April 29, 2024
File No. 04223059.00

Mr. Andrew Smith
Washington State Department of Ecology
Southwest Regional Office
Toxics Cleanup Program
300 Desmond Drive
Lacey, Washington 98503

Subject: Decommissioning of Gas Probes and Monitoring Wells for Leichner Landfill
Located on Waste Connection, Inc. (WCI) Operations Center
9411 NE 94th Ave., Vancouver, Washington 98662

Dear Mr. Smith:

This letter report describes the decommissioning of three landfill gas (LFG) probes (GP-3, GP-4, and GP-5) and three groundwater monitoring wells (MW-1S, MW-1N, and MW-1E) located on the Waste Connections, Inc. (WCI) Operations Center property at 9411 NE 94th Ave in Vancouver, Washington (see Figure 1). SCS Engineers (SCS) prepared this report on behalf of WCI. The monitoring wells and LFG probes are part of the groundwater and LFG compliance monitoring networks for the closed Leichner Landfill. The decommissioning was done to accommodate site improvements being made for WCI's Operations Center. The LFG probes were decommissioned on January 26, 2024 and the monitoring wells were decommissioned on March 6, 2024, in accordance with the *Work Plan for Groundwater and Landfill Gas Monitoring Network Modifications*.[1] Per the Ecology-approved work plan, the LFG probes will be reinstalled after most construction activities are completed but prior to occupancy of the new buildings on-site. Installation is tentatively scheduled sometime late Summer 2024. The monitoring wells, per the approved work plan, will not be replaced.

SCS subcontracted with Cascade Drilling (Cascade), a licensed drilling contractor based in Clackamas, Oregon, to decommission the gas probes, and Holt Services Inc. (Holt), a licensed drilling contractor based in Vancouver, Washington, to decommission the monitoring wells. A representative from SCS was onsite during the decommissioning activities to provide contractor oversight and construction quality assurance. A photographic log of the decommissioning activities is presented in Attachment 1. A copy of the State of Washington Resource Protection Well Report for each decommissioned probe or well is provided in Attachment 2.

Before decommissioning, SCS arranged for public utility notification using the Washington Utility Notification Center to provide utility clearance within a 20-foot radius of each LFG probe and the monitoring well.

DECOMMISSIONING GAS PROBES

The locations of the decommissioned LFG probes GP-03, GP-04 and GP-05 are shown on Figure 1. LFG probe GP-03 was installed with an above-ground monument in the northwest corner of the WCI main entrance, while GP-04 and GP05 were installed as flush monuments along the east border of

[1] SCS, 2024. Work Plan for Groundwater and Landfill Gas Monitoring Network Modifications, WCI Operations Center/Closed Leichner Landfill, Clark County, Washington to Andrew Smith, Jan 15.

the main WCI office (Figure 1). There were no installation records of these probes on file with the Washington Department of Ecology (Ecology), so all three probes were required to be over drilled.

Prior to drilling, a backhoe was used to pull the well monuments and polyvinyl chloride (PVC) well casings, when possible. The monuments for GP-03 and GP-05 were pulled with the PVC well casings fully intact. GP-04 well casing did not come out with the monument and was removed during over drilling. Once monuments and bollards were pulled, Cascade over drilled each boring using an 8.25-inch outside diameter hollow stem auger mounted to a tracked Geoprobe drilling rig. After reaching total depth of about 16.5 feet (Table 1), the augers were retracted. The borehole remained open and was backfilled from the bottom to within two feet of the surface with 3 to 6 bags of hydrated bentonite chips and then covered with native soil up to surface level.

Drill cuttings were placed in labeled, 55-gallon steel drums next to the respective boring locations for disposal by WCI. All monuments well casing materials were disposed of by WCI.

