

2014

# Highland City Sanitary Sewer Management Plan



Highland City  
Public Works Department  
8/19/2014

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**APPENDIX - WORKSHEETS**

## **Chapter 1 General Information**

### ***I. Requirement***

Highland City (City) has prepared this Sewer System Management Plan (SSMP) in compliance with the requirements of the Utah Division of Water Quality's Utah Sewer Management Program (USMP). The program is authorized under State of Utah Administrative Code R317-801.

### ***II. Adoption***

This Sanitary Sewer Management Plan (SSMP) was adopted by the Highland City Council on August 19, 2014 at a regularly held City Council session located at 5600 West Civic Center Drive Suite One, Highland, Utah 84043.

### ***III. Responsible Parties***

The responsible representatives, position and phone number for the City with regard to this SSMP are:

- City Administrator or Designee:
- Justin Parduhn, Public Works Superintendent: 801-420-0547
- Steve Mower, Sanitary Sewer Manager: 801-420-5708
- Timpanogos Special Service District, Pretreatment Coord: 801-756-5231

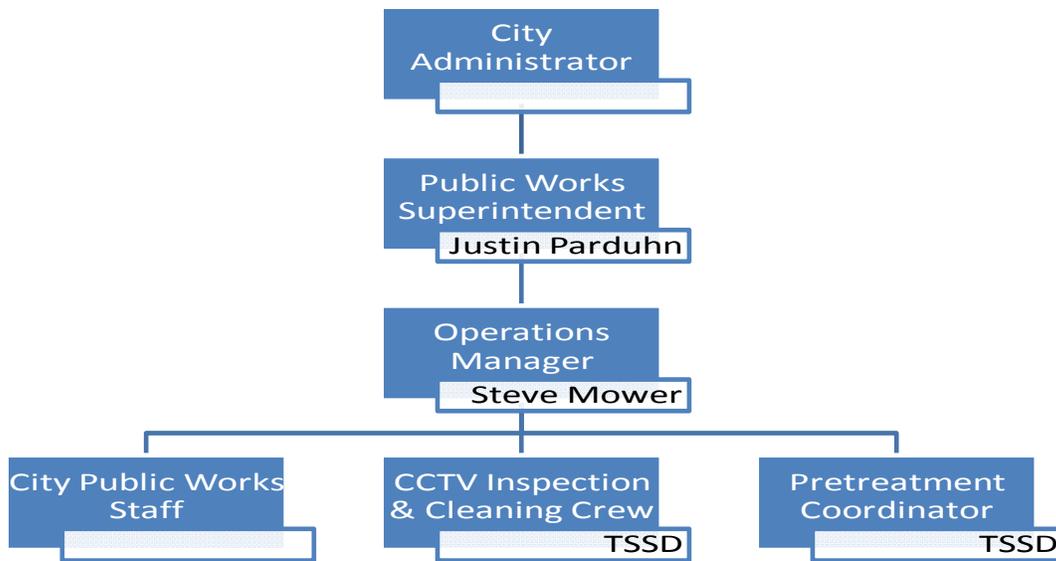
### ***IV. Description of Roles and Responsibilities***

The following positions have the described responsibility for implementation and management of the specific measures as described in the SSMP.

- City Administrator or Designee: This individual is responsible for overall management of the sanitary sewer collection system. Responsibilities include working with governance to assure sufficient budget is allocated to implement the SSMP, maintenance of the SSMP documentation, development of a capital improvement program and general supervision of all staff.
- Public Works Superintendent: This individual is responsible for daily implementation of the SSMP. This includes maintenance activities, compliance with SORP requirements, and monitoring and measurement reporting requirements.
- City Engineer: This individual is responsible for the development and maintenance of collection system design standards, maintenance of collection system mapping and maintenance of the SECAP program.

- Sanitary Sewer Manager: This individual is responsible for the day to day maintenance and operation of the sanitary sewer collection system; maintenance of the sanitary sewer lift stations; and any emergency call outs for backups in the system.
- Pretreatment Coordinator: This individual is responsible for implementation of the pretreatment program including the fats, oil and grease program. The Timpanogos Special Service District that operates the treatment facility for Highland City’s sewage is responsible for pretreatment programs and inspections.

**V. Organizational Chart**



## **Chapter 2 Introduction & Overview**

### ***I. SSMP Introduction***

Highland City is a municipality established in Utah under the Utah State Code. Highland City was established in 1977 and provides sewage collection to the residents of Highland, Utah. This Sewer System Management Plan (SSMP) manual has been established to provide a plan and schedule to properly manage, operate, and maintain all parts of the sewer collection system to reduce and prevent Sanitary Sewer Overflows (SSO), as well as minimize impacts of any SSO that occur. The management for this City recognizes the responsibility it has to operate the sewer system in an environmentally and fiscally responsible manner. As such, this manual will cover aspects of the collection system program necessary to provide such an operation. This manual may refer to other programs or ordinances and by reference may incorporate these programs into this manual.

### ***II. Annual Reporting***

Per the Rule R317-801, the City shall submit to DWQ a USMP annual operating report covering information for the previous calendar year by April 15 of the following year.

### ***III. Definitions***

The following definitions are to be used in conjunction with those found in Utah Administrative Code R317. The following terms have the meaning as set forth:

- (a) BMP: Best Management Practices
- (b) CCTV: Closed Circuit Television
- (c) CIP: Capital Improvement Plan
- (d) UDWQ: Utah Division of Water Quality
- (e) FOG: Fats, Oils, and Grease
- (f) GOSI: Grease Oil and Sand Program
- (g) I/I: Infiltration and Inflow
- (h) Permittee: Federal or state agency, municipality, county, district, and other political subdivision of the state that owns or operates a sewer collection system or who is in direct responsible charge for operation and maintenance of the sewer collection system. When two separate federal or state agencies, municipality, county, district, and other political subdivision of the state are interconnected, each shall be considered a separate Permittee

- (i) SECAP: System Evaluation and Capacity Assurance Plan
- (j) Sewer Collection System: A system for the collection and conveyance of wastewaters or sewage from domestic, industrial and commercial sources. The Sewer Collection System does not include sewer laterals under the ownership and control of an owner of real property, private sewer systems owned and operated by an owner of real property, and systems that collect and convey storm water exclusively.
- (k) SORP: Sewer Overflow Response Plan
- (l) SSMP: Sewer System Management Plan
- (m)SSO: Sanitary Sewer Overflow; the escape of wastewater or pollutants from, or beyond the intended or designed containment of a sewer collection system.
- (n) Class 1 SSO: Significant Sanitary Sewer Overflow or backup that is not caused by a private lateral obstruction or problem that:
  - (i) Affects more than five private structures;
  - (ii) Affects one or more public, commercial or industrial structure(s);
  - (iii)May result in a public health risk to the general public;
  - (iv)Has a spill volume that exceeds 5,000 gallons, excluding those in single private structures; or
  - (v) Discharges to Waters of the State of Utah.
- (o) Class 2 SSO: Non-Significant Sanitary Sewer Overflow; SSO or backup that is not caused by a private lateral obstruction or problem that does not meet the Class 1 SSO criteria.
- (p) USMP: Utah Sewer Management Program.

