1180 NW Maple St., Suite 310
Issaquah, WA 98027
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Revised Work Plan for Monitoring Well Decommissioning and Reinstallation

South Tacoma Field
Former Underground Storage Tank Site
South Tacoma Field, Tacoma, Washington

Prepared For:

Bridge Industrial
10655 NE 4th Street Suite 212
Bellevue, Washington 98004

November 20, 2023

Prepared By:

TRC Environmental Corporation
1180 NW Maple Street, Suite 310
Issaquah, Washington 98027
(425) 395-0010

Prepared by:
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Senior Environmental Scientist

Reviewed and approved by:
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Principal Geologist

TRC Project Number: 422756.5

QR _____ TR _____

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ABBREVIATIONS AND ACRONYMS

Abbreviation/ Acronym	Definition
BNSF	Burlington Northern Santa Fe Railway Company
Bridge	Bridge Industrial
BTEX	Benzene, toluene, ethylbenzene, and total xylenes
DRO	Diesel-range organics
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
GRO	Gasoline-range organics
HASP	Health and Safety Plan
HSA	Hollow-stem auger
NFA	No Further Action
NWTPH-Gx	Northwest Total Petroleum Hydrocarbons as Gasoline Extended
NWTPH-Dx	Northwest Total Petroleum Hydrocarbons as Diesel Extended
ORO	Oil-range organics
TRC	TRC Environmental Corporation
UST	Underground storage tank
VCP	Voluntary Cleanup Program
WAC	Washington Administrative Code

1.0 INTRODUCTION

This *Work Plan for Monitoring Well Decommissioning and Reinstallation* (Work Plan) has been prepared on behalf of Bridge Industrial (Bridge) in support of its efforts to redevelop the Bridge Point 2MM Project (Project). The Project consists of redevelopment of approximately 134 acres near 4800 Burlington Way in Tacoma, Washington (Property). Bridge previously purchased the Property from Burlington Northern Santa Fe Railway Company (BNSF). The location of the Property is indicated on Figure 1.

The Property contains the BNRR Santa Fe RR Site (Facility ID 37376899; Cleanup Site ID 1640) that has been enrolled in the Washington State Department of Ecology (Ecology) Voluntary Cleanup Program (VCP) as Site No. SW0168. This Work Plan refers to this site as the Underground Storage Tank Site (UST Site). The location of the UST Site within the Property is indicated on Figure 2. The UST Site currently has a No Further Action (NFA)[1] determination subject to ongoing groundwater monitoring for petroleum constituents under a 2013 *Long-Term Monitoring Plan.*[2] The requirements for ongoing groundwater monitoring are outlined in an Environmental Covenant recorded on title for the Property.

As a part of Bridge's purchase of the Property, BNSF retained responsibility for the UST Site. The UST Site currently includes six monitoring wells that BNSF uses to conduct ongoing groundwater monitoring in accordance with the 2013 *Long-Term Monitoring Plan*. Well construction details for the monitoring wells are included in Attachment A. Key UST Site features and associated monitoring well locations are indicated on Figure 3.

The Project includes changes in surface grade in and around the UST Site. To facilitate the Project and associated redevelopment, it will be necessary to decommission the existing monitoring wells at the UST Site in advance of mobilization.

BNSF recently proposed decommissioning and termination of groundwater sampling at the UST Site to Ecology. Ecology's response was provided in a letter dated January 17, 2023 and is summarized below:

- The six monitoring wells can be decommissioned to facilitate redevelopment but must be reinstalled following construction activities.
- A work plan for well replacement must be prepared and submitted for approval prior to decommissioning.
- Performance confirmational monitoring required by the 2021 Conditional No Further Action Opinion Letter[2] letter should resume as soon as possible after the redevelopment is completed.

[1] *No Further Action at the Following Site: BNRR Santa Fe RR, 4800 Burlington Way, Tacoma, Pierce County, WA 98422, Facility/Site ID: 37376899, Cleanup Site ID: 1640, VCP Project ID: SW0168*, August 13, 2021.
[2] *Long-Term Groundwater Monitoring Plan, South Tacoma Field Former UST Site*, 16 October 2013, Kennedy/Jenks Consultants, Inc.

Bridge, as the Project developer and the party that will be performing the monitoring well decommissioning and reinstallation, is providing this Work Plan to Ecology. BNSF remains the responsible party for the UST Site and for the performance of future groundwater monitoring activities. By providing this Work Plan, Bridge is not assuming any responsibility or liability for the UST Site. All future sampling, analysis, and reporting of results to Ecology will remain the responsibility of BNSF.

This Work Plan presents the methods and procedures that TRC proposes to use during well decommissioning and reinstallation.

2.0 MONITORING WELL DECOMMISSIONING

2.1 Health and Safety

Prior to commencing any field activities, TRC will prepare a site-specific Health and Safety Plan (HASP) as required by the Code of Federal Regulations (CFR) Title 29 1910.120 and by the Washington State Department of Labor and Industries. The HASP is a document that establishes site objectives, anticipates job hazards, provides implementation of a hazard communication and injuries/illness prevention program, and establishes policies and procedures to be followed in both routine and emergency situations.

2.2 Decommissioning Procedures

Each monitoring well will be decommissioned in accordance with the requirements of *Minimum Standards for Construction and Maintenance of Wells* (Washington Administrative Code [WAC] 173-160) and under the supervision of a Washington-Licensed Well Driller or Professional Engineer. Monitoring well decommissioning is currently tentatively scheduled for November 2023, but is subject to potential delay based on the final project permitting timeline.

As noted, the UST Site contains six monitoring wells. The construction logs for those wells are included in Attachment A. Because the completion details of the wells are known, the wells will be filled with bentonite and hydrated to the surface. The above-grade monument and bollards will then be removed using a rubber-tired backhoe or similar. The bucket of the excavator will typically be strapped to the monument and bollards and pulled vertically from the ground.

The remaining well casing material will then be exposed to a depth of approximately 2 feet below grade and cut off with a hand saw or similar device. All waste will be handled, transported, and disposed in accordance with applicable regulations.

3.0 MONITORING WELL INSTALLATION

3.1 Utility Locating

TRC will notify Washington One Call Service to identify publicly-owned subsurface utilities at the UST Site. The notification will be initiated a minimum of 3 business days prior to scheduled field activities. In addition, TRC will have a private utility locator clear each well location prior to advancing borings. TRC is not responsible for damage to utilities that cannot be located and are not identified.

