



## TECHNICAL MEMORANDUM

**Date:** April 21, 2023

**To:** Mr. Pui Leung  
Roystone on Queen Anne, LLC  
606 Maynard Avenue South #251  
Seattle, Washington 98104

**From:** Jerry Sawetz/Paul Riley  
The Riley Group, Inc.

**Subject:** **Roystone Redevelopment – MW-10 & SSI-W2 Well Modifications**  
**631 Queen Anne Avenue North**  
**Seattle, Washington 98109**  
**RGI Project No. 2017-015K Task 12A**

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## INTRODUCTION

The Riley Group, Inc. (RGI) is pleased to present this Technical Memorandum summarizing modifications to groundwater monitoring wells associated with the Roystone Redevelopment project located at 631 Queen Anne Avenue in Seattle, Washington (hereafter referred to as the Property). The general location of the Property is displayed on Figure 1.

The Property is currently under construction and is owned by Roystone on Queen Anne, LLC (hereafter referred to as the Client). The Property is part of a larger Site identified by the Washington Department of Ecology (Ecology) as the Texaco 211577 Monterey Site (CSID 6663).

On August 19, 2020, Roystone, CEMC, and Ecology entered into Agreed Order No. 16537 (AO 16537). Under AO 16537, Roystone is responsible for the cleanup of the portion of the Site situated within the Property boundaries. Cleanup of the remainder of the Site, outside the Property boundaries, is the responsibility of CEMC. The locations of the Site relative to the Property is displayed on Figure 2.

RGI completed remediation of soil and groundwater on the Property in 2020. Ecology recently indicated that the remediation completed in 2020 was sufficient to bring the Property into compliance with MTCA regulations and Ecology is currently moving forward with regulatory closure of the Property.

Construction work associated with the Property included replacing the sidewalks along the south side of West Roy Street and the west side of Queen Anne Avenue North. Well SSI-W2 was installed in 2017 by RGI and is situated in the sidewalk along the south side of West Roy Street. SSI-W2 is identified with Ecology well tag number BJH412. Well MW-10 is situated in the sidewalk along the west side of Queen Anne Avenue North and was installed by Geoengineers in 1986. RGI was not

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able to locate an Ecology well tag number for this well. Well SSI-W1 (situated to the east of MW-10) was not disturbed during construction activities and remains an active well.

Both SSI-W2 and MW-10 are located outside the Property boundaries on the portion of the Site CEMC is responsible for remediating. However, since construction work in the locations of SSI-W2 and MW-10 was completed by Roystone, RGI was retained by Roystone to protect the wells during construction and to modify each well to match the new grade in both locations after work was completed. The work associated with the modifications to these wells does not have any impact on the regulatory closure of the Property under AO 16537.

RGI completed all work associated with this project in general accordance with the scope of work presented to Ecology in an email dated November 18, 2022, which was approved by Ecology and the scope work presented to the Client separately in an email dated November 22, 2022, which was approved by the Client.

RGI submitted a draft version of this Technical Memorandum to Ecology on March 27, 2023. Based on a review of the document, Ecology indicated that groundwater monitoring wells SSI-W2 and MW-10 must be developed in order to verify if debris had entered either of the wells during the well modification work completed in December of 2022 and March of 2023. Work associated with the development of these wells has been incorporated into this Technical Memorandum.

### **WELL MODIFICATION SCOPE OF WORK**

The scope of work associated with well modifications was performed in two phases. The first phase was completed in December of 2022 and the second phase was completed in March of 2023. The work associated with both of these phases is described in the following sections and well modification work areas are displayed on Figure 2. Photographs pertaining to the work are included in Attachment A.

RGI met onsite with the Roystone construction team and subcontractor on December 1, 2022 to discuss the scope of work for well modifications. RGI also discussed the scope of work with Ecology prior to completing the work.

#### **Well Modifications - Phase 1**

On December 7, 2022, RGI retained B&W Standard Probe, LLC. (Standard), a Washington State licensed well driller, to modify groundwater monitoring wells SSI-W2 and MW-10. The purpose of the modifications was to protect the wells during the replacement of the sidewalk in the location of well MW-10 and the removal of the sidewalk and construction of a landscaped area in the location of well SSI-W2.

