Tillamook County

DEPARTMENT OF COMMUNITY DEVELOPMENT
BUILDING, PLANNING & ON-SITE SANITATION SECTIONS

1510 – B Third Street
Tillamook, Oregon 97141
www.tillamook.or.us
Building (503) 842-3407
Planning (503) 842-3408
Sanitation (503) 842-3409
FAX (503) 842-1819
Toll Free 1(800) 488-8280

Land of Cheese, Trees and Ocean Breeze

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ORS 215 REQUIRES THAT IF YOU RECEIVE THIS NOTICE,
IT MUST BE PROMPTLY FORWARDED TO THE PURCHASER

NOTICE OF PUBLIC HEARING
TILLAMOOK COUNTY PLANNING COMMISSION

Date of Notice: May 11, 2023

A public hearing will be held by the Tillamook County Planning Commission at 6:30p.m. on Thursday, June 8, 2023, in the Port of Tillamook Bay Conference Center, 4000 Blimp Boulevard, Tillamook, OR 97141 to consider the following:

#851-23-000123-PLNG: Request for conditional use approval for the repair and capacity expansion of an existing facility (Pacific City Transfer Station) for solid waste disposal and recycling, and for the siting of a storage structure for emergency supplies. Located at 38255 Brooten Road, a County road, the subject property is east of the Pacific City/Woods Unincorporated Community, zoned Small Farm and Woodlot 20-Acre (SFW-20) and is designated as Tax Lot 2400 of Section 32A, Township 4 South, Range 10 West of the Willamette Meridian, Tillamook County, Oregon. Applicant is David McCall, Tillamook County Solid Waste Program Manager. Property Owner is Tillamook County.

Notice of public hearing, a map of the request area, applicable specific request review criteria and a general explanation of the requirements for submission of testimony and the procedures for conduct of hearing has been mailed to all property owners within 750-feet of the exterior boundary of the subject property for which application has been made at least 28 days prior to the date of the hearing.

Applicable criteria and standards are contained within the Tillamook County Land Use Ordinance Section 6.040: Review Criteria, the Tillamook County Comprehensive Plan, TCLUO Section 3.004: Forest (F) Zone, the criteria outlined in Section 3.004(8) and the relevant standards of TCLUO Section 3.006: Small Farm and Woodlot 20-Acre (SFW-20) Zone. Only comments relevant to the approval criteria are considered relevant evidence.

The hearing will take place at the Port of Tillamook Bay Conference Center with an option for virtual participation. For instructions on how to provide oral testimony at the June 8, 2023 hearing and hearing protocol, please visit the Tillamook County Community Development homepage at https://www.co.tillamook.or.us/commdev or email Lynn Tone, Office Specialist 2, at ltone@co.tillamook.or.us. The virtual meeting link can be found on the Community Development Department homepage as well as a dial in number for those who wish to participate via teleconference.

Written testimony may be submitted to the Tillamook County Department of Community Development, 1510-B Third Street, Tillamook, Oregon, 97141 prior to 4:00 p.m. on the date of the June 8, 2023, Planning Commission hearing. Testimony submitted by 4:00pm on Tuesday, May 30, 2023, will be included in the packet mailed to the Planning Commission the week prior to the June 8, 2023, hearing. Failure of an issue to be raised in a hearing, in person or by letter, or failure to provide sufficient specificity to afford the decision-maker an opportunity to respond to the issue precludes

appeal to the Land Use Board of Appeals on that issue. Please contact Lynn Tone, Office Specialist 2, Tillamook County Department of Community Development, ltone@co.tillamook.or.us as soon as possible if you wish to have your comments included in the staff report that will be presented to the Planning Commission.

Documents and submitted application are also available on the Tillamook County Department of Community Development website (https://www.co.tillamook.or.us/commdev/landuseapps) or at the Department of Community Development office located at 1510-B Third Street, Tillamook, Oregon 97141. A copy of the application and related materials may be purchased from the Department of Community Development at a cost of 25 cents per page. The staff report will be available for public inspection seven days prior to the hearing. Please contact Lynn Tone for additional information ltone@co.tillamook.or.us or call 1-800-488-8280 x3423.

In addition to the specific applicable review criteria, the Tillamook County Land Use Ordinance, Tillamook County Comprehensive Plan and Statewide Planning Goals which may contain additional regulations, policies, zones and standards that may apply to the request are also available for review at the Department of Community Development.

The Port of Tillamook Bay Conference Center is accessible to persons with disabilities. If special accommodations are needed for persons with hearing, visual, or manual impairments who wish to participate in the hearings, call 1-800-488-8280 ext. 3423 or email ltone@co.tillamook.or.us at least 24 hours prior to the hearing so that the appropriate communications assistance can be arranged.

If you need additional information, please contact Lynn Tone, DCD Office Specialist, at 1-800-488-8280 ext. 3423 or email ltone@co.tillamook.or.us.

Tillamook County Department of Community Development

Sarah Absher, CFM, Director

Enc. Criteria
Maps

SECTION 6.040: REVIEW CRITERIA:

Any CONDITIONAL USE authorized according to this Article shall be subject to the following criteria, where applicable:

(1) The use is listed as a CONDITIONAL USE in the underlying zone, or in an applicable overlying zone.

(2) The use is consistent with the applicable goals and policies of the Comprehensive Plan.

(3) The parcel is suitable for the proposed use considering its size, shape, location, topography, existence of improvements and natural features.

(4) The proposed use will not alter the character of the surrounding area in a manner which substantially limits, impairs or prevents the use of surrounding properties for the permitted uses listed in the underlying zone.

(5) The proposed use will not have detrimental effect on existing solar energy systems, wind energy conversion systems or wind mills.

(6) The proposed use is timely, considering the adequacy of public facilities and services existing or planned for the area affected by the use.

SECTION 3.004 FOREST ZONE (F)

(8) CONDITIONAL USE REVIEW CRITERIA: A use authorized as a conditional use under this zone may be allowed provided the following requirements or their equivalent are met. These requirements are designed to make the use compatible with forest operations and agriculture and to conserve values found on forest lands. Conditional uses are also subject to Article 6, Section 040.

1. The proposed use will not force a significant change in, or significantly increase the cost of, accepted farming or forest practices on agriculture or forest lands.

2. The proposed use will not significantly increase fire hazard or significantly increase fire suppression costs or significantly increase risks to fire suppression personnel.

3. A written statement recorded with the deed or written contract with the county or its equivalent is obtained from the land owner that recognizes the rights of adjacent and nearby land owners to conduct forest operations consistent with the Forest Practices Act and Rules for uses authorized in OAR 660-006-0025(5)(c).

Citizen Tips for Providing Testimony at a Planning Commission/Board of County Commissioner Hearing

Goal 1 of Oregon's Statewide Planning Goals recognizes the importance of citizen involvement "in all phases of the planning process." One of the principal ways for citizens to be involved is by testifying at local land use hearings. These citizen tips are designed to help citizens prepare and deliver testimony during Tillamook County land use hearing processes.

Know the Process

The Chair of the decision-making body will always read aloud the order of presentation and the process. Presentation is generally as follows:

- Planning Staff Presentation (generally 15 minutes)
    - Questions to Staff by the Decision-Maker
- Applicant's Presentation (generally 15 minutes)
    - Questions to Applicant by the Decision-Maker
- Public Comment Period
    - Generally limited to 3 minutes per person.
- Applicant Rebuttal & Final Statements
- Staff Final Statements
- Public Hearing Closed for Decision-Maker Deliberation
    - No further public testimony accepted.
- Decision-Maker may ask questions of staff.
- Decision-Makers vote on issue.
- Notice of Decision mailed to all parties.

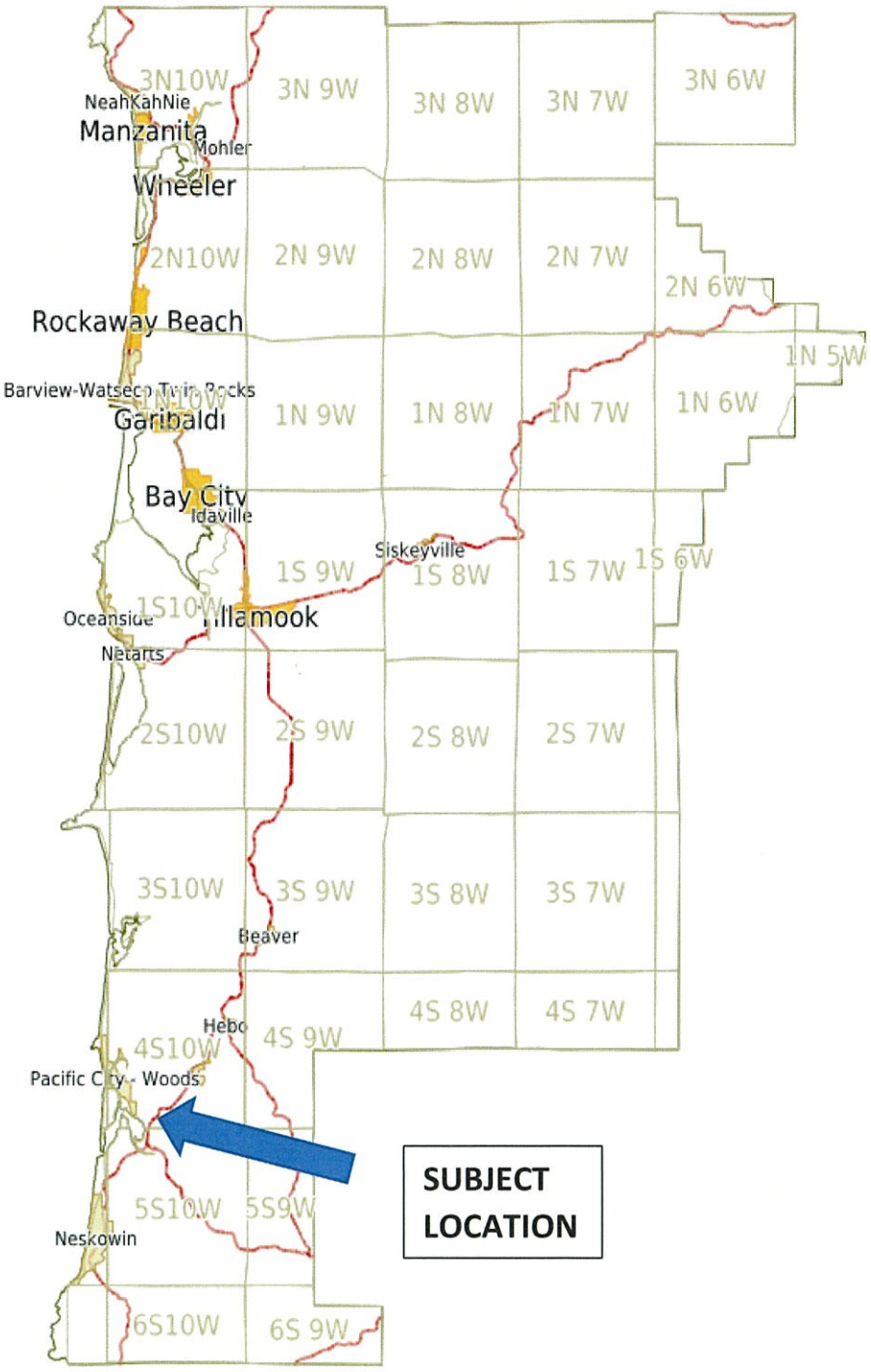
Understand the Issue

- Become familiar with the land use record (application, staff report and hearing materials) found on the Land Use Applications page under the Planning tab of the Community Development website.
- Become familiar with the relevant criteria (included in notice of public hearing).
- Prepare an outline of your testimony to use while testifying and focus testimony to the relevant criteria
- Decisions to approve or deny a request are based on the relevant criteria.
- Know when, where and who you are speaking to.
    - Tillamook County Planning Commission or Board of County Commissioners- depending on nature of request, application review process, and current phase of hearing process.
- Public testimony is generally limited to 3 minutes per person.
- Be sure to state your name and address for the record at the beginning of your testimony to ensure you receive notice of decision after hearing process has ended.

Check Department Website for Updates

- Visit the Land Use Applications page.
- Follow posted calendar dates for written testimony submittal opportunities if the hearing is ongoing.
- Review additional written testimony received during the open comment periods.
- Review hearing packets and agendas if hearing process is ongoing.
- Review Notice of Decision and remain informed on appeal dates.

