



MULTNOMAH
COUNTY

**Multnomah County
Underground Injection Control System
System-Wide Assessment**

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

Permit Number: 103076

DATE April 29, 2014

Land Use and Transportation
Department of Community Services
Multnomah County

Facilities and Property Management
Department of County Management
Multnomah County

Prepared by: Multnomah County and PBS Engineering and Environmental Inc.

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1.0 Introduction

Multnomah County (County) operates a system of Underground Injection Controls (UICs) to manage stormwater runoff from County property (public roads and facilities). Stormwater collected in UICs is injected into the ground, where it disperses into the subsurface. The County is permitted to inject stormwater by a Water Pollution Control Facilities (WPCF) Permit for Class V Stormwater UICs. The state of Oregon Department of Environmental Quality (DEQ) administers the County’s WPCF Permit.

This document is intended to characterize and evaluate the entire UIC system in conformance with Schedule B.1 of the WPCF permit. Table 1 summarizes the minimum permit requirements by section, and the location in this document where the requirements are addressed.

Table 1. System-Wide Assessment Requirements (Permit Schedule B.1)

<i>Permit requirement</i>	<i>Location in System-Wide Assessment</i>
B.1.a. UIC inventory including latitude and longitude	Appendix B
B.1.b. Estimated vehicle trips per day of the UIC drainage area	Appendix B
B.1.c. Identification of UICs that discharge directly to groundwater	Section 4.0, Appendix B
B.1.d. Identification of UICs that do not meet the minimum setbacks and separation distances	Section 5.0, Appendix B
B.1.e. List of prohibited injection systems	Section 6.0
B.1.f. Inventory of facilities and properties with activities that have the potential to discharge to County-owned UICs	Section 7.0
B.1.g. Year five review of System-Wide Assessment	Section 1.0

The following sections of this report include a narrative description of the County’s response to each item listed above. Maps of the County UIC system are included in Appendix A. Physical characteristics and assessment results for each UIC are included in Appendix B, UIC System-Wide Assessment Inventory.

The System-Wide Assessment will be updated during a mid-term review (fifth year of the Permit term). The review will include, at a minimum:

- A comparison of the number, location, type, and characteristics, of existing County injection systems with the information included in the UIC Inventory

- A review of new groundwater two-year time of travel boundaries for drinking water wells or recently installed municipal, community, domestic, or agricultural water wells to determine if any existing UICs no longer meet the horizontal setback or separation distances
- Confirmation that the County does not operate any prohibited injection systems
- Identification of new or recently discovered industrial or commercial properties that conduct activities with the potential to discharge to County-owned UICs

If changes to County UIC systems are identified, the System-Wide Assessment will be updated to reflect current conditions upon completion of the fifth year review. The revised System-Wide Assessment will be submitted to DEQ. The UIC Inventory (Appendix B) may be updated periodically throughout the permit term, outside of the fifth year review, as UICs are decommissioned, modified, or new UICs are installed. Significant changes to UIC systems will be reported to DEQ in the annual report for the calendar year in which the change occurred.

2.0 UIC System Inventory

The County currently has a total of 143 UICs that collect stormwater from public rights-of-way and facilities and discharge it to the subsurface. Most of the UICs are perforated concrete cylinders less than 23 feet deep from the ground surface and 4 feet in diameter (commonly referred to as a “drywell”). The UICs serve the parking lots and building roofs of various County facilities in the cities of Portland and Gresham, and the right-of-way in County-owned arterial and collector roadways in the cities of Troutdale and Fairview. There are 96 UICs on Facility properties and 47 UICs in County roadways.

The County maintains a UIC Inventory to track information relevant to this System-Wide Assessment. This inventory is a living component of the System-Wide Assessment, and is routinely updated as conditions of County UICs change. The current version of the UIC Inventory is included in Appendix B. This includes the latitude and longitude of each UIC owned by the County.

Stormwater UICs are managed and maintained by the County Transportation Department for those located in roadways and the County Facilities & Property Management Department for those located at County facilities. All of the Transportation Department UICs drain public roadways and right-of-ways. The Facilities UICs drain a variety of areas, and some drain a combination of runoff surfaces (e.g., a parking lot and a building roof). For details on the drainage area served by each UIC see the UIC Inventory in Appendix B.

Table 2 provides a summary of the UICs by County facility, including the total number of UICs at each facility, if the UIC has pretreatment, and if any UICs at that facility do not meet the minimum horizontal separation or setback requirements of the permit. Of the 96 UICs at County facilities, 17 dispose of stormwater from building roofs only. The

remaining 79 UICs drain primarily parking areas or a combination of land types that include parking areas. Table 3 provides a similar summary for roadway UICs, grouping the UICs by roadway segments. A total of six segments were defined.

Table 2. Facility descriptions of UIC locations (*total: 94 UICs*).

<i>Facility (Bldg. #)</i>	<i>Building classification</i>	<i>Total # of UICs</i>	<i># of Roof Only UICs</i>	<i># of UICs w/ Pre-treatment</i>	<i># of UICs Within Horizontal Setback</i>
Juvenile Justice Center (311)	Juvenile Detention Facility (Jail)	34	1	0	0 ¹
Hansen Complex (313, 318)	Sheriff's Office and Police Station	9	3	0	0
Walnut Park Complex (322)	Health Clinic	2	0	2	0
North Portland Health Clinic (325)	Health Clinic	4	0	4	0
Mid-County Health Clinic (430)	Health Clinic	8	2	0	0
Gateway Children's Center (439, 448, 451)	Children's Services and Housing Center	11	1	0	0
Wikman Building (465)	Government Office	1	1	0	0
East County Courthouse (488)	Government Office and Public Courthouse	3	0	3	0 ²
Gregory Heights Library (606)	Public Library	1	0	0	0
Holgate Library (609)	Public Library	2	0	0	0
Midland Library (611)	Public Library	6	2 ³	0	0
North Portland Library (612)	Public Library	3	1	0	0
Rockwood Library (614)	Public Library	3	3	0	0
Saint Johns Library (615)	Public Library	5	2	0	0
Woodstock Library (618)	Public Library	1	1	0	0
Title Wave Bookstore / Library Administration (317, 617)	Used Bookstore / Government Office	2	0	0	0
Springdale Road Shop (432)	Road Maintenance Shop	1	0	0	0

¹ Water right claim (GR 4281) was filed in 1951 for use of an on-site well to irrigate property lawns. This water well was decommissioned and sealed in 1995. No potential for use as drinking water source.

² Water wells on-site used for closed loop groundwater heat exchange and subsurface remediation system. No potential for use as drinking water source.

³ Includes building foundation dewatering comingled with roof runoff.

Table 3. Road segment descriptions of UIC locations (*total: 47 UICs*).

<i>Road Segment</i>	<i>Road classification</i>	<i>Total # of UICs</i>	<i># of UICs w/ Pre-treatment</i>	<i># of UICs Within Horizontal Setback</i>
NE Sandy Blvd	Major collector	6	0	4
NE 242 nd Ave	Major arterial	6	0	6
SW Cherry Park Rd (east)	Major collector	8	0	0
NE Halsey St	Minor arterial	5	1 ¹	2 ²
SW Cherry Park Rd (west)	Major collector	6	0	6
SW 257 th Ave	Major arterial	16	0	6

¹ UIC32 on Halsey has a sedimentation manhole.

² Two UICs are located within 500 feet of municipal water well owned by City of Troutdale (Well #7); however, they are outside of the 2-year TOT for this public water well.

3.0 UIC System Traffic Volume

The County owns and maintains a series of public roadways and public facilities with parking lots. Both land types are traversed by the general public and County employees. It is recognized that stormwater runoff from vehicle traffic areas has the potential to convey pollutants, such as heavy metals and petroleum hydrocarbons, into the stormwater system. Therefore, high traffic areas are assumed to pose a greater risk to groundwater quality than low traffic areas. The average number of daily traffic trips for each roadway segment or site parking area was used to assess if an area has high or low traffic. The threshold of 1,000 trips per day was used to define a high traffic area.

Traffic trips were determined using the following two methods:

- Roadways – Direct measurement using traffic strip counters
- Facilities – Estimate using Institute of Traffic Engineers publication¹

Facilities estimates were based on land use and gross floor area of the building(s) served by the parking lot. Facilities with UICs that did not drain traffic areas (i.e., building roofs, landscape areas, or foundations) were excluded from this study. Average daily trips are aggregate for the entire site or roadway segment and were not subdivided by individual UIC drainage basin. All traffic values are reported in Appendix B.

¹ Institute of Transportation Engineers (2008). Trip Generation, Volume 3, 8th Edition. Publication No. IR-016F.

4.0 Discharges Direct to Groundwater

The County does not operate any UICs that discharge directly to groundwater. Every UIC was evaluated for depth during data collection for the UIC Inventory. Depth was determined by either direct measurement in the field or through review of historical construction plans. A depth to groundwater was assumed using published United States Geological Survey literature² for each UIC point. Appendix B, UIC Inventory, lists the depth from the ground surface to the bottom of each UIC, the depth from the ground surface to the estimated groundwater table at the UIC location, and a statement asserting that the UIC does not discharge directly into groundwater.

5.0 Horizontal Setbacks

The WPCF permit specifies minimum horizontal setback distances for UICs in the vicinity of drinking or irrigation water wells. Horizontal setbacks are defined in permit Schedule A.6.a. as being outside of the two-year time-of-travel (TOT) determined by the Oregon Health Authority for public water wells or 500 feet from a public or private drinking water or irrigation water supply well per Oregon Water Resources Department. Operation of UICs outside of these distances are considered in compliance with the permit and believed to be protective of groundwater without further action. For those UICs that do not meet the minimum setback distances, action must be taken within one year of discovery to either demonstrate that use of the injection system is protective of groundwater or modify the injection system to prevent contamination of groundwater (e.g., retrofit or decommission).

Tables 2 and 3 in Section 2.0 of this report indicate which UIC groups are located within a horizontal setback. A total of 24 UICs were found to not meet horizontal setback requirements. All of these UICs are located in public roadways or right-of-ways (i.e., County Transportation UICs). Details on each UIC and the associated water well or two-year TOT are included in Appendices A and B. UICs were grouped into small clusters if they all infringed on the same water well buffer or TOT boundary. The following five areas were defined as group UICs which do not meet the horizontal setback distances.

NE Sandy Boulevard: - *Four UICs: UIC51-54*

These four UICs are located at the east end of the NE Sandy Boulevard road segment. All four are located within 500 feet of the Point of Diversion for water right claim GR 2757 associated with water well log MULT 1383. This water well was drilled for irrigation use by the Femrite Nursery starting in 1944.

² Snyder, D.T. (2008). Estimated depth to ground water and configuration of the water table in the Portland, Oregon area: U.S. Geological Survey Scientific Investigations Report 2008-5059, 40 p. (<http://pubs.usgs.gov/sir/2008/5059/>)

Cascade Wellfield: - *Two UICs: UIC30 and UIC31*

These two UICs are located along NE Halsey Street. Both UICs are located within the two-year capture zone for multiple water supply wells operated by the City of Gresham. This vicinity is part of the larger Cascade Wellfield Wellhead Protection Area.

Wood Village Well #2: - *Thirteen UICs: UIC02, UIC16-19, and UIC22-29*

All six of the County UICs located along NE 242nd Avenue and all six UICs along the west segment of SW Cherry Park Road are included in this group. The north-most UIC along the west shoulder of SW 257th Avenue is also included in this group. These 13 UICs are located within the two-year TOT for a municipal water supply well operated by the City of Wood Village, called “Well #2.” This two-year TOT is defined by a circle around the public water well, with a radius of approximately 2,000 feet and encompassing an area of nearly 300 acres.

Troutdale Well #3 (Columbia): - *Three UICs: UIC20, UIC21, and UIC50*

These three UICs are located at the north end of the SW 257th Avenue road segment. All are located within the two-year TOT for a municipal water supply well operated by the City of Troutdale, called “Well #3 Columbia.” This water well is located on property west of SW 257th Avenue and northwest of this UIC group.