**IV. *General SSO Requirements***

The following general requirements for SSO's are stipulated in R317-801 and are included here as general information.

- (1) The Permittee shall take all feasible steps to eliminate SSOs to include:
  - (a) properly managing, operating, and maintaining all parts of the sewer collection system;
  - (b) training system operators;

- (c) allocating adequate resources for the operation, maintenance, and repair of its sewer collection system, by establishing a proper rate structure, accounting mechanisms, and auditing procedures to ensure an adequate measure of revenues and expenditures in accordance with generally acceptable accounting practices; and,
- (d) Providing adequate capacity to convey base flows and peak flows, including flows related to normal wet weather events. Capacity shall meet or exceed the design criteria of R317-3.

When an SSO occurs, the Permittee shall take all feasible steps to:

- a) Control, contain, or limit the volume of untreated or partially treated wastewater discharged;
- b) Terminate the discharge;
- c) Recover as much of the wastewater discharged as possible for proper disposal, including any wash down water; and,
- d) Mitigate the impacts of the SSO.

#### ***V. SSO Reporting Requirements***

Requirements R317-801 stipulates when and how SSO's are reported. Following are those reporting requirements as of 04/23/2012. SSOs shall be reported as follows:

- a) A Class 1 SSO shall be reported orally within 24 hours and with a written report submitted to the DWQ within five calendar days.
- b) Class 1 SSO's shall be included in the annual USMP report.
- c) Class 2 SSOs shall be reported on an annual basis in the USMP annual report.

#### ***VI. Sewer Use Ordinance***

Highland City has a sewer use ordinance that has been adopted by the governing body. This ordinance contains the following items as stipulated by Utah State Code R317-801:

- a) Prohibition on unauthorized discharges,

- b) Requirement that sewers be constructed and maintained in accordance with R317-3,
- c) Ensures access or easements for maintenance, inspections and repairs,
- d) Has the ability to limit debris which obstruct or inhibit the flow in sewers such as foreign objects or grease and oil,
- e) Requires compliance with pretreatment program,
- f) Allows for the inspection of industrial users, and
- g) Provides for enforcement of for ordinance or rules violations.

**VII. SSMP Elements**

The following elements are included in this SSMP:

- General Information
- Operations and Maintenance Program
- Sewer Design Standards
- Sanitary Sewer Overflow Response Plan
- Grease, Oil and Sand Interceptor Management Program
- System Evaluation and Capacity Assurance Plan
- SSMP Monitoring and Measurement Plan
- Sewer System Mapping Program
- Basement Backup Program
- No Fault Sewage Backup Claims Program

This program is intended to be a guidance document and is not intended to be part of a regulatory requirement. As such, failure to strictly comply with documentation requirements is, in and of themselves, not a failure of the program's effectiveness.

Documentation failures are intended to be identified during system self-audits and will be addressed as training opportunities. Significant system failures will be followed up with corrective action plans. This corrective action process will be implemented by all individuals involved in the SSMP program. Not all Highland City employees will necessarily be involved in the collection system operations. As such, not all employees will receive program training.

Finally, although not a part of this SSMP program, Highland City is an active participant in the Blue Stakes of Utah Utility Notification system. This system,

regulated under title 54-8A of the Utah State Code, stipulates utility notification of all underground operators when excavation takes place.

The intent of this regulation is to minimize damage to underground facilities. Highland City has a responsibility to mark their underground sewer facilities when notified an excavation is going to take place. Participation in the Blue Stakes program further enhances the protection of the collection system and reduces SSO's.

## **Chapter 3 Operations and Maintenance Program**

### ***I. Operations and Maintenance Program***

Highland City has established this sanitary sewer system operations and maintenance program to ensure proper system operations, to minimize any basement backups or SSOs, and to provide for replacement, refurbishment, or repair of damaged or deteriorated piping systems. The combined maintenance program insures that the environment and health of the public are protected at a reasonable cost for the end users. To this end, the following areas are described and included in this maintenance program:

- System Mapping
- System Cleaning
- System CCTV Inspection
- Pump Station/Pressure Lines Inspection
- Manhole Inspection
- Defect Reporting
- Damage Assessment

### ***II. System Mapping***

An up to date map is essential for effective system operations. Highland City has assigned the mapping responsibility to the Public Works Director or his designee who will prepare and maintain current mapping for the entire sanitary sewer system. Mapping may be maintained on either paper or in a graphical information system (GIS) or a combination of both. Current mapping is available at the Highland City Offices.

Should any employee identify an error in the mapping, they should document the error on a defect report and give it to the Public Works Director.

### ***III. System Cleaning***

Highland City currently contracts with TSSD to flush and if necessary vacuum the sewer lines. Highland City has established a goal to clean the entire system every four (4) years. Based on experience over the past 20 years, this frequency significantly reduces the number of basement backups, controls grease problems and flushes any bellies in the system. In addition Highland City will begin a list of identified hot spots which are maintained at a higher frequency.

Systems which may have roots are mechanically rodded or hydraulically cut out and areas where restaurants are close together are hydraulically flushed with a high pressure jet truck. The following methods are employed to provide system cleaning in the City as necessary:

- Hydraulic Cleaning
- Mechanical Rodding.
- Chemical Root Control
- Chemical FOG Control

Cleaning Records will be maintained at the office of the Public Works Office by the Operations Manager. Contractors are required to provide cleaning records associated with their work. Should the cleaning process identify a serious defect, the problem should be reported on a Defect Report Form. The Public Works Director should be given the defect reports for further action. The defect report should be specific as to location and type of problem. A copy of the Defect Report Form is included at the end of this narrative section. A summary of all cleaning activities and actions shall be prepared annually by the Operations Manager. This summary will be presented to the Public Works Director upon completion for review and comments.

