exposure. The O & M program shall include SOPs to ensure that vehicle wash waters are not discharged to the MS4 or surface waters. This Permit strictly prohibits such discharges.

Minimum Performance Measure 4.2.6.6.5 – Roads, highways, and parking lots. The O & M program shall address, but it not limited to: SOPs and schedule for sweeping streets and Permittee-owned or operated parking lots and any other BMPs designed to reduce road and parking lot debris and other pollutants from entering the MS4; road and parking lot maintenance, including pothole repair, pavement marking, sealing and repaving; cold weather operations, including plowing, sanding, and application of deicing compounds and maintenance of snow disposal areas; right-of-way maintenance, including mowing, herbicide and pesticide application; and municipally-sponsored events such as large outdoor festivals, parades or street fairs. The Permittee must ensure that areas used for snow disposal will not result in discharges to receiving waters.

Minimum Performance Measure 4.2.6.6.6 – Storm water collection and conveyance system. The O & M program shall address, but is not limited to: SOPs and schedule for the regular inspection, cleaning, and repair of catch basins, storm water conveyance pipes, ditches and irrigation canals, culverts, structural storm water controls, and structural runoff treatment and/or flow control facilities. Permittees shall implement catch basin cleaning, storm water system maintenance, scheduled structural BMP inspections and maintenance, and pollution prevention/good housekeeping practices. Permittees should prioritize storm sewer system maintenance, with the highest priority areas being maintained at the greatest frequency. Priorities should be driven by water quality concerns, the condition of the receiving water, the amount and type of material that typically accumulates in an area, or other location-specific factors. All Permittee-owned or operated storm water structural BMPs including but not limited to, swales, retention/detention basins or other structures must be inspected annually to ensure that they are properly maintained to reduce the discharge of pollutants into receiving waters. Permittees shall ensure and document

proper disposal methods of all waste and wastewater removed from the storm water conveyance system. These disposal methods apply to, but are not limited to, street sweeping and catch basin cleaning. Materials removed from the MS4 should be dewatered in a contained, impervious area and discharged to the local sanitary sewer (with approval of local authorities) where feasible. The solid material will need to be stored and disposed of properly to avoid discharge to Waters of the State during a storm event. Any other treatment and disposal measures must be reviewed and approved by the Division. Some materials removed from storm drains and open channels may require special handling and disposal, and may not be authorized to be disposed of in a landfill.

Minimum Performance Measure 4.2.6.6.7 – Other facilities and operations Permittees shall identify any facilities and operations not listed above that would reasonably be expected to discharge contaminated runoff, and revise as necessary, implement, and document the appropriate BMPs to protect water quality from discharges from these sites in the O&M program.

Activity/Product	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
Many facilities the University owns are not high priority. SOPs have been developed for many facilities and the activities that have the potential to contaminate storm water. These draft SOPs can be found in Appendix H.	Update SOPs to reflect current University operations	Updated SOPs kept in this SWMP		8 hours $240	July 2021	Facility management

Minimum Performance Measure 4.2.6.7 – If a Permittee contracts with a third-party to conduct municipal maintenance or allows private developments to conduct their own maintenance, the contractor shall be held to the same standards as the Permittee. This expectation must be defined in contracts between the Permittee and its contractors or the contractors of private developments. The Permittee shall be responsible for ensuring, through contractually-required documentation or periodic site visits that contractors are using appropriate storm water controls and following the standard operating procedures, storm water control measures, and good housekeeping practices of the Permittee.

Activity/Product	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
Obtain contract with any third-parties that conduct maintenance activities.	A signed contract that requires the same storm water standards the University is held to will be developed and used	A copy of the signed contract		4 hours $120	July 2021	Facility management

Minimum Performance Measure 4.2.6.8 – The Permittee must develop and implement a process to assess the water quality impacts in the design of all new flood management structural controls that are associated with the Permittee or that discharge to the MS4. This process must include consideration of controls that can be used to minimize the impacts to site water quality and hydrology while still meeting project objectives. A description of this process must be included in the SWMP document.

Minimum Performance Measure 4.2.6.8.1 – Existing flood management structural controls must be assessed to determine whether changes or additions should be made to improve water quality. A description of this process and determinations should be included in the SWMP document.

Activity/Product	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
Develop and implement SOPs to assess water quality impacts of new flood management structural controls. Assess existing flood management structural controls for water quality impacts	Develop a written SOP	Written process kept in SWMP		4 hours $120	July 2021	Facility management

Minimum Performance Measure 4.2.6.9 – Construction Projects. Public construction projects shall comply with the requirements applied to private projects. All construction projects disturbing greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, owned or operated by the Permittee are required to be covered under the General UPDES Permit for Storm Water Discharges Associated with Construction Activities.

Activity/Product	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
The University will follow the UPDES permit process for all private and public projects.	Use the UPDES Storm Water Inspection Form for SWPPP Compliance found in Appendix C and the SWPPP Checklist found in Appendix C which address construction and post-construction controls	Keep records of the UPDES Storm Water Inspection Form for SWPPP Compliance and the SWPPP Checklist		1 hour for each inspection form Assume 2 forms completed per month $60	Ongoing	Facility management

Minimum Performance Measure 4.2.6.10 – The Permittee shall ensure that all employees, contracted staff, and other responsible entities that have primary construction, operation, or maintenance job functions that are likely to impact storm water quality receive annual training. The Permittee shall identify target individuals to participate in the training sessions and ensure that all such employees receive training upon being hired and annually thereafter, at a minimum. Training shall address the importance of protecting water quality, the requirements of this Permit, operation and maintenance requirements, inspection procedures, ways to perform their job activities to prevent or minimize impacts to water quality, SOPs and SWPPPs for the various Permittee-owned or operated facilities and procedures for reporting water quality concerns, including potential illicit discharges. Training records must be kept and shall include dates, activities or course descriptions, and names and positions of staff in attendance. Follow-up training shall be provided as needed to address changes in procedures, methods or staffing. .

Activity/Product	Measureable Goal	Documentation	Related BMPs	Resources Needed	Due Date/ Frequency	Responsible Party
Staff whose job duties are related to the storm water will be trained on the post-construction program	Have all target employees attend at the specified frequency	Attendance roll, training invoice	ET	24 hours $720	Annually	Facility management

Conclusion

CHAPTER 8

STORM WATER MANAGEMENT PLAN

CHAPTER 8

CONCLUSION AND CERTIFICATION

CONCLUSION

The new General Permit provides clarification and gives many additional requirements to cities that are classified as small MS4s. In order to strive for permit compliance, the small MS4s will need to devote additional time, effort, and resources to their storm water program. The time and money required to meet each minimum performance measure provided in this SWMP are only estimates. It is recommended that the University evaluate these estimated costs and also evaluate their current storm water utility rate to determine if the current revenue will cover the cost of these additional requirements.

The ultimate goal of this SWMP document should to make the local rivers and streams cleaner; to do this, an effective program is needed. The EPA has provided guidance on how to evaluate the program effectiveness and its goals. The following are the levels of effectiveness:

- Level 1 – Compliance with Activity Bases Permit Requirements
- Level 2 – Changes in Attitudes, Knowledge, & Awareness
- Level 3 – Behavioral Change & BMP Implementation
- Level 4 – Load Reductions
- Level 5 – Changes in Urban Runoff & Discharge Quality
- Level 6 – Changes in Receiving Water Quality

As stated in the introduction, the measurable goals are mandated by the EPA, and a community must be showing improvement with their program and goals over time. This SWMP is intended to be a living document with tasks, goals, and BMPs added and deleted as new management practices arise and other management practices are found to be ineffective. Communities that are making a concerted effort to comply with permit requirements are less likely to be penalized when inspected and audited. Penalties for not complying with General Permit requirements can be severe including fines as much as $25,000 per day per violation and jail time of up to six months for tampering or falsifying information (see General Permit sections 6.2, 6.10, & 6.11).

The following appendices contain reference documents and examples of what neighboring communities are doing to meet permit requirements. As Weber State University fulfills the requirements of the permit, they will likely follow what the neighboring communities have been doing.

CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated 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."

_____ _____

Name of Certifying Official, Title Date (mm/dd/yy)

Public Education and Outreach
References and Documents

APPENDIX A

STORM DRAIN DECAL PROGRAM
SERVICE PROJECT

PURPOSE

Storm drain decals and brochures have become a popular method of teaching the public about the effects and prohibitions against waste disposal in the storm drain system. The decals are glued to the side of the drain inlet, and the brochures are distributed door-to-door with a message that informs the public that water that enters the storm drain system is not treated prior to discharge into local waters. The brochures also offer tips on how to prevent storm water pollution.

INSTRUCTIONS

1. Obtain a street map of the area and receive the decals from the City. The map shows the location of each storm drain inlet box. Any area not completed may be chosen for the decal program.
2. Use the map as a guide to help you find each inlet box. If the map shows incorrect information about the location of inlet boxes, please indicate the new information on the map or a separate sheet of paper. Use the street address as the locator.
3. Materials provided by the City at no charge:
   a. Decals
   b. Brochures and box of rubber bands
   c. Glue
   d. Caulking Guns
   e. Wire Brushes
   f. Gloves
   g. Map

   NOTE: Upon completion of the project, please return any unused items as well as the caulking guns and the wire brushes.
4. This project requires adult supervision (where applicable) to ensure (1) the safety of youths working in the roadway and (2) the proper use and safe handling of the adhesive, which is harmful if not properly handled.
5. Once at your location, clean the existing grate so it is free from debris. Apply the decals according to the instruction sheet. Distribute the two (2) different brochures door-to-door to neighboring houses. Once all decals have been applied and brochures have been handed out, any unused supplies and the updated map should be returned to the City.
6. Final inspection by the City will take place after completion.

CURB MARKER INSTALLATION INSTRUCTIONS

1. **Clean Surface**
   Make sure application surface is flat, dry and free of any loose debris. **The minimum application temperature is 40° F, and the maximum temperature is 100° F.**

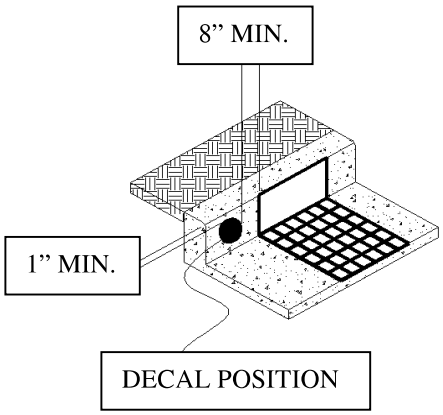
2. **Apply Adhesive**
   Coming in 1/8" from the outside edge of the marker, apply a bead of adhesive and then work in to the center.

Step 1

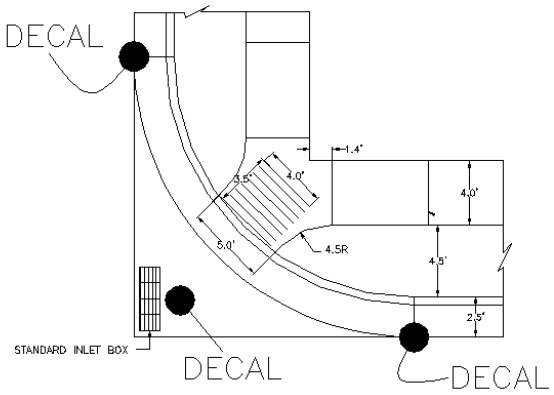
Step 2

3. **Stick It!**
   Apply the marker to the application surface pushing down HARD forcing adhesive out around the entire edge. It is important that the entire edge of the marker is sealed to the application surface. Hold the decal in position for a minimum of 2 minutes.

Step 3



NOTE: If grate is not located at the curb, install decal on closest adjacent curb. If the vertical curb surface is less than 6 inches high and you are not able to install the decal on the vertical surface, install the decal on the top of the curb.



- **CURB MARKER ADHESIVE IS HARMFUL AND MUST BE PROPERLY HANDLED. ADULT SUPERVISION IS REQUIRED TO ENSURE SAFE HANDLING.**

HINTS FOR USE OF CURB MARKER ADHESIVE

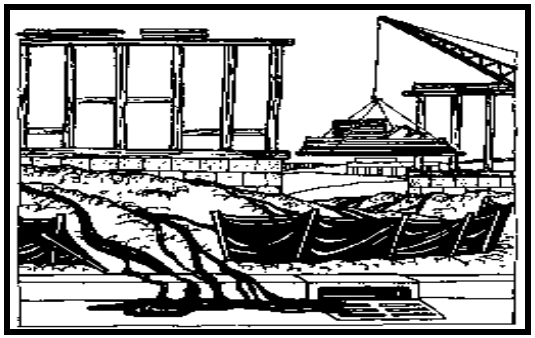
- **Wear gloves and other protective clothing, as necessary.**
- **It is not necessary to use a large amount of adhesive.**
- **Push down on the marker so that it is "TIGHT" to the surface. Large amounts of adhesive trapped under the surface of the marker can retard cure time. Hold the decal in place for 2 minutes.**
- **Make sure that the edge has approximately 1/8" of adhesive all around to seal edge to the surface.**
- **Wash hands with hand cleaner then soap and water.**
- **At 75° F, adhesive will skin over in 1-hour, become hard to touch in 4-hours, and achieve a full cure in 18-hours.**
- **MIN APPLICATION TEMPERATURE = 40° F**
- **MAX APPLICATION TEMPERATURE = 100° F**

FIRST AID PROCEDURES

INHALATION: Remove to fresh air, administer oxygen or artificial respiration. Contact physician. EYES: Flush eyes with water for at least 15 minutes. SKIN CONTACT: Wash with soap and water. Contact physician if irritation persists. INGESTION: Do not induce vomiting. Contact physician immediately.

DANGER: Extremely flammable. Vapor harmful. Vapors may ignite explosively. Keep away from and do not use near heat, sparks, and open flame.

Storm Water Pollution Prevention:
It's Up To Us



In Weber County, storm water flows through storm drains directly to local creeks and rivers with ***NO TREATMENT****.*

Water quality can be affected by a number of natural elements as well as chemical elements introduced by humans.

What kind of contaminants might reach our rivers and streams?

•Contaminants resulting from unwise landscaping practices such as over applying or over watering might include: dirt, leaves, grass clippings, fertilizers, herbicides, and pesticides.

•Chemicals from chemicals used in washing equipment, painting, cleaners, or construction debris.

•Toxins such as oil or antifreeze that may leak from vehicles or heavy equipment.

Local recreation areas are affected by storm water contamination and can result in harmful situations for humans and wildlife. These areas include the Weber River, Ogden River (including North, Middle & South Fork), Pineview Reservoir among others.

What Can You Do?

General Practices

- *Schedule excavation and grading work for dry weather.*
- *Perform major equipment repairs away from the job site.*
- *When refueling or when vehicle/equipment maintenance must be done on site, designate a location away from storm drains or drainage ways.*
- *Do not use diesel oil to lubricate equipment or parts.*

Storm Water Pollution from Construction Activities

Soil excavation and grading operations uncover and loosen large amounts of soil that can flow or blow into storm drains if handled improperly. These activities can be a major source of sediment and contaminants in storm water

Recent regulations require construction activities that disturb five acres or more to obtain a UPDES storm water discharge permit from the State Division of Water Quality. Also required is the development and implementation of a Storm Water Pollution Prevention Plan. See the reverse side of this brochure for the Division's phone number.

What Can You Do?

During Construction

- *Remove existing vegetation only when absolutely necessary.*
- *Consider planting temporary vegetation for erosion control on slopes or where construction is not immediately planned.*
- *Protect downslope drainage courses, streams, and storm drains with hay bales or temporary drainage swales.*
- *Use check dams or ditches to divert runoff around excavations.*
- *Cover stockpiles and excavated soil with secured tarps or plastic sheeting.*

After Construction

- *Re-vegetate and stabilize denuded areas as soon as possible.*
- *Remove dirt and debris from sidewalks, gutters, and drainage structures.*
- *Remove or stabilize stockpiled material.*

For additional information on Storm Water Protection refer to the following brochures:

Erosion Control
Fresh Concrete and Mortar Application
Household and Vehicle Maintenance
Impervious Surfaces
Landscaping, Gardening, and Yard Maintenance
Paint and Household Hazardous Waste
Pet Waste Water Quality
Utah and its Water, Why Conserve
Water Conservation Inside the Home
Water Conservation Outside the Home
Xeriscaping

For more information about the Weber County Storm water quality management program and additional pamphlets, contact:

Weber County Storm Water Management
Dr. George S. Burbidge
444-24th St. Ogden, UT 84401
Office (801)399-8677
Fax (801)625-3699
www.co.weber.ut.us/stormwater.

Brochure created by Salt Lake County Engineering Division modified by Weber County Storm Water Management Division

Spill Response

Dial 911
-or-
State Of Utah
Environmental Response
(801) 536-4123

Utah Division of Water Quality
(801) 538-6146

Local Pollution Control Agencies:

Environmental Health Division of the
Weber/Morgan Health Department
(801) 591-7168

Put Used Oil in Its Place!

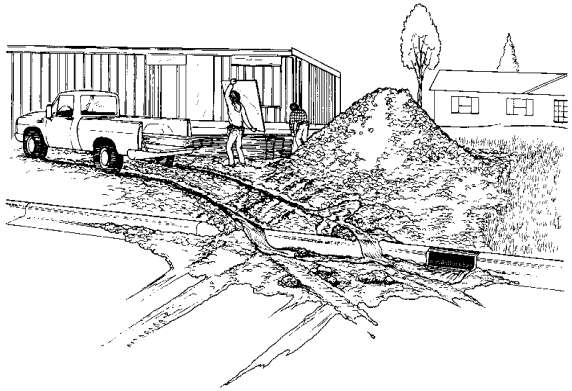
1-800-458-0145

Used Oil Recyclers
(for DIYers in Weber County)

Weber County Transfer Station
Auto Zone Stores
Checker Auto Parts Stores
NAPA Auto Parts Stores
Pep Boys Stores
Little Tire & Lube
Jiffy Lube

The preceding list is not all encompassing nor does it constitute an endorsement by Weber County of any particular company

EROSION CONTROL



RECOMMENDED METHODS FOR STORM WATER PROTECTION

Storm Water Pollution Prevention:
It's Up To Us

In Weber County, storm water flows through storm drains directly to local creeks and rivers with ***NO TREATMENT****.*

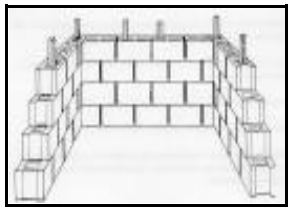
Water quality can be affected by a number of natural elements as well as chemical elements introduced by humans.

What kind of contaminants might reach our rivers and streams?

- ***Contaminants*** *resulting from unwise landscaping practices such as over applying or over watering might include: dirt, leaves, grass clippings, fertilizers, herbicides, and pesticides.*
- ***Chemicals*** *from washing your vehicle or equipment, paint, or cleaners.*
- ***Toxins*** *such as oil or antifreeze that may leak from vehicles or equipment.*

Local recreation areas are affected by storm water contamination and can result in harmful situations for humans and wildlife. These areas include the Weber River, Ogden River (including North, Middle & South Fork), Pineview Reservoir among others.

Who Should Use this Pamphlet?



- ✓ ***Home builders***
- ✓ ***Developers***
- ✓ ***General contractors***
- ✓ ***Sidewalk and patio construction workers***

What Can You Do?
General Business Practices

Both at your yard and the construction site, always store dry and wet materials under cover, protected from rainfall and runoff. Protect dry materials from wind

Secure bags of cement after they are open. Be sure to keep wind-blown cement powder away from gutters, storm drains, rainfall, and runoff.

Wash out concrete mixers only in designated wash-out areas in your yard, where the water will flow into containment ponds. Whenever possible, recycle washout by pumping back into mixers for reuse. ***Never dispose of washout into the street, storm drains, drainage ways, or streams!***

For more information regarding the disposal of unused concrete and washout, contact the Health Department at the number listed on the other side of this brochure.

Storm Water Pollution from Masonry and Paving

Fresh concrete and cement-related mortars that wash into lakes, rivers, and streams are toxic to fish and the aquatic environment. Disposing of these materials to storm drains or streams causes serious problems - and is ***prohibited by law!***

What Can You Do?
General Practices

Don't mix up more fresh concrete or cement than you will use in a day.

Set up and operate small mixers on tarps or heavy plastic drop cloths.

When cleaning up after driveway or sidewalk construction, wash fines onto dirt areas, not down the driveway or into the street or storm drain.

Place hay bales or other erosion controls down-slope to capture runoff carrying mortar or cement before it reaches the storm drain.

When breaking up paving, be sure to pick up all the pieces and dispose of properly.

Recycle large chunks of broken concrete at a landfill.

Dispose of small amounts of excess dry concrete, grout, and mortar in the trash.

Never bury waste material. Never illegally dump or abandon waste material.

For additional information on Storm Water Protection refer to the following brochures:

Erosion Control
Fresh Concrete and Mortar Application
Household and Vehicle Maintenance
Impervious Surfaces
Landscaping, Gardening, and Yard Maintenance
Paint and Household Hazardous Waste
Pet Waste Water Quality
Utah and its Water, Why Conserve
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Put Used Oil in Its Place!

1-800-458-0145

Used Oil Recyclers
(for DIYers in Weber County)

Weber County Transfer Station
Auto Zone Stores
Checker Auto Parts Stores
NAPA Auto Parts Stores
Pep Boys Stores
Little Tire & Lube
Jiffy Lube

The preceding list is not all encompassing nor does it constitute an endorsement by Weber County of any particular company

FRESH CONCRETE and MORTAR APPLICATION

RECOMMENDED METHODS FOR STORM WATER PROTECTION

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What kind of contaminants might reach our rivers and streams?

- ***Contaminants*** *resulting from unwise landscaping practices such as over applying or over watering might include: dirt, leaves, grass clippings, fertilizers, herbicides, and pesticides.*

- ***Chemicals*** *from household products from washing your car, painting, or household cleaners.*

- ***Toxins*** *such as oil or antifreeze that may leak from your car.*

What Can You Do?

General Practices

Never use the gutter or storm drain system for disposal of household hazardous waste. If you wouldn't drink it, don't dump it.

- *Store toxic products and chemicals indoors or in a shed or storage cabinet.*

- *Take unwanted hazardous materials and containers to the household hazardous waste disposal facility.*

*There is a Household Hazardous Waste Facility now located at the Weber County Solid Waste Facility at 867 West Wilson Lane. It is open from 8:00 am to 1:00 pm. on the 3rd Saturday April-September. Weber County homeowners can bring their household hazardous waste to the facility and it will be taken off their hands for **free!** Call 399-8803 for more information.*

- ***DO NOT WASH INTO THE STREET!***

Do not wash tools and equipment in driveways, gutters or drainage ways. Wash over grassed or soil areas where wash water won't reach the street.

Automotive

Take used motor oil and antifreeze to a recycling center or household hazardous waste facility.

Inspect and maintain vehicles to reduce leakage of fluids.

Reduce automotive emissions through regular maintenance and by limiting vehicle usage.

Clean up spills with kitty litter or absorbent material and let dry. Dispose of cleanup as solid waste.

Vehicles should be washed at a commercial car wash. Vehicles can be washed on the lawn with biodegradable soap to reduce wash water flows to the storm drain system.

Recycling Oil

Pour waste oil into an unbreakable container (plastic milk jug), seal and label. Call 399-8381 or 1-800-458-0145 or check the list on the reverse side for facilities that accept used oil.

Do not mix other materials with oil.

Recycling used oil could reduce national petroleum imports by 25.5 million barrels per year!

For additional information on Storm Water Protection refer to the following brochures:

Erosion Control
Fresh Concrete and Mortar Application
Household and Vehicle Maintenance
Impervious Surfaces
Landscaping, Gardening, and Yard Maintenance
Paint and Household Hazardous Waste
Pet Waste Water Quality
Utah and its Water, Why Conserve
Water Conservation Inside the Home
Water Conservation Outside the Home
Xeriscaping

For more information about the Weber County Storm water quality management program and additional brochure, contact:

Weber County Storm Water Management
Dr. George S. Burbidge
444-24th St. Ogden, UT 84401
Office (801)399-8677
Fax (801)625-3699
www.co.weber.ut.us/stormwater.

Brochure created by Salt Lake County Engineering Division modified by Weber County Storm Water Management Division.

Spill Response

Dial 911
-or-
State Of Utah
Environmental Response
(801) 536-4123

Utah Division of Water Quality
(801) 538-6146

Local Pollution Control
Agencies:
Environmental Health Division of the
Weber/Morgan Health Department
(801) 591-7168

Put Used Oil in Its Place!

1-800-458-0145

Used Oil Recyclers
(for DIYers in Weber County)

Weber County Transfer Station
Auto Zone Stores
Checker Auto Parts Stores
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Pep Boys Stores
Little Tire & Lube
Jiffy Lube

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HOUSEHOLD AND VEHICLE MAINTENANCE

RECOMMENDED METHODS FOR STORM WATER PROTECTION

What is an Impervious Surface?

An impervious surface is any surface that covers the soil and repels or prevents water from filtrating into the soil. The most commonly constructed impervious surfaces are rooftops, sidewalks, roads, highly compacted soil and parking lots.

Did you know?

- Impervious surfaces cause untreated storm water and irrigation water to run directly into the storm drains that lead to the rivers.
- Water that drains over impervious surfaces carry pollutants such as litter, pet waste, vehicle fluid, soil, fertilizers, and pesticides to rivers and streams.
- One acres of parking lot produces 15 times more run off than one acres of meadow.
- Permeable surfaces actually help improve water quality by filtering out sediment and other pollutants and helps replenish the water table.
- The temperature of traditional pavement in the summer can reach over 120◦F
- Nationwide, pavement covers 50-70 percent of most urban areas.

What can you do?

- Direct storm water from the driveways into vegetative strips.
- Install detention basins in large areas to store water, filter out sediment, and recharge the ground water.
- Disconnect your down spouts, redirect water to green areas, or save water in a rain barrel.
- Limit discharge by not over watering your landscape or “watering” sidewalks and patios.

Consider Alternative Surfaces

- Permeable pavement or cement*
- White Line Wall Stone
- widely spaced wood decking
- stamped concrete paving blocks
- interlocking pavers
- gravel, brick, river rock, lava rock, cobblestone, slate crushed brick.

*If you choose to install pervious surfaces over a large area consider the soil conditions and type, infiltration rate, depth to bedrock, and water table. Contact the Weber County Engineering Department for more information.

Also alternative underlayment and filler such as:

- rice stone
- course stone dust
- stone dust

These surfaces compared to traditional asphalt and concrete allow more water to filtrate in to the soil, recharges ground water, improves water quality and in some cases eliminates the need for detention basins.

Something to think about

Lawn areas are actually less efficient than landscaped areas of shrubs, trees, and ground covers in recharging the ground water.

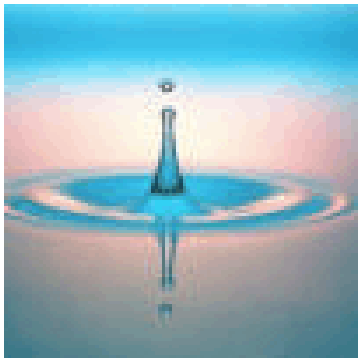
The Benefits of Pervious Surfaces

Financial Benefits

- Reduces the volume of water that enters the storm drain system and decreases the amount of revenue needed to maintain these systems.
- Decreases the cost and need for the development and installation of new systems.

Benefits to Water Quality and Environment.

- Improves water quality in rivers, streams, and the water table.
- Decreases the amount of chemical contaminants that pollute water habitats.
- Reduces stream and river velocity which lessens the severity of channel down cutting erosion.
- Reduces the amount of soil, sand, silt, and clay that enters the waterways and harms habitats.
- Helps keep recreation areas safe from pollutants that can be dangerous to humans.



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Impervious Surfaces

RECOMMENDED METHODS FOR STORM WATER PROTECTION

Storm Water Pollution Prevention:
It's Up To Us

*In Weber County, storm water flows through storm drains directly to local creeks and rivers with **NO TREATMENT**.*

Water quality can be affected by a number of natural elements as well as chemical elements introduced by humans.

What kind of contaminants might reach our rivers and streams?

- ***Contaminants** resulting from unwise landscaping practices such as over applying or over watering might include: dirt, leaves, grass clippings, fertilizers, herbicides, and pesticides.*
- ***Chemicals** from household products from washing your car, painting, or household cleaners.*
- ***Toxins** such as oil or antifreeze that may leak from your car.*

Local recreation areas are affected by storm water contamination and can result in harmful situations for humans and wildlife. These areas include the Weber River, Ogden River (including North, Middle & South Fork), Pineview Reservoir among others.

Who Should Use this Pamphlet?

- ☞ ***Residents***
- ☞ ***Landscapers***
- ☞ ***Gardeners***
- ☞ ***Swimming pool/spa service and repair workers***
- ☞ ***General contractors***

What Can You Do?
General Practices

Take tree & grass trimmings to Weber County Compost Facility (801-726-8212). You can also pick up ground cover to stabilize erosion, and compost is available for a natural fertilizer.

Use biodegradable pesticides/herbicides and cleaners.

Never use the gutter or storm drain system for disposal of household or garden waste.

Remove all pet waste from yard and curb and dispose of in trash. -to prevent spread of bacteria.

Store pesticides, fertilizers and other chemicals indoors, in a shed, or storage cabinet.

Wash household tools over grassed area away from curbs and gutters.

Clean leaves, sediment, and trash out of gutter and dispose of in garden or trash.

Landscaping/Garden Maintenance

Control erosion on your property by planting groundcover and stabilizing erosion-prone areas.

Use up pesticides. Rinse containers and use rinse water as product. Dispose of rinsed containers in the trash

Collect lawn and garden clippings, pruning waste, and tree trimmings. Chip if necessary and compost.

Sweep and collect dirt from driveways or walks and dispose of in garden.

Apply lawn and garden chemicals sparingly and according to instructions. Rinse containers and dispose of in trash.

Pool/Spa Maintenance

Never discharge pool or spa water into a street or storm drain.

When emptying a pool or spa, let chlorine dissipate for a few days, then recycle/reuse it by draining it gradually onto a landscaped area.

Do not use copper-based algaecides unless absolutely necessary. Copper is an especially strong herbicide and doesn't degrade to less toxic forms quickly. Control algae with chlorine or other alternatives.

Perform regular inspections to detect leaks.

Try to keep the water in the pool.

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LANDSCAPING, GARDENING AND YARD MAINTENANCE

RECOMMENDED METHODS FOR STORM WATER PROTECTION

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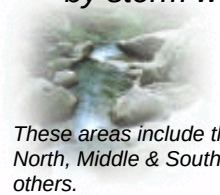

These areas include the Weber River, Ogden River (including North, Middle & South Fork), Pineview Reservoir among others.

What Can You Do? General Practices

- Never use the gutter or storm drain system for disposal of household waste. Liquid residue from paints, thinners, solvents, glues, and cleaning fluids are **hazardous wastes.**
- When thoroughly dry- used kitty litter, empty water base paint cans, spent brushes, rags, and drop cloths may be disposed of in the trash.
- Rinse containers and dispose them in the trash.
- Properly use and store all toxic products including cleaners, solvents, and paints.
- Use kitty litter or other absorbent material to clean up spills from paved surfaces.
- DO NOT WASH INTO THE STREET! Depending on the substance, dispose of absorbents in trash or at the household hazardous waste facility.

FREE!
Household Hazardous Waste Facility -
Weber County Solid Waste Facility

867 West Wilson Lane
8:00 am to 1:00 pm.
3rd Saturday April-September

Call 399-8803 for more information

Paint Solvents and Adhesives

- Select water based or latex paints whenever possible.
- Sweep up dust and paint chips from sanding or stripping. Dispose of in trash- UNLESS the activity involved marine paints or paints containing leads. These should be disposed of as hazardous waste.
- When high-pressure water stripping or cleaning building exteriors, block storm drains. Wash water onto dirt area and spade in soil if no chemicals were used. Contact the City or County Health Department for more specific guidelines, especially if chemicals are used.

- For water based paint, paint out brushes to the extent possible and rinse in sink.
- For oil based paint, paint out the brushes to the extent possible, filter and reuse thinners and solvents. Disposed of excess liquids and residue as hazardous waste.

A Couple Good Ideas: Give unused products to a neighbor or community group and try to buy only what you need.

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PAINT AND HOUSEHOLD

HAZARDOUS WASTE

RECOMMENDED METHODS FOR STORM WATER PROTECTION

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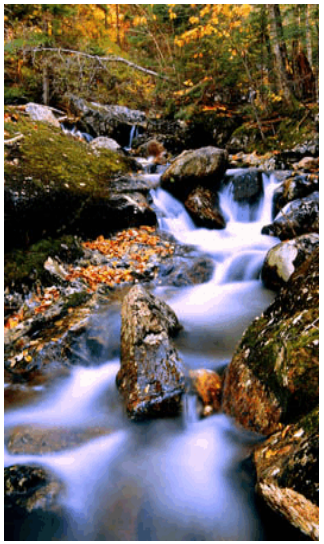

Are You Polluting Lakes and Streams?

Pet Owners... When you clean up after your pet, do you dump the waste in the street or storm drainage system? Do you leave it to decay on the sidewalk or on the parkway? If so, you may be causing pollution or health problems.

Pollutants from improperly disposed pet waste may be washed into the storm drainage system by rain or melting snow. Storm runoff in Weber County receives NO treatment.

☞ When pet waste is washed into lakes or streams, the waste decays, using up oxygen and releases ammonia. Low oxygen levels and ammonia combined with warm temperatures kill fish.

☞ Pet wastes also contain nutrients that encourage weed and algae growth. Overly fertile water becomes cloudy and green– unattractive for swimming, boating, and fishing.

☞ Perhaps most importantly, pet waste can carry diseases which could make water unsafe for contact.

What Can You Do?

Cleaning up after you pet can be as simple as taking a plastic bag or pooper scooper along on your next walk. What should you do with the waste you pick up? No solution is perfect, but we recommend two:

1. Flush It down the toilet.
The water in your toilet goes to a sewage treatment plant that removes most pollutants before the water reaches a river or stream.

To prevent plumbing problems, don't flush debris, cat litter. Cat feces may be flushed but used litter should be put in a securely closed bag in the trash.

2. Put waste in a securely closed bag and deposit it in the trash.

Because pet waste may carry diseases, you should not bury it in a vegetable garden. Do not put waste in a compost pile. The pile will not get hot enough to kill diseases organisms in the waste.

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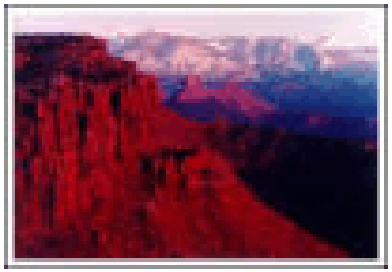
PET WASTE and WATER QUALITY

RECOMMENDED METHODS FOR STORM WATER PROTECTION

Utah and its Water, Why conserve?



Utah is a beautiful state with unique and valuable wilderness lands, but the lands are arid and the precious water that supports life is in more demand everyday as a result of our states' growth.

Some Utah Facts

Utah has one of the highest natural growth rates in the nation and yet only receives 13 inches of precipitation per year.

- The state of Utah is encouraging its districts to set a goal of decreasing per capita water use up to 25%.
- About 67% of Utahns' household water is spent on lawns and gardens.
- The Division of Water Resources has determined that Utahns' per capita water use is approximately 321 gallons per day, while the average water use for the Rocky Mountain states is 245 .

Some other things to think about

- About 75% of the earth's surface is covered with water, but less than 1% is available as fresh water for human use.
- About half of the water use for single family homes in Utah is used for lawns and gardens.
- Water cannot be created it can only change form and location.
- A 10 minute shower can use 55 gallons of water
- The average dishwasher uses 12 to 20 gallons per use.
- Traditional clothes washers use up to 41 gallons per load.

Water Conservation is not difficult!

Conserving water does not mean your lifestyle has to be changed. Simply changing landscape watering methods and installing more efficient appliances can conserve per capita water use by 25 %.

What can you do?

The following is a list of things you can do today to drastically reduce your water consumption:

Fix Those Leaks

- Fix leaking appliances and faucets.
- Repair leaks in our irrigation system.
-

Replace Your Old Toilet

- If your toilet was installed before 1992 it is most likely not a water efficient toilet.
- Place a plastic bottle filled with water or sand in your toilet tank to reduce the amount used in each flush.

Replace Your Clothes Washer

- *The Consortium for Energy Efficiency* keeps a list of water efficient clothes washer models or, check with your local appliance store.

Use Water Considerate Landscaping Methods

- Select plants that are appropriate for the local climate.
- Consider Xeriscaping all or part of your landscape.
- Experiment and adjust water amounts according to plant and soil type.
- Make sure your irrigation controller has a rain shut off device.
- Water only at night, and avoid watering during high winds.
- Avoid watering sidewalk and patios.

Resources

www.conservewater.utah.gov
www.water.utah.gov
www.epa.gov
www.utahgreenpages.org
www.awwa.com
www.h2ouse.org

Home Repair Sites

www.hometime.com
www.doityourself.com
www.bhg.com
www.alsnetbiz.com/homeimprovement

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Utah and its Water, Why Conserve?

Water Conservation Inside the Home

It would be unwise for Utahns to take drinking water for granted. As our population increses so does the demand for water resources, treatment plants, and water delivery systems. Conservation is no longer just a good idea; it is absolutely necessary for the future success of our state.

Some things to think about:

- A bath may use up to 70 gallons of water.
- If your shower head was installed before 1992 it may spray as much as 5 gallons per minute.
- Typically the highest water consuming device in the home is the toilet.

Top things to do inside the home

- Install low flow shower heads, toilets, and sink aerators.
- Repair all leaks.
- Use water only when necessary.
- Install new appliances that use less water
- Monitor water bill for usage and to detect leaks.

In the Shower

Low flow shower head verses the traditional

- Water use for typical 10 minute shower
  5 gallons/minute x 10 minutes =50 gallons

- A water conservative 5 minute shower
  2.5 gallons/minute x 5 minutes =12.5 gallons

  Water savings = 37.5 gallons per shower!

Another good idea

Keep a bucket in the shower to collect clean water for your plants.

The Toilet

Inside the home most of the water used goes down the toilet. If your toilet was installed before 1992 it may use up to **5 gallons** per flush. Low flow toilets require **less than 1.6 gallons** per flush.

Toilet Maintenance

- Put a plastic bottle filled with water or sand inside the toilet tank to lower the water required to fill the tank. Experiment with the water level that works best for your toilet.

- Put food coloring in the tank and if the color appears in the bowl without flushing there is a leak in your toilet.

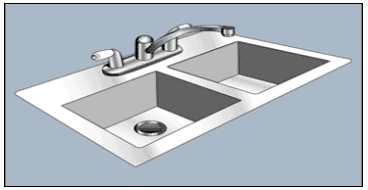
- Do not use caustic cleaners because they can damage the plastic and rubber components of the toilet and cause leaks. Contact your local hardware store for repair information.

Another good idea

Don't use the toilet as a garbage can

In the Kitchen

The number one way to save water in the kitchen is to simply find creative ways to not have to do so many dishes!
Have you ever asked yourself why are there always so many dishes to do?



Consider this

If every member of a 4 person household drank the recommended 8 glasses of water a day and used a different glass for every one, it would add up to 32 glasses to wash!

Some ideas

- Use only one glass a day per person for water. Try using a different color cup for every household member to keep them from getting mixed up.
- If you wash dishes by hand, fill one basin with clean water for rinsing instead of running the water. Fill a smaller basin or pot with the soapy water.

More helpful tips

- Instead of letting the water run while waiting for it to get hot, keep a plastic basin in the sink to collect the clean water and use it for your plants.
- Scrape food from dishes into the garbage can or compost instead of using the disposal.
- Do not run your dishwasher or clothes washer unless it is full.
- Try using an electric razor.
- Thaw food in the refrigerator or microwave instead of using water.
- Perform an annual check up on your evaporative cooler.
- Use a cup of water when brushing teeth instead of letting the water run.
- Teach your children water saving techniques and educate them about the importance of water.

Resources:

www.conservewater.utah.gov
www.waterinfo.org
www.epa.gov
www.h2ouse.org
www.water.utah.gov

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Water Conservation Inside the Home

A few ways you can help conserve water in your own home.

Water Conservation Outside the Home

Did you know?

• A standard garden hose can discharge up to 6.5 gallons per minute.
•To apply an inch of water to 1,000 sq. ft. of lawn requires 620 gallons.
•Typically over 50% of the water use for a single family home in Utah is used for lawn and garden.

What can you Do?

Maintenance

•Fix leaks in faucets, pipes, hoses, and pool/ spa.

•Visually inspect your sprinklers system once a month and repair leaks.

•Install drip system for trees, shrubs, and flowers. They use less water than minsters.

Watering Methods

•Water only once or twice a week during the spring and fall.

•Create a low-maintenance lawn by fertilizing and watering less and mowing taller. Mow to at least 3" in height and do not cut off more than 1/3 of the total length. Over use of fertilizers and pesticides can potentially pollute water sources, so use these chemicals sparingly. Remember, the more you water and fertilize, the more your lawn grows, requiring more maintenance.

•Water at night in cycles. For example, three six minute sessions will decrease run-off and increase absorption.

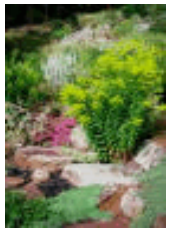
•Only water when needed and only the plants that need it. It is natural for plants to wilt a bit in the evening as long as they perk up in the morning.

•Mulch all areas of exposed soil, including potted plants. Do not water on windy days.
Add organic materials to sandy or clay soils to increase its ability to hold water.

•Use a soil tester to check moisture levels at the root zone to determine when watering is necessary.

Consider updating your landscape

•Try planting drought tolerant and regionally adapted plants.
•Ask yourself, how much lawn do I actually use? Consider replacing unused lawn with drought tolerant plants or ground cover.



•Arrange plants in your garden according to water needs, if done correctly this will prevent over-watering or under- watering of plants.
•Install wood decking or bricks or stone with interlocking patters instead of impervious cement walkways.
•Consider Xeriscaping.

Cleaning Methods

•Sweep instead of using water
•Do not use water to clean gutters
•Use a bucket of non-toxic soap and water to clean the car and turn water off when not needed.
•Wash your car over your lawn if possible.
•Do not clean your car during the hottest part of the day when water evaporates quickly.
•Consider using a commercial facility.

Pool and Spa

•Even a small leak of one inch a day in a 15X30 ft pool can waste 102,000 gallons a year.

Top ways to keep the water in your pool or spa.

•Cover your pool or spa.
Repair leaks.
•If pool is heated, reduce the temperature because warm water evaporates more quickly than cool.
•Manually clean your filter, this will do a better job and save water.
•Re-evaluate the frequency of your back-washing and adjust.

Resources

www.conservewater.utah.gov
www.epa.gov
www.water.utah.gov

For information on Xeriscaping and drought tolerant plants visit:
www.unps.org
www.xeriscape.org
www.slowtheflow.org
www.hort.usu.edu

Other resources

There are many demonstration gardens that can be visited throughout Utah.

Visit your local library to find more sources of information about Xeriscaping and water conservation landscaping methods

For additional information on Storm Water Protection refer to the following brochures:

Erosion Control
Fresh Concrete and Mortar Application
Household and Vehicle Maintenance
Impervious Surfaces
Landscaping, Gardening, and Yard Maintenance
Paint and Household Hazardous Waste
Pet Waste Water Quality
Utah and its Water, Why Conserve
Water Conservation Inside the Home
Water Conservation Outside the Home
Xeriscaping

For more information about the Weber County Storm water quality management program and additional pamphlets, contact:

Weber County Storm Water Management
Dr. George S. Burbidge
444-24th St. Ogden, UT 84401
Office (801)399-8677
Fax (801)625-3699
www.co.weber.ut.us/stormwater.

Brochure created by Salt Lake County Engineering Division modified by Weber County Storm Water Management Division

Spill Response

Dial 911
-or-
State Of Utah
Environmental Response
(801) 536-4123

Utah Division of Water Quality
(801) 538-6146

Local Pollution Control
Agencies:
Environmental Health Division of the
Weber/Morgan Health Department
(801) 591-7168

Put Used Oil in Its Place!

1-800-458-0145

Used Oil Recyclers
(for DIYers in Weber County)

Weber County Transfer Station
Auto Zone Stores
Checker Auto Parts Stores
NAPA Auto Parts Stores
Pep Boys Stores
Little Tire & Lube
Jiffy Lube

The preceding list is not all encompassing nor does it constitute an endorsement by Weber County of any particular company

WATER CONSERVATION OUTSIDE THE HOME

A few ways you can help conserve water at home.

Storm Water Pollution Prevention:
It's Up To Us!

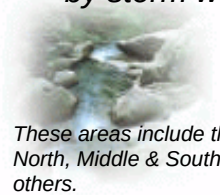
In Weber County, storm water flows through storm drains directly to local creeks and rivers with **NO TREATMENT**.

Water quality can be affected by a number of natural elements as well as chemical elements introduced by humans.

What kind of contaminants might reach our rivers and streams?

Contaminants resulting from unwise landscaping practices such as over applying or over watering might include: dirt, leaves, grass clippings, fertilizers, herbicides, and pesticides.
Chemicals from household products from washing your car, painting, or household cleaners.
Toxins such as oil or antifreeze that may leak from your car.

Local recreation areas are affected by storm water contamination and can result in harmful situations for humans and wildlife.



These areas include the Weber River, Ogden River (including North, Middle & South Fork), Pineview Reservoir among others.

What Can You Do? General Practices

- Never use the gutter or storm drain system for disposal of household waste. Liquid residue from paints, thinners, solvents, glues, and cleaning fluids are **hazardous wastes.**
- When thoroughly dry- used kitty litter, empty water base paint cans, spent brushes, rags, and drop cloths may be disposed of in the trash.
- Rinse containers and dispose them in the trash.
- Properly use and store all toxic products including cleaners, solvents, and paints.
- Use kitty litter or other absorbent material to clean up spills from paved surfaces.
- DO NOT WASH INTO THE STREET! Depending on the substance, dispose of absorbents in trash or at the household hazardous waste facility.

FREE!
Household Hazardous Waste Facility -
Weber County Solid Waste Facility

867 West Wilson Lane
8:00 am to 1:00 pm.
3rd Saturday April-September

Call 399-8803 for more information

Paint Solvents and Adhesives

- Select water based or latex paints whenever possible.
- Sweep up dust and paint chips from sanding or stripping. Dispose of in trash- UNLESS the activity involved marine paints or paints containing leads. These should be disposed of as hazardous waste.
- When high-pressure water stripping or cleaning building exteriors, block storm drains. Wash water onto dirt area and spade in soil if no chemicals were used. Contact the City or County Health Department for more specific guidelines, especially if chemicals are used.

- For water based paint, paint out brushes to the extent possible and rinse in sink.
- For oil based paint, paint out the brushes to the extent possible, filter and reuse thinners and solvents. Disposed of excess liquids and residue as hazardous waste.

A Couple Good Ideas: Give unused products to a neighbor or community group and try to buy only what you need.

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PAINT AND HOUSEHOLD

HAZARDOUS WASTE

RECOMMENDED METHODS FOR STORM WATER PROTECTION

Xeriscaping and the Utah Desert

What is Xeriscaping?

Xeriscape is a word created by combining the Greek word "xeros" which means dry and "scape" from the word "landscape".

Xeriscaping is water-wise landscaping.

This practice of landscaping focuses on using natural forces such as rainfall and careful plant selection to create beautiful sites that requires minimal maintenance. Usually the plants chosen are native plants or those that can survive in the local habitat with little intervention. With patience and planning, this method can be a successful and worthwhile venture that is beneficial and compatible with the Utah habitat.

Why is water-wise gardening so important in Utah?

Most simply stated because Utah is a desert As our population increases the demand for drinking and irrigation water increases. Water can not be created. If water conservation is not practiced our future drinking water supply will be depleted, our recreation areas jeopardized, and our natural habitats compromised.

Other Reasons to Xeriscape

Saving water isn't the only reason to Xeriscape. Other reasons include reducing storm water run off preventing erosion and decreasing the effects of soil expansion which causes pavement to crack.

Reducing Storm water run off

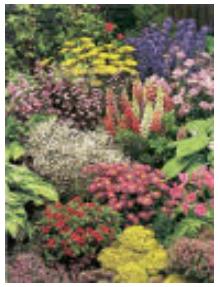
If your property has even a mild to moderate slope it invites runoff. If you do not have the necessary plants to hold it in place the runoff increases. Using mulches and other plants that require little water will decrease the occurrence of run off by allowing the water time to absorb into the soil. This also decreases erosion of the soil.

Decreasing Soil Expansion

Soil expansion happens when soil expands when it gets wet. This is also known as soil swelling. When the soil swells it can cause cracking in pavement and foundations. Xeriscaping can help prevent this because it requires little water thus preventing the soil from expanding and cracking the pavement.

How to get Started

You don't have to take drastic measures like tearing out all of your existing plants in order to begin xeriscaping. Start small.



- Consider removing a few feet of grass along your driveway and sidewalk. Plant these areas with ground cover, small shrubs or perennials.

- Or maybe replace a part of your sloping lawn with a rock garden, rock wall or some low-spreading evergreens.

Xeriscaping Helps Utah

Remember with xeriscaping you will get the most out of every gallon of water you apply to the landscape and that means you are helping to save one of our most precious resources, Water!

For more information including lists of Utah native plants and where to purchase them visit-

www.unps.org
www.slowtheflow.com
www.xeriscape.org
www.hort.usu.edu

For additional information on Storm Water Protection refer to the following brochures:

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Xeriscaping

Getting the most out of every gallon of water!

Davis County Stormwater Coalition

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Clearfield City	801-525-2700
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Fruit Heights City	801-546-0861 www.fruitheightscity.com
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Kaysville City	801-546-1235
Layton City	801-336-3700 www.laytoncity.org
North Salt Lake City	801-936-1122
South Weber City	801-479-3177 www.southwebercity.com
Sunset City	801-614-0014
Syracuse City	801-825-7235 www.syracuseut.com
West Bountiful City	801-292-4486
West Point City	801-776-0971
Woods Cross City	801-292-4421

www.woodscross.com/stormwater

DAVIS COUNTY STORMWATER COALITION

Davis County Stormwater Coalition
1500 East 650 North
Fruit Heights, UT 84037

DAVIS COUNTY STORMWATER COALITION

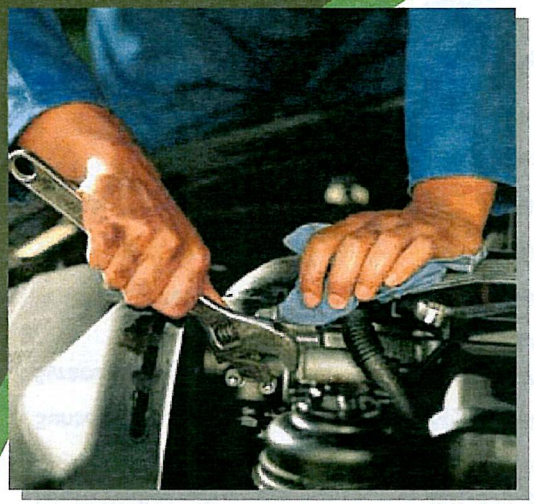
Stormwater Pollution Prevention

Tips for the Automotive Industry

NO DUMPING
DRAINS TO STREAM
DAVIS COUNTY
451-3296
CALL TO REPORT SPILLS

Areas of Concern:

- Cleaning Engines and Parts
- Storage of Hazardous Materials
- Waste Recycling and Disposal
- Drainage in Work and Fueling Areas
- Preventing Leaks and Spills



Cleaning Engines and Parts

Do not wash parts or equipment in a shop sink, parking lot, driveway or street. Scrape parts with a wire brush or use a bake oven rather than liquid cleaners. Arrange drip pans, drying racks and drain boards so that fluids are directed back into the parts washer or the fluid holding tank.

Storage of Hazardous Materials

Store all materials under cover with spill containment or inside to prevent contamination of rainwater runoff. Keep liquid waste segregated. Many fluids can be recycled by hazardous waste disposal companies if they are not mixed.

Waste Recycling and Disposal

When possible, recycle and reuse liquids, tires, batteries, and metal scraps. Combining different types of hazardous waste will limit recycling options and can be dangerous. A licensed hazardous waste hauler can provide information on waste storage and disposal costs.

Cleaning Spills

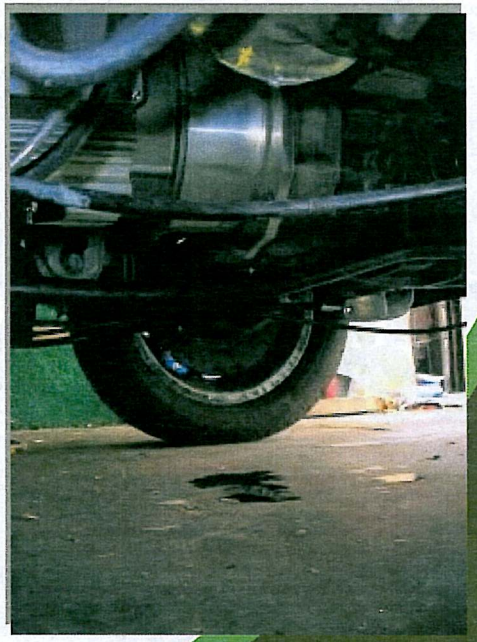
Clean up spills immediately by using absorbents such as rags, kitty litter or sand. If the material spilled is hazardous (solvents, gasoline, oil, etc.), dispose of the soiled absorbents at a hazardous waste facility. If the material spilled is not hazardous, dispose of these items in the trash.

Drains in Work and Fueling Areas

Locate storm drains on or near your property. Know the sources of pollution from your business and do not allow materials to flow into the drains. Perform automotive projects under cover and in a controlled area. Identify specific activities with the potential to cause spills or release pollutants such as oil, grease, fuel, etc. Post signs and train employees on how to prevent and clean up spills during these activities

Preventing Leaks and Spills

Train employees on how to properly clean up spills and waste. Document employee training. Keep a spill kit with absorbent materials in the work area. Empty drip pans into a labeled, sealed container before they are full. Check equipment, wipe up spills and repair leaks daily. Place large pans under wrecked cars until all fluids are drained. Promptly dispose of collected fluids in a hazardous waste drum.



Stormwater 101

Clean wetlands and healthy streams are important to Davis County. The water from parking lots, driveways, and streets flow into the storm drain and into streams, wetlands, etc. eventually discharging into the Great Salt Lake. Stormwater runoff is **never treated**. Pollution entering the storm drain makes the waterways unsafe for people and wildlife. Following these management practices will prevent pollution, comply with regulations, and protect public health.

Information generated by the Davis County Stormwater Coalition

Stop!

Davis County Stormwater Coalition

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North Salt Lake City	801-936-1122
South Weber City	801-479-3177 www.southwebercity.com
Sunset City	801-614-0014
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Woods Cross City	801-292-4421

www.woodscross.com/stormwater

DAVIS COUNTY STORMWATER COALITION

Davis County Stormwater Coalition
1500 East 650 North
Fruit Heights, UT 84037

DAVIS COUNTY STORMWATER COALITION

Stormwater Pollution Prevention

Tips for Fueling Stations

NO DUMPING
DRAINS TO STREAM
DAVIS COUNTY
451-3296
CALL TO REPORT SPILLS

Areas of Concern:

- Emergency Response Plans
- Know Storm Drain Locations
- No "Topping-Off"
- Uphold Cleanliness and Order
- Keep Suitable Clean-up Material.

Did you know?

Storm drain water is NEVER treated.

Stormwater 101

Clean wetlands and healthy streams are important to Davis County. The water from parking lots, driveways, and streets flow into the storm drain which goes untreated into the streams, wetlands, and eventually enters the Great Salt Lake. Pollution entering the storm drain makes the waterways unsafe for people and wildlife. Following these management practices will prevent pollution, comply with regulations, and protect public health.

Emergency Spill Response Plan

Maintain an Emergency Spill Response Plan. Keep employees trained in spill response procedures.

Know Storm Drain Locations

Locate storm drains on or near your property. Know the sources of pollution from your business and do not allow materials to flow into the drains

Operate fueling areas so that spills can be contained and runoff cannot carry spills into the street, gutter, or storm drain.

No Topping-Off

Encourage customers to not top-off their fuel tanks by posting "No Topping-Off" signs

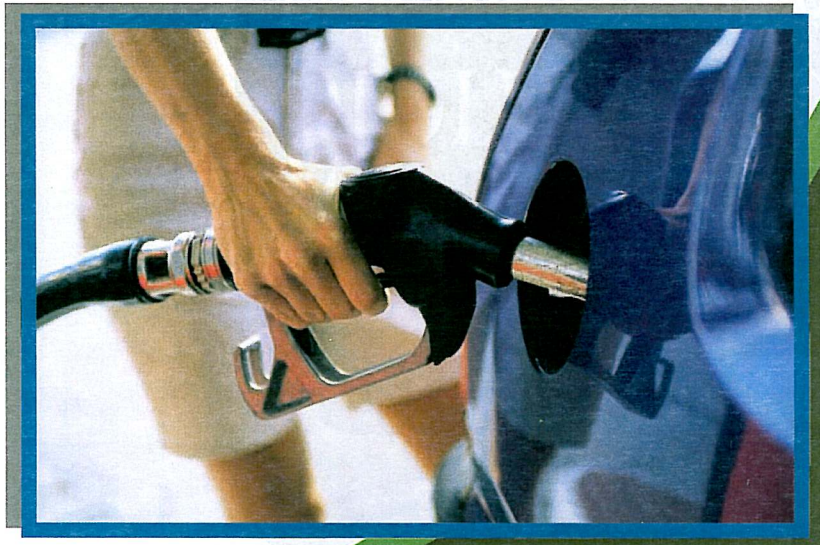
Uphold Cleanliness and Order

Uphold cleanliness and order of the site by keeping waste picked up and regularly sweeping the parking and fueling areas

Keep Suitable Cleanup Material

Keep suitable cleanup material at the site for prompt cleaning of all spills

- Absorbent materials like spill pads, rags, kitty litter, or sand will be effective in containing certain spills
- Do not wash any spills into the gutter or storm drain
- If the material spilled is hazardous, dispose of the soiled absorbents in the same manner as hazardous waste. If the material spilled is not hazardous, dispose of these items in the trash.



