SMITHFIELD CITY

STORM WATER

MANAGEMENT PROGRAM

November 2010

Storm Water Management Program Plan
Permittee: SMITHFIELD CITY
Permit Number: UTR090030
Location of MS4: Smithfield Utah

Submitted with this permit is the following:

☐ A map of the MS4 location
☐ Information Regarding the overall quality concerns, priorities, and measureable goals specific to the Permittee that were considered in the development and/or revisions to the SWMP document
☐ A description of the program elements that will be implemented in each of the six minimum control measures
☐ A description of any modifications to ordinances or long-term/ongoing processes implemented in accordance with the previous MS4 general permit for each of the six minimum control measures
☐ A description of how the Permittee intends to meet the requirements Permit as described in Part 4.0 by either referencing existing program areas that already meet the Permit requirements or a description and relevant measurable goals that include, as appropriate, the year by which the Permittee will achieve required actions, including interim milestones.
☐ If applicable indication of joint submittal of Co-Permittees and the associated responsibility in meeting requirements of the SWMP

Certification

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

Authorized Signature ______________________________ Date ______________________________

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EXECUTIVE SUMMARY

This Storm Water Permit application was completed in the fall of 2010. It has been designed to be Smithfield City’s Storm Water Management Program. There are no significant changes in the existing permit UTR090030 that expired in 2008. Smithfield City has been operating in compliance with Utah’s Storm Water Phase II
requirements through a Notice-of-Intent (NOI) application. This NOI was in effect until the Utah Division of Water Quality could reassess their criteria for an MS4 Management Program. The Division has made its determination of what shall be in the program. The Following information is Smithfield City’s Storm Water Management Program application it is to be completed and sent by November 31, 2010.

INTRODUCTION

Polluted storm water runoff is often transported to municipal separate storm sewer systems (MS4s) and ultimately discharged into local rivers and streams without treatment. EPA’s Storm Water Phase II Rule establishes an MS4 storm water management program that is intended to improve the Nation’s waterways by reducing the quantity of pollutants that are introduced into storm sewer systems during storm events. Common pollutants include oil and grease from roadways, pesticides and fertilizers from lawns, sediment from construction sites, and carelessly discarded trash, such as cigarette butts, paper wrappers, and plastic bottles. When deposited into nearby waterways through MS4 discharges, these pollutants can impair the waterways, thereby discouraging use of the resource, contaminating drinking water supplies, and interfering with the habitat for fish, other aquatic organisms, and wildlife.

Priorities and Concerns

A Storm Water Management Program should:

- Reduce the discharge of pollutants to the “maximum extent practicable” (MEP);
- Protect water quality;
- Satisfy the appropriate water quality requirements of the Clean Water Act; and
- Be a continuation and improvement of the 2003 SWMP.

Smithfield City does not currently discharge into any impaired waters 303d, However it is under the management program to limit TMDL’s into Cutler Reservoir

GLOSSARY OF TERMS

_Authorized Enforcement Agency_: Employees or designees of the director of the municipal agency designated to enforce this ordinance.

_Berm_: An earthen mound used to direct the flow of runoff around or through a structure.
**Best Management Practices (BMPs):** Includes schedules of activities, prohibitions of practices, maintenance procedures, design standards, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly into the waters of the United States. BMPs also include treatment requirements, operating procedures, educational activities, and practices to control plant site runoff spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

**BOD₅:** A measure of the amount of oxygen that is consumed by bacteria as it breaks down organic matter in a sample during a five-day period under standardized conditions. It is generally considered to be a measure of organic material in the water.

**CIP (Capital Improvement Plan):** A plan developed by municipalities to identify and prioritize improvements that need to be made in upcoming years.

**Clean Water Act (CWA):** The federal Water Pollution Control Act (33 U.S.C. § 1251 et seq.), and any subsequent amendments thereto.

**Construction Activity:** Activities subject to NPDES Construction Permits. These include construction projects resulting in land disturbance of one acre or more. Such activities include but are not limited to clearing and grubbing, grading, excavating, and demolition.

**Conveyance System:** Any channel or pipe for collecting and directing the stormwater.

**Culvert:** A covered channel or large diameter pipe that directs water flow below the ground surface.

**Degradation:** (Biological or chemical) The breakdown of chemical compounds into simpler substances, usually less harmful than the original compound, as with the degradation of a persistent pesticide. (Geological) Wearing down by erosion. (Water) The lowering of the water quality of a watercourse by an increase in the amount of pollutant(s).

**Dike:** An embankment to confine or control water, often built along the banks of a river to prevent overflow of lowlands; a levee.

**Directly Connected Impervious Areas (DCIA):** Impervious surfaces that are directly connected to the storm drainage conveyance system. Directly connected means that there is no chance for infiltration or evapotranspiration before entering the conveyance system.

**Discharge:** The release of stormwater or other substance from a conveyance system or storage container.

**Drainage:** Refers to the collection, conveyance, containment, and/or discharge of surface and stormwater runoff.

**Erosion:** The wearing away of land surface by wind or water. Erosion occurs naturally from weather or runoff but can be intensified by land-clearing practices related to farming, residential or industrial development, road building, or timber-cutting.

**Fill:** A deposit of earth material placed by artificial means.

**First Flush:** The delivery of a disproportionately large load of pollutants during the early part of storms due to the rapid runoff of accumulated pollutants.

**General Permit:** A permit issued under the NPDES program to cover a class or category of stormwater discharges.

**Grading:** The cutting and/or filling of the land surface to a desired slope or elevation.

**Hazardous Waste:** By-products of society that can pose a substantial or potential hazard to human health or the environment when improperly managed. Possesses at least one of four characteristics (flammable, corrosivity, reactivity, or toxicity), or appears on special EPA lists.

**Heavy Metals:** Metals of high specific gravity, present in municipal and industrial wastes, that pose long-term environmental hazards. Such metals include cadmium, chromium, cobalt, copper, lead, mercury, nickel, and zinc.

**Illicit Connection:** Any physical connection to a publicly maintained storm drain system allowing discharge of non-storm water which has not been permitted by the public entity responsible for the operation and maintenance of the system.
**Illicit Discharge:** Any direct or indirect non-storm water discharge to the storm drain system, except discharges from fire fighting activities and other discharges exempted in this ordinance.

**Illicit Discharge Detection and Elimination (IDDE):** A program that each municipality develops to identify and eliminate any illicit discharges they might have within their collection system.

**Impervious Surface:** A surface which prevents or retards the penetration of water into the ground including, but not limited to roofs, sidewalks, patios, driveways, parking lots, concrete and asphalt paving, gravel, compacted native surfaces and earthen materials, and oiled, macadam, or other surfaces which similarly impede the natural infiltration of storm water.

**Individual Permit:** A permit issued under the NPDES program for a specific facility, whereby the unique characteristics of that facility may be addressed through the imposition of special conditions or requirements.

**Infiltration:** The downward movement of water from the surface to the subsoil. The infiltration capacity is expressed in terms of inches/hour.

**Ingress/Egress:** The points of access to and from a property.

**Inlet:** An entrance into a ditch, storm sewer, or other waterway.

**Low Impact Development (LID):** This term is used to describe means and methods that can be utilized to reduce the impact of development on the environment.

**Municipal Separate Storm Sewer System (MS4):** A municipally owned and operated storm water collection system that may consist of any or all of the following: curb & gutter, drainage swales, piping, ditches, canals, detention basins, inlet boxes, or any other system used to convey storm water that discharges into canals, ditches, streams, rivers, or lakes not owned and operated by that municipality.

**Mulch:** A natural or artificial layer of plant residue or other materials covering the land surface which conserves moisture, holds soil in place, aids in establishing plant cover, and minimizes temperature fluctuations.

**Nonpoint Source:** Pollution caused by diffuse sources (not a single location such as a pipe) such as agricultural or urban runoff.

**NPDES (National Pollutant Discharge Elimination System):** EPA’s program to control the discharge of pollutants to waters of the United States.

**NPDES Permit:** An authorization, or license, or equivalent control document issued by EPA or an approved state agency to implement the requirements of the NPDES program.

**Off-site:** Any area lying upstream of the site that drains onto the site and any area lying downstream of the site to which the site drains.

**On-site:** The entire property that includes the proposed development.

**Outfall:** The point, location, or structure where wastewater or drainage discharges from a sewer pipe, ditch, or other conveyance to a receiving body of water.

**Point Source:** Any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged.

**Plat:** A map or representation of a subdivision showing the division of a tract or parcel of land into lots, blocks, streets, or other divisions and dedications.

**Pollutant:** Generally, any substance introduced into the environment that adversely affects the usefulness of a resource. Pollutants may include, but are not limited to: paints, varnishes, and solvents; oil and other automotive fluids; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects, and accumulations, so that same may cause or contribute to pollution; floatables; pesticides, herbicides, and fertilizers; hazardous substances and wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals;
animal wastes; wastes and residues that result from constructing a building or structure; and noxious or offensive matter of any kind.

**Receiving Waters:** Bodies of water or surface water systems receiving water from upstream constructed (or natural) systems.

**Retention:** The holding of runoff in a basin without release except by means of evaporation, infiltration, or emergency bypass.

**Riparian:** A relatively narrow strip of land that borders a stream or river.

**Riprap:** A combination of large stone, cobbles and boulders used to line channels, stabilize banks, reduce runoff velocities, or filter out sediment.

**Runon:** Stormwater surface flow or other surface flow which enters property other than that where it originated.

**Runoff:** That part of precipitation, snow melt, or irrigation water that runs off the land into streams or other surface water. It can carry pollutants from the air and land into the receiving waters.

**Sedimentation:** The process of depositing soil particles, clays, sands, or other sediments that were picked up by runoff.

**Sheet Flow:** Runoff which flows over the ground surface as a thin, even layer, not concentrated in a channel.

**Source Control:** A practice or structural measure to prevent pollutants from entering stormwater runoff or other environmental media.

**Stabilization:** The proper placing, grading and/or covering of soil, rock, or earth to ensure its resistance to erosion, sliding, or other movement.

**Standard Operating Procedure (SOP):** A written description of the standard method of performing a given task. Can include a step by step description. SOP’s are developed in an effort to bring consistency to a program and to clearly define the expectations of that program. They should be the basis of training programs for municipal employees.

**Storm Drain:** A slotted opening leading to an underground pipe or open ditch for carrying surface runoff.

**Stormwater:** Rainfall runoff, snow melt runoff, and drainage. It excludes infiltration.

**Storm Water Management Program (SWMP):** A document which describes the Best Management Practices and activities to be implemented by a person or business to identify sources of pollution or contamination at a site and the actions to eliminate or reduce pollutant discharges to storm water, storm water conveyance systems, and/or receiving waters.

**Storm Water Pollution Prevention Plan (SWPPP):** A document which describes the general plan for addressing storm water pollutants at a given site. The plan characterizes the nature of the potential pollutants, describes methods and concepts for controlling those pollutants and identifies those responsible for the plan.

**Swale:** An elongated depression in the land surface that is at least seasonally wet, is usually heavily vegetated, and is normally without flowing water. Swales direct stormwater flows into primarily drainage channels and allow some of the stormwater to infiltrate into the ground surface.

**TMDL (Total Maximum Daily Load):** An acronym for and in this Permit refers to a study that: 1) quantifies the amount of a pollutant in a stream; 2) identifies the sources of the pollutant; and 3) recommends regulatory or other actions that may need to be taken in order for the impaired waterbody to meet water quality standards.

**Total Suspended Solids (TSS):** An analytical measure of the amount of sediment suspended in water. TSS is typically comprised of larger sediment particles and does not include fine clays and silts that might be dissolved.

**Treatment Control BMP:** A BMP that is intended to remove pollutants from stormwater.
**Underground Injection Wells (UIW):** A hole receiving storm water whose top dimension is narrower than the depth.

**UPDES (Utah Pollutant Discharge Elimination System):** The State of Utah’s program to control the discharge of pollutants to waters of the United States.

**Waters of the State:** Surface waters and ground waters within the boundaries of the State of Utah and subject to its jurisdiction.

**Waters of the United States:** Surface watercourses and water bodies as defined in 40 CFR § 122.2, including all natural waterways and definite channels and depressions in the earth that may carry water, even though such waterways may only carry water during rains and storms and may not carry storm water at and during all times and seasons. **Wetlands:** An area that is regularly saturated by surface or ground water and subsequently characterized by a prevalence of vegetation that is adapted for life in saturated soil conditions. Examples include: swamps, bogs, marshes, and estuaries

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**Permit UTR090030**

This Storm Water Permit application was completed in the fall of 2010. It has been designed to be Smithfield City’s Storm Water Management Program. There are no significant changes in the existing permit UTR090030

**Effectiveness Evaluation Criteria**

The chosen measurable goals, submitted in this plan, become the required storm water management program; however, the NPDES permitting authority (UDWQ) can require changes in the mix of chosen BMPs and measurable goals if all or some of them are found to be inconsistent with the provisions of the Phase II Final Rule. Likewise, the permittee can change its mix of BMPs if it determines that the program is not effective as it could be. The criteria used in choosing a BMP or goal is found in appendix A.

**Reports**

Each year Smithfield will submit an annual report. This report will be completed and sent to the NPDES permitting authority three months after the end of the fiscal year. The reports must include:

- The status of compliance with permit conditions, including an assessment of the appropriateness of the selected BMPs and progress toward achieving the selected measurable goals for each minimum measure;
- Results of any information collected and analyzed, including monitoring data if any;
- A summary of the storm water activities planned for the next reporting cycle;
- A change in any identified BMP or measurable goals for any minimum measure; and
- Notice of relying on another governmental entity to satisfy some of the permit obligations (if applicable).

**Record Keeping**

Records required by the NPDES permitting authority must be kept for at least five years and made accessible to the public at reasonable times during regular business hours. Records need not be submitted to the NPDES permitting authority unless the permittee is requested to do so. In the event that a construction or subdivision has not been completed in five years the inspection copies will be kept until three years after the NOT has been issued for said construction. Records are to be current and available for permitting authority to examine in the event of an audit. The Records are in the format of spreadsheets, GIS files, and handwritten journals.

**Deadlines**

The NPDES permitting authority has mandated that Phase 2 operators are to have complete a revised SWMP and submit a copy within 180 days from August 1, 2010 it is due December 1, 2010

**Public Notice**

Smithfield City will have a copy of the SWMP available on its website Smithfieldcity.org or a hard copy will be available upon request from the Engineering department. The location of Smithfield City’s Engineering Department is: 96 South Main Street Smithfield Utah 84335. Comments pertaining to the Storm Water Management Plan its operation under the State NPDES authority can be submitted to Smithfield City or (DEQ) 195N 1950 W SLC Utah 84114. A violation by the operator of the SWMP is federally enforceable and also includes the right for interested parties to sue under citizen suit provision (section 405) of CWA.

**Controlling Regulated Pollutants**

The storm water in Smithfield City drains to a series of canals and ditches where it is transported to Summit Creek or the Bear River. At present, the city has encountered isolated problems related to the canals capacities. These problems were all associated with excessive flows during storm events. The agreement between cities and canal companies is attempting to address this situation.

The water quality within the city of Smithfield is relatively good. None of the streams or waterways have been identified as protected under Section 303(d) of the Clean Water Act. However the ultimate destination of waters from Smithfield and its surrounding communities ends in the Cutler Reservoir. Cutler is presently restricted by (DEQ) as to the Total Maximum Daily Load (TMDL) that is allowed to contribute to pollution in this water body. The hope and intent of this Storm
Water Management program (SWMP) is to maintain that status and possibly even improve the current water quality. Being a part of the tributaries to the Cutler Reservoir Smithfield City is very concerned with phosphorous load. The SWMP tries to address excess phosphorous setting standards for dry ponds and controlling construction run-off. The standard we have set to control phosphorous is to control run-off turbidity. There is some evidence that the amount of phosphorous correlates to the amount of suspended solids in the storm water. So by controlling the visible suspended solids our hope is to reduce phosphorous.

Like most communities in the valley, the biggest concerns involve:

- Sediment loads coming from disturbed sites and streets,
- Fertilizers and pesticides coming from lawns and farmlands,
- Oils and grease coming from the roadways,
- Animal waste coming from dairies with runoff and when flushed out.

Smithfield’s SWMP has been geared toward small city applications, targeting the pollutants mentioned. The focus of this plan is to do what we can within the community, trying to stay in harmony with the rural nature of the community and within the existing budget structure.

STATEMENT OF BASIS
GENERAL PERMIT FOR DISCHARGES FROM SMALL MUNICIPAL SEPARATE STORM WATER SYSTEMS

GENERAL PERMIT UTR090030

1.0. Introduction

The Federal Clean Water Act requires that storm water discharges from certain types of facilities be authorized under storm water discharge Permits. (See 40 CFR 122.26.) The goal of the storm water Permits program is to reduce the amount of pollutants entering streams, lakes and rivers as a result of runoff from residential, commercial and industrial areas. The original 1990 regulation (Phase I) covered municipal (i.e., publicly-owned) storm sewer systems for municipalities over 100,000 population. The regulation was expanded in 1999 to include smaller municipalities as well. This expansion of the program to include small MS4s is referred to as Phase II. This Permit (UTR090000) serves as a re-issuance or replacement of the previous General Permit for Discharges from Small Municipal Separate Storm Sewers (MS4s) issued December 9, 2002. This Permit is intended to cover new or existing discharges composed entirely of storm water from MS4s required by the State to obtain a Permit.

2.0. Background

The State of Utah was granted primacy in the National Pollutant Discharge Elimination System (NPDES) program by USEPA in 1987. In Utah, storm water discharge Permits are issued by the Utah Department of Environmental Quality, Division of Water Quality (the “Division”). Utah’s program is known as the Utah Pollutant Discharge Elimination System (UPDES) Program. The Phase II small municipal separate storm sewer systems (MS4s) are covered under a general Permit for storm water discharges from MS4s. The narrative requirements of this Permit are intended to reduce the discharge of pollutants to the maximum extent practicable (MEP) and meet water quality standards through the development and implementation of a Storm Water Management Program (SWMP). Implementation of a SWMP involves implementation of a variety of Best Management Practices (BMPs) to reduce the discharge of pollutants from the MS4. MEP is the standard that establishes the level of pollutant reductions that operators of regulated MS4s must achieve.
through implementation of BMPs included in their SWMPs. There are no numeric effluent limitations included in this Permit. Storm Water Management Program requirements are the controls used in place of numeric limits to achieve a reduction of pollutants in the storm water discharge from small MS4s. A SWMP is comprised of six minimum control measures that must be developed and implemented. These measures include:

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

The Permittee must develop a SWMP that meets the requirements of the six minimum measures and protects state waters from pollution, contamination, and/or degradation. The Permit allows the MS4 flexibility to determine appropriate BMPs to satisfy each of the six minimum control measures. The BMPs employed to reduce pollutants to the MEP may be different for each small MS4 given the unique local concerns that may exist and the different possible pollutant control strategies. The Division may evaluate the Permittees’ proposed storm water BMPs to determine if they meet the requirements of this Permit and if a reduction to the MEP can be achieved. Evaluation of the effectiveness of a SWMP and application of the MEP standard should be an iterative process. The standard of MEP and the necessary modifications to the SWMP should continually adapt to current conditions and BMP effectiveness. The Permittee must continually assess the effectiveness of the current BMPs and expand or better tailor the BMPs to comply with this Permit and protect water quality, and to satisfy the appropriate water quality requirements of the Utah Water Quality Act.

3.0. Changes in this General Permit

The format of this Permit has been modified for ease of referencing specific citations. Basic requirements within each minimum control measure have changed very little although they have been expanded with more specific descriptions in order to clarify the intent of each minimum control measure. Thorough documentation of all BMPs has been emphasized throughout the Permit. Any changes from the first public noticed permit have been indicated in the Comments and Responses. Significant changes are listed below:

**Application and Storm Water Management Program**

This Permit serves as both a renewal Permit for those covered under the previous Permit as well as provides coverage for New Applicants. Renewal Permittees should have fully implemented SWMPs which include all six minimum control measures. New applicants are given the full Permit term to implement a SWMP except where specific deadlines are indicated. The Division has emphasized the Illicit Discharge Detection and Elimination, Construction Site Storm Water Runoff Control and Post-Construction Storm Water Management in New Development and Redevelopment minimum control measures and has indicated that all Permittees shall fully develop, implement and enforce a program in these areas within 18 months of receiving coverage under this Permit.