In each well location, the monuments protecting the wells were removed and the well casings were cut down to a depth approximately 18-inches below the surface grade at the time. This depth was chosen due to the fact that the Roystone construction team indicated that there would not be any excavation or other construction related work that would extend to this depth.

The wells casings were then capped and sealed with a J-plug and the area above and around each well was backfilled with gravel, which extended to approximately 4-inches above each well casing (or approximately 14-inches below the surface grade). The well cover associated with each well was then placed on top of the gravel such that the center of the well cover corresponded to the center of the well casing beneath the gravel. The purpose of placing the well cover in the subsurface was to mark the well casing location, which would allow the well casings to be easily located during the second phase of well modifications.

## **Well Modifications - Phase 2**

The replacement of the sidewalks along the south side of West Roy Street and the west side of Queen Anne Avenue North was completed in March of 2023. On March 14, 2023, RGI retained Applied Professional Services, Inc. (APS) to assist with locating the well casings for SSI-W2 and MW-10, which were modified during Phase I of well modifications.

On the same date, RGI retained Standard to complete well modifications. The work commenced at well SSI-W2 where a landscaped area was present that had been backfilled with soil to approximately 12 inches below the final grade of the surrounding sidewalk. Standard utilized hand digging tools to remove the soil and gravel above the well casing and expose the casing. The well casing was then extended approximately 16-inches higher with a coupler, which was sealed with concrete. This raised the well casing to a depth of a couple of inches below the new grade of the sidewalk adjacent to the landscaped area.

Since the backfilling of the landscaped area with soil was not completed, the well casing extended approximately one foot above the grade of the soil at that time. Therefore, Standard placed a 8-inch diameter Sonotube around the well casing and the annular space between the well casing and the Sonotube was filled with concrete and a new 5-inch diameter traffic-rated well monument was set in the concrete to protect the well casing. The area surrounding the Sonotube was backfilled with soil up to the new grade the following day and shrubs and other vegetation were planted in the surrounding area. The current condition of well SSI-W2 is displayed on photograph 6 in Attachment A.

In the location of well MW-10, a new sidewalk was present. Therefore, Standard cored a 10-inch diameter core through the approximately 8-inch thick concrete sidewalk to expose the well cover that had been left beneath the concrete as a marker. Standard removed the well cover and utilized hand digging techniques to remove the soil and gravel above the well casing and expose the well casing. The well casing was then extended approximately 16-inches higher with a coupler to raise the well casing to a depth of a couple of inches below the new grade of the sidewalk. A 10-inch diameter traffic-rated monument was then set in approximately one foot of concrete flush with the grade of the new sidewalk. The current condition of well MW-10 is displayed on photograph 5 in Attachment A.

## **Well Surveying**

On March 23, 2023, after all work associated with well modifications was completed, Roystone retained the services of Bush, Roed, and Hitchings, Inc. (BRH), a Washington State licensed well surveyor, to survey the north side of the top of the PVC casing at wells SSI-W2 and MW-10. The vertical elevation was surveyed to the North American Vertical Datum of 1988 (NAVD88) to an accuracy of  $\pm 0.01$ -foot. The horizontal position of each well was also surveyed using Horizontal Datum Washington State North Zone to an accuracy of  $\pm 0.01$ -foot.

The new vertical elevations obtained for the north side of each well casing at wells SSI-W2 and MW-10 are 146.68-foot and 148.75-foot, respectively. A copy of the well survey completed by BRH is included in Attachment B.

## Well Development

Based on a review of the draft version of this Technical Memorandum, Ecology indicated that wells SSI-W2 and MW-2 must be developed in order to verify if debris had entered either of the well casings during the well modification work completed in December of 2022 and March of 2023. Note that, during well modification work completed at wells SSI-W2 and MW-10, RGI was very careful to ensure that no debris entered the well casings and the well casings were covered throughout a large portion of the work.

On April 12, 2023, RGI mobilized to the Site to develop wells SSI-W2 and MW-10. Work commenced at well MW-10, which was developed by placing a decontaminated submersible pump (Geotech Geosub 2 Pump & Controller) at the bottom of the well casing and purging approximately 4 gallons of water from the well. During purging, water quality parameters (temperature, pH, and conductivity) were monitored with a YSI. Well development was determined to be complete after water was observed to be clear and water quality parameters had stabilized. At the start of well development, a small amount of sediment was observed at the bottom of the well casing that cleared up relatively quickly. No evidence of foreign debris was observed in well MW-10 during development.

