

Hydrogeologic Conditions

- Can we reduce or eliminate groundwater during backfill and reclamation?
- Can we meet desired final land use of pasture and hay meadow?
- Can we handle the groundwater without impacting existing water rights and landowners?
- Can we continue our reclamation success, or do we need any modifications to ensure our landowners requested final land use- return to agriculture?

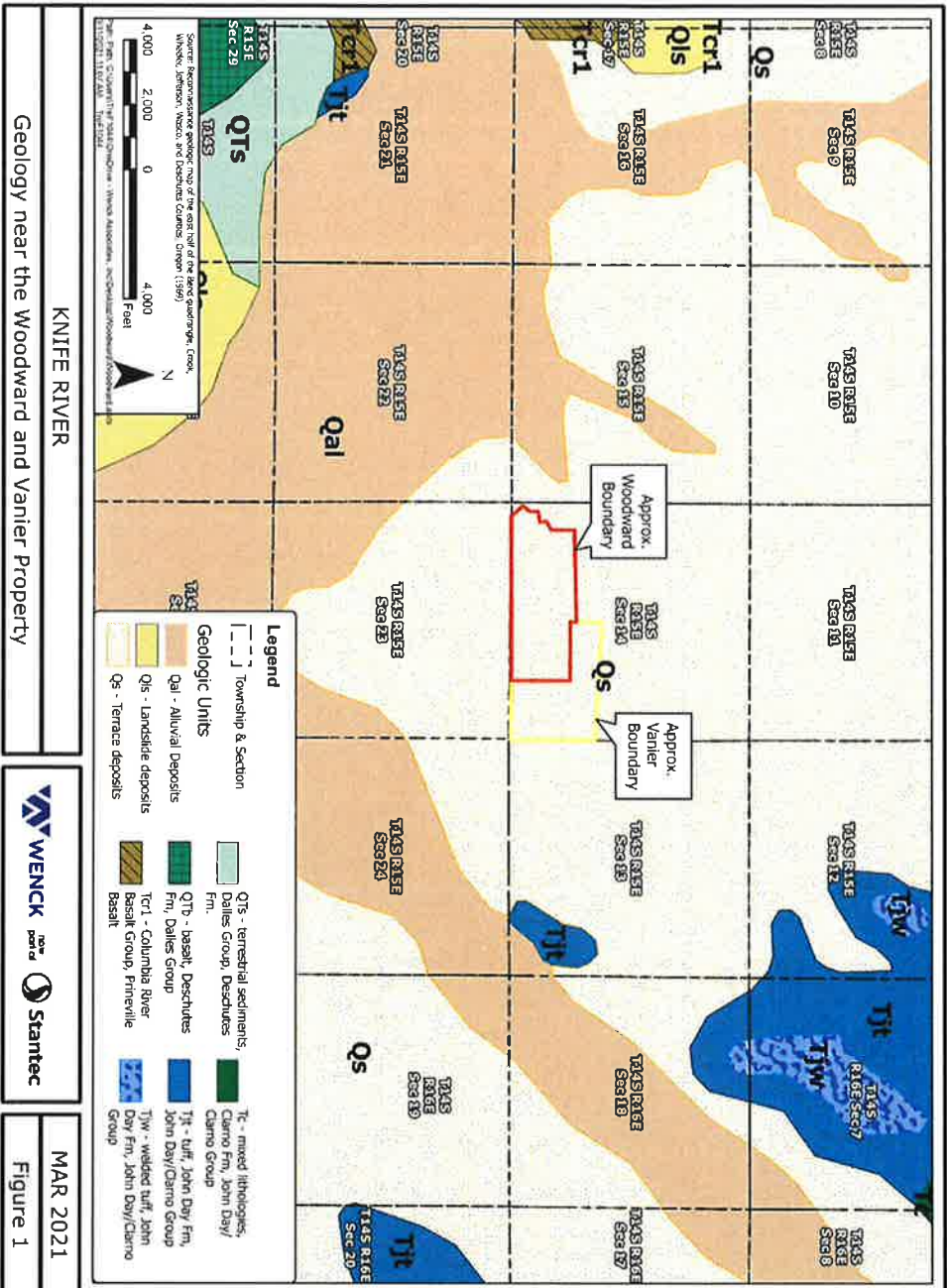


Hydrogeologic Assessment Approach

- Identified water rights on file with the Oregon Water Resources Department
- Reviewed geologic and hydrogeologic data
- Drilled and geologically logged three test wells to define site hydrogeologic conditions
- Completed aquifer tests on these wells to assess aquifer characteristics
- Cored and tested soils, overburden and gravels to address reclamation concerns
- Estimated potential groundwater inflows and identified potential recharge trench and monitoring well locations
- Evaluated reclamation plans and options