3.2 Drilling and Completion

Proposed replacement well locations are indicated on Figure 3. The wells will be installed after completion of all surface improvements for the development and completion of concrete and asphalt placement. This sequencing limits the potential for damage to the wellheads during construction activities. The current schedule for well installation is not known and, in any event, is subject to ongoing permitting and construction delays. In general, it is anticipated that the earliest new wells may be installed would be August 2024.

Six monitoring wells will be installed under the supervision of a Washington State Licensed Well Driller. New wells will be constructed to meet the requirements of *Minimum Standards for the Construction and Maintenance of Wells* (WAC 173-160).

For wells located in areas of asphalt or concrete paving, the surface will be cored prior to drilling to provide a clean edge for well installation. Surface cores will typically be a minimum of 12 inches in diameter. If the surrounding asphalt or concrete are damaged during drilling, a larger area may be sawcut to re-establish a clean edge and allow for a flat surface completion.

Soil borings will be advanced using standard hollow-stem auger (HSA) drilling methods. The HSA tooling will be approximately 8.25 inches outside diameter and approximately 4.25 inches inside diameter. Using standard methods, monitoring wells will be installed to the same terminal elevation as the decommissioned wells. Well depths may be adjusted at the time of installation based on observed conditions. Total well depth will generally be 10 feet below the unsaturated/saturated interface at the time of drilling with 15 feet of screened interval. This will allow the screened interval to continuously intersect the unsaturated/saturated interface through the expected annual fluctuations in water level.

During drilling and well installation, the well construction details will be recorded. TRC will prepare the final well completion logs to be included in the Well Decommissioning and Reinstallation report (See Section 4.0).

The wells will be constructed of 2-inch diameter flush-threaded polyvinyl chloride (PVC). The well screen will be 0.020-inch factory machine slotted over the bottom 15 feet of the well. The bottom of the well will have an approximately 6-inch well cap that can serve as a silt sump. The top of the well will be sealed with a watertight, locking plug.

A filter pack consisting of #10/20 clean-washed Colorado Silica Sand (or equivalent) will be placed from the well terminus to approximately 2 feet above the top of the well screen. Two feet of bentonite chips will be placed above the filter pack and hydrated with 10 gallons of clean tap water. The bentonite will be allowed to sit for approximately 30 minutes prior to well completion. The remainder of the well annulus will be filled with lean bentonite grout. The grout will be placed with a tremie pipe and filled from the bottom up. Grout will be placed to about 2 feet below the surface grade. The surface will be completed with a flush-mounted, traffic-rated monument set in concrete. The monument will be placed flush with the surrounding surface to limit the potential for a tripping hazard. The well monument will be clearly labeled as “Monitor Well – Do Not Fill.” Each monitoring well will be registered by the licensed well driller with the state of Washington, listing BNSF as the owner. The Washington State well registration number and well identifier will be stamped into the monument label.

During drilling, soil samples will be collected at not more than 5-foot vertical intervals using a split spoon sampler. The soil conditions encountered will be logged using the *Unified Soil Classification System with Visual-Manual Procedures* (American Society for Testing and Materials 2488D). The encountered conditions will be noted on boring and well completion logs.

One soil sample from each boring will be collected from a representative location directly above the unsaturated/saturated interface. The samples will be analyzed for the following compounds for the purpose of characterizing drilling spoils for disposal:

- Diesel-range and oil-range organics (DRO and ORO) using the Northwest Total Petroleum Hydrocarbons as Diesel-Extended (NWTPH-Dx) Method;
- Gasoline-range organics (GRO) using the Northwest Total Petroleum Hydrocarbons as Gasoline (NWTPH-Gx) Method; and
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) by U.S. Environmental Protection Agency (EPA) Method 8021B.

After completion, the wells will be developed to remove fines accumulated during installation and to set the filter pack. Development will be performed by surging and over pumping until the development water has a turbidity of less than 10 nephelometric turbidity units or until a total of 10 wetted casing volumes have been removed.

TRC will coordinate a survey to measure horizontal and vertical locations for each installed monitoring well. The survey will include measurements of the north side of the top of each well casing and the center of each well monument lid. The survey will be completed by a Washington-licensed surveyor. The survey will be relative to the local absolute datum with a vertical accuracy of 0.01 foot and a horizontal accuracy of 0.1 foot.

Drilling spoils, development water, and decontamination water will be stored on-site in appropriate 55-gallon drums pending disposal. Drums will be labelled with their contents, date, and contact information for the generator. Drilling spoils will be labeled with the well from which they originate.

One water sample from each drum of development water and decontamination water will be submitted for the following analyses:

- DRO and ORO using NWTPH-Dx;
- GRO using NWTPH-Gx; and
- BTEX using EPA Method 8021B.

Investigation-derived waste disposal will be based upon the analytical results for the soil samples described above and water samples collected from the development water and decontamination water drums. All waste will be handled, transported, and disposed in accordance with applicable regulations.