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1500 East 650 North
Fruit Heights, UT 84037

DAVIS COUNTY STORMWATER COALITION

Stormwater Pollution Prevention

Tips for Mobile Cleaners

NO DUMPING
DAVIS COUNTY
451-3296
CALL TO REPORT SPILLS
DRAINS TO STREAM

Best Management Practices for:

- Carpet Cleaners
- Upholstery Cleaners
- Drapery Cleaners
- Window Washers
- Janitorial & Housekeeping Service Providers
- High Pressure, Steam Cleaners

Stop!

Never discharge/place wastewater into a street, gutter, parking lot or storm drain.

Stormwater 101

In Davis County, any water that enters our storm drain system from rain storms, snow melt, irrigation etc. discharges into our creeks and eventually enters wetlands and/or the Great Salt Lake. This water travels over the ground picking up various pollutants.

This water is never treated.

Both residents and professional carpet cleaners should be sure that the carpet was not contaminated with hazardous materials. Hazardous materials cannot be discharged to the sanitary sewer, and need to be disposed of at a hazardous waste facility.

Hazardous Waste

Although mobile cleaners and pressure washers discharge waste water at various locations, professional carpet cleaners as well as residents should use the following practices in order to prevent waste or wastewater from entering the storm drains where it flows **untreated** to our streams, wetlands and to the Great Salt Lake:

General Practices

- Waste resulting from cleaning activities cannot be discharged into a storm drain.
- Mobile cleaners should have the equipment, materials and personnel to handle a spill. Take preventative action to act quickly to reduce illegal discharge.
- If a spill occurs, use environmentally-friendly products (e.g. kitty litter) to contain the spilled materials. Protect storm drains. Report all spills and discharges that cannot be contained to local authorities for their help.
- Dispose of spill clean-up material properly in a garbage container.

Consider Your Options

Consider your options for wastewater disposal. DO NOT discharge into a street, storm drain or gutter as these are all part of the stormwater system. An acceptable discharge option would be to dispose into sanitary sewers at the job site. These include sinks, showers, bath tubs, toilets or floor drains. Be sure to obtain the consent of the property owner before dumping and use a lint trap or filter to prevent debris from clogging the drain and pipes. Dispose of the lint in the regular trash.

Information generated by the Davis County Stormwater Coalition

Public Participation and Involvement
References and Documentation

APPENDIX B

PUBLIC PARTICIPATION AND INVOLVEMENT LOG

Notice Date	Meeting Date	Meeting Item Description	Copy of Public Notice Attached	Copy of Meeting Minutes Attached

Illicit Discharge Detection and Elimination References and Documentation

APPENDIX C

Procedures for Dry Weather Screening of Outfalls

Definition: Dry weather screening is described as monitoring done in the absence of storm events to discharges representing, as much as possible, the entire storm drainage system for the purpose of obtaining information about illicit connections and improper dumping.

Procedures:

1. Dry weather screening of outfalls should be performed before or after the water season when flows in outfall flows should be at their minimums.
2. The minimum requirement for screening outfalls is to inspect at least 20% of all outfalls per year.
3. The inspector shall use a camera, measuring tape, and clear container. The camera will be used to take pictures and document the condition of the outfall and water. The measuring tape will be used to measure the size of the pipe or channel being inspected. The clear container will be used to take a sample of the water, if any, and visually monitor the water condition.
4. A record of the inspection must be kept. Use the EPA form *Outfall Reconnaissance Inventory/Sample Collection Field Sheet.* Fill out all applicable information.
5. If any water contamination or irregularities are observed use the *Procedures for Tracing and Removing Illicit Discharges.*
6. Keep a record of all inspections performed.

Procedures for Tracing and Removing Illicit Discharges

Definition: Illicit discharge means any discharge to a municipal separate storm sewer that is not composed entirely of storm water.

The following non-storm water discharges do not need to be addressed and are not considered illicit discharges:

- De-chlorinated Water line flushing
- Landscape irrigation
- Diverted stream flows
- Rising ground waters
- Uncontaminated ground water infiltration
- Uncontaminated pumped ground water
- Discharges from potable water sources
- Foundation drains
- Air conditioning condensate
- Irrigation water
- Springs
- Water from crawl space pumps
- Footing drains
- Lawn watering runoff
- Individual residential car washing
- Flows from riparian habitats and wetlands
- De-chlorinated swimming pool discharges
- Residual street wash water
- De-chlorinated water reservoir discharges
- Discharges or flows from firefighting activity

Procedures:

1. The storm drain system map shall be kept up to date to include all new storm drain pipe, manholes, and any other conveyance structures located within the city.
2. Priority sites that are likely to have illicit discharges will be identified (if contained within the city) and at least 20% of these areas will be inspected annually. Examples of such sites are:
    - Areas with older infrastructure or history of sewer overflows or cross connections
    - Industrial, commercial, or mixed use areas
    - Areas with a history of illicit discharges
    - Areas with a history of illegal dumping
    - Areas with onsite sewage disposal systems
    - Areas upstream of sensitive waterbodies
3. The University shall publicly list and promote a hotline or local telephone number for the public to report spills and other illicit discharges. This hotline will be publicized on the university website.

4. The University will train office personnel who might receive initial reports of illicit discharges to use the EPA Illicit Discharge Hotline Incident Tracking Sheet.

5. University will train field personnel who might respond to reports of illicit discharges how to trace and eliminate spills. When necessary open manholes and trace the spill upstream and to its source. If available the use of mobile cameras, dye testers, etc. to trace the spill upstream and to its source.
6. Provide a list of those university personnel that will be notified in case of a spill or illicit discharge and the order they will be contacted, phone numbers, and associated responsibilities. Update this list as changes to personnel occur.
7. If a large spill or illicit discharge takes place contact the Weber-Morgan Health Department at (801) 399-7169, or Weber County Spill Response at (801) 536-4123, or the Davis County Health Department at (801) 807-8872. Notify nearby property owners of the spill or illicit discharge if necessary. Other environmental response companies that are available 24 hours a day are listed below as a resource.
8. When the spill or illicit discharge has been eliminated the *Illicit Discharge Hotline Incident Tracking Sheet* will be completed kept on record, any other necessary paper work will be completed and kept on record. Determine what actions are necessary to prevent similar spills or illicit discharges in the future. If the incident was intentional legal enforcement actions may be considered.

Environmental Response Companies:

Name	**Location**	**Telephone**
A Plus Environmental LLC	Ogden, Layton	(801) 392-6545 or (801) 391-2050
Enviro Care, Inc	North Salt Lake	(801) 299-1900 or (801) 820-9058
HMHTTC Response Inc.	Ogden	(801) 627-2240 or 800-927-9303
Lincoln Environmental Services	Ogden	800-257-5370
S & M Diesel Environmental Services	Brigham City	800-735-2004 or (435) 279-8124
USA Environmental	Layton, Ogden	(801) 390-4934

Illicit Discharge Hotline Incident Tracking Sheet

Incident ID:

Responder Information	
Call taken by:	Call date:
Call time:	Precipitation (inches) in past 24-48 hrs:
Reporter Information	
Incident time:	Incident date:

Caller contact information (*optional*):

Incident Location *(complete one or more below)*

Latitude and longitude:

Stream address or outfall #:

Closest street address:

Nearby landmark:

Primary Location Description	**Secondary Location Description:**		
☐ Stream corridor *(In or adjacent to stream)*	☐ Outfall	☐ In-stream flow	☐ Along banks
☐ Upland area *(Land not adjacent to stream)*	☐ Near storm drain	☐ Near other water source (storm water pond, wetland, etc.):	

Narrative description of location:

Upland Problem Indicator Description

☐ Dumping	☐ Oil/solvents/chemicals	☐ Sewage
☐ Wash water, suds, etc.	☐ Other: _____	

Stream Corridor Problem Indicator Description

Odor	☐ None	☐ Sewage	☐ Rancid/Sour	☐ Petroleum (gas)
	☐ Sulfide (rotten eggs); natural gas	☐ Other: Describe in "Narrative" section		
Appearance	☐ "Normal"	☐ Oil sheen	☐ Cloudy	☐ Suds
	☐ Other: Describe in "Narrative" section			
Floatables	☐ None:	☐ Sewage (toilet paper, etc)	☐ Algae	☐ Dead fish
	☐ Other: Describe in "Narrative" section			

Narrative description of problem indicators:

Suspected Violator (name, personal or vehicle description, license plate #, etc.):

Investigation Notes	
Initial investigation date:	Investigators:
☐ No investigation made	Reason:
☐ Referred to different department/agency:	Department/Agency:
☐ Investigated: No action necessary	
☐ Investigated: Requires action	Description of actions:
Hours between call and investigation:	Hours to close incident:
Date case closed:	
Notes:	

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed:		Outfall ID:	
Today's date:		Time (Military):	
Investigators:		Form completed by:	
Temperature (°F):	Rainfall (in.): Last 24 hours:	Last 48 hours:	
Latitude:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

☐ Industrial
☐ Ultra-Urban Residential
☐ Suburban Residential
☐ Commercial
☐ Open Space
☐ Institutional
Other: _____
Known Industries: _____

Notes (e.g., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ **Closed Pipe**	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☐ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☐ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: _____	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☐ No	***If No, Skip to Section 5***			
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐Flow #2	Flow depth		In	Tape measure
	Flow width	_____' _____"	Ft, In	Tape measure
	Measured length	_____' _____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐Yes ☐No (*If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐Clear ☐ Brown ☐ Gray ☐ Yellow ☐Green ☐ Orange ☐Red ☐Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☐ No (*If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐Oily ☐ Flow Line ☐Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐Floatables ☐ Oil Sheen ☐Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1.	Sample for the lab?	☐ Yes	☐No	
2.	If yes, collected from:	☐ Flow	☐ Pool	
3.	Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

PRIORITY AREAS LIKELY TO HAVE ILLICIT DISCHARGES

Section 4.2.3.3.1

Last Updated: _____

Facility/Area	Location/Address	Description

IDDE TRAINING LOG
Section 4.2.3.11

*attach sign in sheet and agenda of each training session

Date	Instructor	Description	Location

UOCC BASIC LOCATION INFORMATION

WEBER County

		Type *	Phone #
FARR WEST			
JIFFY LUBE #3379 1783 WEST 2700 NORTH	UOCC #0616	A	(801)737-3103
HARRISVILLE			
JIFFY LUBE #3317 609 NORTH HARRISVILLE RD	UOCC #0580	A	(801)394-3000
WAL-MART TIRE & LUBE EXPRESS #2921 534 HARRISVILLE RD	UOCC #0464	A	(801)737-0646
NORTH OGDEN			
AUTOZONE INC #3761 2550 NORTH 400 EAST	UOCC #0611	A	(801)737-0225
JIFFY LUBE #3380 2381 N WASHINGTON BLVD	UOCC #0617	A	(801)737-3112
NORTH OGDEN CITY			
NORTH OGDEN CITY MAINTENANCE 332 EAST PLEASANT VIEW DR	UOCC #0184	B	(801)782-8111
OGDEN			
AUTOZONE INC #856 3130 WASHINGTON BLVD	UOCC #0086	A	(801)392-5070
AUTOZONE INC #860 541 WASHINGTON BLVD	UOCC #0090	A	(801)392-2223
CHECKER AUTO PARTS #1212 3114 WASHINGTON BLVD	UOCC #0199	A	(801)621-4033
CHECKER AUTO PARTS #1626 145 NORTH WASHINGTON BLVD	UOCC #0303	A	(801)621-0451
FIRESTONE COMPLETE AUTO CARE (#595322) 1757 WASHINGTON BLVD	UOCC #0601	A	(801)621-0801
GARYS SERVICE 3202 WASHINGTON BLVD	UOCC #0408	B	(801)392-1586
HERRICK INDUSTRIAL SUPPLY 2881 SOUTH 1100 WEST	UOCC #0466	A	(801)627-2240
IVERSONS TEXACO 2012 HARRISON BLVD	UOCC #0237	A	(801)394-3545
JIFFY LUBE (J-1) 192 36TH ST	UOCC #0328	A	(801)392-2665
JIFFY LUBE (J-2019) 104 NORTH WASHINGTON BLVD	UOCC #0323	A	(801)394-4746

UOCC BASIC LOCATION INFORMATION

WEBER County

OGDEN		Type *	Phone #
WEBER COUNTY TRANSFER STATION 867 WEST WILSON LN	UOCC #0416	A	(801)399-8809
WEBER HIGH AUTO MECHANICS 430 WEST WEBER HIGH DR	UOCC #0312	A	(801)476-3700
WEBER STATE UNIVERSITY PHYSICAL PLANT MAINT BLDG 2601 UNIV CIR	UOCC #0262	A	(801)626-6331

RIVERDALE		Type *	Phone #
THE PEP BOYS #784 4240 SOUTH RIVERDALE RD	UOCC #0003	A	(801)393-1200
WAL-MART TIRE & LUBE EXPRESS #1708 4848 SOUTH 900 WEST	UOCC #0469	A	(801)627-9866

ROY		Type *	Phone #
AUTOZONE INC #857 5780 SOUTH 1900 WEST	UOCC #0087	A	(801)773-8800
CHECKER AUTO PARTS #1244 5881 SOUTH 1900 WEST	UOCC #0039	A	(801)825-7412
FIRESTONE COMPLETE AUTO CARE (#595535) 5702 SOUTH 1900 WEST	UOCC #0604	A	(801)773-5799
JIFFY LUBE (J-2028) 5436 SOUTH 1900 WEST	UOCC #0327	A	(801)776-5169
ROY HIGH SCHOOL 2150 WEST 4800 SOUTH	UOCC #0422	A	(801)774-4922

SOUTH OGDEN		Type *	Phone #
CHECKER AUTO PARTS #4197 1769 EAST SKYLINE DRIVE	UOCC #0503	A	(801)475-4043
FIRESTONE COMPLETE AUTO CARE (#595594) 3076 WALL AVENUE	UOCC #0608	A	(801)621-5107
JIFFY LUBE #3210 3999 WASHINGTON BLVD	UOCC #0539	A	(801)479-9041
JIFFY LUBE (J-2020) 5746 HARRISON BLVD	UOCC #0324	A	(801)475-4355
JIFFY LUBE (J-2024) 3175 HARRISON BLVD	UOCC #0326	A	(801)621-5823

* A. DO-IT-YOURSELFERS (DIYER) UP TO 5 GALLONS PER VISIT

B. FARMERS UP TO 55 GALLONS AND DO-IT-YOURSELFERS UP TO 5 GALLONS PER VISIT

C. BUSINESSES AND FARMERS UP TO 55 GALLONS AND DO-IT-YOURSELFERS UP TO 5 GALLONS PER V

D. BUSINESSES ONLY UP TO 55 GALLONS PER VISITS

Got Drugs?

Most abused prescription drugs come from family and friends. You could be a drug dealer and not even know it.

Visit www.dea.gov
for more information.

- Unused or expired prescription medications are a public safety issue, leading to accidental poisoning, overdose, and abuse.
- Pharmaceutical drugs can be just as dangerous as street drugs when taken without a prescription or a doctor's supervision.
- The non-medical use of prescription drugs ranks second only to marijuana as the most common form of drug abuse in the United States.
- The majority of teenagers abusing prescription drugs got them from family and friends, with the home medicine cabinet a primary source.
- Unused drugs thrown in the trash in their bottles can be retrieved and abused or illegally sold. Proper disposal of unused prescription drugs can save lives.
- Take-back programs are the best way to dispose of old drugs. But if a program is not available :
  - Take the meds out of their bottles;
  - Mix them with something unappealing like used kitty litter or coffee grounds;
  - Seal them in a bag or disposable container, and throw that away.

Clean Out Your MEDICINE Cabinet!

POISON Help
1-800-222-1222

Bring unused over-the-counter and prescription medications to the following location so they can be safely destroyed.

Ogden

Weber-Morgan Health Department

477 23rd Street

Saturday September 25, 2010

10:00 AM to 2:00 PM

To find permanent disposal bins call the DEQ Hotline
1-800-458-0145
or visit www.medicationdisposal.utah.gov

Weber-Morgan Health Department 801-399-7160 webermorganhealth.org
Weber Human Services Prevention 801-625-3674 whsprevention@weberhs.org

UNIVERSITY OF UTAH COLLEGE OF PHARMACY

UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY

WEBER-MORGAN HEALTH DEPARTMENT

Weber Human Services PREVENTION
Individuals Families Schools

WEBER COUNTY SHERIFF'S OFFICE

Clean Out Your Medicine Cabinet!

PLEASE! **Do Not Flush** your unused prescription and over-the-counter medications. You can prevent **abuse, poisoning and pollution** by taking them to the event listed on the front of this flyer or to one of 51 permanent community disposal locations throughout the state listed at:
http://www.medicationdisposal.utah.gov

Why Should I Take the Time To Do This?

Proper disposal of unwanted medicines may be a chore, but there are important reasons to do this in a safe and responsible way.

It's your environment – Please don't flush!

- Many drugs flushed down the toilet cannot be removed by the sewer treatment plant or septic system.
- These substances then get into our streams, rivers, lakes, groundwater and our soil and may cause harm to the environment.

Drug abuse is very common.

- Abuse of prescription drugs, particularly painkillers, has increased among teenagers and young adults.
- More than half of people who abuse painkillers get the drugs for free from friends or relatives.

You can make a difference!

- Children and pets can find medicine in your home or in your trash.
- Drugs may be taken by accident, on purpose or illegally sold.
- You can prevent accidental poisoning and drug abuse.

What can I expect if I go to the Medication Take-Back Event?

- This take-back event is only for households. Medical waste, including medications from hospitals, long term care facilities, clinics, group homes, Dr.'s offices or other medical facilities is not allowed.
- Leave medications in the original container and leave the label on. You can black out or remove your personal information but keep the information about the medication legible.
- This is a completely anonymous and free drop-off. There is no refund and medications will not be resold or used. All medications will be destroyed through incineration.
- Thermometers will not be accepted.
- Sharps will be collected
- Events are held in parking lots to facilitate "Drive-Up and Drop-Off" collections.
- Police are present to comply with federal laws regarding controlled substances as they are the only personnel who can legally take possession of controlled substances after they have been prescribed.

What if I cannot go to the Medication Take-Back Event?

- You can find permanent community collection sites near you at www.medicationdisposal.utah.gov, and directions for safe disposal in your trash if there is no site near you. This website also lists other one-time Take-Back events occurring at different times and locations around the state.

Construction Site Runoff Control
References and Documentation

APPENDIX D

Storm Water Construction Activity Permit

for sites disturbing one acre or greater or part of a common plan of development

Fees (Office Use)	Receipt Number (Office Use)	Permit Number (Office Use)	Priority Site (Office Use) ☐ Yes ☐ No

Property Owner Contact Information

Name of Property Owner(s)			
Phone	Fax		
Email Address			
Mailing Address of Property Owner(s)			

Authorized Representative Contact Information

Name of Person Authorized to Represent the Property Owner(s)			
Phone		Fax	
Email Address			
Mailing Address of Authorized Person			

Project Information

Project Name			
Project Address			
Total Hard Surface (sf)	Start Date	Estimated Project Length (mo)	Previous Permit No. (If applicable)

Applicant Narrative

Please explain your request

Submittal Checklist

☐ **SWPPP.** The application shall include a Storm Water Pollution Prevention Plan which meets the criteria set forth in UPDES Storm Water General Permit for construction activities, UTR300000.

☐ **NOI**. The application shall include a copy of the Notice of Intent filed with the State of Utah.

☐ **Discharge Rate**. Discharges to the storm sewer system shall be designed so that the discharge to the storm sewer system does not exceed 0.1 Cubic Feet Per Second (cfs) per acre.

The applicant shall file the application on or before the following dates:

Subdivision: The date that the applicant submits the preliminary subdivision development plat appliaction
Site Plan: The date that the applicant submits a site plan application or amendes site plan.
Building Permit: The date that the applicant submits a building permit application if the appliant proposes to construct a building on an existing lot or parcel.
Land use Permit: The date that the applicant submits a land use permit application.
Other: at least two (2) weeks before the developer intends to perform any type of work not listed above that would require a Storm Water Construction Activity Permit pursuant to this Chapter.

Failure to aquire a required Storm Water Construction Activity Permit is grounded for tabling a related subdivision application, site plan appliaction, conditional use permit appliaction, or building permit appliaction. It is unlawful to commence work (move dirt) on a development site before obtaining a required Storm Water Connection Activity Permit.

Note: A pre-construction meeting is required before performing any on-site earth work, unless waived by the city engineer.

☐ **NOT**. It is understood that a Permittee is legally responsible for the permit requirements until a NOT (Notice of Termination) is submitted. Final site stabilization, removal of temporary BMPs, and City notification is required before a NOT can be submitted. A Permittee cannot submit a NOT without final stabilization unless another party has agreed to file a NOI (Notice of Intent) to assume responsibility for final stabilization of the site.

*information regarding requirements can be found at: http://www.waterquality.utah.gov/UPDES/Stormwatercon.htm

Authorization

By signing below the Owner / Representative authorizes the city to enter the property to perform inspections.

Owner or Authorized Representative Signature	Date
Signature of Approval (University Official)	Date

Storm Sewer Connection Permit

for sites disturbing less than one acre or are part of a common plan of development

Fees (Office Use)	Receipt Number (Office Use)	Permit Number (Office Use)	Priority Site (Office Use) ☐ Yes ☐ No

Property Owner Contact Information

Name of Property Owner(s)			
Phone	Fax		
Email Address			
Mailing Address of Property Owner(s)			

Authorized Representative Contact Information

Name of Person Authorized to Represent the Property Owner(s)	
Phone	Fax
Email Address	
Mailing Address of Authorized Person	

Project Information

Project Name	
Project Address	
Estimated Project Length (mo)	Previous Permit No. (If applicable)
Start Date	Total Hard Surface (sf)

Applicant Narrative

Please explain your request

Submittal Checklist

☐ **BMP Plan**. A plan incorporating storm water BMP's that meet the requirements of the city storm water and drainage ordinance.

☐ **Maintenance Plan**. A plan outlining how the applicant will maintain the storm water improvements listed in the application.

☐ **Discharge Rate**. Discharges to the storm sewer system shall be designed so that the discharge to the storm sewer system does not exceed 0.1 Cubic Feet Per Second (cfs) per acre.

As per the city ordinance: **No person shall connect tot eh city storm sewer system, either directly or indirectly, without first obtaining a storm sewer discharge permit from the city**.

Authorization

By signing below the Owner / Representative authorizes the site to enter the property to perform inspections.

Owner or Authorized Representative Signature	Date
Signature of Approval (University Official)	Date

Storm Water Pollution Prevention Plan Checklist

This checklist needs to be filled out prior to work commencing on any construction site disturbing 1 acre or more in size, or is part of a commen plan of development. The use of this checklist does not guarantee compliance with the General Permit for Storm Water Discharges from Construction Activities.

Development Name:

No.	Checklist Item	Answer / Location in SWPPP & Notes
General:		
1	Did owner and all "operators" sign the SWPPP?	☐ NO ☐ Yes
2	Did the signatures include the certification statement?	☐ NO ☐ Yes
3	Were the signatures authorized to sign?	☐ NO ☐ Yes
Site Description:		
4	Is there a site description?	☐ NO ☐ Yes
5	Does it identify nature/sequence of construction activities?	☐ NO ☐ Yes
6	Does it identify major grading activities?	☐ NO ☐ Yes
7	Does it identify total area of site and total area to be disturbed?	☐ NO ☐ Yes
8	Does it identify pre/post runoff coefficient/soils description?	☐ NO ☐ Yes
9	Does it identify receiving water(s) or MS4 listed?	☐ NO ☐ Yes
10	Is the receiving water a tributary to waters of the U.S.?	☐ NO ☐ Yes
11	Is there a site map?	☐ NO ☐ Yes
12	Does the site map show drainage patterns/outfalls on map?	☐ NO ☐ Yes
13	Does the site map show area of soil disturbances?	☐ NO ☐ Yes
14	Does the site map show locations of major structural and nonstructural controls?	☐ NO ☐ Yes
15	Does the site map show locations of storm water discharges to a surface water?	☐ NO ☐ Yes
16	Does the site map show locations of materials or equipment storage (on-site or off-site)?	☐ NO ☐ Yes
Controls to Reduce Pollutants:		
17	Does the SWPPP include a description of interim and permanent stabilization practices (e.g. seeding, mulching, rip rap) for the site?	☐ NO ☐ Yes

18	Does the SWPPP Identify the contractor(s) and timing by which stabilization practices will be implemented	☐ NO ☐ Yes
19	Does the SWPPP include a description of structural practices (e.g. off-site vehicle tracking, silt fences, sediment traps, storm drain inlet protection) for the site?	☐ NO ☐ Yes
20	Where the structural practices are a sediment basin that drains over 10 acres, is it adequately designed? (3,600 cu.ft./acre x total drainage acres)	☐ NO ☐ Yes
21	Does the SWPPP identify the contractor(s) who will implement the structural practices?	☐ NO ☐ Yes
22	Does the SWPPP identify storm water management measures to address storm water runoff once the construction is completed (e.g. retention ponds, velocity dissipation controls)?	☐ NO ☐ Yes
Maintenance:		
23	Does the SWPPP describe the procedures to ensure the timely maintenace of sediment control measures identified in the SWPPP in effective operating condition.	☐ NO ☐ Yes
Inspections:		
24	Is the inspection frequesy to be once every seven days, or at least once every 14 days and within 24 hours of the end of a storm event of 0.5 inches or greater?	☐ NO ☐ Yes
25	Are the inspection reports signed and certified by an authorized person?	☐ NO ☐ Yes
26	Are the inspections being performed by a qualified person and are the qualifications in the SWPPP?	☐ NO ☐ Yes

UPDES STORM WATER INSPECTION EVALUATION FORM FOR SWPPP COMPLIANCE

BACKGROUND INFORMATION

Site Name:	UPDES Permit #:
Site Address:	
Local Jurisdiction or County:	Inspection cycle (circle) High Priority 7 days 14 days
Permit Effective Date:	Permit Expiration Date:
Total Project Area:	Total Disturbed Area:

Project Type: (circle) *Subdivision* *Commercial* *Industrial* Linear (Road/Pipe/Power) *Land Disturbance*

OPERATOR CONTACT INFORMATION

	NAMES	PHONE NUMBERS	E-MAIL
Operator:			
Onsite Facility Contact:			
Important Contacts:			
Important Contacts:			

SWPPP PRE-SITE REVIEW INFORMATION	YES	NO
1. Has a pre-construction review of the SWPPP been conducted by the appropriate municipal agency?		
2. Are contact names, positions, responsibilities, and telephone numbers of the Stormwater Team and all other site Operators listed in the SWPPP?		
3. Does the SWPPP include a site map showing storm drains, slopes/surface drainage patterns, SW discharge points, construction boundaries, limits of disturbance, surface waters (name of receiving water), TMDL requirements, buffer zones, structural controls, and does it define/explain non-structural controls?		
4. Does the SWPPP have an estimate of the area to be disturbed, a sequence of construction activities, the SW runoff coefficient before and after construction, a description of the soil types, controls for discharges from (asphalt/concrete) batch plants if any, list UIC Class 5 Injection Well activities and use, show wetland areas, and have a description of the nature of the construction activity?		
5. Does the SWPPP and site map show erosion and sediment controls placement & details, buffer zone documentation (e.g. erosion blankets, mulch, slope drains, check dams, sediment basins, grass-lined channels, fiber rolls, sediment traps, silt fence, inlet protection, curb cut-back, dust control, chemical treatments etc?)		
6. Does the SWPPP and site map show and describe good housekeeping controls and storage areas of polymers, flocculants or other treatment chemicals, spill prevention and mitigation measures, staff training procedures and logs. (e.g. track out pad, street sweeping, material storage, construction waste containment and removal, sanitary waste, concrete washout pits, etc)		
7. Are post-construction elements included in the SWPPP? (i.e. grass swales, detention basins, vegetated filter strips, infiltration, depression storage, landscaping/xeriscaping, discontinuous concrete or hard surface SW conveyance, etc.)		
8.Are the SWPPP Certifications signed by the proper and responsible officers and parties (see permit Appendix G Part G. 16,1,2& 1.3)		
9. Are the NOI , a copy of the State permit, Appendix logs and forms in the SWPPP?		

NOTICE OF TERMINATION (NOT) INSPECTION

Site Name:	Date of Evaluation:
Site Address:	
Inspected By:	Title\Organization:

	YES	NO	COMMENTS:
1. Has the site been properly stabilized according to permit requirements?			
2. Have all temporary BMPs been removed?			
3. Have post-construction (permanent storm water system) elements been constructed and inspected in accordance with approved project drawings?			
4. Is the site acceptably clean?			

University Inspector (print):	**Signature:**

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 gathered and evaluated 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.

Inspector:

(Print Name) (Title) (Signature) (Date)

Operator:

(Print Name) (Title) (Signature) (Date)

Operator:

(Print Name) (Title) (Signature) (Date)

SWPPP COMPLIANCE INSPECTION FORM

Project Name:	Address:	Date:
Owner:	Contractor (Gen/Sub):	Start time:
Site Contact:	Phone:	Stop time:
UPDES Permit #: Expiration:	Weather: (Circle one) Sunny Cloudy Snowing Raining Other:	
Date of last rain event:	Duration:	Approx. Rainfall (in):
Inspected By (Print):	Local Jurisdiction or County:	
Reason for Inspection: Scheduled Complaint/Tip Random	Receiving Waters:	
Inspection Code (circle): SW sampling / SW non-sampling	Inspector Code (circle): (S) State / (L) Local	Type Code (circle): 1 - Municipal, 2 - Industrial, 3 - State

SWPPP, EROSION, SEDIMENT AND HOUSEKEEPING BMP's INFORMATION	YES	NO	N/A
1. Is the SWPPP on site and accessible, or is the SWPPP location posted in an obvious place and reasonably accessible (in a short time)?			
2. Are erosion control, sediment control, buffer controls and good housekeeping BMP's installed on the site as shown in the SWPPP?			
3. Has the SWPPP been updated to reflect the current site conditions (modifications dated & initialed on site map, new BMPs on site map, discontinued BMPs crossed off site map, new BMP details & spec's in SWPPP, SWPPP amendment Log, etc.)?			
4. Are on-site inspections being performed and recorded by a qualified person on a weekly or biweekly basis, reporting items required by permit? (Inspector name, qualifications and signature, weather, problems/repairs, corrective action, new BMPs, removed BMPs, discharges, etc.)			
5. Have all corrective action items from previous inspections been logged, addressed and documented within the time frame allotted?			
6. Are SW flows entering and leaving the construction site controlled, managed, or diverted around the site? (e.g. buffer zones perimeter controls, berms, silt fence, up gradient boundary diversion, down gradient boundary sediment control, etc.)			
7. Is there evidence of sediment discharge such as mud flows or soil deposits from the construction site in downstream locations?			
8. Is there evidence of vehicles tracking soil off the construction site?			
9. Is there soil, construction material, landscaping items, or other debris piled on impervious surfaces (roads, drives) that could be washed with SW to a storm drain or water body?			
10. Is there a need to repair, maintain, or improve erosion control BMPs (temporary stabilization, erosion blankets, mulch, vegetated strips, riprap, surface roughening, pipe slope drain, dust control, etc)?			
11. Is there a need to repair, maintain, or improve sediment control BMPs (silt fence, check dams, fiber rolls, sediment trap/basin, inlet protection, waddles, straw bails, curb cut-back, etc?			
12. Is there a need to repair, maintain, or improve good housekeeping controls (clean track out pad, sweeping, construction materials management, litter/trash control, portable toilet, staked down, fueling areas, concrete wash out area, proper curb ramps, spill prevention, etc)?			
13. Are there disturbed areas that have not had construction activities for 14 to 21 days without stabilization? (except snow or frozen ground)?			
14. Are there places where BMPs are needed and should be installed or not needed and should be removed?			

COMMENTS AND CORRECTIVE ACTIONS FOR SWPPP COMPLIANCE

Identify the problem and its location. If appropriate, describe (in general terms) what needs to be completed. However, only if qualified (e.g., you are a designer) should you be mandating specific BMPs to install. Include the date when corrections are made.

Inspector, please list all applicable SEV codes:	

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 gathered and evaluated 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.

Inspector:

(Print Name) (Title) (Signature) (Date)

Operator:

(Print Name) (Title) (Signature) (Date)

modified 6/1/15

Operator:

(Print Name) (Title) (Signature) (Date)

modifed 6/1/15

(Attach additional sheets of narrative, pictures and checklists, as necessary)

ADDITIONAL COMMENTS AND CORRECTIVE ACTIONS FOR SWPPP COMPLIANCE

Site Name:	Date of Evaluation:	Page	of
Site Address:			

EPA Form 3560-3 SEV Codes and Descriptions

DOR11		Discharge without a permit	BR19B		Failure to properly operate and maintain BMP's
DOR18		Failure to apply for a Notice of Termination	BR19A		Failure to properly install/implement BMP's
BOR12		Failure to conduct inspections	EOR16		Failure to submit required report (non-DMR)
BOC17		Failure to develop any or adequate SWPPP/SWMP	AOR22		Narrative effluent violation
BOC18		Failure to implement SWPPP/SWMP	DOR12		Failure to submit required permit information
BOR41		Failure to maintain records	AOR12		Numeric effluent violation
COR11		Failure to monitor	BOR42		Violation of a milestone in an order

PRIORITY CONSTRUCTION SITES
Section 4.2.4.3.3

Project Name	Location/Address	Date Added to List

CONSTRUCTION SITE RUNOFF TRAINING LOG
Section 4.2.4.5

*attach sign in sheet and agenda of each training session

Date	Instructor	Description	Location

CONSTRUCTION SITE RUNOFF ENFORCEMENT LOG
Section 4.2.4.4.4

Date	Enforcement Type	Description	Location

Long Term Storm Water Management References and Documentation

APPENDIX E

POST-CONSTRUCTION PROGRAM TRAINING LOG
Section 4.2.5.6

*attach sign in sheet and agenda of each training session

Date	Instructor	Description	Location

Pollution Prevention / Good Housekeeping References and Documentation

APPENDIX F

UNIVERSITY-OWNED OR OPERATED FACILITIES

AND STORM WATER CONTROLS

ASSESSMENT PROCESS

To prevent unwanted pollutants from Permittee owned facilities entering into the Stormwater systems, Permittee must understand their possible pollutants. Therefore an assessment must be done to identify facilities and their associated pollutants.

As the potential pollutants may change over time, Permittee will update the findings as they become aware of significant changes, and will conduct this assessment on an annual basis to ensure that pollutants are not inadvertently contaminating the Stormwater systems.

As part of the assessment, particular consideration will be given to any pollutants that the sites may produce, even those that may not be on the lists below that could be a pollutant to the Stormwater systems. The city will utilize this assessment and findings to mitigate Stormwater System pollution risks.

The following chart indicates the steps necessary in the assessment:

Example Facilities include, but are not limited to:

Composting facilities
Equipment storage and maintenance facilities
Fuel farms
Hazardous waste disposal facilities
Hazardous waste handling and transfer facilities
Incinerators
Landfills
Landscape maintenance on municipal property
Materials storage yards
Pesticide storage facilities
Public buildings, including libraries, police stations, fire stations, municipal buildings, and similar Permittee-owned or operated buildings
Public parking lots
Public golf courses
Public swimming pools
Public works yards
Recycling facilities
Salt storage facilities
Solid waste handling and transfer facilities
Street repair and maintenance sites
Vehicle storage and maintenance yards
Permittee-owned and/or maintained structural storm water controls

Potential Pollutants include, but are not limited to:

Sediment
Nutrients
Metals
Hydrocarbons (e.g., benzene, toluene, ethylbenzene, and xylene)
Pesticides
Chlorides
Trash
Bacteria
Chlorine
Organic matter

UNIVERSITY-OWNED OR -OPERATED FACILITIES AND STORM WATER CONTROLS INVENTORY
Section 4.2.6.1 - 4.2.6.3

Facility Name/Description	Location/Address	Pollutant(s)	*High Priority Facility?

*See 4.2.6.3 and 4.2.6.4 of the General Permit for desicription of "high-priority" facility.

Example Facilities include, but are not limited to:

Composting facilities
Equipment storage and maintenance facilities
Fuel farms
Hazardous waste disposal facilities
Hazardous waste handling and transfer facilities
Incinerators
Landfills
Landscape maintenance on municipal property
Materials storage yards
Pesticide storage facilities
Public buildings, including libraries, police stations, fire stations, municipal buildings, and similar Permittee-owned or operated buildings
Public parking lots
Public golf courses
Public swimming pools
Public works yards
Recycling facilities
Salt storage facilities
Solid waste handling and transfer facilities
Street repair and maintenance sites
Vehicle storage and maintenance yards
Permittee-owned and/or maintained structural storm water controls

Potential Pollutants include, but are not limited to:

Sediment
Nutrients
Metals
Hydrocarbons (e.g., benzene, toluene, ethylbenzene, and xylene)
Pesticides
Chlorides
Trash
Bacteria
Chlorine
Organic matter

FLOOR DRAINS INVENTORY WITHIN UNIVERSITY-OWNED OR -OPERATED FACILITIES
Section 4.2.6.6.1

Facility Name/Description	Floor Drain Location	Drains to Sanitary Sewer? Yes/No/Unknown Investigation Method
Shop Building	*Women's Restroom*	*Yes as-built plans*

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Materials Management

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Minimum Measure: Pollution Prevention/Good Housekeeping for Municipal Operations

Subcategory: Municipal Facilities

Description

Secondary containment should be used to prevent materials from contaminating stormwater

Responsible management of common chemicals, such as fertilizers, solvents, paints, cleaners, and automotive products, can significantly reduce polluted runoff (WEF and ASCE, 1998). Such products must be handled properly in all stages of development, use, and disposal. Materials management entails the selection of the individual product, the correct use and storage of the product, and the responsible disposal of associated waste(s).

Applicability

In many cases, industries can implement simple housekeeping practices in order to manage materials more effectively. Proper management reduces the likelihood of accidental spills or releases of hazardous materials during storm events. In addition, health and safety conditions at the facility will improve.

Some simple practices for managing materials are improving maintenance of industrial machinery, establishing material storage and inventory controls, improving routine cleaning and inspection of facilities where materials are stored or processed, maintaining organized workplaces, and educating employees about the benefits of the above practices (USEPA, 1992).

Maintenance Considerations

Maintenance associated with materials management should be designed to minimize the amounts of materials used and the wastes generated by industrial processes. Procedures for operation and maintenance can be easily integrated into an industry's management plan. Simple processes, such as routine cleaning of work spaces, proper collection and disposal of wastes, maintenance of machinery, regular inspections of equipment and facilities, and training employees to respond to spills or leaks, have significant effects on reducing the potential to pollute stormwater runoff.

Another consideration is regular material inventories [PDF - 109 KB - 4 pp]. Such inventories reduce the occurrence of overstocking hazardous materials, increase knowledge about what hazardous materials are present and how they are stored, and provide documentation of proper handling of hazardous materials. An inventory of hazardous materials present at a particular facility consists of three major steps (USEPA, 1992):

- Identify all hazardous and nonhazardous substances present at a facility. This can be accomplished by reviewing all purchase orders for the facility and walking through the facility itself. Compile a list of all chemicals present at a facility and obtain a Material Safety Data Sheet (MSDS) for each one.
- Label all containers with the name of the chemical, unit number, expiration date, handling instructions, and health or environmental hazards. Much of this information will be found on the MSDS. Often, insufficient labeling leads to improper handling or disposal of hazardous substances.
- Make special note on the inventory of hazardous chemicals that require special handling, storage, or disposal.

Cost Considerations

The major costs of these BMPs can be attributed to additional labor. Depending on the extent of the program, varying amounts of staff hours will be required for the necessary education of municipal employees, local businesses, and the public. In addition, posters and bulletin boards that encourage the proper management of materials should be displayed throughout the facility.

References

WEF and the ASCE. 1998. *Urban Runoff Quality Management*. WEF Manual of Practice No. 23 and ASCE Manual and Report on Engineering Practice No. 87. Water Environment Federation, Technical Practice Committee, Water Quality and Ecology Subcommittee, Alexandria, VA, and American Society of Civil Engineers, Urban Water Resources Research Council, Reston, VA.

USEPA. 1992. *Stormwater Management for Industrial Activities*. U.S. Environmental Protection Agency, Office of Water, Washington, DC.

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Municipal Facilities Management

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Minimum Measure: Pollution Prevention/Good Housekeeping for Municipal Operations

Subcategory: Municipal Facilities

Description

Municipalities own and operate numerous facilities, including maintenance yards, parks, office buildings, schools, and other city-owned properties. The objective of managing stormwater at municipal facilities is to prevent pollutants released during city activities from entering storm drain systems or receiving waters. Activities associated with municipal facilities that are a potential threat to water quality include, but are not limited to, Automobile Maintenance, Residential Car Washing, Hazardous Materials Storage, Materials Management, sign painting, Pest Control, Parking Lot and Street Cleaning, and waste storage and disposal. To effectively prevent or reduce stormwater pollution, a municipality should inventory its facilities and associated activities to assess potential impacts on stormwater quality and revise activities or implement new measures as needed. These activities and control measures should be described in a stormwater pollution prevention plan (SWPPP) or a similar document that describes management actions that will be taken to reduce pollution from the site or activity. Training on stormwater best management practices (BMPs) and principles should be provided to all municipal facilities maintenance staff, and they should have clear guidance on how to use appropriate stormwater practices during typical maintenance operations and facility management activities.

Applicability

The Phase II rule specifies that municipalities develop a program to prevent and reduce pollutant runoff from municipal operations, using training and controls for reducing or eliminating the discharge of pollutants from municipal parking lots, maintenance and storage yards, fleet maintenance shops, salt/sand storage locations, snow disposal areas, and waste transfer stations. The rule also includes development of procedures for properly disposing of waste removed from the separate storm sewers and areas listed above (such as dredge spoil, accumulated sediments, floatables, and other debris). Other municipal facilities that should be evaluated for pollution potential and BMP implementation include those where chemicals are stored, those with outdoor trash storage areas, and areas where potentially hazardous materials are stored or disposed of (e.g., animal shelters, hospitals, clinics).

Some municipalities are required to have coverage under an industrial stormwater permit for municipal facilities they own and manage. If a municipal facility, such as a landfill or

transportation facility, has activities included in one of the 11 categories of industrial activity described in 40 CFR 122.26(b)(14)(i)-(xi), the operator must obtain coverage under an NPDES industrial stormwater permit, unless they are conditionally excluded. For those areas where EPA is the permitting authority (in some states, on Indian Country lands, and at some federal facilities), the Multi-Sector General Permit (MSGP) provides facility-specific requirements for many types of industrial facilities in one permit. Most states, however, are authorized to implement the NPDES stormwater program (click here for a list of authorized states) and have their own industrial stormwater permits.

Implementation

Each facility will have different activities and pollutants of concern. Facility managers should consider the housekeeping and pollution prevention BMPs outlined in the Menu of BMPs and develop a SWPPP that outlines how the BMPs will be implemented. If the facility is covered by an industrial stormwater permit, the development and implementation of a SWPPP is one of the permit requirements.

SWPPP development includes a step-by-step process to ensure that pollutants do not enter the storm drain system or receiving waters. BMPs include scheduling activities to reduce the potential for offsite migration of pollutants, such as not scheduling activities immediately before or during rainstorms; prohibiting certain practices, such as the outside storage and use of chemicals; requiring specific maintenance procedures; and other management practices to prevent or reduce pollution. A set of worksheets and a model plan are available in EPA's (1992) Stormwater Management for Industrial Facilities: Development Pollution Prevention Plans and Best Management Practices Summary Document [PDF - 2.59 MB - 52 pp] to assist municipal operators. This document describes the five major phases of developing a pollution prevention plan: (1) planning and organization, (2) assessment, (3) BMP selection and plan design, (4) implementation, and (5) evaluation and site inspection.

Planning and Organization: An individual should be designated who will be responsible for developing and implementing the municipal facility SWPPP and other existing environmental facility plans, such as plans governing pesticide use or hazardous materials storage, to ensure consistency and overlap. The municipality should build on relevant portions of other environmental plans as appropriate, although it is important that the SWPPP be a comprehensive, stand-alone document.

Assessment: Municipal facilities that have been identified as having potential to contribute pollutants to the storm drain system should be inspected to identify possible pollution sources and BMP implementation opportunities. It is helpful to create a map of the facility site that identifies pollutant sources, storm drains, drainage ditches, BMPs requiring periodic maintenance, and areas suitable for new BMP implementation or retrofit. The municipality should also conduct an inventory of potentially polluting materials, evaluate past spills and leaks, identify and eliminate sources of nonstormwater discharges and illicit connections, collect and evaluate any existing stormwater quality data, and summarize the findings of the assessment.

Identify BMPs: BMPs should be selected with special consideration given to areas where materials are handled or stored, outdoor processing areas, loading and unloading areas, and onsite waste management and disposal areas. At a minimum, the plan should address appropriate good housekeeping, preventive maintenance [PDF - 49.5 KB - 3 pp], spill prevention and response [PDF - 55 KB - 5 pp], erosion and sediment control, and structural stormwater management controls. Employee training, visual inspections [PDF - 55 KB - 6 pp], recordkeeping [PDF - 53 KB - 4 pp], and reporting should be addressed and included in the SWPPP as well. Additional activity- or site-specific BMPs might also be appropriate.

Implementation: The selected stormwater BMPs should be implemented according to a schedule that reflects the priority level and funding/labor constraints. Also, all municipal employees should receive training [link to the Municipal Employee Training and Education fact sheet] to understand and carry out the goals of the SWPPP.

Evaluation: Periodic site evaluations should be conducted and records should be kept of BMP implementation, illicit discharge or spill incidents, employee training, inspections, and monitoring, if any is being conducted. The plan should be revised if parts are shown to be ineffective or if activities or conditions at the facility change.

Limitations

Developing and implementing an effective SWPPP at a municipal facility requires time and commitment, not only from managers, but also from staff and laborers. After development of the SWPPP, facilities should be self-inspected annually, with regular inspections conducted more often to detect leaks, spills, or other pollution issues as soon as possible. Also, without the proper training, municipal employees can be unable or unwilling to implement and maintain the BMPs included in the SWPPP.

Case Studies

The following are examples of municipalities that have successfully implemented municipal facility BMPs. Links are provided for more information.

- The City of Gresham, Oregon, conducted an internal audit of a local maintenance yard where materials such as paint, gasoline, oil, grease, pesticides, and herbicides are stored to identify problems and recommend changes that would improve stormwater quality (see Municipal Stormwater Toolbox for Maintenance Practices EXIT Disclaimer). Municipal staff studied stormwater drainage on the site, inventoried equipment and materials, determined the potential for polluting stormwater, inspected the outfalls to a local creek, and interviewed facility operators to learn about existing practices. By participating in the audit, all the facility operators were educated about stormwater drainage and quality and are now actively involved in implementing solutions (Oregon Association of Clean Water Agencies, 1998).

- The City of Santa Monica, California, has implemented numerous practices to control dry and wet weather discharges from municipal areas and activities and has conducted urban runoff training for city employees (USEPA, 2004).

Cost Considerations

The costs of formalizing stormwater management at municipal facilities will vary by facility and by municipality. The majority of the costs are associated with the staff time necessary to develop a SWPPP, train staff, and inspect the facilities to ensure that selected BMPs are applicable and effective.

References

Oregon Association of Clean Water Agencies. 1998. *Oregon Municipal Stormwater Toolbox for Maintenance Practices*. [http://www.oracwa.org/Pages/toolbox.htm EXIT Disclaimer]. Last updated June 1998. Accessed July 6, 2005.

U.S. Environmental Protection Agency. 1992. *Stormwater Management for Industrial Facilities: Development Pollution Prevention Plans and Best Management Practices Summary Document.* EPA 833-R-92-002. [http://www.epa.gov/npdes/pubs/owm0236a.pdf [PDF - 2.59 MB - 52 pp]]. Last updated October 1992. Accessed July 6, 2005.

U.S. Environmental Protection Agency. 2004. Stormwater Case Studies Search Results, Case Study Location: California: Santa Monica. [http://cfpub.epa.gov/npdes/stormwater/casestudies_specific.cfm?case_id=2&CFID=2785611&CFTOKEN=65295474]. Last updated November 12, 2004. Accessed July 6, 2005.

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Potential pollutants likely associated with specific *municipal facilities*

Municipality Facility Activity	Potential Pollutants								
	Sediment	Nutrients	Trash	Metals	Bacteria	Oil & Grease	Organics	Pesticides	Oxygen Demanding Substances
Building and Grounds Maintenance and Repair	X	X	X	X	X	X	X	X	X
Parking/Storage Area Maintenance	X	X	X	X	X	X	X		X
Waste Handling and Disposal	X	X	X	X	X	X	X	X	X
Vehicle and Equipment Fueling			X	X		X	X		
Vehicle and Equipment Maintenance and Repair				X		X	X		
Vehicle and Equipment Washing and Steam Cleaning	X	X	X	X		X	X		
Outdoor Loading and Unloading of Materials	X	X	X	X		X	X	X	X
Outdoor Container Storage of Liquids		X		X		X	X	X	X
Outdoor Storage of Raw Materials	X	X	X			X	X	X	X
Outdoor Process Equipment	X		X	X		X	X		
Overwater Activities			X	X	X	X	X	X	X
Landscape Maintenance	X	X	X		X			X	X
Source: California Stormwater BMP Handbook (http://www.cabmphandbooks.com/)(slightly modified)									

Potential pollutants likely associated with *municipal activities*

Municipal Program	Activities	Potential Pollutants								
		Sediment	Nutrients	Trash	Metals	Bacteria	Oil & Grease	Organics	Pesticides	Oxygen Demanding Substances
Roads, Streets, and Highways Operation and Maintenance	Sweeping and Cleaning	X		X	X		X			X
	Street Repair, Maintenance, and Striping/Painting	X		X	X		X	X		
	Bridge and Structure Maintenance	X		X	X		X	X		
Plaza, Sidewalk, and Parking Lot Maintenance and Cleaning	Surface Cleaning	X	X			X	X			X
	Graffiti Cleaning	X	X		X			X		
	Sidewalk Repair	X		X						
	Controlling Litter	X		X		X	X			X
Fountains, Pools, Lakes, and Lagoons Maintenance	Fountain and Pool Draining		X					X		
	Lake and Lagoon Maintenance	X	X	X		X			X	X
Landscape Maintenance	Mowing/Trimming/Planting	X	X	X		X			X	X
	Fertilizer & Pesticide Management	X	X						X	
	Managing Landscape Wastes			X					X	X
	Erosion Control	X	X							
Drainage System Operation and Maintenance	Inspection and Cleaning of Stormwater Conveyance Structures	X	X	X		X		X		X
	Controlling Illicit Connections and Discharges	X	X	X	X	X	X	X	X	X
	Controlling Illegal Dumping	X	X	X	X	X	X	X	X	X
	Maintenance of Inlet and Outlet Structures	X		X	X		X			X
Waste Handling and Disposal	Solid Waste Collection		X	X	X	X	X	X		X
	Waste Reduction and Recycling			X	X					X
	Household Hazardous Waste Collection			X	X		X	X	X	
	Controlling Litter			X	X	X		X		X
	Controlling Illegal Dumping	X		X		X	X		X	X
Water and Sewer Utility Operation and Maintenance	Water Line Maintenance	X				X	X			
	Sanitary Sewer Maintenance	X				X	X			X
	Spill/Leak/Overflow Control, Response, and Containment	X	X			X		X		X
Source: California Stormwater BMP Handbook (http://www.cabmphandbooks.com/)										

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Road Salt Application and Storage

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Minimum Measure: Pollution Prevention/Good Housekeeping for Municipal Operations

Subcategory: Municipal Activities

Description

The application and storage of deicing materials, most commonly salts such as sodium chloride, can lead to water quality problems for surrounding areas (Koppelman et al., 1984). Salts, gravel, sand, and other materials are applied to highways and roads to reduce the amount of ice during winter storm events. Salts lower the melting point of ice, allowing roadways to stay free of ice buildup during cold winters. Sand and gravel increase traction on the road, making travel safer.

During storage, road salt should be covered to prevent salt from lumping together or being lost with storm water runoff

Applicability

This practice occurs in areas that receive snowfall in winter months and require deicing materials. Municipalities in these areas must ensure proper storage and application for equipment and materials.

Siting and Design Considerations

Many of the problems associated with contamination of local waterways stem from the improper storage of deicing materials (Koppelman et al., 1984). Salts are very soluble when they come into contact with stormwater. They can migrate into ground water used for public water supplies and also contaminate surface waters.

More information about road deicing materials can be found at the American Association of State Highway and Transportation Officials EXIT Disclaimer website.

Limitations

Road salt is the least expensive material for deicing operations; however, once the full social costs are taken into account, alternative products and better management and application of salts become increasingly attractive options.

Table 1. Deicing Alternatives (Keating, 2004)

Substance	Cost	Characteristics
Calcium Chloride ($CaCl_2$)	Flake $290/ton, pellet $340/ton	• Melts ice at temperatures of -25 ° F • If used as recommended, will not harm vegetation
Magnesium Chloride ($MgCl_2$)	Flake $260/ton, pellet $300/ton	• Lowest practical temperature: 5 ° F • If used as recommended, will not harm vegetation; however, $MgCl_2$, on a percentage basis, contains 17-56% more chloride ion than other salt-type deicers
Potassium Chloride (KCl)	$240/ton	• Lowest practical temperature: 12 ° F • Will not harm vegetation
Urea	$280/ton	• Lowest practical temperature: 15 ° F • Will not harm vegetation
Calcium Magnesium Acetate (CMA)	$2,000/ton	• Will work below 0 ° F • Low toxicity and biodegradable

Maintenance Considerations

Covering stored road salts may be costly; however, the benefits are greater than the perceived costs. Properly storing road salts prevents the salt from lumping together, which makes it easier to load and apply. In addition, covering salt storage piles reduces salt loss from stormwater runoff and potential contamination to streams, aquifers, and estuarine areas. Salt storage piles should be located outside the 100-year floodplain for further protection against surface water contamination.

If used during road salt application, certain best management practices can produce significant environmental benefits. The amount of road salt applied should be regulated to prevent oversalting of roadways and increasing runoff concentrations. The amount of salt applied should be varied to reflect site-specific characteristics, such as road width and design, traffic concentration, and proximity to surface waters. Calibration devices mounted in the cabs of spreader-trucks help maintenance workers apply the proper amount of road salt. Alternative materials, such as sand or gravel, should be used in especially sensitive areas.

Cost Considerations See Table 1 for the costs of different deicing alternative

substances.

References

American Association of State Highway and Transportation Officials. 2000. *AASHTO: Transportation Center of Excellence.* [www.transportation.org EXIT Disclaimer]. Accessed September 15, 2005.

Keating, Janis. 2004. Stormwater. *Deicing Salt: Still on the Table* [www.forester.net/sw_0106_deicing.html EXIT Disclaimer]. Accessed October 17, 2005.

Koppelman, L.E., E. Tanenbaum, and C. Swick. 1984. *Nonpoint Source Management Handbook*. Long Island Regional Planning Board, Hauppauge, NY.

USEPA. 1995. *Planning Considerations for Roads, Highways and Bridges*. U.S. Environmental Protection Agency, Office of Water, Washington, DC. [www.epa.gov/OWOW/NPS/education/planroad.html].

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Spill Response and Prevention

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Minimum Measure: Pollution Prevention/Good Housekeeping for Municipal Operations

Subcategory: Municipal Facilities

Description

Spill response and prevention plans should clearly state how to stop the source of the spill, how to contain and clean up the spill, how to dispose of contaminated materials, and how to train personnel to prevent and control future spills.

A person works to prevent a spill from entering a storm sewer (DAWG, 2000)

Applicability

Construction sites that use or store hazardous materials should have a spill prevention and control plan. Hazardous materials include pesticides, paints, cleaners, petroleum products, fertilizers, and solvents. See the Hazardous Materials Storage fact sheet for more information on storing these materials.

Siting and Design Considerations

Identify potential spill or source areas, such as loading and unloading, storage and processing areas, places that generate dust or particulate matter, and areas designated for waste disposal. Also, spill potential should be evaluated for stationary facilities, including manufacturing areas, warehouses, service stations, parking lots, and access roads.

Material handling procedures and storage requirements should be defined and actions should be taken to reduce spill potential and impacts on stormwater quality. This can be achieved by:

- Recycling, reclaiming, or reusing process materials, thereby reducing the amount of process materials that are brought into the facility.
- Installing leak detection devices, overflow controls, and diversion berms.
- Disconnecting drains from processing areas that lead to the storm sewer.
- Performing preventative maintenance on storm tanks, valves, pumps, pipes, and other equipment.

- Using material transfer or filling procedures that minimize spills from tanks and other equipment.
- Replacing toxic materials with less or non-toxic products.

Provide documentation of spill response equipment and procedures to be used, ensuring that procedures are clear and concise. Give step-by-step instructions for spill response at a particular facility. This spill response plan can be presented as a procedural handbook or a sign.

The spill response plan should:

- Identify individuals responsible for implementing the plan.
- Describe safety measures to take with each kind of waste.
- Specify how to notify appropriate authorities, such as police and fire departments, hospitals, or publicly-owned treatment works for assistance.
- State procedures for containing, diverting, isolating, and cleaning up the spill.
- Describe spill response equipment to be used, including safety and cleanup equipment.

Education is essential for reducing spills. By informing people of actions they can take to reduce spill potential, spills will be reduced or prevented. Some municipalities have set up 1-800 numbers for citizens to call in the event of spills. This helps ensure that spills are cleaned up in a safe, proper, and timely manner.

Limitations

A spill prevention and control plan must be well planned and clearly defined. A well conceived plan reduces the likelihood of accidental spills and helps speed an effective response if they occur. Training might be necessary to ensure that all workers can follow procedures. Equipment and materials for cleanup must be readily accessible and clearly marked for workers to be able to follow procedures.

Maintenance Considerations

Update the spill prevention and control plan to accommodate any changes in the site or procedures. Regularly inspect areas where spills might occur to ensure that procedures are posted and cleanup equipment is readily available.

