SCAPPOOSE PLANNING COMMISSION
Council Chambers at City Hall
33568 East Columbia Avenue

AGENDA
Thursday, May 9th, 2024 at 7:00 p.m.

1.0 CALL TO ORDER

2.0 ROLL CALL

3.0 APPROVAL OF MINUTES
3.1 March 14, 2024 meeting minutes

4.0 CITIZEN INPUT
The City accepts public citizen input for any item not on the agenda; in person, by email, mail or joining the Microsoft Teams meeting link

5.0 NEW BUSINESS

5.1 Docket # SDR 1-24, SLDP 2-24
The City of Scappoose has requested approval of a consolidated application for Site Development Review and Sensitive Lands Development Permit (SDR 1-24, SLDP 2-24) to allow for the demolition of two existing water reservoirs, construction of a new 3-million-gallon water reservoir, and improvements to various site amenities. The site is located at 52212 SW Keys Road, southeast of the SW Keys Landing Road and SW Keys Road intersection, on property described as Columbia County Assessor Map #3211-DD-00200.
Format: *This is a consolidated limited land use decision and quasi-judicial hearing.*
Limited land use decisions (Site Development Review in this case) do not allow verbal testimony during the hearing; however, written comments are permitted prior to Wednesday, May 8, 2024 at 5:00 p.m.
Quasi-judicial decisions (Sensitive Lands Development Permit in this case) allow verbal testimony during the hearing as well as written comments prior to Wednesday, May 8, 2024 at 5:00 p.m.

5.2 Team Agreement
Planning Commission Team Agreement for conducting Planning Commission Meetings and Business.

6.0 COMMUNICATIONS
6.1 Calendar Check
6.2 Commissioner Comments
6.3 Staff Comments

7.0 ADJOURNMENT

This is an open meeting, and the public is welcome to attend in person or virtually. Link to attend online can be found within the calendar page on the city's website. The City of Scappoose does not discriminate on the basis of handicap status in its programs and activities. If special accommodations are required, please contact Susan M. Reeves, MMC, City Recorder, in advance, at 543-7146, ext. 224. TTY 1-503-378-5938.

Meeting Packets can be viewed on City's website via the calendar links;
https://www.scappoose.gov/calendar
Please call (503) 543 - 7184 if you have any issues accessing the City's website.

SCAPPOOSE PLANNING COMMISSION MINUTES

Thursday, March 14th, 2024 at 7:00 p.m.

Disclaimer: These minutes are intended to summarize the conversations that took place in this meeting. For a full transcript with video recording of this meeting on YouTube go to; https://www.scappoose.gov/bc-pc/page/planning-commission-22

1.0 CALL TO ORDER

Chair Jensen called the meeting to order at 7pm

2.0 ROLL CALL

Commissioners;		**Staff;**	
Scott Jensen	Chair	Laurie Oliver Joseph	Community Development Dir.
Bill Blank	Vice Chair	NJ Johnson	Associate Planner
Rita Bernhard	Commissioner	Chris Negelspach	City Engineer
Monica Ahlers	Commissioner	Elizabeth Happala	Office Administrator
Harlow Vernwald	Commissioner		
Marty Marquis	Commissioner		
Sara Jones-Graham	Commissioner		
Excused;			
Ty Bailey	*Commissioner*		

Audience attendees;

Applicant Lea Chitwood and John Chitwood

Consultant John DeJong, Technical Engineering Inc.

3.0 APPROVAL OF MINUTES

3.1 February 8, 2024, meeting minutes

Commission Bernhard moved and Vice Chair Blank seconded the motion to approve the minutes.

Motion Passed 7-0. AYES: Chair Jensen, Vice Chair Blank, Commissioner Bernhard, Commissioner Vernwald, Commissioner Ahlers, and Commissioner Marquis & Commissioner Jones.

4.0 CITIZEN INPUT

None

5.0 NEW BUSINESS

5.1 Docket #SDR 2-23

The Scappoose Planning Commission has scheduled a limited land use decision to consider an application for Site Development Review (SDR 2-23) submitted by Lea Chitwood. The request is to allow for the change of use from an existing single-family home to a real estate office as well as improvements to various site amenities. The site is located at 33454 SW JP West Road, southeast of the SW JP West Road and SW 1st Street intersection, on property described as Columbia County Assessor Map #3212-CA-03200.

Format: *Limited Land Use Decisions do not allow verbal testimony during the hearing since they do not require interpretation or the exercise of policy or legal judgement; however, written comments are permitted prior to the deadline of the public comment period;* ***must be received by Wednesday, March 13, 2024, at 5:00 p.m.****.*

Chair Jensen read the docket item, the limited land use format, calling the hearing to order, and stating the order of hearing, he then asked if any commissioner needed to declare any ex-parte contacts or conflicts. After hearing none, he called for the staff report.

Associate Planner Johnson went over the staff report and 28 conditions of approval in detail, then asked the commissioners if they had any questions.

Chair Jensen asked about the deferment of the right of way along the JP West frontage, and if they were still planning on doing the frontage improvements and just deferring the right of way dedication.

Johnson agreed, adding that it would be a 5' sidewalk matching the existing gas station site then other frontage improvements as well.

Chair Jensen then asked the applicants to come forward.

Applicant Lea Chitwood and Consultant John DeJong came forward. Application Lea Chitwood stated that they did not have anything else to add to the staff report and welcome any questions.

Consultant John DeJong stated his name and company name, adding that Associate Planner Johnson did a very thorough job presenting their project and stated he is here tonight to answer any questions.

Chair Jensen thanked them for their time then closed the hearing for consideration by the commission.

Vice Chair Blank stated that 20 odd years ago they implemented a downtown overlay and many of the item are based on that overlay zone. Adding that he does not see anything in the proposal that is not acceptable or hasn't been approved based on the staff report. And the whole area will be developed at some point in time as that was what the overlay was designed for.

Commissioner Bernhard stated it was very thorough.

Chair Jensen stated that this is straightforward by the code and seeing no other conversation he would entertain a motion.

Vice Chair Blank moved and Commissioner Bernhard seconded the motion to approve SDR 2-23 as presented with 28 conditions of approval.
Motion Passed 7-0. AYES: Chair Jensen, Vice Chair Blank, Commissioner Bernhard, Commissioner Vernwald, Commissioner Ahlers, and Commissioner Marquis & Commissioner Jones.

6.0 COMMUNICATIONS

6.1 Calendar Check

Chair Jensen went over the calendar.

Community Development Director Oliver Joseph stated that there will be no Planning Commission meeting on March 28th.

6.2 Commissioner Comments

Commissioner Ahler stated that she noticed that there were a reference to the Uniform Building Code with is not what the Oregon Structural Specialty Code is based on anymore.

Community Development Director Oliver Joseph replied that she appreciated her pointing that out as they are doing several code revision.

Chair Jensen thanked staff and appreciated them for making their jobs really easy.

Vice Chair Blank stated it was easy and ready to go.

6.3 Staff Comments

Community Development Director Oliver Joseph went over the joint Planning Commission and City Council meeting scheduled on Monday March 18 reviewing quite a bit of proposed development code amendments in support of the 50-Year Plan. Adding that packets have been distributed to them tonight. The next council work session will be April 15th. She then went over the current applications; three restaurant complex deemed incomplete, Keys Road 3 million gallon water reservoir to be deemed complete soon, inquiry meeting for a self-storage facility on the Cinnamon Tree property, pre-application for Wauna Credit Union south of Bi-Mart, pre application for a JP West partition near Jobin Lane, and continuing with the UGB study area analysis. She hopes they can all make it to the Annual Town Meeting in April as it's always a good event and the Mayor will be doing a state of the City address, plus the city manager recruitment team might say a few words and request some community feedback.

Associate Planner Johnson added that our agency partners will have tables; Scappoose Bay Watershed Council and our 50-Year Plan consultants.

Commissioner Blank asked if they will be breaking off into small groups.

Community Development Director Oliver Joseph replied that they would not have any actual activity this year.

Commissioner Blank asked about the home being remodeled right now on the corner of 1st & JP West opposite the one they approved tonight. And if that would be coming to them for approval.

Community Development Director Oliver Joseph replied that she was not aware of it and would need to go check it out. Adding that if they were changing their use then it would come to them for approval and stated that property owners can do general maintenance and repairs to their homes in the downtown overlay areas without the planning office approval. She then stated that the application tonight was pretty straightforward as they were just putting in a parking lot, adding that a part of the code changes related to the 50-year plan they were going to look at how they can streamline some process to make it easier for our developing community to get projects done. For an example, she said under the new proposal for site development review, this particular application would have not come to Planning Commission and would just be a staff level approval. Adding that they would still be required to be required to notice their neighbors because there isn't anything discretionary or controversial about their proposal without any variance or sensitive lands.

Commissioner Bernhard asked about the timeline for the Annual Town Meeting since its JR Gedlick's funeral that day at 11am.

Community Development Director Oliver Joseph stated it should be done in about 2 ½ hours, which should work out fine.

Commissioner Blank stated he was married to Donna Gedlick who was a City Council member and once our city recorder and thanked Commissioner Bernhard for the information.

Commissioner Bernhard stated his service will be held at St. Wenceslaus Church.

City Engineer Negelspach went over some projects in the engineering department; Moore Rd. under construction north of the airport, food cart pods are moving along well, multiple plan reviews occurring and staying quite busy.

Vice Chair Blank asked about St. Helens tying to seek a solar company.

City Engineer Negelspach stated there are two components to that, a manufacturing piece they were proposing in St. Helens and then an assembly piece here.

Commissioner Blank stated that it would bring in about 1000 jobs and more people would be looking for homes here.

Community Development Director Oliver Joseph added that the food cart pod has filled all their eleven slots.

Chair Jensen asked about the proposal for the new land use process and how they would handle comments about a proposal especially comments against it.

Community Development Director Oliver Joseph replied that it would be handled how it now in that the comments come to the planning department, and they would continue to work with the applicant to make sure they are responding back to all the comments, and we would add our staff comments as well. Adding that as you know, unless there is a violation of some criteria, they still have the obligation to approve it.

Associate Planner Johnson added that it would come to Planning Commission if it were appealed.

Community Development Director Oliver Joseph stated that staff decision is always appealable to Planning Commission.

Chair Jensen asked if there was only one appeal process.

Community Development Director Oliver Joseph replied that she believed it could still be appealed to City Council.

Chair Jensen stated that his understanding was that it was only one appeal process within the city.

Community Development Director Oliver Joseph stated she would look into that as it seemed to her that there was always a next level.

Commissioner Blank asked if it were a normal situation then if they did something the applicant didn't like, then they could appeal their decision.

Community Development Director Oliver Joseph agreed adding that she looked at a few applications over the years and there would have been only one or two that would have stayed with the staff level approval. And that it is a step in the right direction and maybe we see how that goes to make it easier for our development community especially for these smaller projects like the one we had tonight.

Chair Jensen agreed and would like to recommend leaving an option for staff to kick it to Planning Commission at staff discretion.

Associate Planner Johnson stated that option exists in the proposed language right now.

7.0 ADJOURNMENT

Chair Jensen adjourned the meeting at 7:44 pm.

_____
Chair Jensen

Attest: _____
Elizabeth Happala, Office Administrator

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CITY OF SCAPPOOSE
PLANNING COMMISSION STAFF REPORT

Request: Approval of an application for Site Development Review and Sensitive Lands – Slope Hazard Development Permit to allow for the demolition of two existing water reservoirs, construction of a new 3-million-gallon water reservoir, and improvements to various site amenities.

Location: The site is located at 52212 SW Keys Road, southeast of the SW Keys Landing Road and SW Keys Road intersection, on property described as Columbia County Assessor Map #3211-DD-00200. See Vicinity Map (**Exhibit 1**).

Applicant: City of Scappoose

Owner(s): City of Scappoose

EXHIBITS

1. Vicinity Map
2. Application Forms
    A. Site Development Review
    B. Sensitive Lands – Slope Hazard Development Permit
3. Code Response Narrative
    A. Photographs to Accompany Development Application Code Response Narrative
4. Preliminary Development Plans
    A. Cover (Sheet 01)
    B. General Information (Sheet 02)
    C. Civil Notes and Legends (Sheet 03)
    D. Existing Site Plan (Sheet 04)
    E. Storm and Sewer Structure Tables (Sheet 05)
    F. Demolition Plan (Sheet 06)
    G. Utility Relocation Plan (Sheet 07)
    H. Construction Grading and TESC (Temporary Erosion& Sediment Control) Plan (Sheet 09)
    I. Construction Grading Sections 1 (Sheet 10)
    J. Construction Grading Sections 2 (Sheet 11)
    K. Proposed Grading Plan (Sheet 12)
    L. Proposed Site Grading Sections 1 (Sheet 13)
    M. Proposed Site Grading Sections 2 (Sheet 14)
    N. Proposed Utility Plan (Sheet 15)
    O. Proposed Drainage Plan (Sheet 16)
    P. Landscaping Plan (Sheet 20)
    Q. Reservoir Floor and Foundation Plan (Sheet 21)

R. Mechanical Plan (Sheet 31)
S. Electrical Legend (Sheet 35)
T. Electrical Site Plan (Sheet 36)
U. Preliminary Site Plan (Sheet 38)

5. Geotechnical Engineering Report from Shannon & Wilson, dated December 2023[1]
6. Stormwater Design Report from RH2 Engineering, dated March 2024[1]
7. Notice of Final Decision for Approval of ZC 5-02/SDR 9-02, dated December 23, 2002
8. Referral comment from City of Scappoose Public Works Director, dated April 5, 2024
9. Referral comment from Columbia County Building Official, dated April 22, 2024
10. Referral comment from Scappoose Rural Fire Protection District, dated April 30, 2024
11. Referral comment from Columbia River PUD, dated May 1, 2024
12. Referral comment from Columbia County Public Works, dated May 2, 2024

SUBJECT SITE

- The subject site consists of an approximately 4.7-acre parcel of land that is currently occupied by three water reservoirs, a water treatment plant operations building, and a backwash basin (see **Exhibit 4D**). The site operates as a municipal water treatment plant and is known as the Keys Road Water Treatment Plant.
- North of the subject site is a row of single-family homes. East of the subject site is a vacant lot and a single-family home (south of the vacant lot). South of the subject site is SW Keys Road and to the south of that is a row of single-family homes. West of the subject site is SW Keys Road and to the west of that is a row of single-family homes, the SW Huser Lane and SW Keys Road intersection, and the SW Crystal Springs Court and SW Keys Road intersection.
- The subject site is zoned Public Lands-Utility (PL-U) and is designated as Public Lands (PL) on the Comprehensive Plan Map. All surrounding properties are zoned Low Density Residential (R-1) and are designated as Suburban Residential (SR) on the Comprehensive Plan Map.
- The subject site is not located within the Special Flood Hazard Area (SFHA, commonly referred to as the 100-year floodplain) and there are no wetlands or water courses on or near the site. The subject site does contain steep slopes greater than 20%.

OBSERVATIONS

REQUESTED APPROVAL

- The request is to allow for the demolition of two existing water reservoirs, construction of a new 3-million-gallon water reservoir, and improvements to various site amenities. This requires Site Development Review, where Planning Commission is the approval authority.
- The subject site contains steep slopes greater than 20% and so a Sensitive Lands – Slope Hazard Development Permit will be required as well as conformance to Scappoose Development Code (SDC) Chapter 17.86 - Sensitive Lands–Slope Hazard.
- Section 17.78.050 states that “Due to the unique nature of the public uses allowed within the

[1] *Note: Appendices available upon request.*

PL-U zone, no designated minimum lot size, minimum yard requirements, minimum building height or maximum lot coverage exist. Minimum lot size, lot coverage, building height and yard requirements shall be determined on a case by case basis by the planning commission as provided for within the provisions of Chapter 17.120 or 17.130." The subject site is 4.7 acres in area (see **Exhibit 4D**), which is sufficiently large enough to host two water reservoirs, a water treatment plant operations building, a backwash basin, and other accessory structures related to public water. The subject site has an approximately calculated lot coverage of 25-30%, including buildings and impervious surfaces (see **Exhibit 4U**), which is very reasonable for the zone and use. The new water reservoir is proposed to be 24 feet in height, compared to the height of the larger reservoir that will be demolished, which is 20 feet (see **Exhibit 4U**). The smallest setback on the site is 22.8 feet for an existing water reservoir and 36.9 feet for the new water reservoir (see **Exhibit 4U**). Staff recommends approving the proposed dimensional conditions since they are very reasonable, do not cause conflicts with the SDC, are similar to the existing dimensional conditions of Keys Road Water Treatment Plant (see **Exhibit 4D**), and the applicant is proposing to provide buffering and screening to the standards of Chapter 17.100 (see **Exhibit 4P**).

CONSOLIDATED LAND USE APPLICATIONS

- The applicant is requesting approval of two land use applications, Site Development Review (SDR) and Sensitive Lands – Slope Hazard Development Permit (SLDP). On its own, SLDP requires staff approval. However, since the applicant is requesting a consolidated decision and SDR requires Planning Commission approval, Planning Commission will be the approval authority for both applications.
- Approving SDR is a limited land use decision subject to Chapter 17.164 and approving SLDP is a quasi-judicial decision subject to Chapter 17.162. Pursuant to Section 17.01.050(B), public noticing for the consolidated application was provided in accordance with Chapter 17.162 since these noticing requirements are a higher standard than Chapter 17.164. Public comments related to SDR will be processed in accordance with Chapter 17.164 and public comments related to SLDP will be processed in accordance with Chapter 17.162.
- Both applications would need to be approved for the applicant to be permitted to construct the proposed water reservoir.

RIGHT-OF-WAY/PUBLIC IMPROVEMENTS

- The property has frontage on SW Keys Road (see **Exhibit 4D**). SW Keys Road is classified by the 2016 Transportation System Plan (TSP)[2] as a Neighborhood Route, which requires 60 feet of right-of-way width comprised of 36 feet of travel way, two 5.5-foot planter strips, two 6-foot sidewalks, and two 6-inch utility areas. SW Keys Road currently has a right-of-way width between 48-54 feet and a paved width of 20-32 feet (depending on the section of SW Keys Road). Additionally, the subject site has a 5-foot sidewalk along the entire frontage, except for most of the southwestern property line curve where the sidewalk turns slightly inward away from the curbline and continues the pedestrian pathway but inside the parcel (see **E**

[2] City of Scappoose, Transportation System Plan, 2016, Figures 12 & 13b.

xhibit 4D). In lieu of performing street improvements and providing a dedication meeting the full standards of a Neighborhood Route, the SDC allows developers to submit and record a non-remonstrance agreement if certain provisions are met. Since the City of Scappoose is the named applicant and property owner and the City cannot enter a non-remonstrance agreement with itself, a non-remonstrance agreement will not be required. The non-remonstrance criteria in Section 17.154.030(A)(3) will be used to evaluate whether or not the applicant may be waived from performing street improvements and providing a dedication meeting the full standards of a Neighborhood Route. This development proposal applies to the criteria necessary to be waived from street improvements and a wholescale dedication.

- A right-of-way dedication will be required in the southeastern corner of the subject site to the extent that the sidewalk is entirely within the right-of-way. The applicant is proposing to provide a dedication in this area to remove the sidewalk from the property and to instead have the sidewalk contained within the right of way (see **Exhibit 4N**).

VEHICULAR ACCESS/OFF-STREET PARKING

- The subject site has and is proposed to retain two driveways, one in the northwest corner of the site and the other in the southeast corner of the site (see **Exhibits 4D** & **4U**).
- The majority of the subject site is fenced and not to be accessed by the public (see **Exhibit 4D**). The applicant is not proposing changes to this fence or access privileges (see **Exhibit 4U**). As such, this proposal does not trigger the regulations of Chapter 17.106 - Off-Street Parking and Loading Requirements.

TRAFFIC GENERATION

- Requests for Site Development Review typically require a Transportation Impact Study (TIS) to be submitted as part of their land use application. However, given that trips to and from the site are nearly exclusively City employees or City contractors (see **Exhibit 3, p. 35**) and the number of daily and peak hour trips is unlikely to be significantly altered as a result of this development, no TIS will be required.
- Due to the low volume of estimated trips, no new transportation facilities or mitigation measures will be required.

UTILITIES

- There is currently an 8-inch concrete sewer main in SW Keys Road along the entire frontage with a connected 8-inch sewer main that runs from the south of the subject site to the approximate center of the site, providing connection to the water treatment plant operations building and the backwash station (see **Exhibit 4D**). The applicant is proposing to replace and relocate a section of the on-site main so that it is not directly under the larger new water reservoir (see **Exhibit 4G**).
- There is currently a stormwater main of various diameters between 10-15 inches in SW Keys Road along the entire frontage with a connected 12-inch stormwater main that runs from the south of the subject site towards the existing 2-million-gallon water reservoir to remain (see **Exhibit 4D**). The on-site storm system also connects to the water treatment plant operations building and the backwash station (see **Exhibit 4D**). The applicant is proposing to replace a

stormwater pipe primarily to the east of the new water reservoir, add a catch basin to the south of the new water reservoir, and add an area drain to the north of the water treatment plant operations building and backwash station (see **Exhibit 4O**).

- There is currently an 8-inch oxide dispersion strengthened alloys (ODS) water main in SW Keys Road along the entire frontage and several water mains of various sizes and materials within the subject site (see **Exhibit 4D**). The applicant is proposing to replace and relocate a section of the on-site main further to the east so that it is appropriately distanced from the larger new water reservoir (see **Exhibit 4G**).