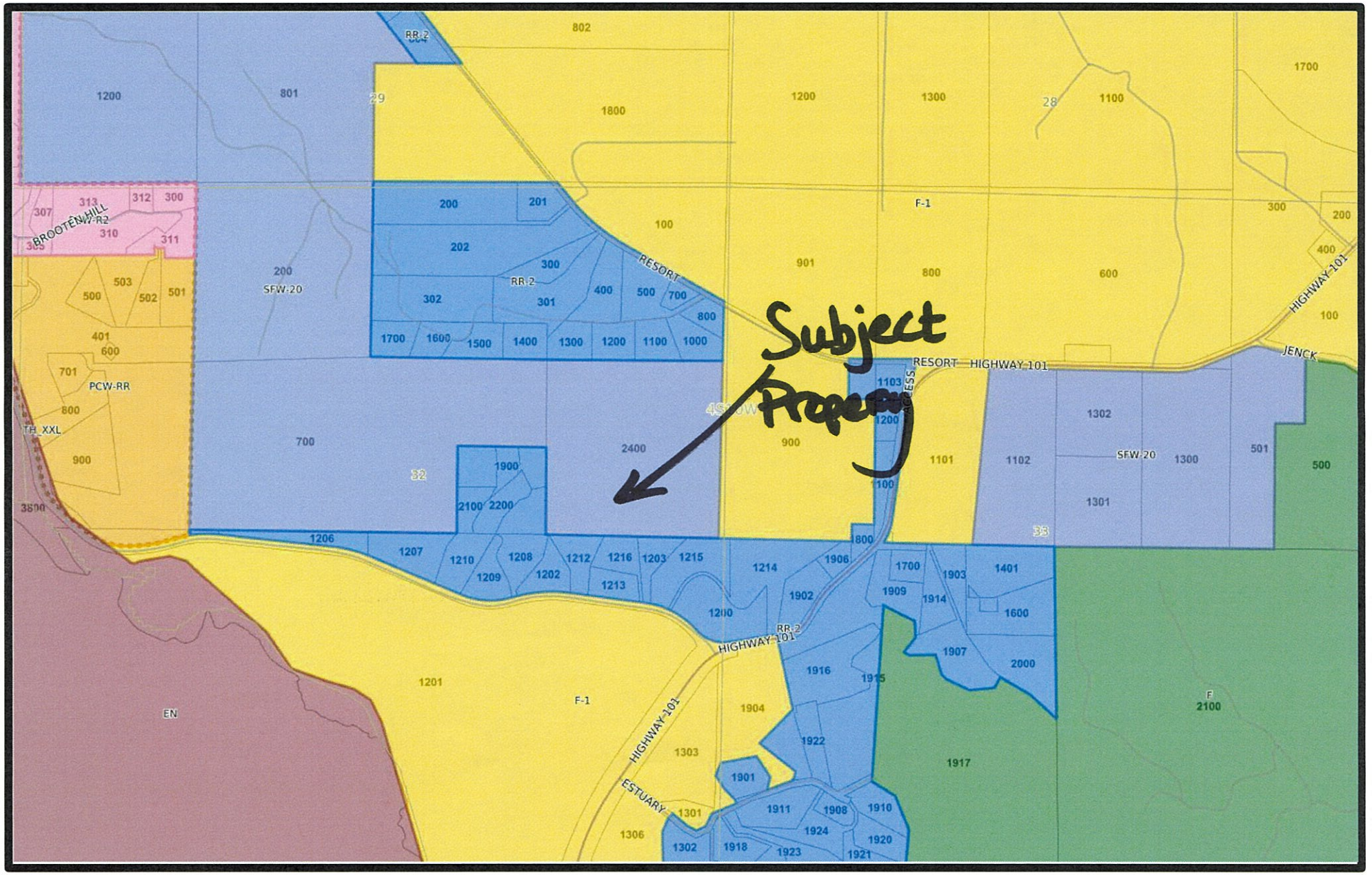
VICINITY MAP



#851-23-000123-PLNG

PACIFIC CITY TRANSFER STATION

Map



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Tillamook County Department of Community Development
1510-B Third Street. Tillamook, OR 97141 | *Tel: 503-842-3408* *Fax: 503-842-1819*
www.co.tillamook.or.us

PLANNING APPLICATION

OFFICE USE ONLY
Date Stamp
RECEIVED APR 20 2023
☐Approved ☐Denied
Received by:
Receipt #:
Fees: 1900 IFT
Permit No: 851-23-000123PLNG

Applicant ☐ *(Check Box if Same as Property Owner)*

Name: David McCall Phone: 503.815.3975
Address: 503 Marolf Loop Rd
City: Tillamook State: OR Zip: 97141
Email: dmccall@co.tillamook.or.us

Property Owner

Name: Tillamook County Phone: 503.815.3975
Address: 201 Laurel Ave
City: Tillamook State: OR Zip: 97141
Email: dmccall@co.tillamook.or.us

Request: Repair and capacity expansion of existing facility for solid waste disposal and recycling

Type II	Type III	Type IV
☐ Farm/Forest Review	☐ Appeal of Director's Decision	☐ Appeal of Planning Commission Decision
☐ Conditional Use Review	☐ Extension of Time	☐ Ordinance Amendment
☐ Variance	☐ Detailed Hazard Report	☐ Large-Scale Zoning Map Amendment
☐ Exception to Resource or Riparian Setback	☒ Conditional Use (As deemed by Director)	☐ Plan and/or Code Text Amendment
☐ Nonconforming Review (Major or Minor)	☐ Ordinance Amendment	
☐ Development Permit Review for Estuary Development	☐ Map Amendment	
☐ Non-farm dwelling in Farm Zone	☐ Goal Exception	
☐ Foredune Grading Permit Review		
☐ Neskowin Coastal Hazards Area		

Location:

Site Address: 38255 Brooten Road, Pacific City

Map Number:	4S	10W	32A	2400
	Township	Range	Section	Tax Lot(s)

Clerk's Instrument #: _____

Authorization

This permit application does not assure permit approval. The applicant and/or property owner shall be responsible for obtaining any other necessary federal, state, and local permits. The applicant verifies that the information submitted is complete, accurate, and consistent with other information submitted with this application.

Rachel Hagey — 4/20/23
Property Owner Signature (Required) — Date

David McCall — 4/19/23
Applicant Signature — Date

Tillamook County Public Works
503 Marolf Loop Road, Tillamook, OR 97141
County Road Phone: 503-842-3419
Solid Waste Phone: 503-815-3975
Email: pubwks@co.tillamook.or.us
TTY Oregon Relay Service

Land of Trees, Cheese, and Ocean Breeze

March 29th, 2023

David McCall
Solid Waste Department
503 Marolf Loop Road
Tillamook, OR 97141

RE: Pacific City Transfer Station Improvements
Brooten Road; Tillamook County Road #887
T04S R10W Sec. 32A, Tax Lot #2400

Dear David:

The design submitted for improvements to the Pacific City Transfer Station has been reviewed by Tillamook County Public Works engineering staff. The proposed improvements appear to represent no significant change to the volume or character of traffic presently accessing the site from Brooten Road. As such, Tillamook County Public Works has no objection to this project moving forward.

Sincerely,

Jasper J. Lind
Engineering Technician

Tillamook County

Randy B. Thorpe, Director
Emergency Management
201 Laurel Avenue
Tillamook, Oregon 97141
Phone (503) 842-3412 x3309
Mobile (503) 812-8523

Land of Cheese, Trees and Ocean Breeze

March 28, 2023

To Whom it may concern,

I am writing this letter of support for the proposed upgrades to the Pacific City Transfer Station (38255 Brooten Road). By including a sitting for a container that will housing the need emergency supply in cast of a disaster will greatly improve the Counties ability to respond in times of need.

I have in conjunction with the South Tillamook Emergency Volunteer Corps been looking for a suitable site to place a storage container. David McCall, Solid Waste Program Manager said that the County would be upgrading the transfer station in Pacific City and they would be able to include a sitting area for an Emergency Preparedness Container. This is a great option to house the necessary supplies. It will provide a secure site in the south county area.

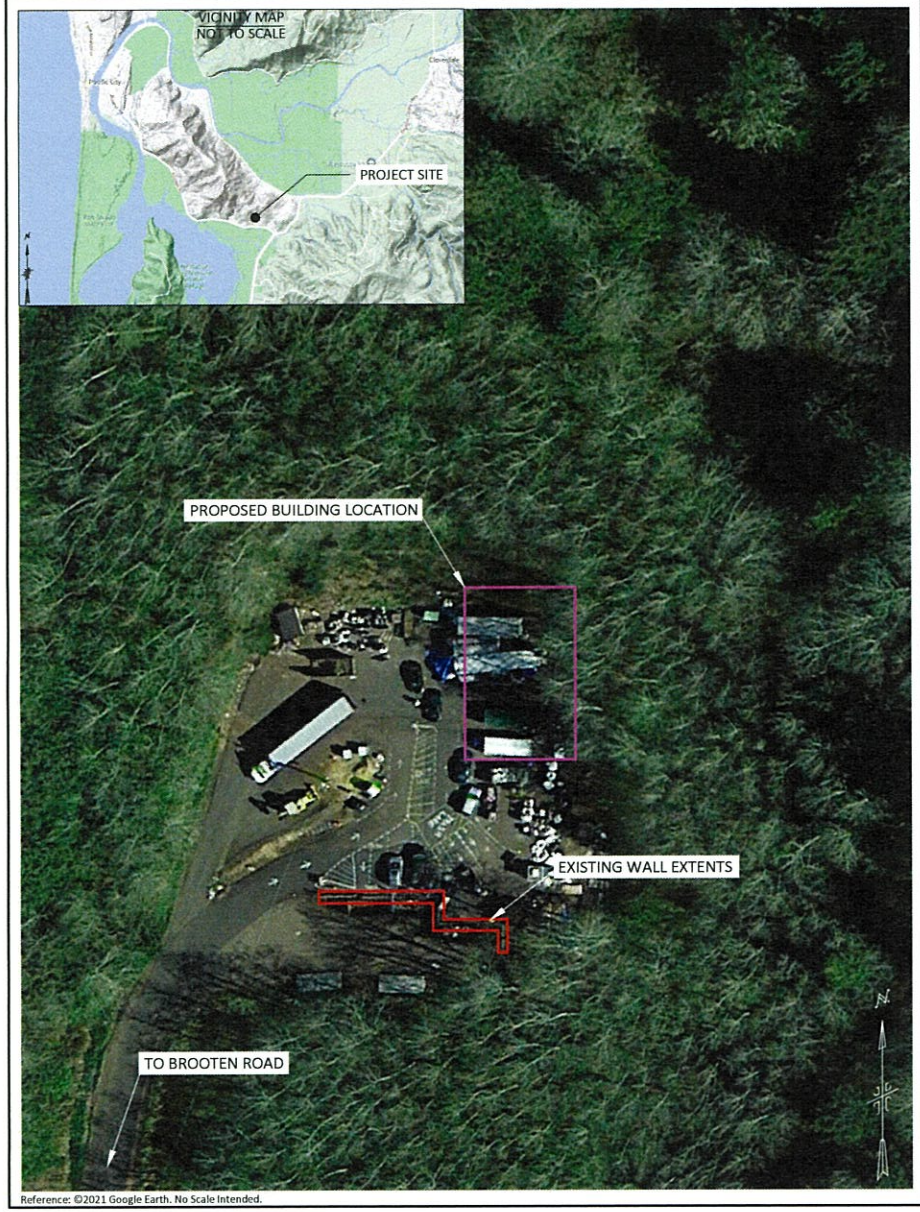
I am in full support of this opportunity to increase the Counties response efforts in south county area.

Best regards,

Randy B. Thorpe

Randy B. Thorpe, Director

PACIFIC CITY TRANSFER STATION



Reference: ©2021 Google Earth. No Scale Intended.

1 PROJECT UNDERSTANDING

Existing Site Conditions and Proposed Construction

The Pacific City Transfer Station is located just east of Pacific City, Oregon and is accessed from a private drive extending from Brooten Road. The transfer station comprises a recycling drop off area, recycling storage containers, and an area for 3 garbage transfer bins behind a timber pile retaining wall. A small attendant building also exists with overhead power and an underground telephone line. The majority of the existing ground surface is asphalt paved. Pacific City personnel reports a historic landslide may have impacted the immediate area, but has since been repaired. GPI's recent exploration did not suggest evidence of ongoing landslide activity in the locations or depths explored.

