

City of Portland, Oregon

**Water Pollution Control Facilities (WPCF) Permit For
Class V Stormwater Underground Injection Control Systems**

Permit Number: 102830

SYSTEMWIDE ASSESSMENT FOLLOW-UP ACTIONS

Stormwater Underground Injection Control

December 2006

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City of Portland, Bureau of Environmental Services**

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Figure

Figure 1: Separation Distance- Projected Follow-up Action Timeline

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1 Introduction and Organization



1.1 Introduction

This work plan presents the approach the City of Portland (City) Bureau of Environmental Services (BES) will take to further evaluate City-owned or operated underground injection control systems (UICs) identified by the City's *Systemwide Assessment*¹ as having the one or more of the characteristics identified in Section 1.2. The *Systemwide Assessment* was performed in accordance with the Water Pollution Control Facility (WPCF) permit issued to the City by the Oregon Department of Environmental Quality (DEQ) on June 1, 2005.

1.2 Background

The purpose of the *Systemwide Assessment* was to identify, evaluate, track, and report on spatial and physical characteristics of City owned UICs. Of the approximately 9,000 City-owned UICs that were subject to the assessment, the City identified approximately 950 UICs for follow-up actions. A summary of these UICs is presented in the following table.

As used in this document, **UIC** means any Class V underground injection control system owned or operated by the City of Portland.

| System Assessment Factor | Result (No. of UICs) | Work Plan Section |
|---|----------------------|-------------------|
| UICs in areas of high groundwater that may have inadequate separation distance between the bottom of the UIC and groundwater. | 400 | Section 2 |
| UICs that may receive drainage from motor vehicle maintenance floor drains, fire station bay drains, or indoor parking facilities. | 1 | Section 2 |
| UICs that may receive drainage from industrial and commercial properties that store, handle, or use toxic or hazardous materials that are regulated under SARA Title III. | 78 | Section 3 |
| UICs that may receive drainage from industrial and commercial properties that have site activities that would be expected to result in a direct or indirect discharge to a UIC that may cause a violation of permit conditions. | 147 | Section 3 |
| UICs estimated to be located within 500 feet of a domestic well; two-year time of travel of a public water well; or 500 feet of a public water well that does not have a time of travel delineation. | 332 | Section 4 |
| UICs that receive drainage from public and private facilities that have been issued a NPDES 1200-Z permit | 0 | NA |

¹ The *Systemwide Assessment Report* was submitted to DEQ in July 2006.

UICs were identified in the *Systemwide Assessment* as belonging to one or more of the assessment factors (identified in the above table) as a result of initial evaluation. Additional evaluation is required to determine if the identified UICs are compliant with permit requirements or require corrective action. Results of the *Systemwide Assessment* were not intended to provide a definitive source of information for determining UIC compliance status. Portions of the assessment were based on estimated and modeled information that was intended to focus additional evaluation efforts on a subset of the UIC system.

This work plan presents the approach that will be applied for conducting additional evaluation of the UICs identified for follow-up in the *Systemwide Assessment*. DEQ's approval of this approach was provided in response to a BES letter, dated June 2, 2006 (Re: *Schedule Classification, Underground Injection Control System, City of Portland WPCF Permit No. 10283*).

1.3 Work Plan Organization

The work plan is organized as follows:

Section 2 presents the approach that will be used to evaluate UICs located in areas of high groundwater to determine if the separation distance between the UIC and groundwater is sufficient. The one UIC identified that receives drainage from a Fire Station Bay Drain has also been estimated to have in-adequate separation distance. This location will be grouped and addressed as part of the separation distance evaluation.

Section 3 outlines the approach that will be used to evaluate UICs that were identified to potentially receive drainage from SARA Title III facilities and Commercial/Industrial properties.

Section 4 describes the approach that will be used to assess UICs that are located in close proximity to domestic drinking water wells.

1.4 Ongoing Evaluation

The UICs identified for follow-up actions in the *Systemwide Assessment* were defined using the best available information at the time. Follow-up actions described in this document are designed to collect the information necessary to determine UIC compliance with permit conditions and address data gaps. Evaluation activities associated with the City's UIC program are ongoing throughout the life of the permit as described in the City's *UIC Management Plan* (UICMP), submitted to DEQ in December 2006.