SW 257th Avenue, South End: - *Two UICs: UIC5 and UIC49*

These two UICs are located at the south end of the SW 257th Avenue road segment. Both are located within 500 feet of the Point of Diversion for water right claim GR 3920 and water well log MULT 1439. This water well was drilled and used for irrigation purposes starting in 1947.

Each group of injection systems was evaluated by PBS Engineering and Environmental Inc. for continued use in a manner that is both protective of groundwater and in compliance with the WPCF permit. This evaluation considered the type of fluids being injected into the subsurface, UIC characteristics and dimensions, proximity (horizontally and vertically) to water wells, and local subsurface stratigraphy in the vicinity of the UIC. All existing injection practices and UIC facilities were found to be protective of local groundwater drinking water sources. PBS’ report³, including the detailed evaluation and basis for these conclusions, is enclosed in Appendix C.

New proposed injection systems that do not meet the setback requirements will be evaluated for protectiveness to groundwater and/or provided with pretreatment prior to installation.

³ PBS Engineering and Environmental Inc. (April 30, 2013). Multnomah County Underground Injection Control (UIC) Facilities Protectiveness Demonstration. Letter Report for Multnomah County Facilities and Property Management. PBS Project No. 15194.835 Phase 0003, Task 001.

6.0 Prohibited Injection Systems

The County does not operate any prohibited injection systems as defined in OAR 340-044-0015(2). Prohibited injection systems include UICs in the following scenarios:

- Vehicle maintenance areas
- Fuel dispensing areas
- Floor pits
- Non-vehicle maintenance facilities' floor drains
- Fire station bay floor drains

If the County discovers a previously unknown UIC that fits the definition of a prohibited injection system, illicit discharges will cease immediately, DEQ will be notified, and plans to decommission the UIC will be undertaken.

7.0 Facility Inventory

In order to assess the risk of potential spills and contamination reaching County-owned injection systems, a review of industrial and commercial facilities with the potential to drain to County UICs was conducted. This review identified two potential sources of pollution from private properties that drain to roadway UICs and three potential sources of pollution from County facilities. Most of these are associated with the potential of spills from bulk fuel storage tanks and petroleum transfers.

Private Properties

Commercial development at the NE corner of the intersection of NE 242nd Ave. and SW Cherry Park Road	The development includes a commercial fueling station open to the general public. The fueling station uses underground storage tanks (USTs) to store fuel and pumps it to dispensers for transferring to customers. Commercial fuel stations typically include engineered controls to prevent spills and migration of small fuel leaks from entering stormwater systems. In addition, UST operators are required to obtain a permit by DEQ and are subject to regulatory oversight (inspections, equipment testing, training, and spill/leak controls). Controls at this type of facility may include: covered fuel dispensing area, overfill prevention, routine fuel pipe leak testing, operator training, containment catchment basins or trench drains, and oil/water separator vaults. The potential for fuel spills from these activities is believed to pose a low risk of reaching roadside UICs.
Agricultural property at the SE corner of the intersection of NE 242nd Ave. and SW Cherry Park Road	This property is used to plant and harvest seasonal crops, primarily berries. There is a potential that pesticides are applied to the crops and have the potential to be mobilized by stormwater into roadside UICs. Pesticide monitoring practices have been addressed in the Multnomah County UIC System Monitoring Plan; refer to this document for additional details.

County Facilities

Juvenile Justice Center (Bldg. 311)	Fuel is stored at this facility in one (1) UST for use by an emergency power generator. The generator is equipped with a day tank for local storage of fuel inside a building on-site. The UST facility operates under a permit administered by DEQ and in compliance with applicable state regulations. The UST is equipped with an overfill prevention alarm and the day tank is equipped with secondary containment. Fuel is not dispensed to vehicles or equipment from either of these tanks. The potential for fuel spills due to these activities is believed to pose a low risk of reaching site UICs.
Hansen Building (Bldg. 313)	Fuel is stored at this facility in an aboveground storage tank (AST) for use by an emergency power generator. Fuel is pumped from the AST to a small day tank on the generator unit through buried piping. The AST has a double-wall for secondary containment. Metal fuel piping is equipped with a sacrificial anode for corrosion protection and routinely pressure-tested for leaks. Fuel is not dispensed to vehicles or equipment from these tanks. The potential for fuel spills due to these activities is believed to pose a low risk of reaching site UICs.
Springdale Road Shop (Bldg. 432)	Fuel is stored at this facility in an AST for use by road maintenance crews to fuel vehicles and equipment. A dispenser is located at the end of the tank. The tank has a double-wall for secondary containment and is protected from potential vehicle collisions by concrete bollards. Other physical and operational controls are in place to prevent fuel spills, including: overfill prevention, fill pipe spill buckets, spill cleanup supplies, and implementation of spill prevention and response plans. All employees that dispense fuel from this tank are trained in the controls and procedures in place to prevent or respond to spills. The facility also conducts vehicle and equipment maintenance inside of a shop in an area that does not drain to on-site UICs. The potential for fuel or oil spills due to these activities is believed to pose a low risk of reaching site UICs.

Appendix A. UIC System Maps

Appendix B. UIC System Master Inventory



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MULTNOMAH COUNTY - VICINITY MAP

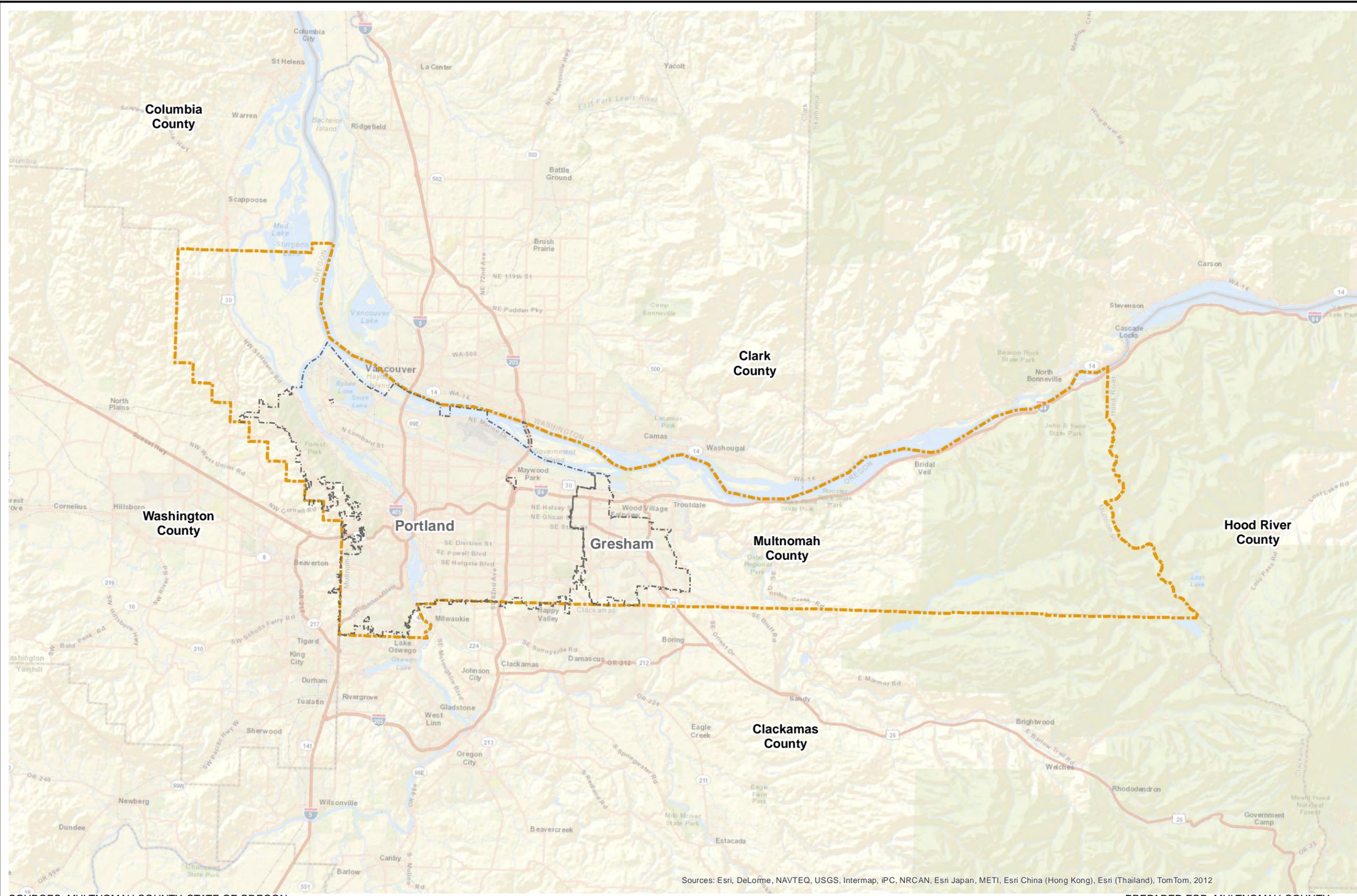
MULTNOMAH COUNTY UIC WPCF PERMIT SYSTEM-WIDE ASSESSMENT
MULTNOMAH COUNTY, OREGON

PROJECT 15194.835

DATE JUN 2013

FIGURE

1



Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2012

SOURCES: MULTNOMAH COUNTY, STATE OF OREGON

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Legend
 Multnomah County



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MULTNOMAH COUNTY UICs - ENLARGED AREAS REFERENCE

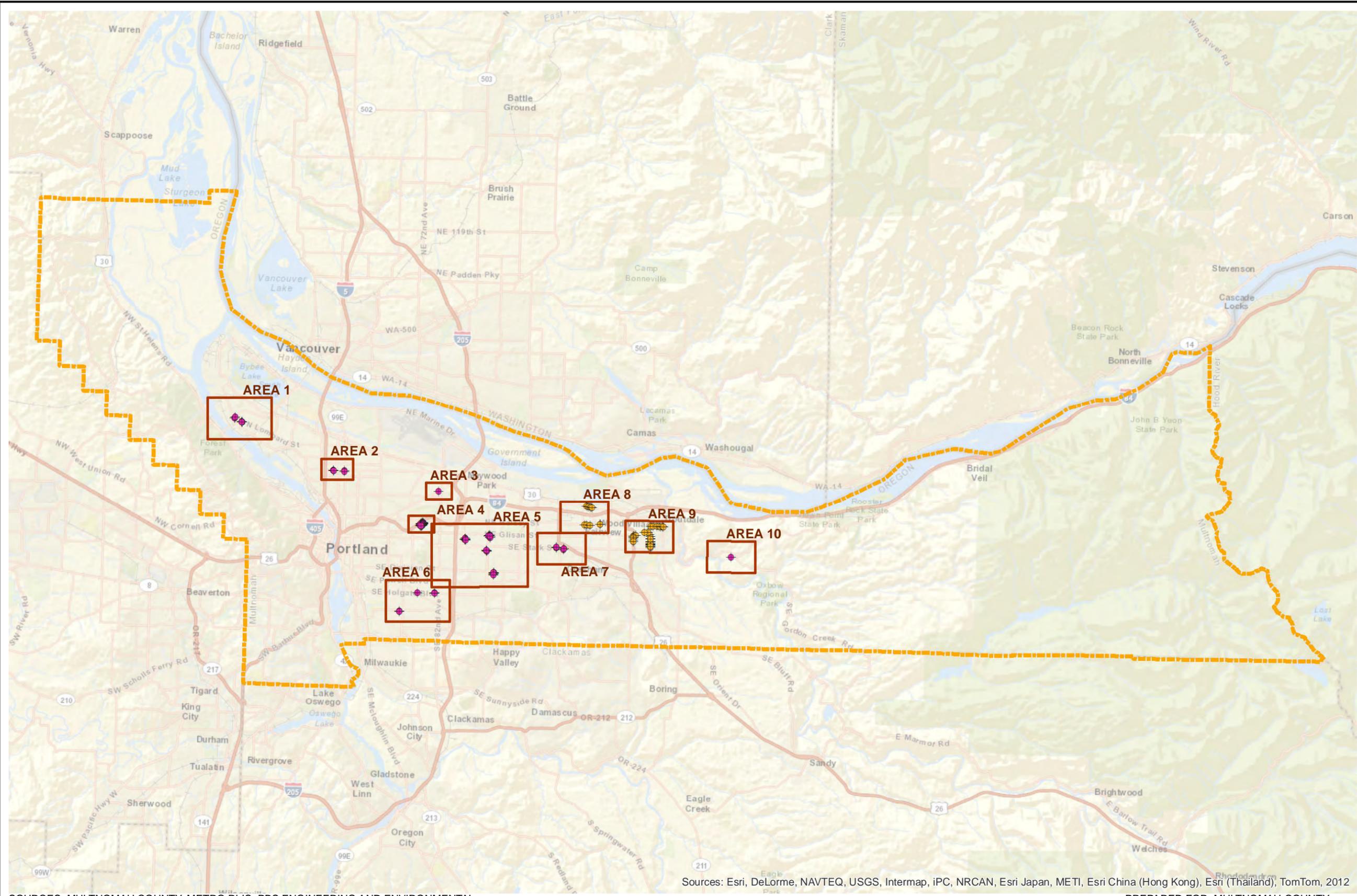
MULTNOMAH COUNTY UIC WPCF PERMIT SYSTEM-WIDE ASSESSMENT
MULTNOMAH COUNTY, OREGON