LANDSCAPING, SCREENING, AND STREET TREES

- The applicant submitted a Landscaping Plan (**Exhibit 4P**), which depicts the provision of trees and grass throughout the subject site.
- The existing/proposed utility use is directly abutting residential uses to the north and east. Buffering and screening will be required where the subject site abuts residential uses. The applicant is proposing buffering and screening where abutting residential uses to the north and east. The utility use would also be abutting residential uses to the west and south if not for the SW Keys Road right-of-way. When this is the case, buffering but not screening is required. The applicant is proposing buffering along the western and southern edges of the property.
- The applicant is proposing to plant 7 Golden Desert Ash street trees along the western frontage of the subject site and use existing deciduous, coniferous, and arborvitae trees to satisfy the requirements of Chapter 17.104 - Street Trees. The applicant proposes to plant 16 total new trees on the site.

SENSITIVE LANDS DEVELOPMENT PERMIT

- The subject site contains steep slopes greater than 20% and so a Sensitive Lands – Slope Hazard Development Permit will be required as well as conformance to Scappoose Development Code (SDC) Chapter 17.86 - Sensitive Lands–Slope Hazard.
- The applicant is proposing to reduce some of the steep slopes of the site (see **Exhibit 4K**).
- The Geotechnical Engineering Report (**Exhibit 5, p. 20**) states that the proposed reservoir will not degrade the slope stability of the site, provided the foundation recommendations of the Report are followed. The recommended Conditions of Approval will require the applicant to follow the recommendations of the Geotechnical Engineering Report. The new water reservoir is proposed to be supported by either deep foundation or ground improvement foundation (see **Exhibit 5, p. 20**), which supports structural stability.

PUBLIC AND PRIVATE AGENCIES

- The City of Scappoose Interim City Manager, Interim Public Safety Director, Public Works Director, Columbia County Public Works Director, Columbia County Building Official, Scappoose Rural Fire Protection District, and Columbia River PUD have been provided an opportunity to review and comment on the proposal.
- The City of Scappoose Public Works Director provided a referral comment (**Exhibit 8**) stating that they have reviewed the application and have no objection to its approval as submitted.

- The Columbia County Building Official provided a referral comment (**Exhibit 9**) stating that the contractor will be required to obtain all applicable building, plumbing, and electrical permits.
- The Scappoose Rural Fire Protection District provided a referral comment (**Exhibit 10**) with requirements related to addressing, fire apparatus roads, hydrants, and emergency access. These requirements are reflected in the recommended Conditions of Approval.
- The Columbia River PUD provided a referral comment (**Exhibit 11**) stating that they have reviewed the application and have no objection to its approval as submitted.
- The Columbia County Public Works Department provided a referral comment (**Exhibit 12**) issuing the following requirements:
    1. The applicant shall obtain an access permit for each connection to Keys Road.
    2. The applicant must obtain a construction permit for any work that occurs within the right-of-way.
    3. No additional storm water may be added to Keys Road.
    4. The applicant will help develop an Intergovernmental Agreement with the County to address any needed road rehabilitation attributable to the construction.
    5. Applicant must meet all City of Scappoose standards.
    6. The portion of newly dedicated right-of-way should be dedicated to the County.

  The applicant will be required by the recommended Conditions of Approval to obtain an access permit for each connection to SW Keys Road, obtain a construction permit for any work that occurs within the right-of-way, adhere to the weight limit for construction vehicles on SW Keys Road, meet the provisions of the Scappoose Municipal Code and Scappoose Public Works Design Standards, and provide the right-of-way dedication to Columbia County. Regarding requirement #3 above, the proposed stormwater improvements will mitigate stormwater runoff for all of the proposed net new impervious areas by adding in a detention system capable of matching the pre-development runoff from the site (see **Exhibits 4O** & **6**). Therefore, the downstream system will not see any increase in runoff from the proposed work. Regarding requirement #4 above, Columbia County will document the condition of SW Keys Road with images and video before construction begins. The City and the County will discuss road restoration following construction.
- Notice of the application and hearing was mailed to property owners within 300 feet of the subject site on April 19, 2024 and published in the April 26, 2024 edition of the Columbia County Spotlight. As of the date of this report, there have been no comments made by the public.

FINDINGS OF FACT

The following sections of the Scappoose Municipal Code and Scappoose Development Code are applicable to this request:

Chapter 12.10
VISUAL CLEARANCE AREAS

12.10.020 Visual clearance–Required

A. A visual clearance area shall be maintained on the corners of all property adjacent to an unregulated intersection of two streets, a street and a railroad, or a driveway providing access to a public or private street.

Finding: The corners of the subject site are not adjacent to an intersection of two streets or a street and a railroad (see **Exhibit 4D**). The subject site has and is proposed to retain two driveways, one in the northwest corner of the site and the other in the southeast corner of the site (see **Exhibits 4D** & **4U**). Visual clearance will be required to be maintained at both driveways. Section 12.10.020(A) is satisfied.

B. A visual clearance area shall contain no vehicle, recreational vehicle, watercraft, parts designed to be affixed to a vehicle of any type, hedge, planting, fence, wall structure, sign, or temporary or permanent obstruction that would impede visibility between a height of three feet and ten feet above the center line grades of the intersecting streets or railroad.

Finding: The visual clearance areas (VCA) do not contain any of the items listed above except for existing arborvitae trees and a chain link fence, both on the western side of the southeastern driveway (see **Exhibit 4D**). The chain link fence is nearly completely transparent, compared to a fence constructed of wood or another solid material. The trees in this area are already continuously trimmed by the property owner (see **Exhibit 3A, Photo 1**), which Section 12.10.020(D) provides an exemption for. The recommended Conditions of Approval will require the applicant to regularly trim the arborvitae trees that are in the VCA up to 8 feet above the level of the driveway. Section 12.10.020(B) is satisfied.

C. Where the crest of a hill or vertical curve conditions contribute to the obstruction of visual clearance areas at a street, driveway or railroad intersection, hedges, plantings, fences, walls, wall structures and temporary or permanent obstructions shall be further reduced in height or eliminated to comply with the intent of the required visual clearance area.

Finding: The northwestern driveway has a negligible slope in terms of its impact on visual clearance. The southeastern driveway slopes downward towards the street, which improves visual clearance for egress drivers. Without any slopes causing an existing or potential visual clearance hazard, stricter visual clearance requirements will not be established. Section 12.10.020(C) is satisfied.

D. The preceding provisions shall not apply to the following:

[…]

2. A tree trimmed (to the trunk) to a line at least eight feet above the level of the intersection;

[…]

Finding: The subject site has an existing row of arborvitae trees along its southern edge that

interfere with the western VCA of the southeastern driveway (see **Exhibit 4D**). The recommended Conditions of Approval will require the applicant to regularly trim these trees to a distance of at least 8 feet above the level of the driveway. Section 12.10.020(D) is satisfied.

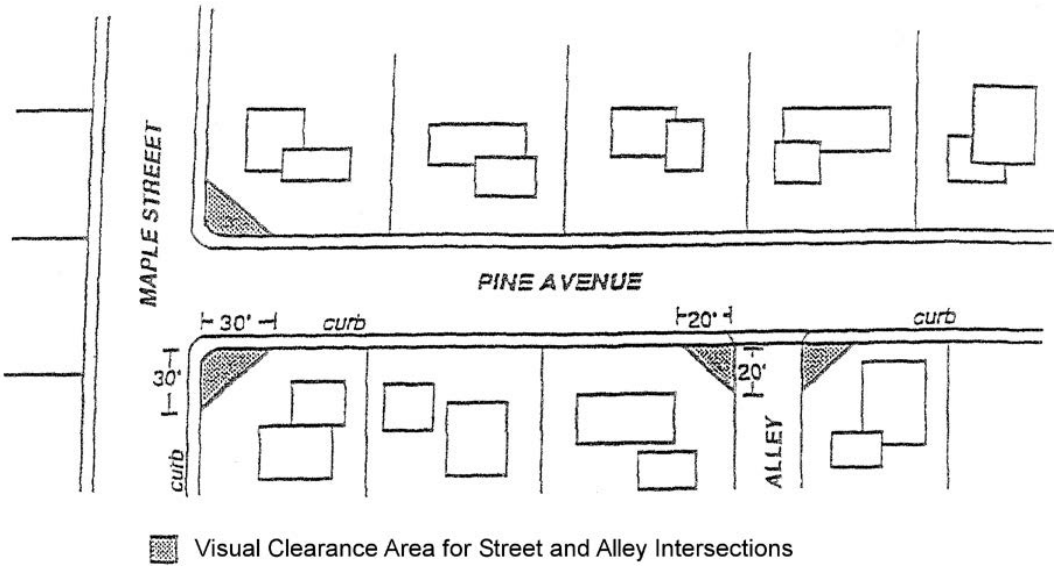
12.10.030 Visual clearance area dimensions

A visual clearance area shall consist of a triangular area, two sides of which are lot lines for distances specified in this section, or, where the lot lines have rounded corners, the lot lines extended in a straight line to a point of intersection and so measured, and the third side of which is a line across the corner of the lot joining the nonintersecting ends of the other two sides. The following measurements shall establish the visual clearance areas:

A. Street and Railroad Intersections (see also Figure 12.10.1):

Intersection Classification	***Measurement Along each Lot Line***
All streets except alleys	*30 feet*
Streets and railroads	*30 feet*
Alley	*10 feet*
Intersection of a street and alley	*20 feet*

Figure 12.10.1. Visual Clearance Areas for Streets and Alleys



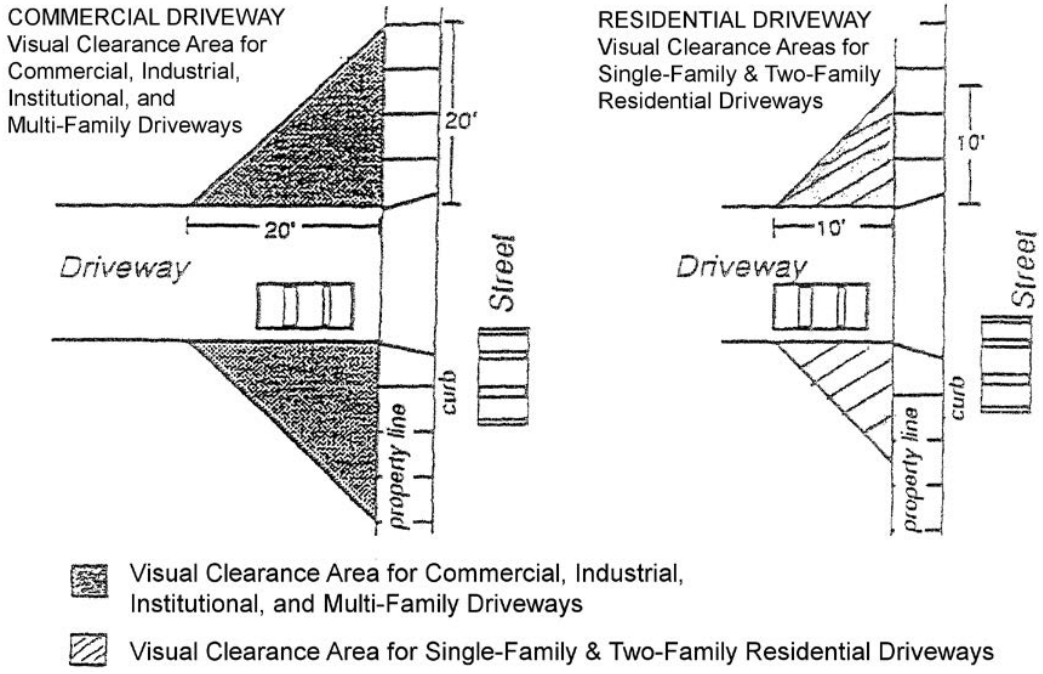
B. Driveway Intersections (see also Figure 12.10.2):

1. Commercial, Industrial, Institutional, and Multi-Family Developments. Service drives to public or private streets shall have a minimum visual clearance area formed by the intersection of the edges of the service drive, the street right-of-way line, and a straight line joining said lines through points twenty feet from their intersection. No off-street parking shall be located in a service drive visual clearance area.

2. Single-Family and Two-Family Developments. Driveways to public or private

streets shall have a minimum visual clearance area formed by the intersection of the edges of the driveway, the street right-of-way line, and a straight line joining said lines through points ten feet from their intersection. No off-street parking area shall be located in a driveway visual clearance area.

Figure 12.10.2. Visual Clearance Areas for Driveways



Finding: The corners of the subject site are not adjacent to an intersection of two streets or a street and a railroad (see **Exhibit 4D**) so visual clearance will not be required for the street intersections; see Section 12.10.020(A). However, the two driveways will need to comply with the visual clearance standards for a commercial driveway. Both driveways conform to the 20-foot visual clearance standards for a commercial driveway except for the arborvitae trees and chain link fence to the west of the southeastern driveway (see **Exhibit 4D**). However, the fence is nearly transparent, and the trees are regularly trimmed (see **Exhibit 3A, Photo 1**), which both qualify for an exception; see Section 12.10.020(D) and staff report findings to Section 12.10.020(B). Section 12.10.030 is satisfied.

Chapter 17.01
INTRODUCTION

17.01.060 Right-of-way dedications and improvements.
Upon approval of any development permit or any land use approval of any property which abuts or is served by an existing substandard street or roadway, the applicant shall make the necessary right-of-way dedications for the entire frontage of the property to provide for minimum right-of-way widths according to the city's public works design standards and shall improve the abutting

portion of the street or roadway providing access to the property in accordance with the standards in Chapter 17.154.

Finding: SW Keys Road is classified by the 2016 Transportation System Plan (TSP)[3] as a Neighborhood Route, which requires 60 feet of right-of-way width. SW Keys Road currently has right-of-way width between 48-54 feet (depending on the section of SW Keys Road). In lieu of providing a dedication meeting the full standards of a Neighborhood Route, the SDC allows developers to submit and record a non-remonstrance agreement if the provisions of Section 17.154.030(A)(3) are met. Since the City of Scappoose is the named applicant and property owner and the City cannot enter a non-remonstrance agreement with itself, a non-remonstrance agreement will not be required. The non-remonstrance criteria in Section 17.154.030(A)(3) will be used to evaluate whether or not the applicant may be waived from performing street improvements and providing a dedication meeting the full standards of a Neighborhood Route. This development proposal applies to the criteria necessary to be waived from street improvements and a wholescale dedication; see staff report findings to Section 17.154.030(A)(3). A right-of-way dedication will be required in the southeastern corner of the subject site to the extent that the sidewalk is entirely within the right-of-way. The applicant is proposing to provide a dedication in this area to remove the sidewalk from the property and to instead have the sidewalk contained within the right of way (see **Exhibit 4N**). Section 17.01.060 is satisfied.

Chapter 17.78
PL-U PUBLIC LANDS–UTILITY

17.78.030 Permitted and Conditional uses.
In the PL-U zone, only the following uses and their accessory uses are permitted outright, and are subject to the provisions of Chapter 17.120, Site Development Review:
A. Public water system structures, including, but not limited to treatment plants, storage reservoirs, pump stations or other major facilities associated with the supply or distribution of water;
[…]

Finding: The applicant is proposing to replace two existing water reservoirs with a new water reservoir (see **Exhibit 2A, p. 1**), which is outright permitted in the Public Lands-Utility (PL-U) zone. The applicant has applied for Site Development Review (see **Exhibit 2A**) and will be subject to the standards of Chapter 17.120. Section 17.78.030 is satisfied.

17.78.050 Dimensional requirements.
Due to the unique nature of the public uses allowed within the PL-U zone, no designated minimum lot size, minimum yard requirements, minimum building height or maximum lot coverage exist. Minimum lot size, lot coverage, building height and yard requirements shall be determined on a case by case basis by the planning commission as provided for within the provisions of Chapter

[3] City of Scappoose, Transportation System Plan, 2016, Figures 12 & 13b.

17.120 or 17.130.

Finding: The subject site is 4.7 acres in area (see **Exhibit 2A, p. 1**), which is sufficiently large enough to host two water reservoirs, a water treatment plant operations building, a backwash basin, and other accessory structures related to public water. The subject site has an approximately calculated lot coverage of 25-30%, including buildings and impervious surfaces (see **Exhibit 4U**), which is very reasonable for the zone and use. The new reservoir is proposed to be 24 feet in height, compared to the height of the larger reservoir that will be demolished, which is 20 feet (see **Exhibit 4U**). The smallest setback on the site is 22.8 feet for an existing reservoir and 36.9 feet for the new reservoir (see **Exhibit 4U**). Staff recommends approving the proposed dimensional conditions since they are very reasonable, do not cause conflicts with the SDC, are similar to the existing dimensional conditions of Keys Road Water Treatment Plant (see **Exhibit 4D**), and the applicant is proposing to provide buffering and screening to the standards of Chapter 17.100 (see **Exhibit 4P**). Section 17.78.050 is satisfied.

Chapter 17.86
SENSITIVE LANDS–SLOPE HAZARD

17.86.020 Applicability of uses.

A. Except as provided by this section, the following uses are permitted uses:

1. Accessory uses such as lawns, gardens or play areas, except in wetlands;

2. Agricultural uses conducted without locating a structure or altering landforms;

3. Public and private conservation areas for water, soil, open space, forest and wildlife resources;

4. Removal of poison oak, tansy ragwort, blackberry or other noxious vegetation;

5. Fences.

B. Separate permits shall be obtained from the appropriate state, county or city jurisdiction for the following:

1. Installation of underground utilities and construction of roadway improvements including sidewalks, curbs, streetlights and driveway aprons;

2. Minimal ground disturbance(s) but no landform alterations.

Finding: The recommended Conditions of Approval will require the applicant to obtain the necessary permits for the relocation of underground utilities. Section 17.86.020(A-B) is satisfied.

C. For the purpose of this chapter, "slope hazard areas" means those areas subject to a severe risk of landslide or erosion. They include any of the following areas:

1. Any area containing slopes greater than or equal to fifteen percent and two of the following subsections;

a. Impermeable soils (typically silt and clay) frequently interbedded with granular soils (predominately sand and gravel),

b. Any area located on areas containing soils which, according to the current version of the soil survey of Columbia County, Oregon may experience severe to

very severe erosion hazard,
c. Any area located on areas containing soils which, according to the current version of the soil survey of Columbia County, Oregon are poorly drained or subject to rapid runoff,
d. Springs or ground water seepage;
2. Any area potentially unstable as a result of natural drainageways, rapid stream incision, or stream bank erosion;
3. Any area located on an alluvial fan, presently subject to or potentially subject to inundation by debris flows or deposition of stream transported sediments;
4. Any area containing slopes greater than or equal to twenty percent.

Finding: The subject site has slopes that are greater than 20% to the east of the water treatment plant operations building and north of the proposed water reservoir (see **Exhibit 4K**). Therefore, the provisions of Chapter 17.86 apply and the applicant will be required to obtain a Sensitive Lands – Slope Hazard Development Permit. Section 17.86.020(C) is satisfied.

D. Landform alterations or developments within slope hazard areas that meet the jurisdictional requirements and permit criteria of the U. S. Army Corps of Engineers, Division of State Lands, and/or other federal, state or regional agencies do not require duplicate analysis or local permits. The city may require additional information not addressed above. When any provision of any other chapter of this title conflicts with this chapter, the regulations that provides more protection to the sensitive areas shall apply unless specifically provided otherwise in this chapter; provided, such exceptions shall not conflict with any federal, state or local regulation.

Finding: The development does not trigger the jurisdictional requirements of the U.S. Army Corps of Engineers or Department of State Lands, or any other agencies; therefore, the applicant only applied for permits related to slope hazards with the City of Scappoose and so the standards of Chapter 17.86 will be used. Section 17.86.020(D) is satisfied.

E. A development permit shall be obtained before construction or development begins within any area of slope hazard as identified in subsection C of this section. The permit shall apply to all structures including manufactured homes.

Finding: The applicant has applied for a Sensitive Lands – Slope Hazard Development Permit (see **Exhibit 2B**). Approval of this permit will be required for the applicant to begin construction of the water reservoir or otherwise impact landforms in the slope hazard area. Section 17.86.020(E) is satisfied.

F. Except as explicitly authorized by other provisions of this chapter, all other uses are prohibited on steep slope areas.
G. A use established prior to the adoption of this title, which would be prohibited by this chapter or which would be subject to the limitations and controls imposed by this chapter, shall be considered a nonconforming use. Nonconforming uses shall be subject to the provisions of

Chapter 17.132.
H. The planner shall determine if a slope hazard applies based upon one or any combination described in subsection C of this section.

Finding: Section 17.78.030(A) authorizes the development of public water reservoirs in the PL-U zone. As the proposed water reservoir is in the slope hazard area for having slopes that exceed 20%, a Sensitive Lands – Slope Hazard Development Permit will be required. The applicant has applied for this permit (see **Exhibit 2B**) and the approval of which will be required for development to occur. Section 17.86.020(F-H) is satisfied.

17.86.050 General provisions for slope areas.
A. Slope hazard regulations apply to those areas meeting the federal, state or local definition of "slope hazard" as identified in Section 17.86.020(C) and areas of land adjacent to and within one hundred feet of areas identified as slope hazards.
B. Slope locations may include but are not limited to those areas identified as slope hazards in the Scappoose comprehensive plan.
C. Precise boundaries may vary from those shown on maps; specific delineation of slope hazards boundaries may be necessary. Slope hazard delineation will be done by qualified professionals at the applicant's expense.

Finding: Measured 100 feet south of the slopes that are 20% or greater, the proposed reservoir is in the area applicable to slope hazard regulations (see **Exhibit 4K**). A Sensitive Lands – Slope Hazard Development Permit will be required for development in this area. Section 17.86.050 is satisfied.