Tillamook County (County) is constructing a new, pre-engineered metal building to help facilitate their recycling processes at the existing transfer station. The overall structure will be approximately 4,000 square feet (sf) with concrete slabs-on-grade to support relatively high equipment and storage slab loads. Helical piers bearing on mudstone will provide vertical support to foundations to penetrate existing fill and reduce over-excavation. Structural loads range from 25 to 50 kips per columns with less than 2 kips per linear foot along perimeter grade beams. Below grade spaces and loading docks are not currently planned. However, the existing timber pile wall on the south end of the site is showing signs of distress and a new, steel soldier pile wall will be constructed immediately north of the existing wall to accommodate several new garbage transfer containers and improve access. The 2 easternmost containers will also receive a canopy cover. Additionally, a cast-in-place concrete retaining wall will be constructed in the northeast corner of the building to accommodate a level pad for the building.

The majority of grades will remain essentially unchanged, except in the northeast corner of the site where 5- to 10-foot cuts are planned to level the site for building construction. Site stormwater will be collected in roof gutters and conveyed to a stormwater infiltration swale in the southeast corner of the site. The majority of the existing asphalt will be removed and replaced for parking areas, approach driveways, and concrete aprons for building access. Utilities will extend from existing connection points on site.

Subsurface Conditions

Exploration was accomplished via 4 soil borings extending approximately 30.9 to 36.5 feet and 1 test pit extending 12.0 feet beneath the existing ground surface. Borings were advanced with a B-58, truck-mounted drill rig equipped with mud rotary drilling and standard penetration test (SPT) sampling equipment and the test pit was advanced with a John Deere 310 backhoe. Exploration locations are shown on sheet GT6. GPI encountered asphalt pavement at the ground surface in each boring ranging from 0.23- to 0.25-feet-thick. Pavement was underlain by base course described as poorly graded gravel that was brown, medium dense, and moist extending 0.75 to 0.90 feet below the ground surface. Topsoil containing vegetation and organics was encountered at the ground surface in test pit TP-21203A-1 comprising silt that was dark brown, soft, and moist extending to 1 foot beneath the ground surface. Outside of pavement, base course sections, and topsoil, GPI encountered the following primary subsurface units:

- Undocumented Fill: Silty Fine Sand (SM) - Tan-orange with white, gray, and brown mottling, firm to very stiff, and moist to wet. Undocumented fill was encountered in each boring beneath base course extending 7.0 to 17.5 feet below the ground surface. Undocumented fill likely originated from previous landfill activities.
- Uncontrolled Fill: Intermittent clay and sand with debris - Orange-brown, very loose, and moist. Uncontrolled fill was encountered in test pit TP-21203A-1 containing significant debris including metal, glass, and plastic. Uncontrolled fill extended to the termination depth at 12.0 feet below the ground surface where practical refusal occurred due to backhoe limitations.
- Alluvium: Sandy Silt (ML) - Tan-orange with white, gray, and brown mottling, stiff to very stiff, and moist to wet. Alluvial sandy silt was encountered in each boring beneath uncontrolled fill extending 18.5 to 35.5 feet below the ground surface.
- Mudstone: Clay (CL) - Dark gray with trace orange mottling, medium dense to very dense, and moist. Clay mudstone was encountered in each boring beneath alluvial sand extending to the boring termination depths.

Groundwater was not encountered in the exploration locations and is anticipated around 60 to 70 feet below the ground surface, consistent with sea levels. However, groundwater can be impacted by changes in precipitation, infiltration, irrigation, and developments to the project site.

2 REFERENCES

The geotechnical evaluation herein is based on the authorized geotechnical scope dated November 15, 2021, and the latest version of the ASTM International (ASTM) and Standard Methods (SM) standards, Oregon Department of Transportation (ODOT), and other reference standards listed below:

Field Exploration

- ASTM D 420 - Guide to site characterization for engineering, design, and construction
- ASTM D 2487 - Test method for classification of soils for engineering purposes (USCS)
- ASTM D 2488 - Practice for description & identification of soil (Visual-manual procedure)

Laboratory Testing

- ASTM D2216 - Determination of Moisture Content of Soil and Rock by Mass
- ASTM D1140 - Determining Material Finer than No. 200 Sieve by Washing
- ASTM D2937 - Determining In-Place Density of Soil by the Drive Cylinder Method
- SM 4500-H$^+$ B - Determining pH of soils
- SM 2510 B - Determining resistivity of soils
- SM-4500 SO_4 E - Determining total sulfates in soils

3 GEOTECHNICAL DESIGN BASIS

General

- GPI's field exploration, reference sheets GT6 and GT7
  - o Borings advanced on December 21 and 22, 2021.
- GPI's laboratory testing, reference sheet GT7
- International Building Code, 2018
  - o IBC Chapters 16 and 18
- Frost protection embedment depth: 1-foot (Tillamook County)
- Seismic Site Class D (Reference IBC Section 1613 and ASCE 7).

Construction Material Standards

- Oregon Standard Specifications for Construction 2021 (ODOT Standards)
- 1993 AASHTO Guide for Design of Pavement Structures (AASHTO 1993)

ISSUED FOR
- ☐ DESIGN USE
- ■ PRELIMINARY REVIEW
- ■ APPROVAL
- ■ REFERENCE
- ☐ CONSTRUCTION
- ☐ DESTROY PREVIOUS PRINTS

REV	DATE	DESCRIPTION	CHECK: AJA
1	4/15/22	30% DRAFT	FILE: MO21203A
2	1/17/23	90% DRAFT	PROJECT: PACIFIC CITY TRANSFER STATION GEOTECHNICAL ENGINEERING EVALUATION 34255 BROOTEN ROAD PACIFIC CITY, OREGON

DRAWN: JBM
DESIGN: TJW
PREPARED FOR:
GREAT WEST ENGINEERING
3050 N LAKE HARBOR LN
BOISE, ID 83703
ATTN:
MR. TRAVIS PYLE, P.E. &
MS. MICHELLE LANGDON

GreatWest Engineering

GeoProfessional Innovation
GPI 6 O'Donnell Road Pullman, WA 99163 509.339.2000

(4)

EARTHWORK

Site Preparation

1. Topsoil containing vegetation and organics was encountered in test pit TP-21203A-1 and is evident at the northeast end of the site. Remove soil containing vegetation and organics from proposed improvement areas and stockpile it for use as landscaping or remove it from the site.
3. Isolated tree roots and associated landfill material deposits are expected on the north and east sides of the proposed building.
4. Isolated thicker topsoil layers are possible and must be removed during site stripping operations. Specifically, surrounding mature trees and vegetation throughout the planned improvement areas.
5. Asphalt pavement was encountered at the ground surface in the majority of the planned improvement area.
6. Extend site stripping and saw cut asphalt laterally 5-feet outside improvement areas.
7. Retain existing base course from stripping and excavation for potential reuse throughout construction.

Uncontrolled/Undocumented Fill

1. Uncontrolled fill containing significant glass, brick, plastic, and metal was encountered in TP-21203A-1 extending to 12.0 feet below the existing ground surface. Uncontrolled fill may extend to greater depths within the improvement areas.
2. Undocumented fill was encountered in each boring extending 7.0 to 17.5 feet below the ground surface.
3. The fill's performance cannot be predicted when subjected to new loading or changing drainage patterns. This uncertainty presents risk to the planned construction including, but not limited to, settlement beneath the foundations and pavement support loss due to consolidation of loose or variable fill beneath pavement. Therefore, helical piers are selected to penetrate the fill on site and bear on the dense mudstone at depth.
4. The County may elect to leave fill in place beneath interior slabs-on-grade and exterior pavements/hardscapes.
5. Where fill is left in place beneath slabs and hardscapes, remediate it to structural fill requirements per the *Subgrading* section herein.

Subgrading

1. Subgrades beneath helical pier caps and grade beams shall be cut clean with smooth blade equipment.
2. A thin layer of *Crushed Surfacing* (CS-1) may be used as a leveling course beneath helical pier cap foundations and shall be compacted to a dense and interlocking condition to create a level bearing surface.
3. Subgrades beneath slabs or pavement areas may comprise variable existing fill.
4. Prepare subgrades for slabs and pavement by scarifying the exposed soil at least 1-foot, moisture conditioning, and compacting to 95% of the soil's maximum dry density per ASTM D1557.
5. Where fill is left in place beneath slabs and hardscapes, over-excavate the subgrade at least 1 foot then line the excavation with geotextile fabric and geogrid reinforcement. Geogrid shall be placed atop the geotexitle fabric. Replace the over-excavation with *Granular Structural Fill* per the requirements outlined in Section 5, *Structural Fill*.
6. Deeper over-excavations may be required if significant deleterious debris is encountered and shall be determined during construction by the County.
7. Subgrades must be reviewed by the project geotechnical engineer retained for construction (GER) to confirm soil suitability prior to foundation, slab, or hardscape construction.

Over-Excavations

1. If exposed and prepared subgrades are disturbed, saturated, begin to pump or rut, and/or cannot achieve compaction, over-excavate to expose competent material, moisture condition, and recompact at the direction of the GER and the County. To reduce excessive over-excvation, line the subgrade with geotextile fabric and geogrid reinforcement then replace the excavation *Granular Structural Fill* (SF-2) per *Structural Fill* requirements herein.
2. Determine soft soil over-excavation criteria during construction with the GER, the earthwork contractor, and the County. Extend over-excavations at least 2-feet below the subgrade and laterally 1/2 the depth.
3. Plan a contingency of 180 cubic yards for debris, soft, wet, or otherwise unsuitable soil removal.
4. Determine geosynthetic applicability during construction with the GER and the County.

Excavation Characteristics

1. The on-site soil is excavatable using conventional excavation techniques and equipment.
2. Bedrock excavation is not anticipated to achieve the planned subgrades based on exploration to date.
3. Temporarily excavate, slope, shore or brace excavations in accordance with the Oregon Occupational Safety and Health Division (Oregon OSHA).
4. Site soil typically classifies as Type C soil referencing Oregon OSHA, and must be temporarily sloped back at least 1.5H:1V (horizontal:vertical) for certain configurations.
5. Construction vibrations, seepage, or surface loading can cause excavations to slough or cave and shall be avoided.
6. The contractor is solely responsible for site safety, excavation configurations, establishing shoring requirements, and maintaining Oregon OSHA-approved personnel for excavation monitoring.
7. Plan excavations carefully, allowing water collection points and utilizing conventional sumps and pumps to remove nuisance water from runoff, seeps, springs or precipitation.
8. Coordinate construction activities and excavation backfilling as rapidly as possible following excavation to reduce the potential for subgrades to degrade under construction traffic.
9. Maintain dewatering systems to facilitate good drainage during construction and reduced over-excavation.

Wet-Cold Weather/Wet Soil Construction

1. This project may not occur exclusively during dry weather conditions.
2. The contractor shall prepare subgrades and stage earthwork noting wet weather and wet soil will exist at certain times of the year. Earthwork may require temporary additional grading and over-excavation to accomplish work according to the geotechnical and contract documents during wet-cold weather/wet soil conditions.
3. The site soil is susceptible to pumping or rutting from heavy vehicle and equipment loads when moist conditions persist.
4. Accomplish work at or near final subgrade using equipment that imparts low bearing pressures, track-mounted, drum and low tire pressure equipment. Using high bearing pressure equipment such as dump trucks can readily pump and rut the subgrade and their application must be carefully considered.
5. Coordinate construction activities and excavation backfilling as rapidly as possible following excavation to reduce the potential for subgrades to degrade under construction traffic.
6. Stormwater sheet flow towards or across the site can occur during storm events. Contractors shall expect these conditions and be prepared to install runoff management facilities and to replace wet or disturbed soil with SF-2 as specified in the *Structural Fill* section after moisture conditioning.

(5)

STRUCTURAL FILL

Material Requirements

1. Existing base course may be reused as *General Structural Fill* (SF-1) provided it meets the requirements outlined in Table 2.1.
2. Material requirements for structural fill reference the ODOT Standards and are described in Table G2.1 below.

