

**UTAH DEPARTMENT OF TRANSPORTATION  
2014 ANNUAL REPORT**

Utah Pollutant Discharge Elimination System  
MS4 Permit No. UTS000003

Submitted to:

STATE OF UTAH  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
DIVISION OF WATER QUALITY

September 2015

## **TABLE OF CONTENTS**

**UPDES Storm Water Program - Small MS4 Report Form**

**Appendix 1 – UPDES Phase I Activities in Partnership with Salt Lake County**

**Appendix 2 – Current UDOT Storm Water Management Program**

# Utah Pollutant Discharge Elimination System Storm Water Program

## Small MS4 Report Form

The purpose of this report is to contribute information to an evaluation of the UPDES small municipal separate storm sewer system (MS4) permit program. Consistent with 40 CFR §122.37 the Utah Department of Environmental Quality is assessing the status of the storm water program. A “no” answer to a question does not necessarily mean noncompliance with your permit or with the federal regulations. In order to establish the range of variability in the program it is necessary to ask questions along a fairly broad performance continuum.

### 1. MS4 Information

\_\_\_\_\_  
Name of MS4

\_\_\_\_\_  
Name of Contact Person (First) (Last) (Title)

\_\_\_\_\_  
Telephone (including area code) Email

\_\_\_\_\_  
Mailing Address

\_\_\_\_\_  
City State ZIP code

What size population does your MS4 serve? \_\_\_\_\_ UPDES number \_\_\_\_\_

What is the reporting period for this report? (mm/dd/yyyy) From \_\_\_\_\_ to \_\_\_\_\_

### 2. Water Quality Priorities

- A. Does your MS4 discharge to waters listed as impaired on a state 303(d) list?  Yes  No
- B. If yes, identify each impaired water, the impairment, whether a TMDL has been approved by EPA for each, and whether the TMDL assigns a wasteload allocation to your MS4. Use a new line for each impairment, and attach additional pages as necessary.

Impaired Water	Impairment	Approved TMDL		TMDL assigns WLA to MS4	
_____	_____	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
_____	_____	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
_____	_____	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
_____	_____	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
_____	_____	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
_____	_____	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
_____	_____	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No
_____	_____	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Yes	<input type="checkbox"/> No

- C. What specific sources contributing to the impairment(s) are you targeting in your storm water program?  
\_\_\_\_\_
- D. Do you discharge to any high-quality waters (e.g., Tier 2, Tier 3, outstanding natural resource waters, or other state or federal designation)?  Yes  No
- E. Are you implementing additional specific provisions to ensure their continued integrity?  Yes  No

### 3. Public Education and Public Participation

- A. Is your public education program targeting specific pollutants and sources of those pollutants?  Yes  No
- B. If yes, what are the specific sources and/or pollutants addressed by your public education program?  
 \_\_\_\_\_
- C. Note specific successful outcome(s) (e.g., quantified reduction in fertilizer use; NOT tasks, events, publications) fully or partially attributable to your public education program during this reporting period.  
 \_\_\_\_\_
- D. Do you have an advisory committee or other body comprised of the public and other stakeholders that provides regular input on your storm water program?  Yes  No
- E. Do you belong to a storm water coalition or other advisory committee? If yes, describe:  Yes  No  
 \_\_\_\_\_

### 4. Construction

- A. Do you have an ordinance or other regulatory mechanism stipulating:
- |  |                              |                             |
|--|------------------------------|-----------------------------|
| Erosion and sediment control requirements?           | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Other construction waste control requirements?       | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Requirement to submit construction plans for review? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| MS4 enforcement authority?                           | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
- B. Do you have written procedures for:
- |                               |                              |                             |
|-------------------------------|------------------------------|-----------------------------|
| Reviewing construction plans? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Performing inspections?       | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Responding to violations?     | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
- C. What is the threshold for construction storm water plan review (e.g., all projects, projects disturbing greater than one acre, etc.)? \_\_\_\_\_
- D. Identify the number of active construction sites  $\geq$  1 acre in operation in your jurisdiction at any time during the reporting period. \_\_\_\_\_
- E. How many of the sites identified in 4.D did you inspect during this reporting period? \_\_\_\_\_
- F. Identify the number of active construction sites  $<$  1 acre in operation in your jurisdiction at any time during the reporting period. \_\_\_\_\_
- G. How many of the sites identified in 4.F did you inspect during this reporting period? \_\_\_\_\_
- H. Describe, on average, the frequency with which your program conducts construction site inspections.  
 \_\_\_\_\_
- I. Do you prioritize certain construction sites for more frequent inspections?  Yes  No  
 If Yes, based on what criteria? \_\_\_\_\_
- J. Identify which of the following types of enforcement actions you used during the reporting period for construction activities, indicate the number of actions, or note those for which you do not have authority:
- |                              |                       |         |                                       |
|------------------------------|-----------------------|---------|---------------------------------------|
| <input type="checkbox"/> Yes | Notice of violation   | # _____ | No Authority <input type="checkbox"/> |
| <input type="checkbox"/> Yes | Administrative fines  | # _____ | No Authority <input type="checkbox"/> |
| <input type="checkbox"/> Yes | Stop Work Orders      | # _____ | No Authority <input type="checkbox"/> |
| <input type="checkbox"/> Yes | Civil penalties       | # _____ | No Authority <input type="checkbox"/> |
| <input type="checkbox"/> Yes | Criminal actions      | # _____ | No Authority <input type="checkbox"/> |
| <input type="checkbox"/> Yes | Administrative orders | # _____ | No Authority <input type="checkbox"/> |
| <input type="checkbox"/> Yes | Other _____           | # _____ |                                       |

- K. Do you use an electronic tool (e.g., GIS, data base, spreadsheet) to track the locations, inspection results, and enforcement actions of active construction sites in your jurisdiction?  Yes  No
- L. What are the 3 most common types of violations documented during this reporting period?  
\_\_\_\_\_

M. How often do municipal employees receive training on the construction program? \_\_\_\_\_

**5. Illicit Discharge Elimination**

- A. Have you completed a map of all outfalls and receiving waters of your storm sewer system?  Yes  No
- B. Have you completed a map of all storm drain pipes and other conveyances in the storm sewer system?  Yes  No

C. Identify the number of outfalls in your storm sewer system. \_\_\_\_\_

D. Identify the number of Class V injection wells in your jurisdiction. \_\_\_\_\_

E. Do you have documented procedures, including frequency, for screening outfalls?  Yes  No

F. Of the outfalls identified in 5.C, how many were screened for dry weather discharges during this reporting period?  
\_\_\_\_\_

G. Of the outfalls identified in 5.C, how many have been screened for dry weather discharges at any time since you obtained MS4 permit coverage? \_\_\_\_\_

H. What is your frequency for screening outfalls for illicit discharges? Describe any variation based on size/type.  
\_\_\_\_\_

I. Do you have an ordinance or other regulatory mechanism that effectively prohibits illicit discharges?  Yes  No

J. Do you have documented procedures for tracing and removing an illegal discharge?  Yes  No

K. Do you have an ordinance or other regulatory mechanism that provides authority for you to take enforcement action and/or recover costs for addressing illicit discharges?  Yes  No

L. During this reporting period, how many illicit discharges/illegal connections have you discovered? \_\_\_\_\_

M. Of those illicit discharges/illegal connections that have been discovered or reported, how many have been eliminated?  
\_\_\_\_\_

N. Identify which of the following types of enforcement actions you used during the reporting period for illicit discharges, indicate the number of actions, or note those for which you do not have authority:

- Yes Notice of violation # \_\_\_\_\_ No Authority
- Yes Administrative fines # \_\_\_\_\_ No Authority
- Yes Stop Work Orders # \_\_\_\_\_ No Authority
- Yes Civil penalties # \_\_\_\_\_ No Authority
- Yes Criminal actions # \_\_\_\_\_ No Authority
- Yes Administrative orders # \_\_\_\_\_ No Authority
- Yes Other \_\_\_\_\_ # \_\_\_\_\_

O. How often do municipal employees receive training on the illicit discharge program? \_\_\_\_\_

### 6. Storm Water Management for Municipal Operations

- A. Have storm water pollution prevention plans (or an equivalent plan) been developed for:
- |  |                              |                             |
|--|------------------------------|-----------------------------|
| All public parks, ball fields, other recreational facilities and other open spaces | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| All municipal construction activities, including those disturbing less than 1 acre | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| All municipal turf grass/landscape management activities                           | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| All municipal vehicle fueling, operation and maintenance activities                | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| All municipal maintenance yards  | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| All municipal waste handling and disposal areas                                    | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
- Other \_\_\_\_\_
- B. Are storm water inspections conducted at these facilities?  Yes  No
- C. If Yes, at what frequency are inspections conducted? \_\_\_\_\_
- D. List activities for which operating procedures or management practices specific to storm water management have been developed (e.g., road repairs, catch basin cleaning).  
\_\_\_\_\_
- E. Do you prioritize certain municipal activities and/or facilities for more frequent inspection?  Yes  No
- F. If Yes, which activities and/or facilities receive most frequent inspections? \_\_\_\_\_
- G. How are you disposing of catch basin decant water and solid material?  
\_\_\_\_\_
- H. Are municipal vehicles washed into an approved wastewater disposal system?  Yes  No
- I. Do all municipal employees and contractors overseeing planning and implementation of storm water-related activities receive comprehensive training on storm water management?  Yes  No
- J. If yes, do you also provide regular updates and refreshers?  Yes  No
- K. If so, how frequently and/or under what circumstances? \_\_\_\_\_

### 7. Long-term (Post-Construction) Storm Water Measures

- A. Do you have an ordinance or other regulatory mechanism to require:
- |   |                              |                             |
|---|------------------------------|-----------------------------|
| Site plan reviews for storm water/water quality of all new and re-development projects? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Long-term operation and maintenance of storm water management controls?                 | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Retrofitting to incorporate long-term storm water management controls?                  | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
- B. If you have retrofit requirements, what are the circumstances/criteria?  
\_\_\_\_\_
- C. What are your criteria for determining which new/re-development storm water plans you will review (e.g., all projects, projects disturbing greater than one acre, etc.) \_\_\_\_\_
- D. Do you require water quality or quantity design standards or performance standards, either directly or by reference to a state or other standard, be met for new development and re-development?  Yes  No
- E. Do these performance or design standards require that pre-development hydrology be met for:
- |                      |                              |                             |
|----------------------|------------------------------|-----------------------------|
| Flow volumes         | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Peak discharge rates | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Discharge frequency  | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Flow duration        | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

- F. Please provide the URL/reference where all post-construction storm water management standards can be found.  
\_\_\_\_\_
- G. How many development and redevelopment project plans were reviewed during the reporting period to assess impacts to water quality and receiving stream protection? \_\_\_\_\_
- H. How many of the plans identified in 7.G were approved? \_\_\_\_\_
- I. How many privately owned permanent storm water management practices/facilities were inspected during the reporting period? \_\_\_\_\_
- J. How many of the practices/facilities identified in I were found to have inadequate maintenance? \_\_\_\_\_
- K. How long do you give operators to remedy any operation and maintenance deficiencies identified during inspections?  
\_\_\_\_\_
- L. Do you have authority to take enforcement action for failure to properly operate and maintain storm water practices/facilities?  Yes  No
- M. How many formal enforcement actions (i.e., more than a verbal or written warning) were taken for failure to adequately operate and/or maintain storm water management practices? \_\_\_\_\_
- N. Do you use an electronic tool (e.g., GIS, database, spreadsheet) to track post-construction BMPs, inspections and maintenance?  Yes  No
- O. Do all municipal departments and/or staff (as relevant) have access to this tracking system?  Yes  No
- P. How often do municipal employees receive training on the post-construction program? \_\_\_\_\_

**8. Program Resources**

- A. What was the annual expenditure to implement MS4 permit requirements this reporting period? \_\_\_\_\_
- B. What is next year's budget for implementing the requirements of your MS4 NPDES permit? \_\_\_\_\_
- C. This year what is/are your source(s) of funding for the storm water program, and annual revenue (amount or percentage) derived from each?
- |               |                 |            |
|---------------|-----------------|------------|
| Source: _____ | Amount \$ _____ | OR % _____ |
| Source: _____ | Amount \$ _____ | OR % _____ |
| Source: _____ | Amount \$ _____ | OR % _____ |
- D. How many FTEs does your municipality devote to the storm water program (specifically for implementing the storm water program; not municipal employees with other primary responsibilities)? \_\_\_\_\_
- E. Do you share program implementation responsibilities with any other entities?  Yes  No
- | Entity | Activity/Task/Responsibility | Your Oversight/Accountability Mechanism |
|--------|------------------------------|---|
| _____  | _____                        | _____                                   |
| _____  | _____                        | _____                                   |
| _____  | _____                        | _____                                   |

**9. Evaluating/Measuring Progress**

A. What indicators do you use to evaluate the overall effectiveness of your storm water management program, how long have you been tracking them, and at what frequency? These are not measurable goals for individual management practices or tasks, but large-scale or long-term metrics for the overall program, such as macroinvertebrate community indices, measures of effective impervious cover in the watershed, indicators of in-stream hydrologic stability, etc.

Indicator	Began Tracking (year)	Frequency	Number of Locations

B. What environmental quality trends have you documented over the duration of your storm water program? Reports or summaries can be attached electronically, or provide the URL to where they may be found on the Web.

**10. Additional Information**

In the space below, please include any additional information on the performance of your MS4 program. If providing clarification to any of the questions on this form, please provide the question number (e.g., 2C) in your response.

See additional information sheets that supplement this form.

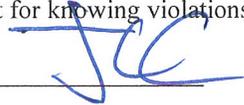
**Certification Statement and Signature**

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.