17.86.070 Approval standards.
A. The planner or the planning commission may approve or approve with conditions or deny an application request within the slope area based upon following findings:
1. Land form alterations shall preserve or enhance slope stability;

Finding: The Geotechnical Engineering Report (**Exhibit 5, p. 20**) states that the proposed reservoir will not degrade the slope stability of the site, provided the foundation recommendations of the Report are followed. The recommended Conditions of Approval will require the applicant to follow the recommendations of the Geotechnical Engineering Report. Section 17.86.070(A)(1) is satisfied.

2. The proposed land form alteration or development will not result in erosion, stream sedimentation, ground instability, or other adverse on-site and off-site effects or hazards to life or property;

Finding: The applicant is proposing standard erosion control procedures for construction (see **Exhibit 4H**). Additionally, the applicant is proposing to reduce some of the steep slopes of the site (see **Exhibit 4K**), which would also reduce the risk of erosion and stream sedimentation. The

Geotechnical Engineering Report (**Exhibit 5, p. 20**) states that the proposed reservoir will not degrade the slope stability of the site, provided the foundation recommendations of the Report are followed. The recommended Conditions of Approval will require the applicant to follow the recommendations of the Geotechnical Engineering Report. Section 17.86.070(A)(2) is satisfied.

3. Land form alterations or developments address stormwater runoff, maintenance of natural drainageways, and reduction of flow intensity by the use of retention areas;

Finding: The applicant submitted a Stormwater Design Report (**Exhibit 6**), which addresses stormwater runoff and existing drainageways. The applicant is proposing to utilize detention basins but not retention basins (see **Exhibit 6, pp. 4-7**). Section 17.86.070(A)(3) is satisfied.

4. The structures are appropriately sited and designed to ensure structural stability and proper drainage of foundation and crawl space areas for development with any of the following soil conditions: wet/high water table; high shrink-swell capability; compressible/organic; and shallow depth-to-bedrock;

Finding: The new water reservoir is proposed to be supported by either deep foundation or ground improvement foundation (see **Exhibit 5, p. 20**), which supports structural stability. The applicant is proposing to use an underdrain system and a vertical drain system surrounding the perimeter of the tank for drainage (see **Exhibit 5, pp. 17-20**). Although soil units have a wide range of compressibility (see **Exhibit 5, pp. 7-8**), the requirement for a crawl space is not applicable to a water reservoir since its does not have electrical wiring, HVAC, or other systems that need to be accessed via a crawl space. Section 17.86.070(A)(4) is satisfied.

5. Where natural vegetation has been removed due to land form alteration or development, the areas not covered by structures or impervious surfaces will be replanted to prevent erosion in accordance with Chapter 17.100;

Finding: The applicant is proposing to plant grass seed in the areas that are currently sloped at 20% or greater, impacted by land form alterations, or impacted by construction (see **Exhibit 4P**). Section 17.86.070(A)(5) is satisfied.

6. The water flow capacity of the drainageway is not decreased or the drainageway will be replaced by a public facility of adequate size to accommodate maximum flow;

Finding: The water flow capacity of the drainageway would not be decreased as a result of this development (see **Exhibit 3, p. 12**). Section 17.86.070(A)(6) is satisfied.

7. The necessary U.S. Army Corps of Engineers and state of Oregon Land Board, Division of State Lands and Department of Environmental Quality approvals shall be obtained;

Finding: The proposed development will require a 1200 Series Construction Stormwater Permit

from the Oregon Department of Environmental Quality. The recommended Conditions of Approval will require the applicant to obtain this permit before development occurs. Section 17.86.070(A)(7) is satisfied.

8. No development, building, construction or grading permit may be issued on lands in the slope hazard area until the public works director approves:

a. An engineering geotechnical study and supporting data demonstrating that the site is stable for the proposed use and development,

b. The study shall include at a minimum geologic conditions, soil types and nature, soil strength, water table, history of area, slopes, slope stability, erosion, affects of proposed construction, and recommendations. This study shall be completed by a registered geotechnical engineer in the state of Oregon. The plans and specifications shall be based on the study recommendations shall be prepared and signed by a professional civil engineer registered in the state of Oregon,

c. A stabilization program for an identified hazardous condition based on established and proven engineering techniques that ensure protection of public and private property,

Finding: The applicant submitted a Geotechnical Engineering Report (**Exhibit 5**) that includes findings and analysis on site stability (see **p. 20**), geologic conditions (see **pp. 3-11**), history (see **pp. 3-4**), slopes (see **pp. 10-11, 20**), erosion (see **pp. 20-21**), and recommendations (see **pp. 12-26**). The City of Scappoose Public Works Director provided a referral comment (**Exhibit 8**) stating that they have reviewed the application, including the Geotechnical Engineering Report, and have no objection to its approval as submitted. Section 17.86.070(A)(8)(a-c) is satisfied.

d. A plan showing that the strategically important vegetative cover shall be maintained or established for stability and erosion control purposes,

Finding: The applicant's Landscaping Plan (**Exhibit 4P**) proposes to plant grass seed in the areas that are currently sloped at 20% or greater, impacted by land form alterations, or impacted by construction. The Construction Grading and TESC (Temporary Erosion & Sediment Control) Plan (**Exhibit 4H**) also shows standard erosion control procedures during construction. The City of Scappoose Public Works Director provided a referral comment (**Exhibit 8**) stating that they have reviewed the application, including the Landscaping Plan and the Construction Grading and TESC Plan, and have no objection to its approval as submitted. Section 17.86.070(A)(8)(d) is satisfied.

e. A plan showing the proposed stormwater system. Said system will not divert stormwater into slope hazard areas.

Finding: The applicant submitted a Proposed Drainage Plan (**Exhibit 4O**) and a Stormwater Design Report (**Exhibit 6**). The Plan and Report show that stormwater will not be diverted into slope hazard areas. The City of Scappoose Public Works Director provided a referral comment (**Exhibit 8**) stating that they have reviewed the application, including the Proposed Drainage Plan and the

Stormwater Design Report, and have no objection to its approval as submitted. Section 17.86.070(A)(8)(e) is satisfied.

B. Where landform alterations and/or development are allowed within and adjacent to the one hundred-year floodplain, the requirements of Chapter 17.84 shall be met.
C. Where landform alterations and/or development are allowed within and adjacent to wetlands, the requirements of Chapter 17.85 shall be met.

Finding: There are no wetlands on the subject site, nor is it within the 100-year floodplain. Therefore, the provisions of Chapters 17.84 and 17.85 are not applicable to this proposal. Section 17.86.070(B-C) is not applicable.

Chapter 17.100
LANDSCAPING, SCREENING AND FENCING

17.100.090 Buffering and screening requirements.
A. Buffering and screening are required to reduce the impacts on adjacent uses which are of a different type. The owner of each proposed development is responsible for the installation and effective maintenance of buffering and screening. When different uses abut one another, buffering and screening are required. When different uses would be abutting one another except for separation by a right-of-way, buffering, but not screening, shall be required.

Finding: The subject site directly abuts residential uses to its north and to a portion of its east (south of the vacant lot that also abuts the subject site). Buffering and screening will be required in these areas. The subject site would be abutting residential uses to its west and south if not for the SW Keys Road right-of-way. Buffering, but not screening, will be required in these areas. Section 17.100.090(A) is satisfied.

B. A buffer consists of an area within a required interior setback adjacent to a property line, having a width of ten feet, except where the planning commission requires additional width, and a length equal to the length of the property line of the abutting use or uses.
C. Occupancy of a buffer area shall be limited to utilities, screening, and landscaping. No buildings, access ways or parking areas shall be allowed in a buffer area.

Finding: The applicant is proposing to create 10-foot-wide buffer areas along the northern, western, southern, and a portion of the eastern (where the subject site abuts an active residential use) property lines (see **Exhibit 3, p. 17**). The buffer area will not be occupied by any site elements other than utilities, screening, landscaping, and a portion of an existing sidewalk (see **Exhibit 4P**). Section 17.100.090(B-C) is satisfied.

D. The minimum improvements within a buffer area shall include:
1. One row of trees, or groupings of trees equivalent to one row of trees. At the time of planting, these trees shall not be less than ten feet high for deciduous trees and five feet

high for evergreen trees measured from the ground to the top of the tree after planting. Spacing for trees shall be as follows:

a. Small or narrow stature trees, under twenty-five feet tall or less than sixteen feet wide at maturity shall be spaced no further than fifteen feet apart;

b. Medium sized trees between twenty-five feet to forty feet tall and with sixteen feet to thirty-five feet wide branching at maturity shall be spaced no greater than twenty-five feet apart;

c. Large trees, over forty feet tall and with more than thirty-five feet wide branching at maturity, shall be spaced no greater than thirty feet apart.2. In addition, at least one five-gallon shrub shall be planted for each one hundred square feet of required buffer area.

2. In addition, at least one five-gallon shrub shall be planted for each one hundred square feet of required buffer area.

3. The remaining area shall be planted in groundcover or spread with bark mulch.

Finding: The applicant is proposing to use existing deciduous and coniferous trees as well as newly planted Golden Desert Ash trees along the northern and western property lines (see **Exhibit 4P**). Golden Desert Ash trees are classified as medium sized trees and therefore, should not be spaced more than 25 feet apart. The applicant is proposing for the newly planted Golden Desert Ash trees to be either 15 or 18 feet apart where no conflicts with underground utility lines, existing landscaping, or VCAs exist. The applicant is proposing to use existing deciduous, coniferous, and arborvitae trees along the southern property line and where buffering is required along the eastern property line (see **Exhibit 4P**). A small portion of the southwestern curve of the subject site lacks existing or proposed plantings because planting a tree in this area would interfere with existing sewer lines (see **Exhibit 4N**) and so it will not be required. Section 17.100.090(D) is satisfied.

E. Where screening is required the following standards shall apply in addition to those required for buffering:

1. A hedge of narrow or broadleaf evergreen shrubs shall be planted which will form a four-foot continuous screen within two years of planting; or

2. An earthen berm planted with evergreen plant materials shall be provided which will form a continuous screen six feet in height within two years. The unplanted portion of the berm shall be planted in lawn, ground cover or bark mulched; or

3. A five-foot or taller fence or wall shall be constructed to provide a continuous sight obscuring screen. Fences and walls shall be constructed of any materials commonly used in the construction of fences and walls such as wood or brick, or otherwise acceptable by the planner. Corrugated metal is not considered to be acceptable fencing material. Chain link fences with slats may qualify as screening when combined with a planting of a continuous evergreen hedge;

4. An evergreen hedge or other dense evergreen landscaping may satisfy a requirement for a sight obscuring fence where required. Such hedge or other dense landscaping shall be properly maintained and shall be replaced with another hedge, other dense evergreen

landscaping, or a fence or wall when it ceases to serve the purpose of obscuring view; and no hedge shall be grown or maintained at a height greater than that permitted by these regulations for a fence or wall when located within a visual clearance area as set forth in Chapter 12.10, Visual Clearance Areas

Finding: There is an existing wooden fence along the northern property line of varying heights due to the step formation of the fence (see **Exhibits 3, p. 19** & **4P**). All heights are above the required 5 feet. There is an existing continuous row of arborvitae trees between the subject site and the existing residential use to the east. The arborvitae trees are planted in a continuous row that forms a satisfactory screening effect, as can be seen in **Exhibit 3A, Photo 3**. Section 17.100.090(E) is satisfied.

F. Buffering and screening provisions shall be superseded by the vision clearance requirements as set forth in Chapter 12.10, Visual Clearance Areas.

Finding: The requirements of Chapter 12.10 took precedence over the requirements of Section 17.100.090. Section 17.100.090(F) is satisfied.

G. When the use to be screened is downhill from the adjoining zone or use, the prescribed heights of required fences, walls or landscape screening shall be measured from the actual grade of the adjoining property.

Finding: The overall subject site has a west-to-east downhill slope (see **Exhibit 4K**). Because of this, the adjoining uses to the north of the subject site are approximately the same elevation as the subject site. Regarding the eastern screening, the utility use to be screened is not downhill from the adjoining residential use. Section 17.100.090(G) is not applicable.

Section 17.100.100 Screening–Special provisions.
A. If four or more off-street parking spaces are required under this title, off-street parking adjacent to a public street shall provide a minimum of four square feet of landscaping for each lineal foot of street frontage. Such landscaping shall consist of landscaped berms or shrubbery at least two feet in height, which shall be dispersed adjacent to the street as much as practical. Additionally, one tree which shall provide a canopy of at least three hundred square feet upon maturity shall be provided for each fifty lineal feet of street frontage or fraction thereof. Landscaped parking areas may include special design features which effectively screen the parking lot areas from view. These design features may include the use of landscaped berms, decorative walls, and raised planters. Landscape planters may be used to define or screen the appearance of off-street parking areas from the public right-of-way. Materials to be installed shall achieve a balance between low lying and vertical shrubbery and trees.

Finding: No new parking spaces are required by the SDC. Section 17.100.100(A) is not applicable.

B. Loading areas and outside storage shall be screened from public view from public streets and

adjacent properties by means of sight-obscuring landscaping, fences, walls or other means. The screen shall have a minimum height of six feet and the planning commission may require a taller screen depending on the location and height of the loading or storage area.

Finding: No off-street loading or outside storage will take place in the proposed development. Section 17.100.100(B) is not applicable.

C. Except for one-family and two-family dwellings, any refuse container or disposal area and service facilities such as gas meters and air conditioners which would otherwise be visible from a public street, customer or resident parking area, any public facility or any residential area, shall be screened from view by placement of a solid wood fence, masonry wall or evergreen hedge between five and eight feet in height. All refuse materials shall be contained within the screened area.

Finding: The applicant is not proposing to establish a refuse container, disposal area, or service facility (see **Exhibit 4U**). Section 17.100.100(C) is not applicable.

17.100.110 Fences or walls.
A. Fences, walls or combinations of earthen berms and fences or walls up to four feet in height may be constructed in required front yards. Rear and side yard fences, or berm/fence combinations behind the required front yard setback may be up to six feet in height without any additional permits. Any proposed fence or fence/berm combination higher than six feet shall require a building permit. Any fence or fence/berm combination greater than eight feet in height shall require planning commission approval in addition to a building permit.
B. The prescribed heights of required fences, walls or landscaping shall be measured from the lowest of the adjoining levels of finished grade.
C. Fences and walls shall be constructed of any materials commonly used in the construction of fences and walls such as wood or brick, or otherwise acceptable by the planner. Corrugated metal is not considered to be acceptable fencing material. Fences and walls shall be in compliance with other city regulations.

Finding: There is an existing fence between the subject site and the residences to its north (see **Exhibit 4P**). The height of the fence is between the 5-foot minimum and the 7-foot maximum. The fence is constructed of wood (see **Exhibit 3, p. 19**), which is an acceptable material for a fence. Section 17.100.110 is satisfied.

17.100.140 Re-vegetation.
A. Upon completion of construction activities, where natural vegetation or topsoil has been removed in areas not affected by the landscaping requirements and that are not to be occupied by structures, such areas are to be replanted as set forth in this section to prevent erosion.
B. Preparation for Re-vegetation. Topsoil removed from the surface is to be stored on or near the sites and protected from erosion while construction activities are underway; and
1. Such storage may not be located where it would cause suffocation of root systems of

trees intended to be preserved; and

2. After completion of such activities, the topsoil is to be restored to exposed cut and fill embankments or building pads to provide a suitable base for seeding and planting.

C. Methods of Re-vegetation.

1. Acceptable methods of re-vegetation include hydromulching or the planting of rye grass, barley or other seed with equivalent germination rates, and where lawn or turf grass is to be established, lawn grass seed or other appropriate landscape cover is to be sown at not less than four pounds to each one thousand square feet of land area.

2. Other re-vegetation methods offering equivalent protection may be approved by the approval authority.

3. Plant materials are to be watered at intervals sufficient to ensure survival and growth.

4. The use of native plant materials is encouraged to reduce irrigation and maintenance demands.

Finding: The applicant is proposing to replant any areas where vegetation removal occurs with grass seed (see **Exhibits 3, p. 12** & **4P**). The applicant will be required by the recommended Conditions of Approval to revegetate the site in accordance with this section. Section 17.100.140 is satisfied.

Chapter 17.104
STREET TREES

17.104.020 Applicability.

A. The provisions of this chapter shall apply to all development as defined in Scappoose Municipal Code Chapter 17.26, Definitions, except a building permit to add to or remodel an existing single family residence.

B. All development shall be required to plant street trees. Street trees shall be defined as trees located on land lying between the property lines on either side of all streets, avenues or public rights-of-way within the city or within easements defined on a recorded plat as street tree easements.

C. All street trees required under this chapter shall be subject to the requirements of Scappoose Municipal Code Chapter 17.140 Public Land Tree Removal.

Finding: The applicant is proposing to construct a water reservoir (see **Exhibit 2A**), which falls under the definition of development; see Section 17.26.030. Therefore, street trees are required. If any street trees are proposed to be removed in the future, the provisions of Chapter 17.140 will be applied. Since the applicant is proposing to remove 7 trees from the site overall (not exclusively street trees) (see **Exhibit 4F**) and the subject site is a public property, a Public Land Tree Removal Permit subject to Chapter 17.140 will be required. The findings to Chapter 17.140 are included in this staff report. Section 17.104.020 is satisfied.

17.104.040 Standards for street trees.

A. Street trees shall be selected from the approved street tree list on file with the Planning

Department.

Finding: The applicant is proposing to plant 7 Golden Desert Ash street trees (see **Exhibit 4P**). Golden Desert Ash is a species on the Approved Street Tree list[4]. The existing street trees are a combination of deciduous and coniferous trees (see **Exhibit 4P**) that are not required to be on the Approved Street Tree list because they are existing. Section 17.104.040(A) is satisfied.

B. At the time of planting, street trees shall not be less than ten feet high for deciduous trees and five feet high for evergreen trees.

Finding: The Landscaping Plan (**Exhibit 4P**) includes instructions for deciduous tree planting, which instructs that the Golden Desert Ash street trees be a minimum height of 10 feet at the time of planting. Section 17.104.040(B) is satisfied.

C. Spacing and minimum planting areas for street trees shall be as follows:

1. Street trees under twenty-five feet tall and less than sixteen feet wide at maturity shall be spaced no further than fifteen feet apart in planting areas containing no less than sixteen square feet of porous surface and not less than four feet wide;

2. Street trees under twenty-five feet tall and greater than sixteen feet wide at maturity shall be spaced no further than twenty feet apart in planting areas containing no less than sixteen square feet of porous surface and not less than four feet wide;

3. Street trees between twenty-five feet to forty feet tall and less than twenty-five feet wide at maturity shall be spaced no greater than twenty-five feet apart in planting areas containing no less than twenty-four square feet of porous surface and not less than six feet wide;

4. Street trees between twenty-five feet to forty feet tall and greater than twenty-five feet wide at maturity shall be spaced no greater than thirty feet apart in planting areas containing no less than twenty-four square feet of porous surface and not less than six feet wide;

5. Street trees greater than forty feet tall at maturity shall be spaced no greater than forty feet apart in planting areas containing not less than thirty-six square feet of porous surface and not less than eight feet wide.

Finding: Golden Desert Ash trees are under 25 feet tall and greater than 16 feet wide at maturity[5], meaning that they shall be spaced no further than 20 feet apart in planting areas containing no less than 16 square feet of porous surface and not less than 4 feet wide. Golden Desert Ash street trees are proposed to be planted at 18-foot spacing intervals where there are no conflicts with existing trees, underground utilities, or VCAs (see **Exhibit 4P**). The deciduous tree planting instructions provide that the porous area will be 6 feet wide and ~28 square feet in area (see **Exhibit 4P**). Section 17.104.040(C) is satisfied.

[4] City of Scappoose Approved Street Trees, 2023, page 3.
[5] City of Scappoose Approved Street Trees, 2023, page 3.

D. Street trees located under or within ten feet of overhead utility lines shall be less than twenty-five feet tall at maturity.

Finding: There is an overhead utility line across SW Keys Road from the proposed street trees (see **Exhibit 4D**), which is more than 10 feet away. Section 17.104.040(D) is not applicable.

E. Street trees shall be planted in accordance with the requirements of Scappoose Municipal Code Section 13.28.020(C).

Finding: The recommended Conditions of Approval will require the applicant to plant all new trees on the site in accordance with Section 13.28.020(C) since the entire property is classified as public lands. Section 17.104.040(E) is satisfied.

17.104.060 Maintenance of street trees.
A. The adjacent owner, tenant, and their agent, if any, shall be jointly and severally responsible for the maintenance of all street trees which shall be maintained in good condition so as to present a healthy, neat and orderly appearance and tree wells shall be kept free from refuse and debris.
B. All street trees shall be controlled by pruning to National Arborist Association Pruning Standards for Shade Trees included as Appendix B of the Scappoose Comprehensive Urban Forestry Plan.
C. Every owner of any tree overhanging any street or right-of-way within the city shall prune the branches so that such branches shall not severely obstruct the light from any street lamp or obstruct the view of any street intersection and so that there shall be a clear space of thirteen feet above street surface or eight feet above the sidewalk surface. Such owners shall remove all dead, diseased or dangerous trees, or broken or decayed limbs which constitute a menace to the safety of the public. The city shall have the right to prune any tree or shrub on private property when it interferes with the proper spread of light along the street from a street light, or interferes with visibility of any traffic-control device or sign or sight triangle at intersections as defined in Scappoose Municipal Code 12.10, Visual Clearance Areas. Tree limbs that grow near high voltage electrical conductors shall be maintained clear of such conductors by the electric utility company in compliance with any applicable franchise agreements.
D. The city shall have the right to plant, prune, and otherwise maintain trees, plants and shrubs within the lines of all streets, alleys, avenues, lanes, as may be necessary to insure public safety or to preserve or enhance the symmetry and beauty of such public grounds.
E. It is unlawful as a normal practice for any person, firm or city department to top any street tree. Topping is defined as the severe cutting back of limbs within the tree's crown to such a degree so as to remove the normal canopy and disfigure the tree. Trees severely damaged by storms or other causes, or certain trees under utility wires or other obstructions where other pruning practices are impractical may be exempted from this chapter at the determination of the city manager after consultation with a registered arborist or certified forester.