Table G2.1: Structural Fill Specifications and Allowable Use

SF-1	General Structural Fill	- General site grading, utility trench backfill	- Soil classified as GW, GP, GM, SP, SM, or SW according to the USCS. - Less than 3 percent (by weight) of organics, vegetation, wood, metal, plastic, or other deleterious substances. - Particles no larger than 0.8-feet in diameter. - Coarse granular soil locally know as "shot rock" or "pit run" may also be used as SF-1 outside reinforced zones. - Existing base course may be used as SF-1 provided it meets the requirements herein.
SF-2	Granular Structural Fill	- SF-1 applications - Over-excavations	-Soil meeting requirements stated in Section 2630.10 – Dense Graded Aggregates of ODOT Standards. -2.5, 2.0 or 1.5-inch nominal aggregate sizes per Table 2630-1 in the ODOT Standards
CS-1	Crushed Surfacing	- Foundation leveling course - Pavement/slab support aggregate - SF-1 applications - SF-2 applications - DA-1 applications	-Soil meeting requirements stated in Section 2630.10 – Dense Graded Aggregates of ODOT Standards. -1.0 to 0.75-inch nominal aggregate sizes per Table 2630-1
DA-1	Drainage Aggregate	-Foundation/wall drains	-Soil meeting requirements stated in Section 430.11 - Granular Drain Backfill Material of ODOT Standards

Earthwork Testing

The firm retained to verify wall subgrade conditions, compaction, and asphalt testing shall become the GER. At a minimum, the following earthwork testing frequencies shall be implemented.

1. *Project Subgrades* - Must be reviewed by the GER retained for construction to document subgrade conditions consistent with exploration findings and design requirements.
4. *Helical Pier/Soldier Pile Installation* - Full time monitoring of pier/pile elements to verify design torques and bearing criteria are achieved.
5. *Foundation Bearing Surfaces* - Bearing surfaces in between piers cut neat with smooth blade equipment or document compaction of CS-1 leveling course.
6. *Slab, Pavement, and Hardscape Section Subgrades* - 1 compaction test every 1,000 sf, minimum 4 tests per testing event.
7. *Site Grading/Structural Fill Placement* - 1 compaction test every 2,000 sf, per fill lift, minimum 3 tests per testing event.
8. *Asphalt Pavement Construction* - 1 compaction test every 1,000 square feet, per paving lift. 1 laboratory test suite on a bulk sample of hot mix asphalt per each day's paving including oil content, gradation and maximum theoretical (Rice) specific gravity.

Required Compaction

Subgrades and all fill used on this project shall be compacted to the structural fill requirements presented in Table G2.2 below.

Table G2.2: Required Structural Fill Products for Designated Project Areas

Project Area	Required Structural Fill Product	Compaction Requirement[A]
Pier and grade beam subgrades	Existing soil	N/A[B]
All other subgrades	Existing soil	95%
Site grading	SF-1, CS-1	95%
Slab & pavement support aggregate, foundation leveling course	CS-1	95%
Landscape areas sloped flatter than 5H:1V	Landscape Fill, Topsoil	85%

Table G2.2 Notes:

A. Relative compaction requirement compared to the maximum dry density of the soil as estimated by Modified Proctor.

B. Soil cut neat with smooth blade equipment need not be compacted.

1. Structural fill shall not contain particles of frozen soil, mud, snow, or ice. Structural fill shall not be placed on frozen subgrades.
2. Structural fill products must be moisture conditioned to near optimum moisture content, placed and compacted in maximum 1-foot-thick, loose lifts, provided compaction equipment weighs a minimum of 5 tons.
3. If smaller or lighter compaction equipment is provided, reduce the lift thickness to meet the compaction requirements presented herein.

Coarse Fill

1. Any material with greater than 30 percent retained above the ¾-inch sieve is too coarse for Modified Proctor density testing. Coarse fill must be compacted using a "method specification" developed during construction that is based on the material characteristics and the contractor's means and methods.
2. Method specifications will be developed during construction specific to the materials, compaction equipment, and conditions encountered.
3. At a minimum, place all oversize material in maximum 1.5-foot-thick lifts and compact with 5 complete passes of a minimum 10-ton, vibratory or grid roller.
4. Vibratory rollers shall have a dynamic force of at least 30,000 pounds per impact per vibration and at least 1,000 vibrations per minute. Coarse fill must be compacted to a dense, interlocking, and unyielding surface. Vibratory rollers can negatively impact nearby structures and must be used with caution.

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REV	DATE	DESCRIPTION
1	4/15/22	30% DRAFT
2	1/17/23	90% DRAFT

CHECK: AJA
FILE: M0212303A
PROJECT:
PACIFIC CITY TRANSFER STATION GEOTECHNICAL ENGINEERING EVALUATION
38255 BROOTEN ROAD
PACIFIC CITY, OREGON

DRAWN: JBM
DESIGN: TJW
PREPARED FOR:
GREAT WEST ENGINEERING
3050 N LAKE HARBOR LN
BOISE, ID 83703
ATTN:
MR. TRAVIS PYLE, P.E. &
MS. MICHELLE LANGDON

GreatWest Engineering

GeoProfessional Innovation
GP 6 O'Donnell Road Pullman, WA 99163 509.339.2000

2

6 FOUNDATION DESIGN

Helical Pier Foundations

Helical pier foundation support systems shall be installed to refusal on mudstone for building foundation support. Design and construct helical pier foundations according to the following requirements. See Figure G3.1 for typical helical pier foundation schematic and *Helical Pier Specifications* on sheet GT5 for product details.

Perimeter footings and interior columns:

1. Minimum installation torque: 5,000 foot-pounds.
   - Ultimate vertical compression capacity: 50 kips
   - Safety factor on vertical pier capacity: 2.0
   - Allowable design compression load: 25 kips
2. Minimum helical pier size: A.B. Chance SS-5 with minimum 8-10-12-inch-diameter helix configuration, round corner square (RCS) lead section.
3. Minimum installation depth: Lead helix must extend to practical refusal on mudstone, estimated at 18 to 20 feet below the proposed building foundations.
4. Vertical load carrying capacity may be increased by 33 percent for short-term loads such as wind or seismic accelerations.
5. Pier spacing: Structural design shall specify pier spacing with respect to the estimated loading conditions and structural capacity of the planned grade beams and pier caps.
6. Pier spacing shall not be less than 3 times the maximum lead helix diameter (i.e., 24-inches for an 8-inch diameter helix).
7. Estimated settlement for vertical piers bearing on mudstone:
   - Less than 0.75 inches total and 0.5 inches differential settlement within a 30-foot span.
8. The GER retained for construction shall review the pier contractor's installation plan, equipment, any proposed alternate materials and the proposed configuration prior to initiating construction.
9. The contractor shall have equipment and materials available at the time of installation to achieve the design capacity of each pier through additional helices or extending additional depth.
10. A.B. Chance piers are manufactured by Hubbell, Inc. and should review the helical pier design and qualify the contractor prior to allowing construction.
11. Prior to bidding, contractors must accomplish a test pier installation at the site, to assess pier installation conditions and expected depths. During production installation, dial gauge or in-line digital hydraulic torque measurements shall be available on piers. Load testing shall be required for at least 1 pier. Pier construction specifications are provided in the *Helical Pier Specifications* on sheet GT5.

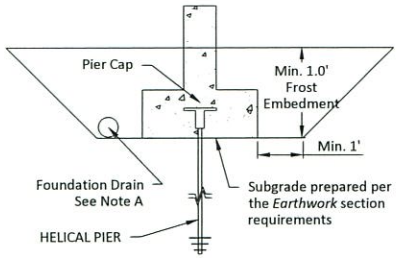

Figure G3.1: Helical Pier Foundation Schematic

Note:

A. Construct footing drains with 0.3-foot-diameter, perforated PVC or ADS pipe, wrapped in non-woven geotextile fabric. Adjust foundation drain pipe elevation to lowest possible elevation that maintains gravity drainage. Reference *Site Drainage - Foundation/Wall* section on sheet GT4 for additional drain requirements.

Grade Beam & Pier Cap Design Criteria

1. Perimeter grade beams and pier caps shall be structurally designed to span between helical piers as vertical point loads. Vertical piers must not be relied on for resisting lateral loads. Lateral loads may be resisted by passive resistance from soil placed against the grade beam or pier cap sides. Friction on pier caps or grade beams should not be relied on to resist lateral loads.
2. Exterior grade beam frost protection embedment depth: 1.0 foot below finished exterior surface.
3. Grade beam lateral load resistance:
   - Equivalent fluid weight: 550 pcf assumes granular backfill (SF-2/CS-1).
   - Requires 3/4-inch lateral movement to mobilize full resistance.
4. Maintain at least 0.3 feet of soil cover between top of grade beam or pier caps and the bottom of the concrete slab.
5. Due to their propensity for reflective cracking, incorporating grade beams into monolithic slab placements should be avoided.

Seismicity

1. Site geology correlates to a seismic site soil profile Class D.
2. Seismic design shall reference the parameters provided in Table G3.1. based on the soil conditions and project location.
3. The risk-targeted maximum considered earthquake (MCER) spectral response acceleration parameters provided have been modified from a Site Class B to a Site Class D.
4. The design spectral acceleration parameters provided in Table G3.1 are equal to 67 percent of the Risk Targeted MCER acceleration parameters.

Table G3.1: Seismic Response Criteria (ASCE 7-22)[1,2]

Period (seconds)	Standard Acceleration Coefficients for Site Class B (g)[3]	MCER Spectral Acceleration Parameters for Site Class D (g)	Design Spectral Acceleration Parameters for Site Class D (g)
0.0 (Peak)	-	PGA_M = 0.550	-
0.2 (Short)	S_S = 0.93	S_{MS} = 1.22	S_{DS} = 0.82
1.0	S_1 = 0.41	S_{M1} = 0.88	S_{D1} = 0.58

1. Values for location Latitude: 44.265016°N, Longitude: 123.170709°W.
2. Values for an ASCE Risk Category III.
3. Acceleration based on 2% probability of exceedance in 50 years.

Liquefaction Potential

1. Liquefaction is commonly a concern for loose, fine-grained sand that is saturated.
2. The subsurface geology exhibited relatively high blow counts, no consistent static groundwater level, and the soil overlying mudstone primarily comprises silty fine sand with a high fines content.
3. Therefore, liquefaction potential is low at the site.
4. Fill settlement due to seismic activity should be expected.

Soil Corrosivity

1. Corrosion of buried metallic structures is an electrochemical process and is dependant on many factors, including type of metal or alloy, galvanic effects, and soil properties such as resistivity, pH, and oxygen content. Average laboratory test results for these parameters are presented below:
   - pH = 4.8, Resistivity = 7,735 ohms-cm, sulfates = 22.7 ppm
2. Test results correspond to a high corrosion potential.
3. Maintain maximum clearances for concrete reinforcing.
4. Consider the application of galvanized materials or other corrosion protection parameters in steel applications.
5. Site soil is suitable for Types I/II cement.

7 LATERAL EARTH PRESSURES

Lateral Earth Pressures (LEP)

Design cast-in-place retaining walls to resist lateral earth pressures from the retained soil adjacent to the structure. Also, lateral surcharge loads from equipment or vehicles adjacent to the walls must be accounted for in structural wall design. Structural design shall apply the lateral earth pressures for wall design using the equivalent fluid unit weights (EFW) from Table G3.1.

Table G3.1: Equivalent Fluid Unit Weights (EFW)

On-site soil backfill (SF-1) ($\Phi = 28°$)	Static EFW	Dynamic EFW
Lateral Earth Pressure Case		
At-rest (no wall movement)	65 pcf	+25 pcf
Active (wall movement away from soil mass	45 pcf	+5 pcf
Passive (wall movement toward soil mass)[1]	325 pcf	-250 pcf
Granular backfill (SF-2, CS-1) ($\Phi = 40°$)	Static EFW	Dynamic EFW
Lateral Earth Pressure Case		
At-rest (no wall movement)	50 pcf	+28 pcf
Active (wall movement away from soil mass	30 pcf	+8 pcf
Passive (wall movement toward soil mass)[1]	550 pcf	-285 pcf

Table G3.1 Notes:

1. Passive case assumes 3/4 inch lateral movement to fully mobilize passive resistance.

1. The above equivalent fluid weights assume fully drained conditions, no hydrostatic forces, and horizontal backfill.
2. Retaining walls shall be constructed with adequate drainage systems specified by Great West to reduce the potential for ponding behind the wall and developing hydrostatic pressures. This can be accomplished by including weepholes or other drainage features. However, these features do not preclude the need for foundation drainage as shown in Figure G3.1.
3. For walls that cannot tolerate movement, structurally design walls utilizing at-rest equivalent earth pressures.
4. Lateral surcharge pressures due to traffic, equipment, storage loads, etc., are not included in the above lateral earth pressure recommendations. Use a lateral earth pressure coefficient of 0.5, acting over the entire wall height to estimate the lateral surcharge loads from traffic and other surcharges behind and above walls.
5. Figures G3.2 and G3.3 below illustrate the equivalent fluid pressure distributions for the anticipated wall backfill materials (EFW values are in Table G3.2) for static and dynamic conditions, respectively.