New Applicants will have 180 days from Division notification to submit a Notice of Intent (NOI) in accordance with Part 2.2. of this Permit and a Storm Water Management Program (SWMP) whereas Renewal Permittees will have 120 days from the effective date of this Permit to submit an updated SWMP in accordance with Part 2.3. of this Permit.

**Storm Water Management Program Evaluation**

As mentioned in Part 2.0 of this Statement of Basis, it is imperative that Permittees have an iterative process for evaluating the effectiveness of their SWMPs. Therefore, within 90 days after the effective date of this Permit, all Permittees shall have an ongoing process for gathering, maintaining, and using information to conduct planning, set priorities, track the development and implementation of the SWMP, evaluate Permit compliance/non-compliance, and evaluate the effectiveness of the SWMP implementation as stated in Part 4.1.2. of the Permit.
Phase II MS4 Permits require the development and implementation of a SWMP which contains the details of the implementation of Permit requirements. Therefore, provisions in the SWMP are enforceable as Permit requirements and should therefore be available for public review and comment as described in Parts 4.2.2.2. and 4.2.2.3. Each Permittee must secure the resources necessary to meet all requirements of this permit as indicated in Part 4.1.2.2.

**Illicit Discharge Detection and Elimination**

Field assessment activities such as dry weather screening were a requirement of the previous Permit and continue to be a requirement in this Permit. Permittees were required to prioritize areas likely to have illicit discharges. This Permit includes a specific minimal inspection schedule for these areas as indicated in 4.2.3.3.2. This schedule consists of inspecting at least 20 percent of these priority areas within one year of receiving coverage under this Permit and continuing to assess an additional 20 percent each year thereafter for the Permit term as described in Part 4.2.3.3.2.

A specific requirement to publicly list and publicize a hotline or other local telephone number for public reporting of spills and other illicit discharges is indicated in Part 4.2.3.9.

**Construction Site Storm Water Runoff Control**

The previous Permit required Permittees to develop and implement requirements for construction site operators to implement appropriate erosion and settlement control best management practices. This Permit further clarifies this requirement by stating that the Permittee shall require construction operators to prepare a Storm Water Pollution Prevention Plan (SWPPP) as further described in Part 4.2.4.1.1. Part 4.2.4.3.1 requires the Permittee to review these SWPPPs.

Part 4.2.4.5. requires training for MS4 staff in the fundamentals of erosion prevention and sediment control and in how to review SWPPPs.

The evaluation of opportunities for use of low impact design (LID) and green infrastructure, as well as the encouraged use where possible, is required to be incorporated into the SWPPP review process (Part 4.2.4.3.3). Although the terms “LID” and “Green Infrastructure” were not used in the previous permit, BMPs which could be considered as such were discussed in the Post-Construction minimum control measure of the previous permit and are also discussed in this Permit.

Monthly inspections of all new construction sites that disturb one acre or more, or are part of a common plan of development or sale, and biweekly inspections of priority construction sites defined in Part 4.2.4.3.4. are required.

The Construction Storm Water Inspection Form (Checklist) found on the Division’s website at [http://www.waterquality.utah.gov/UPDES/stormwatercon.htm](http://www.waterquality.utah.gov/UPDES/stormwatercon.htm) is required to be used for construction site inspections (Part 4.2.4.4.1).

**Post-Construction Storm Water Management in New Development and Redevelopment**

As of May 11, 2010, rainwater harvesting is now legal in the state of Utah. Therefore the harvest and use of storm water has been included in this minimum control measure, specifically Parts 4.2.5.3.2 and 4.2.5.3.3.

The ordinance or other regulatory mechanism must include a provision for both construction-phase inspection and post-construction access for Permittees to inspect storm water BMPs on private properties that discharge to the MS4 as described in Part 4.2.5.5.1.

Retrofitting existing post-construction structural controls is addressed in Part 4.2.5.3.2.

Adequate training of all staff involved in Permitting, planning, and review is required in 4.2.5.6.

SWPPPs are required to be reviewed for long-term storm water management measures (post-construction) prior to construction (Part 4.2.5.4.1).
Although long-term operation and maintenance was addressed in the previous permit, Part IV.B.5.a.(12), further detail has been provided in this Permit. Structural BMPs shall be inspected at least once during installation (Part 4.2.5.5.2), inspected annually by the Permittee and maintained as necessary (4.2.5.5.3). The property owner/operator or third party may conduct an inspection in lieu of the Permittee through a maintenance agreement and with annual certification provided by the owner/operator or third party (Part 4.2.5.5.1). If an owner/operator or third party conducts operation and maintenance, through a maintenance agreement, the Permittee is required to verify and ensure proper maintenance of those structures at least once during the 5-year Permit term.

**Pollution Prevention and Good Housekeeping for Municipal Operations**

In April, 2010, EPA issued the “Municipal Separate Storm Sewer System Permit Improvement Guide” which contains much more descriptive requirements for the Pollution Prevention/Good Housekeeping Minimum Control Measure (MCM). Therefore, vehicle and equipment maintenance facilities covered under the MSGP will be covered under this reissued General Permit for Storm Water Discharges from Small MS4s. The SWPPPs generated for compliance for the MSGP must be updated to reflect the requirements of this permit. The Pollution Prevention/Good Housekeeping MCM has been restructured somewhat to accommodate the new EPA guidance and therefore many of the citations have changed.

Low impact development (LID) techniques should be considered for all new and redeveloped municipal facilities.

Permittee-owned facilities have weekly, quarterly comprehensive, and quarterly visual inspection requirements (Part 4.2.6.6.).

All Permittee-owned or operated storm water structural BMPs must be inspected annually to ensure that they are properly maintained to reduce the discharge of pollutants into receiving waters (Part 4.2.6.4.6).

**Reporting**

All Permittees must submit an annual report to the Division by October 1 following each year of the Permit term. The report must be submitted using the report form provided on the Division’s website, [http://www.waterquality.utah.gov/UPDES/stormwatermun.htm](http://www.waterquality.utah.gov/UPDES/stormwatermun.htm).

**Record Keeping**

The Permittee shall retain all required plans, records of all programs, records of all monitoring information, copies of all reports required by this Permit, and records of all other data required by or used to demonstrate compliance with this Permit, for at least five years as stated in Part 5.4.4. Some records, as in the case of common plans of development, may have to be retained longer than 5 years.

**Permit Duration**

This Permit will be effective for five (5) years.

**Public Notice and Public Comment Period**

The initial public notice period began on December 4, 2009 and ended on January 7, 2010. The public notice ran in the *Salt Lake Tribune* and the *Deseret News* and was also posted on the Utah Division of Water Quality’s Public Notice website at [http://www.waterquality.utah.gov/PublicNotices/index.htm](http://www.waterquality.utah.gov/PublicNotices/index.htm).

A second public notice period will begin on May 24, 2010 and end on June 24, 2010. The public notice will run in the *Salt Lake Tribune* and the *Deseret News* and will also be posted on the Utah Division of Water Quality’s Public Notice website at [http://www.waterquality.utah.gov/PublicNotices/index.htm](http://www.waterquality.utah.gov/PublicNotices/index.htm).
Comments Received and DWQ Responses

Please refer to the Utah Division of Water Quality’s Public Notice website at http://www.waterquality.utah.gov/PublicNotices/index.htm for the response to comments received from the initial public notice period (December 4, 2009 through January 7, 2010).
# SMITHFIELD CITY CHARACTERISTICS

## 2010-11 STORM SEWER DEPARTMENT BUDGET 53-5300

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<tr>
<td></td>
<td>a. Miscellaneous</td>
<td>350.00</td>
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<tr>
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<td>b. Billings</td>
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<td>c. Annual/permit</td>
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<td><strong>Subtotal</strong></td>
<td>1,150.00</td>
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<td>Stormwater Fair</td>
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<td>Professional &amp; Technical</td>
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<td>511</td>
<td>Auto/Property Insurance</td>
<td>293.16</td>
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<td>Miscellaneous Supplies</td>
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<td>Street Repair</td>
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<td>617</td>
<td>Collection Sys. Repair</td>
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<td>307.64</td>
<td>1,000.00</td>
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<tr>
<td></td>
<td>a. M.H. catch basin, edema box, cover</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>b. Miscellaneous</td>
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<td>Capital Improvements</td>
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<tr>
<td></td>
<td>a. Miscellaneous</td>
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</tr>
<tr>
<td></td>
<td>b. Contractor rehab, overhauling</td>
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<td></td>
<td>c. Alter E10 S 256 E cross-drain</td>
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<td>3,500.00</td>
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<td>d. Center St Intersection Improvements</td>
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<td>e. 250 East CAG</td>
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<td>North Main Detention Pond</td>
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<td>740</td>
<td>Equipment</td>
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<td>810</td>
<td>Sweeper Lease Principal Payment</td>
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<td>22,150.54</td>
<td>22,150.54</td>
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<td>820</td>
<td>Sweeper Lease Interest Payment</td>
<td>2,000.00</td>
<td>3,070.94</td>
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<tr>
<td></td>
<td><strong>Total</strong></td>
<td>183,327.47</td>
<td>98,047.79</td>
<td>154,598.11</td>
</tr>
<tr>
<td></td>
<td><strong>Contribution to Reserve</strong></td>
<td>0.00</td>
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<td>0.00</td>
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<tr>
<td></td>
<td><strong>GRAND TOTAL</strong></td>
<td>183,327.47</td>
<td>98,047.79</td>
<td>154,598.11</td>
</tr>
</tbody>
</table>

09/21/10
General Information

**Population:** 9,843  
**Size:** 4.92 sq. miles  
**Geographic Description:** 7 miles North of Logan. Located on the East side of Cache Valley with elevations varying between 4520 ft. to 4870 ft.

**Receiving Waters:** Smithfield is part of the recharge basin for the Bear River.  
**Annual Precipitation:** 17.36 inches per year  
**Type of Community:** A small rural city with high rates of residential growth that are expected to continue for many years.  
**Latitude:** 41.83° N  
**Longitude:** 111.82° W

*Storm Drain System*
The Smithfield storm water system consists of curb and gutters, culverts, a few typical piped sections, swales and canals. Most storm water facilities continue to drain into irrigation canals where they empty into Summit Creek, a natural waterway that empties into the Bear River or continue northward and eventually empty into the Bear River. The canals have served as the recipient for storm water flows since the city’s establishment. Continuing improvements and retention/detention controls exist within the system. Many of the streets use curb and gutter to collect storm water runoff with the remaining using swales or ditches.

*Storm Water Management Agreement*
Smithfield City is a partner in the Cache Stormwater Coalition a group of cities and canal companies that are eager to create a viable solution to the irrigation and Storm water concerns of the valley. This coalition is developing standards for the determining dry pond sizing as well as storm water release flows into canals and waters. Because of the TMDL that have been set for the Cutler Reservoir this coalition is also preparing to monitor, along with Logan City, the quality of the Canals. They are currently in the process of establishing a legal document to serve as a template whereby the irrigation companies may allow the municipalities to use their canals for storm water runoff. This document will define a relationship that allows the Irrigation Companies to maintain and regulate the canal while receiving revenue from the municipalities to offset costs of maintaining and operating the canals. The relationship allows for flexibility in the management of and responsibilities that pertain to the canals. The agreement will address responsibility for cases of flooding and accidents. It will also address additional storm water to be added to the system and the party that will give approval. This document will be helpful to many communities in establishing a Storm Water Management Agreement with the Irrigation Companies.

*Sewer System*
The city is served by a sanitary sewer system that is treated in Logan City. The city has an ordinance requiring any new development within 300 feet of the existing sanitary sewer to connect. There are some existing septic tank systems in the city and some new developments with septic tanks, but the trend is toward connecting to the sanitary sewer system as the network is enlarged.
**History**  
Smithfield, located in Cache County, is eight miles north of Logan. Smithfield was settled in October of 1859 by Seth Langton and by Robert and John Thornley. The first settlement was located approximately one-half mile west of the present site and was originally called Summit, because of its location on Summit Creek. The site was later renamed Smithfield after John Glover Smith in 1860.

The dairy industry is important to Smithfield, and in 1892 the Smithfield Dairy Company built its plant—which was later taken over by Sego Milk Products. In 1920 the Morgan Pea Factory began business and was later bought by Del Monte Foods; it has since been turned into a can-making factory. Some current businesses in Smithfield are Cantwell Brothers Lumber, Smithfield Livestock Auction, and Smithfield Implement.

Since the 1970’s, Smithfield has grown rapidly in population. Today, the city is a thriving mix of residential, commercial, industrial and agricultural prosperity.

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**Responsible Parties**

The Entire Smithfield Community, and its Citizens are responsible for stopping pollutants from entering the storm water system. However the Municipal employees have the duty to inform, educate, and rectify pollution problems. The following is a flow chart of the Storm Water responsible parties, followed by a brief description of each persons duties pertaining to the storm water management plan.
City Manager / City Council  
(Jim Gass 563-6226)

- Golf Course  
  Chad Daniels

- Public Works Coordinator  
  Doug Petersen 563-6068

- Police  
  Brenda Smith 563-8501

- Engineering  
  Clay Bodily 994-1233

- Storm Water Inspector  
  Kortney Hale 994-0647

- Storm Water Steering Committee

- Streets Lead  
  Lyle Izatt

- Water/ Sewer  
  Chris Seamons

- City Shop  
  Kevin Ogden 563-6068

City Manager  
Reports to City Council on storm water issues and storm water budget needs. This position in the storm water management plan is essential to make sure all storm water projects are approved, funded and coordinated between the different entities. The City Manager is able to consult with staff and the master plan documents to try and foresee and control structures that may be needed or resources that may help in storm water policy implementation. This position is the main step in ordinance origination, approval and ordinance enforcement. All Staff report to the person in this position and coordination is directed from here.

Public Works Coordinator  
This is the position that directs both labor and equipment resources to projects such as; storm water system improvements or existing BMP maintenance. This person arranges for training of public works employees on safety procedures and SOP’s. It is also the contact person for privately owned BMP’s to receive maintenance training and SOP’s. Complaints from the general population are rectified with plans implemented from the coordinator.

Engineering  
Provide maps and other pertinent data to assist in the maintenance of storm water structures, and other BMPs. This office is to attend training on new or recently updated storm water mandates and inform the Manager and Public works coordinator on any changes.
responsible to see that all permits, management plans and staff certifications are current and pertinent.

**Storm Water Inspector** This position is to be an inspector of all construction in the city. Sites that are larger than one acre are required to have a NOI with the state, the inspector for the city checks to see that they have a workable SWPPP and have the NOI. For lots smaller than an acre the inspector reviews their construction activity permit SWPPP and suggests changes. This person is not only an inspector for the city but is also expected to be a RSI with State training and certification.

**Police** Provide enforcement of city ordinances and prevent storm water violations.

**Steering Committee** A steering committee was formed in the spring of 2002 for the purpose of addressing any water quality issues and consider options to develop a storm water management structures and policies. The steering committee includes members from the community and staff including:

<table>
<thead>
<tr>
<th>Name</th>
<th>Representing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay Bodily</td>
<td>Assistant Engineer</td>
</tr>
<tr>
<td>Kortney Hale</td>
<td>Stormwater Inspector</td>
</tr>
<tr>
<td>Sherman Lewis</td>
<td>Resident/Retired SCS</td>
</tr>
</tbody>
</table>

**Minimum Control Measures**

- Best Management Practices (BMPs) for each of the *six* minimum control measures;
  1. Public Education and Outreach
  2. Public Participation/Involvement
  3. Illicit Discharge Detection and Elimination
  4. Construction Site Runoff Control
  5. Post-Construction Runoff Control
  6. Pollution Prevention/Good Housekeeping

- The columns of the MCM table are defined in the following bullets.

  - **MCM**, This column indicates which of the six minimum control measures the BMP applies to.
Target, The target pollutants and the target audience. Each of our BMPs is meant to reduce or control a specific pollutant and a specific group or individual currently attached to the pollutant.

Desired result, The outcome from addressing a specific pollutant and the associated group. Whether it is to reduce the pollutant or make the target group aware of said pollutant.

Measurable Goal, What criteria is used to measure if the BMP is working or needs to be changed.

Milestone, When should a particular BMP be in effect or evaluated to see if it meeting its intended purpose.

Associated BMP’s What other control measures would this BMP satisfy.

Effectiveness, Or measure of success. Should the BMP be changed, suspended or removed?

PUBLIC EDUCATION AND OUTREACH
(MCM 1)

Educational Materials
All cities in Cache County contract with Service Area #1 to provide garbage collection, waste services, and a recycling program. The Cache County Council serves as board for Service Area #1, which in turn contracts with Logan City Environmental Division to provide the services. There are educational materials covering subjects of recycling, waste reduction, and proper disposal that are available at the local landfill. (See Appendix D)

Recycling Facilitator
In contracting with Service Area #1 to provide waste services, a recycling program is included. There is a Recycling Facilitator who currently works with the local schools to teach about recycling and natural resources.

City used Media
Smithfield City was a website that is located at:
http://www.smithfieldcity.org

Information on how to reduce pollutants in storm water is to be included in the city newsletter twice a year. The newsletter is sent with utility bills monthly it informs the public of current issues and upcoming events.

<table>
<thead>
<tr>
<th>BMP's</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 1- Public Education and Outreach

<table>
<thead>
<tr>
<th>Building and Grounds Maintenance</th>
<th>BGM</th>
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<tbody>
<tr>
<td>Classroom Education on Storm Water</td>
<td>CESW</td>
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<tr>
<td>Educational Materials</td>
<td>EM</td>
</tr>
<tr>
<td>Housekeeping Practice</td>
<td>HP</td>
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<tr>
<td>Materials Use</td>
<td>MU</td>
</tr>
<tr>
<td>Public Education / Participation</td>
<td>PEP</td>
</tr>
<tr>
<td>Storm Drain System Signs</td>
<td>SDSS</td>
</tr>
<tr>
<td>Used Oil Recycling</td>
<td>UOR</td>
</tr>
<tr>
<td>Using Media</td>
<td>UM</td>
</tr>
<tr>
<td>Watershed Organization</td>
<td>WO</td>
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</table>

<table>
<thead>
<tr>
<th>MC</th>
<th>Target</th>
<th>Pollutant(s)</th>
<th>Audience(s)</th>
<th>Desired Result</th>
<th>Measurable Goal</th>
<th>Milestone Date</th>
<th>Associated BMPs</th>
<th>Measure of Success (Effectiveness)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Suspended solids, Phosphorus, nitrogen</td>
<td>Residents and Businesses</td>
<td>4.2.1.1 To educate audiences about impacts from storm water discharge</td>
<td>Newsletter</td>
<td></td>
<td>PEP and UM</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>All pollutants</td>
<td></td>
<td>Residents (4th graders)</td>
<td>4.2.1.1 To educate audiences on ways to avoid, minimize, and reduce impacts of storm water discharge</td>
<td>Continue storm water fair annually</td>
<td>Annually</td>
<td>PEP and CESW</td>
<td>Fair occurs annually</td>
</tr>
<tr>
<td>1</td>
<td>All pollutants</td>
<td></td>
<td>Residents and Businesses</td>
<td>4.2.1.1 To educate audiences on actions individuals can take to improve water quality</td>
<td></td>
<td></td>
<td>PEP and UM</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>See list in &quot;desired result&quot; column</td>
<td></td>
<td>General Public</td>
<td>4.2.1.2 Information is provided to target audience on prohibitions against illicit discharges and improper disposal of waste including: maintenance of septic systems; effects of outdoor activities, such as lawn care; benefits of on-site infiltration of storm water; effects of automotive work and car washing on water quality; proper disposal of swimming pool water; and proper management of pet wastes.</td>
<td>Include information on the website and include information in the city newsletter semi-annually.</td>
<td></td>
<td>PEP and UM</td>
<td>Information is current on website and included in city newsletter semi-annually.</td>
</tr>
<tr>
<td>1</td>
<td>See list in &quot;desired result&quot; column</td>
<td></td>
<td>Business and Institutions</td>
<td>4.2.1.3 Information is provided to target audience on prohibitions against illicit discharges and improper disposal of waste including: Benefits of on-site infiltration of storm water, building and equipment maintenance, use of salt or other deicing materials, proper storage of materials, proper management of waste materials and dumpsters, proper management of parking lot surfaces.</td>
<td>Include information on the website.</td>
<td></td>
<td>PEP and UM</td>
<td>Information links are current on website.</td>
</tr>
<tr>
<td>1</td>
<td>Illicit discharge and waste</td>
<td></td>
<td>Contractors, Developers, and plan review staff</td>
<td>4.2.1.4 Reduce adverse impacts from development sites</td>
<td>Have developers and contractors fill out a &quot;construction activity permit&quot; to inform them about pollutants.</td>
<td>Current</td>
<td>EM</td>
<td>Information packets are signed for every new development.</td>
</tr>
</tbody>
</table>
PUBLIC PARTICIPATION / INVOLVEMENT

(MCM 2)

Steering Committee
A “Storm Water Steering Committee” consisting of citizens and staff members was reformed in October of 2010 and has taken an active role in selecting the BMPs and developing the initial SWMP for the city.