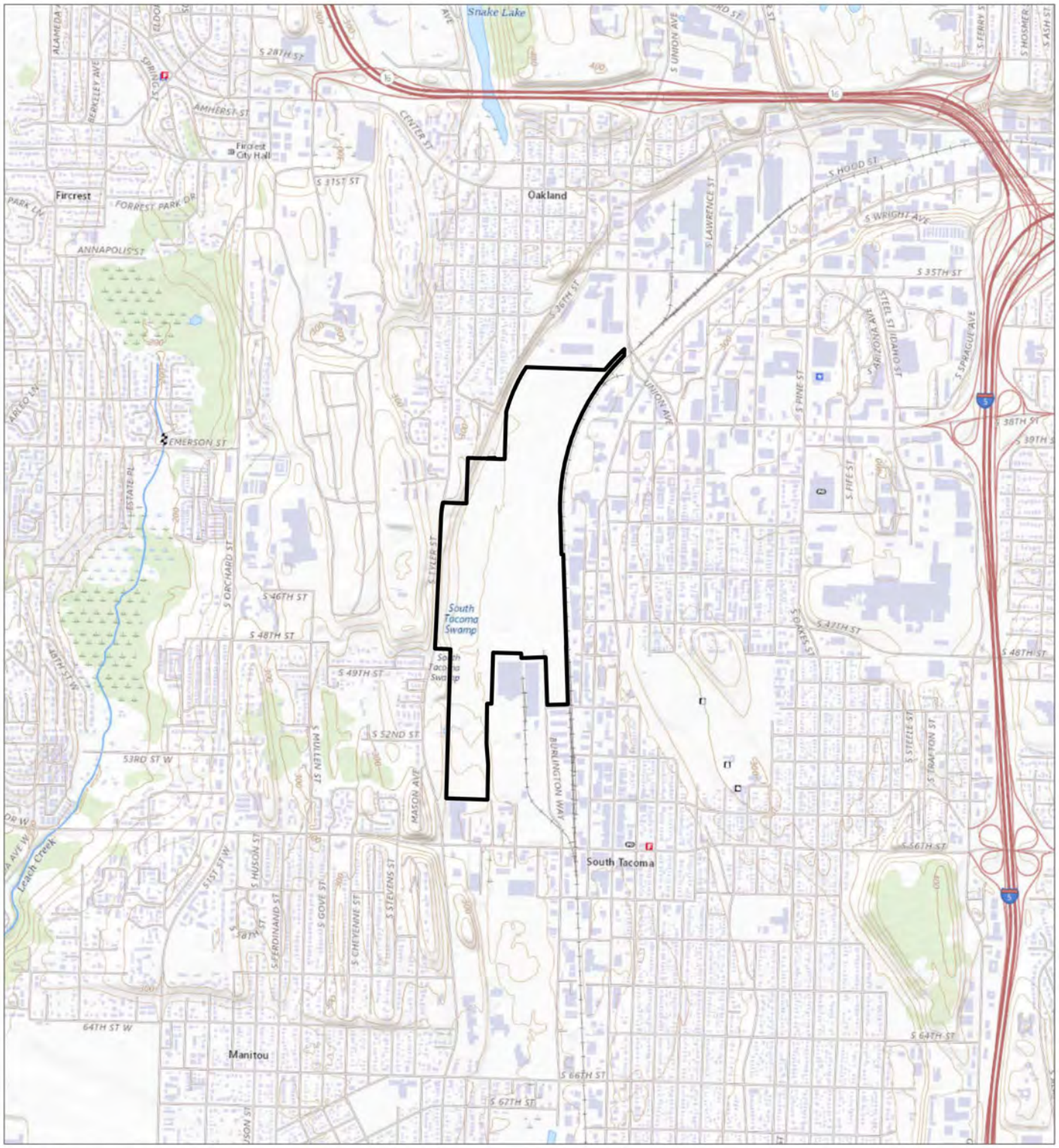
4.0 REPORTING

TRC will prepare a Well Decommissioning and Reinstallation Report (report) for submittal to BNSF and Ecology following completion of monitoring well decommissioning and installation. The report will document the decommissioning and reinstallation activities as discussed in this Work Plan. The report will include the following:

- A brief narrative of the activities performed as discussed in this Work Plan with discussion of any substantial deviations from the Work Plan;
- Figures presenting the locations of decommissioned and reinstalled monitoring wells relative to property features;
- Analytical results from waste characterization samples;
- Well logs for decommissioned and reinstalled and completed monitoring wells;
- Survey data; and
- Other information pertinent to the contents of the report.

Following monitoring well reinstallation, BNSF will assume responsibility for all well maintenance, sampling, and reporting as required by Ecology and the NFA determination of the UST Site.

Figures



PROPERTY BOUNDARY

BASE MAP: USGS COLOR ORTHO IMAGERY
DATA SOURCES: TRC

N

0 1,000 2,000
FEET
1:24,000 1" = 2,000'

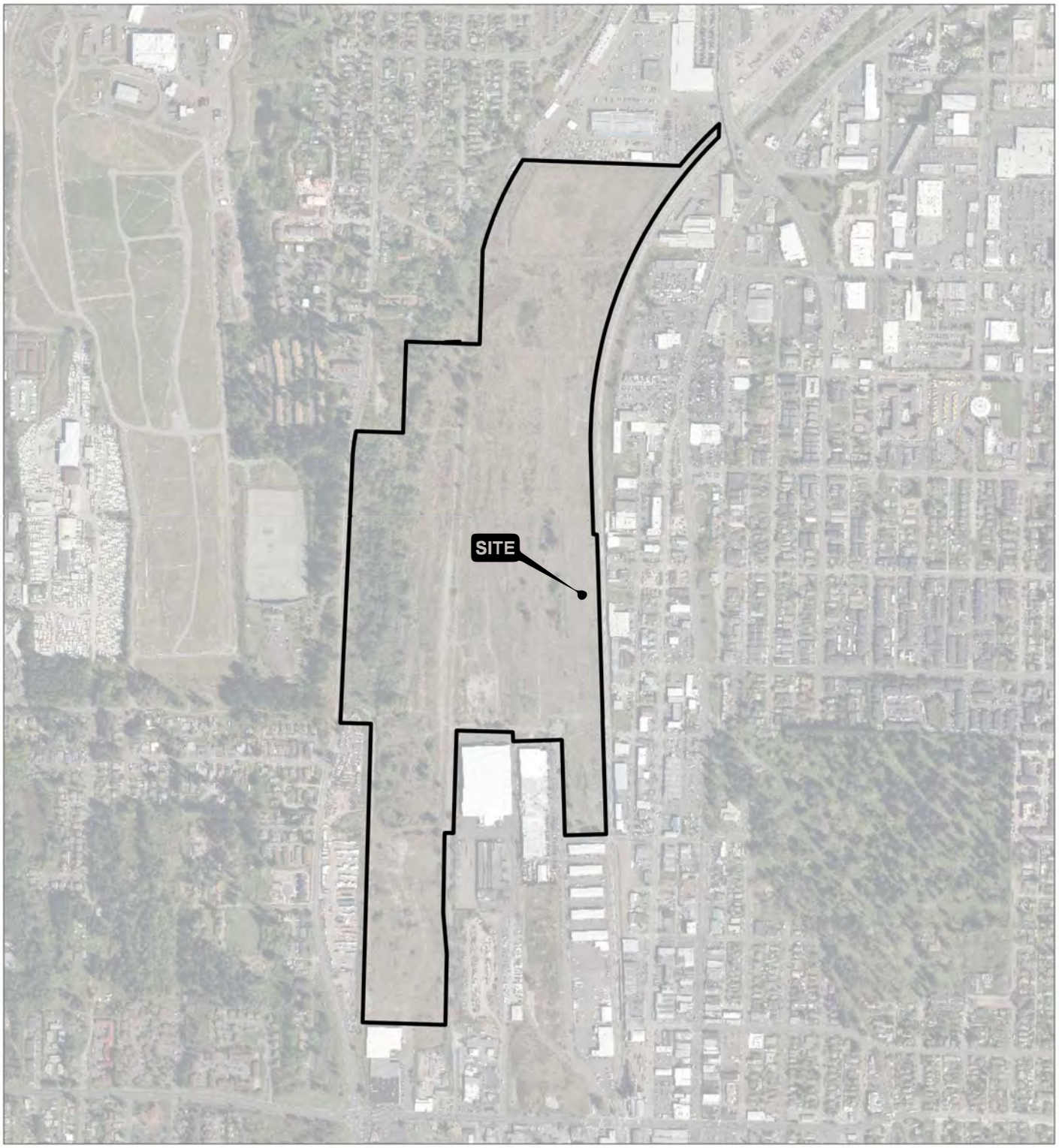
PROJECT:
SOUTH TACOMA FIELD
FORMER UNDERGROUND STORAGE TANK SITE
TACOMA, WASHINGTON

