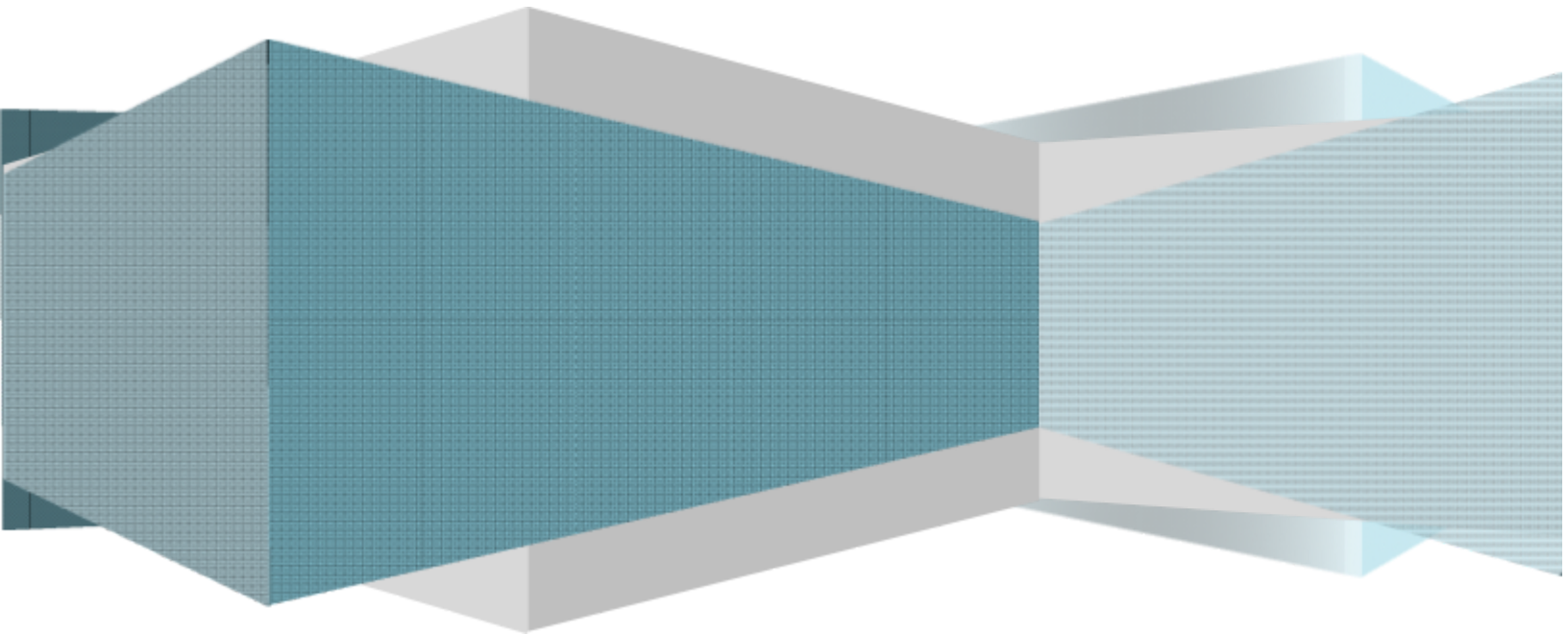


# City of Orem

## Storm Water Management Plan

2021 - 2026



**CITY OF OREM**  
Permit No. UTR090014

**CITY OF OREM**  
**STORM WATER MANAGEMENT PLAN**  
**For the permit period of May 12, 2021 – May 11, 2026**

**Submitted to:**

**State of Utah**  
**Department of Environmental Quality**  
**Division of Water Quality**

**Submitted by:**

**City of Orem, Public Works Department**

**Revised**  
**July 28, 2021**

**Reviewed**  
**October 19, 2021**

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## SIGNATORY PAGE

**Governmental Entity Name:** City of Orem

**Permit number:** UTR090014

**Mailing Address:** 56 North State Street **City:** Orem **State:** Utah **Zip Code:** 84057

**Storm Water Management Program Responsible Person(s):**

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**Title:** Public Works Director

**Telephone Number:** 801-229-7501

**Name:** Reed Price

**Title:** Maintenance Division Manager

**Telephone Number:** 801-229-7530

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**Title:** Streets & Storm Water Section Manager

**Telephone Number:** 801-229-7512

### Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that 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."

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

---

### Duly Authorized Position(s):

"Letter already on file with the Division of Water Quality, Storm Water Section, identifying the Public Works Director as having the authority to sign this and future documents pertaining to the UPDES Permit Program."



**OREM CITY  
STORM WATER MANAGEMENT PLAN**

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## STORM WATER MANAGEMENT PLAN OVERVIEW

### ACKNOWLEDGEMENT

This project would not have been possible without the support of many people. We take this opportunity to express gratitude to the people who have been instrumental in the successful completion of this project. In appreciation for their many hours of hard work and dedication in assembling this Storm Water Management Program Manual, we recognize the following people:

Chris Tschirki	Public Works Director
Reed Price	Maintenance Division Manager
Neal Winterton	Water Resources Division Manager
Sam Kelly	City Engineer
Stan Orme	Streets/Storm Water Section Manager
Cody Steggell	Streets/Storm Water Section Manager
Rick Sabey	Public Works Field Supervisor
Ryan Johnson	Storm Water Program Manager
Danny Spray	Storm Water Program Manager
Matt Petersen, Jr.	Storm Water Program Manager
Steve Johnson	Storm Water Engineer Specialist
Chelsea Lindsey	Storm Water Program Manager

And the many others who contributed their time and effort to the contents of this manual, thank you!



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**CITY OF OREM****STORM WATER MANAGEMENT PLAN OVERVIEW**

Last Reviewed: October 19, 2021

**PURPOSE**

This document presents the City of Orem's Storm Water Management Plan (SWMP). The City of Orem originally applied for coverage in 2003 and was granted permit number UTR090014. This management plan is a major revision meant to satisfy the requirements of the State for the period of 2021-2026. The plan has been updated to limit the discharge of pollutants, as much as is practical, to the City of Orem's Storm Water System. This Plan was prepared to guide the City in planning, funding, and implementing a comprehensive program for addressing current and future regulatory and policy requirements for managing storm water runoff.

The purpose of the Storm Water Management Plan is to comprehensively address how to meet the many different but related regulations, adopt plans, programs, and policies that affect urban storm water runoff, flooding, and protect the environment, including water quality. The goal of the SWMP is to provide the City of Orem the basis for establishing effective rules, regulations, and guidelines that will reduce the potential for storm water damage to the environment, to the citizens of Orem, to public and private property, and to protect human, animal, and aquatic life.

Storm water regulations developed by the Utah Division of Water Quality require the operator of a regulated MS4 community to develop a program that:

- Prevents or reduces the amount of storm water pollution generated by municipal operations and conveyed into receiving waters by identifying and implementing appropriate control measures and setting measurable goals.
- Train employees on how to incorporate pollution prevention and good housekeeping techniques into municipal operations.

**SWMP COORDINATION**

Agency: City of Orem, Public Works Department  
Contact: Mr. Christopher R. Tschirki, Public Works Director  
UPDES Number: UTR090014

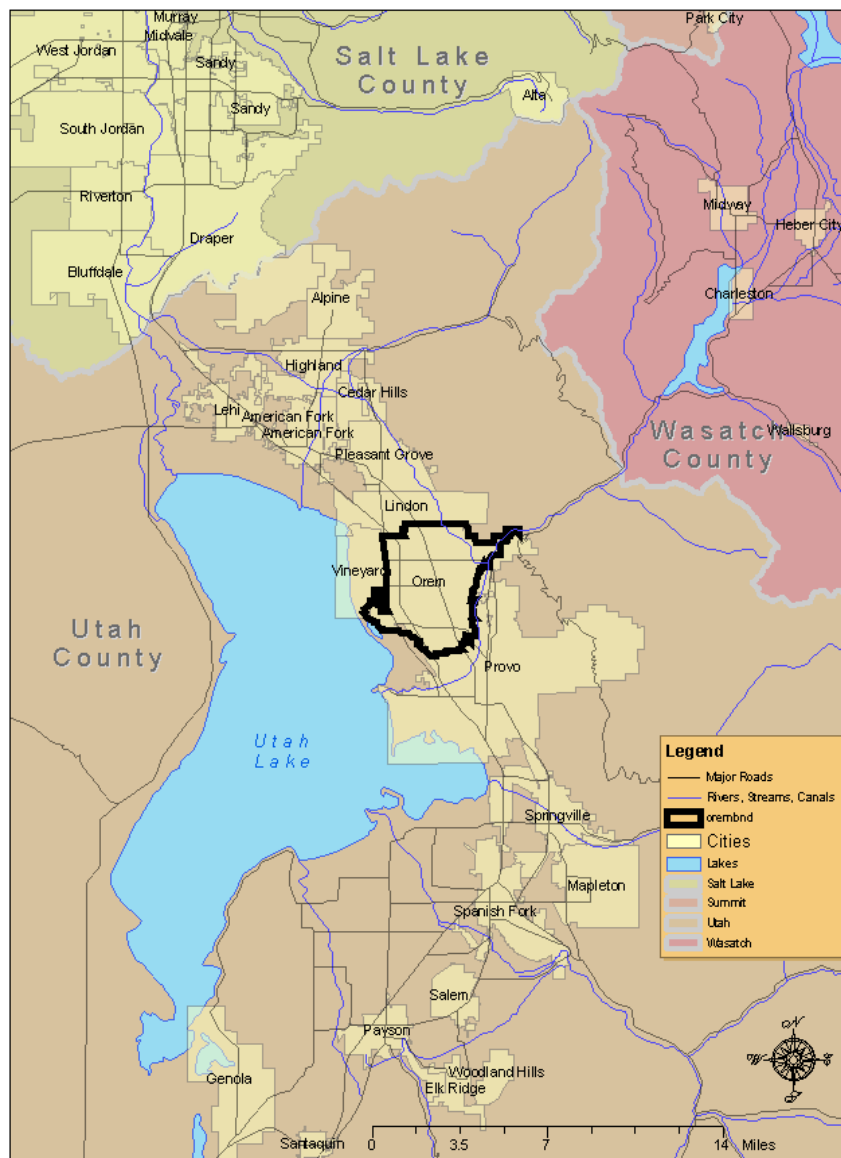
**STAFFING AND RESOURCE ALLOCATIONS**

Responsibility for implementation of the storm water management program is divided between different groups and organizations within the City. The group responsible for each task is stated in each section of this document.

***Permit Requirement 2.3.2.2 MS4 Location Description and Map***

The City of Orem (City) has a population of approximately 98,000 and encompasses approximately 18.5 square miles. The City is located in the center of Utah Valley, 40 miles south of Salt Lake City. It is surrounded by Provo to the south and east, Vineyard to the west, and Lindon to the north (see Figure 1-1). The City is situated between the Wasatch Mountains, the Provo River, and Utah Lake.





**Figure 1-1: Map of Orem's location**

### **Permit Requirement 2.3.2.3 Water Quality Concerns**

The City operates and maintains a municipal storm water system that consists of thousands of sumps (class v injection wells), several miles of pipe, and numerous detention basins. With these assets, the City has some unique challenges as it addresses its storm drainage system. Most of the City is located on highly permeable sands and gravels that comprise the Orem bench. The City has taken advantage of the highly permeable soils for management of storm drainage and relies heavily upon sumps for storm drainage disposal.

There are currently more than 3,600 sumps within the City, of which 1,771 are located on public property. Runoff is directed into these sumps, which discharge directly to the underlying soils. Even though the use of sumps is an acceptable method for runoff disposal, untreated storm drainage runoff

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## STORM WATER MANAGEMENT PLAN OVERVIEW

can eventually reach the underlying groundwater aquifers, which supplies the culinary water to the City and a number of other communities in Northern Utah County.

Concern about the impact of sumps on groundwater quality, long-term maintenance of sumps, and areas with existing storm drainage problems has motivated the City to evaluate current storm drainage disposal practices and to create a long-term storm water master plan for the City.

## STORM WATER POLLUTANT SOURCES AND ENVIRONMENTAL IMPACTS

The table below outlines the most common potential pollutants that any MS4 could generate. These pollutants can harm human health, degrade water quality, damage aquatic habitat, and seriously impair ecosystem functions.

Pollutant	Common Source	Impacts on Water Quality
<b>Sediment</b>	Construction sites, vehicle/boat washing, agricultural sites	Sediment is a common component of storm water. Sediment can be detrimental to aquatic habitat for fish and plants, transportation of attached oils, nutrients and other chemical contamination, and increased flooding. Sediment can transport other pollutants that are attached to it including nutrients, trace metals, and hydrocarbons. Sediment is the primary component of total suspended solids (TSS), a common water quality analytical parameter.
<b>Nutrients (Phosphorus, Nitrogen Potassium, Ammonia)</b>	Fertilizers from agricultural operations, lawns and gardens, livestock and pet waste, decaying grass and leaves, sewer overflows and leaks	Nutrients are often found in storm water. These nutrients can result in excessive or accelerated growth of harmful algal blooms, reduced oxygen in the water, changes in water chemistry and pH. In addition, un-ionized ammonia (one of the nitrogen forms) can be toxic to fish.
<b>Hydrocarbons (Petroleum Products, Benzene, Toluene, Ethyl benzene, Xylene)</b>	Vehicle and equipment fluid leaks, engine emissions, pesticides, equipment cleaning, leaking fuel storage containers, fuel spills, parking lot runoff	Oil and grease include a wide array of hydrocarbon compounds, some of which are toxic to aquatic organisms at low concentrations. Some of these pollutants are toxic to humans and wildlife at very low levels.
<b>Heavy Metals</b>	Vehicle brake and equipment wear, engine emissions, parking lot runoff, batteries, paint and wood preservatives, fuels and fuel additives, pesticides, cleaning agents	Metals including lead, zinc, cadmium, copper, chromium and nickel are commonly found in storm water. Metals are of concern, as they are toxic to aquatic organisms, can bioaccumulate, and have the potential to contaminate drinking water supplies.



## STORM WATER MANAGEMENT PLAN OVERVIEW

<b>Toxic Chemicals (Chlorides)</b>	Pesticides, herbicides, dioxins, PCBs, industrial chemical spills and leaks, deicers, solvents,	Pesticides have been repeatedly detected in storm water at toxic levels, even when pesticides have been applied in accordance with label instructions. As pesticide use has increased, so too have concerns about the adverse effect of pesticides on the environment and human health.
<b>Debris/Litter/Trash</b>	Improper solid waste storage and disposal, abandoned equipment, litter	Typically resulting from an urban environment, industrial sites and construction sites, trash and floatables create an aesthetic eye sore in waterways. Risk of decay product toxicity. Risk of aquatic animal entrapment or ingestion and death.
<b>Pathogens (Bacteria)</b>	Livestock, human, and pet waste, sewer overflows and leaks, septic systems	Bacteria and viruses are common contaminants of storm water. There are human health risks due to disease and produces toxic contamination of aquatic life.

The following table lists some lesser-known pollutants that can be found in most urban storm water runoff, yet are harmful to the environment.