17.104.070 Excavation approval required.
Written approval of the city manager is required prior to any excavation within the dripline of a street tree.

17.104.080 Penalties for damage or removal of street trees.
Any activity that results in injury, mutilation or death of a street tree is prohibited. If such injury, mutilation or death of a street tree shall occur, the cost of the repair or replacement shall be borne by the party performing the activity. The replacement value of street trees shall be determined in accordance with the latest revision of the Council of Tree and Landscape Appraisers evaluation method.

Finding: The applicant has stated in their Narrative (**Exhibit 3, p. 22**) that they acknowledge and accept the responsibilities and regulations above. Sections 17.104.060, 17.104.070, and 17.104.080 are satisfied.

Chapter 17.120
SITE DEVELOPMENT REVIEW

17.120.020 Applicability of provisions.
Site development review shall be applicable to all new developments and major modification of existing developments, as provided in Section 17.120.070 except it shall not apply to:
[…]

17.120.030 Administration and approval process.
A. The applicant for a site development review proposal shall be the recorded owner of the property or an agent authorized in writing by the owner.
B. Applications for site development review shall be processed according to Chapter 17.164.
C. The planning commission shall approve, approve with conditions or deny any application for site development review. The planning commission shall apply the standards set forth in Section 17.120.180 when reviewing an application for site development review.

Finding: The applicant is requesting approval that would allow for the demolition of two existing water reservoirs, construction of a new 3-million-gallon water reservoir, and improvements to various site amenities (see **Exhibit 2A**). This request requires approval of Site Development Review, where Planning Commission is the approval authority. This application will be processed in consolidation with an application for a Sensitive Lands Development Permit (see **Exhibit 2B**). Pursuant to Section 17.01.050(B), public noticing for the consolidated application was provided in accordance with Chapter 17.162 since these noticing requirements are a higher standard than Chapter 17.164. Public comments related to SDR will be processed in accordance with Chapter 17.164 and public comments related to SLDP will be processed in accordance with Chapter 17.162. Both applications would need to be approved for the applicant to be permitted to construct the proposed water reservoir. Sections 17.120.020 and 17.120.030 are satisfied.

17.120.040 Expiration of approval.

A. Site development review approval by the planning commission shall be effective for a period one year from the date of approval.

B. The site development review approval by the planning commission shall lapse if:

1. Substantial construction of the approved plan has not been completed within a one-year period; or

2. Construction on the site is a departure from the approved plan.

C. The planner may, upon written request by the applicant, grant an extension of the approval period not to exceed one year; provided, that:

1. No changes are made on the original site development review plan as approved by the planning commission;

2. The applicant can show intent of initiating construction on the site within the one year extension period; and

3. There have been no changes to the applicable comprehensive plan policies and ordinance provisions on which the approval was based.

D. Notice of the decision shall be provided to the applicant.

Finding: If approved by the Planning Commission on May 9, 2024, the approval shall be effective until May 9, 2025. Approval will be revoked if substantial development to the site has not occurred or if the development deviates from the plans approved by the Planning Commission. Extension of approval may be granted by the planner if the provided criteria are met. Following a decision by the Planning Commission, notice will be sent to the applicant and others entitled to notice. Section 17.120.040 is satisfied.

17.120.180 Approval standards.

The planning commission shall make a finding with respect to each of the following criteria when approving, approving with conditions, or denying an application:

A. Provisions of all applicable chapters;

Finding: The applicable chapters of the Scappoose Municipal and Development Code are discussed throughout this staff report. Section 17.120.180(A) is satisfied.

B. Buildings shall be located to preserve topography, and natural drainage; located in areas not subject to ground slumping or sliding; located to provide adequate distance between adjoining buildings for adequate light, air circulation, and fire fighting; and oriented with consideration for sun and wind; and

Finding: The new water reservoir is proposed to be located in roughly the same location as the existing water reservoirs to be demolished (see **Exhibit 4U**). Due to the steep slopes of the site, the applicant is proposing some fill to reduce the slopes (see **Exhibit 4K**). The water flow capacity of the natural drainageway would not be decreased as a result of this development (see **Exhibit 3, p. 12**). The Geotechnical Engineering Report (**Exhibit 5, p. 10**) identified the risk of liquefaction as low. The new water reservoir is proposed to be located 36.9 feet from the nearest property

and over 100 feet from the nearest major building (see **Exhibit 4U**). Section 17.120.180(B) is satisfied.

C. Existing trees having a six-inch caliper or greater shall be preserved or replaced by new plantings of equal character;

Finding: The applicant is proposing to remove 7 street trees having a caliper of 6 inches or greater (see **Exhibit 4F**) and to plant 16 new trees (see **Exhibit 4P**). Section 17.120.180(C) is satisfied.

D. Privacy and noise:

1. The buildings shall be oriented in a manner which protects private spaces on adjoining properties from view and noise,

2. Residential buildings shall be located on the portion of the site having the lowest noise levels, and

3. On-site uses which create noise, lights, or glare shall be buffered from adjoining residential uses;

Finding: The proposed water reservoir is expected to generate minimal visual or audible impacts. For the impacts it may generate, the applicant is proposing to provide buffering and screening between the reservoir and the adjoining residential use to the standards of 17.100.090. Section 17.120.180(D) is satisfied.

E. Private outdoor area: residential use:

1. Structures which include residential dwelling units shall provide private outdoor areas which is screened from view by adjoining units,

2. Private open space such as a patio or balcony shall be provided and shall be designed for the exclusive use of individual units and shall be at least forty-eight square feet in size with a minimum width dimension of four feet, and

a. Balconies used for entrances or exits shall not be considered as open space except where such exits or entrances are for the sole use of the unit, and

b. Required open space may include roofed or enclosed structures such as a recreation center or covered picnic area,

3. Wherever possible, private outdoor open spaces should be oriented toward the sun;

F. Shared outdoor recreation areas: residential use:

1. In addition to the requirements of subsections D and E of this section, usable outdoor recreation space shall be provided in multifamily, mixed-use, and live/work residential developments for the shared or common use of all the residents in the following amounts:

a. Studio up to and including two-bedroom units, two hundred square feet per unit, and

b. Three or more bedroom units, three hundred square feet per unit,

2. The required recreation space may be provided as follows:

a. It may be all outdoor space, or

b. It may be part outdoor space and part indoor space; for example, an outdoor

tennis court, and indoor recreation room,
c. It may be all public or common space,
d. It may be part common space and part private; for example, it could be an outdoor tennis court, indoor recreation room and balconies on each unit, and
e. Where balconies are added to units, the balconies shall not be less than forty-eight square feet.

1. Shared outdoor recreation space shall be readily observable for reasons of crime prevention and safety;

Finding: The proposed development is not for a residential use (see **Exhibit 2A**). Section 17.120.180(E-F) is not applicable.

G. Where landfill and/or development is allowed within and adjacent to the one hundred-year floodplain, the city may require the dedication of sufficient open land area for greenway adjoining and within the floodplain. This area shall include portions at a suitable elevation for the construction of a pedestrian/bicycle pathway within the floodplain;

Finding: The subject site is not within or adjacent to the 100-year floodplain. Section 17.120.180(G) is not applicable.

H. Demarcation of public, semipublic, and private spaces; crime prevention:

1. The structures and site improvements shall be designed so that public areas such as streets or public gathering places, semipublic areas and private outdoor areas are clearly defined in order to establish persons having a right to be in the space, in order to provide for crime prevention and to establish maintenance responsibility; and
2. These areas may be defined by a deck, patio, low wall, hedge or draping vine, a trellis or arbor, a change in level or landscaping;

Finding: The majority of the subject site is currently and will remain fenced from the public right-of-way (see **Exhibit 4U**) to clearly indicate who has a right to be in the space during all hours of the day. Section 17.120.180(H) is satisfied.

I. Crime prevention and safety:

1. Windows shall be located so that areas vulnerable to crime can be surveyed by the occupants,
2. Interior laundry and service areas shall be located in a way that they can be observed by others,
3. Mail boxes shall be located in lighted areas having vehicular or pedestrian traffic,
4. The exterior lighting levels shall be selected and the angles shall be oriented towards areas vulnerable to crime, and
5. Light fixtures shall be provided in areas having heavy pedestrian or vehicular traffic and in potentially dangerous areas such as parking lots, stairs, ramps and abrupt grade changes. Fixtures shall be placed at a height so that light patterns overlap at a height of

seven feet which is sufficient to illuminate a person;

Finding: The water reservoir structure will not have windows, occupants or interior laundry. The proposed project will not necessitate a change to any existing mailboxes or exterior lighting; therefore, this section is not applicable to this request. Section 17.120.180(I) is not applicable.

J. Access and circulation:

1. The number of allowed access points for a development shall be as provided in the public works design standards.

2. All circulation patterns within a development shall be designed to accommodate emergency vehicles.

3. Provisions shall be made for pedestrian ways and bicycle ways consistent with 17.120.180(Q);

Finding: The Public Works Design Standards (PWDS)[6] provides that the access points with the street shall be the minimum necessary to provide access while not inhibiting the safe circulation and carrying capacity of the street. The site currently has two access points (see **Exhibit 4D**) and they are both proposed to remain (see **Exhibit 4U**). Due to the large size of the site, the two access points are over 700 lineal feet apart and do not present a safety concern. The Scappoose Rural Fire Protection District provided a referral comment for this proposal (**Exhibit 10**), which included requirements related to fire apparatus roads and emergency access. These requirements are included in the recommended Conditions of Approval. The requirements of Section 17.120.180(Q) are not applicable to this proposal; see findings to Section 17.120.180(Q) for more information. Section 17.120.180(J) is satisfied.

K. Public transit:

1. Provisions within the plan shall be included for providing for transit if the development proposal is adjacent to existing or proposed transit route.

2. The requirements for transit facilities shall be based on:

a. The location of other transit facilities in the area,

b. The size and type of the proposal.

3. The following facilities may be required:

a. Bus stop shelters,

b. Turnouts for buses, and

c. Connecting paths to the shelters;

Finding: There is not an existing transit stop for the CC (Columbia County) Rider near the subject site, so no transit provisions will be required. Section 17.120.180(K) is not applicable.

L. All parking and loading areas shall be designed in accordance with the requirements set forth in Sections 17.106.050 and 17.106.080, Chapter 12.10, and the public works design standards;

[6] City of Scappoose Public Works Design Standards, 2002, Section 5, page 11.

Finding: The subject site does not have a parking or loading area subject to Sections 17.106.050 and 17.106.080, Chapter 12.10, or the PWDS. Section 17.120.180(L) is not applicable.

M. All landscaping shall be designed in accordance with the requirements set forth in Chapter 17.100;

Finding: The proposed Landscaping Plan (**Exhibit 4P**) satisfies the requirements of Chapter 17.100, as discussed in the findings to that chapter. Section 17.120.180(M) is not applicable.

N. All drainage plans shall be submitted to the public works director for review and approval;

Finding: The applicant has submitted a Proposed Drainage Plan (**Exhibit 4O**) and a Stormwater Design Report (**Exhibit 6**) as part of their application. The City of Scappoose Public Works Director provided a referral comment (**Exhibit 8**) stating that they have reviewed the application, including the Proposed Drainage Plan and Stormwater Design Report, and have no objection to its approval as submitted. Section 17.120.180(N) is satisfied.

O. All facilities for the handicapped shall be designed in accordance with the requirements set forth in the ADA requirements; and

Finding: The applicant will be required to comply with applicable State and Federal requirements of the Americans with Disabilities Act, which will be verified during building permit review. Section 17.120.180(O) is satisfied.

P. All of the provisions and regulations of the underlying zone shall apply.

Finding: The subject site is in the Public Lands-Utility zone, which is subject to Chapter 17.78. The proposed application satisfies the requirements of Chapter 17.78, as discussed in the findings to that chapter. Section 17.120.180(P) is satisfied.

Q. Pedestrian Access and Circulation Standards. Developments shall conform to all of the following standards for pedestrian access and circulation:

1. Continuous Walkway System. A pedestrian walkway system shall extend throughout the development site and connect to adjacent sidewalks, if any, and to all future phases of the development, as applicable.

2. Safe, Direct, and Convenient. Walkways within developments shall provide safe, reasonably direct, and convenient connections between primary building entrances and all adjacent parking areas, transit stops, recreational areas/playgrounds, and public rights-of-way based on all of the following criteria:

a. The walkway is reasonably direct. A walkway is reasonably direct when it follows a route that does not deviate unnecessarily from a straight line or it does not involve a significant amount of out-of-direction travel;

b. The walkway is designed primarily for pedestrian safety and convenience, meaning it is reasonably free from hazards and provides a reasonably smooth and consistent surface and direct route of travel between destinations. The city planning commission may require landscape buffering between walkways and adjacent parking lots or driveways to mitigate safety concerns.

c. The walkway network connects to all primary building entrances and, where required, Americans With Disabilities Act requirements.

3. Vehicle/Walkway Separation. Except as required for crosswalks, pursuant to Subsection 4, below, where a walkway abuts a driveway or street it shall be raised 6 inches and curbed along the edge of the driveway/street. Alternatively, the city planning commission may approve a walkway abutting a driveway at the same grade as the driveway if the walkway is physically separated from all vehicle-maneuvering areas. An example of such separation is a row of bollards (designed for use in parking areas) with adequate minimum spacing between them to prevent vehicles from entering the walkway.

4. Crosswalks. Where a walkway crosses a parking area or driveway ("crosswalk"), it shall be clearly marked with contrasting paving materials (e.g., pavers, light-color concrete inlay between asphalt, or similar contrast). The crosswalk may be part of a speed table to improve driver-visibility of pedestrians. Painted or thermo-plastic striping and similar types of non-permanent applications are discouraged, but may be approved for lesser used crosswalks not exceeding 20 feet in length.

5. Walkway Width and Surface. Walkways, including access ways required for subdivisions pursuant with Chapter 17.150, shall be constructed of concrete, asphalt, brick/masonry pavers, or other durable surface, as approved by the city engineer, and not less than 5 feet wide. Multi-use paths (i.e., designed for shared use by bicyclists and pedestrians) shall be concrete or asphalt and shall conform to the public works design standards.

6. Walkway Construction. Walkway surfaces may be concrete, asphalt, brick/masonry pavers, or other city-approved durable surface meeting Americans with Disabilities Act requirements. Walkways shall be not less than 5 feet in width, except that concrete walkways a minimum of 6 feet in width are required in commercial developments and where access ways are required for subdivisions under Chapter 17.150 the planning commission may also require 6 foot wide, or wider, concrete sidewalks in other developments where pedestrian traffic warrants walkways wider than 5 feet.

7. Multi-Use Pathways. Multi-use pathways, where approved, shall be 12 feet wide and constructed of asphalt or concrete, consistent with the applicable public works design standards.

Finding: While the subject site is publicly owned, it is not public in the sense that it can be accessed by members of the public. The subject site is and will continue to be fenced from public visitation (see **Exhibit 4U**). Since the site will not be accessible to the public, the pedestrian access and circulation standards will not be required. Section 17.120.180(Q) is not applicable.

Chapter 17.140
PUBLIC LAND TREE REMOVAL

17.140.020 Permit required/applicability.

A. The provisions of this chapter shall apply to all publicly owned or maintained properties and to street trees as regulated by Chapter 17.104.

B. No person shall cut a tree upon these properties without first obtaining a permit from the city.

C. For the purpose of this chapter, tree removal shall not include tree topping and pruning under power and utility lines, or pruning of trees located with visual clearance areas Chapter 12.10.

D. For the purpose of this chapter, tree removal permits shall be required for all trees having a trunk six inches or more in diameter, measured four feet above the ground level.

Finding: The applicant is proposing to remove 7 trees from a publicly owned property (see **Exhibit 4F**) and so a Public Land Tree Removal Permit is required. Section 17.140.020 is satisfied.

17.140.030 Criteria for issuance of permits.

A. The planner may approve, approve with conditions, or deny an application for a tree cutting permit based on the criteria below. A permit for tree removal may be granted if any of the following criteria apply:

[…]

3. The proposed removal is part of an approved development project, a public improvement project, or a street tree improvement program; or

[…]

[…]

Finding: The removal of 7 trees on publicly owned land is depicted on the applicant's Demolition Plan (**Exhibit 4F**), which is an element of the submitted application. If the development proposal is approved, criterion 3 applies and the trees may be removed. Section 17.140.030 is satisfied.

17.140.031 General provisions.

A. The applicant shall be responsible for all costs associated with the tree removal and shall ensure that all work is done in a manner which maintains safety to individuals and public and private property.

B. The applicant shall replace each removed tree on a one-for-one basis within one year of approval. Replacement trees for all permits other than timber harvesting and clearing shall comply with the standards of Section 13.28.020 (Public Tree Standards). If site conditions do not allow replacement near the location of the trees removed, the approval authority may authorize replanting at other locations.

C. For all permits other than timber harvesting and clearing, the applicant shall remove or grind stumps and surface roots at least six inches below grade.

D. Following removal of the tree(s), the applicant shall perform erosion control, slope stability measures, and seeding to restore the surface.

Finding: The applicant will be responsible for all costs and safety protections involved with removing the trees. The applicant is proposing to remove 7 trees and plant 16 new trees (see **Exhibit 4P**), exceeding the one-for-one requirement. The applicant will be required by the

recommended Conditions of Approval to remove or grind the stumps and surface roots of removed trees 6 inches below grade. Section 17.140.031 is satisfied.

Chapter 17.154
STREET AND UTILITY IMPROVEMENT STANDARDS

17.154.030 Streets.

A. No development shall occur unless the development has frontage or approved access to a public street:

1. Streets within a development and streets adjacent to a development shall be improved in accordance with this title and the public works design standards and specifications.

2. Any new street or additional street width planned as a portion of an approved street plan shall be dedicated and improved in accordance with this title and the public works design standards and specifications.

3. Subject to approval of the city engineer and the planner, the planner may accept and record a non-remonstrance agreement in lieu of street improvements if two or more of the following conditions exist:

a. A partial improvement is not feasible due to the inability to achieve a cohesive design for the overall street;

b. A partial improvement may create a potential safety hazard to motorists or pedestrians;

c. Due to the nature of existing development on adjacent properties it is unlikely that street improvements would be extended in the foreseeable future and the improvement associated with the project under review does not, by itself, provide a significant improvement to street safety or capacity;

d. The improvement would be in conflict with an adopted capital improvement plan;

e. Additional planning work is required to define the appropriate design standards for the street and the application is for a project which would contribute only a minor portion of the anticipated future traffic on the street.

[…]

Finding: The property has frontage on SW Keys Road (see **Exhibit 4D**). SW Keys Road is classified by the TSP[7] as a Neighborhood Route, which requires 60 feet of right-of-way width comprised of 36 feet of travel way, two 5.5-foot planter strips, two 6-foot sidewalks, and two 6-inch utility areas. SW Keys Road currently has right-of-way width between 48-54 feet and a paved width of 20-32 feet (depending on the section of SW Keys Road). Additionally, the subject site has a 5-foot sidewalk along the entire frontage, except for most of the southwestern property line curve where the sidewalk turns slightly inward away from the curbline and continues the pedestrian pathway but inside the parcel (see **Exhibit 4D**). In lieu of performing street improvements and providing a dedication meeting the full standards of a Neighborhood Route, the section above a

[7] City of Scappoose, Transportation System Plan, 2016, Figures 12 & 13b.

llows developers to submit and record a non-remonstrance agreement if certain provisions are met. Since the City of Scappoose is the named applicant and property owner and the City cannot enter a non-remonstrance agreement with itself, a non-remonstrance agreement will not be required. The non-remonstrance criteria in Section 17.154.030(A)(3) will be used to evaluate whether or not the applicant may be waived from performing street improvements and providing a wholescale dedication. The proposed development and surrounding area conform to conditions a and c based on the findings below:

a. The portion of SW Keys Road that fronts the subject site already has a cohesive street design due to the street improvements required by the Conditions of Approval for the most recent land use decision (local file # ZC 5-02/SDR 9-02) (see **Exhibit 7, Condition 4**). The frontage also includes 5-foot sidewalks that tie into existing sidewalks abutting the site and has two existing driveways (see **Exhibit 4D**). The applicant completing additional improvements to their SW Keys Road frontage would jeopardize the cohesiveness of the street overall.

c. The properties on both sides of SW Keys Road are entirely built out and are unlikely to redevelop in the near future. Widening and improving SW Keys Road centerline east/north (depending on the section of SW Keys Road) would not, by itself, provide a significant safety improvement. The 36-foot paved width requirement is intended to accommodate on-street parking; however, this is not needed for this site due to the limited public access and the sufficient off-street parking the site provides (see **Exhibit 4U**).

Two of the conditions, a and c, have been met and so the requirement to perform street improvements and provide a dedication meeting the full standards of a Neighborhood Route are waived. A right-of-way dedication will be required in the southeastern corner of the subject site to the extent that the sidewalk is entirely within the right-of-way. The applicant is proposing to provide a dedication in this area to remove the sidewalk from the property and to instead have the sidewalk contained within the right-of-way (see **Exhibit 4N**). Section 17.154.030(A) is satisfied.

S. A Transportation Impact Study (TIS) must be submitted with a land use application if the conditions in (1) or (2) apply in order to determine whether conditions are needed to protect and minimize impacts to transportation facilities, consistent with Section 660-012-0045(2)(b) and (e) of the State Transportation Planning Rule.