DECOMMISSIONING MONITORING WELLS

Monitoring well MW-1S, MW-1N, and MW-1E were installed as three nested 4-inch wells within a single boring and a 12-inch PVC casing was placed around them and served as the monument. These nested wells were located near the northwest corner of the office building, near the sidewalk (Figure 1). The well casings were all below ground surface. The monitoring wells MW-1S, MW-1N, and MW-1E did not have a record on file with Ecology, and therefore it was required to be over drilled. A summary of information for these three wells is provided in Table 1.

Table 1. Monitoring Well Information

Monitoring Well	Depth to Bottom (ft btoc)	Depth to Water on 3/6/24 (ft btoc)
MW-1N	15	Dry
MW-1E	29.05	Dry
MW-1S	44.50	35.5

ft bTOC = feet below top of casing

Prior to drilling, the 12-inch by 5-foot PVC monument was pulled. An attempt was made to pull the 4-inch PVC well casings from the boring but only the shallowest casing for well MW-1N (15 feet long) came out.

To over drill the the well boreholes, the drillers used a 12-inch outside diameter hollow stem auger with a cork plug installed at the bottom of the auger, mounted to a CME 850X tracked hollow stem auger drilling rig. The borehole was over drilled to a total depth of 50-feet and the PVC from the other two wells (MW-1E and MW-1S) came up during over drilling. The borehole was backfilled with 30 bags of hydrated bentonite chips and brought up to within 2 feet of the surface and then covered with native soil up to surface level.

Drill cuttings from over drilling were placed in two labelled steel drums and stored on-site. All monument and well materials were properly disposed of by WCI.

If you have any questions or comments regarding this letter-report, please contact Barbara Lary at (971) 284-1297 or by email at blary@scsengineers.com.

Sincerely,

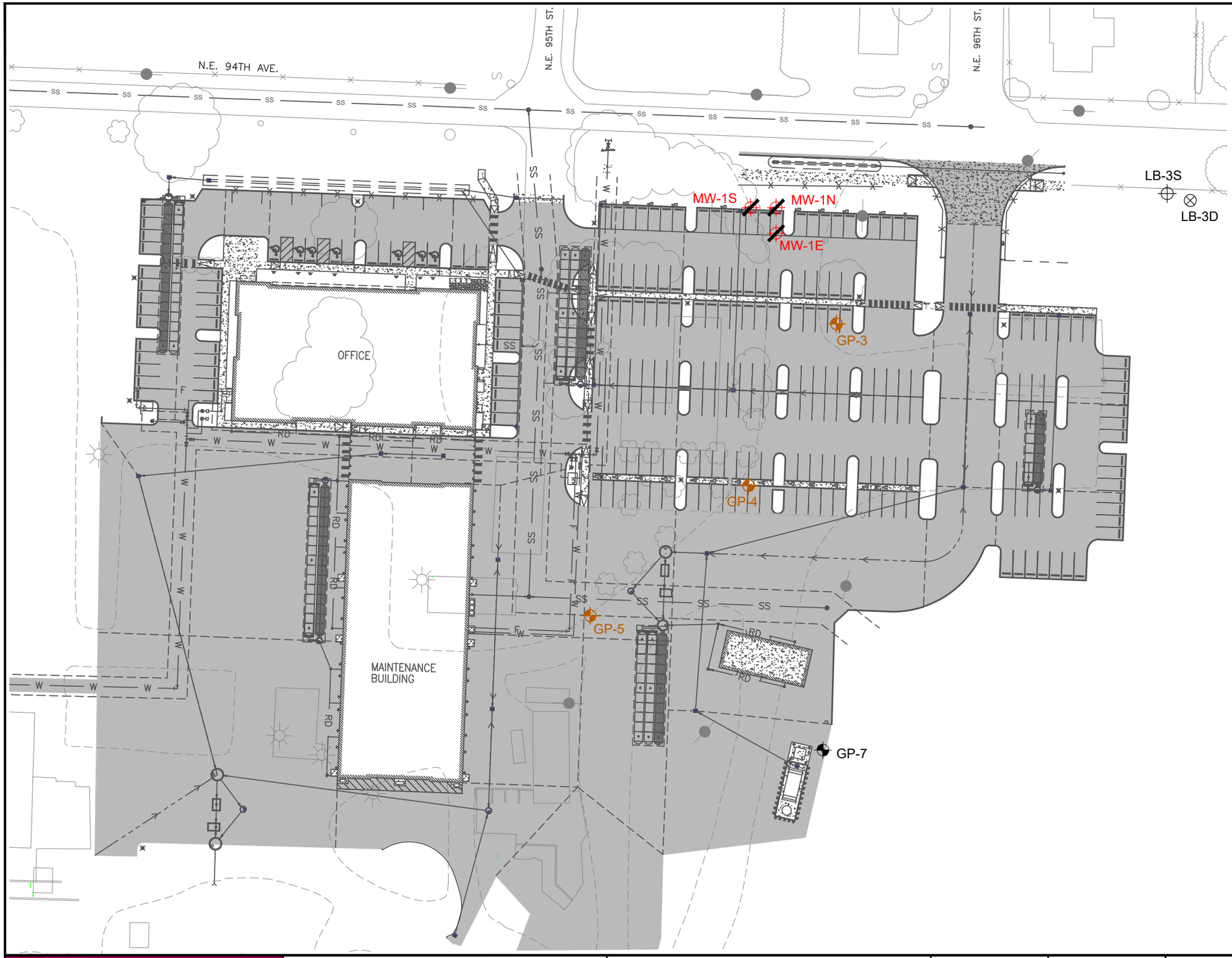
Brandon Rapozo
Staff Professional
SCS Engineers