Effectiveness

A spill prevention and control plan effectively reduces the risk of surface and ground water contamination. However, to be effective, workers must be trained, materials and cleanup equipment available, and procedures followed.

Cost Considerations

Spill prevention and control plans are inexpensive to implement. However, extra time is needed to properly handle and dispose of spills, which increases labor costs.

References

DAWG. 2000. *Flexible Spill Berm For Quick Spill Containment*. [http://www.dawginc.com/secondary-spill-containment/secondary-spill-containment.php EXIT Disclaimer]. Accessed September 15, 2005.

USEPA. 1992. *Stormwater Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.* EPA 832-R-92-005. U.S. Environmental Protection Agency, Office of Water, Washington, DC.

USEPA. 1992. *Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices.* EPA 832-R-92-006. U.S. Environmental Protection Agency, Office of Water, Washington, DC.

U.S. ENVIRONMENTAL PROTECTION AGENCY

National Pollutant Discharge Elimination System (NPDES)

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Measurable Goals

Stormwater Home

Municipal Vehicle and Equipment Washing

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Minimum Measure: Pollution Prevention/Good Housekeeping for Municipal Operations

Subcategory: Municipal Activities

Description

Municipal vehicle washing can generate dry weather runoff contaminated with detergents, oils, grease, and heavy metals. Vehicle washing BMPs can eliminate contaminated wash water discharges to the sanitary sewer system. Such BMPs include installing wash racks that discharge wash water to the sanitary sewer, and contracting the services of commercial car washes, which are permitted to discharge wash water to the sanitary sewer system. Finally, employees and subcontractors should be trained in the municipality's vehicle washing procedures to avoid illicit discharges.

Applicability

Municipalities typically operate a fleet of vehicles, including public works trucks, fire trucks, ambulances, police cars, school buses, and other types of vehicles. Municipalities with a large fleet of vehicles might consider building municipal-operated vehicle washing facilities. Municipalities with small fleets might consider contracting with a commercial car wash. Municipalities that own and operate concrete trucks should look at the Concrete Washout fact sheet for proper washing procedures. For information on how to educate the public about reducing pollution while washing personal vehicles, see the Residential Car Washing and Stormwater Outreach for Commercial Businesses fact sheets.

Siting & Design Considerations

Wash Racks

When installing a wash rack at a municipal facility, several design features should be considered. A designated wash area should be paved and bermed or sloped to contain and direct wash water to a sump connected to the sanitary sewer or to a holding tank, process treatment system, or enclosed recycling system. Note that you must seek the permission of the sewer authority before discharging wastewater to the sanitary sewer, and that special treatment requirements may be placed on such discharges. Alternately, the wash rack could be designed to recycle wash water, thereby eliminating the pretreatment costs of discharging to the sanitary sewer.

The following good housekeeping practices can minimize the risk of contamination from vehicle wash water discharges at municipal facilities (adapted from CASQA, 2003):

- Wash all vehicles in areas designed to collect and hold wash water before its

discharge to the sanitary sewer system. Normally, wastewater treatment regulations require wash water to be pretreated prior to its discharge to the treatment plant. Contact your sewer authority to ensure that all requirements are met before designing, building, and operating the wash rack.
- Avoid detergents whenever possible. If detergents are necessary, a phosphate-free, non-toxic, biodegradable soap is recommended. Detergents should be avoided if an oil/water separator is used for pretreatment prior to discharge to the sanitary sewer.
- Municipal facilities that store vehicles should stencil their storm drains to remind employees to wash vehicles within the designated wash area. Signage can also be posted with this message.
- Mount spill kits with absorbent containment materials and instructions near wash racks. Immediately contain and treat all spills.

Commercial Car Washes

Municipalities can negotiate with commercial car washes and steam cleaning businesses to handle their fleet vehicle washing. This option eliminates the cost of building and the liability of operating a wash facility. This option may be limited to smaller sized vehicles, however, since many car washes do not have bays large enough to handle buses, fire trucks, ambulances, and other large vehicles.

Other BMPs

If a vehicle must be washed outside of a facility plumbed to the sanitary sewer, take precautions to avoid wash water discharges to the storm drain system. For small jobs, berm the area surrounding the vehicle and use a wet/dry vacuum to capture the wash water for discharge to the sanitary sewer. For larger jobs, use a combination of berms and a vacuum truck, such as those used to clean storm and sanitary sewer systems, to capture and safely dispose of wash water. If detergents are used, clean the pavement to prevent this material from being carried to the storm drain during the next rainstorm.

Maintenance Considerations

A wash rack's paved surfaces and sump should be inspected and cleaned periodically to remove buildups of particulate matter or other pollutants. Plumbing, recycling, and pretreatment systems also require periodic inspection and maintenance. The area surrounding the wash rack should be visually inspected for leaks, overspray, or other signs of ineffective containment due to faulty design or physical damage to berms. Any defects should be corrected.

Limitations

Building a new wash rack can be expensive. Also, for facilities that cannot recycle their wash water, the cost of pretreating wash water prior to discharge to the sanitary sewer can represent a cost limitation. If the appropriate facilities are available, vehicle washing BMPs are relatively inexpensive housekeeping measures.

Effectiveness

Studies have yet to demonstrate the effectiveness of car washing management practices at reducing stormwater pollutant loads.

Cost Considerations

Municipal wash racks plumbed to the sanitary sewer can be expensive to build. They need to be pursued as a capital improvement project or through other measures based on your local policies for such projects. Costs for contracting with commercial car washes can vary depending on the size of the fleet. Rates are subject to negotiation, but they would constitute an annual operating cost that could be included as part of the municipal budget. Other measures to control discharge of incidental washing to the storm drain system (berms, wet/dry vacuums, etc.) are relatively inexpensive.

References

California Stormwater Quality Association (CASQA). 2004. California Stormwater Industrial/Commercial Best Management Practice Handbook. Stormwater Quality Task Force, Sacramento, CA.

Center for Watershed Protection. 1999. On Watershed Behavior. Watershed Protection Techniques 3(3): 671-679.

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Small MS4 UPDES General Permit

APPENDIX G

STATE OF UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF WATER QUALITY

Authorization to Discharge Under the
Utah Pollutant Discharge Elimination System (UPDES)

General Permit for Discharges from Small Municipal Separate Storm Sewer Systems (MS4s)

This Permit is issued in compliance with the provisions of the Utah Water Quality Act, Title 19, Chapter 5, Utah Code Annotated 2004, as amended (the "Act") and the Federal Water Pollution Control Act (33 U.S.C. §§ 1251 et. seq., as amended to date), and the rules and Regulations made pursuant to those statutes.

This Permit authorizes storm water discharges to Waters of the State of Utah resulting from a Small Municipal Separate Storm Sewer System (Small MS4) as provided in Part 1.0 of this Permit. This authorization is conditioned upon an operator of a Small MS4 meeting the eligibility requirements in Part 1.2 of this Permit prior to filing a Notice of Intent ("NOI") to discharge under this General Permit. An operator of a Small MS4 is not covered by this General Permit if the operator submits an NOI but has not met these conditions.

This authorization is subject to the authority of the Utah Water Quality Board or the *Division* of the Utah Water Quality Board to reopen this Permit (see Part 6.22 of Permit), or to require a discharger to obtain an individual Permit (see Part 6.15 of this Permit). The issuance of a discharge Permit authorization under this General Permit does not relieve Permittees of other duties and responsibilities under the Act or rules made under that Act. Significant terms used in this Permit are defined in Part 7.0 of this Permit.

This Modified Permit shall become effective on December 1, 2016.

This Modified Permit and the authorization to discharge shall expire at midnight, February 28, 2021, except as described in Part 6.3 of this Permit.

Signed this 30 day of November, 2016.

Walter L. Baker, P.E.
Director

UPDES GENERAL PERMIT FOR DISCHARGES FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4s)

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1.0 Coverage Under this Permit

1.1. Authority to Discharge

This General Permit authorizes the discharge, to Waters of the State of Utah, of storm water from a Small MS4 as that term is defined in R317-8-1.6(14) and Part 7.39. of this Permit. This authorization is subject to all of the terms and conditions of this Permit. This General Permit does not authorize discharges prohibited under Part 1.4. of this Permit.

1.2. Permit Area and Eligibility

1.2.1. This Permit covers all areas of the State of Utah except Indian Country (see Part 7.22. of this Permit for a definition of "Indian Country").

1.2.1.1. No operator of a Small MS4 described in 40 CFR 122.32 may discharge from that system without authorization from the *Division*. (See Utah Administrative Code Section R317-8-3.9(1)(h)(1)(a), which sets forth the Permitting requirement, and R317-8-1.10(13), which incorporates 40 CFR 122.32 by reference.) Authorization to discharge under the terms and conditions of this Permit is granted if:

1.2.1.1.1 It applies to an operator of a Small MS4 within the State of Utah but not within Indian Country;

1.2.1.1.2 The operator is not a "large" or "medium" MS4 as defined in 40 CFR 122.26(b)(4) or (7);

1.2.1.1.3 The operator submits a Notice of Intent (NOI) in accordance with Part 2.0 of this Permit;

1.2.1.1.4 The MS4 is located fully or partially within an urbanized area as determined by the latest Decennial Census by the Bureau of Census;

1.2.1.1.5 The operator is ordered by the *Division* to obtain coverage under this Permit, as provided in the UPDES rules, R317-8.

1.2.2. The following are types of authorized discharges:

1.2.2.1. *Storm water discharges.* This Permit authorizes storm water discharges to waters of the State from the Small MS4s identified in 1.2.1., except as excluded in Part 1.4.

1.2.2.2. *Non-storm water discharges.* The following non-storm water discharges do not need to be addressed unless the Permittee or the *Division* identifies these discharges as significant sources of pollutants to Waters of the State or as causing or contributing to a violation of water quality standards:

- Water line flushing
- Landscape irrigation
- Diverted stream flows

- Rising ground waters
- Uncontaminated ground water infiltration
- Uncontaminated pumped ground water
- Discharges from potable water sources
- Foundation drains
- Air conditioning condensate
- Irrigation water
- Springs
- Water from crawl space pumps
- Footing drains
- Lawn watering runoff
- Individual residential car washing
- Flows from riparian habitats and wetlands
- Dechlorinated swimming pool discharges
- Residual street wash water
- Dechlorinated water reservoir discharges
- Discharges or flows from emergency firefighting activity

1.3. Local Agency Authority

This Permit does not pre-empt or supersede the authority of local agencies to prohibit, restrict, or control discharges to storm drain systems or other water courses within their jurisdiction.

1.4. Limitations on Coverage

This Permit does not authorize:

1.4.1. Discharges that are mixed with sources of non-storm water unless such non-storm water discharges are in compliance with a separate UPDES Permit or are determined not to be a substantial contributor of pollutants to Waters of the State.

1.4.2. Storm water discharges associated with industrial activity as defined in *Utah Administrative Code (UAC) R317-8-3.9(6)(c).*

1.4.3. Storm water discharges associated with construction activity as defined in *UAC R317-8-3.9(6)(d)(10)* and *R317-8-3.9(6)(d)(11).*

1.4.4. Storm water discharges currently covered under another Permit.

1.4.5. Discharges that would cause or contribute to in-stream exceedances of water quality standards as contained in *UAC R317-2.*

1.4.6. Discharges of any pollutant into any Waters of the State for which a Total Maximum Daily Load (TMDL) has been approved by EPA unless the discharge is consistent with the TMDL. This consistency determination applies at the time a Notice of Intent is submitted. If conditions change after coverage is issued, the coverage may

remain active provided the conditions and requirements of Part 3.1. of this Permit are complied with.

2.0 Notice of Intent and Storm Water Management Program Requirements

2.1. The requirements of this Part apply only to Permittees **not** covered under the previous General Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems, i.e. **New Applicants**. Permittees that were covered under the previous MS4 General Permit and have submitted a notice of intent (NOI) at least **180 days** prior to the expiration date of the previous Permit, are covered by this Permit and instead must follow the requirements of Part 2.3.

2.1.2. New applicants must meet the following application requirements. The Notice of Intent (NOI) must include submittal of the Storm Water Management Program (SWMP) document. Detailed information on SWMP requirements can be found in Part 4.0 of this Permit.

2.1.3. Within **180 days** of notification from the *Division*, the operator of the MS4 shall submit a NOI form as provided by the Division at http://www.deq.utah.gov/Permits/water/updes/stormwatermun.htm. (The *Division* retains the right to grant permission for a later submission date upon good cause shown). One original completed NOI shall be submitted, by mail or hand delivery to:

Attention: UPDES IES
Department of Environmental Quality
Division of Water Quality
195 North 1950 West
PO Box 144870
Salt Lake City, UT 84114-4870

2.1.4. Late submittal of an NOI is prohibited (unless permission has been granted by the *Division*). If a late NOI is submitted, authorization is only for discharges that occur after Permit coverage is granted. The *Division* reserves the right to take appropriate enforcement actions for any unpermitted discharges.

2.1.5. Where application is made by a new applicant that has assumed operational control of an MS4 for which coverage under this Permit was previously held by a separate entity, the Division may determine that the new applicant shall comply with the Permit requirements in this Permit, as directed for Renewal Permittees. Notification shall be made by the *Division* of this requirement in writing to the New Applicant prior to issuance of Permit coverage

2.1.6. Implementation of the Permittee's SWMP must include the six minimum control areas, including Measurable Goals, described in Part 4.2. Measurable Goals for each of the program areas must include, as appropriate, the year by which the Permittee will undertake required actions, including interim milestones and the frequency of the action if applicable.

2.1.7. Implementation of the Permittee's SWMP as described in the Permittee's application is required to begin within **30 days** after the completed application is submitted. The Permittee must fully develop and implement the SWMP as discussed in Part 4.0 of the Permit by the end of the Permit term unless a more restrictive timeframe is indicated.

2.1.8. If an Operator is designated by the Division as requiring Permit coverage later than one year after the effective date of this General Permit, the Division may approve alternative deadlines that would allow the Permittee to have its program areas implemented.

2.2. Contents of the Notice of Intent

The Notice of Intent requires, at a minimum, the following information:

2.2.1. Name, address, and telephone number of the principal executive officer, ranking elected official or other duly authorized employee in charge of municipal resources used for implementation of the SWMP;

2.2.2. Name(s)/ identification of Waters of the State as defined by UAC R317-1-1.32 that receive discharges from the Permittee's MS4;

2.2.3. Name of the person responsible for overseeing implementation and coordination of the SWMP;

2.2.4. Summary description of the overall water quality concerns, priorities, and measurable goals specific to the Permittee that were considered in the development of the SWMP;

2.2.5. The SWMP document shall consist of, at a minimum, a description of the program elements that will be implemented (or already exist) for each of the SWMP minimum control measures. The plan must be detailed enough for the Division to determine the Permittee's general strategy for complying with the required items in each of the six minimum control measures in the SWMP document (see Part 4.2 of this Permit);

2.2.6. Information on the chosen Best Management Practices (BMPs) and the measurable goals for each of the storm water minimum control measures in Part 4.2 of this Permit and, as appropriate, the timeframe by which the Permittee will achieve required actions, including interim milestones;

2.2.7. Permittees which are applying as Co-Permittees shall each submit an NOI and individual SWMP document which will clearly identify the areas of the MS4 for which each of the Co-Permittees are responsible. Permittees which are relying on another entity (ies) to satisfy one or more of their Permit obligations shall include with the NOI, a summary of the Permit obligations that will be carried out by the other entity (ies). During the term of the Permit, Permittees may terminate or amend shared responsibility arrangements by notifying the *Division*, provided this does not alter implementation deadlines.

2.2.8. Certification and signature requirements in accordance with Part 6.8.

2.3. Storm Water Management Program Plan Description for Renewal Permittees

2.3.1. The requirements of this part apply only to **Renewal Permittees** that were previously covered under the last MS4 General Permit. New applicants are not required to meet the requirements of this Part and instead must follow the requirements of Part 2.0.

2.3.2. Renewal Permittees must submit a **revised SWMP document** to the Division within **120 days** of the effective date of this Permit, which includes at a minimum, the following information:

2.3.2.1. Permit number;

2.3.2.2. MS4 location description and map;

2.3.2.3. Information regarding the overall water quality concerns, priorities, measurable goals, and interim milestones specific to the Permittee that were considered in the development and/or revisions to the SWMP document;

2.3.2.4. A description of the program elements that will be implemented (or are already being implemented) in each of the six minimum control measures (see Part 4.0);

2.3.2.5. A description of any modifications to ordinances or long-term/ongoing processes implemented in accordance with the previous MS4 General Permit for each of the six minimum control measures;

2.3.2.6. A description of how the Permittee intends to meet the requirements of the Permit as described in Part 4.0 by either referencing existing program areas that already meet the Permit requirements or a description and relevant measurable goals that include, as appropriate, the year by which the Permittee will achieve required actions, including interim milestones.

2.3.2.7. Indicate the joint submittal (s) of Co-Permittees (if applicable) and the associated responsibility (ies) in meeting requirements of the SWMP.

2.3.2.8. Certification and signature requirements in accordance with Part 6.8.

2.3.2.9. The revised SWMP document must contain specific details for complying with the required items in each of the six minimum control measures contained within the SWMP document (See Part 4.2.).

3.0 Special Conditions

3.1. Discharges to Water Quality Impaired Waters

3.1.1. Applicability: Permittees must:

3.1.1.1. Determine whether storm water discharge from any part of the MS4 contributes to a 303(d) listed (i.e., impaired) waterbody. A 303(d) list of impaired waterbodies is available at: http://www.deq.utah.gov/ProgramsServices/programs/water/wqmanagement/assessment/PreviousIR.htm. Water quality impaired waters means any segment of surface waters that has been identified by the Division as failing to support classified uses. If the Permittee has discharges meeting these criteria, the Permittee must comply with Part 3.1.2. below and if no such discharges exist, the remainder of this Part 3.1 does not apply.

3.1.1.2. If the Permittee has "303(d)" discharges described above, the Permittee must also determine whether a Total Maximum Daily Load (TMDL) has been developed by the Division and approved by EPA for the listed waterbody. If there is an approved TMDL, the Permittee must comply with all requirements associated with the TMDL as well as the requirements of Part 3.1.2. below and if no TMDL has been approved, the Permittee must comply with Part 3.1.2. below and any TMDL requirements once it has been approved.

3.1.2. Water Quality Controls for Discharges to Impaired Waterbodies. If the Permittee discharges to an impaired waterbody, the Permittee must include in its SWMP document a description of how the Permittee will control the discharge of the pollutants of concern. This description must identify the measures and BMPs that will collectively control the discharge of the pollutants of concern. The measures should be presented in the order of priority with respect to controlling the pollutants of concern.

3.1.3. Where a discharge is already authorized under this Permit and is later determined to cause or have the reasonable potential to cause or contribute to the violation of an applicable water quality standard, the Division will notify the Permittee of such violation(s). The Permittee must take all necessary actions to ensure future discharges do not cause or contribute to the violation of a water quality standard and document these actions as required by the Division. If violations remain or re-occur, coverage under this Permit may be terminated by the Division and an alternative General Permit or individual Permit may be issued. Compliance with this requirement does not preclude any enforcement activity as provided by the Utah Water Quality Act for the underlying violation.

3.2. Nitrogen and Phosphorus Reduction

3.2.1. As part of the Permittee's Storm Water Management Program (SWMP), all Permittees must specifically address the reduction of water quality impacts associated with nitrogen and phosphorus in discharges from the MS4.

3.2.1.1. The Permittee can meet the requirements of this section through contribution to a collaborative program (e.g., storm water coalitions) to evaluate, identify, target, and provide outreach that addresses sources State-wide or within a specific region or watershed.

3.2.1.2. The Permittee must determine and target sources (e.g., residential, industrial, agricultural, or commercial) that are contributing to, or have the potential to contribute, nitrogen and phosphorus to the waters receiving the discharge authorized under this Permit.

3.2.1.3. The Permittee must prioritize which targeted sources are likely to obtain a reduction in nitrogen and phosphorus discharges through education. The Permittee must distribute educational materials or equivalent outreach to the prioritized targeted sources. Educational materials or equivalent outreach must describe storm water quality impacts associated with nitrogen and phosphorus in storm water runoff and illicit discharges, the behaviors of concern, and actions that the target source can take to reduce nitrogen and phosphorus. The Permittee may incorporate the education and outreach to meet this requirement into the education and outreach strategies provided in accordance with Permit Part 4.2.1.

3.3. Co-Permittees

3.3.1. Two or more operators of interrelated or neighboring Small MS4s may apply as Co-Permittees.

3.3.2. In order to be Permitted as Co-Permittees, the MS4(s) must each submit an NOI complete with BMP measurable goals and implementation milestones. Each description of the MS4(s) Storm Water Management Program Plan(s) must clearly describe which Permittees are responsible for implementing each of the control measures.

3.3.3. Each Co-Permittee is individually liable for:

3.3.3.1. Permit compliance for discharges from portions of the MS4 where it is the operator and for areas within its legal jurisdiction;

3.3.3.2. Ensuring that the six minimum control measures described in Part 4.2 are implemented for portions of the MS4 where it is the operator and in areas within its legal jurisdiction; and

3.3.3.3. If any Permit conditions are established for specific portions of the MS4, Co-Permittees need only comply with the Permit conditions relating to those portions of the MS4 for which they are the operator.

3.3.4. Each Co-Permittee is jointly liable for compliance with annual reporting requirements listed in Part 5.5, except that a Co-Permittee is individually liable for any parts of the annual report that relate exclusively to portions of the MS4 where it is the operator.

3.3.5. Specific Co-Permittees are jointly liable for Permit compliance on portions of the MS4 as follows:

3.3.5.1. Where operational or storm water management program implementation authority over portions of the MS4 has been transferred from one Co-Permittee to another in accordance with legally binding interagency agreements, both the owner and the operator may be jointly liable for Permit compliance on those portions of the MS4; and;

3.3.5.2. Where one or more Co-Permittees jointly own or operate a portion of the MS4, each owner/operator is jointly liable for compliance with Permit conditions on the shared portion of the MS4.

4.0 Storm Water Management Program

Permittees covered under the previous General Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems, i.e. **Renewal Permittees**, are expected to have fully implemented all of the following six minimum control measures as required in the previous Permit term. Permittees that were newly designated during the previous Permit term have 5 years from the date of their submitted NOI to develop, fully implement and enforce their Storm Water Management Program (SWMP). A Renewal Permittee must continue to implement its SWMP designed to reduce the discharge of pollutants from the MS4 as described in the application and submittals provided in accordance with the previous MS4 General Permit, while updating its SWMP document pursuant to this Permit. This Permit does not extend the compliance deadlines set forth in the previous MS4 General Permit unless specifically noted. All requirements contained in this renewal Permit are effective immediately unless an alternative timeframe is indicated.

4.1. Requirements

4.1.1. All Permittees must develop, implement, and enforce a SWMP designed to reduce the discharge of pollutants from the MS4, protect water quality, and satisfy the appropriate water quality requirements of the *Utah Water Quality Act.* The SWMP must include the six minimum control measures described in Part 4.2 of this Permit.

4.1.1.1. The SWMP shall be developed and implemented in accordance with the schedules contained in Part 4.0. of this Permit.

4.1.2. Each Permittee shall have an ongoing documentation process for gathering, maintaining, and using information to conduct planning, set priorities, track the development and implementation of the SWMP, evaluate Permit compliance/non-compliance, and evaluate the effectiveness of the SWMP implementation.

4.1.2.1. Each Permittee shall track the number of inspections performed, official enforcement actions taken, and types of public education activities implemented as required for each SWMP component. This information shall be provided to the Division upon request and used by the Division to determine compliance with this Permit.

4.1.2.2. Each Permittee must secure the resources necessary to meet all requirements of this permit. Each Permittee must conduct an annual analysis of the capital and operation and maintenance expenditures needed, allocated, and spent as well as the necessary staff resources needed and allocated to meet the requirements of this permit, including any development, implementation, and enforcement activities required. Each permittee must submit a summary of its fiscal analysis with each annual report.

4.1.3. The SWMP document shall include BMPs that the Permittee or another entity will implement for each of the storm water minimum control measures.

4.1.3.1. The measurable goals for each of the BMPs shall include, as appropriate, the months and years in which the Permittee will undertake required actions, including interim milestones and the frequency of the actions.

4.1.3.2. The SWMP document shall indicate the person or persons responsible for implementing or coordinating the BMPs contained within the SWMP document.

4.1.3.3. The revised SWMP document shall clearly identify the roles and responsibilities of all offices, departments, divisions, or sub-sections and if necessary other responsible entities and it shall include any necessary agreements, contracts, or memorandum of understanding (MOUs) between said entities that affect the implementation and operation of the SWMP. Necessary agreements, contracts, and MOUs shall deal with coordination or clarification of the responsibilities associated with the detection and elimination of improper connections or illicit discharges to the MS4, BMP coordination or other coordinated programs or sensitive issues of unclear or overlapping responsibility. Such agreements, contracts, and MOUs shall be retained by the Permittee as required by the SWMP document.

4.2. Minimum Control Measures

The six minimum control measures that must be included in the storm water management program are:

4.2.1. Public Education and Outreach on Storm Water Impacts

The Permittee must implement a public education and outreach program to promote behavior change by the public to reduce water quality impacts associated with pollutants in storm water runoff and illicit discharges. Outreach and educational efforts shall include a multimedia approach and shall be targeted and presented to specific audiences for increased effectiveness. The educational program must include documented education and outreach efforts for the following four audiences: (1) residents, (2) institutions, industrial and commercial facilities, (3) developers and contractors (construction), and (4) MS4-owned or operated facilities. The minimum performance measures which should be based on the land uses and target audiences found within the community include:

4.2.1.1. Target specific pollutants and pollutant sources determined by the Permittee to be impacting, or have the potential to impact, the beneficial uses of receiving water. This includes providing information which describe the potential impacts from storm water discharges; methods for avoiding, minimizing, reducing and /or eliminating the adverse impacts of storm water discharges; and the actions individuals can take to improve water quality, including encouraging participation in local environmental stewardship activities, based on the land uses and target audiences found within the community;

4.2.1.2. Provide and document information given to the general public of the Permittee's prohibitions against and the water quality impacts associated with illicit discharges and improper disposal of waste. The Permittee must at a minimum consider the following topics. These topics are not inclusive and the Permittee must focus on those topics most relevant to the community: maintenance of septic systems; effects of outdoor activities such as lawn care (use of pesticides, herbicides, and fertilizers); benefits of on-site infiltration of storm water; effects of automotive work and car washing on water quality; proper disposal of swimming pool water; and proper management of pet waste.

4.2.1.3. Provide and document information given to institutions, industrial, and commercial facilities on an annual basis of the Permittee's prohibition against and the water quality impacts associated with illicit discharges and improper disposal of waste. The Permittee must at a minimum consider the following topics. These topics are not inclusive and the Permittee must focus on those topics most relevant to the community: proper lawn maintenance (use of pesticides, herbicides and fertilizer); benefits of appropriate on-site infiltration of storm water; building and equipment maintenance (proper management of waste water); use of salt or other deicing materials (cover/prevent runoff to storm system and contamination to ground water); proper storage of materials (emphasize pollution prevention); proper management of waste materials and dumpsters (cover and pollution prevention); and proper management of parking lot surfaces (sweeping). This education can also be a part of the Illicit Discharge Detection and Elimination measure detailed in Part 4.2.3.

4.2.1.4. Provide and document information given to engineers, construction contractors, developers, development review staff, and land use planners concerning the development of storm water pollution prevention plans (SWPPPs) and BMPs for reducing adverse impacts from storm water runoff from development sites. This education can also be a part of the Construction Site Storm Water Runoff minimum control measure detailed in Part 4.2.4.

4.2.1.5. Provide and document information and training given to employees of Permittee-owned or operated facilities concerning the Permittee's prohibition against and the water quality impacts associated with illicit discharges and improper disposal of waste. The Permittee must at a minimum consider the following topics: equipment inspection to ensure timely maintenance; proper storage of industrial materials (emphasize pollution prevention); proper management and disposal of wastes; proper management of dumpsters; minimization of use of salt and other de-icing materials (cover/prevent runoff to MS4 and ground water contamination); benefits of appropriate on-site infiltration (areas with low exposure to industrial materials such as roofs or employee parking); and proper maintenance of parking lot surfaces (sweeping).

4.2.1.6. Provide and document information and training given to MS4 engineers, development and plan review staff, land use planners, and other parties as applicable to learn about Low Impact Development (LID) practices, green infrastructure practices, and to communicate the specific requirements for post-construction control and the associated Best Management Practices (BMPs) chosen within the SWMP.

4.2.1.7. An effective program must show evidence of focused messages and audiences as well as demonstration that the defined goal of the program has been achieved. The Permittee must define the specific messages for each audience. The Permittee must identify methods that will be used to evaluate the effectiveness of the educational messages and the overall education program. Any methods used to evaluate the effectiveness of the program must be tied to the defined goals of the program and the overall objective of changes in behavior and knowledge.

4.2.1.8. The Permittee must include written documentation or rationale as to why particular BMPs were chosen for its public education and outreach program.

4.2.2. Public Involvement/Participation

The Permittee must implement a program that complies with applicable State and Local public notice requirements. The SWMP shall include ongoing opportunities for public involvement and participation such as advisory panels, public hearings, watershed committees, stewardship programs, environmental activities, other volunteer opportunities, or other similar activities. The Permittee should involve potentially affected stakeholder groups, which include but is not limited to, commercial and industrial businesses, trade associations, environmental groups, homeowners associations, and education organizations. The minimum performance measures are:

4.2.2.1. Permittees shall adopt a program or policy directive to create opportunities for the public to provide input during the decision making processes involving the development, implementation and update of the SWMP document including development and adoption of all required ordinances or regulatory mechanisms.

4.2.2.2. Renewal Permittees shall make the revised SWMP document available to the public for review and input within **120** days from the effective date of this Permit. New Applicants shall make the SWMP document available to the public for review and input within **180** days of receiving notification from the *Division* of the requirement for Permit coverage.

4.2.2.3. A current version of the SWMP document shall remain available for public review and input for the life of the Permit. If the Permittee maintains a website, the latest version of the SWMP document shall be posted on the website within **120 days** from the effective date of this Permit and shall clearly denote a specific contact person and phone number or email address to allow the public to review and provide input for the life of the Permit.

4.2.2.4. The Permittee must at a minimum comply with State and Local public notice requirements when implementing a public involvement/participation program.

4.2.3. Illicit Discharge Detection and Elimination (IDDE)

All Permittees shall revise as necessary, implement and enforce an IDDE program to systematically find and eliminate sources of non-storm water discharges from the MS4 and to implement defined procedures to prevent illicit connections and discharges according to the minimum performance measures listed below. The IDDE program must be described in writing, incorporated as part of the Permittee's SWMP document, and contain the elements detailed in this part of the Permit. The minimum performance measures are:

4.2.3.1. Maintain a current storm sewer system map of the MS4, showing the location of all municipal storm sewer outfalls with the names and location of all State waters that receive discharges from those outfalls, storm drain pipe and other storm water conveyance structures within the MS4.

4.2.3.2. Effectively prohibit, through ordinance or other regulatory mechanism, non-storm water discharges to the MS4, including spills, illicit connections, illegal dumping and

sanitary sewer overflows ("SSOs") into the storm sewer system, require removal of such discharges consistent with Part 4.2.3.6. of this Permit, and implement appropriate enforcement procedures and actions. The Permittee must have a variety of enforcement options in order to apply escalating enforcement procedures as necessary for the severity of violation and/or the recalcitrance of the violator. Exceptions are discharges pursuant to a separate UPDES Permit (other than the UPDES Permit for discharges from the MS4) and non-storm water discharges listed in Part 1.2.2.2.

4.2.3.2.1 The IDDE program must have adequate legal authority to detect, investigate, eliminate and enforce against non-storm water discharges, including illegal dumping, into the MS4. Adequate legal authority consists of an effective ordinance, by-law, or other regulatory mechanism. The documented IDDE program that is included in the Permittee's SWMP must include a reference or citation of the authority the Permittee will use to implement all aspects of the IDDE program.

4.2.3.3. Implement a written plan to detect and address non-storm water discharges to the MS4, including spills, illicit connections, sanitary sewer overflows and illegal dumping. The plan shall include:

4.2.3.3.1 Written systematic procedures for locating and listing the following priority areas likely to have illicit discharges (if applicable to the jurisdiction):

- Areas with older infrastructure that are more likely to have illicit connections;
- Industrial, commercial, or mixed use areas;
- Areas with a history of past illicit discharges;
- Areas with a history of illegal dumping;
- Areas with onsite sewage disposal systems;
- Areas with older sewer lines or with a history of sewer overflows or cross-connections;
- Areas upstream of sensitive waterbodies; and,
- Other areas the Permittee determines to be likely to have illicit discharges.

The Permittee must document the basis for its selection of each priority area and create a list of all priority areas identified in the system. This priority area list must be updated annually to reflect changing priorities.

4.2.3.3.2 Field inspections of areas which are considered a priority area as identified in Permit Part 4.2.3.3.1. Compliance with this provision shall be achieved by inspecting each priority area annually at a minimum. All field assessment activities shall utilize an inspection form to document findings.

4.2.3.3.3 Dry weather screening (See Definition 7.13) activities for the purpose of verifying outfall locations and detecting illicit discharges that discharge within the Permittee's jurisdiction to a receiving water. All outfalls shall be inspected at least once during the 5-year Permit term. Dry weather screening activities shall utilize an inspection form to document findings.

4.2.3.3.4 If the Permittee discovers or suspects that a discharger may need a separate UPDES Permit (e.g., Industrial Storm Water Permit, Dewatering Permit), the Permittee shall notify the Division.

4.2.3.4. Implement standard operating procedures (SOPs) or similar type of documents for tracing the source of an illicit discharge; including visual inspections, and when necessary, opening manholes, using mobile cameras, using field tests of selected chemical parameters as indicators of discharge sources, collecting and analyzing water samples for the purpose of determining sanctions or penalties, and/or other detailed inspection procedures.

4.2.3.5. Implement standard operating procedures (SOPs) or similar type of documents for characterizing the nature of, and the potential public or environmental threat posed by, any illicit discharges found by or reported to the Permittee by the hotline or other telephone number described in 4.2.3.9. These procedures shall include detailed instructions for evaluating how the discharge shall be immediately contained and steps to be taken for containment of the discharge. Compliance with this provision will be achieved by initiating an investigation immediately upon being alerted of a potential illicit discharge.

4.2.3.5.1 When the source of a non-storm water discharge is identified and confirmed, the Permittee must record the following information in an inspection report: the date the Permittee became aware of the non-storm water discharge, the date the Permittee initiated an investigation of the discharge, the date the discharge was observed, the location of the discharge, a description of the discharge, the method of discovery, date of removal, repair, or enforcement action; date, and method of removal verification. Analytical monitoring may be necessary to aid in the identification of potential sources of an illicit discharge and to characterize the nature of the illicit discharge. The decision process for utilizing analytical monitoring must be fully documented in the inspection report.

4.2.3.6. Implement standard operating procedures (SOPs) or similar type of documents for ceasing the illicit discharge, including notification of appropriate authorities; notification of the property owner; technical assistance for removing the source of the discharge or otherwise eliminating the discharge; follow-up inspections; and escalating enforcement and legal actions if the discharge is not eliminated. Illicit discharges to the MS4 are prohibited and any such discharges violate this Permit and remain in violation until they are eliminated. Upon detection, the Permittee shall require immediate cessation of improper disposal practices upon confirmation of responsible parties in accordance with its enforceable legal authorities established pursuant to Part 4.2.3.2.1. of this Permit.

4.2.3.6.1 All IDDE investigations must be thoroughly documented and may be requested at any time by the *Division.* If a Permittee is unable to meet the minimum performance measures outlined in Parts 4.2.3.5. or 4.2.3.6., the Permittee must immediately submit to the *Division* written documentation or rationale describing the circumstances why compliance with the minimum performance measures was not possible. All IDDE documentation shall be retained by the Permittee as required by the SWMP document.

4.2.3.7. Permittees shall inform public employees, businesses, and the general public of hazards associated with illicit discharges and improper disposal of waste.

4.2.3.8. Permittees shall promote or provide services for the collection of household hazardous waste.

4.2.3.9. Permittees shall publicly list and publicize a hotline or other local telephone number for public reporting of spills and other illicit discharges. A written record shall be kept of all calls received, all follow-up actions taken, and any feedback received from public education efforts.

4.2.3.9.1 The Permittee must develop a written spill/dumping response procedure, and a flow chart for internal use, that shows the procedures for responding to public referrals of illicit discharges, the various responsible agencies and their contacts, and who would be involved in illicit discharge incidence response, even if it is a different entity other than the Permittee. The procedure and list must be incorporated as part of the IDDE program and incorporated into the Permittee's SWMP document. The list must be maintained and updated as changes occur.

4.2.3.10. Permittees shall implement procedures for program evaluation and assessment which includes maintaining a database for mapping, tracking of the number and type of spills or illicit discharges identified; and inspections conducted.

4.2.3.11. Permittees shall at a minimum, ensure that all staff, contracted staff, or other responsible entities receives annual training in the IDDE program including identification, investigation, termination, cleanup, and reporting of illicit discharges including spills, improper disposal, and illicit connections. All Permittees shall ensure that all new hires are trained immediately upon hire and annually thereafter, at a minimum. Follow-up training shall be provided as needed to address changes in procedures, methods or staffing. The Permittee shall provide training to all field staff that as part of their normal job responsibilities might come into contact with or otherwise observe an illicit discharge or illicit connection to the MS4. The Permittee shall also train office personnel who might receive initial reports of illicit discharges. Training shall include how to identify a spill, an improper disposal, or an illicit connection to the MS4 and proper procedures for reporting the illicit discharge. Training records must be kept and shall include dates, activities or course descriptions, and names and positions of staff in attendance. The Permittee shall include a summary of such training in the annual report.

4.2.3.12. The Division reserves the right to request documentation or further study of a particular non-storm water discharge of concern, to require a reasonable basis for allowing the non-storm water discharge and excluding the discharge from the Permittee's program, and to require inclusion of the discharge in the Permittee's program, if water quality concerns cannot otherwise be reasonably satisfied.

4.2.4. Construction Site Storm Water Runoff Control

All Permittees shall revise as necessary, implement and enforce a program to reduce pollutants in any storm water runoff to the MS4 from construction sites with a land disturbance of greater than or equal to one acre, including projects less than one acre

that are part of a larger common plan of development or sale according to the minimum performance measures listed below. Public and private projects, including projects proposed by the Permittee's own departments and agencies, shall comply with these requirements. The minimum performance measures are:

4.2.4.1. Revise as necessary and enforce an ordinance or other regulatory mechanism that requires the use of erosion and sediment control practices at construction sites. The ordinance or other regulatory mechanism shall, at a minimum, be equivalent with the requirements set forth in the most current UPDES Storm Water General Permits for Construction activities which can be found at http://www.deq.utah.gov/Permits/water/updes/stormwatercon.htm. The ordinance or other regulatory mechanism shall include sanctions to ensure compliance. The ordinance or other regulatory mechanism shall apply, at a minimum, to construction projects disturbing greater than or equal to one acre and to construction projects of less than one acre that are part of a larger common plan of development or sale. Existing local requirements to apply storm water controls at sites less than 1 acre or not part of a Common Plan of Development may be retained.

4.2.4.1.1 The ordinance or other regulatory mechanism shall, at a minimum, require construction operators to prepare a Storm Water Pollution Prevention Plan (SWPPP) and apply sediment and erosion control BMPs as necessary to protect water quality, reduce the discharge of pollutants, and control waste such as, but not limited to, discarded building materials, concrete truck washout, chemicals, litter and sanitary waste at the construction site that may cause adverse impacts to water quality. The SWPPP requirements must be, at a minimum, equivalent with the SWPPP requirement set forth in the most current UPDES Storm Water General Permits for Construction Activities, which can be found at: http://www.deq.utah.gov/Permits/water/updes/stormwatercon.htm.

4.2.4.1.2 Permittees shall ensure construction operators obtain and maintain coverage under the current UPDES Storm Water General Permits for Construction Activities for the duration of the project. Coverage can be obtained by completing a NOI as well as renewed online at https://secure.utah.gov/account/login.html?returnToUrl=https%3A//secure.utah.gov/stormwater/uii_authentication.

4.2.4.1.3 The ordinance shall include a provision for access by qualified personnel to inspect construction storm water BMPs on private properties that discharge to the MS4.

4.2.4.2. Develop a written enforcement strategy and implement the enforcement provisions of the ordinance or other regulatory mechanism which shall include:

4.2.4.2.1 Standard operating procedures (SOPs) or similar type of documents that include specific processes and sanctions to minimize the occurrence of, and obtain compliance from violators which shall include appropriate, escalating enforcement procedures and actions.

4.2.4.2.2 Documentation and tracking of all enforcement actions.

4.2.4.3. Develop and implement SOPs or similar type of documents for pre-construction Storm Water Pollution Prevention Plan (SWPPP) review and keep records for, at a

minimum, all construction sites that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, to ensure plans are complete and in compliance with State and Local regulations. Permittees shall keep records of these projects for five years or until construction is completed, whichever is longer. Prior to construction, the Permittee shall:

4.2.4.3.1 Conduct a pre-construction SWPPP review which includes a review of the site design, the planned operations at the construction site, planned BMPs during the construction phase, and the planned BMPs to be used to manage runoff created after development.

4.2.4.3.2 Incorporate into the SWPPP review procedures the consideration of potential water quality impacts and procedures for pre-construction review which shall include the use of a checklist.

4.2.4.3.3 Identify priority construction sites considering the following factors at a minimum:

- Soil erosion potential;
- Site slope;
- Project size and type;
- Sensitivity of receiving waterbodies;
- Proximity to receiving waterbodies; and,
- Non-storm water discharges and past record of non-compliance by the operators of the construction site.

4.2.4.4. All Permittees shall develop and implement SOPs or similar type of documents for construction site inspection and enforcement of construction storm water pollution control measures. The procedures must clearly define who is responsible for site inspections as well as who has authority to implement enforcement procedures. The Permittee must have the authority to the extent authorized by law to impose sanctions to ensure compliance with the local program. These procedures and regulatory authorities must be written and documented in the SWMP. The construction site storm water runoff control inspection program must provide:

4.2.4.4.1 Inspections of all new construction sites with a land disturbance of greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale at least monthly by qualified personnel using the Construction Storm Water Inspection Form (Checklist) found on the Division's website at http://www.deq.utah.gov/Permits/water/updes/stormwatermun.htm.

4.2.4.4.2 The Permittee must inspect all phases of construction: prior to land disturbance, during active construction, and following active construction. The Permittee must document in its SWMP the procedure for being notified by construction operators/owners of their completion of active construction so that verification of final stabilization and removal of all temporary control measures may be conducted. This procedure must be provided to the construction operator/owner before active construction begins.

4.2.4.4.3 Inspections by the MS4 of priority construction sites defined in Part 7.36. must be conducted at least biweekly (every two weeks) using the Construction Storm Water

Inspection Form (Checklist) found on the Division's website at http://www.deq.utah.gov/Permits/water/updes/stormwatermun.htm.

4.2.4.4.4 Based on site inspection findings, the permittee must take all necessary follow-up actions (i.e., reinspection, enforcement) to ensure compliance in accordance with the permittee's enforcement strategy. These follow-up and enforcement actions must be tracked and documented.

4.2.4.4.5 Permittees shall publicly provide and publicize a hotline or other local telephone number for public reporting of storm water related issues on construction sites, such as tracking onto streets. Records of violations, enforcement actions and corrective actions taken shall be tracked and documented.

4.2.4.5 The Permittee must ensure that all staff whose primary job duties are related to implementing the construction storm water program, including permitting, plan review, construction site inspections, and enforcement, are annually trained to conduct these activities. The training can be conducted by the MS4 or outside training can be attended. Such training must extend to third-party inspectors and plan reviewers as well. The Permittee shall ensure that all new hires are trained upon hire and before commencing storm water related duties and annually thereafter, at a minimum. Follow-up training shall be provided as needed to address changes in procedures, methods or staffing. The training records to be kept include dates, activities or course descriptions, and names and positions of staff in attendance.

4.2.4.6. All Permittees shall implement a procedure to maintain records of all projects disturbing greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale. Permittees shall keep records which include but are not limited to, site plan reviews, SWPPPs, inspections and enforcement actions including verbal warnings, stop work orders, warning letters, notices of violation, and other enforcement records. Permittees shall keep records of these projects for five years or until construction is completed, whichever is longer.

4.2.5. Long-Term Storm Water Management in New Development and Redevelopment (Post-Construction Storm Water Management)

All Permittees shall revise as necessary, implement and enforce a program to address post-construction storm water runoff to the MS4 from new development and redevelopment construction sites disturbing greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, according to the minimum performance measures listed below. The objective of this control measure is for the hydrology associated with new development to mirror the pre-development hydrology of the previously undeveloped site or to improve the hydrology of a redeveloped site and reduce the discharge of storm water. The water quality considerations of this minimum control measure do not replace or substitute for water quantity or flood management requirements implemented on the local level for new developments. The water quality controls may be incorporated into the design of structures intended for flow control; or water quality control may be achieved with separate control measures. The program must apply to private and public development sites, including roads.

The minimum performance measures are:

4.2.5.1. Develop and adopt an ordinance or other regulatory mechanism that requires long-term post-construction storm water controls at new development and redevelopment sites. The ordinance or other regulatory mechanism shall apply, at a minimum, to new development and redevelopment sites that discharge to the MS4 and that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale. Existing local requirements to apply storm water controls at smaller sites shall be retained. The ordinance or other regulatory mechanism shall require BMP selection, design, installation, operation and maintenance standards necessary to protect water quality and reduce the discharge of pollutants to the MS4.

4.2.5.2. Implement an enforcement strategy and implement the enforcement provisions of the ordinance or other regulatory mechanism. Procedures for enforcement of BMPs include:

4.2.5.2.1 Procedures that include specific processes and sanctions to minimize the occurrence of, and obtain compliance from, chronic and recalcitrant violators which shall include appropriate, escalating enforcement procedures and actions.

4.2.5.2.2 Documentation on how the requirements of the ordinance or other regulatory mechanism will protect water quality and reduce the discharge of pollutants to the MS4. Documentation shall include:

- How long-term storm water BMPs were selected;
- The pollutant removal expected from the selected BMPs; and
- The technical basis which supports the performance claims for the selected BMPs.

4.2.5.3. The Permittee's new development/redevelopment program must have requirements or standards to ensure that any storm water controls or management practices for new development and redevelopment will prevent or minimize impacts to water quality. BMPs must be selected that address pollutants known to be discharged or anticipated to be discharged from the site.

4.2.5.3.1 The Permittee's new development/redevelopment program shall include non-structural BMPs such as requirements and standards to minimize development in areas susceptible to erosion and sediment loss; to minimize the disturbance of native soils and vegetation; to preserve areas in the municipality that provide important water quality benefits; to implement measures for flood control; and to protect the integrity of natural resources and sensitive areas.

4.2.5.3.2 For new development or redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, the program shall include a process to evaluate and encourage a Low Impact Development (LID) approach which promotes the implementation of BMPs that infiltrate, evapotranspire or harvest and use storm water from the site to protect water quality. **By March 1, 2019**, the program shall

include a process which ***requires*** the evaluation of an LID approach for new development or redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale. Structural controls may include green infrastructure practices such as rainwater harvesting, rain gardens, permeable pavement, and vegetated swales. If an LID approach cannot be utilized, the Permittee must document an explanation of the reasons preventing this approach and the rationale *for the chosen alternative controls* on a case by case basis for each project.

Since 2010, rainwater harvesting is legal in the State of Utah. Depending on the volume of rainwater collected and stored for beneficial use, the Permittee must meet the requirements of the Utah Division of Water Rights to harvest rainwater found on their website: http://waterrights.utah.gov/forms/rainwater.asp

4.2.5.3.3 The Permittee must develop a plan to retrofit existing developed sites that are adversely impacting water quality. The retrofit plan must be developed to emphasize controls that infiltrate evapotranspire or harvest and use storm water discharges. The plan must include a ranking of control measures to determine those best suited for retrofitting as well as those that could later be considered for retrofitting. The Permittee must include the following when developing the criteria for the retrofit plan:

- Proximity to waterbody
- Status of waterbody to improve impaired waterbodies and protect unimpaired waterbodies
- Hydrologic condition of the receiving waterbody
- Proximity to sensitive ecosystem or protected area
- Any upcoming sites that could be further enhanced by retrofitting storm water controls

4.2.5.3.4 Each Permittee shall develop and define specific hydrologic method or methods for calculating runoff volumes and flow rates to ensure consistent sizing of structural BMPs in their jurisdiction and to facilitate plan review. **By March 1, 2019**, new development or redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale must manage rainfall on-site, and prevent the off-site discharge of the precipitation from all rainfall events less than or equal to the 90th percentile rainfall event. This objective must be accomplished by the use of practices that are designed, constructed, and maintained to infiltrate, evapotranspire and/or harvest and reuse rainwater. The 90th percentile rainfall event is the event whose precipitation total is greater than or equal to 90 percent of all storm events over a given period of record. If meeting this retention standard is technically infeasible, a rationale shall be provided on a case by case basis for the use of alternative design criteria. The project must document and quantify that infiltration, evapotranspiration and rainwater harvesting have been used to the maximum extent technically feasible and that full employment of these control are infeasible due to site constraints.

4.2.5.4. All Permittees shall adopt and implement procedures for site plan review which evaluate water quality impacts. The procedures shall apply through the life of the

project from conceptual design to project closeout. Prior to construction, Permittees shall:

4.2.5.4.1 Review post-construction plans for, at a minimum, all new development and redevelopment sites that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, to ensure that the plans include long-term storm water management measures that meet the requirements of this minimum control measure.

4.2.5.4.2 Permittees shall provide developers and contractors with preferred design specifications to more effectively treat storm water for different development types such as industrial parks, commercial strip malls, retail gasoline outlets, restaurants, parking lots, automotive service facilities, street and road construction, and projects located in, adjacent to, or discharging to environmentally sensitive areas.

4.2.5.4.3 Permittees shall keep a representative copy of information that is provided to design professionals; and if information is distributed to a large number of design professionals at once, the dates of the mailings and lists of recipients.

4.2.5.5. All Permittees shall adopt and implement SOPs or similar type of documents for site inspection and enforcement of post-construction storm water control measures. These procedures must ensure adequate ongoing long-term operation and maintenance of approved storm water control measures.

4.2.5.5.1 The ordinance or other regulatory mechanism shall include provisions for post-construction access for Permittees to inspect storm water control measures on private properties that discharge to the MS4 to ensure that adequate maintenance is being performed. The ordinance or other regulatory mechanism may, in lieu of requiring that the Permittee's staff inspect and maintain storm water controls on private property, instead require private property owner/operators or qualified third parties to conduct maintenance and provide annual certification that adequate maintenance has been performed and the structural controls are operating as designed to protect water quality. In this case, the Permittee must require a maintenance agreement addressing maintenance requirements for any control measures installed on site. The agreement must allow the Permittee to conduct oversight inspections of the storm water control measures and also account for transfer of responsibility in leases and/or deeds. The agreement must also allow the Permittee to perform necessary maintenance or corrective actions neglected by the property owner/operator, and bill or recoup costs from the property owner/operator as needed.

4.2.5.5.2 Permanent structural BMPs shall be inspected at least once during installation by qualified personnel. Upon completion, the Permittee must verify that long-term BMPs were constructed as designed.

4.2.5.5.3 Inspections and any necessary maintenance must be conducted annually by either the Permittee or through a maintenance agreement, the property owner/operator. On sites where the property owner/operator is conducting maintenance, the Permittee shall inspect those storm water control measures at least once every five years, or more frequently as determined by the Permittee to verify and ensure that adequate maintenance is being performed. The Permittee must document its findings in an inspection report which includes the following:

- Inspection date;
- Name and signature of inspector;
- Project location;
- Current ownership information;
- A description of the condition of the storm water control measure including the quality of: vegetation and soils; inlet and outlet channels and structures; catch basins; spillways; weirs, and other control structures; and sediment and debris accumulation in storage as well as in and around inlet and outlet structures; and,
- Specific maintenance issues or violations found that need to be corrected by the property owner or operator along with deadlines and reinspection dates.

4.2.5.6. Permittees shall ensure that all staff involved in post-construction storm water management, planning and review, and inspections and enforcement receive adequate training on an annual basis. Training shall be provided or made available for staff in the fundamentals of long-term storm water management through the use of structural and non-structural control methods. The training records to be kept include dates, activities or course descriptions, and names and positions of staff in attendance. The Permittee shall ensure that all new hires are trained upon hire and before commencing storm water related duties and annually thereafter, at a minimum. Follow-up training shall be provided as needed to address changes in procedures, methods or staffing.

4.2.5.7. The Permittee must maintain an inventory of all post-construction structural storm water control measures installed and implemented at new development and redeveloped sites that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale. This inventory shall include both public and private sector sites located within the Permittee's service area.

4.2.5.7.1 Each entry to the inventory must include basic information on each project, such as project's name, owner's name and contact information, location, start/end date, etc. In addition, inventory entries must include the following for each project:

- Short description of each storm water control measure (type, number, design or performance specifications);
- Short description of maintenance requirements (frequency of required maintenance and inspections); and
- Inspection information (date, findings, follow up activities, prioritization of follow-up activities, compliance status).

4.2.5.7.2 Based on inspections conducted pursuant to Part 4.2.5.5., the Permittee must update the inventory as appropriate where changes occur in property ownership or the specific control measures implemented at the site.

4.2.6. Pollution Prevention and Good Housekeeping for Municipal Operations

All Permittees shall implement a program for Permittee-owned or operated facilities, operations and structural storm water controls that includes standard operating procedures (SOPs), pollution prevention BMPs, storm water pollution prevention plans or similar type of documents, and a training component that have the ultimate goal of preventing or reducing the runoff of pollutants to the MS4 and Waters of the State. All components of the program shall be included in the SWMP document and must identify the department (and where appropriate, the specific staff) responsible for performing each activity described in this section. The Permittee must develop an inventory of all such Permittee-owned or operated facilities. The Permittee must review this inventory annually and update as necessary. The minimum performance measures are:

4.2.6.1. Permittees shall develop and keep current a written inventory of Permittee-owned or operated facilities and storm water controls that may include but is not limited to:

- Composting facilities
- Equipment storage and maintenance facilities
- Fuel farms
- Hazardous waste disposal facilities
- Hazardous waste handling and transfer facilities
- Incinerators
- Landfills
- Landscape maintenance on municipal property
- Materials storage yards
- Pesticide storage facilities
- Public buildings, including libraries, police stations, fire stations, municipal buildings, and similar Permittee-owned or operated buildings
- Public parking lots
- Public golf courses
- Public swimming pools
- Public works yards
- Recycling facilities
- Salt storage facilities
- Solid waste handling and transfer facilities
- Street repair and maintenance sites
- Vehicle storage and maintenance yards
- Permittee-owned and/or maintained structural storm water controls

4.2.6.2. All Permittees shall assess the written inventory of Permittee-owned or operated facilities, operations and storm water controls identified in Part 4.2.6.1. for their potential to discharge to storm water the following typical urban pollutants: sediment, nutrients, metals, hydrocarbons (e.g., benzene, toluene, ethylbenzene and xylene), pesticides, chlorides, and trash. Other pollutants may be associated with, but not generated directly from, the municipally-owned or operated facilities, such as bacteria, chlorine, organic matter, etc. Therefore, the Permittee must determine additional pollutants associated with its facilities that could be found in storm water

discharges. A description of the assessment process and findings must be included in the SWMP document.

4.2.6.3. Based on the assessment required in Part 4.2.6.2., the Permittee must identify as "high-priority" those facilities or operations that have a high potential to generate storm water pollutants. Among the factors that must be considered in giving a facility a high priority ranking is the amount of urban pollutants stored at the site, the identification of improperly stored materials, activities that must be performed outside (e.g., changing automotive fluids), proximity to waterbodies, poor housekeeping practices, and discharge of pollutant(s) of concern to impaired water(s).

4.2.6.4. Within **180 days** from the effective date of this Permit, the Permittee shall develop and implement a Storm Water Pollution Prevention Plan (SWPPP) or similar type document for each "high-priority" Permittee-owned or operated facility. The SWPPP shall identify potential sources of pollution that may reasonably be expected to affect the quality of storm water discharges associated with activity from the facility. The SWPPP shall describe and ensure the implementation of standard operating practices (SOPs) that are to be used to reduce the pollutants in storm water discharges associated with activity at the facility and to ensure compliance with the terms and conditions of this Permit. This document shall be tailored and retained at all "high priority" facility locations. The SWPPP shall include a site map showing the following information:

- Property boundaries;
- Buildings and impervious surfaces;
- Directions of storm water flow (use arrows);
- Locations of structural control measures;
- Location and name of the nearest defined drainage(s) which could receive runoff from the facility, whether it contains water or not;
- Locations of all storm water conveyances including ditches, pipes, basins, inlets, and swales;
- Locations where the following activities are exposed to storm water:
  - -Fixed fueling operations;
  - -Vehicle and equipment maintenance and/or cleaning areas;
  - -Brine making areas;
  - -Loading/unloading areas;
  - -Waste storage or disposal areas;
  - -Liquid storage tanks;
  - -Process and equipment operating areas;
  - -Materials storage or disposal areas;
- Locations where significant spills or leaks have occurred;
- Locations of all visual storm water monitoring points;
- Locations of storm water inlets and outfalls, with a unique identification code for each outfall and an approximate outline of the areas draining to each outfall;

- Locations of all non-storm water discharges;
- Locations of sources of run-on to your site from adjacent property.

4.2.6.5. The following inspections shall be conducted at "high priority" Permittee-owned or operated facilities:

4.2.6.5.1 Weekly visual inspections: The Permittee must perform weekly visual inspections of "high priority" facilities in accordance with the developed SOPs to minimize the potential for pollutant discharge. The Permittee must look for evidence of spills and immediately clean them up to prevent contact with precipitation or runoff. The weekly inspections must be tracked in a log for every facility and records kept with the SWMP document. The inspection log should also include any identified deficiencies and the corrective actions taken to fix the deficiencies.