RGI attempted to develop well SSI-W2 on April 12, 2023. However, during the previous well modification work, the driller had covered the well casings for SSI-W2 and MW-10 with tight fitting PVC slip covers. The original well modification plan included securing the well casings with j-plugs. The PVC slip cover on the well casing of SSI-W2 was too tight to be removed by hand without tools. Therefore, RGI left the Site with the intention of returning to develop well SSI-W2 and replacing the slip covers with j-plugs on wells SSI-W2 and MW-10.

On April 17, 2023, RGI mobilized to the Site to develop well SSI-W2, remove PVC slip covers and install j-plugs on the well casings of SSI-W2 and MW-10. Well SSI-W2 was developed using a peristaltic pump by placing dedicated tubing connected to the pump at the bottom of the well casing and purging approximately 1.5 gallons of water from the well. A peristaltic pump was used in place of the Geosub pump due to the Geosub pump and power line that extending along the side of the pump being slightly too big to fit down the 1.5" SSI-W2 well casing. During purging, water quality parameters (temperature, pH, and conductivity) were monitored with a YSI and development was determined to be complete after water was observed to be clear and water quality parameters had stabilized. At the start of development, a very minor amount of sediment was observed in the water that cleared up very quickly. No evidence of foreign debris was observed in well SSI-W2 during development.

Purge water generated from wells SSI-W2 and MW-10 was stored in 5-gallon labeled buckets with lids. One composite water sample was obtained of purge water generated from wells SSI-W2 and MW-10 and submitted to Friedman & Bruya, Inc. (FBI) analytical laboratory for analysis of hydrocarbon identification using Method NWTPH-HCID and benzene, toluene, ethylbenzene, and xylenes (BTEX). The disposal method for the water will be determined once the analytical data is obtained. Historical groundwater analytical data obtained from SSI-W2 and MW-10 indicated that no COCs have been detected in groundwater from SSI-W2.

## CONCLUSIONS

Groundwater monitoring wells SSI-W2 and MW-10 were modified in accordance with applicable Ecology well regulations to match the new grade of the landscaped area at SSI-W2 work along the south side of West Roy Street and the sidewalk at MW-10 work along the west side of Queen Anne Avenue North. Both wells were also developed and surveyed by a licensed well surveyor. No further action is required.

All environmental work associated with the Roystone Redevelopment property has been completed and regulatory closure is underway. RGI recommends submitting this technical memorandum to Ecology to share with CEMC.

Please do not hesitate to contact us at 425-415-0551 with any questions regarding this Technical Memorandum.

*Attachments: Figure 1: Property Vicinity Map with Site Location  
Figure 2: Location of Property and Site with Well Modification Work Areas*

*Attachment A: Well Modification Photographs*

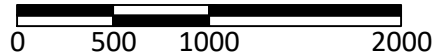
*Attachment B: March 2023 Well Survey by Bush, Roed, and Hitchings, Inc.*





USGS, 2020, Seattle North, Washington  
 USGS, 2020, Seattle South, Washington  
 7.5-Minute Quadrangle

Approximate Scale: 1"=1000'