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FIGURE

2



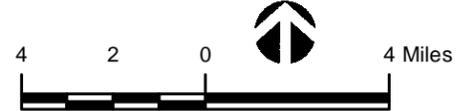
SOURCES: MULTNOMAH COUNTY, METRO RLIS, PBS ENGINEERING AND ENVIRONMENTAL

Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2012

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Legend

- Mult. Co. UIC - Roads
- Multnomah County Boundary
- Mult. Co. UIC - Facilities
- Enlarged Area



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MULTNOMAH COUNTY UIC LOCATIONS - AREA 1

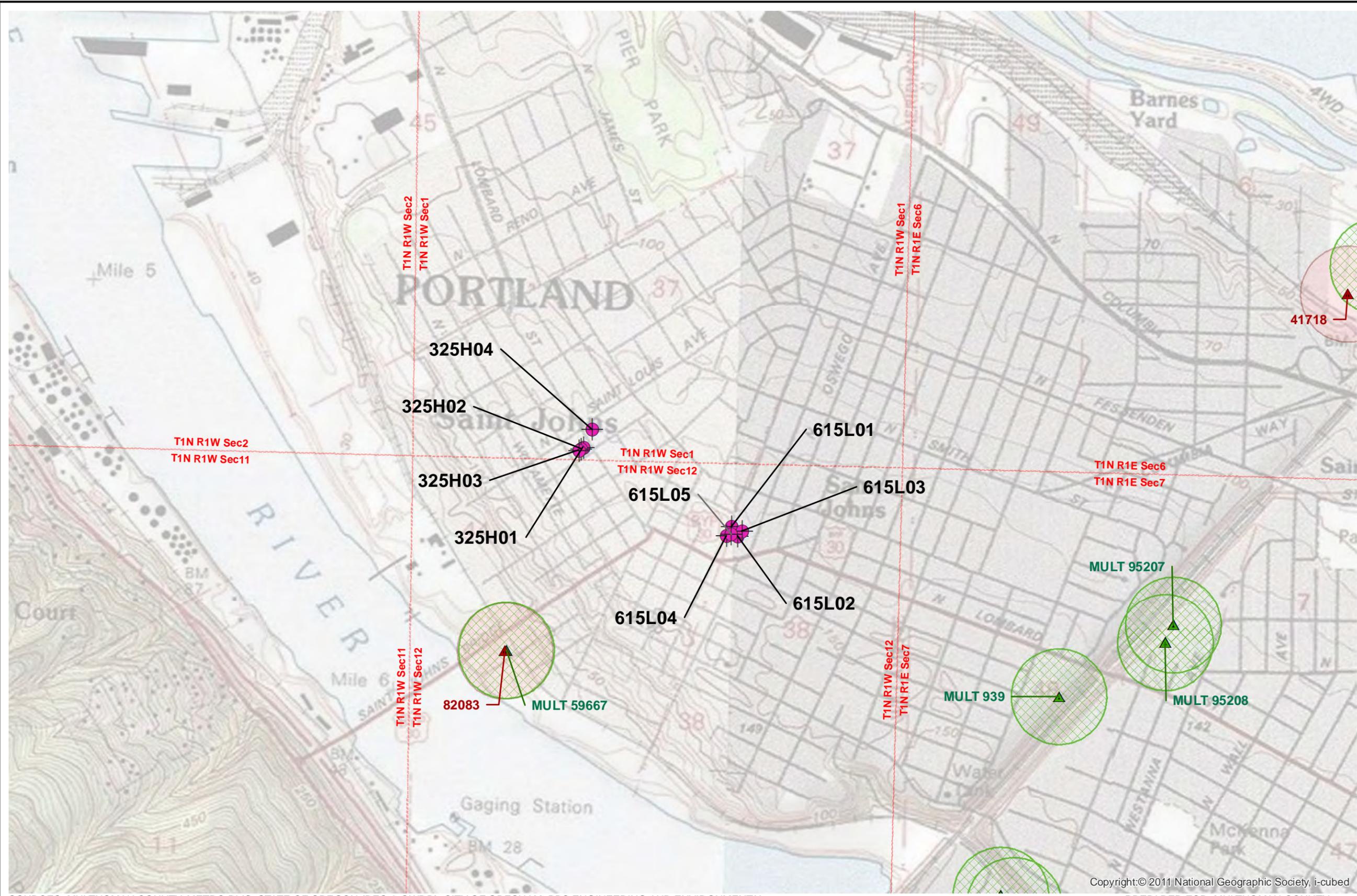
MULTNOMAH COUNTY UIC WPCF PERMIT SYSTEM-WIDE ASSESSMENT
 MULTNOMAH COUNTY, OREGON

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FIGURE

3

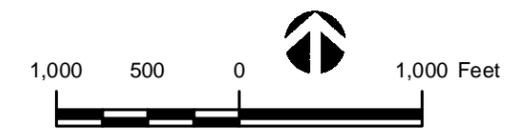


SOURCES: MULTNOMAH COUNTY, METRO RLIS, STATE OF OREGON (DEQ & OWRD), CITY OF GRESHAM, PBS ENGINEERING AND ENVIRONMENTAL

Mult. Co. UIC - Roads	OWRD Wells	OR-DEQ 2-year Time-Of-Travel	Water Rights Point of Diversion
Mult. Co. UIC - Facilities	OWRD Wells 500Ft Buffer	City of Gresham Groundwater 2-yr Capture Zone	Water Rights Point of Diversion - 500Ft Buffer

NOTE: UIC FEATURE LOCATIONS ARE BASED ON FIELD MEASUREMENTS AND ARE CONSIDERED APPROXIMATE

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MULTNOMAH COUNTY UIC LOCATIONS - AREA 2

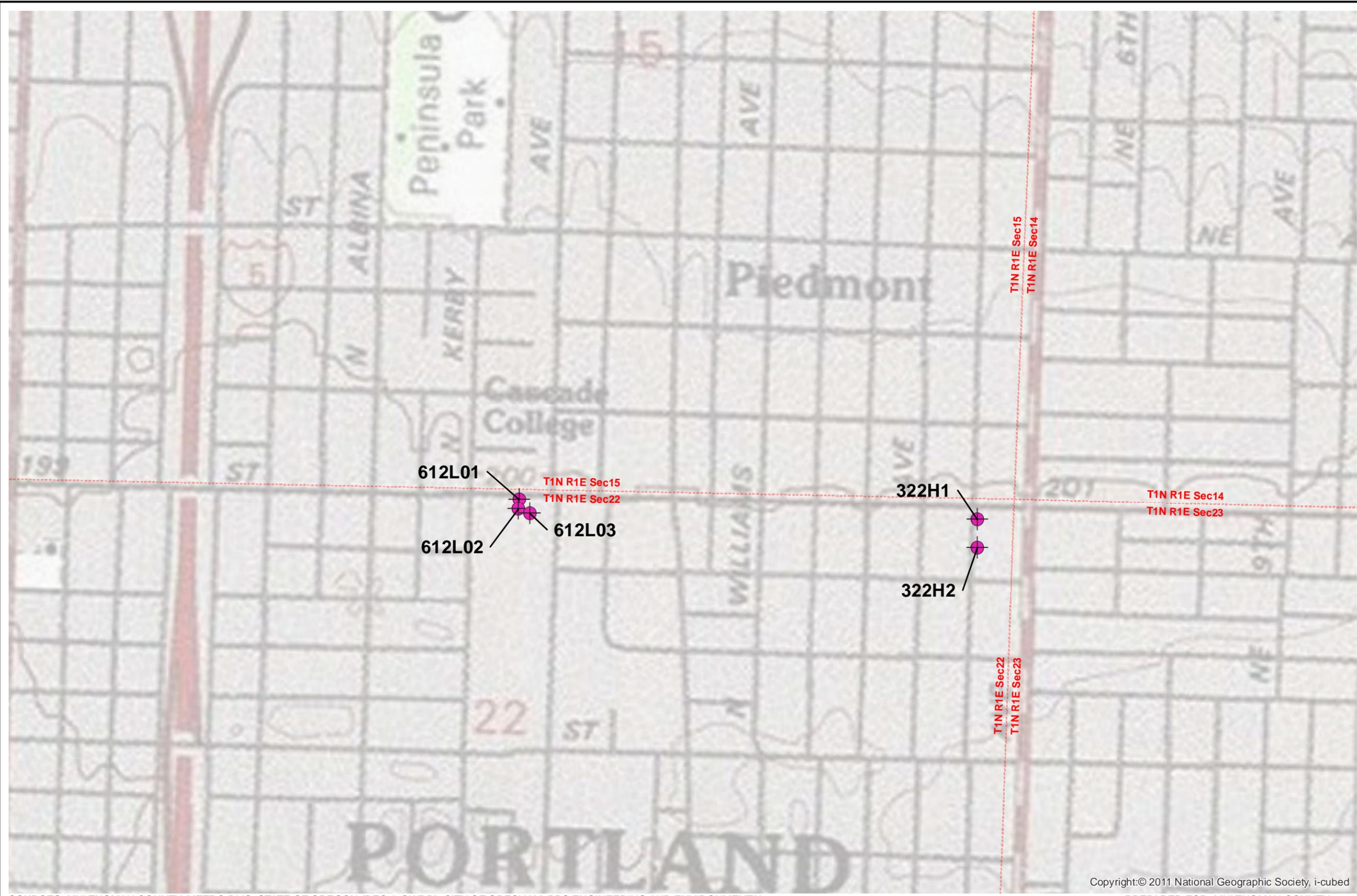
MULTNOMAH COUNTY UIC WPCF PERMIT SYSTEM-WIDE ASSESSMENT
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FIGURE

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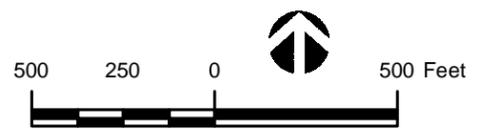
SOURCES: MULTNOMAH COUNTY, METRO RLIS, STATE OF OREGON (DEQ & OWRD), CITY OF GRESHAM, PBS ENGINEERING AND ENVIRONMENTAL