Recycling Program
All cities in Cache County contract with Service Area #1 for waste management services, which include a recycling program. Logan City Environmental Division is contracted by Service Area #1 to provide services to the cities.

The program reduces solid waste by recycling and offers proper disposal options for hazardous wastes that can be difficult to dispose of, thereby preventing storm water contamination due to improper disposal of hazardous wastes and solids. The landfill accepts: cardboard, newspaper, aluminum cans, tin/steel cans, plastic pop bottles, plastic milk jugs, green waste, aluminum scrap,
ferrous metals, tires, used oil, oil filters, antifreeze, carpet pad, batteries, wood pallets, mixed paper on site for recycling.

Drop-sites have been set up throughout the county to facilitate recycling. The drop sites accept cardboard, newspaper, mixed paper, aluminum cans, tin/steel cans, plastic pop bottles, plastic milk jugs, glass, and green waste. The current drop-site for the city is located East of the Armory.

**Green Waste Collection**
A curbside green waste collection program exists from Smithfield to Providence. It is administered by the Logan environmental Division acting under contract for Service Area #1 who contracts with the individual cities of Cache County to provide waste services. The program currently has about 600 members who participate in a curbside pick up program for green waste recycling for a monthly fee. The Logan Landfill has a green waste facility where green waste can be dropped off and it is either composted or made into wood chips or firewood. The green waste facility encourages donations by offering $10 of compost or wood chip material for ten loads of compost materials dropped off. This program encourages reuse of an otherwise useless material that could become a solid contaminant in storm water. The two large community Green Bins are located on 800west and 56 North.

**Other Community Groups**
There are two other community groups that are actively engaged in protecting the local environment. They are "Friends of Smithfield Canyon" and "Birch Creek Golf Course Volunteer Cleanup Committee".

**Birch Creek Golf Course Cleanup**
Every spring, a community volunteer group of golfers pick up trash around the golf course.

<table>
<thead>
<tr>
<th>BMP's</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2- Public Participation/Involvement</td>
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<tr>
<td>Community Cleanup</td>
<td>CC</td>
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<tr>
<td>Community Hotline</td>
<td>CH</td>
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<tr>
<td>Watershed Organization</td>
<td>WO</td>
</tr>
<tr>
<td>Service Group Participation</td>
<td>SGM</td>
</tr>
<tr>
<td>Storm Channel / Creek Maintenance</td>
<td>SCCM</td>
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<tr>
<td>Stream Cleanup and Monitoring</td>
<td>SCM</td>
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</tbody>
</table>
ILLICIT DISCHARGE DETECTION AND ELIMINATION
(MCM 3)

Summary of Existing Efforts

Illicit Discharge
Smithfield City currently has an ordinance designed to specifically prohibit illicit discharges to the storm sewer system. The ordinance number is 13.24.

Hazardous Spills
Currently, reports of spills are handled by the Fire Department, Logan Service Center or County Health Department.

The City has not generally experienced problems with individuals or businesses illicitly connecting their sanitary waste water piping to storm drains. More-common types of illicit discharges include spills from highway accidents, concrete truck wash out water, and general household waste.

Storm Water System Map
A map of the current collection System and a separate map of city outfalls into canals and Sumitt Creek have been printed out and are also available from the Engineering department. See Appendix E.
<table>
<thead>
<tr>
<th>Pollutant(s)</th>
<th>Audience(s)</th>
<th>Desired Result</th>
<th>Measurable Goal</th>
<th>Milestone Date</th>
<th>Associated BMPs</th>
<th>Measure of Success (Effectiveness)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Pollutants</td>
<td>Contractors, Developers, City Council</td>
<td>4.2.3 Enforcement ability for storm water rules</td>
<td>Review and update the ordinance to conform with new permit</td>
<td>Draft by Aug 2011 &amp; Final Feb 2012</td>
<td>OD</td>
<td>If ordinance is in place and meets the permit requirements</td>
</tr>
<tr>
<td>N/A</td>
<td>Public Works</td>
<td>4.2.3.1 Maintain Storm Water Map</td>
<td>Establish policy to maintain a Current SD System Map on all new developments within 6 months</td>
<td>Completed by July 1, 2011</td>
<td>MSWD</td>
<td>If policy is in place and meets the permit requirements</td>
</tr>
<tr>
<td>All Pollutants</td>
<td>All Audiences</td>
<td>4.2.3.2 Develop, implement, and prepare in writing a plan to detect and address non-SW discharges</td>
<td>Do Dry weather screening 20% of all outfalls each year</td>
<td>Completed by July 1, 2012</td>
<td>NSWD</td>
<td>Successful if all screens are done</td>
</tr>
<tr>
<td>All Pollutants</td>
<td>All Audiences</td>
<td>4.2.3.5 Develop and implement standard operating procedures for characterizing the nature of any illicit discharges found or reported to the Permittee by the hotline developed in 4.2.3.9</td>
<td>Create the Incidence Response Flow Chart and train personnel</td>
<td>Completed by July 1, 2011</td>
<td>IIC, CH</td>
<td>Successful if completed by that date and staff is following Flow Chart</td>
</tr>
<tr>
<td>All Pollutants</td>
<td>All Audiences</td>
<td>4.2.3.6 Develop and implement standard operating procedures for ceasing the illicit discharge</td>
<td>Create the Incidence Response Flow Chart and train personnel</td>
<td>Completed by July 1, 2011</td>
<td>IDC, ISDC</td>
<td>Successful if training is completed annually for all staff involved in incident reporting.</td>
</tr>
<tr>
<td>All Pollutants</td>
<td>Public Employees, Businesses and Residents</td>
<td>4.2.3.7 Inform public employees, businesses, and general public of hazards associated with illicit discharges and improper disposal of waste</td>
<td>See MCM 1</td>
<td></td>
<td>PEP, ET</td>
<td>See MCM 1</td>
</tr>
</tbody>
</table>
### CONSTRUCTION SITE RUNOFF CONTROL
(MCM4)

#### Summary of Existing Efforts

**Ordinances**
The current ordinance 13.24 defines and restricts storm water activities in Smithfield City.

**Site Plan Review**
There is currently a construction Activity permit required for all construction requiring a permit or approval. The inspector reviews the SWPPP included in this application before the permit is issued or construction begins.

**Site Inspector**
There is currently one public works inspector who oversees local construction. He is concerned with sewer connections, storm drain and streets. The inspector makes decisions and recommendations using good judgment of what proper construction techniques are. The inspector may also require contractors to clean up streets and supplemental BMPs to reduce any contamination sources.

**Standard Drawings and Specifications**
The city is reviewing and refining their set of standard drawings and specifications.
<table>
<thead>
<tr>
<th></th>
<th>Sediment, Construction Site Debris, Hydrocarbons</th>
<th>Contractors and Developers</th>
<th>4.2.4.1 Raise awareness of contractors and developers on what is expected on construction sites</th>
<th>Require a SWPPP for every construction site over one acre, or if part of a common plan of development.</th>
<th>Feb. 2012</th>
<th>OD</th>
<th>Successful if 95% of all active construction sites have a working SWPPP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sediment, Construction Site Debris, Hydrocarbons</td>
<td>Contractors and Developers</td>
<td>4.2.4.2 Develop a written enforcement strategy and implement the enforcement provisions of the ordinance or other regulatory mechanism</td>
<td>Draft ordinance to include escalating enforcement provisions</td>
<td>July, 2011</td>
<td>OD</td>
<td>Successful if completed by milestone</td>
</tr>
<tr>
<td></td>
<td>Sediment, Construction Site Debris, Hydrocarbons</td>
<td>Contractors and Developers, City Council, Plan Reviewers</td>
<td>Have an ordinance that is meaningful and enforceable</td>
<td>Revise ordinance to require a SWPPP or Construction Activity Permit on every site.</td>
<td>Current</td>
<td>OD</td>
<td>If ordinance is in place and meets the permit requirements</td>
</tr>
<tr>
<td></td>
<td>Sediment, Construction Site Debris, Hydrocarbons</td>
<td>Contractors and Developers</td>
<td>4.2.4.3 Develop and implement SOP’s for pre-construction SWPPP review for construction sites</td>
<td>Develop checklist and begin to do preconstruction reviews of SWPPP</td>
<td>Current</td>
<td>ECP</td>
<td>Successful if we are conducting SWPPP reviews</td>
</tr>
<tr>
<td></td>
<td>*</td>
<td>*</td>
<td>4.2.4.3.1 Conduct a pre-construction meeting</td>
<td>Hold Pre-con meetings on all sites greater than 1 acre or as part of common plan of development</td>
<td>Immediately</td>
<td>ECP</td>
<td>Successful if we are conducting Pre-con meetings</td>
</tr>
<tr>
<td></td>
<td>*</td>
<td>*</td>
<td>4.2.4.3.2 Incorporate into the SWPPP review procedures the consideration of potential water quality impacts and procedures for pre-construction review which shall include the use of a checklist.</td>
<td>Develop a policy to consider potential water quality impacts on all projects - private or municipal</td>
<td>Feb. 2012</td>
<td>ZO</td>
<td>Create SWPPP Checklist including water quality impacts.</td>
</tr>
<tr>
<td></td>
<td>*</td>
<td>*</td>
<td>4.2.4.3.3 Incorporate into the SWPPP review procedures for an evaluation of opportunities for use of Low Impact Development (LID) and green infrastructure and when the opportunity exists, encourage such BMPs to be incorporated into the site design.</td>
<td>Develop a policy to consider Low Impact Development practices on all projects - private or municipal</td>
<td>Feb. 2012</td>
<td>ZO</td>
<td>Successful if we have post construction BMPs on 50% of projects</td>
</tr>
<tr>
<td></td>
<td>*</td>
<td>*</td>
<td>4.2.4.3.4 Identify priority construction sites, including at a minimum those construction sites discharging directly into or immediately upstream of waters that the State</td>
<td>Develop a “sensitive area” map showing areas within the city where “additional” protection may be desired</td>
<td>July, 2011</td>
<td>LIP</td>
<td>Successful when map is completed and ready for use</td>
</tr>
<tr>
<td></td>
<td>Sediment, Construction Site Debris, Hydrocarbons</td>
<td>Contractors and Developers</td>
<td>4.2.4.4.1 Inspections of all new construction sites ... at least monthly by qualified personnel</td>
<td>Conduct monthly inspections of all construction sites - Emphasize self inspections - sensitive areas to be inspected twice monthly</td>
<td>Feb. 2012</td>
<td>CCIT</td>
<td>Successful if 90% of all active construction sites are inspected monthly</td>
</tr>
<tr>
<td></td>
<td>*</td>
<td>Contractors, developers and MS4 staff</td>
<td>4.2.4.5 Provide training to city staff and 3rd party designers</td>
<td>Develop a city policy to require all SWPPP inspectors to be RSI inspectors within 12 months</td>
<td>Current</td>
<td>CCIT</td>
<td>Successful if completed by milestone</td>
</tr>
<tr>
<td></td>
<td>*</td>
<td>Contractors, developers and MS4 staff</td>
<td>4.2.4.4.2 ...The Permittee must include in its SWMP document a procedure for being notified by construction operators/owners of their completion of active construction so that verification of final stabilization and removal of all temporary control measures may be conducted.</td>
<td>Develop a written Notice of Termination process for use within the city</td>
<td>Feb. 2012</td>
<td>ECP</td>
<td>Successful if 95% of all active construction sites are terminated appropriately</td>
</tr>
<tr>
<td></td>
<td>*</td>
<td>Contractors, developers and MS4 staff</td>
<td>“</td>
<td>Train SWPPP inspectors, their supervisors, and any personnel who grant final occupancy permits on the NOT process</td>
<td>Feb. 2012</td>
<td>ECP</td>
<td>Successful if 95% of all active construction sites are terminated appropriately</td>
</tr>
</tbody>
</table>
### POST CONSTRUCTION RUNOFF CONTROL
(MCM 5)

#### Landscaping Plan Review
Developers are required to present a plan outlining landscaping plans to the city.

<table>
<thead>
<tr>
<th>Pollutant(s)</th>
<th>Audience(s)</th>
<th>Permit Reference/Desired Result</th>
<th>Measurable Goal</th>
<th>Milestone Date</th>
<th>BMP Assoc.</th>
<th>Measure of Success (Effectiveness)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>All Audiences</td>
<td>4.2.5.1. Develop and adopt an ordinance or other regulatory mechanism that requires long-term post-construction storm water controls at new development and redevelopment sites. (4.2.5.3.1 for flood control structure issues and 4.2.5.3.2 for LID)</td>
<td>Review existing ordinance to determine if it meets requirements of new permit - Use checklist from coaching sessions</td>
<td>March, 2011</td>
<td>OD</td>
<td>If review is complete</td>
</tr>
<tr>
<td>*</td>
<td>*</td>
<td>4.2.5.2.2 Documentation on how the requirements of the ordinance or other regulatory mechanism will protect water quality and reduce the discharge of pollutants to the MS4.</td>
<td>Draft a standard to require contractors and developers to submit documentation on: how long-term BMPs were selected, pollutant removal expected from the BMP, and technical basis supporting performance claims</td>
<td>July, 2011</td>
<td>IPL</td>
<td>If draft is completed by the milestone date</td>
</tr>
<tr>
<td>*</td>
<td>*</td>
<td>4.2.5.3.3 The Permittee must develop a plan to retrofit existing developed sites that are adversely impacting water quality.</td>
<td>Update Storm Drain Master Plan and Capital Improvement Plan to include Water Quality components</td>
<td>Dec. 2014</td>
<td>IPL</td>
<td>If CIP includes water quality projects</td>
</tr>
<tr>
<td>MS4 Staff, City Council</td>
<td>*</td>
<td>4.2.5.3.4 Each Permittee shall develop and define specific hydrologic method or methods for calculating runoff volumes and flow rates...</td>
<td>Review existing design standards to see if they meet new permit requirements - see section 4.2.5.3.4</td>
<td>June, 2011</td>
<td>IPL</td>
<td>If standards have been reviewed and comments made</td>
</tr>
<tr>
<td>MS4 Staff, Contractors and Developers</td>
<td>*</td>
<td>4.2.5.4.1 Review Storm Water Pollution Prevention Plans (SWPPPs)</td>
<td>See goals for MCM 4</td>
<td>Dec. 2011</td>
<td>IPL</td>
<td>If updated standards have been adopted</td>
</tr>
<tr>
<td>#</td>
<td>Issuer</td>
<td>Action</td>
<td>Title</td>
<td>Date</td>
<td>Target Milestone</td>
<td>Notes</td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td>5</td>
<td>*</td>
<td>*</td>
<td>4.2.5.4.2 Permittees shall provide developers and contractors with preferred design specifications to more effectively treat storm water for different development types...projects located in, adjacent to, or discharging to environmentally sensitive areas.</td>
<td>Review map of sensitive areas and identify preferred method(s) of treating storm water to discharge to those areas</td>
<td>July, 2011</td>
<td>IPL</td>
</tr>
<tr>
<td>5</td>
<td>*</td>
<td>*</td>
<td>Update design standards to contain information on treating storm water for various project types that discharge to sensitive lands.</td>
<td></td>
<td>Dec. 2012</td>
<td>IPL</td>
</tr>
<tr>
<td>5</td>
<td>*</td>
<td>*</td>
<td>Keep a revision log for information in Appendix A - Supplemental Guide to Contractors and Developers</td>
<td></td>
<td>July, 2011</td>
<td>EM</td>
</tr>
<tr>
<td>5</td>
<td>*</td>
<td>*</td>
<td>Log name and date of distribution of Supplemental Guide to Contractors and Developers</td>
<td></td>
<td>July, 2011</td>
<td>EM</td>
</tr>
<tr>
<td>5</td>
<td>*</td>
<td>*</td>
<td>Review and customize SOPs for inspection and enforcement of post-construction control measures</td>
<td></td>
<td>July, 2011</td>
<td>LIP</td>
</tr>
<tr>
<td>5</td>
<td>*</td>
<td>*</td>
<td>Draft a maintenance agreement template</td>
<td></td>
<td>July, 2011</td>
<td>BMPIM</td>
</tr>
<tr>
<td>5</td>
<td>*</td>
<td>*</td>
<td>Adopt a maintenance agreement template</td>
<td></td>
<td>Dec, 2011</td>
<td>BMPIM</td>
</tr>
<tr>
<td>5</td>
<td>*</td>
<td>*</td>
<td>Inventory post-construction BMPs - see 4.2.5.7.1 for inventory inclusion items</td>
<td></td>
<td>March, 2011</td>
<td>BMPIM</td>
</tr>
<tr>
<td>5</td>
<td>*</td>
<td>*</td>
<td>Identify who is responsible to inspect and/or maintain each post-construction BMP</td>
<td></td>
<td>July, 2011</td>
<td>BMPIM</td>
</tr>
<tr>
<td>5</td>
<td>*</td>
<td>*</td>
<td>Develop inspection report form for post-construction BMPs</td>
<td></td>
<td>July, 2011</td>
<td>BMPIM</td>
</tr>
<tr>
<td>5</td>
<td>*</td>
<td>*</td>
<td>Conduct inspections annually for city owned BMP’s</td>
<td></td>
<td>Ongoing</td>
<td>BMPIM</td>
</tr>
<tr>
<td>5</td>
<td>*</td>
<td>*</td>
<td>Conduct inspections on privately owned BMP’s at least 20% per year</td>
<td></td>
<td>Ongoing</td>
<td>BMPIM</td>
</tr>
<tr>
<td>5</td>
<td>MS4 staff</td>
<td>*</td>
<td>4.2.5.6. Permittees shall provide adequate training for all staff involved in post-construction storm water management, planning and review, and inspections and enforcement.</td>
<td>Schedule and conduct training for appropriate personnel</td>
<td>Annually</td>
<td>BMPIM</td>
</tr>
</tbody>
</table>
## POLLUTION PREVENTION / GOOD HOUSEKEEPING (MCM 6)