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Roystone Redevelopment

RGI Project Number  
 2017-015K

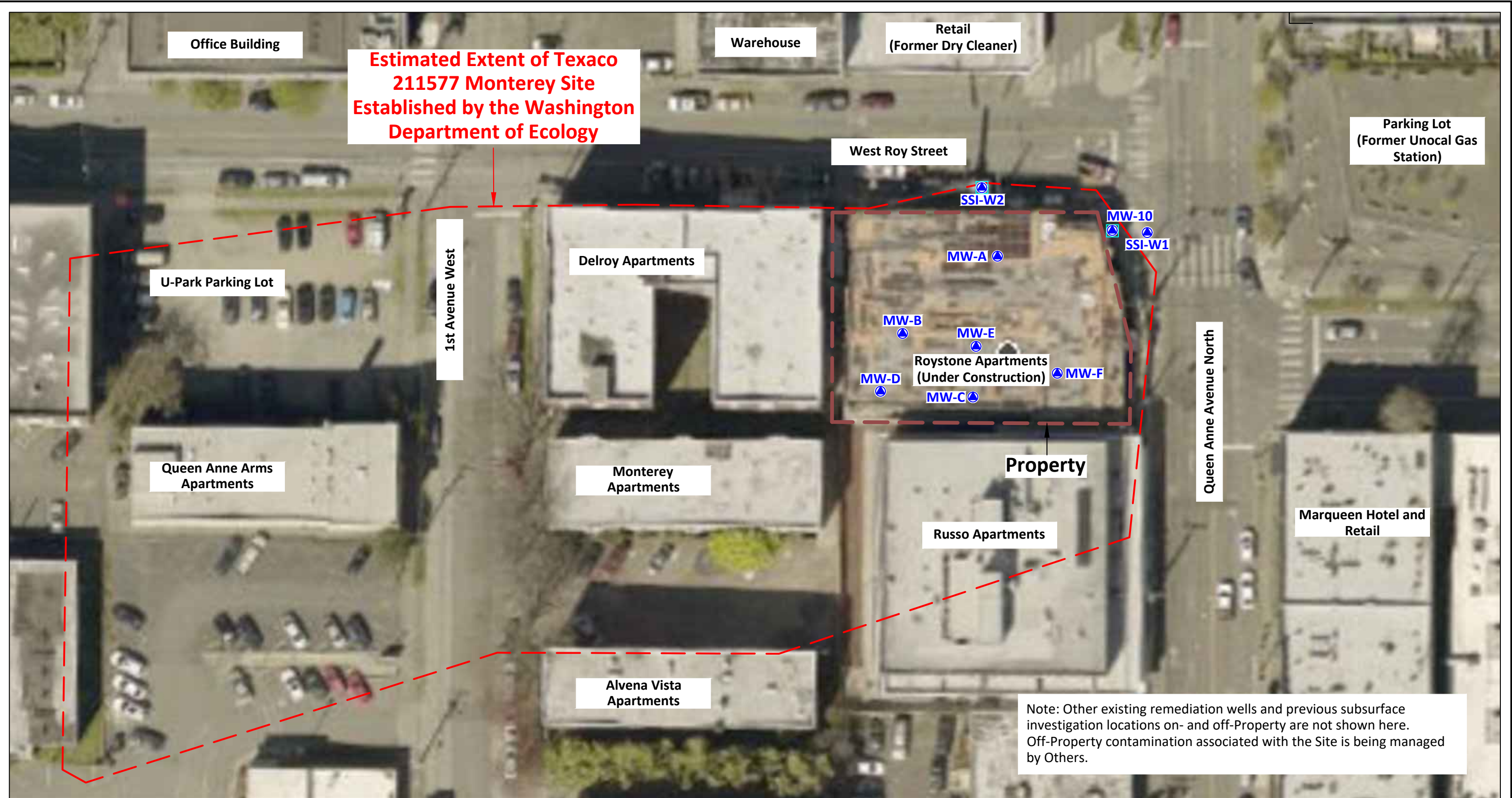
Property Vicinity Map with Site Location

Figure 1

Date Drawn:  
 04/2023

Address: 631 Queen Anne Avenue North, Seattle, Washington 98109



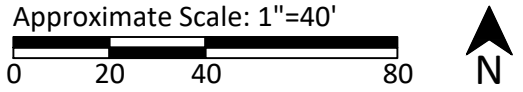


**Estimated Extent of Texaco  
211577 Monterey Site  
Established by the Washington  
Department of Ecology**

Note: Other existing remediation wells and previous subsurface investigation locations on- and off-Property are not shown here. Off-Property contamination associated with the Site is being managed by Others.

- = Existing groundwater monitoring well. Wells MWA through MWF are situated on-Property in the parking garage of Roystone Apartments and wells MW10, SSI-W1 and SSI-W2 are situated off-Property at the grade of the sidewalk.
- = (in red) Site boundary
- = Property boundary

