Bull Run TREATMENT PROJECTS | Pipelines

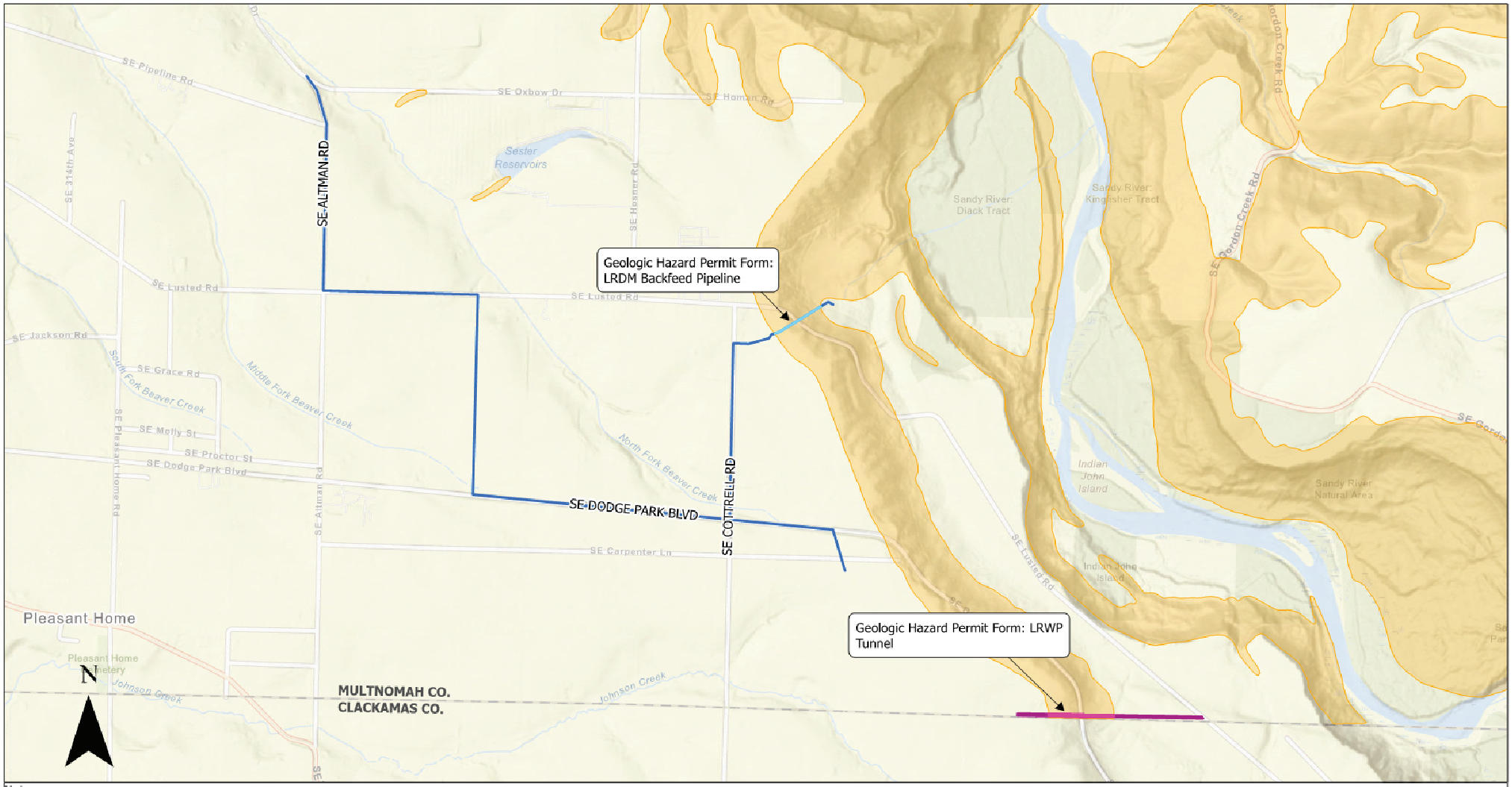
PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

CITY OF PORTLAND, OREGON 1851

Geologic Hazards Permit (GHP) Form 1 Filtration Pipelines Project

September 2022

Key Plan for Forms



Notes:

1. Slope hazard data from Multnomah County GIS.
2. Raw and Finished Water Pipeline alignments based on 60% Design Submittal.