<b>Pollutant</b>	<b>Potential Health Effect</b>	<b>Source</b>
<b>Chlorine</b>		Used as an additive to water to control microbes. Used in swimming pools, drinking water disinfection, etc.
<b>Arsenic</b>	Skin damage or problems with circulatory systems, and may have increased risk of cancer	Erosion of natural deposits; runoff from orchards, runoff from glass and electronics production wastes.
<b>Beryllium</b>		Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries.
<b>Cadmium</b>	Kidney damage	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paint.
<b>2, 4-D</b>	Kidney, liver, or adrenal gland problems	Runoff from herbicide used on row crops.
<b>PAHs (Polycyclic Aromatic Hydrocarbons)</b>	Potential risk to aquatic life	Sources of PAHs are numerous and include municipal and industrial effluents and discharges. Combustion products from transportation, power generation, and cooking processes are significant man made sources. Other potential sources include manufactured gas plants, wood treatment facilities, and smelters as well as from coal-tar- based pavement sealants.





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## STORM WATER MANAGEMENT PLAN OVERVIEW

To reduce these pollutants the following six minimum control measures) in the areas of (1) public education and outreach, (2) public participation and involvement, (3) illicit discharge detection and elimination, (4) construction site runoff control, (5) long-term storm water management in new development and redevelopment (post-construction storm water management), and (6) pollution prevention and good housekeeping. Implementation of these 6 control measures is presented in subsequent chapters and includes Standard Operating Procedures (SOPs) and Best Management Practices (BMPs). The SOPs and BMPs are intended to meet the current needs of the City and will be changed as needed.

### ***Permit Requirement 2.3.2.5 Modifications to City Ordinance***

The City of Orem tracks changes to the City's ordinance. The date of the enactment of each ordinance along with dates associated with amendments to each ordinance can be found in the [City's code](#).

### ***Permit Requirement 3.1.1.1- 3.1.1.2 does the City Discharge to a 303(d) Waterbody?***

Under Section 3.1 of the Small MS4 General UPDES Permit, Permit Number UTR090000, it states, "Permittees must determine whether storm water discharge from any part of the MS4 contributes to a 303(d) listed waterbody."

The City of Orem currently discharges into three water bodies that are listed in the Utah 303(d) list.


- Utah Lake is listed as impaired for Total Dissolved Solids (TDS), Total Phosphorus, and PCB in fish tissue. The status associated with these pollutants are low to medium. A draft TMDL was published in 2007, however the TMDL has not been adopted. Once adopted the City will implement regulations necessary to be in compliance with these standards.
- Provo River has been designated as impaired for OE Bioassessment. This is a condition that requires the monitoring of the health data of benthic macroinvertebrates, fish and periphyton. The State has not determined a cause for concern in the bioassessment, but the City will implement any required measures if a TMDL is published for this stretch of the Provo River.
- Powell Slough, has been designated as impaired for Dissolved Oxygen. This condition would be improved by measures that encourage waters movement and lessens stagnation. There is no TMDL that has been adopted for this water body.

### ***Permit Requirement 3.2.1 Nitrogen and Phosphorus Reduction***

Developers must design BMP's to treat storm water with a goal of reducing pollutants in the receiving water bodies. BMP's must address removal of nitrogen and phosphorus. Proposed BMPs will be evaluated by City staff to verify selected BMP's are addressing targeted pollutant removal.



## STORM WATER MANAGEMENT PLAN OVERVIEW

 Storm Water Management Plan Measurable Goals Matrix	
Year Originally Executed: 2019	
Last Reviewed: November 01, 2021	
Permit Part 4.1.3.1. The measurable goals for each of the BMPs shall include, as appropriate, the months and years in which the permittee will undertake required actions, including interim milestones and the frequency of the actions.	
Description: The City of Orem's Storm Water Program BMPs are fully implemented and running according to the language found in our Storm Water Management Plan (SWMP). The following list contains the goals and frequency of evaluation in order to ensure effectivity.	
<b>Goal:</b>	<b>Frequency of Evaluation:</b>
City Ordinance Evaluation	Every time the permit is renewed or changed
Review of MCM 1 & 2 and All Measurable Goals, Practices, Procedures and Forms within those sections	Annually: from January 1 - March 1
Review of MCM 3 & 4 and All Measurable Goals, Practices, Procedures and Forms within those sections	Annually: from March 1 - May 1
Review of MCM 5 & 6 and All Measurable Goals, Practices, Procedures and Forms within those sections	Annually: from May 1 - August 1
Review of the Appendices and All Measurable Goals, Practices, Procedures and Forms within them	Annually: from August 1- September 1
Annual Storm Water Program Report	Annually: Send to the state by October 1
Gather and File All LTSWMP Annual Inspection Reports	Annually: These shall be collected by September 29
Complete City Employee Storm Water Training	Annually: from January 1 - March 1

## Chapter 1

### MCM 1: Public Education and Outreach on Storm Water Impacts

The permit requirements for Public Education and Outreach on Storm Water Impacts can be found in Section 4.2.1 of the permit. This section also incorporates tasks intended to meet the Nutrient Reduction Section of the permit found in Section 3.2. A copy of the General Permit for Discharges from Small MS4s can be found at [DWQ's Website](#). The permit outlines in general the following requirements:

1. The MS4 must promote behavior change of the public to reduce water quality impacts associated with pollutants in storm water runoff and illicit discharges. This is a multimedia approach targeted to specific audiences. The four audiences are: (1) residents, (2) institutions, industrial and commercial facilities, (3) developers and contractors (construction), and (4) MS4-owned or operated facilities. (4.2.1)
2. Target pollutants and pollutant sources and their potential impacts relating to storm water quality. (4.2.1.1)
3. Provide and document information given to the four focus audiences.
4. Provide documentation or rationale as to why particular programs were chosen for its public education and outreach program

The City of Orem has implemented tasks to meet the requirements of this MCM, which are summarized in this section:

[PEO-1: Education and Outreach for General Public](#)

[PEO-2: Education and Outreach for Institutions, and Industrial and Commercial Facilities](#)

[PEO-3: Education and Outreach for Engineers, Construction Contractors, Developers, Development Review Staff and Land Use Planners](#)

[PEO-4: Education and Outreach for City Employees](#)



**PEO-1: Education and Outreach for General Public****Year Originally Executed:** 2000**Last Reviewed:** September 28, 2021**Reference Regulation:** 3.2.1.3; 4.2.1; 4.2.1.1; 4.2.1.2; 4.2.1.7; 4.2.1.8; 4.2.3.6; 4.2.3.7; 4.2.4.4.5**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash, Debris; Pathogens**Audiences:** General Public**Description:** The City uses several outlets to reach the general public. Among these are:

- *WaterWatch Newsletter:* This informational newsletter features articles that are generally targeted at residents living in the City of Orem. In the past, it was mailed quarterly; however, responses to the newsletter have declined through the years. This has been made a digital publication and is available on [Orem's Storm Water webpage](#). Additionally, it is publicized on the City's social media pages.
- *Information Booths at Community Events:* The City has participated in several community events and plans to do so in the future. Most notably the City has set up a booth at its annual Summerfest. Booths at these events have included two models. We also distribute literature and promotional items that discuss storm water quality issues and feature our storm water hotline number.
- *Storm Drain Markers:* The City has established a program to mark all public storm drain inlets with curb markers. All City storm water facilities will be inspected. At the time of inspection, storm drain inlets will be re-marked as necessary by stenciling or by replacement of storm drain markers. Maintenance of these markers will be scheduled as needed. This maintenance may be accomplished by City employees or by community volunteers. Many existing markers read, "Do not dump, drains to drinking water". Those installed in the future will have the City's Storm Water Hotline posted on them.
- *Social Media:* The City often uses Facebook, Twitter and YouTube to maintain a presence in social media. We use these outlets to publicize the county's household hazardous waste collection days and we will seek to include more messages related to storm water pollution prevention aimed at City residents.
- *Utah County Storm Water Coalition (UCSC) School Education Program:* During 2006-2007, the UCSC hired an instructor who has taken on the load of doing classroom presentations. As a participating member of the Coalition, we use this resource to educate students in our city. The City supports this effort by providing financial support and oversight in the form of membership on the Coalition's Education Subcommittee.
- *Storm Water Hotline:* This telephone number (801-229-7577) is publicized in most storm water educational materials and on City vehicles. This resource is used as an opportunity to educate both those that report problems and those that are investigated because of reports. Further details can be found in MCM 3.

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**PUBLIC EDUCATION AND OUTREACH ON STORM WATER IMPACTS**

- *Door Hangers:* When residents are reported as having engaged in behaviors that are potentially harmful to water quality, staff use informational door hangers to inform residents of the issue and the solution to the issue. These can lead to actions under the IDDE program if not addressed.
- *City Website:* Many water quality topics are covered on the website.

These outlets are selected to reach a large number of people with messages that are meant to educate and inform the public about the potential for detrimental impacts of storm water discharges into public waters.

**Purpose and Benefit:** These outlets allow for discussion of many common activities that affect the amount of target pollutants exposed to storm water throughout the City. These activities include at a minimum:

- maintenance of septic systems
- outdoor activities such as lawn care including use of pesticides, herbicides, and fertilizers (spring of each year)
- on-site infiltration of storm water
- automotive repairs
- car-washing
- proper disposal of swimming pool water (summer of each year)
- proper management of pet waste
- building and equipment maintenance
- use of salt and de-icing materials (fall of each year)
- proper storage of materials
- proper solid waste management (dumpsters)
- Stockpile management, especially as it relates to landscaping activities (spring of each year)
- Emphasis will be given to the hazards of illicit discharges (in April to coincide with County collection day)

**Measure of Success:** The city tracks phone calls, emails and social media interactions received related to topics discussed in outreach efforts. In addition, with the publication of this revised SWMP, the City will maintain a log of General Public outreach efforts by date published, topic, format and public comment of response.

This task will be evaluated annually according to the Storm Water Management Plan Measurable Goals Matrix to ensure that messages are focused and effective for the general public. It will also be reviewed to see how well it is helping to achieve behavioral changes that lead to better water quality.

**Responsible Staff:** Storm Water Program Manager



**Funding:** Storm Water Utility

**Standard Operating Procedures:** none

**Supporting Documents:**

Public media postings can be found at the City's [Twitter](#), [Instagram](#), [Facebook](#) and the Storm Water Blog ([WaterWatch](#))

Sample publications such as door hangers and brochures are available upon request.

**PEO-2: Education and Outreach for Institutions, and Industrial and Commercial Facilities**

**Year Originally Executed:** 1996

**Last Reviewed:** September 28, 2021

**Reference Regulation:** 3.2.1.3; 4.2.1; 4.2.1.1; 4.2.1.3; 4.2.1.7; 4.2.1.8; 4.2.3.6; 4.2.3.7

**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash, Debris; Pathogens

**Audiences:** Institutions, and Industrial and Commercial Facilities

**Description:** The City Uses three main activities to promote awareness of water quality issues related to storm water.

*The Storm Water Quality Credit Program:* The City encourages commercial and industrial facilities in the City to participate in the Storm Water Quality Credit Program by publicity through WaterWatch, on the city website, targeted letters, and through social media. It rewards businesses and institutions for utilizing Best Management Practices (BMPs) that affect storm water quality by giving discounts on storm water utility fees. This allows the City to visit annually with major rate paying businesses to discuss the storm water management practices.

*Electronic and Printed Media:* The City will produce a series of electronic posts and pamphlets relating to specific industries and activities that the committee deems to have significant potential for harmful effects to storm water.

The following topics will be reviewed for inclusion in publications and presentations to commercial and industrial entities. This list is not all-inclusive:

- Proper lawn maintenance including proper use of pesticides, herbicides and fertilizer (spring of each year)
- Benefits of appropriate on-site infiltration of storm water
- Building and equipment maintenance including proper management of waste water
- Use of salt or other deicing materials including covering materials to prevent runoff to storm system and contamination to groundwater (fall of each year)
- Proper storage of materials to emphasize pollution prevention
- Proper management of waste materials and dumpsters
- Proper management of parking lot surfaces
- Proper reporting of spills
- Proper record-keeping of incidents
- Emphasis will be given to the hazards of illicit discharges
- Provide/Promote services for collection of household hazardous waste (April of each year to coincide with County collection day)

**PUBLIC EDUCATION AND OUTREACH ON STORM WATER IMPACTS**

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*Social Media:* The City will use social media outlets such as Facebook, Twitter and YouTube to interact with Institutions, and Industrial and Commercial Facilities and encourage participation in The Storm Water Quality Credit Program

**Purpose and Benefit:** Institutions, and Industrial and Commercial Facilities often have a higher potential risk to water quality because of the chemicals used and stored on-site as well as manufacturing activities that can come in contact with storm water. Reminding business owners and institutional operators about storm water is critical, as it may be low on their list of priorities.

**Measure of Success:** Track participation in Storm Water Quality Credit Program and use a log to track the publication of media and responses to it.

This task will be evaluated annually according to the Storm Water Management Plan Measurable Goals Matrix to ensure that messages are focused and effective for the Institutions, and Industrial and Commercial Facilities. It will also be reviewed to see how well it is helping to achieve behavioral changes that lead to better water quality.

**Responsible Staff:** Storm Water GIS Specialist and Storm Water Program Manager

**Funding:** Storm Water Utility

**Standard Operating Procedures:** None

**Supporting Documents:**

[Storm Water Quality Credit Program](#)



**PEO-3: Education and Outreach for Engineers, Construction Contractors, Developers, Development Review Staff and Land Use Planners**

**Year Originally Executed:** 1997

**Last Reviewed:** September 28, 2021

**Reference Regulation:** 3.2.1.3; 4.2.1; 4.2.1.1; 4.2.1.4; 4.2.1.6; 4.2.1.7

**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash, Debris; Pathogens

**Audiences:** Engineers, Construction Contractors, Developers, Development Review Staff and Land Use Planners

**Description:** The City has held multiple trainings for developers, contractors and homebuilders covering topics like the specifics of developing Storm Water Pollution Prevention Plans (SWPPPs) for construction as well as BMPs relating to the importance of clean storm water and the effects of pollution. Information about the principles of Low Impact Development as well as the development of SWPPPs will be distributed. The Utah County Storm Water Coalition provides most aspects of this function currently, but the City will evaluate the usefulness of the City providing its own training.

**Purpose and Benefit:** Annual training keeps engineers, construction contractors, and developers up to date on critical issues associated with storm water quality.

**Measure of Success:** Report attendance at training. Analyze infractions to see if there is a lessening of issues.

This task will be evaluated annually to ensure that messages are focused and effective for the Engineers, Construction Contractors, Developers, Development Review Staff and Land Use Planners. It will also be reviewed to see how well it is helping to achieve behavioral changes that lead to better water quality.