Barbara E. Lary, LG
Project Manager
SCS Engineers

Louis Caruso, LG, LHG
Project Director/Vice President
SCS Engineers

Attachments: Figure 1 – Decommissioned Landfill Gas Probe and Monitoring Well Locations
Attachment 1 – Photographic Log
Attachment 2 – State of Washington Resource Protection Well Reports

cc: Yuta Naganuma and Derek Ranta, WCI.
Mike Davis and Tina Kendall, CCPH
Alan Melnick and Melissa Sutton, CCPH



LEGEND:

GP-5	Decommissioned Landfill Gas Monitoring Probe Location
GP-7	Landfill Gas Monitoring Probe Location
MW-1S	Decommissioned Monitoring Well Location
LB-3S	Monitoring Well Location, Alluvial Water–Bearing Zone
LB-3D	Monitoring Well Location, Troutdale Aquifer

Proposed Site Developments

Proposed Site Asphalt Area

NOTE:

Topography taken from Clark County GIS, December 2023.

SCS ENGINEERS
Environmental Consultants and Contractors
15940 S.W. 72nd Avenue
Portland, Oregon 97224
(503) 639-9201 FAX: (503) 684-6948

SCALE
0 75 150 FEET

PROJECT NO. 04223059.00	DES BY B.R.
SCALE AS SHOWN	CHK BY B.L.
CAD FILE FIGURE 1	APP BY L.C.

DECOMMISSIONED LANDFILL GAS PROBE AND MONITORING WELL LOCATIONS

WASTE CONNECTION INC. PROPERTY
VANCOUVER, WASHINGTON

DATE APRIL 2024

FIGURE 1

Attachment 1

Photographic Log

Site Photographic Log

Photo 1: View looking at GP-3 during decommissioning. Metal above ground monument set into concrete is pulled using an excavator as Cascade Drilling supervises. Note, 1-inch PVC also coming up. Work done on January 29, 2024.

Photo 2: Each boring was over drilled using 8-inch outside diameter augers to total depth and then backfilled with hydrated bentonite chips. The above photo shows drilling out GP-3.

Photo 3: View of GP-3 when finished. Backfilled with bentonite chips and then gravel over the surface. Note all drill cuttings were placed into 55-gallon, labeled drums.