The tasks and projected times described in this document are subject to change as additional data and information are gathered. Availability of data, results of data evaluation, field conditions, bidding and procurement processes, results of demonstration projections, identification of technologies, staff availability, and funding resources are examples of factors that could alter the scope or timelines for the projected follow-up actions.

If tasks or projected timelines change, DEQ will be informed through the scheduled meetings and changes will be reflected in the annual UICMP report.

2 Separation Distance

Section

2

2.1 Systemwide Assessment Results

The WPCF permit requires that UICs more than 5 feet deep must have a minimum separation distance of 10 feet between the UIC and seasonal high groundwater. UICs less than 5 feet deep must have a minimum separation distance of 5 feet.

The *Systemwide Assessment Report* estimated separation distance for the approximate 9,000 UICs within the City system. Through a collaborative effort with DEQ and USGS, the City was able to demonstrate that the vast majority of City-owned UICs have adequate separation distance between the bottom of the UIC and seasonal high groundwater. Of the initial UICs evaluated, there are approximately 400 UICs that were identified as potentially having inadequate separation distance. Most of these UICs are located within the Johnson Creek / Holgate Lake and Columbia Slough areas. This preliminary identification of UICs in areas of high groundwater was intended to focus additional investigations needed to address or confirm separation distance status.

Of the 400 identified UICs with the potential for inadequate separation distance, 29 were identified as Category 2 UICs, based on field verification of the *System Assessment* results. The method for identification of the 29 locations is discussed as part of the annual UICMP report, submitted to DEQ on December 1, 2006. The Category 2 UICs are identified as non-compliant with permit requirements and will be addressed in accordance with the process described in the *Corrective Action Plan*² (CAP).

An additional, 22 UICs were identified in the *Systemwide Assessment* that do not pose a threat to groundwater quality and will not be further evaluated. These UICs are described below:

- 20 UICs are operated by the Portland Water Bureau and include vault drains, aquifer storage and recovery wells, and tank overflows. These locations were previously registered with DEQ by the Water Bureau and are considered City-owned UICs under the permit. The purpose of the separation distance is so E. coli bacteria can be removed from stormwater by physical processes in the soil before reaching groundwater. Because these locations are associated with the City's potable water supply system, they pose no threat to groundwater and were previously authorized by DEQ for continued use.
- Two (2) UICs are operated by the Portland Parks Bureau. These locations consist of drinking water fountain overflows that have a depth of 2 feet. Because of the nature of the drainage, these UICs pose no threat to groundwater. Because these locations are associated with the City's potable water supply system, they pose no threat to groundwater and were previously authorized by DEQ for continued use.

Ninety-four of the remaining 349 UICs identified for further evaluation currently have unknown depths. UICs without reported depths in the City's Hansen database were assumed to be 30 feet

² The *Corrective Action Plan* was submitted to DEQ for review and approval on July 15, 2006. Approval is pending.

in depth for the purposes of the *Systemwide Assessment*. This is the standard construction depth for all new UIC systems. Since this is an assumed rather than confirmed depth, the estimated separation may require field verification to adequately assess compliance.

2.2 Projected Follow-up Actions

Of the initial 9,000 UICs evaluated in the *Systemwide Assessment*, approximately 349 UICs were identified as potentially having inadequate separation distance and requiring further evaluation. Further evaluation is needed to confirm the separation distance of the 349 UICs. The methods that will be used to evaluate the remaining UICs, including sources of data used and the evaluation process are described in the following sections.

Follow-up actions identified in this work plan focus on early development and implementation of technologies that can be used to increase separation distance or manage stormwater using infiltration. This process includes performing pilot studies or demonstration projects, but not to the exclusion of generating important information for determining compliance status, making stormwater management decisions, or correcting non-compliant conditions.

The goals of the tasks described in this section are as follows.

- Determine UIC compliance.
- Focus additional data collection to support identification of potential corrective action alternatives and corrective action design.
- Pilot test a range of technologies to increase separation distance and determine the associated costs, feasibility, and applicability of these technologies.
- Identify, evaluate, and recommend feasible alternatives for increasing separation distance or managing stormwater.
- Develop a regional implementation plan for applying selected alternatives in a cost effective and efficient manner.