TITLE:
GENERAL VICINITY MAP
WELL DECOMMISSIONING AND REINSTALLATION WORK PLAN

DRAWN BY:	S. RAY	PROJ. NO.:	422756.0005.0000
CHECKED BY:	R. MAULDIN		
APPROVED BY:	R. MAULDIN		**FIGURE 1**
DATE:	JULY 2023		

TRC
1180 NW MAPLE STREET, SUITE 310
ISSAQUAH, WA 98027
PHONE: 425.395.0010

FILE: WELL DECOMMISSIONING AND REINSTALLATION WORK PLAN



PROPERTY BOUNDARY

PROJECT:
SOUTH TACOMA FIELD
FORMER UNDERGROUND STORAGE TANK SITE
TACOMA, WASHINGTON

TITLE:
BNSF UST SITE LOCATION
WELL DECOMMISSIONING AND REINSTALLATION WORK PLAN

DRAWN BY:	S. RAY	PROJ. NO.:	422756.0005.0000
CHECKED BY:	R. MAULDIN		
APPROVED BY:	R. MAULDIN		**FIGURE 2**
DATE:	JULY 2023		

BASE MAP: CITY OF TACOMA, ARCGIS ONLINE (2015)
DATA SOURCES: TRC

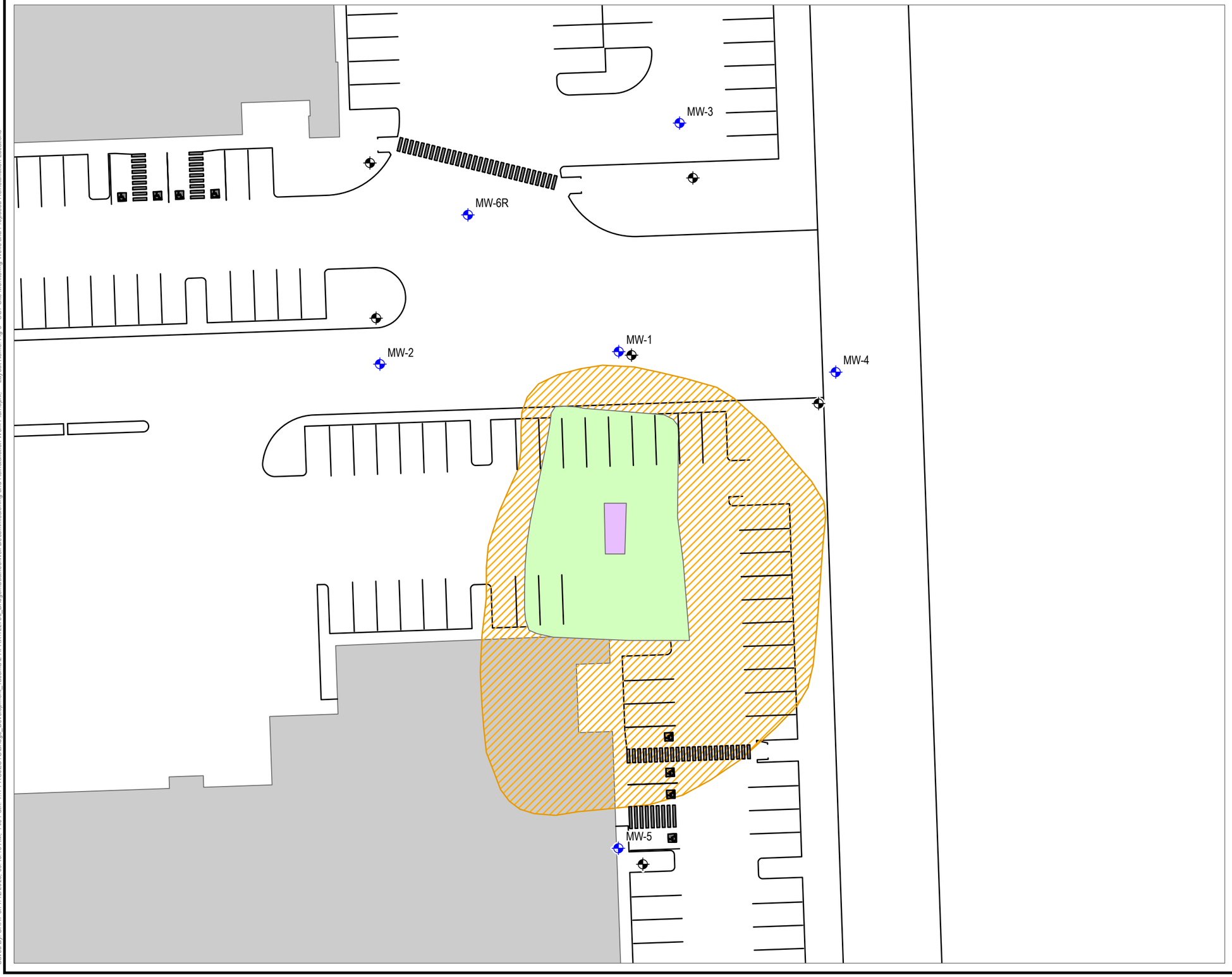
0 500 1,000 FEET

1:12,000 1" = 1,000'

TRC
1180 NW MAPLE STREET, SUITE 310
ISSAQUAH, WA 98027
PHONE: 425.395.0010

FILE: WELL DECOMMISSIONING AND REINSTALLATION WORK PLAN

COORDINATE SYSTEM: NAD 1983 STATEPLANE WASHINGTON SOUTH FIPS 4602 FEET MAP ROTATION: 0
-- SAVED BY: RCOLLINS ON 7/12/2023 09:36:39 AM -- FILE PATH: T:\1-PROJECTS\BRIDGE_DEVELOPMENT_TACOMA\2-APRX\422756_BRIDGEINDUSTRIES\WELL DECOMMISSIONING AND REINSTALLATION WORK PLAN.APRX -- LAYOUT NAME: FIG 2 - UST SITE LOCATION