#### ***IV. System CCTV Inspection***

Closed Circuit TV inspections of the sanitary sewer system are used to assess pipe condition and identify problems or possible future failures which need current attention. The CCTV process also identifies the piping condition to allow for replacement prior to failure. Generally Highland City will conduct CCTV inspection through a contract with Timpanogos Special Service District. Inspections of the system will occur every 10 to 15 years. This inspection frequency is based on the pipe aging process.

As such, once the system has been inspected completely, change usually occurs gradually. CCTV will also be employed when a systems operation or capacity is questioned or when an SSO occurs. Any defects identified during the CCTV process should be reported on a Defect Report Form and the form should be given to the Public Works Director for possible repairs. Documentation of CCTV activities will be maintained at Highland City Offices and/or the Public Works Office.

When contractors are employed to inspect the sanitary sewer system they will be required to submit records for their work. The Operations Manager will prepare an annual summary of CCTV completed for that calendar year.

#### ***V. Pump Station/Pressure Line Inspection***

Staff inspects each pump station at least weekly for correct operations. Included in this inspection is a visual observation of the pressure line alignment in order to insure there are no leaks. Pump stations are also monitored via remote monitoring from the SCADA System. Operators inspecting the pump stations will complete the City's inspection form. Should a problem be encountered that cannot be corrected during

the inspection, a Defect Report Form should be completed and the form given to the Public Works Director. If the defect has the potential to cause a sanitary sewer overflow, immediate action should be taken to insure no overflow occurs. During the inspection of the pressure sewer alignment, operators should be looking for unusual puddles. If a potential leak is identified a Defect Report should be completed and given to the Public Works Director for further action. An evaluation will be made to determine if there is an actual leak and appropriate action taken.

**VI. *Manhole Inspection***

Highland City schedules annual inspection of the sanitary sewer manholes (M/H). The M/H inspection involves the identification of foreign objects and surcharging that may be present. Crews inspecting the manholes will be given maps by the Operations Manager who will monitor the progress and completeness of the inspection process. When a potential defect is identified the manhole should be flagged. Flagged manholes should be checked by an operator within several days to determine further action. If, during the inspection process, the inspection crew believes a problem is imminent, they should immediately cease inspecting and inform the Public Works Director of the problem. A cleaning crew should be dispatched immediately to ensure correct system operations. All inspection records will be retained for documentation of work performed.

**VII. *Defect Reporting***

Defect Reports generated through the cleaning, CCTV inspection, pump station inspection or manhole inspection programs will be prioritized for correction by the Public Works Director. Any defects which have the potential for catastrophic failure and thus create a SSO should be evaluated immediately and discussed with the Public Works Director for repair. Repair methods may include:

- Spot Excavation Repairs
- Spot Band Repairs
- Segment Excavation Replacements
- Segment Lining
- Manhole Rehabilitation

When a defect is not flagged for immediate repair, it should be considered for placement on the “hot spot” list. This will allow for vigilant maintenance to ensure failure and a subsequent sanitary sewer overflow do not take place. Defect reports should be used in the Budget process to determine what financial allocation should be made in the next Budget year. The Operations Manager should include outstanding defects in the annual report.

**VIII. *Collection System Damage***

Collection damage may occur as a result of multiple factors, some identified as a result of inspection activities and some identified as a result of damage by third parties such as contractors.

**IX. *Damage Identification***

The identification of system damage which may result in an SSO or basement backup is important to prevent environmental, public health, or economic harm.

Identification of damage may be from either internal activities or external activities.

Internal activities which may result in the identification of damage include the following:

- Collections Maintenance Activities
- CCTV Inspection Activities
- Manhole Inspection Activities

These three activities are discussed in this Maintenance Program and the identification of damage will result in the generation of a Defect Report. Generally, damage identification is an iterative and continuous process.

External activities which identify damages include:

- Contractor Notification of Damage
- Directional Drilling Notification of Damage
- Public Damage Complaints

All three of these notifications generally require immediate response. Staff should respond and evaluate the seriousness of the damage and the effect on the environment. Damages which include a release to the environment should be handled in accordance with the SORP. Damages which cause a basement backup should trigger the Basement Backup program. Damages which remain in the trench do not require more action than the repair of the damage.

Whatever the cause of collection system damage, the response should be expeditious to prevent environmental or economic harm. City staff should consider all damages an emergency until it is shown by inspection to be a lower priority.

**X. *Damage Response Actions***

When damages occur in the collection system, the following actions help define the path staff should take. These action plans are not inclusive of all options available but are indicative of the types of response that may be taken.

***a. Stable Damage***

Inspection activities may show a system damage which has been there for an extended period of time. Such damage may not require immediate action but may be postponed for a period of time. When stable damage is identified and not acted upon immediately, a defect report should be prepared. If such a defect is identified and repaired immediately, a defect report is not needed. An example of stable damage could be a major crack in a pipeline or a severely misaligned lateral connection where infiltration is occurring.

***b. Unstable Damage***

Unstable damage is damage which has a high likely hood that failure will occur in the near future. Such damage may be a broken pipe with exposed soil or a line which has complete crown corrosion. In these cases, action should be taken as soon as there is a time, a contractor, materials and other necessary resources available. When such unstable damage is identified, if possible, consideration should be given to trenchless repairs which may be able to be completed quicker than standard excavation. Immediately after identification the Manager should be contacted to review and take care of budget considerations.

***c. Immediate Damage***

When a contractor or others damage a collection line such that the line is no longer capable of functioning as a sewer, this immediate damage must be handled expeditiously. Such damage allows untreated wastewater to pool in the excavation site, spill into the environment or possibly backup into a basement. Under such conditions priority should be given to an immediate repair. Since excavation damage may be a result of contractor negligence or it could be a failure of Highland City to adequately protect the line by appropriately following the Damages to Underground Utilities Statute 54-8A, priority should be given to effecting a repair and not to determining the eventual responsible party.

As can be determined from the above action plans, priority should always be preventing SSO's and attendant environmental damage, to prevent basement backups and financial impacts, and to prevent public health issues.