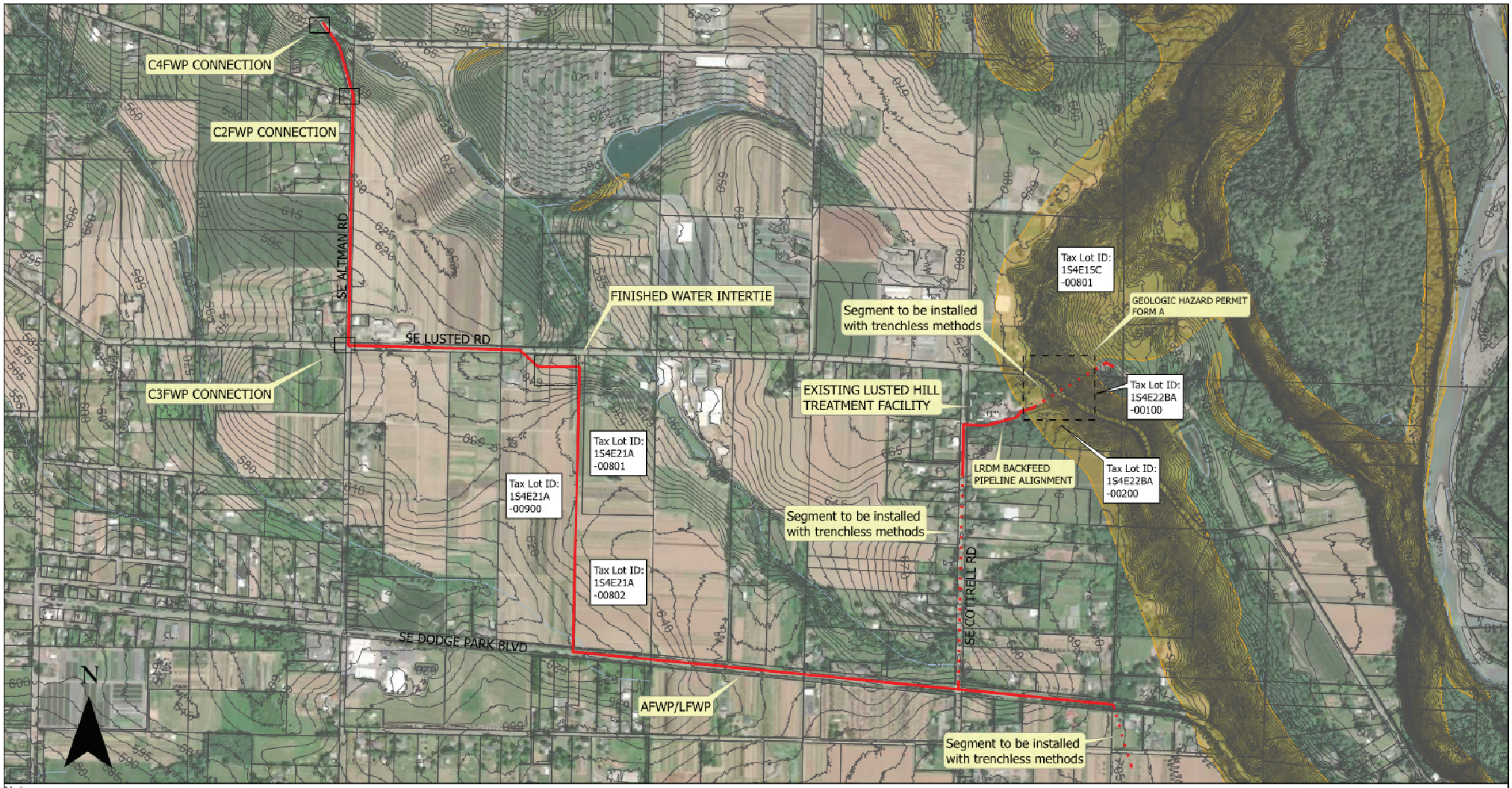
Legend

- Multnomah County Geologic Hazard Zone
- Finished Water Alignment - Outside Geologic Hazard Zone
- Finished Water Pipeline within Hazard Zone (Geologic Hazard Permit Form A)
- Raw Water Alignment - Outside Geologic Hazard Zone
- Raw Water Pipeline within Hazard Zone (Geologic Hazard Permit Form B)

0 600 1,200 Feet

McMILLEN JACOBS ASSOCIATES

PORTLAND WATER BUREAU	SEPT 2022
FILTRATION PIPELINES PROJECT	
GEOHAZARD PERMIT APPLICATION KEY PLAN	



Notes:

1. Slope hazard data from Multnomah County GIS.
2. Finished Water Pipeline alignments based on 60% Design Submittal.
3. Elevations are given in Portland Vertical Coordinate System (PVCS=NAVD88-2.1 ft).

Legend

- Multnomah County Geologic Hazard Zone
- Tax Lots
- Finished Water Alignment - Trenched
- Finished Water Alignment - Trenchless

0 400 800 Feet

Jacobs

PORTLAND WATER BUREAU	
FILTRATION PIPELINES PROJECT	
GEOHAZARD PERMIT APPLICATION SITE PLAN	SEPT 2022

Finished Water Pipeline - LRDM within Geologic Hazard Zone - Form A

Land Use Planning Division
1600 SE 190th Ave, Ste 116
Portland OR 97233
Ph: 503-988-3043 Fax: 503-988-3389
multco.us/landuse

GEOLOGIC HAZARDS PERMIT (GHP) Form 1:
GEOTECHNICAL RECONNAISSANCE AND STABILITY PRELIMINARY STUDY

Note: Response to each question below must be completed or verified by a Certified Engineering Geologist or Geotechnical Engineer, including a State of Oregon Registration Stamp and Number in the space provided on page four. The GHP Form 1 addresses Multnomah County Code Section 39.5085(C)(3)(c); 38.5515(C)(3)(c), Geologic Hazards Permits.

Site Address: 1. 6704 SE Cottrell Road, Gresham, 970 2. Levy Code 416, Gresham, 97080 3. 34747 SE Lusted Rd, Gresham, 97080 * See Filtration Pipeline Project Geohazard Permit Application Site Plan

Legal Description: 1. 1S4E22BA -00200 2. 1S4E22BA -00100 3. 1S4E15C -00801

Property Owner's Name: 1. City of Portland 2. City of Portland 3. Lusted Road Farms LLC

Firm Preparing Report: Jacobs Engineering

Address: 2020 SW Fourth Avenue, Suite 300

City: Portland **State:** Oregon **Zip:** 97201

Preparer's Name: Todd Cotten

Phone Number: 503.803.4148

GENERAL PROPERTY INFORMATION

1. a. Maximum Slope on Property: 1: 1H:1V (horizontal:vertical) 2: 1H:1V 3: 1H:1V Area in which it is located: 1: Near SE Lusted Rd. 2 Near SE Lusted Rd 3: Western margin
   Average Slope of Property: 1: Approximately 10H:1V 2: Approximately 3H:1V 3: Approximately 3.5H:1V

   b. Are there any wetlands or streambeds on the property? (Please Circle) Yes (No)
   If yes, please show on topographical survey or sketch.

   c. Volume of soil or earth material disturbed, stored, disposed of or used as fill: See page 5 of this application for the response.

   d. Total area of proposed ground disturbance:
   Approximately 1,400 (square feet) Less than 0.1 (acres) See page 5 of this application for additional information on ground disturbance.

Were building plans considered when completing this form? (Please Circle) Yes No

If yes, please note the author and date the plans were prepared.

Bull Run Filtration Pipelines, Finished Water Pipeline 60 percent design package. Jacobs Engineering, September 2022.

2. What is the general topography of the property? Please attach a topographic survey or sketch with pertinent notes.

The ground at the west end of the proposed Lusted Road Distribution Main (LRDM) pipeline within the geohazard zone is flat to gently sloping (~2% and 5%) for approximately 300 feet at the west end. The ground surface starts to slope to the east about 160 feet east of the start of the trenchless pipeline and slopes down to SE Lusted Road at about 25% slope. The ground is approximately level across SE Lusted Road, then continues downhill on the east side of SE Lusted Road at about 35% slope. The slope becomes more gentle (<10% slope) at the east end of the trenchless installation within the geologic hazard zone. See attached drawings GH-05 and GH-06.