The following sections describe the tasks the City will undertake over the next two years to develop a preliminary plan for all 349 UICs. Figure 1 presents the projected timeline for implementation of the individual tasks described below. Timeframes identified for Tasks 2 and 3 allow for implementation of established bidding and procurement processes for public works projects. Task timeframes are developed using a minimum bidding and procurement time of approximately 7 months. The bidding and procurement process generally includes advertising the project, developing bid packages and construction documents, reviewing bids, and contracting requested services.

Factors that can affect the bidding and procurement process include the length and complexity of the project, uniqueness of the work, and the time of day that the work may be performed, site and traffic constraints, and availability of qualified contractors. Task timelines for evaluating the feasibility of separation distance technologies and alternatives will be affected if the estimated bidding and procurement process timelines need to be extended. Any changes to schedule will

be communicated to DEQ through meetings identified in this work plan and through the annual UICMP report.

As described in the tasks, dates are identified for meetings between the City and DEQ. The meetings are intended to keep DEQ informed of the progress of the work tasks and to facilitate collaboration between the City and DEQ as alternatives are developed and implemented. These meetings may also be used to initiate discussions with DEQ regarding developing a “regional corrective action” for non-compliant UICs in accordance with the permit.

Potential outcomes or products are described for selected tasks. These products are intended to serve for internal City planning, scoping, and design activities. The identified products are not intended to be formal DEQ submittals, however, they may be used to share information and to allow collaboration in addressing the identified UICs.

2.2.1 Task 1: Initiate Pre-Design Activities

Subtask 1: Meet with DEQ

Projected Timeframe: March 2007.

City UIC Program staff will meet with DEQ in early 2007 to establish expectations and guidelines for implementing a regional approach for addressing the remaining 349 UICs with potential inadequate separation distances. This meeting will also provide an opportunity to update DEQ on progress on Tasks 1 and 2.

Subtask 2: Collect Pre-Design Data & Refine UIC Information

Projected Timeframe: January 2007 – September 2007.

Using information from readily available sources (see below), the City will:

- Refine information regarding the physical characteristics of the identified UICs for determining compliance status and for use in pre-design activities. This data will be used to re-calculate separation distances and remove any UICs that meet permit conditions from the current list of potentially non-compliant UICs.
- Identify potential technologies for increasing separation distance or managing stormwater infiltration. This information will be used to identify potential data gaps, so that during the information review described below, applicable data can be identified and used for pre-design activities.

UIC Evaluation and Response (UICER) Guideline No. 1: Separation Distance (see Appendix H of the *UIC Management Plan*) provides a general outline of follow-up activities that may be conducted to further evaluate separation distance. The 349 UICs will be further evaluated to determine compliance status and general hydrologic and hydrogeologic information that may be used in pre-design activities.

For example, the separation distances presented in the *Systemwide Assessment Report* used construction information contained in the City's Hansen database and estimates of seasonal high groundwater produced by United States Geological Survey (USGS). If construction information was not present in the Hansen database, an assumed a depth of 30 feet was used (i.e., current standard UIC construction depth) for calculating separation distance. It is expected that an evaluation of additional existing data will refine the current information on construction depths, as well as information about specific UIC location, observed water, and functionality.

Examples of data that may be reviewed and evaluated, as necessary and appropriate, include the following:

- *Flow Test Data:* Historical information collected by the City that documents flow tests completed on some City-owned UICs during construction and installation.
- *Boring Logs/ Test Pit Data:* Well logs, boring logs, and/or soil information not used during the development of the USGS depth to groundwater map may be reviewed (Note: the *Systemwide Assessment Report* describes the process and data used by the USGS). Additional information may come directly from BES, DEQ, or other agencies such as Oregon Water Resources Department (OWRD).
- *As-builts:* Design drawings used to identify projected construction depth and type for UIC installation. Some as-builts have field notes that may provide groundwater depth or construction depth.
- *Hansen database:* In addition to specific construction information provided in the Hansen database, field notes are sometimes entered as a separate field in the database. These notes may contain information specific to UIC characteristics not identified in the standard data fields.

Subtask 3: Compliance Determination

Projected Timeframe: January 2007 – September 2007.