## **Chapter 4 System Evaluation and Capacity Assurance Plan**

Highland City believes that one of the keys to preventing sanitary sewer overflows is to evaluate system capacity and to monitor flows throughout the system in order to ensure that capacities are not exceeded. Should a collection sub-system exceed the capacity of the pipes, the system will be immediately re-evaluated and corrective action taken. The following elements are all part of Highland City SECAP program.

- a) Initial Capacity Modeling and Master Planning
- b) Flow Monitoring
- c) Surcharge Flow Analysis
- d) Re-evaluation Modeling and Analysis
- e) Flow Reduction Evaluation and Implementation
- f) Capacity Increase Evaluation and Implementation

The actual implementation process associated with each of the elements above is shown in figure on the next page. This flow chart process forms the backbone of the SECAP.

### ***I. Initial Capacity Evaluation:***

Highland City has performed an analysis and modeling of each critical subsystem contained within its collection system. In 2007, Hansen Allen & Luce completed the City's Wastewater Collection Master Plan. The master planning included modeling of the entire system, flow monitoring, determination of an equivalent flow for residential unit, recommendations and a Capital Facility Plan. The Master Plan may be viewed at the Highland City Offices. The City plans to update the Master Plan with modeling as appropriate in compliance with the USMP requirements.

### ***II. Flow Monitoring***

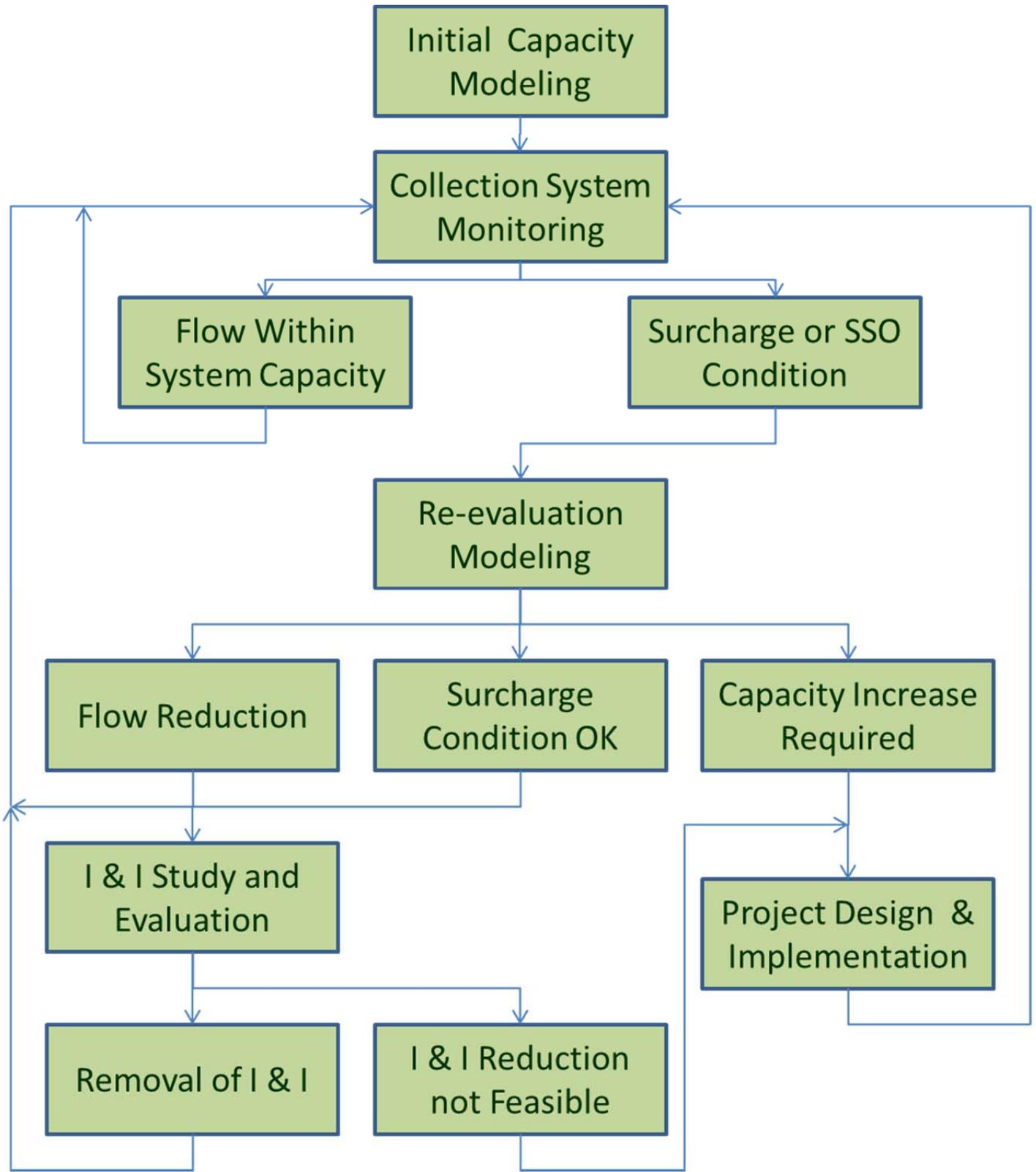
The City monitors flow predominantly through the master influent meters into the TSSD. TSSD reports monthly totals to the City. During the Master Planning process flow metering in City collection lines were provided. The flow monitoring of collection lines provides a basis for City flows.

### ***III. Surcharge Flow Analysis***

If any collection subsystem is identified as having any of the following problems the system will be evaluated to determine future action. These problems are:

- a) Sanitary Sewer Overflow to the Environment
- b) Sanitary Sewer Break Remaining in the Trench
- c) Basement Backup
- d) Observed Subsystem Surcharging.