= Well modification work area

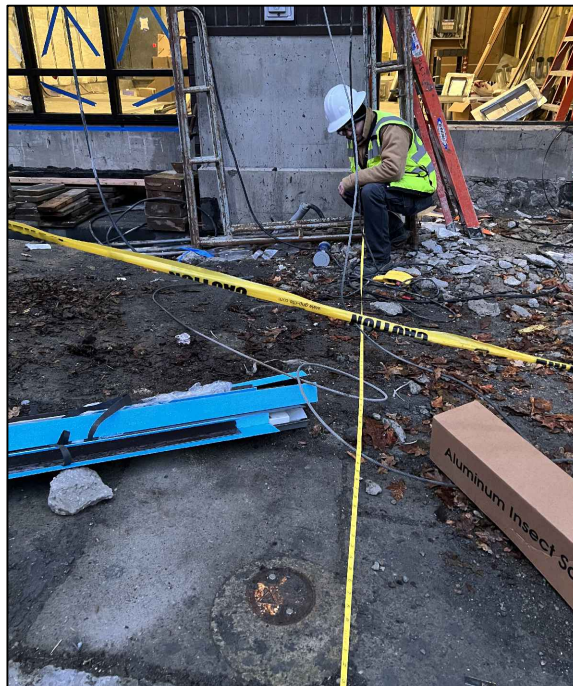


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Roystone Redevelopment		Figure 2
RGI Project Number 2017-015K	Location of Property and Site with Well Modification Work Areas	Date Drawn: 04/2023
Address: 631 Queen Anne Avenue North, Seattle, Washington 98109		



Photograph 1: View looking north at well MW-10 prior to well modification work. This well is situated on the sidewalk adjacent to the west of Queen Anne Avenue North.



Photograph 2: View looking south at well SSI-W2 prior to well modification work. This well is situated on the sidewalk adjacent to the south of West Roy Street.



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Roystone on Queen Anne, LLC

RGI Project Number:  
2017-015K

Well Modification Photographs

Figure A-1

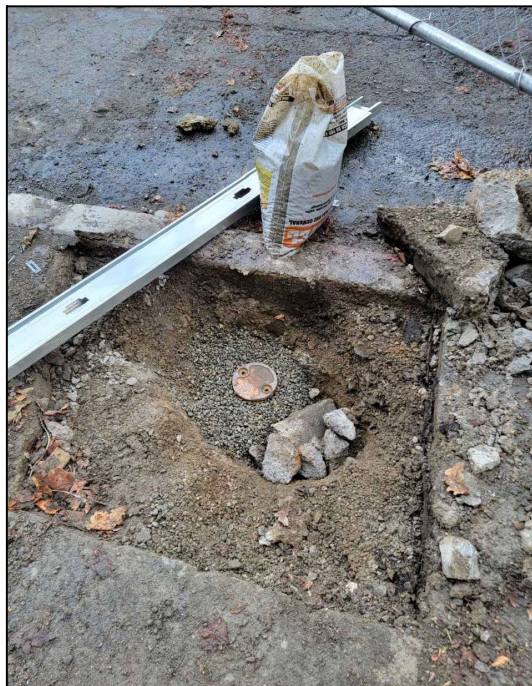
Date Drawn:  
04/2023

Address: 631 Queen Anne Avenue North, Seattle, Washington 98109





Photograph 3: View of well MW-10 after the well casing was cut to a depth approximately 18 inches below surface grade and prior to covering the well casing with gravel.



Photograph 4: View of well SSI-W2 after well casing was cut to a depth approximately 18 inches below surface grade and covered with gravel to a depth of approximately 14 inches below surface grade. The center of the well cover corresponded to the center of the well casing below and was used as a marker for locating the well later.



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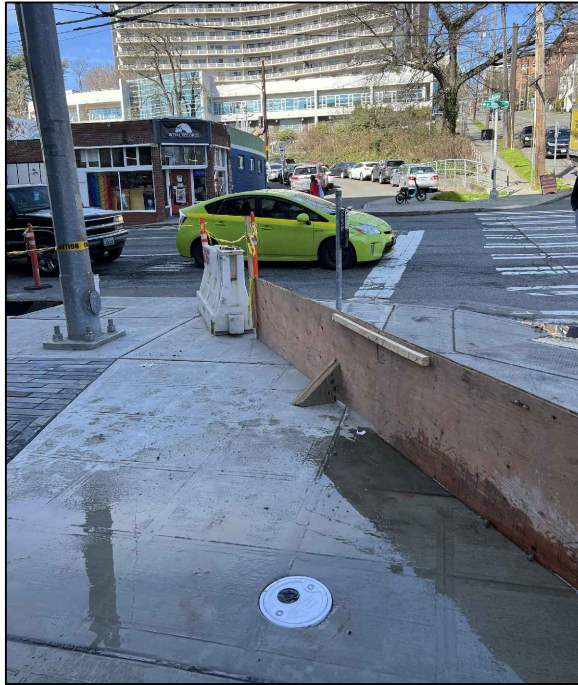
Well Modification Photographs

Figure A-2

Date Drawn:  
 04/2023

Address: 631 Queen Anne Avenue North, Seattle, Washington 98109

DRAFT



Photograph 5: View looking north at well MW-10 after completion of well modification work.