Yes

Jerry Chaney, UDOT Hydraulics Engineer

Name of Certifying Official, Title



09/29/2015

Date (mm/dd/yyyy)

## Additional Information to Supplement Small MS4 Report Form UPDES 2014 MS4 Annual Report

### 2.B. Water Quality Priorities

Impaired Waters and TMDLs: Listed below are water bodies that are directly adjacent to state roadways or where UDOT stormwater systems outfall to the water body.

Impaired Water	Impairment	Approved TMDL		TMDL Assigns WLA to UDOT MS4	
		Yes	No	Yes	No
Jordan R.	E. Coli		X		X
	DO		X		X
	TDS		X		X
	Temp.		X		X
Little Cottonwood Cr.	Temp.		X		X
Big Cottonwood Cr.	Temp.		X		X
	TDS		X		X
Emigration Creek	E. Coli		X		X
East Canyon Creek & Res.	DO				
	Total Phosphorus				
Deer Creek Res.	DO		X		X
	Total Phosphorus		X		X
Echo Creek	Sediment		X		X
Rockport Res. & Echo Res.	Total Nitrogen		X		X
	Total Phosphorus		X		X
	DO		X		X
Pineview Res.	DO				X
	Total Phosphorus		X		X
	Temp.		X		X

### 3. Public Education and Public Participation

Refer to Appendix 1 “UPDES Activities in Partnership with Salt Lake County”

#### **4. Construction**

**4A & B.** The following items were was revised in December 2014 to reflect the changes to UPDES General Permit for Stormwater Discharges from Construction Activities, Permit UTRC00000:

1. SWPPP boilerplate document for construction sites
2. Spill Prevention and Response Plan for Construction Sites (included in SWPPP)
3. Standard Specification 01571 “Temporary Environmental Controls”

#### **4.M. Employee training on storm water issues in construction**

The UDOT Environmental Control Supervisor (ECS) class is now offered as an on-line class to UDOT construction staff, contractor’s staff, consultants and municipal staff. Persons who pass the class must be re-certified every 3 years. During calendar year 2014, 208 persons passed the class.

All new UDOT employees receive one-hour of training on stormwater issues.

All new UDOT Transportation Technicians employees receive a one-hour overview of environmental topics and one hour of training on the UDOT SWPPP and UPDES Permit.

#### **5. Illicit Discharge Elimination**

Spills Reported:

##### Report 11671, US-6, MP 186, 1/3/2014

A car crossed the interstate and struck a coal truck on highway 6 damaging the truck and the car, rupturing the fuel tanks. The resulting fire consumed all the fuel that was released. No waterways impacted. Coal did not catch fire.

8/28/2014 DWQ - Site Closure (NFA) No Action Needed - LHD/FD took lead and closed.

##### Report 11686, SR-18, MP 5.2 NB, 1/16/2014

Caller reported that a driver hit a divider at a road construction site, damaging both the hydraulic and fuel lines on the truck. Incident resulted in the release of 30 gallons hydraulic fluid and 20 gallons diesel. Release was contained to the soils on the road shoulder with the use of berms. Impacted soils were excavated and will be transported to the Staker Parsons Ft. Pierce facility for recycling.

4/23/2014 DSHW - Site Closure (NFA). Spill was cleaned up the following day

Report 11675, I-84 MP 89, Jan 8 2014

One train rear-ended another train. Locomotive and rail cars derailed. Locomotive came to rest on its side causing release of diesel fuel. Amount of diesel released is unknown. Per reporting party, the spill did not impact surface waters. Grain being hauled absorbed a significant portion of diesel fuel spilled.

2/13/2014 DWQ - Site Closure (NFA)

Report 11678, I-15, MP 217, Jan. 9, 2014

Caller is reporting a tractor trailer rollover I-15 southbound at mile marker 217. Trailer is placarded under Hazard Class III -- Flammable Liquids. It is unknown at this time if an actual release has occurred. HazMat and Fire Dept. reported to the scene.

2/24/2014 DERR - Receipt of Corrective Action Final Report

Report 11696, Sandwash Road, 1 mile south of US-40, 30-Jan-14

Caller stated that a tractor trailer with a pup hit black ice and rolled onto a pickup truck then down an embankment. There was a release of 40 barrels of crude oil onto the ground and into a creek. Police and Fire Dept. were on site, Tri County Health Dept. was notified. Envirocare was dispatched to provide cleanup. Waterway affected was Gray Mountain Canal. The canal was frozen at the time of the release. The crude oil was waxy crude so it may not have migrated.

8/28/2014 DWQ - Site Closure (NFA) Cleanup completed

Report 11790, I-80 at Coalville, April 14, 2014

Sanitary sewer overflow occurred due to a pump failure. Spill impacted UDOT right of way and confined to a borrow area. Noland and Son was onsite to look at the project. They have the resources and will begin work on April 16.

4/17/2014 - Main has been repaired and sewage is no longer being discharged.

Report 11817, I-80, MP 191 , Wahsatch, May 7, 2014

A tractor trailer accident resulted in the release of 20 gallons of diesel fuel. Two gallons of used oil and 5 gallons of anti-freeze were also released during the accident. Released Materials impacted the roadway and the soils along the shoulder. No waterways were impacted by the release. Environmental Restoration was contracted for spill clean-up.

Report 11823, 800 E. Pioneer Crossing, Saratoga Springs, May 21,2014

A crane crashed causing a release of an estimated 130 gallons of diesel and 15 gallons of mixture of motor oil and hydraulic fluid. Contractor was able to report to Utah County HD that spill appears to be contained to a depression between the roadway and a sidewalk. Initial report indicates that all has absorbed into the gravel and soil. Saratoga Springs FD, UDOT and police responded on-scene. No storm drains nearby

Report 11884, I-80 Exit 70, Grantsville, July 12, 2014

Caller reported a sulfuric acid spill from a rail car due to mechanical failure. The leak was coming from the top of the rail car and was leaking down the side of the car onto the railroad. 120 gallons of sulfuric acid was released. The spill occurred in a remote area away from any population centers. No waterways were impacted. Pacific West was contacted for clean-up services. The NRC was notified (report #1088822 and #1088846).

Report 11973, US-6, MP 200, Sept 21 2014

Diesel a tractor trailer accident on Highway 6 at MP 200 that has caused over 150 gallons of diesel to spill, likely flowing into the river. The Spanish Fork Fire Department was on-site. The NRC was notified.

Report 12048, I-15, US-6 East of Off-ramp north of Spanish Fork, Nov 28 2014

Western tanker truck had an accident and spilled approximately 7,000 of gasoline. A fire occurred after the accident and the local fire department responded. The spill impacted the UDOT ROW and occurred in the stormwater retention area between I-15 and the off-ramp for Highway 6. Based on field observations immediately after the spill and subsequent site visits, surface water was not impacted by the spill, and groundwater has not been encountered during the excavation. A-Plus Environmental initially and then Enviro Care Inc. (ECI) of Salt Lake City, Utah, were dispatched to contain and remediate the fuel-contaminated area. Excavated soil was placed in roll-off containers or stockpiled on two layers of plastic sheeting and covered with plastic sheeting. The excavated soil was transported to the E.T. Technologies, Inc., soils regeneration site in Salt Lake City, Utah. Tetra Tech prepared a spill remediation plan.

Report 12052, I-80, MP 180 in Echo Canyon Dec 7, 2014

Caller reported a semi-truck accident in Echo Canyon resulted in the release of 500-700 gallons of pesticide to the roadway and median. Pesticide was Echo-720 and was stored in 2-gallon containers. Multiple 2-gallon containers were spread along the median over a distance of 150 yards PacificWest is on-scene and is cleaning up spilled material on the surface. PacificWest will obtain the necessary UDOT permits to remove contaminated soils. Summit Co. Health and UHP were on-scene.

12/7/2014 Summit County - Performed site visit

Report 12060 I-15 in American Fork MP 279, Dec 25, 2014

90 gallons of fuel was released when a semi-truck jack-knifed and damaged its saddle tank. Diesel released to the roadway and soils. AF Fire Dept., UDOT, and Highway Patrol were on-scene. UDOT worked to get the release cleaned up.

Illicit Connections Discovered:

I-15, 4100 South, West Side of Hwy, Oct 30, 2014 - Illicit Connection

Central Hydraulics staff met with Murray City staff to investigate 2 possible illicit connections from a local business complex owned by Garco West, to UDOT right of way. Both connections discharge to a vegetated area bordering I-15. This area drains south to Big Cottonwood Creek. We did not observe any flows in either of the connections during our site visit. Garco West submitted a plan to UDOT Region Two Permits to install a "snout" type of water quality device on the last box before entering our system. Region Two has requested additional details on this proposal and is awaiting a response. If Garco's proposal is rejected, UDOT will eliminate the existing connection.

Dry Weather Screening Activities:

Region 4

SR-8, Sunset Blvd, MP 0.1, outlets into Half Mile Wash – No flow observed

I-15, MP 6.2, near Hilton Drive, outlets into Santa Clara Creek - No flow observed

**6. Post Construction for Municipal Operations**

A. UDOT Maintenance Activities:

**MS4 Report - Calendar Year 2014**

<b>MMQA Group</b>	<b>Activity</b>	<b>Amount</b>	<b>Total Cost (\$)</b>
4A1 - Litter Pickup	7M56 - CONTRACTUAL LITTER PICKUP (STD - Stnd Cst \$)	0	\$179,236.39
4A1 - Litter Pickup	7M57 - CONTRACTUAL CARCASS REMOVAL (STD - Stnd Cst \$)	0	\$256,470.66
4A1 - Litter Pickup	7S38 - ADOPT-A-HIGHWAY (LM - Litter Mile)	876.9	\$70,305.07
4A1 - Litter Pickup	7S39 - LITTER CONTROL (LM - Litter Mile)	25,261.61	\$760,046.37
4A1 - Litter Pickup	7S45 - SPOT LITTER & CARCASS REMOVAL (MHR - Work Hr)	16,863.81	\$538,297.72
<b>Total</b>		<b>43,002.32</b>	<b>\$1,804,356.21</b>
6A1 - Grade and Clean Ditches	7D58 - DETENTION POND MAINTENANCE (EA - EACH)	93	\$63,602.08
6A1 - Grade and Clean Ditches	7S46 - PAVED/CONCRETE DITCH MAINTENANCE (LF - LIN FOOT)	30,035	\$18,804.57
6A1 - Grade and Clean Ditches	7S52 - CUT DITCH CLEAN AND RESHAPE (TML - 1/10 Mile)	1,691.98	\$300,758.03
6A1 - Grade and Clean Ditches	7S53 - CANYON CUT DITCH CLEANING (CUY - Cu Yard)	41,418.84	\$644,108.78
6A1 - Grade and Clean Ditches	7S56 - OPEN SURFACE DRAINAGE MAINTENANCE (CUY - Cu Yard)	16,818.54	\$166,803.29
<b>Total</b>		<b>90,057.36</b>	<b>\$1,194,076.75</b>
6A2 - Maintain Inlets	7D61 - SPECIAL DRAINAGE (HYDRO-	2,611	\$321,270.01

<b>MMQA Group</b>	<b>Activity</b>	<b>Amount</b>	<b>Total Cost (\$)</b>
	VACUUM (EA - EACH)		
6A2 - Maintain Inlets	7M62 - CONTRACTUAL DRAINAGE PROGRAM (STD - Stnd Cst \$)	10,653	\$624,614.52
6A2 - Maintain Inlets	7S51 - DRAINAGE PROGRAM MAINTENANCE (EA - EACH)	20,603.45	\$1,121,359.60
<b>Total</b>		<b>33,867.45</b>	<b>\$2,067,244.13</b>
6B1 - Erosion Repair	7M63 - CONTRACTUAL EROSION REPAIR (STD - Stnd Cst \$)	0	\$109,090.00
6B1 - Erosion Repair	7S55 - EROSION REPAIR (EA - EACH)	1,947.25	\$475,632.76
6B1 - Erosion Repair	7S84 - FLOODS & LANDSLIDES (MHR - Work Hr)	9,441.59	\$736,534.89
<b>Total</b>		<b>11,388.84</b>	<b>\$1,321,257.65</b>
8A8 - Sweeping	7M70 - CONTRACTUAL SWEEPING (STD - Stnd Cst \$)	0	\$32,650.30
8A8 - Sweeping	7S69 - SWEEPING (MHR - Work Hr)	27,861.88	\$1,520,338.79
<b>Total</b>		<b>27,861.88</b>	<b>\$1,552,989.09</b>
		<b>Total for all:</b>	<b>Total for all:</b>
		<b>206,177.85</b>	<b>\$7,939,923.83</b>

B. Salt Piles Covered in 2014:

Station 4452A, La Sal Jct., San Juan, County  
 Satellite Station on US-89 at MP 28, Kane County

C. Brine Making

Brine making improvements were completed at existing facilities:  
 Station 1431, Snowville, Box Elder County  
 Station 1427, Centerville, Davis County

D. Retention Pond Improvements

Improvements were made to the following Maintenance Station retention ponds:  
 Station 4472, Kanab, Kane County

E. New Maintenance Stations Constructed in 2014:

Station 1423, Willard (Hot Springs) Satellite Station, Box Elder County  
 Station 3423, Lehi, Utah County  
 Station 3428, Saratoga Springs, Utah County  
 Station 4463, Salina, Sevier County

F. Adopt A Highway / Sponsor A Highway litter cleanup program:

Miles of state roadway where litter was removed:  
 Region 1 – 342  
 Region 2 – 256  
 Region 3 – 94  
 Region 4 – 550

Total Miles Cleaned - 1242 miles

## **7. Long-term (Post Construction) Storm Water Measures**

Post construction storm water measures installed in 2013 in addition to permanent seeding include:

### Region One

US-89; Antelope Dr. Intersection Improvements – Two detention ponds and 1150 linear feet of grassed swale were constructed.

US-89; SR-193 to Cornia Dr. – 2250 linear feet of grassed swale was constructed

### Region Two

Bangerter Hwy. Interchange at Redwood Rd. – Expanded the capacity of the existing detention basin along Redwood Rd. adjacent to the Jordan River.