EXISTING MONITORING WELL
PROPOSED REPLACEMENT MONITORING WELL
ROAD EDGE
BUILDING OUTLINE
CROSSWALK
FORMER DEEP EXCAVATION BOUNDARY
FORMER EXCAVATION BOUNDARY
REMOVED UST

1:420
1" = 35'
0 35 70 FEET

PROJECT:
SOUTH TACOMA FIELD
FORMER UNDERGROUND STORAGE TANK SITE
TACOMA, WASHINGTON

TITLE:
UST SITE MONITORING WELLS AND PROPOSED REINSTALLATION LOCATIONS
WELL DECOMMISSIONING AND REINSTALLATION WORK PLAN

DRAWN BY:	S. RAY	PROJ. NO.:	422756.0005.0000
CHECKED BY:	R. MAULDIN		**FIGURE 3**
APPROVED BY:	R. MAULDIN		
DATE:	JULY 2023		

TRC
1180 NW MAPLE STREET, SUITE 310
ISSAQUAH, WA 98027
PHONE: 425.395.0010

FILE: Well Decommissioning and Reinstallation Work Plan.aprx

Coordinate System: NAD 1983 StatePlane Washington South FIPS 4602 Feet: Map Rotation: 0
Saved By: SRAY on 7/27/2023 9:45:13 AM: File Path: T:\1-PROJECTS\Bridge_Development_Tacoma\2-ARRV\422756.Bridge\Industrial\Well Decommissioning and Reinstallation Work Plan.aprx: Layout Name: Fig 3 - UST Site Monitoring Wells and Proposed Reinstallation Locations

Attachment A
Existing Monitoring Well Completion Details

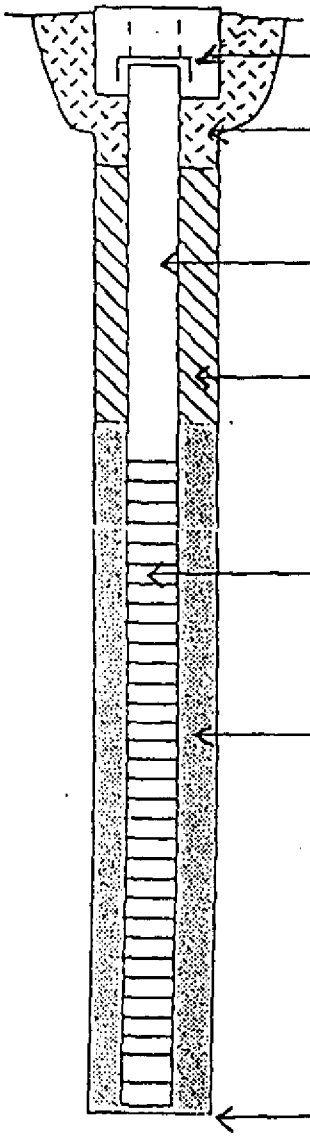
RESOURCE PROTECTION WELL REPORT

START CARD NO. R43722

PROJECT NAME: BNSF RR
WELL IDENTIFICATION NO. AFF 879
DRILLING METHOD: HSA
DRILLER: Brian G. Bosse
FIRM: Cascade Drilling, Inc.
SIGNATURE:
CONSULTING FIRM: Kennedy / Jenks
REPRESENTATIVE: Gary Stoyka

COUNTY: Pierce
LOCATION: NW¼ NW¼ Sec 24 Twn 20N R 2E
STREET ADDRESS OF WELL: 4800 Burlington Way, Tacoma
WATER LEVEL ELEVATION: 33'
GROUND SURFACE ELEVATION: N/A
INSTALLED: 9/28-29/99 & 10/4/99
DEVELOPED: Yes

9528

AS-BUILT	WELL DATA	FORMATION DESCRIPTION
	WELL COVER CONCRETE SURFACE SEAL DEPTH = 2/ft PVC BLANK 2 "x 25' BACKFILL 20 ft. TYPE: bent. chips PVC SCREEN 2 "x 20' SLOT SIZE: 010 GRAVEL PACK 23 ft. MATERIAL: 2/12 sand WELL DEPTH 45 ' "	0 - 10 ft. brown / sand / gravels / cobbles 10 - 45 ft. brown / sand. - ft.

SCALE: 1" = _____ PAGE _____ OF _____

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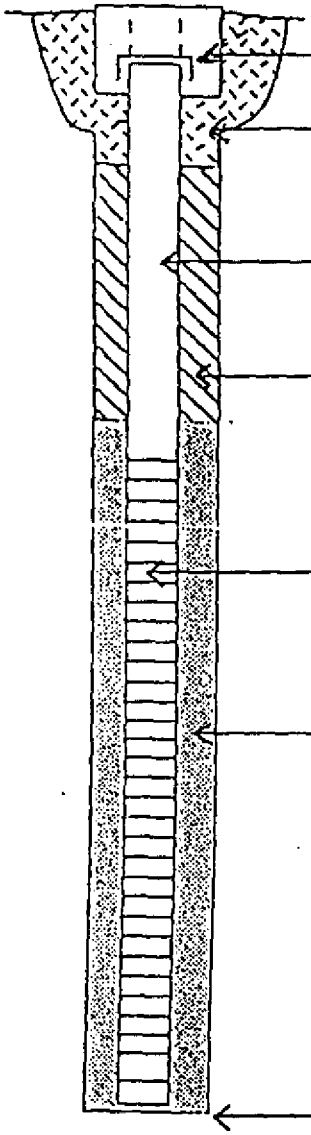
RESOURCE PROTECTION WELL REPORT

START CARD NO. R43722

PROJECT NAME: BNSF RR
WELL IDENTIFICATION NO. AFE 880
DRILLING METHOD: HSA
DRILLER: Brian G. Boese
FIRM: Cascade Drilling, Inc.
SIGNATURE:
CONSULTING FIRM: Kennedy / Jenks
REPRESENTATIVE: Gary Stoyka

COUNTY: PIERCE
LOCATION: NW¼ NW¼ Sec 24 Twn 20N R 2E
STREET ADDRESS OF WELL: 4800 Burlington Way, Tacoma
WATER LEVEL ELEVATION: 33'
GROUND SURFACE ELEVATION: N/A
INSTALLED: 9/28-29/99 / 10/4/99
DEVELOPED: Yes

9528

AS-BUILT	WELL DATA	FORMATION DESCRIPTION
	WELL COVER CONCRETE SURFACE SEAL DEPTH = 2 ft PVC BLANK 7 "x 25' BACKFILL 20 ft. TYPE: bent. chips PVC SCREEN 2 "x 20' SLOT SIZE: 010 GRAVEL PACK 23 ft. MATERIAL: 7/12 sand WELL DEPTH 45 ' "	0 - 10 ft. brown / sand / gravels / cobbles 10 - 45 ft. brown / sand. - ft.