Photo 4: View of the flush monument and PVC pipe coming out of the ground for GP-05 using an excavator supervised by Cascade Drilling.

Photo 5: View of drill rig setup on GP-4, getting ready to over drill the boring to total depth (16.5 ft).

Photo 6: View of over drilling GP-05.

Photo 7: View of tracked auger drilling rig setup on MW-1N, 1S, and 1E (nested wells) to decommission them by Holt Drilling on March 6, 2024.

Photo 8: View of 12-inch diameter PVC outer casing being pulled out of the ground.

Photo 9: View of three nested wells in boring, each constructed using 4-inch PVC pipe.

Photo 10: View of the 4-inch PVC for the shallowest of the three wells (MW-1E) that could be pulled from the borehole. The other two well casings could not be removed. They were shredded during over drilling.

Photo 11: View of the area following well decommissioning.

Attachment 2

State of Washington Resource Protection Well Reports

DEPARTMENT OF ECOLOGY
State of Washington

Resource Protection Well Report

Submit one well report per well installed. See page two for instructions.

Type of Work:

☐ Construction
☒ Decommission ⇨ Original NOI No. No Original NOI

Ecology Well ID Tag No. _____

Site Well Name GP-3

Consulting Firm SCS Engineers

Was a variance approved for this well/boring? ☐Yes ☑ No

If yes, what was the variance for? _____

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported are true to my best knowledge and belief.

☒ Driller ☐ Trainee ☐ Engineer

Name (Print Last, First Name) GALBRETH, RYAN

Driller/Engineer/Trainee Signature _____

License No. 2522

Company Name CASCADE DRILLING

If trainee box is checked, sponsor's license number: _____

Sponsor's signature _____

Notice of Intent No. AE81381

Type of Well:

☒ Resource Protection Well ☐ Injection Point
☐ Remediation Well ☐ Grounding Well
☐ Geotechnical Soil Boring ☐ Ground Source Heat Pump
☐ Environmental Boring ☐ Other _____

↳ ☐ Soil- ☐ Vapor- ☐ Water-sampling

Property Owner Waste Connections of Washington Inc.

Well Street Address 9411 NE 94th Ave.

City Vancouver County Clark

Tax Parcel No. 199859000

Location (see instructions): WWM ☐ or EWM ☒

NW ¼-¼ NW ¼, Section 4 Town 2N Range 2E

Latitude (Example: 47.12345) 45.68904829465135

Longitude (Example: -120.12345) -122.57331625337054

(WGS 84 Coordinate System)

Borehole diameter 8.25 inches Casing diameter _____ inches

Static water level _____ ft below top of casing Date _____

☐ Above-ground completion with bollards ☐ Flush monument

↳ Stick-up of top of well casing _____ ft above ground surface

Start Date 2/12/2024 Completed Date 2/12/2024

Construction Design	Well Data	Driller's Log
Decommisioning of old vapor wells. Composed an above ground monument with 1/2" PVC down to a depth 16.5'. Will be backfilled with Bentinite Chips to 2 feet below surface with 2 feet of concrete above the beninite to the surface.	Pulled above ground monument then proceeded to augar out well with 8.25 OD augars. Augar down to a total depth of 16.5' to totally destory any part of the exsisting well. Pull Augars out to backfill with bentinite chips 2 feet below surface. Contiued to backfill to surface (two feet) with concrete.	There are no Startcard Numbers or Well ID tags associated with this well. Received February 12, 2024 Department of Ecology HQ

DEPARTMENT OF ECOLOGY
State of Washington

Resource Protection Well Report

Submit one well report per well installed. See page two for instructions.

Type of Work:

☐ Construction
☒ Decommission ⇨ Original NOI No. No Original NOI

Ecology Well ID Tag No. _____

Site Well Name GP-4

Consulting Firm SCS Engineers

Was a variance approved for this well/boring? ☐Yes ☑ No

If yes, what was the variance for? _____

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported are true to my best knowledge and belief.