SECAP Flow Chart



(Surcharge Flow Analysis – continued)

The flow evaluation may result in multiple conclusions, some of which may require further action. Possible conclusions and their further action are listed below. This list is not inclusive nor does it require the specific action detailed. These are given as possible examples and will be used by the Public Works Director to determine correct future action.

a. Flow Reduction Evaluation

Should excessive flows be identified during the surcharge analysis, the solution may be to proceed with an inflow and infiltration study with the ultimate goal of reducing flows. These flow reductions may be achieved by reconstruction of specific areas, internal spot repairs, removing illegal storm water or sump pump connections from homes or storm water systems, and system grouting. Tools used in flow reduction may include extensive in line camera inspection, smoke testing, dye testing, and increased inspection or flow monitoring.

b. Foreign Objects or Obstructions

There are multiple foreign objects which may be found in sewers. These may include objects knocked into sewers during construction, illegally placed in sewer manholes, roots, grease and soaps, bellies in piping systems, etc. Each of these problems should be found during the backup investigation and a plan developed to insure the problem does not reoccur. Types of action may include increased cleaning frequency, spot repairs, greater pretreatment activity, lining of pipes, and other corrective actions which resolve the problem.

c. Allowable Surcharging

Some piping systems may be able to accept surcharges without creating problems. Such systems may be deep and surcharging occurs below the level of basements or manhole rims, or they may be in areas where there are no connections. In such cases the resolution of the observed surcharge may just be additional monitoring.

d. Revised System Modeling

Where piping system problems cannot be resolved in a less expensive way, the system may be further modeled to determine upgrade needs. Modeling should include known flow information and future projections. Since the system has been shown to have problems, further modeling should be more conservative in flow projections. Revised modeling should follow the guides given next.

#### **IV. *Re-evaluation Modeling and Analysis***

When a subsystem needs demonstrate unresolvable problems by less costly means, the subsystem should be re-modeled and required action determined. Revised modeling may show that flow reduction may still be viable or it may show that the system can allow current surcharge conditions. Most likely, however, the modeling will normally form the basis for construction to enlarge the subsystem capacity. Modeling should be done either by the City's Consultant.

It is important to insure the modeling is comprehensive and includes all the potential flow sources. While the current area zoning and land use planning should be used in the model development, care should be taken to discuss possible changes with appropriate officials. Where possible zoning changes appear likely, the model should be re-run with the revised zoning alternatives. Once a resolution has been selected, the resulting project should be placed on the capital improvement plan (CIP).

#### **V. *Capacity Increase Evaluation and Implementation***

The capacity evaluation should be expedited based on the impact of the problem on the environment and the possible repeat of the overflow/backup/surcharging. Details on prioritization are given in the next section.

Systems requiring additional capacity should be engineered for expansion by qualified staff or engineering consultants. Project design should be based on acceptable engineering standards and should comply with State of Utah regulations found in R317-3. Easements should be obtained, where needed and the design should include an analysis of other utilities in the vicinity. Design review should be done by the applicable regulatory agency, as appropriate. A design report should be prepared for each project. Where appropriate, the subsystem modeling may be substituted for the design report.

Finalized projects should be placed on the CIP.

#### **VI. *System Improvement Prioritization***

The priority for improvement should follow the following general guidelines:

##### **a. High Priority Projects**

When there is significant potential for sanitary sewer overflows, or frequent basement backups, the improvement should be considered a high priority and any available budget should be allocated to the project.

b. Medium Priority Projects

Where the problem is infrequent and the possibility exists that it may not repeat in the near future, the priority for correction is medium. Medium priority projects may be delayed until appropriate budget is available or the priority is adjusted to high priority. Should an SSO or basement backup repeat in the same area, the priority should be immediately revised.

c. Low Priority Projects

If the observed problem is infrequent, there is possibility that it may not repeat in the near future and the possibility that increased flow in the subsystem is low, the correct priority is low. Low priority projects will be placed in the budget process and evaluated against other needs. These projects will eventually be completed, but the work is not prioritized above plant and equipment needs.

**VII. *Capital Improvement Plan***

The CIP is part of the Highland City's budgeting process to insure sufficient revenue to address identified weaknesses in the sanitary sewer system. Items which have been identified as needing a structural fix are placed on the CIP list and the cost for each estimated. Sources of funding should be identified for all high priority projects so that SSO's or other failures do not re-occur. Forecasts of available funding for medium and low priority projects should be made to facilitate future revenue needs.

## **Chapter 5 Sanitary Sewer Overflow Action Plan**

Whenever sanitary sewage leave the confines of the piping system, immediate action is necessary to prevent environmental, public health or financial damage from occurring. In addition, quick action is normally needed to mitigate damage which may have already occurred. For the purpose of this section, the following are part of the emergency action plan.

- a) Basement backups
- b) Sanitary sewer overflows
- c) Sanitary sewer breaks which remain in the trench
- d) Sewer lateral backups

All of the above conditions are likely to cause some damage. Each should be treated as an emergency, and corrective actions taken in accordance with Highland City directions.

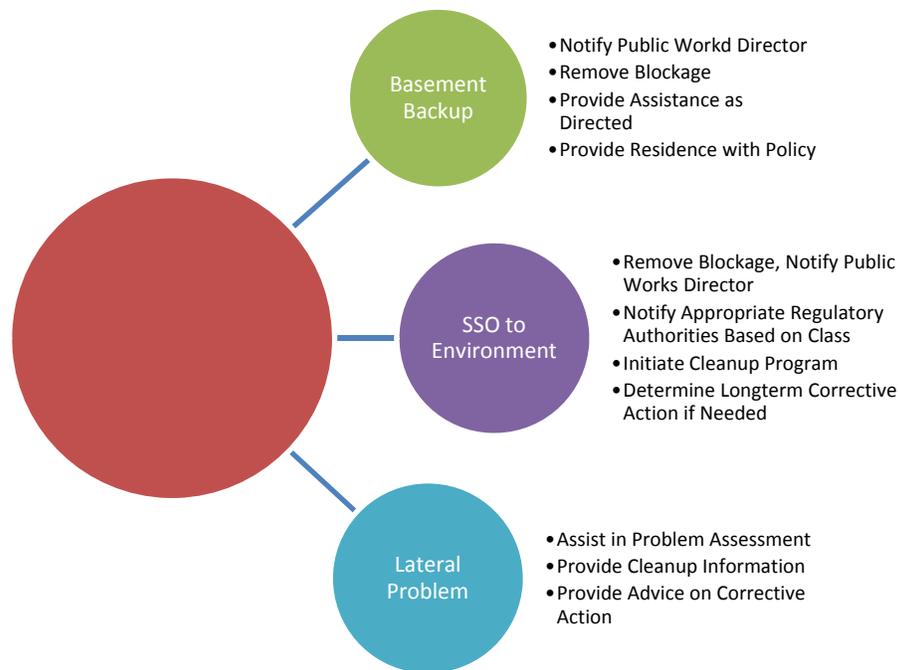
Items a & b above should be reported immediately based on whether they constitute a Class 1 or Class 2 SSO. As stated in the definition section of the SSMP, a Class 1 SSO is an overflow which affects more than five private structures; affects a public, commercial or industrial structure; results in a significant public health risk; has a spill volume more than 5,000 gallons; or has reached Waters of the State. All other overflows are Class 2 SSO's. All Class 1 SSO's should be reported immediately.