3. Are there any visible signs of instability or other potentially adverse site features (Landslides, slumps, mud flow, creep, ravines, fills, cuts, seeps, springs, ponds, etc.) within the surrounding area for a minimum distance of 100 feet beyond the subject property boundaries? Describe and indicate on attached topographic survey or sketch.

No signs of instability or adverse site features were observed within 300 feet of the proposed LRDM pipeline, which will be installed using trenchless methods (primarily) on the north side and adjacent to existing pipelines routed up and down the relatively steep slopes described above (Question 2). One of the existing pipelines was installed in 1925, almost 100 years ago, and there has been no slope movement along the pipeline that has resulted in damage or the need to repair the pipe or mitigate slope movement.
Two inactive landslides slumps were previously documented south of the existing buried pipeline.

4. Is any earthwork proposed in connection with site development?

(Please Circle) Yes No

If yes, please indicate depth and extent of cuts/fills; describe fill types.

The proposed12-inch diameter LRDM pipe will be installed using trenchless installation methods through the majority of the geologic hazard overlay zone. It will be installed using open-cut methods through the western limits of the geologic hazard overlay zone, where the ground surface becomes more gentle. The open cut pipe installation will require temporary excavations that will be brought back existing grade with properly compacted structural backfill and native material at the surface. Site grading will not be required. See page 5 of this application for information on proposed structural fill to be used within the geologic hazard area.

5. In your opinion, will the proposed earthwork cause potential stability problems for the subject and/or adjacent properties?

(Please Circle) Yes No

The pipeline will primarily be installed using trenchless methods. A short segment, approximately 140 feet long, of open-cut installation will be backfilled and the ground brought back to pre-construction grades. See attached drawings GH-04 through GH-06.

IF YES, EXPRESS PROBABILITY:

(Please Circle) Very Probable Possibly Possible, but remote

If Very Probable or Possibly, please explain.

6. In your opinion, will the proposed development (structures, foundations, parking area, streets, etc.) create potential stability problems for the subject and/or adjacent properties?

(Please Circle) Yes (No)

There are no new developments for this portion of the project other than a 12-inch diameter LRDM pipeline that will primarily be constructed using trenchless installation methods.

IF YES, EXPRESS PROBABILITY:

(Please Circle) Very Probable Possibly Possible, but remote

If Very Probable or Possibly, please explain.

7. In your opinion would the subsurface disposal of sewage effluent on the site (i.e., drain fields) have an adverse affect on stability of the site or adjacent area?

(Please Circle) Yes (No)

NOT APPLICABLE: This project does not involve sewage effluent or drain fields.

IF YES, EXPRESS PROBABILITY:

(Please Circle) Very Probable Possibly Possible, but remote

If Very Probable or Possibly, please explain.

8. If answer is Very Probable or Possibly to questions 4 or 5, is it your opinion, on the basis of a visual evaluation, that adequate stability might be achieved by preferred siting of the development, alternative foundation support, earthwork, drainage, etc.?

(Please Circle) Yes No

If yes, please explain.

9. Do you recommend additional geotechnical studies (i.e., mapping, testing pits or borings, stability analysis, etc.) prior to site development?

(Please Circle) Yes (No)

No. Geotechnical explorations and studies have been completed along the alignment that sufficiently provide subsurface information for hazard evaluation and design.

If yes, please explain.

By signing and affixing the required stamp below, the Certifying Engineering Geologist or Geotechnical Engineer certifies that the site is suitable for the proposed development.

Signature _____

Date September 29, 2022

REGISTERED PROFESSIONAL ENGINEER
58496PE
Digital Signature
OREGON
July 21, 1998
TODD E. COTTEN

EXPIRES 12/31/2023

GEOLOGIC HAZARDS PERMIT (GH) APPLICATION:

Additional Responses

Response to General Property Information Question 1.c

The volume of earth material excavated along the LRDM within the geologic hazard overlay area will be approximately 581 yds3. Of this, about 529 yds3 will be removed from the site and disposed of offsite. About 63 yds3 of soil will be disturbed in the trenchless installation area within the geologic hazard area assuming a 24-inch diameter bore will be used for the proposed pipeline. About 519 yds3 of soil will be disturbed in the open cut segment of the pipeline that is within the geologic hazard overlay area. The volume assumes a trench will be excavated that is about 20 feet deep and 5 feet wide. The calculations of excavated, stockpiled, transported, and fill quantities and the area of disturbance within the geologic hazard area is provided on the following page. The open-cut section will be backfilled using properly compacted granular material around the pipe and native material at the surface. A discussion of the structural backfill materials to be used within the geologic hazard overlay area is provided below.

Response to General Property Information Question 1.d

Construction within the geologic slope hazard overlay zone will consist of a horizontal direction drill for a 12-inch diameter pipeline. A reamed hole diameter of 24-inches is conservatively assumed. The entry point at the east end will be outside the slope hazard overlay zone. The west end of the trenchless installation is within the geologic hazard overlay zone. Approximately 140 feet of the open cut potion of the pipeline will be within the geologic hazard overlay zone.

Structural Fill for Finish Water Pipeline within Geohazard Zone.

Structural fill will not be used to backfill the portion of the LRDM pipeline that will be installed using trenchless installation methods.

Structural fill and native fill will be used to backfill the open-cut portion of the12-inch diameter LRDM pipeline. The proposed structural backfill to be used within the geologic hazard overlay zone consists of the following:

1) Pipe Zone Material will consist of 1-inch - minus or 3/4-inch - minus crushed aggregate, also known as dense-graded aggregate fill. Pipe zone material will be used below, around, and to approximately 12 inches above the pipeline. These materials will conform to the requirements of Section 02630 of the City of Portland Standard Construction Specifications, 2020 version.
2) Gravel or crushed rock consisting either of dense-graded aggregate fill or a pit run or bar run material, well-graded from coarse to fine with a maximum dimension of 3 inches will be used as backfill between the pipe zone material and native topsoil that will be placed at the surface.

See attached Bull Run Filtration PIpeline drawings: GH-000, GH-001, GH-04, GH-05, GH-06, ESC-201, and ESC-202.