SCALE: 1" = _____ PAGE _____ OF _____

ECY 050-12 (Rev. 11/09)

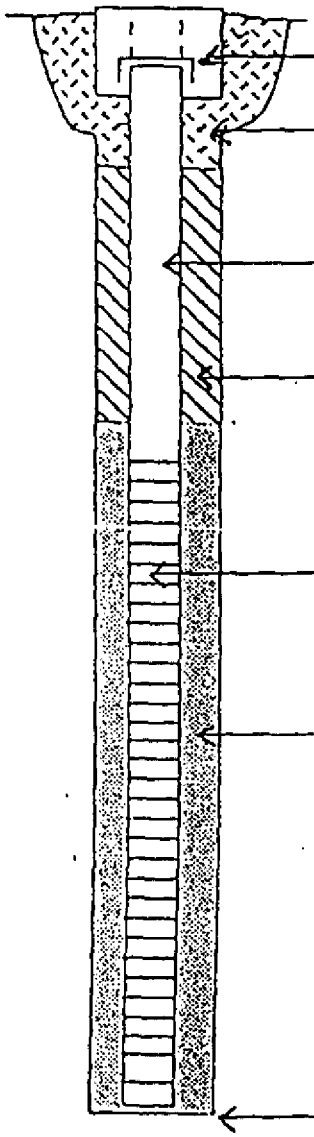
RESOURCE PROTECTION WELL REPORT

START CARD NO. R43722

PROJECT NAME: BNSF RR
WELL IDENTIFICATION NO. AFE 881
DRILLING METHOD: HSA
DRILLER: Brian G. Goss
FIRM: Cascade Drilling, Inc.
SIGNATURE:
CONSULTING FIRM: Kennedy / Jenks
REPRESENTATIVE: Gary Stoyka

COUNTY: Pierce
LOCATION: NW¼ NW¼ Sec 24 Twn 20N R 2E
STREET ADDRESS OF WELL: 4800 Burlington Way, Tacoma
WATER LEVEL ELEVATION: 33'
GROUND SURFACE ELEVATION: N/A
INSTALLED: 9/28-29/99 / 10/4/99
DEVELOPED: Yes

9528

AS-BUILT	WELL DATA	FORMATION DESCRIPTION
	WELL COVER CONCRETE SURFACE SEAL DEPTH = 2/ft PVC BLANK 2 "x 25' BACKFILL 20 ft. TYPE: bent. chips PVC SCREEN 2 "x 20' SLOT SIZE: 010 GRAVEL PACK 23 ft. MATERIAL: 2/12 sand WELL DEPTH 45 ' "	0 - 10 ft. brown / sand / gravels / cobbles 10 - 45 ft. brown / sand. - ft.

SCALE: 1" = _____ PAGE _____ OF _____

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RESOURCE PROTECTION WELL REPORT

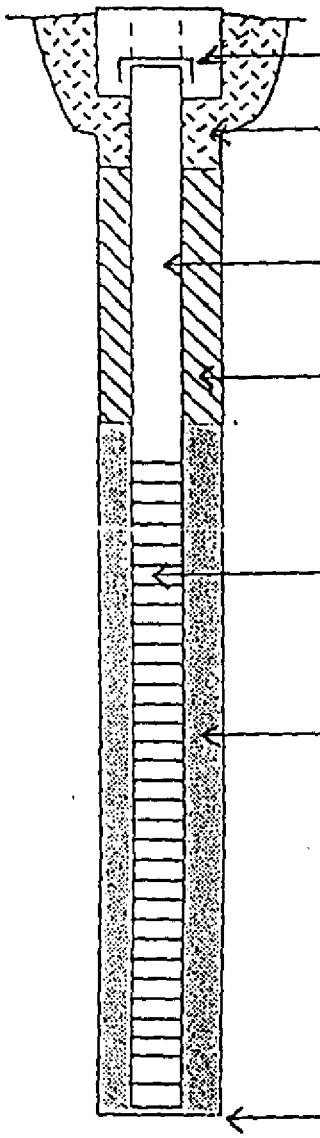
START CARD NO. R43727

PROJECT NAME: BNSF RR
WELL IDENTIFICATION NO. AEE 882
DRILLING METHOD: HSA
DRILLER: Brian Gibson
FIRM: Cascade Drilling, Inc.
SIGNATURE:
CONSULTING FIRM: Kennedy/Jenks
REPRESENTATIVE: Gary Stoyka

COUNTY: Pierce
LOCATION: NW¼ NW¼ Sec 24 Twn 20N R 2E
STREET ADDRESS OF WELL: 4800 Burlington Way, Tacoma
WATER LEVEL ELEVATION: 33'
GROUND SURFACE ELEVATION: N/A
INSTALLED: 9/28-29/97 & 10/4/97
DEVELOPED: Yes

9528

AS-BUILT



WELL DATA

WELL COVER
CONCRETE SURFACE SEAL DEPTH = 2/ft
PVC BLANK 2 "x 25'
BACKFILL 20 ft.
TYPE: bent. chips
PVC SCREEN 2 "x 20'
SLOT SIZE: 010
GRAVEL PACK 23 ft.
MATERIAL: 2/12 sand
WELL DEPTH 45' "

FORMATION DESCRIPTION

0 - 10 ft.
brown/sand/gravels/cobbles

10 - 45 ft.
brown/sand.

- ft.