### Region Three

US-40, Daniel's Canyon Summit – 2665 linear feet of riprap lined ditch constructed.

SR-145, Pioneer Crossing Extension to SR-73 – Constructed 300 linear feet of riprap lined ditch

US-40, MP 130.6 to MP 136 West of Vernal - Constructed 633 linear feet of riprap lined ditch

SR-87, Climbing lane North of Duchesne - Constructed 203 linear feet of riprap lined ditch

### Region Four

I-15, MP 8 Interchange Reconstruction – Two new detention ponds were constructed at the SE and NW gore areas.

Southern Parkway, Segment 3A – Three new detention ponds were constructed, two near Warner Valley Road and one near Stucki Basin.

## **8. Program Resources**

### **8.A. Annual Expenditure for the MS4 Permit Program**

Phase I activities performed in partnership with Salt Lake County = Approx. \$23,000 annually. This includes storm water sampling, laboratory analyses and public education activities described in Appendix 1 "UPDES Activities in Partnership with Salt Lake County.

All other activities related to MS4 Permit compliance are performed by individuals throughout the UDOT; this includes design staff, construction staff, maintenance staff and central management.

Maintenance Activities: \$7,939,924 (from item 6.A.)

Design & Const. Activities: \$848,000

Approximate total cost in 2014:  $\$7,939,924 + \$848,000 + \$23,000 = \$8,810,924$

**8.B. Next Year's Expenditures in CY 2015** - Expected to remain the same as the current year with the addition of approximately \$50,000 to be spent for locating drainage systems within Phase I and Phase II areas statewide.

## **Appendix 1**

### **UPDES Phase I Activities in Partnership with Salt Lake County**

**2014 PUBLIC EDUCATION/OUTREACH  
PUBLIC PARTICIPATION/INVOLVEMENT PROGRAMS  
AND REPRESENTATIVE STORM SAMPLING  
UPDES Phase I Activities**

In compliance with UDOT's UPDES MS4 stormwater discharge Permit, this Appendix contains the Public Information and Education and Representative Stormwater Sampling Reports for 2014/2015 from the Salt Lake County Stormwater Coalition in which UDOT is a contributing member. Sections include:

- 1.0 Public Education and Outreach Program
- 2.0 Public Participation/Involvement Program
  - 2.1 Salt Lake Valley Recycling Program Summary
  - 2.2 Household Hazardous Waste Program Summary
  - 2.3 Pollution Prevention Program Summary
- 3.0 Representative Stormwater Sampling

**1.0 PUBLIC EDUCATION AND OUTREACH REPORT**

**1.1 INTRODUCTION**

A coalition of local agencies has been established in compliance with the Salt Lake County Stormwater Management Plan. Salt Lake County is responsible for hosting and coordinating the Coalition, as well as conducting the administrative tasks to ensure the Public Education and Outreach Best Management Practice is fulfilled. The objective of the Salt Lake County Stormwater Coalition (Coalition) is to increase public and professional awareness of stormwater quality concerns with consistent and combined marketing methods. The Coalition consists of local agencies and the 15 permitted municipalities in Salt Lake County whose purpose is provide a forum for members to discuss stormwater issues and regulations in order to assist in compliance with the stormwater discharge permit. In addition, the Coalition coordinates educational programs and materials with the intent to ultimately reduce the load of pollutants entering the storm drains and receiving waterbodies by educating the public. The Coalition meets monthly to coordinate new educational materials/programs, stormwater program development and inform members of new regulations or stormwater workshops.

The purpose of this 2014/2015 Salt Lake County-wide Report is to document activities conducted by the Coalition and funded by the co-permittees. This report identifies activities conducted from July 1, 2014 through June 30, 2015.

The Coalition has conducted numerous activities for the purpose of Public Education and Outreach and within the Salt Lake Valley and extending statewide. This coordination with the Coalition members helps to reach a wider audience with the same message. Consequently, this section presents the activities conducted by the Coalition with the understanding that the co-

permittees and other members also participated in this program. Please refer the Annual Reports submitted by the co-permittees and other members for details regarding additional stormwater activities and information relating to the portions of the stormwater system under each jurisdiction.

**1.2 COALITION PARTICIPATION**

The Coalition consists of representatives from Salt Lake County, local municipalities, local and statewide agencies. The following are a breakdown of those representatives:

- ◆ Salt Lake County
- ◆ Jordan Valley Municipalities
- ◆ Salt Lake City
- ◆ Salt Lake Valley Health Department
- ◆ State of Utah, Division of Water Quality
- ◆ Recycling Information Office
- ◆ Utah Department of Transportation

Additional municipalities outside of Salt Lake County are encouraged to attend. Representatives from Weber County and Davis County also participate in the Coalition's mission of public outreach by contributing target specific funds to boost the Spring and Fall media campaigns.

**1.3 FUNDING AND BUDGET**

The Coalition is funded by participating agencies and municipalities and is based on a calendar year budget. The 2014 budget for public information and education is direct costs for media, information, and handouts. The proposed 2015 budget is subject to change as additional municipalities begin to participate in the Coalition or current members alter their contribution. The budget is for media direct costs only and does not include consultant fees. The Coalition 2014 and 2015 funding and budget are shown below:

<b>2014 Funding</b>		<b>2015 Proposed Funding</b>	
Salt Lake County	\$24,000	Salt Lake County	\$24,000
Salt Lake City	13,000	Salt Lake City	13,000
SLCO Health Department	5,000	SL Valley Health Department	5,000
UDOT	5,000	UDOT	5,000
West Valley City	12,000	West Valley City	12,000
Sandy City	8,000	Sandy City	8,000
Murray City	5,000	Murray City	5,000
West Jordan	10,000	West Jordan	10,000
Riverton	5,000	Riverton	5,000
Davis County	16,000	Davis County	16,000
Weber County	6,000	Weber County	6,000
South Jordan	5,000	South Jordan	5,000
Cottonwood Heights	5,000	Cottonwood Heights	5,000
Draper City	5,000	Draper City	5,000
Holladay City	5,000	Holladay City	5,000
Bluffdale City	5,000	Bluffdale City	5,000
Herriman City	5,000	Herriman City	5,000
Midvale City	5,000	Midvale City	5,000
South Salt Lake	5,000	South Salt Lake	5,000
Taylorsville	5,000	Taylorsville	5,000

<b>TOTAL</b>	<b>\$154,000</b>	<b>TOTAL</b>	<b>\$154,000</b>
--------------	------------------	--------------	------------------

<b>2014 Budget</b>		<b>2015 Proposed Budget</b>	
Television Advertising	\$121,000	Television Advertising	\$100,000
Movie Theatre Advertising	13,000	Movie Theater Advertising	8,000
Stormwater Quality Fair	7,500	TV Spot/Develop	30,000
Web Design Maintenance	2,500	Stormwater Quality Fair	5,000
Leave Behinds	10,000	Website design/Maintenance	1,000
		Leave Behinds	10,000
<b>TOTAL</b>	<b>\$154,000</b>	<b>TOTAL</b>	<b>\$154,000</b>

#### 1.4 RESIDENTS EDUCATION PROGRAM

The Coalition participated in a number of residents education programs during 2014/2015. The public education and outreach program is designed to raise public awareness regarding: (1) the transport of stormwater; (2) the effect on water quality due to urban activities; and, (3) protective measures that can be implemented. The stormwater public education program targets students, residents, businesses, and County employees. Education is a proactive, non-structural source control that has been shown to be a cost effective BMP.

Activities conducted as part of the residents' education program include: Stormwater Quality Fair, Media Campaign, Educational Materials, Informational Brochures, Educational DVD, Internet and Social Media, and Stream Crossing Identification. Each program is described in the Salt Lake County 2014 Stormwater Management Plan.

#### Water Quality Grade School Outreach

The Coalition continued implementing the school program with the goal of educating students about stormwater in a fun and entertaining way. The main tools for the school program have been the Salt Lake County Water Quality Fair, an educational DVD, printed educational materials, demonstrations and outreach activities regarding the impact of daily activities on stormwater quality, internet/direct mail requests and other activities that reach school age children. Over 10,000 of the following were given to county children to share with their families:

- DVD's
- Reusable Bags
- Lip Balm
- Activity Books

**Salt Lake County Stormwater Quality Fair 2015:** The Coalition hosted a two day Water Quality Fair for Salt Lake Valley 4<sup>th</sup> grade students in May of 2015 at Utah's Hogle Zoo. It was the eighth year of the Fair. In 2015 over 3,000 Salt Lake County 4<sup>th</sup> grade students attended, as well as 500 adult chaperones. The growth has been attributed to additional cities financially contributing funding for buses for schools that might not otherwise be able to attend.

School children attended from the following cities: Salt Lake City, Sandy City, Cottonwood Heights City, South Salt Lake City, West Valley City, Riverton City, Taylorsville City and Draper City. All students visited 12 booths designed to educate about stormwater pollution and prevention and other water topics. In addition, all guests received printed materials to take home, designed to reinforce the principals learned at the water fair.

The 2016 Water Fair will continue to host schools from the current cities above in with its full capacity reserved nine months prior to the Fair. As spots open up other Cities will be recruited to bring in new schools from under-served areas of the County. In addition, South Salt Lake City staff has plans to design a new Stormwater lesson to present at the Fair to educate the kids about Stormwater prevention and pollution in a unique and fun way.

### **Media Campaign**

Eighty-four percent of Salt Lake County residents continue to list our TV Media Campaign as their main source for gathering information on Stormwater pollution and protection. The Coalition, with the assistance of a consultant, conducted a mass media campaign for 2014/2015. The Media Campaign is our most effective tool in continuing the education of our residents about stormwater pollution and prevention. In 2013 the Coalition partnered with the two top Nielsen rated TV stations in the Salt Lake County market to reach the largest number of Salt Lake County residents. The Coalition has chosen to partner up with two local stations rather than simply placing media spots. By doing so the Coalition has been able to leverage their limited funds with both local stations matching dollar for dollar the Coalition's media budget with bonus advertising.

#### **Television:**

**Fall Campaign 2014** - A two-week television campaign ran in September 2014 as part of our partnership with the top two local TV stations. The County purchased and ran over 100 spots in news and primetime targeted toward the ideal demographic 25-54 age group. Over 1.7 million viewers saw the Coalition TV spot a minimum of 3 times during the three-week period. As a rule of thumb it generally takes a viewer three times to see a message over a short period of time to incorporate the message into their daily life.

**Spring Campaign 2015** - A three-week television campaign ran in May 2015 as part of our partnership with the top three local TV stations. The County purchased and ran over 150 spots in news and primetime targeted toward the ideal demographic 25-54 age group. Over 2.1 million viewers saw the Coalition TV spot a minimum of 3 times during the three-week period. As a rule of thumb it generally takes a viewer three times to see a message over a short period of time to incorporate the message into their daily life.

**Live Location Shots on Local News Programming** - As part of our partnership package with the Top Rated News Station in Utah, the top two stations sent their top Weather Personalities to broadcast live from our Fair in 2015. The broadcast personalities were on site during the noon hour, broadcasting live four times from the Salt Lake County Water Quality Fair.

All the live shots from the Fair showcased the numerous booth activities highlighting Stormwater and Salt Lake County 4<sup>th</sup> grade students actively engaged in learning about stormwater. The live remotes were seen by over 150,000 residents, 3+ times as a result of the four live shots from two stations during two Water Quality Fairs. Teasers and actual running of our spot occurred as part of news coverage that day.

**Movie Theatre Advertisement:**

The Coalition's two current TV spots ran at the four largest Megaplex theatres for a four-week run during the months of June 2015. The campaign months were selected due to the high frequency of viewers during those time periods (blockbuster movies). The spots ran an average of three times before the beginning of each movie (37 screens) and ran on the big screen TV in the main lobby of all three theatres an average of 10 times daily. Over 1,000,000 Salt Lake County residents saw our message a minimum of three times in one sitting on a monthly basis.

**Internet Advertising with local TV Partners:**

A teaser, coalition border ad and internet link to our Coalition website was placed on two local TV websites during the months of August, September and October 2014 and April, May and June 2015. Between the two websites, our leader boards received over 250 million hits between both stations over a one-month period. Each station estimates that on a monthly basis over 100,000 new viewers logged-on and viewed our advertisement during the six months noted above. We anticipate that as the way people view media changes we will expand this area of advertising to reach traditional TV viewers who now seek their information via the Internet.

**Educational Materials**

The Coalition's educational materials are designed to promote and educate the community at large about stormwater quality issues. These materials include information, as well as, items designed to promote the stormwater program, and are primarily obtained through the Salt Lake County Stormwater Coalition.

**Bilingual educational printed materials:**

The Coalition continues to disperse Spanish translated materials to our Spanish speaking residents about stormwater prevention and pollution.

**Brochures:**

Over 2,000 Informational brochures regarding specific activities were distributed throughout the County during 2014/2015:

- pet waste disposal
- landscaping
- erosion control
- fresh concrete and mortar application

- paint and household hazardous waste
- household and vehicle maintenance

#### **Lip Balm and Reusable Grocery Bags:**

In 2014 and 2015, Lip Balm and Reusable Grocery Bags were produced as leave behinds for giveaways at Public Events and local school distribution. They were a huge success and we plan to order more for 2016. Ten thousand bags and 2,000 lip balms were distributed in Salt Lake County in 2014/2015.

#### **Dr. Strangewater and the Downstream Deputies Activity Book:**

The Coalition reprinted the popular Dr. Strangewater and the Downstream Deputies in 2015 and continues to distribute the 8-page stormwater educational activity book designed to supplement the Dr. Strangewater DVD. The book's theme builds upon the information shared from the DVD in the same manner as the activity book. The activity books were reproduced in April 2015.