In conjunction with Task 2, updated UIC construction and site-specific information will be added to the City's UIC database. The refined information will be used to determine the UIC compliance status, based on verifiable data of known quality. The *UICMP* includes the Compliance Determination Procedure (see Appendix F of the *UICMP*), which defines the criteria, types and quality of data (i.e., weight of evidence) needed to determine compliance. The results of this determination will result in placement of each UIC into one of three categories:

- **Compliant:** The UIC is determined to have adequate separation distance, and is moved to the System Management and System Monitoring program elements of the *UICMP*.
- **Non-Compliant:** The UIC is moved to the Corrective Action program element of the *UICMP* as a Category 3 UIC.

The WPCF permit requires the City to implement corrective actions for any UICs that do not comply with the above permit requirements. The *Corrective Action Plan* presents the process BES will use to identify, evaluate, select, and implement corrective actions for non-compliant UICs.

- **No Determination:** No conclusive determination can be made and additional data or evaluation is needed to make a definitive determination regarding UIC compliance. Further evaluation is needed: The UIC will continue to be evaluated in accordance with this work plan and discussions with DEQ.

During Task 1 activities, if the “weight-of-evidence” indicates that conditions associated with an individual UIC or group of UICs is non-compliant with permit conditions, the City will identify these locations as Category 3 UICs. Category 3 UICs would proceed to Corrective Action (see UICMP Section 6). Any location identified, as a Category 3 UIC will be reported to DEQ in the annual UICMP report (to be submitted November 1 of each permit year).

Products of Task 1 may include:

- Updated list of UICs with estimated inadequate separation distance for further evaluation under this work plan;
- Possible list of Category 3 UICs;
- List of potential technologies for increasing separation distance or surface water infiltration.

2.2.2 Task 2: Develop Pre-Design Alternatives and Initiate Demonstration Projects

Subtask 1: Develop and Evaluate Alternatives

Projected Timeframe: January 2007 – January 2008.

The list of UICs with estimated inadequate separation distance will be updated using data and information from Task 1. This list will be used to develop and evaluate potential technologies and alternatives to increase separation distance or manage stormwater using infiltration in accordance with permit requirements. In addition, the City will identify and implement demonstration projects to assist in testing the feasibility of technologies to increase separation distance and develop alternatives. Specifically, this subtask includes the following activities:

- Identify and evaluate a range of available technologies (e.g., backfill UIC, backfill UIC with additional UIC installation, install horizontal UIC, shallow or surface infiltration w/ vegetative pretreatment) to increase separation distance or manage stormwater using infiltration. Applicable technologies may be identified for individual UICs or groups of UICs. Information presented in the *Best Management Practice (BMP) Monitoring Program* (presented in Appendix E of the UICMP) will be used as a starting point for the initial evaluation of technologies.
- Identify and evaluate ongoing City sustainable stormwater management projects (e.g., Taggart, Lents I & II) that may be used as demonstration projects of potentially applicable technologies.

- Define or develop groups of UICs where similar technologies may be applicable. These groups may be developed based on similar characteristics or design considerations, such as:
 - Geographic proximity to other UICs with inadequate separation;
 - Geologic and hydrogeologic characteristics;
 - Feasibility of technologies;
 - Availability of alternative stormwater management solutions and facilities;
 - Implementability / constructability; and
 - Cost Effectiveness.
- Identify field data needed for initial alternatives evaluation.
- Develop scope and schedule for testing of available technologies.
- Develop preliminary alternatives based on technologies determined to be feasible, cost effective, and implementable.
- Initiate demonstration projects to assess feasibility of wide scale implementation. Identification of demonstration projects will assist in the evaluation of separation distance BMPs and coincide with the *BMP Monitoring Program*.

Subtask 2: Meet with DEQ

Projected Timeframe: July 2007 and January 2008.

City UIC Program staff will meet with DEQ on a periodic basis to provide an overview of work completed to date and to discuss next steps. These meetings will serve as an opportunity for the City to provide DEQ with updated scope and schedule as appropriate. Meetings are projected to occur in July 2007 and January 2008.

Products of Task 2 may include:

- Map showing projected UIC groups.
- Projected plan for testing available technologies and/or alternatives.
- Identification of potentially feasible technologies and/or alternatives.
- Scope and schedule for selection of appropriate technologies or alternatives.