1. Applicability - TIS letter. A TIS letter shall be required to be submitted with a land use application to document the expected vehicle trip generation of the proposal. The expected number of trips shall be documented in both total peak hour trips and total daily trips. Trip generation shall be estimated for the proposed project using the latest edition of the Institute of Engineers Trip Generation Manual or, when verified with the City prior to use, trip generation surveys conducted at similar facilities.

2. Applicability - TIS report. A TIS report shall be required to be submitted with a land use application if the proposal is expected to involve one or more of the following:

a. The proposed development would generate more than 10 peak hour trips or more than 100 daily trips.

b. The proposal is immediately adjacent to an intersection that is functioning at a poor level of service, as determined by the city engineer.

c. A new direct approach to US 30 is proposed.

d. A proposed development or land use action that the road authority states may contribute to operational or safety concerns on its facility(ies).

e. An amendment to the Scappoose Comprehensive Plan or Zoning Map is proposed.

3. Consistent with the city's Traffic Impact Study (TIS) Guidelines, the city engineer will determine the project study area, intersections for analysis, scenarios to be evaluated and any other pertinent information concerning the study and what must be addressed in either a TIS letter or a TIS report.

4. Approval Criteria. When a TIS Letter or Report is required, a proposal is subject to the following criteria:

a. The TIS addresses the applicable elements identified by the city engineer, consistent with the Traffic Impact Study Guidelines;

b. The TIS demonstrates that adequate transportation facilities exist to serve the proposed development or, in the case of a TIS report, identifies mitigation measures that resolve identified traffic safety problems in a manner that is satisfactory to the city engineer and, when state highway facilities are affected, to ODOT;

c. For affected non-highway facilities, the TIS report establishes that mobility standards adopted by the city have been met; and

d. Proposed public improvements are designed and will be constructed consistent with Public Works Design Standards and access standards in the Transportation System Plan

5. Conditions of Approval.

a. The city may deny, approve, or approve a proposal with conditions necessary to meet operational and safety standards; provide the necessary right-of-way for improvements; and to require construction of improvements to ensure consistency with the future planned transportation system.

b. Construction of off-site improvements may be required to mitigate impacts resulting from development that relate to capacity deficiencies and public safety; and/or to upgrade or construct public facilities to city standards.

c. Improvements required as a condition of development approval, when not voluntarily provided by the applicant, shall be roughly proportional to the impact of the development on transportation facilities. Findings in the development approval shall indicate how the required improvements directly relate to and are roughly proportional to the impact of development.

Finding: A TIS (Transportation Impact Study) is generally required for a development of this type and scale. However, given that trips to and from the site are nearly exclusively City employees or City contractors and the number of daily and peak hour trips is unlikely to be altered as a result of this development, no TIS will be required. Section 17.154.030(S) is not applicable.

17.154.050 Easements.

A. Easements for sewers, drainage, water mains electric lines or other public utilities shall be either dedicated or provided for in the deed restrictions, and where a subdivision is traversed by a watercourse, drainageway, channel or stream, there shall be provided a stormwater easement or drainage right-of-way conforming substantially with lines of such watercourse and such further width as will be adequate for conveyance and maintenance.

B. A property owner proposing a development shall make arrangements with the city, the applicable district and each utility franchise for the provision and dedication of utility easements necessary to provide full services to the development.

Finding: The subject site is owned by the City of Scappoose (see **Exhibit 2A, p. 2**) and so no easements are required to maintain utilities. Section 17.154.050 is not applicable.

17.154.080 Public use areas.

A. Where a proposed park, playground or other public use shown in a development plan adopted by the city is located in whole or in part in a subdivision, the commission may require the dedication or reservation of such area within the subdivision.

B. Where considered desirable by the commission in accordance with adopted comprehensive plan policies, and where a development plan of the city does not indicate proposed public use areas, the commission may require the dedication or reservation of areas within the subdivision or sites of a character, extent and location suitable for the development of parks and other public use.

C. If the declarant is required to reserve land area for a park, playground or other public use, such land shall be acquired by the appropriate public agency within eighteen months following plat approval, at a price agreed upon prior to approval of the plat, or such reservation shall be released to the declarant.

Finding: The above code language is specific to dedication of land for public use or parks within a subdivision, which is not relevant to this application. Section 17.154.080 is not applicable.

17.154.090 Sanitary Sewers.

A. Sanitary sewers shall be installed to serve each new development and to connect developments to existing mains in accordance with the provisions set forth by the city's public works design standards and the adopted policies of the comprehensive plan.

B. The public works director shall approve all sanitary sewer plans and proposed systems prior to issuance of development permits involving sewer service.

C. Proposed sewer systems shall include consideration of additional development within the area as projected by the comprehensive plan and the wastewater treatment facility plan and potential flow upstream in the sewer sub-basin.

D. Applications shall be denied by the approval authority where a deficiency exists in the existing sewer system or portion thereof which cannot be rectified within the development and which if not rectified will result in a threat to public health or safety, surcharging of existing mains, or violations of state or federal standards pertaining to operation of the sewage treatment system.

Finding: There is currently an 8-inch concrete sewer main in SW Keys Road along the entire frontage with a connected 8-inch sewer main that runs from the south of the subject site to the approximate center of the site, providing connection to the water treatment plant operations building and the backwash station (see **Exhibit 4D**). The applicant is proposing to replace and relocate a section of the on-site main so that it is not directly under the larger new water reservoir (see **Exhibit 4G**). The recommended Conditions of Approval will require the applicant to video inspect the on-site sewer main from its connection point with the SW Keys Road sewer main and submit it to the City for inspection and approval. If the main is insufficient as determined by the Public Works Director or City Engineer, the applicant will be required to replace it prior to construction of the water reservoir. The City of Scappoose Public Works Director provided a referral comment (**Exhibit 8**) stating that they have reviewed the application, including the Utility Relocation Plan, and have no objection to its approval as submitted. Section 17.154.090 is satisfied.

17.154.100 Storm Drainage.

A. The planner and public works director shall issue permits only where adequate provisions for stormwater and floodwater runoff have been made, and:

1. The stormwater drainage system shall be separate and independent of any sanitary sewage system.

2. Where possible, inlets shall be provided so surface water is not carried across any intersection or allowed to flood any street.

3. Surface water drainage patterns shall be shown on every development proposal plan.

4. All stormwater analysis and calculations shall be submitted with proposed plans for public works directors review and approval.

5. All stormwater construction materials shall be subject to approval of the public works director.

B. Where a subdivision is traversed by a watercourse, drainageway, channel or stream, there shall be provided a stormwater easement or drainage right-of-way conforming substantially with the lines of such watercourse and such further width as will be adequate for conveyance and maintenance.

C. A culvert or other drainage facility shall, and in each case be, large enough to accommodate potential runoff from its entire upstream drainage area, whether inside or outside the development. The public works director shall determine the necessary size of the facility.

D. Where it is anticipated by the public works director that the additional runoff resulting from the development will overload an existing drainage facility, the planner and engineer shall withhold approval of the development until provisions have been made for improvement of the potential condition or until provisions have been made for storage of additional runoff caused by the development.

Finding: There is currently a stormwater main of various diameters between 10-15 inches in SW Keys Road along the entire frontage with a connected 12-inch stormwater main that runs from the south of the subject site towards the existing 2-million-gallon water reservoir to remain (see **Exhibit 4D**). The applicant is proposing to replace a stormwater pipe primarily to the east of the

new water reservoir, add a catch basin to the south of the new water reservoir, and add an area drain to the north of the water treatment plant operations building and backwash station (see **Exhibit 4O**). The proposed stormwater and sewer are separate lines and systems (see **Exhibit 4G**). The applicant submitted a Proposed Drainage Plan (**Exhibit 4O**), illustrating the proposed drainage patterns. The proposed stormwater improvements will mitigate stormwater runoff for all of the proposed net new impervious areas by adding in a detention system capable of matching the pre-development runoff from the site. Therefore, the downstream system will not see any increase in runoff from the proposed work. The applicant submitted a Stormwater Design Report (**Exhibit 6**), which includes the required analysis and calculations. The City of Scappoose Public Works Director provided a referral comment (**Exhibit 8**) stating that they have reviewed the application, including the Proposed Drainage Plan and Stormwater Design Report, and have no objection to its approval as submitted. Section 17.154.100 is satisfied.

17.154.105 Water System.
The planner and public works director shall issue permits only where provisions for municipal water system extensions have been made, and:
A. Any water system extension shall be designed in compliance with the comprehensive plan existing water system plans.
B. Extensions shall be made in such a manner as to provide for adequate flow and gridding of the system.
C. The public works director shall approve all water system construction materials.

Finding: There is currently an 8-inch oxide dispersion strengthened alloys (ODS) water main in SW Keys Road along the entire frontage and several water mains of various sizes and materials within the subject site (see **Exhibit 4D**). The applicant is proposing to replace and relocate a section of the on-site main further to the east so that it is appropriately distanced from the larger new water reservoir (see **Exhibit 4G**). The recommended Conditions of Approval will require the applicant to conduct hydraulic testing on any on-site water mains connected to the new water reservoir to ensure their continued use for the anticipated life of the project. The City of Scappoose Public Works Director provided a referral comment (**Exhibit 8**) stating that they have reviewed the application, including the Utility Relocation Plan, and have no objection to its approval as submitted. Section 17.154.105 is satisfied.

17.154.107 Erosion Controls.
A. Any time the natural soils are disturbed and the potential for erosion exists, measures shall be taken to prevent the movement of any soils off site. The public works director shall determine if the potential for erosion exists and appropriate control measures.
B. The city shall use the city's public works design standards as the guidelines for erosion control.

Finding: The applicant submitted a Construction Grading and TESC (Temporary Erosion & Sediment Control) Plan (**Exhibit 4H**). The City of Scappoose Public Works Director provided a referral comment (**Exhibit 8**) stating that they have reviewed the application, including the Construction Grading and TESC Plan, and have no objection to its approval as submitted. Section

17.154.107 is satisfied.

17.154.110 Bikeways.
A. Developments adjoining proposed bikeways shall include provisions for the future extension of such bikeways through the dedication of easements or rights-of-way.
B. Where possible, bikeways should be separated from other modes of travel including pedestrians.
C. Minimum width for bikeways is four paved feet per travel lane.

Finding: The TSP[8] does not indicate SW Keys Road as a proposed bicycle route. Section 17.154.110 is not applicable.

17.154.120 Utilities.
A. All utility lines including, but not limited to those required for electric, communication, lighting and cable television services and related facilities shall be placed underground, except for surface mounted transformers, surface mounted connection boxes and meter cabinets which may be placed above ground, temporary utility service facilities during construction, high capacity electric lines operating at fifty thousand volts or above, and:

1. The applicant shall make all necessary arrangements with the serving utility to provide the underground services;

2. The city reserves the right to approve location of all surface mounted facilities;

3. All underground utilities, including sanitary sewers, water lines, and storm drains installed in streets by the applicant, shall be constructed prior to the surfacing of the streets; and

4. Stubs for service connections shall be long enough to avoid disturbing the street improvements when service connections are made.

B. The applicant for a subdivision shall show on the development plan or in the explanatory information, easements for all underground utility facilities, and:

1. Plans showing the location of all underground facilities as described herein shall be submitted to the public works director for review and approval; and

2. Above ground equipment shall not obstruct visual clearance areas for vehicular traffic.

Finding: There are existing above-ground utility lines along the SW Keys Road corridor. The applicant would not be able or required to remove the existing above-ground utility lines since other surrounding properties are reliant on these lines. Section 17.154.120 is satisfied.

17.154.130 Cash or bond required.
A. All improvements installed by the applicant shall be guaranteed as to workmanship and material for a period of one year following acceptance by the city council.
B. Such guarantee shall be secured by cash deposit or bond for one hundred ten percent of the actual cost of the value of the improvements as set by the public works director.

[8] City of Scappoose, Transportation System Plan, 2016, Figure 11.

C. The cash or bond shall comply with the terms and conditions of Section 17.150.180.

Finding: The applicant has stated in their Narrative (**Exhibit 3, p. 42**) that they will submit to the City a performance bond of 110% of the value of all public improvements. The value will be determined by the Public Works Director. This requirement is included in the recommended Conditions of Approval. Section 17.154.130 is satisfied.

Chapter 17.162
PROCEDURES FOR DECISION MAKING–QUASI-JUDICIAL

17.162.021 Consolidation of proceedings.

A. Except as provided in subsection C of this section, whenever an applicant requests more than one approval and more than one approval authority is required to decide the applications, the proceedings shall be consolidated so that one approval authority shall decide all applications in one proceeding.

B. In such cases as stated in subsection A of this section, the hearings shall be held by the approval authority having original jurisdiction over one of the applications under Section 17.164.110, in the following order of preference: the council, the commission, or the planner.

C. Where there is a consolidation of proceedings:

1. The notice shall identify each action to be taken;

2. The decision on a plan map amendment shall precede the decision on the proposed zone change and other actions. Plan map amendments are not subject to the one hundred twenty-day decision making period prescribed by state law and such amendments may involve complex issues. Therefore, the planner shall not be required to consolidate a plan map amendment and a zone change or other permit applications requested unless the applicant requests the proceedings be consolidated and signs a waiver of the one hundred twenty-day time limit prescribed by state law for zone change and permit applications; and

3. Separate actions shall be taken on each application.

D. Consolidated Permit Procedure.

1. Use of the consolidated permit procedures described in this section shall be at the election of the applicant.

2. When the consolidated procedure is elected, application and fee requirements shall remain as provided by resolution approved by the council. If more than one permit is required by this title or other ordinance to be heard by the planning commission or city council, each such hearing shall be combined with any other permit also requiring such hearing. The standards applicable to each permit by this or any other ordinance shall be applied in the consolidated procedures to each application.

3. In a consolidated proceeding, the staff report and recommendation provided by the planner shall be consolidated into a single report.

4. All rules and ordinances of the city not in conflict with this section shall apply in a consolidated permit procedure.

Finding: The applicant has submitted a consolidated application for SDR (**Exhibit 2A**) and SLDP (**Exhibit 2B**). Since SDR typically requires Planning Commission approval and SLDP typically requires staff approval, the consolidated application will require Planning Commission approval. The public notices (mailed, newspaper, and on-site) provided express notice for the consideration of both applications and the consolidated decision procedures. This staff report contains findings to both Chapter 17.120 - Site Development Review and Chapter 17.86 - Sensitive Lands–Slope Hazard. Section 17.162.021 is satisfied.

17.162.025 Noticing Requirements

A. Notice of a pending quasi-judicial public hearing shall be given by the planner in the following manner:

1. At least twenty days prior to the scheduled hearing date, or if two or more hearings are scheduled, ten days prior to the first hearing, notice shall be sent by mail to:

a. The applicant and all owners or contract purchasers of record of the property which is the subject of the application;

b. All property owners of record or the most recent property tax assessment roll within three hundred feet of the property which is the subject of the notice plus any properties abutting proposed off-site improvements.

c. Any governmental agency or utility whose property, services or facilities may be affected by the decision. The reviewing City Staff shall determine the extent of notice to public agencies or utilities based on perceived interest or impact; noticed agencies may include:

i. Columbia County Land Development Services;
ii. Columbia County Road Department;
iii. Oregon Department of Transportation (ODOT);
iv. ODOT Rail Division;
v. Portland & Western Railroad;
vi. Scappoose Rural Fire Protection District;
vii. Port of St. Helens;
viii. Oregon Department of Aviation;
ix. Scappoose School District;
x. Columbia County Soil Conservation District;
xi. Scappoose Drainage Improvement Company; or
xii. Any other affected agencies as identified by the planner;

d. Acknowledged neighborhood planning organizations, if active;

e. Any person who requests, in writing; and

f. The appellant and all parties to an appeal.

2. At least thirty-five days before the initial hearing on adoption of any proposal to amend the comprehensive plan map or zoning map, notice shall be sent to the Department of Land Conservation and Development;

3. Notice of a hearing on a proposed zone change for a manufactured home park shall be given to tenants of that manufactured home park at least twenty days but no more than forty days prior to the hearing; and

4. The planner shall cause an affidavit of mailing of notice to be filed and made a part of the administrative record.

B. For all quasi-judicial decisions requiring a public hearing, the applicant shall post signs provided by the planner displaying notice of the pending hearing at least fourteen days prior to the date of the hearing. One sign shall be required for each three hundred feet, or part thereof, of frontage of the subject property on any street. The content, design, size and location of the signs shall be as determined by the planner to assure that the information is legible from the public right-of-way. As a precondition to a hearing, the applicant shall file an affidavit of such posting with the planner no less than ten days prior to the hearing.

C. For all quasi-judicial decisions requiring a public hearing, at least ten days prior to the hearing, notice shall be given in a newspaper of general circulation in the city. An affidavit of publication shall be made part of the administrative record.

Finding: Using the most recent property tax assessment roll, notice of this application was mailed to every property owner within 300 feet of the entire subject site on April 19, 2024. The applicant has provided a signed affidavit certifying that onsite noticing has been posted as of April 23, 2024, consistent with the requirements of this section. Notice of the hearing was published in the April 26, 2024 edition of the Columbia County Spotlight. The public has until May 8, 2024 at 5:00 pm to provide a written public comment. As of the date of this report, no members of the public have submitted written comment. A land use action referral was sent to agency representatives from the City of Scappoose, Columbia County Building and Public Works Departments, Scappoose Rural Fire Protection District, and Columbia River PUD. Section 17.162.025 is satisfied.

17.162.090 Approval authority responsibilities.

A. The planner shall have the authority to approve, deny or approve with conditions the following applications:

[…]

7. Sensitive land permits (for applications not subject to planning commission approval) pursuant to Chapter 17.84, Chapter 17.85, Chapter 17.86, and Chapter 17.89; and

[…]

[…]

Finding: See findings to Sections 17.162.021 and 17.164.110. Since this application includes a proposal for Site Development Review (**Exhibit 2A**) and Sensitive Lands Development Permit (**Exhibit 2B**), Planning Commission will be the approval authority for the consolidated application. Section 17.162.090 is satisfied.

Section 17.162.140 Decision process.

A. The decision shall be based on:

1. Proof by the applicant that the application fully complies with:

a. Applicable policies of the city comprehensive plan; and

b. The relevant approval standards found in the applicable chapter(s) of this title, the public works design standards, and other applicable implementing ordinances.

B. Consideration may also be given to:

1. Proof of a substantial change in circumstances or a mistake in the comprehensive plan or zoning map as it relates to the property which is the subject of the development application; and

2. Factual oral testimony or written statements from the parties, other persons and other governmental agencies relevant to the existing conditions, other applicable standards and criteria, possible negative or positive attributes of the proposal or factors in subsections (A) or (B)(1) of this section.

[…]

Finding: The applicant has submitted a complete proposal for Site Development Review and Sensitive Lands Development Permit. Findings related to the approval criteria have been addressed within this staff report. The recommended Conditions of Approval are included to ensure the satisfaction of all applicable approval criteria and the requirements of other governmental agencies. Section 17.162.140 is satisfied.

Chapter 17.164
PROCEDURES FOR DECISION MAKING–LIMITED LAND USE DECISIONS

17.164.025 Consolidation of proceedings.

[…]

Finding: See findings to Section 17.162.021. Section 17.164.025 is satisfied.

17.164.110 Approval authority responsibilities.

[…]

B. The planning commission shall have the authority to approve, deny or approve with conditions the following applications:

[…]

3. Site development review pursuant to Chapter 17.120.

C. The decision shall be based on the approval criteria set forth in Section 17.164.150.

Finding: See findings to Sections 17.162.021 and 17.162.090. Since this application includes a proposal for Site Development Review (**Exhibit 2A**) and Sensitive Lands Development Permit (**Exhibit 2B**), Planning Commission will be the approval authority for the consolidated application. Section 17.164.110 is satisfied.

17.164.130 Notice requirements.

[…]

Finding: See findings to Sections 17.162.021 and 17.162.025. Pursuant to Section 17.01.050(B), the higher standard of noticing requirements of Section 17.162.025 will be used to provide notice

of the consolidated application. Section 17.164.130 is satisfied.

17.164.150 Decision process.
[…]

Finding: See findings to Section 17.162.140. Section 17.164.150 is satisfied.

RECOMMENDATION
Based on the Findings of Fact and the materials submitted by the applicant, staff recommends that the Planning Commission **approve** SDR 1-24, SLDP 2-24, subject to the following conditions:

GENERAL

1. This approval authorizes the demolition of two existing water reservoirs, construction of a new 3-million-gallon water reservoir, and improvements to various site amenities as depicted on the plans provided in **Exhibits 4A-4U**. Approval of this Site Development Review and Sensitive Lands Development Permit shall be effective until May 9, 2025.

2. The applicant shall obtain all applicable building, plumbing, and electrical permits.

3. The applicant shall obtain any necessary permits for the relocation of underground utilities.

4. The applicant shall obtain an access permit from Columbia County for each connection to SW Keys Road.

5. The applicant shall obtain a construction permit from Columbia County for any work that occurs within the right-of-way.

6. The applicant shall obtain a right-of-way permit from both Columbia County and the City of Scappoose. Traffic control will be required.

7. The applicant shall obtain a 1200 Series Construction Stormwater Permit from the Oregon Department of Environmental Quality before development occurs.

8. The applicant shall obtain a fill and grading permit from the City for site grading, including the installation of any necessary erosion control measures, per the standards set forth in the Scappoose Public Works Design Standards.

SITE PROVISIONS

9. The applicant shall regularly trim the arborvitae trees within the driveway visual clearance area up to 8 feet above the level of the driveway.