4.2.6.5.2 Quarterly comprehensive inspections: At least once per quarter, a comprehensive inspection of "high priority" facilities, including all storm water controls, must be performed, with specific attention paid to waste storage areas, dumpsters, vehicle and equipment maintenance/fueling areas, material handling areas, and similar pollutant-generating areas. The quarterly inspection results must be documented and records kept with the SWMP document. This inspection must be done in accordance with the developed SOPs. An inspection report must also include any identified deficiencies and the corrective actions taken to remedy the deficiencies.

4.2.6.5.3 Quarterly visual observation of storm water discharges: At least once per quarter, the Permittee must visually observe the quality of the storm water discharges from the "high priority" facilities (unless climate conditions preclude doing so, in which case the Permittee must attempt to evaluate the discharges four times during the wet season). Any observed problems (e.g., color, foam, sheen, turbidity) that can be associated with pollutant sources or controls must be remedied to prevent discharge to the storm drain system. Visual observations must be documented and records kept with the SWMP document. This inspection must be done in accordance with the developed SOPs. The inspection report must also include any identified deficiencies and the corrective actions taken to remedy the deficiencies.

4.2.6.6. SOPs shall be developed and implemented for the following types of facilities and/or activities listed below:

4.2.6.6.1 Buildings and facilities: SOPs shall address, but is not limited to: Permittee-owned or operated offices, police and fire stations, pools, parking garages, and other Permittee-owned or operated buildings or utilities. The SOPs must address the use, storage and disposal of chemicals and ensure through employee training, that those responsible for handling these products understand and implement the SOPs. All Permittee-owned or operated facilities must develop and ensure that spill prevention plans are in place, if applicable, and coordinate with the local fire department as necessary. The SOPs must address dumpsters and other waste management which includes, but is not limited to, cleaning, washing, painting and other maintenance activities. The Permittee must include a description of schedules and SOPs for sweeping parking lots and keeping the area surrounding the facilities clean to minimize runoff of pollutants. All Permittees must maintain an inventory of all floor drains inside all Permittee-owned or operated buildings. The inventory must be kept

current. The Permittee must ensure that all floor drains discharge to appropriate locations.

4.2.6.6.2 Material storage areas, heavy equipment storage areas and maintenance areas. Permittees shall develop and implement SOPs to protect water quality at each of these facilities owned or operated by the Permittee.

4.2.6.6.3 Parks and open space. SOPs shall address, but are not limited to: the proper application, storage, and disposal of fertilizer, pesticides, and herbicides including minimizing the use of these products and using only in accordance with manufacturer's instructions; sediment and erosion control; evaluation of lawn maintenance and landscaping activities to ensure practices are protective of water quality such as, proper disposal of lawn clippings and vegetation, and use of alternative landscaping materials such as drought tolerant plants. The SOPs must address the management of trash containers at parks and other open spaces which include scheduled cleanings and establishing a sufficient number of containers, and for placing signage in areas concerning the proper disposal of pet wastes. The SOPs must also address the proper cleaning of maintenance equipment, building exterior, trash containers and the disposal of the associated waste and wastewater. Permittees shall implement park and open space maintenance pollution prevention/good housekeeping practices at all park areas, and other open spaces owned or operated by the Permittee.

4.2.6.6.4 Vehicle and Equipment. SOPs shall address, but are not limited to: vehicle maintenance and repair activities that occur on Permittee-owned or operated vehicles. BMPs should include using drip pans and absorbents under or around leaky vehicles and equipment or storing indoors where feasible. Fueling areas for Permittee-owned or operated vehicles and equipment shall be evaluated. If possible, place fueling areas under cover in order to minimize exposure. The O & M program shall include SOPs to ensure that vehicle wash waters are not discharged to the MS4 or Waters of the State. This Permit strictly prohibits such discharges.

4.2.6.6.5 Roads, highways, and parking lots. SOPs shall address, but are not limited to: SOPs and schedule for sweeping streets and Permittee-owned or operated parking lots and any other BMPs designed to reduce road and parking lot debris and other pollutants from entering the MS4; road and parking lot maintenance, including pothole repair, pavement marking, sealing and repaving; cold weather operations, including plowing, sanding, and application of deicing compounds and maintenance of snow disposal areas; right-of-way maintenance, including mowing, herbicide and pesticide application; and municipally-sponsored events such as large outdoor festivals, parades or street fairs. The Permittee must ensure that areas used for snow disposal will not result in discharges to receiving waters.

4.2.6.6.6 Storm water collection and conveyance system. SOPs shall address, but are not limited to: SOPs and schedules for the regular inspection, cleaning, and repair of catch basins, storm water conveyance pipes, ditches and irrigation canals, culverts, structural storm water controls, and structural runoff treatment and/or flow control facilities. Permittees shall implement catch basin cleaning, storm water system maintenance, scheduled structural BMP inspections and maintenance, and pollution prevention/good housekeeping practices. Permittees shall prioritize storm sewer system maintenance, with the highest priority areas being maintained at the greatest

frequency. Priorities should be driven by water quality concerns, the condition of the receiving water, the amount and type of material that typically accumulates in an area, or other location-specific factors. All Permittee-owned or operated storm water structural BMPs including but not limited to, swales, retention/detention basins or other structures must be inspected annually to ensure that they are properly maintained to reduce the discharge of pollutants into receiving waters. Permittees shall ensure and document proper disposal methods of all waste and wastewater removed from the storm water conveyance system. These disposal methods apply to, but are not limited to, street sweeping and catch basin cleaning. Materials removed from the MS4 shall be dewatered in a contained, impervious area and discharged to the local sanitary sewer (with approval of local authorities) where feasible. The solid material shall be stored and disposed of properly to avoid discharge to Waters of the State during a storm event. Any other treatment and disposal measures shall be reviewed and approved by the Division. Some materials removed from storm drains and open channels may require special handling and disposal, and may not be authorized to be disposed of in a landfill.

4.2.6.6.7. Other facilities and operations Permittees shall identify any facilities and operations not listed above that would reasonably be expected to discharge contaminated runoff, and develop, implement, and document the appropriate BMPs and SWPPP to protect water quality from discharges from these sites.

4.2.6.7. If a Permittee contracts with a third-party to conduct municipal maintenance or allows private developments to conduct their own maintenance, the contractor shall be held to the same standards as the Permittee. This expectation must be defined in contracts between the Permittee and its contractors or the contractors of private developments. The Permittee shall be responsible for ensuring, through contractually-required documentation or periodic site visits that contractors are using appropriate storm water controls and following the standard operating procedures, storm water control measures, and good housekeeping practices of the Permittee.

4.2.6.8. The Permittee must develop and implement a process to assess the water quality impacts in the design of all new flood management structural controls that are associated with the Permittee or that discharge to the MS4. This process must include consideration of controls that can be used to minimize the impacts to site water quality and hydrology while still meeting project objectives. A description of this process must be included in the SWMP document

4.2.6.8.1 Existing flood management structural controls must be assessed to determine whether changes or additions should be made to improve water quality. A description of this process and determinations should be included in the SWMP document.

4.2.6.9. Public construction projects shall comply with the requirements applied to private projects. All construction projects disturbing greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, owned or operated by the Permittee are required to be covered under the General UPDES Permits for Storm Water Discharges Associated with Construction Activities.

4.2.6.10. The Permittee shall ensure that all employees, contracted staff, and other responsible entities that have primary construction, operation, or maintenance job functions that

are likely to impact storm water quality receive annual training. The Permittee shall identify target individuals to participate in the training sessions and ensure that all such employees receive training upon being hired and annually thereafter, at a minimum. Training shall address the importance of protecting water quality, the requirements of this Permit, operation and maintenance requirements, inspection procedures, ways to perform their job activities to prevent or minimize impacts to water quality, SOPs and SWPPPs for the various Permittee-owned or operated facilities and procedures for reporting water quality concerns, including potential illicit discharges. Training records must be kept and shall include dates, activities or course descriptions, and names and positions of staff in attendance. Follow-up training shall be provided as needed to address changes in procedures, methods or staffing.

4.3. Sharing Responsibility

4.3.1. Implementation of one or more of the six minimum measures may be shared with another entity, or the entity may fully take over the measure. A Permittee may rely on another entity only if:

4.3.2. The other entity, in fact, implements the control measure;

4.3.3. The particular control measure, or component of that measure, is at least as stringent as the corresponding Permit requirement; and

4.3.4. The other entity agrees to implement the control measure through a written agreement. This obligation must be maintained as part of the description given in the Permittee's SWMP document. If the other entity agrees to report on the minimum control measure, the Permittee must supply the other entity with the reporting requirements contained in Part 5.5. of this Permit. If the other entity fails to implement the control measure, then the Permittee remains liable for any discharges due to that failure to implement.

4.3.5. The Permittee conducts training of the responsible entity on the Permit requirements and applicable standard operating procedures.

4.4. Reviewing and Updating Storm Water Management Programs

4.4.1. Storm Water Management Program Review: All Permittees must conduct, at a minimum, an annual review of the SWMP document in conjunction with preparation of the annual report required in Part 5.5.

4.4.2. *Storm Water Management Program Update:* A Permittee may change the SWMP document during the life of the Permit in accordance with the following procedures:

4.4.2.1. Changes adding (but not subtracting or replacing) components, controls, or requirements to the SWMP document may be made at any time upon written notification to the Division.

4.4.2.2. Changes replacing an ineffective or unfeasible BMP specifically identified in the SWMP document with an alternate BMP may be adopted at any time, provided the analysis is clearly outlined and subsequently approved by the Division. An analysis shall include:

4.4.2.2.1 An explanation of why the BMP is ineffective or infeasible,

4.4.2.2.2 Expectations or report on the effectiveness of the replacement BMP, and

4.4.2.2.3 An analysis of why the replacement BMP is expected to achieve the goals of the BMP to be replaced, or has achieved those goals.

4.4.3. Change requests or notifications must be made in writing and signed in accordance with Part 6.8.

4.4.4. Change requests or notifications will receive confirmation and approval or denial in writing from the Division.

4.4.5. Storm Water Management Program Updates required by the Division: The Division may require changes to the SWMP as needed to:

4.4.5.1. Address impacts on receiving water quality caused, or contributed to, by discharges from the MS4;

4.4.5.2. Include more stringent requirements necessary to comply with new Federal regulatory requirements; or

4.4.5.3. Include such other conditions deemed necessary by the Division to comply with the goals and requirements of the Clean Water Act.

5.0 Narrative Standard, Monitoring, Recordkeeping and Reporting

5.1. Narrative Standard

It shall be unlawful, and a violation of this Permit, for the Permittee to discharge or place any waste or other substance in such a way as will be or may become offensive such as unnatural deposits, floating debris, oil, scum or other nuisances such as color, odor or taste, or conditions which produce undesirable aquatic life or which produces objectionable tastes in edible aquatic organisms; or concentrations or combinations of substances which produce undesirable physiological responses in desirable resident fish, or other desirable aquatic life, or undesirable human health effects, as determined by bioassay or other tests performed in accordance with standard procedures

5.2. Analytical Monitoring

Permittees are not required to conduct analytical monitoring (see definition in Part 7.3) during the effective term of this Permit, with the following exceptions:

5.2.1. Water quality sampling may be required for compliance with TMDLs, pursuant to Part 3.1. of this Permit.

5.2.2. Sampling or testing may be required for characterizing illicit discharges pursuant to Parts 4.2.3.4., 4.2.3.5., and 4.2.3.5.1 of this Permit.

5.2.3. In the event that the MS4 elects to conduct analytical monitoring as part of its Storm Water Management Program, the Permittee is required to comply with Part 6.18. of this Permit.

5.3. Non-analytical Monitoring

5.3.1. Non-analytical monitoring (see definition in Part 7.32.) such as visual dry weather screening is required to comply with Part 4.2.3.3.2 of this Permit.

5.4. Record keeping

5.4.1. Permittees must keep all supplementary documents associated with this Permit (e.g., Storm Water Management Program (SWMP) document, SWMP Implementation Schedule) current and up to date to achieve the purpose and objectives of the required document.

5.4.2. All modifications to supplementary documents must be submitted to the *Division* in accordance with Parts 4.4 and 6.8.

5.4.3. The *Division* may at any time make a written determination that parts or all of the supplementary documents are not in compliance with this Permit, wherein the Permittee must make modifications to these parts within a time frame specified by the *Division*.

5.4.4. The Permittee shall retain all required plans, records of all programs, records of all monitoring information, copies of all reports required by this Permit, and records of

all other data required by or used to demonstrate compliance with this Permit, for at least five years. This period may be explicitly modified by alternative provisions of this Permit or extended by request of the *Division* at any time.

5.4.5. The Permittee must make records, including the Notice of Intent (NOI) and the SWMP document, available to the public if requested.

5.5. Reporting

5.5.1. The Permittee must submit an annual report to the Division by October 1 for the reporting period of July 1 to June 30 of each year of the Permit term.

5.5.2. The report must be submitted using the report form provided on the *Division's* website at http://www.deq.utah.gov/Permits/water/updes/stormwatermun.htm.

5.5.3. The Permittee shall sign and certify the annual report in accordance with Part 6.8.

5.5.4. Signed copies of the Annual Report and all other reports required herein, shall be submitted to:

Department of Environmental Quality
Division of Water Quality
PO Box 144870
195 North 1950 West
Salt Lake City, UT 84114-4870

6.0 Standard Permit Conditions

6.1. Duty to Comply

The Permittee must comply with all conditions of this Permit. Any Permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for Permit termination, revocation and reissuance, or modification; or for denial of a Permit renewal application. The Permittee shall give advance notice to the Division of any planned changes in the Permitted facility or activity, which may result in noncompliance with Permit requirements.

6.2. Penalties for Violations of Permit Conditions

The *Act* provides that any person who violates a Permit condition implementing provisions of the *Act* is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates Permit conditions or the Act is subject to a fine not exceeding $25,000 per day of violation. Any person convicted under *UCA 19-5-115(2)* a second time shall be punished by a fine not exceeding $50,000 per day.

6.3. Duty to Reapply

If the Permittee wishes to continue an activity regulated by this Permit after the expiration date of this Permit, the Permittee shall apply for and obtain a new Permit. The application shall be submitted at least **180 days** before the expiration date of this Permit. Continuation of expiring Permits shall be governed by regulations promulgated at *UAC R317-8-5* and any subsequent amendments.

6.4. Need to Halt or Reduce Activity not a Defense

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

6.5. Duty to Mitigate

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

6.6. Duty to Provide Information

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

6.7. Other Information

When the Permittee becomes aware that it failed to submit any relevant facts in a Permit application, or submitted incorrect information in a Permit application or any report to the Division, it shall promptly submit such facts or information.

6.8. Signatory Requirements

All notices of intent, storm water management programs, storm water pollution prevention plans, reports, certifications or information either submitted to the *Division* or that this Permit requires to be maintained by the Permittee, shall be signed, dated and certified as follows:

6.8.1. All Permit applications shall be signed by either a principal executive officer or ranking elected official.

6.8.2. All reports required by the Permit and other information requested by the Division shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

6.8.2.1. The authorization is made in writing by a person described above and submitted to the Division, and,

6.8.2.2. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters. A duly authorized representative may thus be either a named individual or any individual occupying a named position.

6.8.2.3. Changes to authorization. If an authorization under *Part 6.8.2.* is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of *Part 6.8.2.* must be submitted to the Division prior to or together with any reports, information, or applications to be signed by an authorized representative.

6.8.3. *Certification.* Any person signing documents under this Part shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated 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."

6.9 Availability of Reports

Except for data determined to be confidential under the Government Records Access and Management Act (*see* particularly Utah Code Ann. § 63-2-309) and Utah Code Ann. § 19-1-3-6, all reports prepared in accordance with the terms of this Permit shall be available for public inspection at the office of the Division. As required by the *Act*, Permit applications, Permits and effluent data shall not be considered confidential.

6.10. Penalties for Falsification of Reports

The *Act* provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this Permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than $10,000.00 per violation, or by imprisonment for not more than six months per violation, or by both. Utah Code Ann. § 19-5-115(4)

6.11. Penalties for Tampering

The *Act* provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this Permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

6.12. Oil and Hazardous Substance Liability

Nothing in this Permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penaltics to which the Permittee is or may be subject under the "*Act*".

6.13. Property Rights

The issuance of this Permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or Local laws or regulations.

6.14. Severability

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

6.15. Requiring a Different Permit

The *Division* may require the Permittee authorized by this Permit to obtain an individual *UPDES* Permit. Any interested person may petition the *Division* to take action under this paragraph. The *Division* may require the Permittee authorized to discharge under this Permit to apply for an individual *UPDES* Permit only if the Permittee has been notified in writing that a Permit application is required. This notice shall include a brief statement of the reasons for this decision, an application form (as necessary), a statement setting a deadline for the Permittee to file the application, and a statement that on the effective date of the municipal *UPDES* Permit, coverage

under this Permit shall automatically terminate. Permit applications shall be submitted to the address of the *Division of Water Quality* shown in *Part 5.5.* of this Permit. The *Division* may grant additional time to submit the application upon request of the applicant. If the municipality fails to submit in a timely manner a municipal *UPDES* Permit application as required by the *Division*, then the applicability of this Permit to the Permittee is automatically terminated at the end of the day specified for application submittal.

6.16. State/Federal Laws

Nothing in this Permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by *UCA 19-5-117* and *Section 510* of the *Clean Water Act* or any applicable Federal or State transportation regulations, such as but not limited to the Department of Transportation regulations.

6.17. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this Permit and with the requirements of the SWMP. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance requires the operation of backup or auxiliary facilities or similar systems, installed by the Permittee only when necessary to achieve compliance with the conditions of the Permit.

6.18. Monitoring and Records

6.18.1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

6.18.2. The Permittee shall retain records of all monitoring information including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of the reports required by this Permit, and records of all data used to complete the application for this Permit, for a period of at least five years from the date of the sample, measurement, report or application. This period may be extended by request of the *Division* at any time.

6.18.3. Records of monitoring information shall include:

6.18.3.1 The date, exact place, and time of sampling or measurements;

6.18.3.2 The name(s) of the individual(s) who performed the sampling or measurements;

6.18.3.3 The date(s) and time(s) analyses were performed;

6.18.3.4 The name(s) of the individual(s) who performed the analyses;

6.18.3.5 The analytical techniques or methods used; and

6.18.3.6 The results of such analyses.

6.19. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under *Utah Administrative Code ("UAC") R317-2-10*, unless other test procedures have been specified in this Permit.

6.20. Inspection and Entry

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

6.20.1. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this Permit;

6.20.2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this Permit; and

6.20.3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment).

6.20.4. Sample or monitor at reasonable times, for the purposes of assuring Permit compliance or as otherwise authorized by law, any substances or parameters at any location.

6.21. Permit Actions

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

6.22. Storm Water-Reopener Provision

At any time during the duration (life) of this Permit, this Permit may be reopened and modified (following proper administrative procedures) as per *UAC R317.8*, to include, any applicable storm water provisions and requirements, a storm water pollution prevention plan, a compliance schedule, a compliance date, monitoring and/or reporting requirements, or any other conditions related to the control of storm water discharges to "Waters-of-State".

7.0 Definitions

Definitions related to this Permit and small municipal separate storm sewers (MS4s).

7.1. "40 CFR" refers to Title 40 of the Code of Federal Regulations, which is the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the Federal government.

7.2. "Act" means the *Utah Water Quality Act*.

7.3. "Analytical monitoring" refers to monitoring of waterbodies (streams, ponds, lakes, etc.) or of storm water, according to UAC R317-2-10 and 40 CFR 136 "Guidelines Establishing Test Procedures for the Analysis of Pollutants," or to State or Federally established protocols for biomonitoring or stream bioassessments.

7.4. "Beneficial Uses" means uses of the Waters of the State, which include but are not limited to: domestic, agricultural, industrial, recreational, and other legitimate beneficial uses.

7.5. "Best Management Practices" (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of Waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

7.6. "CWA" means *The Clean Water Act of 1987*, formerly referred to as the Federal Water Pollution Control Act.

7.7. "Co-Permittee" means any operator of a regulated Small MS4 that is applying jointly with another applicant for coverage under this Permit. A Co-Permittee owns or operates a regulated Small MS4 located within or adjacent to another regulated MS4. A Co- Permittee is only responsible for complying with the conditions of this Permit relating to discharges from the MS4 the Co-Permittee owns or operates. See also 40 CFR 122.26(b)(1).

7.8. "Control Measure" refers to any Best Management Practice or other method used to prevent or reduce the discharge of pollutants to Waters of the State.

7.9. "Common plan of development or sale" means one plan for development or sale, separate parts of which are related by any announcement, piece of documentation (including a sign, public notice or hearing, sales pitch, advertisement, drawing, plat, blueprint, contract, Permit application, zoning request, computer design, etc.), physical demarcation (including contracts) that identify the scope of the project. A plan may still be a common plan of development or sale even if it is taking place in separate stages or phases, is planned in combination with other construction activities, or is implemented by different owners or operators.

7.10. "Director" means the director of the Utah Division of Water Quality, otherwise known as the *Division* of the Utah Water Quality Board.

7.11. "Division" means the Utah Division of Water Quality.

7.12. "Discharge" for the purpose of this Permit, unless indicated otherwise, refers to discharges from the Municipal Separate Storm Sewer System (MS4).

7.13. "Dry weather screening" is monitoring done in the absence of storm events to discharges representing, as much as possible, the entire storm drainage system for the purpose of obtaining information about illicit connections and improper dumping.

7.14. "Escalating enforcement procedures" refers to a variety of enforcement actions in order to apply as necessary for the severity of the violation and/or the recalcitrance of the violator.

7.15. "Entity" means a governmental body or a public or private organization.

7.16. "EPA" means the United States Environmental Protection Agency.

7.17. "General Permit" means a Permit which covers multiple dischargers of a point source category within a designated geographical area, in lieu of individual Permits being issued to each discharger.

7.18. "Ground water" means water in a saturated zone or stratum beneath the surface of the land or below a surface water body.

7.19. "High quality waters" means any water, where, for a particular pollutant or pollutant parameter, the water quality exceeds that quality necessary to support the existing or designated uses, or which supports an exceptional use.

7.20. "Illicit connection" means any man-made conveyance connecting an illicit discharge directly to a municipal separate storm sewer.

7.21. "Illicit discharge" means any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges pursuant to a UPDES Permit (other than the UPDES Permit for discharges from the municipal separate storm sewer) and discharges resulting from emergency firefighting activities.

7.22. "Impaired waters" means any segment of surface waters that has been identified by the Division as failing to support classified uses. The Division periodically compiles a list of such waters known as the 303(d) List.

7.23. "Indian Country" is defined as in 40 CFR §122.2 to mean:

7.23.1. All land within the limits of any Indian reservation under the jurisdiction of the United States Government, notwithstanding the issuance of any patent, and, including rights-of-way running through the reservation;

7.23.2. All dependent Indian communities within the borders of the United States whether within the originally or subsequently acquired territory thereof, and whether within or without the limits of a state; and

7.23.3. All Indian allotments, the Indian titles to which have not been extinguished, including right-of-ways running through the same.

7.24. "Large MS4" *Large municipal separate storm sewer system* means all municipal separate storm sewers that are located in an incorporated place with a population of 250,000 or more as determined by the current Decennial Census by the Bureau of the Census.

7.25. "Low Impact Development" (LID) is an approach to land development (or re-development) that works with nature to more closely mimic pre-development hydrologic functions. LID employs principles such as preserving and recreating natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treat storm water as a resource rather than a waste product. There are many practices that have been used to adhere to these principles such as bioretention facilities, rain gardens, vegetated rooftops, rain barrels, and permeable pavements.

7.26. "MS4" is an acronym for "municipal separate storm sewer system".

7.27. "Maximum Extent Practicable" (MEP) is the technology-based discharge standard for Municipal Separate Storm Sewer Systems established by paragraph 402(p)(3)(B)(iii) of the Federal Clean Water Act (CWA), which reads as follows: "Permits for discharges from municipal storm sewers shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques, and system, design, and engineering methods, and other such provisions as the Administrator or the State determines appropriate for the control of such pollutants."

7.28. "Medium MS4" *Medium municipal separate storm sewer system* means all municipal separate storm sewers that are located in an incorporated place with a population of 100,000 or more but less than 250,000, as determined by the1990 Decennial Census by the Bureau of the Census

7.29. "Monitoring" refers to tracking or measuring activities, progress, results, etc.;

7.30. "Municipal separate storm sewer system" means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) pursuant to paragraphs R317-8-1.6(4), (7), & (14), or designated under UAC R317-8-3.9(1)(a)5:

7.30.1. that is owned or operated by a state, city, town, county, district, association, or other public body (created by or pursuant to State Law) having jurisdiction over disposal of wastes, storm water, or other wastes, including special districts under State Law such as a sewer district, flood control district or drainage district, or similar entity, or a designated and approved management agency under section 208 of the CWA that discharges to Waters of the State;

7.30.2. that is designed or used for collecting or conveying storm water;

7.30.3. which is not a combined sewer; and

7.30.4. which is not part of a Publicly Owned Treatment Works (POTW) as defined in 40 CFR 122.2.

7.31. "NOI" is an acronym for "Notice of Intent" to be covered by this Permit and is the mechanism used to "register" for coverage under a General Permit.

7.32. "Non-analytical monitoring" refers to monitoring for pollutants by means other than UAC R317-2-10 and 40 CFR 136, such as visually or by qualitative tools that provide comparative or rough estimates.

7.33. "Operator" is the person or entity responsible for the operation and maintenance of the MS4.

7.34. "Outfall" means a point source as defined by UAC R317-8-1.5(34) at the point where a municipal separate storm sewer discharges to Waters of the State and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other Waters of the State and are used to convey waters of the State.

7.35. "Phase II areas" means areas regulated under UPDES storm water regulations encompassed by Small MS4's (see definition 7.39.).

7.36. "Priority construction site" means a construction site that has potential to threaten water quality when considering the following factors: soil erosion potential; site slope; project size and type; sensitivity of receiving waterbodies; proximity to receiving waterbodies; non-storm water discharges and past record of non-compliance by the operators of the construction site.

7.37. "Redevelopment" is the replacement or improvement of impervious surfaces on a developed site.

7.38. "Runoff" is water that travels across the land surface, or laterally through the ground near the land surface, and discharges to water bodies either directly or through a collection and conveyance system. Runoff includes storm water and water from other sources that travels across the land surface.

7.39. "SWMP" is an acronym for storm water management program. The SWMP document is the written plan that is used to describe the various control measures and activities the Permittee will undertake to implement the storm water management plan.

7.40. "SWPPP" is an acronym for storm water pollution prevention plan.

7.41. "Small municipal separate storm sewer system" is any MS4 not already covered by the Phase I program as a medium or large MS4. The Phase II Rule automatically covers on a nationwide basis all Small MS4s located in "urbanized areas" (UAs) as defined by the Bureau of the Census (unless waived by the UPDES Permitting authority), and on a case-by-case basis those Small MS4s located outside of UAs that the UPDES Permitting authority designates.

7.41.1. This term includes systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares. The term does not include separate storm sewers in very discrete areas, such as individual buildings.

7.42. "SOP" is an acronym for standard operating procedure which is a set of written instructions that document a routine or repetitive activity. For the purpose of this Permit, SOPs should emphasize pollution control measures to protect water quality.

7.43. "Storm water" means storm water runoff, snowmelt runoff, and surface runoff and drainage.

7.43. "Storm water management program" means a set of measurable goals, actions, and activities designed to reduce the discharge of pollutants from the Small MS4 to the maximum extent practicable and to protect water quality.

7.44. "TMDL" is an acronym for "Total Maximum Daily Load" and in this Permit refers to a study that: 1) quantifies the amount of a pollutant in a stream; 2) identifies the sources of the pollutant; and 3) recommends regulatory or other actions that may need to be taken in order for the impaired waterbody to meet water quality standards.

7.45. "Urbanized area" is a land area comprising one or more places and the adjacent densely settled surrounding area that together have a residential population of at least 50,000 and an overall population density of at least 1,000 people per square mile.

7.46. "Waters of the State" means all streams, lakes, ponds, marshes, water-courses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private which are contained within, flow through, or border upon this state or any portion thereof, except bodies of water confined to and retained within the limits of private property, and which do not develop into or constitute a nuisance, or a public health hazard, or a menace to fish and wildlife which shall not be considered to be "Waters of the State" under this definition ("UAC" R317-1-1).

FACT SHEET STATEMENT OF BASIS

GENERAL PERMIT FOR DISCHARGES FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS
UPDES PERMIT NUMBER UTR090000

PERMIT MODIFICATION

BACKGROUND

The General Permit for Discharges from Small Municipal Separate Storm Sewer Systems (MS4s), UTR090000, was reissued by the Division of Water Quality (DWQ) on March 1, 2016. The renewed permit included more specific requirements than the previous permit for on-site retention of storm water; specifically, on-site management of the 90th percentile storm event for new and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale. Permittees were to accomplish the storm water retention standard by requiring a process which evaluates a Low Impact Development (LID) approach which implements Best Management Practices (BMPs) that infiltrate, evapotranspire and harvest and reuse storm water.

In June 2016, DWQ became aware that certain stakeholder groups, notably the Utah Homebuilders Association (UHBA) and Utah League of Cities & Towns (ULCT) had not been engaged in the public involvement process with the MS4 Permittees during development of the permit. Subsequently, meetings were held with these stakeholders in order to understand their concerns and obstacles to implementation of the retention standard/LID requirements. In order to facilitate communication and collaboration with all stakeholders, DWQ proposes an extension of the timeframe for implementation of the retention standard and LID requirements to March 1, 2019. The over 2-year extension will allow permittees and home builder/developer groups to work through implementation issues and any communication gaps via a technical advisory committee in order to allow for LID practices to be implemented for future development/ redevelopment in MS4 communities.

PERMIT MODIFCATIONS

Two modifications were made to Permit Part 4.2.5, Long-Term Storm Water Management in New Development and Redevelopment (Post-Construction Storm Water Management).

Permit Part 4.2.5.3.2 was modified to require permittees to implement a process to evaluate and encourage an LID approach for all new development or redevelopment projects disturbing greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale. By March 1, 2019, the permittees'

program shall include a process which ***requires*** the evaluation of an LID approach for new development or redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale.

The date for implementation of Permit Part 4.2.5.3.4 was modified from 180 days from the effective date of the Permit (September 1, 2016) to *March 1, 2019*. This permit provision requires new development or redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, to manage rainfall on-site and prevent the off-site discharge of the precipitation from all rainfall events less than or equal to the 90th percentile rainfall event.

This modification affects only Permit Parts 4.2.5.3.2 and 4.2.5.3.4. All other permit conditions remain unchanged for this permit modification.

PERMIT DURATION

It is recommended that this modified permit be effective for the remainder of the original permit renewal period of five (5) years. As stated in *UAC R317-8-5.1(1),* UPDES permits shall be effective for a fixed term not to exceed five (5) years. Therefore, this modified Permit will be set to expire at midnight on February 28, 2021, five years after the original effective date of reissuance.

COMMENT RECEIVED AND DWQ RESPONSES

The 30-day public notice began on September 29, 2016 and ended on October 31, 2016. Comments were received and responded to separately. For the response to comments as received, please refer to the Utah Division of Water Quality's website at: http://www.deq.utah.gov/Permits/water/updes/stormwatermun.htm.

The Permit Modifications and Fact Sheet Statement of Basis were drafted by Rhonda Thiele, MS4 Program Coordinator, Utah Division of Water Quality and Jeanne Riley, Storm Water Specialist, Utah Division of Water Quality, with updates on November 28, 2016.

DWQ Response to Comments received during the Public Notice of Proposed Modifications to Small MS4 General Permit Parts 4.2.5.3.2 and 4.2.5.3.4

Comment 1 (Kevin Campbell, P.E., Centerville City): *We understand that the new requirement would require new development or redevelopment to retain on site the 90th percentile storm event.*

Centerville City currently requires new development or redevelopment to detain to 0.2 cfs/acre the 25 year storm event and also requires that the water be treated on the site before it enters the City storm drainage system.

Our main concern is that the new requirement will lead to retention basin design that will leave standing water in them for long periods of time. We currently require that our detention facilities drain freely shortly after a peak event so that there are no ponds or standing water. Ponds lead to many complaints from the residents of our City as the standing water is a nuisance in many ways.

In many areas of our City the sub-soils are very clayey and give little to no infiltration. The future retention areas in these parts of the City would have to be very large and would rely solely on evaporation leaving them inundated for long periods of time. Underground retention in these areas does not work well as the evaporation rates for these underground facilities are also very low.

We do not oppose detention and proper treatment of the storm water, but ***we do strongly oppose requiring retention to the 90th percentile storm event and do not think that this is something that the State should be requiring of the Cities.***

DWQ Response: The requirement of permit part 4.2.5.3.4 is for retention of the 90th percentile storm event, which is the volume representing the small, frequently occurring storms that make up the majority of the total annual precipitation volume.

The design standard requirement for detention to 0.2 cfs/acre (or other rate) is typically the maximum allowable release rate in order to control flows based on the system capacity for storm water piping and other conveyances for a specific design storm. While some water quality treatment may be achieved through detention, the 90th percentile retention standard is intended to retain a portion of storm water on site via methods that infiltrate, evapotranspire and harvest and reuse storm water. The water quality volume associated with the 90th percentile storm event is not intended to replace permittee's design standards. MS4s may have separate standards for flood control and to meet system capacity.

Soils with low permeability may cause standing water and limit infiltration BMPs in some areas. The modified permit states that "if meeting this retention standard is technically infeasible, a rationale shall be provided on a case by case basis for the use of alternative design criteria. The project must document and quantify that infiltration, evapotranspiration and rainwater harvesting have been used to the maximum extent technically feasible and that full employment of these controls are infeasible due to site constraints." If technical design constraints render retention of the 90th percentile storm event infeasible, the Permittee must document the rational for selection of alternative design criteria. A Long-Term Storm Water Management Work Group has been formed as of November 2016 to consider, among other issues, defining "technically infeasible." Until this term has been further defined, it is the responsibility of the permittee to evaluate site conditions and determine feasibility for compliance with the standard. The permittee should work closely with local mosquito abatement to determine safety issues related to standing water.

Utah's former MS4 Permits included a narrative standard for storm water retention, requiring new and redevelopment projects to "mimic" predevelopment conditions. In 2009 EPA began development of a nationwide numeric retention standard, an effort that was terminated in 2014, when it was decided that each state would establish its own numeric design standard. Numeric design standards that are specific and measurable are an important tool to set clear expectations for controlling storm water impacts from newly developed and redeveloped sites. To date, more than half of the states have implemented a numeric retention standard. Another quarter of the states have specific numeric treatment standards. Only one quarter of the states rely on a narrative standard for retention of storm water.

In April of 2014, EPA conducted a Permit Quality Review (PQR) Audit of Utah's UPDES Program which resulted in one lone critical finding from the Storm Water Program Review: *"The post-construction storm water management requirements are insufficient to meet current expectations of the Maximum Extent Practicable (MEP) standard for MS4s. The post-construction standard requires that MS4s develop and adopt a post-construction ordinance. Development of ordinances should have been completed in previous permit terms, such that this permit could include a specific numeric design standard for all newly developed and re-developed areas (e.g., all new developments must be designed and maintained to retain, detain, or infiltrate the prescribed storm event, such as a 85th, 90th, or 95th percentile storm event). This is especially true for municipalities in the densely populated and rapidly growing parts of Utah."*

Therefore, in March 2016, and subsequently modified with an extended implantation period in December 2016, the Utah General MS4 Permit added the requirement for the retention of the 90th percentile storm event for new and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale. The retention design standard is a numeric translator of the former narrative standard which provides a specific depth of rainfall to be retained on site depending on geographic location and precipitation patterns

Comment 2 (Ross Ford, Home Builders Association of Utah): *Stake holders from the construction industry have only recently been brought into the conversation of how to meet the EPA standard of maximum extent practicable for storm water. This group of stake holders is looking forward to working with DEQ to developing specific language to address issues with proposed language.*

DEQ's proposal to move to a more restrictive retention based standard raises concern with the depth of research and understanding of impact on housing. The HBA's research has brought to light concern that the rationale contained within documentation for this stricter standard is comparatively weaker and provides for less flexibility compared to neighboring jurisdictions. DEQ's permit "fact sheet" or statement of basis for the permit contains roughly one page of documentation justifying why Utah chose to implement a 90th percentile retention-based approach. In contrast, EPA recently adopted a nearly identical 90th percentile standard for the Middle Rio Grande Watershed , but provided a lengthy technical justification, as well as a study identifying baseline pre-development hydrology characteristics throughout the state. The permit terms are not yet flexible enough to reflect Utah's unique hydrology and landscape. In addition, as it stands, the permit does not provide clear alternative compliance options for difficult sites, which will disproportionately raise housing costs in certain areas.

DEQ agreed to delay implementation until 2019. It was the HBA's understanding this delay was to allow time for DEQ to assemble a technical advisory group comprised of key state stake holders. The task of this group would be to provide DEQ with recommendation on how to move forward with implementation of the 2016 permit. The advisory group has not been assembled, so clearly no stake holder advise has been offered or received. Furthermore, the delayed implementation is ineffective since MS4's are not compelled or even encouraged to delay implementation within their enforcement jurisdiction.

The retention based standard goes well beyond the federal minimum requirements. This requirement has a potential conflict with Utah State building codes and the recognized adoption process. Currently building codes require drainage from building lots to be collected and channeled to a storm drain system. Compliance with building codes is a state law. The requirement of 90 percentile retention seems to be in direct conflict with current law.

The HBA has concern with mandated LID/green infrastructure when there is not a functioning green infrastructure manual that works for our arid climate. This requirement is unreasonable without a working design manual applicable to Utah's unique geography and climate.

Mandatory Green infrastructure needs to be supported with mandatory language requiring cities to provide alternative compliance options. Different soil types, topography, drainage capacity and other unique site specific conditions require workable solutions. There needs to be language to compel MS4's to accept structural controls best suited to the site, as designed by industry professionals.

DWQ Response: DWQ has been engaged with EPA and other states in the development of a nationwide numeric retention standard since 2009; an effort that was ultimately terminated by EPA in favor of individual state-developed numeric standards. In 2014, EPA conducted a Permit Quality Review (PQR) Audit of Utah's UPDES Program which resulted in one lone critical finding from the Storm Water Program Review: *"The post-construction storm water management requirements are insufficient to meet current expectations of the Maximum Extent Practicable (MEP) standard for MS4s.... this permit could include a specific numeric design standard for all newly developed and re-developed areas.... This is especially true for municipalities in the densely populated and rapidly growing parts of Utah."* Therefore, upon renewal of the General MS4 permit, a retention standard was added to the Long-Term Post-Construction Storm Water Management minimum control measure.

The State of Utah has an active stakeholder group, the Utah Storm Water Advisory Committee (USWAC) and County-wide coalitions, each of which meets monthly. DWQ has communicated the development of the standard with these groups in regular meetings, the annual APWA conference and an LID and Storm Water Regulations conference in June 2015. USWAC was provided a Stakeholder Draft of the Small MS4 Permit in July 2015 and comments were received and addressed. Because MS4 permittees are required to educate those working in their jurisdiction, it was assumed the development community was informed of a new storm water retention standard. However, DWQ agrees that the Utah Home Builders Association was not directly engaged during the lengthy standard development process. In May 2016, upon realization of the need to directly engage the development community, DWQ conducted several meetings with the Home Builders Association of Utah (HBA) and the Utah League of Cities and Towns (ULCT) to attempt to bridge this gap.

Together with UHBA, DWQ formed the Long-Term Storm Water Management Work Group, scheduled for its initial meeting on December 15, 2016. Among the groups objectives will be defining technical feasibility for compliance with the retention standard, alternative compliance options for difficult sites and reconciling conflicts between any local and state laws.

The State of Utah has not developed a Low Impact Development/Green Infrastructure Manual; however there are many resources regarding these strategies and techniques available from EPA and other organizations which have been shared with USWAC. Because of the unique conditions in each MS4 community, permittees must evaluate LID/GI options for suitability in their jurisdiction and develop ordinances and design standards accordingly.

Utah's former MS4 Permits included a narrative standard for storm water retention, requiring new and redevelopment projects to mirror or improve predevelopment conditions. Several permittees have been

requiring storm water retention for several years; however, this narrative standard has been inconsistently applied among the permittees. The standard for retention of the 90th percentile storm event is a numeric translator of the former narrative standard. An implementation date of March 1, 2019, allows those already implementing storm water retention or those who are on-track for implementation, to continue on their path while allowing time for permittees requiring additional time to address feasibility issues and update ordinances and design standards for their jurisdiction.

Standard Operating Procedures (SOPs)

APPENDIX H

STANDARD OPERATING PROCEDURES

Weber County Storm Water Coalition

Created: February 2010
Davis County Storm Water Coalition
revised for Weber County Coalition April 2010

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BUILDINGS – Dumpsters/Garbage Storage

1. Preparation.

    a. Train employees on proper trash disposal.

    b. Locate dumpsters and trash cans in convenient, easily observable areas.

    c. Provide properly-labeled recycling bins to reduce the amount of garbage disposed.

    d. Install berms, curbing, or vegetation strips around storage areas to control water entering/ leaving storage areas.

    e. Whenever possible store garbage containers beneath a covered structure or inside to prevent contact with storm water.

2. Process.

    a. Inspect garbage bins for leaks regularly, and have repairs made immediately by responsible party.

    b. Request/use dumpsters, and trash cans with lids and without drain holes.

    c. Locate dumpsters on a flat, hard surface that does not slope or drain directly into thestorm drain system.

3. Clean-up.

    a. Keep areas around dumpsters clean of all garbage.

    b. Have garbage bins emptied regularly to keep from overfilling.

    c. Wash out bins or dumpsters as needed to keep odors from becoming a problem.

4. Documentation

    a. Document training of employees

BUILDINGS – Parking Lot Maintenance

1. Preparation.

    a. Conduct regular employee training to reinforce proper housekeeping.

2. Process.

    a. Sweep parking areas, as needed, or as directed by the city's responsible official.

    b. Hand sweep sections of gutter if soil and debris accumulate.

    c. Pick-up litter as required to keep parking areas clean and orderly.

3. Clean-up.

    a. Dispose of sweepings properly (appropriate solid waste facility).

    b. Street sweepers to be cleaned out in a manner as instructed by the manufacturer and ina location that swept materials cannot be introduced into a stormdrain.

    c. Swept materials will not be stored in locations where storm water could transport fines into the stormdrain system.

4. Documentation.

    a. Keep accurate logs to track swept parking areas and approximate quantities.

    b. Document training of employees.

IDDE - Call-in Inspections

1. Preparation

    a. Have a system in place to receive phone calls and collect information regarding suspected illicit discharges**.**

2. Process

    a. Use the Incident Tracking Sheet to collect the appropriate information from the caller. Then, transfer the Incident Tracking Sheet to the proper authority (ie. department head, stormwater specialist, construction inspector, code enforcement officer, or other assigned personnel).

    b. Promptly investigate reported incidents**.**

    c. If an illicit discharge of unknown source is confirmed, follow the procedure of SOP IDDE - Tracing Illicit Discharges**.**

    d. If an illicit discharge known source is confirmed, follow the procedure of SOP IDDE- Removing Illicit Discharges**.**

3. Clean up

    a. Clean catch basin, clean storm drain, or initiate spill response, as applicable. Follow relevant SOPs**.**

4. Documentation

    a. File all completed forms (ie. incident tracking, catch basins cleaning, storm drain cleaning.

    b. Document any further action taken.

    c. Review incidents reported by citizens on an annual basis to look for patterns of illicit discharges and to evaluate the call-in inspection program.

IDDE - Opportunistic Illicit Discharge Observation

1. Preparation

    a. Be alert for potential illicit discharges to the municipal storm water system while goingabout normal work activities.

2. Process

    a. Call the appropriate authority (ie. department head, stormwater specialist, construction inspector, code enforcement officer or a supervisor) if you see evidence of an illicit discharge.

    b. Assess the general area of the illicit discharge to see if you can identify its source.

    c. Whenever possible, take photographs of the suspected illicit discharge.

    d. Responding stormwater department personnel or code enforcement officer will complete the following:

        1. Use the IDDE Incident Tracking Sheet to document observations.
        2. Obtain sample for visual observation and complete an Outfall Inspection Form, if applicable.
        3. Follow the procedure of SOP IDDE - Tracing Illicit Discharges.

3. Clean-up

    a. Clean catch basin, clean storm drain, or initiate spill response, as needed. Follow relevant SOPs.

4. Documentation

    a. File all completed forms (ie. Incident Tracking Form, Outfall Inspection Form, Catch Basin Cleaning Form, and Storm Drain Cleaning Log).

    b. Document any further action taken.

IDDE - Outfall Inspections

1. Preparation:

    a. Know the past and present weather conditions. Conduct inspections during dry weather periods.

    b. Gather all necessary equipment including: tape measure, clear container, clipboard with necessary forms, flashlight, and camera (optional).

    c. Obtain maps showing outfall locations and identifiers.

    d. Obtain outfall description and observations from previous inspections, so the outfall can be accurately identified and observations compared.

2. Process

    a. Perform an inspection of each outfall at least once per year. Whenever, possible use the same personnel for consistency in observations.

    b. Identify each outfall with a consistent and unique identifier. For example “Howard Slough-#13”. Use maps and previous inspection reports to confirm the outfall identity and location.

    c. If dry weather flow is present at the outfall, then document and evaluate the discharge by completing the following steps:

        1. Collect field samples for visual observations in a clean, clear container and in a manner that avoids stirring up sediment that might distort the observation.

        2. Characterize and record observations on basic sensory and physical indicators (e.g., outfall condition, flow, odor, color, oil sheen) on the Outfall Inspection Form.

        3. Compare observations to previous inspections.

        4. If the flow does not appear to be an obvious illicit discharge (e.g., flow is clear, odorless, etc.), attempt to identify the source of the flow (groundwater, intermittent stream, etc.)

    d. If an illicit discharge (such as raw sewage, petroleum products, paint, etc.) is encountered or suspected, follow the procedure of SOP IDDE - Tracing Illicit Discharges.

3. Cleanup - as necessary

4. Documentation

IDDE - Outfall Inspections

a. File completed outfall inspection forms.

b. Update maps if new outfalls are observed and inspected.

IDDE - Removing Illicit Discharges

1. Preparation

    a. Obtain available property ownership information for the source of the illicit discharge.

2. Process

    a. Determine who is financially responsible; and follow associated procedures as given below.

        For Private Property
            Owner: Contact
            Owner,
            Issue Notice of Violation for violations of the municipal ordinance,
            and Determine schedule for removal.

        For Municipal Facility:
            Notify appropriate municipal authority or department
            head, Schedule removal, and
            Remove illicit connection.

    b. Suspend access to storm drain if threats of serious physical harm to humans or the environment are possible.

    c. Direct responsible party to initiate repairs/corrections/cleanup. Coordinate with enforcement official for escalating penalties in accordance with the municipal ordinance.

    d. Repair/correct cause of discharge if municipality is responsible. Schedule the work through the appropriate municipal authority or department head..

    e. Seek technical assistance from the Weber-Morgan Health Department or Utah Department of Water Quality, if needed.

3. Clean up

    a. Confirm illicit discharge is removed or eliminated by follow-up inspection.

4. Documentation

    a. Maintain records of notice of violation and penalties.

    b. Document repairs, corrections, and any other actions required.

IDDE - Tracing Illicit Discharges

1. Preparation

    a. Review / consider information collected when illicit discharge was initially identified and document using Incident Tracking Form or Outfall Inspection Form.

    b. Obtain storm drain mapping for the area of the reported illicit discharge.

    c. Gather all necessary equipment including: tape measure, clear container, clipboard with necessary forms, flashlight, and camera (optional).

2. Process

    a. Survey the general area / surrounding properties to identify potential sources of the illicit discharge as a first step.

    b. Trace illicit discharges using visual inspections of upstream points as a second step. Use available mapping to identify tributary pipes, catch basins, etc.

    c. If the source of the illicit discharge cannot be determined by a survey of the area or observation of the storm drain system, then consider the following additional steps:

        1. Use weirs, sandbags, dams, or optical brightener monitoring traps to collect or pool intermittent discharges during dry weather.

        2. Smoke test or televise the storm drain system to trace high priority, difficult to detect illicit discharges.

        3. Dye test individual discharge points within suspected buildings.

        4. Consider collecting bacterial samples of flowing discharges to confirm/refute illicit discharge.

    d. If the source is located, follow SOP IDDE - Removing Illicit Discharges.

    e. If the source cannot be found, add the location to a future inspection program.

3. Clean up

    a. Clean catch basin, clean storm drain, or initiate spill response, as applicable. Follow relevant SOPs.

4. Documentation

    a. Document tracing results for future reference.

PARKS – Chemical Application Pesticides, Herbicides, Fertilizers

1. Preparation

    a. Make sure your state Chemical Handling Certification is complete and up-to-date before handling any chemicals.

    b. Calibrate fertilizer and pesticide application equipment to avoid excessive application.

    c. Use pesticides only if there is an actual pest problem and periodically test soils for determining proper fertilizer use

    d. Time and apply the application of fertilizers, herbicides or pesticides to coincide with the manufacturer's recommendation for best results ("Read the Label").

    e. Know the weather conditions. Do not use pesticides if rain is expected. Apply pesticides only when wind speeds are low(less than 5 mph).

2. Process

    a. Always follow the manufacturer's recommendations for mixing, application and disposal. ("Read the Label").

    b. Do not mix or prepare pesticides for application near storm drains, preferably mix inside a protected area with impervious secondary containment (preferably indoors) so that spills or leaks will not contact soils.

    c. Employ techniques to minimize off-target application (e.g. spray drift, over broadcasting.) of pesticides and fertilizers.

3. Clean-up

    a. Sweep pavements or sidewalks where fertilizers or other solid chemicals have fallen, back onto grassy areas before applying irrigation water.

    b. Triple rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.

    c. Always follow all federal and state regulations governing use, storage and disposal of fertilizers, herbicides or pesticides and their containers. ("Read the Label")

4. Documentation

    a. Keep copies of MSD sheets for all pesticides, fertilizers and other hazardous products used.

    b. Record fertilizing and pesticide application activities, including date, individual who did the application, amount of product used and approximate area covered.

PARKS – Cleaning Equipment

1. Preparation
    a. Review process with all Parks employees
2. Process
    a. Wipe off dirt, dust and fluids with disposable towel
    b. Wash equipment in approved wash station
3. Clean-up
    a. Dispose of towels in proper trash receptacle
    b. Sweep floor and dispose of debris.

PARKS – Mowing and Trimming

1. Preparation

    a. Process overview with all employees

    b. Check the oil and fuel levels of the mowers and other equipment; fill if needed.

2. Process

    a. Put on eye and hearing protection

    b. Mow and trim the lawn

    c. Sweep or blow clippings to grass areas

3. Clean-up

    a. Mowers are to be scraped and brushed at shop – dry spoils are dry swept and disposed of properly, or they may be washed down as long as contaminated water does not enter the storm drain system.

    b. Wash equipment in approved wash station

PARKS – Open Space Management

1. Preparation

    a. Provide a regular observation and maintenance of parks, golf courses, and other pubic open spaces.

    b. Identify public open spaces that are used for stormwater detention and verify that detention areas are included on the storm drain system mapping, inspection schedules, and maintenance schedules.

2. Process

    a. Ensure that any storm drain or drainage system components on the property are properly maintained.

    b. Avoid placing bark mulch (or other floatable landscaping materials) in stormwater detention areas or other areas where stormwater runoff can carry the mulch into the storm drainage system.

    c. Follow all SOPs related to irrigation, mowing, landscaping, and pet waste management.

3. Clean Up

    a. Keep all outdoor work areas neat and tidy. Clean by sweeping instead of washing whenever possible. If areas must be washed, ensure that wash water will enter a landscaped area rather than the storm drain. Do not use soap for outdoor washing.

    b. Pick up trash on a regular basis.

4. Documentation

    a. Document any observed deficiencies for correction or repair.

PARKS – Planting Vegetation (Starters)

1. Clean-up

    a. Move any extra spoils into truck or trailer. Place the spoils on a tarp if there is a likelihood that some of the dirt would be lost through openings in the bed.

    b. Sweep dirt from surrounding pavement(s) into the planter area

    c. Transport spoils to their designated fill or disposal area.

PARKS – Planting Vegetation (Seeds)

1. Clean-up

    a. Move any extra spoils into truck or trailer. Place the spoils on a tarp if there is a likelihood that some of the dirt would be lost through openings in the bed.

    b. Sweep dirt, seed, and any cover material from surrounding pavement(s) into the planter area

    c. Transport spoils to their designated fill or disposal area.

PARKS – Transporting Equipment

1. Preparation

    a. Determine equipment needed for transport and method (trailer, truck bed) needed to transport equipment.

    b. Conduct pre- trip inspection of equipment

2. Process

    a. Load and secure equipment on trailer or truck

    b. Load and secure fuel containers for equipment usage

3. Clean-up

    a. Off load equipment

    b. Store equipment and trailer in proper locate on

    c. Conduct post-trip inspection of equipment

    d. Wash equipment, if needed, according to the SOP for Cleaning Equipment SOP

STREETS/STORM DRAIN – Catch Basin Cleaning

1. Preparation:

    a. Clean sediment and trash off grate.

    b. Do visual inspection on outside of grate.

    c. Make sure nothing needs to be replaced.

    d. Do inside visual inspection to see what needs to be cleaned.

2. Process

    a. Clean using a high powered vacuum truck to start sucking out standing water and sediment.

    b. Use a high pressure washer to clean any remaining material out of catch basin, while capturing the slurry with the vacuum.

    c. After catch basin is clean, send the rodder of the vacuum truck downstream to clean pipe and pull back sediment that might have gotten down stream of pipe.

    d. Move truck downstream of pipe to next catch basin.

3. Clean-up

    a. When vacuum truck is full of sediment take it to the designated location to dump all the sediment out of truck into a drying bed.

    b. When it evaporates, clean up solids and dispose of properly.

4. Documentation

    a. Keep logs of number of catch basins cleaned.

    b. Record the amount of waste collected.

    c. Keep any notes or comments of any problems.

STREETS/STORM DRAIN – Curb Painting

1. Preparation

    a. Calculate the amount of paint required for the job

    b. Use water based paints if possible.

    c. Determine whether the wastes will be hazardous or not and the required proper disposal of said wastes

    d. Determine locations of storm drain inlets and sewer inlets that may need to be protected

    e. Prepare surfaces to be painted without generating wastewater by sandblasting and/or scraping.

    f. Thoroughly sweep up all sand, blastings, and/or paint scrapings

    g. If paint stripping is needed, use a citrus-based paint remover whenever possible, which is less toxic than chemical strippers

    h. If wastewater will be generated, use curb, dyke, etc. around the activity to collect the filter and collect the debris.

2. Process

    a. Paint curb.

    b. Prevent over-spraying of paints and/or excessive sandblasting

    c. Use drip pans and drop clothes in areas of mixing paints and painting

    d. Store latex paint rollers and brushes in air tight bags to be reused later with the same color.

    e. Have available absorbent material and other BMP's ready for an accidental paint spill.

3. Clean-up

    a. Paint out brushes and rollers as much as possible. Squeeze excess paint from brushes and rollers back into the containers prior to cleaning them.

    b. Pour excess paint from trays and buckets back into the paint can containers and wipe with cloth or paper towels. Dispose of the towels according to the recommendations on the paint being used.

    c. Rinse water-based paint brushes in the sink after pre-cleaning. Never pour excess paint or wastewater from cleanup of paint in the storm drain.

d. Cleanup oil based paints with paint thinner. Never clean oil based brushes in a sink or over a storm drain. Filter solvents for reuse if possible and/or store in approved drum for recycling.

e. Dispose of waste collected by placing it in a garbage container. Left-over paint and solvents should be stored for later use (do not place these liquids in the garbage).

4. Documentation

a. Write-up/report of any discharges into storm drain system

STREETS/STORM DRAIN – Detention Pond Cleaning

1. Preparation:

    a. Schedule the Pond cleaning work for a time when dry weather is expected.

    b. Remove any sediment and trash from grates, placing it in a truck for disposal.

    c. Do a visual inspection to make sure any grates, structures, manholes, boxes, and pipes are in good working order. Remove manhole covers and grates as necessary for inspecting.

2. Process

    a. Provide outlet protection where feasible to minimize the amount of debris that might leave basin during cleaning process.

    b. Start cleaning basin by using backhoe to remove debris and sediment off the bottom.

    c. Continue cleaning structures and pond bottom as necessary by sweeping and shoveling.

    d. Put all material removed from the pond into a dump truck.

    e. Some structures may require use of a vactor truck. If so use the same procedures described for cleaning catch basins.

3. Clean-up

    a. After cleaning basins, clean off the concrete pads using dry methods (sweeping and shoveling).

    b. Make sure they are swept up and clean.

    c. Take the material that was removed to the landfill for final disposal.

4. Documentation

    a. Keep a log of each detention basins/pond cleaned including date, individuals involved in cleaning, and a description of the type of debris removed.

    b. Record the amount of waste collected.

    c. Keep any notes or comments of any problems.

STREETS/STORM DRAIN – Chip Seal

1. Preparation

    a. Clean and dry areas where materials are to be applied.

    b. Apply temporary covers to manholes and catch basins to prevent oil and materials from getting inside of them.

2. Process

    a. Apply emulsion at recommended rate.

    b. Spread chips closely behind emulsion distributor, slowly such that the chips do not roll when they hit the surface.

    c. Maximum speed 5 mph.

3. Clean-up

    a. All loose aggregate is removed from the roadway by sweeping it up (see SOP for Street Sweeping).

    b. Excessive asphalt applications and spills are removed with shovels and scraping tools.

    c. Remove the temporary covers from manholes and catch basins. If it appears that any chip seal materials have gotten into the inlet boxes, remove the material according to the SOP for inlet boxes.

    d. Dispose of the waste material that has been swept and scraped up by taking it to the landfill.

4. Documentation

    a. Record location and date on the maintenance database and map

STREETS/STORM DRAIN – Slurry Seal

1. Preparation

    a. Remove weeds from the roads. Sweep areas where materials are to be applied, and allow to dry, if necessary. Verify that existing pavement has been inspected for detrimental effects of poor drainage.

    b. Cover/protect catch basins and manholes.