#### **Educational DVD:**

**Dr. Strangewater and the Downstream Deputies DVD** - The Coalition continues to distribute an educational DVD entitled "Dr. Strangewater and the Downstream Deputies" to educate 4<sup>th</sup> grade students about stormwater in a fun way, giving them valuable tips on keeping stormwater clean.

#### **Internet and Social Media**

In 2014 and 2015, we continue to work actively with cities and agencies within the Coalition to provide relevant and timely information on our newly designed Coalition Website. The website is designed to educate residents in a more detailed level about stormwater pollution and prevention and act as a resource for residents to contact their municipalities. In addition, the website highlights local, urban areas throughout the County that residents can visit which are affected by stormwater.

Social media is quickly becoming the top resource for residents to access their news, as well as, interact with entities they share a common commitment. In 2014/2015, a web campaign was simultaneously launched via our partner TV Networks websites and social media to connect with the Coalition's website, Facebook and Twitter page. The benefits of the Coalition's Website, along with social media tools continue to be slowly cultivated as we enter into a new level of conversation with our Salt Lake County residents.

#### **Stream Crossing Identification**

In 2014/2015, we continued to maintain the current stream crossing signs posted throughout the County. Stream crossing signs act as a reminder to residents as they are traveling throughout the County of the bodies of water that are prevalent throughout the County. In addition, the signs also bring to their minds activities which affect stormwater pollution prevention.

## **Additional**

In addition to these programs, the Coalition has developed other stormwater education components for the general public. Below is a summary of the activities conducted during 2014/2015:

### **KSL Weather Lab Project 2014/2015:**

KSL Weather Lab was hosted by two local weather personalities at the Discovery Gateway where over 3,500 children, age 7 through 11, learned about the effects of stormwater pollution and received Coalition education materials to take home and share with their family members. Salt Lake County elementary school children visited the “Weather Lab” twice a week during the months of September and October 2014 and May/June 2015.

### **Droplet Character:**

Our brand of the Droplet Character, in conjunction with the *‘We All Live Downstream’* slogan continues to receive an 80% recognition with our Salt Lake County residents and keeping our stormwater clean. We will continue to use both on all new printed and produced pieces and all electronic media.

### **Public Events:**

The Coalition participates in information booths each year. The information booths provide an additional mechanism to reach a larger audience regarding stormwater quality. Informational brochures and “leave behind” items such as pencils and magnets are distributed at the booths. In addition, the information booths provide a forum for the public to respond to and comment on the stormwater program. Over 25,000 Salt Lake County residents were exposed to our message at many public events in 2014/2015. Below is a sampling of the events:

- Nov 2014 Salt Lake County Watershed Symposium
- May 2015 Salt Lake County Stormwater Quality Fair
- Jordan Valley Municipalities’ events

In addition over 20,000 promotional materials were distributed to County residents at these events, which continue to put our message, top of mind long after they have seen us at a public event.

## **2.0 PUBLIC PARTICIPATION/INVOLVEMENT PROGRAM**

This program is intended to provide opportunities for public involvement in the prevention of stormwater pollution. The Coalition participated in other committees promoting stormwater pollution prevention. Refer to Section 2.1.4 for further program details.

### **Jordan River Watershed Council:**

The Jordan River Watershed Council has been revitalized due to several issues potentially impacting the Jordan River Watershed. The Coalition participates in this effort by representing

stormwater issues at Council meetings. During the year this Council met on an as-needed basis.

**Utah Stormwater Advisory Committee**

This committee serves as an agent to address a variety of stormwater issues statewide including Phase I and Phase II implementation, underground injection wells for stormwater, stormwater treatment design criteria and stormwater education. The Salt Lake County staff represents the Salt Lake County Stormwater Coalition at committee meetings. This committee meets monthly.

**2.1 SALT LAKE VALLEY RECYCLING PROGRAM**

The Recycling Information Office distributes educational information developed by the Coalition. The following provides a summary of the Recycling Program for 2014/2015:

Total number of people reached	>37,000
Tours	56
Tour Attendance	2,006
Presentations	14
Presentation Attendance	1,345
Fairs	28
Fair Attendance	34,437

**2.2 HOUSEHOLD HAZARDOUS WASTE PROGRAM**

The Household Hazardous Waste Program (HHW) is administered by the Salt Lake County Health Department and the Salt Lake Valley Solid Waste Management Facility. The HHW program runs two full-service permanent facilities that accept HHW from Salt Lake County residents. The facilities are located at the Trans-Jordan Landfill and the Salt Lake Valley Solid Waste Facility. The program also operates two ABOP centers (antifreeze, batteries, oil and paint) and an electronic scrap (e-scrap) collection site. This program works to address the improper disposal of HHW by educating the public to the hazards associated with improper disposal and storage. The following provides a summary of the program for 2014:

- ◆ Total amount of household hazardous waste collected during this reporting period was 1,006,539 pounds.
- ◆ The following amount was collected:

Paint	534,974 lbs	Batteries	41,831 lbs
Used Oil	53,000 lbs	Lab pack	96,535 lbs
Antifreeze	47,208 lbs	Fluorescent tubes	13,907 lbs
Fuel	175,477 lbs	Electronics	1,065,102 lbs

Community collection events were held in June, July and August. These events are held the first Thursday in Salt Lake City, the second Thursday in Sandy, the third Thursday in Holladay and the fourth Thursday in Draper. The events in Salt Lake City include collection of pharmaceutical wastes.

### **2.3 POLLUTION PREVENTION PROGRAM**

The Pollution Prevention Program (P2) serves several functions. Staff in this program review new business license applications and inspect those who fall under SLCo Health Department regulations. This allows P2 staff to work with businesses early on as they are identifying their waste stream and disposal options. P2 staff are always available to review P2 plans and conduct facility audits that are often required as part of settlement agreements reached after a business has been found in violation of SLCoHD regulations.

The Pollution Prevention program completed around 83 P2 inspections or phone consultations in 2014. With the updates to Regulation #01, Solid Waste Management and Permitting, outreach materials were created for the businesses that would be newly permitted under the regulation. Over 250 letters were sent countywide to businesses specializing in carpet cleaning, power washing and scrap yards. The address list for these businesses was compiled using Health Department contacts for business licensing, which helped open doors for future conversations about permitted businesses requiring health department inspections. A handout for carpet cleaners was created to help the education process for which types would require a health permit. While there were no up to date education materials to give to the new businesses under Regulation #01 at the time it went for public comment, plans were created to develop more outreach materials and set up presentations about P2 for further growth of the program. Around 10 NOV Pollution Prevention Plans were reviewed and cases closed.

### **3.0 REPRESENTATIVE STORMWATER SAMPLING**

Representative stormwater sampling is completed in accordance with the Sampling Plan for Representative Storm Monitoring. A representative storm is defined as a precipitation event with at least 0.20 inches of rainfall in at least three hours duration, with widespread precipitation across the valley. The representative storm must be preceded by at least 72 hours from the previously measurable (0.1") storm event.

Weather forecasts are monitored daily during the spring and fall to determine when a representative frontal storm event is expected. Approximately 24 hours prior to the prediction of a representative storm, preparations for sampling begin. Prior to or at the start of the event, the sampling units and area velocity flow meters are turned on and programmed to take samples at specified intervals, based on the predicted length and intensity of the storm. The sampling crews are mobilized to finalize preparation activities, to ensure that the samplers are working properly, and to take grab samples. Base flow grab samples are taken prior to the beginning of stormwater runoff. Storm grab samples are taken at each station on the rising limb of the hydrograph. Flow-weighted composite samples are collected during the stormwater runoff

event. All samples are analyzed for the same constituents, with the exception of oil and grease and E. Coli, which are not analyzed in composite samples.

At various intervals throughout the storm event, general observations such as rain gauge reading, flow level and rate readings, and status of equipment are recorded on field data sheets. If runoff ceases or flow returns to approximately 1.2 times the base flow (site must have base flow), or if six hours has passed, the sample bottles and station flow data are retrieved and returned to the consultant’s laboratory for review and compositing. Flow-weighted compositing is performed based on flow data compiled by the area velocity meters. The composite samples are then transported to a State-certified laboratory for constituent analyses.

**Storm Event Description**

Table 1 contains the total amount of precipitation from each station gauge for the 2014/2015 sampling events. Storm tracking is conducted throughout the sampling seasons; this tracking initiates the sampling process. Not all storms are pursued given the weather forecast. A record of storm events during each year is maintained, and provided in Volume 2, Appendix H. Storm event summaries are in Volume 2, Appendix H.

**TABLE 1  
FALL 2014 & SPRING 2015 STORM EVENT PRECIPITATION SUMMARY**

DATE	Rain Gauge Locations (Precipitation in inches)	
	East Millcreek (MIL-07)	Midvale Gauge (JOR03)
May 14, 2015	0.32	0.20

**Summary of Sampling Events**

**Fall 2014** – Sampling not conducted due to few qualifying storm events and weather forecasts that were incorrect.

**Spring 2015** – On May 14, 2015, the National Weather Service (NWS) predicted precipitation ahead of a low pressure system entering Utah. Potential for heaviest precipitation on Thursday was predicted between 6 pm and midnight with the possibility for amounts greater than 0.2-inches.

The sampling team was mobilized Thursday afternoon, samplers were set to trigger. A quick moving system started with a wave of moderate precipitation at approximately 5:00pm. Precipitation slowed down at approximately 5:30pm and resumed with moderate intensity at 8:30pm. All stations were set up for representative sampling with the exception of BIG01 which was still under construction.

- MIL03 - samples collected only for the 1<sup>st</sup> tray; sampler malfunctioned during the second tray and did not collect samples. Peak of storm flow occurred after the 1<sup>st</sup> tray samples were collected. Base and rise grab samples collected and submitted.

- MIL07 – One tray with 12 – 1,000mL bottles was used. Samples were collected manually by pumping through the sampler because the sampler was not collecting samples automatically. Rise grab and composite samples were collected and submitted; base grab was not collected because there was no base flow.
- MIL08 – Sampler malfunctioned; only rise grab collected and submitted. Base grab was not collected because there was not base flow.
- JOR03 – First tray collected samples, only 8 bottles collected samples in the 2<sup>nd</sup> tray due to sampler malfunction. Composite and grab samples were collected and submitted.

Table 2 summarizes the sampling events for the spring of 2015.

**TABLE 2**  
**STATIONS SAMPLED - SPRING 2015 STORM EVENTS**

<b>STATION</b>	<b>Spring 2015</b>
<b>MIL-03</b>	Sampler malfunctioned; base and rise samples collected and analyzed.
<b>MIL07</b>	Twelve 1-liter bottles programmed for flow-weighted composite sampling approximately every 15 minutes. Sampler pump not working – samples pumped manually. Rise grab and composite samples collected and analyzed. No base grab collected due to lack of base flow.
<b>MIL-08</b>	Sampler malfunction; rise grab collected and submitted. No base grab collected due to lack of base flow.
<b>JOR-03</b>	Collected and analyzed base, rise and composite samples
<b>BIG-01</b>	Station under construction

### **Summary of Results**

The results of the spring 2015 sampling event for JOR-03 is in Table 3. All data from the events were included in load and event mean concentration calculations. The concentrations were divided into land use categories and by constituents. Thus, for each constituent, four land use categories were used: commercial, industrial, transportation and residential.

**TABLE 3**  
**Summary of Representative Sampling Analyses**  
**JOR-03 Outfall – Transportation Landuse**

CONSTITUENT	BASE GRAB	RISE GRAB	COMPOSITE
<b>METALS (mg/L)</b>	<b>5/14/15</b>		
Total Cadmium	<0.005	<0.005	<0.005
Total Copper	<0.005	0.029	0.037
Total Lead	<0.02	<0.02	<0.02
Total Zinc	0.01	0.08	0.14
Dissolved Cadmium	<0.005	<0.005	<0.005
Dissolved Copper	<0.005	0.015	0.013
Dissolved Lead	<0.02	<0.02	<0.02
Dissolved Zinc	<0.01	0.03	0.04
<b>WATER QUALITY PARAMETERS</b>			
pH (s.u.)	8.3	8	8.1
TSS (mg/L)	<4	42	68
VSS	<10	15	18
TDS (mg/L)	768	508	412
Hardness (mg/L)	341	206	186
Total Ammonia (as N) (mg/L)	<0.2	0.3	<0.8
TKN (mg/L)	<1	3	2
Nitrate Nitrogen (as N) (mg/L)	1.5	1.5	1
Nitrite Nitrogen (as N) (mg/L)	<0.5	<0.5	<0.5
Total Nitrogen (mg/L)	1.5	4.5	3
Total Phosphorus (as P) (mg/L)	0.01	0.12	0.16
Orthophosphate P (mg/L)	0.01	0.03	<0.01
BOD <sub>5</sub> (mg/L)	<5	13	10
CBOD	<5	11	<5
COD (mg/L)	15	96	78
Oil and Grease (mg/L)	<5	5	NA <sup>1</sup>
E. Coli (org./100ml)	1100	>2400	NA <sup>2</sup>

<sup>1</sup>Only collected for Base and Rise samples

<sup>2</sup>Not analyzed due to holding time constraints

## WATER QUALITY ANALYSIS

The UPDES Permit requires that the identification of water quality improvements or degradation must be documented. The permit also requires an annual estimation of pollutant loads from the municipal separate storm sewer system (MS4), together with an estimate of event mean concentrations (EMCs). This section provides a basis for the estimate of annual constituent loading to receiving waters. The method used in estimating these quantities has not changed from the procedure documented in the Permit Application.

It should be noted that analytical data have been gathered for a total of 43 representative storms, however, not all constituents have been analyzed for each storm event. Table 4 shows the storms sampled and the basins by landuse that are included in the EMC computation.