Geologic Setting

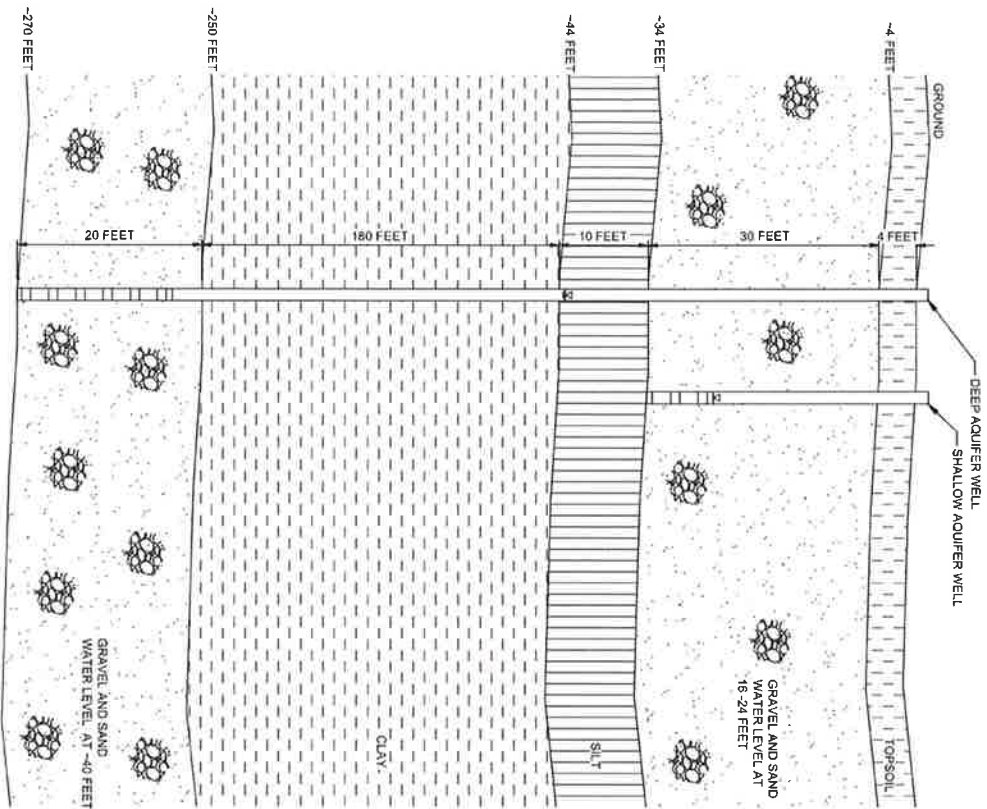


Geology near the Woodward and Vanier Property

WENCK part of **Stantec**

MAR 2021
Figure 1

Terrace Deposits - Aquifer Configuration



Driller Name: Arnold Matt
Driller License No: CROO 54339

STATE OF OREGON
 WATER SUPPLY WELL REPORT
 (as required by ORS 317.015 & OAR 620.005 0010)

3/12/2016

WELL ID: WATER # 121818
 SHAFT CODE # 120713
 ORIGINAL LOG #

(1) LAND OWNER: 5 Res. Co. Oreg. Well ID: 121818
 County: Multnomah
 City/Township: Troutdale
 Section: 7-2-31-1-1-5
 Township: Troutdale
 Range: 7-2-31-1-1-5

(2) TYPE OF WORK: New Well Alteration Abandonment Repair

(3) PERMITS: Yes No

(4) PROPOSED USE: Domestic Industrial Commercial Agricultural Other

(5) MODEL HOLE CONSTRUCTION: Standard Special
 Depth: 200 ft
 Diameter: 4 in
 Hole ID: 0
 Hole ID: 0