### Recycling Program
The City participates in a recycling program.

### Educational Materials
The City has educational materials.

### Green Waste Collection
The City has a Green Waste Collection program

### Operations
Salt is stored under cover to prevent contamination of storm water and other areas.

<table>
<thead>
<tr>
<th>MCM</th>
<th>Target</th>
<th>Desired Result</th>
<th>Measurable Goal</th>
<th>Milestone Date</th>
<th>Assoc.</th>
<th>Measure of Success</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>All pollutants</td>
<td>M54 staff</td>
<td>4.2.6. All components of an O &amp; M program shall be included in the SWMP document and must identify the department (and where appropriate, the specific staff) responsible for performing each activity described in this section.</td>
<td>Complete Org chart and define specific responsibilities for all departments shown</td>
<td>Jan. 2011</td>
<td>HP</td>
</tr>
<tr>
<td>6</td>
<td>&quot;</td>
<td>&quot;</td>
<td>4.2.6.1. Permittees shall develop and keep current a written inventory of Permittee-owned or operated facilities</td>
<td>Complete listing of M54 owned/operated facilities</td>
<td>Dec. 2010</td>
<td>HP</td>
</tr>
<tr>
<td>6</td>
<td>&quot;</td>
<td>&quot;</td>
<td>4.2.6.2. All Permittees must initially assess the written inventory of Permittee-owned or operated facilities, operations and storm water controls identified in Part 4.2.6.1. for their potential to discharge to storm water the following typical urban pollutants:</td>
<td>Complete assessments and identify &quot;high priority&quot; facilities</td>
<td>Feb. 2011</td>
<td>HP</td>
</tr>
<tr>
<td>6</td>
<td>&quot;</td>
<td>&quot;</td>
<td>4.2.6.4. Each &quot;high priority&quot; facility identified in Part 4.2.6.3. must develop facility-specific standard operating procedures (SOPs) or similar type of documents.</td>
<td>Review, customize and update appropriate SOPs</td>
<td>July, 2011</td>
<td>HP</td>
</tr>
<tr>
<td>6</td>
<td>&quot;</td>
<td>&quot;</td>
<td>4.2.6.6.1 Weekly visual inspections: The Permittee must perform weekly visual inspections of &quot;high priority&quot; facilities in accordance with the developed SOPs to minimize the potential for pollutant discharge.</td>
<td>Develop weekly inspection form and log</td>
<td>July, 2011</td>
<td>HP</td>
</tr>
<tr>
<td>6</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>Conduct weekly inspections</td>
<td>Ongoing</td>
<td>HP</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4.2.6.6.2 Quarterly comprehensive inspections: At least once per quarter, a comprehensive inspection of “high priority” facilities, including all storm water controls, must be performed</td>
<td>Develop quarterly inspection form(s) and log</td>
<td>July, 2011</td>
<td>HP</td>
</tr>
<tr>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Conduct quarterly comprehensive inspections</td>
<td>Ongoing</td>
<td>HP</td>
<td>If at annual review all quarterly inspections are logged and reports completed</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>4.2.6.3 Quarterly visual observation of storm water discharges: At least once per quarter, the Permittee must visually observe the quality of the storm water discharges from the “high priority” facilities</td>
<td>Conduct quarterly visual observations of storm water discharges at high priority facilities</td>
<td>Ongoing</td>
<td>HP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MS4 Staff, Contractors and Developers</td>
<td>4.2.6.7. The Permittee must develop and implement a process to assess the water quality impacts in the design of all new flood management structural controls that are associated with the Permittee or that discharge to the MS4.</td>
<td>Draft a policy/process to assess water quality impacts on all new flood control projects</td>
<td>July, 2011</td>
<td>IPL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Get policy approved</td>
<td>Dec. 2011</td>
<td>IPL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M54 staff</td>
<td>4.2.6.7.1 Existing flood management structural controls must be assessed to determine whether changes or additions should be made to improve water quality</td>
<td>See MCM 5 for goals (part of the retrofit program)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4.2.6.9. Permittees shall provide training for all employees who have primary construction, operation, or maintenance job functions that are likely to impact storm water quality.</td>
<td>See individual training goals within other MCMs</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Develop a training schedule</td>
<td>July, 2011</td>
<td>EM, HP</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Conduct ongoing training according to schedule</td>
<td>Ongoing</td>
<td>EM, HP</td>
</tr>
</tbody>
</table>

**APPENDIX A**

*Developers And Contractors*

* Design Methods and Considerations
* SWPPP Review Criteria / applicability checklist
* Non-City owned BMP’s
  o Maintenance Agreement Draft
  o Inspection Authority Easement
* Copy of inspection Forms
  o Inspection Frequency
  o State inspection Forms (Required for areas greater than 1 acre)
  o Smithfield City (Construction Activity Permit)

Design Standards and Specifications

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These standards cover the criteria and methodology to be utilized by the designers in the design, planning, evaluation, and reports associated with the design of storm water and related irrigation facilities. Any
deviations from these criteria must be approved by the City Engineer in writing prior to initiating and again before finalizing the design. Where any deviations may also affect a canal company, a written approval of the canal company will also be required.

All designs completed must utilize and comply with the most current edition of the City Standards and Specifications.

**Definitions**

**Certified Percolation Test:** A saturated soil percolation test completed in accordance with Utah Administrative Rule, R317-4-5 with the exception that the test shall extend 2.0 feet below the bottom of the proposed invert of the pond. These tests shall be done in accordance with the certification requirements by a “qualified individual” as defined in R317-11.

**Detention:** The detaining or holding of water on site and releasing the water from the site into a pipeline, channel, or other water bodies at a slower rate than would otherwise occur.

**DEQ:** Utah Department of Environmental Quality

**Detention Basin:** A pond or basin, either above ground or below, that catches the storm water runoff from a contributing area and uses the detention process.

**DWQ:** Utah Division of Water Quality, a division of the DEQ.


**EPA:** United States Environmental Protection Agency


**HISTORICAL RUNOFF FLOW:** The runoff that has historically flowed off of a given piece of land in the specified storm frequency and duration prior to development. Table VIII-1 lists the SCS curve numbers used to calculate the historic runoff for areas above the Logan Hyde Park Smithfield Canal and for areas below the Logan Hyde Park Smithfield Canal. The historic (pre-development) condition used for the area above the Logan Hyde Park Smithfield Canal is non-cultivated pasture or range land in good condition. The historic (pre-development) condition for the areas below the Logan Hyde Park Smithfield Canal is cultivated agricultural land with straight row small grain crops in good condition.

**NOI:** A notice of intent to construct permit obtained from the DWQ which is required for all construction on areas greater than or equal to 1.0 acres.

**NOT:** A notice of termination to construction submitted to the DWQ upon the stabilization of 70 percent of the project site that required a NOI.

**PWD:** Public Works Department

**Retention:** The retaining or keeping of water on site and preventing its release from the site by any method other than infiltration or evaporation.

**Retention Basin:** A pond that is built to capture and retain the design storm on site and dispose of it through infiltration.

**Return Frequency:** The frequency or likelihood of a storm of occurring. A 100-year storm has a one (1) percent chance of occurring in any given year while a 10-year storm has a ten (10) percent chance of occurring in any given year. This should never be interpreted as happening only once every 100 or 10 years for the two given examples.

**Spread Width:** The width of water flow as measured from the flow line of the gutter into the asphalt.

**Stream Alteration Permit:** A permit that is obtained through the Utah Division of Water Rights and is necessary anytime construction impacts a stream, wetland, riparian zone, or other water body defined as the waters of the U.S.
**Storm Event:** The event and hyetograph that define the design volume of precipitation, duration of the storm, intensity of the storm, and the pattern in which the precipitation falls.

**SWPPP:** A storm water pollution prevention plan which is required on any construction site.

**Underground Injection/Retention System:** A system designed to be fully underground and to dispose of water, entirely or in part, through infiltration. These require a special permit from the DWQ known as a Class 5 injection well permit.

**Underground Injection Well:** A facility, such as a pressured injection well, free draining injection well, sump, or other buried underground facility that infiltrates or injects surface water into the subsurface or groundwater system to eliminate surface runoff.

**Wetlands Mitigation, or 404, Permit:** A permit obtained through the US Army Corp of Engineers which allows the wetlands to be impacted and provides for required mitigation before the project can be approved.

---

**Design Requirements**

All projects, irrespective of the size or type, shall meet these requirements. Where projects are governed by a state or federal agency, their standards shall take precedence. All designs shall be in compliance with the City’s constructions standards and specifications.

Subsequent sections within this chapter identify the required methodology based upon the size and type of the project.

**Storm Event**

Design all storm water facilities associated with permanent new and re-development for the 100-year event. Design construction BMP’s for the 2 year storm. The storm duration is subject to the size of the contributing area and the project as discussed in Section C, Hydrologic Calculation.

Existing development shall be required to construct storm water facilities to detain and treat runoff anytime at the time of remodeling or reconstruction of any facilities under the same policy as the International Building Code. However, the return frequency and design duration may be modified under extreme conditions at the direction of the City Engineer with approval of the agency managing the receiving waters.

The storm water runoff leaving the site during the design storm is limited to the lesser of:

1. 0.2 cfs per acre, or
2. Discharge prior to development, current or pre-existing (Historical Runoff Flow).

Historical runoff flow values per acre of land within and around Logan, North Logan, Hyde Park and Smithfield are given on the attached map (Figure A). The map has been divided into runoff zones based on ground slope and soil-cover complexes. The curve numbers that are to be used are given Developments that cross runoff zone boundaries shall compute the total allowed run-off for the development by multiplying the acreage of the development that falls in each runoff zone, by the allowed runoff rate for that zone and adding those results together.

An electronic copy of the runoff zone map are available from PWD to assist in calculating the allowed runoff flow for developments.

Developers may choose to calculate the historic runoff flow from their development without the map but must use the following method and assumptions

- **Method of Calculation** - SCS
- **Design Storm** - 100-year 24-Hour Storm with SCS Type II Distribution
- **Curve Numbers** - See Table VIII-1 below.

**Table VIII-1, SCS Runoff Curve Numbers for Historic Flow Calculations Soil-Cover Complexes**
<table>
<thead>
<tr>
<th>Land Area</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above (North and East of) the Logan Hyde park</td>
<td>39</td>
<td>61</td>
<td>74</td>
<td>80</td>
</tr>
<tr>
<td>Smithfield Canal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below (South and West of) the Logan Hyde Park</td>
<td>63</td>
<td>75</td>
<td>83</td>
<td>87</td>
</tr>
<tr>
<td>Smithfield Canal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Must pay for check

**Curb and Gutter Flow Design**

3. The flow depth in the gutter shall not be allowed to exceed the lesser of the top back of curb elevation (TBC) or the peak drive way approach elevation during the required storm event. This includes a combination of piping, curb and gutter, and ditches.

4. Where the flow depth is exceeded, storm drain inlets and a piped system shall be required and appropriate actions taken to eliminate overtopping of the curbs and flooding private property.

**Channel Design**

5. Channel side slopes shall not be steeper than 3:1 (H:V) unless they are concrete. Where they are incorporated into landscaping, flatter slopes shall be required. This will be evaluated on a case by case basis.

6. Channel velocities shall be slow enough to prevent scour, and where possible, facilitate further settlement of sediments unless the channel is used to deliver irrigation water as well. If the channel will also carry irrigation water, maintain velocities above 2 ft/sec if possible, but at no time exceed 4 ft/sec.

7. Where rip-rap is used, design shall be in accordance with EM-1110 from the US Army Corp of Engineers or HEC-11 from the Federal Highway Administration.

8. Free board on the channels shall be in compliance with the Bureau of Reclamation, Design of Small Canal Structures.

9. Channel maintenance easements shall be maintained as required in the City and Canal Company agreements.

**Pipe Design**

10. For storm water pipes, roughness coefficients listed in the table included in Section D of these standards that coincide with the accepted pipe materials in the City’s Standard Specifications, most current edition shall be used.

11. Maintain velocities in the pipes at design flows sufficient to prevent sediment deposition and low enough to prevent scour damage to the pipe.

12. Pipe outlets shall have a flared end discharge unless more stringent methods of energy dissipation are required.

13. Minimum diameter of storm drains shall be:
   a. 12 inches for laterals
   b. 15 inches for trunk lines
   c. 18 inches under the UDOT right of way.
14. Pipe sizes shall not decrease in the downstream direction.
15. Maximum flow depth in the pipe during the design storm shall not exceed 0.85 times the diameter of the pipe.

Detention Basins

16. Detention basins, or other equivalent methods to limit the storm water release rate and improve the water quality when approved by the City Engineer, are required prior to discharge into any canal.
17. All detention basins shall be sized to meet the requirements of Section C of this chapter.
19. The maximum depth at the emergency overflow location of the pond shall be three feet plus one (1) foot of freeboard above the emergency overflow and a maximum water depth of three (feet) below the emergency overflow. All other ponds require special design, approval, and permitting including safety precautions on a case by case situation.
20. All ponds shall be stabilized with rocks or planted vegetation to prevent internal erosion. Vegetation or other stabilization must be maintained.
21. All ponds must have a water treatment method to prevent heavy sediment, floatable debris, or petroleum products from leaving the pond.
22. Where orifice and snouts are used, the orifice size is limited to not less than three (3) inches in diameter to prevent clogging.
23. Emergency overflows and the flow path of the overflows shall be mapped to natural streams, canals, or city approved drainage system for purpose of flood mapping using existing topographic mapping.
24. The emergency overflow shall be designed to pass the full 100 year event.
25. Other utilities (for example water lines, sewer lines, gas lines, power lines, phone lines, etc.) shall not be allowed through the detention pond or within 5 feet of the pond berms.
26. The invert or lowest point in the pond shall be not less than 12-inches above the existing or historical groundwater levels (whichever is higher).
27. The bottom of the pond shall be finished to maintain historical infiltration.

At Grade Retention Basins

28. All retention basins shall be sized to meet the requirements of Section C of this chapter and to contain 100 percent of project site runoff from the design storm.
29. Side slopes shall not be steeper than 3:1 (H:V).
30. The maximum depth of the pond shall be three feet plus one (1) foot of freeboard above the emergency overflow and a maximum water depth of three (feet) below the emergency overflow. All other ponds require special design, approval, and permitting including safety precautions on a case by case situation.
31. All ponds shall be stabilized with rocks or planted vegetation to prevent internal erosion. Vegetation or other stabilization must be maintained.
32. All ponds shall drain within 3 days (72 hours) from the end of the storm event. This is to be documented with a certified percolation test and documented in the soils report.
33. Emergency overflows and the flow path of the overflows shall be mapped for purpose of flooding.
34. The emergency overflow shall be designed to pass the full 100 year event.

35. Other utilities (for example water lines, sewer lines, gas lines, power lines, phone lines, etc.) shall not be allowed through the retention pond or within 5 feet of the pond berms.

36. The invert or lowest point in the pond shall be not less than 12-inches above the existing or historical groundwater levels (whichever is higher).

37. The bottom of the pond shall be finished to maintain historical infiltration.

**Underground Detention, Retention, and Injection Systems**

38. Underground retention and injections systems, including sumps, are not allowed in drinking water source protection zones.

39. All detention and retention basins are to be sized to meet all the requirements of Section B, Design Requirements of this chapter.

40. Underground systems shall provide adequate access points for cleaning and maintenance.

41. All systems shall drain by discharge (detention basins) or infiltration (retention basins) within 3 days (72 hours) from the end of the storm event. This is to be documented with a certified percolation test and documented in the soils report.

42. Sumps shall provide adequate water quality treatment to prevent contamination of the ground water aquifer.

43. Emergency overflows and the flow path of the overflows shall be mapped for purpose of flooding and flood insurance requirements.

44. The emergency overflow shall be designed to pass the full 100 year event.

45. Other utilities (for example water lines, sewer lines, gas lines, power lines, phone lines, etc.) shall not be allowed through or under the underground retention system.

46. Registration with the DWQ and a Class 5 Injection Well Permit are required for all underground systems.

**Water Quality/Treatment Requirements**

46. Water discharging from the project site shall not exceed 70 mg/L of total suspended sediments or increase the turbidity of the receiving waters by 10 NTU.

47. The treatment system shall remove oils, greases, and any other floatable petroleum products.

48. The treatment system and best management practices shall reduce the total phosphorus in the discharge to below 0.10 mg/L.

49. Total dissolved solids of the receiving waters must not be increased above 350 mg/L and the discharge water must not exceed 1000 mg/L.

50. All contaminants shall be stored to prevent impact by storm water and to contain any spilled materials on site. The location and methods of this storage shall be shown on the design plans.

51. The implementation of standard construction and post construction BMP’s have historically met or exceeded the water quality criteria listed above. In rare cases where these are insufficient, PWD reserves the right to monitor and require owners to implement a mitigation plan or pay appropriate fines.
Irrigation Canals and Systems

All irrigation canals, pipes, ditches, channels, structures, diversions, and other portions of the system shall be designed for the full range of base flows including historical maximum flows, historical minimum flows, and the full water right flow. Then the channel shall have the upstream storm drain inflows and irrigation return flows added to the model to ensure that all future systems have sufficient capacity. These design flows must to be approved by the associated canal company in writing and the City Engineer.

Storm Water Pollution Prevention Plan

Storm water pollution prevention plans (SWPPP) are required on all projects in City boundaries and every project must comply with City standards and specifications, whether approved by the PWD or not. Table VIII-2 summarizes the requirements of the SWPPP.

Table VIII-2, SWPPP Requirements

<table>
<thead>
<tr>
<th>Contributing Area Size</th>
<th>Minimum Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1.0 Acre</td>
<td>Erosion and sediment control plan, dust control plan, debris and garbage control plan, post construction BMPs, Inspection and maintenance plan, record keeping and training, and final stabilization. These can be on a standard design sheet as detailed notes with supporting details.</td>
</tr>
<tr>
<td>1.0 Acre and larger.</td>
<td>A full SWPPP using the EPA template downloadable from the DWQ at the following web site: <a href="http://www.waterquality.utah.gov/UPDES/stormwatercon.htm">http://www.waterquality.utah.gov/UPDES/stormwatercon.htm</a> (click on SWPPP Template (Word Doc)) The SWPPP shall include but not be limited to the following criteria: Maps and figures in the document must address construction sequence, total area of site and area to be disturbed, pre and post runoff analysis, identification of receiving waters, map of drainage patterns with outfall locations and downstream flow paths, locations of structural controls, and locations of equipment and material and chemical storage, and methods of containment. Additionally, the document must include a map identifying where each BMP is to be used and provide details for the implementation of the BMPs.</td>
</tr>
</tbody>
</table>

hydrologic calculation
Design Methodology
Numerous methodologies and hydrologic methods are available. While, in some cases, these other methods might provide a more favorable estimate, they are not acceptable to PWD unless approved by the City Engineer. Table VIII-3 summarizes the required methods based on the area contributing flows to the system, including offsite flows.

Table VIII-3, Hydrologic Methods Required

<table>
<thead>
<tr>
<th>Contributing Area (Acres)</th>
<th>Methodology Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1.0 Acre</td>
<td>Rational Method, Time of concentration = 10 minutes</td>
</tr>
<tr>
<td>1.0 Acre to 10.0 Acres</td>
<td>Rational Method, Time of concentration calculated.</td>
</tr>
<tr>
<td>Greater than 10.0 Acres</td>
<td>Subject to additional requirements of individual Cities. Each City has different hydrologic and hydraulic conditions. Verify with the City Engineer the methods and requirements prior to initiating projects.</td>
</tr>
</tbody>
</table>

Design Hyetographs
The design hyetographs to be used for each storm vary based on the size of the area being modeled and designed. Table VIII-4 summarizes the hyetograph which shall be used during the design.

Table VIII-4, Required Design Hyetograph

<table>
<thead>
<tr>
<th>Contributing Area (Acres)</th>
<th>Methodology Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1.0 Acre</td>
<td>Rational Method</td>
</tr>
<tr>
<td>1.0 Acre to 10.0 Acres</td>
<td>Rational Method</td>
</tr>
<tr>
<td>Greater than 10.0 Acres</td>
<td>SCS Type II Storm or other acceptable Hyetograph with special approval.</td>
</tr>
</tbody>
</table>

Design Frequency
All storm water calculations shall be based on the 100-year event within the City for subdivisions and contributing areas less than 640 acres (1 square mile). For areas larger than 640 acres, design shall address the 100-year, 50-year, 25-year, and 10-year events. Storm water BMP’s for use during construction shall be designed based on the 2-year 24 hour storm.

Design Duration
Design duration shall be based on the criteria summarized in Table VIII-5.