Mult. Co. UIC - Roads	OWRD Wells	OR-DEQ 2-year Time-Of-Travel	Water Rights Point of Diversion
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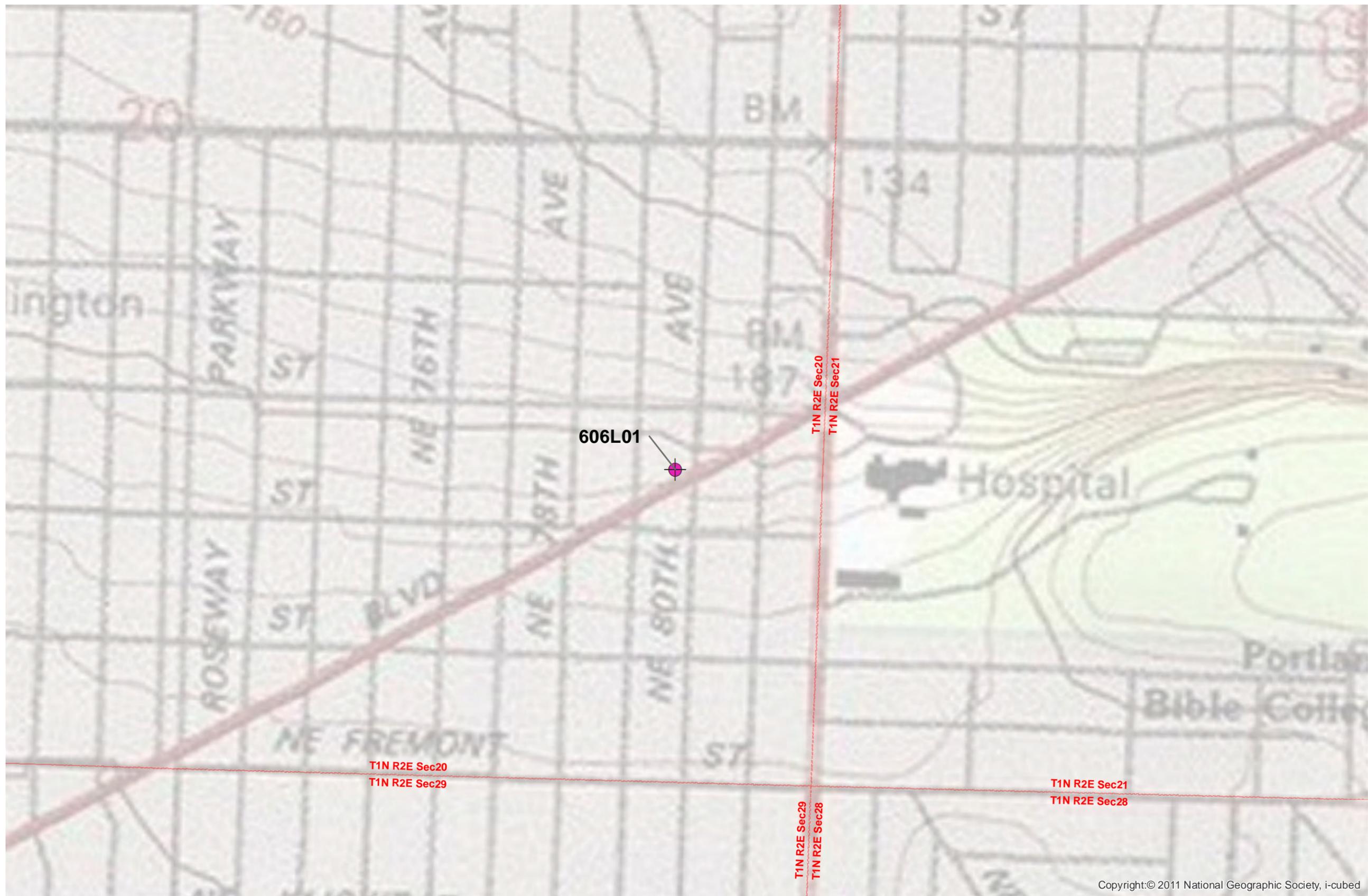
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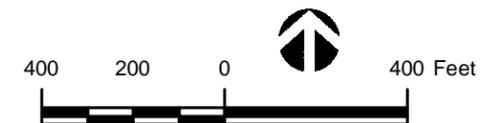
SOURCES: MULTNOMAH COUNTY, METRO RLIS, STATE OF OREGON (DEQ & OWRD), CITY OF GRESHAM, PBS ENGINEERING AND ENVIRONMENTAL

- Mult. Co. UIC - Roads
- OR-DEQ 2-year Time-Of-Travel
- OWRD Wells 500Ft Buffer
- City of Gresham Groundwater 2-yr Capture Zone
- Water Rights Point of Diversion - 500Ft Buffer
- Mult. Co. UIC - Facilities
- OWRD Wells
- City of Gresham Groundwater 2-yr Capture Zone
- Water Rights Point of Diversion

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MULTNOMAH COUNTY UIC LOCATIONS - AREA 3

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FIGURE

5



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MULTNOMAH COUNTY UIC LOCATIONS - AREA 4

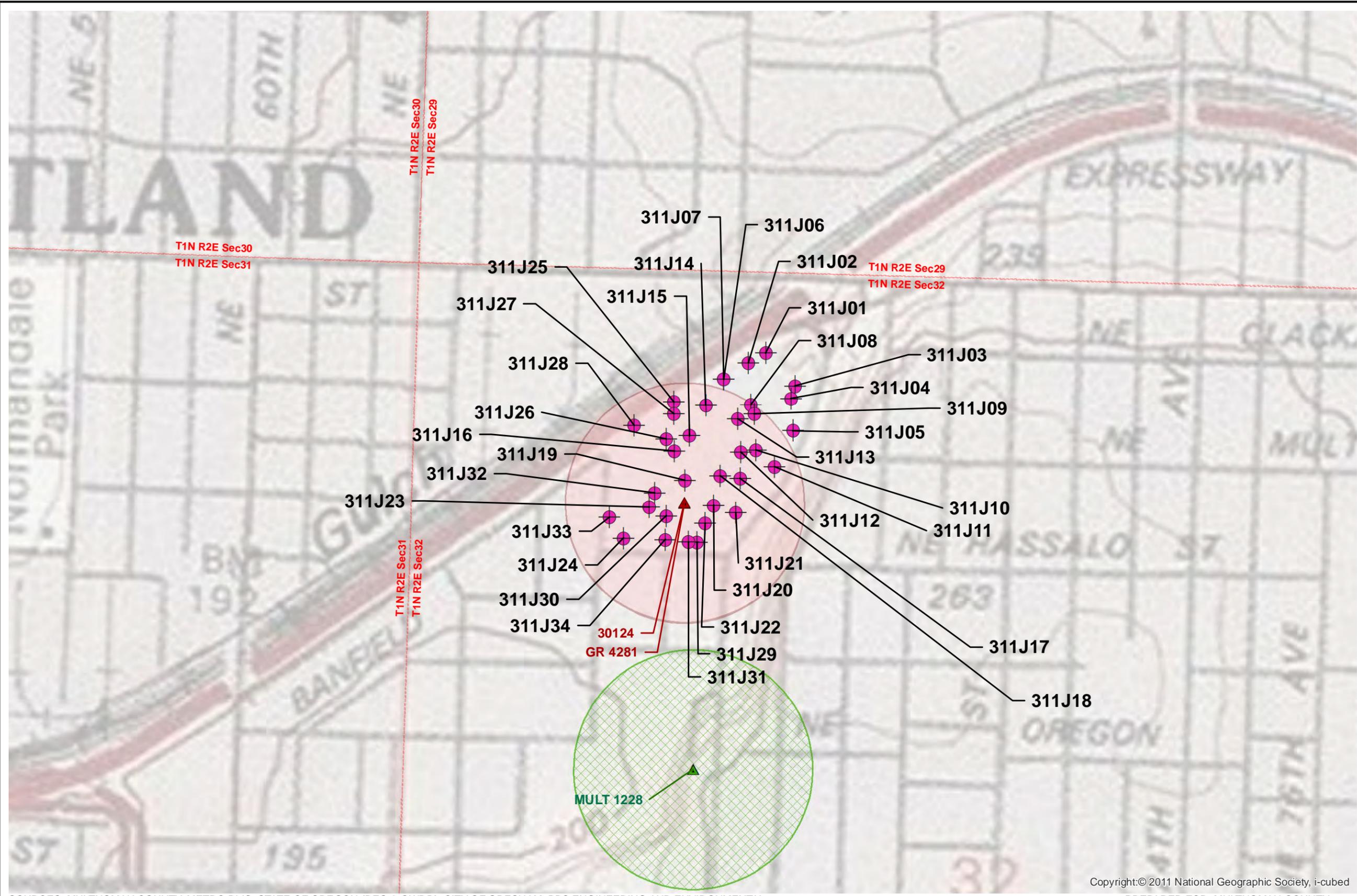
MULTNOMAH COUNTY UIC WPCF PERMIT SYSTEM-WIDE ASSESSMENT
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FIGURE

6



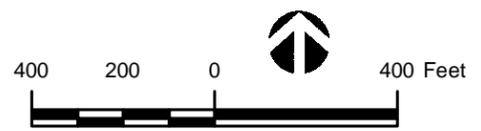
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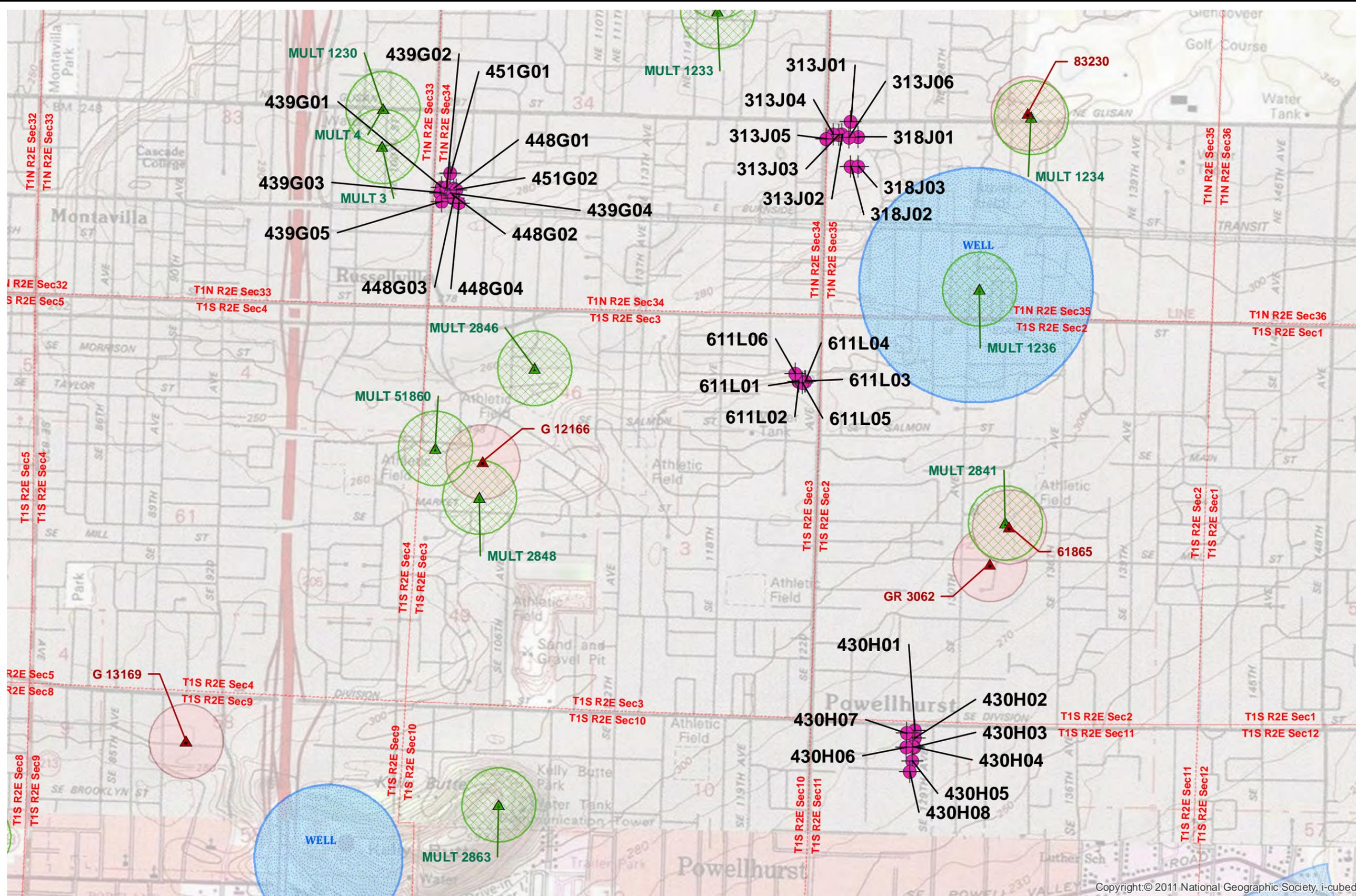
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SOURCES: MULTNOMAH COUNTY, METRO RLIS, STATE OF OREGON (DEQ & OWRD), CITY OF GRESHAM, PBS ENGINEERING AND ENVIRONMENTAL