**Responsible Staff:** Storm Water GIS Specialist and Storm Water Program Manager

**Funding:** Storm Water Utility

**Standard Operating Procedures:** None

**Supporting Documents:**

Training Attendance Logs (Available upon request)

Meeting Flyers (Available upon request)

**PEO-4: Education and Outreach for City Employees****Year Originally Executed:** 2001**Last Reviewed:** September 28, 2021**Reference Regulation:** 3.2.1.3; 4.2.1; 4.2.1.1; 4.2.1.5; 4.2.1.6; 4.2.1.7; 4.2.1.8; 4.2.3.6; 4.2.3.7; 4.2.3.8; 4.2.3.11; 4.2.4.5**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash, Debris; Pathogens**Audiences:** City Employees**Description:** The City trains its employees about storm water quality. Employees receive different training based on their contact or potential contact with issues that may affect water quality. Here is a summary of City Employees and the topics they receive training on:*All Employees:*

- Recognizing and reporting IDDE situations
- Solid Waste Management (Dumpsters)
- Benefits of Street and Parking Lot Sweeping
- Spill Prevention and Cleanup Plans
- Disposal of Household Hazardous Waste

*Public Works:*

- Public Works Facilities SWPPP
- Equipment Inspection to ensure timely maintenance
- Proper Storage and Disposal of Chemicals
- Spill and Dumping Response Procedures
- Cleaning, Washing, Painting and Maintenance Activity SOPs

*Fleet:*

- Storage of Vehicles and Equipment

*Traffic:*

- Street Marking SOPs

*Water:*

- Proper Use of Salt and De-Icing Materials

*Water Reclamation:*

- Training is dictated by separate UPDES permit

*Parks:*

- Proper Use of Salt and De-Icing Materials



- Proper Application, Storage and Disposal of Fertilizer, Pesticides and Herbicides
- Sediment and Erosion Control
- Lawn Maintenance and Landscaping Activities SOPs Including Good Housekeeping for Open Spaces and Rights-of-Way
- Festival and Event Cleanup

*Streets:*

- Proper Use of Salt and De-Icing Materials
- Proper Maintenance of Parking Lot Surfaces
- Festival and Event Cleanup

*Storm Water:*

- Benefits of On-Site Infiltration
- Proper Maintenance of Parking Lot Surfaces
- Low Impact Development (LID) Practices
- Green Infrastructure Practices
- Construction Site Inspections
- SWPPP Review
- Site Plan Review including preferred BMPs
- Enforcement Procedures
- Long-Term Storm Water Management Through the Use of Structural and Non-Structural Control Methods
- Post Construction Plan ReviewSOP
- Inspection, Cleaning and Repair of MS4 and Associated BMPs
- Street Sweeping Dewatering and Disposal

*Development Services:*

- Benefits of On-Site Infiltration
- Low Impact Development (LID) Practices
- Green Infrastructure Practices
- Construction Site Inspections
- SWPPP Review
- Site Plan Review
- Post Construction Plan Review

- Long-Term Storm Water Management Through the Use of Structural and Non-Structural Control Methods

*Public Safety:*

- Training SOPs
- Spill and Dumping Response Procedures

Storm water staff are trained upon hire and before commencing duties. All of this training is repeated at least annually. Employees are required to participate in this training or a similar training. It will be supplemented for those that have a change of duties relating to storm water related tasks.

**Purpose and Benefit:** Training is the key to an even approach to storm water management. It helps keep everyone on the same page and provides awareness of issues that may not be at the top of the priority list.

**Measure of Success:** Track attendance at training. Training is accomplished in the early part of the year as specified in the Storm Water Management Plan Measurable Goals Matrix. City Employees to review reports for IDDE and Storm Water Construction programs.

**Responsible Staff:** Storm Water GIS Specialist and Storm Water Program Manager

**Funding:** Storm Water Utility, Utah County Storm Water Coalition

**Standard Operating Procedures:** None

Training Program Matrix (Available upon request)

Attendance Logs (Available upon request)

Training Outlines and Presentation Materials (Available upon request)

## Chapter 2

### MCM 2: Public Involvement/Participation Program

The permit requirements for Public Participation and Involvement on Storm Water Impacts can be found in Section 4.2.2-4.2.2.4 of the permit. A copy of the General Permit for Discharges from Small MS4s can be found at [DWQ's Website](#). The permit outlines in general the following requirements. General Permit for Discharges from Small MS4s—UTR090000

1. Comply with applicable State, and local public notice requirements to involve interested groups and stakeholders for their input on the SWMP.
2. Make available to the public a current version of the SWMP document for review and input for the life of the permit. This should be posted on the City's website.

The City has identified the following target pollutants to be addressed by this Minimum Control Measure: Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash, Debris; Pathogens

The City of Orem has implemented tasks to meet the requirements of this MCM, which are summarized in this section:

[PIP-1: Public Review of this Storm Water Management Plan](#)

[PIP-2: Volunteer Opportunity](#)

[PIP-3: Neighbor Committee Involvement](#)

[PIP-4: Public Notifications](#)

[PIP-5: Public Works Advisory Commission](#)



**PIP-1: Public Review of this Storm Water Management Plan****Year Originally Executed:** 2010**Last Reviewed:** September 15, 2021**Reference Regulation:** 4.2.2.1, 4.2.2.2, 4.2.2.3**Audiences:** General Public**Description:**

In 1995, the City formed a citizens' committee to study and make recommendations to the City Council about the formation of a Storm Sewer Utility. The formation of the utility was also brought to public hearing before the City Council in 1996. The Council accepted the ordinance establishing the Storm Sewer Utility shortly thereafter.

A 30-day period was provided for public comment regarding the original Storm Water Management Program (SWMP) before its initial adoption in 2003. During this time, copies of the management program were placed in the City of Orem's Public Library with comment forms. In addition, the City worked with the Utah Valley Home Builder's Association to address concerns before the revised storm water ordinance and this management program was implemented for the 2003 permitting period.

Annual reviews are made of this SWMP by City Staff. Major revisions have been undertaken in 2010, 2016, and 2021 in conjunction with the newly issued MS4 Storm Water permits issued by the State. A copy of the SWMP has been available through the [City's website](#) for past permit cycles. This revision will be posted online by November 8, 2021 and updated versions will continue to be posted on the City's webpage throughout the duration of the permit. Notice of the ability to review this revised SWMP will be given to all residents via utility bills, on the [City website](#), through social media and in newsletters. City staff will address public comments and make updates to SWMP as part of the annual review.

**Purpose and Benefit:** Local Government plans benefit from public and stakeholder buy-in. Allowing for public review will allow diverse opinions to be considered.

**Measure of Success:** Track phone calls, emails, and social media interactions received related to SWMP.

**Responsible Staff:** Storm Water Program Manager

**Funding:** Storm Water Utility

**Standard Operating Procedures:** none

**Supporting Documents:**

[City of Orem Stormwater Management Plan](#)



## **PIP-2: Volunteer Opportunity**

**Year Originally Executed:** 1998

**Last Reviewed:** September 15, 2021

**Reference Regulation:** 4.2.2

**Audiences:** General Public

**Description:** All storm drain inlets have been marked with a warning that reads “No Dumping: Drains to Drinking Water.” Ninety to ninety-five percent of all inlets were marked as a result of volunteer efforts by Boy Scouts and other community-minded citizens and groups.

The City plans to coordinate volunteer activities to maintain the integrity of the storm drain markers. City staff also inspect storm drain markers as part of routine facility inspections. Markers are replaced if necessary during routine inspections.

**Purpose and Benefit:** This activity allows the public to be involved and increases awareness of storm water issues.

**Measure of Success:** Track the number of markers placed, repaired or replaced versus needs. Will be reviewed annually according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Storm Water Field Supervisor and Program Manager

**Funding:** Storm Water Utility

**Standard Operating Procedures:** Storm Drain Markers (Available upon request)

**Supporting Documents:**

Volunteer Tracking Sheet (Available upon request)

### **PIP-3: Neighborhood Committee Involvement**

**Year Originally Executed:** 1998

**Last Reviewed:** September 15, 2021

**Reference Regulation:** 4.2.2

**Audiences:** General Public

**Description:** The City coordinates volunteer activities with neighborhood communities and includes storm water activities in neighborhood cleanup programs. The City uses the Neighborhood Partnership Initiative.

The Storm Water GIS Specialist and/or Storm Water Program Manager is available to speak with neighborhood chairs about the importance of keeping gutters clear, reporting illegal dumping and proper disposal of household hazardous waste.

**Purpose and Benefit:** This activity allows the public to be involved and increases awareness of storm water issues.

**Measure of Success:** Track neighborhood cleanup activities by reporting the number of dumpster loads taken to transfer stations in the annual report to the State.

**Responsible Staff:** Storm Water GIS Specialist and Storm Water Program Manager

**Funding:** Storm Water Utility, Neighborhood Partnership Initiative

**Standard Operating Procedures:** None

**Supporting Documents:**

Neighborhood Committee Reports (Available upon request)



**PIP-4: Public Notifications**

**Year Originally Executed:** 2003

**Last Reviewed:** September 15, 2021

**Reference Regulation:** 4.2.2; 4.2.2.1; 4.2.2.2; 4.2.2.3; 4.2.2.4;

**Audiences:** General Public

**Description:** The City follows all local public notice requirements.

**Purpose and Benefit:** This activity allows the public to be involved and increases awareness of storm water issues.

**Measure of Success:** Public notices are kept according to the Public Notice Policy and can be found on the [Utah Public Notice website](#).

**Responsible Staff:** Storm Water Program Manager and City Recorder

**Funding:** Storm Water Utility

**Standard Operating Procedures:** None

**Supporting Documents:**

Public Notice Policy

**PIP-5: Public Works Advisory Commission****Year Originally Executed:** 2014**Last Reviewed:** September 15, 2021**Reference Regulation:** 4.2.2**Audiences:** General Public, Institutional, Commercial Representatives

**Description:** On February 11, 2014, the Public Works Director recommended that the City Council, by ordinance, create a Public Works Advisory Commission (Commission) made up of citizens to assist the City in addressing Public Works issues. The Commission was officially formed on that date and has been functioning ever since. The Commission meets monthly and representatives attend City Council meetings and work sessions on a regular basis. The Commission consists of seven members appointed by the Mayor with the advice and consent of the City Council to act in an advisory capacity to the City Council and City Manager. Some of the primary responsibilities include:

1. Review and make recommendations to the City Council on Public Works issues brought to the Commission by the City Manager;
2. Review and make recommendations to the City Council on master plans. The recommendations may include a Capital Facilities Plan, a Financial Plan, supporting utility rates, and other relevant recommendations;
3. Meet, discuss, and review any other relevant issues associated with Water Supply and Distribution, Wastewater Collections and Treatment, Traffic Operations (i.e., Signals, Lighting, Fiber Optics, Signs, Striping, etc.), Streets (i.e., Asphalt, Curb, Gutter, Sidewalk, etc.), Storm Water (i.e., Piping, Detention, Injection, Treatment, etc.), Parks, Cemetery, Urban Forestry, Fleet, etc.;
4. Work toward the continuing education of citizens regarding Public Works issues in the community;
5. Plan and arrange for neighborhood meetings/open houses and attend such meetings to receive and review public input.

**Purpose and Benefit:** This committee provides advice for the storm water program from stakeholders outside of City staff.

**Measure of Success:** Minutes of meetings where storm water issues are discussed.

**Responsible Staff:** Public Works Director, Maintenance Division Manager, and City Recorder

**Funding:** Public Works Department

**Standard Operating Procedures:** None

**Supporting Documents:**

Agendas and minutes of meetings, with Storm Water Discussions, can be found on the [Utah Public Notice website](#).



## Chapter 3

### MCM 3: Illicit Discharge Detection and Elimination (IDDE)

The permit requirements for Illicit Discharge Detection and Elimination on Storm Water Impacts can be found in Section 4.2.3 of the permit.

This Section also incorporates the requirements of 5.3 and 5.4 analytical and non-analytical storm water monitoring.

A copy of the General Permit for Discharges from Small MS4s can be found at [DWO's Website](#). The permit outlines in general the following requirements:

1. Maintain a storm water system map of the MS4, showing the location of all outfalls and the names and location of all State waters that receive discharges from those outfalls.
2. Through an ordinance, or other regulatory mechanism, a prohibition (to the extent allowable under State, or local law) on non-storm water discharges into the MS4, and appropriate enforcement procedures and actions.
3. Develop and implement a plan to detect and address non-storm water discharges, including spills, illicit connections, and illegal dumping to the MS4.
4. Develop and implement Standard Operating Procedures (SOPs) for:
  - a. Tracing the source of an illicit discharge.
  - b. Characterizing the nature of, and the potential public or environmental threat posed by, any illicit discharges found or reported.
  - c. Ceasing the illicit discharge, including notification of appropriate authorities, property owners, and technical assistance for removing the source and follow-up inspections.
5. Inform public employees, businesses, and the general public about the hazards associated with illegal discharges and improper disposal of waste.
6. Promote or provide services for the collection of household hazardous waste.
7. Publicly list and publicize a hotline or other local number for public reporting of spills or other illicit discharges.
8. Develop a written spill/dumping response procedure, and a flowchart for internal use, including various responsible agencies and their contacts.
9. Adopt and implement procedures for program evaluation and assessment.
10. Train employees, at a minimum, annually on the IDDE program.
11. Analytical and non-analytical monitoring.
12. Notify DEQ of dischargers to the MS4 that need a separate General Permitting Section for Construction. (e.g., Industrial Storm Water Permit, Construction Storm Water Permit, or Dewatering Permit).
13. Additionally a 30-day deadline for a Permittee to report to the Director that a discharger may need a separate UPDES Permit.

The city has identified the following target pollutants to be addressed by this Minimum Control Measure: Nutrients, Hydrocarbons, Heavy Metals, Sediment, Toxic Chemicals, Litter/Trash, Debris, and Pathogens.



The City of Orem has implemented tasks to meet the requirements of this MCM, which are summarized in this section.

[IDDE-1: Maintain a Current Map of MS4](#)

[IDDE-2: Administrative Prohibition of Illicit Discharges](#)

[IDDE-3: Identification and Periodic Reclassification of High Priority IDDE Areas](#)

[IDDE-4: Outfall Verification and Screening](#)

[IDDE-5: Field Response to IDDE Events](#)

[IDDE-6: Compliance Assistance and Enforcement](#)

[IDDE-7: Employee Training about Illicit Discharges, Spills, Illicit Connections and Improper Disposal](#)

[IDDE-8: Publicize a Hotline for Public Reporting of Spills and Other Illicit Discharges](#)

[IDDE-9: Promote and Provide Services for the Collection of Household Hazardous Waste](#)

### **IDDE-1: Maintain a Current Map of MS4**

**Year Originally Executed:** 1996

**Last Reviewed:** October 6, 2021

**Reference Regulation:** 4.2.3.1

**Audiences:** MS4 Employees, General Public, Contractors, Developers, Planners

**Description:**

The Storm Water Utility has surveyed and mapped the current storm water system, which identifies the location of all MS4 and drainage areas contributing to those outfalls that discharge from the City's jurisdiction to a receiving water. The names and location of all State waters that receive discharges from those outfalls have been mapped and given an individual alphanumeric identifier. All mapping is done by GPS surveying. The MS4 map is found in Appendix A.

**Purpose and Benefit:** Knowing the locations of storm water systems and the type of development near them is the first step in protecting it from pollution sources.