☒ Driller ☐ Trainee ☐ Engineer

Name (Print Last, First Name) GALBRETH, RYAN

Driller/Engineer/Trainee Signature _____

License No. 2522

Company Name CASCADE DRILLING

If trainee box is checked, sponsor's license number: _____

Sponsor's signature _____

Notice of Intent No. AE81381

Type of Well:

☒ Resource Protection Well ☐ Injection Point
☐ Remediation Well ☐ Grounding Well
☐ Geotechnical Soil Boring ☐ Ground Source Heat Pump
☐ Environmental Boring ☐ Other _____

↳ ☐ Soil- ☐ Vapor- ☐ Water-sampling

Property Owner Waste Connections of Washington Inc.

Well Street Address 9411 NE 94th Ave.

City Vancouver County Clark

Tax Parcel No. 199859000

Location (see instructions): WWM ☐ or EWM ☒

NW ¼-¼ NW ¼, Section 4 Town 2N Range 2E

Latitude (Example: 47.12345) 45.68904829465135

Longitude (Example: -120.12345) -122.57331625337054

(WGS 84 Coordinate System)

Borehole diameter 8.25 inches Casing diameter _____ inches

Static water level _____ ft below top of casing Date _____

☐ Above-ground completion with bollards ☐ Flush monument

↳ Stick-up of top of well casing _____ ft above ground surface

Start Date 2/12/2024 Completed Date 2/12/2024

Construction Design	Well Data	Driller's Log
Decommisioning of old vapor wells. Composed an above ground monument with 1/2" PVC down to a depth 16.5'. Will be backfilled with Bentinite Chips to 2 feet below surface with 2 feet of concrete above the beninite to the surface.	Pulled above ground monument then proceeded to augar out well with 8.25 OD augars. Augar down to a total depth of 16.5' to totally destory any part of the exsisting well. Pull Augars out to backfill with bentinite chips 2 feet below surface. Contiued to backfill to surface (two feet) with concrete.	There are no Startcard Numbers or Well ID tags associated with this well. Received February 12, 2024 Department of Ecology HQ

DEPARTMENT OF ECOLOGY
State of Washington

Resource Protection Well Report

Submit one well report per well installed. See page two for instructions.

Type of Work:

☐ Construction
☒ Decommission ⇨ Original NOI No. No Original NOI

Ecology Well ID Tag No. _____

Site Well Name GP-5

Consulting Firm SCS Engineers

Was a variance approved for this well/boring? ☐ Yes ☑ No

If yes, what was the variance for? _____

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported are true to my best knowledge and belief.

☒ Driller ☐ Trainee ☐ Engineer

Name (Print Last, First Name) GALBRETH, RYAN

Driller/Engineer/Trainee Signature _____

License No. 2522

Company Name CASCADE DRILLING

If trainee box is checked, sponsor's license number: _____

Sponsor's signature _____

Notice of Intent No. AE81381

Type of Well:

☒ Resource Protection Well ☐ Injection Point
☐ Remediation Well ☐ Grounding Well
☐ Geotechnical Soil Boring ☐ Ground Source Heat Pump
☐ Environmental Boring ☐ Other _____

↳ ☐ Soil- ☐ Vapor- ☐ Water-sampling

Property Owner Waste Connections of Washington Inc.

Well Street Address 9411 NE 94th Ave.