Table VIII-5, Required Design Durations for Storm Water Systems

<table>
<thead>
<tr>
<th>Larger of Contributing Area or Project Area (Acres)</th>
<th>Pipes, Channels, Inlet Spacing</th>
<th>Detention Ponds and Facilities</th>
<th>Retention Ponds and Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1.0 Acre</td>
<td>10 Minutes</td>
<td>24-hours</td>
<td>48-hours</td>
</tr>
<tr>
<td>1.0 Acre to 10.0 Acres</td>
<td>Calculated Time of Concentration</td>
<td>24-hours</td>
<td>48-hours</td>
</tr>
<tr>
<td>Greater than 10.0 Acres</td>
<td>Calculated Time of</td>
<td>24-hours</td>
<td>48-hours</td>
</tr>
</tbody>
</table>
The amount of rainfall and the intensity-duration tables for different rainfall events are included in Table VIII-6 and Table VIII-7 for use within the City. Data compatibility with PWD models is mandatory. This data is taken from the National Weather Service, Logan Radio KVNU site.

### Table VIII-6, Depth-Duration Summary Table, (KVNU) Logan Station (inches)

<table>
<thead>
<tr>
<th>ARI (Years)</th>
<th>5 min</th>
<th>10 min</th>
<th>15 min</th>
<th>30 min</th>
<th>60 min</th>
<th>120 min</th>
<th>3 hr</th>
<th>6 hr</th>
<th>12 hr</th>
<th>24 hr</th>
<th>48 hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0.14</td>
<td>0.21</td>
<td>0.26</td>
<td>0.34</td>
<td>0.43</td>
<td>0.55</td>
<td>0.64</td>
<td>0.87</td>
<td>1.15</td>
<td>1.46</td>
<td>1.68</td>
</tr>
<tr>
<td>10</td>
<td>0.23</td>
<td>0.35</td>
<td>0.44</td>
<td>0.59</td>
<td>0.73</td>
<td>0.88</td>
<td>0.98</td>
<td>1.28</td>
<td>1.64</td>
<td>2.04</td>
<td>2.33</td>
</tr>
<tr>
<td>25</td>
<td>0.31</td>
<td>0.47</td>
<td>0.58</td>
<td>0.78</td>
<td>0.96</td>
<td>1.13</td>
<td>1.23</td>
<td>1.56</td>
<td>1.98</td>
<td>2.41</td>
<td>2.75</td>
</tr>
<tr>
<td>50</td>
<td>0.37</td>
<td>0.57</td>
<td>0.70</td>
<td>0.94</td>
<td>1.17</td>
<td>1.36</td>
<td>1.45</td>
<td>1.79</td>
<td>2.24</td>
<td>2.71</td>
<td>3.08</td>
</tr>
<tr>
<td>100</td>
<td>0.45</td>
<td>0.68</td>
<td>0.85</td>
<td>1.14</td>
<td>1.41</td>
<td>1.61</td>
<td>1.71</td>
<td>2.05</td>
<td>2.52</td>
<td>3.02</td>
<td>3.42</td>
</tr>
</tbody>
</table>

### Table VIII-7, Intensity-Duration-Frequency, (KVNU), Logan Station (inches/hour)

<table>
<thead>
<tr>
<th>ARI (Years)</th>
<th>5 min</th>
<th>10 min</th>
<th>15 min</th>
<th>30 min</th>
<th>60 min</th>
<th>120 min</th>
<th>3 hr</th>
<th>6 hr</th>
<th>12 hr</th>
<th>24 hr</th>
<th>48 hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1.62</td>
<td>1.24</td>
<td>1.02</td>
<td>0.69</td>
<td>0.43</td>
<td>0.27</td>
<td>0.21</td>
<td>0.14</td>
<td>0.10</td>
<td>0.06</td>
<td>0.04</td>
</tr>
<tr>
<td>10</td>
<td>2.80</td>
<td>2.13</td>
<td>1.76</td>
<td>1.18</td>
<td>0.73</td>
<td>0.44</td>
<td>0.33</td>
<td>0.21</td>
<td>0.14</td>
<td>0.09</td>
<td>0.05</td>
</tr>
<tr>
<td>25</td>
<td>3.68</td>
<td>2.80</td>
<td>2.31</td>
<td>1.56</td>
<td>0.96</td>
<td>0.56</td>
<td>0.41</td>
<td>0.26</td>
<td>0.16</td>
<td>0.10</td>
<td>0.06</td>
</tr>
<tr>
<td>50</td>
<td>4.46</td>
<td>3.40</td>
<td>2.81</td>
<td>1.89</td>
<td>1.17</td>
<td>0.68</td>
<td>0.48</td>
<td>0.30</td>
<td>0.19</td>
<td>0.11</td>
<td>0.06</td>
</tr>
<tr>
<td>100</td>
<td>5.40</td>
<td>4.10</td>
<td>3.39</td>
<td>2.29</td>
<td>1.41</td>
<td>0.81</td>
<td>0.57</td>
<td>0.34</td>
<td>0.21</td>
<td>0.13</td>
<td>0.07</td>
</tr>
</tbody>
</table>

### Runoff Coefficients

PWD has established standard runoff coefficients that shall be used to ensure compatibility of results from the base model and each individual project. Calculations differing from these values shall be returned to the design professional for corrections.

#### Rational Method

Table VIII-8 identifies the rational equation runoff coefficients that shall be used.

### Table VIII-8, Required Runoff Coefficient

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rational Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>0.95</td>
</tr>
<tr>
<td>Concrete Pavement</td>
<td>0.95</td>
</tr>
<tr>
<td>Grassed Open Space (slopes less than 2 percent)</td>
<td>0.15</td>
</tr>
<tr>
<td>Grassed Open Space (slopes greater than 2 percent)</td>
<td>0.20</td>
</tr>
<tr>
<td>Graveled Areas</td>
<td>0.85</td>
</tr>
<tr>
<td>1) Residential Lots &lt;8000 sq-ft</td>
<td>0.70</td>
</tr>
<tr>
<td>1) Residential Lots, 8000 sq-ft to ¼ acre</td>
<td>0.50</td>
</tr>
<tr>
<td>1) Residential Lots, ¼ acre to ½ acre</td>
<td>0.45</td>
</tr>
<tr>
<td>1) Commercial Business Areas</td>
<td>0.75</td>
</tr>
<tr>
<td>1) Industrial Areas</td>
<td>0.85</td>
</tr>
</tbody>
</table>

1) Where the weighted values are less than these coefficients, or insufficient data is available outside of the project area, use these values. In no case will values less than the provided coefficients be used.
**SCS Method**

The SCS method, as developed in TR-55 by the Soil Conservation Service in the 1950s, requires more engineering interpretation than the rational method since it is also necessary to address the soil conditions, vegetative cover, and the antecedent soil condition (AMC) being evaluated. There are four primary soil conditions available in the SCS method, grouped as A, B, C, and D.

**Group A** soils typically are gravels and sands with fast infiltration rates and low runoff potential. While there are Group A soils on some of the benches and along the Logan river in some places, as soon as any landscaping with topsoil occurs, the stormwater benefit of these soils is lost. As a result, the Group A classification shall not be used.

**Group B** soils have moderate infiltration rates when wetted and consist of moderately well drained soils with moderately fine to coarse textures, typically without clay.

**Group C** soils have slow infiltration rates if thoroughly wetted and consist of soils that have a layer that impedes vertical infiltration.

**Group D** soils have a slow infiltration rate if thoroughly wetted and consist of clays, usually with high swelling potential, soils with a permanent high water table, soils with a clay pan or hard pan later near the surface, and shallow soils over an impervious material.

Soil maps and references available from the Natural Resource Conservation Service will identify the group associated with each soil class. HOWEVER, the designer needs to consider the effects of the final landscaping, such as the use of top soil, as part of his design.

In addition to the soil group, the antecedent moisture condition (AMC) must also be considered. For the average case, the SCS has defined AMC II to apply as the definition of the conditions preceding most annual floods. For this purpose, AMC II will be used for all PWD approved projects.

Upon selecting the soil group, the appropriate curve number can be selected from various standard references and text books. A common free reference is the HEC-HMS technical reference manual which can be downloaded from the Army Corp of Engineers HEC website.

**Time of Concentrations Calculations**

There are numerous equations for calculating the time of concentrations. While many may be applicable to various locations, Table VIII-9 identifies the methods that shall be used in determining the time of concentrations within the PWD areas.

<table>
<thead>
<tr>
<th>Larger of Contributing Area or Project Area (Acres)</th>
<th>Sheet Flow</th>
<th>Open Channel Flow</th>
<th>Piped Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1.0 Acre</td>
<td>Less than 10 min(^{1})</td>
<td>Less than 10 min(^{1})</td>
<td>Less than 10 min(^{1})</td>
</tr>
<tr>
<td>1.0 Acre to 10.0 Acres</td>
<td>Calculated per HEC-22</td>
<td>Calculated per HEC-22</td>
<td>Calculated per HEC-22</td>
</tr>
<tr>
<td>Greater than 10.0 Acres</td>
<td>Subject to City Requirements</td>
<td>Subject to City Requirements</td>
<td>Subject to City Requirements</td>
</tr>
</tbody>
</table>

\(^{1}\) For areas less than 1.0 acres, the total time of concentration adds to 10 minutes.

**Total Allowable Discharge Design Flows**

The total discharge design flows to be used for design shall be the combination of the allowable design storm flows and base flows which may include the maximum irrigation diversion based upon water rights, whether the existing facilities have sufficient capacity or not, and maximum return flows from sources upstream of the canal or irrigation ditch.

**Hydraulic calculations**

Hydraulic calculations shall be used for sizing pipes and open channels associated with the total design flows.
**Channel Design**
Channels shall be designed with a trapezoidal cross section using roughness coefficients associated with the final restored condition. The Manning’s equation methodology shall be used for sizing and considering the associated backwater impacts from downstream conditions. Computer software can be used to calculate the channel size, but sufficient data and results shall be provided to validate the procedure, assumptions, and conclusions.

**Pipe Design**
For design of pipes and culverts, the designer shall demonstrate that the pipes meet the standard design requirements using Manning’s equation for open channel flow and standard culvert calculation procedures to determine inlet and outlet control conditions. Full pipe flow designs are not allowed for gravity systems. For storm water pressure mains from pump stations, either the Hazen-Williams or Darcy-Weisbach equations will be allowed. Roughness coefficients and assumptions shall be in accordance with Table VIII-10 selected from various references.

**Table VIII-10, Mannings Coefficients for Pipe**

<table>
<thead>
<tr>
<th>Material</th>
<th>Roughness “n”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smooth Interior HDPE or ADS Pipe</td>
<td>.010</td>
</tr>
<tr>
<td>Corrugated Metal Pipe (CMP)</td>
<td>.024</td>
</tr>
<tr>
<td>Concrete</td>
<td>.013</td>
</tr>
<tr>
<td>PVC</td>
<td>.010</td>
</tr>
</tbody>
</table>

The design and sizing may be done manually or with the use of computer software. However the results must be provided as part of the submittal review process.

**Spread Width Calculations**
Spread width calculations and depth of flow in the gutters shall be completed in accordance with HEC-22 methodology developed by the Federal Highway Administration (FHWA). These calculations can be completed using numerous available software or manually. However, the calculations must be documented and provided to the City for review for the design storms.

**Detention and Retention Basin Designs**
Detention or retention basins shall be used to reduce the peak flow rates to meet the discharge requirements and to provide water quality improvements by detaining the water and settling sediments and other contaminants or by preventing the storm water from leaving the site. These basins shall be constructed as part of the individual development projects, both residential and commercial, and regional projects as outlined in the most current PWD storm water master plan.

**Detention Basins**
The detention requirements shall be calculated differently depending upon the size of the projects and the storm water contributing area as summarized by the Table VIII-10.

**Table VIII-10, Detention Basin Sizing Methodologies**

<table>
<thead>
<tr>
<th>Contributing Area Size</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1.0 Acre</td>
<td>Volume of runoff generated = volume of detention. This can be done with a simple spreadsheet.</td>
</tr>
</tbody>
</table>
| 1.0 Acre to 10 Acres   | Volume of runoff generated = volume of detention - discharge through the outlet. Spreadsheet routing of the hyetograph or the use of more sophisticated models are
Greater than 10 Acres | Subject to additional requirements by each City. For construction sites that are 10 acres or larger, sediment basins of 3960 cubic feet per acre are required by MS4 permits during construction.

The ponds shall be designed to meet all of the requirements in VIII.B.6. The outlets shall be modeled as a function of the depth of the ponds. In most cases, this results in a depth-discharge curve and a depth-storage curve being created for the ponds and used in routing the hyetographs. These curves shall be provided to the PWD for review as part of the calculations.

While the magnitude of flows from a storm larger than the design storm is unknown, the emergency overflows shall be sized sufficient to pass the full design storm to prevent jeopardy to the detention basin and provides for the normal outlet to fully fail, or a second design storm to occur prior to the basin fully draining.

As part of the design, a percolation test shall be completed at the site of the pond with the hole excavated to at least two feet below the design invert. As the hole is dug, the soils shall be logged and photographed, with particular care given to 1) when saturated soils were encountered, 2) the elevation of the water table, and 3) the presence of “mottling” in the soil showing the historical presence of groundwater. This information shall be used in establishing the final invert elevation as required in Section B.

**Retention Basins**

The retention requirements shall be calculated differently depending upon the size of the projects and the storm water contributing area as summarized by the Table VIII-11. All calculations for sizing shall be completed base on a time step not exceeding 15 minutes.

**Table VIII-11, Retention Basin Sizing Methodologies**

<table>
<thead>
<tr>
<th>Contributing Area Size</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1.0 Acre</td>
<td>Volume of runoff = volume of retention. This can be done with a simple spreadsheet.</td>
</tr>
<tr>
<td>1.0 Acre to 10.0 Acres</td>
<td>Volume of runoff generated = volume of retention. Spreadsheet routing of the hyetograph or the use of more sophisticated models are allowed.</td>
</tr>
<tr>
<td>Greater than 10.0 Acres</td>
<td>Subject to additional requirements by each City.</td>
</tr>
</tbody>
</table>

As part of the design, a percolation test shall be completed at the site of the pond with the hole excavated to at least two feet below the design invert. As the hole is dug, the soils shall be logged, with particular care given to 1) when saturated soils were encountered, 2) the elevation of the water table, and 3) the presence of “mottling” in the soil showing the historical presence of groundwater. This information shall be used in establishing the final invert elevation as required in Section B.

Since these ponds are dependent upon infiltration to dispose of the storm water, the designer shall designate methods of completion of the pond to maintain the infiltration rates determined by the certified percolation test. Note that where question of the effectiveness of the restoration and completion of the pond is present, the City may require the contractor to complete a new certified percolation test with a test hole not exceeding 6 inches to demonstrate the soil are not sealed by compaction.
Underground Retention and Injection Systems (Sumps)

Sumps, underground retention systems, and other underground injection systems are not allowed in drinking water source protection zones. Maps of these zones are available for review from the City Engineer. Additionally, all other locations are governed by the permitting requirements of the DWQ. Prior to submitting any designs for approval, the designer is expected to verify that location of the injection system is acceptable and obtain the Class 5 Injection Well Permit before any approvals will be granted.

Water Quality Treatment

All designs shall provide performance that will meet or exceed the more stringent requirements between the City, DWQ, and EPA. Best management practices (BMPs) for erosion and sediment control are acceptable as the primary treatment method with the appropriate documentation. These BMP’s may include but are not limited to: vegetated filter buffers, detention basins with outlet treatment such as floatable and sediment separation, retention basins, landscaping swells, engineered wetlands, or other acceptable methods.

Irrigation Base Flows

Every existing irrigation ditch or canal has played a part of the City storm water facilities from the settling of the community. When the canals were built, they delivered water from the river and intercepted storm water runoff from uphill naturally. However, when the canals flooded, there weren’t houses at risk back then. Now, with ongoing development, these conditions have changed. Design of storm drainage systems using the canals have special requirements as a result and must be approved by not only the City, but also the canal company serving the area of question.

Water Right Flows

The design flow will be the maximum flow allowed by the canal water rights. Flows down laterals and distribution ditches shall be obtained in accordance with the agreements between the Cities and the canal companies. Obtain the water righted flows and the lateral flows directly from the canal companies. These must be documented in a letter signed by an authorized canal company representative to be accepted by the City. Primary canal company contacts are available from the City.

Return Flows

Many of the canals receive return flows from the upstream canals. This can seriously complicate the storm water design since many people turn off their irrigation water and simply pass it down the ditch during storms. This can result in major flooding issues on some canals, even without any storm water entering the canals. When designing a section of the canal, it shall be necessary to take the return flows into consideration and to discuss them with the canal companies. Again, the agreed upon flows must be obtained in accordance with the canal agreements with the Cities.

Storm Water Pollution Prevent Plan

All elements of the EPA template available from the DWQ website must be met without respect for project size. However the details and format changes tremendously as discussed in item B.11 above. Many designers have an erosion control plan that can be easily modified to meet all of the requirements for sites less than 1.0 acre. However, for larger sites, the PWD requires the EPA template available from our website be used.

Storm Water Submittals

Submittals Required for Hydrologic Calculations

Every review package shall provide basic hydrologic calculations in accordance with the specific Cities. Check with the City prior to initiating the calculations.
Submittals Required for Water Quality/Treatment Requirements

The water quality control and treatment methods shall be defined in the SWPPP and on the plan sheets. The associated additional specifications shall provide sufficient information for the contractor to build the system and ensure that it will meet the required performance specifications.

Submittals Required for SWPPP

A completed SWPPP prepared in accordance with Section B.11 shall be submitted with the review package. For all construction sites 1.0 acre or larger, copies of the Notice of Intent (NOI) from the Utah Division of Water Quality shall be submitted. Additionally, copies of all additional permits which may be required for the project including stream alteration permits, wetlands permits, Class 5 injection well permits, groundwater discharge permits, etc., shall be included with the SWPPP.

(End of Design Standards)

SWPPP PRECONSTRUCTION REVIEW SOP

Name of Development______________________________________________________________

Developer______________________________________________________________ Phone:____________________________________

Responsible Contact________________________________________________________ Phone:____________________________________

Submittal Date _________________ Reviewed Date ____________ Reviewed by ______________________

References are given from both the Small MS4 General UPDES Permit (section 4.2) and the Construction General Permit (section 3.5).
Site Description

- Nature of activity or project – 3.5.1.a
- Intended sequence of major soil disturbing activities – 3.5.1.b
- Total area of site, area to be disturbed – 3.5.1.c
- Runoff coefficient – 3.5.1.d
  - Pre-construction
  - Post-construction
- General location map – 3.5.1.e
  - Existing drainage patterns and slopes
  - Final drainage patterns and slopes
  - Construction boundaries
  - Existing vegetation description
  - Areas of soil disturbance
  - Areas of no soil disturbance
  - BMP locations
  - Off-site areas used for construction support (may be non-applicable)
  - Final stabilization treatment
  - Discharge locations
- Description and location of discharges associated with off-site facilities (portable asphalt or concrete plants, stockpile areas, etc…) – 3.5.1.f
- Name and location of receiving waters – 3.5.1.g
- Area and boundary of any associated wetlands (may be non-applicable) – 3.5.1.g
- Copy of the current General Permit for Construction Activities

Erosion and Sediment Controls - 3.5.2.a.1

- Control measures for each major soil disturbing activity
  - Activity
  - Control Measure to be used
  - Timing
  - Installation details
  - Anticipated maintenance requirements

Stabilization Practices – 3.5.2.a.2

- Site specific stabilization
  - Interim stabilization practices – including timing
  - Permanent stabilization practices – including timing

Structural Controls - 3.5.2.a.3

- Flow control
  - Description of flow diversion BMPs
  - Description of flow storage BMPs
  - If site is 10 acres or more – Sediment Basin required
    - Basin sized for 3,600 cfs/acre or 10-yr 24 hour storm

Post-Construction BMPs – 3.5.2.b

- Description of how pollutants are controlled after construction. (ie. permanent detention or retention basins, flow attenuation swales, infiltration, combination of BMPs, etc.)
Technical basis for selecting post-construction BMPs

- Velocity dissipation devices at discharge points (as necessary)

Other Controls – 3.5.2.c
- Waste Disposal – location and practices to control
- Off-Site Tracking – off-site tracking and dust control
- Septic, Waste and Sanitary Sewer Disposal – location and practices to control
- Vehicle/Equip. maintenance areas and controls.
- Exposure to construction materials – inventory, storage practices, locations, spill response, and practices to control
- Off-site support area controls (if applicable)

Maintenance – 3.5.3
- Maintenance requirements and schedules
- Maintenance Agreements

Non-Storm Water Discharges – 3.5.5
- Identify non-storm water discharges that may be associated with project (water used to clean or flush improvements, etc…)
- Describe measures to be taken to implement pollution prevention for non-storm water discharges

Inspections – 3.5.4
- Inspection requirements (at least once every 7 days, or once every 14 days and within 24 hours after a storm of 0.5 inches or greater)
- Qualifications of the inspector
- Linear project inspection requirements (0.25 miles above and below each access point)
- Inspection report forms
  - Inspection date
  - Name, title and qualifications of inspector
  - Weather information since last inspection
  - Current weather information
  - Locations of pollutant discharges
  - Locations of BMPs needing maintenance
  - Locations of BMPs that aren’t working
  - Locations where additional BMPs are needed
  - Any corrective actions that may be required, including changes that need to be made to the SWPPP – with implementation dates
- Requirements to keep records as part of SWPPP for at least 5 years

II- Water Quality Review (4.2.4.3.2)
- Urban Pollutants of Concern
  - Sediments
  - Nutrients (Phosphorus, Nitrogen…)
  - Metals
- Hydrocarbons/oils
- Pesticides
- Chlorides
- Trash and Debris
- Bacteria
- Organics matter
- Others___________________

☐ Consider options to include water quality aspects to this project.
☐ Identify any highly impacted areas.
☐ Identify and limit directly connected impervious areas (DCIA) on this project.
☐ Identify measures to minimize runoff.