**Measure of Success:** The MS4 map reviewed annually according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Storm Water GIS Specialist

**Funding:** Storm Water Utility

**Standard Operating Procedures:** None

**Supporting Documents:**

MS4 Facility Map (Available upon request)

## **IDDE-2: Administrative Prohibition of Illicit Discharges**

**Year Originally Executed:** 1996, revised and amended 2008, 2015

**Last Reviewed:** October 6, 2021

**Reference Regulation:** 4.2.3.2-4.2.3.2.1

**Audiences:** MS4 Staff, Residents, Developers, Contractors, Engineers and Planners

### **Description:**

The City enacted chapter 23 of the City code in 1996. This ordinance was updated in 2008, 2015, and 2020 to come into greater compliance with the General Permit for Discharges from Small MS4s. Beyond this chapter, there are numerous City Codes that prohibit activities that have a negative impact on storm water quality. A summary of City Ordinances which impact water quality can be found in Appendix B.

**Purpose and Benefit:** Codifying the requirements of the Permit and the SWMP allow for effective enforcement of necessary prohibitions to ensure storm water quality.

**Measure of Success:** Maintain a log of ordinance revisions. Reviewed with each permit renewal or change in the permit according to the Storm Water Management Plan Measurable Goals Matrix

**Responsible Staff:** City Attorney in coordination with Maintenance Division Manager and Streets and Storm Water Section Manager

**Funding:** Storm Water Utility

**Standard Operating Procedures:** None

### **Supporting Documents:**

[City Code](#)

City Storm Water Ordinance Summary (Appendix B)

### **IDDE-3: Identification and Periodic Reclassification of High Priority IDDE Areas**

**Year Originally Executed:** 2011

**Last Reviewed:** October 6, 2021

**Reference Regulation:** 4.2.3.3; 4.2.3.3.1; 4.2.3.10

**Audiences:** MS4 Staff, Commercial, Industrial

**Description:**

The Storm Water Utility staff have identified and selected the highest priority areas likely to have illicit discharges. The selection process is based on the likelihood of problems and the significance of potential problems. The areas focused on are areas with older infrastructure, industrial or commercial use, areas with onsite sewage disposal systems, areas with older sewer lines or with a history of sewer overflows or cross connections, areas with a history of illicit discharges or illegal dumping in addition to areas upstream of sensitive water bodies. These priority areas will be reviewed annually to reflect changing priorities.

**Purpose and Benefit:** Focusing monitoring efforts will allow for better use of limited resources.

**Measure of Success:** Map hot spots for illicit discharges, as outlined in Appendix C, and compare how well these hot spots correspond to those expected. This will be reviewed annually according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Streets and Storm Water Section Manager and Storm Water Program Manager

**Funding:** Storm Water Utility

**Standard Operating Procedures:** Priority Area Identification Procedures

**Supporting Documents:**

Facilities Map has a delineation of priority areas. (Available upon request)

## **IDDE-4: Outfall Verification and Screening**

**Year Originally Executed:** 2011

**Last Reviewed:** October 6, 2021

**Reference Regulation:** 4.2.3.3.2-4.2.3.3.4

**Audiences:** MS4 Staff, General Public, Commercial, Institutional, Industrial

### **Description:**

Field screening is necessary to identify the source(s) of the actual illicit discharges. The priority list of outfalls is the basis of screening and assessment activities. All outfalls should be inspected at least once every five years. At least once every permit cycle, the system will be evaluated to ensure the outfall list is current. Every outfall in priority areas will be screened at least once a year. Using the checklist, the staff designated to conduct field screening will go out into the priority areas and collect visual data. The screening will be conducted at least 72 hours after the last precipitation event.

**Purpose and Benefit:** Procedures for eliminating illicit discharges, direct sources of pollution in the MS4.

**Measure of Success:** Track reports of illicit discharges and the actions taken to remedy the discharges. This will be reviewed annually according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Streets and Storm Water Section Manager and Storm Water Field Supervisor

**Funding:** Storm Water Utility

**Standard Operating Procedures:** Reporting Illicit Discharges, Dry Weather Outfall Screening

### **Supporting Documents:**

Facilities Map includes Outfalls. (Available upon request)



## **IDDE-5: Field Response to IDDE Events**

**Year Originally Executed:** 2011

**Last Reviewed:** October 6, 2021

**Reference Regulation:** 4.2.3.4; 4.2.3.5; 4.2.3.5.1; 4.2.3.9.1; 4.2.3.12

**Audiences:** MS4 Staff, General Public, Commercial, Institutional, Industrial

### **Description:**

There are several items addressed by the City's Storm Water Field Staff in connection with illicit connections and illicit discharges and spills. The City has implemented SOPs to address items such as tracking illicit discharge reports, tracing the sources of illicit discharges and connections, removing illicit connections, eliminating illicit discharges, and proper maintenance of the MS4. The implementation of these practices is found in SOPs listed below. Additionally, there is a 30-day deadline for a Permittee to report to the Director that a discharger may need a separate UPDES Permit.

**Purpose and Benefit:** Procedures for eliminating illicit discharges, direct sources of pollution in the MS4.

**Measure of Success:** Reports of tracing activities. Reporting to DEQ as necessary. Report to the County Health Department as necessary. This will be reviewed annually according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Storm Water Field Supervisor and Storm Water Program Manager

**Funding:** Storm Water Utility

**Standard Operating Procedures:** Tracking an Illicit Discharge Report, Tracing Illicit Discharges, Sump-Separator-Manhole Inspections, Video Inspections (TV Camera), Dye Testing, Illicit Discharge Response

## **IDDE-6: Compliance Assistance and Enforcement**

**Year Originally Executed:** 2011

**Last Reviewed:** October 6, 2021

**Reference Regulation:** 4.2.3.2.1; 4.2.3.6; 4.2.3.6.1; 4.2.3.9.1

**Audiences:** General Public, Commercial, Institutional, Industrial

**Description:** Enforcement measures are spelled out in City ordinances and City staff will use their own judgment about what mix of compliance assistance and enforcement actions is appropriate in a given situation. The City will respond to the discovery of an illegal connection in a graduated manner, beginning with efforts to obtain voluntary compliance and escalating to increasingly severe enforcement actions if compliance is not obtained.

**Purpose and Benefit:** Assistance and enforcement are powerful tools in helping residents, businesses, institutions and industrial facilities eliminate the sources of illicit discharges.

**Measure of Success:** Tracking of illicit discharges and follow up activities. This will be reviewed annually according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Storm Water GIS Specialist and Storm Water Program Manager

**Funding:** Storm Water Utility

**Standard Operating Procedures:** Ceasing Illicit Discharges, Spill Dumping Response and Flow Chart

**IDDE-7: Employee Training about Illicit Discharges, Spills, Illicit Connections and Improper Disposal****Year Originally Executed:** 1998**Last Reviewed:** October 6, 2021**Reference Regulation:** 4.2.3.7; 4.2.3.11**Audiences:** MS4 Staff

**Description:** Many public employees can play an important role as partners in the detection and/or prevention of illicit discharges. For example, street/storm water staff who maintain catch basins can look for signs of illicit discharges. Municipal building inspectors/project managers can help ensure that illegal connections to the storm water system do not take place in construction and renovation projects. Public Safety officers, public works employees, and other municipal staff whose jobs keep them outside and mobile can help spot illegal dumpers. Public Safety personnel who respond to hazardous material spills can help keep these spills out of the storm water system and adjacent water bodies.

**Purpose and Benefit:** Annual training keeps staff up to date on critical issues associated with storm water quality.

**Measure of Success:** Training logs, Illicit Discharge Reports submitted by employees. These will be reviewed annually according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Storm Water GIS Specialist and Storm Water Program Manager

**Funding:** Storm Water Utility

**Standard Operating Procedures:** Reporting Illicit Discharges (Available upon request)

**Supporting Documents:**

Employee Training Materials (Available upon request)

## **IDDE-8: Publicize a Hotline for Public Reporting of Spills and Other Illicit Discharges**

**Year Originally Executed:** 2011

**Last Reviewed:** October 6, 2021

**Reference Regulation:** 4.2.3.9; 4.3.9.1, 4.2.3.10

**Audiences:** General Public, Businesses and Institutions

**Description:** The City has established a hotline number (801-229-7577) for reporting illicit discharges. This number is publicized in WaterWatch on the City website, social media, City vehicles, etc. Recorded messages received at this number are forwarded to storm water personnel with a goal to respond to calls in a timely fashion.

**Purpose and Benefit:** The hotline allows City residents and business owners to become the eyes and ears of the storm water utility in its efforts to eliminate illicit discharges.

**Measure of Success:** Track the number of phone calls received with the City's telephone system. These will be reviewed annually according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Storm Water Program Manager under the direction of the Storm Water Field Supervisor and the Streets and Storm Water Section Manager

**Funding:** Storm Water Utility

**Standard Operating Procedures:** IDDE Response SOP (Official), Tracking Illicit Discharge Report SOP, Illicit Discharge Hotline Incident Reporting and Spill/Dumping Response Procedure and Flow Chart (Available upon request)

**IDDE-9: Promote and Provide Services for the Collection of Household Hazardous Waste**

**Year Originally Executed:** 1997

**Last Reviewed:** October 6, 2021

**Reference Regulation:** 4.2.3.8

**Audiences:** General Public, Commercial, Institutional, Industrial

**Description:** The City has established an oil and antifreeze recycling station as part of its Fleet Services Section. The City promotes the oil and antifreeze-recycling program in newsletters and on its website.

The City also has publicized the efforts of the Utah County Health Department and its Household Hazardous Waste collection events. It has done this through its website and through its social media outlets.

**Purpose and Benefit:** Eliminating the storage of unused or leftover chemicals and household hazardous waste lessens the potential for IDDE events.

**Measure of Success:** Oil and Antifreeze Recycling Tracking logs. This is reported annually to the State according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Fleet Services Section Manager and Storm Water Program Manager.

**Funding:** Storm Water Utility and Fleet Services Section

**Standard Operating Procedures:** None

## Chapter 4

### MCM 4: Construction Site Storm Water Runoff Control (CSR)

The permit requirements for Construction Site Storm Water Runoff Control can be found in Section 4.2.4 of the permit.

A copy of the General Permit for Discharges from Small MS4s can be found at [DWQ's Website](#). The permit outlines in general the following requirements:

1. Compliance with the General Permit Section for Construction through an ordinance or other regulations.
2. Documentation of enforcement activities including a written enforcement strategy and Standard Operating Procedures (SOPs) related to ceasing violations.
3. Develop and implement a plan for the pre-construction review of Storm Water Pollution Prevention Plans (SWPPPs).
  - a. Review BMPs
  - b. Include a checklist to evaluate water quality impacts as explained in the drainage design manual
  - c. Encourage the use of low impact design (LID) and green infrastructure
  - d. Identify priority construction sites, especially those that directly discharge impaired waters to high quality waters as identified by the State
  - e. Receive and consider information and comments submitted by the public on proposed projects
4. Develop and implement procedures for construction site inspection and enforcement of SWPPP control measures.
5. Track the preconstruction review, regular inspections, permit violations, and permit termination of construction sites of one acre or larger and those sites smaller than one acre that are part of a common plan of development.
6. Publicly list and publicize a hotline or other local number for public reporting of storm water violations observed on construction sites. Track calls made to this number as well as the responses made to these calls.
7. Train employees and maintain records of training.

## **MCM 4**

### **CONSTRUCTION SITE STORM WATER RUNOFF CONTROL**

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The City of Orem has implemented tasks to meet the requirements of this MCM, which are summarized in this section.

[CSR-1: City of Orem Ordinances](#)

[CSR-2: SWPPP Review Procedures](#)

[CSR-3: Construction Site Inspection Procedures](#)

[CSR-4: Documentation, Enforcement Strategies and Procedures to respond to Violation of Ordinance](#)

[CSR-5: Tracking of Preconstruction and Construction Storm Water Activities](#)

Tasks in other Minimum Control Measures

PEO-1: Education and Outreach for General Public (4.2.4.4.5)

PEO-4: Education and Outreach for City Employees (4.2.4.5)



**CSR-1: City of Orem Ordinances**

**Year Originally Executed:** 1996, revised and amended 2008, 2015

**Last Reviewed:** October 6, 2021

**Reference Regulation:** 4.2.4.1; 4.2.4.1.1; 4.2.4.1.2; 4.2.4.1.3

**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash; Debris; Pathogens

**Audiences:** MS4 Employees, General Public, Engineers, Construction Contractors, Developers and Planners

**Description:**

City of Orem ordinances include code about the use of erosion and sediment control practices at construction sites disturbing greater than or equal to one acre and to construction projects of less than one acre that are part of a larger common plan of development. These projects are governed by the State's General Construction Storm Water Permit. Sites that are smaller than this are governed by the City's Land Disturbance Permit.

City ordinances require construction operators to prepare a Storm Water Pollution Prevention Plan (SWPPP) and apply sediment and erosion control BMPs as necessary to protect water quality, reduce the discharge of pollutants, and control waste in accordance with the SWPPP requirement set forth in the General Permit Section for Construction Activities.

Additionally, the ordinances address compliance with the UPDES General Storm Water Permit for Construction Activities Connected with Single Lot Housing Projects. The ordinance includes a provision allowing access by qualified personnel to inspect construction storm water BMPs on private properties that discharge to the MS4.

**Purpose and Benefit:** Ordinances supporting the City's storm water programs are vital to ensure the success of programs that govern and protect the public.

**Measure of Success:** Evaluate the ordinance revision and draw connections to positive outcomes. This will be reviewed every time the permit is renewed or changed.

**Responsible Staff:** Storm Water Program Manager, Maintenance Division Manager and City Attorney

**Funding:** Storm Water Utility

**Standard Operating Procedures:** None

**City Ordinance References**

Storm Water Ordinances available online are linked below.

[Chapter 17](#)

[Chapter 23](#)

City Storm Water Ordinance Summary (See Appendix B)





**Supporting Documents**

[UPDES Construction General Permit Number UTRC00000](#)

[UPDES Common Plan Permit UTRH00000](#)

City of Orem [Land Disturbance Permit](#) Application

**CSR-2: SWPPP Review Procedures****Year Originally Executed:** 1996**Last Reviewed:** October 6, 2021**Reference Regulation:** 4.2.4.3-4.2.4.3.3**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash; Debris; Pathogens**Audiences:** Engineers, Construction Contractors, Developers and Planners**Description:**

The City has developed and implemented procedures for pre-construction Storm Water Pollution Prevention Plan (SWPPP) review and for keeping records for construction sites that disturb greater than or equal to one acre including projects less than one acre that are part of a larger common plan of development or sale. This is to ensure plans are complete and in compliance with State and Local regulations. The City also has procedures in place for sites that are smaller than one acre through its Land Disturbance Permit.

The City conducts pre-construction SWPPP reviews, which include a review of the site design, the planned operations at the construction site, planned BMPs during the construction phase, and the planned BMPs to be used to manage runoff created after development. The city also reviews and considers information and comments submitted by the public on proposed projects.

These procedures consider potential water quality impacts and use a checklist. Priority construction sites shall consider soil erosion potential, site slope, project size and type, sensitivity of receiving waterbodies, proximity to receiving water bodies, non-storm water discharges and past record of non-compliance by the operators of the construction site. The review also identifies priority construction sites such as those sites that discharge directly into or immediately upstream of waters that the State recognizes as impaired (for sediment) or as high quality.