2. Process

    a. Apply materials in a smooth and uniform manner. Slurry material should not run onto adjacent pavement surface, curb and gutter or waterways.

3. Clean-up

    a. If loose aggregate is remaining in street or curb, sweep it up.

    b. Ensure that excess emulsion materials are removed from the site and stored for later use in an area or container that is not exposed to the weather.

    c. Remove covers/protection from catch basins and manholes, and valves.

4. Documentation

    a. Record location and date on the maintenance database and map

STREETS/STORM DRAIN – Overlays and Patching

1. Preparation

    a. Measure and mark locations of manholes and valves on the curb

    b. Manholes and catch basins are covered as needed to prevent oil and materials from getting inside the structures or system.

    c. Cracks should be properly sealed. Alligator cracks and potholes should be removed and patched. Rutting should be milled.

    d. Surface should be clean and dry.

    e. Uniform tack coat applied and cured prior to placement of overlay.

    f. If milling is required, install inlet protection as needed.

2. Process

    a. Check hot asphalt mix for proper temperature, percentage asphalt, gradation, air voids and any other agency requirements.

    b. Raise manhole lids and valves to elevation of new asphalt surface with riser rings.

    c. Surface texture should be uniform, no tearing or scuffing.

    d. Rolling should be done to achieve proper in-place air void specification.

3. Clean-up

    a. Covering should be removed as soon as the threat of imported materials entering the system is reduced and prior to a storm event.

    b. After pavement has cooled, sweep gutters to remove loose aggregate.

4. Documentation

    a. Record location and date on the maintenance database and map

STREETS/STORM DRAIN – Crack Seal

1. Preparation

    a. Cover Manholes and catch basins to prevent oil and materials from getting inside the structures or system.

    b. Remove weeds from the road

    c. Air-blast the cracks to remove sediments from the crack to allow for proper adhesion.

    d. Ensure that surface is clean and dry.

2. Process

    a. Proper temperature of material should be maintained.

    b. Sufficient material is applied to form the specified configuration.

3. Clean-up

    a. Excessive sealant application or spills are removed.

    b. Sweep all loose debris from the pavement and dispose of it properly.

4. Documentation

    a. Record location and date on the maintenance database and map

STREETS/STORM DRAIN – Concrete Work

1. Preparation

    a. Store dry and wet materials under cover, away from drainage areas

    b. Remove any damaged concrete that may need to be replaced.

    c. Prepare and compact sub-base.

    d. Set forms and place any reinforcing steel that may be required.

    e. Determine how much new concrete will be needed.

    f. Locate or construct approved concrete washout facility.

2. Process

    a. Install inlet protection as needed.

    b. Moisten subbase just prior to placing new concrete. This helps keep the soil from wicking moisture out of the concrete into the ground.

    c. Place new concrete in forms.

    d. Consolidate new concrete

    e. Screed off surface

    f. Let concrete obtain its initial set

    g. Apply appropriate surface finish

    h. Remove forms when concrete will not slump

3. Clean-up

    a. Perform washout of concrete trucks and equipment in designated areas only. Do not washout concrete trucks or equipment into storm drains, open ditches, streets or streams

    b. Cement and concrete dust from grinding activities is swept up and removed from the site.

    c. Remove dirt or debris from street and gutter. Do not direct it to the storm drain system.

STREETS/STORM DRAIN – Garbage Storage

1. Preparation

    a. Locate dumpsters and trash cans with lids in convenient, easily observable areas.

    b. Provide properly-labeled recycling bins to reduce the amount of garbage disposed.

    c. Provide training to employees to prevent improper disposal of general trash.

2. Process

    a. Inspect garbage bins for leaks regularly, and have repairs made immediately by responsible party.

    b. Locate dumpsters on a flat, impervious surface that does not slope or drain directly into the storm drain system.

    c. Install berms, curbing or vegetation strips around storage areas to control water entering/leaving storage areas.

    d. Keep lids closed when not actively filling dumpster.

3. Clean-up

    a. Keep areas around dumpsters clean of all garbage.

    b. Have garbage bins emptied as often as needed to keep from overfilling.

    c. Wash out bins or dumpsters as needed to keep odors from becoming a problem. Wash out in properly designated areas only.

STREETS/STORM DRAIN – Snow Removal and De-icing

1. Preparation

    a. Store de-icing material under a covered storage area or in an area where water coming off the de-icing materials is collected and delivered to the sanitary sewer or reused as salt brine.

    b. Wash out vehicles (if necessary) in approved washout area before preparing them for snow removal.

    c. Calibrate spreaders to minimize amount of de-icing material used and still be effective

    d. Provide vehicles with spill cleanup kits in case of hydraulic line rupture or other spills

    e. Train employees in spill cleanup procedures and proper handling and storage of de-icing materials

2. Process

    a. Load material into trucks carefully to minimize spillage

    b. Periodically dry sweep loading area to reduce the amount of de-icing materials exposed to runoff

    c. Distribute the minimum amount of de-icing material to be effective on roads

    d. Do not allow spreaders to idle while distributing de-icing materials.

    e. Park trucks loaded with de-icing material inside when possible

3. Cleanup

    a. Sweep up all spilled de-icing material around loading area

    b. Clean out trucks after snow removal duty in approved washout area

    c. Provide maintenance for vehicles in covered area

    d. If sand is used in de-icing operations, sweep up residual sand from streets when weather permits

STREETS/STORM DRAIN – Street Sweeping

1. Preparation

    a. Prioritize cleaning routes to use at the highest frequency in areas with the highest pollutant loading.

    b. Restrict street parking prior to and during sweeping using regulations as necessary.

    c. Increase sweeping frequency just before the rainy season, unless sweeping occurs continuously throughout the year.

    d. Perform preventative maintenance and services on sweepers to increase and maintain their efficiency

    e. Streets are to be swept as needed or specified by the city. Street maps could be used to ensure all streets are swept at a specified interval

2. Process

    a. Drive street sweeper safely and pick up debris

    b. When full, take the sweeper to an approved street sweeper cleaning station.

3. Clean-up

    a. Street sweepers are to be cleaned out in an approved street sweeper cleaning station

    b. Street sweeping cleaning stations shall separate the solids from the liquids.

    c. Once solids have dried out, haul them dispose of them properly.

    d. Decant water is to be collected and routed to an approved wastewater collection system area only.

    e. Haul all dumped material to the landfill.

4. Documentation

    a. Keep accurate logs to track streets swept and streets still requiring sweeping.

    b. Log the amount of debris collected and hauled off.

STREETS/STORM DRAIN – Transporting Soil and Gravel

1. Preparation

    a. Dry out wet materials before transporting.

    b. Spray down dusty materials to keep from blowing.

    c. Make sure you know and understand the SWPPP requirements for the site you will be working at.

    d. Determine the location that the truck and other equipment will be cleaned afterwards

2. Process

    a. Use a stabilized construction entrance to access or leave the site where materials are being transported to/from.

    b. Cover truck bed with a secured tarp before transporting.

    c. Follow the SWPPP requirements for the specific site to/from which the materials are being hauled.

    d. Make sure not to overfill materials when loading trucks.

3. Clean up

    a. Use sweeper to clean up any materials tracked out on the roads from site.

    b. Wash out truck and other equipment when needed in properly designated areas.

4. Documentation

    a. Keep records of any material that is tracked out of site and what was done to clean it up and how long it took to clean up and what the weather conditions were at the time.

VEHICLES – Fueling

1. Preparation

    a. Train employees on proper fueling methods and spill cleanup techniques.

    b. Install a canopy or roof over aboveground storage tanks and fuel transfer areas.

    c. Absorbent spill clean-up materials and spill kits shall be available in fueling areas andon mobile fueling vehicles and shall be disposed of properly after use.

2. Process

    a. Shut off the engine.

    b. Ensure that the fuel is the proper type of fuel for the vehicle.

    c. Nozzles used in vehicle and equipment fueling shall be equipped with an automatic shut off to prevent overfill.
    d. Fuel vehicle carefully to minimize drips to the ground.

    e. Fuel tanks shall not be 'topped off'.

    f. Mobile fueling shall be minimized. Whenever practical, vehicles and equipment shallbe transported to the designated fueling area in the Facilities area.

    g. When fueling small equipment from portable containers, fuel in an area away from storm drains and water bodies.

3. Clean Up

    a. Immediately clean up spills using dry absorbent (e.g., kitty litter, sawdust, etc.) sweep up absorbent material and properly dispose of contaminated clean up materials.

    b. Large spills shall be contained as best aspossible and the HazMat team should be notified ASAP.

4. Records

    a. Comply with underground storage tank records and monitoring requirements.

    b. Document training of employees.

VEHICLES – Vehicle and Equipment Storage

1. Preparation

    a. Inspect parking areas for stains/leaks on a regular basis.

    b. Provide drip pans or adsorbents for leaking vehicles.

2. Process

    a. Whenever possible, store vehicles inside where floor drains have been connected to sanitary sewer system.

    b. When inside storage is not available, Vehicles and equipment will be parked in the approved designated areas.

    c. Maintain vehicles to prevent leaks as much as possible.

    d. Address any known leaks or drips as soon as possible. When a leak is detected a drip pan will be placed under the leaking vehicle to collect the drip.

    e. The shop will provide a labeled location to empty and store drip pans.

    f. If any leaks are discovered, a drip pan will be used to collect the fluids and vehicle will be scheduled for repairs.

    g. Clean up all spills using dry methods.

    h. Never store leaking vehicles over a storm drain.

3. Clean Up

    a. Any leaks that are spilled on the asphalt will be cleaned up with dry absorbent; the dry absorbent will be swept up and disposed of in the garbage.

    b. The paved surfaces around the building will be swept every two weeks, weather permitting.

VEHICLES – Washing

1. Preparation

    a. Provide wash areas for small vehicles inside the maintenance building that has a drain system which is attached to the sanitary sewer system.

    b. Provide wash areas for large vehicles on an approved outside wash pad that has a drain system which is attached to the sanitary sewer system.

    c. No vehicle washing will be done where the drain system is connected to the storm sewer system.

2. Process

    a. Minimize water and soap use when washing vehicles inside the shop building.

    b. Soap should not be used when washing vehicles outside the shop building. Water Only.

    c. Use hoses with automatic shut off nozzles to minimize water usage.

    d. When washing outside the building, it is the operators' responsibility to make sure all wash water is contained on the wash pad and does not have access to the storm drain.

    e. Never wash vehicles over or a storm drain.

3. Clean Up

    a. Sweep wash areas after every washing to collect what solids can be collected to prevent them from washing down the drain system.

    b. Clean solids from the settling pits on an as needed basis.

WATER – Planned Waterline Excavation Repair/Replacement

1. Preparation
    a. Determine where discharge flow will go
    b. Place inlet protection at nearest downstream storm drain inlet
    c. Clean Gutters leading to inlet
    d. Isolate waterline to be worked on
    e. Neutralize any chlorine residual before discharging water
2. Process
    a. Make efforts to keep water from pipeline from entering the excavation
    b. Direct any discharge to pre-determined area
    c. Backfill and compact excavation
    d. Haul of excavated material or stock pile nearby
3. Clean up
    a. Clear gutter/waterway where water flowed
    b. Clean up all areas around excavation
    c. Clean up travel path of trucked material
4. Documentation
    a. Complete paperwork

WATER – Unplanned Waterline Excavation Repair/Replacement

1. Preparation
    a. Make sure service trucks have wattles, gravel bags, or other materials for inlet protection.
2. Process
    a. Slow the discharge.
    b. Inspect flow path of discharged water
    c. Protect water inlet areas
    d. Follow planned repair procedures.
    e. Haul off spoils of excavation
    f. Consider use of silt filter bags on pumps
3. Clean-up
    a. Repair eroded areas as needed
    b. Follow planned repair procedures
    c. Clean up the travel path of trucked excavated material

WATER – Transporting Dry Excavated Materials & Spoils

1. Preparation
    a. Utilize truck with proper containment of materials
    b. Determine disposal site of excavated materials
2. Process
    a. Load
    b. Check truck after loading for possible spillage
    c. Transport in manner to eliminate spillage & tracking
    d. Utilize one route for transporting
3. Clean-up
    a. Clean loading area
    b. Clean transporting route
    c. Wash off truck and other equipment in a designated equipment cleaning area

WATER – Transporting Wet Excavated Materials & Spoils

1. Preparation
    a. Utilize truck with containment for material
    b. Determine disposal site of excavated material
2. Process
    a. Load and Transport in manner to minimize spillage & tracking of material
    b. Check truck for spillage
    c. Utilize one route of transport
3. Clean-up
    a. Clean route of transport to provide cleaning of any spilled material
    b. Wash out equipment truck and other equipment in designated wash area

WATER – Waterline Flushing for Routine Maintenance

1. Preparation
    a. Determine flow path of discharge to inlet of waterway.
    b. Determine chlorine residual
    c. Neutralize chlorine residual
2. Process
    a. Clean flow path.
    b. Protect inlet structures.
    c. Use diffuser to dissipate pressure to reduce erosion possibilities.
3. Clean-up
    a. Clean flow path
    b. Remove inlet protection
4. Documentation
    a. Residual tests of discharge water.

WATER – Waterline Flushing after Construction/System Disinfection with Discharge to Storm Drain

1. Preparation
    a. Determine chlorine content of discharged water, and select de-chlorination equipment to be used.
    b. Determine flow path of discharge.
2. Process
    a. Protect inlets in flow path
    b. Install de-chlorination equipment
    c. Sweep and clean flow path
    d. Use diffuser to reduce velocities
3. Clean-up
    a. Pick up inlet protection
    b. Clean flow paths
    c. Remove equipment from flush point
4. Documentation
    a. Residual test of discharged water

WATER – Waterline Flushing after Construction/System Disinfection with Discharge with Haul Off (Used for Dust Control/Compaction)

1. Preparation
    a. Determine chlorine content of discharged water
    b. Determine appropriate construction activity for treatment
2. Process
    a. Flush to tanker for disposal on unpaved construction activity for dust control or compaction
    b. Conform that application of water is in appropriate location
4. Clean-up
    a. Remove equipment from flush point
5. Documentation
    a. Residual test of discharged water
    b. Location of water discharged

WATER – Chemical Handling/Transporting and Spill Response

1. Preparation
    a. Understand MSDS sheets for handling of product
    b. Determine proper place of handling
    c. Have necessary containment and spill kits at handling place
2. Process
    a. Begin transfer process
    b. Discontinue operations if spill levels occurs
    c. Disconnect and store handling equipment
3. Clean-up
    a. Clean up spills with proper material
    b. Dispose of contaminated material at appropriate facility
4. Documentation

    Report spills to Weber/Morgan Health Department

    Work hours 801-399-7160

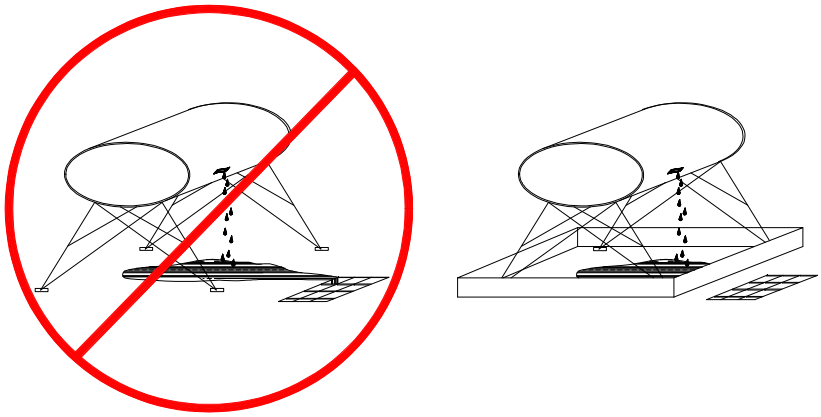
    After hours 801-629-8221 Weber County dispatch

Best Management Practices
(BMPs)

APPENDIX I

BMP: Aboveground Tank Leak And Spill Control

ATL



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

The most common causes of unintentional releases are:
< Installation problems,
< Failure of piping systems (pipes, pumps, couplings, hoses, and valves),
< External corrosion and structural failure,
< Spills and overfills due to operator error, and
< Leaks during pumping of liquids or gases from a truck to a storage tank or vice versa.

APPROACH:
< Integrate efforts with existing aboveground petroleum storage tank programs through the local Fire Department and Health Department, and area and business emergency response plans through the City, County, or Fire District.
< Use engineering safeguards to reduce the chance for spills.
< Perform regular maintenance.

LIMITATIONS:
For larger spills, a private spill clean-up company or Hazmat team may be necessary.

MAINTENANCE:
Maintenance is critical to preventing leaks and spills. Conduct routine weekly inspections and:
< Check for external corrosion and structural failure,
< Check for spills and overfills due to operator error,
< Check for failure of piping system (pipes, pumps, flanger, coupling, hoses, and valves),
< Check for leaks or spills during pumping of liquids or gases from truck to storage facility or vice versa.
< Periodically, integrity testing should be conducted by a qualified professional.

PROGRAM ELEMENTS

☐ New Development
☐ Residential
☒ Commercial Activities
☒ Industrial Activities
☒ Municipal Facilities
☒ Illegal Discharges

TARGETED POLLUTANTS

☐ Sediment
☐ Nutrients
☐ Heavy Metals
■ Toxic Materials
☐ Oxygen Demanding Substances
■ Oil & Grease
☐ Floatable Materials
☐ Bacteria & Viruses

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

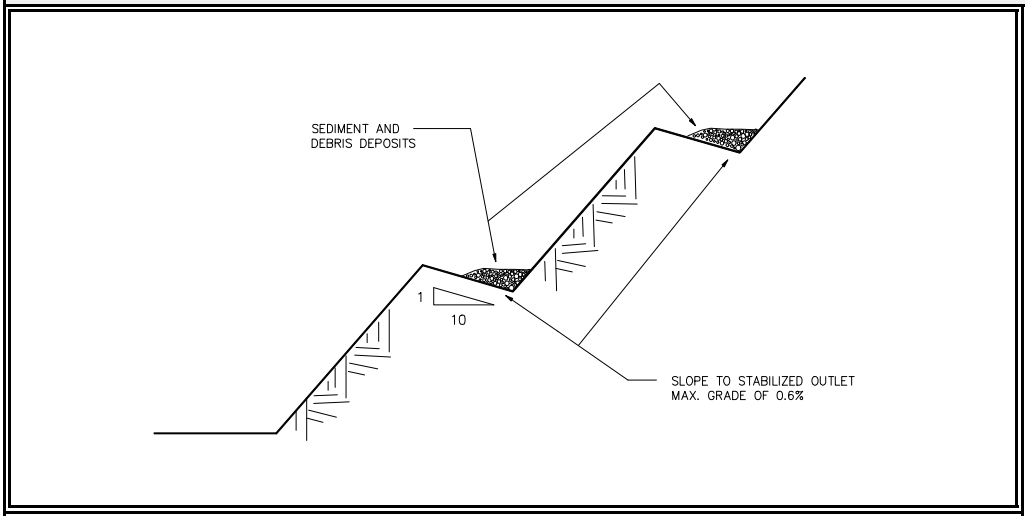
IMPLEMENTATION REQUIREMENTS

☒ Capital Costs
☐ O&M Costs
☒ Regulatory
■ Training
☒ Staffing
☒ Administrative

■ High ☒ Medium ☐ Low

BMP: Benching

BE



DESCRIPTION:
Slope construction with benches spaced at regular intervals perpendicular to the slope which intercept and collect sheet flow and direct it to a stable outfall point.

APPLICATION:
- Unstabilized cut and fill slopes
- Large stockpiles
- Existing unstable slopes

INSTALLATION/APPLICATION CRITERIA:
- Benches should be formed as slope is constructed and graded to the outlet point.
- Stabilized outlet with sediment controls should be in place prior to slope construction.

LIMITATIONS:
- Construction slope design must accomodate benching
- Not appropriate for sandy or rocky soil
- Only effective if suitable outlet provided

MAINTENANCE:
- Inspect after major storm events and at least biannually, repair any damaged areas
- Remove debris blocking water flow
- Inspect outlet, repair/replace sediment controls and remove sediment build up.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☐ Control Internal Erosion

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☒ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

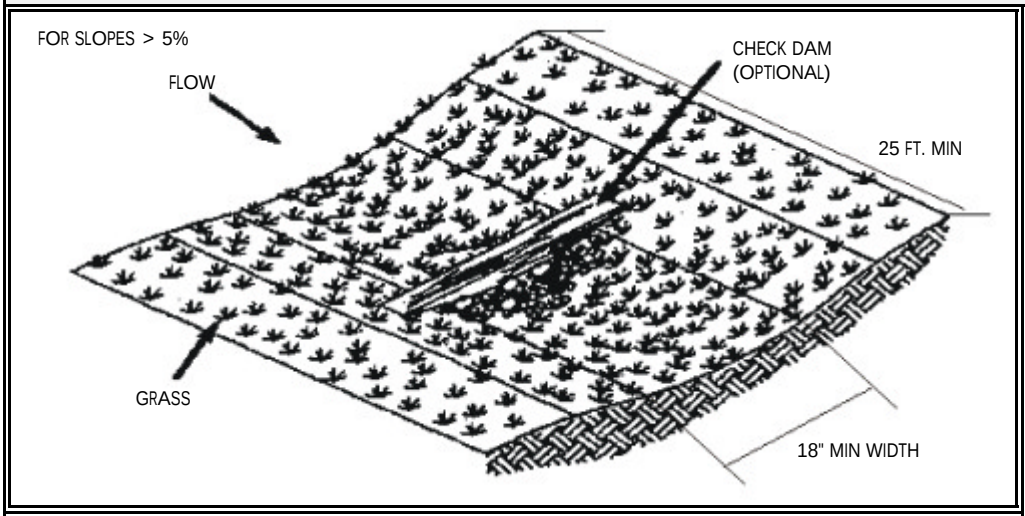
IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Biofilters

BF



DESCRIPTION:
Biofilters are of two general types: vegetated channel and vegetated filter strip. The vegetated channel is sloped like a standard storm drain channel; the stormwater is treated as it passes through the channel. With filter strips the flow is distributed broadly along the width of the vegetated area.

APPLICATION:
< Comparable performance to wet ponds and constructed wetlands.
< Limited to treating a few acres.

INSTALLATION/APPLICATION CRITERIA:
< Limited to treating a few acres and availability of water during dry season.
< The surface area must be defined.
< The minimum width for a swale is determined by Mannings Equation.
< Minimum length of a strip is 10 feet.
< The longitudinal slope must not exceed 5%.
< Use a flow spreader and energy dissipator at the entrance of a swale.
< Good soils are important to achieve good vegetation cover.

LIMITATIONS:
< Poor performance has occurred but this appears to be due to poor design.
< May be limited to areas where summer irrigation is feasible.
< Can be difficult to maintain sheet flow in strips.
< Can be difficult to avoid channelization in swales.
< Cannot be placed on steep slope.
< Area required may make infeasible on industrial sites.
< Proper maintenance required to maintain health and density of vegetation.
< Limited to treating a few acres and availability of water during dry season.

MAINTENANCE:
< Make sure soils are suitable for healthy vegetation.
< Level cross-section and even longitudinal slope for swales.
< Any damage to the channel such as rutting must be repaired with suitable soil, properly tamped and seeded.

CONSIDERATIONS

☒ Soils
☒ Area Required
☒ Slope
☒ Water Availability
☒ Aesthetics
☐ Hydraulic Head
☐ Environmental Side Effects

TARGETED POLLUTANTS

■ Sediment
☒ Nutrients
☒ Heavy Metals
☒ Toxic Materials
☒ Oxygen Demanding Substances
☒ Oil & Grease
☒ Floatable Materials
☐ Bacteria & Viruses

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

☒ Capital Costs
☒ O&M Costs
☒ Maintenance
☐ Training

■ High ☒ Medium ☐ Low

BMP: Buildings And Grounds Maintenance

BGM

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, and maintaining the stormwater collection system.

APPROACH:
- < Preserve existing native vegetation to reduce water, fertilizer, and pesticide needs.
- < Carefully use pesticides and fertilizers in landscaping.
- < Take care in over-watering landscape sites to reduce the risk of discharge of water contaminated with nutrients and pesticides.
- < Integrate pest management where appropriate.
- < Sweep paved surfaces.
- < Clean the storm drainage system at appropriated intervals, includes marking storm drain inlets to minimize the dumping of inadvertent liquids.
- < Properly dispose wash water, sweepings, and sediments.
- < Take care of landscaped areas around the facility.
- < Clean parking lots and areas other than industrial activity.
- < Clean all catch basins in parking lots every 6 to 12 months or whenever the sump is full.
- < Sweeping, either vacuum or mechanical, is the most appropriate BMP for cleaning parking lots and basins.

LIMITATIONS:
Alternative pest/weed controls may not be available, suitable or effective in every case.

MAINTENANCE:
The BMPs themselves relate to maintenance and do not require maintenance as they do not involve structures.

PROGRAM ELEMENTS

- ☐ New Development
- ☐ Residential
- ☒ Commercial Activities
- ☒ Industrial Activities
- ☒ Municipal Facilities
- ☐ Illegal Discharges

TARGETED POLLUTANTS

- ■ Sediment
- ☒ Nutrients
- ☒ Heavy Metals
- ☒ Toxic Materials
- ☒ Oxygen Demanding Substances
- ☒ Oil & Grease
- ■ Floatable Materials
- ☐ Bacteria & Viruses

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

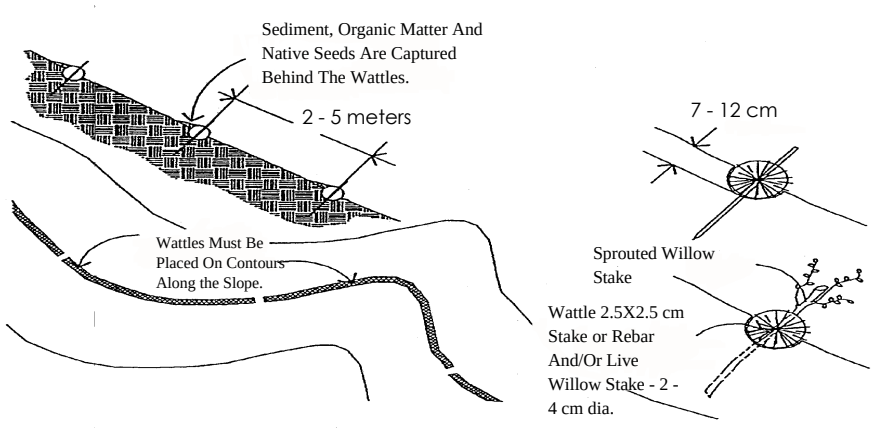
IMPLEMENTATION REQUIREMENTS

- ☐ Capital Costs
- ☒ O&M Costs
- ☐ Regulatory
- ☒ Training
- ☒ Staffing
- ☒ Administrative

■ High ☒ Medium ☐ Low

BMP: Bioengineering

BIO



GENERAL DESCRIPTION:
Bioengineering methods combine vegetative and mechanical techniques to stabilize eroding slopes. Bioengineering methods include sprigging, tubeling, and wattling. Sprigging involves planting rhizomes, stolons, shoots, or sprouts of a desirable species. Tubelings are forbs, shrubs, or trees commercially available in reusable plastic tubes or sleeves. Wattles are bundles of cuttings from live willows, alders, or similar plants placed and secured in trenches across a slope to aid in slope stabilization.

APPLICATIONS:
< Sprigging may be performed on cut and fill slopes or other areas needing permanent soil stability.
< Tubelings may be placed on any area needing revegetation, but are most useful on slopes or flat areas where poor topsoil conditions inhibit successful seed germination and early plant growth.
< Wattlings act to reduce slope length and aid in stabilizing slopes due to surface runoff, frost heaving, needle ice, or other soil movement.

INSTALLATION/APPLICATION CRITERIA:
< Sprigging involves tearing sod apart, planting rhizomes or stolons, or transplanting shoots or sprouts. Sprigs are placed by broadcast, punching-in or with a special sprig planter.
< Tubelings involve drilling holes to the depth necessary to accomodate roots.
< Wattles are best applied to slopes no steeper than 2:1.

LIMITATIONS:
< Availability of plant materials may affect what species can be used.
< May be necessary to arrange for commercially grown tubelings.
< Cannot be used as a substitute for retaining walls or similar devices to stabilize oversteepened slopes.

MAINTENANCE:
< Sprigging and tubeling plantings should be checked periodically until they are permanently established.
< Assess the need for replacement plantings or supplemental fertilizer.
< The wattlings should be inspected at regular intervals to make sure bundles are still secure and check for sprouting of the wattling material.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☒ Control Internal Erosion

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

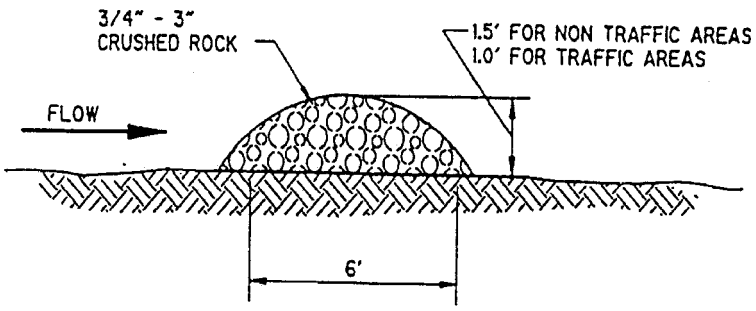
IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Brush or Rock Filter

BRF



DESCRIPTION:

A rock filter is made of rock 3/4 - 3" in diameter and placed along a level contour. A brush filter is composed of brush (usually obtained during the site clearing) wrapped in filter cloth and anchored to the toe of the slope. If properly anchored brush or rock filters may be used for sediment trapping and velocity reduction.

APPLICATION:

< As check dams across mildly sloped construction roads.
< Below the toe of slopes.
< Along the site perimeter.
< In areas where sheet or rill flow occurs.
< Around temporary spoil areas.
< At sediment traps or culvert/pipe outlets.

INSTALLATION/APPLICATION CRITERIA:

< For rock filter, use larger rock and place in a staked, woven wire sheathing if placed where concentrated flows occur.
< Install along a level contour.
< Leave area behind berm where runoff can pond and sediment can settle.
< Drainage areas should not exceed 5 acres.

LIMITATIONS:

< Rock berms may be difficult to remove.
< Removal problems limit their usefulness in landscaped areas.
< Runoff will pond upstream of the filter, possibly causing flooding if sufficient space does not exist.

MAINTENANCE:

< Inspect monthly after each rainfall.
< If berm is damaged, reshape and replace lost/dislodged rock.
< Remove sediment when depth reaches 1/3 of berm height, or 1 ft.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☒ Control Internal Erosion

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

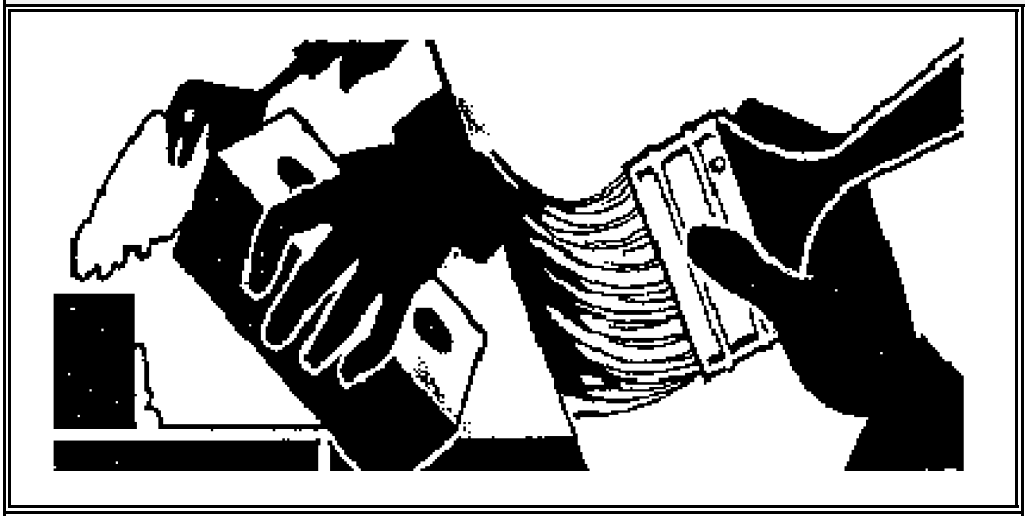
IMPLEMENTATION REQUIREMENTS

- ■ Capital Costs
- ☒ O&M Costs
- ☐ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Building Repair, Remodeling, and Construction

BRRC



DESCRIPTION:

Prevent or reduce the discharge of pollutants to stormwater from building repair, remodeling and construction by using soil erosion controls, enclosing or covering building material storage areas, using good housekeeping practices, using safer alternative products, and training employees.

APPROACH:

< Use soil erosion control techniques if bare ground is temporarily exposed.
< Use permanent soil erosion control techniques if the remodeling clears buildings that are not to be replaced.
< Enclose painting operations consistent with local air quality regulations and OSHA.
< Properly store materials that are normally used in repair and remodeling such as paints and solvents.
< Properly store and dispose waste materials generated from the activity.
< Maintain good housekeeping practices while work is underway.

LIMITATIONS:

< This BMP is for minor construction only.
< Hazardous waste that cannot be re-used or recycled must be disposed of by a licensed hazardous waste hauler.
< Safer alternative products may not be available, suitable, or effective in every case.
< Be certain that actions to help stormwater quality are consistent with OSHA and air quality regulations.

PROGRAM ELEMENTS

- ☐ New Development
- ☐ Residential
- ☒ Commercial Activities
- ☒ Industrial Activities
- ☒ Municipal Facilities
- ☐ Illegal Discharges

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☒ Heavy Metals
- ☒ Toxic Materials
- ☐ Oxygen Demanding Substances
- ☒ Oil & Grease
- ■ Floatable Materials
- ☐ Bacteria & Viruses

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ☐ Regulatory
- : Training
- : Staffing
- : Administrative

■ High ☒ Medium ☐ Low

BMP: Catch Basin Cleaning

CBC

DESCRIPTION:
Maintain catch basin and stormwater inlets on a regular basis to remove pollutants, reduce high pollutant concentrations during the first flush of storms, prevent clogging of the downstream conveyance system, and restore the catch basins' sediment trapping capacity. A catch basin is distinguished from a stormwater inlet by having at its base a sediment sump designed to catch and retain sediments below the overflow point. This information sheet focuses on the cleaning of accumulated sediments from catch basins.

APPROACH:
Regular maintenance of catch basins and inlets is necessary to ensure their proper functioning. Clogged catch basins are not only useless but may act as a source of sediments and pollutants. In general, the key to effective catch basins are:

< At least annual inspections.
< Prioritize maintenance to clean catch basins and inlets in areas with the highest pollutant loading.
< Clean catch basins in high pollutant load areas just before the wet season to remove sediments and debris accumulated during the summer.
< Keep accurate logs of the number of catch basins cleaned.
< Record the amount of waste collected.

LIMITATIONS:
There are no major limitations to this best management practice.

MAINTENANCE:
Regular maintenance of public and private catch basins and inlets is necessary to ensure their proper functioning. Clogged catch basins are not only useless but may act as a source of sediments and pollutants. In general, the keys to effective catch basins are:

< Annual inspection of public and private facilities to ensure structural integrity, a clean sump, and a stenciling of catch basins and inlets.
< Keep logs of the number of catch basins cleaned.
< Record the amount of waste collected.

PROGRAM ELEMENTS

- ☐ New Development
- ☐ Residential
- ☐ Commercial Activities
- ☐ Industrial Activities
- ☒ Municipal Facilities
- ☒ Illegal Discharges

TARGETED POLLUTANTS

- ■ Sediment
- ☒ Nutrients
- ■ Heavy Metals
- ☐ Toxic Materials
- ☒ Oxygen Demanding Substances
- ☒ Oil & Grease
- ■ Floatable Materials
- ☐ Bacteria & Viruses

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

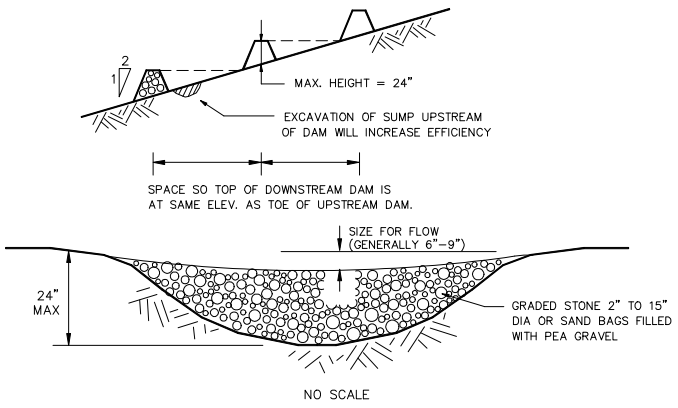
IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ■ O&M Costs
- ☐ Regulatory
- ☒ Training
- # Staffing
- ☒ Administrative

■ High ☒ Medium ☐ Low

BMP: Rock Check Dams

CD



DESCRIPTION:

A small, temporary dam constructed across a drainage ditch to reduce velocity of concentrated storm water flows, thereby reducing the erosion of the ditch.

APPLICATION:

< Temporary drainage paths
< Permanent drainage ways not yet stabilized
< Existing drainage paths receiving increased flows due to construction

INSTALLATION/APPLICATION CRITERIA:

< Prepare location of dam by removing any debris and rough grading any irregularities in channel bottom
< Place rocks by hand or with appropriate machinery, do not dump
< Construct dam with center lower to pass design flow
< Construct 50% side slopes on dam

LIMITATIONS:

< Maximum recommended drainage area is 10 acres
< Maximum recommended height is 24"
< Do not use in running stream

MAINTENANCE:

< Inspect dams daily during prolonged rainfall, after each major rain event and at a minimum of once monthly.
< Remove any large debris and repair any damage to dam, channel or sideslopes
< Remove accumulated sediment when it reaches one half the height of the dam

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☐ Control Internal Erosion

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Contaminated or Erodible Surface Areas

CESA

DESCRIPTION:
Prevent or reduce the discharge of pollutants to stormwater from contaminated or erodible surface areas by leaving as much vegetation on-site as possible, minimizing soil exposure time, stabilizing exposed soils, and preventing stormwater runon and runoff.

APPROACH:
This BMP addresses soils which are not so contaminated as to exceed criteria but the soil is eroding and carrying pollutants off in the stormwater.

Contaminated or erodible surface areas can be controlled by:
< Preservation of natural vegetation,
< Re-vegetation,
< Chemical stabilization,
< Removal of contaminated soils, or
< Geosynthetics.

LIMITATIONS:
Disadvantages of preserving natural vegetation or re-vegetating include:
< Requires substantial planning to preserve and maintain the existing vegetation.
< May not be cost-effective with high land costs.
< Lack of rainfall and/or poor soils may limit the success of re-vegetated areas.

Disadvantages of chemical stabilization include:
< Creation of impervious surfaces.
< May cause harmful effects on water quality.
< Is usually more expensive than vegetative cover.

MAINTENANCE:
Maintenance should be minimal, except if irrigation of vegetation is necessary.

PROGRAM ELEMENTS

☒ New Development
☐ Residential
☒ Commercial Activities
☒ Industrial Activities
☒ Municipal Facilities
☐ Illegal Discharges

TARGETED POLLUTANTS

■ Sediment
■ Nutrients
☒ Heavy Metals
■ Toxic Materials
☒ Oxygen Demanding Substances
☒ Oil & Grease
☒ Floatable Materials
☐ Bacteria & Viruses

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

■ Capital Costs
☒ O&M Costs
☐ Regulatory
☐ Training
☒ Staffing
☒ Administrative

■ High ☒ Medium ☐ Low

BMP: Chemical Mulch

CM

DESCRIPTION:
Applying materials such as vinyl, asphalt, plastics, or rubber on an unprotected slope to temporarily stabilize the slope.

APPLICATION:
- < As a tacking agent to aid the stabilization of mulches (where matting is not used).
- < As a short-term alternative in areas where temporary seeding practices cannot be used because of seasonal condition or climate.
- < On steep and rocky slopes where neither mechanical methods or mulches and protective netting can be effectively applied.

INSTALLATION/APPLICATION CRITERIA:
- < The application rates and procedures recommended by the manufacturer of a chemical stabilization product should be followed to prevent the products from forming ponds and from creating large areas where moisture cannot get through.
- < For permanent application, chemical mulches (when used with seed and mulch) should be applied over wood fiber or straw mulch.

LIMITATIONS:
- < Chemical mulches can create impervious surfaces and impact water quality if not properly applied.
- < Some products may not be suitable for use near natural streams.

MAINTENANCE:
- < Inspect at regular intervals and after each runoff-producing storm event.
- < Replace chemical mulch as needed to ensure adequate level of coverage.

CONSIDERATIONS

- ☒ Soils
- ☐ Area Required
- ☒ Slope
- ☐ Water Availability
- ☐ Aesthetics
- ☐ Hydraulic Head
- ☒ Environmental Side Effects

TARGETED POLLUTANTS

- ■ Sediment
- ☒ Nutrients
- ☐ Heavy Metals
- ☐ Toxic Materials
- ☐ Oxygen Demanding Substances
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Bacteria & Viruses

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

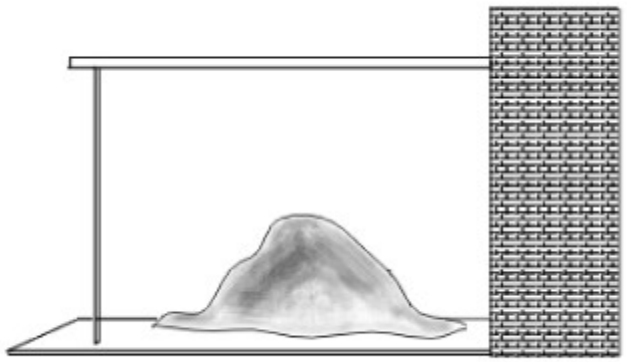
IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ☐ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Covering

CO



DESCRIPTION:
Covering is the partial or total physical enclosure of materials, equipment, process operations, or activities. Covering certain areas or activities 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 contamination. Covering can be temporary or permanent.

APPROACH:
< Covering is appropriate for outdoor material storage piles (e.g., stockpiles of dry materials, gravel, sand, compost, sawdust, wood chips, and de-icing salt) as well as areas where liquids and solids in containers are stored or transferred.
< While it may be too expensive to cover all industrial activities, cover all high-risk areas first (e.g., chemical preparation areas, vehicle maintenance areas, and areas where salts are stored), then according to budget cover the rest of the materials.
< Evaluate the strength and longevity of the covering, as well as its compatibility with the material or activity being enclosed.
< When designing an enclosure, consider access to materials, their handling, and transfer.
< Materials that pose environmental and safety dangers require special ventilation and temperature considerations.
< Covering alone may not protect the materials. When designing, consider placing materials on an elevated, impermeable surface or build curbing around the outside of the materials to prevent problems from runon of uncontaminated stormwater from adjacent areas.
< Anchor all coverings with stakes, tie-down ropes, large rocks, tires or other easily available heavy objects.

LIMITATIONS:
< Requires frequent inspection.
< May pose health or safety problems if enclosure is built over certain activities.

MAINTENANCE:
< Frequently inspect coverings for rips, holes and general wear.

APPLICATIONS

☒ Manufacturing
☒ Material Handling
☒ Vehicle Maintenance
☒ Construction
☒ Commercial Activities
☐ Roadways
☒ Waste Containment
☒ Housekeeping Practices

TARGETED POLLUTANTS

Sediment
☒ Nutrients
Heavy Metals
Toxic Materials
☒ Oxygen Demanding Substances
☒ Oil & Grease
☒ Floatable Materials
☒ Bacteria & Viruses

High Impact
☒ Medium Impact
☐ Low or Unknown Impact

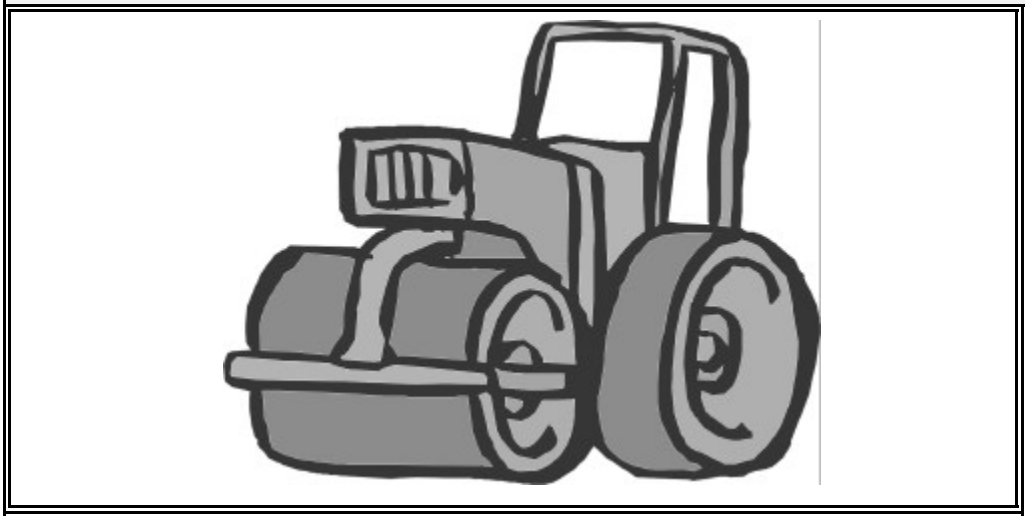
IMPLEMENTATION REQUIREMENTS

■ Capital Costs
☐ O&M Costs
☒ Maintenance
☐ Training

High ☒ Medium ☐ Low

BMP: Compaction

CP



DESCRIPTION:
Use of rolling, tamping, or vibration to stablize fill materials and control erosion by increasing the soil density. Increasing the density of soil improves soil strength, reduces long-term soil settlement, and provides resistance to erosion.

APPLICATIONS:
< Stabilize fill material placed around various structures.
< Improve soil in place as foundation support for roads, parking lots, and buildings.

INSTALLATION/APPLICATION CRITERIA:
< Make sure soil moisture content is at optimum levels.
< Use proper compaction equipment.
< Install sediment control and storm water management devices below compacted areas and runon interceptor devices above these areas. Drainage from compacted areas must be carefully planned to protect adjacent uncompacted soils.
< The surface of compacted areas should be scarified and seeded or mulched and seeded to increase the effectiveness of compaction.

LIMITATIONS:
< Compaction tends to increase runoff.
< Over-compaction will hamper revegetation efforts.

MAINTENANCE:
No maintenance required.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☒ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☐ Control Internal Erosion

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

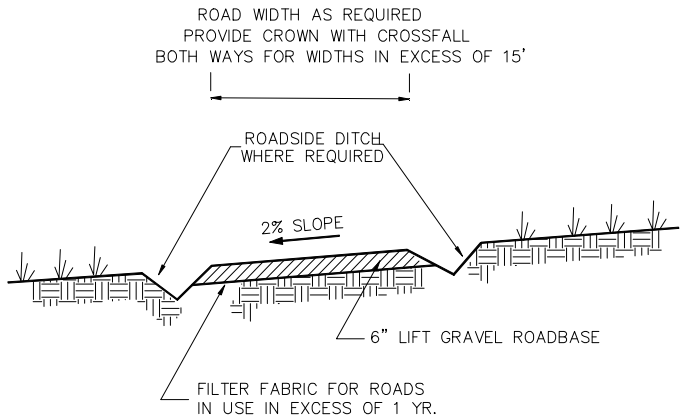
IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ☐ Maintenance
- ☒ Training

■ High ☒ Medium ☐ Low

BMP: Construction Road Stabilization

CR



DESCRIPTION:
Temporary stabilization of on-site roadway by placement of gravel roadbase.

APPLICATION:
< On-site roadways used daily by construction traffic (may not apply to gravelly type soils)
< Parking or staging areas susceptible to erosion due to traffic use

INSTALLATION/APPLICATION CRITERIA:
< Grade temporary access road with 2% cross fall, for two-way width provide crown.
< Provide roadside ditch and outlet controls where required.
< Place 6 inches of 2-inch to 4-inch crushed rock on driving area

LIMITATIONS:
< May require removal of gravel roadbase at completion of activities if final cover is not impervious
< May require controls for surface storm water runoff

MAINTENANCE:
< Inspect after major rainfall events and at least monthly.
< Place additional gravel as needed and repair any damaged areas.
< Maintain any roadside drainage controls.

OBJECTIVES

☒ Housekeeping Practices
☐ Contain Waste
☒ Minimize Disturbed Areas
☒ Stabilize Disturbed Areas
☒ Protect Slopes/Channels
☐ Control Site Perimeter
☐ Control Internal Erosion

TARGETED POLLUTANTS

■ Sediment
☐ Nutrients
☐ Toxic Materials
☐ Oil & Grease
☐ Floatable Materials
☐ Other Waste

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

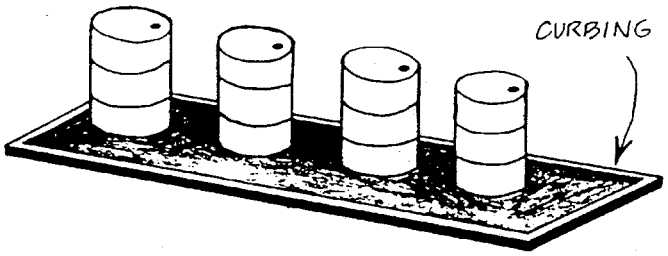
IMPLEMENTATION REQUIREMENTS

☒ Capital Costs
☒ O&M Costs
☒ Maintenance
☐ Training

■ High ☒ Medium ☐ Low

BMP: Curbing

CU



DESCRIPTION:
Curbing is a barrier that surrounds an area of concern, much like containment diking (See Containment Diking BMP). Curbing prevents spills, leaks, etc. from being released to the environment by routing runoff to treatment or control areas. The terms curbing and diking are sometimes used interchangeably.

APPROACH:
< Curbing can be used at all industrial facilities. It is particularly useful in areas where liquid materials are transferred and as a stormwater runoff control.
< 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.
< For maximum efficiency, spilled materials should be removed immediately, to allow space for future spills.
< Curbs should have pumping systems, instead of drainage systems, for collecting spilled materials.
< Curb systems should be maintained through curb repair (patching and replacement).
< To minimize the amount of spilled material tracked outside of the area by personnel, grade within the curbing to direct the spilled materials to a down-slope side of the curbing, thus keeping the spilled materials away from personnel and equipment. Grading will also facilitate clean-up.

LIMITATIONS:
< Curbing is not effective for holding large spills.
< May require more maintenance than diking.

MAINTENANCE:
< Inspection should be conducted before and after storm events.
< When certain spills occur, cleanup should start immediately, thus preventing overflows and contamination of stormwater runoff.
< Inspection should also be made to clear clogging debris, prevent dilution by rainwater, and to again prevent overflow of any materials.

APPLICATIONS

☒ Manufacturing
☒ Material Handling
☐ Vehicle Maintenance
☒ Construction
☒ Commercial Activities
☐ Roadways
☒ Waste Containment
☒ Housekeeping Practices

TARGETED POLLUTANTS

☒ Sediment
☐ Nutrients
☒ Heavy Metals
■ Toxic Materials
☐ Oxygen Demanding Substances
☒ Oil & Grease
☒ Floatable Materials
☐ Bacteria & Viruses

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

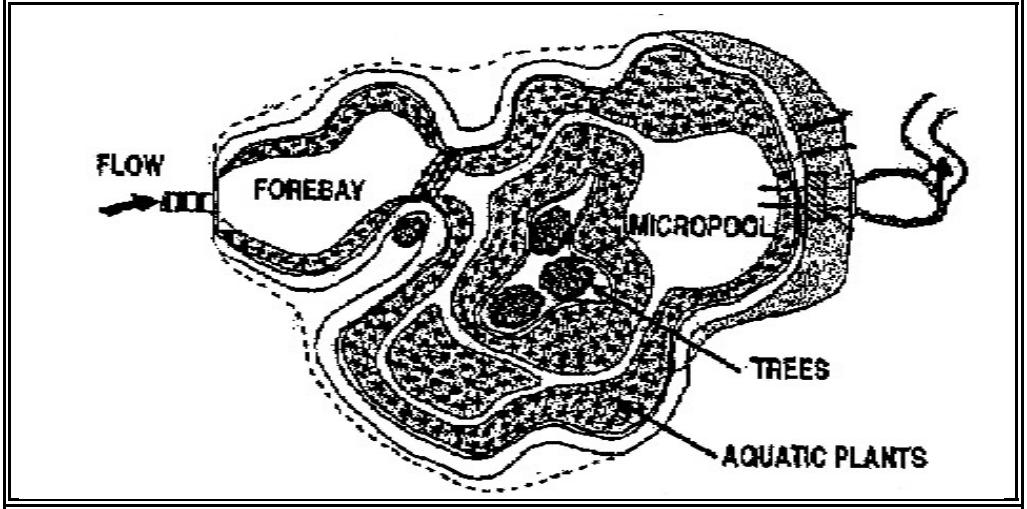
IMPLEMENTATION REQUIREMENTS

☒ Capital Costs
☒ O&M Costs
☒ Maintenance
☐ Training

■ High ☒ Medium ☐ Low

BMP: Constructed Wetlands

CW



DESCRIPTION:

Constructed wetlands have a significant percentage of the facility covered by wetland vegetation.

APPLICATION:

< Need to achieve high level of particulate and some dissolved contaminant removal.
< Ideal for large, regional tributary areas.
< Multiple benefits of passive recreation and wildlife.

INSTALLATION/APPLICATION CRITERIA:

< Suitable soils for wetland vegetation are required.
< Surface area equal to at least 1% and preferably 2% of the tributary watershed.
< Include a forebay for extra storage and to trap incoming sediment.
< Involve qualified wetland ecologist to design and install wetland vegetation.
< Establishing wetland vegetation may be difficult.

LIMITATIONS:

< Concern for mosquitoes.
< Cannot be placed on steep unstable slopes.
< Need base flow to maintain water level.
< Not feasible in densely developed areas.
< Nutrient release may occur during winter.
< Overgrowth can lead to reduced hydraulic capacity.
< Regulatory agencies may limit water quality to constructed wetlands.

MAINTENANCE:

< Remove foreign debris and sediment build-up.
< Areas of bank erosion should be repaired.
< Remove nuisance species.
< Control mosquitoes.

CONSIDERATIONS

☒ Soils
☒ Area Required
☒ Slope
☒ Water Availability
☒ Aesthetics
☐ Hydraulic Head
☒ Environmental Side Effects

TARGETED POLLUTANTS

■ Sediment
■ Nutrients
■ Heavy Metals
■ Toxic Materials
■ Oxygen Demanding Substances
■ Oil & Grease
■ Floatable Materials
☒ Bacteria & Viruses

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

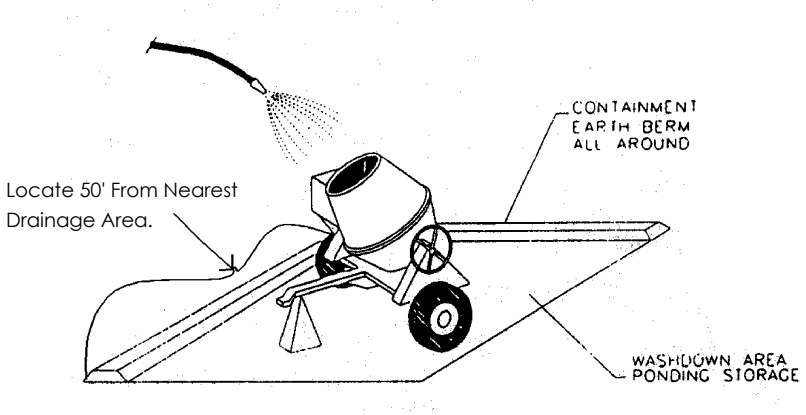
IMPLEMENTATION REQUIREMENTS

■ Capital Costs
☒ O&M Costs
☒ Maintenance
☐ Training

■ High ☒ Medium ☐ Low

BMP: Concrete Waste Management

CWM



DESCRIPTION:
Prevent or reduce the discharge of pollutants to storm water from concrete waste by conducting washout off-site, performing on-site washout in a designated area, and training employees and subcontractors.

APPLICATIONS:
This technique is applicable to all types of sites.

INSTALLATION/APPLICATION CRITERIA:
< Store dry and wet materials under cover, away from drainage areas.
< Avoid mixing excess amounts of fresh concrete or cement on-site.
< Perform washout of concrete trucks off-site or in designated areas only.
< Do not wash out concrete trucks into storm drains, open ditches, streets, or streams.
< Do not allow excess concrete to be dumped on-site, except in designated areas.
< When washing concrete to remove fine particles and expose the aggregate, avoid creating runoff by draining the water within a bermed or level area. (See Earth Berm Barrier information sheet.)
< Train employees and subcontractors in proper concrete waste management.

LIMITATIONS:
< Off-site washout of concrete wastes may not always be possible.

MAINTENANCE:
< Inspect subcontractors to ensure that concrete wastes are being properly managed.
< If using a temporary pit, dispose hardened concrete on a regular basis.

OBJECTIVES

- ☐ Housekeeping Practices
- ☒ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☐ Control Internal Erosion

TARGETED POLLUTANTS

- ☐ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☒ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

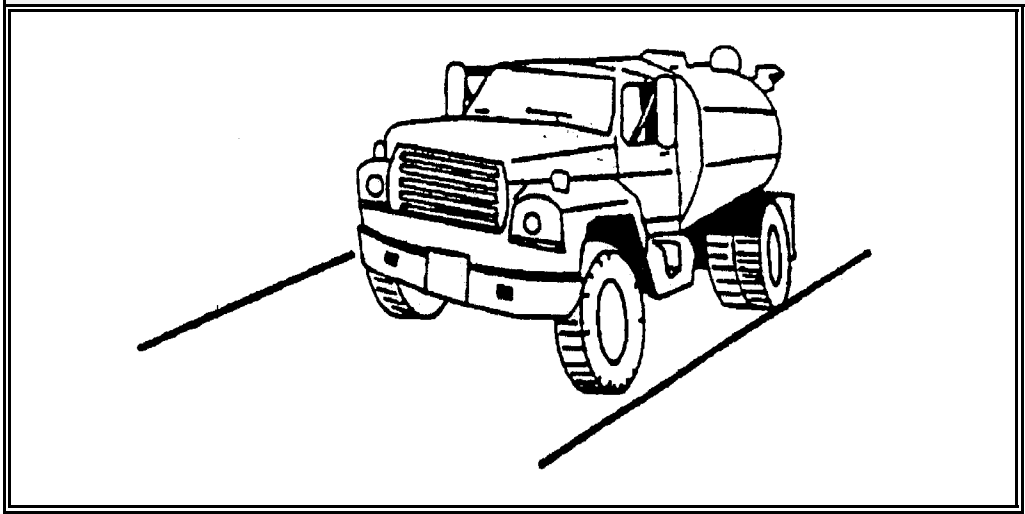
IMPLEMENTATION REQUIREMENTS

- ☐ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☒ Training

■ High ☒ Medium ☐ Low

BMP: Dust Controls

DC



DESCRIPTION:
Dust control measures are used to stabilize soil from wind erosion, and reduce dust by construction activities.