NOTE: UIC FEATURE LOCATIONS ARE BASED ON FIELD MEASUREMENTS AND ARE CONSIDERED APPROXIMATE

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MULTNOMAH COUNTY UIC LOCATIONS - AREA 5

MULTNOMAH COUNTY UIC WPCF PERMIT SYSTEM-WIDE ASSESSMENT
 MULTNOMAH COUNTY, OREGON

PROJECT 15194.835

DATE JUN 2013

FIGURE

7

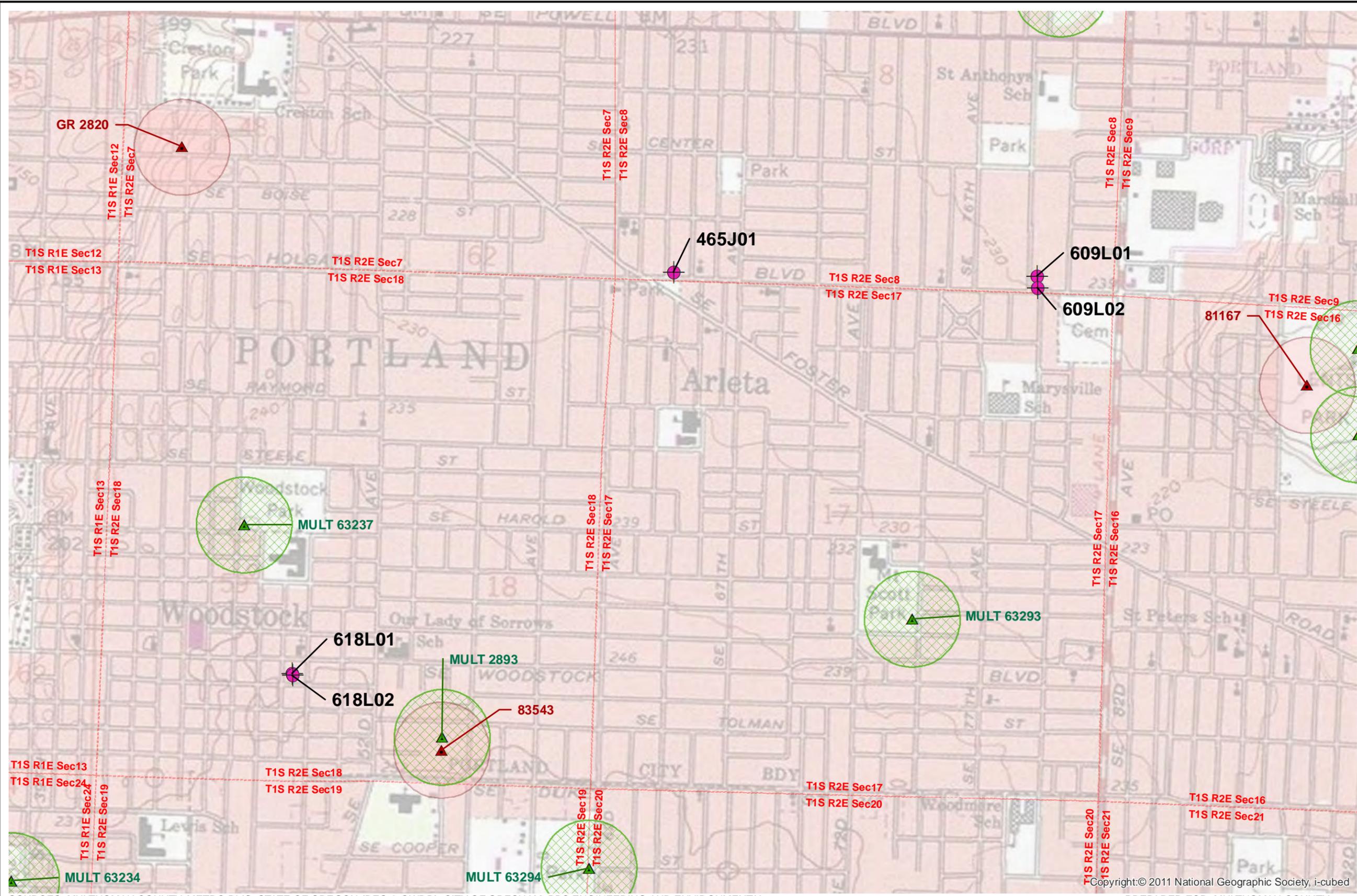


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MULTNOMAH COUNTY UIC LOCATIONS - AREA 6

MULTNOMAH COUNTY UIC WPCF PERMIT SYSTEM-WIDE ASSESSMENT
MULTNOMAH COUNTY, OREGON



SOURCES: MULTNOMAH COUNTY, METRO RLIS, STATE OF OREGON (DEQ & OWRD), CITY OF GRESHAM, PBS ENGINEERING AND ENVIRONMENTAL

Mult. Co. UIC - Roads	OWRD Wells	OR-DEQ 2-year Time-Of-Travel	Water Rights Point of Diversion
Mult. Co. UIC - Facilities	OWRD Wells 500Ft Buffer	City of Gresham Groundwater 2-yr Capture Zone	Water Rights Point of Diversion - 500Ft Buffer

NOTE: UIC FEATURE LOCATIONS ARE BASED ON FIELD MEASUREMENTS AND ARE CONSIDERED APPROXIMATE

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FIGURE

8

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MULTNOMAH COUNTY UIC LOCATIONS - AREA 7

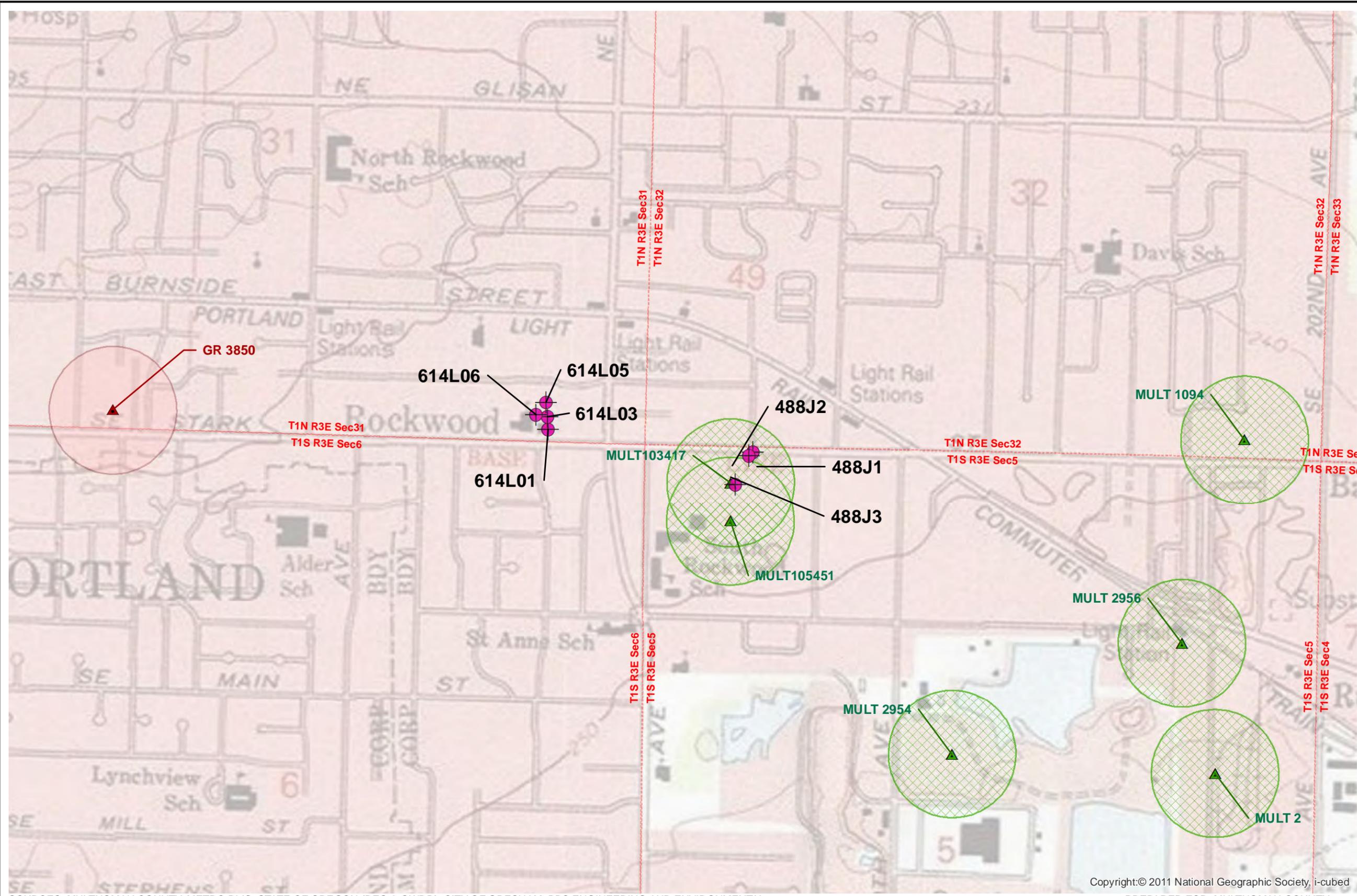
MULTNOMAH COUNTY UIC WPCF PERMIT SYSTEM-WIDE ASSESSMENT
MULTNOMAH COUNTY, OREGON

PROJECT 15194.835

DATE JUN 2013

FIGURE

9



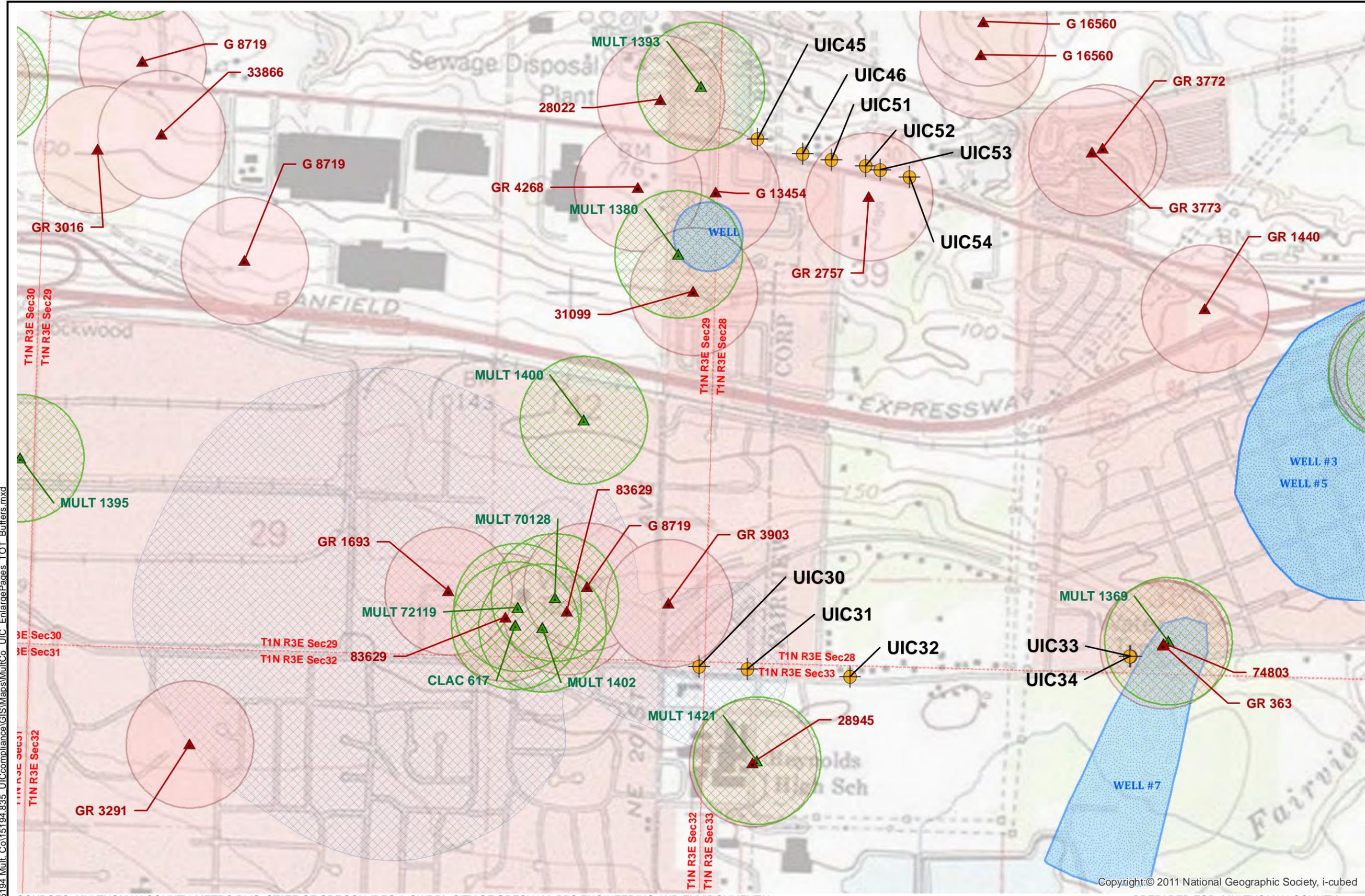
SOURCES: MULTNOMAH COUNTY, METRO RLIS, STATE OF OREGON (DEQ & OWRD), CITY OF GRESHAM, PBS ENGINEERING AND ENVIRONMENTAL