**Purpose and Benefit:** Creating procedures and checklists allow for uniform review of sites based on agreed upon objective criteria. This consistency should lead to better compliance as contractors, developers and engineers are able to recognize patterns applicable to sites throughout the City.

**Measure of Success:** Maintain a file of SWPPP reviews on the maps.oremi.org server, deficiencies discovered by these reviews and the actions taken to remedy these deficiencies. Reviewed annually according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Storm Water Program Manager, Storm Water Field Supervisor and City Planner

**Funding:** Storm Water Utility

**Standard Operating Procedures:** Preconstruction SWPPP Review (Available upon request)

**Other References**



[Checklist: Subdivision/Site Plan](#)

[SWPPP Preconstruction Submittal and Review Checklist](#)

[BMP Final Construction](#) (Source: [Salt Lake County](#))

### **CSR-3: Construction Site Inspection Procedures**

**Year Originally Executed:** 2003

**Last Reviewed:** October 6, 2021

**Reference Regulation:** 4.2.4.4-4.2.4.4.4

**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash; Debris; Pathogens

**Audiences:** MS4 Employees

**Description:**

The City has developed and implemented a program for inspecting construction sites for compliance with storm water regulations. Those sites that disturb an area larger than one acre or that are part of a common plan of development that disturbs more than one acre are governed by procedures that are defined by the General Permit Section for Construction.

Activities are carried out using the State's Construction Storm Water Inspection Form (Checklist). Those smaller than one acre are governed by the City's Land Disturbance Permit.

**Purpose and Benefit:** Creating procedures and checklists allow for uniform review of sites based on agreed upon objective criteria. This consistency should lead to better compliance as contractors, developers and engineers are able to recognize patterns applicable to sites throughout the City.

**Measure of Success:** Maintain a file of SWPPP inspections on the maps.orem.org server. Include a record of deficiencies during these inspections and the actions taken to remedy these deficiencies. Reviewed annually according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Storm Water Program Manager

**Funding:** Storm Water Utility

**Standard Operating Procedures:** Construction Site Inspections SOP

**CSR-4: Documentation, Enforcement Strategies, and Procedures to respond to Violation of Ordinance****Year Originally Executed:** 2003**Last Reviewed:** October 6, 2021**Reference Regulation:** 4.2.4.2; 4.2.4.2.1; 4.2.4.2.2; 4.2.5.2-4.2.5.2.1**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash; Debris; Pathogens**Audiences:** MS4 Employees**Description:**

The City has developed a program to track enforcement actions related to compliance with regulations governing storm water discharges from construction sites. This includes a series of escalating actions that are meant to increase the probability of compliance. The system is identified in the Criminal and Civil Enforcement Strategy SOP and includes actions ranging from verbal warnings to civil and criminal penalties.

A key component of this effort is the Storm Water Pollution Prevention Plan tracking program developed by the City's IT Staff. The Storm Water Program Manager uses this program to track inspections and enforcement actions related to construction activities.

**Purpose and Benefit:** Creating procedures and checklists allow for consistent enforcement and documentation of deficiencies. This should lead to better compliance as contractors, developers and engineers are able to recognize consistent enforcement of deficiencies to sites throughout the City.

**Measure of Success:** Annual review of enforcement actions and remedies according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Storm Water Program Manager and Storm Water Field Supervisor

**Funding:** Storm Water Utility

**Standard Operating Procedures:** Criminal and Civil Enforcement Strategy SOP (Available upon request)

**City Ordinance References**

Storm Water Ordinances available online are linked below.

[Chapter 23](#)

City Storm Water Ordinance Summary (See Appendix B)

**CSR-5: Tracking of Preconstruction and Construction Storm Water Activities**

**Year Originally Executed:** 2003

**Last Reviewed:** October 6, 2021

**Reference Regulation:** 4.2.4.6

**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash; Debris; Pathogens

**Audiences:** MS4 Employees, Engineers, Construction Contractors, Developers and Planners

**Description:**

The City has developed a program to track preconstruction and construction storm water activities. The Development Tracking program developed by the City's IT Department tracks site plan reviews. The Storm Water Pollution Prevention Plan tracking program developed by the City's IT Department tracks SWPPPs, inspections and enforcement. The city also reviews and considers information and comments submitted by the public on proposed projects.

A key component of this effort is the Storm Water Pollution Prevention Plan tracking program developed by the City's IT Staff. The Storm Water Program Manager uses this program to track inspections and enforcement actions related to construction activities.

**Purpose and Benefit:** Tracking preconstruction and construction storm water activities allows for consistent enforcement of storm water regulations. It also allows for review of items such as common violations.

**Measure of Success:** Annual review of data collected compared to previous years according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Storm Water Program Manager, Storm Water Field Supervisor and City Planner

**Funding:** Storm Water Utility

**Standard Operating Procedures:** Criminal and Civil Enforcement Strategy SOP (Available upon request)

## Chapter 5

### MCM 5: Long-Term Storm Water Management in New Development and Redevelopment (Post-Construction Storm Water Management)

The permit requirements for Long-Term Storm Water Management in New Development and Redevelopment (Post-Construction Storm Water Management) can be found in Section 4.2.5 of the permit.

A copy of the General Permit for Discharges from Small MS4s can be found at [DWQ's Website](#). The permit outlines in general the following requirements:

1. Develop and adopt an ordinance that requires long-term post-construction storm water controls at new development and redevelopment sites that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale. The ordinance or other regulatory mechanism shall require BMP selection, design, installation, operation and maintenance standards necessary to protect water quality and reduce the discharge of pollutants to the MS4.
2. Document enforcement activities including a written enforcement strategy and Standard Operating Procedures (SOPs) related to ceasing violations, which is covered in MCM 4.
3. Documentation on how the requirements of the ordinance or other regulatory mechanism will protect water quality and reduce the discharge of pollutants to the MS4.  
Documentation shall include:
  - a. How long-term storm water BMPs were selected
  - b. The pollutant removal expected from the selected BMPs
  - c. The technical basis that supports the performance claims for the selected BMPs.
4. Develop and implement standards to ensure that any storm water controls or management practices for new development and redevelopment will prevent or minimize impacts to water quality. This should include encouraging non-structural BMPs.
5. Require the evaluation of Low Impact Development (LID) to encourage infiltration, evapotranspiration, and storm water harvesting and Green Infrastructure controls. Require documentation of why LID and Green Infrastructure was selected on a case-by-case basis.
6. Track the preconstruction review, regular inspections, permit violations, and permit termination of construction sites of one acre or larger and those sites smaller than one acre that are part of a common plan of development.
7. Develop a retrofit plan that incorporates LID and Green Infrastructure. Priority Areas should be identified in the plan.
8. Specify a hydrologic method to be used in calculation of runoff values.
9. Implement procedures for site plan review that includes preferred design specifications tailored to different development types. These design specifications should be made available to design professionals on a regular basis.
10. Conduct site inspections during construction and annually after site completion.

## **MCM 5**

### **LONG-TERM STORM WATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT (POST-CONSTRUCTION STORM WATER MANAGEMENT)**

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11. Maintain a database of long-term storm water management structures and maintain a catalog of inspections done on these structures.

The City of Orem has implemented tasks to meet the requirements of this MCM, which are summarized in this section.

[LTM-1: City of Orem Ordinances](#)

[LTM-2: Water Quality Protection Documentation](#)

[LTM-3: Long-Term Storm Water Management Plan Review](#)

[LTM-4: Retrofit Plan](#) (Moved to MCM 6)

[LTM-5: Hydrologic Method](#)

[LTM-6: Site Plan Review Procedures](#)

[LTM-7: Site Inspection for Post-Construction Storm Water Management Compliance](#)

[LTM-8: Post-Construction Storm Water Management Structure Inventory](#)

Tasks in other Minimum Control Measures

CSR-4: Documentation, Enforcement Strategies and Procedures to respond to Violation of Ordinance (4.2.5.5.2-4.2.5.5.2.1)

PEO-4: Education and Outreach for City Employees (4.2.5.5.)





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

**LTM-1: City of Orem Ordinances**

**Year Originally Executed:** 1996, revised and amended 2008, 2015, 2020

**Last Reviewed:** October 11, 2021

**Reference Regulation:** 4.2.5.1.

**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash; Debris; Pathogens

**Audiences:** MS4 Employees, General Public, Engineers, Construction Contractors, Developers and Planners

**Description:**

City of Orem ordinances include code about the use of BMPs needed to protect water quality on all new development and redevelopment sites within the City of Orem. These City ordinances govern the selection, design, installation, operation and maintenance of long term/post-construction BMPs. It encourages the use of non-structural BMPs by reference to a City approved BMP manual. It also encourages the use of a Low Impact Development (LID) approach for handling storm water. It requires documentation of the green infrastructure and other BMPs considered and the reasons for choosing the practices or explanations of what prevents the use of green infrastructure and LID for each development or redevelopment project. These ordinances also require annual inspection and maintenance of long-term storm water management structures as needed. In addition, maintenance agreements are required so that property owners can be held accountable for keeping BMPs in good working order.

**Purpose and Benefit:** Ordinances supporting the City's storm water programs are vital to ensure the success of programs that govern and protect the public.

**Measure of Success:** Evaluate the ordinance and draw connections to positive outcomes when the permit is renewed or changed according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Storm Water Program Manager, Storm Water Field Supervisor, Maintenance Division Manager and City Attorney

**Funding:** Storm Water Utility

**Standard Operating Procedures:** None

**City Ordinance References**

Storm Water Ordinances available online are linked below

[Chapter 17](#)

[Chapter 23](#)

City Storm Water Ordinance Summary (See Appendix B)

**Supporting Documents**

Storm Water Maintenance Agreement (Available upon request)



**LTM-2: Water Quality Protection Documentation****Year Originally Executed:** 2016**Last Reviewed:** October 11, 2021**Reference Regulation:** 4.2.5.2.2**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash; Debris; Pathogens**Audiences:** City Staff, Engineers, Construction Contractors, Developers, Planners**Description:**

Selecting specific long-term storm water BMPs for recommendation has been a challenge due to the lack of data on the effectiveness and pollutants removal rates from studies that have been completed in Utah. The City of Orem recommends developers consider Low Impact Design (LID) through the use of the UDWQ's manual [“A Guide to Low Impact Development within Utah”](#). Additional resources can be found at the [International Storm Water BMP Database](#) and the [EPA's National Menu of Best Management Practices \(BMPs\) for Stormwater](#). The preceding websites list expected removal rates from a variety of BMPs and the technical basis and studies which support these performance claims. In order to protect the receiving water bodies, design BMPs for new or redeveloped sites are required. Developers must design BMPs to treat storm water with a goal of reducing pollutants in the receiving water bodies. BMPs should address removal of phosphorus, total suspended solids, and other site specific target pollutants. Proposed BMPs will be evaluated by City staff to verify selected BMPs are addressing pollutant removal.

**Purpose and Benefit:** Creating procedures and checklists allow for uniform review of sites based on agreed upon objective criteria. This consistency should lead to better compliance as contractors, developers and engineers are able to recognize patterns applicable to sites throughout the City.

**Measure of Success:** Required use of Low Impact Design elements in all new development and qualifying redevelopment.

**Responsible Staff:** Storm Water Program Manager, Storm Water Field Supervisor and City Planners

**Funding:** Storm Water Utility

**Standard Operating Procedures:** None

**Supporting Documents:**

UDWQ's manual [“A Guide to Low Impact Development within Utah”](#)

[International Storm Water BMP Database](#)

[EPA's National Menu of Best Management Practices \(BMPs\) for Stormwater](#)



**LTM-3: Long-Term Storm Water Management Plan Review**

**Year Originally Executed:** 2003

**Last Reviewed:** October 11, 2021

**Reference Regulation:** 4.2.5.3. ; 4.2.5.3.1 ; 4.2.5.3.2.

**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash; Debris; Pathogens

**Audiences:** MS4 Employees

**Description:**

Development can alter landscapes by increasing imperviousness (i.e. roofs, driveways, parking lots) and changing drainage patterns, thereby increasing the volume and velocity of runoff from the site. Increased volume leads to degradation of receiving waters and increases the occurrence of flooding. Storm water from developed impervious areas can also contain a variety of pollutants that are detrimental to water quality, such as sediment, nutrients, road salts, heavy metals, pathogenic bacteria, and petroleum hydrocarbons.

Considering water quality impacts early in the design process can provide long-term water quality benefits. New development projects on undeveloped land offer many opportunities to reduce storm water runoff from the site. Redevelopment projects, which replace an existing development and are typically in more urban areas, usually have less land area available for storm water controls.

The City of Orem as a Phase II regulated municipality has developed ordinances which require property owners and operators to include a combination of structural and non-structural BMPs. The ordinances also ensure adequate long-term operation and maintenance of BMPs. The City needs to thoroughly review development plans and supporting documents to ensure that they minimize water quality impacts from the site after construction is complete.

Depending on the development type and location, different BMPs may apply. The City of Orem recommends developers consider Low Impact Design (LID) and BMP selection through the use of the UDWQ's manual [“A Guide to Low Impact Development within Utah”](#). Additional resources can be found at the [International Storm Water BMP Database](#) and the [EPA's National Menu of Best Management Practices \(BMPs\) for Stormwater](#).

The City will keep a record on hand of those materials that are provided to design professionals. If mass mailings are distributed to design professionals, the date and list of recipients will be recorded.

**Purpose and Benefit:** Plan reviews allow for the evaluation of selected BMPs and guidance for developers from planning, to construction, to long-term maintenance.

**Measure of Success:** Review site plan and subdivision reviews, deficiencies discovered by these reviews and the actions taken to remedy these deficiencies according to the Storm Water Management Plan Measurable Goals Matrix. These plans are found on Orem's server.



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

**Responsible Staff:** Storm Water Program Manager, Storm Water Field Supervisor and City Planner.

**Funding:** Storm Water Utility

**Standard Operating Procedures:** Long-Term Storm Water Management Plan & Maintenance Agreement Review (Available upon request)

**Supporting Documents:**

UDWQ's manual [“A Guide to Low Impact Development within Utah”](#)

[International Storm Water BMP Database](#)

[EPA's National Menu of Best Management Practices \(BMPs\) for Stormwater](#)

**LTM-4: Retrofit Plan**

**This task was moved to MCM6, Pollution Prevention and Good Housekeeping for Municipal Operations. It is now task PPGH-8.**

**LTM-5: Hydrologic Method****Year Originally Executed:** 2016**Last Reviewed:** October 11, 2021**Reference Regulation:** 4.2.5.1.2**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash; Debris; Pathogens**Audiences:** MS4 Employees, Engineers, Construction Contractors, Developers and Planners**Description:**

The use of hydrologic analysis in the design of storm water facilities for new developments and redevelopment sites has been a part of the preconstruction process for many years at the City of Orem. The standards used have been selected by the Development Services Department under the direction of the City Engineer. The Storm Water Utility provides guidance in the process, ensuring that UPDES standards of management/retention are met. The review of plan designs will require the technical rationale should this standard be unachievable for a given site. Exemptions can be obtained if retention is not feasible due to site constraints, poor percolation, high groundwater levels, etc. The City Engineer will use engineering judgement to determine if the exemption request will be accepted or denied on a case-by-case basis. If an exemption is accepted, developers will be required to provide a plan to the City Engineer for his approval. It should identify the means by which water quality will be protected .