APPLICATION:
Dust control is useful in any process area, loading and unloading area, material handling areas, and transfer areas where dust is generated. Street sweeping is limited to areas that are paved.

INSTALLATION/APPLICATION CRITERIA:
- < Mechanical dust collection systems are designed according to the size of dust particles and the amount of air to be processed. Manufacturers' recommendations should be followed for installation (as well as the design of the equipment).
- < Two kinds of street weepers are common: brush and vacuum. Vacuum sweepers are more efficient and work best when the area is dry.
- < Mechanical equipment should be operated according to the manufacturers' recommendations and should be inspected regularly.

LIMITATIONS:
- < Is generally more expensive than manual systems.
- < May be impossible to maintain by plant personnel (the more elaborate equipment).
- < Is labor and equipment intensive and may not be effective for all pollutants (street sweepers).

MAINTENANCE:
If water sprayers are used, dust-contaminated waters should be collected and taken for treatment. Areas will probably need to be resprayed to keep dust from spreading.

OBJECTIVES

- ☒ Housekeeping Practices
- ☐ Contain Waste
- ☒ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☐ Control Internal Erosion

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

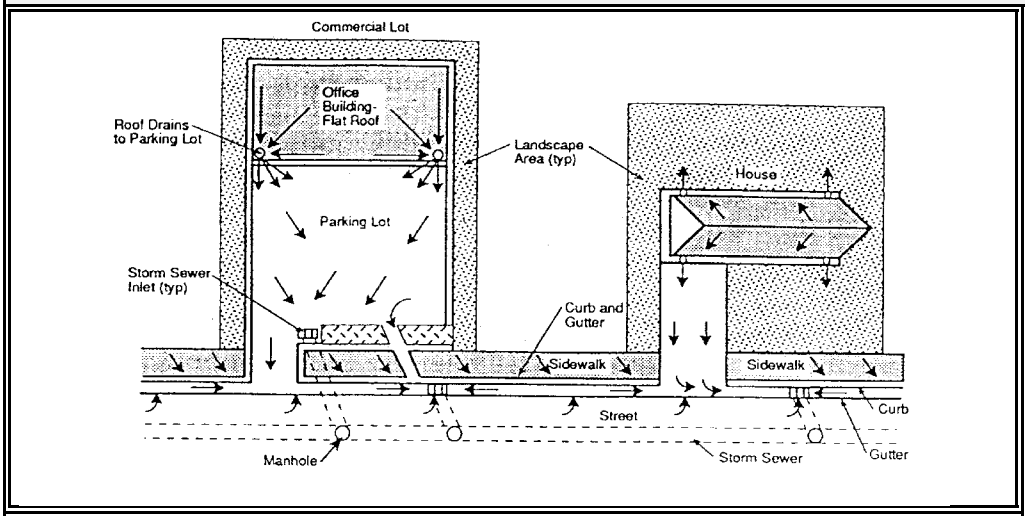
IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☒ Training

■ High ☒ Medium ☐ Low

BMP: Minimizing DCIAs

DCIA



DESCRIPTION:

Minimizing directly connected impervious areas (DCIAs) is a structural BMP strategy that requires a basic change in drainage design philosophy. The basic principle is to direct stormwater runoff to landscaped areas, grass buffer strips, and vegetated swales to slow down the rate of runoff, reduce runoff volumes, attenuate peak flows, and encourage filtering and infiltration of stormwater.

APPLICATIONS:

It can be made an integral part of drainage planning for any development.

INSTALLATION/APPLICATION CRITERIA:

< Use on sites with general terrain slopes flatter than 3-4%.
< Design the site drainage flowpath to maximize flow over vegetated areas before leaving a site.
< Minimize ground slopes to limit erosion and slow down water flow.
< Select vegetation that will not only survive, but also enhance water quality.

LIMITATIONS:

< Potential increase in site open space requirements over the traditional development systems.
< Introduction of a nonconventional development design strategy.
< Infiltration of water near building foundations and parking lots is a concern.
< Will likely result in increased maintenance along the swales.

MAINTENANCE:

< Maintain grass and other vegetation.
< Pick up debris.
< Conduct ongoing inspections for potential erosion problems and changes in drainage patterns.
< Remove sediment buildup and replace damaged grass cover.

CONSIDERATIONS

- ☐ Soils
- ☐ Area Required
- ☒ Slope
- ☐ Water Availability
- ☒ Aesthetics
- ☐ Hydraulic Head
- ☐ Environmental Side Effects

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☒ Heavy Metals
- ☐ Toxic Materials
- ☐ Oxygen Demanding Substances
- ☒ Oil & Grease
- ☒ Floatable Materials
- ☐ Bacteria & Viruses

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

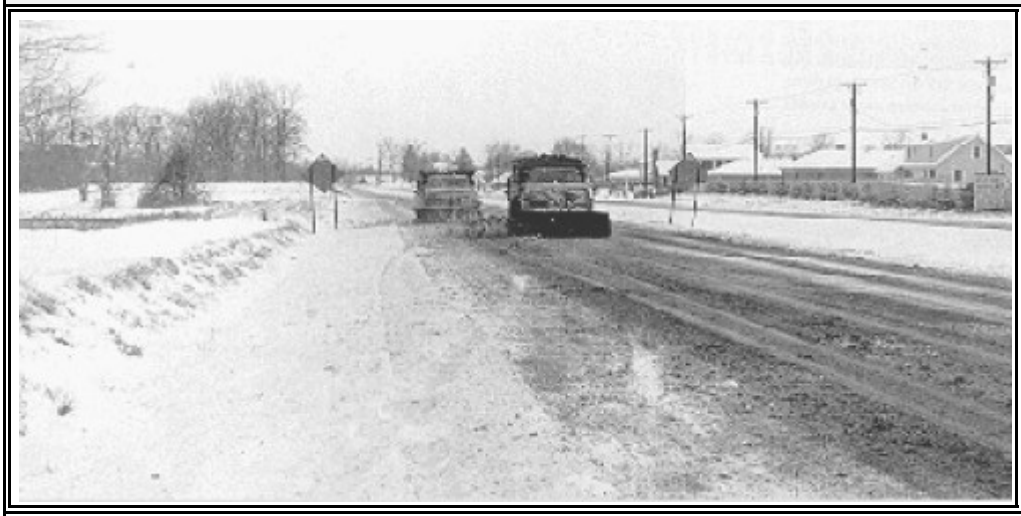
IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: De-Icing Chemical Use and Storage

DCUS



DESCRIPTION:

A sizeable amount of de-icing chemicals are used each winter on roads, parking lots, and sidewalks in Utah. Sodium chloride (salt) is the main chemical used. Proper use and storage of salt will reduce the chance of high chloride concentration in runoff that may damage the environment.

APPROACH:

< Proper storage practices can control sodium chloride pollution in runoff from stockpiles.
< For de-icing use, preventing over-application of salt will reduce quantities of chloride reaching surface or ground water.
< All salt piles should be covered with polyethylene if not stored in a shed. All sand/salt piles should be moved too empty salt sheds or covered during the spring and summer.
< Any runoff from stockpiles should be contained.
< To prevent over-application of salt one must properly calibrate the equipment and monitor the need for de-icing material.
< Another method to prevent the over-application of salt is to limit salt application on low traffic areas and straight level areas, critical areas will, however, need higher levels of service.

LIMITATIONS:

< All deicers hold the potential for damaging grass and plant biota should their concentration within the soil becomes unusually high. In amounts recommended for sidewalk and driveway deicing, there is minimal chance of damage to trees, grass, and shrubs. This is especially true if the chemical is used sparingly -- only to undercut snow and ice -- and the slush is not plowed or shoveled into grassy or planted areas.
< Another concern of many businesses and homeowners is the visible deicer residue that may be tracked into a building. This residue occurs because these deicers are solids in their natural state. However, since the residue is water soluble, it cleans up readily using plain water or ordinary household cleaner.
< Salt should not be used to melt every bit of snow and ice. Use only enough to break the ice/pavement bond, then remove the remaining slush by plowing or shoveling.

APPLICATIONS

- ☐ Manufacturing
- ☒ Material Handling
- ☐ Vehicle Maintenance
- ☐ Construction
- ☐ Commercial Activities
- ☒ Roadways
- ☒ Waste Containment
- ☒ Housekeeping Practices

TARGETED POLLUTANTS

- ☐ Sediment
- ☒ Nutrients
- ☒ Heavy Metals
- ■ Toxic Materials
- ☐ Oxygen Demanding Substances
- ☐ Oil & Grease
- ☒ Floatable Materials
- ☐ Bacteria & Viruses

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

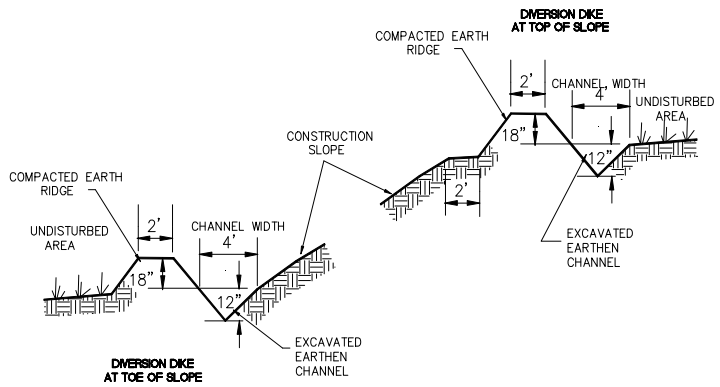
IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ■ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Diversion Dike

DD



DESCRIPTION:
A temporary sediment barrier and storm runoff conveyance consisting of an excavation channel and compacted earth ridge.

APPLICATION:
< Construct along top of construction slope to intercept upgradient runoff and convey around construction site.
< Construct along toe of construction to divert sediment laden runoff.
< Construct along midpoint of construction slope to intercept runoff and channel to controlled discharge point.
< Construct around base of soil stockpiles to capture sediment.
< Construct around perimeter of disturbed areas to capture sediment.

INSTALLATION/APPLICATION CRITERIA:
< Clear and grub area for dike construction.
< Excavate channel and place soil on downgradient side.
< Shape and machine compact excavated soil to form ridge.
< Place erosion protection (riprap, mulch) at outlet.
< Stabilize channel and ridge as required with mulch, gravel, or vegetative cover.

LIMITATIONS:
< Recommended maximum drainage area of 5 acres
< Recommended maximum sideslopes of 2h:1v (50%)
< Recommended maximum slope on channel of 1%

MAINTENANCE:
< Inspect immediately after any rainfall and at least daily during prolonged rainfall.
< Look for runoff breaching dike or eroding channel or sideslopes.
< Check discharge point for erosion or bypassing of flows.
< Repair and stabilize as necessary.
< Inspect daily during vehicular activity on slope, check for and repair any traffic damage.

OBJECTIVES

- ☐ Housekeeping Practices
- ☒ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☒ Control Internal Erosion

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

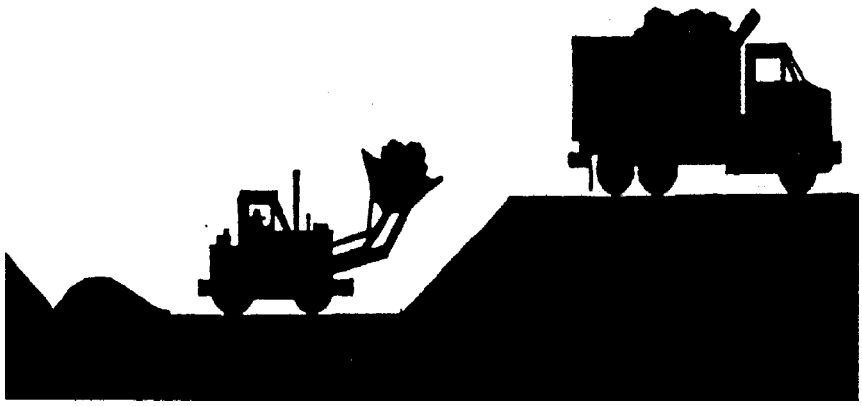
IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Detention/Infiltration Device Maintenance

DIDM



DESCRIPTION:

Proper maintenance and siltation removal is required on both a routine and corrective basis to promote effective stormwater pollutant removal efficiencies for wet/dry detention pond and infiltrative devices.

APPROACH:

< Remove silt after sufficient accumulation.
< Periodically clean accumulated sediment and silt out of pre-treatment inlets.
< Infiltration device silt removal should occur when the infiltration rate drops below ½ inch per hour.
< Removal of accumulated paper, trash, and debris should occur every six months or as needed to prevent clogging of control devices.
< Vegetation growth should not be allowed to exceed 18 inches in height.
< Mow the slopes periodically and check for clogging, erosion and tree growth on the embankment.
< Corrective maintenance may require more frequent attention (as required).
< Create a public education campaign to explain the function of wet/dry detention pond/infiltration devices and their operation requirements for proper effectiveness.
< Encourage the public to report wet/dry detention pond/infilitration devices needing maintenance.

LIMITATIONS:

< Wet detention pond dredging can produce slurried waste that often exceeds the requirements of many landfills.
< Frequent sediment removal is labor and cost intensive.

PROGRAM ELEMENTS

- ☐ New Development
- ☐ Residential
- ☐ Commercial Activities
- ☐ Industrial Activities
- ☒ Municipal Facilities
- ☐ Illegal Discharges

TARGETED POLLUTANTS

- ■ Sediment
- ☒ Nutrients
- ■ Heavy Metals
- ☐ Toxic Materials
- ☒ Oxygen Demanding Substances
- ☐ Oil & Grease
- ☐ Floatable Materials
- ■ Bacteria & Viruses

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

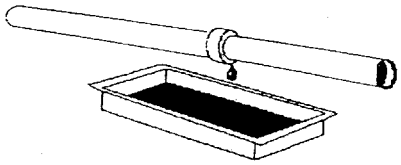
IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ■ O&M Costs
- ☐ Regulatory
- ☐ Training
- ☒ Staffing
- ☐ Administrative

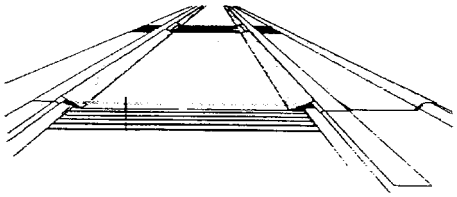
■ High ☒ Medium ☐ Low

BMP: Drip Pans

DP



Use Drip Pans for Leaking Equipment



Use Drip Pans in Loading and Unloading Areas

DESCRIPTION:

Drip pans are small depressions or pans used to contain very small volumes of leaks, drips, and spills that occur at a facility. Drip pans can be depressions in concrete, asphalt, or other impenetrable material. They can be made of metal, plastic, or any material that does not react with the dripped chemicals. Drip pans can be temporary or permanent.

Drip pans are used to catch drips from valves, pipes, etc. so that the materials or chemicals can be cleaned up easily or recycled before they contaminate stormwater. Although leaks and drips should be repaired and eliminated as part of a preventative maintenance program, drip pans can provide a temporary solution where repair or replacement must be delayed. In addition, drip pans can be an added safeguard when they are positioned beneath areas where leaks and drips may occur.

APPROACH:

< When using drip pans, consider the location of the drip pan, weather conditions, the type of material used for the drip pan, and how it will be cleaned.
< The location of the drip pan is important. Because drip pans must be inspected and cleaned frequently, they must be easy to reach and remove. However, take special care to avoid placing drip pans where they can be easily overturned or be a safety hazard.
< Secure pans by installing or anchoring them. Drip pans may be placed on platforms, behind wind blocks or tied down.
< Employees must pay attention to the pans and empty them when they are nearly full.
< Frequent inspection of the drip pans is necessary due to the possibility of leaks in the pan itself or in piping or valves that may occur randomly or irregular slow drips that may increase in volume.

LIMITATIONS:

< Contain small volumes only.
< Must be inspected and cleaned frequently.
< Must be secured during poor weather conditions.
< Contents may be disposed of improperly unless facility personnel are trained in proper disposal methods.

APPLICATIONS

☒ Manufacturing
☐ Material Handling
☐ Vehicle Maintenance
☐ Construction
☐ Commercial Activities
☐ Roadways
☒ Waste Containment
☐ Housekeeping Practices

TARGETED POLLUTANTS

☐ Sediment
☐ Nutrients
☒ Heavy Metals
■ Toxic Materials
☒ Oxygen Demanding Substances
■ Oil & Grease
☐ Floatable Materials
☐ Bacteria & Viruses

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

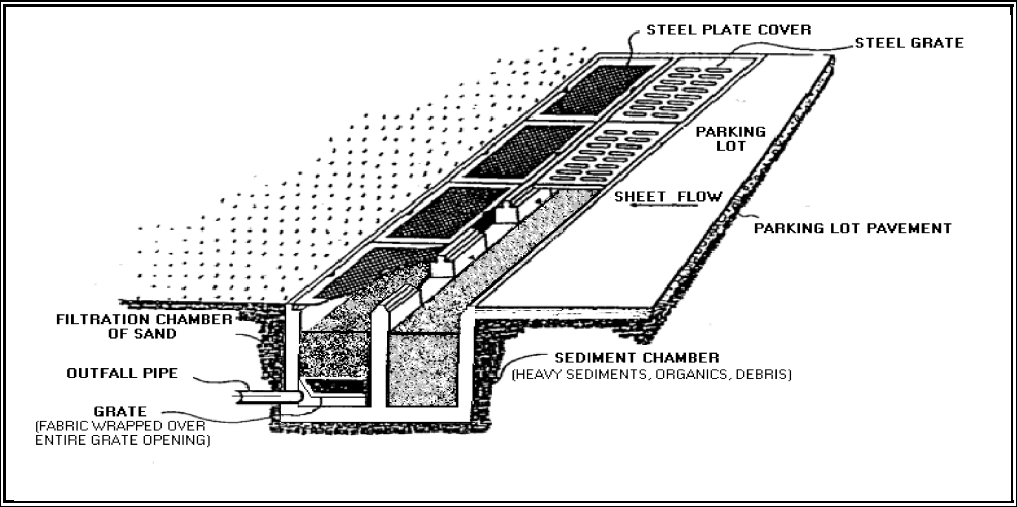
IMPLEMENTATION REQUIREMENTS

☐ Capital Costs
☐ O&M Costs
■ Maintenance
☒ Training

■ High ☒ Medium ☐ Low

BMP:Double Trench Sand Filter

DTSF



DESCRIPTION:

The double trench sand filter (aka Delaware sand filter) is a BMP consisting of parallel sedimentation and sand filter trenches connected by a series of level weir notches to assure sheet flow onto the filter. Filtered runoff is conveyed to a storm sewer by gravity flow or by pumping.

APPLICATIONS:

< Commercial and institutional parking lots, small shopping centers, and infill developments.
< Smaller redevelopment sites where the use of conventional BMPs is not practical.

INSTALLATION/APPLICATION CRITERIA:

< Requires very little hydraulic head.
< Need to consider structural design with traffic load.

LIMITATIONS:

< Will not prevent small floatable debris from entering through the grate openings.
< Disposing of petroleum-contaminated sand may require expertise in hazardous waste disposal.
< Sand filter may clog sooner than other BMPs requiring more frequent maintenance.

MAINTENANCE:

< System should be inspected yearly and after storm events to assess the filtration capacity of the filter.
< Filter sand should be replaced every few years to maintain pollutant removal efficiency.

CONSIDERATIONS

☒ Soils
☐ Area Required
☒ Slope
☐ Water Availability
☐ Aesthetics
☐ Hydraulic Head
☐ Environmental Side Effects

TARGETED POLLUTANTS

■ Sediment
☒ Nutrients
☒ Heavy Metals
☐ Toxic Materials
☒ Oxygen Demanding Substances
☒ Oil & Grease
☐ Floatable Materials
☐ Bacteria & Viruses

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

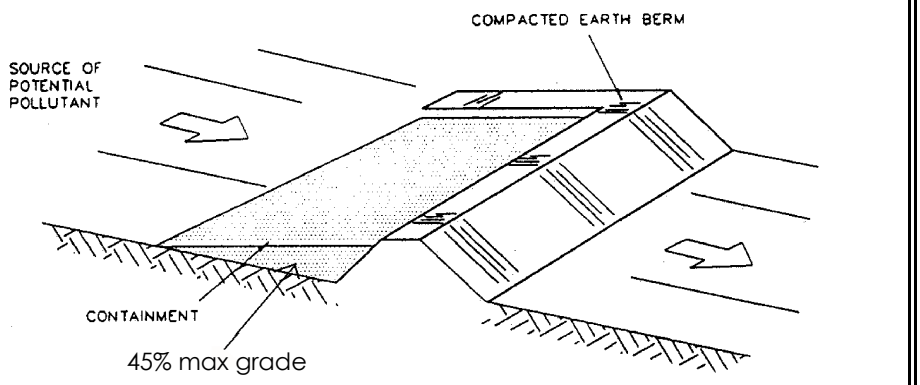
IMPLEMENTATION REQUIREMENTS

■ Capital Costs
☒ O&M Costs
☒ Maintenance
☐ Training

■ High ☒ Medium ☐ Low

BMP: Earth Berm Barrier

EB



DESCRIPTION:
A temporary containment control constructed of compacted soil.

APPLICATION:
< Construct around waste and materials storage area.
< Construct around staging and maintenance areas.
< Construct around vehicle parking and servicing areas.

INSTALLATION/APPLICATION CRITERIA:
< Construct an earthen berm down hill of the area to be controlled. The berm should surround fueling facilities and maintenance areas on three sides to provide containment.
< Berm needs to be a minimum of 1 foot tall by 1 foot wide and be compacted by earth moving equipment.

LIMITATIONS:
< Not effective on steep slopes.
< Limits access to controlled area.
< Personnel need to quickly respond to spills with remedial actions.

MAINTENANCE:
< Observe daily for any non-stormwater discharge.
< Look for runoff bypassing ends of berms or undercutting berms.
< Repair or replace damaged areas of the berm and remove accumulated sediment.
< Recompact soil around berm as necessary to prevent piping.

OBJECTIVES

- ☐ Housekeeping Practices
- ☒ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☐ Control Internal Erosion

TARGETED POLLUTANTS

- ☐ Sediment
- ☐ Nutrients
- ■ Toxic Materials
- ☐ Oil & Grease
- ■ Floatable Materials
- ☐ Other Construction Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

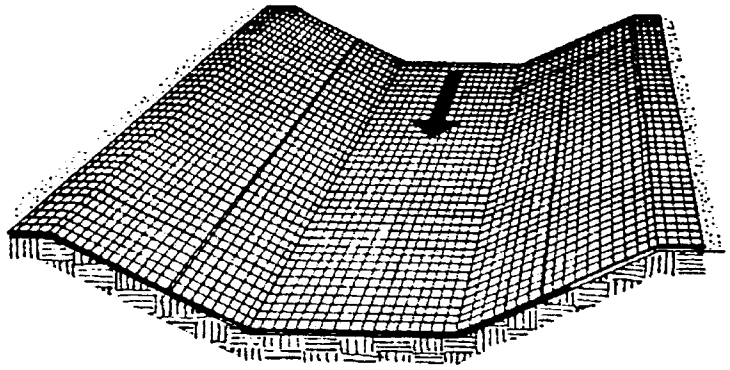
IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Erosion Control Blankets

ECB



DESCRIPTION:
Erosion control blankets are used in place of mulch on areas of high velocity runoff and/or steep grade, to aid in controlling erosion on critical areas by protecting young vegetation.

APPLICATIONS:
< Where vegetation is likely to grow too slowly to provide adequate cover.
< In areas subject to high winds where mulch would not be effective.

INSTALLATION/APPLICATION CRITERIA:
< Install erosion control blankets parallel to the direction of the slope.
< In ditches, apply in direction of the flow.
< Place erosion control blankets loosely on soil - do not stretch.
< Ends of blankets should be buried no less than six inches deep.
< Staple the edges of the blanket at least every three feet.

LIMITATIONS:
< Not recommended in areas which are still under construction.

MAINTENANCE:
< Check for erosion and undermining periodically, particularly after rainstorms.
< Repair dislocations or failures immediately.
< If washouts occur, reinstall after repairing slope damage.
< Monitor until permanently stabilized.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☐ Control Internal Erosion

TARGETED POLLUTANTS

- ■ Sediment
- ☒ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

- ☐ Other Waste

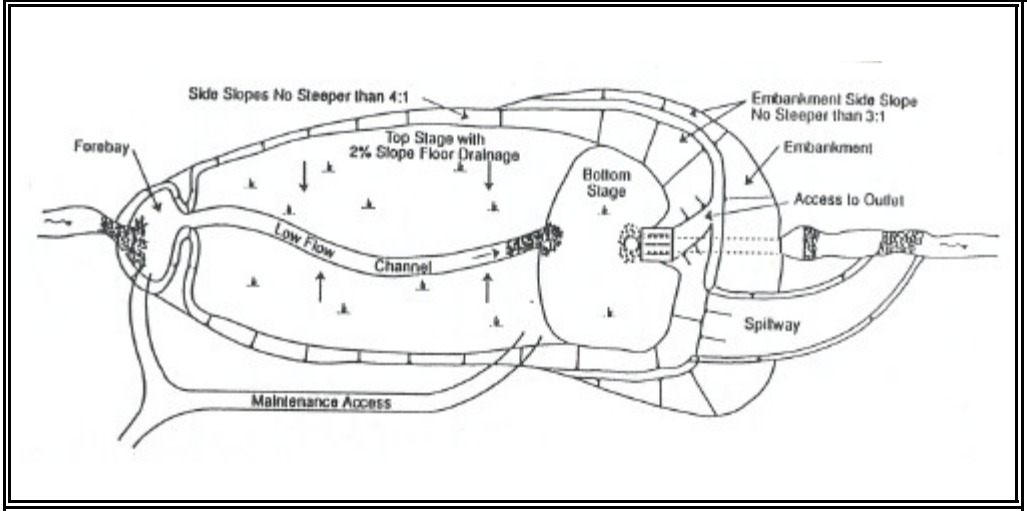
IMPLEMENTATION REQUIREMENTS

- ■ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Extended Detention Basins

EDB



DESCRIPTIONS:
Extended detention basins are dry between storms. During a storm the basin fills. A bottom outlet releases the stormwater slowly to provide time for sediments to settle.

APPLICATION:
< Objective is to remove only particulate pollutants.
< Use where lack of water prevents the use of wet ponds, wetlands or biofilters.
< Use where wet ponds or wetlands would cause unacceptable mosquito conditions.

INSTALLATION/APPLICATION CRITERIA:
< Basin volume is sized to capture a particular fraction of the runoff.
< Drawdown time of 24 to 40 hours is required.
< A shallow basin with large surface area performs better than a deep basin with the same volume.
< Place energy dissipators at the entrance to minimize bottom erosion and resuspension.
< Vegetate side slopes and bottom to the maximum extent practical.
< If side erosion is particularly severe, consider paving or soil stabilization.
< If floatables are a problem, protect outlet with a trash rack or other device.
< Provide bypass or pass through capabilities for 100-year storm.

LIMITATIONS:
< May be less reliable than other treatment control BMPs. Inability to vegetate banks and bottom may result in erosion and resuspension.
< Limitation of the orifice diameter may preclude use in small watersheds.
< Requires differential elevation between inlet and outlet.

MAINTENANCE:
< Check outlet regularly for clogging.
< Check banks and bottom of basin for erosion and correct as necessary.
< Remove sediment when accumulation reaches 6-inches, or if resuspension is observed.

CONSIDERATIONS

- ☐ Soils
- ☒ Area Required
- ☐ Slope
- ☐ Water Availability
- ☐ Aesthetics
- ☒ Hydraulic Head
- ☐ Environmental Side Effects

TARGETED POLLUTANTS

- ■ Sediment
- ☒ Nutrients
- ☒ Heavy Metals
- ☒ Toxic Materials
- ☒ Oxygen Demanding Substances
- ☒ Oil & Grease
- ☒ Floatable Materials
- ☐ Bacteria & Viruses

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ■ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Employee Training

ET

DESCRIPTION:

Employee training, like equipment maintenance, is a method by which to implement BMPs. Employee training should be used in conjunction with all other BMPs as part of the facility's SWPPP.

The specific employee training aspects of each of the source controls are highlighted in the individual information sheets. The focus of this information sheet is more general, and includes the overall objectives and approach for assuring employee training in stormwater pollution prevention. Accordingly, the organization of this information sheet differs somewhat from the other information sheets in this chapter.

OBJECTIVES:

Employee training should be based on four objectives:

< Promote a clear identification and understanding of the problem, including activities with the potential to pollute stormwater;
< Identify solutions (BMPs);
< Promote employee ownership of the problems and the solutions; and
< Integrate employee feedback into training and BMP implementation.

APPROACH:

< Integrate training regarding stormwater quality management with existing training programs that may be required for other regulations.
< Employee training is a vital component of many of the individual source control BMPs included in this manual.

PROGRAM ELEMENTS

☒ New Development
☒ Residential
☒ Commercial Activities
☒ Industrial Activities
☒ Municipal Facilities
☒ Illegal Discharges

TARGETED POLLUTANTS

■ Sediment
■ Nutrients
■ Heavy Metals
■ Toxic Materials
■ Oxygen Demanding Substances
■ Oil & Grease
■ Floatable Materials
■ Bacteria & Viruses

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

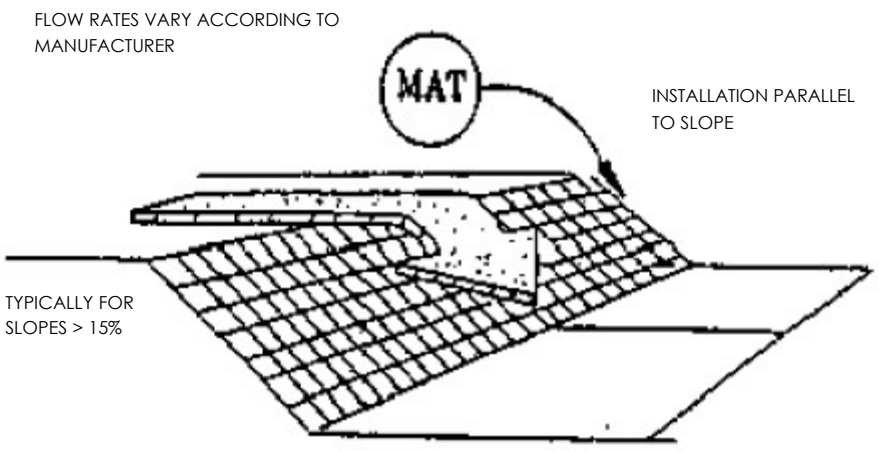
IMPLEMENTATION REQUIREMENTS

☒ Capital Costs
☒ O&M Costs
☐ Regulatory
■ Training
☒ Staffing
☒ Administrative

■ High ☒ Medium ☐ Low

BMP:Geotextiles and Mats

GM



DESCRIPTION:
Mattings made of natural or synthetic material which are used to temporarily or permanently stabilize soil.

APPLICATION:
< Typically suited for post-construction site stabilization, but may be used for temporary stabilization of highly erosive soils.
< Channels and streams.
< Steep slopes.

INSTALLATION/APPLICATION CRITERIA:
< Mattings may be applied to disturbed soils and where existing vegetation has been removed.
< The following organic matting materials provide temporary protection until permanent vegetation is established, or when seasonal circumstances dictate the need for temporary stabilization until weather or construction delays are resolved: Jute mattings and straw mattings.
< The following synthetic mattings may be used for either temporary or post-construction stabilization, both with and without vegetation: excelsior matting, glass fiber matting, mulch matting.
< Staples are needed to anchor the matting.

LIMITATIONS:
< Mattings are more costly than other BMP practices, limiting their use to areas where other BMPs are ineffective (e.g., channels, steep slopes).
< May delay seed germination, due to reduction in soil temperature.
< Installation requires experienced contractor to ensure soil stabilization and erosion protection.

MAINTENANCE:
< Inspect monthly and after significant rainfall.
< Re-anchor loosened matting and replace missing matting and staples as required.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☒ Control Internal Erosion

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ■ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Hydromulching

HM

DESCRIPTION:
A combination of wood fiber mulch, processed grass, or hay or straw mulch and a tacking agent. It is made into a slurry, then applied to bare slopes or other bare areas to provide temporary stabilization.

APPLICATIONS:
< Small roadside slopes.
< Large, relatively flat areas.

INSTALLATION/APPLICATION CRITERIA:
< Legume seeds should be pellet inoculated with the appropriate bacteria.
< The seed should not remain in the hydromulcher tank for more than 30 minutes.
< Wood fiber may be dyed to aid in uniform application.
< Slurry should be uniformly applied until an adequate coverage is achieved.
< The applicator should not be directed at one location for a long period of time; erosion will occur.

LIMITATIONS:
< Will lose effectiveness after 1 year.
< Can use only on physically stable slopes (at natural angle of repose, or less).

MAINTENANCE:
< Periodically inspect for damage caused by wind, water, or human disturbance.
< Promply repair damaged areas.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☐ Control Internal Erosion

TARGETED POLLUTANTS

- ☒ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ■ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☐ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Housekeeping Practices

HP

DESCRIPTION:
Promote efficient and safe housekeeping practices (storage, use, and cleanup) when handling potentially harmful materials such as fertilizers, pesticides, cleaning solutions, paint products, automotive products, and swimming pool chemicals.

APPROACH:
- < Pattern a new program after the many established programs from municipalities around the country. Integrate this best management practice as much as possible with existing programs at your municipality.
- < This BMP has two key audiences: municipal employees and the general public.
- < For the general public, municipalities should establish a public education program that provides information on such items as storm water pollution and beneficial effects of proper disposal on water quality; reading product labels; safer alternative products; safe storage, handling, and disposal of hazardous products; list of local agencies; and emergency phone numbers. The programs listed below have provided this information through brochures or booklets that are available at a variety of locations including municipal offices, household hazardous waste collection events or facilities, and public information fairs.

Municipal facilities should develop controls on the application of pesticides, herbicides, and fertilizers in public right-of-ways and at municipal facilities. Controls may include:
- < List of approved pesticides and selected uses.
- < Product and application information for users.
- < Equipment use and maintenance procedures.
- < Record keeping and public notice procedures.

LIMITATIONS:
There are no major limitations to this best management practice.

PROGRAM ELEMENTS

- ☐ New Development
- ☒ Residential
- ☐ Commercial Activities
- ☐ Industrial Activities
- ☒ Municipal Facilities
- ☐ Illegal Discharges

TARGETED POLLUTANTS

- ■ Sediment
- ■ Nutrients
- ☐ Heavy Metals
- ■ Toxic Materials
- ■ Oxygen Demanding Substances
- ■ Oil & Grease
- ☐ Floatable Materials
- ☐ Bacteria & Viruses

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☐ Capital Costs
- ☒ O&M Costs
- ☐ Regulatory
- ■ Training
- ☒ Staffing
- ☐ Administrative

■ High ☒ Medium ☐ Low

BMP: Hazardous Waste Management

HWM

DESCRIPTION:
Prevent or reduce the discharge of pollutants to stormwater from hazardous waste through proper material use, waste disposal, and training of employees and subcontractors.

APPLICATION:
Many of the chemicals used on-site can be hazardous materials which become hazardous waste upon disposal. These wastes may include:

< Paints and solvents; petroleum products such as oils; fuels and greases; herbicides and pesticides; acids for cleaning masonry; and concrete curing compounds.

In addition, sites with existing structures may contain wastes which must be disposed of in accordance with federal, state and local regulations, including:

< Sandblasting grit mixed with lead, cadmium or chromium based paints, asbestos, and PCBs.

INSTALLATION/APPLICATION CRITERIA:
The following steps will help reduce stormwater pollution from hazardous wastes:

< Use all of the product before disposing of the container.
< Do not remove the original product label, it contains important safety and disposal information.
< Do not over-apply herbicides and pesticides. Prepare only the amount needed. Follow the recommended usage instructions. Over-application is expensive and environmentally harmful. Apply surface dressings in several smaller applications, as opposed to one large application, to allow time for infiltration and to avoid excess material being carried off-site by runoff. Do not apply these chemicals just before it rains. People applying pesticides must be certified in accordance with federal and state regulations.

LIMITATIONS:
Hazardous waste that cannot be reused or recycled must be disposed of by a licensed hazardous waste collector.

MAINTENANCE:
< Inspect hazardous waste receptacles and areas regularly.
< Arrange for regular hazardous waste collection.

PROGRAM ELEMENTS

☒ New Development
☒ Residential
☒ Commercial Activities
☒ Industrial Activities
☒ Municipal Facilities
☒ Illegal Discharges

TARGETED POLLUTANTS

☐ Sediment
☐ Nutrients
☐ Heavy Metals
■ Toxic Materials
☐ Oxygen Demanding Substances
☒ Oil & Grease
☐ Floatable Materials
☐ Bacteria & Viruses

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

☐ Capital Costs
☒ O&M Costs
☒ Regulatory
☒ Training
☒ Staffing
☒ Administrative

■ High ☒ Medium ☐ Low

BMP: Illegal Dumping Controls

IDC

DESCRIPTION:

Implement measures to detect, correct, and enforce against illegal dumping of pollutants on streets, into the storm drain system, and into creeks. Substances illegally dumped on streets, into the storm drain system, and into creeks includes paints, used oil and other automotive fluids, construction debris, chemicals, fresh concrete, leaves, grass clippings, and pet wastes. All of these wastes can cause storm water and receiving water quality problems as well as clog the storm drain system.

APPROACH:

One of the keys to success is increasing the general public's awareness of the problem and to at least identify the incident, if not correct it. There are a number of ways of accomplishing this:

< Train municipal staff from all departments to recognize and report incidents.
< Deputize municipal staff who may come into contact with illegal dumping with the authority to write illegal dumping tickets for offenders caught in the act.
< Educate the public.
< Provide the public with a mechanism for reporting such as a hot line.

Establish system for tracking incidents which will identify:

< Illegal dumping "hot spots",
< Types and quantities (in some cases) of wastes,
< Patterns in time of occurrence (time of day/night, month, or year),
< Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accident/spills), and
< Responsible parties.

A tracking system also helps manage the program by indicating trends, and identifying who, what, when, and where efforts should be concentrated.

LIMITATIONS

The elimination of illegal dumping is dependent on the availability, convenience, and cost of alternative means of disposal.

PROGRAM ELEMENTS

- ☐ New Development
- ☐ Residential
- ☐ Commercial Activities
- ☐ Industrial Activities
- ☐ Municipal Facilities
- ☒ Illegal Discharges

TARGETED POLLUTANTS

- ☒ Sediment
- ☐ Nutrients
- ☒ Heavy Metals
- ■ Toxic Materials
- ■ Oxygen Demanding Substances
- ■ Oil & Grease
- ■ Floatable Materials
- ☒ Bacteria & Viruses

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

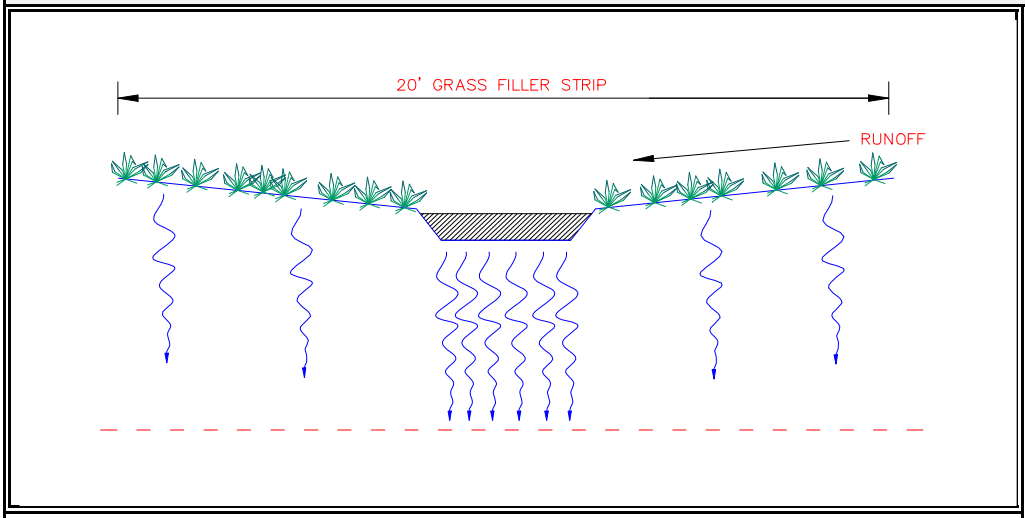
IMPLEMENTATION REQUIREMENTS

- ☐ Capital Costs
- ☒ O&M Costs
- ☐ Regulatory
- ■ Training
- ☒ Staffing
- ☐ Administrative

■ High ☒ Medium ☐ Low

BMP: Infiltration

IN



DESCRIPTION:
A family of systems in which the majority of the runoff from small storms is infiltrated into the ground rather than discharged to a surface water body. Infiltration systems include: ponds, vaults, trenches, dry wells, porous pavement, and concrete grids.

APPLICATION:
Suitable site soils and geologic conditions; low potential for long-term erosion in the watershed.

INSTALLATION/APPLICATION CRITERIA:
< Volume sized to capture a particular fraction of annual runoff.
< Pretreatment is necessary in fine soils.
< Emergency overflow or bypass for larger storms is needed.
< Observation wells are required in trenches.
< Infiltration surface must be protected during construction.
< Pond sides need vegetation to prevent erosion.
< During construction frequent inspection for clogging is necessary.
< Line sides of trench with permeable filter fabric
< Trench should be filled with clean washed stone or gravel. (1.5-3.0 in.)
< A six inch sand filter layer; cloth lines the bottom of trench.

LIMITATIONS:
< Loss of infiltrative capacity and high maintenance cost in fine soils.
< Low removal of dissolved pollutants in very coarse soils.
< Not suitable on fill sites or steep slopes.
< The risk of ground water contamination in very coarse soils, may require ground water monitoring.

MAINTENANCE:
< Remove sediment at a frequency appropriate to avoid excessive concentrations of pollutants and loss of infiltrative capacity.
< Frequent cleaning of porous pavements is required.
< Maintenance is difficult and costly for underground trenches.

CONSIDERATIONS

☒ Soils
☒ Area Required
☒ Slope
☐ Water Availability
☐ Aesthetics
☐ Hydraulic Head
☒ Environmental Side Effects

TARGETED POLLUTANTS

■ Sediment
☒ Nutrients
■ Heavy Metals
■ Toxic Materials
■ Oxygen Demanding Substances
■ Oil & Grease
☒ Floatable Materials
■ Bacteria & Viruses

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

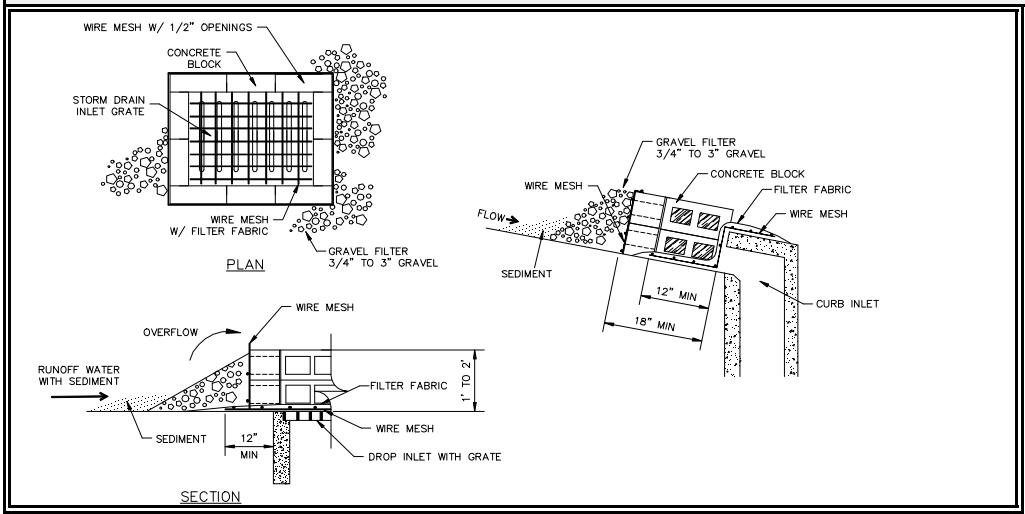
IMPLEMENTATION REQUIREMENTS

■ Capital Costs
☒ O&M Costs
☒ Maintenance
☐ Training

■ High ☒ Medium ☐ Low

BMP:Inlet Protection - Concrete Block

IP



DESCRIPTION:
Concrete block and gravel filter placed over inlet to storm drain system.

APPLICATION:
Construct at inlets in paved or unpaved areas where upgradient area is to be disturbed by construction activities.

INSTALLATION/APPLICATION CRITERIA:
< Place wire mesh (with ½ inch openings) over the inlet grate extending one foot past the grate in all directions.
< Place concrete blocks around the inlet with openings facing outward. Stack blocks to minimum height of 12-inches and maximum height of 24-inches.
< Place wire mesh around outside of blocks.
< Place gravel (3/4" to 3") around blocks.

LIMITATIONS:
< Recommended for maximum drainage area of one acre.
< Excess flows may bypass the inlet requiring down gradient controls.
< Ponding will occur at inlet.

MAINTENANCE:
< Inspect inlet protection after every large storm event and at a minimum of once monthly.
< Remove sediment accumulated when it reaches 4-inches in depth.
< Replace filter fabric and clean or replace gravel if clogging is apparent.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☒ Control Internal Erosion

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ■ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

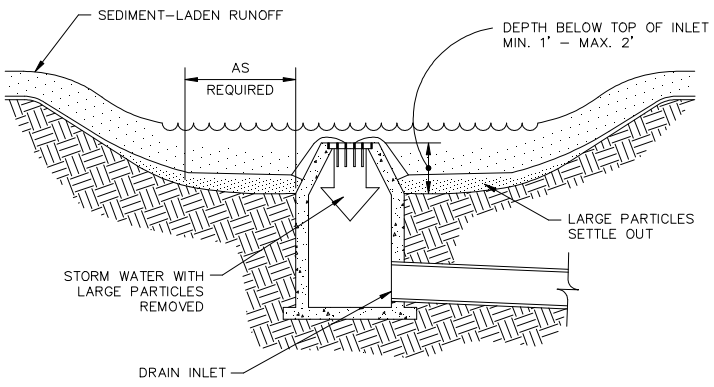
IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Inlet Protection - Excavated

IP



DESCRIPTION:
An area excavated around a storm drain inlet to impound water below the inlet.

APPLICATION:
Construct at storm drainage inlets located downgradient of areas to be disturbed by construction (for inlets in paved areas see other information sheets for inlet protection).

INSTALLATION/APPLICATION CRITERIA:
- < Provide upgradient sediment controls, such as silt fence during construction of inlet.
- < When construction of inlet is complete, excavate adjacent area 1 to 2 feet lower than the grate elevation. Size of excavated area should be based on soil type and contributing acreage.

LIMITATIONS:
- < Recommended maximum contributing drainage area of one acre.
- < Limited to inlets located in open unpaved areas.
- < Requires flat area adjacent to inlet.

MAINTENANCE:
- < Inspect inlet protection following storm event and at a minimum of once monthly.
- < Remove accumulated sediment when it reaches one half of the excavated sump below the grate.
- < Repair side slopes as required.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☒ Control Internal Erosion

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☒ Toxic Materials
- ☐ Oil & Grease
- ■ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

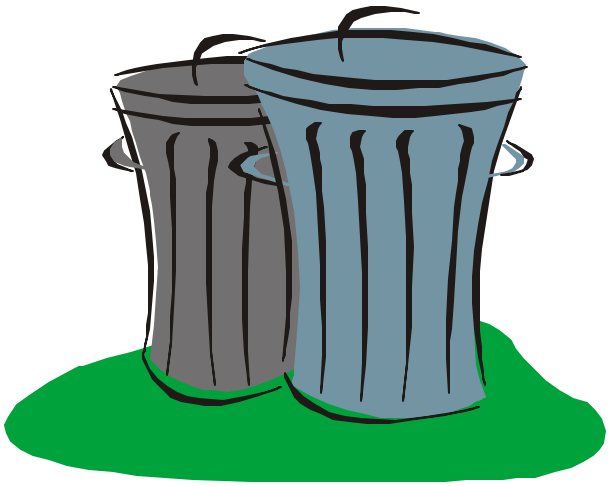
IMPLEMENTATION REQUIREMENTS

- ☐ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Litter Control

LC



DESCRIPTION:
Litter control involves the removal of litter from streets and other surfaces before runoff or wind moves these materials to surface waters. This practice will prevent litter from becoming pollution as well as improving the aesthetics of the area.

APPROACH:
There are two categories of litter control programs: source reduction and removal programs.

Source reduction:
- < Litter containers should be conveniently placed and emptied frequently to prevent overflow.
- < Recycling programs should be promoted.
- < Public education programs should be developed since litter control programs depend upon public support.

Litter removal programs:
- < Litter control program include refuse and leaf collection, street cleaning, and catch basin cleaning.
- < Educational programs that explain the environmental benefit of leaf collection to water quality are helpful.
- < Municipal leaf collection is usually accomplished with street sweepers (see Street Cleaning BMP) or mechanical lawn sweepers.

LIMITATIONS:
No limitations.

PROGRAM ELEMENTS

- ☒ New Development
- ☒ Residential
- ☒ Commercial Activities
- ☒ Industrial Activities
- ☒ Municipal Facilities
- ☒ Illegal Discharges

TARGETED POLLUTANTS

- ☐ Sediment
- ☐ Nutrients
- ☐ Heavy Metals
- ☒ Toxic Materials
- ■ Oxygen Demanding Substances
- ☐ Oil & Grease
- ■ Floatable Materials
- ☐ Bacteria & Viruses

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

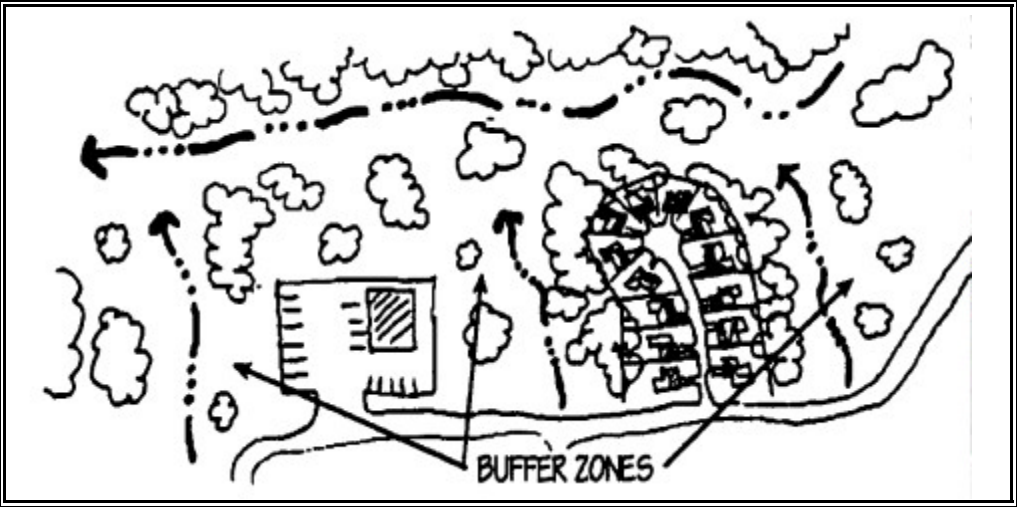
IMPLEMENTATION REQUIREMENTS

- ☐ Capital Costs
- ☒ O&M Costs
- ☐ Regulatory
- ☒ Training
- ☒ Staffing
- ☒ Administrative

■ High ☒ Medium ☐ Low

BMP: Land Use Planning/Management

LUPM



DESCRIPTION:
This BMP represents an important opportunity to reduce pollutants in stormwater runoff by using a comprehensive planning process to integrate water quality concerns into the development and redevelopment process. It is applicable to all types of land use and represents one of the most effective pollution prevention practices.

APPROACH:
The land use planning process need not be complex. A basic schematic model involves:

- < Phase I - Goals: Determine clear-cut water quality goals.
- < Phase 2 - Study: Identify planning area, gather pertinent data, and write a description of the planning area and its associated problems.
- < Phase 3 - Analysis and Synthesis: Determine and prioritize the water quality needs as they relate to land use.
- < Phase 4 - Recommendations: Future courses of action are developed to address the identified problems and needs determined previously.
- < Phase 5 - Adoption: The recommendations are presented to a political body for acceptance and implementation.
- < Phase 6 - Implementation: Recommendations adopted by the political body are implemented by the locality.

LIMITATIONS:
- < Land use planning/management frequently addresses sensitive public issues. Restrictions on certain land uses for the purpose of mitigating stormwater pollution may be politically unacceptable.
- < The use of land use controls and planning for water quality improvements may be limited by the lack of staff to enforce various aspects of local zoning and building codes.
- < The planning process addresses many public needs and legal requirements which often are in conflict with one another. It is difficult but extremely important to integrate and balance these sometimes competing programs.

PROGRAM ELEMENTS

☒ New Development
☐ Residential
☐ Commercial Activities
☐ Industrial Activities
☐ Municipal Facilities
☐ Illegal Discharges

TARGETED POLLUTANTS

■ Sediment
☒ Nutrients
■ Heavy Metals
■ Toxic Materials
☐ Oxygen Demanding Substances
☐ Oil & Grease
☒ Floatable Materials
☐ Bacteria & Viruses

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

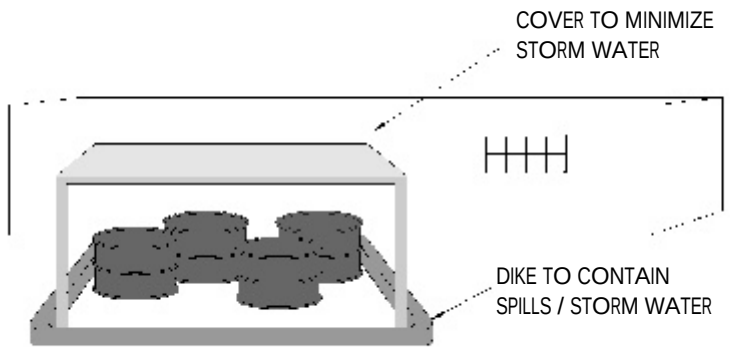
IMPLEMENTATION REQUIREMENTS

☐ Capital Costs
☐ O&M Costs
■ Regulatory
☐ Training
☒ Staffing
☐ Administrative

■ High ☒ Medium ☐ Low

BMP: Outdoor Container Storage of Liquids

OCSL



APPLICATIONS

- ☐ Manufacturing
- ☒ Material Handling
- ☐ Vehicle Maintenance
- ☒ Construction
- ☒ Commercial Activities
- ☐ Roadways
- ☒ Waste Containment
- ☒ Housekeeping Practices

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, runon, runoff, and wind dispersal:

< Store materials indoors.
< Cover the storage area with roof.
< Minimize stormwater runon by enclosing the area or building a berm around it.
< Use a "doghouse" for storage of liquid containers.
< Use covered dumpsters for waste product containers.

Storage of oil and hazardous materials must meet specific federal and state standards including:

< secondary containment,
< integrity and leak detection monitoring, and
< emergency preparedness plans.

Train operator on proper storage.

Safeguards against accidental releases:

< Overflow protection devices to warn operator or automatic shut down transfer pumps, protection guards (bollards) around tanks and piping to prevent vehicle or forklift damage, clear tagging or labeling, and restricting access to valves to reduce human error.

Berm or surround tank or container with secondary containment system:

< Dikes, liners, vaults, or double walled tanks.

Some municipalities require that secondary containment areas be connected to the sanitary sewer, prohibiting any hard connections to the storm drain.

LIMITATIONS:
Storage sheds often must meet building and fire code requirements.

MAINTENANCE:
Conduct routine weekly inspections.

TARGETED POLLUTANTS

- ☐ Sediment
- ☐ Nutrients
- ■ Heavy Metals
- ■ Toxic Materials
- ■ Oxygen Demanding Substances
- ☒ Oil & Grease
- ☐ Floatable Materials
- ☐ Bacteria & Viruses

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☒ Training

■ High ☒ Medium ☐ Low

BMP: Outdoor Loading/Unloading Of Materials

OLUM

DESCRIPTION:
Prevent or reduce the discharge of pollutants to stormwater from outdoor loading/unloading of materials.

APPROACH:
< Park tank trucks or delivery vehicles so that spills or leaks can be contained.
< Cover the loading/unloading docks to reduce exposure of materials to rain.
< A seal or door skirt between trailer and building can also prevent exposure to rain.
< Design loading/unloading area to prevent stormwater runon: grade/berm and position roof downspouts to direct stormwater away from loading/unloading areas.
< Contain leaks during transfer.
< Use drip pans under hoses.
< Make sure fork lift operators are properly trained.
< Train employees for spill containment and cleanup.

LIMITATIONS:
< Space and time limitations may preclude all transfers from being performed indoors or under cover.
< It may not be possible to conduct transfers only during dry weather.

MAINTENANCE:
< Conduct regular inspections and make repairs as necessary. The frequency of repairs will depend on the age of the facility.
< Check loading and unloading equipment regularly for leaks: valves, pumps, flanges, and connections.