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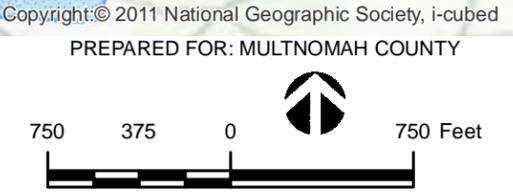


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SOURCES: MULTNOMAH COUNTY, METRO RLIS, STATE OF OREGON (DEQ & OWRD), CITY OF GRESHAM, PBS ENGINEERING AND ENVIRONMENTAL

- Mult. Co. UIC - Roads
- OWRD Wells
- OR-DEQ 2-year Time-Of-Travel
- Water Rights Point of Diversion
- OWRD Wells 500Ft Buffer
- City of Gresham Groundwater 2-yr Capture Zone
- Water Rights Point of Diversion - 500Ft Buffer
- Mult. Co. UIC - Facilities

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**MULTNOMAH COUNTY UIC LOCATIONS -
 AREA 8**

MULTNOMAH COUNTY UIC WPCF PERMIT SYSTEM-WIDE ASSESSMENT
 MULTNOMAH COUNTY, OREGON

PROJECT	15194.835
DATE	JUN 2013

FIGURE 10

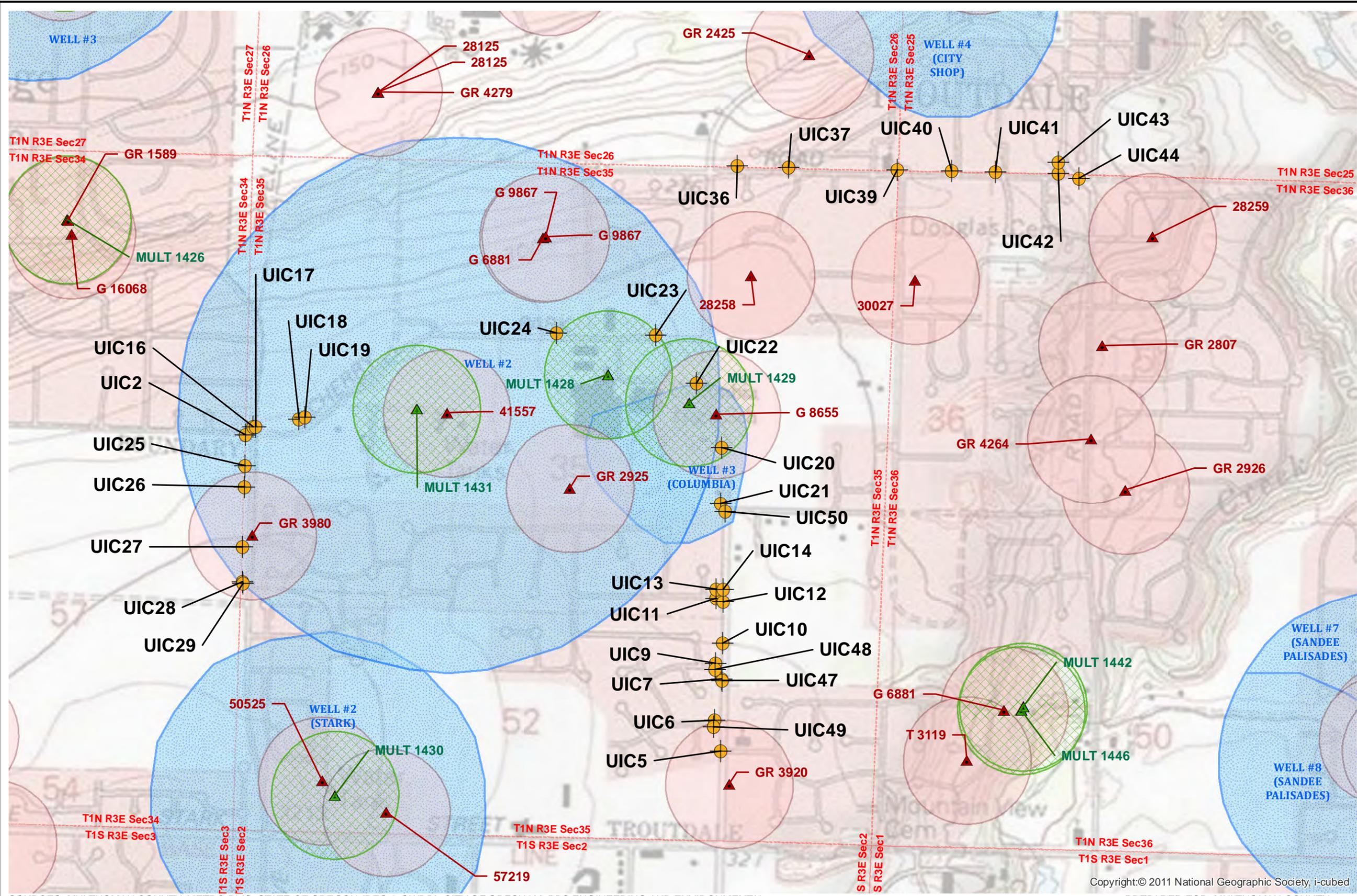


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MULTNOMAH COUNTY UIC LOCATIONS - AREA 9

MULTNOMAH COUNTY UIC WPCF PERMIT SYSTEM-WIDE ASSESSMENT
MULTNOMAH COUNTY, OREGON

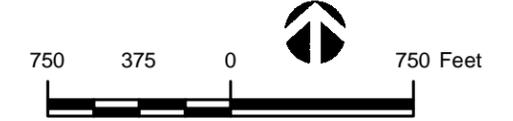


SOURCES: MULTNOMAH COUNTY, METRO RLIS, STATE OF OREGON (DEQ & OWRD), CITY OF GRESHAM, PBS ENGINEERING AND ENVIRONMENTAL

Mult. Co. UIC - Roads	OWRD Wells	OR-DEQ 2-year Time-Of-Travel	Water Rights Point of Diversion
Mult. Co. UIC - Facilities	OWRD Wells 500Ft Buffer	City of Gresham Groundwater 2-yr Capture Zone	Water Rights Point of Diversion - 500Ft Buffer

NOTE: UIC FEATURE LOCATIONS ARE BASED ON FIELD MEASUREMENTS AND ARE CONSIDERED APPROXIMATE

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FIGURE

11

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MULTNOMAH COUNTY UIC LOCATIONS - AREA 10

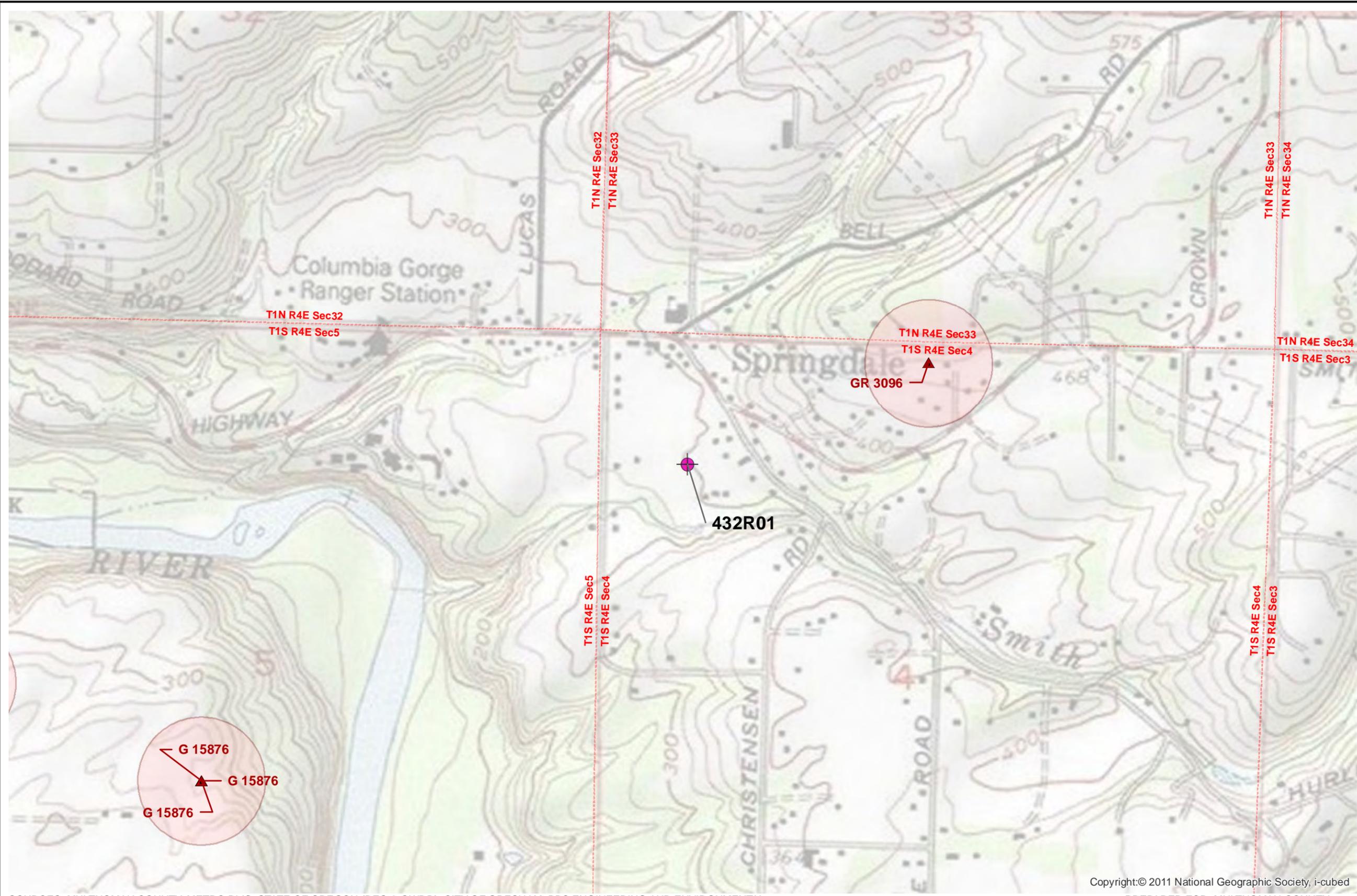
MULTNOMAH COUNTY UIC WPCF PERMIT SYSTEM-WIDE ASSESSMENT
MULTNOMAH COUNTY, OREGON