City Vancouver County Clark

Tax Parcel No. 199859000

Location (see instructions): WWM ☐ or EWM ☒

NW ¼-¼ NW ¼, Section 4 Town 2N Range 2E

Latitude (Example: 47.12345) 45.68904829465135

Longitude (Example: -120.12345) -122.57331625337054

(WGS 84 Coordinate System)

Borehole diameter 8.25 inches Casing diameter _____ inches

Static water level _____ ft below top of casing Date _____

☐ Above-ground completion with bollards ☐ Flush monument

↳ Stick-up of top of well casing _____ ft above ground surface

Start Date 2/12/2024 Completed Date 2/12/2024

Construction Design	Well Data	Driller's Log
Decommisioning of old vapor wells. Composed an above ground monument with 1/2" PVC down to a depth 16.5'. Will be backfilled with Bentinite Chips to 2 feet below surface with 2 feet of concrete above the beninite to the surface.	Pulled above ground monument then proceeded to augar out well with 8.25 OD augars. Augar down to a total depth of 16.5' to totally destory any part of the exsisting well. Pull Augars out to backfill with bentinite chips 2 feet below surface. Contiued to backfill to surface (two feet) with concrete.	There are no Startcard Numbers or Well ID tags associated with this well. Received February 12, 2024 Department of Ecology HQ

DEPARTMENT OF ECOLOGY
State of Washington

Resource Protection Well Report

Submit one well report per well installed. See page two for instructions.

Type of Work:

☐ Construction
☒ Decommission ⇨ Original NOI No. UNKOWN

Ecology Well ID Tag No. UNKNOWN

Site Well Name

Consulting Firm SCS ENGINEERS

Was a variance approved for this well/boring? ☐ Yes ☒ No

If yes, what was the variance for?

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported are true to my best knowledge and belief.

☒ Driller ☐ Trainee ☐ Engineer

Name (Print Last, First Name) SMITH PAUL

Driller/Engineer/Trainee Signature

License No. 2584

Company Name HOLT

If trainee box is checked, sponsor's license number:

Sponsor's signature

Notice of Intent No. AE81729

Type of Well:

☒ Resource Protection Well ☐ Injection Point
☐ Remediation Well ☐ Grounding Well
☐ Geotechnical Soil Boring ☐ Ground Source Heat Pump
☐ Environmental Boring ☐ Other

↳ ☐ Soil- ☐ Vapor- ☐ Water-sampling

Property Owner WASTE CONNECTION

Well Street Address 9411 NE 94TH AVE

City VANCOUVER County CLARK

Tax Parcel No. 199859000

Location (see instructions): WWM ☐ or EWM ☐

NW ¼-¼ NW ¼, Section 4 Town 2N Range 2E

Latitude (Example: 47.12345) 46.69084

Longitude (Example: -120.12345) -122.57558

(WGS 84 Coordinate System)

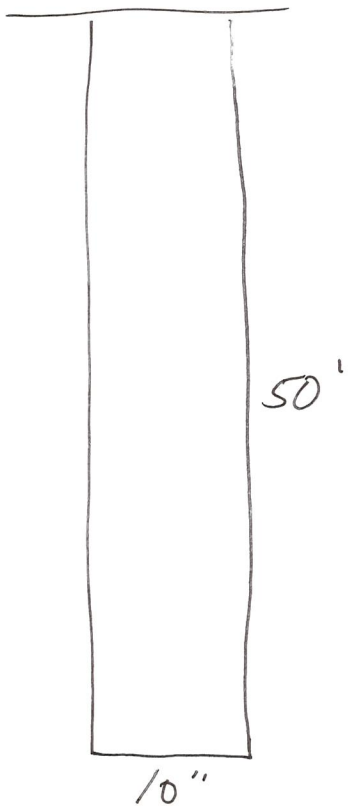
Borehole diameter 10 inches Casing diameter 2 inches

Static water level ____ ft below top of casing Date ____

☐ Above-ground completion with bollards ☒ Flush monument

↳ Stick-up of top of well casing ____ ft above ground surface

Start Date 3/6/24 Completed Date 3/6/24

Construction Design	Well Data	Driller's Log
	0-2' TOP SOIL 2'-50' BENTONITE CHIPS	0-1' MONUMENT 1'-50' BENTONITE SAND PVC