2.2.3 Task 3: Identification of Regional Alternatives

Subtask 1: Evaluate and Identify Preferred Regional Alternatives

Projected Timeframe: January 2008 – July 2009.

In this task, the City will continue pre-design activities by evaluating and selecting potentially applicable alternatives to increase separation distance or manage stormwater using infiltration. Specifically, this task may include the following activities:

- Refine UIC groups using data collected from previous tasks.

- Complete testing and evaluation of demonstration projects as identified in Task 2.
- Evaluate and recommend preferred alternative(s) for refined UIC groups. The preferred alternative(s) will be used as a starting point for City design activities.

During this task, alternatives will be evaluated and a preliminary recommended action (e.g., corrective action, groundwater protectiveness demonstration) will be identified for all 349 UICs or by groups of UICs. As part of the pre-design, field verification and/or construction confirmation of UIC characteristics may be completed, as needed and appropriate, such as:

- Confirmation of UIC location, access, construction depth and design.
- UIC system cleaning (e.g., inlets, sedimentation manholes, and sumps).
- Obtaining access to UICs that may currently be inaccessible (e.g. paved over).
- UIC inspection during seasonal high water conditions to verify presence/absence of standing water.

Additional information may be obtained if determined necessary and appropriate by the City to support a potential regional approach(es)³ or to further evaluate a potentially applicable alternative(s). For example, if it is the City identifies a groundwater protectiveness demonstration⁴ (e.g., risk assessment) as a preferred alternative, additional information may be collected to support the alternative such as:

- Information to support fate and transport evaluation activities;
- Data to support fate and transport calculations; and
- Information to support a permit modification to reduce permit separation distance requirements.

Products of Task 3 may include:

- Recommended alternative for UIC groups based on results of evaluation and demonstration project testing.
- Preliminary outline of anticipated scope, schedule, and budget for design and implementation of a regional corrective action approach to increase separation distance of identified UICs or manage surface water using infiltration.

Subtask 2: Meet with DEQ

Projected Timeframe: July 2008, January 2009, July 2009.

City staff will meet with DEQ on a periodic basis, as needed, to develop a regional implementation plan based on the alternatives selected as part of Subtask 1. Development of a

³ UICER Guideline No. 7: Regional Assessment of Problem (presented in Appendix H of the UICMP) outlines the general approaches the City may undertake to develop a regional solution.

⁴ UICER Guideline No. 6: Groundwater Protectiveness Demonstration (presented in Appendix H of the UICMP) outlines the general approaches the City may undertake to demonstrate groundwater is protected in accordance with Oregon Administrative Rules 340-040.

regional approach will be the start of the design phase of the project and will incorporate the anticipated scope, schedule and budget for addressing UICs with inadequate separation distance. Meetings are projected to occur in July 2008, January 2009, and July 2009.

2.2.4 Task 4: Initiate Design and Implementation of Regional Alternatives

Projected Timeframe: Begin July 2009.

Based on the recommendations of Task 3, the City will perform design activities for the preferred alternatives. Once design is complete, the selected alternative(s) will be implemented in accordance with the regional implementation plan. Implementation will be discussed and reported as part of the UIC Annual Reports submitted to DEQ November 1 of each permit year.

At any time during pre-design and design activities if the City collects information that provides the appropriate weight of evidence to identify any of the 349 UICs are compliant, the identified UIC will be removed from the pre-design/ design activities and no further actions will be taken at that specific location.

Product of Task 4 includes:

- Regional Implementation Plan with the general scope, schedule, and budget for design, preparation of bid specifications, contracting, and implementation of the regional corrective action approach to increase separation distance of identified UICs or manage surface water using infiltration.

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3 SARA Title III and Commercial / Industrial Locations

Section

3

3.1 Systemwide Assessment Results

The WPCF permit requires the *Systemwide Assessment* include an inventory of City-owned UICs that receive stormwater or other fluids from:

- 1) Industrial and commercial properties, that store, handle or use hazardous and/or toxic materials in quantities that require registration under the federal Superfund Amendment and Reauthorization Act (SARA) Title III;
- 2) Facilities that have DEQ issued National Pollution Discharge Elimination System (NPDES) 1200Z permits that may discharge to public UICs; and
- 3) Industrial and commercial properties that have site activities where those activities may result in a direct or indirect discharge of pollutants to a City-owned or operated UIC(s) that may cause a violation of the conditions of this permit.