10. The applicant shall plant new trees on the site in accordance with Section 13.28.020(C).

11. The applicant shall follow all recommendations of the Geotechnical Engineering Report (**Exhibit 5, pp. 12-26**).

12. The applicant shall install landscaping substantially in conformance with the Landscaping Plan (**Exhibit 4P**).

13. The applicant shall replant any vegetation or topsoil that has been disturbed or removed during construction with grass seed. Topsoil removed from the surface is to be stored on or near the sites and protected from erosion while construction activities are underway. Such storage may not be located where it would cause suffocation of root systems of trees intended to be preserved. After completion of such activities, the topsoil is to be restored to exposed cut and fill embankments or building pads to provide a suitable base for seeding and planting. Acceptable methods of re-vegetation include hydro-mulching or the planting of rye grass, barley, or other seed with equivalent germination rates and where lawn or turf grass is to be established, lawn grass seed or other appropriate landscape cover is to be sown at not less than four pounds to each one thousand square feet of land area. Other re-vegetation methods offering equivalent protection may be approved by the approval authority. Plant materials are to be watered at intervals sufficient to ensure survival and growth. The use of native plant materials is encouraged to reduce irrigation and maintenance demands.

14. The applicant shall remove or grind the stumps and surface roots of removed trees 6 inches below grade.

15. The applicant shall adhere to the weight limit for construction vehicles on SW Keys Road during construction.

UTILITIES AND STREET IMPROVEMENTS

16. The applicant shall provide a dedication to Columbia County to remove the sidewalk from the southeastern portion of the property and to instead have the sidewalk contained within the right-of-way, as depicted in **Exhibit 4N**.

17. The applicant shall plant 7 Golden Desert Ash street trees in accordance with Sections 13.28.010(C) and 17.104.040 prior to final inspections. The final construction plans shall provide a detail for root guard to protect sidewalks and other surroundings. All street trees shall have a 2-inch minimum caliper and be spaced as appropriate for the selected species, as specified in the approved Street Tree List, on file with the Planning Department. All newly planted street trees shall be of a species on the approved Street Tree List. All street trees shall be of good quality and conform to the American Standard for Nursery Stock (ANSI Z60.1). The Planner reserves the right to reject any plant material

that does not meet this standard.

18. The applicant shall video inspect the on-site sewer main from its connection point with the SW Keys Road sewer main and submit it to the City for inspection and approval. If the main is insufficient as determined by the Public Works Director or City Engineer, the applicant will be required to replace it prior to construction of the water reservoir.

19. The applicant shall conduct hydraulic testing on any on-site water mains connected to the new water reservoir to ensure their continued use for the anticipated life of the project.

20. The contractor shall submit to the City a performance bond of 110% of the value of all public improvements. The value will be determined by the Public Works Director.

FIRE LIFE SAFETY

21. The applicant shall install address numbers at a minimum 8 inches tall by 1.5 inch (stroke) wide. Numbers shall be contrasting in color. Address numbers on commercial buildings shall be fixed to the building facing the street at a height that is not obstructed by passenger vehicles, delivery trucks or other obstructions (trees and bushes). Address numbers shall not be affixed to glass windows or doors.

22. The applicant shall widen the on-site fire apparatus access roads to have an unobstructed paved width of 20 feet. Compact gravel is an acceptable material, subject to the inspection and approval of the Scappoose Rural Fire Protection District. At the discretion of the Scappoose Rural Fire Protection District, exceptions may be made due to location, topography, grades or other conditions.

23. The applicant shall add concrete pads to the existing fire hydrant on the property per the Scappoose Rural Fire Protection District standards.

24. The applicant shall install a Knox emergency access system on both entry gates to be approved by the Scappoose Rural Fire Protection District.

Exhibit 1

SCAPPOOSE

SDR 1-24, SLDP 2-24
Keys Road Reservoir
3211-DD-00200

Vicinity Map

Subject site
Taxlots with labels
Streets

N

0 0.03 0.06 0.11 mi

Scappoose Planning Department
33568 E. Columbia Ave. Scappoose, OR 97056
Phone: 503-543-7184 Fax: 503-543-7182
www.ci.scappoose.or.us

SITE DEVELOPMENT REVIEW APPLICATION

NOTICE TO APPLICANT: On original application form, please print legibly using black/dark blue ink or type. Applicants are advised to review the list of submittal requirements and recommendations indicated on each land use application form and in the applicable code section prior to submitting an application. Applicants are required to schedule a pre-application meeting with the staff prior to submitting final application. **INCOMPLETE APPLICATIONS WILL NOT BE PROCESSED UNTIL THE PLANNING DEPARTMENT RECEIVES ALL REQUIRED SUBMITTAL MATERIALS. REFER TO SUBMITTAL CHECKLIST PAGE.**

TRACKING INFORMATION (For Office Use Only)

Application Submittal Includes:

☐ 2 Hard Copies Required (Initial Submittal) ☐ Electronic Submittal ☐ Fee

☐ 7 Hard Copies Required (Final Submittal, once deemed complete by City Planner)

Date Submitted with payment: _____ *Receipt #:* _____

File #_____ Hearing Date_____

SITE LOCATION & DESCRIPTION

Tax Map #(s) 03 02 11 DD Tax Lot #(s) 3211-DD-00200

Frontage Street or Address 52212 SW Keys Rd, Scappoose, OR 97056

Nearest Cross Street Huser Ln

Plan Designation Public Lands Zoning PL-U Site Size 4.7 ☑ acres ☐ sq. ft.

Dimensions 650 FT x 340 FT (Approx.)

SUMMARY OF REQUEST

Proposed Project Name Keys Road Reservoir **Estimated Valuation $** 8,900,000

Project Type/Narrative Summary: *(Provide a brief summary and specify project type: Single-Family Residential (SFR), Multi-Family Residential (MFR), Accessory Dwelling Unit (ADU), Commercial, Industrial, Mixed Use)*

The project consists of demolition of two existing water tanks and construction of a proposed 3-million gallon (MG) reservoir (water tank). The site already houses the Keys Water Treatment Plant, the tanks slated for demolition, and water tank. In this PL-U zoning, water infrastructure is listed in City development code as a permitted use.

Is a variance requested? ○ Yes ◉ No (*If yes, identify what type of request*) ☐ Minor Variance ☐ Major Variance

NOTE: *Procedures and applicable criteria for variances may be found in SDC Chapter 17.134*

Subject to previous land use approval? ◉ Yes ○ No File No. ZC 5-02/SDR 9-02 (*attach copy of Notice of Decision*)

See Attachment A

SITE DEVELOPMENT REVIEW APPLICATION

(CONTINUED)

Landscaping (sq. ft.) 7 street trees Paving (sq. ft.) 7600 SF

# of Parking Spaces NA # of Accessible Parking Spaces NA

NOTE: *If a residential project is proposed, a Residential Density Calculation Worksheet must be submitted.*

If Mixed Use, please specify types of uses and approximate percentages of overall site area in each use: NA

Commercial _____% Industrial _____% Residential _____%

If Commercial or Industrial: List # of non-residential buildings and square footage of each; _____

Use is Public Water Structures (a permitted use in PL-U): New proposed structure is one water tank, 17,700 SF.

DETAILED SITE INFORMATION

Are any of the following present on site? *If so, please specify the number of acres and/or percentage of site affected.*

Floodplain NA Wetlands NA Riparian Corridors NA

Cultural Resources NA Airport Noise Contours NA Slopes greater than 20% ~ 10% of site

Water Provider: ☑ City of Scappoose ☐ Well

Does the site have access to City street(s)? ○ Yes ◉ No (Please explain): Site has access to county road; see below.

Does the site have access to County road(s)? ◉ Yes ○ No (Please explain): Site has existing developed entrances from two points on SW Keys Road. The entrance on the south is only for construction/maintenance.

Are there existing structures on the site? ◉ Yes ○ No (If Yes, briefly explain future status of structures.) (1) water pump station, (1) Existing water treatment plant, and (1) water tank--all remain; (2) existing water tanks to be demolished.

OWNERSHIP AND APPLICANT INFORMATION (Property owner signature must be a wet-ink signature. If the property is under-going a change of ownership, proof of purchase or purchase contract must be provided if property owner of record is not the signing party.)

Property Owner(s): Name(s) City of Scappoose

Business Name _____

Mailing Address 33568 East Columbia Avenue City Scappoose State OR Zip 97056

Phone # 503-543-7146 ext. 226 Fax # _____ Email Address arains@scappoose.gov

Does the owner of this site also own any adjacent property? ○ Yes ◉ No (If Yes, please list tax map and tax lots) _____

Property Owner(s) Signature(s) _____ Date: 1/8/2024

(If more than one property owner, please attach additional sheet with names and signatures.)

Applicant: Name Dave Sukau

Business Name City of Scappoose

Mailing Address 33568 East Columbia Avenue City Scappoose State OR Zip 97056

Phone # 503.543-7146 x 801 Fax # NA Email Address dsukau@scappoose.gov

Applicant's Signature _____ Date: 1/5/2024

Applicant's interest in property Public Works Manager

Additional Project Team Members

Applicant's Representative: Contact Name _____

Business Name _____

Mailing Address _____ City _____ State _____ Zip _____

Phone # _____ Fax # _____ Email Address _____

Civil Engineer: Contact Name Taylor Stockton

Business Name RH2 Engineering, Inc.

Mailing Address 5335 Meadows Rd. Suite 420 City Lake Oswego State OR Zip 97035

Phone # 503.278.5356 Fax # NA Email Address tstockton@rh2.com

Architect: Contact Name NA

Business Name _____

Mailing Address _____ City _____ State _____ Zip _____

Phone # _____ Fax # _____ Email Address _____

Landscape Architect: Contact Name NA

Business Name _____

Mailing Address _____ City _____ State _____ Zip _____

Phone # _____ Fax # _____ Email Address _____

Additional Personnel:

Role Geotechnical Engineer Contact Name Elliott Mecham

Business Name Shannon & Wilson

Mailing Address 3990 Collins Way, Suite 100 City Lake Oswego State OR Zip 97035

Phone # 503.210.4764 Fax # _____ Email Address elliott.mecham@shanwil.com

Scappoose Planning Department
33568 E. Columbia Ave. Scappoose, OR 97056
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SENSITIVE LANDS – SLOPE HAZARD DEVELOPMENT PERMIT APPLICATION

NOTICE TO APPLICANT: On original application form, please print legibly using black/dark blue ink or type. Applicants are advised to review the list of submittal requirements and recommendations indicated on each sensitive lands development permit application form and in the applicable code section prior to submitting an application. Applicants are required to schedule a pre-application meeting with the staff prior to submitting final application. **INCOMPLETE APPLICATIONS WILL NOT BE PROCESSED UNTIL THE PLANNING DEPARTMENT RECEIVES ALL REQUIRED SUBMITTAL MATERIALS. REFER TO SUBMITTAL CHECKLIST PAGE.**

TRACKING INFORMATION (For Office Use Only)

Application Submittal Includes:

☐ 3 Hard Copies Required (Initial Submittal) ☐ Electronic Submittal ☐ Fee

☐ 7 Hard Copies Required (Final Submittal, once deemed complete by City Planner)

Date application submitted: _____ *Amount of Fee paid:*_____ *Receipt #:* _____

Date accepted as complete: _____

SITE LOCATION & DESCRIPTION

Tax Map #(s) 03 02 11 DD Tax Lot #(s) 3211-DD-00200

Frontage Street or Address 52212 SW Keys Rd, Scappoose, OR 97056

Nearest Cross Street Huser Ln

Plan Designation Public Lands Zoning PL-U Site Size 4.7 ☑ acres ☐ sq. ft.

Dimensions 650 FT x 340 FT (Approx.)

SUMMARY OF REQUEST

Proposed Project Name Keys Road Reservoir **Estimated Valuation $** 8,900,000

Project Type/Narrative Summary: *(Provide a brief summary and specify project type: Single-Family Residential (SFR), Multi-Family Residential (MFR), Accessory Dwelling Unit (ADU), Commercial, Industrial, Mixed Use)*

The project consists of demolition of two existing water tanks and construction of a proposed 3-million gallon (MG) reservoir (water tank) atop ground improvements. The site already houses the Keys Water Treatment Plant and another water tank . In this PL-U zoning, water infrastructure is listed in City development code as a permitted use.

Is a variance requested? ☐ Yes ☑ No (*If yes, identify what type of request*) ☐ Minor Variance ☐ Major Variance

NOTE: *Procedures and applicable criteria for variances may be found in SDC Chapter 17.134*

Subject to previous land use approval? ◉ Yes ○ No File No. ZC 5-02/SDR 9-02 (*attach copy of Notice of Decision*)

See Attachment A

Landscaping (sq. ft.) 7 street trees Paving (sq. ft.) 7600 SF

# of Parking Spaces NA # of Accessible Parking Spaces NA

NOTE: *If a residential project is proposed, a Residential Density Calculation Worksheet must be submitted.*

If Mixed Use, please specify types of uses and approximate percentages of overall site area in each use: NA

Commercial _____% Industrial _____% Residential _____%

If Commercial or Industrial: List # of non-residential buildings and square footage of each; _____

Use is Public Water Structures (a permitted use in PL-U): New proposed structure is one water tank, 17,700 SF.

DETAILED SITE INFORMATION

Are any of the following present on site? *If so, please specify the number of acres and/or percentage of site affected.*

Floodplain NA Wetlands NA Riparian Corridors NA

Cultural Resources NA Airport Noise Contours NA Slopes greater than 20% ~ 10% of site

Water Provider: ☑ City of Scappoose ☐ Well

Does the site have access to City street(s)? ☐ Yes ◉ No (Please explain): Site has access to county road; see below.

Does the site have access to County road(s)? ◉ Yes ☐ No (Please explain): Site has existing developed entrances from two points on SW Keys Road. The entrance on the south is only for construction/maintenance.

Are there existing structures on the site? ◉ Yes ☐ No (If Yes, briefly explain future status of structures.) (1) water pump station, (1) Existing water treatment plant, and (1) water tank--all remain; (2) existing water tanks to be demolished.

APPLICANT AND OWNER INFORMATION

(Property owner signature must be a wet-ink signature. If the property is under-going a change of ownership, proof of purchase or purchase contract must be provided if property owner of record is not the signing party.)

Applicant Name Dave Sukau, Public Works Director, City of Scappoose

Mailing Address 33568 East Columbia Avenue City Scappoose State OR Zip 97056

Phone # 503.543-7146 ext. 801 Fax # NA Email Address dsukau@scappoose.gov

Applicant's Signature _____ Date: 1/5/2024

Property Owner Name City of Scappoose

Mailing Address 33568 East Columbia Avenue City Scappoose State OR Zip 97056

Phone # 503-543-7146 ext. 226 Fax # NA Email Address drains@scappoose.gov

Property Owner Signature _____ Date: 1/8/2024

(If more than one property owner, please attach additional sheet with names and signatures.)

AFFIDAVIT CERTIFYING STEEP SLOPE

Pursuant to Scappoose Municipal Code 17.86.030, this affidavit declares that the applicant has no knowledge that sensitive areas on the development proposal site have been illegally altered, and that the applicant previously has not been found in violation of sensitive area regulations for any property in Columbia County.

DATED this 8th day of January, 2024

Applicant: Dave Sukau

STATE OF OREGON)

) ss

COUNTY OF Columbia)

Dated: January 8, 2024

Personally appeared the above named Dave Sukau and acknowledged the foregoing instrument to be their voluntary act.

Before me: Susan Marie Reeves

Notary Public for Oregon

My Commission expires: October 19, 2025

OFFICIAL STAMP
SUSAN MARIE REEVES
NOTARY PUBLIC - OREGON
COMMISSION NO. 1018015
MY COMMISSION EXPIRES OCTOBER 19, 2025

Site Development Review Code Response Narrative
Applicant's Submittal

Updated March 2024

APPLICANT: Dave Sukau
City of Scappoose
33568 East Columbia Avenue
Scappoose, OR 97056

OWNER: City of Scappoose
33568 East Columbia Avenue
Scappoose, OR 97056

REQUEST: Keys Road Reservoir

LOCATION: 52212 SW Keys Road, Scappoose, OR
Columbia County Assessor Map No. 3211-DD-00200

BACKGROUND

1. Existing Conditions

   The City of Scappoose (City) provides water for approximately 8,700 customers within southeastern Columbia County. The City's 2020 *Water Master Plan Update* (WMP) anticipates the need for additional water storage over the 20-year planning period, which is driven by rapid population growth and economic development. The City's lower pressure zone (PZ1) is the largest zone and is where growth is expected to double the total water demand by 2038.

   The Keys Road Water Treatment Plant (Keys WTP) site currently houses the City's Keys WTP, a booster pump station, and three water reservoirs (tanks). The site is bounded on two sides by SW Keys Road and by private residential property on two sides. All sides are bordered by security fencing and mature trees. The site is generally sloped from west down to the east with some slopes in excess of 20 percent.

   Uses of the site relate to operation and maintenance of the existing public water system infrastructure.

2. Proposed Project Description

   To address the forecasted water storage needs, the WMP recommends that the City construct a new 2.0 million gallon (MG) reservoir to service the City's PZ1 and seismically retrofit the existing 1.0 MG tank. As a value-added alternative, the City has decided to build a new 3.0 MG tank at the Keys WTP site and decommission/demolish

the existing, aging 1.0 MG Reservoir. The new tank will comply with current seismic codes, increase system-wide storage capacity, and help solve operational constraints experienced at the Keys WTP site. The new tank will be similar to the existing 1.0 MG tank in height and location on the site.

The proposed project also will involve tree removal, demolition of an abandoned water tank, and relocation of utilities in order to accommodate construction of the new tank. Utilities relocation will be limited to utilities located on the site; affected utilities include sewer, water, and power. The project will include on-site stormwater improvements to replace aging infrastructure and address new impervious areas associated with the larger tank.

The project will involve ground improvements under the new tank to provide stability for the tank's foundation. Other improvements include relocation of an access road, relocation of a fence, grading to soften some existing steep slopes, and street tree additions.

Use of the site will continue to relate to operation and maintenance of the public water system infrastructure.

REQUIRED CODE RESPONSES

The following sections of Scappoose Municipal Code (SMC) are applicable to this land use approval:

12.10 – Visual Clearance Areas
17.01 – Introduction (Section 17.01.060)
17.78 – PL-U Public Lands—Utility
17.86 – Sensitive Lands - Slope Hazard
17.100 – Landscaping, Screening and Fencing (Section 17.100.090)
17.104 – Street Trees
17.120 – Site Development Review (Section 17.120.180)
17.140 – Public Land Tree Removal
17.154 – Street and Utility Improvement Standards

12.10 VISUAL CLEARANCE AREAS

12.10.020 VISUAL CLEARANCE—REQUIRED

A. A visual clearance area shall be maintained on the corners of all property adjacent to an unregulated intersection of two streets, a street and a railroad, or a driveway providing access to a public or private street.
B. A visual clearance area shall contain no vehicle, recreational vehicle, watercraft, parts designed to be affixed to a vehicle of any type, hedge, planting, fence, wall structure, sign, or temporary or permanent obstruction that would impede visibility between a height of three feet and ten feet above the center line grades of the intersecting streets or railroad.
C. Where the crest of a hill or vertical curve conditions contribute to the obstruction of visual clearance areas at a street, driveway or railroad intersection, hedges, plantings, fences, walls, wall structures and

temporary or permanent obstructions shall be further reduced in height or eliminated to comply with the intent of the required visual clearance area.

D. The preceding provisions shall not apply to the following:

1. A public utility pole;

2. A tree trimmed (to the trunk) to a line at least eight feet above the level of the intersection;

3. Another plant species of open growth habit that is not planted in the form of a hedge and which is so planted and trimmed as to leave at all seasons a clear and unobstructed cross-view;

4. A supporting member or appurtenance to a permanent building lawfully existing on the date this standard becomes effective;

5. An official warning sign or signal;

6. A place where the natural contour of the ground is such that there can be no cross-visibility at the intersection; and

7. A sign support structure(s) if combined total width is twelve inches or less, and the combined total depth is twelve inches or less. (Ord. 820 § 2, 2012)

Applicant's Response

The applicant understands this standard. This standard is met.