III- Low Impact Development Design (4.2.4.3.3)

☐ Identify any low-impact development concepts and ideas that might work for this project. Consider the following LID Techniques:
  - Bio-Retention Areas
  - Green Roof
  - Permeable Pavements
  - Rain Water Collection
  - Riparian Buffers
  - Green Street System
  - Non Structural

IV- Sensitive Areas (4.2.4.3.4)(3.5.2.d)

List any of the following within the proximity:
☐ Impaired water bodies
☐ High Quality Waters
☐ TMDL
☐ Wetlands
☐ Wildlife issues (Threatened & Endangered Species)
☐ Historic
☐ Priority Construction sites (7.36)
☐ Other___________________

Any variance of Permit___________________(End of SWPPP Review)

**Maintenance Agreement. (Guidelines to be adopted in Ordinance)**

(1) The owners with a record interest in the private drainage facilities specified (AT LOCATION) shall sign and record a covenant which runs with the land and requires the owners of the property, and their heirs, successors and assigns to maintain the drainage facilities. The covenant shall be in a form specified by the director. The restrictions set forth in such covenant shall include, but not be limited to a description of the owner’s maintenance responsibilities and obligations, the right of entry for
inspection by the county, and provisions for notice to the persons holding title to the property of a county determination that maintenance and/or repairs are necessary to the facility and a reasonable time limit in which such work is to be completed.

(2) If required maintenance has not been performed, the county may cause said maintenance to be done at the sole expense of the owner. The city shall endeavor to provide the property owner reasonable advance notification of the need to do the maintenance and a reasonable opportunity for the property owner to perform it. The property owner shall reimburse the city for the cost of performing maintenance which the owner has failed to perform in violation of this code. Payments shall be made within sixty days of the day the county submits a bill for costs. In the event of nonpayment, the city may bring suit to recover such costs, including its attorney’s fees, and upon obtaining a judgment, such amount shall become a lien against the property of the owner.

Smithfield City Smithfield Utah 84335

Department of Engineering GRANT OF STORMWATER Protection MANAGEMENT EASEMENT Parcel ID#____________ (Street Name or Location)
Smithfield City, Utah
Made this __________________ day of ______________________, 19 ____ , by and between ____________________________________________________________,
Grantor(s) and Smithfield City, Utah, hereinafter referred to as the City.
WITNESSETH: That in consideration of the sum of One Dollar (1.00) paid by the City, the receipt of which is hereby acknowledged, the Grantor(s) do hereby grant and convey to the City, its successors and assigns, a stormwater management easement and right-of-way described as follows:

EASEMENT

(Name of Property Owner), with land ownership in the City of Smithfield, further described as being in Cache County herein after referred to as GRANTOR, hereby grants and conveys the right to lay, construct, reconstruct, operate, maintain, replace and/or remove earth, conduits, concrete and other associated appurtenances in Smithfield City of which it is the Owner, bounded and described as follows, to wit: a parcel of land situated on the

(Location, Street Name).

Title to the aforesaid lands and premises was obtained by deed dated XX/XX/XX and recorded in Book XXX at Page XXX of the (City, County, or State) Land Records.

The above granted rights being more particularly described as the exclusive right to construct, reconstruct, operate, maintain, replace and/or remove earth, conduits, concrete and other associated appurtenances for a pond/ wetland/ treatment device/ channel rehabilitation measure/ other that is intended to reduce the level of pollutants and erosion entering (local water body). This pond/ wetland/ treatment device/ channel rehabilitation measure/ other may be monitored with the results being used to determine specific or overall effectiveness of the structural stormwater control present.

The area of easement shall be bound by XXX. An initial area of construction X feet on either side of this easement may be necessary for proper installation. This easement shall exist in perpetuity unless both parties agree upon a discontinuation of the easement.

The Grantor and any successors agree that they will not erect or permit any building upon said land area and upon said premises that will restrict access thereto for all the above purposes.

Smithfield City hereby for itself and its successors agrees

Storm Water
Inspections and Frequency’s

1. Any Land disturbance of over or equal to an acre needs SWPPP, needs an NOI, must be inspected every fourteen days, after a significant storm, and when project is completed it needs to be inspected to make sure it is ready for an NOT from the state.
2. If a project is less than one acre but part of a larger common plan of development or sale (lot in a larger subdivision.) it must be inspected once a month, and after a significant storm until completion of the project.

3. Inspect 20% of all outfalls in a calendar year so that in a five year span I will inspect all outfalls.

4. Inspect all high priority city owned facilities. Weekly do a quick inspection.

5. Inspect all high priority city owned facilities. Quarterly and do a full comprehensive inspection.
**Inspected By:**

**Existing Weather Conditions:**

**UPDES Permit #:**

**Start/End Time:**

**Permit Effective Date:**

**Permit Expiration Date:**

**Total Project Area:**

**Total Disturbed Area:**

**Describe present phase of construction:**

**Type of Inspection:**

- **Subdivision**
- **Commercial**
- **Industrial**
- **Linear (road/pipe/power)**
- **Land Disturbance**

**Reason for Inspection:**

- Scheduled
- Response to complaint/tip
- Random inspection

**List Receiving Waters:**

**Date of last rain event:**

**Duration:**

**Approximate Rainfall (in):**

**CONTACT INFORMATION**

<table>
<thead>
<tr>
<th>NAMES</th>
<th>PHONE NUMBERS</th>
<th>E-MAIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operator:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operator Co-permittee:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Onsite Facility Contact:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Important Contacts:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTICE OF TERMINATION (NOT)**

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

- Has the site been permanently stabilized according to permit requirements?
- Have all temporary BMP's been removed?
- Have post-construction elements been constructed in accordance with approved project drawings?
- Is the site acceptably clean?

**Municipal Inspector:**

**Signature:**

**EPA Form 3560-3 SEV Codes and Descriptions**

<table>
<thead>
<tr>
<th>CODE</th>
<th>DESCRIPTION</th>
<th>CODE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOR11</td>
<td>Discharge without a permit</td>
<td>BR19B</td>
<td>Failure to properly operate and maintain BMP's</td>
</tr>
<tr>
<td>DOR18</td>
<td>Failure to apply for a Notice of Termination</td>
<td>DOR12</td>
<td>Failure to submit required permit information</td>
</tr>
<tr>
<td>BOR12</td>
<td>Failure to conduct inspections</td>
<td>EOR16</td>
<td>Failure to submit required report (non-DMR)</td>
</tr>
</tbody>
</table>

**Available Single Event Violation Codes for WW Storm Water Construction**

(Attach additional sheets of narrative, pictures and checklists, including Single Event Violation codes, as necessary)
<table>
<thead>
<tr>
<th>SWPPP INFORMATION</th>
<th>YES</th>
<th>NO</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Has a pre-construction review of the SWPPP been conducted by the County or Local Jurisdiction? If yes, name the entity and person who performed the review in comments section. <em>(Check with Engineer)</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. During the pre-construction review, has the SWPPP been reviewed for post-construction elements? <em>(i.e. grass swales, permanent detention basins, etc.)</em> List all controls in comments section.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Is a SWPPP located on the construction site?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Is the SWPPP posted or easily accessible to inspectors?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Is a current NOI and copy of the State permit included with the SWPPP?</td>
<td></td>
<td></td>
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<tr>
<td>6. Are the names and telephone numbers of the current responsible contact people listed in the SWPPP?</td>
<td></td>
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</tr>
<tr>
<td>7. Did the “Operator” sign the SWPPP with authorization and certification statements?</td>
<td></td>
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<tr>
<td>8. Does the SWPPP contain the site description, sequence of construction activities, and areas of the site to be disturbed?</td>
<td></td>
<td></td>
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<tr>
<td>9. Does the SWPPP contain locations of storm drains, surface drainage patterns, and locations of storm water discharges?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Does the SWPPP include the site map, sediment, and erosion control design drawings, showing both structural and non structural BMPs?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Does the SWPPP and/or site map address waste control &amp; disposal, off site tracking, sanitary concerns, exposure to construction materials, laydown or storage areas, administrative trailers, etc.?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>BMP/HOUSEKEEPING INFORMATION</th>
<th>YES</th>
<th>NO</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Are all sediment &amp; erosion control BMP’s that are deployed on the site updated and marked on the site map? <em>(BMP’s that are no longer necessary should be crossed out and dated, new BMP’s drawn in and dated.)</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Does the SWPPP contain updated submittals, specifications, and engineering for BMPs (both structural and non-structural)?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Are on-site inspection reports included with the SWPPP? <em>(i.e. in compliance with state permit requirements)</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Are on-site inspections being performed by a qualified person on a bi-weekly basis and within 24 hours after a measurable weather event, and/or at the required interval identified in the SWPPP?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5. Have all on-site corrective action items from previous inspections been addressed and documented within the timeframe allotted by the inspector?

6. Are off-site flows entering the construction site?

7. Is there evidence of, or the potential for, increased pollutant (i.e., sediment, fuel, concrete waste, portable toilet waste, etc.) loading to enter the storm water conveyance system as a result of the lack of maintenance or improper BMP installation?

8. Are construction products, chemicals, and supplies managed properly with good housekeeping, pollution prevention, and proper waste management?

9. Have any areas been left dormant, disturbed, and exposed for more than 14 to 21 days without stabilization (except for snow cover or frozen ground)?

10. Does repair/maintenance of existing sediment and erosion control BMPs need to occur?

11. Is there evidence of sediment discharge such as mud flows or soil deposits from the construction site to downstream locations?

12. Are vehicles tracking sediment off the construction site onto nearby roads or parcels of land?

13. If applicable, is soil, construction material, landscaping items, or other debris evident on the streets?

14. Are BMPs properly located?

15. Are there locations where additional BMPs should be installed that are not identified in the SWPPP?

16. Have post-construction elements i.e. (grass swales, permanent detention basins, etc.) been installed per plans and inspected? (list all controls in comments section)

17. Do locations exist where BMPs could be removed?

18. Does your site evaluation indicate a need to update and document the SWPPP report and accompanying sediment and erosion control drawings within the next seven (7) days?

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

**CORRECTIVE ACTIONS FOR SWPPP COMPLIANCE**

<table>
<thead>
<tr>
<th>Detail Report:</th>
<th>Identify the problem and its location. If appropriate, describe (in general terms) what needs to be completed. However, only if qualified (e.g., you are a designer) should you be mandating specific BMPs to install.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
</tbody>
</table>
**Background Information**

<table>
<thead>
<tr>
<th>Site Name:</th>
<th>Date of Evaluation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Address:</td>
<td></td>
</tr>
<tr>
<td>Inspected By:</td>
<td>Existing Weather Conditions:</td>
</tr>
<tr>
<td>Building Permit #:</td>
<td>Start/End Time:</td>
</tr>
</tbody>
</table>
**Permit Effective Date:**

**Permit Expiration Date:**

**Total Project Area:**

**Total Disturbed Area:**

**Describe present phase of construction:**

**Type of Inspection:**

**Reason for Inspection:**

<table>
<thead>
<tr>
<th>Subdivision</th>
<th>Commercial</th>
<th>Industrial</th>
<th>Linear (road/pipe/power)</th>
<th>Land Disturbance</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Scheduled</th>
<th>Random inspection</th>
</tr>
</thead>
</table>

**List Receiving Waters:**

**Bear River**

**Date of last rain event:**

**Duration:**

**Approximate Rainfall (in):**

**CONTACT INFORMATION**

<table>
<thead>
<tr>
<th>NAMES</th>
<th>PHONE NUMBERS</th>
<th>E-MAIL</th>
</tr>
</thead>
</table>

**Operator:**

**Operator Co-permittee:**

**Onsite Facility Contact:**

**Important Contacts:**

**Codes and Descriptions**

<table>
<thead>
<tr>
<th>Inspection Code</th>
<th>SW sampling SW non-sampling</th>
<th>Inspector Code (Place X in box):</th>
<th>(S) State (L) Local</th>
<th>Type Code (place # in box):</th>
</tr>
</thead>
</table>

| 1 - Municipal | 2 - Industrial | 3 - Commercial |

**Place X by applicable Violation**

(Attach additional sheets of narrative, pictures and checklists, including Single Event Violation codes, as necessary)

**Available Single Event Violation Codes for WW Storm Water Construction**

<table>
<thead>
<tr>
<th>CODE</th>
<th>DESCRIPTION</th>
<th>CODE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
</table>

**BOC18** Failure to implement SWPPP/SWMP

**BR19B** Failure to properly operate and maintain BMP's

**COR11** Failure to Monitor

**AOR12** Numeric effluent violation

**BR19A** Failure to properly install/implement BMP's

**SWPPP INFORMATION**

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>COMMENTS</th>
</tr>
</thead>
</table>

1. Has a Construction Activity Permit been Inspected and approved?

2. During the pre-construction review, has the SWPPP been reviewed for post-construction elements? (i.e. grass swales, permanent detention basins, etc.) List all controls in comments section.

3. Are the names and telephone numbers of the current responsible contact people listed in the SWPPP?

4. Does the SWPPP contain the site description, sequence of construction activities, and areas of the site to be disturbed?

5. Does the SWPPP contain locations of storm drains, surface drainage patterns, and locations of storm water discharges?

6. Does the SWPPP include the site map, sediment, and erosion control design drawings, showing both structural and non structural BMPs?

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

**BMP/HOUSEKEEPING INFORMATION**

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>COMMENTS</th>
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</table>

1. Are all sediment & erosion control BMP’s that are deployed on the site updated and marked on the site map? (BMPs that are no longer necessary should be crossed out and dated, new BMPs drawn in and dated.)

2. Does the SWPPP contain updated submittals, specifications, and engineering for BMPs (both structural and...
3. Are off-site flows entering the construction site?

4. Is there evidence of, or the potential for, increased pollutant (i.e., sediment, fuel, concrete waste, portable toilet waste, etc.) loading to enter the storm water conveyance system as a result of the lack of maintenance or improper BMP installation?

5. Are construction products, chemicals, and supplies managed properly with good housekeeping, pollution prevention, and proper waste management?

6. Does repair/maintenance of existing sediment and erosion control BMPs need to occur?

7. Is there evidence of sediment discharge such as mud flows or soil deposits from the construction site to downstream locations?

8. Are vehicles tracking sediment off the construction site onto nearby roads or parcels of land?

9. If applicable, is soil, construction material, landscaping items, or other debris evident on the streets?

10. Are BMPs properly located?

11. Are there locations where additional BMPs should be installed that are not identified in the SWPPP?

12. Have post-construction elements i.e. (grass swales, permanent detention basins, etc.) been installed per plans and inspected? (list all controls in comments section)

13. Do locations exist where BMPs could be removed?

14. Does your site evaluation indicate a need to update and document the SWPPP report and accompanying sediment and erosion control drawings within the next seven (7) days?

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

Public Works

* Standard Operating Procedures
* BMP Fact Sheets
* City Owned Facilities
  o Aerial of City owned Facilities
- Assessment of City Owned Facilities
- City Detention/Retention Ponds (Aerials with Outlet Elevations)
PARKS – Chemical Application Pesticides, Herbicides, Fertilizers

Description: This section contains information on the application of Pesticides, Herbicides and Fertilizers to Parks. Including how to prepare, take care, and disposal of chemical products.

Applicability: Using chemicals in city parks.

1. Preparation

   Calibrate fertilizer and pesticide application equipment to avoid excessive application.

   Use pesticides only if there is an actual pest problem

   Time and apply the application of fertilizers, herbicides or pesticides to coincide with the manufacturer’s recommendation for best results (“Read the Label”).

   Know the weather conditions. Do not use pesticides if rain is expected. Apply pesticides or herbicides only when wind speeds are low (less than 5 mph).

2. Process
Always follow the manufacturer’s recommendations for mixing, application and disposal. ("Read the Label").

Do not mix or prepare pesticides for application near storm drains,

Employ techniques to minimize off-target application (e.g. spray drift, over broadcasting,) of pesticides and fertilizers.

3. Clean-up

Sweep pavements or sidewalks where fertilizers or other solid chemicals have fallen, back onto grassy areas before applying irrigation water.

Triple rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.

Always follow all federal and state regulations governing use, storage and disposal of fertilizers, herbicides or pesticides and their containers. ("Read the Label")

4. Documentation

Keep copies of MSD sheets for all pesticides, fertilizers and other hazardous products used.

Record fertilizing and pesticide application activities, including date, individual who did the application, amount of product used and approximate area covered.
PARKS – Mowing and Trimming

Description: This section contains information on mowing and trimming around drainage structures and the proper cleaning of mowing and trimming equipment.

Applicability: Mowing and trimming in city parks.

1. Preparation

   Locate all storm drain collection structures and inlets in the right-of-way.

2. Process

   Install temporary catch basin protection on affected basins

   Mow in a manner to minimize clippings blown toward collection structures inlets and water courses.

3. Clean-up

   Scraped and brush mowers at the shop – Sweep dry spoils and dispose at approved facilities.

   Wash equipment in approved wash station

4. Documentation

   None.
Description: This section contains information on the planting of within parks and rights-of-way. This also includes cleaning of the area and how to dispose of excess soil.

Applicability: Planting in Parks and rights-of-way.

1. Preparation

   Call the Blue Stakes Center of Utah at least 2 working days before any digging will be performed, to reveal the location of any underground utilities.

   Dial 811 or 1-800-662-4111.

   Determine where any spoils will be taken.

2. Process

   Dig holes; place spoils near the hole where they may easily be placed back around roots. Avoid placing spoils in the gutter or areas that may drain into drainage ways.

   Bring each plant near the edge of the hole dug for it.

   Check the depth of the hole, and adjust the depth if necessary. The depth of the hole for a tree should be as deep as the root ball, so that the top of the root ball is level with the top of the hole.

   Carefully remove pot or burlap.

   Place the plant in the hole.

   Backfill the hole with existing spoils, compost, and fertilizer if desired. Do not use excessive amendments.

   Water the plant.

   Stake the plant, if necessary, to stabilize it.

3. Clean-up

   Move any extra spoils into truck or trailer. Place the spoils on a tarp if there is likelihood that some of the dirt would be lost through openings in the bed.

   Sweep dirt from surrounding pavement(s) into the planter area.