**TABLE 4  
STORMS SAMPLED BY LANDUSE**

	Mixed	Residential	Residential	Transportation	Industrial
Date	MIL-03	MIL-07	MIL-08	JOR-03	BIG-01
5/14/15	--	X	--	X	--

X = Sampled, analyzed and included in load computations

### Estimation Methodology

Utilizing the statistical methodology, as defined in the Permit Application, EMCs were determined for the 43 storms sampled throughout the duration of the program from 1992 to the spring of 2015. The EMCs are computed from the composite sampling results. The annual constituent loads were then estimated from the EMCs using the following equation:

$$L = C * P_{15} * R_a * EMC * A_s$$

where:  $L$  = annual constituent load (lbs)

$C$  = conversion constant

$P_{15}$  = average annual precipitation (assumed to be 15 inches for Salt Lake County)

$R_a$  = weighted average runoff coefficient based on basin landuse

$EMC$  = event mean concentration (mg/L)

$A_s$  = serviced area of the basin (acres)

Table 9 presents the EMCs for the spring of 2015. Estimates of annual constituent loading to receiving waters are presented in Table 10.

**TABLE 5  
REPRESENTATIVE SAMPLING  
SPRING 2015 EVENT MEAN CONCENTRATIONS**

Compound	Current EMC <sup>1</sup>	Compound	Current EMC <sup>1</sup>
BOD <sub>5</sub> (mg/L)	14.8	T. Ammonia (mg/L)	0.469
COD (mg/L)	98.4	T. Nitrogen (mg/L)	2.74
TSS (mg/L)	136	Hardness (mg/L)	90
TDS (mg/L)	163	Total Cadmium (µg/L) <sup>2</sup>	2.6 <sup>2</sup>
T. Phosphorus (mg/L)	0.55	Total Copper (µg/L)	42.4
O. Phosphorus (mg/L)	0.132	Total Lead (µg/L)	38.4
TKN (mg/L)	2.58	Total Zinc (µg/L)	157.4

<sup>1</sup>Based on 43 qualifying storm events during 1992-spring of 2015

<sup>2</sup>Cadmium concentrations are typically below the detection level; when this occurs, ½ of the detection level is used for EMC calculations.

## STORMWATER QUALITY TRENDS

As part of the annual review of the SWMP, sampling plans and sample results, Stormwater quality trends are identified to assess stormwater quality in UDOT's Phase I area (Salt Lake County). The percent change in parameter concentrations from 2014 to 2015 is provided in Table 6. It is noted that all parameters showed a decrease in concentrations from the prior year, with the exception of Total Kjeldahl Nitrogen which had a slight increase from 2.56 mg/L to 2.58 mg/L in 2015.

**TABLE 6**  
**STORMWATER QUALITY TRENDS**

	2010	2011	2012	2013	2014	2015	2014-2015 % change
EMCs							
BOD	14.5	14.6	14.7	14.7	15	14.8	-1.35
COD	86.8	96.8	95	98.3	98.4	98.4	0.00
TSS	144	139	137	137	136	136	0.00
TDS	158	165	161	162	164	163	-0.61
T. Phos	0.61	0.59	0.56	0.53	0.55	0.55	0.00
O. Phos	0.155	0.15	0.139	0.129	0.133	0.132	-0.76
TKN	2.45	2.55	2.42	2.26	2.56	2.58	0.78
T. Ammon	0.507	0.479	0.471	0.444	0.477	0.469	-1.71
T. Nit	2.86	2.85	2.74	2.74	2.75	2.74	-0.36
Hardness	90	93	91	91	91	90	-1.11
T Cd	2.7	2.7	2.7	2.6	2.6	2.6	0.00
T Cu	44.3	43.5	42.4	42.7	42.6	42.4	-0.47
T Pb	40.5	39.6	39	39	38.6	38.4	-0.52
T Z n	167.8	162.6	159.3	159.6	157.7	157.4	-0.19

## **Appendix 2**

# **UDOT Storm Water Management Program**

**UTAH DEPARTMENT OF TRANSPORTATION  
STORM WATER MANAGEMENT PROGRAM  
UPDES PHASE II**

**Submitted to:**

**STATE OF UTAH  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
DIVISION OF WATER QUALITY**

**2014**

## Modifications to UDOTs Storm Water Management Program

Mod #	Brief Description	Approved By	Date
1	UDOT Environmental Protection Specification 01355 was revised.	UDOT Standards Committee	Sept. 2005
2	UDOT Std drawings EN1-EN7 for erosion and sediment control measures were modified.	UDOT Standards Committee	Sept. 2005
3	SWPPP Standard Summary Sheet was up-dated and clarified.	UDOT Standards Committee	Sept. 2005
4	UDOT Std Specification for Temporary Environmental Controls 01571 was revised.	UDOT Standards Committee	June 2005
5	New Outline developed for SWPPPs	UDOT Env. Services	Jan. 2007
6	SWPPPs compiled by UDOT and supplied to contractors for use on projects	UDOT Env. Services	Jan. 2007
7	UDOT Spill Prevention & Response Plan added to SWPPPs	UDOT Env. Services	Jan. 2007
8	UDOT Environmental Protection Specification 01355 was revised for inclusion in the 2008 Standards	UDOT Standards Committee	Fall 2007
9	UDOT Environmental Controls Specification 01571 was revised for inclusion in the 2008 Standards	UDOT Standards Committee	Fall 2007
10	UDOT Std drawings EN1-EN7 for erosion and sediment control measures were modified for inclusion in the 2008 Standards	UDOT Standards Committee	Fall 2007
11	UDOT Storm Water pollution Prevention Plan was updated to include the new state inspection form.	UDOT Env. Services	July 2010
12	UDOT Erosion and Sediment Control Field Guide was developed which replaces the Temporary Erosion and Sediment Control Manual	UDOT Env. Services	August 2010
13	UDOT Environmental Controls Specification 01571 was up-dated/revised for inclusion in the 2012 Standards.	UDOT Standards Committee	Fall 2011
14	UDOT Stormwater Pollution Prevention Plan Outline updated by adding Cultural Resource and Endangered Species consultation information and other minor edits	UDOT Env. Services	Aug 2012



# TABLE OF CONTENTS

<b>Introduction</b> .....	1
<b>Description</b> .....	2
<b>SWMP Responsibility And Resources</b> .....	2
<b>Chapter 1 - Public Education and Outreach</b> .....	3
<b>Chapter 2 - Public Involvement/participation</b> .....	8
<b>Chapter 3 - Illicit Discharges and Improper Disposal</b> .....	13
<b>Chapter 4 - Construction Site Storm Water Runoff Control</b> .....	19
<b>Chapter 5 - Post Construction Storm Water Management</b> .....	29
<b>Chapter 6 - Pollution Prevention/good Housekeeping</b> .....	37
<b>Appendix 1 - Standard Drawings for Temporary Erosion Control</b>	
<b>Appendix 2 - UDOT Erosion and Sediment Control Field Guide</b>	
<b>Appendix 3 - UDOT Storm Water Pollution Prevention Plan</b>	
<b>Appendix 4 - UDOT Standard Specification 1355 titled “Environmental Protection” UDOT Standard Specification 1571 titled “Environmental Controls” (Updated Jan. 2012)</b>	
<b>Appendix 5 - UDOT Spill Prevention and Response Plan for Maintenance Stations and Construction Sites</b>	

# UTAH DEPARTMENT OF TRANSPORTATION STORM WATER MANAGEMENT PROGRAM

## INTRODUCTION

This Storm Water Management Program is submitted to the State of Utah, Division of Water Quality for the discharge of municipal storm water under Phase II of the Utah Pollutant Discharge Elimination System. This Storm Water Management Plan applies to UDOT storm water conveyance systems in areas designated by the EPA. These include small municipalities and other areas listed below:

### **Small Municipalities:**

#### Cache County

Hyde Park  
Logan  
Millville  
North Logan  
Providence  
River Heights  
Smithfield

#### Davis County

Bountiful  
Centerville  
Clearfield  
Clinton  
Farmington  
Fruit Heights  
Kaysville  
Layton  
North Salt Lake  
Syracuse  
West Bountiful  
West Point  
Woods Cross

#### Salt Lake County

Bluffdale  
Draper  
Salt Lake County Cont.

Holladay  
Midvale  
Murray  
Riverton  
Salt Lake City  
Sandy  
South Jordan  
South Salt Lake  
Taylorsville  
West Jordan  
West Valley City

#### Utah County

American Fork  
Cedar Hills  
Highland  
Lehi  
Lindon  
Mapleton  
Orem  
Pleasant Grove  
Provo  
Spanish Fork  
Springville

#### Weber County

Farr West  
Harrisville  
North Ogden

Ogden  
Pleasant View  
Riverdale  
Roy  
South Ogden  
South Weber  
Sunset  
Uintah  
Washington Terrace

#### Washington County

Ivins  
Santa Clara  
Washington City  
St. George City

### **Other Designated Areas:**

Brigham City  
Ogden  
Tooele

## **DESCRIPTION**

This Storm Water Management Program is designed to limit the discharge of pollutants to UDOT's storm water systems to the maximum extent practicable (MEP). This plan consists of various best management practices (BMP's) that help to achieve the goals outlined in 40CFR 122.34(b), Section 402(p)(3)(B) of the Federal Clean Water Act and State of Utah Storm Water Regulations (UAC R317-8-3.8).

### SWMP Control Measures Required for Phase II Designated Areas and Municipalities

This Storm Water Management Plan addresses the six minimum control measures set forth by the EPA through the State Division of Water Quality. A separate chapter is dedicated to each control measure listed below, outlining BMP's that describe specific activities, procedures, training and other actions that help to prevent and reduce pollution to waters of the state.

- Public Education and Outreach
- Public Involvement/Participation
- Illicit Discharge Detection and Elimination
- Construction Site Storm Water Runoff Control
- Post Construction Storm Water Management in New Development and Redevelopment
- Pollution Prevention/Good Housekeeping for Municipal Operations

### SWMP Control Measures Required for All Other Areas Statewide

For statewide locations other than Phase II municipalities and areas, the chapters listed below are applicable. Best Management Practices described in these chapters may be dependent on area of disturbance, hydrologic characteristics, topography or geography.

- Construction Site Storm Water Runoff Control
- Post Construction Storm Water Management in New Development and Redevelopment
- Pollution Prevention/Good Housekeeping for Municipal Operations

## **SWMP RESPONSIBILITY AND RESOURCES**

Under the authority granted by the Utah Code Volume 2, Title 27 and Volume 3, Title 63, UDOT is responsible for design, construction and maintenance of all state highway systems, including drainage systems. UDOT shall provide adequate finances, staff, equipment and support capabilities to implement the control measures outlined in the storm water management plan.

# CHAPTER 1

## PUBLIC EDUCATION AND OUTREACH

### OBJECTIVE

Provide information and guidance to the public on issues related to storm water quality.

### BEST MANAGEMENT PRACTICES

The BMP's in this chapter describe techniques to inform the public on the effects of pollution to storm water and ways to reduce pollutants from being discharged to storm drain systems.

Several BMP's focus on informing and educating the public on issues relating to storm water quality.

### List of BMP's

- Storm Water Displays at Public Meetings
- Television Commercials on Storm Water
- Storm Water Information on UDOT's Web Site

## **BMP - Storm Water Displays at Public Meetings**

### Objective

Increase public awareness of storm water, the effects of pollutants and ways to minimize the discharge of pollutants to storm drain systems.

### Description

On many projects, public hearings and meetings are necessary to provide information and opportunities for the public to give input. Storm water informational displays will be provided at public meetings and public hearings held for selected UDOT projects. The displays will briefly explain what storm water is and how pollutants from storm water can impact the aquatic environment. The displays will also describe how to properly dispose of common household wastes and include steps to reduce the discharge of pollutants to rivers, streams and storm water facilities. Educational materials such as tabloids, handouts, magnets, pads and pencils would be available for the public to take home. In addition, comment sheets would be provided to allow the public an opportunity to submit their input.

### Decision Process

Those who attend meetings and public hearings will also have an opportunity to view a display and obtain educational materials on storm water. A table top display at these meetings is an effective way to provide information on storm water to the public. The target audience for this BMP includes residents, business and property owners, and all other interested individuals and groups that attend public meetings for transportation projects. For projects that are likely to involve minority populations, information notices will be sent to local papers and community centers that serve these groups. Target pollutant sources include litter, common household hazardous wastes, vehicle fluids and lawn care chemicals.

UDOT Region environmental staff would be present at the public meetings and hearings to provide information and answer questions on storm water issues and methods of proper waste disposal. Displays would be provided at public meetings and hearings for major projects involving the preparation of Environmental Assessments (EA's) and Draft Environmental Impact Statements (DEIS's).

### Staffing

Storm water displays will be set up and staffed by at least one individual from the UDOT Region environmental section.

### Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
November 2003	Develop Display Materials	Approval of Materials by DWQ
March 2004 - 2008	Provide Storm Water Displays at Public Meetings for EA's and EIS's	Document number of displays provided
Summer 2012		Displays are no longer effective. Hearing attendees are confused.

## **BMP - Television Commercials on Storm Water**

### Objective

Increase public awareness of storm water and the effects of common pollutants. Inform and educate the public on ways to minimize the discharge of pollutants to storm drain systems.

### Description

Television commercials that focus on storm water quality are broadcast on major networks to audiences statewide. These commercials describe storm water, common pollutants, and ways the public can prevent and minimize pollutants from being discharged to storm drain systems.

UDOT provides yearly financial support to Salt Lake County as part of a current Public Education and Outreach Program. Salt Lake County hired a consultant that developed and produced the TV commercials as well as other mass educational materials.

### Decision Process

Television commercials are an effective means to communicate information to a statewide audience. Target audiences include all residents, business and property owners throughout Utah. Target pollution sources include common household hazardous wastes and litter, vehicle fluids/wash water and lawn care chemicals.

### Staffing

This BMP requires yearly financial support to Salt Lake County. Except for general coordination activities, no UDOT staffing resources are required.

### Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
2003 - 2008	Provide TV commercials to statewide audiences.	Document number of TV commercials provided.

## **BMP - Storm Water Information on UDOT's Web Site**

### Objective

Increase public awareness of storm water and the effects of pollutants. Educate the public on ways to minimize the discharge of pollutants to storm drain systems.

### Description

Provide on-line information that explains what storm water is and how pollutants from storm water can impact the aquatic environment. Information directly on the web site or on web links would describe how to properly dispose of common household wastes and include steps to reduce the discharge of pollutants to rivers, streams and storm water facilities. In addition, the web site will provide the opportunity for the public to email information to staff on potential problems, illicit discharges or spills.

### Decision Process

Many highway users access UDOT's web site to obtain information on transportation projects and traffic conditions. Web based information is an effective way to inform and educate the public on issues regarding storm water quality and the ultimate destination of storm water runoff

The target audience for this BMP includes residents, business and property owners, and all other interested individuals and groups that may desire to obtain transportation information via the world wide web. Target pollutant sources described will include litter, common household hazardous wastes, vehicle fluids and lawn care chemicals.

### Measurable Goals

Goal - Provide storm water information and links that provide a description of storm water, common pollutants and measures to minimize pollutant discharges to storm drain systems on UDOT's web site by June 2004.

### Staffing

One member of the Environmental Services section will work with the Web Manager to develop and add storm water information to the web site.

### Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
May 2004	Develop web materials	N/A
July 2004 - 2008	Provide Storm Water Displays informational material on UDOT's environmental web site.	Document number of web site visits.

## CHAPTER 2

### PUBLIC INVOLVEMENT AND PARTICIPATION

#### OBJECTIVE

Provide the public an opportunity to be involved and participate in UDOT programs related to storm water quality.

#### BEST MANAGEMENT PRACTICES

The BMP's in this chapter describe techniques to involve the public in programs to reduce pollutants from being discharged to storm drain systems. BMP's focus on involving the public in various programs designed to reduce pollutants from being discharged into storm drain systems.

#### List of BMP's

- Storm Water Displays at Public Meetings
- Storm Water Comment Opportunity via UDOT's Web Site
- Adopt-A-Highway Litter Cleanup Program

## **BMP - Storm Water Displays at Public Meetings**

### Objective

Provide the public an opportunity to submit comments and suggestions regarding UDOT storm water management techniques.

### Description

Storm water informational displays will be provided at public meetings and public hearings held for UDOT projects. The displays will briefly explain what storm water is and how pollutants from storm water can impact the aquatic environment. The displays will describe how UDOT manages storm water on projects and how UDOT minimizes the discharge of pollutants to downstream water resources. A UDOT staff member will be available to answer questions and receive comments or suggestions the public may have about storm water management. Comment sheets will be provided to allow the public an opportunity to submit their input and suggestions in writing.

### Decision Process

Those who attend meetings and public hearings will also have an opportunity to view a display and obtain educational materials on storm water. A table top display at these meetings is an effective way to provide information on storm water to the public and allow the public an opportunity to provide input and suggestions. The target audience for this BMP includes residents, business and property owners, and all other interested individuals and groups that attend public meetings for transportation projects. For projects that are likely to involve minority populations, information notices will be sent to local papers and community centers that serve these groups. Target pollutant sources include litter, common household hazardous wastes, vehicle fluids and lawn care chemicals.

UDOT Region environmental staff would be present at the public meetings and hearings to provide information and answer questions on storm water issues and methods of proper waste disposal. Displays would be provided at public meetings and hearings for projects involving the preparation of Environmental Assessments (EAs) and Draft Environmental Impact Statements (DEISs).

### Staffing

Storm water displays will be set up and staffed by at least one individual from the UDOT region environmental section.

### Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
November 2003	Develop Display Materials	Approval of Materials by DWQ
January 2004	Obtain Display Panels	N/A
March 2004 - 2008	Provide Storm Water comment opportunity at Public Meetings for EAs and EISs	Document number of displays provided
March 2004 -	Respond to public comments	Document comments and responses

2008	within 2 weeks	
------	----------------	--

## **BMP - Storm Water Comment Opportunity via UDOT's Web Site**

### Objective

Provide an on-line opportunity to the public to submit comments and suggestions regarding storm water issues.

### Description

Storm water Information directly on UDOT's web site or on web links would describe how storm water is managed on transportation projects. UDOT's web site will provide the opportunity for the public to comment on these management strategies and email suggestions to UDOT staff. The web site will also provide an e-mail opportunity and telephone number/contact person for the public to share information on potential storm water problems, illicit discharges or spills.

### Decision Process

Many highway users access UDOT's web site to obtain information on transportation projects and traffic conditions. Web based information is an effective way to inform and educate the public on issues regarding storm water quality and management techniques.

The target audience for this BMP includes residents, business and property owners, and all other interested individuals and groups that may desire to obtain transportation information via the world wide web. Target pollutant sources described will include litter, common household hazardous wastes, vehicle fluids and lawn care chemicals.

### Measurable Goals

Goal - Provide a written response to all who submit comments within two weeks.

### Staffing

One member of the Environmental Services section will work with the Web Manager to develop and add storm water information to the web site.

### Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
May 2004	Develop web materials	N/A
July 2004 - 2008	Provide Storm Water Displays informational material on UDOT's environmental web site.	Document number of web site visits.
July 2004 - 2008	Provide a opportunity to comment on line	Document number of comments submitted.

## **BMP - Adopt-A-Highway Litter Cleanup Program**

### Objective

Provide the public an opportunity to be involved and participate in UDOT's litter cleanup program on state roadways and highways. The objective of this BMP is to prevent litter and associated pollutants from being discharged to downstream drainage facilities and receiving waters.

### Description

The "Adopt a Highway" program is a cleanup effort by volunteers from various groups who collect and remove litter on a specific segment of interstate highway or local state roadway. UDOT provides litter bags and collects the bags and disposes of the waste material at a local landfill.

### Decision Process

The "Adopt a Highway" program currently has approximately 800 groups that participate. Each group involved in the program collects litter on a two mile segment of roadway right of way a minimum of three times per year.

By participating in the Adopt-A-Highway program, members of the public learn first hand, the effects of litter pollution on roadside areas and the importance of proper disposal. To recognize the efforts of the group, UDOT erects a sign on that section of roadway with the groups name.

### Measurable Goals

Goal - Groups will cleanup roadway segments in the Adopt-A-Highway program 2 times per year.

### Staffing

This program is managed by UDOT region staff as follows:

Region 1 - 1 staff member

Region 2 - 1 staff member

Region 3 - 1 staff member

Region 4 - 3 staff members

### Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
2003 - 2008	Continue to provide the Adopt-A-Highway Litter Removal Program	N/A
2003 - 2008	Provide roadway clean-up efforts two times per roadway segment per year.	Document number of roadway cleanup efforts.

## **CHAPTER 3**

# **ILLICIT DISCHARGE DETECTION AND ELIMINATION**

## **OBJECTIVE**

Detect and eliminate illicit discharges to storm drain systems.

## **BEST MANAGEMENT PRACTICES**

The BMP's in this chapter describe methods to detect and eliminate illicit discharges and improper disposal of pollutants to storm drain systems.

## **List of BMP's**

- Storm Drain Outfall Maps
- Storm Water Outfall Screening
- Encroachment Permits

## **BMP - Storm Drain Outfall Maps**

### Objective

Provide a map for each permitted area showing where UDOT storm drain systems outfall to waters of the state.

### Description

Each UDOT Region office would prepare one or more maps showing discharge points from storm drain systems to waters of the state. These maps would show discharge locations, outfall size, outfall type and names of water resources that receive storm water from UDOT systems. Maps would be prepared for all areas in the Region that are regulated under UPDES Phase II.

### Decision Process

Implementation of this BMP will help to detect illicit discharges to waters of the state. Major outfalls of municipal storm water runoff to waters of the U.S. will be located and shown on appropriate maps. Maps will clearly show the location of the outfall and the receiving water resource. Major outfalls are defined as municipal storm water conveyance facilities with an equivalent size equal to or greater than 36 inches in diameter.

Sources of information for the development of these maps will include project design drawings, UDOT maintenance personnel and field surveys.

### Measurable Goals

Goal - Produce storm drain outfall maps for each area regulated under UPDES Phase II by June 2005.

Goal - Add new information to update storm drain outfall maps within 1 month after construction or modification of storm drain outfall structures.

### Staffing

Staffing for this BMP includes:

Region Environmental Engineer

Region Hydraulics Engineer

1 CAD Designer

### Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
July 2004	Meet with UDOT Maintenance, Design and Hydraulics staff to determine major storm drain outfall locations	N/A
June 2005	Produce a draft storm drain outfall map for major outfalls in areas regulated under UPDES Phase II	Finalize Region storm drain outfall maps
2005 - 2008	Revise maps if new outfalls are	N/A

	constructed or modifications to existing outfalls are made	
Sept. 2012	UDOT has begun an effort to locate all subsurface utilities on state roadways including storm drain systems.	

## **BMP - Storm Water Outfall Screening**

### Objective

Detect illicit discharges to UDOT storm drain systems and determine their sources.

### Description

Major outfalls owned and operated by UDOT are inspected and screened for pollutants. Major outfalls are those drainage structures equal or greater than 36 inches in diameter (or equivalent size) that discharge to waters of the state.

### Decision Process

Illicit discharges often result in changes in physical and chemical characteristics of water. Many of these characteristics can be observed in the field. Testing and analysis of storm water samples can reveal information about the pollutant type and possible source for enforcement action and elimination of the discharge. Drainage from major outfalls will be inspected, tested and analyzed during dry weather conditions for the following physical and chemical indicators of pollutants:

#### Physical Characteristics:

- Color
- Odor
- Clarity
- Floatables
- Deposits
- Stains
- Structural Damage

#### Field Measurements:

- Temperature
- pH

#### Field Analyses:

- Ammonia
- Surfactants
- Metal Toxicity

A field data sheet will be completed for every outfall inspected. Follow-up activities will be conducted for sites where pollutants indicate possible illicit discharges. Up-stream sites be investigated in further detail to determine the source of the discharge. Findings will be reported to Salt Lake Valley Health Department for action to eliminate the illicit discharge. All enforcement actions taken will be documented.

### Staffing

Staffing for this BMP includes:

- Region Environmental Engineer
- Region Hydraulics Engineer
- 1 Additional Region Environmental Staff Member

### Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
February 2006	Develop outfall screening protocol	Approval by the Division of Water Quality
May 2006	Obtain necessary screening equipment	N/A
2006 - 2008	Inspect major outfalls once per year for illicit discharges	Document screening activities and findings

## **BMP - Encroachment Permits**

### Objective

Prohibit/eliminate illicit discharges of storm water and pollutants from entering UDOT drainage facilities and right of way.

### Description

An encroachment permit is required for the discharge storm water runoff from a private source into a UDOT storm drain system.

When a private development or business requests an encroachment permit to discharge storm water runoff into a UDOT facility, the following activities take place:

- The UDOT Region Hydraulics Engineer (RHE) determines if the existing storm drain system has sufficient capacity.
- The RHE checks the proposal to verify presence of an oil/water separator and floating debris trap.
- The RHE ensures that on-site detention is provided at the development/business and the flow to UDOT's storm drain system is limited to 0.1cfs/acre.
- If the design is satisfactory, the RHE recommends to the Region Permits Officer that an encroachment permit be issued.
- If the design is not satisfactory, the request to discharge into UDOT's system is denied.

### Decision Process

Encroachment permits can help prevent/eliminate unauthorized discharges of storm water and pollutants from entering UDOT storm drain facilities and right of way. Failure to obtain an encroachment permit is a violation of UDOT Policy and enforcement actions are taken against those responsible. Enforcement against parties responsible would be accomplished by UDOT, with punitive measures being levied by the local health department with jurisdiction over the area.

### Staffing

Staffing for this BMP includes the UDOT Region Hydraulics Engineer and the UDOT Region Permits Officer

### Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
August 2006	Review Encroachment Permit Language and update or modify as necessary	Approval by Utilities Engineer
2003 - 2008	Implement screening protocol within 2 days after discovery of an illicit discharge	Document screening activities and findings

## **CHAPTER 4**

# CONSTRUCTION SITE STORM WATER RUNOFF CONTROL

## OBJECTIVE

Provide information and guidance to construction personnel on issues related to storm water quality.

## BEST MANAGEMENT PRACTICES

The BMP's in this chapter describe techniques to reduce pollutants in storm water runoff from construction sites. Construction sites that disturb an area greater than or equal to one acre must incorporate the BMP's listed below.

### List of BMP's

- UDOT Standard Drawings for Temporary Erosion and Sediment Control (EN1 - EN5)
- UDOT Manual for Temporary Erosion and Sediment Control
- UDOT Storm Water Pollution Prevention Plan
- UDOT Standard Specification titled "Environmental Protection"
- UDOT Environmental Control Supervisor (ECS) Training
- UDOT General Environmental Training
- Stabilized Construction Entrances
- Contractor Rating for Environmental Compliance

# BMP - UDOT Standard Drawings for Temporary Erosion and Sediment Control (EN1 - EN5)

Objective

Minimize the discharge of construction site pollutants to storm water conveyance systems.

Description

This BMP consists of standard drawing sheets that describe various temporary erosion and sediment control measures used on UDOT construction and maintenance projects. These drawings describe the necessary elements of each control measure and how each measure is to be constructed. General notes are included for each measure that describe construction practices and issues regarding maintenance.

Temporary Erosion and Sediment Control Measures include:

- Straw or Hay Bale Check Dam
- Stone Check Dam
- Silt Fence
- Slope Drain
- Temporary Berm
- Straw and Hay Bale Drop Inlet Barrier
- Silt Fence Drop Inlet Barrier
- Stone Drop Inlet Barrier
- Sediment Trap
- Curb Inlet Barrier

Strategy

Control measures listed above are designed to trap pollutants in storm water to the maximum extent practicable (MEP) prior to discharge from the construction site. Temporary erosion control measures can reduce erosion and sediment loss by approximately 80%.