(6) CASING/LINER: Yes No
 Material: Steel Concrete Other

(7) PERFORATIONS/SERIES: Yes No
 Series type: Screen Slotted Other

(8) WELL TESTS: Minimum flowing time is 1 hour
 Pump: Hand Electric Other

(9) LOCATION OF WELL (legal description):
 County: Multnomah
 City/Township: Troutdale
 Section: 7-2-31-1-1-5
 Township: Troutdale
 Range: 7-2-31-1-1-5
 Well ID: 121818
 Shaft Code: 120713

(10) STATIC WATER LEVEL:
 Date: 3/12/2016
 Time: 10:00 AM
 Depth: 200 ft
 Water Level: 286 ft
 Static Water Level: 20 ft

(11) WELL LOG:
 Date: 3/12/2016
 Driller: Arnold Matt
 Well ID: 121818
 Shaft Code: 120713

Depth (ft)	Material	Notes
0 - 4	GROUND	
4 - 16	TOPSOIL	
16 - 24	GRAVEL AND SAND	
24 - 270	CLAY	

RECEIVED BY CWB
 DATE: 3/12/2016
 SALTUM, OR

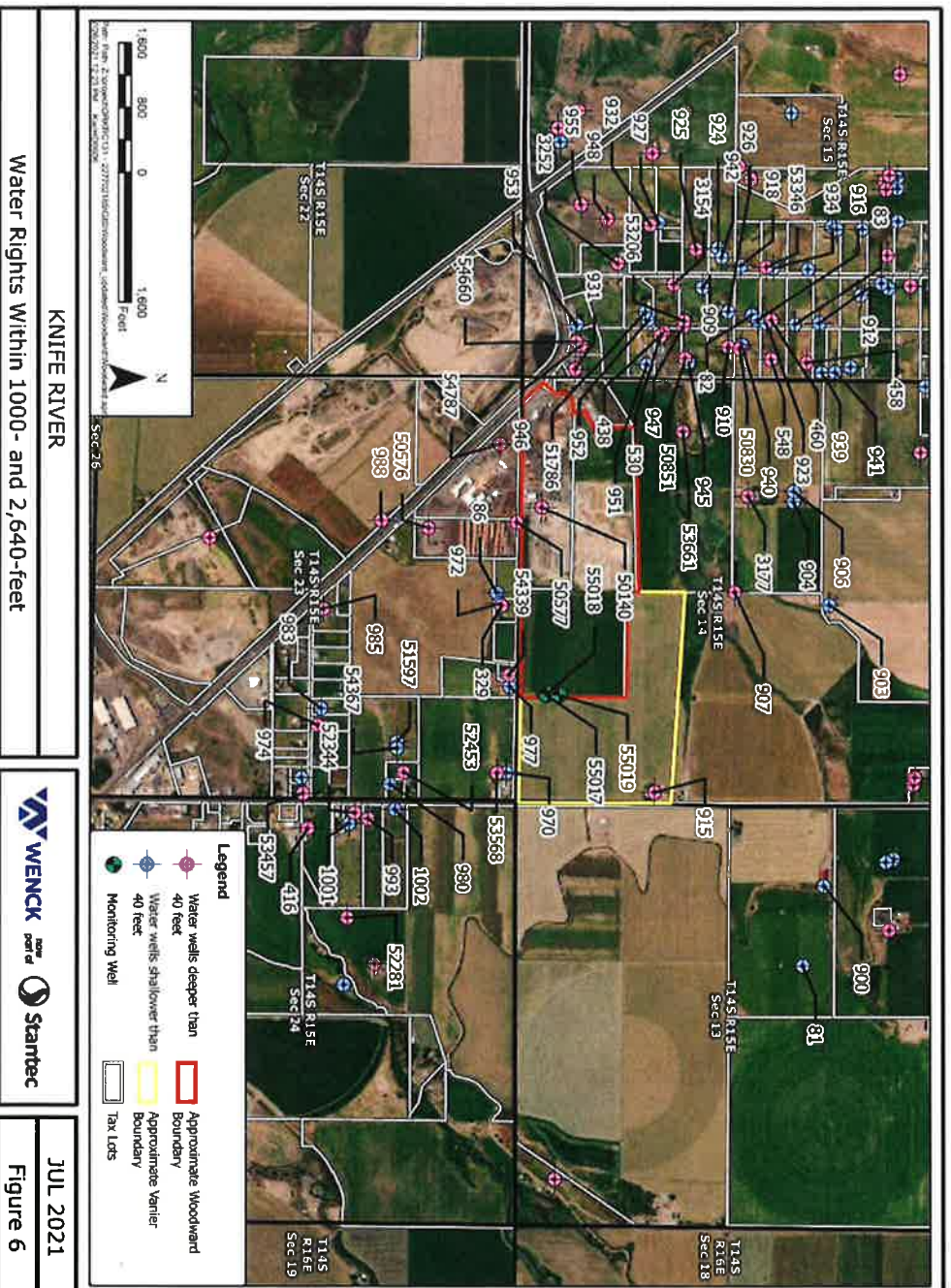
Date Started: 3/12/2016
 Completed: 3/12/2016