The *Systemwide Assessment Report* identified 78 UICs that may receive drainage from 69 SARA Title III facilities that may have site activities that could contribute pollutants to stormwater discharged to City-owned UICs. Forty-nine (49) SARA Title III facilities were identified for follow-up activities. An additional 147 UICs were identified that may receive drainage from Commercial/Industrial facilities. No UICs were identified that receive discharge from facilities with DEQ issued NPDES 1200Z stormwater permits.

3.2 Projected Follow-up Actions

This work plan focuses on evaluating potential stormwater discharges from SARA Title III and Commercial/Industrial facilities and preventing pollutants at these facilities from entering the City's UIC system. The specific goals of the tasks described in this section are:

- Evaluate and verify UIC drainage catchments;
- Identify and verify potential pollutant sources; and
- Implement source control measures to minimize the potential for pollutants from SARA Title III or Commercial/Industrial facilities to be discharged in stormwater to City-owned UICs.

The tasks described below reflect a prioritized and phased approach for evaluating the identified facilities. SARA Title III facilities will be evaluated in the first phase with Commercial/Industrial properties evaluated thereafter (Phase 2). Phase 1 will be initiated in Fiscal-year 2007-2008 and Phase 2 will be initiated, as soon as possible following Phase I activities, but no later than Fiscal year 2008-2009. Adjustments to the projected schedule may be made if UICs near Commercial/Industrial facilities are identified as high priorities.

UICs identified for further evaluation will be prioritized in accordance with the UIC Prioritization Procedure (presented in Appendix G of the UICMP). The Prioritization Procedure

will be used to rank the UICs from greatest to least potential risk of endangerment to the environment or public health. Those UICs with the highest priority will be initiated in Phase 1. Commercial/Industrial facilities with a high priority will be implemented during Phase 1, concurrent with the evaluation of the SARA Title III facilities. To the extent practicable, UICs will be grouped by geographic proximity to the identified facilities to streamline further evaluation activities.

If a significant issue is identified during any of the projected follow-up actions, a pollutant source (*e.g.*, facility, utility, business) may be referred to DEQ for further evaluation and investigation under the appropriate DEQ regulatory authority (*e.g.*, Water Quality, UIC, Environmental Cleanup, Solid Waste, Hazardous Waste, UST).

3.2.1 Task 1: UIC Drainage Catchment Assessment

Using information from readily available sources (see subtasks below), the City will, to the extent practicable:

- Identify potential pollutant sources and pollutant types from the identified facility(s) that may discharge pollutants via stormwater to a City-owned UIC;
- Verify identified facility activities;
- Verify the UIC drainage catchment characteristics; and
- Assess if a complete pollutant migration pathway from an identified pollutant source to a City-owned UIC is likely.

Subtask 1: Refine UIC Catchment Information

Collect and review the following types of information listed below, as needed and appropriate to refine the information collected during the *Systemwide Assessment*. Specifically, stormwater flow in individual UIC catchment will be further assessed to determine if the UIC receives stormwater runoff from the identified facility.

- Evaluate and verify current estimated UIC catchment delineations and drainage patterns during a rain event or a flow test if necessary;
- Size and composition of UIC drainage catchment (*e.g.*, square feet, acres):
 - Estimate percentage of impervious surfaces (*e.g.*, rights-of-way, rooftops, and discharge from private properties including parking lots, roadways, or other paved surfaces.
 - Identify potential pollutant types and sources for impervious surfaces within the drainage catchment (see Subtask 2).
- General surface topography within catchment (*i.e.*, slope or grade);
- Estimated drainage patterns within the catchment;

- Key features of UIC catchment:
 - Location and number of catch basins or inlets;
 - Location of UIC; and
 - Presence, if any, of structural control measures (e.g., constructed features to control storm water flow such as berms, retention/detention ponds, vegetative swales, sediment traps, ditches, oil-water separators, etc.) associated with the UIC system.