Staffing

Staffing for this BMP includes:

- Region Environmental Staff
- Region Design Staff
- Region Construction Staff

Measurable Goals and Implementation Schedule

Milestone/Year	Goal/Action	Assessment
2003 - 2008	Review/modify Standard Drawings once during permit period	Approval of UDOT Standards Committee
2003 - 2008	Include Temporary Erosion and Sediment Control Drawings on all projects that disturb an area greater or equal than 1 acre in size.	N/A
2003 - 2008	Include Temporary Erosion and Sediment Control Drawings on all projects that drain to an adjacent water of the state, sensitive environmental area or special aquatic site as defined by the US Army Corps of Engineers. (wetland, mudflat, playa, marsh, etc.)	N/A

## **BMP - UDOT Manual for Temporary Erosion and Sediment Control**

### Objective

Minimize the discharge of construction site pollutants to storm water conveyance systems.

### Description

This BMP consists of a manual that describes various temporary erosion and sediment control measures used on UDOT construction and maintenance projects. This manual is intended to give designers, contractors, installers, and inspectors the tools they need to implement practical and efficient SWPPP's. Each section of this manual includes information on the design, installation, inspection and maintenance of temporary erosion control measures. Proper use of these measures will protect the environment. Portions of UDOT Standard Drawings for Temporary Erosion and Sediment Control are included in the manual and the necessary elements of each control measure are described.

### Strategy

This manual is a useful tool that is used by design staff and construction staff in developing and modifying storm water pollution prevention plans. It is concise enough that it can be carried from job site to job site with ease. Common problems with erosion/sediment control measures are identified and solutions to these problems are listed.

### Staffing

Staffing for this BMP includes one staff member from UDOT Environmental Services Section to oversee production and distribution of the manual.

### Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
2003 - 2008	Update Existing Manual of Instruction once during the permit period	Incorporate comments from environmental staff
2003 - 2008	Distribute latest manual to UDOT construction, maintenance, environmental and design personnel	N/A

## **BMP - UDOT Storm Water Pollution Prevention Plan (SWPPP)**

### Objective

Minimize the discharge of construction site pollutants to storm water conveyance systems.

### Description

A set of plans are developed that describe temporary and permanent erosion control measures for transportation projects. The SWPPP consists of a summary sheet that describes the project area and the type of control measures planned for the project and supplementary drawings that describe the types and locations of proposed erosion control measures.

Temporary erosion/sediment control measures address project construction activities. Permanent erosion control measures address erosion control throughout the life of the project. This plan will be developed for all projects which will disturb one acre or more. In addition, a SWPPP will be developed for all projects that are adjacent to waters of the state, sensitive environmental areas or special aquatic sites as defined by the US Army Corps of Engineers (wetlands, mudflats, playas, marshes, etc.) regardless of acreage disturbed.

### Strategy

Including storm water pollution prevention plans and specifications in contract documents will enable construction staff to provide adequate measures to minimize pollutants from being discharged via storm water runoff.

### Measurable Goals

Goal - Provide a SWPPP for all projects that drain to an adjacent water of the state, sensitive environmental area or special aquatic site as defined by the US Army Corps of Engineers. (wetland, mudflat, playa, marsh, etc.)

### Staffing

Staffing for this BMP is comprised of:

- Region Landscape Architect
- 2-3 Region Design technicians
- 1-2 Region Design Engineers

### Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
2003 - 2008	Provide a SWPPP for all projects that drain to an adjacent water of the state, sensitive environmental area or special aquatic site as defined by the US Army Corps of Engineers. (wetland, mudflat, playa, marsh, etc.)	N/A
2003 - 2008	Update UDOT SWPPP Title Sheet once during permit period	Incorporate comments from environmental, design & construction

## **BMP - UDOT Standard Specification “Environmental Protection”**

Objective

Prevent construction site pollutants such as sediment, fuels, oils, bitumens, chemicals or other harmful materials from being discharged to storm water conveyance systems.

Description

This standard specification is applicable to UDOT projects and outlines specific actions to be taken and requirements necessary for environmental protection. Topics covered in this specification include:

- Wetlands
- Flood Plains
- Live Streams
- UPDES Permits
- Environmental Clearances by the Contractor
- Hazardous Materials
- Noise and Vibration Control
- Archeological, Paleontological Discoveries
- Open Burning
- Abrasive Blasting

Strategy

This specification is part of the UDOT Standard Specifications for Road and Bridge Construction. UDOT projects include these standard specifications in the contract documents.

Staffing

Staffing for this BMP is comprised of:  
UDOT Standards Committee  
1 Staff member of UDOT Environmental Services

Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
2003 - 2008	Update the Environmental Protection Specification once during permit period	Approval of UDOT Standards Committee

## **BMP - UDOT Environmental Control Supervisor (ECS) Training**

### Objective

Increase protection of environmental resources within and adjacent to UDOT construction sites.

### Description

This BMP consists of a training program conducted by UDOT environmental staff, and attended by inspectors and contractors who work on UDOT construction projects. The goal of this training program is to have trainees become certified as Environmental Control Supervisors (ECS).

UDOT requires the contractor to designate an Environmental Control Supervisor (ECS) for selected projects that have 404 Permits, UPDES Permits, Stream Alteration Permits or other sensitive environmental resources.

The responsibilities of the ECS include:

- Inspecting the project site for compliance with UPDES and other environmental permits
- Ensuring that environmental protection measures in the project plans are implemented on the project
- Maintaining temporary erosion and sediment control measures
- Modifying the Storm Water Pollution Prevention Plan as required
- Obtaining additional environmental clearances for off-site work
- Coordinating with the UDOT construction crew's ECS
- Ensuring that environmental mitigation commitments are followed on the project

### Strategy

Individuals on construction projects that are trained in a variety of environmental issues and certified as an ECS, will help minimize environmental impacts from construction operations and reduce the discharge of pollutants to environmental resources.

### Staffing

Staffing for this BMP includes:

- 1 staff member from UDOT's Environmental Services
- 2 staff members from UDOT Region Environmental Division

### Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
2003 - 2008	Provide ECS Training opportunities at least twice per calendar year	Document the number of training opportunities provided. Retain a list of all who have passed the class
2003 - 2008	Review class materials on a bi-annual basis	Document changes or additions made to course instructional materials

## **BMP - UDOT General Environmental Training**

Objective

Provide instruction and guidance to UDOT project managers, maintenance personnel, construction inspectors and design technicians on environmental issues common to transportation projects.

Description

UDOT Environmental Services provides training to staff on a variety of environmental topics. This training will inform and educate employees on UDOT’s environmental ethic and provide the tools necessary to help minimize potential adverse impacts to the natural and built environment.

Environmental topics covered include:

- NEPA Compliance
- Point & Non-Point Source Pollution
- Temporary Erosion/Sediment Control
- Waters of the US, Including Wetlands
- Stream Channel Alterations
- Archeological/Paleontological Resources
- Project Mitigation Commitments
- Air Quality
- Hazardous Materials
- Noise
- Rare, Threatened and Endangered Species
- Invasive Weed Species
- Water Quality Permits

Strategy

Providing training to UDOT staff in a variety of environmental issues, will help provide guidance and educate staff on best management practices to minimize environmental impacts. This training will help reduce the discharge of pollutants to environmental resources.

Staffing

Staffing for this BMP includes:

5 staff members from UDOT’s Environmental Services

Measurable Goals and Implementation Schedule

Milestone/Year	Goal/Action	Assessment
2003 - 2008	Provide environmental training to project managers, maintenance personnel, construction inspectors and design technicians at least once per calendar year.	Document training provided.

## **BMP - Stabilized Construction Entrances**

### Objective

Minimize the amount of sediment and mud that may leave a construction site on vehicles.

### Description

#### 1. Gravel Pad

A pad of gravel approximately 6 inches thick is placed where construction traffic leaves and enters the construction site. Usually, these locations will occur at access points to local paved roads and highways. A geotextile layer should be placed between the gravel layer and the subgrade. The stabilized entrance should be flared at the intersection to adjacent roadways so that longer vehicles remain on the gravel pad when turning out of or on to the site. When a construction vehicle drives over the gravel pad, sediment and mud are removed from the vehicle's wheels, thereby reducing off-site tracking on to local roads and streets. The size of the gravel should be large enough so that it is not carried away by vehicle traffic but small enough to not be caught between dual wheels. The gravel pad can reduce erosion and rutting at the construction site entrance.

#### 2. Cattle Guard/Metal Grate

A metal grate can be added to the gravel pad measure described above which will enhance the performance of the construction entrance. As vehicles drive over the series of parallel steel bars, soil is dislodged from vehicle tires.

All construction entrances should be maintained until the entire project site has been stabilized. Additional gravel may need to be added in order for the entrance to remain effective. Soil that is tracked off-site should be swept up and properly disposed as soon as possible.

### Strategy

Stabilized construction entrances are an effective measure that reduces off-site tracking, dust and sediment discharge to downstream storm water conveyance systems.

### Staffing

Staffing for this BMP includes construction crew members and one UDOT inspector.

### Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
2003 - 2008	Provide a stabilized construction entrance on all projects that could cause off-site tracking onto paved roadways and highways.	Document effectiveness and improvements needed
November 2004	Develop a standard specification for Stabilized Construction Entrances	Approval by UDOT Standards Committee

## **BMP - Contractor Rating for Environmental Compliance**

### Objective

Increase contractor environmental sensitivity in the construction phase.

### Description

UDOT has a rating system that provides an opportunity for UDOT construction staff to comment on contractor performance for each project. Contractor performance is rated by the UDOT resident engineer on quality control/workmanship, traffic control, EEO/labor compliance, organization/supervision, partnering, schedule, public relations and environmental compliance. An overall score of 70 or below (out of 100) is considered failing. If the overall rating score falls below 70, the contractor is no longer pre-qualified to bid on major UDOT projects. A project is considered “major” if the estimated construction cost is likely to exceed \$500,000. The rating for environmental compliance includes the following issues:

- Hazardous Waste Requirements
- Air Quality
- Clearances for off-site work
- Invasive Weed Control
- UPDES Permit Requirements
- 404/Stream Alteration Permit Requirements
- Temporary Erosion Control

### Strategy

A rating system for contractors gives UDOT management an indication of how they are performing on a variety of issues. It also provides feedback on areas in which the contractor needs additional training and guidance. This system also provides a way to recognize high quality work and preclude those contractors who have done poor quality work from bidding on major UDOT projects.

### Staffing

Staffing for this BMP includes 18 UDOT Resident Engineers who oversee projects in the construction phase.

### Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
2003 - 2008	Rate UDOT contractors for each major project.	Document ratings given
2003 - 2008	Review contractor rating system once during the permit period	Document all modifications made.

## CHAPTER 5

### POST CONSTRUCTION STORM WATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT

#### OBJECTIVE

Provide information and guidance to address storm water runoff from new development and redevelopment projects that disturb areas greater than or equal to one acre.

#### BEST MANAGEMENT PRACTICES

The BMP's in this chapter describe permanent structural controls and non structural controls to reduce pollutants in storm water runoff from areas of new development and redevelopment.

#### List of BMP's

- Detention Pond
- Wet Pond
- Grassed Swale
- Filter Strip

## **BMP - Detention Pond**

### Objective

Remove sediment in storm water runoff and reduce the quantity of runoff discharged to downstream water resources.

### Description

Detention ponds are typically provided for new storm sewer systems prior to discharge to a water resource such as a river, lake, stream or wetland. The purpose of a detention pond is to trap sediment suspended in storm water runoff and to trap floatable debris on the pond surface. Typically, a controlled outlet is provided that allows a rate of storm water release equal to pre-development conditions. Detention ponds need to be sized to allow a 30 minute detention time to allow the majority of suspended solids to settle out prior to discharge.

### Strategy

Detention ponds provide a mechanism for removal of sediment pollutants and other debris. This also results in the removal of nutrients, heavy metals, toxic materials and oxygen demanding particles associated with fine sediment. In addition, providing a slow release of storm water out of the pond serves to protect downstream drainage channels from channel erosion and reduces the potential for downstream flooding.

Design staff need to coordinate all detention facilities with the Division of Water Quality regarding treatment and design issues.

### Staffing

Staffing for this BMP includes:

- 1 staff member from Region Environmental
- 2 staff members from Region Design
- 1 staff member from UDOT Hydraulics

### Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
2003 - 2008	For projects exhibiting the proper site characteristics, provide a detention pond for new storm drain systems that discharge to water resources.	Approval of design by the Department of Water Quality
September 2005	Develop a list of detention pond facilities for monitoring purposes	Distribute list to maintenance personnel
2003 - 2008	Document performance and effectiveness 1 year after installation	Assess performance, document modifications or maintenance needed

## **BMP - Wet Pond**

### Objective

The purpose of a wet pond is to remove sediment, biochemical oxygen demand (BOD), organic nutrients and trace metals from storm water.

### Description

A wet pond is similar to a detention pond except that it contains a permanent pool of water. Biochemical processes take place within the pond that naturally aid in reducing the quantity of soluble nutrients and heavy metals such as lead and zinc. Wet ponds also offer flood control benefits and removal of floating debris from storm water. Wet ponds need a dependable water source or be located at the ground water level. It may be necessary to provide a clay liner or geotextile if the existing soil has a high rate of permeability. The permanent pool should be approximately 3 to 8 feet deep and should incorporate a floating debris trap before runoff is discharged downstream. The distance between the pond inlet and outlet should be as large as possible to maximize the removal of sediment, organic pollutants and heavy metals. The volume of the pond should be approximately 3 times the first flush from the storm event (approximately ½ inch of rainfall over the impervious surface).