This report was originally e-filed to the Department.
 The original e-filed document is attached.

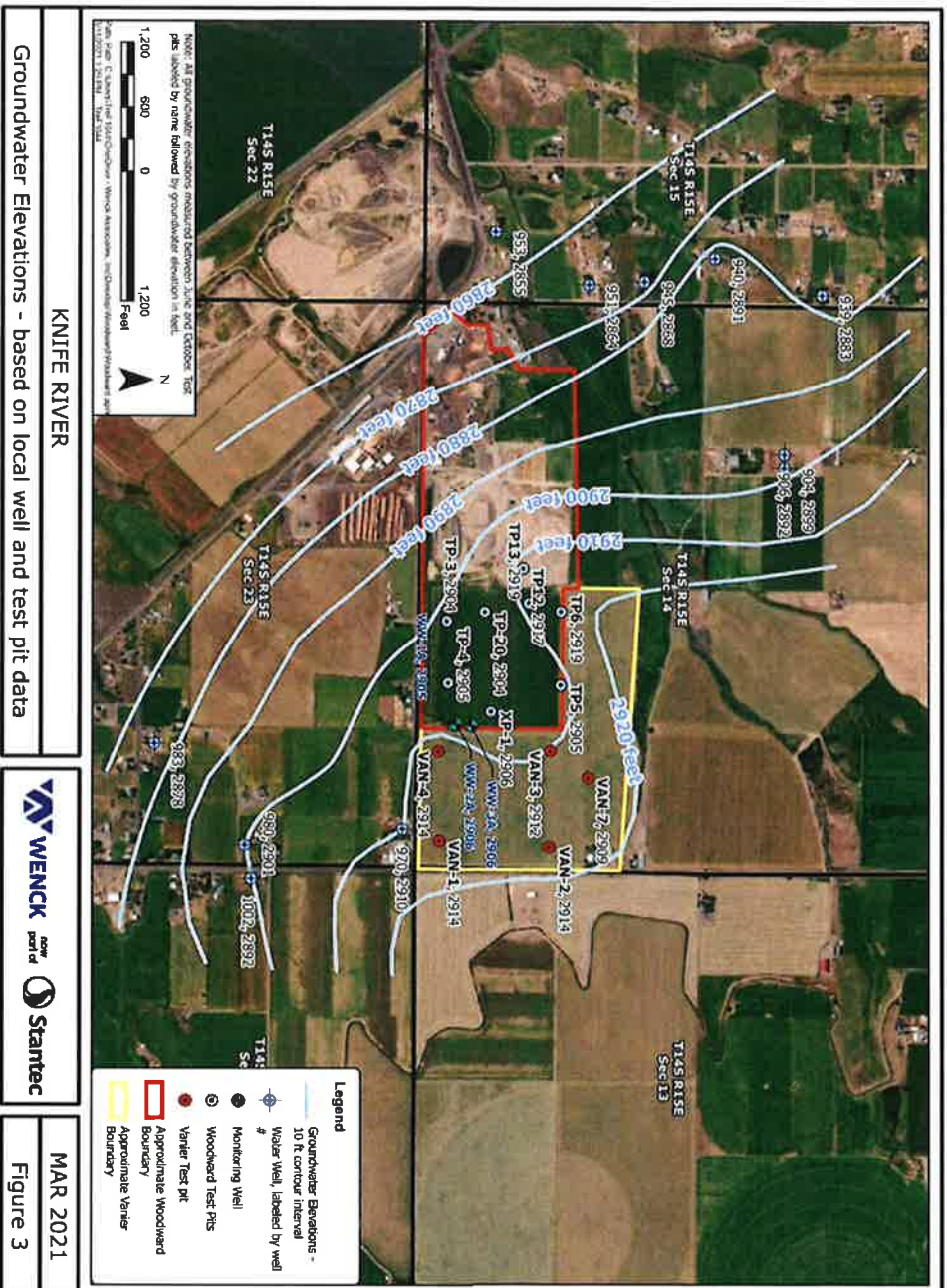
Signature: *Arnold Matt*
 License Number: 211
 Date: 3/12/2016