SCALE: 1" = _____ PAGE _____ OF _____

ECY 050-12 (Rev. 11/89)

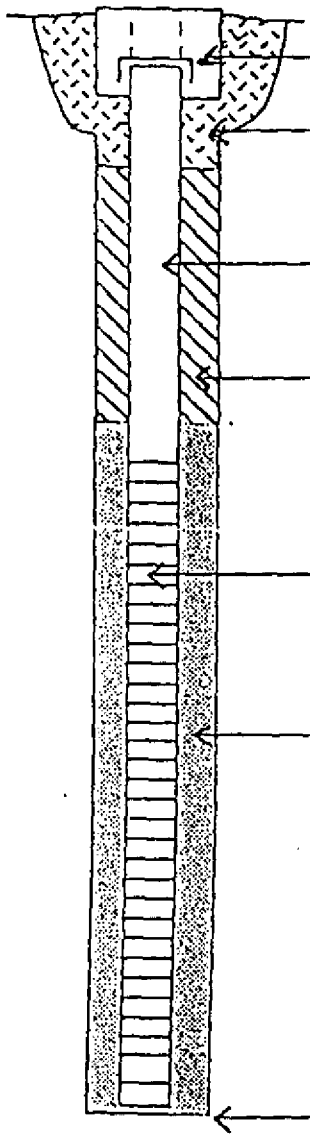
RESOURCE PROTECTION WELL REPORT

START CARD NO. R43722

PROJECT NAME: BNSF RR
WELL IDENTIFICATION NO. AEE883
DRILLING METHOD: HSA
DRILLER: Brian G. Bose
FIRM: Cascade Drilling, Inc.
SIGNATURE:
CONSULTING FIRM: Kennedy / Jenks
REPRESENTATIVE: Gary Stoyka

COUNTY: Pierce
LOCATION: NW¼ NW¼ Sec 24 Twn 20N R 2E
STREET ADDRESS OF WELL: 4800 Burlington Way, Tacoma
WATER LEVEL ELEVATION: 33'
GROUND SURFACE ELEVATION: N/A
INSTALLED: 9/28-29/99 / 10/4/99
DEVELOPED: Yes

9528

AS-BUILT	WELL DATA	FORMATION DESCRIPTION
	WELL COVER CONCRETE SURFACE SEAL DEPTH = 2 ft PVC BLANK 2 "x 25' BACKFILL 20 ft. TYPE: bent. chips PVC SCREEN 2 "x 20' SLOT SIZE: 010 GRAVEL PACK 23 ft. MATERIAL: 2/12 sand WELL DEPTH 45 ' "	0 - 10 ft. brown / sand / gravels / cobbles 10 - 45 ft. brown / sand. - ft.

SCALE: 1" = _____ PAGE _____ OF _____

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RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT

Notice of Intent No. RE03556

Construction/Decommission 348484

[X] Construction

[ ] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well

[X] Resource Protection

[ ] Geotechnical Soil Boring

Property Owner: Burlington Northern Santa Fe RR

Site Address: 4800 S. Burlington Way

Consulting Firm: Kennedy/Jenks Consultants-Federal Way

City: Tacoma County: 27-Pierce

EWM

Unique Ecology Well ID Tag No.: BCS-162

Location 1/4 SE 1/4 SE Sec 13 Twn 20N R 2E or WWM

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 above are true to my best knowledge and belief.

Lat/Long (s,t,r still Required) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

[X] Driller [ ] Engineer [ ] Trainee Name (Print) Andy Flagan

Driller/Trainee Signature

Driller/Trainee License No. 2761

Tax Parcel No.: 0220131130

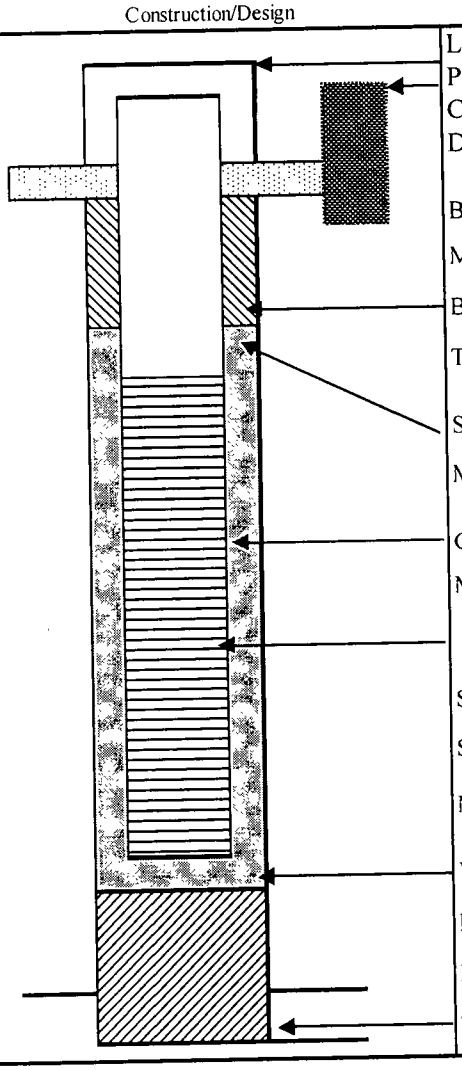
Cased or Uncased Diameter: 8" Static Level: 30'

Work/Decommission Start Date: 7/23/2009

If trainee, licensed driller's Signature and License No.

Work/Decommission End Date: 7/24/2009

Construction/Design — Well Data W09-341B — Formation Description



Locking Cap	
Protective Post	
Concrete Surface Seal Depth	3' FT
Blank Casing (dia x dep)	2" x 27.5'
Material	PVC
Backfill	— FT
Type	—
Seal	20'
Material	bent chips
Gravel Pack	22' FT
Material	2-12
Screen (dia x dep)	2" x 20'
Slot Size	.020
Material	PVC
Well Depth	45' FT
Backfill	
Material	
Total Hole Depth	FT

Formation Description

0 - 30' FT brown silty sand & gravel

0 30' - 45' FT wet brown silty sand & gravel

0 - FT

RECEIVED

AUG 17 2009

Washington State Department of Ecology

Scale 1" = _____

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ECY 050-12 (Rev 2/01)

Boring & Well Construction Log

Kennedy/Jenks Consultants

BORING LOCATION: STF Former UST Area		**Well Name**	MW-6
DRILLING COMPANY: Cascade	DRILLER: Frank	**Project Name**	STF-UST
DRILLING METHOD(S): HSA	DRILL BIT(S) SIZE: 9"	**Project Number**	006031*01
ISOLATION CASING: N/A	FROM N/A TO N/A FT.	ELEVATION AND DATUM: bgs	TOTAL DEPTH: 46.5 ft. bgs
BLANK CASING: 2-inch Schedule 40 PVC	FROM 0 TO 25 FT.	DATE STARTED: 7/23/09	DATE COMPLETED: 7/23/09
SLOTTED CASING: 2-inch Schedule 40 PVC, 0.020 slot	FROM 25 TO 45 FT.	INITIAL WATER DEPTH (FT): 30.0	
SIZE AND TYPE OF FILTER PACK: Lapis Lustre #2/12 Moterey Sand	FROM 23 TO 46.5 FT.	LOGGED BY: DKM	
SEAL: Bentonite Chips	FROM 2 TO 23 FT.	SAMPLING METHODS: Split Spoon	WELL COMPLETION: ☐ SURFACE HOUSING ■ STAND PIPE 3 FT.
GROUT: Concrete	FROM 0 TO 2 FT.		