City of Portland

Facility Pipelines Geohazard Permit Quantities

Prepared by: McMillen Jacobs / Jacobs Engr

Revision No. 3 prepared by Todd Cotten and Jeff Quinn, 09/26/2022.

*Processed Material - defined as asphalt, aggregate, class B backfill, engineered fill, non-native road fill, concrete, CDF, CLSM, cellular concrete

						Excavation Volumes, CY			Stockpiled Material Quantities, CY		Transportation Quantities, CY				Total Volume per 1.c	Area of Disturbance		
						A	B	C (equal to A - B)	D	E	F (equal to C - D)	G	H	I (equal to A - D - E - Pipe Volume)	J (equal to C + H)	K	L	
Item #	Description	length (feet)	diameter or width (feet)	Depth (feet)	Located In ROW Y/N	Total Excavated Volume (Earth Material & Existing Processed Material)	Volume Existing Processed Material Excavated	Volume Earth Material Excavated	Earth Material stored onsite to be reused	Existing Processed Material stored onsite to be reused	Earth Material Hauled Offsite	Excavated Processed Materials Hauled Offsite	Imported Earth Material (i.e. hauled onsite)	Imported Processed Material*	GHP Form 1 item 1.c "Total Volume of soil or earth material disturbed, stored, disposed of or used as fill"	GHP Form 1 item 1.d "Total area of proposed ground disturbance" (Square Feet)	GHP Form 1 item 1.d "Total area of proposed ground disturbance" (Acres)	Notes
Finished Water Backfeed Pipeline: Geologic Hazard Permit Form A																		
1	Backfeed Pipeline - Open Cut Section	140	5	20	Y	519	0	519	52	0	467	0	0	467	519	1400	0.03	12" pipe in open cut trench within geologic hazard overlay zone.
2	Backfeed Pipeline - Horizontal Directional Drill Trenchless Instal.	540	2	-	Y	63	0	63	0	0	63	0	0	47	63	0	0.00	Installaision of 12" pipe primarily by trenchless installation within geologic hazard overlay zone.
	Totals					581	-	581	52	-	529	-	-	514	581	1,400	0.03	

Portland Water Bureau

Bull Run Filtration Pipelines Project

GEOHAZARD AREA EXHIBITS

09/28/2022 3:02:29 PM

No	Date	Description	Appd
		Revision	
Survey			

PRELIMINARY NOT FOR CONSTRUCTION

Designed By	WM	Program Mgr	XXX
Drawn By	AP	Const Mgr	XXX
Checked By	SDO	Const Supvr	XXX
Project Mgr	XXX	Date 6/30/22	

WARNING

0 1"

If this bar does not measure 1" then the drawing is not to scale

XXX XXX Date

XXX XXX Date

Bull Run Filtration Pipelines

LAND USE APPLICATION

COVER SHEET

SAP Project No W02563

1/4 Section

Sheet No GH-000

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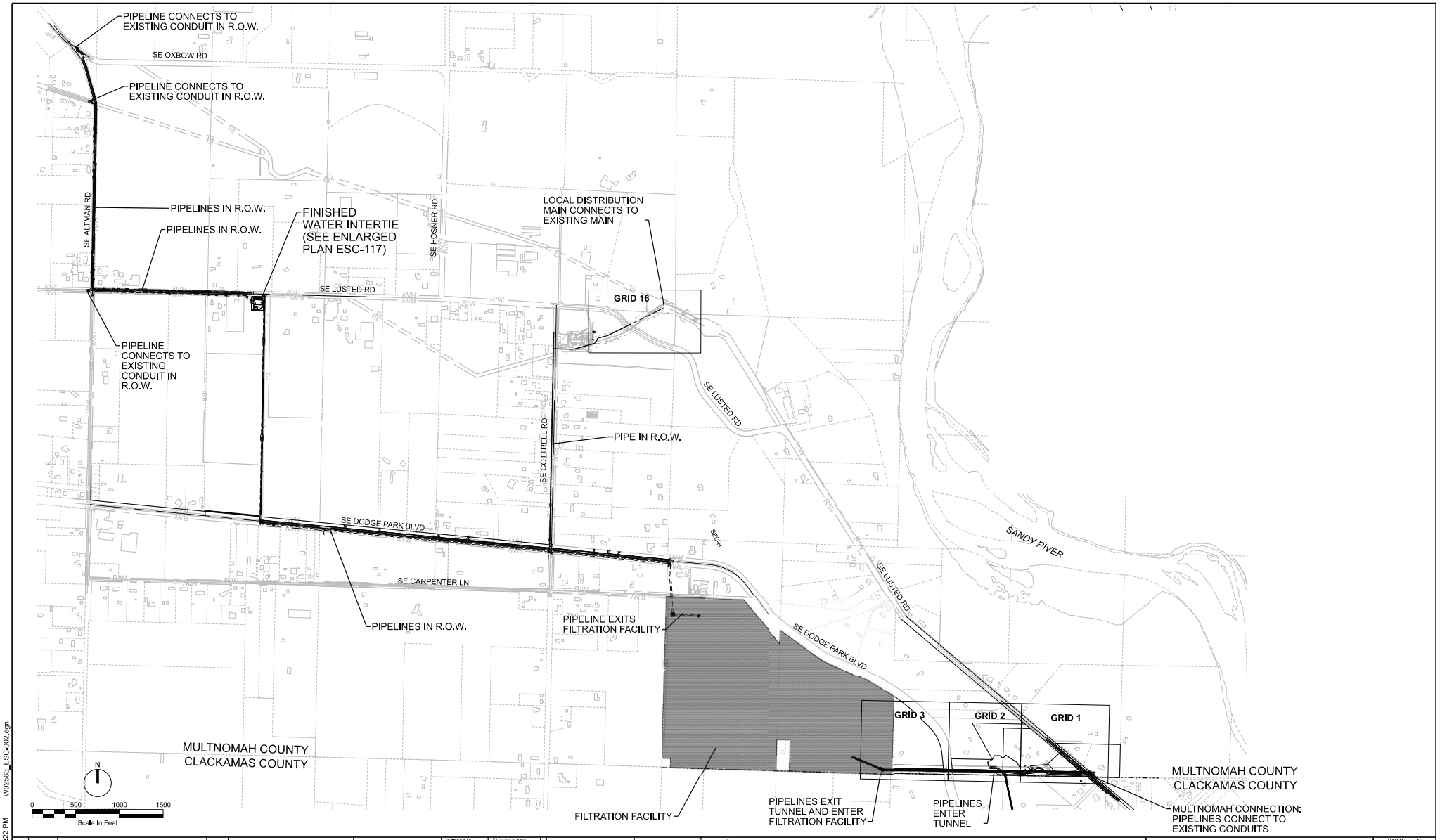