Witnessed Water Well Construction Certificate
 Signature: *Jack Adams*
 License Number: 1280
 Date: 3/12/2016

Local Water Wells



Groundwater Flow

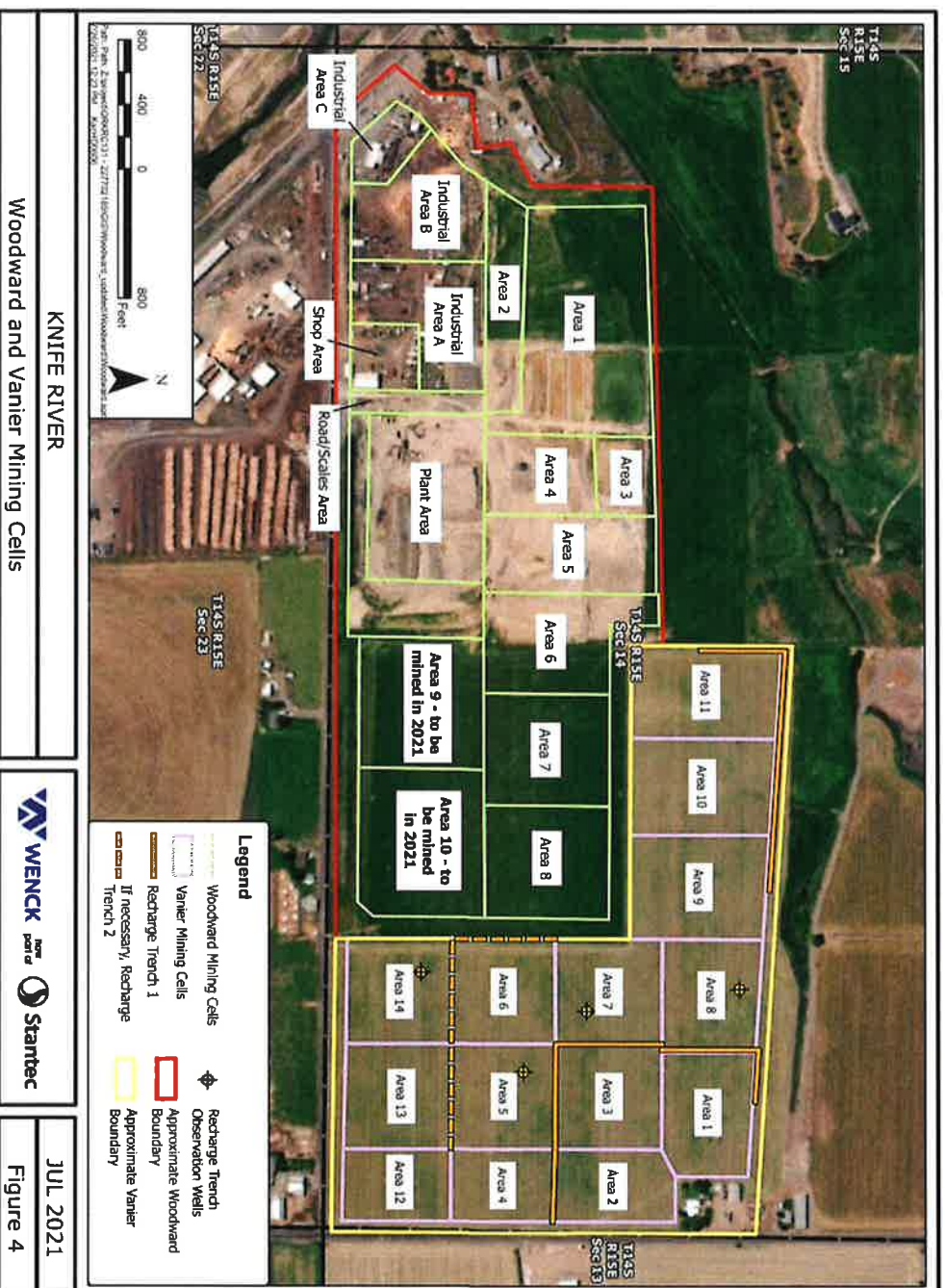


Groundwater Elevations - based on local well and test pit data

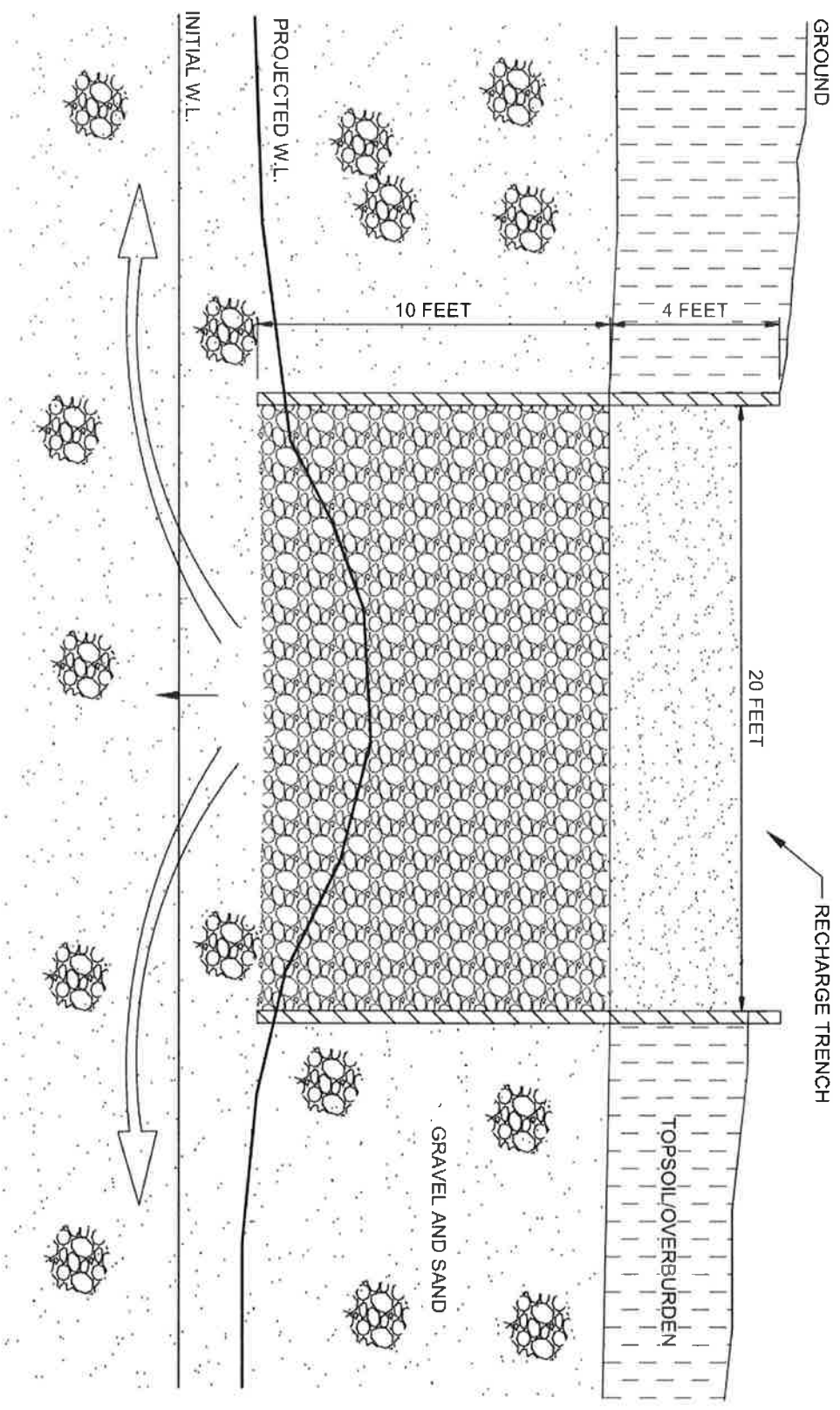


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Figure 3

Recharge Trenches and Monitoring Wells



Recharge Trench Approach



Findings and Recommendations

- Mining will remove water only from the uppermost aquifer and given our proposed mine plan, Knife River will be able to mitigate any operational impacts to groundwater and will not impact neighboring water rights.
- Aquifer testing of these wells indicated the shallow aquifer has a relatively high permeability. Transmissivity values range from 2,215 and 9,195 gpd/ft, hydraulic conductivity values varied between 218 and 903 gpd/ft², and the storage coefficient was estimated to be 0.285.
- Potential groundwater inflows to Vanier may range up to approximately 290 gpm on the eastern edge of the property and diminish to the west. Lesser flows may be encountered, and may range from 13 to 60 gpm.
- To minimize the potential impacts to local water resources and water rights, Knife River will establish recharge trenches and observation wells between the mine area and adjacent water rights. All water removed from the mine cell will be replaced into the recharge trench.