Subtask 2: Identification of Potential Pollutant Source(s)

Review available records and information to identify potential pollutant sources and pollutant types associated with the identified facilities to supplement data collected during the *Systemwide Assessment*. This may include a review of the following databases:

- DEQ Facility Profiler which includes information regarding:
 - Permitted underground storage tanks (UST);
 - Leaking USTs;
 - Environmental cleanup sites;
 - Air quality permits; and
 - Water quality permits.
- Oregon State Fire Marshall (OSFM) Incident Search;
- City of Portland pretreatment permits;
- Stormwater Pollution Control Plans; and
- Spill Prevention, Control, and Countermeasure Plans.

To the extent practicable, the location and estimated quantities of identified pollutant sources will be identified in relationship to City-owned UICs and catch basins.

Subtask 3: Facility Site Visits

Selected facilities will be identified for site visits. An onsite meeting will be scheduled with a facility representative. This meeting will be scheduled to coincide with a rain event, if possible. During the scheduled visit the following steps will be conducted:

- Review findings from original visit performed during the *Systemwide Assessment*;
- Tour facility to verify the information collected in Subtasks 1 and 2 and confirm the location(s) and type(s) of potential pollutant sources or identify additional areas of concern;
- Obtain available facility spill plan or stormwater management documentation;
- Inspect facility drainage system including catch basins, pre-treatment structures (e.g., oil/water separators), and UIC construction; and
- If potential issues are identified, establish a short-term follow-up schedule and confirm business contact for additional discussions.

Subtask 4: Repeat Subtasks 1 - 3 for Identified Commercial/Industrial Facilities

The Phase 2 Commercial/Industrial property evaluations are projected to begin no later than Fiscal year 2008- 2009. Phase 2 consists of evaluating the 147 identified Commercial/Industrial properties that were identified as part of the *Systemwide Assessment*. (Note: Commercial/Industrial facilities with a high priority as determined by the UIC Prioritization Procedure will be implemented during Phase 1, concurrent with the evaluation of the SARA Title III facilities).

3.2.2 Task 2: Implement Source Control Measures

Projected Timeframe: As needed and appropriate.

The City will implement source control measures, as needed and appropriate, for facilities where it is determined that a complete pollutant migration pathway exists from the source to a City-owned UIC and there is a potential for facility activities to result in stormwater discharges to a City-owned UIC at concentrations exceeding MADLs. The goal of source control measures is to eliminate or minimize the potential impact of facility activities on stormwater quality entering the City's UIC system. Implementation of source control measures is anticipated to be an iterative process. Early steps may be revisited and findings refined with information collected later in the process. Source control may include using a combination of tools to address a particular pollutant source, including but not limited to the following:

- **Site Visit Follow-up Letters.** After completion of the facility visits the City will document the meeting with a follow-up letter sent to the facility representative. This letter will document the results of the meeting, identify additional information needed, or identify the City's expectations for future stormwater related activities.
- **Education and Training.** Education and training may be provided to increase facility awareness of issues associated with UIC requirements (e.g., city, state and federal regulations) and the potential impacts to groundwater associated with stormwater discharges to the subsurface. The City may develop fact sheets, guidance, signage, or other materials to assist facilities in educating their employees about stormwater pollutants and UICs. The City may also educate the facility regarding resources available from DEQ, EPA, and other resources regarding stormwater management and BMPs. The City may provide limited training regarding potentially applicable BMPs.
- **Technical Assistance.** Technical assistance, often provided during site visits or inspections, provides technical information tailored to help individual facilities comply with pertinent regulations. The City will work with the identified facility owner or representative to identify potential pollutant sources and to minimize or eliminate the potential of pollutants entering stormwater. In addition, the City may also refer facilities to DEQ for technical assistance (e.g., DEQ's Hazardous Waste Program or Toxic Use Reduction Program).

- **BMPs Implementation.** The City will assist the identified facility owner or operator in identifying potentially applicable structural or nonstructural BMPs. BMPs will be identified using the City of Portland *Stormwater Management Manual*, DEQ's BMPs for UICs (DEQ, 1998; <http://www.deq.state.or.us/wq/groundwa/uicbmp.htm>), or to other available sources. The City will also assist or provide oversight in developing the scope and schedule for implementation of selected BMPs by the facility. In addition, the City may provide recommendations for selecting BMP performance measures.