**Purpose and Benefit:** Reducing runoff from sites and encouraging the infiltration, evapotranspiration and/or reuse of storm water allows for groundwater recharge and minimizes potentially adverse impacts to downstream waters.

**Measure of Success:** Evaluate the method when the permit is renewed or changed according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Storm Water Program Manager, Storm Water Field Supervisor and City Engineer

**Funding:** Storm Water Utility

**Standard Operating Procedures:** Long-Term Storm Water Management Plan & Maintenance Agreement Review (Available upon request)

**Supporting Documents:**

[City of Orem Storm Drainage Systems Design and Management Manual](#)

**LTM-6: Site Plan Review Procedures**

**Year Originally Executed:** 1996

**Last Reviewed:** October 11, 2021

**Reference Regulation:** 4.2.5.3. ; 4.2.5.3.1 ; 4.2.5.3.2

**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash; Debris; Pathogens

**Audiences:** MS4 Employees, Contractors, Developers, Engineers

**Description:** The City reviews site plans to ensure that any storm water controls or management practices for new development and redevelopment will prevent or minimize impacts to water quality. This process involves the technical development review with engineering, public works and public safety. It promotes non-structural BMPs such as minimizing disturbance areas, preserving areas deemed important for water quality benefits, implementing flood control and protecting natural resources. It also requires the evaluation of LIDs and green infrastructure to implement infiltration, evapotranspiration, and storm water harvesting in accordance with state regulations. If LID is determined not to be feasible, documentation explaining site limitations must be submitted to city personnel for review and approval prior to construction. BMPs will be reviewed to ensure that they will address anticipated pollutants from the developed site. Additionally, this process of preconstruction and review meetings is a time to review maintenance agreements.

**Purpose and Benefit:** The best way to integrate long-term storm water quality measures into a site is during planning and review.

**Measure of Success:** Document the number of sites evaluated and the measures used to address the issues with these site plans. This will be reviewed annually according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Storm Water Program Manager, Storm Water Field Supervisor, City Planner and City Engineer

**Funding:** Storm Water Utility

**Standard Operating Procedures:** Long-Term Storm Water Management Plan Review  
(Available upon request)

**Supporting Documents**

[City of Orem Construction Standards](#)

[Utah Division of Water Rights Rainwater Harvesting Registration](#)

UDWQ's manual ["A Guide to Low Impact Development within Utah"](#)

[International Storm Water BMP Database](#)

[EPA's National Menu of Best Management Practices \(BMPs\) for Stormwater](#)

[Subdivision and Site Plan Checklist](#)



## **LTM-7: Site Inspection for Post-Construction Storm Water Management Compliance**

**Year Originally Executed:** 2016

**Last Reviewed:** October 11, 2021

**Reference Regulation:** 4.2.5.2.3 ; 4.2.5.2.4 ; 4.2.5.2.5

**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash; Debris; Pathogens

**Audiences:** MS4 Employees, Business Owners

### **Description:**

The City has a program to verify the proper installation and maintenance of long-term storm water management controls. This program includes an inspection during installation and reporting of annual inspections after site completion. The installation inspection is to be completed by the Storm Water Project Manager or a Construction Engineer with biennial inspections being completed by qualified inspectors from the property developer/owner. The City will inspect these sites at a minimum of once every five years.

**Purpose and Benefit:** Properly installed and maintained storm water controls ensure long-term benefits are extended to the full life expectancy of the measures.

**Measure of Success:** Document the number of sites evaluated and the measures used to address the issues with these sites. This will be reviewed annually according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Storm Water Program Manager, Storm Water Field Supervisor, Construction Engineer and City Engineer

**Funding:** Storm Water Utility

**Standard Operating Procedures:** None

**Supporting Documents:** Storm Water Maintenance Agreement (Available upon request)



### **LTM-8: Post-Construction Storm Water Management Structure Inventory**

**Year Originally Executed:** 2016

**Last Reviewed:** October 11, 2021

**Reference Regulation:** 4.2.5.4. ; 4.2.5.4.1 ; 4.2.5.4.2

**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash; Debris; Pathogens

**Audiences:** MS4 Employees

**Description:**

The City will monitor its current inventory of post-construction storm water management structures and collect information on all such existing structures. A GIS map with related databases will track the description, maintenance requirements and inspection information regarding sites that require a Long Term Storm Water Management Plan. This GIS and related database will be reviewed frequently to update necessary information.

**Purpose and Benefit:** A database allows for the proper tracking of the maintenance and inspections of long-term management structures and ensures greater compliance with maintenance expectations.

**Measure of Success:** Maps and reports on structures and related maintenance and inspection activities. This will be reviewed annually according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Storm Water Program Manager, Storm Water Field Supervisor, Storm Water GIS Specialist and Streets Section Manager

**Funding:** Storm Water Utility

**Standard Operating Procedures:** None

**Supporting Documents:**

GIS database information (Available upon request)

## Chapter 6 (CSR)

### MCM 6: Pollution Prevention and Good Housekeeping for Municipal Operations

The permit requirements for Pollution Prevention and Good Housekeeping for Municipal Operations can be found in Section 4.2.6 of the permit.

A copy of the General Permit for Discharges from Small MS4s can be found at [DWQ's Website](#). The permit outlines in general the following requirements:

1. Develop and keep a current written inventory of Permittee-owned or operated facilities and storm water controls. Permittees shall assess this written inventory for their potential to discharge to storm water typical urban pollutants. The Permittee must identify "high-priority" facilities or operations that have a high potential to generate storm water pollutants. The Permittee shall develop and implement a Storm Water Pollution Prevention Plan (SWPPP) or similar type document for each "high-priority" facility.
2. Conduct the following inspections at "high priority" facilities:
  - a. Monthly visual inspections
  - b. Semi-Annual comprehensive inspections
  - c. Annual visual observation of storm water discharges
3. Develop and implement Standard Operating Procedures for offices, police and fire stations, pools, parking garages, and other Permittee-owned or operated buildings or utilities. They must address:
  - a. Storage and disposal of chemicals
  - b. Spill prevention and cleanup plans
  - c. Dumpsters and other waste management
  - d. Sweeping of parking lots
  - e. Cleanliness of areas surrounding the facilities
  - f. Material storage areas
  - g. Heavy equipment storage and maintenance areas
  - h. Parks and open space
  - i. Vehicles and Equipment
  - j. Roads, highways and parking lots
4. Maintain an inventory of all floor drains inside all Permittee-owned or operated buildings. The inventory must be kept current. The Permittee must ensure that all floor drains discharge to appropriate locations.
5. Assess the effectiveness of flood management structural controls for water quality and hydrologic performance. Suggest improvements to these structures when they can provide significant improvements to water quality.
6. Assure that City construction projects follow the requirements of the General UPDES Permits for Storm Water Discharges Associated with Construction Activities.
7. Train City employees responsible for the construction, operation or maintenance of facilities, structures, vehicles or equipment likely to affect storm water quality.

## **MCM 6**

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

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The City of Orem has implemented tasks to meet the requirements of this MCM, which are summarized in this section.

[PPGH-1: City of Orem Facility Inventory](#)

[PPGH-2: High Priority Facility Inspections](#)

[PPGH-3: Standard Operating Procedures for Good Housekeeping and Municipal Operations](#)

[PPGH-4: Floor Drain Inventory](#)

[PPGH-5: Flood Management Control Assessment](#)

[PPGH-6: Public Construction Project Compliance](#)

[PPGH-7: Oversight of Contractors Performing Municipal Maintenance](#)

[PPGH-8: Retrofit Plan](#)

Tasks in other Minimum Control Measures

PEO-4: Education and Outreach for City Employees (4.2.6.10)



**PPGH-1: City of Orem Facility Inventory****Year Originally Executed:** 2002**Last Reviewed:** October 11, 2021**Reference Regulation:** 4.2.6; 4.2.6.1; 4.2.6.2; 4.2.6.3; 4.2.6.4**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash; Debris; Pathogens**Audiences:** MS4 Employees**Description:**

The City maintains a list of all City owned and operated facilities including city buildings (offices), equipment storage and maintenance facilities, landscape maintenance facilities, parking lots, golf courses, swimming pools, drinking water wells, and sewer lift stations.

Regular assessments are made of the impact of each facility on storm water quality based on the presence of potential pollutants. Through these assessments, the City has determined that its Public Works Complex along with Sleepy Ridge Golf Course Maintenance Shed should be considered a “high-priority” facility. The City has developed a Storm Water Pollution Prevention Plan to help manage the Public Works Complex facility’s potential impacts on storm water quality. Sleepy Ridge Golf Course Maintenance Shed was determined a “high-priority” facility through the 2019 DWQ audit process.

**Purpose and Benefit:** This inventory will ensure that City facilities are regularly reviewed to minimize adverse impacts of City operations on storm water quality.

**Measure of Success:** Review of City facility inventory will be done annually according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Storm Water Program Manager, Storm Water Field Supervisor, and Maintenance Division Manager

**Funding:** Storm Water Utility

**Standard Operating Procedures:** None

**Supporting Documents:**

City of Orem Facility Inventory (See Appendix H)

## **PPGH-2: High Priority Facility Inspections**

**Year Originally Executed:** 2002

**Last Reviewed:** October 11, 2021

**Reference Regulation:** 4.2.6.5; 4.2.6.5.1; 4.2.6.5.2; 4.2.6.5.3

**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash; Debris; Pathogens

**Audiences:** City Staff

### **Description:**

The City conducts the following inspections, on High Priority Facilities, in accordance with the permit:

1. Monthly visual inspections to look for evidence of spills that could come in contact with precipitation runoff.
2. Semi-annual comprehensive inspections to review all storm water controls, waste storage areas, dumpsters, material handling areas and similar pollutant generating areas.
3. Annual visual observation of storm water discharges where discharges are observed for irregularities (discoloration, foam, sheen, turbidity) that may indicate polluted runoff.

**Purpose and Benefit:** Regular inspections of areas that have the potential to lead to polluted runoff can minimize the potential of polluted discharges.

**Measure of Success:** Review of inspection reports including follow up actions. This will be reviewed annually according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Storm Water Project Manager

**Funding:** Storm Water Utility

**Standard Operating Procedures:** High Priority Facility Inspections SOP

**PPGH-3: Standard Operating Procedures for Good Housekeeping and Municipal Operations****Year Originally Executed:** 2010**Last Reviewed:** October 11, 2021**Reference Regulation:** 4.2.6.6; 4.2.6.6.1; 4.2.6.6.2; 4.2.6.6.3; 4.2.6.6.4; 4.2.6.6.5; 4.2.6.6.6;**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash; Debris; Pathogens**Audiences:** City Staff**Description:**

The City has developed and implemented Standard Operating Procedures (SOPs) to address storm water concerns related to municipal operations. The following topics are all addressed in the City's SOPs.

1. Buildings and facilities
  - a. Storage and Disposal of Chemicals
  - b. Spill Prevention and Cleanup Plans
  - c. Dumpsters and Waste Management
  - d. Cleaning and Washing Activities
  - e. Painting and Maintenance Activities
2. Storage and Maintenance Areas
3. Parks and Open Space
  - a. Application, Storage and Disposal of Fertilizer, Pesticides and Herbicides
  - b. Sediment and Erosion Control
  - c. Lawn Maintenance and Landscaping Activities
    - i. Disposal of Lawn Clippings and Vegetation
    - ii. Selection of Alternative Landscaping Materials
  - d. Trash Containers
  - e. Pet Wastes
  - f. Building Exterior and Equipment Cleaning
  - g. Other Pollution Prevention and Good Housekeeping Practices
4. Vehicles and Equipment
  - a. Storage of Vehicles Awaiting Repair
  - b. Washing of Vehicles

5. Roads, Highways, and Parking Lots
  - a. Street and Parking Lot Sweeping
  - b. Asphalt and Concrete Maintenance
    - i. Pothole Repairs
    - ii. Pavement Marking
    - iii. Sealing and Repaving
  - c. Cold Weather Operations
    - i. Plowing
    - ii. Sanding
    - iii. Deicing Compounds
    - iv. Snow Disposal Area Maintenance
  - d. Right-of-Way Maintenance (see Lawn Maintenance in Parks Section)
  - e. Event Management (Summerfest, Freedom Festival, etc.)
6. Storm Water Collection and Conveyance System
  - a. Inspections
  - b. Cleaning
  - c. Repairs
  - d. Other Pollution Prevention and Good Housekeeping Practices
  - e. Prioritizing Maintenance
  - f. Structural BMPs
    - i. Swales
    - ii. Detention Basins
  - g. Disposal of materials removed from catch basins, detention basins, and by street sweeping operations
7. Other Facilities and Operations
  - a. Public Safety Training Activities

**Purpose and Benefit:** SOPs lead to standard applications of policies and procedures.

**Measure of Success:** Facility Inspection reports will be reviewed annually according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Public Works Program Manager, Storm Water Field Supervisor

**Funding:** Storm Water Utility

**Standard Operating Procedures:** SOPs available upon request



### **PPGH-4: Floor Drain Inventory**

**Year Originally Executed:** 2010

**Last Reviewed:** October 11, 2021

**Reference Regulation:** 4.2.6.6.

**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash; Debris; Pathogens

**Audiences:** MS4 Employees

**Description:** The City maintains an inventory of all interior floor drains. All drains have been tested to make sure that they drain to the sanitary sewer. Those that do not will be re-plumbed to drain to the sanitary sewer wherever possible.

**Purpose and Benefit:** Floor drains could be direct conduits for pollutants to enter storm drain systems if not properly plumbed.

**Measure of Success:** This inventory will be reviewed and updated annually according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Public Works Program Manager, Public Works Field Supervisor, Maintenance Division Manager

**Funding:** Storm Water Utility

**Standard Operating Procedures:** None

**Supporting Documents:**

Floor Drain Inventory (Available upon request)



**PPGH-5: Flood Management Control Assessment****Year Originally Executed:** 2016**Last Reviewed:** October 12, 2021**Reference Regulation:** 4.2.6.8; 4.2.6.8.1**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash; Debris; Pathogens**Audiences:** MS4 Employees, Engineers, Construction Contractors, Developers and Planners**Description:**

Successful implementation of any BMP is dependent on the following:

- Effective training of municipal employees working in both fixed facilities and field programs.
- Regular inspections of fixed facilities, field programs, and treatment controls.
- Maintenance of treatment controls as needed to ensure proper functioning.
- Periodic evaluation/monitoring of BMP performance consistent with the UPDES permit requirements.
- Correct deficiencies in BMP implementation noted during inspections.
- Keep accurate records of inspections, training, monitoring, and BMP maintenance.

Maintenance of treatment controls and drainage conveyance systems (e.g. detention basins, sumps, catch basins, etc.) including regular inspections as needed to maintain efficient pollutant reduction. If treatment control BMPs are not properly maintained, BMP effectiveness is reduced and water quality deteriorates. The following are steps to be taken to ensure that new and existing BMPs work properly:

- Special attention will be directed toward ensuring proper maintenance procedures are implemented.
- Regular inspections of facilities or programs include compliance with BMP maintenance requirements.
- Visual monitoring will occur at key outfalls and at selected conveyance system structures to assess long-term BMP effectiveness. Should any observed problems be identified (e.g., color, foam, sheen, turbidity) that can be associated with pollutant sources, then analytical testing will be conducted to determine the cause of the problem and the potential source identified.
- Develop and enforce ordinances, procedures, and mechanisms that maintain the effectiveness of BMPs.