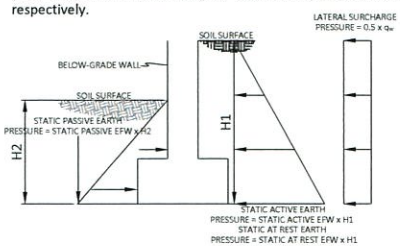

Figure G3.2: Static Lateral Earth Pressure Diagram

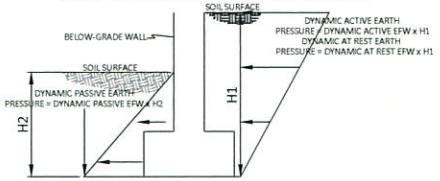

Figure G3.3: Dynamic Lateral Earth Pressure Diagram

8 SOLDIER PILE WALL CRITERIA

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REV	DATE	DESCRIPTION	CHECK: AJA
2	4/15/22	30% DRAFT	FILE: MO21203A
1	1/17/23	90% DRAFT	PROJECT: PACIFIC CITY TRANSFER STATION GEOTECHNICAL ENGINEERING EVALUATION 38255 BROOTEN ROAD PACIFIC CITY, OREGON

PREPARED FOR: GREAT WEST ENGINEERING 9050 W LAKE HARBOR LN BOISE, ID 83703
ATTN: MR. TRAVIS PYLE, P.E. & MS. MICHELLE LANGDON

DESIGN: TJW DRAWN: JBM

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(9) PAVEMENT

General

The following pavement design is provided referencing the American Association of State Highway and Transportation Officials (AASHTO) Guide for Design of Pavement Structures (1993). Traffic loads are estimated based on data provided by the County. Pavement design parameters are based on typical pavement design criteria in northwest Oregon, results from laboratory testing, and the subsurface conditions encountered from exploration. Tables G4.1 and G4.2 present the design parameters and references, as well as resulting section design for flexible asphalt pavement. Differential pavement performance shall be expected in areas where uncontrolled/undocumented fill is left in place.

Flexible Pavement

Table G4.1: Pavement Design Parameters

Design Parameter	Value Used	Reference
Reliability (R)	85%	Assumed
Standard Deviation (S)	0.45	AASHTO 1993
Initial Serviceability (P_o)	4.2	AASHTO 1993
Terminal Serviceability (P_t)	2.2	Typical northwest Oregon area value for local roadway
Traffic Loading	85,000 ESALS[1]	Estimated Traffic Loading: - 50 passenger vehicles (6,000 lb gross vehicle weight, GVW) per day - 2 Refuse trucks (64,000 lb GVW) per day - 2 Delivery/Service trucks (12,000 lb GVW) per week - 1 Semi-trailer truck (80,000 GVW) per week
Design Life	20 years	Typical northwest Oregon local roadway design life
Resilient Modulus (Mr)	5,000 psi[2]	Based on Mr correlations of site soil
Asphalt Layer Coefficient (a1)	0.42	Figure 2.5 AASHTO 1993
Top Course Layer Coefficient (a2)	0.12	Figure 2.6 AASHTO 1993
Top Course Drainage Coefficient (m2)	0.8	Table 2.4 AASHTO 1993 for "fair" drainage, > 25 percent saturation

Table G4.1 Notes:
1. Equivalent Single Axle Loads (ESALs)
2. Pounds per square inch (psi)

Table G4.2 provides pavement thickness design for constructing new flexible pavement sections and Figure G4.1 illustrates the typical pavement section. Figure G4.1 is not a structural detail.

Table G4.2: Asphalt Pavement Section Thickness

Pavement Section Material	Section Thickness (feet)	Material Specifications
Asphalt Pavement	0.38[1]	Hot-mix asphalt (HMA) conforming to Section 00744, latest ODOT Standards edition
CS-1	0.83	Meeting CS-1 requirements in Table G3.1 on sheet GT3
Non-woven geotextile fabric	Required	Meeting requirements in Table 02320-4, latest ODOT Standards

1. Requires 2 separate lifts of pavement.

Figure G4.1: Asphalt Pavement Section Thickness

Pavement Drainage and Maintenance

Accomplish crack and surface maintenance on all pavement surfaces every 3 to 5 years to reduce the potential for surface water infiltration into the underlying pavement subgrade, according to the following:

1. Crack Cleaning: Ensure that cracks are thoroughly clean, dry, and free of all loose and foreign material when filling with crack sealant material. Use a hot compressed air lance to dry and warm the pavement surfaces within the crack immediately prior to filling a crack with the sealant material. Do not overheat pavement. Flame dryers are not allowed.
2. Sand Slurry: For cracks greater than 1 inch in width, fill with sand slurry by thoroughly mixing the components and pour the mixture into the cracks until full. Add additional CSS-1 cationic emulsified asphalt to the sand slurry as needed for workability to ensure the mixture will completely fill the cracks. Strike off the sand slurry flush with the existing pavement surface and allow the mixture to cure. Do not place the HMA overlay until the slurry has fully cured.
3. Hot Poured Sealant: For cracks less than 1 inch in width, fill with hot poured sealant by applying the material in accordance with these requirements and the manufacturer's recommendations. Confine hot poured sealant material within the crack. Clean any overflow of sealant from the pavement surface.
4. Surface and subgrade drainage are extremely important to the performance of the pavement section. Therefore, the subgrade, CS-1, and pavement surfaces shall slope aggressively towards stormwater drain inlets.
5. Avoid inverted crowns in all pavement locations. Accomplish grading to avoid ponding at the subgrade and surface elevations.
6. The pavement's life will be dependent on achieving adequate drainage throughout the section and especially at the subgrade. Water that ponds at the pavement subgrade surface can induce heaving during the freeze-thaw process, which can readily damage pavement.

(10) CONCRETE SLABS-ON-GRADE

Slab Substrate

1. Support concrete slabs with at least 1.0-foot of CS-1 meeting Table G2.1 requirements, placed over compacted subgrades prepared per the *Earthwork* section requirements.
2. Compact CS-1 below slabs to *Structural Fill* requirements.
3. Concrete slabs and supporting base section thicknesses must be structurally designed for the anticipated use and loading conditions.
6. Where high or heavy racking is planned or equipment is expected to impose point loads, additional substrate support may be necessary and shall be evaluated by structural design.
7. Dynamic loading and vibrations to slabs from equipment or trucks may induce additional settlement that cannot be readily estimated.
8. Concrete slab design may utilize an allowable modulus of subgrade reaction (k) of 190 pounds per cubic inch (pci) for slab sections constructed over compacted subgrade soil and at least 1.0-foot of compacted CS-1, see Figure G4.2.

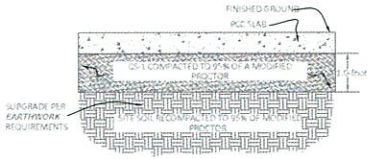

Figure G4.2: Slab Schematic

Frost Considerations

1. Frost jacking/heaving are rigid slab design concerns, particularly where abrupt changes in soil frost susceptibility occur.
2. Abrupt changes may occur where flexible pavements meet rigid hardscapes at building entrances and foundations.
3. To accommodate these locations, 1 foot shall be excavated and removed, extending 10 feet laterally from the building or rigid hardscape.
4. Line the excavations with a non-woven geotextile fabric and replace the excavations with SF-2 or CS-1 compacted to the *Structural Fill*, Section 5 requirements on sheet GT3.
5. Reference Figure G4.3.

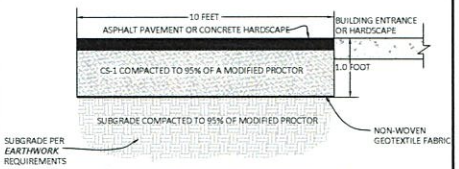

Figure G4.3: Reduced Frost Heave Section

Transfer Container Slab Considerations

1. Transfer slabs near the new soldier pile wall shall be structurally designed for the anticipated traffic and impact loads.
2. Support transfer container slabs with at least 1 foot of CS-1.
3. Extend concrete slabs for transfer containers at least 10 feet in front of the container to support the truck axle closest to the container.

(11) GEOSYNTHETICS

Geosynthetic uses and material requirements are provided in Table G4.3.

Table G4.3: Geosynthetic Specifications

Geosynthetic Type	Applicable Use	Material Specifications
Non-woven Geotextile Fabric	Foundation and wall drains, pavement section separation fabric	– Must meet Separation Geotextile Property Requirements in ODOT Standards *Table 02320-4*. – Min. 113 pound grab tensile strength. – Min. 223 pound puncture strength.
Biaxial or Triaxial Geogrid	Extremely soft subgrade conditions	- 93 percent junction efficiency (GRI-GG2-05) - 6.5 m-N/degree Torsional Rigidity @ 20kg-cm (GRI-GG9) - Punched and drawn polypropylene Minimum Radial Stiffness of 15,400 lb/ft at 0.5% Strain (ASTM D6637), applies only to triaxial geogrid

Geosynthetics

1. Geosynthetics which do not meet the requirements in Table G4.3 above may be used only if approved by the Engineer.
2. Geotextile fabrics are applicable around foundation drains, wall drains, and beneath pavement sections, as separation fabrics.
3. Geotextile fabrics are recommended over flexible pavement subgrades as they will improve long term pavement subgrade performance.
4. Where geosynthetics are utilized, apply them directly on approved subgrades, taut, free of wrinkles, and over-lapping at least 1-foot.
5. Consult GPI to review geosynthetic applications or other subgrade improvement alternatives.
6. Geogrid is not expected to be required unless extremely soft subgrades are exposed or compaction cannot be achieved at the subgrade.

(12) SITE DRAINAGE

Foundations/Walls

1. Construct foundation drains along the foundation alignments as illustrated in Figure G3.1 on sheet GT3.
2. Construct wall drains along cast-in-place retaining walls in a similar fashion.
3. Footing drain and weephole elevations can be modified at Great West's election to the lowest elevation possible to maintain gravity drainage.
4. Divert water collected in wall/foundation drains and dispose at least 50 feet away and 1 foot downgradient from new foundations.
5. Do not daylight stormwater onto finished slopes.

Exterior Grading & Stormwater Disposal Considerations

1. New impervious areas will be created as part of this project.
2. Site grading design and construction must allow for positive drainage of surface runoff water away from pavement surfaces and do not allow pavement subgrades to become saturated.
3. Slope paved surfaces at least 2 percent away from the planned structure, walls, and existing structures to reduces the risk of water ponding.
4. Convey runoff or water migrating along the ground surface away through existing drainage paths or by an appropriately designed series of ditches or swales.
5. Do not not allow water to infiltrate into existing fill on site.
6. On-site sandy silt has a moderate stormwater treatment capacity and is appropriate for biofiltration treatment swales.
7. Groundwater was not encountered during exploration and no other vertical limiting layer was observed in the upper 10 feet during exploration.