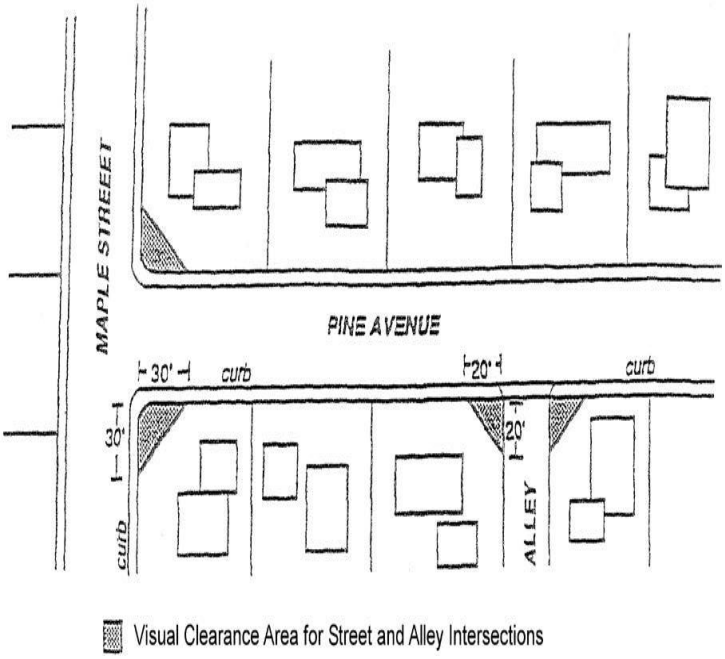
12.10.030 VISUAL CLEARANCE AREA DIMENSIONS

A visual clearance area shall consist of a triangular area, two sides of which are lot lines for distances specified in this section, or, where the lot lines have rounded corners, the lot lines extended in a straight line to a point of intersection and so measured, and the third side of which is a line across the corner of the lot joining the nonintersecting ends of the other two sides. The following measurements shall establish the visual clearance areas:

A. Street and Railroad Intersections (see also Figure 12.10.1):

Intersection Classification	Measurement Along each Lot Line
All streets except alleys	30 feet
Streets and railroads	30 feet
Alley	10 feet
Intersection of a street and alley	20 feet

Figure 12.10.1. Visual Clearance Areas for Streets and Alleys

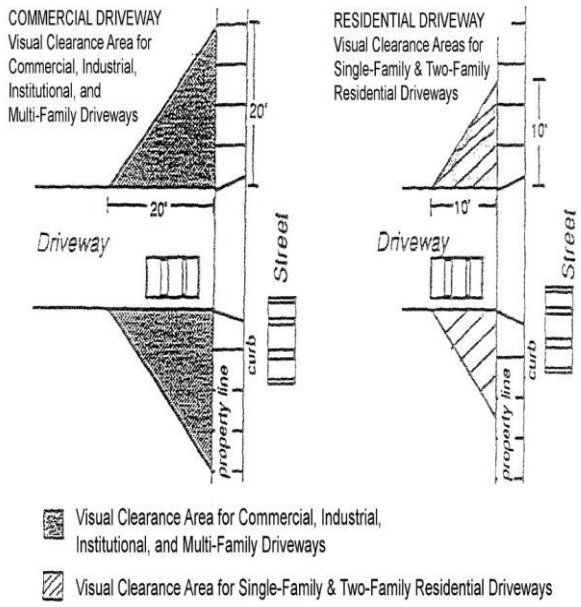


B. Driveway Intersections (see also Figure 12.10.2):

1. *Commercial, Industrial, Institutional, and Multi-Family Developments.* Service drives to public or private streets shall have a minimum visual clearance area formed by the intersection of the edges of the service drive, the street right-of-way line, and a straight line joining said lines through points twenty feet from their intersection. No off-street parking shall be located in a service drive visual clearance area.

2. *Single-Family and Two-Family Developments.* Driveways to public or private streets shall have a minimum visual clearance area formed by the intersection of the edges of the driveway, the street right-of-way line, and a straight line joining said lines through points ten feet from their intersection. No off-street parking area shall be located in a driveway visual clearance area. (Ord. 820 § 2, 2012)

Figure 12.10.2. Visual Clearance Areas for Driveways



Applicant's Response

Existing and proposed site elements do not obstruct sight distance within the 20-foot visual clearance areas required by this standard. This standard is met.

17.01 INTRODUCTION

17.01.060 RIGHT-OF-WAY DEDICATIONS AND IMPROVEMENTS

Upon approval of any development permit or any land use approval of any property which abuts or is served by an existing substandard street or roadway, the applicant shall make the necessary right-of-way dedications for the entire frontage of the property to provide for minimum right-of-way widths according to the city's public works design standards and shall improve the abutting portion of the street or roadway providing access to the property in accordance with the standards in Chapter 17.154. (Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

In the pre-application conference for this project, two potential right-of-way (ROW) dedications were identified: 1. SW Keys Road width; 2. And sidewalk ROW. A discussion of each follows.

1. **Keys Road Width**

   The 2016 Transportation System Plan (TSP) requires Neighborhood Routes to have a ROW width of 60 feet and a paved width of 36 feet. SW Keys Road appears to have a ROW width between 48 and 54 feet and a paved width between 20 and 32 feet (depending on the section of SW Keys Road). Typically, a ROW dedication and half street improvements would be required to bring the road adjacent to the subject site up to standard. Alternatively, the applicant can propose to record a waiver of non-remonstrance agreement if certain conditions apply, including the following two conditions:

   a. **A partial improvement is not feasible due to the inability to achieve a cohesive design for the overall street.**
   b. **[Not applicable condition]**
   c. **Due to the nature of existing development on adjacent properties, it is unlikely that street improvements would be extended in the foreseeable future and the improvement associated with the project under review does not, by itself, provide a significant improvement to street safety or capacity.**

   Findings regarding the applicability of these conditions are as follows:

   - **Half street improvements have already been performed on this section of SW Keys Road during past site projects and were approved by the City Planning Commission at a 22-foot paved width as noted in the 2002 notice of final approval (Attachment A, Condition of Approval No. 4). These street improvements resulted in a consistent curbline along the subject property. The**

majority of the ROW width adjacent to the subject property is 50 feet. Further widening of the ROW and street into the subject property would result in a non-cohesive street design since the edge of street is already offset around 5 feet into the subject property compared to the adjacent section of street. A tapered transition currently accommodates this offset; additional offset would require an abrupt offset. Additional offset would also require moving stormwater features and sidewalk. Additional offset would also require removing large Douglas Fir trees or creating non-cohesive curbline offsets near the trees. A partial improvement is not feasible due to the inability to achieve a cohesive design for the overall street.

For these reasons, Condition "a." applies.

- **The adjacent properties along the east side of the street (north of the subject property) are already developed with curb, gutter, and sidewalk. In addition, the ground slopes away from this developed east edge into front yard areas with developed landscaping. Widening eastward likely would require retaining walls to support a new sidewalk location. This existing development and topography makes the extension of any road widening unlikely. Further widening of the street just along the subject property would result in further offset of the curbline. This would result in a short, isolated section of wider roadway. The offset could create safety issues. Due to its isolation and already wider dimension, the widening likely would not provide significant improvements to the overall capacity of the street.**

  For these reasons, condition "c." applies.

Since these two conditions apply, an exemption from ROW dedication is possible. This is typically established with a waiver of non-remonstrance agreement. However, such an agreement is not appropriate since this is a City project. The City cannot enter into a waiver of non-remonstrance agreement with itself. Therefore, an exemption is allowed with the previous supporting findings.

The requirements of this standard for SW Keys Road width have been met.

2. **Sidewalk ROW**

   At the southeast corner of the site, the sidewalk ends partially in the existing ROW and partially in the site. The triangle of area required to include the entirety of the sidewalk will be dedicated as indicated on the Proposed Utility Plan "PROPOSED ROW DEDICATION" (Attachment B).

   The requirements of this standard will be met for the sidewalk ROW.

17.78 PL-U PUBLIC LANDS—UTILITY

17.78.030 PERMITTED USES

In the PL-U zone, only the following uses and their accessory uses are permitted outright, and are subject to the provisions of Chapter 17.120, Site Development Review:

A. Public water system structures, including, but not limited to treatment plants, storage reservoirs, pump stations or other major facilities associated with the supply or distribution of water;
B. Public sewerage or drainage way system structures, including, but not limited to, pump stations, or sewage or storm water treatment plants;
C. Public workshops, road shops, yards, and equipment and material storage yards.
D. Public support facilities. (Ord. 868, 2018; Ord. 828, 2013; Ord. 741 § 2, 2004; Ord. 715 § 1, 2002)

Applicant's Response

The proposed project is a public water system storage reservoir structure, which is a permitted use. In applying for Site Development Review, the requirements of this section will be met.

17.78.040 CONDITIONAL USES

The following uses and their accessory uses may be permitted in the PL-U zone when authorized by the planning commission in accordance with the requirements of Chapter https://scappoose.municipal.codes/Code/17.130 Commission:

A. Public recreation facilities including neighborhood parks, and multi-use trails with associated trail access points and trailheads, when the use does not interfere with the public utility facilities onsite. (Ord. 868, 2018)

Applicant's Response

The proposed project does not include any conditional uses; therefore, this standard is not applicable.

17.78.050 DIMENSIONAL REQUIREMENTS

Due to the unique nature of the public uses allowed within the PL-U zone, no designated minimum lot size, minimum yard requirements, minimum building height or maximum lot coverage exist. Minimum lot size, lot coverage, building height and yard requirements shall be determined on a case by case basis by the planning commission as provided for within the provisions of Chapter 17.120 or 17.130. (Ord. 868, 2018; Ord. 715 § 1, 2002)

Applicant's Response

The proposed water tank will be similar in height and occupy a location similar to that of the water tank being replaced. It is proposed to be 34 feet from the nearest property line. For comparison, an existing water tank at the site that will remain is approximately 15 feet from the same eastern property line. This proposed project will be reviewed by the Planning Commission; therefore, this standard can be met.

17.86 SENSITIVE LANDS – SLOPE HAZARD

17.86.020 APPLICABILITY OF USES

A. Except as provided by this section, the following uses are permitted uses:
1. Accessory uses such as lawns, gardens or play areas, except in wetlands;
2. Agricultural uses conducted without locating a structure or altering landforms;
3. Public and private conservation areas for water, soil, open space, forest and wildlife resources;

4. Removal of poison oak, tansy ragwort, blackberry or other noxious vegetation;
5. Fences.

B. Separate permits shall be obtained from the appropriate state, county or city jurisdiction for the following:
1. Installation of underground utilities and construction of roadway improvements including sidewalks, curbs, streetlights and driveway aprons;
2. Minimal ground disturbance(s) but no landform alterations.

C. For the purpose of this chapter, "slope hazard areas" means those areas subject to a severe risk of landslide or erosion. They include any of the following areas:
1. Any area containing slopes greater than or equal to fifteen percent and two of the following subsections;
a. Impermeable soils (typically silt and clay) frequently interbedded with granular soils (predominately sand and gravel),
b. Any area located on areas containing soils which, according to the current version of the soil survey of Columbia County, Oregon may experience severe to very severe erosion hazard,
c. Any area located on areas containing soils which, according to the current version of the soil survey of Columbia County, Oregon are poorly drained or subject to rapid runoff,
d. Springs or ground water seepage;
2. Any area potentially unstable as a result of natural drainageways, rapid stream incision, or stream bank erosion;
3. Any area located on an alluvial fan, presently subject to or potentially subject to inundation by debris flows or deposition of stream transported sediments;
4. Any area containing slopes greater than or equal to twenty percent.

D. Landform alterations or developments within slope hazard areas that meet the jurisdictional requirements and permit criteria of the U. S. Army Corps of Engineers, Division of State Lands, and/or other federal, state or regional agencies do not require duplicate analysis or local permits. The city may require additional information not addressed above. When any provision of any other chapter of this title conflicts with this chapter, the regulations that provides more protection to the sensitive areas shall apply unless specifically provided otherwise in this chapter; provided, such exceptions shall not conflict with any federal, state or local regulation.

E. A development permit shall be obtained before construction or development begins within any area of slope hazard as identified in subsection C of this section. The permit shall apply to all structures including manufactured homes.

F. Except as explicitly authorized by other provisions of this chapter, all other uses are prohibited on steep slope areas.

G. A use established prior to the adoption of this title, which would be prohibited by this chapter or which would be subject to the limitations and controls imposed by this chapter, shall be considered a nonconforming use. Nonconforming uses shall be subject to the provisions of Chapter 17.132.

H. The planner shall determine if a slope hazard applies based upon one or any combination described in subsection C of this section. (Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

Regarding Requirements A and B:

The applicant will be acquiring all necessary permits for the installation of underground utilities and ground disturbances. Therefore, these requirements will be met.

Regarding Requirement C:

The site contains some areas with existing slopes greater than 20 percent. Therefore, "slope hazard area" applies to the site.

Regarding Requirement D:

The applicant understands this requirement. This requirement can be met.

Regarding Requirement E:

Development of the reservoir will not occur until the City has obtained the required Sensitive Lands – Slope Hazard Development Permit. Therefore, this requirement will be met.

Regarding Requirements F through H:

The applicant understands these requirements.

17.86.030 ADMINISTRATION AND APPROVAL PROCESS

A. The applicant for a development permit shall be the recorded owner of the property or an agent authorized in writing by the owner.

B. If uncertainty exists in regards to the location or configuration of slope hazard areas, the planner shall make an on-site inspection prior to an application being initiated to determine the nature and extent of the resource. If necessary, assistance from state and federal agencies shall be sought to provide the applicant additional information.

C. The planner shall review all development applications to determine if the mitigation and monitoring plans and bonding measures proposed by the applicant are sufficient to protect the public health, safety and welfare consistent with the goals, purposes, objectives and requirements of this chapter.

D. The applicant shall submit an affidavit which:

1. Declares that the applicant has no knowledge that sensitive areas on the development proposal site have been illegally altered, and that the applicant previously has not been found in violation of sensitive areas regulations for any property in Columbia County;

2. Demonstrates that any development proposal submitted conforms to the purposes, standards and protection mechanisms of this chapter;

3. If required, prepare a special sensitive areas study in accordance with Section 17.86.070;

E. Approval of a development proposal pursuant to the provisions of this chapter does not discharge the obligation of the applicant to comply with the provisions of this chapter.

F. The provisions of this chapter shall apply to all forest practices over which the city has jurisdiction, and to all property which has been cleared and/or graded without an approved state and local permit.

G. The application shall be processed in accordance with Chapter 17.162. (Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

The applicant understands the administrative and approval process. The location of existing steep slopes on the subject site are identified on the Proposed Grading Plan (Attachment B). These steep slopes are addressed in the accompanying Sensitive Lands – Slope Hazard Development Permit Application.

17.86.040 MAINTENANCE OF RECORDS

A. The planner shall retain on file, the current version of the soil survey for Columbia County, Oregon as provided by the Soil Conservation Service, of the Department of Agriculture.

B. The planner shall retain on file all studies of soil hazards areas for new or existing development or construction. (Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

The applicant understands this standard; this standard can be met.

17.86.050 GENERAL PROVISIONS FOR SLOPE AREAS

A. Slope hazard regulations apply to those areas meeting the federal, state or local definition of "slope hazard" as identified in Section 17.86.020(C) and areas of land adjacent to and within one hundred feet of areas identified as slope hazards.

B. Slope locations may include but are not limited to those areas identified as slope hazards in the Scappoose comprehensive plan.

C. Precise boundaries may vary from those shown on maps; specific delineation of slope hazards boundaries may be necessary. Slope hazard delineation will be done by qualified professionals at the applicant's expense. (Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

The applicant understands the requirements of this standard. Some mapping indicates slope hazard areas near the subject site, and the subject site itself contains some slopes in excess of 20 percent. This standard is met.

17.86.060 EXPIRATION OF APPROVAL

A. Approval of a development permit shall be void if:

1. Substantial construction of the approved plan has not completed within a one-year period; or

2. Construction on the site is a departure from the approved plan.

B. The planner may, upon written request by the applicant, grant an extension of the approval period not to exceed one year, provided that:

1. No changes are made on the original plan as approved by the approval authority;

2. The applicant can show intent of initiating construction of the site within the one year extension period;

3. There have been no changes to the applicable comprehensive plan policies and ordinance provisions on which the approval was based;

4. There have been no naturally occurring or manmade changes to the landform.

C. Notice of the extension shall be provided to the applicant. (Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

The applicant understands the requirements of this standard and will apply for extensions as necessary. Therefore, the requirements of this standard will be met.

17.86.070 APPROVAL STANDARDS

A. The planner or the planning commission may approve or approve with conditions or deny an application request within the slope area based upon following findings:

1. Land form alterations shall preserve or enhance slope stability;

2. *The proposed land form alteration or development will not result in erosion, stream sedimentation, ground instability, or other adverse on-site and off-site effects or hazards to life or property;*
3. *Land form alterations or developments address stormwater runoff, maintenance of natural drainageways, and reduction of flow intensity by the use of retention areas;*
4. *The structures are appropriately sited and designed to ensure structural stability and proper drainage of foundation and crawl space areas for development with any of the following soil conditions: wet/high water table; high shrink-swell capability; compressible/organic; and shallow depth-to-bedrock;*
5. *Where natural vegetation has been removed due to land form alteration or development, the areas not covered by structures or impervious surfaces will be replanted to prevent erosion in accordance with Chapter 17.100;*
6. *The water flow capacity of the drainageway is not decreased or the drainageway will be replaced by a public facility of adequate size to accommodate maximum flow;*
7. *The necessary U.S. Army Corps of Engineers and state of Oregon Land Board, Division of State Lands and Department of Environmental Quality approvals shall be obtained;*
8. *No development, building, construction or grading permit may be issued on lands in the slope hazard area until the public works director approves:*
    a. *An engineering geotechnical study and supporting data demonstrating that the site is stable for the proposed use and development,*
    b. *The study shall include at a minimum geologic conditions, soil types and nature, soil strength, water table, history of area, slopes, slope stability, erosion, affects of proposed construction, and recommendations. This study shall be completed by a registered geotechnical engineer in the state of Oregon. The plans and specifications shall be based on the study recommendations shall be prepared and signed by a professional civil engineer registered in the state of Oregon,*
    c. *A stabilization program for an identified hazardous condition based on established and proven engineering techniques that ensure protection of public and private property,*
    d. *A plan showing that the strategically important vegetative cover shall be maintained or established for stability and erosion control purposes,*
    e. *A plan showing the proposed stormwater system. Said system will not divert stormwater into slope hazard areas.*

B. *Where landform alterations and/or development are allowed within and adjacent to the one hundred-year floodplain, the requirements of Chapter 17.84 shall be met.*

C. *Where landform alterations and/or development are allowed within and adjacent to wetlands, the requirements of Chapter 17.85 shall be met. (Ord. 634 § 1 Exh. A, 1995)*

Applicant's Response

Findings related to Requirement A are as follows:

1. **The proposed grading meets the recommendations of the project Geotechnical Engineering Report (GER) provided as Attachment C. As noted in Section 6.7 of the GER, the proposed development will not degrade the global stability of the site. In addition, the new tank foundation improvements are anticipated to reduce the risk of shallow instability at this site. This requirement is met.**
2. **The proposed development is anticipated to increase the stability of the site as described previously. The proposed development is expected to result in less sheet**

flow runoff of stormwater on the subject property and onto adjacent downhill property; this and reduction of some steep slopes should reduce the risk of erosion on the subject property and offsite. Construction of the development is planned with standard erosion control methods to avoid risk of off-site stream sedimentation. The proposed development will replace an existing water reservoir with a new reservoir built to higher seismic standards; therefore, it should reduce hazards to life or property in the event of an earthquake. This requirement is met.

3. **The proposed development addresses stormwater runoff, maintenance of natural drainageways, and reduction of flow intensity by the use of detention areas; refer to the project's Stormwater Report (Attachment D). This requirement is met.**
4. **The proposed water tank will be designed to meet structural stability and proper drainage through the use of an underdrain layer below the tank and a vertical drain (drain rock and pipe) surrounding the perimeter of the tank as described in Section 6.4 and 6.5 of the GER. This requirement is met.**
5. **The proposed development involves vegetation removal on portions of the site. Affected areas are proposed to be replanted with a grass seed mixture in accordance with Chapter 17.100; therefore, this requirement is met.**
6. **The water flow capacity of the drainageways on and related to the proposed site work are not decreased; therefore, this requirement is met.**
7. **The entire site is located outside of the 100-year floodplain; therefore U.S. Army Corps of Engineers approval is not required. A 1200-series construction stormwater permit will be obtained before starting construction; therefore, the Department of Environmental Quality requirements will be met.**
8. **Findings related to Part 8 are as follows:**
    a. **The project GER (Attachment C) is an engineering geotechnical study with supporting data demonstrating that the site is stable (with proposed soil improvements) for the proposed use and development. This requirement is met.**
    b. **The project GER (Attachment C) includes descriptions of geologic conditions (Sections 2 and 4), soil types and nature (Section 4.1), soil strength (Section 4.1), water table (Section 4.2), history of area (Section 2), slopes (Figure 2; also refer to the Proposed Grading Plan of Attachment B), slope stability (Section 5.2 and 6.7), erosion considerations (Section 6.6 and 6.8.1), and effects of proposed construction (Section 6.7), and recommendations (Sections 6 and 7). The GER is prepared and signed by a professional engineer registered in the State of Oregon (see Page 1). These requirements are met.**
    c. **The project GER (Attachment C) includes a stabilization program for the identified low liquefaction risk (Section 6.3). The recommended ground improvement method (rammed aggregate piers "geopiers") or, alternatively, the augercast piles, should result in improved global stability for the site**

(Section 6.7) and help protect of public and private property. This requirement is met.

d. The project GER does not identify particular existing vegetative cover as strategically important for stability; however, general requirements for the project will require maintaining existing vegetative cover except where shown removed or replanted. The project Construction Grading and Temporary Erosion and Sediment Control Plan (Attachment B) shows erosion control measures as recommended by the GER. This requirement is met.

e. The project's Proposed Drainage Plan (Attachment B) shows the proposed stormwater system. The proposed system will not divert stormwater into slope hazard areas. This requirement is met.

B. The proposed development site is entirely outside of the 100-year floodplain; therefore, Requirement B is not applicable.