   Transport spoils to their designated fill or disposal area.
PARKS – Seeding

Description: This section contains information on the seeding of areas in parks and rights-of-way. This also includes cleaning of the area and how to dispose of excess soil.


1. Preparation

   Call the Blue Stakes Center of Utah at least 2 working days before any digging or grading will be done, to reveal the location of any underground utilities.

   Dial 811 or 1-800-662-4111

   Decide on the application rate, method, water source, and ensure adequate materials are in possession.

   Grade and prepare the soil to receive the seed. Place any extra soil in a convenient location to collect.

2. Process

   Place the seed and any cover using the pre-determined application method (and rate).

   Lightly moisten the seed.

   Adjust watering rates to minimize runoff from seeded area.

   Monitor site for erosion. Correct as needed.

3. Clean-up

   Move any extra spoils into truck or trailer. Place the spoils on a tarp if there is a likelihood that some of the dirt would be lost through openings in the bed.

   Sweep dirt, seed, and any cover material from surrounding pavement(s) into the planter area

   Transport spoils to their designated fill or disposal area.

Documentation

None.
STREETS/STORM DRAIN – Catch Basins

Description: This section contains information on the cleaning of catch basins in the storm drain system. This includes the processes of disposal of excess waste and the record keeping of the amounts of waste collected.

Applicability: Cleaning catch basins or storm drains.

1. Preparation:
   - Clean off sediment and trash off grate.
   - Do visual inspection on outside of grate.
   - Make sure nothing needs to be replaced.
   - Do inside visual inspection to see what needs to be cleaned.

2. Process
   - Clean catch basin using manual or mechanical means.
   - For manual means, place removed material in a location protected from potential runoff.
   - Place spoils in vehicle for transport to disposal area.
   - Dispose of spoils in an approved location for dewatering if necessary.
   - For mechanical cleaning use a high powered vac truck to removed sediment. When sediment is removed use a high pressure washer to clean any other sediment out of catch basin.
   - After catch basin is clean, send the rodder of the vac truck downstream to clean pipe and pull back sediment that might have moved down stream of the catch basin.

3. Clean-up
   - When vehicle is full of spoils take them to a contained area for drying.
   - After drying, put it into a dump truck and take it to the landfill.

4. Documentation
   - Keep logs of the date and number of catch basins cleaned. Record employees involved with the activity.
   - Record the estimated amount of waste collected from each catch basin.
   - Keep any notes or comments of any problems.
STREETS/STORM DRAIN – Curb Painting

Description: This section contains information on the painting of curbs and how to protect the drainage system from hazardous wastes. The use of BMP’s in case of accidents and spills is recommended. This also includes the processes of disposal, clean up, and record keeping of any paint entering into the storm drain system.

Applicability: Curb Surface painting.

1. Preparation

   Calculate the amount of paint required for the job

   Use water based paints if possible.

   Determine whether the wastes will be hazardous or not and the required proper disposal of said wastes

   Determine locations of storm drain inlets and sewer inlets that may need to be protected. If possible, prepare surfaces to be painted without generating wastewater; eg. Use sandblasting and or scraping.

   If using a pressure washer to remove loose paint, place filter fabric or containment devices at entrances to storm drains or natural waterways to collect materials. (i.e. place geotextile beneath catch basin grates, use curb dyke)

   Use a citrus-based paint remover whenever possible, less toxic than chemical strippers

2. Process

   Paint curb.

   Prevent over-spraying of paints and/or excessive sandblasting

   Use drip pans and drop clothes in areas of mixing paints and painting

   Store latex paint rollers and brushes in air tight bags to be reused later with the same color.

   Have available absorbent material and other BMP’s ready for an accidental paint spill.

3. Clean-up

   Paint out brushes and rollers as much as possible. Squeeze excess paint from brushes and rollers back into the containers prior to cleaning them.

   Pour excess paint from trays and buckets back into the paint can containers and wipe with cloth or paper towels. Dispose of the towels according to the recommendations on the paint being used.

   Rinse water-based paint brushes in the sink after pre-cleaning. Never pour excess paint or wastewater from cleanup of paint in the storm drain.

   Cleanup oil based paints with paint thinner. Never clean oil based brushes in a sink or over a storm drain. Filter solvents for reuse if possible and/or store in approved drum for recycling.

4. Documentation

   Write-up/report of any discharges into storm drain system
Description: This section contains information on the cleaning of storm drain culverts and pipes. This also includes what methods to use to remove sediment and debris from the structure. A record keeping procedure is also outlined for tracking the cleaning process.

Applicability: Cleaning of Culverts and Pipes.

1. Preparation:
   - Clean sediment and trash off inlet to culvert/storm water pipe.
   - If possible do visual inspection of inside of culvert/storm water pipe.
   - Look for cracks, missing or broken pieces in the walls/sides of structure.
   - Do inside visual inspection to see what needs to be cleaned.

2. Process
   - Clean using a high powered vac truck, cleaning the sides of the structure and sucking out sediment on the bottom.
   - Send high powered hose down culvert and pull back any sediment.
   - Clean inlets and outlets.
   - Move truck down to next storm drain.

3. Clean-up
   - When vac truck is full of sediment take it to ______________ to dump all the sediment out of the truck into a dry pond.
   - When evaporates are dry, clean it up with a backhoe, put it into a dump truck and take it to the landfill.

4. Documentation
   - Keep logs of culverts/storm water pipes wells cleaned.
   - Record the amount of waste collected.
   - Keep any notes or comments of any problems.
STREETS/STORM DRAIN – Sumps and Injection Wells (Includes Underground Stormwater Detention Structures)

Description: This section contains information on the cleaning of storm drain sumps and injection wells. This also includes what methods to use to remove sediment and debris from the structures. A record keeping procedure is also outlined for tracking the cleaning process.

Applicability: Cleaning of Sumps and Injection Wells.

1. Preparation:

   Clean sediment and trash off inlet to sump/injection well.

   Determine how water is supposed to drain from the structure and assess the ability of the structure to allow water to drain as designed.

   If possible do visual inspection of inside of sump/injection well.

   Look for cracks, missing or broken pieces in the walls/sides of structure.

   Do inside visual inspection to see what needs to be cleaned.

2. Process

   Clean using a high powered vac truck, cleaning the sides of the structure and sucking out sediment on the bottom.

   Remove fine sediments that might inhibit the drainage of water if the structure is designed such that the water drains out the bottom.

   Clean those places where water drains if the structure is designed to drain out the sides of the sump/injection well.

   Clean inlets and overflow outlets.

3. Clean-up

   When vac truck is full of sediment take it to ______________ to dump all the sediment out of the truck into a dry pond.

   When evaporates are dry, clean it up with a backhoe, put it into a dump truck and take it to the landfill.

4. Documentation

   Keep logs of culverts/storm water pipes wells cleaned.

   Record the amount of waste collected.

   c. Keep any notes or comments of any problems.
STREETS/STORM DRAIN – Detention Ponds

Description: This section contains information on the maintenance and cleaning of storm drain detention ponds and structures. This also includes what methods to use to remove sediment and debris from the structure. A record keeping process is also outlined for maintenance.

Applicability: Maintenance of detention structures.

1. Preparation:
   - Remove any sediment and trash from grates.
   - Do a visual inspection to make sure grates are in good shape and everything is in good working order.
   - Pull grates, inspect inside of structures/boxes/pipes.

2. Process
   - Provide outlet protection where feasible to minimize the amount of debris that might leave basin during cleaning process.
   - If necessary, clean basin by using backhoe to remove silt and sediment off the bottom
   - Place all sediment into a dump truck.
   - Clean structures as cleaning catch basins SOP.

3. Clean-up
   - Haul and dump sediment at the landfill.

4. Documentation
   - Keep logs of number of detention basins cleaned including date, estimated quantity of material, individuals involved in cleaning, and a description of the type of debris removed.
   - Record the estimated amount of waste collected.
   - Keep any notes or comments of any problems.
STREETS/STORM DRAIN – Creek Maintenance

Description: This section contains information on the maintenance and preservation of natural water courses including creeks and streams. This also includes identifying what maintenance needs to be done and the method of how it will be accomplished. Record keeping is necessary in stream maintenance.

Applicability: Maintaining any creek or stream.

1. Preparation
   
   Monitor streams on a regular basis.
   
   Check culverts and crossings after every storm or runoff event.
   
   Maintain access to stream channels wherever possible.
   
   Identify areas requiring maintenance.
   
   Determine method of maintenance that will be least damaging to the channel.
   
   Determine what manpower or equipment will be required.
   
   Obtain necessary permits as required by the Army Corp. of Engineers or State Engineers Office.
   
   Identify access and easements to area requiring maintenance.

2. Process
   
   Follow requirements of permits as applicable.
   
   Use techniques to minimize disruption to the stream bank or channel.
   
   Install clean materials free of pollutants and contaminants.
   
   Place removed materials in an area upland of the water course to prevent them from re-entering the channel.

3. Clean-up
   
   Stabilize all disturbed soils.
   
   Haul all debris or sediment removed from area to approved dumping site.
   
   Remove all tracking from paved surfaces near maintenance site, if applicable.

4. Documentation
   
   Keep log of actions performed including date and individuals involved.
   
   Record the amount of materials removed or imported.
   
   Keep any notes or comments of any problems.
   
   Use “before” and “after” photographs to document activities as applicable.
STREETS/STORM DRAIN – Canal / Ditch Maintenance

Description: This section contains information on the maintenance and preservation of canals. This also includes identifying what maintenance needs to be done and the method of how it will be accomplished. Record keeping is necessary in canal maintenance.

Applicability: Maintaining canal or irrigation ditch.

1. Preparation

   Monitor canals on a regular basis (Monthly).
   Establish maintenance responsibilities with irrigation company boards and operators.
   Create a maintenance schedule with the irrigation company.
   Identify areas requiring maintenance with irrigation company annually at a minimum.
   Identify access and easements to canal area.
   Establish procedures for removal of material from canal maintenance. Including stockpiling of material removed or hauling methods.
   Check canal/ditch crossings on schedule, including during and after storm events.
   Determine what man power or equipment will be required.

2. Process

   Perform maintenance as outlined in agreement with irrigation company
   Install clean materials free of pollutants and contaminants.
   Place removed materials in an area upland of the watercourse to prevent them from re-entering the channel.
   Haul material away as outlined in agreements with irrigation company.

3. Clean-up

   Stabilize all disturbed soils.
   Haul all debris or sediment removed from area to approved dumping site.
   Remove all tracking from paved surfaces near maintenance site, if applicable.

4. Documentation

   Keep log of actions performed including date and individuals involved.
   Record the amount of materials removed or imported.
   Keep any notes or comments of any problems.
   Use “before” and “after” photographs to document activities as applicable.
STREETS/STORM DRAIN – Chip Seal

Description: This section contains information on the protection and maintenance of storm drain system while chip sealing roadways. This also includes guidelines for chip sealing and for the cleaning of roadways after a chip seal has been applied.

Applicability: Chip sealing roadways.

1. Preparation

   Remove weeds from the roads.

   Correct any areas with poor drainage. (i.e. rutting)

   Clean and dry areas where materials are to be applied. Ensure manholes and catch basins are covered to prevent oil and materials from getting inside the structures or system.

   Calibrate spreader to minimize excess chips from being placed on the emulsion.

   Review standard operating procedure with contractor if performing work.

2. Process

   Apply emulsion at recommended rate.

   Spread chips closely behind emulsion distributor.

   Roll chips. Rollers follow closely behind the chip spreader. Roll entire surface twice.

3. Clean-up

   Use street sweeper to pick up excess chips.

   Remove excessive asphalt applications and spills.

   a. Remove covers from storm drain structures and remove debris that has entered the collection system.

4. Documentation

   Record location and date on the maintenance log.
STREETS/STORM DRAIN – Slurry Seal

Description: This section contains information on the protection and maintenance of storm drain system while applying slurry seal to roadways.

Applicability: Applying slurry seal to roadways.

1. Preparation
   - Remove weeds from the roads.
   - Clean and dry areas where materials are to be applied.
   - Correct any areas with poor drainage. (i.e. rutting)
   - Cover/protect catch basins and manholes.
   - Review standard operating procedure with contractor if performing work.

2. Process
   - Apply slurry in a smooth and uniform manner.
   - Protect adjacent areas and storm drainage systems from slurry during spreading.

3. Clean-up
   - Remove covers/protection from catch basins and manholes.
   - Clean up any excess material that may have entered the storm drain.
   - Dispose of excess materials at an approved location.

4. Documentation
   - Record location and date on the maintenance log.
STREETS/STORM DRAIN – Overlays and Patching

Description: This section contains information on the protection and maintenance of storm drain system while the roadway is being overlaid or patched.

Applicability: Overlaying or patching roadways.

1. Preparation

   Correct any areas with poor drainage. (i.e. rutting)

   Fill pothole areas and soft spots.

   Seal cracks in asphalt.

   Manholes and catch basins are covered to prevent oil and materials from getting inside the structures or system.

   Surface should be clean and dry.

   Review standard operating procedure with contractor if performing work.

2. Process

   Apply tack coat uniformly at the required rate. Do not over apply.

   Protect area outside of work zone from overlay material.

   Place removed material in a truck for removal from the job site.

   Protect manholes and catch basins when raising covers as necessary.

3. Clean-up

   a. Remove covers from catch basins and manholes

4. Documentation

   Record location and date on the maintenance log.
STREETS/STORM DRAIN – Crack Seal

Description: This section contains information on the protection and maintenance of roadway and storm drain system while cracks are being sealed on roadway surface.

Applicability: Crack sealing on roadways.

1. Preparation
   
   Remove weeds from the
   
   Surface should be clean and dry. cracks.
   
   Remove sediments from crack to a specified depth.

   Review standard operating procedure with contractor if performing work.

2. Process
   
   Place material as specified.
   
   Minimize material from spilling outside of crack and into storm drain systems.
   
   Keep crack sealing equipment on asphalt surface to control any material spills.

3. Clean-up
   
   Remove excessive sealant or spills from roadway.

4. Documentation
   
   Record location and date on the maintenance log.
STREETS/STORM DRAIN – Shouldering

Description: This section contains information on the protection and maintenance of roadway and storm drain system while shouldering. This includes traffic control, cleaning, and record keeping of the project.

Applicability: Shouldering roadways.

1. Preparation
   
   Use traffic control devices as necessary.

   Install protection for storm drain system from receiving shouldering material.

   Determine quantity required for shouldering and distribute along roadway as needed trying to minimize stockpiles.

2. Process

   Place import material as needed and perform grading to achieve proper drainage.

   Compact as placement of material occurs to minimize erosion.

3. Clean-up

   Clean any loose material off asphalt or gutter by dry methods

   Remove protection from the storm drain system.

   Clean up any excess material, that has entered the storm drain system.

4. Documentation

   Record location and date on the maintenance log.
PARKS – Mowing and Trimming

Description: This section contains information on mowing and trimming in the right-of-way and the proper cleaning of mowing and trimming equipment.

Applicability: Mowing and trimming along city streets.

1. Preparation
   
   Locate all storm drain collection structures and inlets in the right-of-way.

   Fuel mower in a manner to minimize spills.

2. Process
   
   Install temporary catch basin protection on affected basins

   Mow in a manner to blow clippings blown away from collection structures inlets and water courses.

3. Clean-up
   
   Scraped and brush mowers at the shop – Sweep dry spoils and dispose at approved facilities.

   Wash equipment in approved wash station

4. Documentation
   
   None.
STREETS/STORM DRAIN – Gravel Road Maintenance

Description: This section contains information on gravel roadway maintenance and the protection of the storm drain system.

Applicability: Performing any maintenance on gravel roadways.

1. Preparation
   - Locate drainage features along length of road to be maintained.
   - Protect drainage structures from material entering the system during maintenance activities.
   - Determine disposal site for excess materials.
   - Install traffic control as necessary.
   - Stockpile material as necessary for the work.
   - Install BMP’s as necessary for the level of work to be performed.

2. Process
   - Grade road to promote drainage away from the roadway.
   - Place imported material as needed for roadway.
   - Compact material quickly to maintain moisture content and reduce potential for erosion.
   - Repair/revise drainage structures to collect runoff.
   - Stabilize shoulders after completing maintenance.
   - Install / maintain BMP’s as necessary along roadway.

3. Clean-up
   - Remove stockpiled material from work area.
   - Stabilize any loose material or disturbed areas.
   - Clean any tracked materials from paved surfaces.

4. Documentation
   - Record location and date on the maintenance log.
STREETS/STORM DRAIN – Concrete Work

Description: This section contains information on proper concrete placement and how to clean a site to prevent excess concrete materials from entering the storm drain system.

Applicability: Performing any maintenance on roadways.

1. Preparation
   - Train employees and contractors in proper concrete waste management
   - Store dry and wet materials under cover, away from drainage areas
   - Determine how much new concrete will be needed.
   - Locate or construct approved concrete washout facility.

2. Process
   - Remove any damaged concrete that may need to be replaced.
   - Prepare and compact subbase.
   - Set forms and place any reinforcing steel that may be required.
   - Moisten subbase just prior to placing new concrete. Place new concrete in forms.
   - Consolidate new concrete.
   - Screed off surface.
   - Let concrete obtain its initial set.
   - Apply appropriate surface finish

3. Clean-up
   - Perform washout of concrete trucks and equipment in approved washout area.
   - Remove and dispose of excess concrete spilled on site. Sweep and remove concrete dust from grinding activities from the site.

4. Documentation
   - None
STREETS/STORM DRAIN – Garbage Storage

Description: This section contains information on proper placement, installation, and cleaning of garbage dumpsters. Also, proper use and repair of damaged garbage bins to prevent leakage into drainage system.

Applicability: Garbage dumpster/bin location.

1. Preparation

   Locate dumpsters and trash cans with lids in convenient, easily observable areas.

   Locate dumpsters on a flat, impervious surface that does not slope or drain directly into the storm drain system.

   Install berms, curbing or vegetation strips around storage areas to control water entering/leaving storage areas.

   Provide properly labeled recycling bins to reduce the amount of garbage disposed.

   Provide training to employees to prevent improper disposal of general trash.

2. Process

   Inspect garbage bins for leaks regularly, and have repairs made immediately by responsible party.

   Have garbage bins emptied as often as needed to keep from overfilling.

   Keep lids closed when not actively filling dumpster.

   Repair any drainage improvements to prevent runoff from dumpsters from entering the storm drain system.

3. Clean-up

   Keep areas around dumpsters clean of all garbage.

   Wash out bins or dumpsters as needed to keep odors from becoming a problem.
STREETS/STORM DRAIN – Snow Removal and De-icing

Description: This section contains information on proper storage and loading of de-icing material in order to prevent materials from entering into a storm drain system.

Applicability: Snow removal or application of de-icing materials.

1. Preparation
   
   Store de-icing material under a covered storage area or in an area.
   
   Collect and deliver water coming off the de-icing materials to the sanitary sewer or reuse as salt brine.
   
   Slope loading area away from storm drain inlets
   
   Design drainage from loading area to collect runoff before entering storm water system
   
   Wash out vehicles (if necessary) in approved washout area before preparing them for snow removal.
   
   Calibrate spreaders to minimize amount of de-icing material used and still be effective
   
   Train employees in spill cleanup procedures and proper handling and storage of de-icing materials

2. Process
   
   Load material into trucks minimizing spillage.
   
   Sweep loading area periodically to reduce the amount of de-icing materials exposed to runoff
   
   Distribute the minimum amount of de-icing material to be effective on roads
   
   Do not allow spreaders to idle while distributing de-icing materials.
   
   Park trucks with de-icing material inside when possible

3. Cleanup
   
   Sweep up all spilled de-icing material around loading area.
   
   Clean out trucks after snow removal duty in approved washout area.
   
   Provide maintenance for vehicles in covered area.

4. Documentation
   
   a. None
STREETS/STORM DRAIN – Salt and Sand, Mixing and Storing

Description: This section contains information on proper storage and loading of de-icing material in order to prevent materials from entering into a storm drain system.

Applicability: Snow removal or application of de-icing materials.

1. Preparation
   
   Mix and store materials on impervious surface only.