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2	4/15/22	30% DRAFT	FILE: MD22203A
1	1/17/23	90% DRAFT	PROJECT: PACIFIC CITY TRANSFER STATION GEOTECHNICAL ENGINEERING EVALUATION 38325 BROOTEN ROAD PACIFIC CITY, OREGON

DRAWN: JBM
DESIGN: TJW
PREPARED FOR: GREAT WEST ENGINEERING 3050 N LAKE HARBOR LN BOISE, ID 83703
ATTN: MR. TRAVIS PYLE, P.E. & MS. MICHELLE LANGDON

GreatWest ENGINEERING

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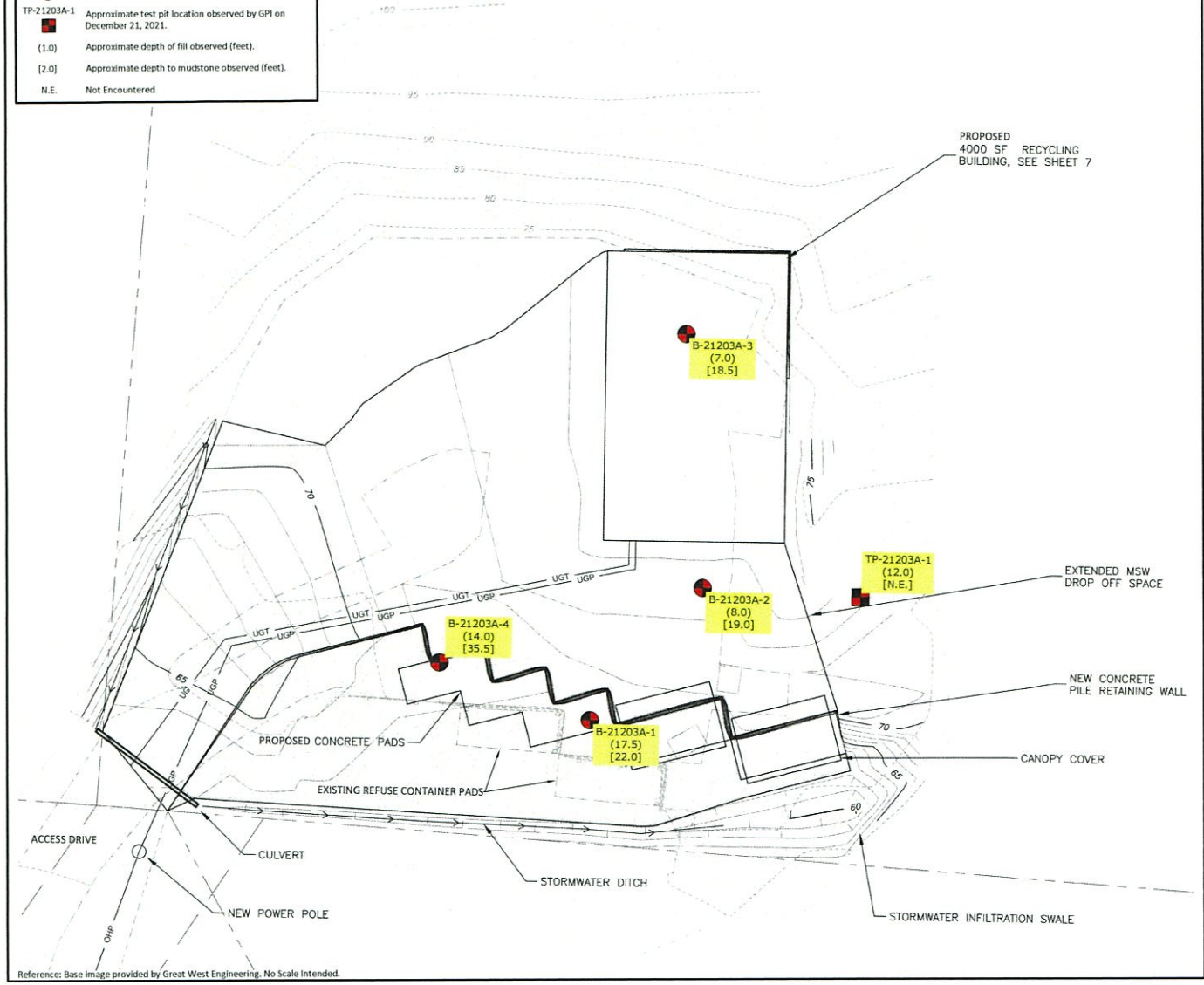
(14) **EXPLORATION MAP**

LEGEND

B-21203A-1	Approximate boring location observed by GPI on December 21 and 22, 2021.
TP-21203A-1	Approximate test pit location observed by GPI on December 21, 2021.
(1.0)	Approximate depth of fill observed (feet).
[2.0]	Approximate depth to mudstone observed (feet).
N.E.	Not Encountered



Reference: Base image provided by Great West Engineering. No Scale Intended.

(15) **USCS & EXPLORATION LOGS**

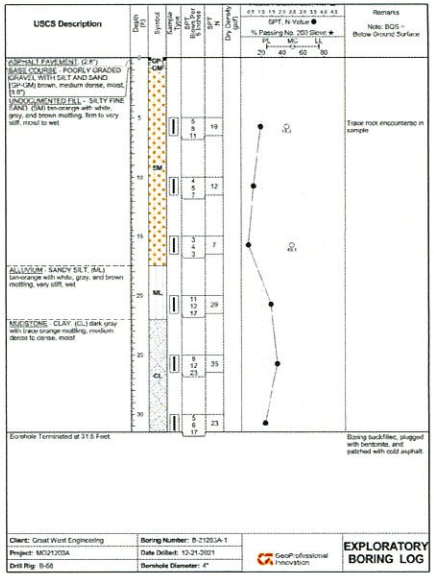
UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GRAPHIC SYMBOL	GROUP SYMBOL	TYPICAL NAMES
COARSE GRAINED SOIL	GRAVEL	CLEAN GRAVEL		GW	WELL-GRADED GRAVEL, GRAVEL SAND MIXTURES.
				GP	POORLY-GRADED GRAVEL, GRAVEL-SAND MIXTURES.
		GRAVEL WITH FINES		GM	SILTY GRAVEL, GRAVEL-SAND-SILT MIXTURES.
				GC	CLAYEY GRAVEL, GRAVEL-SAND-CLAY MIXTURES.
	SAND	CLEAN SAND		SW	WELL-GRADED SAND, GRAVELLY SAND.
				SP	POORLY-GRADED SAND, GRAVELLY SAND.
		SAND WITH FINES		SM	SILTY SAND, SAND-SILT MIXTURES.
				SC	CLAYEY SAND, SAND-CLAY MIXTURES.
FINE GRAINED SOIL	SILT AND CLAY LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILT, SANDY OR CLAYEY SILT
				CL	INORGANIC CLAY OF LOW TO MEDIUM PLASTICITY, SANDY OR SILTY CLAY.
				CL-ML	INORGANIC MIXED CLAY AND SILT.
				OL	ORGANIC SILT AND CLAY OF LOW PLASTICITY.
	SILT AND CLAY LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILT, MICA- CEOUS SILT, PLASTIC SILT.
				CH	INORGANIC CLAY OF HIGH PLASTICITY, FAT CLAY.
				OH	ORGANIC CLAY OF MEDIUM TO HIGH PLASTICITY.
				PT	PEAT, MUCK AND OTHER HIGHLY ORGANIC SOILS.

BORING LOG SYMBOLS: STANDARD 2 INCH OD SPLIT SPOON SAMPLE; CALIFORNIA MODIFIED 3 INCH OD SPLIT SPOON SAMPLE; ROCK CORE; SHELBY TUBE 3 INCH OD UNDISTURBED SAMPLE

TEST PIT LOG SYMBOLS: GRAB BAG SAMPLE (BG); BULK SAMPLE (BK); RING SAMPLE (RG)

GROUNDWATER SYMBOLS: GROUND WATER AFTER 24 HOURS; GROUND WATER AT TIME OF DRILLING; GROUND WATER AT THE END OF DRILLING



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REV	DATE	DESCRIPTION	CHECK: AJA
2	1/17/23	90% DRAFT	FILE: MO21203A
1	4/15/22	30% DRAFT	DRAWN: JBM

PROJECT: PACIFIC CITY TRANSFER STATION PRELIMINARY ENGINEERING EVALUATION
38255 BROOTEN ROAD
PACIFIC CITY, OREGON

PREPARED FOR: GREAT WEST ENGINEERING
3050 N LAKE HARBOR LN
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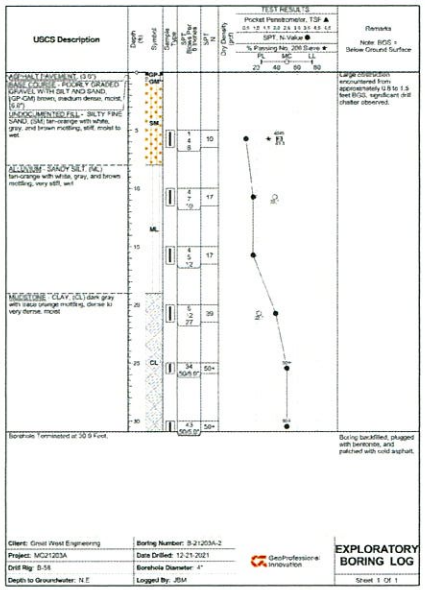
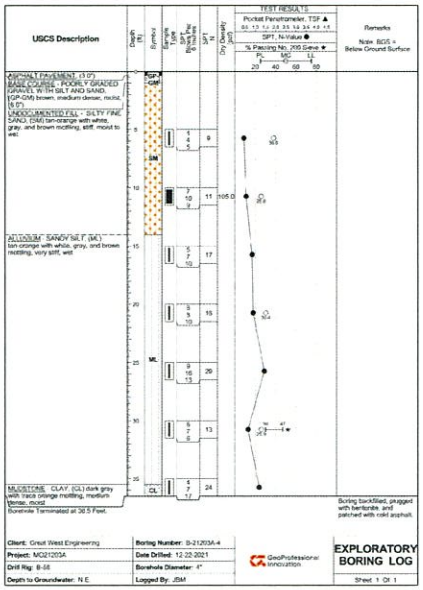
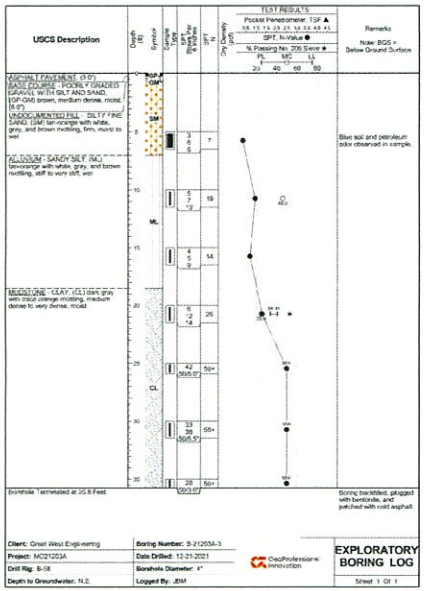
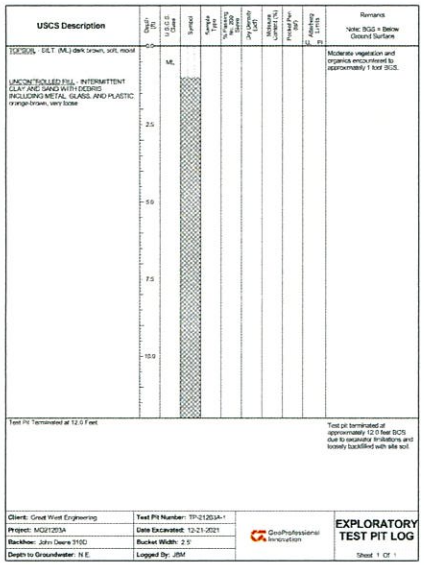
(15)

EXPLORATION LOGS









(16)

LABORATORY TEST RESULTS

Test Results Summary

Boring ID	Depth (feet)	Lab Number	Description (U.S.C.S. Classification)	In-Situ Moisture, %	In situ Dry Density, pcf	Atterberg Limits Liquid Limit	Atterberg Limits Plasticity Index	#200 Sieve Passing, %	pH	Resistivity Ω-cm	Sulfates ppm
B-21203A-1	5.0-6.5	12219	Silty fine Sand (SM)	44.0	-	-	-	-	-	-	-
B-21203A-1	15.0-16.5	12220	Silty fine Sand (SM)	49.1	-	-	-	-	-	-	-
B-21203A-1	20.0-21.5	12255-2	Sandy Silt (ML)	-	-	-	-	-	4.6	7,140	9.3
B-21203A-2	5.0-6.5	12221	Silty fine Sand (SM)	43.3	-	45	5	32	-	-	-
B-21203A-2	10.0-11.5	12222	Sandy Silt (ML)	38.1	-	-	-	-	-	-	-
B-21203A-2	20.0-21.5	12223	Sandy Silt (ML)	22.7	-	-	-	-	-	-	-
B-21203A-3	10.0-11.5	12224	Sandy Silt (ML)	46.0	-	-	-	-	-	-	-
B-21203A-3	20.0-21.5	12225	Sandy Silt (ML)	25.0	-	41	7	53	-	-	-
B-21203A-4	5.0-6.5	12226	Silty fine Sand (SM)	38.0	-	-	-	-	-	-	-
B-21203A-4	10.0-11.5	12227	Silty fine Sand (SM)	25.8	105.0	-	-	-	-	-	-
B-21203A-4	15.0-16.5	12255-1	Sandy Silt (ML)	-	-	-	-	-	5.0	8,330	36.0
B-21203A-4	20.0-21.5	12228	Sandy Silt (ML)	30.4	-	-	-	-	-	-	-
B-21203A-4	30.0-31.5	12229	Sandy Silt (ML)	25.9	-	47	17	52	-	-	-

Moisture contents include a 15% correction (reduction) based on the mud rotary drilling technique.