PROJECT 15194.835

DATE JUN 2013

FIGURE

12



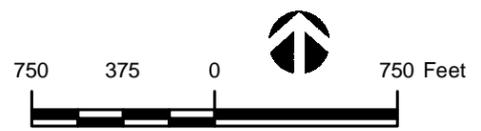
SOURCES: MULTNOMAH COUNTY, METRO RLIS, STATE OF OREGON (DEQ & OWRD), CITY OF GRESHAM, PBS ENGINEERING AND ENVIRONMENTAL

Mult. Co. UIC - Roads	OWRD Wells	OR-DEQ 2-year Time-Of-Travel	Water Rights Point of Diversion
Mult. Co. UIC - Facilities	OWRD Wells 500Ft Buffer	City of Gresham Groundwater 2-yr Capture Zone	Water Rights Point of Diversion - 500Ft Buffer

NOTE: UIC FEATURE LOCATIONS ARE BASED ON FIELD MEASUREMENTS AND ARE CONSIDERED APPROXIMATE

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Appendix C. Protectiveness Demonstration Report (PBS)

Mult Co Well						Average Daily	Depth to	Groundwater
ID	Area Classification	Type	Basin Type(s)	Longitude	Latitude	Traffic Trips	Depth (ft	ft bgs)
						(count/day)	bgs)	(ft bgs)
UIC2	NE 242nd Avenue	Drywell	Roadway	-122.413072	45.527525	1690	18	42
UIC5	SW 257th Avenue	Drywell	Roadway	-122.398322	45.520979	18400	20.5	49
UIC6	SW 257th Avenue	Drywell	Roadway	-122.398527	45.521637	18400	21	49
UIC7	SW 257th Avenue	Drywell	Roadway	-122.398331	45.522526	18400	19.5	47
UIC9	SW 257th Avenue	Drywell	Roadway	-122.398525	45.522861	18400	19.5	47
UIC10	SW 257th Avenue	Drywell	Roadway	-122.398329	45.523297	18400	21	45
UIC11	SW 257th Avenue	Drywell	Roadway	-122.398565	45.524254	18400	22.5	45
UIC12	SW 257th Avenue	Drywell	Roadway	-122.398343	45.524189	18400	21	45
UIC13	SW 257th Avenue	Drywell	Roadway	-122.398576	45.524455	18400	20	45
UIC14	SW 257th Avenue	Drywell	Roadway	-122.398352	45.524459	18400	19.5	45
UIC16	SW Cherry Park Rd. (West)	Drywell	Roadway	-122.412848	45.527704	1690	12	42
UIC17	SW Cherry Park Rd. (West)	Drywell	Roadway	-122.412770	45.527708	1690	15.33	42
UIC18	SW Cherry Park Rd. (West)	Drywell	Roadway	-122.411469	45.527902	9240	20	40
UIC19	SW Cherry Park Rd. (West)	Drywell	Roadway	-122.411291	45.527955	9240	20	40
UIC20	SW 257th Avenue	Drywell	Roadway	-122.398499	45.527501	18400	13	47
UIC21	SW 257th Avenue	Drywell	Roadway	-122.398493	45.526293	18400	17	44
UIC22	SW 257th Avenue	Drywell	Roadway	-122.399325	45.528875	18400	14.25	48
UIC23	SW Cherry Park Rd. (West)	Drywell	Roadway	-122.400603	45.529882	9240	16	49
UIC24	SW Cherry Park Rd. (West)	Drywell	Roadway	-122.403671	45.529883	9240	13	49
UIC25	NE 242nd Avenue	Drywell	Roadway	-122.413072	45.526864	1690	20	46
UIC26	NE 242nd Avenue	Drywell	Roadway	-122.413071	45.526406	1690	16.5	51
UIC27	NE 242nd Avenue	Drywell	Roadway	-122.413083	45.525124	1690	18	59
UIC28	NE 242nd Avenue	Drywell	Roadway	-122.413059	45.524374	1690	21	62
UIC29	NE 242nd Avenue	Drywell	Roadway	-122.413044	45.524343	1690	15.25	62
UIC30	NE Halsey St.	Drywell	Roadway	-122.455252	45.533494	8200	17	61
UIC31	NE Halsey St.	Drywell	Roadway	-122.453780	45.533469	8200	16	56
UIC32	NE Halsey St.	Drywell	Roadway	-122.450630	45.533353	8200	21	38
UIC33	NE Halsey St.	Drywell	Roadway	-122.442053	45.533934	8200	7	21
UIC34	NE Halsey St.	Drywell	Roadway	-122.442074	45.533932	8200	7	21
UIC36	SW Cherry Park Rd. (East)	Drywell	Roadway	-122.398232	45.533550	4820	13.5	52
UIC37	SW Cherry Park Rd. (East)	Drywell	Roadway	-122.396661	45.533553	4820	14	58
UIC39	SW Cherry Park Rd. (East)	Drywell	Roadway	-122.393331	45.533554	4820	17	62
UIC40	SW Cherry Park Rd. (East)	Drywell	Roadway	-122.391657	45.533560	4820	16.5	62
UIC41	SW Cherry Park Rd. (East)	Drywell	Roadway	-122.390323	45.533559	4820	14	63
UIC42	SW Cherry Park Rd. (East)	Drywell	Roadway	-122.388396	45.533555	4820	16	64
UIC43	SW Cherry Park Rd. (East)	Drywell	Roadway	-122.388400	45.533792	4820	12.33	64
UIC44	SW Cherry Park Rd. (East)	Drywell	Roadway	-122.387765	45.533451	4820	13.75	61
UIC45	NE Sandy Blvd.	Drywell	Roadway	-122.453857	45.544842	1690	15.33	60

Mult Co Well ID	Area Classification	Type	Basin Type(s)	Longitude	Latitude	Average Daily Traffic Trips (count/day)	Depth (ft bgs)	Depth to Groundwater (ft bgs)
UIC46	NE Sandy Blvd.	Drywell	Roadway	-122.452460	45.544561	1690	15.33	57
UIC47	SW 257th Avenue	Drywell	Roadway	-122.398312	45.522500	18400	19	47
UIC48	SW 257th Avenue	Drywell	Roadway	-122.398551	45.522733	18400	19	47
UIC49	SW 257th Avenue	Drywell	Roadway	-122.398553	45.521500	18400	19	49
UIC50	SW 257th Avenue	Drywell	Roadway	-122.398348	45.526123	18400	20	44
UIC51	NE Sandy Blvd.	Drywell	Roadway	-122.451581	45.544439	1690	15.33	58
UIC52	NE Sandy Blvd.	Drywell	Roadway	-122.450522	45.544325	1690	15.33	58
UIC53	NE Sandy Blvd.	Drywell	Roadway	-122.450084	45.544249	1690	15.33	58
UIC54	NE Sandy Blvd.	Drywell	Roadway	-122.449175	45.544113	1690	15.33	57
311J01	Juvenile Justice Center	Drywell	Parking	-122.593798	45.532681	15310	10	141
311J02	Juvenile Justice Center	Drywell	Parking	-122.594079	45.532564	15310	10	141
311J03	Juvenile Justice Center	Drywell	Parking	-122.593308	45.532312	15310	15	142
311J04	Juvenile Justice Center	Drywell	Parking	-122.593369	45.532165	15310	10	141
311J05	Juvenile Justice Center	Drywell	Parking	-122.593324	45.531798	15310	15	140
311J06	Juvenile Justice Center	Drywell	Parking	-122.594477	45.532367	15310	20	142
311J07	Juvenile Justice Center	Drywell	Parking	-122.594477	45.532367	15310	10	142
311J08	Juvenile Justice Center	Drywell	Parking	-122.594022	45.532085	15310	10	140
311J09	Juvenile Justice Center	Drywell	Parking	-122.593963	45.531979	15310	10	140
311J10	Juvenile Justice Center	Drywell	Parking	-122.593917	45.531565	15310	15	140
311J11	Juvenile Justice Center	Drywell	Parking	-122.593606	45.531382	15310	15	138
311J12	Juvenile Justice Center	Drywell	Landscape, Roof	-122.594162	45.531536	15310	15	140
311J13	Juvenile Justice Center	Drywell	Parking	-122.594227	45.531919	15310	15	140
311J14	Juvenile Justice Center	Drywell	Parking, Roof	-122.594755	45.532066	15310	10	140
311J15	Juvenile Justice Center	Drywell	Parking, Roof	-122.595011	45.531710	15310	15	140
311J16	Juvenile Justice Center	Drywell	Parking, Roof	-122.595247	45.531527	15310	10	140
311J17	Juvenile Justice Center	Drywell	Landscape	-122.594166	45.531237	15310	10	138
311J18	Juvenile Justice Center	Drywell	Landscape, Roof	-122.594491	45.531261	15310	15	139
311J19	Juvenile Justice Center	Drywell	Landscape, Roof	-122.595063	45.531196	15310	15	139
311J20	Juvenile Justice Center	Drywell	Parking	-122.594584	45.530919	15310	20	139
311J21	Juvenile Justice Center	Drywell	Parking, Roof	-122.594218	45.530844	15310	15	138
311J22	Juvenile Justice Center	Drywell	Parking	-122.594717	45.530714	15310	10	136
311J23	Juvenile Justice Center	Drywell	Landscape	-122.595640	45.530878	15310	20	139
311J24	Juvenile Justice Center	Drywell	Landscape	-122.596041	45.530517	15310	5	136
311J25	Juvenile Justice Center	Drywell	Parking	-122.595279	45.532092	15310	15	141
311J26	Juvenile Justice Center	Drywell	Parking, Landscape	-122.595384	45.531665	15310	20	141
311J27	Juvenile Justice Center	Drywell	Roof	-122.595270	45.531958	15310	20	140
311J28	Juvenile Justice Center	Drywell	Landscape	-122.595921	45.531811	15310	10	141
311J29	Juvenile Justice Center	Drywell	Landscape	-122.594841	45.530490	15310	5	136