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No	Date	Description	Appd

Revision

Survey

PRELIMINARY NOT FOR CONSTRUCTION

Designed By	DG	Program Mgr	XXX
Drawn By	BS	Const Mgr	XXX
Checked By	BN	Const Supvr	XXX
Project Mgr	XXX	Date 6/30/22	

WARNING

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If this bar does not measure 1" then the drawing is not to scale

PORTLAND WATER BUREAU

FROM FOREST TO FAUCET

XXX XXX Date

XXX XXX Date

CITY OF PORTLAND OREGON 1851

Bull Run Filtration Pipelines

KEY MAP

SAP Project No W02563

1/4 Section

Sheet No GH-001

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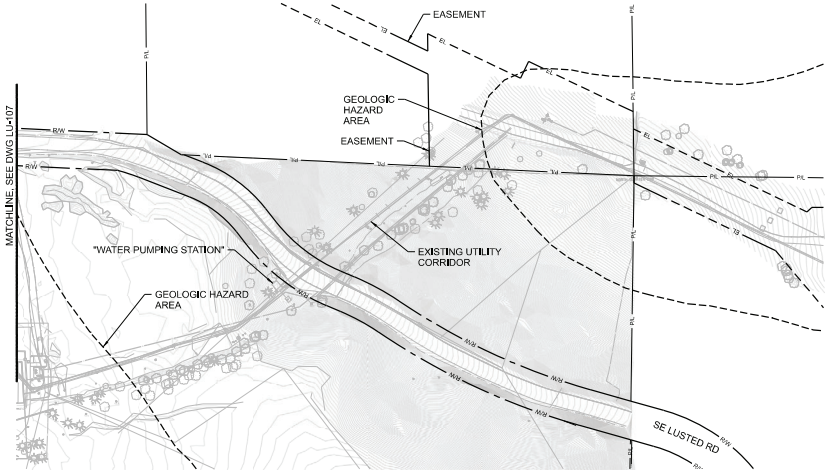
LEGEND

	CONIFEROUS TREE
	DECIDUOUS TREE
	COUNTY LINE
P/L	PROPERTY LINE
R/W	RIGHT-OF-WAY
EL	EASEMENT
	GEOHAZARD AREA



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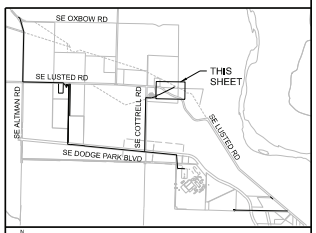
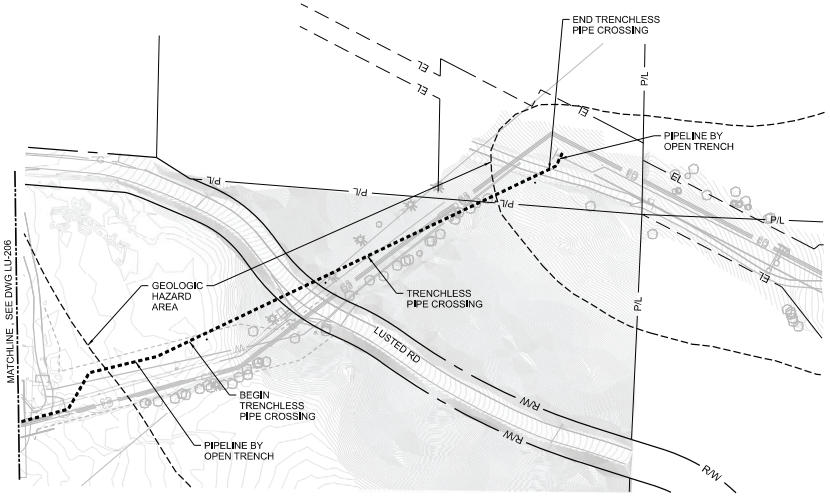
Scale In Feet



KEYPLAN

No	Date	Description	Appd



GENERAL SHEET NOTES

1. ALL WORK AREAS RESTORED TO EXISTING GRADE
2. REFER TO SEC LH-01 (APPENDIX A.3) FOR DETAILS SEC WORK.
3. SEE SHEET GEN-L-061 FOR LANDSCAPE PLANT SCHEDULE AND SPEC 32 92 00 FOR SEEDING INFORMATION

LEGEND

- EXISTING STRUCTURES
- CONTOURS
- PIPELINE
- CONIFEROUS TREE
- DECIDUOUS TREE
- EL — EASEMENT
- P/L — PROPERTY LINE
- R/W — RIGHT OF WAY
- GEOHAZARD AREA

0 100 200 300
Scale In Feet

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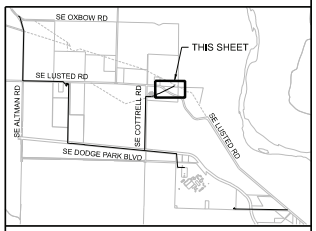