- Knife River will backfill mine cells immediately following mining. Overburden will be backfilled followed by separately stockpiled topsoil. Overburden can be placed directly on the mine floor with negligible impacts to the soil as suggested by its favorable agronomic characteristics.



Crook County
 300 NE 3rd St, Rm #12
 Prineville, OR 97754
 541-447-3211
 Fax: 541-416-2139

Building Permit
Commercial Structural
Permit Number: 217-21-001918-STR
 IVR Number: 217044063876

Web Address: co.crook.or.us
 Email Address: bid@co.crook.or.us

Permit Issued: July 28, 2021
Project: Crook County, Robins, Airport Hanger
Application Date: June 01, 2021

TYPE OF WORK

Structural Specialty Code Edition: 2019
Category of Construction: Accessory Structure
Submitted Job Value: \$160,000.00
Description of Work: Crook County, Robins, Hanger 3600 [/] will have a bathroom and electrical

JOB SITE INFORMATION

Worksite Address
 4215 SW AVIATION BLVD
 PRINEVILLE, OR 97754
Parcel
 1515000000300
Owner:
 CROOK COUNTY
Address:
 300 NE THIRD ST
 PRINEVILLE, OR 97754

LICENSED PROFESSIONAL INFORMATION

Business Name
 RAY HAYES CONSTRUCTION INC -
License
 CCB
License Number
 222946
Phone
 541-420-4751
SCHEDULING INSPECTIONS

Various inspections are minimally required on each project and often dependent on the scope of work. Contact the issuing jurisdiction indicated on the permit to determine required inspections for this project. Schedule or track inspections at www.buildingpermits.oregon.gov. Call or text the word "schedule" to 1-888-299-2821 use IVR number: 217044063876. Schedule using the Oregon ePermitting Inspection App, search "epermitting" in the app store.

Permits expire if work is not started within 180 Days of issuance or if work is suspended for 180 Days or longer depending on the issuing agency's policy.

All provisions of laws and ordinances governing this type of work will be compiled with whether specified herein or not. Granting of a permit does not presume to give authority to violate or cancel the provisions of any other state or local law regulating construction or the performance of construction.
ATTENTION: Oregon law requires you to follow rules adopted by the Oregon Utility Notification Center. Those rules are set forth in OAR 952-001-0010 through OAR 952-001-0090. You may obtain copies of the rules by calling the Center at (503) 232-1987.
 All persons or entities performing work under this permit are required to be licensed unless exempted by ORS 701.010 (Structural/Mechanical), ORS 479.540 (Electrical), and ORS 693.010-020 (Plumbing).

PERMIT FEES

Fee Description	Quantity	Fee Amount
New Address Fee	1	\$100.00
Road sign reserve fund	1	\$10.00
Code compliance fee - Commercial building	160000	\$240.00
Structural building permit fee		\$839.27
Structural plan review fee		\$629.45
State of Oregon Surcharge - Bldg (12% of applicable fees)		\$100.71
Total Fees:		\$1,919.43

Note: This may not include all the fees required for this project.