Class 2 SSO's should be documented and reported in the annual SSMP report and included in the Municipal Wastewater Planning Program submitted to the State. Item c may be reported to the local health department if, in the opinion of the responsible staff member there is potential for a public health issue. An example of where a public health issue may be present is when an excavator breaks both a sewer and a water line in the same trench. In such cases, the local health department representatives should be contacted and the situation explained. If the health representative requests further action on the part of the Highland City, staff should try and comply. If, in the opinion of the responsible staff member, the health department or state request is unreasonable, the Public Works Director should be immediately notified. Care should always be taken to err on the side of protecting public health over financial considerations.

When a basement backup occurs, the staff member responding should follow the Basement Backup Program procedures. Lateral backups, while the responsibility of the property owner, should also be treated as serious problems. Care should be taken to provide advice to the property owner in such cases, but the property owner is ultimately the decision maker about what actions should be taken.

### ***I. Response Activities***

There are specific steps that should be followed once a notification is received that an overflow may be occurring. The following figure outlines actions that could be taken when the Highland City receives notice that a possible overflow has or is occurring.



### General Notification Procedure

When a Class 1 SSO occurs specific notification requirement are needed. In such cases the following Notification procedure should be followed and documented. Failure to comply with notification requirements is a violation of R317-801.

#### **II. Agency Notification Requirements**

Both the State of Utah Division of Water Quality and the local health department should be immediately notified when an overflow is occurring. Others that may require notification include local water suppliers, affected property owners and notification may be required to Utah Division of Emergency Response and Remediation if hazardous materials are involved.

The initial notification must be given within 24 hours. However, attempts should be made to notify them as soon as possible so they can observe the problem and the extent of the issue while the problem is happening. A notification form is provided to document notification activities.

After an SSO has taken place and the cleanup has been done, a written report of the event should be submitted to the State DEQ within five days (unless waived). This report should be specific and should be inclusive of all work completed. If possible the report should also include a description of follow-up actions such as modeling or problem corrections that has or will take place.

### **III. *Public Notification***

When an SSO occurs and the extent of the overflow is significant and the damage cannot be contained, the public may be notified through proper communication channels. Normally the local health department will coordinate such notification.

Should Highland City need to provide notification it could include press releases to the local news agencies, publication in an area paper, and leaflets delivered to home owners or citizens in the area of the SSO. Notification should be sufficient to insure that the public health is protected. When and if Federal laws are passed concerning notification requirements, these legal requirements are incorporated by reference in this document. In general, notification requirements should increase as the extent of the overflow increases.

### **IV. *Overflow Cleanup***

When an overflow happens, care should be taken to clean up the environment to the extent feasible based on technology, good science and financial capabilities. Cleanup could include removal of contaminated water and soil saturated with wastewater and toilet paper, disinfection of standing water with environmentally adequate chemicals or partitioning of the affected area from the public until natural soil microbes reduce the hazard.

Cleanup is usually specific to the affected area and may differ from season to season. As such, this guide does not include specific details about cleanup. The responsible staff member in conjunction with the State DEQ, the local health department and the owner of real property should direct activities in such a manner that they are all satisfied with the overall outcomes. If, during the cleaning process, the responsible staff member believes the State or the County is requesting excessive actions, the Public Works Director should be contacted.

### **V. *Corrective Action***

All SSO's should be followed up with an analysis as to cause and possible corrective actions. An SSO which is the result of grease or root plug may be placed on the preventative maintenance list for more frequent cleaning.

Serious or repetitive plugging problems may require the reconstruction of the sewer lines. An overflow that results from inadequate capacity should be followed by additional system modeling and either flow reduction or capacity increase. If a significant or unusual weather condition caused flooding which was introduced to the sanitary sewer system incorrectly, the corrective action may include working with other agencies to try and rectify the cross connection from the storm sewer to the

sanitary sewer or from home drainage systems and sump pumps. Finally, should a problem be such that it is not anticipated to reoccur, no further action may be needed.

## **Chapter 6 Grease, Oil and Sand Management Program (GOSI)**

The purpose of a GOSI program is to provide for the control and management of grease, oil and sand discharges to the collection system. Currently, TSSD has implemented a GOSI to quarterly inspect businesses in Highland that were found to require a sand and/or grease separator before discharging into the City's System. TSSD's current GOSI is administered by the Districts Pre-Treatment Manager.

When an infraction occurs or if the TSSD staff identify a problem they coordinate with the City Operations Manager. The City through CCTV inspection and cleaning will identify any 'Hot Spots' where FOG's may be a problem. These 'Hot Spots' will be monitored to ensure sufficient capacity in the collection system.

## **Chapter 7 Sewer Design Standards & Mapping**

### ***I. Design Criteria and Standards***

Highland City's Sewer Design Criteria, Construction Standards and Specifications can be found on their website at <http://highlandcity.org/index.aspx?nid=145> .

These design standards are intended to be used in conjunction with Utah Administrative Code R317-3. Where a conflict exists between these two standards, the Administrative Code shall prevail.

### ***II. System Mapping***

The City currently maintains records on the Sewer System through the City GIS System and As-Built Drawings. As-Built drawings are prepared for each new development and Capital Facility Project. City GIS information is updated periodically.

## **Chapter 8 Basement Backup Program**

Basement backups are a serious impact on a home or business owner. As such, all reasonable efforts should be taken to prevent such backups from occurring. Sewer system backups are the result of several system problems. Such problems include any one or a combination of the following:

1. Laterals serving real properties are owned by the property owner and lateral maintenance is their responsibility. Roots, low points, structural failure, and grease are primary problems lateral owners face.
2. Backups caused by main line plugs are usually caused by roots, grease, low points, foreign objects and contractor negligence.
3. Piping system structural damage may cause basement backups. Such structural problems include age or deterioration damage, installation damage, excavation damage and trenchless technology damage.
4. Excess flow problems may surcharge a piping system and cause backups into homes. Excess flows usually occur when major storm waters inflow into sanitary sewers. Sanitary sewers are not designed for such flow. In addition, some homeowners may illegally connect foundation drains and sump pumps to the sanitary sewer system.

### ***I. Basement Backup Response***

When the City is notified about a basement backup, staff will log the complaint in a complaint log. The person receiving the call may log the backup complaint or may ask administrative staff to document the complaint.