KEY PLAN

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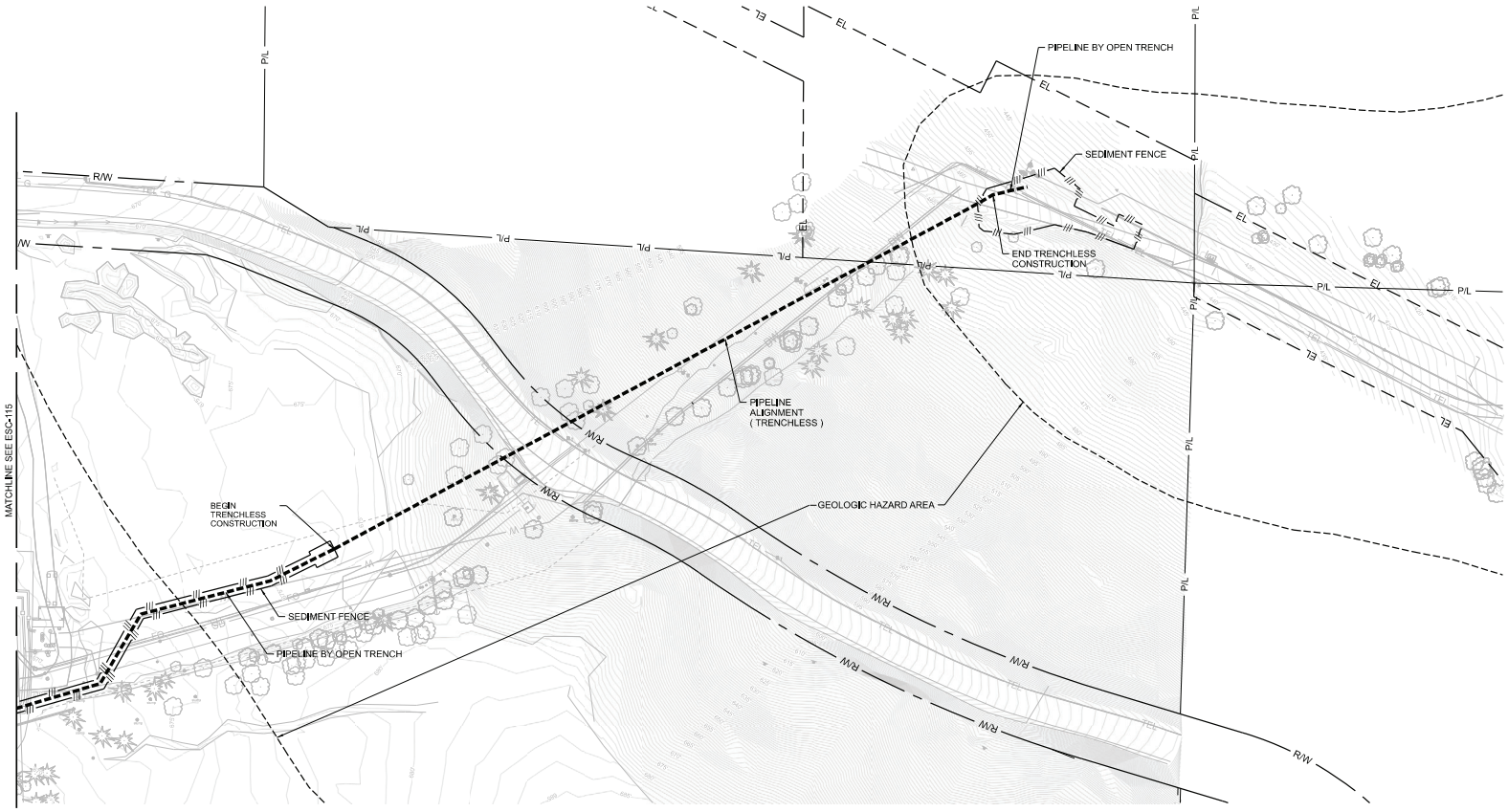


GENERAL SHEET NOTES

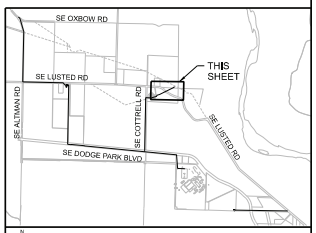
1. REFER TO EROSION AND SEDIMENT CONTROLS NOTES, SHEET ESC-004
2. PROTECT ALL EXISTING STRUCTURES AND TREES NOT SHOWN FOR DEMOLITION.
3. LIMITS OF GROUND DISTURBANCE ARE CONCURRENT WITH RIGHT-OF-WAY, PROPERTY LINE, EASEMENT LINE, OR TREE PROTECTION LINES EXCEPT AS INDICATED ON THE DRAWINGS.
4. REMOVE AND REPLACE ROADWAY PAVEMENT WITHIN LIMITS OF DISTRURBANCE TO MATCH EXISTING LINE AND GRADE.
5. CONTRACTOR TO RE-GRADE DISTURBANCE AREA FROM PIPELINE CONSTRUCTION TO MATCH EXISTING GRADE, WHERE NOT OTHERWISE SHOWN ON DRAWINGS.
6. ALL DISTURBANCE AREA NOT RECIEVING PAVEMENT OR GRAVEL, UNLESS OTHERWISE SHOWN, SHALL BE RESTORED WITH GRASS SEEDING. SLOPES STEEPER THAN 3:1 SHALL BE RESTORED WITH GRASS SEEDING AND PERMANENT EROSION CONTROL BLANKETS AS SPECIFIED AND PER DETAIL 3125-152, SHEET ESC-201.
7. UPON PROJECT COMPLETION REMOVE GRAVEL SURFACING FROM ALL STAGING AREAS AND RESTORE TOPSOIL AND SEED.
8. SEE ESC-003 FOR TREE REMOVAL.

LEGEND

	PIPE
500'	CONTOUR
	CONIFEROUS TREE
	DECIDUOUS TREE
PL	PROPERTY LINE
R/W	RIGHT-OF-WAY
EL	EXISTING EASEMENT LINE
TEL	TELEPHONE LINE
FO	FIBER OPTIC LINE
W	WATER LINE
G	GAS LINE
	EXISTING BUILDINGS
///	SEDIMENT FENCE
	GEOHAZARD AREA

N

0 50 100 150
Scale In Feet



KEYPLAN

No	Date	Description	Appd

Revision

Survey

PRELIMINARY NOT FOR CONSTRUCTION

Designed By	RD	Program Mgr	XXX
Drawn By	JBL	Const Mgr	XXX
Checked By	RD	Const Supvr	XXX
Project Mgr	XXX	Date 6/30/22	