Photograph 6: View looking southeast at well SSI-W2 after completion of well modification work.



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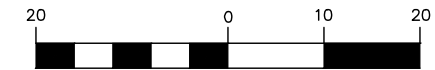
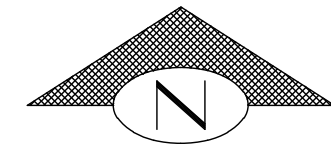
Well Modification Photographs

Figure A-3

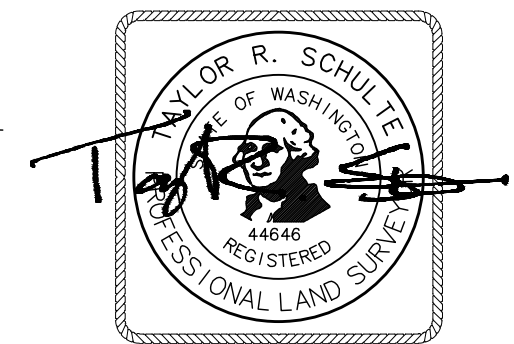
Date Drawn:  
04/2023

Address: 631 Queen Anne Avenue North, Seattle, Washington 98109

W. ROY STREET  
DEDICATED PUBLIC RIGHT-OF-WAY



( IN FEET )  
1 inch = 20 ft.



03/27/23

N88°33'15"W 321.86'

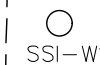
33'

SSI-W2  
N: 231939.10  
E:1264690.67  
PVC:146.68'  
MON RIM:147.19  
GRND: 147.06



MW-10  
N: 231918.43  
E:1264746.90  
PVC:148.75'  
MON RIM:149.14  
GRND: 149.16

MW-10



SSI-W1  
N: 231916.12  
E:1264759.75  
PVC:148.83'  
MON RIM:149.14  
GRND: 149.16

S88°33'15"E 112.94'

HORIZONTAL DATUM  
WASHINGTON STATE PLANE NORTH ZONE, NAD 83/2011  
VERTICAL DATUM  
NAVD 88

MW-A  
N: 231910.70  
E:1264697.16  
PVC:135.66'  
MON RIM:136.05  
GRND: 136.01



S12°38'07"E 61.86'

LOT 14

25 W. ROY ST.  
PARCEL NO. 387990-0490  
OWNER: MONTEREY PARTNERS LLC

LOT 1

N01°25'01"E 89.87'

MW-B  
N:231876.08  
E:1264654.55  
PVC:135.59  
MON RIM:136.02  
GRND: 136.03



MW-E  
N:231868.76  
E:1264686.41  
PVC:135.73  
MON RIM:136.04  
GRND:136.00



BLOCK 9  
SUPPLEMENTAL PLAT OF G. KINNEAR'S  
ADDITION TO THE CITY OF SEATTLE  
VOL. 2, PG. 62

MW-D  
N:231852.68  
E:1264643.50  
PVC:135.75  
MON RIM:136.12  
GRND:136.09



MW-C  
N:231848.87  
E:264684.62  
PVC:135.69  
MON RIM:136.03  
GRND:136.01



MW-F  
N:231858.92  
E:1264721.55  
PVC:135.70  
MON RIM:136.05  
GRND:136.02



S01°23'53"W 29.86'

QUEEN ANNE AVE N  
DEDICATED PUBLIC RIGHT-OF-WAY

LOT 13

LOT 2  
LOT 3 N88°33'32"W 127.97'

MONITOR WELL EXHIBIT  
ROYSTONE  
THE RILEY GROUP

SEATTLE

WASHINGTON



BUSH, ROED & HITCHINGS, INC.  
LAND SURVEYORS & CIVIL ENGINEERS

2009 MINOR AVE. EAST  
SEATTLE, Washington  
98102-3513

(206) 323-4144  
DATE:03/27/23  
JOB NO.:2017167.07