SAMPLES TYPE	SAMPLES RECOV. (FEET)	SAMPLES PENETR. RESIST. BLOWS/6"	DEPTH (FEET)	SAMPLE NUMBER	PID	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
						GW/ GM	**Well-graded GRAVEL with silt and sand fill** Tan to brown, gravel with 10-20% silt and 20-25% sand, moderately dense, slightly moist, no odor, no sheen.
SS	1.5	12 25 50	5		0.0		
SS	1.5	7 15 16	10		0.0		**Poorly graded SAND** Brown, primarily medium to coarse sand, but texture varies locally; less than 5% fine gravel overall but up to 10-20% locally, moderately dense to dense, moist to wet at ~30 feet bgs, no odor, no sheen.
SS	1.5	5 5 6	15		0.7	SP	
SS	1.5	12 15 16	20		0.6		
			25				

WELL CONSTRUCTION: ■ Bentonite Chips; ▨ Lapis Lustre #2/12 Moterey Sand; ▦ Concrete; ▥ 2-inch Schedule 40 PVC, 0.020 slot

LITHOLOGY: ▨ Gravel; ▥ Sand

KJ PNW B13 TO B22 AND MW6 JULY 2009.GPJ KJ PNW.GDT 8/3/09

F-40.1
(6-87) (3-88) (8-90)

Project Name STF-UST **Project Number** 006031*01 **Well Name** MW-6

SAMPLES TYPE	SAMPLES RECOV. (FEET)	SAMPLES PENETR. RESIST. BLOWS/6"	DEPTH (FEET)	SAMPLE NUMBER	WELL CONSTRUCTION	PID	LITHOLOGY	USCS LOG	SAMPLE DESCRIPTION AND DRILLING REMARKS
SS	1.5	14 28 28				0.4			**Poorly graded SAND** Brown, primarily medium to coarse sand, but texture varies locally; less than 5% fine gravel overall but up to 10-20% locally, moderately dense to dense, moist to wet at ~30 feet bgs, no odor, no sheen. ***(Continued)***
SS	1.5	24 29 30		B-MW6-28		0.3			
SS	1.5	17 23 22	30		▽				
SS	1.0	24 50-6				0.4			
SS	1.5	13 30 36	35					SP	
SS	1.0	18 50-6	40	B-MW6-41		0.3			
SS	1.5	9 22 23	45			0.4			

KJ PNW B13 TO B22 AND MW6 JULY 2009.GPJ KJ PNW.GDT 8/3/09

F-40.1
(6-87) (3-88) (8-90)

RESOURCE PROTECTION WELL REPORT

(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. RE04435

Construction/Decommission
[X] Construction 372241
[ ] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* _____

Type of Well
[X] Resource Protection
[ ] Geotechnical Soil Boring

Property Owner South Tacoma Field
Site Address 4800 S. Burlington Way
Consulting Firm Kennedy/Jenks Consultants-Federal Way
City Tacoma County 27-Pierce EWM
Unique Ecology Well ID Tag No. BCP-433
Location 1/4 SE 1/4 SE Sec 13 Twn 20N R 3E or WWM
Lat/Long (s,t,r still Required) Lat Deg _____ Lat Min/Sec _____ Long Deg _____ Long Min/Sec _____

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 above are true to my best knowledge and belief.

Tax Parcel No. _____

[X] Driller [ ] Engineer [ ] Trainee Name (Print) Andy Flagan
Driller/Trainee Signature _____
Driller/Trainee License No. 2761

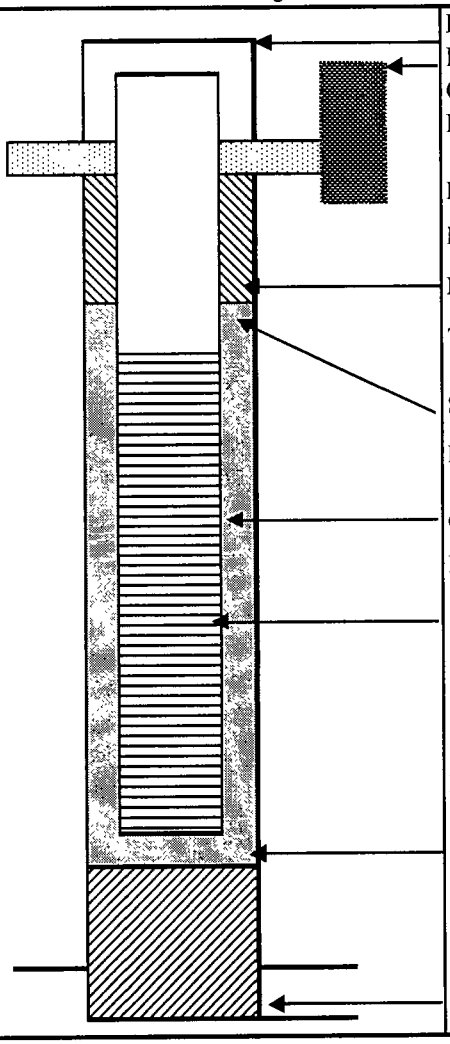
Cased or Uncased Diameter 10"/4 Static Level 35'

Work/Decommission Start Date 3/29/2010

If trainee, licensed driller's Signature and License No. _____

Work/Decommission End Date 3/29/10

Construction/Design — Well Data W10-159 — Formation Description



Locking Cap	
Protective Post	
Concrete Surface Seal Depth	3' FT
Blank Casing (dia x dep)	2"x 27.5'
Material	PVC
Backfill	— FT
Type	—
Seal	20'
Material	bent chips
Gravel Pack	22' FT
Material	2-12
Screen (dia x dep)	2"x 20'
Slot Size	.020
Material	PVC
Well Depth	45' FT
Backfill	1.5'
Material	sand
Total Hole Depth	46.5 FT

Formation Description:
0 - 46.5' FT
overdrilled previous broken 45'-2" BCS-162
0 - FT
0 - FT

RECEIVED
APR 29 2010
WA State Department of Ecology (SWRO)

Scale 1" = _____ Page _____ of _____

ECY 050-12 (Rev 2/01)