WARNING
0 1"
If this bar does not measure 1" then the drawing is not to scale

PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

XXX XXX Date
XXX XXX Date

Bull Run Filtration Pipelines

FINISHED WATER PIPELINE EROSION CONTROL

GRID 16

SAP Project No W02563
1/4 Section 3765
Sheet No GH-06

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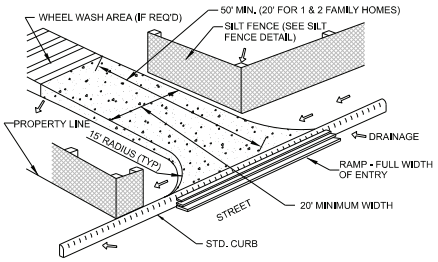
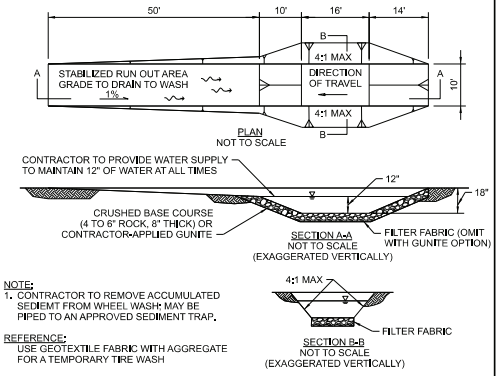


GRAVEL CONSTRUCTION ENTRANCE
NTS

3125-130

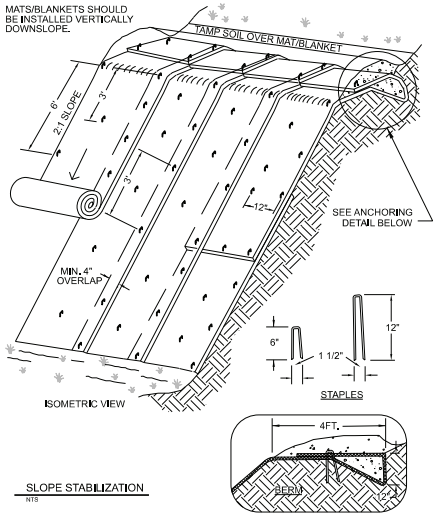


NOTE:
1. CONTRACTOR TO REMOVE ACCUMULATED SEDIEMT FROM WHEEL WASH; MAY BE PIPED TO AN APPROVED SEDIMENT TRAP.

REFERENCE:
USE GEOTEXTILE FABRIC WITH AGGREGATE FOR A TEMPORARY TIRE WASH

WHEEL WASH
NTS

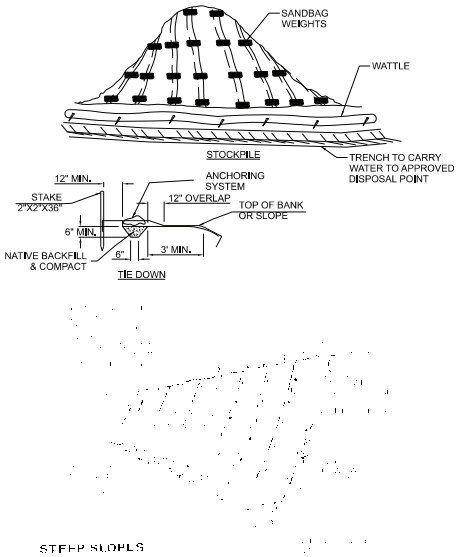
3125-135



SLOPE STABILIZATION
NTS

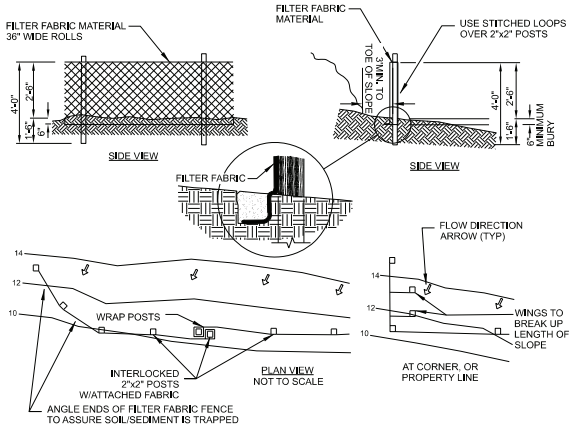
ANCHORING DETAIL
NOT TO SCALE

3125-152



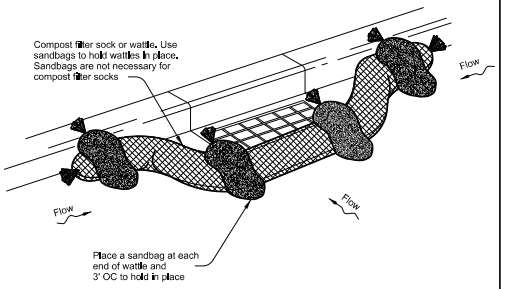
TEMPORARY SLOPE PROTECTION
NTS

3125-153



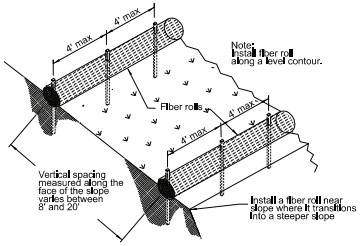
TEMPORARY SILT FENCE
NTS

3125-165

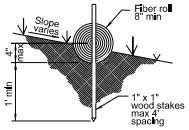


COMPOST FILTER SOCK OR WATTLE - TYPE 7
NTS

3125-187



TYPICAL FIBER ROLL INSTALLATION
NOT TO SCALE



ENTRENCHMENT DETAIL
NOT TO SCALE

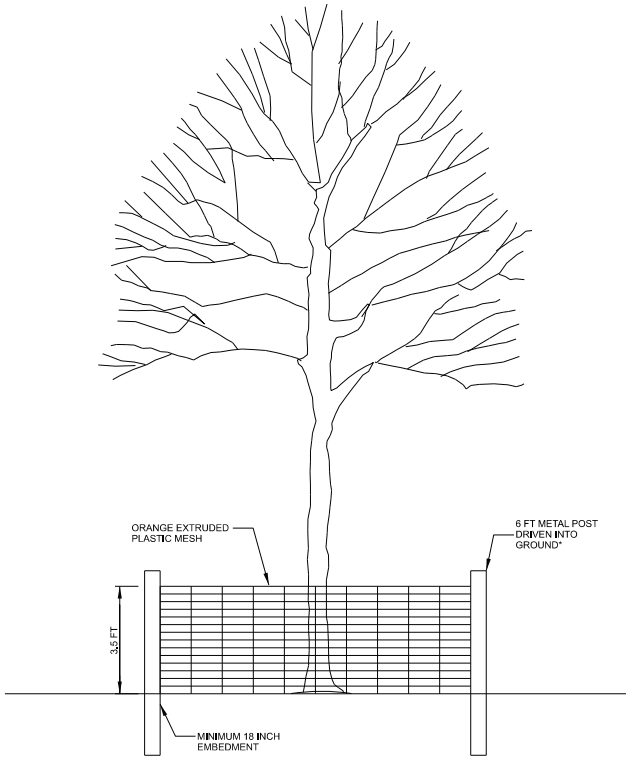
COMPOST FILTER SOCK OR WATTLE - TYPE 8
NTS

3125-188

No	Date	Description	Appd.