Mult Co Well ID	Area Classification	Type	Basin Type(s)	Longitude	Latitude	Average Daily Traffic Trips (count/day)	Depth (ft bgs)	Depth to Groundwater (ft bgs)
311J30	Juvenile Justice Center	Drywell	Landscape, Roof	-122.595356	45.530785	15310	20	139
311J31	Juvenile Justice Center	Drywell	Landscape	-122.594982	45.530492	15310	5	136
311J32	Juvenile Justice Center	Drywell	Landscape	-122.595557	45.531042	15310	5	139
311J33	Juvenile Justice Center	Drywell	Landscape	-122.596280	45.530754	15310	5	139
311J34	Juvenile Justice Center	Drywell	Landscape	-122.595361	45.530513	15310	5	136
313J01	Hansen Complex - Main	Drywell	Parking	-122.536251	45.526168	3428	20	120
313J02	Hansen Complex - Main	Drywell	Roof	-122.536690	45.525688	3428	6	119
313J03	Hansen Complex - Main	Drywell	Roof	-122.536865	45.525669	3428	6	119
313J04	Hansen Complex - Main	Drywell	Roof	-122.537163	45.525694	3428	6	119
313J05	Hansen Complex - Main	Drywell	Parking	-122.537527	45.525509	3428	20	119
313J06	Hansen Complex - Main	Drywell	Parking	-122.536851	45.525909	3428	20	119
318J01	Hansen Complex - Bldg. C	Drywell	Parking	-122.535837	45.525613	3428	13	119
318J02	Hansen Complex - Bldg. C	Drywell	Parking	-122.536192	45.524517	3428	13	116
318J03	Hansen Complex - Bldg. C	Drywell	Parking	-122.535790	45.524522	3428	13	116
322H1	Walnut Park Health Complex	Stormchamber	Parking	-122.662315	45.562460	3126	7	159
322H2	Walnut Park Health Complex	Stormchamber	Parking	-122.662299	45.562052	3126	7	159
325H01	North Portland Health Clinic	Drywell	Parking	-122.757353	45.592304	828	20	67
325H02	North Portland Health Clinic	Drywell	Parking, Roof	-122.757441	45.592261	828	20	69
325H03	North Portland Health Clinic	Drywell	Parking	-122.757533	45.592218	828	20	69
325H04	North Portland Health Clinic	Drywell	Parking	-122.757018	45.592829	828	20	69
430H01	Mid-County Health Clinic	Drywell	Parking, Roof	-122.532064	45.503748	681	20	79
430H02	Mid-County Health Clinic	Drywell	Parking, Roof	-122.532070	45.503460	681	20	78
430H03	Mid-County Health Clinic	Drywell	Parking, Roof	-122.532077	45.503127	681	20	78
430H04	Mid-County Health Clinic	Drywell	Parking	-122.532159	45.503134	681	20	78
430H05	Mid-County Health Clinic	Drywell	Parking	-122.532160	45.502616	681	20	75
430H06	Mid-County Health Clinic	Drywell	Roof	-122.532491	45.503117	681	20	78
430H07	Mid-County Health Clinic	Drywell	Roof	-122.532497	45.503633	681	20	78
430H08	Mid-County Health Clinic	Drywell	Parking	-122.532275	45.502219	681	20	72
432R01	Springdale Road Shop	Drywell	Parking, Landscape	-122.329017	45.516132	50	3.4	75
439G01	Gateway Children's Center - MDT	Drywell	Parking	-122.557723	45.523377	1517	5	179
439G02	Gateway Children's Center - MDT	Drywell	Parking	-122.557449	45.523376	1517	20	179
439G03	Gateway Children's Center - MDT	Drywell	Parking	-122.557773	45.523159	1517	8	179
439G04	Gateway Children's Center - MDT	Drywell	Parking	-122.557250	45.523155	1517	8	174
439G05	Gateway Children's Center - MDT	Drywell	Roof	-122.557680	45.522837	1517	8	174
448G01	Gateway Children's Center - Service	Drywell	Parking	-122.557081	45.523336	1517	5	174
448G02	Gateway Children's Center - Service	Drywell	Parking	-122.557135	45.523096	1517	8	174
448G03	Gateway Children's Center - Service	Drywell	Parking	-122.557049	45.522994	1517	5	170
448G04	Gateway Children's Center - Service	Soakage Trench	Sidewalk	-122.556793	45.522800	1517	3	170

Mult Co Well ID	Area Classification	Type	Basin Type(s)	Longitude	Latitude	Average Daily Traffic Trips (count/day)	Depth (ft bgs)	Depth to Groundwater (ft bgs)
451G01	Gateway Children's Center - Residential	Drywell	Parking	-122.557265	45.523895	1517	20	184
451G02	Gateway Children's Center - Residential	Drywell	Driveway, Roof	-122.556927	45.523298	1517	20	174
465J01	Wikman Building	Drywell	Roof	-122.596953	45.490542	543	6	121
488J01	East County Courthouse	Drywell	Parking	-122.472845	45.519084	3068	20	59
488J02	East County Courthouse	Stormchamber	Roof, Parking	-122.473047	45.518297	3068	4	60
488J03	East County Courthouse	Drywell	Roadway	-122.472647	45.518919	3068	20	60
606L01	Gregory Heights Library	Drywell	Parking, Sidewalk	-122.580991	45.551646	336	17	170
609L01	Holgate Library	Drywell	Parking, Roof	-122.582147	45.490691	371	23	100
609L02	Holgate Library	Drywell	Parking, Roof	-122.582104	45.490357	371	23	100
611L01	Midland Library	Drywell	Parking	-122.538673	45.516547	1458	20	120
611L02	Midland Library	Drywell	Parking	-122.538649	45.516548	1458	20	120
611L03	Midland Library	Drywell	Parking	-122.538330	45.516553	1458	20	120
611L04	Midland Library	Drywell	Parking	-122.538306	45.516554	1458	20	120
611L05	Midland Library	Drywell	Roof, Foundation	-122.538464	45.516482	1458	20	120
611L06	Midland Library	Drywell	Roof, Foundation	-122.538847	45.516827	1458	20	117
612L01	North Portland Library	Drywell	Landscape, Roof	-122.671677	45.562574	838	6	144
612L02	North Portland Library	Drywell	Landscape, Roof	-122.671688	45.562434	838	9	145
612L03	North Portland Library	Drywell	Roof	-122.671451	45.562373	838	9	145
614L01	Rockwood Library	Drywell	Roof	-122.478794	45.519364	Roof Only	5	64
614L03	Rockwood Library	Drywell	Roof	-122.478811	45.519638	Roof Only	8	64
614L06	Rockwood Library	Drywell	Roof	-122.479171	45.519675	Roof Only	5	64
615L01	St. Johns Library	Drywell	Roof	-122.751204	45.590154	567	5	82
615L02	St. Johns Library	Drywell	Landscape	-122.750954	45.589895	567	5	82
615L03	St. Johns Library	Drywell	Landscape, Foundation	-122.750784	45.590033	567	5	82
615L04	St. Johns Library	Drywell	Parking	-122.751410	45.589893	567	15	80
615L05	St. Johns Library	Drywell	Roof	-122.751237	45.589954	567	15	80
618L01	Woodstock Library	Drywell	Roof	-122.612084	45.478769	418	16	129
618L02	Woodstock Library	Drywell	Parking	-122.612066	45.478718	418	16	129

*Depth for UIC45, UIC51, UIC52, UIC53, & UIC54 assumed equal to nearby UICs constructed at the same time.

Mult Co Well ID	Discharges to Groundwater (Yes/No)	Intersects 2-Year Time of Travel, or if none then 500' Well or Point of Diversion Buffer (Yes/No)	2-Yr_TOT	WELL 1	WELL 1 TYPE	WELL 2	WELL 2 TYPE	Water Right Point of Diversion Permit/ Claim #
UIC2	NO	YES	Wood Village WELL #2					
UIC5	NO	YES						GR 3920
UIC6	NO	NO						
UIC7	NO	NO						
UIC9	NO	NO						
UIC10	NO	NO						
UIC11	NO	NO						
UIC12	NO	NO						
UIC13	NO	NO						
UIC14	NO	NO						
UIC16	NO	YES	Wood Village WELL #2					
UIC17	NO	YES	Wood Village WELL #2					
UIC18	NO	YES	Wood Village WELL #2					
UIC19	NO	YES	Wood Village WELL #2					
UIC20	NO	YES	Troutdale -Well #3 (Columbia)	MULT 1429	MUNICIPAL			G 8655
UIC21	NO	YES	Troutdale -Well #3 (Columbia)					
UIC22	NO	YES	Wood Village WELL #2	MULT 1429	MUNICIPAL			G 8655
UIC23	NO	YES	Wood Village WELL #2	MULT 1428	IRRIGATION			
UIC24	NO	YES	Wood Village WELL #2					
UIC25	NO	YES	Wood Village WELL #2					
UIC26	NO	YES	Wood Village WELL #2					GR 3980
UIC27	NO	YES	Wood Village WELL #2					GR 3980
UIC28	NO	YES	Wood Village WELL #2					GR 3980
UIC29	NO	YES	Wood Village WELL #2					GR 3980
UIC30	NO	YES	Gresham 2yr TOT (Cascade Wellfield)					
UIC31	NO	YES	Gresham 2yr TOT (Cascade Wellfield)					
UIC32	NO	NO						
UIC33	NO	NO		MULT 1369	MUNICIPAL			G 2460
UIC34	NO	NO		MULT 1369	MUNICIPAL			G 2460
UIC36	NO	NO						
UIC37	NO	NO						
UIC39	NO	NO						
UIC40	NO	NO						
UIC41	NO	NO						
UIC42	NO	NO						
UIC43	NO	NO						
UIC44	NO	NO						
UIC45	NO	NO						

Mult Co Well ID	Discharges to Groundwater (Yes/No)	Intersects 2-Year Time of Travel, or if none then 500' Well or Point of Diversion Buffer (Yes/No)	2-Yr_TOT	WELL 1	WELL 1 TYPE	WELL 2	WELL 2 TYPE	Water Right Point of Diversion Permit/ Claim #
UIC46	NO	NO						
UIC47	NO	NO						
UIC48	NO	NO						
UIC49	NO	YES						GR 3920
UIC50	NO	YES	Troutdale -Well #3 (Columbia)					
UIC51	NO	YES						GR 2757
UIC52	NO	YES						GR 2757
UIC53	NO	YES						GR 2757
UIC54	NO	YES						GR 2757
311J01	NO	NO						
311J02	NO	NO						
311J03	NO	NO						
311J04	NO	NO						
311J05	NO	NO						
311J06	NO	NO						
311J07	NO	NO						
311J08	NO	YES						GR 4281
311J09	NO	YES						GR 4281
311J10	NO	YES						GR 4281
311J11	NO	YES						GR 4281
311J12	NO	YES						GR 4281
311J13	NO	YES						GR 4281
311J14	NO	YES						GR 4281
311J15	NO	YES						GR 4281
311J16	NO	YES						GR 4281
311J17	NO	YES						GR 4281
311J18	NO	YES						GR 4281
311J19	NO	YES						GR 4281
311J20	NO	YES						GR 4281
311J21	NO	YES						GR 4281
311J22	NO	YES						GR 4281
311J23	NO	YES						GR 4281
311J24	NO	YES						GR 4281
311J25	NO	YES						GR 4281
311J26	NO	YES						GR 4281
311J27	NO	YES						GR 4281
311J28	NO	YES						GR 4281
311J29	NO	YES						GR 4281

Mult Co Well ID	Discharges to Groundwater (Yes/No)	Intersects 2-Year Time of Travel, or if none then 500' Well or Point of Diversion Buffer (Yes/No)	2-Yr_TOT	WELL 1	WELL 1 TYPE	WELL 2	WELL 2 TYPE	Water Right Point of Diversion Permit/ Claim #
311J30	NO	YES						GR 4281
311J31	NO	YES						GR 4281
311J32	NO	YES						GR 4281
311J33	NO	YES						GR 4281
311J34	NO	YES						GR 4281
313J01	NO	NO						
313J02	NO	NO						
313J03	NO	NO						
313J04	NO	NO						
313J05	NO	NO						
313J06	NO	NO						
318J01	NO	NO						
318J02	NO	NO						
318J03	NO	NO						
322H1	NO	NO						
322H2	NO	NO						
325H01	NO	NO						
325H02	NO	NO						
325H03	NO	NO						
325H04	NO	NO						
430H01	NO	NO						
430H02	NO	NO						
430H03	NO	NO						
430H04	NO	NO						
430H05	NO	NO						
430H06	NO	NO						
430H07	NO	NO						
430H08	NO	NO						
432R01	NO	NO						
439G01	NO	NO						
439G02	NO	NO						
439G03	NO	NO						
439G04	NO	NO						
439G05	NO	NO						
448G01	NO	NO						
448G02	NO	NO						
448G03	NO	NO						
448G04	NO	NO						

Mult Co Well ID	Discharges to Groundwater (Yes/No)	Intersects 2-Year Time of Travel, or if none then 500' Well or Point of Diversion Buffer (Yes/No)	2-Yr_TOT	WELL 1	WELL 1 TYPE	WELL 2	WELL 2 TYPE	Water Right Point of Diversion Permit/ Claim #
451G01	NO	NO						
451G02	NO	NO						
465J01	NO	NO						
488J01	NO	YES		MULT 103417	TEST	MULT 105451	EXTRACTION	
488J02	NO	YES		MULT 103417	TEST	MULT 105451	EXTRACTION	
488J03	NO	YES		MULT 103417	TEST	MULT 105451	EXTRACTION	
606L01	NO	NO						
609L01	NO	NO						
609L02	NO	NO						
611L01	NO	NO						
611L02	NO	NO						
611L03	NO	NO						
611L04	NO	NO						
611L05	NO	NO						
611L06	NO	NO						
612L01	NO	NO						
612L02	NO	NO						
612L03	NO	NO						
614L01	NO	NO						
614L03	NO	NO						
614L06	NO	NO						
615L01	NO	NO						
615L02	NO	NO						
615L03	NO	NO						
615L04	NO	NO						
615L05	NO	NO						
618L01	NO	NO						
618L02	NO	NO						

*Depth for UIC.