All backup complaints shall be investigated by staff. If the investigation determines that the case of the backup is only in the lateral, staff may offer technical information but should not take responsibility for cleanup or subsequent restoration.

When it is determined that the basement backup is the result of a mainline problem, the City will follow the policy approved by its governing authority. A copy of this policy should be given to the home owner. It should be noted that all action the City takes are on a no-fault basis. The City does not accept liability nor does it waive its governmental immunity.

## ***II. Backup Prevention Design Standard***

The City promotes system designs which minimize backups and insure proper operations. To this end the City has a design standard for all system construction. In addition, the City complies with state design standards contained in R317-3. Finally for laterals, the following policy applies:

### **Policy on the Installation of Backflow Valves**

#### Reference Regulatory Documents:

The following regulations are referenced in the establishment of this policy:

- Utah Code Title 15A-2-103(c). This code section adopts the 2009 edition of the International Plumbing Code.
- The 2009 International Plumbing Code, section 715 Sewage Backflow.

#### City Policy:

- The State of Utah has adopted the International Plumbing Code(IPC) as its plumbing building standard;
- And the IPC requires the installation of a sewage backwater valve “where the overflow rim of the lowest plumbing fixtures are below the next upstream manhole in the public sewer.”

Therefore, for new construction, the City requires the installation of backwater valves as stipulated by the IPC already propagated for all new construction.



A. SPILL LOCATION			
Street Name and Number: _____			
City: _____	County: _____	Zip Code: _____	
<input type="checkbox"/> Public Street <input type="checkbox"/> Private (Residence) <input type="checkbox"/> Private (Business) <input type="checkbox"/> City-Owned <input type="checkbox"/> Other _____			

B. SPILL TIME LOG			
Start of Spill:	Date:	Time:	<input type="checkbox"/> A.M. <input type="checkbox"/> P.M.
City Notified:	Date:	Time:	<input type="checkbox"/> A.M. <input type="checkbox"/> P.M.
WWS Notified:	Date:	Time:	<input type="checkbox"/> A.M. <input type="checkbox"/> P.M.
Sewer Crew Dispatched:	Date:	Time:	<input type="checkbox"/> A.M. <input type="checkbox"/> P.M.
Sewer Crew Arrival:	Date:	Time:	<input type="checkbox"/> A.M. <input type="checkbox"/> P.M.
Spill Stopped:	Date:	Time:	<input type="checkbox"/> A.M. <input type="checkbox"/> P.M.
Spill Contained:	Date:	Time:	<input type="checkbox"/> A.M. <input type="checkbox"/> P.M.
Spill Cleaned Up:	Date:	Time:	<input type="checkbox"/> A.M. <input type="checkbox"/> P.M.

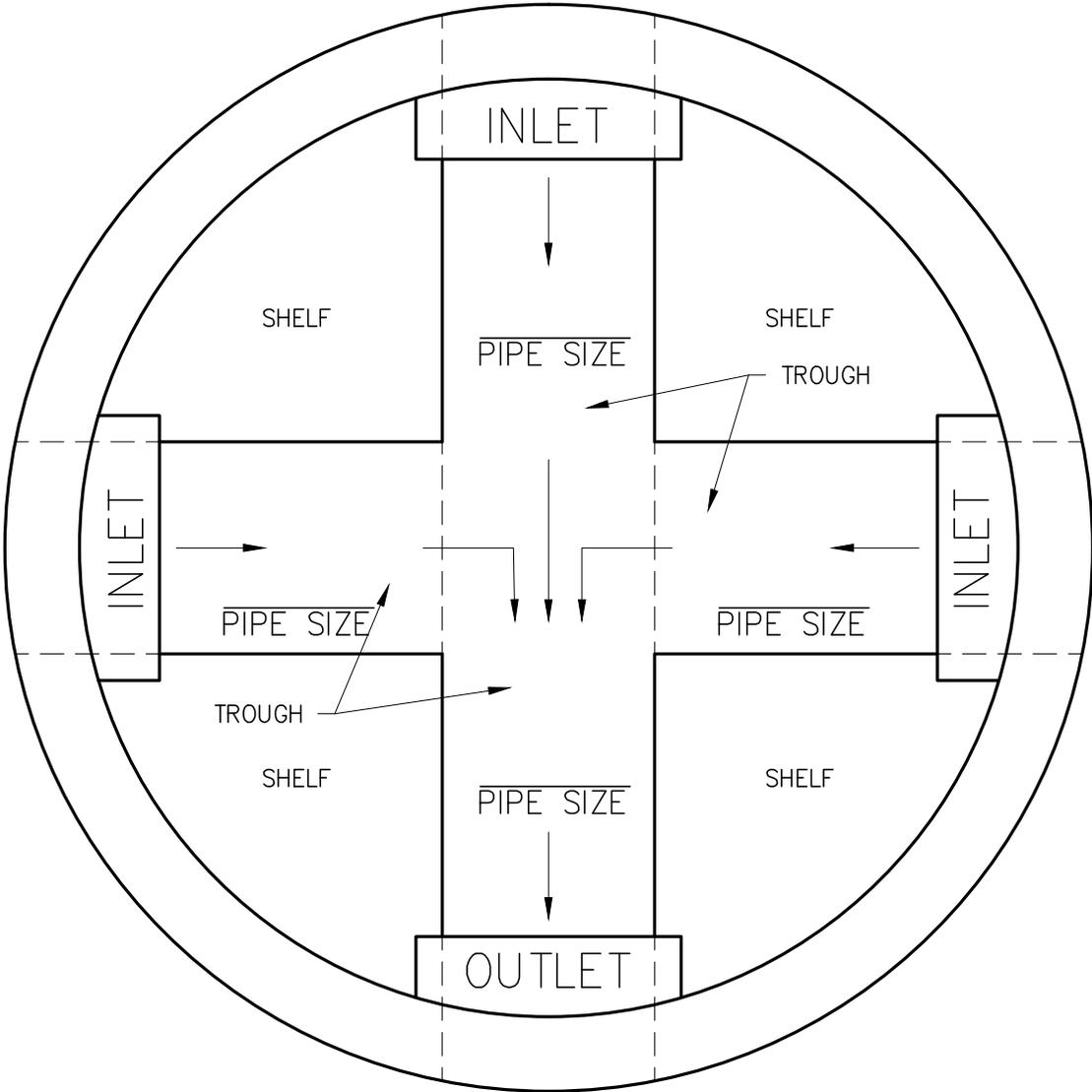
C. SPILL DESCRIPTION / CAUSE	
Spill Site: <input type="checkbox"/> Gravity Sewer <input type="checkbox"/> Force Main <input type="checkbox"/> Manhole <input type="checkbox"/> Building/Structure <input type="checkbox"/> Pump Station <input type="checkbox"/> Other Sewer System Structure _____ <input type="checkbox"/> Other _____	
ID# (if applicable): _____	Approximate Spill Volume (gallons): _____
Location of Blockage: <input type="checkbox"/> Main <input type="checkbox"/> Lateral <input type="checkbox"/> Private Lateral <input type="checkbox"/> Other _____	
SSO Cause(s): <input type="checkbox"/> Blocked Sewer <input type="checkbox"/> Pipe Failure <input type="checkbox"/> Mechanical Malfunction <input type="checkbox"/> Vandalism <input type="checkbox"/> Construction of Other Utilities <input type="checkbox"/> Natural Disaster <input type="checkbox"/> Other _____	
Description: _____ _____ _____ _____	
If causes included blocked sewer indicate if any of the following apply: <input type="checkbox"/> Flow exceeded the capacity of the sewer pipe. <input type="checkbox"/> Buildup of FOG contributed to blockage.	