- **Conduct Follow-up Facility Visits.** The City will conduct a follow-up visit(s) to verify that identified site issues have been addressed. If identified issues are not addressed within an appropriate time frame, the City may, as necessary and appropriate:
 - Initiate enforcement activities;
 - Install temporary (e.g., berms, catchbasin closure) or permanent structural BMPs (e.g., vegetated swales) to prevent stormwater pollutants from entering the City's UIC;
 - Refer facility to DEQ for further evaluation, permitting, and/or investigation under the appropriate regulatory authority (e.g., Water Quality, UIC, Environmental Cleanup, Solid Waste, Hazardous Waste, UST).

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4 Distance to Drinking Water Wells

Section

4

4.1 Systemwide Assessment Results

The WPCF permit requires that stormwater discharges meet the maximum allowable discharge limits (MADLs) defined in Table 1 of the permit for UICs that are located:

- Less than 500 feet from a domestic well;
- Within a two-year time of travel of a public water well; or
- Less than 500 feet from a public water well without a delineated time of travel.

The *Systemwide Assessment Report* identified 332 UICs that are within 500 feet or 2-year time of travel of a domestic use or public water well. The WPCF permit categorizes a UIC as noncompliant if it is within the specified distances AND does not meet the water quality limits established in the permit. Information generated in the *Systemwide Assessment* must be combined with data from the *Annual Stormwater Discharge Monitoring Report* to determine compliance with the permit. The *Systemwide Assessment* information was intended to direct future efforts, rather than be used as a definitive assessment of potential groundwater impacts. Data of known and verify quality are not available to determine permit compliance, at the time of the assessment.

4.2 Projected Follow-up Actions

This work plan focuses assessing representative stormwater concentrations entering the UICs identified in this category and on verifying UIC and domestic well locations.

The tasks described below reflect a prioritized and phased approach for evaluating the identified UICs. UICs identified for further evaluation will be prioritized in accordance with the UIC Prioritization Procedure (presented in Appendix G of the UICMP). The Prioritization Procedure will be used to rank the UICs from greatest to least potential risk of endangerment to the environment or public health. Evaluation of UICs with the highest priority will be initiated first. To the extent practicable, UICs will be grouped by geographic proximity to the identified domestic wells to streamline the further evaluation activities.

4.2.1 Task 1: Implement Supplemental UIC Monitoring

Projected Timeframe: October 2006 – July 2007.

The City elected to voluntarily perform additional stormwater discharge monitoring to supplement the sampling required under the WPCF permit. The objectives of the supplemental monitoring program are to:

- Assess the quality of stormwater discharged to UICs located near domestic or public drinking water wells; and
- Demonstrate the results of the stormwater discharge monitoring program, described in the *Final Stormwater Discharge Monitoring Plan* (SDMP; dated August 2006), are

representative of stormwater discharging to UICs located within 500 feet of a domestic (e.g., private, public, irrigation) well or within the two-year time of travel of a public water well.

The supplemental monitoring program consists of 10 UIC locations. Supplemental sampling locations were randomly selected using the Generalized Random Tessellation Stratified survey (GRTS) method described in the SDMP. Locations were selected from the list of the City-owned UICs estimated in the *Systemwide Assessment Report* as being located within 500 feet of a domestic well; the two-year time of travel of a public water well; or 500 feet of a public water well that does not have a time of travel.

The supplemental sampling locations were generated and stratified by traffic category in accordance with the permit and the SDMP. Supplemental sampling locations consists of five UICs with estimated traffic counts of <1,000 trips per day (TPD) and five locations with estimated traffic counts of $\geq 1,000$ TPD.

The results of the supplemental monitoring will be presented in the *Annual Stormwater Discharge Monitoring Report* for permit year 2. This report will be submitted to DEQ by July 15, 2007.

4.2.2 Task 2: Meet with DEQ

City UIC Program staff will meet with DEQ to discuss the results of the supplemental sampling, the need for additional UIC sampling, and the next steps in evaluating UICs near domestic wells. This meeting is projected for August 2007.

The need for further evaluation or actions will be based on the results of the supplemental monitoring, the results of the first two years of UIC sampling, and a preliminary statistical evaluation of the data. UICER Guideline No. 2: Proximity to Drinking Water Wells (presented in Appendix H of the UICMP) outlines the general approach the City may undertake to further evaluate UIC setback distances and permit compliance.