ISSUED FOR
- ☐ DESIGN USE
- ☒ PRELIMINARY REVIEW
- ☐ YOUR APPROVAL REQUIRED
- ☐ CONSTRUCTION
- ☐ DESTROY PREVIOUS PRINTS

REV	DATE	DESCRIPTION	CHECK: AJA
2	4/15/22	30% DRAFT	FILE: MG21203A
1	1/17/23	90% DRAFT	PROJECT:

PACIFIC CITY TRANSFER STATION GEOTECHNICAL EXPLORATION
38255 BROOTEN ROAD
PACIFIC CITY, OREGON

DRAWN: JBM
DESIGN: TJW

PREPARED FOR:
GREAT WEST ENGINEERING
3050 N LAKE HARBOR LN
BOISE, ID 83703

ATTN:
MR. TRAVIS PYLE, P.E. &
MS. MICHELLE LANGDON

GreatWest

GeoProfessional Innovation®
GPI 6 O'Donnell Road Pullman, WA 99163 509.339.2000

2

(13)

HELICAL PIER SPECIFICATIONS

PART 1 - GENERAL

SUMMARY

1. Includes installing helical piers in the locations shown on the plans prepared by Great West Engineering to the following ultimate and allowable strengths:
   a. SS-5 Pier - compression: 50 kips ultimate, 25 kips allowable; minimum installation torque = 5,000 ft-lbs
   b. A factor of safety of 2.0 shall be provided for vertical piers.
2. Piers are estimated to extend approximately 16 to 18 feet below proposed building foundations to bear on mudstone bedrock. Bedrock depth may extend deeper or vary and pier bid depth shall include a 10 percent variance.
3. Installation must include all necessary equipment to install piers to achieve the required load carrying capacity and accomplish at least 1 load test.

SUBMITTALS

1. Product Data: For each type of product indicated, include manufacturer's acknowledgment of the application and loading of helical pier products and that the contractor is an approved installer.
2. Installer Qualifications: Submit as listed in *Quality Assurance*.
3. Shop Drawings: Indicating specific shaft and helix sizes or the estimated pier configuration to achieve capacity, and include manufacturer's catalog cuts and data sheets.
4. Welding certificates.
5. Record drawings at project closeout according to project specifications.

QUALITY ASSURANCE

1. Installer Qualifications: Installation shall be done by the helical pier manufacturer's (A.B. Chance) authorized installation contractor. Proof of current certification with the steel helical pier manufacturer shall be submitted to the Architect during the submittals period.
2. A representative of the Geotechnical Engineer-of-Record (GER) retained for construction shall be present during installation of the helical piers.
3. Welding: Meet requirements of AWS "Structural Welding Code," D1.1, latest edition. All welders shall be AWS certified.
4. Steel Helical Piers as specified shall be manufactured by a facility whose quality control systems comply with ISO (International Organization for Standardization) 9001 requirements. Certificates of Registration denoting ISO Standards Number shall be presented upon request to the owner or their representative.
5. Survey Work: Engage a qualified land surveyor or professional engineer to perform surveys, layouts, and measurements for piers. Before excavating, lay out each helical pier to lines and levels required.
6. Record actual measurements of each pier's location, shaft diameter, bottom and top elevations, deviations from specified tolerances, torque, and other specified data.
7. Preinstallation Meeting: Schedule and conduct conference prior to installing piers at Project site. Representatives from the Owner, General Contractor, and the GER retained for construction shall be notified of the meeting 48 hours in advance.

PROJECT CONDITIONS

1. Existing Utilities: Locate existing underground utilities before installing helical piers. If utilities are to remain in place, provide protection from damage during helical pier installation.
   a. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, adapt drilling procedure if necessary to prevent damage to utilities. Cooperate with Owner and utility companies in keeping services and facilities in operation without interruption. Repair damaged utilities to satisfaction of utility owner.

PART 2 - PRODUCTS

STEEL HELICAL PIERS

1. General: The steel helical pier system shall be ICC listed. The contractor shall furnish evidence to the Structural and GER retained for construction by means of the ICC evaluation report number ER-5110.
2. Steel Helical Piers:
   a. Basis of Design Product: Piers must be manufactured by A.B. Chance, 210 North Allen Street, Centralia, MO 65240, or a comparable product which must be submitted to design team and Owner for review and approval at least 10 days prior to the Bid Opening.
   b. Shafts shall conform to the general requirements of ASTM A29 and the following descriptions:
3. High strength low alloy (HSLA), low to medium carbon steel grade (similar to AISI 1530) with improved strength due to fine grain size and structure having a torsional strength rating of 5,000 ft.-lbs.
4. Helix configuration shall be a minimum of 8-10-12-inch-diameter, round corner square (RCS) lead section. Helices shall be carbon steel sheet, strip, or plate formed on matching metal dies to true helical shape and shall conform to ASTM A715 Grade 80.
5. Round shaft (RS) minimum extension size of A.B. Chance RS3500.300 for all extensions above lead section. Requires AB Chance model T107-0808 square shaft to round shaft (SS/RS) coupler if utilized.
6. New pier-to-cap construction connection consisting of A.B. Chance Model #C150-0607
7. Bolts used to connect the helical pier extensions to lead sections or another extension shall conform to ASTM A193 Grade B7.
8. Couplings shall be formed as an integral part of shaft extension material through a forging process.
9. Finish: All material shall have a Class B-1 hot dipped galvanized coating complying with ASTM A153.
10. All piers shall consist of new components.
11. Steel Helical Piers shall extend to refusal on bedrock to achieve the design operating load and associated required torque by drilling with a minimum down force of 2,000 pounds.

PART 3 - EXECUTION

PREPARATION

1. Protect existing structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, vibration, and other hazards created by pier installation operations.

EQUIPMENT

1. Installation Equipment:
   a. Shall be a rotary type motor with equal forward and reverse torque capabilities. This equipment shall be capable of continual adjustment of the torque drive unit's revolutions per minute (RPM's) during installation. Percussion drilling equipment will not be allowed.
   b. Shall be capable of applying installation torque equal to the torque required to meet the pier loads.
   c. Equipment shall be capable of applying down pressure and torque simultaneously.
2. Torque Monitoring Devices:
   a. The torque being applied by the installing units shall be monitored throughout the installation by the installer. The torque monitoring device shall either be a part of the installing unit or an independent device in-line with the installing unit. Calibration for either unit shall be available for review by the owner's representatives. Hydraulic gauges may be utilized by the contractor to measure torque providing at least 1 shear pin torque measurement correlation is accomplished for each pier installed.
3. Testing equipment:
   a. The necessary beams, additional piers, jacking device and dial gauges necessary to provide at least 1 load test must be provided by the pier installer.

INSTALLATION PROCEDURES

1. Advancing Sections:
   a. Engage and advance the Helical Pier sections in a smooth, continuous manner with the rate of pier rotation in the range of 5 to 20 RPM.
   b. Apply sufficient down pressure to uniformly advance the helical sections to approximately 3-inches per revolution. The rate of rotation and magnitude of down pressure must be adjusted for different soil conditions and depths in order to maintain the penetration rate.
2. Termination Criteria:
   a. The torque as measured during the installation shall not exceed the torsional strength rating of the steel helical lead and extension sections.
   b. Extend vertical piers below foundations to refusal on mudstone bedrock.
   c. Pier refusal shall be defined as less than 1 inch of downward movement after 3 minutes of continuous rotation and full downward pressure by the installation equipment. Terminate the installation after encountering pier refusal only with the approval of the GER retained for construction.
3. Documentation
   a. The installer shall keep a written installation record for each helical pier. This record shall include the following information:
      - Project name and location.
      - Name of authorized and certified dealer and installer.
      - Name of installer's foreman or representative witnessing the installation.
      - Date of installation.
      - Location drawing of each Helical Pier.
      - Description of lead section including number and diameter of helices and extensions used.
      - Overall depth of installation from foundation subgrade.
      - Installation torque at termination of pier.
      - Refusal or bedrock depth.

FIELD QUALITY CONTROL

1. Testing Agency: The helical pier system is a critical component of foundation support. The GER retained for construction shall be retained by the Owner to observe and document, perform tests, and submit reports during installation of helical piers.
2. A helical pier report shall be prepared by the GER retained for construction for each pier as follows:
   a. Actual top and bottom elevations.
   b. Estimated bedrock bearing elevation.
   c. Estimated termination depth below footing elevation.
   d. Description, location, and dimensions of obstructions.
   e. Final top centerline location and deviations from requirements.
   f. Variation of shaft from plumb.
   g. Design and tested bearing capacity.
   h. Description, diameter, and top and bottom elevations of permanent casings (if used).
   i. Remarks, unusual conditions encountered, and deviations from requirements.

LOAD TEST

1. Load test 1 pier 24 or more hours after installation. A load test shall be provided and performed by the pier installer, and observed by the GER retained for construction.
2. The pier shall be loaded in 25% increments of the allowable design load to 150% of design in accordance with Table G5.1 below.
3. Testing equipment shall have been calibrated within 6 months of installation and capable of holding the test load without bleed off for at least 1 hour.
4. An acceptable test results when vertical movement of the pier results in less than 0.5 inches between one log cycle (6 to 60 minutes) under the test load.
5. A failing pier shall be corrected prior to continuing remaining pier installation.
6. If a failing pier test results, 2 additional piers shall be tested, as determined by the GER retained for construction.
7. The following table outlines the minimum data to be obtained during installation, including load and time increments:

Table G5.1: Pier Load Test Information

Load Increment	Hold Time (min.)	Time of Reading
0.00DL	0	None
0.25DL	5	5
0.50DL	5	5
0.75DL	5	5
1.00DL	5	5
1.25DL	5	5
1.50DL	60	1
--	--	2
--	--	3
--	--	4
--	--	5
--	--	6
--	--	10
--	--	20
--	--	30
--	--	40
--	--	50
--	--	60

ISSUED FOR
- ☐ DESIGN USE
- ■ PRELIMINARY REVIEW
- ☐ PLAN APPROVAL
- ■ REFERENCE
- ☐ CONSTRUCTION
- ☐ DESTROY PREVIOUS PRINTS