TREE PROTECTION NOTES

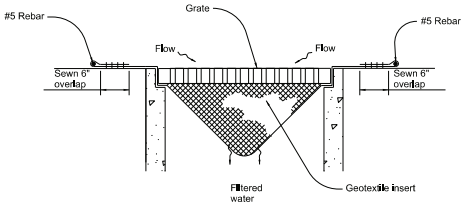
1. INSTALL TREE PROTECTION FENCING (TPF) PRIOR TO ANY GROUND DISTURBING ACTIVITY. INSPECTION AND APPROVAL OF FENCING BY THE URBAN FORESTRY TREE INSPECTOR IS REQUIRED PRIOR TO COMMENCEMENT OF WORK, INCLUDING EQUIPMENT AND MATERIALS STAGING AND MOBILIZATION
2. CALL 823-TREE (8733) TO SCHEDULE THE TREE PROTECTION INSPECTION ONCE TPF IS INSTALLED
3. NO ENTRY IS ALLOWED INTO TREE PROTECTION AREAS FOR THE DURATION OF THE PROJECT UNLESS PERMITTED BY THE URBAN FORESTRY TREE INSPECTOR
4. TREE PROTECTION FENCING SHALL NOT BE MOVED, ALTERED OR REMOVED THROUGHOUT THE DURATION OF THE PROJECT
5. WHERE TREE ROOTS ARE ENCOUNTERED OR ANTICIPATED, EXCAVATION SHALL BE COMPLETED WITH HAND TOOLS CAREFULLY WITHOUT DAMAGE (I.E. VAC TRUCK, AIR SPADE, ETC)
6. TREE ROOTS OVER 2-INCH DIAMETER MAY NOT BE CUT OR DAMAGED WITHOUT A ROOT PRUNNING INSPECTION AND PERMIT ISSUED BY THE URBAN FORESTRY TREE INSPECTOR. CALL THE ASSIGNED TREE INSPECTOR OR 823-TREE (8733) FOR ROOT INSPECTION PERMITTING SPECIFIC TO THIS PROJECT
   - A. INSPECTION AND ISSUANCE OF A PERMIT MAY TAKE UP TO 48 HOURS
   - B. IF APPROVED, ROOTS MUST BE PROPERLY PRUNED USING APPROVED ARBORICULTURAL TECHNIQUES
7. FIELD ADJUSTMENTS OR ALTERNATIVE METHODS MAY BE NEEDED IF LARGE ROOTS ARE ENCOUNTERED. CONTACT THE ASSIGNED TREE INSPECTOR TO DISCUSS
8. TREES WITHIN THE LIMITS OF DISTURBANCE DESIGNATED TO BE PROTECTED WILL NOT BE REMOVED. CONTRACTOR IS DIRECTED TO COMPLETE CUT AND FILL OPERATIONS WITH CARE NEXT TO THESE TREES
9. MAINTAIN FENCING THROUGHOUT THE ENTIRE PROJECT. NO ACCESS IS PERMITTED WITHIN FENCED AREAS THROUGH THE DURATION OF THE PROJECT UNLESS OTHERWISE STATED IN THE TREE PROTECTION PLAN
10. THE ORANGE PLASTIC FENCE CAN BE USED AS CONSTRUCTION FENCE IN LIEU OF SILT FENCE IF GRADE IS MODERATE.



*MAXIMUM 10 FEET SEPARATION BETWEEN METAL POSTS

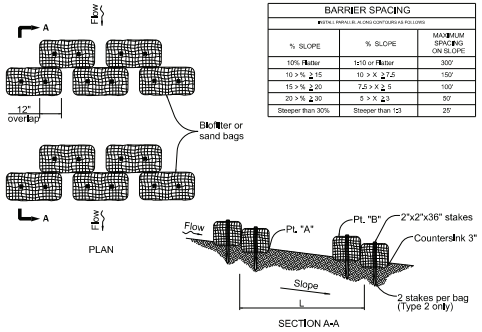
TREE PROTECTION FENCE
NTS

3125-190



PREFABRICATED FILTER INSERT - TYPE 3
NTS

3125-201



BARRIER SPACING		
(INSTALL PARALLEL ALONG CONTOURS AS FOLLOWS)		
% SLOPE	% SLOPE	MAXIMUM SPACING ON SLOPE
10% flatter	1x10 or flatter	300'
10 > % ≥ 15	10 > X ≥ 7.5	150'
15 > % ≥ 20	7.5 > X ≥ 5	100'
20 > % ≥ 30	5 > X ≥ 3	50'
Steeper than 30%	Steeper than 1:3	25'

NOTES:
1. For Type 2 barrier, drive stakes flush with top of bag and into undisturbed ground a min. of 12". Omit stakes if bags are placed on paved surface.
2. For Type 2 and Type 4 barriers, space bags (L) so that the elevation of point "A" is less than or equal to the elevation of point "B".

Type 2 - Biofilter bags
Type 3 - Wattles
Type 4 - Sand bags

BIOFILTER BAG / SAND BAG BARRIER - TYPE 2 AND 4
NTS

3125-202

No	Date	Description	Appd
		Revision	
Survey			

PRELIMINARY NOT FOR CONSTRUCTION

Designed By	RG	Program Mgr	XXX
Drawn By	JBL	Const Mgr	XXX
Checked By	RG	Const Supvr	XXX
Project Mgr	XXX	Date 6/30/22	

WARNING
0 1"
If this bar does not measure 1" then the drawing is not to scale

PORTLAND WATER BUREAU
FROM FOREST TO FAUCET

XXX XXX Date
XXX XXX Date

Bull Run Filtration Pipelines
STANDARD DETAILS

SAP Project No W02563
1/4 Section
Sheet No ESC-202

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