APPLICATIONS

- ☐ Manufacturing
- ☒ Material Handling
- ☐ Vehicle Maintenance
- ☒ Construction
- ☒ Commercial Activities
- ☐ Roadways
- ☐ Waste Containment
- ☒ Housekeeping Practices

TARGETED POLLUTANTS

- ☐ Sediment
- ■ Nutrients
- ■ Heavy Metals
- ■ Toxic Materials
- ■ Oxygen Demanding Substances
- ■ Oil & Grease
- ■ Floatable Materials
- ☐ Bacteria & Viruses

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

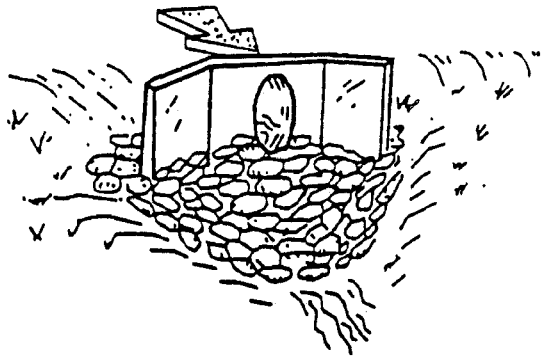
IMPLEMENTATION REQUIREMENTS

- ■ Capital Costs
- ☐ O&M Costs
- ☐ Maintenance
- ☒ Training

■ High ☒ Medium ☐ Low

BMP: Outlet Protection

OP



DESCRIPTION:
A rock outlet protection is a physical device composed of rock, grouted riprap, or concrete rubble which is placed at the outlet of a pipe to prevent scour of the soil caused by high pipe flow velocities, and to absorb flow energy to produce non-erosive velocities.

APPLICATIONS:
- < Wherever discharge velocities and energies at the outlets of culverts, conduits, or channels are sufficient to erode the next downstream reach.
- < Rock outlet protection is best suited for temporary use during construction becasue it is usually less expensive and easier to install than concrete aprons or energy dissipators.
- < A sediment trap below the pipe outlet is recommended if runoff is sediment laden.
- < Permanent rock riprap protection should be designed and sized by the engineer as part of the culvert, conduit or channel design.
- < Grouted riprap should be avoided in areas of freeze and thaw because the grout will break up.

INSTALLATION/APPLICATION CRITERIA:
Rock outlet protection is effective when the rock is sized and placed properly. When this is accomplished, rock outlets do much to limit erosion at pipe outlets. Rock size should be increased for high velocity flows. Best results are obtained when sound, durable, angular rock is used.

LIMITATIONS:
- < Large storms often wash away the rock outlet protection and leave the area susceptible to erosion.
- < Sediment captured by the rock outlet protection may be difficult to remove without removing the rock.
- < Outlet protection may negatively impact the channel habitat.

MAINTENANCE:
- < Inspect after each significant rain for erosion and/or disruption of the rock, and repair immediately.
- < Grouted or wire-tied rock riprap can minimize maintenance requirements.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☒ Control Internal Erosion

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

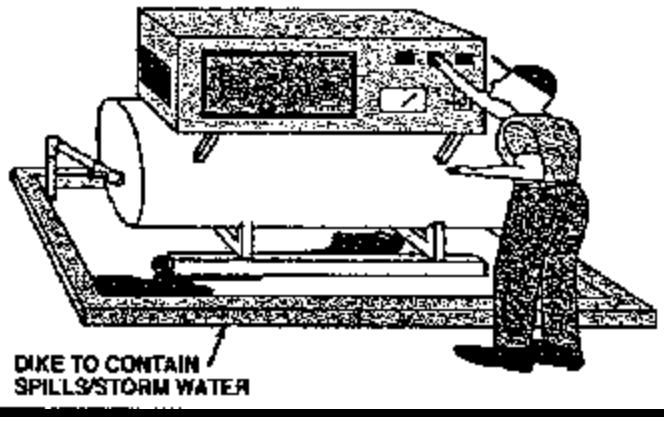
IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Outdoor Process Equipment Operations

OPE



APPLICATIONS

- ☒ Manufacturing
- ☐ Material Handling
- ☒ Vehicle Maintenance
- ☒ Construction
- ☒ Commercial Activities
- ☐ Roadways
- ☐ Waste Containment
- ☒ Housekeeping Practices

DESCRIPTION:

Prevent or reduce the discharge of pollutants to stormwater from outdoor process equipment operations and maintenance by reducing the amount of waste created, enclosing or covering all or some of the equipment, installing secondary containment, and training employees.

APPROACH:

- < Alter the activity to prevent exposure of pollutants to stormwater.
- < Move activity indoors.
- < Cover the area with a permanent roof.
- < Minimize contact of stormwater with outside manufacturing operations through berming and drainage routing (runon prevention).
- < Connect process equipment area to public sewer or facility wastewater treatment system.
- < Clean the storm drainage system regularly.
- < Use catch basin filtration inserts as a means to capture particulate pollutants.
- < Some municipalities require that secondary containment areas (regardless of size) be connected to the sanitary sewer, prohibiting any hard connections to the storm drain.

LIMITATIONS:

- < Providing cover may be expensive.
- < Space limitations may preclude enclosing some equipment.
- < Storage sheds often must meet building and fire code requirements.

MAINTENANCE:

Routine preventive maintenance, including checking process equipment for leaks.

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ■ Heavy Metals
- ■ Toxic Materials
- ☐ Oxygen Demanding Substances
- ■ Oil & Grease
- ☐ Floatable Materials
- ☐ Bacteria & Viruses

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

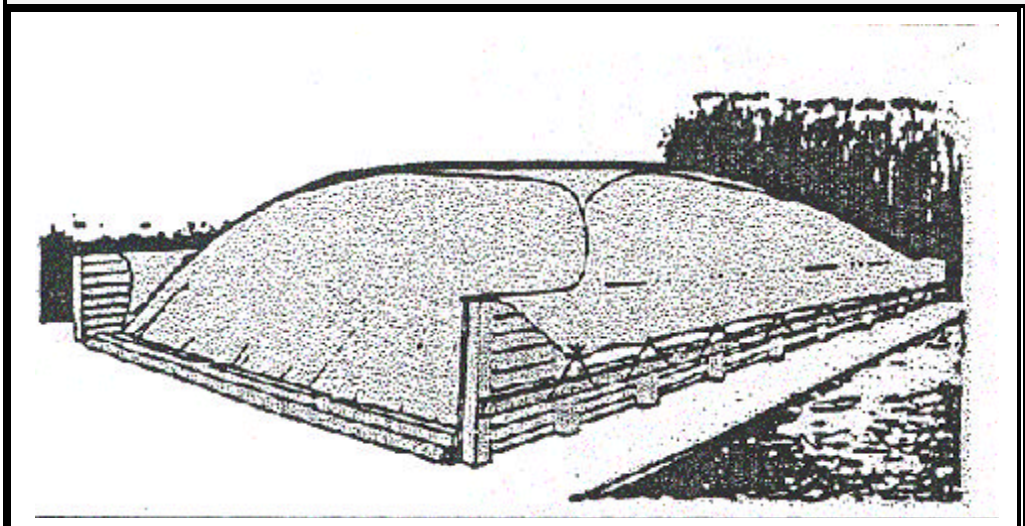
IMPLEMENTATION REQUIREMENTS

- ■ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☒ Training

■ High ☒ Medium ☐ Low

BMP: Outdoor Storage of Raw Materials

OSRM



DESCRIPTION:

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

APPROACH:

Protect materials from rainfall, runon, runoff and wind dispersal:

- Store material indoors.
- Cover the storage area with a roof.
- Cover the material with a temporary covering made of polyethylene, polypropylene, or hypalon.
- Minimize stormwater runon by enclosing the area or building a berm around the area.
- Use a "doghouse" for storage of liquid containers.

< Parking lots or other surfaces near bulk materials should be swept periodically to remove debris blown or washed from storage area.

< Install pellet traps at stormwater discharge points where plastic pellets are loaded and unloaded.

< Keep liquids in a designated area on a paved impervious surface within a secondary containment.

< Keep outdoor storage containers in good condition.

< Use berms and curbing.

< Use catch basin filtration inserts.

LIMITATIONS:

< Space limitations may preclude storing some materials indoors.

< Some municipalities require that secondary containment areas (regardless of size) be connected to the sanitary sewer, prohibiting any hard connections to the storm drain.

< Storage sheds often must meet building and fire code requirements.

MAINTENANCE:

Berm and curbing repair and patching.

APPLICATIONS

☒ Manufacturing
☒ Material Handling
☐ Vehicle Maintenance
☒ Construction
☒ Commercial Activities
☐ Roadways
☐ Waste Containment
☒ Housekeeping Practices

TARGETED POLLUTANTS

■ Sediment
☒ Nutrients
■ Heavy Metals
■ Toxic Materials
☐ Oxygen Demanding Substances
■ Oil & Grease
■ Floatable Materials
☐ Bacteria & Viruses

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

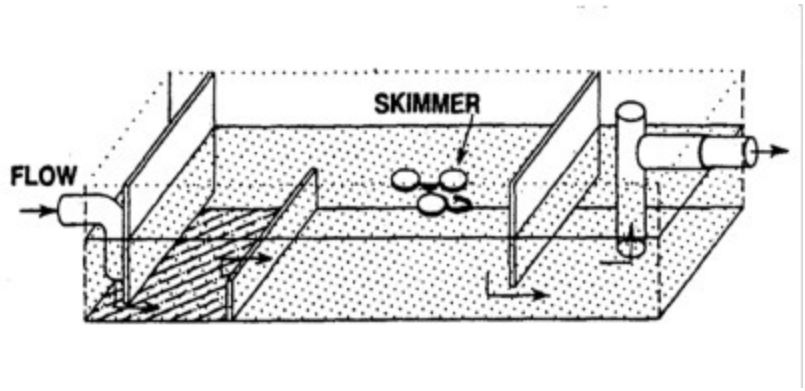
IMPLEMENTATION REQUIREMENTS

☒ Capital Costs
☐ O&M Costs
☒ Maintenance
☒ Training

■ High ☒ Medium ☐ Low

BMP: Oil/Water Separators and Water Quality Inlets

OWS



DESCRIPTION:
Oil/Water separators are designed to remove a specific group of contaminants: petroleum compounds and grease. However, separators will also remove floatable debris and settleable solids. Two general types of oil/water separators are used: conventional gravity separator and the coalescing plate interceptor (CPI).

APPLICATION:
- < Applicable to situations where the concentration of oil and grease related compounds is abnormally high and source control cannot provide effective control. The general types of businesses where this situation is likely are truck, car, and equipment maintenance and washing businesses, as well as businesses that perform maintenance on their own equipment and vehicles.
- < Public facilities where separators may be required include marine ports, airfields, fleet vehicle maintenance and washing, facilities, and mass transit park-and-ride lots.
- < Conventional separators are capable of removing oil droplets with diameters equal to or greater than 150 microns.
- < A CPI separator should be used if smaller droplets must be removed.

INSTALLATION/APPLICATION CRITERIA:
- < Sizing relates to anticipated influent oil concentration, water temperature and velocity, and the effluent goal.
- < To maintain a reasonable separator size, it should be designed to bypass flows in excess of first flush.

LIMITATIONS:
- < The lack of data on oil characteristics in stormwater leads to considerable uncertainty about performance.
- < An air quality permit may be required.

MAINTENANCE:
Clean frequently of accumulated oil, grease, and floating debris.

CONSIDERATIONS

- ☐ Soils
- ☒ Area Required
- ☐ Slope
- ☐ Water Availability
- ☐ Aesthetics
- ☐ Hydraulic Head
- ☒ Environmental Side Effects

TARGETED POLLUTANTS

- ☒ Sediment
- ☒ Nutrients
- ☒ Heavy Metals
- ☒ Toxic Materials
- ☒ Oxygen Demanding Substances
- ■ Oil & Grease
- ■ Floatable Materials
- ☐ Bacteria & Viruses

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

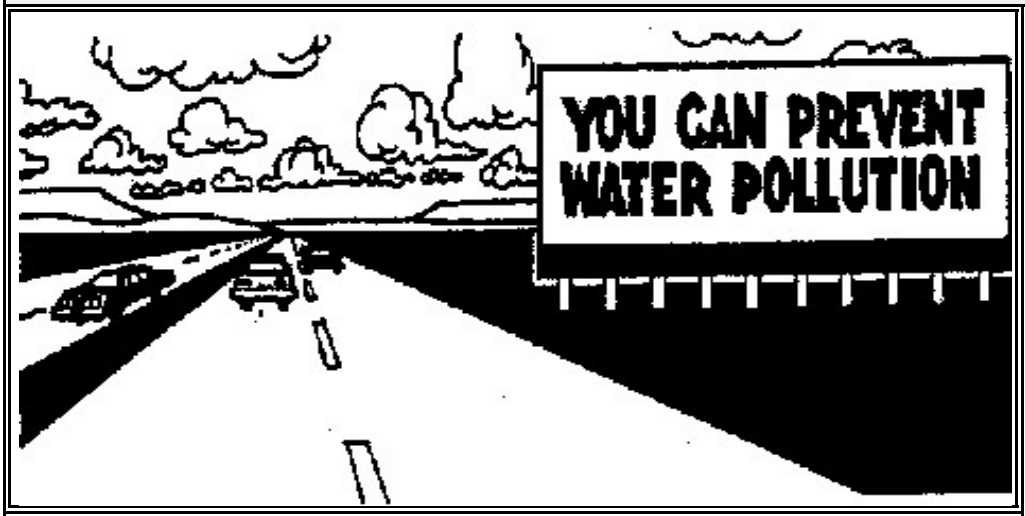
IMPLEMENTATION REQUIREMENTS

- ■ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Public Education/Participation

PEP



DESCRIPTION:
Public education/participation, like an ordinance or a piece of equipment, is not so much a best management practice as it is a method by which to implement BMPs. This information sheet highlights the importance of integrating elements of public education and participation into a municipality's overall plan for stormwater quality management.

A public education and participation plan provides the municipality with a strategy for educating its employees, the public, and businesses about the importance of protecting stormwater from improperly used, stored, and disposed of pollutants. Municipal employees must be trained, especially those that work in departments not directly related to stormwater but whose actions affect stormwater. Residents must become aware that a variety of hazardous products are used in the home and that their improper use and disposal can pollute stormwater. Increased public awareness also facilitates public scrutiny of industrial and municipal activities and will likely increase public reporting of incidents.

APPROACH:
- < Pattern a new program after the many established programs around the country.
- < Implement public education/participation as a coordinated campaign in which each message is related to the last.
- < Present a clear and consistent message and image to the public regarding how they contribute to stormwater pollution and what they can do to reduce it.
- < Utilize multi-media to reach the full range of audiences.
- < Translate messages into the foreign languages of the community to reach the full spectrum of your populace and to avoid misinterpretation of messages.
- < Create an awareness and identification with the local watershed.
- < Use everyday language in all public pieces. Use outside reviewers to highlight and reduce the use of technical terminology, acronyms, and jargon.
- < Make sure all statements have a sound, up-to-date technical basis. Do not contribute to the spread of misinformation.
- < Break complicated subjects into smaller more simple concepts. Present these concepts to the public in a metered and organized way to avoid "overloading" and confusing the audience.

LIMITATIONS:
None.

PROGRAM ELEMENTS

- ☐ New Development
- ☒ Residential
- ☒ Commercial Activities
- ☐ Industrial Activities
- ☒ Municipal Facilities
- ☒ Illegal Discharges

TARGETED POLLUTANTS

- ■ Sediment
- ■ Nutrients
- ■ Heavy Metals
- ■ Toxic Materials
- ■ Oxygen Demanding Substances
- ■ Oil & Grease
- ■ Floatable Materials
- ■ Bacteria & Viruses

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

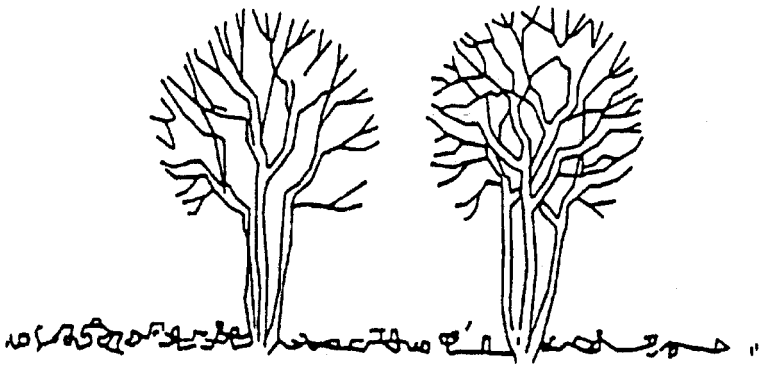
IMPLEMENTATION REQUIREMENTS

- ■ Capital Costs
- ☒ O&M Costs
- ☐ Regulatory
- ☒ Training
- ☒ Staffing
- ☒ Administrative

■ High ☒ Medium ☐ Low

BMP: Preservation of Existing Vegetation

PEV



GENERAL DESCRIPTION:
Carefully planned preservation of existing vegetation minimizes the potential of removing or injuring existing trees, vines, shrubs and/or grasses that serve as erosion controls.

APPLICATIONS:
This technique is applicable to all types of sites. Areas where preserving vegetation can be particularly beneficial are floodplains, wetlands, stream banks, steep slopes, and other areas where erosion controls would be difficult to establish, install, or maintain.

INSTALLATION/APPLICATION CRITERIA:
- < Clearly mark, flag or fence vegetation or areas where vegetation should be preserved.
- < Prepare landscaping plans which include as much existing vegetation as possible and state proper care during and after construction.
- < Define and protect with berms, fencing, signs, etc. a setback area from vegetation to be preserved.
- < Propose landscaping plans which do not include plant species that compete with the existing vegetation.
- < Do not locate construction traffic routes, spoil piles, etc. where significant adverse impact on existing vegetation may occur.

LIMITATIONS:
- < Requires forward planning by the owner/developer, contractor and design staff.
- < For sites with diverse topography, it is often difficult and expensive to save existing trees while grading the site satisfactorily for the planned development.
- < May not be cost effective with high land costs.

MAINTENANCE:
- < Inspection and maintenance requirements for protection of vegetation are low.
- < Maintenance of native trees or vegetation should conform to landscape plan specifications.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☒ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☐ Control Internal Erosion

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

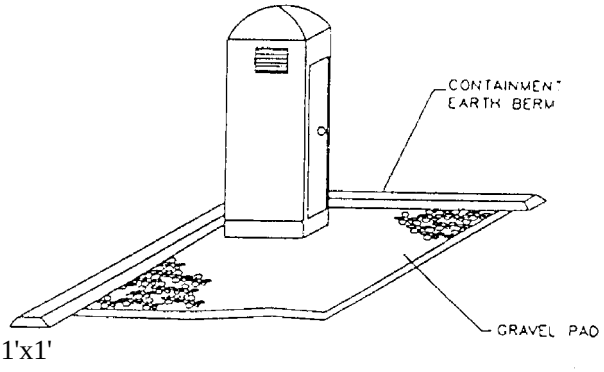
IMPLEMENTATION REQUIREMENTS

- ☐ Capital Costs
- ☐ O&M Costs
- ☐ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Portable Toilets

PT



1'x1'

DESCRIPTION:
Temporary on-site sanitary facilities for construction personnel.

APPLICATION:
All sites with no permanent sanitary facilities or where permanent facility is too far from activities.

INSTALLATION/APPLICATION CRITERIA:
< Locate portable toilets in convenient locations throughout the site.
< Prepare level, gravel surface and provide clear access to the toilets for servicing and for on-site personnel.
< Construct earth berm perimeter (See Earth Berm Barrier Information Sheet), control for spill/protection leak.

LIMITATIONS:
No limitations.

MAINTENANCE:
< Portable toilets should be maintained in good working order by licensed service with daily observation for leak detection.
< Regular waste collection should be arranged with licensed service.
< All waste should be deposited in sanitary sewer system for treatment with appropriate agency approval.

OBJECTIVES

☒ Housekeeping Practices
☒ Contain Waste
☐ Minimize Disturbed Areas
☐ Stabilize Disturbed Areas
☐ Protect Slopes/Channels
☐ Control Site Perimeter
☐ Control Internal Erosion

TARGETED POLLUTANTS

☐ Sediment
☐ Nutrients
☐ Toxic Materials
☐ Oil & Grease
☐ Floatable Materials
■ Other Waste

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

☒ Capital Costs
☒ O&M Costs
☒ Maintenance
☐ Training

■ High ☒ Medium ☐ Low

BMP: Riprap

RR

DESCRIPTION:
Riprap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated runoff. Riprap may also be used to stabilize slopes that are unstable because of seepage problems.

APPLICATION:
< Riprap is normally used at locations where erosive forces from water flow exceed the ability of the soil or vegetative cover to resist those forces.
< Riprap can be used for pipe outlet protection, channel lining, scour protection, etc.
< Riprap is commonly used for wave protection on lakes.

INSTALLATION/APPLICATION CRITERIA:
< For slopes steeper than 2:1, consider using materials other than riprap for erosion protection.
< If riprap is being planned for the bottom of a permanently flowing channel, the bottom can be modified to enhance fish habitat. This can be done by constructing riffles and pools which simulate natural conditions.
< When working within flowing streams, measures should be taken to prevent excessive turbidity and erosion during construction. Bypassing base flows or temporarily blocking base flows are two possible methods. Work should be done during a period of low flow.

In designing riprap consider the following:
< Use durable rock, such as granite, and a variety of rock sizes.
< The thickness of riprap layers should be at least 1.25 times the max. stone diameter.
< Filter material is usually required between riprap and the underlying soil surface.

LIMITATIONS:
< Riprap may be unstable on very steep slopes.
< The placement of a riprap in streams requires a state stream alteration permit.

MAINTENANCE:
< Riprap should be inspected annually and after major storms.
< If riprap has been damaged, repairs should be made promptly to prevent a progressive failure.
< If repairs are needed repeatedly at one location, the site should be evaluated to see if original design conditions have changed.

CONSIDERATIONS

- ☒ Soils
- ☒ Area Required
- ☒ Slope
- ☐ Water Availability
- ☒ Aesthetics
- ☐ Hydraulic Head
- ☒ Environmental Side Effects

TARGETED POLLUTANTS

- ☒ Sediment
- ☐ Nutrients
- ☐ Heavy Metals
- ☐ Toxic Materials
- ☐ Oxygen Demanding Substances
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Bacteria & Viruses

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

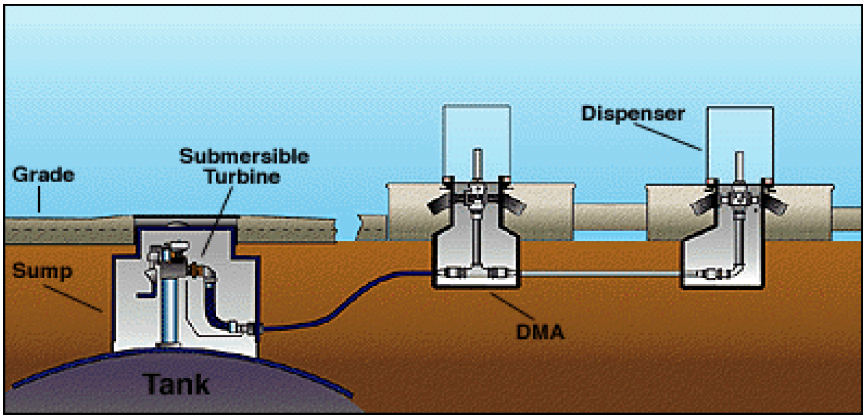
IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Sumps

S



DESCRIPTION:
Sumps are holes or low areas that are structured so that liquid spills or leaks will flow down toward a particular part of a containment area. Frequently, pumps are placed in a depressed area and are turned on automatically to transfer liquids away from the sump when the level of liquids gets too high. Sumps can be temporary or permanent.

APPLICATION:
Sumps can be used at all facilities. Sumps are used with other spill containment and treatment measures and can be located almost anywhere onsite. Sumps are frequently located in low lying areas within handling or storage areas.

INSTALLATION/APPLICATION CRITERIA:
< Consider the pump location, function, and system alarms when designing a sump system.
< Design and install the sump in the lowest lying area of a containment structure, allowing materials to gather in the area of the sump.
< Construct the sump of impenetrable materials and provide a smooth surface so that liquids are funneled toward the sump.
< It may be appropriate to house the pumps in a shed or other structure for protection and stabilization.

LIMITATIONS:
< Pumps may clog easily if not designed correctly.
< Costs for purchasing and/or replacing pumps may be high.

MAINTENANCE:
Where pumps are used, frequent inspection and maintenance should be performed. It may require a maintenance/servicing agreement with the pump dealers.

CONSIDERATIONS

- ☐ Soils
- ☐ Area Required
- ☐ Slope
- ☐ Water Availability
- ☐ Aesthetics
- ☒ Hydraulic Head
- ☐ Environmental Side Effects

TARGETED POLLUTANTS

- ☐ Sediment
- ☒ Nutrients
- ☐ Heavy Metals
- ■ Toxic Materials
- ☐ Oxygen Demanding Substances
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Bacteria & Viruses

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

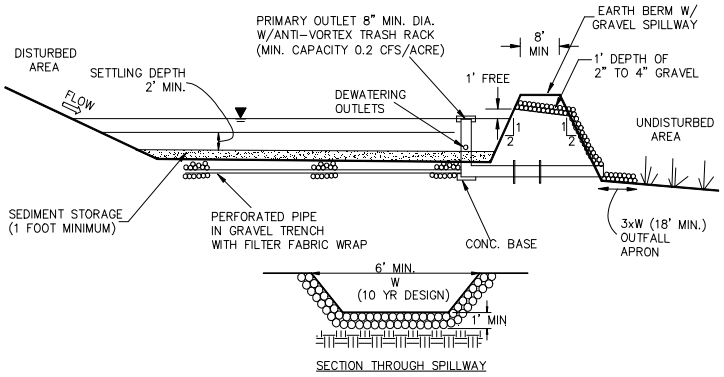
IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Sediment Basin

SB



OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☒ Control Internal Erosion

DESCRIPTION:

A pond created by excavation or construction of an embankment, and designed to retain or detain runoff sufficiently to allow excessive sediment to settle.

APPLICATION:

< At the outlet of all disturbed watersheds 10 acres or larger.
< At the outlet of smaller disturbed watersheds, as necessary.
< Where post construction detention basins will be located.

INSTALLATION/APPLICATION CRITERIA:

< Design basin for site specific location, maintain effective flow length 2 times width.
< Excavate basin or construct compacted berm containment, ensure no downgradient hazard if failure should occur. (Provide minimum of 67 cy. per acre of drainage area).
< Construct dewatering and outfall structure and emergency spillway with apron.

LIMITATIONS:

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

< Should be sized based on anticipated runoff, sediment loading and drainage area size.
< May require silt fence at outlet for entrapment of very fine silts and clays.
< May require safety fencing to prevent public access.
< Height restrictions for embankment regulated by Utah Division of Dam Safety.

MAINTENANCE:

< Inspect after each rainfall event and at a minimum of monthly.
< Repair any damage to berm, spillway or sidewalls.
< Remove accumulated sediment as it reaches 2/3 height of available storage.
< Check outlet for sedimentation/erosion of downgradient area and remediate as necessary. Install silt fence if sedimentation apparent.

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☒ Toxic Materials
- ☐ Oil & Grease
- ☒ Floatable Materials
- ☐ Other Waste

IMPLEMENTATION REQUIREMENTS

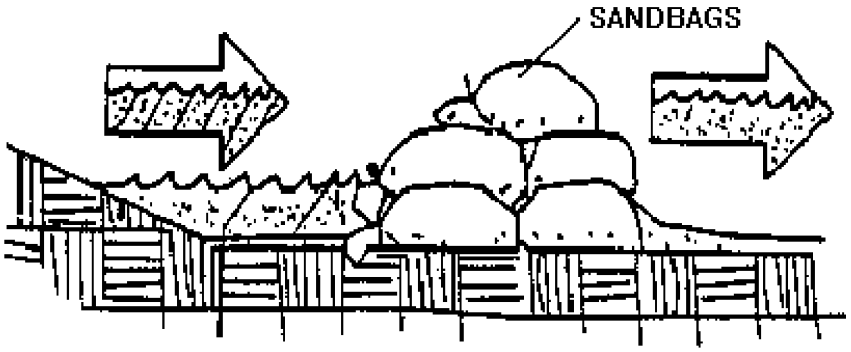
- ■ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance

■ High ☒ Medium ☐ Low

- ☐ Training

BMP: Sand Bag Barrier

SBB



DESCRIPTION:
Stacking sand bags along a level contour creates a barrier which detains sediment-laden water, ponding water upstream of the barrier and promoting sedimentation.

APPLICATION:
< Along the perimeter of the site.
< May be used in drainage areas up to 5 acres.
< Along streams and channels
< Across swales with small catchments.
< Around temporary spoil areas.
< Below the toe of a cleared slope.

INSTALLATION/APPLICATION CRITERIA:
< Install along a level contour.
< Base of sand bag barrier should be at least 48 inches wide.
< Height of sand bag barrier should be at least 18 inches high.
< 4 inch PVC pipe may be installed between the top layer of sand bags to drain large flood flows.
< Provide area behind barrier for runoff to pond and sediment to settle.
< Place below the toe of a slope.

LIMITATIONS:
< Sand bags are more expensive than other barriers, but also more durable.
< Burlap should not be used.

MAINTENANCE:
< Inspect after each rain.
< Reshape or replace damaged sand bags immediately.
< Replace sediment when it reaches six inches in depth.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☒ Control Internal Erosion

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ■ Capital Costs
- ☐ O&M Costs
- ☐ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Street Cleaning

SC

DESCRIPTION:
Reduce the discharges of pollutants to stormwater from street surfaces by conducting street cleaning on a regular basis.

APPROACH:
< Prioritize cleaning to use the most sophisticated sweepers, at the highest frequency, and in areas with the highest pollutant loading.
< Restrict street parking prior to and during sweeping.
< Increase sweeping frequency just before the rainy season.
< Proper maintenance and operation of sweepers greatly increase their efficiency.
< Keep accurate operation logs to track programs.
< Reduce the number of parked vehicles using regulations.
< Sweepers effective at removing smaller particles (less than 10 microns) may generate dust that would lead to concerns over worker and public safety.
< Equipment selection can be key for this particular BMP. There are two types used, the mechanical broom sweepers (more effective at picking up large debris and cleaning wet streets), and the vacuum sweepers (more effective at removing fine particles and associated heavy metals). Many communities find it useful to have a compliment of both types in their fleet.

LIMITATIONS:
< Conventional sweepers are not able to remove oil and grease.
< Mechanical sweepers are not effective at removing finer sediments.
< Effectiveness may also be limited by street conditions, traffic congestion, presence of construction projects, climatic conditions and condition of curbs.

MAINTENANCE:
< Replace worn parts as necessary.
< Install main and gutter brooms of the appropriate weight.

PROGRAM ELEMENTS

☐ New Development
☐ Residential
☐ Commercial Activities
☐ Industrial Activities
☒ Municipal Facilities
☒ Illegal Discharges

TARGETED POLLUTANTS

■ Sediment
■ Nutrients
■ Heavy Metals
☒ Toxic Materials
■ Oxygen Demanding Substances
☐ Oil & Grease
☒ Floatable Materials
☐ Bacteria & Viruses

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

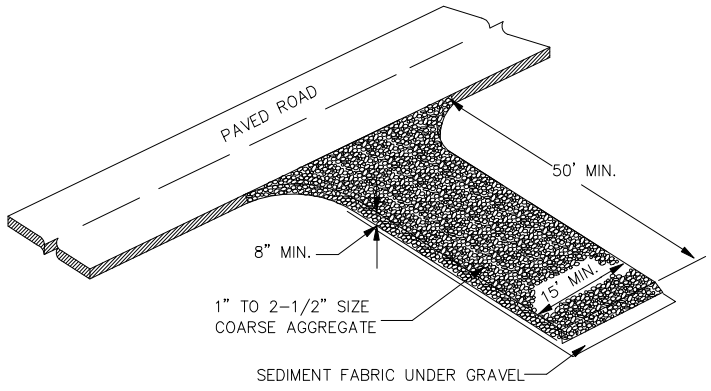
IMPLEMENTATION REQUIREMENTS

■ Capital Costs
■ O&M Costs
☒ Regulatory
☒ Training
■ Staffing
☒ Administrative

■ High ☒ Medium ☐ Low

BMP: Stabilized Construction Entrance

SCE



DESCRIPTION:
A stabilized pad of crushed stone located where construction traffic enters or leaves the site from or to paved surface.

APPLICATIONS:
At any point of ingress or egress at a construction site where adjacent traveled way is paved. Generally applies to sites over 2 acres unless special conditions exist.

INSTALLATION/APPLICATION CRITERIA:
< Clear and grub area and grade to provide maximum slope of 2%.
< Compact subgrade and place filter fabric if desired (recommended for entrances to remain for more than 3 months.
< Place coarse aggregate, 1 to 2-1/2 inches in size, to a minimum depth of 8 inches.

LIMITATIONS:
< Requires periodic top dressing with additional stones.
< Should be used in conjunction with street sweeping on adjacent public right-of-way.

MAINTENANCE:
< Inspect daily for loss of gravel or sediment buildup.
< Inspect adjacent roadway for sediment deposit and clean by sweeping or shoveling.
< Repair entrance and replace gravel as required to maintain control in good working condition.
< Expand stabilized area as required to accomodate traffic and prevent erosion at driveways.

OBJECTIVES

☒ Housekeeping Practices
☐ Contain Waste
☐ Minimize Disturbed Areas
☐ Stabilize Disturbed Areas
☐ Protect Slopes/Channels
☒ Control Site Perimeter
☐ Control Internal Erosion

TARGETED POLLUTANTS

■ Sediment
☐ Nutrients
☐ Toxic Materials
☐ Oil & Grease
☐ Floatable Materials
☐ Other Waste

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

■ Capital Costs
☒ O&M Costs
☒ Maintenance
☐ Training

■ High ☒ Medium ☐ Low

BMP: Spill Clean-Up

SCU

DESCRIPTION:
Practices to clean-up leakage/spillage of on-site materials that may be harmful to receiving waters.

APPLICATION:
All sites

GENERAL:
< Store controlled materials within a storage area.
< Educate personnel on prevention and clean-up techniques.
< Designate an Emergency Coordinator responsible for employing preventative practices and for providing spill response.
< Maintain a supply of clean-up equipment on-site and post a list of local response agencies with phone numbers.

METHODS:
< Clean-up spills/leaks immediately and remediate cause.
< Use as little water as possible. NEVER HOSE DOWN OR BURY SPILL CONTAMINATED MATERIAL.
< Use rags or absorbent material for clean-up. Excavate contaminated soils. Dispose of clean-up material and soil as hazardous waste.
< Document all spills with date, location, substance, volume, actions taken and other pertinent data.
< Contact local Fire Department and State Division of Environmental Response and Remediation (Phone #536-4100) for any spill of reportable quantity.

OBJECTIVES

☒ Housekeeping Practices
☒ Contain Waste
☐ Minimize Disturbed Areas
☐ Stabilize Disturbed Areas
☐ Protect Slopes/Channels
☐ Control Site Perimeter
☐ Control Internal Erosion

TARGETED POLLUTANTS

☐ Sediment
☐ Nutrients
■ Toxic Materials
☒ Oil & Grease
☐ Floatable Materials
☐ Other Waste

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

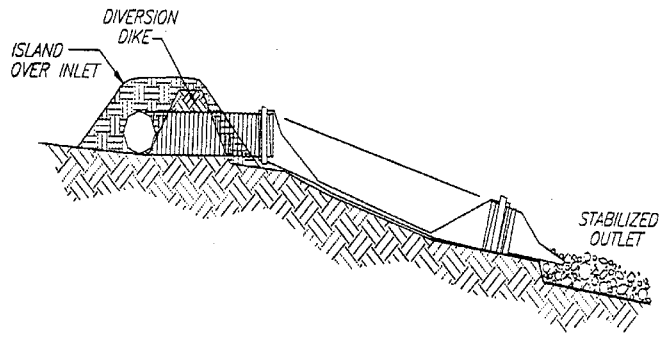
IMPLEMENTATION REQUIREMENTS

☒ Capital Costs
☐ O&M Costs
☐ Maintenance
■ Training

■ High ☒ Medium ☐ Low

BMP: Slope Drain

SD



DESCRIPTION:
A temporary pipe or lined channel that drains the top of a slope to a stable discharge point at the bottom of a slope without causing erosion.

APPLICATIONS:
< Where concentrated flow of surface runoff must be conveyed down a slope in order to prevent erosion.
< Drainage for top slope diversion dikes or swales.
< Emergency spillway for a sediment basin.
< Drainage for top of cut/fill slopes where water can accumulate.

INSTALLATION/APPLICATION CRITERIA:
< Secure inlet and surround with dikes to prevent gully erosion, and anchor pipe to slope.
< Size to convey at least the peak of a 10-year, storm event.
< Stabilize outlet. (See Outlet Protection BMP).

LIMITATIONS:
< Maximum drainage area per slope drain is 5 acres.
< Clogged slope drains will force water around the pipe and cause slope erosion.
< Dissipation of high flow velocities at the pipe outlet is required to avoid downstream erosion.
< Failure can result in flooding and severe erosion.

MAINTENANCE:
< Structure must be inspected weakly and after storms.
< Inlet must be free of undercutting and no water should circumvent the entry.
< Outlet should not produce erosion; velocity dissipators must be maintained.
< Pipe anchors must be checked to ensure that the pipe remains anchored to the slope.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☒ Control Internal Erosion

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

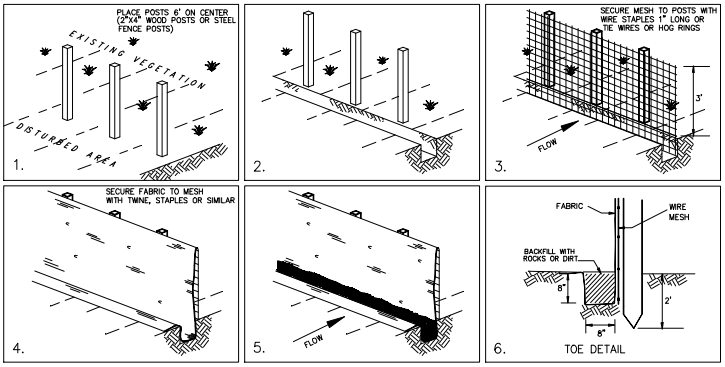
IMPLEMENTATION REQUIREMENTS

- ■ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Silt Fence

SF



DESCRIPTION:
A temporary sediment barrier consisting of entrenched filter fabric stretched across and secured to supporting posts.

APPLICATION:
- < Perimeter control: place barrier at downgradient limits of disturbance
- < Sediment barrier: place barrier at toe of slope or soil stockpile
- < Protection of existing waterways: place barrier at top of stream bank
- < Inlet protection: place fence surrounding catchbasins

INSTALLATION/APPLICATION CRITERIA:
- < Place posts 6 feet apart on center along contour (or use preassembled unit) and drive 2 feet minimum into ground. Excavate an anchor trench immediately upgradient of posts.
- < Secure wire mesh (14 gage min. With 6 inch openings) to upslope side of posts. Attach with heavy duty 1 inch long wire staples, tie wires or hog rings.
- < Cut fabric to required width, unroll along length of barrier and drape over barrier. Secure fabric to mesh with twine, staples, or similar, with trailing edge extending into anchor trench.
- < Backfill trench over filter fabric to anchor.

LIMITATIONS:
- < Recommended maximum drainage area of 0.5 acre per 100 feet of fence
- < Recommended maximum upgradient slope length of 150 feet
- < Recommended maximum uphill grade of 2:1 (50%)
- < Recommended maximum flow rate of 0.5 cfs
- < Ponding should not be allowed behind fence

MAINTENANCE:
- < Inspect immediately after any rainfall and at least daily during prolonged rainfall.
- < Look for runoff bypassing ends of barriers or undercutting barriers.
- < Repair or replace damaged areas of the barrier and remove accumulated sediment.
- < Reanchor fence as necessary to prevent shortcutting.
- < Remove accumulated sediment when it reaches ½ the height of the fence.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☒ Control Internal Erosion

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

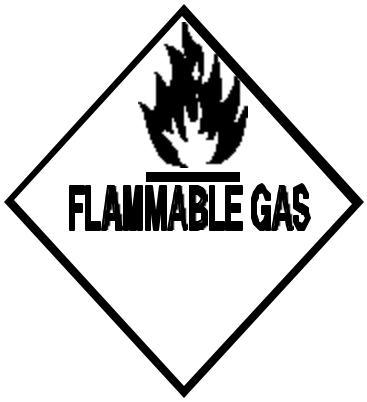
IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Signs and Labels

SL



APPLICATIONS

- ☒ Manufacturing
- ☐ Material Handling
- ☐ Vehicle Maintenance
- ☐ Construction
- ☒ Commercial Activities
- ☐ Roadways
- ☐ Waste Containment
- ☒ Housekeeping Practices

DESCRIPTION:

Signs and labels identify problem areas or hazardous materials at a facility. Warning signs, often found at industrial facilities, are a good way to suggest caution in certain areas. Signs and labels can also provide instructions on the use of materials and equipment. Labeling is a good way to organize large amounts of materials, pipes, and equipment, particularly on large sites.

APPROACH:

Signs and labels can be used at all types of facilities. Areas where they are particularly useful are material transfer areas, equipment areas, loading and unloading areas, or anywhere information might prevent contaminants from being released to stormwater.

Signs and labels should be visible and easy to read. Useful signs and labels might provide the following information:

- < Names of facility and regulatory personnel, including emergency phone numbers, to contact in case of an accidental discharge, spill, or other emergency.
- < Proper uses of equipment that could cause release of stormwater contaminants.
- < Types of chemicals used in high-risk areas.
- < The direction of drainage lines/ditches and their destination (treatment or discharge).
- < Information on a specific material.
- < Refer to OSHA standards for sizes and numbers of signs required for hazardous material labeling.

LIMITATIONS:

No limitations.

MAINTENANCE:

- < Periodic checks can ensure that signs are still in place and labels are properly attached.
- < Signs and labels should be replaced and repaired as often as necessary.

TARGETED POLLUTANTS

- ☐ Sediment
- ☐ Nutrients
- ■ Heavy Metals
- ■ Toxic Materials
- ☐ Oxygen Demanding Substances
- ☒ Oil & Grease
- ☐ Floatable Materials
- ☐ Bacteria & Viruses

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

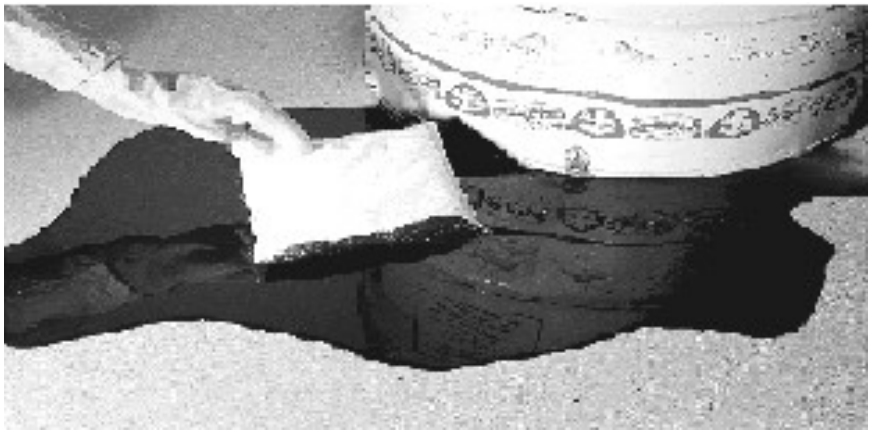
IMPLEMENTATION REQUIREMENTS

- ☐ Capital Costs
- ☐ O&M Costs
- ☐ Maintenance
- ☒ Training

■ High ☒ Medium ☐ Low

BMP: Sorbents

SO



DESCRIPTION:
Sorbents are materials that are capable of cleaning up spills through the chemical processes of adsorption and absorption. Sorbents adsorb (an attraction to the outer surface of a material) or absorb (taken in by the material like a sponge) only when they come in contact with the sorbent materials.

Sorbents include, but are not limited to, the following:
< Common materials such as clays, sawdust, straw and fly ash
< Polymers - polyurethane and polyolefin
< Activated Carbon - powdered or granular
< "Universal Sorbent Material" - a silicate glass foam consisting of rounded particles that can absorb the material.

APPLICATION:
Sorbents are useful BMPs for facilities with liquid materials onsite.

INSTALLATION/APPLICATION CRITERIA:
< Personnel should know the properties of the spilled material(s) to know which sorbent is appropriate. To be effective, sorbents must adsorb the material spilled but must not react with the spilled material to form hazardous or toxic substances.
< Apply immediately to the release area.
< Application is generally simple: the sorbent is added to the area of release, mixed well, and allowed to adsorb or absorb.
< Many sorbents are not reusable once they have been used.
< Proper disposal is required.

LIMITATIONS:
< Requires a knowledge of the chemical makeup of a spill (to choose the best sorbent).
< May be an expensive practice for large spills.
< May create disposal problems and increase disposal costs by creating a solid waste and potentially a hazardous waste.

MAINTENANCE:
No information available.

CONSIDERATIONS

- ☐ Soils
- ☐ Area Required
- ☐ Slope
- ☐ Water Availability
- ☐ Aesthetics
- ☐ Hydraulic Head
- ☒ Environmental Side Effects

TARGETED POLLUTANTS

- ☐ Sediment
- ☐ Nutrients
- ☒ Heavy Metals
- ■ Toxic Materials
- ☒ Oxygen Demanding Substances
- ☒ Oil & Grease
- ☐ Floatable Materials
- ☐ Bacteria & Viruses

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

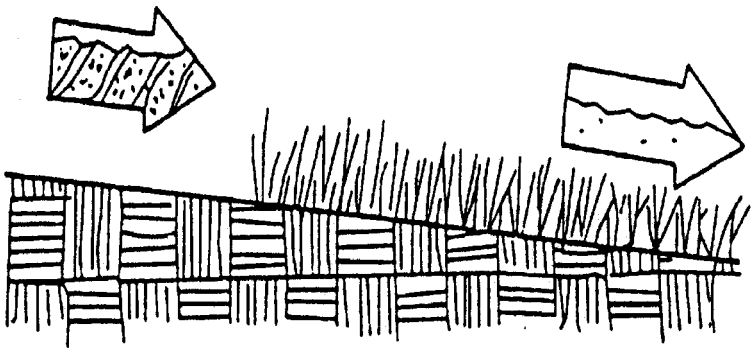
IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☐ Maintenance
- ☒ Training

■ High ☒ Medium ☐ Low

BMP: Seeding and Planting

SP



DESCRIPTION:
Seeding of grass and plantings of trees, shrubs, vines and ground covers provide long-term stabilization of soil. In some areas, with suitable climates, grasses can be planted for temporary stabilization.

APPLICATION:
< Appropriate for site stabilization both during construction and post-construction.
< Any graded/cleared areas where construction activities have ceased.
< Open space cut and fill areas.
< Steep slopes, spoil piles, vegetated swales, landscape corridors, stream banks.

INSTALLATION/APPLICATION CRITERIA:
Type of vegetation, site and seedbed preparation, planting time, fertilization and water requirements should be considered for each application.

Grasses:
< Ground preparation: fertilize and mechanically stabilize the soil.
< Tolerant of short-term temperature extremes and waterlogged soil composition.
< Appropriate soil conditions: shallow soil base, good drainage, slope 2:1 or flatter.
< Mowing, irrigating, and fertilizing are vital for promoting vigorous grass growth.

Trees and Shrubs:
< Selection criteria: vigor, species, size, shape & wildlife food source.
< Soil conditions: select species appropriate for soil, drainage & acidity.
< Other factors: wind/exposure, temperature extremes, and irrigation needs.

Vines and Ground Covers:
< Ground preparation: lime and fertilizer preparation.
< Use proper seeding rates.
< Appropriate soil conditions: drainage, acidity and slopes.
< Generally avoid species requiring irrigation.

LIMITATIONS:
< Permanent and temporary vegetation may not be appropriate in dry periods without irrigation.
< Fertilizer requirements may have potential to create stormwater pollution.

MAINTENANCE:
< Shrubs and trees must be adequately watered and fertilized and if needed pruned.
< Grasses may need to be watered and mowed.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☐ Control Internal Erosion

TARGETED POLLUTANTS

- ■ Sediment
- ☒ Nutrients
- ☒ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

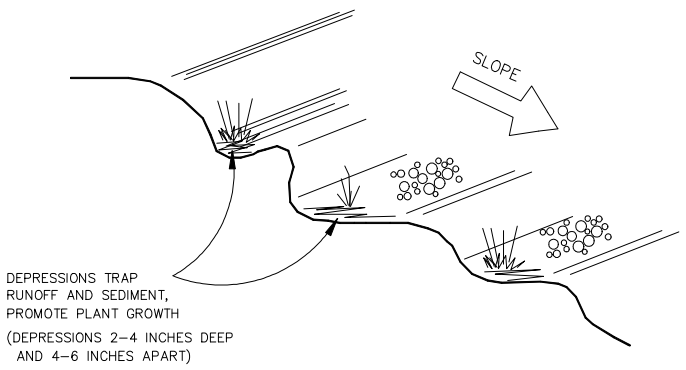
IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Surface Roughening

SR



DESCRIPTION:
Rough preparation of working areas leaving depressions and uneven surface. Depressions should be done parrallel to contours.

APPLICATION:
Surface roughening is appropriate for all construction that will not be receiving impervious cover within 14 days and that will be exposed less than 60 days (seed areas to be open in excess of 60 days).

INSTALLATION/APPLICATION CRITERIA:
< Surface should be left in rough condition during initial earthwork activity.
< Surfaces that have become smoothed or compacted due to equipment traffic should be roughened by use of disks, spring harrows, teeth on front end loader, or similar, operating along the contours of the slope. Tracking (by crawler tractor driving up and down slope) may also be used to provide depressions parallel to contours.
< Avoid compaction of soils during roughening as this inhibits plant growth and promotes storm water runoff. Limit tracked machinery to sandy soil.
< Seed or mulch areas to be exposed in excess of 60 days.
< Employ dust controls. (See Dust Control Detail Sheet).

LIMITATIONS:
< Will not withstand heavy rainfall.
< Slopes steeper than 2:1 (50%) should be benched.(See Benching Detail Sheet).

MAINTENANCE:
< Inspect following any storm event and at a minimum of weekly.
< If erosion in the form of rills (small waterways formed by runoff) is evident, perform machine roughening of area.
< For vegetated slopes reseed areas that are bare or have been reworked.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☒ Control Internal Erosion

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

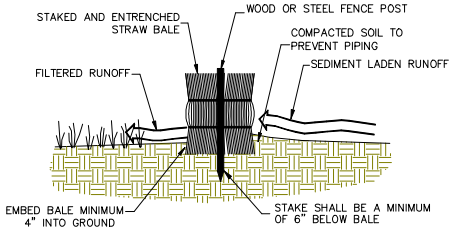
IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Straw Bale Barrier

STB



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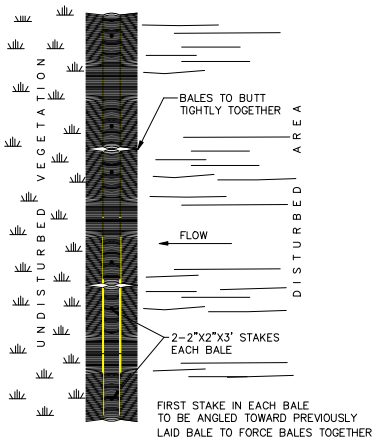


PLAN

DESCRIPTION:

Temporary sediment barrier consisting of a row of entrenched and anchored straw bales.

APPLICATION:

- < Perimeter Control: place barrier at downgradient limits of disturbance.
- < Sediment barrier: place barrier at toe of slope or soil stockpile.
- < Protection of existing waterways: place barrier at top of stream bank.
- < Inlet Protection.

INSTALLATION/APPLICATION CRITERIA:

- < Excavate a 4-inch minimum deep trench along contour line, i.e. parallel to slope, removing all grass and other material that may allow underflow.
- < Place bales in trench with ends tightly abutting, fill any gaps by wedging loose straw into openings.
- < Anchor each bale with 2 stakes driven flush with the top of the bale.
- < Backfill around bale and compact to prevent piping, backfill on uphill side to be built up 4-inches above ground at the barrier.

LIMITATIONS:

- < Recommended maximum area of 0.5 acre per 100 feet of barrier
- < Recommended maximum upgradient slope length of 150 feet
- < Recommended maximum uphill grade of 2:1 (50%)

MAINTENANCE:

- < Inspect immediately after any rainfall and at least daily during prolonged rainfall.
- < Look for runoff bypassing ends of barriers or undercutting barriers.
- < Repair or replace damaged areas of the barrier and remove accumulated sediment.
- < Realign bales as necessary to provide continuous barrier and fill gaps.
- < Recompact soil around barrier as necessary to prevent piping.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☒ Control Internal Erosion

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

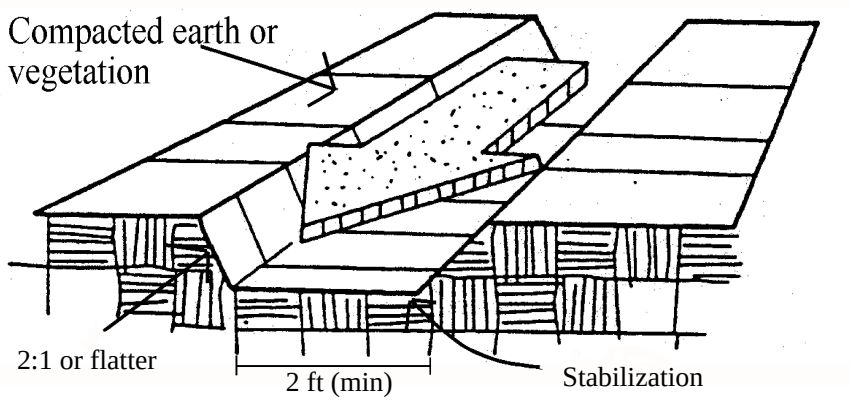
IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Temporary Drains And Swales

TDS



DESCRIPTION:
Temporary drains and swales are used to divert off-site runoff around the construction site, divert runoff from stabilized areas around disturbed areas, and direct runoff into sediment.

APPLICATIONS:
< Temporary drains and swales are appropriate for diverting any upslope runoff around unstabilized or disturbed areas of the construction site.
< Prevent slope failures. Prevent damage to adjacent property. Prevents erosion and transport of sediments into water ways. Increases the potential for infiltration. Diverts sediment-laden runoff into sediment basins or traps.

INSTALLATION/APPLICATION:
< Temporary drainage swales will effectively convey runoff and avoid erosion if built properly:
< Size temporary drainage swales using local drainage design criteria. A permanent drainage channel must be designed by a professional engineer (see the local drainage design criteria for proper design).
< At a minimum, the drain/swale should conform to predevelopment drainage patterns and capacities.
< Construct the drain/swale with an uninterrupted, positive grade to a stabilized outlet. Provide erosion protection or energy dissipation measures if the flow out of the drain or swale can reach an erosive velocity.

LIMITATIONS:
< Temporary drains and swales or any other diversion of runoff should not adversely impact upstream or downstream properties.
< Temporary drains and swales must conform to local floodplain management requirements.

MAINTENANCE:
< Inspect weekly and after each rain.
< Repair any erosion immediately.
< Remove sediment which builds up in the swale and restricts its flow capacity.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☒ Control Internal Erosion

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ■ Capital Costs
- ☐ O&M Costs
- ☐ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Temporary and Permanent Seeding

TPS

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☐ Control Internal Erosion

DEFINITION:

Temporary seeding - establishment of short term cover by application of rapidly germinating seed mix (alternatively hydroseeding may be utilized).
Permanent seeding - establishment of final term cover by application of perennial seed mix (alternatively sod may be utilized).

APPLICATION:

Disturbed areas that are at final grade and which will not be disturbed by continuing activities on site. Also areas that are not at final grade but which will be left untouched in excess of one year.

RECOMMENDED SEED MIX:

The recommended seed mix will be dependent on site specific information such as elevation, exposure, soils, water available and topography. Check with the County Extension Service for recommended mixes for site specific conditions:

Utah State University Extension Service
2001 South State Street #S1200
Salt Lake City, Utah 84190
phone (801) 468-3170

LIMITATIONS:

- < Limited to areas that will not be subject to traffic or high usage.
- < May require irrigation and fertilizer which creates potential for impacting runoff quality.
- < May only be applied during appropriate planting season, temporary cover required until that time.

INSTALLATION:

- < Roughen soil to a depth of 2 inches. Add fertilizer, manure, topsoil as necessary.
- < Evenly distribute seed using a commonly accepted method such as; breast seeding, drilling, hydroseeding.
- < Use a seed mix appropriate for soil and location that will provide rapid germination and growth. Check with County for recommended mix and application rate.
- < Cover area with mulch if required due to steep slopes or unsuitable weather conditions.

MAINTENANCE:

- < Provide irrigation as required to establish growth and to maintain plant cover through duration of project.
- < Reseed as necessary to provide 75% coverage
- < Remediate any areas damaged by erosion or traffic.
- < When 75% coverage is achieved inspect monthly for damage and remediate as necessary.

TARGETED POLLUTANTS

- ■ Sediment
- ■ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

BMP: Vehicle And Equipment Cleaning

VEC

DESCRIPTION:
Prevent or reduce the discharge of pollutants to stormwater from vehicle and equipment washing and steam cleaning by using off-site facilities, washing in designated, contained areas only, eliminating discharges to the storm drain by infiltrating or recycling the wash water, and training employees and subcontractors.

APPROACH:
- < Use off-site commercial washing and steam cleaning businesses as much as possible. Washing vehicles and equipment outdoors or in areas where wash water flows onto paved surfaces or into drainage pathways can pollute stormwater. If you wash a large number of vehicles or pieces of equipment, consider conducting this work at an off-site commercial business. These businesses are better equipped to handle and dispose of the wash waters properly. Performing this work off-site can also be economical by eliminating the need for a separate washing operation at your site.
- < If washing must occur on-site, use designated, bermed wash areas to prevent wash water contact with stormwater, creeks, rivers, and other water bodies. The wash area can be sloped for wash water collection and subsequent infiltration into the ground.
- < Use as little water as possible to avoid having to install erosion and sediment controls for the wash area. Use phosphate-free biodegradable soaps. Educate employees and subcontractors on pollution prevention measures. Do not permit steam cleaning on-site. Steam cleaning can generate significant pollutant concentrations.