REV	DATE	DESCRIPTION	CHECK: AJA
2	4/15/22	30% DRAFT	
1	1/17/23	90% DRAFT	

FILE: M0021203A

PROJECT:
PACIFIC CITY TRANSFER STATION EXPANSION
ENGINEERING EVALUATION
38255 BROOTEN ROAD
PACIFIC CITY, OREGON

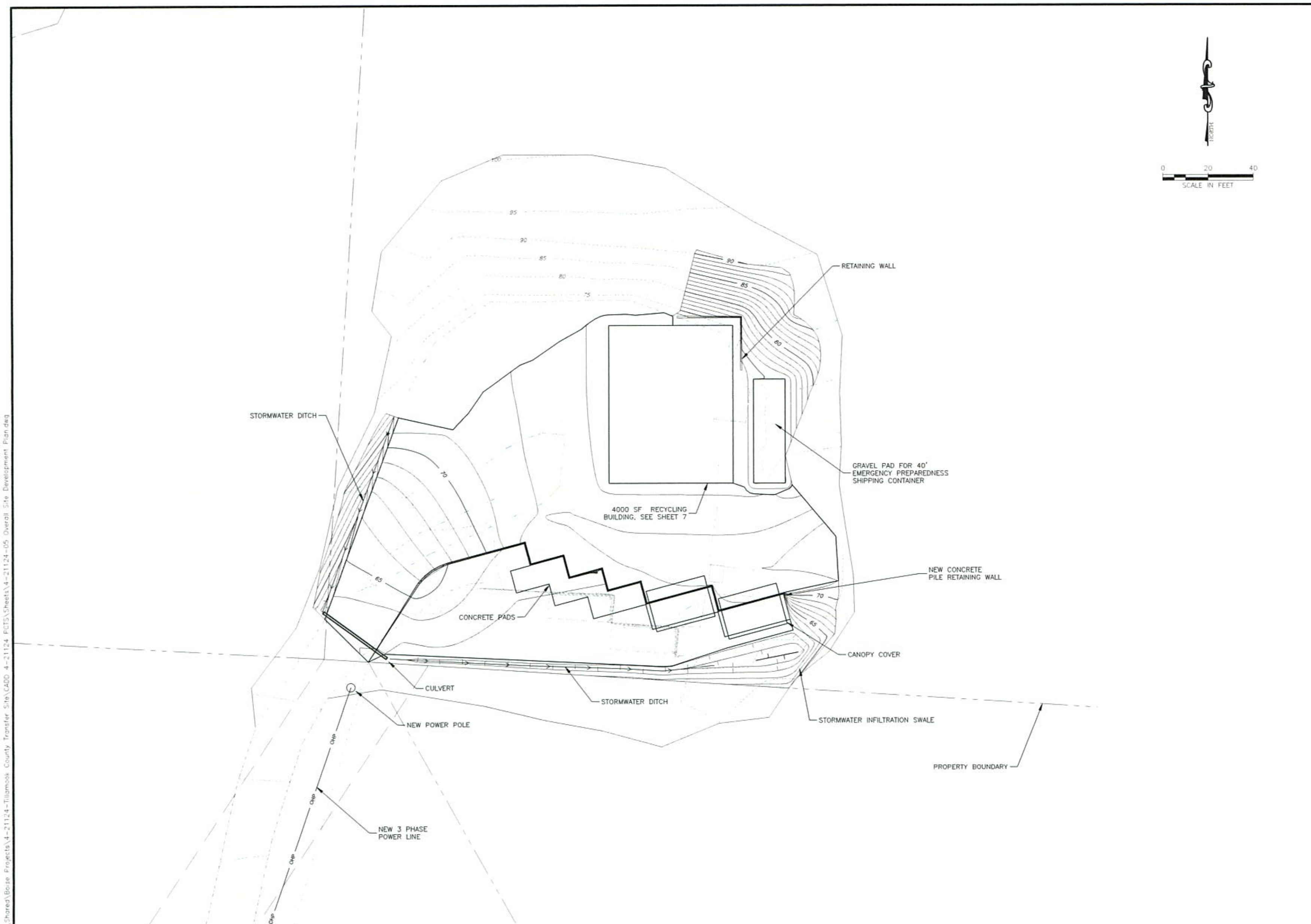
DRAWN: JBM
DESIGN: TW

PREPARED FOR:
GREAT WEST ENGINEERING
3050 N LAKE HARBOR LN
BOISE, ID 83703

ATTN:
MR. TRAVIS PYKE, P.E. &
MS. MICHELLE LANGDON

GeoProfessional Innovation
GP: 6 O'Donnell Road Pullman, WA 99163 509.339.2000

2



NO	REVISION DESCRIPTION	BY	DATE

PROJECT: 4-21124
DESIGNED: MLL
DRAWN: DAB
CHECKED: TAP
APPROVED: MLL
DATE: DECEMBER 2022

GreatWest ENGINEERING
3050 N. LAKEHARBOR LANE SUITE 201
BOISE, ID 83703
(208)576-6646

TILLAMOOK COUNTY
PACIFIC CITY TRANSFER STATION IMPROVEMENTS

OVERALL SITE DEVELOPMENT PLAN

SHEET NO.
5
OF 12

Y:\Shared\Boise Projects\4-21124-Tillamook County Transfer Site\CADD 4-21124 PCTS\Sheets\4-21124-05 Overall Site Development Plan.dwg

Tillamook County
PUBLIC WORKS DEPARTMENT
Department of Solid Waste
Waste Prevention and Recycling

503 Marolf Loop Road
Tillamook, Oregon 97141
PH (503) 815-3975
FAX (503) 842-6473
Email: recycle@co.tillamook.or.us
www.co.tillamook.or.us/solid-waste

Land of Cheese, Trees and Ocean Breeze

March 31, 2023

Tillamook County Department of Community Development

RE: Pacific City Transfer Station permit requests

Tillamook County is the owner of the Pacific City Transfer Station, located at 38255 Brooten Rd, which operated as an open burn site, a landfill, and has operated as a municipal solid waste (MSW) transfer station and recycling facility since 1981. The transfer station had been operated by various contracted/franchised entities but since January 2016 Tillamook County's own Solid Waste Department has operated the facility.

The site operates under DEQ Solid Waste Disposal Site Permit #343.

As has been reported to the Solid Waste Advisory Committee and the Tillamook County Board of Commissioners, traffic to this site and the quantities of materials collected there has steadily increased over the years, reflecting the increasing population in the area. Various methods to increase efficiency and accommodate the increasing volumes of materials has been worked on during the past several years. The long-term projection was disrupted by a very significant increase in traffic and volumes during the COVID-19 pandemic, which saw a 28% increase in MSW quantities alone. This fortunately coincided with our work to plan for increasing capacity and maintain operating services.

Over a decade ago traffic improvements were introduced, enabling traffic to travel counter-clockwise through the facility, avoiding cross-traffic. All areas where customers travel or park are fully paved.

There are no permanent structures on this site, other than a set of "Z-walls" constructed when the site was converted to a transfer station in 1980-81. These Z-walls were constructed using wooden timber walls, and while they have served well, they necessitate repair. The quantity of MSW collected at this site has exceeded the capacity of the original Z-walls.

The need for waste diversion through a separate collection of yard debris, as well as the anticipated collection of additional materials covered under the Recycling Modernization Act (RMA), results in the need for additional collection, storage and Z-wall space. The need for improved recycling services and conditions is apparent, and necessary if this site is to comply with expectations for statewide improvements consistent with the RMA, set to become effective July 1, 2025.

There are concerns with safety with the current timber-constructed Z-walls. We would like to use this opportunity to not just repair the existing Z-walls, but realign the newly constructed Z-walls to provide additional capacity, thanks to improved operational logistics.

With this in mind, we have submitted a proposal for the designed construction of five Z-walls, all located on the southern end of the property, near the west end, staggered to enable improved logistics on both the incoming and outgoing ends. This project would provide not only additional capacity for MSW and yard debris, but also additional space for the public to access both MSW and yard debris disposal services, as well as a building in which recycling would be collected in an organized manner, and not subjected to the elements. This would occur within the current footprint of the site.

There is currently an office shed/shack on site, which would be replaced with an office area inside the new building.

The collection of recycling materials currently occurs in bags and containers, which are then stored in various containers and trailers until they are shipped off site. The result of this improvement project would be a building in which recycling is stored, as well as an organized set of containers along the southern edge of the property. This will more effectively separate customer vs logistics traffic flow, and allow for the elimination of some of the on site storage that currently occurs in trailers. This addition will occur primarily within the current footprint of operations, with a slight expansion away from residential property neighbors.

On the east side of the new building we plan on preparing an area which could be used to house a storage structure for emergency preparedness purposes. The storage structure would most likely be a 20' or 40' container, but could potentially be a constructed shed. Whatever the eventual structure, it would not require a larger footprint than a 40' shipping container, which would be located away from the area of the site used, and away from residential property neighbors.

Electrical access to the site is planned to be diverted into an underground system, with the addition of on-site generation of power through solar panels, to provide for sustainable and safe power.

A current site plan can be found in the documentation we are providing.

This site currently operates under a No Exposure Certification and does not require a NPDES permit. The engineered plans anticipate that at some point a NPDES 1200-Z permit may be required, and thus the plans include stormwater collection, diversion and potential locations for infiltration and/or outfall sampling, should that become a requirement in the future.

I hope that I have addressed any questions or concerns you may have in this and the attached documents. Please do not hesitate to contact me if you have any questions, or

if you would like further information or clarification. I am also happy to meet with you on site and provide clarity for any questions you may have.

Thank you,

David McCall
Solid Waste Program Manager

Info for Planning for PCTS Upgrade

Use as a Solid Waste Disposal Facility, under DEQ Permit #343, with an area for the storage of emergency supplies

Conditional Use Review Criteria

(1) Yes, 3.004

(2) Yes

(3) The total size of the site is 40 acres, and less than 1 acre of that is used for the purposes of the transfer station. It is located approx. 2 miles outside of the unincorporated community of Pacific City, which is the largest community in the area. Access to the site is off of Brooten Road, which is one of the main arterials to Pacific City. The site is predominantly hilly, forested land, which a flat section that serves the purposes of the transfer station. The terrain and trees provide a barrier to nearby areas, such that the transfer station is virtually invisible to passersby. The existing Z-walls were built into the topography to integrate the old, closed landfill into the functional structure of the facility.

(4) This project, and the continued operation of the transfer station, will not limit, impair, or present the use of surrounding properties. This site was a public open burning dump and a sewage sludge dump until it was closed and converted in 1981 to a transfer station for self-haulers of small loads of trash and recycling. The site is currently open to the public three days a week (Thursday, Friday, Monday) throughout the year, and an additional day (Sunday) during the six summer months. As a result of this project, the site will be able to operate more efficiently, and serve the public's disposal (both trash and recycling) needs not only for the present, but likely for the upcoming 20 years. This will all be done within the existing footprint, or with minimal expansion in a direction opposite of the nearest residential uses. The steps taken with this project are consistent with the desire to insulate neighbors from the transfer station, which has been here longer than most neighboring houses. Tree barriers on all sides of the transfer station provide an insular barrier for sound, dust, and other potential issues.

(5) No, there are no existing solar or wind energy systems in the area, and this would not have an impact on them if there were.

(6) The capacity of this facility is at its limits, and this project will alter the structure of the facility, enabling greater operating efficiency, and better preventing contamination of the environment through a controlled acceptance of waste materials. While remaining within the same footprint, the capacity will increase through better positioning of infrastructure, and more efficient handling and storage of recyclable materials.

a. Water is not required for this facility. Water for operations is collected on site and/or trucked in.

b. Sewer is not required for this facility. A porta-potty is stationed on site, and is regularly serviced by the contracted service provider.
c. Road access is from Brooten Road, via an internal paved and maintained road over an easement. See attached letter from Public Works.
d. This project will enable the provision of internal security cameras to augment security measures beyond the locking of the gate at the access point (just off of Brooten Road). This will not hinder, but support local law enforcement services.
e. See attached letter from the Fire District.
f. See attached letter from Emergency Manager

Forest Zone Criteria

(8) Conditional Use Review Criteria
1. The project will not affect or change farming, forest practices, or agriculture on forest lands.
2. The project will not significantly increase fire hazard or place any burden on fire resources.

(9) Siting Standards
See site plan

NESTUCCA RURAL FIRE PROTECTION DISTRICT

30710 Highway 101 S
Cloverdale, Oregon
503-392-3313

March 31, 2023
To: Tillamook County Solid Waste
Attn: David McCall

Subject: South County collection site

After reviewing the plot map for the proposed new structure. The District see no problems with the proposal. When approved a water access form will need to be filled out and submit to the District. The structure would need to fallow the Oregon Fire Code 2022.

James Oeder
Fire Chief

TILLAMOOK COUNTY SHERIFF'S OFFICE

CONSERVATORS OF THE PEACE

Sheriff Joshua Brown

April 3, 2023

To whom it may concern,

I am writing this in regard to the Pacific City Transfer Station construction project and upgrade. As explained to me, this project consists of realigning existing Z-walls and the addition of a new 4,000 sq. ft. building for recycling.

These needed improvements will not affect the adequacy of law enforcement services. The physical construction and remodels will not impact the Tillamook County Sheriff's Office.

Respectfully,

Joshua Brown

Sheriff Joshua Brown

5995 Long Prairie Rd. Tillamook, OR 97141 503-842-2561 tillamooksheriff.com