**Purpose and Benefit:** Reducing runoff from sites and encouraging the infiltration, evapotranspiration, and/or reuse of storm water allows for groundwater recharge and minimizes potentially adverse impacts to downstream waters.

**Measure of Success:** Document the number of sites evaluated and the measures used to address the issues with these sites. This will be reviewed annually according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Storm Water Field Supervisor, City Planner and City Engineer

**Funding:** Storm Water Utility

**Standard Operating Procedures:** None

**Supporting Documents:**

[Construction Standards & Specifications](#)

[Construction Standards & Specifications \(Drawings/Details\)](#)

## **PPGH-6: Public Construction Project Compliance**

**Year Originally Executed:** 2002

**Last Reviewed:** October 12, 2021

**Reference Regulation:** 4.2.6.9

**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash; Debris; Pathogens

**Audiences:** City Staff

**Description:**

The City ensures that construction projects that the City manages and controls follow the same practices as those undertaken by private entities. See MCM 4 for details.

**Purpose and Benefit:** The City seeks to set the proper example for contractors, engineers and developers in their compliance with storm water construction regulations.

**Measure of Success:** Review the City Projects in the SWPPP program annually according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Storm Water Field Supervisor, City Planner and City Engineer

**Funding:** Storm Water Utility

**Standard Operating Procedures:** Refer to MCM 4

## **PPGH-7: Oversight of Contractors Performing Municipal Maintenance**

**Year Originally Executed:** 2016

**Last Reviewed:** October 12, 2021

**Reference Regulation:** 4.2.6.7: 4.2.6.10

**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash; Debris; Pathogens

**Audiences:** City Staff, Contractors

### **Description:**

The City contracts with private providers for various maintenance needs. The City ensures that its employees are trained on issues relating to their jobs and the potential for exposure of storm water runoff to pollutants. Contractors will be held to the same requirements as the City by staff responsible for overseeing contracted projects.

**Purpose and Benefit:** Contractors working for the City should be held to the same standards as City staff.

**Measure of Success:** Annual staff training log. This will be reviewed annually according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Various City Staff

**Funding:** Storm Water Utility

**Standard Operating Procedures:** None

**PPGH-8: Retrofit Plan****Year Originally Executed:** 2016**Last Reviewed:** October 12, 2021**Reference Regulation:** 4.2.6.9.**Target Pollutants:** Nutrients; Hydrocarbons; Heavy Metals; Sediment; Toxic Chemicals; Litter/Trash; Debris; Pathogens**Audiences:** MS4 Employees**Description:**

The City will develop a program to retrofit existing developed sites that are adversely impacting water quality on a case-by-case basis. It will emphasize infiltration, evapotranspiration, and harvesting and reuse of storm water. The program will rank the measures based on pollutant removal expectation. The plan will analyze impact to sites based on proximity to water bodies, protection status of water bodies as defined by DEQ, hydrologic conditions of water bodies, proximity to sensitive ecosystems and the impact of future sites.

**Purpose and Benefit:** Evaluating sites that are already adversely affecting water quality by the removal of polluted discharges will lead to cleaner water.

**Measure of Success:** Document the number of City sites evaluated and the measures used to address the issues with these sites. Reviewed annually according to the Storm Water Management Plan Measurable Goals Matrix.

**Responsible Staff:** Storm Water Program Manager, Storm Water Field Supervisor and City Planner

**Funding:** Storm Water Utility

**Standard Operating Procedures:** None

**City Ordinance References**

Storm Water Ordinances available online at the links below.

[Chapter 17](#)

[Chapter 23](#)

City Storm Water Ordinance Summary (See Appendix B)

**Supporting Documents:**

Orem City's Retrofitting Plan (See Appendix D)

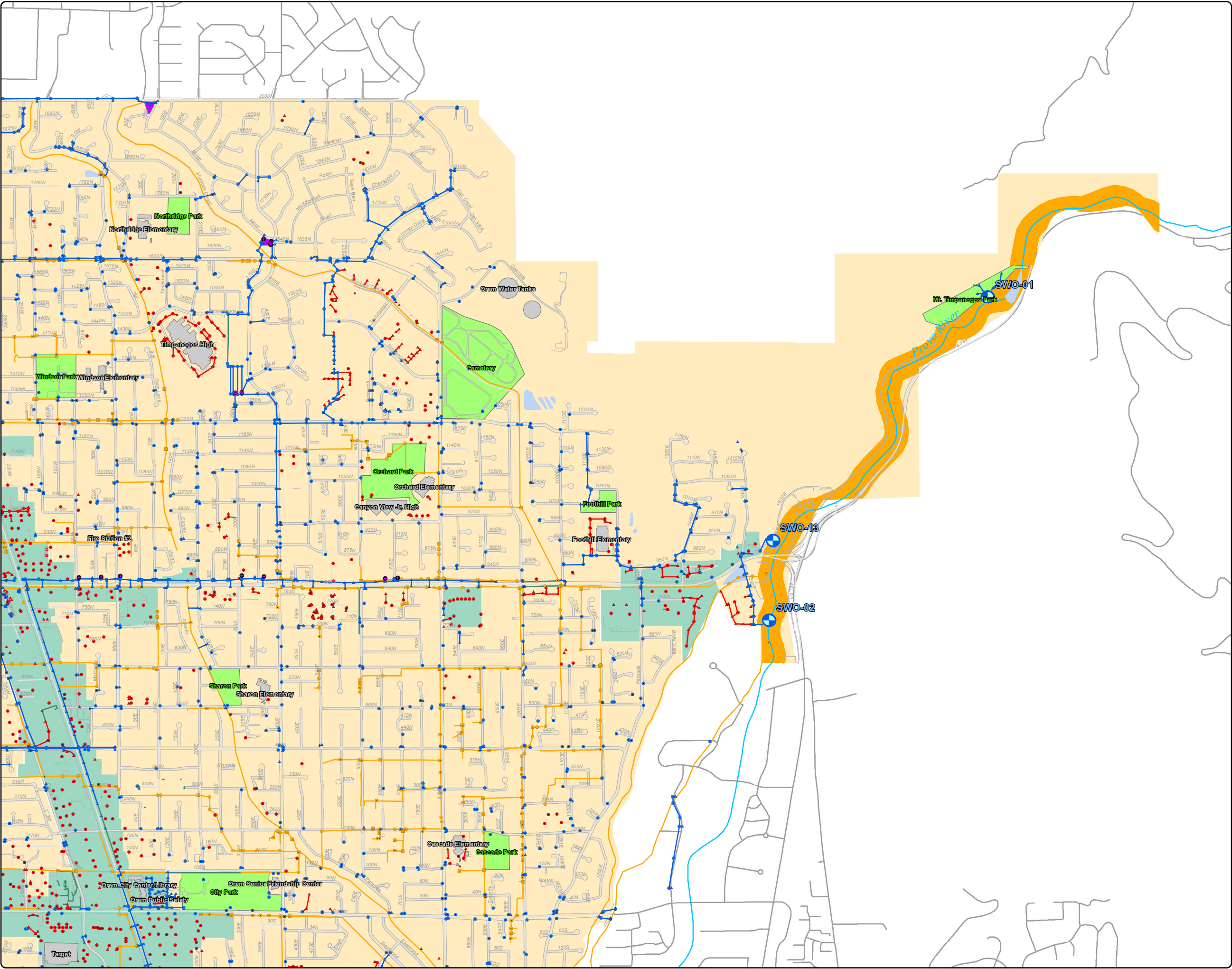


# **APPENDIX A**

## **MS4 MAP**

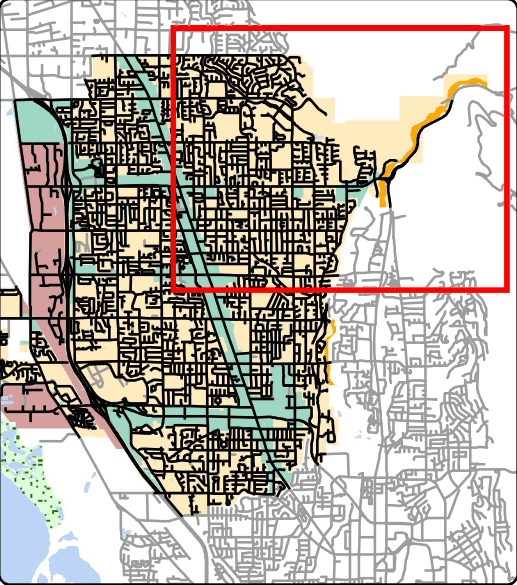
# Orem Stormwater Map

## Northeast Quadrant



### Legend

- |                         |                           |
|-------------------------|---------------------------|
| <b>Orem City System</b> | <b>Groundwater System</b> |
| ▲ Drain Inlet           | ● Manhole                 |
| ● Sump                  | ■ Diversion Structure     |
| ● Manhole               | ⊗ Outfall                 |
| ◆ Bubble-Up             | <b>Irrigation System</b>  |
| ■ Diversion Structure   | ▲ Drain Inlet             |
| ⊗ Outfall               | ● Manhole                 |
| ⊕ Stormwater Outfall    | ◆ Bubble-Up               |
| — Conveyance            | ■ Diversion Structure     |
| — Undefined Conveyance  | ⊗ Outfall                 |
| <b>Private System</b>   | <b>Detention</b>          |
| ▲ Drain Inlet           | ⊕ In-Flow                 |
| ● Sump                  | ⊗ Outfall                 |
| ● Manhole               | ■ Detention Basin         |
| ◆ Bubble-Up             | <b>Landmarks</b>          |
| ⊕ In-Flow               | ■ Orem Boundary           |
| ⊗ Outfall               | — Railroad                |
| — Conveyance            | — Road                    |
| <b>Zones</b>            | — Water Body              |
| ■ Industrial            | — River                   |
| ■ Commercial            | — Drainage                |
| ■ Provo River Buffer    | ■ Building                |
|                         | ■ Park                    |
|                         | ■ Wetland                 |



Scale: 1:18,000  
1000 Ft.

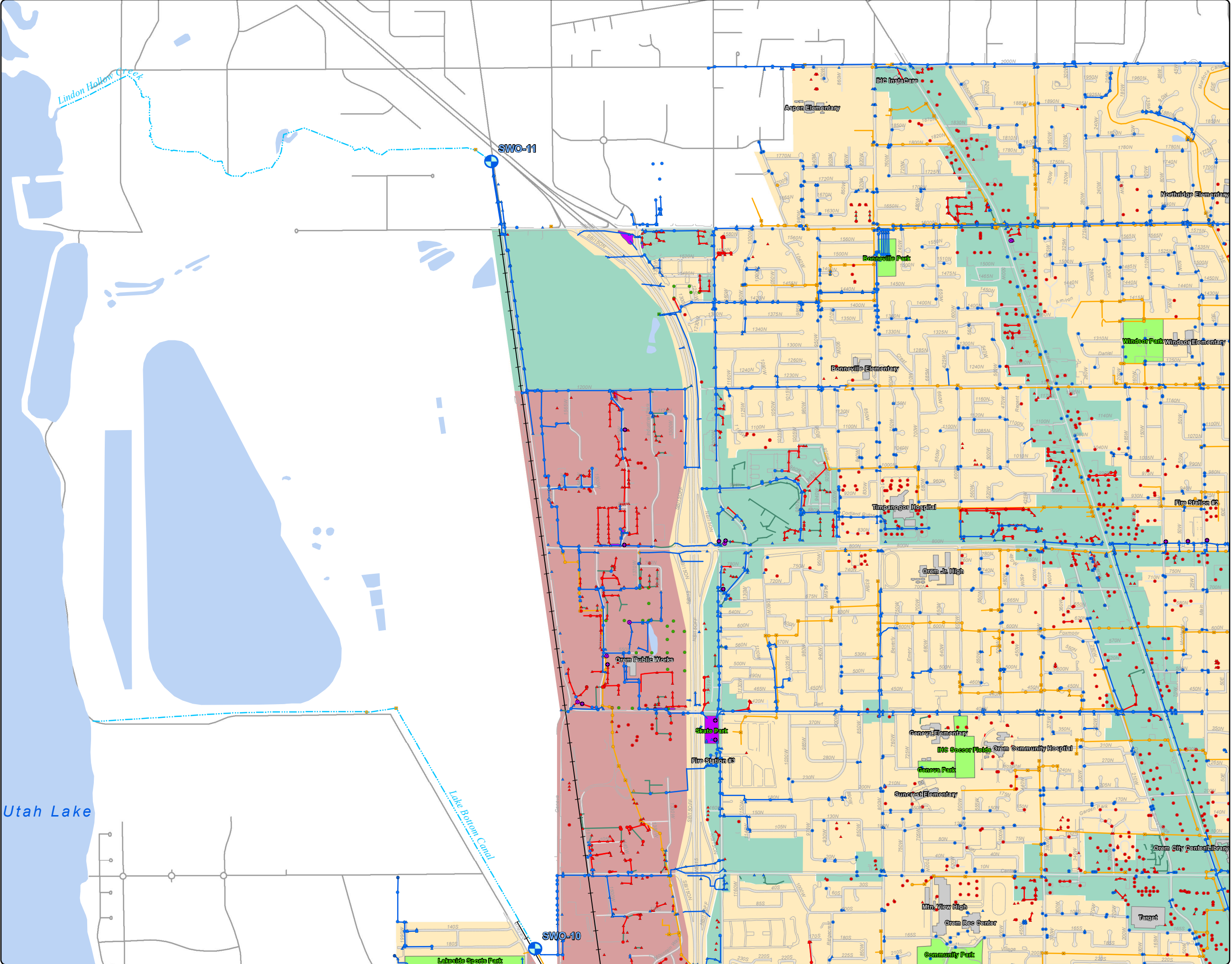


Map Created: 11/1/2010



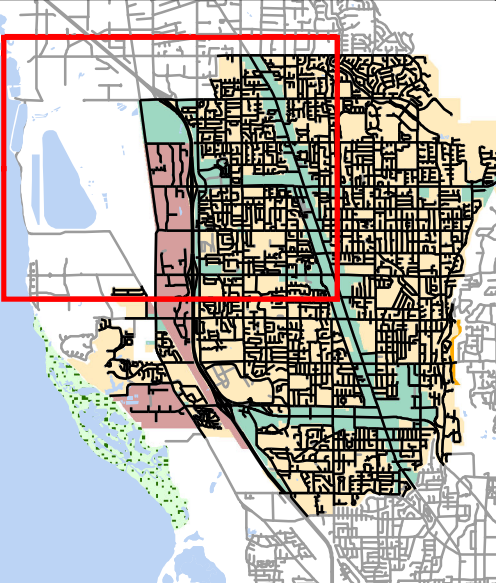
# Orem Stormwater Map

## Northwest Quadrant



### Legend

Orem City System	Groundwater System	
Drain Inlet	Manhole	
Sump	Diversion Structure	
Manhole	Outfall	
Bubble-Up	<th>Irrigation System</th>	Irrigation System
Diversion Structure	Drain Inlet	
Outfall	Manhole	
Stormwater Outfall	Bubble-Up	
Conveyance	Diversion Structure	
Undefined Conveyance	Outfall	
Conveyance	Conveyance	
Private System	Detention	
Drain Inlet	In-Flow	
Sump	Outfall	
Manhole	Detention Basin	
Bubble-Up	<th>Landmarks</th>	Landmarks
In-Flow	Orem Boundary	
Outfall	Railroad	
Conveyance	Road	
Industrial	Water Body	
Commercial	River	
Provo River Buffer	Drainage	
	Building	
	Park	
	Wetland	