LIMITATIONS:
- < Even phosphate-free, biodegradable soaps have been shown to be toxic to fish before the soap degrades.
- < Sending vehicles/equipment off-site should be done in conjunction with Stabilized Construction Entrance.(See BMP in the Construction Section).
- < The measures outlined in this fact sheet are insufficient to address all the environmental impacts and compliance issues related to steam cleaning.

MAINTENANCE:
- < Minimal, some berm repair may be necessary.

APPLICATIONS

- ☐ Manufacturing
- ☐ Material Handling
- ☒ Vehicle Maintenance
- ☒ Construction
- ☒ Commercial Activities
- ☐ Roadways
- ☐ Waste Containment
- ☒ Housekeeping Practices

TARGETED POLLUTANTS

- ■ Sediment
- ■ Nutrients
- ■ Heavy Metals
- ■ Toxic Materials
- ■ Oxygen Demanding Substances
- ■ Oil & Grease
- ☐ Floatable Materials
- ☐ Bacteria & Viruses

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

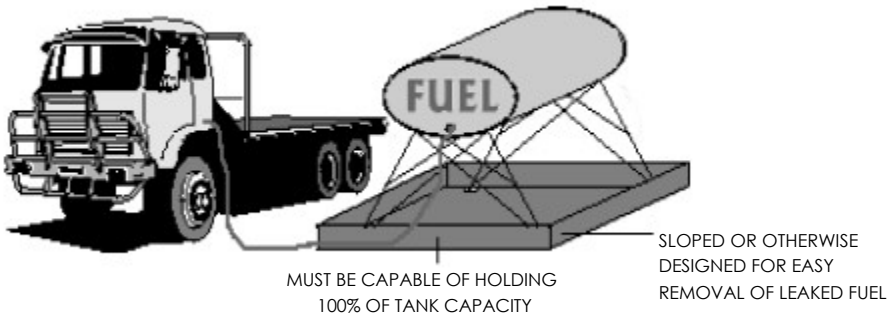
IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☐ Maintenance
- ☒ Training

■ High ☒ Medium ☐ Low

BMP: Vehicle And Equipment Fueling

VEF



DESCRIPTION:
Prevent fuel spills and leaks, and reduce their impacts to storm water by using off-site facilities, fueling in designated areas only, enclosing or covering stored fuel, implementing spill controls, and training employees and subcontractors.

INSTALLATION/APPLICATION:
- < Use off-site fueling stations as much as possible. Fueling vehicles and equipment outdoors or in areas where fuel may spill/leak onto paved surfaces or into drainage pathways can pollute storm water. If you fuel a large number of vehicles or pieces of equipment, consider using an off-site fueling station. These businesses are better equipped to handle fuel and spills properly. Performing this work off-site can also be economical by eliminating the need for a separate fueling area at your site.
- < If fueling must occur on-site, use designated areas, located away from drainage courses, to prevent the runon of storm water and the runoff of spills. Discourage"topping-off" of fuel tanks.
- < Always use secondary containment, such as a drain pan or drop cloth, when fueling to catch spills/leaks. Place a stockpile of spill cleanup materials where it will be readily accessible. Use adsorbent materials on small spills rather than hosing down or burying the spill. Remove the adsorbent materials promptly and dispose of properly.
- < Carry out all Federal and State requirements regarding stationary above ground storage tanks.(40 CF Sub. J) Avoid mobile fueling of mobile construction equipment around the site; rather, transport the equipment to designated fueling areas. With the exception of tracked equipment such as bulldozers and perhaps forklifts, most vehicles should be able to travel to a designated area with little lost time. Train employees and subcontractors in proper fueling and cleanup procedures.

LIMITATIONS:
Sending vehicles/equipment off-site should be done in conjunction with Stabilized Construction Entrance.

MAINTENANCE:
- < Keep ample supplies of spill cleanup materials on-site.
- < Inspect fueling areas and storage tanks on a regular schedule.

OBJECTIVES

- ☒ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☐ Control Internal Erosion

TARGETED POLLUTANTS

- ☐ Sediment
- ☐ Nutrients
- ☒ Toxic Materials
- ☒ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

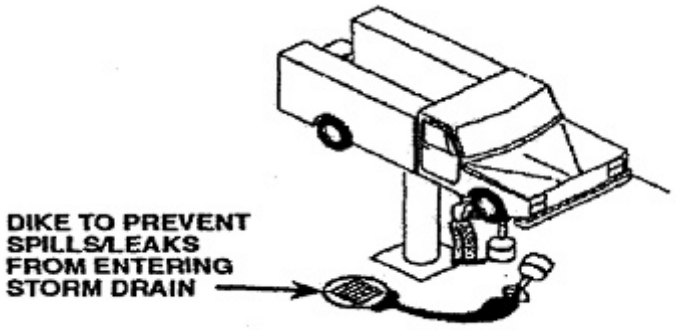
IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☒ Training

■ High ☒ Medium ☐ Low

BMP: Vehicle And Equipment Maintenance & Repair

VEMR



(INSIDE MAINTENANCE FACILITY)

DESCRIPTION:

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

APPROACH:

< Keep equipment clean, don't allow excessive build-up of oil and grease.
< Keep drip pans or containers under the areas that might drip.
< Do not change motor oil or perform equipment maintenance in non-appropriate areas.
< Inspect equipment for leaks on a regular basis.
< Segregate wastes.
< Make sure oil filters are completely drained and crushed before recycling or disposal.
< Make sure incoming vehicles are checked for leaking oil and fluids.
< Clean yard storm drain inlets regularly and especially after large storms.
< Do not pour materials down drains or hose down work areas; use dry seeping.
< Store idle equipment under cover.
< Drain all fluids from wrecked vehicles.
< Recycle greases, used oil or oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic, and transmission fluids.
< Switch to non-toxic chemicals for maintenance when possible.
< Clean small spills with rags, general clean-up with damp mops and larger spills with absorbent material.
< Paint signs on storm drain inlets to indicate that they are not to receive liquid or solid wastes.
< Train employees, minimize use of solvents.

LIMITATIONS:

< Space and time limitations may preclude all work being conducted indoors.
< It may not be possible to contain and clean up spills from vehicles/equipment brought on-site after working hours.
< Dry pans are generally too small to contain antifreeze, which may gush from some vehicles, so drip pans may have to be purchased or fabricated.
< Dry floor cleaning methods may not be sufficient for some spills.

MAINTENANCE:

Should be low if procedures for the approach are followed.

APPLICATIONS

☐ Manufacturing
☒ Material Handling
☒ Vehicle Maintenance
☒ Construction
☒ Commercial Activities
☐ Roadways
☐ Waste Containment
☒ Housekeeping Practices

TARGETED POLLUTANTS

☐ Sediment
☐ Nutrients
■ Heavy Metals
■ Toxic Materials
☐ Oxygen Demanding Substances
■ Oil & Grease
☐ Floatable Materials
☐ Bacteria & Viruses

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

☐ Capital Costs
☒ O&M Costs
☒ Maintenance
☒ Training

■ High ☒ Medium ☐ Low

BMP: Vehicle Use Reduction

VUR

UTA RIDESHARE

533-RIDE

DESCRIPTION:

Reduce the discharge of pollutants to stormwater from vehicle use by highlighting the stormwater impacts, promoting the benefits to stormwater of alternative transportation, and integrating initiatives with existing or emerging regulations and programs.

APPROACH:

< Integrate this best management practice as much as possible with efforts being developed and implemented by government agencies and businesses to reduce vehicle use and improve air quality. Integration will help avoid redundant and/or conflicting programs and be more effective and efficient.

< Establish trip reduction programs at major employers (government, large businesses).

< Reducing vehicle use begins with land use planning. Frequently used public services (post offices, government offices, etc.) and private businesses (banks, restaurants, retail stores, etc.) should be located in "service hubs" near transportation corridors. Multiple, small service hubs should be established as opposed to fewer, large hubs to reduce travel time and thus promote alternative transportation.

< Municipalities and large businesses with significant numbers of employees working in the same location should be encouraged to establish trip reduction programs. These programs encourage alternative transportation such as carpooling, buses, bicycles, walking, etc. through incentives including monetary compensation, increased parking fees, and subsidized public transit passes.

< Public education should highlight the benefits to stormwater in public outreach pieces and campaigns. The benefits to water quality of reduced vehicle usage are second only to the benefits to air quality.

LIMITATIONS:

The use of alternative transportation is highly dependent on its convenience and relative cost.

PROGRAM ELEMENTS

☒ New Development
☒ Residential
☐ Commercial Activities
☐ Industrial Activities
☒ Municipal Facilities
☐ Illegal Discharges

TARGETED POLLUTANTS

☐ Sediment
☐ Nutrients
■ Heavy Metals
■ Toxic Materials
☐ Oxygen Demanding Substances
■ Oil & Grease
☐ Floatable Materials
☐ Bacteria & Viruses

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

☒ Capital Costs
☐ O&M Costs
☒ Regulatory
☒ Training
☒ Staffing
☒ Administrative

■ High ☒ Medium ☐ Low

BMP: Waste Handling And Disposal

WHD

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, re-use, and recycling; and preventing runon and runoff from waste management areas.

APPROACH:
- < Maintain usage inventory to limit waste generation.
- < Substitute or eliminate raw materials.
- < Modify process or equipment.
- < SARA Title III, Section 313 requires reporting for over 300 listed chemicals and chemical compounds. This requirement should be used to track these chemicals although this is not as accurate a means of tracking as other approaches.
- < Track waste generated.
- < Use design data and review: process flow diagram, materials and applications diagram, piping and instructions, equipment list, plot plan.
- < Use economic data and review: Waste treatment and disposal cost. Product utility and economic cost. Operation and maintenance labor cost.
- < Recycle materials whenever possible.
- < Maintain list of and the amounts of materials disposed.
- < Segregation and separate waste.
- < Cover, enclose, or berm industrial wastewater management areas whenever possible to prevent contact with runon or runoff.
- < Equip waste transport vehicles with anti-spill equipment.
- < Minimize spills and fugitive losses such as dust or mist from loading systems.
- < Ensure that sediments or wastes are prevented from being tracked off-site.
- < Training and supervision.
- < Stencil storm drains on the facility's property with prohibitive message regarding waste disposal.

LIMITATIONS:
Hazardous waste that cannot be re-used or recycled must be disposed of by a licensed hazardous waste hauler.

APPLICATIONS

- ☐ Manufacturing
- ☒ Material Handling
- ☐ Vehicle Maintenance
- ☒ Construction
- ☒ Commercial Activities
- ☐ Roadways
- ☒ Waste Containment
- ☒ Housekeeping Practices

TARGETED POLLUTANTS

- ☐ Sediment
- ☐ Nutrients
- ■ Heavy Metals
- ■ Toxic Materials
- ☐ Oxygen Demanding Substances
- ■ Oil & Grease
- ☐ Floatable Materials
- ☐ Bacteria & Viruses

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

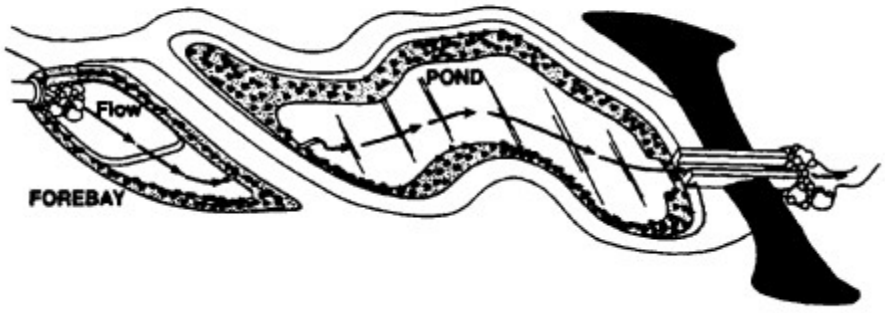
IMPLEMENTATION REQUIREMENTS

- ☐ Capital Costs
- ☒ O&M Costs
- ☐ Maintenance
- ☒ Training

■ High ☒ Medium ☐ Low

BMP: Wet Ponds

WP



DESCRIPTION:
A wet pond has a permanent water pool to treat incoming stormwater. An enhanced wet pond includes a pretreatment sediment forebay.

APPLICATION:
< Need to achieve high level of particulate and some dissolved contaminant removal.
< Ideal for large, regional tributary areas.
< Multiple benefits of passive recreation (e.g. bird watching, wildlife habitat).

INSTALLATION/APPLICATION CRITERIA:
< Water depth of 3 to 9 feet.
< Wetland vegetation, occupying 25-50% of water surface area.
< Design to minimize short-circuiting.
< Bypass storms greater than two year storm.
< Establishing wetland vegetation may be difficult.

LIMITATIONS:
< Concern for mosquitoes and maintaining oxygen in ponds.
< Cannot be placed on steep unstable slopes.
< Need base flow or supplemental water if water level is to be maintained.
< Infeasible in very dense urban areas.
< May require permits from various regulatory agencies, e.g.,Corps of Engineers.

MAINTENANCE:
< Remove floatables and sediment build-up.
< Correct erosion spots in banks.
< Control mosquitoes.

CONSIDERATIONS

☒ Soils
☒ Area Required
☒ Slope
☒ Water Availability
☒ Aesthetics
☐ Hydraulic Head
☒ Environmental Side Effects

TARGETED POLLUTANTS

■ Sediment
☒ Nutrients
☒ Heavy Metals
☒ Toxic Materials
☒ Oxygen Demanding Substances
☒ Oil & Grease
■ Floatable Materials
☒ Bacteria & Viruses

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

■ Capital Costs
☒ O&M Costs
☒ Maintenance
☐ Training

■ High ☒ Medium ☐ Low

NOI, Ordinance & Resolutions, and Interlocal Agreement

APPENDIX J

DRAFT
Interlocal Agreement Relating To Obligations
Required For a Small MS4 General UPDES Permit No. UTR09000
For
Storm Water Management

This Agreement made effective this ____ day of _____, 2018 is entered into by and among Weber State University (hereafter "University"), and Weber County (hereafter "County").

Recitals

WHEREAS, the Utah Interlocal Cooperation Act, Title 11, Chapter 13, Utah Code Annotated 1953, as amended, permits public agencies to enter into agreements with one another for the purpose of exercising, on a joint and cooperative basis, powers and privileges that will benefit their citizens and make the most efficient use of their resources; and,

WHEREAS, all of the parties hereto are public agencies as defined by the Interlocal Cooperation Act;

WHEREAS, the County is a body politic duly organized under the laws of Utah;

WHEREAS, the University is an institution of higher education duly organized under Title 10 of the Utah Code Annotated, as amended;

WHEREAS, in accordance with the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1987, and the Utah Water Quality Act, together with federal and state regulations adopted pursuant to such Acts, the County and the University, as operators of storm water systems, must reduce pollutants in storm water to the Maximum Extent Practicable (hereafter "MEP") to protect water quality;

WHEREAS, the Phase 2 NPDES and UPDES Storm Water Regulations (hereafter "Regulations") specify that compliance with the ***Regulations*** can be attained by developing, implementing and enforcing a storm water management plan which incorporates Best Management Practices addressing State of Utah Department of Environmental Quality Division of Water Quality **Small MS4 General UPDES Permit, No. UTR090000 (MS4 Permit)**

WHEREAS, pursuant to said **MS4 Permit Section 4.3. Sharing Responsibility**, the County and the University as Permittees may share with each other the implementation of the **MS4 Permit Section 4.2. Minimum Control Measures;** listed in Permit Articles:

4.2.1 Public Education and Outreach on Storm Water Impacts

4.2.2 Public Involvement /Participation

4.2.3. Illicit Discharge Detection and Elimination (IDDE)

4.2.4. Construction Storm Water Runoff Control

4.2.5. Long-Term Storm Water Management in New Development and Redevelopment (Post-Construction Storm Water management)

4.2.6. Pollution Prevention and Good Housekeeping for Municipal Operations;

through a written agreement with the obligations of said Permit to be maintained as part of each Permittee's **Storm Water Management Plan** or SWMP.

WHEREAS, the County and the University desire to work cooperatively in compliance with the **MS4 Permit** and subsequent renewals of the **MS4 Permit** with other relevant federal and state storm water Regulations as enacted within the time period of this agreement or through subsequent extensions to this agreement;

NOW, THEREFORE, for the reasons cited above, and in consideration of the mutual covenants and agreements contained herein, Weber State University and Weber County do mutually agree and undertake as follows:

Section One

Scope of Agreement

Intent. The parties intend by this Agreement to co-permit with one another incompliance to and for the implementation of the State of Utah Department of Environmental Quality Division of Water Quality **MS4 Permit**.

Specifically, this Agreement addresses the obligations of the County and the University in relation to compliance with the Regulations which require developing, implementing and enforcing a storm water management plan (SWMP) incorporating Best Management Practices addressing the six minimum control measures as follows:

a. Public Education and Outreach.

b. Public Involvement and Participation.

c. Illicit Discharge Detection and Elimination.

d. Construction Site Runoff Control.

e. Post Construction Storm Water Management.

f. Pollution Prevention and Good House Keeping.

1. County Storm Water Management. The County shall provide for Storm Water Management Administration in accordance with the relevant rules and regulations and laws imposed upon the County.

2. ***Golden Spike Stormwater Coalition*** Management. The County shall provide a contracted entity or firm to serve as a ***Golden Spike Stormwater Coalition Manager to assist in the direction and management of the Golden Spike Stormwater Coalition ("Coalition").***

3. Co-permitting. The County and the University mutually agree to jointly implement the current and subsequent **MS4 Permit** as renewed on a 5 year basis and shall provide one another with the relevant management plan, storm water information, and other necessary documentation relevant to said **MS4 Permit**.

4. County Service Provided. The County shall be responsible for each control measure as follows, and the University shall cooperate with the County in relation to such measures:

    a. Public Education and Outreach. The County shall through its participation in the ***Golden Spike Stormwater Coalition,*** provide materials and coordinate educational activities on a county-wide and regional level, including but not limited to media and public relations, publications and advertisements, and school outreach programs. The County may, through its participation in the ***Golden Spike Stormwater Coalition,*** respond to concerns from University officials and relevant public committee recommendations.

    b. Public Involvement and Participation. The County ***shall participate actively with the University through the Golden Spike Stormwater Coalition for public involvement*** and participation for addressing storm water issues.

    c. Illicit Discharge Detection and Elimination. The County shall provide for this control measure only as it relates to mapping and coordinating of discharges that occurs in multiple jurisdictions, or as otherwise crosses jurisdictional boundaries between the ***Coalition participants. The University has no responsibility for this control measure, inside the unincorporated areas of the County, except for mutual cooperation and coordination with the County at the County's request concerning this control measure.***

    d. Construction Site Runoff Control. The County has no responsibility for this control measure, outside unincorporated areas, except for mutual cooperation and coordination with the University at the University's request concerning this control measure***.***

    e. Post Construction Storm Water Management. The County has no responsibility for this control measure, outside unincorporated areas, except for mutual cooperation and coordination with the University at the University's request concerning this control measure.

    f. Pollution Prevention and Good House Keeping. The County has no responsibility for this control measure, outside unincorporated areas, except for mutual cooperation and coordination with the University at the University's request concerning this control measure.

5. The University shall participate financially with other Coalition participants as agreed upon for the County providing a ***Golden Spike Stormwater Coalition Manager to assist in the direction and management of the Golden Spike Stormwater Coalition.***

6. University Service Provided. The University shall be responsible for each control measure as follows, and the County shall cooperate with the University in relation to such measurable:

   a. Public Education and Outreach. The University shall be responsible for distribution of material provided by the County within the University's jurisdiction as coordinated with the County Storm Water Director. The University may coordinate additional public education and outreach program with the County for special events or other activities at the discretion of the University.

   b. Public Involvement and Participation. The University ***shall participate actively with the County through the existing Golden Spike Stormwater Coalition.***

   c. Illicit Discharge Detection and Elimination. The University shall provide for the enforcement of illicit discharge detection and elimination within the boundaries of the University.

   d. Construction Site Runoff Control. The University is responsible to implement and administer this control measure within its jurisdiction and may seek mutual cooperation and coordination with the County at the University's request concerning this control measure.

   e. Post Construction Storm Water Management. The University is responsible to implement and administer this control measure within its jurisdiction and may seek mutual cooperation and coordination with the County at the University's request concerning this control measure.

   f. Pollution Prevention and Good House Keeping. The University is responsible to implement and administer this control measure within its jurisdiction and may seek mutual cooperation and coordination with the County at the University's request concerning this control measure.

7. Nominal Annual Fee. The County through its participation in the Golden Spike Stormwater Coalition may assess a ***nominal*** annual fee as mutually agreed upon by the University and other Coalition participants to reimburse the County for administering the contract for and making compensation to the entity or firm as the ***Coalition Manager,*** as well as for copy costs, brochure and publication costs, and community outreach program costs, etc. **The University agrees to pay the l fee assessed by the County, in a timely manner, upon receiving a written billing notice for the same from the Coalition and or County.**

8. Limitations. The County, except as outlined by this Agreement ***or by agreement separate from this***, does not assume any responsibility to inspect, install, operate or otherwise maintain the University's storm water system, storm water program, or storm water utility. Further, the County shall have no duty regarding storm water management, fees, inspections, or any other

types of activity outside the scope of this Agreement, unless such relates to an unincorporated area.

9. Designated Contacts. The University shall designate its contact with the County for any and all issues which may arise under this Agreement. The County designates ***the Weber County Engineer*** as its contact with the University for any and all issues which may arise under this Agreement. The County and the University contacts may also consult with each other from time to time on the status of mutual relations and the terms of this Agreement.

Section Two

General Provisions

1. Termination. This Agreement may be terminated by either party upon ninety ***(90***) days written notice form the Mayor or County Commission provided either to the County Clerk or the University Recorder, as the case may dictate.

2. Effective Date. This Agreement shall become effective upon compliance with state law governing interlocal cooperation agreements and upon ratification by the parties as provided U.C.A. Section 11-13-10, as amended.

3. Amendment. This Interlocal Agreement may be changed, modified, or amended by written agreement of the participants, upon adoption of appropriate resolutions from County and the University, along with an approved as to form by the County Attorney and University Attorney, and upon meeting all other applicable requirements of the Interlocal Cooperation Act.

4. Entire Agreement. This Agreement, together with any written amendments, shall constitute the entire agreement between the parties and any prior understanding or representation of any kind preceding the date of this Agreement shall not be binding upon either party except for the resolutions of each party herein attached and incorporated by reference.

5. Indemnification. The County agrees to save and hold harmless the University from its obligation under this Agreement. ***The University agrees to save and hold harmless the County from its obligation under this Agreement.*** In all other instances, each of the parties agrees to defend, hold harmless, and indemnify the other party, its elected officials, officers, employees, agents, and volunteers, for the wrongful or negligent acts or omissions of employees against any and all liabilities, claims, damages, actions, suits, proceedings, costs and expenses which arise by reason of the Agreement, however, in no event shall indemnification exceed the amount set forth in Utah Code Ann. 36-30-1 et. seq, at the time of judgment.

6. Employee Status. It is understood and agreed by the parties that any and all personnel furnished by the parties shall remain employees **of** the respective parties and shall abide by the personnel policies of the respective parties.

7. Hired Consultant Status. It is understood and agreed by the parties that any Consultant including and not limited to ***the firm or entity serving as Coalition Manager*** as engaged by the County to provide management for the Coalition shall not represent themselves as employees of the respective parties

8. Warranties. Each party represents and warrants that it is a public agency within the meaning of the Interlocal Cooperation Act, is authorized to execute and deliver this Agreement and there is no litigation, legal action or investigation between the parties that would adversely affect this Agreement.

9. Documents on File. Executed copies of this Agreement shall be placed on file in the office of the County Clerk and the University Recorder and shall remain on file for public inspection for the duration of this Agreement.

10. Governing Law. It is understood and agreed by the parties that this Agreement shall be governed by the laws of the State of Utah as to interpretation and performance.

11. Non-transferable. This rights, duties, powers and obligations of this Agreement may not be transferred, assigned or delegated without the consent of the parties.

12. Rules of Construction and Severability. Standard rules of construction, as well as the context of this agreement, shall be used to determine the meaning of the provisions herein, except as follows: If any of the provisions herein are different from what is normally allowed or required by law, every effort shall be made to construe the clauses to be legally binding and to infer voluntary arrangements which are in addition to what is normally allowed or required by law. If any provision, article, sentence, clause, phrase, or portion of this agreement, including but not limited to any written amendments, is for any reason held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this agreement. It is thus the intention of the parties that each provision of this agreement shall be deemed independent of all other provisions herein.

Interlocal Agreement Relating To Obligations
Required For a Small MS4 General UPDES Permit No. UTR09000
For
Storm Water Management

DATED this _____ Day of _____, 2018

FOR WEBER COUNTY:

_____
(Chair, Weber County Commission)

ATTEST:

_____
County Clerk

APPROVED AS TO FORM:

_____
County Attorney

DATED this _____ Day of _____, 2018

FOR WEBER STATE UNIVERSITY:

_____
Mayor

ATTEST:

_____
University Clerk

APPROVED AS TO FORM:

_____
University Attorney

WEBER STATE UNIVERSITY
RESOLUTION NO. ____

A RESOLUTION APPROVING AN INTERLOCAL AGREEMENT BETWEEN WEBER STATE UNIVERSITY AND WEBER COUNTY RELATING TO OBLIGATIONS REQUIRED FOR UPDES GENERAL PERMIT FOR DISCHARGES FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4'S)
PERMIT NO. UTR090000

WHEREAS, the Utah Interlocal Cooperation Act, Title 11, Chapter3, Utah Code Annotated 1953 as amended, permits governmental units to enter into agreements with one another for the purpose of exercising on a joint cooperative basis powers and privileges that will benefit their citizens and make the most efficient use of their resources; and

WHEREAS, Title 11, Chapter 13, Section 5 of the Utah Code Annotated, 1953 as amended, requires that governing bodies of governmental units adopt resolutions approving an interlocal agreement before such agreements become effective; and

WHEREAS, Weber County and Weber State University have negotiated an Agreement for the purposes of providing storm water services in accordance with the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1987, and the Utah Water Quality Act, together with federal and state regulation adopted pursuant to such Acts for Weber State University;

WHEREAS, Weber County and Weber State find that mutual benefit and cost effective government can be achieved through this interlocal agreement for services entailed herein;

NOW, THEREFORE, BE IT RESOLVED by the Mayor and University Council of Weber State University the attached interlocal agreement is entered with Weber County for the purposes of storm water management as authorized in the Interlocal Agreement, and the Interlocal Agreement is hereby approved and incorporated by this reference. The Council hereby authorizes and directs the Mayor to execute the Interlocal Agreement for and on behalf of Weber State University.

PASSED AND APPROVED by the Weber State University Council this _____day of _____, 2018.

_____ ATTEST:_____

Mayor, Weber State University University Recorder

DRAFT
Interlocal Agreement Relating To Obligations
Required For a Small MS4 General UPDES Permit No. UTR09000
For
Storm Water Management

This Agreement made effective this ____ day of _____, 2018 is entered into by and among Weber State University (hereafter "University"), and Weber County (hereafter "County").

Recitals

WHEREAS, the Utah Interlocal Cooperation Act, Title 11, Chapter 13, Utah Code Annotated 1953, as amended, permits public agencies to enter into agreements with one another for the purpose of exercising, on a joint and cooperative basis, powers and privileges that will benefit their citizens and make the most efficient use of their resources; and,

WHEREAS, all of the parties hereto are public agencies as defined by the Interlocal Cooperation Act;

WHEREAS, the County is a body politic duly organized under the laws of Utah;

WHEREAS, the University is an institution of higher education duly organized under Title 10 of the Utah Code Annotated, as amended;

WHEREAS, in accordance with the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1987, and the Utah Water Quality Act, together with federal and state regulations adopted pursuant to such Acts, the County and the University, as operators of storm water systems, must reduce pollutants in storm water to the Maximum Extent Practicable (hereafter "MEP") to protect water quality;

WHEREAS, the Phase 2 NPDES and UPDES Storm Water Regulations (hereafter "Regulations") specify that compliance with the ***Regulations*** can be attained by developing, implementing and enforcing a storm water management plan which incorporates Best Management Practices addressing State of Utah Department of Environmental Quality Division of Water Quality **Small MS4 General UPDES Permit, No. UTR090000 (MS4 Permit)**

WHEREAS, pursuant to said **MS4 Permit Section 4.3. Sharing Responsibility**, the County and the University as Permittees may share with each other the implementation of the **MS4 Permit Section 4.2. Minimum Control Measures;** listed in Permit Articles:

4.2.1 Public Education and Outreach on Storm Water Impacts

4.2.2 Public Involvement /Participation

4.2.3. Illicit Discharge Detection and Elimination (IDDE)

4.2.4. Construction Storm Water Runoff Control

4.2.5. Long-Term Storm Water Management in New Development and Redevelopment (Post-Construction Storm Water management)

4.2.6. Pollution Prevention and Good Housekeeping for Municipal Operations;

through a written agreement with the obligations of said Permit to be maintained as part of each Permittee's **Storm Water Management Plan** or SWMP.

WHEREAS, the County and the University desire to work cooperatively in compliance with the **MS4 Permit** and subsequent renewals of the **MS4 Permit** with other relevant federal and state storm water Regulations as enacted within the time period of this agreement or through subsequent extensions to this agreement;

NOW, THEREFORE, for the reasons cited above, and in consideration of the mutual covenants and agreements contained herein, Weber State University and Weber County do mutually agree and undertake as follows:

Section One

Scope of Agreement

Intent. The parties intend by this Agreement to co-permit with one another incompliance to and for the implementation of the State of Utah Department of Environmental Quality Division of Water Quality **MS4 Permit**.

Specifically, this Agreement addresses the obligations of the County and the University in relation to compliance with the Regulations which require developing, implementing and enforcing a storm water management plan (SWMP) incorporating Best Management Practices addressing the six minimum control measures as follows:

a. Public Education and Outreach.

b. Public Involvement and Participation.

c. Illicit Discharge Detection and Elimination.

d. Construction Site Runoff Control.

e. Post Construction Storm Water Management.

f. Pollution Prevention and Good House Keeping.

1. County Storm Water Management. The County shall provide for Storm Water Management Administration in accordance with the relevant rules and regulations and laws imposed upon the County.

2. ***Golden Spike Stormwater Coalition*** Management. The County shall provide a contracted entity or firm to serve as a ***Golden Spike Stormwater Coalition Manager to assist in the direction and management of the Golden Spike Stormwater Coalition ("Coalition").***

3. Co-permitting. The County and the University mutually agree to jointly implement the current and subsequent **MS4 Permit** as renewed on a 5 year basis and shall provide one another with the relevant management plan, storm water information, and other necessary documentation relevant to said **MS4 Permit**.

4. County Service Provided. The County shall be responsible for each control measure as follows, and the University shall cooperate with the County in relation to such measures:

    a. Public Education and Outreach. The County shall through its participation in the ***Golden Spike Stormwater Coalition,*** provide materials and coordinate educational activities on a county-wide and regional level, including but not limited to media and public relations, publications and advertisements, and school outreach programs. The County may, through its participation in the ***Golden Spike Stormwater Coalition,*** respond to concerns from University officials and relevant public committee recommendations.

    b. Public Involvement and Participation. The County ***shall participate actively with the University through the Golden Spike Stormwater Coalition for public involvement*** and participation for addressing storm water issues.

    c. Illicit Discharge Detection and Elimination. The County shall provide for this control measure only as it relates to mapping and coordinating of discharges that occurs in multiple jurisdictions, or as otherwise crosses jurisdictional boundaries between the ***Coalition participants. The University has no responsibility for this control measure, inside the unincorporated areas of the County, except for mutual cooperation and coordination with the County at the County's request concerning this control measure.***

    d. Construction Site Runoff Control. The County has no responsibility for this control measure, outside unincorporated areas, except for mutual cooperation and coordination with the University at the University's request concerning this control measure***.***

    e. Post Construction Storm Water Management. The County has no responsibility for this control measure, outside unincorporated areas, except for mutual cooperation and coordination with the University at the University's request concerning this control measure.

    f. Pollution Prevention and Good House Keeping. The County has no responsibility for this control measure, outside unincorporated areas, except for mutual cooperation and coordination with the University at the University's request concerning this control measure.

5. The University shall participate financially with other Coalition participants as agreed upon for the County providing a ***Golden Spike Stormwater Coalition Manager to assist in the direction and management of the Golden Spike Stormwater Coalition.***

6. University Service Provided. The University shall be responsible for each control measure as follows, and the County shall cooperate with the University in relation to such measurable:

   a. Public Education and Outreach. The University shall be responsible for distribution of material provided by the County within the University's jurisdiction as coordinated with the County Storm Water Director. The University may coordinate additional public education and outreach program with the County for special events or other activities at the discretion of the University.

   b. Public Involvement and Participation. The University ***shall participate actively with the County through the existing Golden Spike Stormwater Coalition.***

   c. Illicit Discharge Detection and Elimination. The University shall provide for the enforcement of illicit discharge detection and elimination within the boundaries of the University.

   d. Construction Site Runoff Control. The University is responsible to implement and administer this control measure within its jurisdiction and may seek mutual cooperation and coordination with the County at the University's request concerning this control measure.

   e. Post Construction Storm Water Management. The University is responsible to implement and administer this control measure within its jurisdiction and may seek mutual cooperation and coordination with the County at the University's request concerning this control measure.

   f. Pollution Prevention and Good House Keeping. The University is responsible to implement and administer this control measure within its jurisdiction and may seek mutual cooperation and coordination with the County at the University's request concerning this control measure.

7. Nominal Annual Fee. The County through its participation in the Golden Spike Stormwater Coalition may assess a ***nominal*** annual fee as mutually agreed upon by the University and other Coalition participants to reimburse the County for administering the contract for and making compensation to the entity or firm as the ***Coalition Manager,*** as well as for copy costs, brochure and publication costs, and community outreach program costs, etc. **The University agrees to pay the l fee assessed by the County, in a timely manner, upon receiving a written billing notice for the same from the Coalition and or County.**

8. Limitations. The County, except as outlined by this Agreement ***or by agreement separate from this***, does not assume any responsibility to inspect, install, operate or otherwise maintain the University's storm water system, storm water program, or storm water utility. Further, the County shall have no duty regarding storm water management, fees, inspections, or any other

types of activity outside the scope of this Agreement, unless such relates to an unincorporated area.

9. Designated Contacts. The University shall designate its contact with the County for any and all issues which may arise under this Agreement. The County designates ***the Weber County Engineer*** as its contact with the University for any and all issues which may arise under this Agreement. The County and the University contacts may also consult with each other from time to time on the status of mutual relations and the terms of this Agreement.

Section Two

General Provisions

1. Termination. This Agreement may be terminated by either party upon ninety ***(90***) days written notice form the Mayor or County Commission provided either to the County Clerk or the University Recorder, as the case may dictate.

2. Effective Date. This Agreement shall become effective upon compliance with state law governing interlocal cooperation agreements and upon ratification by the parties as provided U.C.A. Section 11-13-10, as amended.

3. Amendment. This Interlocal Agreement may be changed, modified, or amended by written agreement of the participants, upon adoption of appropriate resolutions from County and the University, along with an approved as to form by the County Attorney and University Attorney, and upon meeting all other applicable requirements of the Interlocal Cooperation Act.

4. Entire Agreement. This Agreement, together with any written amendments, shall constitute the entire agreement between the parties and any prior understanding or representation of any kind preceding the date of this Agreement shall not be binding upon either party except for the resolutions of each party herein attached and incorporated by reference.

5. Indemnification. The County agrees to save and hold harmless the University from its obligation under this Agreement. ***The University agrees to save and hold harmless the County from its obligation under this Agreement.*** In all other instances, each of the parties agrees to defend, hold harmless, and indemnify the other party, its elected officials, officers, employees, agents, and volunteers, for the wrongful or negligent acts or omissions of employees against any and all liabilities, claims, damages, actions, suits, proceedings, costs and expenses which arise by reason of the Agreement, however, in no event shall indemnification exceed the amount set forth in Utah Code Ann. 36-30-1 et. seq, at the time of judgment.

6. Employee Status. It is understood and agreed by the parties that any and all personnel furnished by the parties shall remain employees **of** the respective parties and shall abide by the personnel policies of the respective parties.

7. Hired Consultant Status. It is understood and agreed by the parties that any Consultant including and not limited to ***the firm or entity serving as Coalition Manager*** as engaged by the County to provide management for the Coalition shall not represent themselves as employees of the respective parties

8. Warranties. Each party represents and warrants that it is a public agency within the meaning of the Interlocal Cooperation Act, is authorized to execute and deliver this Agreement and there is no litigation, legal action or investigation between the parties that would adversely affect this Agreement.

9. Documents on File. Executed copies of this Agreement shall be placed on file in the office of the County Clerk and the University Recorder and shall remain on file for public inspection for the duration of this Agreement.

10. Governing Law. It is understood and agreed by the parties that this Agreement shall be governed by the laws of the State of Utah as to interpretation and performance.

11. Non-transferable. This rights, duties, powers and obligations of this Agreement may not be transferred, assigned or delegated without the consent of the parties.

12. Rules of Construction and Severability. Standard rules of construction, as well as the context of this agreement, shall be used to determine the meaning of the provisions herein, except as follows: If any of the provisions herein are different from what is normally allowed or required by law, every effort shall be made to construe the clauses to be legally binding and to infer voluntary arrangements which are in addition to what is normally allowed or required by law. If any provision, article, sentence, clause, phrase, or portion of this agreement, including but not limited to any written amendments, is for any reason held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this agreement. It is thus the intention of the parties that each provision of this agreement shall be deemed independent of all other provisions herein.

Interlocal Agreement Relating To Obligations
Required For a Small MS4 General UPDES Permit No. UTR09000
For
Storm Water Management

DATED this _____ Day of _____, 2018

FOR WEBER COUNTY:

_____
(Chair, Weber County Commission)

ATTEST:

_____
County Clerk

APPROVED AS TO FORM:

_____
County Attorney

DATED this _____ Day of _____, 2018

FOR WEBER STATE UNIVERSITY:

_____
Mayor

ATTEST:

_____
University Clerk

APPROVED AS TO FORM:

_____
University Attorney

WEBER STATE UNIVERSITY
RESOLUTION NO. ____

A RESOLUTION APPROVING AN INTERLOCAL AGREEMENT BETWEEN WEBER STATE UNIVERSITY AND WEBER COUNTY RELATING TO OBLIGATIONS REQUIRED FOR UPDES GENERAL PERMIT FOR DISCHARGES FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4'S)
PERMIT NO. UTR090000

WHEREAS, the Utah Interlocal Cooperation Act, Title 11, Chapter3, Utah Code Annotated 1953 as amended, permits governmental units to enter into agreements with one another for the purpose of exercising on a joint cooperative basis powers and privileges that will benefit their citizens and make the most efficient use of their resources; and

WHEREAS, Title 11, Chapter 13, Section 5 of the Utah Code Annotated, 1953 as amended, requires that governing bodies of governmental units adopt resolutions approving an interlocal agreement before such agreements become effective; and

WHEREAS, Weber County and Weber State University have negotiated an Agreement for the purposes of providing storm water services in accordance with the Federal Water Pollution Control Act, as amended by the Clean Water Act of 1987, and the Utah Water Quality Act, together with federal and state regulation adopted pursuant to such Acts for Weber State University;

WHEREAS, Weber County and Weber State find that mutual benefit and cost effective government can be achieved through this interlocal agreement for services entailed herein;

NOW, THEREFORE, BE IT RESOLVED by the Mayor and University Council of Weber State University the attached interlocal agreement is entered with Weber County for the purposes of storm water management as authorized in the Interlocal Agreement, and the Interlocal Agreement is hereby approved and incorporated by this reference. The Council hereby authorizes and directs the Mayor to execute the Interlocal Agreement for and on behalf of Weber State University.

PASSED AND APPROVED by the Weber State University Council this _____day of _____, 2018.

_____ ATTEST:_____

Mayor, Weber State University University Recorder

STORM WATER MANAGEMENT POLICY

PURPOSE AND NEEDS STATEMENT

As required by the Federal Clean Water Act Phase II (CWA) and the State of Utah, Weber State University (University) shall regulate and minimize the discharge of pollutants into the storm drain system.

BACKGROUND

This document provides authority for the implementation and enforcement Weber State University's Storm Water Management Plan (SWMP). The Storm Water Management Plan was developed to satisfy the requirements of the Utah Pollution Discharge Elimination System (UPDES) General Permit for Discharges from Small Municipal Separate Storm Sewer Systems (MS4s), Permit No. UTR 090000.

The goals and activities identified in the Storm Water Management Plan are intended to reduce the discharge of pollutants that may compromise the quality of water in receiving rivers, streams, and lakes.

The Utah Division of Water Quality issued Weber State University a storm water discharge permit (Permit) which requires the establishment of a plan that implements procedures and improvements also known as Best Management Practices (BMPs) for the following Minimum Control Measures (MCMs):

- Public Education and Outreach
- Public Participation/Involvement
- Illicit Discharge Detection and Elimination
- Construction Site Storm Water Runoff Control
- Post-Construction Storm Water Management
- Pollution Prevention/Good Housekeeping

The SWMP outlines the procedures needed to help meet the minimum control measures listed above. While the complete elimination of pollutants into storm water may be technically or financially infeasible, the implementation of the SWMP must reduce pollutants to the Maximum Extent Practicable (MEP) described in the Permit.

STORM WATER MANAGEMENT PLAN POLICY STATEMENT

All activities taking place on University property shall be conducted in compliance with the Storm Water Management Plan. Activities include those sponsored by University organizations as well as non-University organizations. This policy also applies to University operations and construction projects.

EFFECTIVE DATE

This policy is in affect as of _____

POLICY MANAGEMENT

In order to comply with the Storm Water Management Policy, the University hereby authorizes the oversight of the policy as follows:

Responsible Office: Weber State University, Environmental Health and Safety

Responsible Executive: Mark Halverson, Facilities Management

Responsible Officer: Rick Wade, Director of Health & Safety

POLICY ADMINISTRATION

The Storm Water Management Policy will be administered by Weber State University's Environmental Health and Safety. This office shall have authority to impose corrective action on non-compliant activities in consultation with the respective office, department, or general contractor found to be in violation of this policy. Penalties may be applied as appropriate under existing codes, rules, and regulations of the university, state, or federal government. Interpretation of this Storm Water Management Policy is assigned to the Responsible Officer, who shall ensure that the requirements of the Clean Water Act Phase II Storm Water Regulations are respectfully followed. Corrective action, as determined by the Responsible Office, shall be fair and appropriate as determined by the Responsible Executive.

POLICY COMPLIANCE AND REPORTING

The University's Environmental Health and Safety shall review and report on Policy compliance to the Responsible Officer. Reports shall be submitted annually.

The Responsible Office shall develop a written Storm Water Management Plan to ensure that the University complies with the General Permit for Discharges from Small Municipal Separate Storm Sewer Systems.

STORM WATER MANAGEMENT PLAN

The Storm Water Management Plan (SWMP) shall establish written procedures needed to ensure that the Minimum Control Measures (MCM) are adequately addressed for activities taking place on University property. The SWMP shall require the cooperation of various University departments and offices conducting activities on University property. At a minimum, the SWMP shall:

1. Specify actions, timelines, and approvals necessary for University activities. The SWMP shall include language specific to activities that may put the University out of compliance with the Clean Water Act Phase II and appropriate measures to prevent them. The SWMP shall not only address maintenance and construction activities but also events hosted by the University.
2. Provide students and faculty with opportunities to support the Plan by way of volunteer activities that focus on storm water education, pollution awareness, pollution prevention, and clean-up efforts.

3. Establish a process to ensure that approved activities follow through with their commitment to the Storm Water Management Policy (post activity review or evaluation).
4. Establish a process to ensure that long term storm water facilities are properly maintained.
5. Direct how the SWMP is to be updated.
6. Direct how Policy compliance is to be reviewed and reported to the Responsible Office.
7. Provide the Responsible Office with suggestions for corrective actions for common compliance violations.

DEFINITIONS AS USED IN THIS DOCUMENT

Best Management Practices (BMP): Activities or structural improvements that help reduce the quantity and improve the quality of storm water runoff. BMPs include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Clean Water Act Phase II (CWA): An act of Congress that established a storm water program under the Environmental Protection Agency to preserve, protect, and improve the Nation's water resources from polluted storm water runoff.

General Permit for discharges from MS4 (Permit): Authorization for a municipal separate storm sewer system to discharge storm water into waters of the United States.

Maximum Extent Practicable (MEP): The reasonable amount of effort and expense needed to control the discharge of pollutants into storm water.

Municipal Separate Storm Sewer System (MS4): An MS4 is a conveyance or system of conveyances that is owned by a state, city, town, village, or other public entity that is used to collect and discharge storm water and includes ditches, waterways, pipes and their appurtenances.

Responsible Office: The office designated by the University to oversee the Storm Water Management Policy.

Storm Water Management Plan (SWMP): A plan that includes general guidance and structural controls for activities to reduce pollutants in storm water runoff.

Storm Water Management Policy (Policy): The official statement endorsed by the University to comply with the Clean Water Act Phase II.

Storm Water Pollutant: Chemicals, sediment, trash, disease-carrying organisms, and other contaminants picked up by storm water as it runs off hard surfaces into rivers, streams, and other water bodies.

Storm Water Runoff: Precipitation that is not intercepted or otherwise captured at a site which eventually enters into natural water bodies such as rivers, streams, and lakes.

University: Weber State University

Utah Pollution Discharge Elimination System (UPDES): The Utah Pollutant Discharge Elimination System (UPDES) is the Utah version of the National Pollutant Discharge Elimination System (NPDES), which is the permit system mandated by § 402 of the Clean Water Act to control pollutants in waters of the U.S., including storm water.

LID Measures References and Documents

APPENDIX K

Low Impact Development (LID) Strategies

Minimum Control Measure: Long-Term Storm Water Management in New Development and Redevelopment (Post-Construction Storm Water Management)

Subcategory: Innovative BMPs for Site Plans

Urban development significantly alters the natural features and hydrology of a landscape. Development and redevelopment usually creates impervious surfaces like concrete sidewalks and asphalt roadways, commercial and residential buildings, and even earth compacted by construction activities. Prevented from soaking into the ground, rainwater runs across parking lots and streets, collecting used motor oil, pesticides, fertilizers, and other pollutants.

In most cities, a complex system of piping usually feeds contaminated storm water flows directly into streams and coastal waters. More recently, storm water control structures (sometimes called Best Management Practices or BMPs) like dry extended detention ponds or wet retention ponds have been installed, most in new development, to intercept storm water on its way to surface waters.

Historically, the goal of storm water planning has been to prevent localized flooding by moving large amounts of water offsite as quickly as possible. However, experience has shown that traditional storm water management has many limitations.

Expensive, ever-expanding storm sewer systems strain municipal budgets. Fast moving storm water discharges cause downstream flooding, erode stream banks, and contribute to water quality violations. Bacteria and other pathogens carried in storm water contaminate coastal waters, often requiring beach closures. Rainwater diverted or otherwise unable to soak into the soil cannot recharge aquifers. This reduces stream base flows, which can cause streams to dry-up for extended periods of time. Storm water that collects in detention basins or flows over impervious surfaces is often much warmer than the streams into which it flows. This is a problem because a temperature increase of just one or two degrees can stress fish and other aquatic organisms.

Mimicking Natural Hydrology

Efforts to address storm water problems resulting from traditional development methods have produced a number of innovative design alternatives. For example, researchers and developers are experimenting with minimizing the distance between land uses to decrease infrastructure requirements. Another method reduces storm water runoff by conserving forests and green spaces and protecting stream buffers. Yet another technique diminishes impervious surfaces, narrows road and sidewalk widths, reduces parking lot sizes, minimizes or removes cul-de-sacs, and replaces traditional paving materials with pervious concrete.

Such innovative site design grew out of concerns that rapid urban development was not only impairing water quality but eroding quality of life. Concerned by the development of sensitive

agricultural and wetlands, and burdened by the rising costs of storm water damage, some communities are implementing Green Design strategies, such as LID, Conservation Development, Better Site Design, and Smart Growth. The complementary goals of these design schemes lessen the impact of storm water while still providing opportunities for development.

LID

Like other alternative development strategies, LID seeks to control storm water at its source. Rather than moving storm water offsite though a conveyance system, the goal of LID is to restore the natural, pre-developed ability of an urban site to absorb storm water.

LID integrates small-scale measures scattered throughout the development site. Constructed green spaces, native landscaping, and a variety of innovative bioretention and infiltration techniques capture and manage storm water on-site. LID reduces peak runoff by allowing rainwater to soak into the ground, evaporate into the air, or collect in storage receptacles for irrigation and other beneficial uses. In areas with slow drainage or infiltration, LID captures the first flush before excess storm water is diverted into traditional storm conveyance systems. The result is development that more closely maintains pre-development hydrology. Furthermore, LID has been shown to be cost effective, and in some cases, cheaper than using traditional storm water management techniques.

LID Techniques

LID can be simple and effective. Instead of relying solely on complex and costly collection, conveyance, storage and treatment systems, LID employs a range of economical devices that control runoff at the source.

- Bioretention cells, commonly known as rain gardens, are relatively small-scale, landscaped depressions containing plants and a soil mixture that absorbs and filters runoff.
- Cisterns and rain barrels harvest and store rainwater collected from roofs. By storing and diverting runoff, these devices help reduce the flooding and erosion caused by storm water runoff. And because they contain no salts or sediment, they can provide "soft" chemical-free water for garden or lawn irrigation, reducing water bills and conserving municipal water supplies.
- Green roofs are roof-tops partially or completely covered with plants. Used for decades in Europe, green roofs help mitigate the urban "heat island" effect and reduce peak storm water flows. The vegetated cover also protects and insulates the roof, extending its life and reducing energy costs.
- Permeable and porous pavements reduce storm water runoff by allowing water to soak through the paved surface into the ground beneath. Permeable pavement encompasses a variety of mediums, from porous concrete and asphalt, to plastic grid systems and interlocking paving bricks suitable for driveways and pedestrian malls. Permeable

pavement helps reduce runoff volumes at a considerably smaller cost than traditional storm drain systems.

- Grass swales are broad, open channels sown with erosion resistant and flood tolerant grasses. Used alongside roadways for years primarily as storm water conveyances, swales can slow storm water runoff, filter it, and allow it to soak into the ground. Swales and other biofiltration devices like grass filter-strips improve water quality and reduce in-stream erosion by slowing the velocity of storm water runoff before it enters the stream. They also cost less to install than curbs, storm drain inlets, and piping systems.

Conservation Development

Like LID, Conservation Development tries to mitigate the effects of urbanization, but it places additional emphasis on protecting aquatic habitat and other natural resources. Conservation Development subdivisions are characterized by compact clustered lots surrounding a common open space. Conservation Development's goal is to disturb as little land area as possible while simultaneously allowing for the maximum number of residences permitted under zoning laws.

Prior to new construction, conservation developers evaluate natural topography, natural drainage patterns, soils and vegetation. They deploy storm water best management practices to help prevent flooding and protect natural hydrology. By maintaining natural hydrological processes, Conservation Development creates conditions that slow, absorb, and filter storm water runoff onsite.

Because future development threatens valuable natural features, Conservation Development provides specific provisions for long-term and permanent resource protection. Conservation easements, transfer of development rights, and other "in perpetuity" mechanisms ensure that protective measures are more than just temporary.

Better Site Design

The goals of Better Site Design are to reduce impervious cover, preserve natural lands, and capture storm water onsite. To meet these goals, designers employ a variety of methods. To reduce impervious cover, they narrow streets and sidewalks, minimize cul-de-sacs, tighten parking spaces, and reduce the size of driveways and housing lots.

To reduce storm water runoff, designers preserve natural lands, using them as buffer zones along streams, wetlands and steep slopes. They employ landscaping techniques that flatten slopes and preserve native vegetation and clusters of trees. They create bioretention areas - open channels, filter strips and vegetated swales - to increase storm water infiltration, helping to protect streams, lakes, and wetlands.

Development Districts

Development districts are areas zoned specifically for the purpose of permitting property development. Development districts concentrate intense, mixed-use development in an area typically five-acres and larger. Although a development district's percentage of imperviousness may exceed those of surrounding areas, such focused, compact development creates a smaller "footprint" than traditional development patterns.

A well-designed development district can contribute to a number of water quality benefits. Compact development lends itself to more environmentally friendly transportation options, like biking or walking, and shorter and less frequent automobile trips. A development district that redevelops an urban area reuses existing infrastructure, which can reduce the demand for new construction elsewhere in a watershed. Many development districts incorporate tree-lined streets, rain gardens, green roofs and other best management practices into their designs, helping manage storm water onsite.

Smart Growth

Smart Growth is a set of development strategies that seek to balance economic growth, urban renewal, and conservation. In newly developing areas, Smart Growth advocates compact, town-centered communities composed of open green space, businesses, and affordable housing, interconnected by pedestrian walkways and bicycle lanes. Smart Growth's emphasis on walkable communities and alternative forms of transportation can help alleviate the environmental consequences of automobile use. Smart Growth also advocates the revitalization of inner cities and older suburbs. Reusing existing infrastructure often costs less than new construction, and it helps slow the spread of large-scale impervious surfaces.

Ten core principles guide Smart Growth:

- Mix land use.
- Take advantage of compact building design.
- Create a range of housing opportunities and choices.
- Create walkable neighborhoods
- Foster distinctive, attractive communities with a strong sense of place.
- Preserve open space, farmland, natural beauty and critical environmental areas.
- Strengthen and direct development toward existing communities.
- Provide a variety of transportation choices.
- Make development decisions predictable, fair and cost effective.
- Encourage community and stakeholder collaboration in development decisions.

While not explicitly mentioned as a guiding principal, storm water management nevertheless benefits from Smart Growth policies. Compact, high-density development reduces the spread of impervious surfaces on a watershed scale. This helps reduce overall storm water runoff. Infill and redevelopment that reuses existing infrastructure can be cheaper than greenfield

development, which requires expensive new infrastructure. The `Fix it First' management philosophy advocates repairing and upgrading existing, frequently crumbling infrastructure before spending on new infrastructure.

All of these development strategies can contribute to reducing sprawl and slow the rapid spread of impervious surfaces. All of the site design frameworks discussed in this fact sheet can be coupled with the Smart Growth approach so that small-scale reductions in run-off aren't offset by watershed-scale increases in run-off.

Holistic Planning

The damaging effects of storm water runoff can be mitigated if urban planners use development designs that reduce the "footprint" of impervious structures. Traditional storm water approaches, with their emphasis on collection, conveyance, storage and discharge, cannot adequately address the environmental problems caused by sprawling urbanization. Furthermore, with rapid development occurring beyond the fringe of metropolitan regions, urban storm water is jeopardizing hard fought gains in U.S. water quality.

New land and storm water management strategies take a more holistic approach. Communities employing conservation development techniques have found that natural features like undeveloped landscapes, vegetation, and buffer zones effectively reduce and filter storm water flows. There are also other benefits like recreation, wildlife habitat, and increased property values.

Case studies of green design practices have shown substantial decreases in storm water runoff in pre-existing communities refitted with bioretention basins, permeable pavements, vegetated roof covers, and grass swales.

For example, a study of runoff and pollutant loading conducted in the parking lot of The Florida Aquarium in Tampa revealed an 80 percent decline in runoff volumes when the parking lot was retrofitted with pervious pavement and grass swales. Amounts of copper, manganese, lead, and other metals found in runoff also dropped steeply. EXIT Disclaimer.

Similarly, a study of vegetated roofs in Philadelphia, PA found that an older building retrofitted with a green roof absorbed all but 15 inches of a total 44 inches of rainfall that fell during the nine-month test period. Twenty-five years of German research on green roofs support this finding.

LID integrates ecological considerations into each phase of urban development, from design to construction to post-construction. Pilot programs conducted in the U.S. and around the world show that LID saves money by reducing construction costs for curbing, paving materials, drainage pipes and land clearing. Techniques that manage runoff onsite, such as swales and rain gardens, deliver tangible improvements in water quality and ground water recharge. LID

practices also improve air quality, reduce the heat island effect, and enhance community appearance.

Green Design concepts used individually can yield measurable improvements in storm water runoff management. Used in combination, they can help local governments address significant sources of storm water pollution, particularly in older urban and suburban areas.

Because Green Design practices like LID blend multiple technologies, they are more versatile than the more limited drain-and-discharge methods of traditional storm water management. LID can effectively address sources of water pollution in new and existing developments, in brownfields and greenfields, in warm climates and cold, and wet and dry climates. In urban areas, green roofs used in combination with rain gardens, permeable pavement, bio-retention cells and rain barrels produce results far greater than a single technology used alone.

Sound engineering principals form the basis of Green Design practices. Years of experience derived from storm water management, sanitary engineering, agriculture, and other disciplines, demonstrate soil's ability to effectively absorb and digest many waterborne pollutants. By capturing storm water onsite, Green Design techniques not only reduce pollutants and runoff volume, but they do so cost-effectively.

Approved Methods/Approaches for Low Impact Development (LID) to Achieve Retention Storage for Development

Methods/Techniques

- LID street cross sections
  - Grassy swales
  - R-Tanks (or equal)
  - StormTech chambers (or equal)
- Rain gardens/bioretention basins
- Soil amendments
- Permeable pavements/pavers
- Below grade retention/detention
- Retention/detention basins
- Curbless parking lot
- Tree box filters
- Grassed/vegetated buffers
- Green roofs
- Rain barrels (Utah Code 73-3-1.5)
- Downspout disconnection
- Other (with pre-approval only)

Resources

- Low Impact Development Center: http://www.lowimpactdevelopment.org/index.htm
- Whole Building Design Guide: https://www.wbdg.org/resources/lidtech.php#lidt
- National Asphalt Pavement Association, Porous Asphalt: http://www.asphaltpavement.org/index.php?option=com_content&view=article&id=359&Itemid=863
- National Pervious Concrete Pavement Association: http://npcpa.org/
- National Ready Mixed Concrete Association, Pervious Concrete Pavement: http://www.perviouspavement.org/