   Mix materials in summer months.

   After mixing materials store in covered shed.

2. Process
   
   Mixed materials are ready for winter use.

3. Cleanup
   
   Sweep up/Clean up mixing areas.

   Wash out trucks/loaders in approved wash bays.

4. Documentation
   
   None
STREETS/STORM DRAIN – Street Sweeping

Description: This section contains information and guidelines on proper street sweeping techniques in order to prevent high rates of oils and other pollutants from getting into the storm drain system.

Applicability: Streets with a high quantity of debris and pollutants.

1. Preparation
   
   Prioritize cleaning routes to use at the highest frequency in areas with the highest pollutant loading.
   
   Perform preventative maintenance and services on sweepers to increase and maintain their efficiency.
   
   Review standard operating procedure with contractor if performing work.

2. Process
   
   Drive street sweeper safely and pickup debris.
   
   Dispose of debris at an approved street sweeper disposal location.

3. Clean-up
   
   Clean street sweepers at an approved street sweeper cleaning station
   
   Street sweeping cleaning stations shall separate the solids from the liquids.
   
   Once solids have had a chance to dry out haul to the local landfill
   
   Collected decant water and route to an approved wastewater collection system.

4. Documentation
   
   Keep accurate logs to track street swept and streets still requiring sweeping.
   
   Log the approximate amount of debris collected and hauled off.
STREETS/STORM DRAIN – Transporting Soil and Gravel

Description: This section contains information for proper site preparation and maintenance while materials are being transported to or from a site. The use of a SWPPP is also recommended.

Applicability: Removing or importing fill materials for a site.

1. Preparation

   Dry out wet materials before transporting to prevent spillage on the roadway.

   Spray down dusty materials to keep from blowing.

   Know and understand the SWPPP requirements for the site you will be working at.

2. Process

   Use a stabilized construction entrance to access or leave the site where materials are being transported to/from.

   Cover truck bed with a secured tarp before transporting.

   Follow the SWPPP requirements for the specific site to/from which the materials are being hauled.

   Do not to overfill materials when loading trucks.

3. Clean up

   Clean up any materials tracked out on the roads from site with street sweeper or by hand methods.

   Wash mud from vehicles before leaving site.

4. Documentation

   Document tracked material cleanup in maintenance logs.
WATER – Planned Waterline Excavation Repair/Replacement

Description: This section contains information for proper waterline excavation. Including protection of storm drain inlets and clearing of gutters.

Applicability: Repairing or replacing waterlines.

1. Preparation

Determine where discharge flow will go.

Obtain dewatering permit if necessary for the project.

Protect Storm drain inlet(s).

Clean Gutters leading to inlet.

Isolate waterline to be worked on.

2. Process

Make efforts to keep water from pipeline from entering the excavation

Direct any discharge to pre-determined area per permit if necessary.

Neutralize any chlorine residual before discharging water to a storm drain or water course.

Backfill excavation.

Haul off excavated material or stock pile nearby.

Stabilize any stockpiled material until installed or hauled away.

3. Clean up

Clear gutter/ waterway where water flowed

Clean up and stabilize all areas around excavation

Clean up travel path of hauled material if necessary.

4. Documentation

Document beginning of work, completion of work and any cleanup items performed on site.
**WATER – Unplanned Waterline Excavation Repair/Replacement**

Description: This section contains information for proper waterline excavation when an unexpected leak has occurred. Including protection of storm drain inlets and clearing of gutters.

Applicability: Repairing or replacing waterlines when unexpected leak occurs.

1. **Preparation**
   
   Equip leak repair equipment with filter material (Inlet Protection Filter bags)

2. **Process**
   
   Stop the discharge
   
   Inspect flow path of discharged water
   
   Protect water inlet areas.
   
   Follow planned repair procedures.
   
   Haul off spoils from excavation

3. **Clean-up**
   
   Repair eroded areas as needed.
   
   Stabilize area from further erosion.
   
   Clean traveled path of hauled material

4. **Documentation**
   
   Document beginning of work, completion of work and any cleanup items performed on site.
WATER – Transporting Dry Excavated Materials & Spoils

Description: This section contains information for proper transport of dry excavated materials that may have environmental contaminants.

Applicability: Transport of dry excavated materials & spoils.

1. Preparation
   
   Utilize truck with proper containment of materials
   
   Determine disposal site of excavated materials
   
   Install BMP’s if necessary for operations.

2. Process
   
   Load truck with materials
   
   Check truck after loading for possible spillage. Clean up when loading operations complete for the day.
   
   Cover truck with tarp.
   
   Transport in manner to eliminate spillage & tracking.
   
   Utilize one route for transporting.

3. Clean-up
   
   Clean loading area.
   
   Wash off truck and other equipment at approved wash location.

4. Documentation
   
   Document beginning of work, completion of work and any cleanup items performed on site.
WATER – Transporting Wet Excavated Materials & Spoils

Description: This section contains information for proper transport of wet excavated materials that may have environmental contaminants.

Applicability: Transport of wet excavated materials & spoils.

1. Preparation
   - Utilize truck with containment for material.
   - Determine disposal site of excavated material.
   - Dry materials prior to transporting if possible.
   - Install BMP’s if necessary for operations.

2. Process
   - Load and Transport in manner to minimize spillage & tracking of material
   - Check truck for spillage.
   - Cover load with tarp.
   - Utilize one route of transport

3. Clean-up
   - Clean route of transport to provide cleaning of any spilled material
   - Wash out equipment truck and other equipment

4. Documentation: None.

Water – Waterline Flushing for Routine Maintenance
Description: This section contains information for proper waterline flushing, protection of inlet structures, and maintaining a clean flow path for waterway.

Applicability: Waterline flushing for routine maintenance.

1. Preparation
   - Determine flow path of discharge to inlet of waterway.
   - Obtain discharge permit if necessary from State of Utah.
   - Neutralize chlorine residual if necessary.

2. Process
   - Clean flow path.
   - Protect inlet structures.
   - Use diffuser to dissipate pressure to reduce erosion possibilities

3. Clean-up
   - Clean flow path
   - Remove inlet protection if installed.

4. Documentation
   - Document beginning of work, completion of work and any cleanup items performed on site.
   - Residual tests of discharge water

WATER – Waterline Flushing after Construction/System Disinfection with Discharge to Storm Drain
Description: This section contains information for proper waterline flushing, protection of inlet structures, and maintaining a clean flow path for waterway after a construction project or system disinfection with discharge to storm drain.

Applicability: Waterline flushing after construction projects or after system disinfection.

1. Preparation
   - Determine chlorine content of discharged water. Utilize de-chlorination equipment if necessary.
   - Determine flow path of discharge.
   - Obtain discharge permit if necessary.

2. Process
   - Protect inlets in flow path.
   - Sweep and clean flow path.
   - Use diffuser to reduce velocities.

3. Clean-up
   - Remove inlet protection.
   - Clean flow paths.
   - Remove equipment from flush point.

4. Documentation
   - Document beginning of work, completion of work and any cleanup items performed on site.

Residual test of discharged water.

**WATER – Waterline Flushing after Construction/System Disinfection with Discharge with Haul Off (Used for Dust Control/Compaction)**

Description: This section contains information for proper waterline flushing and the hauling off of the discharged water in a tanker to use for dust control and compaction.

Applicability: Waterline flushing after construction projects or after system disinfection.

1. Preparation
   - Determine chlorine content of discharged water.
   - Neutralize chlorine content.
Determine appropriate construction activity for treatment.
Provide backflow prevention device.

2. Process
   Flush to tanker.
   Conform that application of water is in appropriate location.
   Conform to BMP’s at the construction site to prevent tracking.

3. Clean-up
   Remove equipment from flush point.

4. Documentation
   None

Document beginning of work, completion of work and any cleanup items performed on s– Chemical Handling/Transporting and Spill Response

Description: This section contains information for transporting or handling of chemicals and actions that need to be taken when a chemical spill occurs.

Applicability: Transporting or handling of chemicals and possible spill of contaminants.

1. Preparation
   Understand MSDS streets for handling of product.
   Determine proper place of handling.
Have necessary containment and spill kits at handling place.

2. Process

Begin transfer process.
Discontinue operations if spill levels occur.
Disconnect and store handling equipment.

3. Clean-up

Clean up spills with proper material
Dispose of contaminated material at appropriate facility

4. Documentation

Report spills to Bear River Health

WATER - Swimming Pools and Spas Discharge to Stormwater System

Description: This section contains information and guidelines for the draining of swimming pools and spas into the storm drain or sanitary sewer systems.

Applicability: Pool and Spa draining into stormwater or sanitary sewer systems.

Note: Pool owners may discharge their pool water and filter backwash water to the sanitary sewer. There are no limitations on chlorine content or pH levels for discharges to the sanitary sewer. It is also acceptable to discharge to the sanitary sewer if the water is cloudy discolored, or contains algae. The pool owner should contact Public Works prior to discharging water from any pool or spa regardless of where they plan to discharge the water - sanitary sewer, onto the ground, or in a manner such that it enters the storm water system. After approval has been given by the public works department, swimming pool water may be discharged into the sanitary sewer system or the storm water system. The city must ensure the sewer system can accommodate the additional swimming pool water discharge. There may be a fee associated with discharging pool or spa water into the sanitary sewer.

1. Preparation

With the help of Public Works officials determine the best place to discharge the water from the pool/spa.

A pool or spa may be emptied onto the ground or into the storm water system if the chlorine content is less than one part per million and free of other chemicals.

The pH level of the water must be tested prior to discharge and must fall within a range of 7 to 8.
The water must not be cloudy or discolored and must be free of algae or other contaminants.

Do a visual inspection of the pathway the water will take to ensure contaminants, trash, or soils or other sediments will not be washed into the storm water system. Clean as needed.

2. Process

Clean, as needed, any storm water structure that will be used to convey the water into and through the storm water system.

Drain the pool or spa to the location determined by Public Works officials using the pool system's pumps or by gravity.

Carefully watch the draining process at all times to ensure the water flow is going as planned and does not overload the system.

Water being discharged may not cause erosion and may not go unto a neighbor's property without their express written permission.

3. Clean-up

Keep logs of pools and spas drained.

Record the amount of water drained and where the water was drained to.

Keep any notes or comments of any problems.

(End of SOP's)
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- Ordinance Development: OD
# BMP: Aboveground Tank Leak And Spill Control

## Applications
- Manufacturing
- Material Handling
- Vehicle Maintenance
- Construction
- Commercial Activities
- Roadways
- Waste Containment
- Housekeeping Practices

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

The most common causes of unintentional releases are:
- Installation problems,
- Failure of piping systems (pipes, pumps, couplings, hoses, and valves),
- External corrosion and structural failure,
- Spills and overfills due to operator error, and
- Leaks during pumping of liquids or gases from truck to a storage tank or vice versa.

## Approach:
- Integrate efforts with existing aboveground petroleum storage tank programs through the local Fire Department and Health Department, and area and business emergency response plans through the City, County, or Fire District.
- Use engineering safeguards to reduce the chance for spills.
- Perform regular maintenance.

## Limitations:
For larger spills, a private spill clean-up company or Hazmat team may be necessary.

## Maintenance:
Maintenance is critical to preventing leaks and spills. Conduct routine inspections and:
- Check for external corrosion and structural failure,
- Check for leaks or spills due to operator error,
- Check for failure of piping system (pipes, pumps, flanges, couplings, hoses, and valves),
- Check for leaks or spills during pumping of liquids or gases from truck to storage facility or vice versa.

## Targeted Pollutants
- Sediment
- Nutrients
- Heavy Metals
- Toxic Materials
- Oxygen Demanding Substances
- Oil & Grease
- Floatable Materials
- Bacteria & Viruses

## Implementation Requirements
- High Impact
- Medium Impact
- Low or Unknown Impact

- Capital Costs
- O&M Costs
- Maintenance
- Training

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PERMITTEE OWNED PROPERTY
Permittee-Owned Facilities Evaluation Form

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Section 4.2.6.3 requires that the "Permittee must identify as "high-priority" those facilities or operations that have a high potential to generate storm water pollutants." Weekly inspections are required (4.2.6.6.1), and Storm Water discharge must be evaluated quarterly at these high priority locations (4.2.6.6.3).
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Section 4.2.6.3 requires that the "Permittee must identify as "high-priority" those facilities or operations that have a high potential to generate storm water pollutants." Weekly inspections are required (4.2.6.6.1), and Storm Water discharges must be evaluated quarterly at these high priority locations (4.2.6.6.3).

### Permittee-Owned Facilities Evaluation Form

**MS4 Name:** Smithfield City  
**Date of Evaluation:** Nov. 19, 2010

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<th>Facility #: SP#13</th>
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### HYDROCARBONS DEFINITION

**Benzene** is an organic chemical compound with the molecular formula \( \text{C}_6\text{H}_6 \). It is sometimes abbreviated Ph–H. Benzene is a colorless and highly flammable liquid with a sweet smell and a relatively high melting point. Because it is a known carcinogen, its use as an additive in gasoline is now limited, but it is an important industrial solvent and precursor in the production of drugs, plastics, synthetic rubber, and dyes. Benzene is a natural constituent of crude oil, and may be synthesized from other compounds present in petroleum. Benzene is an aromatic hydrocarbon and the second \([n]-\)annulene \((6)-\)annulene, a cyclic hydrocarbon with a continuous pi bond. It is also related to the functional group arene which is a generalized structure of benzene.
**Toluene**, formerly known as **toluol**, is a clear, **water**-insoluble liquid with the typical smell of **paint thinners**. Chemically it is a mono-substituted **benzene** derivative, i.e. one in which a single hydrogen atom from the benzene molecule has been replaced by a univalent group, in this case **CH₃**.

It is an **aromatic hydrocarbon** that is widely used as an industrial **feedstock** and as a **solvent**. Like other solvents, toluene is sometimes also used as an **inhalant** drug for its intoxicating properties; however, this can potentially cause severe neurological harm.¹²¹²

**Ethylbenzene** is an **organic compound** with the formula C₆H₅CH₂CH₃. This **aromatic hydrocarbon** is important in the **petrochemical** industry as an intermediate in the production of **styrene**, which in turn is used for making **polystyrene**, a common **plastic** material. Although often present in small amounts in **crude oil**, ethylbenzene is produced in bulk quantities by combining **benzene** and **ethylene** in an acid-catalyzed **chemical reaction**:C₆H₆ + C₂H₄ → C₆H₅CH₂CH₃

Approximately 24,700,000 tons were produced in 1999.¹¹ Catalytic **dehydrogenation** of the ethylbenzene then gives **hydrogen** and styrene:

C₆H₅CH₂CH₃ → C₆H₅CH=CH₂ + H₂

It has been used as a solvent for aluminum bromide in the anhydrous electrodeposition of aluminum. Ethylbenzene is also an ingredient in some paints, and solvent grade **xylene** (xylol) is nearly always contaminated with a few percent of ethylbenzene.

The term **xylene** or **xylol** refers to a mixture of three structural **isomers** of the **aromatic hydrocarbon** dimethylbenzene. Xylene is a clear, colorless, sweet-smelling liquid that is very flammable. It is usually refined from **crude oil** in a process called **alkylation**. It is also produced as a by-product from **coal carbonisation** derived from coke ovens, extracted from crude **benzole** from gas, or by **dehydrocyclodimerization** and **methylating** of **toluene** and **benzene**.¹¹ It is also manufactured from **reformate**.

Xylene is used as a **solvent** in the **printing**, **rubber**, and **leather** industries. Xylene is also abused as an **inhalant** drug for its intoxicating properties.¹¹[1]"
Permittee Maintained Structures
Appendix C

* IDDE Procedure
* Flow Chart
* Spill Response Report Form
* Hotline Call-in Response Procedure
Spill Response Plan (S.O.P)

Follow these steps if a spill occurs:

1. Stop source
2. Contain Spill
3. Call Supervisor
4. Identify substance
5. Quantify spill
6. Did spill leave the site?
7. Call Bear River Health Department (435 - 792 - 6570)
8. Call State Environmental Emergency Response (801- 536-4123)
9. Clean up & dispose
10. Document
    (Use Spill Response Report from SWPPP Appendix C)
INCIDENT RESPONSE FLOW CHART
SMITHFIELD CITY

Spill Call:
Fill out IDDE incoming call report form

Did illicit discharge enter the storm drain system, lake or stream?

Yes or Unknown

Is the substance hazardous?

Yes or Unknown

Is the spill amount large?

Yes or Unknown

Call Both
Health Department
Phone #: (435) 792-6570

Fire Department
Phone #: 563-3056

Public Works to follow IDDE SOP
Fill out Spill Response Report form

Health Department and Fire Department to follow their prescribed procedures

Public Works
Phone #: (435) 563-6068
SPILL RESPONSE REPORT FORM
(For Public Works Crew)

Date of Spill_________________________________ Time _________ Duration _________

Chemical name or identity of any substance involved in the release ___________________________

Is it a hazardous substance? _____________________________________________________________

Estimate of Quantity Spilled ____________________________________________________________

Who Responded? _________________________________________________________________

Cleaning Method Used _______________________________ _________________________________

Any Discharge to Storm Drain? _________________________________________________________

Any known or anticipated acute or chronic health risks for exposed individuals associated with
the emergency spill:

________________________________________________________________________________

________________________________________________________________________________

________________________________________________________________________________

________________________________________________________________________________

Where proper precautions taken, including evacuation, if necessary? ______________________

________________________________________________________________________________

Was Spill Reported to the State?  Yes  No
IDDE INCOMING CALL REPORT FORM
(For Phone Operator)

Date of Illicit Discharge____________________________ Time _______ Duration _______

Address of Discharge ____________________________________________________________

Name of person discharging (If applicable) __________________________________________

Name & phone number of person making the call _____________________________________

Chemical name or identity of any substance involved in the release ______________________

__________________________________________________________

Is substance hazardous? _________________________________________________

Estimate of Quantity Spilled? _________________________________________________

Did the illicit discharge enter a waterbody? (Lake or Stream)

______________________________________________________________

Did the illicit discharge enter the storm drain system? (Manhole or storm drain pipe)   Yes

No Any known or anticipated acute or chronic health risks for exposed individuals associated

with the emergency spill:

______________________________________________________________

See Illicit Discharge determination form

Appendix D
Documentation

* Inspection Checklist
* Training Schedule
* Training Log
* Visual Inspection
* The Storm Water Inspector has a bound Enforcement Journal
SWPPP Inspection Checklist

**Pre-inspection Items**
- Contact Site Superintendent or Project Manager
- Review previous inspections – are there reoccurring problems?
- Proper equipment
  - Hard hat
  - Vest
  - Safety shoes
  - Safety glasses
  - Camera
  - GPS unit?
  - Inspector credentials

**On-Site before inspecting**
- Review SWPPP – updates and changes
- Review any specific concerns
- Check contractors inspection forms/issues

**Inspection**
- Use State Form – keep notes
- Check outfalls
- Check perimeter control
- Check entrances/exits
- Check erosion control BMPs
- Check sediment control BMPs
- Check for mud tracking
- Check stockpile/storage areas
- Check staging areas
- Take photos of good and bad
- Keep photo log
- Review findings with superintendent/project manager

**Post Inspection**
- Review form, complete and clarify as needed
- File inspection form and photos
- Send copy of form to State – can be done monthly
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# Training Log

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PREPARATION

☐ Identify "High Priority" facilities
☐ Map of location
☐ Become familiar with potential pollutants at the site

PROCESS

☐ Look for evidence of spills at the site
☐ If a spill is found assess the general area to identify its source
☐ Whenever possible take photographs of the suspected illicit discharge

CLEAN-UP

☐ Clean up spill immediately to prevent contact with precipitation or runoff
☐ Initiate spill response

DOCUMENTATION

☐ Fill out Weekly High Priority Inspection Log for facility and mark that the weekly inspection has been completed
☐ If a deficiency was found make note on the Weekly High Priority Inspection Log and fill out the Note Log for that particular facility

Appendix E
Maps

* Location of Smithfield City
* Collection System (Storm Drain Divided Areas)