Scale: 1:18,000

1000 Ft.

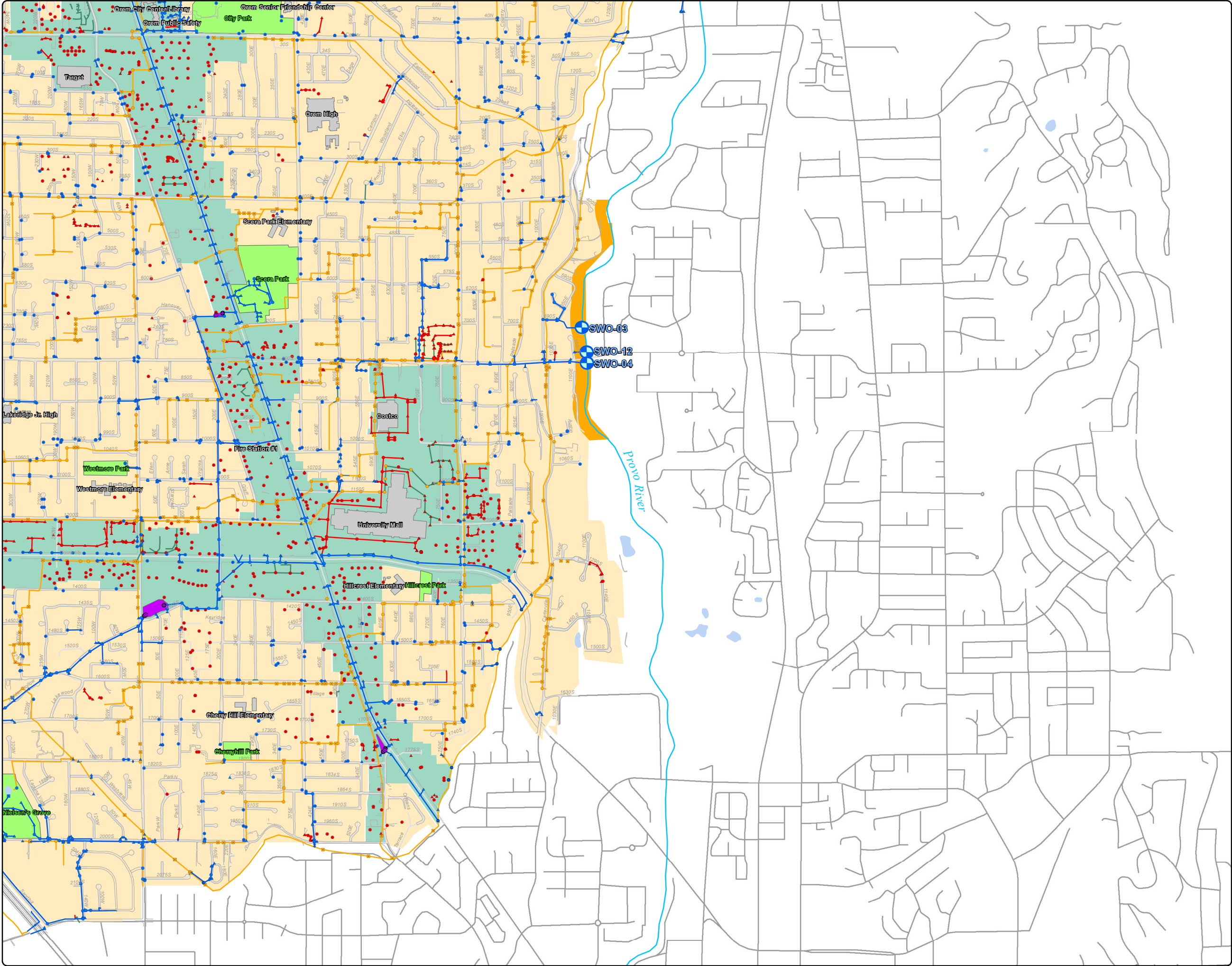


Map Created: 11/1/2010



# Orem Stormwater Map

## Southeast Quadrant



**Legend**

**Orem City System**

- ▲ Drain Inlet
- Sump
- Manhole
- ◆ Bubble-Up
- Diversion Structure
- ⊗ Outfall
- ⊕ Stormwater Outfall
- Conveyance
- Undefined Conveyance

**Groundwater System**

- Manhole
- Diversion Structure
- ⊗ Outfall

**Irrigation System**

- ▲ Drain Inlet
- Manhole
- ◆ Bubble-Up
- Diversion Structure
- ⊗ Outfall
- Conveyance

**Private System**

- ▲ Drain Inlet
- Sump
- Manhole
- ◆ Bubble-Up
- ⊕ In-Flow
- ⊗ Outfall
- Conveyance

**Detention**

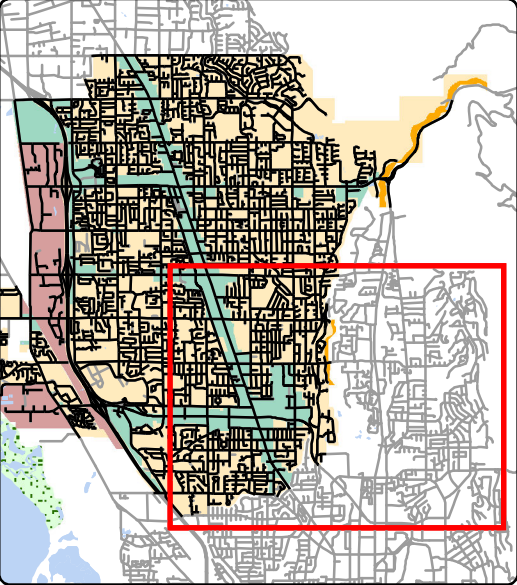
- ⊕ In-Flow
- ⊗ Outfall
- Detention Basin

**Landmarks**

- Orem Boundary
- Railroad
- Road
- Water Body
- River
- Drainage
- Building
- Park
- Wetland

**Zones**

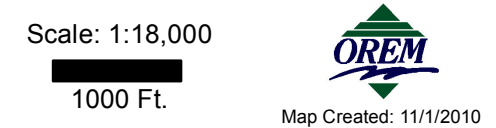
- Industrial
- Commercial
- Provo River Buffer



Scale: 1:18,000  
1000 Ft.



## Southwest Quadrant



**APPENDIX B**  
**SUMMARY OF**  
**CITY ORDINANCES**

## City Code that affects storm water beyond chapter 23

### All of the following impact the storm water system:

Chapter 22 (most of these requirements are found throughout chapter 22 depending on the type of development)

Buffered sidewalks : OCC 22-6-8.B

Open space requirements: PRDs OCC Article 22-7 and Article 22-11 through 18

Open space zones: Article 22-10 allows clustered development

50% Landscaping requirement: Article 22-10 and Article 22-11 PD Zones, 22-7-12.D

40% Landscaping requirement: 22-17-8

Storm Water Runoff Plan: 22-7-14.V. PRDs must have a Storm Water Runoff Plan to accommodate a 25- year storm and a detention system w/ max allowable discharge rate of 60 g.p.m/ac; PD-21, 23, 30, 31, 33, 34, 37, 38, 39, 40, student housing developments, ASH zone must have 25 year storm plan; 22-11- 23.B.17 25-year plan, all PD-15, 16, 17, must have 50-year plan.

Landscaped berms: 22-8-9, 22-8-9, 22-8-10, 22-8-13, 22-11-13 PD Zones, 22-14-19 Residential Zones, 22- 17-8 High Density Apartments

Landscaped islands: 22-8-10 Commercial, 22-11-13 PD Zones (found throughout), 22-15-9 Off-street parking [How to improve: maybe do away with the concrete curb so that water can drain]

Setback requirements: found throughout Chapter 22

Limited size of accessory buildings to 8% of the lot area in residential zones: 22-6-8.D

Piping irrigation ditches: 22-7-13 PRDs, 22-11 required in various PDs

All areas not covered by buildings must be landscaped in newer PDs Article 22-11

Front yard landscaping requirement: 22-14-7.B.1

No waste or trash accumulation: 22-14-7.B.3

General landscaping requirements on all developed lots: 22-14-13

Site plan landscaping requirements: 22-14-20.H.

## Chapter 11

Nuisance of waste accumulates: 11-1-3

## Chapter 15

Solid waste prohibitions

## Chapter 16

Clean up of public streets: 16-1

## Chapter 17

Subdivision preliminary plats: 17-4-3.B.13. 25-year storm water drainage plan

Subdivision Regulations & Design Standards: 17-7-6 system must be designed to handle all runoff generated by the subdivision

## Chapter 20

Limit what can be put in public sewers: 20-2

## Chapter 21

Protection of drinking water: 21-2-2

**APPENDIX C**  
**PRIORITY AREA**  
**IDENTIFICATION**

## **Identifying and Periodic Reclassification of High Priority IDDE Areas**

Annually, the City will undertake a process to review areas designated as high priority for IDDE.

The Storm Water Utility staff have identified and selected the highest priority areas likely to have illicit discharges. The selection process is based on the likelihood of problems and the significance of potential problems.

The following items are used as criteria in delineating High Priority IDDE Areas

- Areas with older infrastructure
- Areas of industrial or commercial use
  - Geneva Road Corridor
- Areas with a history of illicit discharges or illegal dumping
  - Business Park
- Areas upstream of sensitive water bodies
  - The Provo River, Utah Lake, and Powell Slough have been designated as impaired water bodies.

**APPENDIX D**  
**OREM CITY'S**  
**RETROFITTING PLAN**



## **Orem City's Retrofitting Plan**

### **I. Amend Orem City Code as follows:**

#### **Orem City Ordinance 23-4-8(13). Retrofitting Plan**

The City shall develop a plan to retrofit those properties described in Section 23-4-8(2) that are adversely impacting water quality. The plan shall emphasize controls that infiltrate, evapotranspire or harvest and use storm water discharges and shall rank those controls measures that are best suited and those controls that may be considered for future retrofitting. The retrofitting plan will include the following criteria:

1. Proximity to waterbody;
2. Status of waterbody to improve impaired waterbodies and protect unimpaired waterbodies;
3. Hydrologic condition of the receiving waterbody;
4. Proximity to sensitive ecosystem or protected area; and
5. Any site included in Section 23-4-8-(2) that could be further enhanced by retrofitting storm water controls.

### **II. Implementation of Ordinance Amendment OCC § 23-4-8(13):**

- **Step One:** The City shall identify existing developed properties described in Orem City Code Section 23-4-8(2) that may be adversely impacting water quality. The City shall prioritize and perform risk assessments on those properties that are located near significant waterbodies such as Utah Lake or the Provo River, sensitive ecosystems or protected areas focusing first on public property which the City owns or properties where a violation is reported and then expanding when able to assessments of private property similarly located.
- **Step Two:** In performing the risk assessments, the City shall consider the following:
  1. Proximity to waterbody
  2. Status of waterbody to improve impaired waterbodies and protect unimpaired waterbodies
  3. Hydrologic condition of the receiving waterbody
  4. Proximity to sensitive ecosystem or protected area
  5. Any site included in Section 23-4-8-(2) that could be further enhanced by retrofitting storm water controls.
- **Step Three:** The City shall continue to use the risk assessment list that is part of its Storm Water Quality Credit Package program and will include as part of the assessment the five criteria included in Orem City Code § 23-4-8(13). The City will, when financially feasible, continue to encourage private property owners to implement control measures through education and private property inspection.
- **Step Four:** The City shall continue to require redevelopment projects to complete a LTSWMP and to add LID controls to the project even when a permit is not required. In

doing so, the City will consider the five criteria found in Orem City Code § 23-4-8(13) when reviewing the LTSWMP.

### **III. Prioritization of Current and Future Control Measure Retrofits:**

The City recognizes that some existing areas may pose a risk of storm water contamination and an ongoing retrofit program may reduce potential contamination risks. In an effort to reduce storm water contamination risks, the City is currently taking measures to upgrade city owned infrastructure and require or encourage upgrades to privately owned infrastructure. The improvement plan listed below has been expanded to include the entire city due to Wellhead Protection Zones and is not limited by the criteria listed in **Step Two** above:

- City owned drainage infrastructure to meet existing pretreatment standards on Capital Improvement Projects (CIPs). All upcoming storm drain projects have been prioritized and can be found in the 2018 Storm Water Master Plan at the following link: [https://orem.org/wp-content/uploads/2017/09/Orem\\_Storm\\_Water\\_Master\\_Plan\\_opt\\_red\\_uced-3.pdf](https://orem.org/wp-content/uploads/2017/09/Orem_Storm_Water_Master_Plan_opt_red_uced-3.pdf)
- City projects that are non-Storm Water Master Plan projects such as street improvements, comprehensive water line upgrades, comprehensive sewer line upgrades, and traffic light projects are all held to the same standards as storm water projects and are required to upgrade storm drain infrastructure to existing Orem City pretreatment standards.
- Encourage use of Orem City Storm Water Quality Credit Program. This program encourages businesses to utilize a combination of structural and non-structural BMPs to reduce storm water contamination risk through storm water assessment reduction. The requirements for this program can be found at <https://orem.org/storm-water-credit/>
- Private redevelopment projects that change the existing site by 10% or more are required to upgrade storm water infrastructure to Orem City pretreatment standards, route roof drainage to landscape areas where possible, and utilize the Subdivision/Site Plan Review Checklist that can be accessed at [https://orem.org/wp-content/uploads/2019/06/DRC\\_Subdivision\\_checklist.pdf](https://orem.org/wp-content/uploads/2019/06/DRC_Subdivision_checklist.pdf) to meet other LID requirements.

The City has ranked control measures, with the highest probability of success to prevent storm water pollution, as listed below in this prioritized list.

- Retrofit pretreatment manholes on existing sumps and other storm water infrastructure for ongoing City CIP projects to current pretreatment standards.
- Require private redevelopment projects to upgrade all existing storm water infrastructure to current Orem City pretreatment standards.
- Require current Orem City storm water retention standards for each public and private redevelopment project as required in current Orem City Municipal Code. (23-4-8(7))
- Require roof drainage on public and private redevelopment projects to be directed to landscaping and infiltrated where technically feasible.
- Encourage curb cuts to utilize pervious areas for retention and infiltration of storm water and to help meet LID requirements.

- Encourage vegetative areas in detention/retention areas to aid in infiltration and evapotranspiration of storm water and to help meet LID requirements.

Controls that may be considered for future retrofitting.

- All control measures listed above will continue to be considered or required
- Green roofs
- Bioswales
- Expanded use of vegetative swales