Monitoring studies have shown that wet ponds have achieved the following average pollutant removal efficiencies (Schueler, 1992):

<u>Pollutant</u>	<u>Removal Efficiency</u>
Sediment	74 %
Total Phosphorus	49 %
Total Nitrogen	34 %
Lead	69 %
Zinc	59%

### Strategy

Wet ponds are a useful tool because they assist in pollutant removal using both physical and chemical processes. As a result they are more effective than detention ponds, if a constant source of water is available. In addition to fine particles settling out of the runoff, biological activity occurs and vegetation in the pond help to remove nutrients and heavy metals from storm water.

### Staffing

Staffing for this BMP includes:

- 1 staff member from Region Environmental
- 2 staff members from Region Design
- 1 staff member from UDOT Hydraulics

### Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
2003 - 2008	For projects exhibiting the proper site characteristics, provide a wet pond for new storm drain systems that discharge to water resources.	Approval of design by the Department of Water Quality
October 2005	Develop a list of wet pond facilities for monitoring purposes	Distribute list to maintenance personnel

2003 - 2008	Document performance and effectiveness 1 year after installation	Assess performance, document modifications or maintenance needed
-------------	--	--

## BMP - Grassed Swale

### Objective

The objective of a grassed swale is to convey and remove sediment and heavy metals from storm water runoff.

### Description

Grassed swales are open channel storm water conveyance systems that are vegetated with grasses. They require relatively flat longitudinal slopes and soils that drain well. The best performance is achieved for storms with moderate runoff, their effectiveness on large storms is limited. They can be effective when used in roadway ditches and medians where sediment loads are expected to be low. Pollutant removal rates are dependent on channel width, longitudinal slope and type of vegetation. The best removal rates have been achieved by using dense turf grass species with a grass blade height of 2 inches above the design water depth. Increasing time of runoff through the swale will increase pollutant removal rates. Check dams can be incorporated in the swale to reduce velocities and aid in sediment removal.

Monitoring studies have shown that 200 foot long grassed swales have achieved the following average pollutant removal efficiencies (Barret et al., Schueler, 1991; Yu, 1993; Yousef, et al., 1985, Horner, 1993):

<u>Pollutant</u>	<u>Removal Efficiency</u>
Total Suspended Solids	74 %
Total Phosphorus	29 %
Total Nitrogen	25 %
Lead	67 %
Zinc	63%
Oil/Grease	75%

### Strategy

Grassed swales are a useful tool because they assist in pollutant removal, are aesthetically pleasing and cost effective solutions for conveying and treating storm water runoff. Suspended solids and metals can be reduced by the use of grassed swales. The mechanism of pollutant removal is typically through adsorption and sedimentation.

### Staffing

Staffing for this BMP includes:

- 1 staff member from Region Environmental
- 2 staff members from Region Design
- 1 staff member from UDOT Hydraulics

### Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
2003 - 2008	For projects exhibiting the proper site characteristics, provide grassed swales for channelizing storm water runoff.	N/A
2003 - 2008	Document performance and	Assess performance, document

	effectiveness 1 year after installation	modifications or maintenance needed
--	---	-------------------------------------

## BMP - Filter Strip

### Objective

The objective of a filter strip is to remove sediment and other pollutants from storm water runoff.

### Description

A filter strip is a vegetated section of land, usually between a roadway and a receiving water. They are relatively flat and convey overland (sheet) flow. Filter strips may occur as grasslands, forested areas or any other vegetated surface. They function by intercepting sheet flow and provide a filtering mechanism prior to discharge to the receiving water body. Pollutants are detained and removed by sedimentation, filtration and infiltration into the soil. Filter strips only treat low velocity flows. Flat side slopes (less than 5%) combined with fair soil permeability are found to result in the best performance. Storm water runoff from roadways can be directed to flow through a filter strip prior to being discharged into the receiving water.

### Strategy

Filter strips can be useful in rural situations where storm water runoff is allowed to sheet flow and dissipate into the surrounding vegetated areas. Suspended solids and metals can be reduced by the use of filter strips. They can contribute to ground water recharge, reduce erosion, trap sediment, provide good wildlife habitat.

Expected pollutant removal efficiencies (Schueler, 1987) for grassed and forested filter strips are shown below:

<u>Pollutant</u>	<u>Grassed Filter Strip (20'</u>	<u>Forested Filter Strip</u>
	<u>length)</u>	<u>(100' length)</u>
Suspended Sediment		20 - 40 %
Total Phosphorus		60 - 80% >20 %
Total Nitrogen		40 - 60% >20 %
Trace Metals	60%	40 - 20 - 40 >80%
	%	

### Measurable Goals

Goal - Provide a filter strip for all projects when suitable conditions exist.

### Staffing

Staffing for this BMP includes:

- 1 staff member from Region Environmental
- 2 staff members from Region Design
- 1 staff member from UDOT Hydraulics

Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
2003 - 2008	For projects exhibiting the proper site characteristics, provide filter strips to intercept sheet flow runoff.	N/A
2003 - 2008	Document performance and effectiveness 1 year after installation	Assess performance, document modifications or maintenance needed

## **CHAPTER 6**

### **POLLUTION PREVENTION/GOOD HOUSEKEEPING FOR MUNICIPAL OPERATIONS**

#### OBJECTIVE

Develop and implement maintenance programs for municipal operations to prevent and reduce pollutants from being discharged to downstream resources.

#### BEST MANAGEMENT PRACTICES

The BMP's in this chapter describe training and maintenance procedures to reduce pollutants in storm water runoff from municipal operations.

#### List of BMP's

- Snow Removal and Deicing Practices
- Salt Pile Storage
- Street Sweeping
- Spill Prevention and Response Plan

## **BMP - Snow Removal and Deicing Practices**

### Objective

Operate and maintain UDOT roadways and maintenance facilities while incorporating best management practices to reduce the discharge of pollutants to the surrounding environment.

### Description

Snow and ice are removed from UDOT roadways to provide a safe transportation system for the traveling public. Snow and ice are removed from traveled lanes, storage lanes, shoulders and gore areas. Several types of snow and ice removal are incorporated:

#### Anti Icing Technology :

This technology consists of treating the roadway surface with liquid chemicals such as sodium chloride and magnesium chloride to prevent the accumulation of snow and ice. A mixture of salt and water referred to as brine is applied first to roadway surfaces to help prevent the formation of ice. This method is used in the Weber County, Salt Lake County and Utah County urbanized areas. Magnesium chloride is very effective against snow and ice and has fewer adverse effects commonly attributed to salt.

#### Traditional Snow and Ice Removal Methods:

Plowing is done and ice control materials are applied at a frequency to avoid snow accumulation of 2 inches. In rural areas salt and grit are used to remove ice at a ratio of (2) parts grit to (1) part salt. Grit is not used in the Salt Lake County urbanized area because particulate matter is an air quality concern. Currently, snow plow spreaders are re-calibrated at least twice a year, more often if required.

Remote Weather Information Systems (RWIS) are used on all major interstate highways and major rural arterial roadways. These systems record pavement surface temperatures and other weather information. With this data, maintenance crews can plan ahead and treat roadway surfaces early, before ice accumulates from winter storm events.

### Strategy

The practices described above are designed to provide transportation facilities that are free of ice and snow while minimizing the discharge of pollutants to the surrounding environment. A key strategy is to apply only the minimum quantity of deicing agent necessary to remove ice from roadway facilities. UDOT has a Statewide Snow Plan which includes information on current practices regarding snow and ice removal, deicing chemicals, equipment and application techniques

### Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
July 2005	Update the current UDOT Statewide Snow Plan	Updated Plan Distributed to UDOT Region Maintenance Personnel
2003 - 2008	Re-calibrate snow plow spreaders twice each year	Document re-calibration of equipment
November 2005	Develop a training program for	Document training efforts

	maintenance personnel on snow and ice removal	
2005 - 2008	Provide annual training to maintenance personnel on snow removal and deicing techniques	Document training efforts

Staffing

Staffing for deicing and snow removal include:

640 staff members from 79 maintenance stations

100 staff members and supervisors from the Maintenance Division

7 staff members who will provide training

## **BMP - Salt Piles and Salt Storage**

### Objective

Prevent salt from polluting storm water and adversely affecting downstream environmental resources.

### Description

Salt is an important material in UDOT's winter road maintenance program. UDOT has approximately 120 stock piles of salt throughout the state. Many existing salt piles are covered, preventing storm runoff from contacting the material. Most salt pile facilities not covered have retention ponds that contain storm water runoff. It is important to prevent salt and brine from migrating to downstream drainage facilities and receiving waters.

### Strategy

Excessive quantities of salt can cause adverse impacts to aquatic environments and roadside vegetation. Therefore, it is important to incorporate best management practices to contain salt and salt leachate in order to store this material properly.

### Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
2004 - 2008	Cover 4 salt stockpiles per year	Document results

### Staffing

Staffing for this BMP includes 640 staff members from 79 maintenance stations.

## **BMP - Street Sweeping**

### Objective

Remove particulates and debris from paved roadway surfaces.

### Description

All state paved roadways in urbanized and rural areas are swept at least once per year. Material collected is properly disposed of at local landfills. Paved roadways in urban areas are swept approximately 2 times per year.

### Strategy

Street sweeping efforts help to remove fine particulate matter and other pollutants before being discharged into storm drain systems and downstream receiving waters.

### Staffing

Staffing for this BMP includes 2 personnel from each of 79 maintenance stations.

### Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
2003 - 2008	Provide street sweeping in urban areas 2 times per year	Document street sweeping efforts
2003 - 2008	Provide street sweeping in rural areas once per year	Document street sweeping efforts

## **BMP - Spill Prevention and Response Plan**

### Objective

Prevent pollutants from being discharged to downstream receiving waters and adjacent environmental resources.

### Description

UDOT is developing a general emergency response/spill response plan that describes regulations, standard policies, procedures, worker safety, responsible parties, incident reporting and record keeping regarding the release of hazardous materials/waste constituents. Key elements of the plan include:

- Identifying the substance
- Shutting off the source
- Eliminating all sources of combustion
- Reporting the incident
- Evacuating the area
- Containing the spill
- Cleaning up and decontaminating the area
- Disposing of hazardous waste substances at an approved facility

### Strategy

It is important to have an established set of policies and procedures to provide instruction and guidance in case of hazardous material discharge or spill.

### Staffing

Staffing for this BMP is derived from the UDOT Maintenance Division.

### Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
2003 - 2008	Review current spill response procedures once during the permit period.	Document modifications made to current procedures
2003 - 2008	Provide annual training to maintenance personnel regarding spill prevention and response.	Document training provided.

## **BMP - Herbicide Application**

### Objective

Apply herbicides in such a manner to reduce to the maximum extent possible, the discharge of pollutants to adjacent areas, drainage facilities and receiving waters.

### Description

Maintenance forces selectively apply herbicides to roadside areas within the roadway right way to control undesirable plant species and invasive weed species listed on the Utah State Department of Agriculture's Noxious Weed List and each counties weed list.

### Strategy

The UDOT Maintenance Division implements a process that integrates the needs of local communities, visual quality, knowledge of wildlife and plant ecology and various economical methods to manage roadside vegetation. Healthy stands of vegetation resist invasion by noxious weeds, reduce the need for herbicide application and reduce maintenance costs. All personnel who apply herbicides receive approximately 20 hours of specialized training. This training includes the use of the various types of herbicides, calibration of equipment and field instruction. Trainees are supplied with handouts, instruction manuals and reference manuals. Every maintenance station is supplied with plant identification and weed management books. Applicators as well as other interested persons are encouraged to attend the annual Utah Weed Control Conference. UDOT's Roadside Vegetation Manager is continually evaluating the use and effectiveness of various herbicides. It was through this effort, that it was decided to discontinue the use of fertilizers throughout the department.

UDOT is a strong advocate of wildlife habitat preservation. UDOT supports a program called "Roadsides for Wildlife" which advocates leaving a strip of natural vegetation adjacent to the roadway. This program recommends leaving this strip of vegetation partially mowed or unmowed. This has numerous benefits such as providing habitat for many bird species, reducing erosion and siltation and resisting invasion by noxious weeds. Native grasses, wildflowers and shrubs provide an aesthetically pleasing landscape and are important components of quality wildlife habitat.

### Staffing

Staffing and equipment resources are derived from the maintenance division and supervised by the Roadside Vegetation Manager.

### Measurable Goals and Implementation Schedule

<b>Milestone/Year</b>	<b>Goal/Action</b>	<b>Assessment</b>
2003 - 2008	Provide annual training on latest best practices and herbicide application techniques	Document training efforts
2003 - 2008	Evaluate the use and effectiveness of existing and new herbicide products on an annual basis.	Document findings and distribute recommendations

## **APPENDIX 1**

### **EN Series Standard Drawings for Temporary Erosion Control EN 1 – EN 7**

[http://www.udot.utah.gov/main/f?p=100:pg:3180728468211999:::1:T,V:1945,](http://www.udot.utah.gov/main/f?p=100:pg:3180728468211999:::1:T,V:1945)

## **APPENDIX 2**

### **UDOT Erosion and Sediment Control Field Guide**

<http://www.udot.utah.gov/main/uconowner.gf?n=15220806279436191>

## **APPENDIX 3**

### **UDOT Storm Water Pollution Prevention Plan Outline**

<http://www.udot.utah.gov/main/uconowner.gf?n=14087427668812613>

## **APPENDIX 4**

**UDOT Standard Specification 1355 titled “Environmental Protection”  
UDOT Standard Specification 1571 titled “Environmental Controls”**

<http://www.udot.utah.gov/main/f?p=100:pg:11173642162179741000:::1:T,V:1925>

## **APPENDIX 5**

### **UDOT Spill Prevention and Response Plan for Maintenance Stations and Construction Sites**

**<http://www.udot.utah.gov/main/uconowner.gf?n=13387732701099139>**