D. SPILL RESPONSE	
Spill Response Activities: <input type="checkbox"/> Stopped the cause of SSO <input type="checkbox"/> Requested additional resources <input type="checkbox"/> Performed TV Inspection <input type="checkbox"/> Contained the SSO <input type="checkbox"/> Flushed and cleaned the area <input type="checkbox"/> Disinfected the site (where appropriate) <input type="checkbox"/> Other: _____	
Other Comments: _____	
Name of impacted waters (if applicable): _____	
Comments from visual inspection of impacted waters: _____	
Were health warnings posted (if applicable)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Was the County Health Department Notified (if applicable)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

E. SPILL CLASSIFICATION
Was the backup caused by a private lateral? <input type="checkbox"/> Yes <input type="checkbox"/> No – If “Yes” then the spill is neither a Class 1 nor Class 2 SSO. – If “No” then the spill is either a Class 1 or Class 2 SSO.
Check the following that apply: <input type="checkbox"/> Spill affected more than five structures <input type="checkbox"/> A public, commercial, or industrial structure was affected <input type="checkbox"/> Spill posed a possible public health risk to the general public <input type="checkbox"/> Spill volume exceeded 5,000 gallons (excluding those in single private structures) <input type="checkbox"/> Spill volume discharged to waters of the State – If one or more of the above are checked and the backup was not caused by a private lateral, the spill is a Class 1 SSO. – If none of the above are checked and the backup was not caused by a private lateral, the spill is a Class 2 SSO.
Based on the information above, what is the classification of the spill?
<input type="checkbox"/> Class 1 SSO <input type="checkbox"/> Class 2 SSO <input type="checkbox"/> Neither (private lateral)

F. COMMENTS
Use this area to record comments made by the general public, other agencies, property owners, etc.
Name: _____ Phone Number: _____
Category of commenter (i.e. general public, private property owner): _____
Comments: _____ _____ _____ _____
Name: _____ Phone Number: _____
Category of commenter (i.e. general public, private property owner): _____
Comments: _____ _____ _____ _____
Name: _____ Phone Number: _____
Category of commenter (i.e. general public, private property owner): _____
Comments: _____ _____ _____ _____

PIPE TO MANHOLE CONNECTION



## SANITARY SEWER MANHOLE INSPECTION FORM

¼ SEC.#:	M.H. DEPTH:	FORM:	M.H.#:	DATE:
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APPROX. ADDRESS: \_\_\_\_\_

I. INITIAL INSPECTION	II. STRUCTURAL INSPECTION	III. HYDRAULIC INSPECTION
<b>A. LOCATION:</b> 1. Roadway 2. Gutter 3. Paved Alley 4. Unpaved Alley 5. Easement 6. Other _____	<b>A. STEPS:</b> 1. Serviceable 2. Unsafe 3. Missing (no.) 4. Corroded 5. None	<b>A. INFLOW INDICATIONS:</b> 1. Debris on Sides/Shelf <b>B. SURCHARGE INDICATOR:</b> 1. Grease/Debris on Sides & Shelf
<b>B. MANHOLE COVER:</b> 1. Serviceable 2. Damaged 3. Displaced 4. Missing 5. Needs Raising 6. Needs Lowering	<b>B. CONE:</b> 1. Serviceable 2. Broken 3. Sulfided 4. Misaligned 5. Leaking/Bad Joints	<b>C. CLARITY OF FLOW:</b> 1. Turbid Appearance 2. Clear Appearance <b>D. FLOW:</b> 1. Steady 2. Pulsing 3. Turbulent 4. Surcharging 5. Sluggish
<b>C. RING &amp; FRAME:</b> 1. Serviceable 2. Loose 3. Displaced 4. Missing Grout 5. Needs Raising 6. Needs Lowering	<b>C. RISER:</b> 1. Serviceable 2. Broken 3. Sulfided 4. Misaligned 5. Leaking/Bad Joints	<b>E. FLOW DEPTH COMPARED TO ADJACENT MANHOLES:</b> 1. Same 2. Lower 3. Higher
<b>D. MANHOLE MATERIAL:</b> 1. Brick 2. Concrete	<b>D. SHELF:</b> 1. Serviceable 2. Broken 3. Dirty/Sulfided 4. Bad Base Joint	<b>F. FLOW DEPTH:</b> 1. _____ Inches 2. Time _____ a.m./p.m.
<b>E. SIZE M.H. COVER:</b> 1. 24 Inch 2. 30 Inch 3. Other (size) _____	<b>E. CHANNEL:</b> 1. Serviceable 2. Obstructed 3. Sulfided 4. Bad Pipe Joint 5. Silt 6. Poor Struct. Cond.	<b>G. VERMIN:</b> 1. Roaches 2. Rats 3. Other _____
<b>F. MANHOLE SIZE:</b> 1. 4 Foot 2. 5 Foot 3. Other (size) _____		

OBSERVATION SUMMARY:

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FOREMAN RECOMMENDATIONS:

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SUPERVISOR APPROVAL & COMMENTS:

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