C. The proposed development site is entirely outside of mapped wetlands; therefore, Requirement C is not applicable.

17.86.080 APPLICATION SUBMISSION REQUIREMENTS

A. All applications shall be made on forms provided by the planner and shall be accompanied by:

1. One reproducible copy of the development plan(s) and necessary data or narrative which explains how the development conforms to the standards. Sheet size for the development plan(s) and required drawings shall not exceed eighteen inches by twenty-four inches and the scale for all development plans shall be an engineering scale;

2. A list of the names and addresses of all who are property owners of record within two hundred feet of the site.

B. The development plan and narrative shall include the following information. Items may be combined on one map:

1. Existing site conditions including vicinity map showing the location of the property in relation to adjacent properties and including parcel boundaries, dimensions and gross area;

2. The location, dimensions and names of all existing and platted streets and other public ways, railroad tracks and crossings, and easements on adjacent property and on the site and proposed streets or other public ways, easements on the site;

3. The location, dimensions and setback distances of all existing structures, improvements, utility and drainage facilities on adjoining properties and existing structures, water, sewer, improvements, utility and drainage facilities to remain on the site; and proposed structures, water, sewer, improvements, utility and drainage facilities on the site;

4. Contour lines at two-foot intervals for slopes from zero to ten percent and five-foot intervals from slopes over ten percent;

5. The drainage patterns and drainage courses on the site and on adjacent lands;

6. Potential natural hazard areas including:

a. Floodplain areas,

b. Areas having a high seasonal water table within zero to twenty-four inches of the surface for three or more weeks of the year,

c. Unstable ground (areas subject to slumping, earth slides or movement). Where the site is subject to landslides or other potential hazard, a soils and engineering

geologic study based on the proposed project may be required which shows the area can be made suitable for the proposed development,

d. Areas having a severe soil erosion potential, and

e. Areas having severe weak foundation soils;

7. The location of trees having a six-inch caliper at four feet. Only those trees that will be affected by the proposed development need to be sited accurately. Where the site is heavily wooded, an aerial photograph at the same scale as the site analysis may be required;

8. Identification information, including the name and address of the owner, developer, and project designer, and the scale and north arrow;

9. A grading and drainage plan that includes:

a. The identification and location of the benchmark and corresponding datum,

b. Location and extent to which grading will take place indicating contour lines, slope ratios, and slope stabilization proposals,

c. When requested by the planner, a statement from a registered engineer supported by factual data substantiating:

i. The validity of the slope stabilization proposals,

ii. That other off-site impacts will not be created,

iii. Stream flow calculations,

iv. Cut and fill calculations, and

v. Channelization measures proposed.

d. A statement from a registered engineer supported by factual data that all drainage facilities are designed in conformance A.P.W.A standards and as reviewed and approved by the public works director;

10. The method for mitigating any adverse impacts upon wetland, riparian or wildlife habitat areas. (Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

Regarding Requirement A:

1. **This narrative response is provided with this application as well as the engineering development drawings of Attachment B. This requirement is met.**
2. **Scappoose Planning will generate a list of names and addresses of the property owners of record within 300 feet of the site (300 instead of 200 feet for the requirements of the SLSH Application). This requirement will be met.**

Regarding Requirement B:

For the referenced plans in this response, please refer to Attachment B.

1. **Refer to the Existing Site Plan. This requirement is met.**
2. **Refer to the Existing Site Plan for the bounding street (SW Keys Road) and the locations of adjacent properties. No easements have been identified on the proposed site. No public streets are proposed on the site; however, the revised on-site access road is shown on the Proposed Grading Plan. This requirement is met.**
3. **Structures and utilities (existing and proposed) are shown on the Proposed Utility Plan and the Preliminary Site Plan. Also refer to the legend on the Civil Notes and Legends drawing and to the Existing Site Plan. This requirement is met.**

4. **Contour lines are shown on the Proposed Grading Plan. This requirement is met.**
5. **Drainage patterns are shown on the Proposed Drainage Plan with slope arrows. This requirement is met.**
6. **No potential natural hazards have been identified on the site. However, existing slopes that will remain after development having 20 percent or greater slopes are identified on the Proposed Grading Plan. This requirement is met.**
7. **The location of all existing trees on the site is shown on the Existing Site Plan. This requirement is met.**
8. **Identification information is shown on the Existing Site Plan. This requirement is met.**
9. **Proposed grading and drainage is shown on the Proposed Grading Plan and the Proposed Drainage Plan.**
    a. **For benchmark information, refer to the survey notes and control point table of the General Information Drawing. This requirement is met.**
    b. **Contours are shown on the Proposed Grading Plan. Geopiers (rammed aggregate piers) and a temporary retaining wall are shown in the Construction Grading Plan/Sections. These are stabilization measures for the structure (with benefits provided to the general slope) and for temporary slopes. This requirement is met.**
    c. **Refer to the project GER (Attachment C, Section 6.3) for a statement regarding the validity of the geopier slope stabilization procedure referred to previously. This requirement is met.**
    d. **Refer to the project Stormwater Report (Attachment D) for a statement regarding American Public Works Association standards. The applicant is submitting the Stormwater Report to the City's Public Works Director. This requirement will be met.**
10. **No sensitive natural areas, such as wetland, riparian, or wildlife habitat areas, have been identified by the City within the project site. Therefore, this requirement is not applicable.**

17.100 LANDSCAPING, SCREENING AND FENCING

17.100.090 BUFFERING AND SCREENING REQUIREMENTS

A. Buffering and screening are required to reduce the impacts on adjacent uses which are of a different type. The owner of each proposed development is responsible for the installation and effective maintenance of buffering and screening. When different uses abut one another, buffering and screening are required. When different uses would be abutting one another except for separation by a right-of-way, buffering, but not screening, shall be required.

B. A buffer consists of an area within a required interior setback adjacent to a property line, having a width of ten feet, except where the planning commission requires additional width, and a length equal to the length of the property line of the abutting use or uses.

C. Occupancy of a buffer area shall be limited to utilities, screening, and landscaping. No buildings, accessways or parking areas shall be allowed in a buffer area.

D. The minimum improvements within a buffer area shall include:

1. One row of trees, or groupings of trees equivalent to one row of trees. At the time of planting, these trees shall not be less than ten feet high for deciduous trees and five feet high for evergreen trees measured from the ground to the top of the tree after planting. Spacing for trees shall be as follows:

a. Small or narrow stature trees, under twenty-five feet tall or less than sixteen feet wide at maturity shall be spaced no further than fifteen feet apart;

b. Medium sized trees between twenty-five feet to forty feet tall and with sixteen feet to thirty-five feet wide branching at maturity shall be spaced no greater than twenty-five feet apart;

c. Large trees, over forty feet tall and with more than thirty-five feet wide branching at maturity, shall be spaced no greater than thirty feet apart.

2. In addition, at least one five-gallon shrub shall be planted for each one hundred square feet of required buffer area.

3. The remaining area shall be planted in groundcover, or spread with bark mulch.

E. Where screening is required the following standards shall apply in addition to those required for buffering:

1. A hedge of narrow or broadleaf evergreen shrubs shall be planted which will form a four-foot continuous screen within two years of planting; or

2. An earthen berm planted with evergreen plant materials shall be provided which will form a continuous screen six feet in height within two years. The unplanted portion of the berm shall be planted in lawn, ground cover or bark mulched; or

3. A five-foot or taller fence or wall shall be constructed to provide a continuous sight obscuring screen. Fences and walls shall be constructed of any materials commonly used in the construction of fences and walls such as wood or brick, or otherwise acceptable by the planner. Corrugated metal is not considered to be acceptable fencing material. Chain link fences with slats may qualify as screening when combined with a planting of a continuous evergreen hedge;

4. An evergreen hedge or other dense evergreen landscaping may satisfy a requirement for a sight obscuring fence where required. Such hedge or other dense landscaping shall be properly maintained and shall be replaced with another hedge, other dense evergreen landscaping, or a fence or wall when it ceases to serve the purpose of obscuring view; and no hedge shall be grown or maintained at a height greater than that permitted by these regulations for a fence or wall when located within a visual clearance area as set forth in Chapter 12.10, Visual Clearance Areas

F. Buffering and screening provisions shall be superseded by the vision clearance requirements as set forth in Chapter 12.10, Visual Clearance Areas.

G. When the use to be screened is downhill from the adjoining zone or use, the prescribed heights of required fences, walls or landscape screening shall be measured from the actual grade of the adjoining property. (Ord. 820 § 6, 2012; Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

Regarding Requirement A:

The subject site is of a different use (public water system structures) than abutting sites (residential). New, above-ground development (the water tank replacement) is on the south end of the site. To the east of the proposed tank, directly abutting the lot is an existing

residence that requires buffering and screening. Also abutting the proposed property are existing lots with residences along the north. To the south and southwest, there also are existing residential lots, but these are separated from the proposed site by public ROW and only buffering is required.

The applicant understands this requirement.

Regarding Requirements B and C:

A space of at least 10 feet inside all sides of the proposed site is limited to utilities and landscaping. These requirements are met.

Regarding Requirement D:

1. **Regarding buffer area trees:**
    - **Along the south end of the eastern property line, existing screening arborvitae trees are established. These screening trees are located on the outside of an existing fence (refer to Attachment E, Photo 3). The existing fence is located approximately 10 feet from the property line. The existing fence and existing screening trees block access to these plantings and other parts of the 10 foot buffer area. Therefore, in the buffer area, additional buffering tree plantings are not practical.**
    - **Along the north end of the property line are 8 existing trees. Most are large trees with some having spacing of around 30 feet. In an area on the west end of this property line where no trees are located, nine additional trees classifying as "small-stature" trees are proposed on the Landscaping Plan (Attachment B) at spacing of 15 feet.**
    - **A row of existing arborvitae trees (narrow stature trees) occupies the southern buffer area. They are higher than 5 feet (average is 12 feet) and are spaced at closer than 15 feet apart. Refer to Attachment E, Photo 1. In addition, refer to the group of 25 and group of 3 called out on the Landscaping Plan (Attachment B).**
    - **An existing grove of trees, mostly mature Douglas Fir trees (large trees), occupies the area west of the proposed replacement tank. The area occupied exceeds 10 feet wide and trees are spaced at less than 30 feet apart (Attachment E, Photo 2). This area of the site is shown on the Landscaping Plan (Attachment B) with existing trees identified as coniferous or deciduous trees (along with their trunk diameters).**

    This requirement is met to the extent practical.
2. **Regarding buffer area shrubs:**
    - **Along the south end of the eastern property line existing screening arborvitae trees are established. These screening trees are located on the outside of an existing fence. The existing fence is located approximately 10 feet from the property line. Some parts of the buffer area (between the trees and the property line) are planted with existing shrubs or other low plantings. The**

existing fence and existing screening trees block access to these plantings and other parts of the 10 foot buffer area. Therefore, in the buffer area, additional buffering shrub plantings are not practical.

- **Along the north end of the property line are no shrub plantings. The City maintains this buffer area by trimming grass in an area that is steep and narrow in some places. Shrubs would hamper this area maintenance and were not required during the last development project on the north end of the proposed site. Therefore, additional shrubs are not proposed in this area.**
- **The southern property buffer area is approximately 108 feet long. This would require 8 trees at the standard 15-foot spacing. There are 28 trees in this area along the property line. The remaining 20 trees may be counted to meet the shrub requirements. At 1 shrub per 100 square feet of area, the 1,075 square feet would require 11 shrubs. Therefore, the 20 trees in excess of the tree requirement also exceed the shrub requirement along the southern side.**
- **To the west, the grove of existing trees consists of 31 large Douglas Fir and native deciduous trees (not counting the trees proposed to be removed). The grove is a mature grove abutting a portion of the property line roughly 220 feet in length (the portion of the property line where the sidewalk meanders away from the property line). This length would require 8 trees at the standard 30-foot spacing. The remaining 23 trees may be counted to meet the shrub requirements. At 1 shrub per 100 square feet of area, the 2,200 square foot buffer area would require 22 shrubs. Therefore, the 23 trees in excess of the tree requirement also exceed the shrub requirement along the west side.**

This requirement is met to the extent practical.

3. **The buffer areas described previously are all planted with mature lawn and will not be disturbed during the proposed development. Therefore, this requirement is met.**

Regarding Requirement E:

Screening is required in the following areas and is met with existing elements as follows:

Along the south end of the eastern property line: The first 116 feet of the eastern property line abuts a private residence. In the 10-foot space on the applicant's property, between the property line and an existing fence, is a mature line of arborvitae trees. These trees form an evergreen hedge that is continuous and approximately 16 feet tall. On its southern end, this hedge stops just outside of the visual clearance area required by Chapter 12.10. For details on this hedge, refer to Attachment E, Photo 3; also refer to the "SCREENING TREES" called out on the Landscaping Plan of Attachment B. The remainder of the eastern property line abuts undeveloped land. Existing established and mature coniferous and deciduous trees exist on both sides of this part of the eastern property line. These trees form a generally continuous visual screening—especially near the proposed above-ground development on the subject property; refer to Attachment E, Photos 4 through 7. Most of the trees shown in the photos are within the subject property (the existing fence is installed 10 feet inside the subject property's eastern property line). Most of

these trees are identified (including trunk diameter) on the Landscaping Plan in Attachment B.

Along the north end of the property line is a mixture of fence types. Fencing in the most visually open area is solid wood fencing. This wood fencing extends west past the westernmost existing residential structure. In the gap between the end of this fence and existing plantings two "small-stature" trees are proposed (part of a line of nine proposed trees). Other more continuous screening is not proposed due to the existence of ancillary structures (owned by the resident) on the property line in this area.

This requirement is met to the extents practical.

Regarding Requirement F:

Buffering and screening measures proposed comply with the requirements of Chapter 12.10; therefore, this requirement is met.

Regarding Requirement G:

The use to be screened is not downhill from the adjoining use. Therefore, this requirement is not applicable.

17.104 STREET TREES

17.104.020 APPLICABILITY

A. The provisions of this chapter shall apply to all development as defined in Scappoose Municipal Code Chapter 17.26, Definitions, except a building permit to add to or remodel an existing single family residence.

B. All development shall be required to plant street trees. Street trees shall be defined as trees located on land lying between the property lines on either side of all streets, avenues or public rights-of-way within the city or within easements defined on a recorded plat as street tree easements.

C. All street trees required under this chapter shall be subject to the requirements of Scappoose Municipal Code Chapter 17.140 Public Land Tree Removal. (Ord. 659 § 3, 1997)

Applicant's Response

The applicant understands the applicability of this code. In the October 11th Pre-Application Conference, the City of Scappoose Planning Department indicated that street trees are needed along portions of the western property boundary street frontage that is currently without existing plantings. This requirement is met with the Proposed Landscaping Plan (Refer to Attachment B).

17.104.030 APPROVAL PROCESS

A. The applicant shall submit two copies of a site plan, drawn to an acceptable scale, which includes:

1. North arrow and map scale;

2. Name and phone number of contact person;

3. Location of all permanent structures including signs;
4. Location of right-of-way and all utilities including underground and aboveground;
5. Location, type, size and species of proposed street trees.

B. Where the development does not require approval by the planning commission, the plan shall be submitted to the planner for determination of completeness. When the plan is determined to be complete, the planner shall send one copy to the public works director for review and comment and shall allow five days for public works comments. The planner shall approve, approve with conditions, or deny a plan submitted under the provisions of this chapter within ten business days of determining the plan to be complete. No additional public notice shall be required.

C. If no other approvals are required by the project, there shall be no fee for approval of the plan required by this section.

D. If the project requires other approvals, the following shall apply:
1. Approval of the plan required by this section shall be consolidated with all other required approvals and shall be processed pursuant to the requirements of the other approvals; and
2. One percent of the total fee for all other approvals shall be placed in a dedicated fund for the planting and maintenance of street trees; and
3. All required information may be combined with plans required by other approvals.

E. Certificates of occupancy shall not be issued unless the street tree requirements have been met or a bond has been posted with the city to insure the plantings. (Ord. 659 § 3, 1997)

Applicant's Response

Regarding Requirement A:

An Existing Site Plan, Landscaping Plan, and Preliminary Site Plan are provided as part of Attachment B with the required elements displayed. This requirement is met.

Regarding Requirements B and C:

The development application does require approval of the planning commission; therefore, this requirement is not applicable.

Regarding Requirement D:

Other approvals are required, so the applicant understands that these requirements apply. These requirements can be met.

Regarding Requirement E:

A certificate of occupancy is not required for this development; therefore, this requirement does not apply.

17.104.040 STANDARDS FOR STREET TREES

A. Street trees shall be selected from the approved street tree list on file with the Planning Department.

B. At the time of planting, street trees shall not be less than ten feet high for deciduous trees and five feet high for evergreen trees.

C. Spacing and minimum planting areas for street trees shall be as follows:

1. *Street trees under twenty-five feet tall and less than sixteen feet wide at maturity shall be spaced no further than fifteen feet apart in planting areas containing no less than sixteen square feet of porous surface and not less than four feet wide;*
2. *Street trees under twenty-five feet tall and greater than sixteen feet wide at maturity shall be spaced no further than twenty feet apart in planting areas containing no less than sixteen square feet of porous surface and not less than four feet wide;*
3. *Street trees between twenty-five feet to forty feet tall and less than twenty-five feet wide at maturity shall be spaced no greater than twenty-five feet apart in planting areas containing no less than twenty-four square feet of porous surface and not less than six feet wide;*
4. *Street trees between twenty-five feet to forty feet tall and greater than twenty-five feet wide at maturity shall be spaced no greater than thirty feet apart in planting areas containing no less than twenty-four square feet of porous surface and not less than six feet wide;*
5. *Street trees greater than forty feet tall at maturity shall be spaced no greater than forty feet apart in planting areas containing not less than thirty-six square feet of porous surface and not less than eight feet wide.*

D. Street trees located under or within ten feet of overhead utility lines shall be less than twenty-five feet tall at maturity.

E. Street trees shall be planted in accordance with the requirements of Scappoose Municipal Code Section 13.28.020©. (Ord. 875, 2018; Ord. 659 § 3, 1997)

Applicant's Response

Regarding Requirement A:

The street tree type (Golden Desert Ash) proposed has been selected from the list on file with the Planning Department; therefore, this requirement is met.

Regarding Requirement B:

The street tree type proposed is called out as a 10-foot minimum height; therefore, this requirement is met. Refer to the Landscaping Plan in Attachment B.

Regarding Requirement C:

The street tree type proposed is greater than 16 feet wide at maturity; therefore, it is planted at less than 20-foot spacing (18 feet per Attachment B, Landscaping Plan). Therefore, this requirement is met. Note that areas with existing established trees or utilities are not planted with street trees. Also, significant clearance is provided between the large existing fir trees and the existing site entrance to provide sun exposure for the street trees and to provide additional visual clearance at the main site entrance.

Regarding Requirement D:

The street trees planting location is not within 10 feet of overhead utility lines; therefore, this requirement is not applicable.

Regarding Requirement E:

The street trees will be of the quality, size, root guard, and other requirements of Scappoose Municipal Code 13.28.020(C) as shown in the planting detail called out on the Landscaping Plan in Attachment B. This requirement is met.

17.104.060 MAINTENANCE OF STREET TREES

A. The adjacent owner, tenant, and their agent, if any, shall be jointly and severally responsible for the maintenance of all street trees which shall be maintained in good condition so as to present a healthy, neat and orderly appearance and tree wells shall be kept free from refuse and debris.

B. All street trees shall be controlled by pruning to National Arborist Association Pruning Standards for Shade Trees included as Appendix B of the Scappoose Comprehensive Urban Forestry Plan.

C. Every owner of any tree overhanging any street or right-of-way within the city shall prune the branches so that such branches shall not severely obstruct the light from any street lamp or obstruct the view of any street intersection and so that there shall be a clear space of thirteen feet above street surface or eight feet above the sidewalk surface. Such owners shall remove all dead, diseased or dangerous trees, or broken or decayed limbs which constitute a menace to the safety of the public. The city shall have the right to prune any tree or shrub on private property when it interferes with the proper spread of light along the street from a street light, or interferes with visibility of any traffic-control device or sign or sight triangle at intersections as defined in Scappoose Municipal Code 12.10, Visual Clearance Areas. Tree limbs that grow near high voltage electrical conductors shall be maintained clear of such conductors by the electric utility company in compliance with any applicable franchise agreements.

D. The city shall have the right to plant, prune, and otherwise maintain trees, plants and shrubs within the lines of all streets, alleys, avenues, lanes, as may be necessary to insure public safety or to preserve or enhance the symmetry and beauty of such public grounds.

E. It is unlawful as a normal practice for any person, firm or city department to top any street tree. Topping is defined as the severe cutting back of limbs within the tree's crown to such a degree so as to remove the normal canopy and disfigure the tree. Trees severely damaged by storms or other causes, or certain trees under utility wires or other obstructions where other pruning practices are impractical may be exempted from this chapter at the determination of the city manager after consultation with a registered arborist or certified forester. (Ord. 820 § 7, 2012; Ord. 659 § 3, 1997)

Applicant's Response

The applicant understands the requirements of this section. These requirements can be met.

17.104.070 EXCAVATION APPROVAL REQUIRED

Written approval of the city manager is required prior to any excavation within the dripline of a street tree. (Ord. 659 § 3, 1997)

Applicant's Response

No excavation is proposed within the dripline of a street tree on this project; therefore, this requirement is not applicable.

17.104.080 PENALTIES FOR DAMAGE OR REMOVAL OF STREET TREES

Any activity that results in injury, mutilation or death of a street tree is prohibited. If such injury, mutilation or death of a street tree shall occur, the cost of the repair or replacement shall be borne by the party performing the activity. The replacement value of street trees shall be determined in accordance with the latest revision of the Council of Tree and Landscape Appraisers evaluation method. (Ord. 659 § 3, 1997)

Applicant's Response

The applicant understands this requirement. This requirement can be met.

17.120 SITE DEVELOPMENT REVIEW

17.120.180 APPROVAL STANDARDS

The planning commission shall make a finding with respect to each of the following criteria when approving, approving with conditions, or denying an application:

A. Provisions of all applicable chapters;

B. Buildings shall be located to preserve topography, and natural drainage; located in areas not subject to ground slumping or sliding; located to provide adequate distance between adjoining buildings for adequate light, air circulation, and fire fighting; and oriented with consideration for sun and wind; and

C. Existing trees having a six-inch caliper or greater shall be preserved or replaced by new plantings of equal character;

D. Privacy and noise:

1. The buildings shall be oriented in a manner which protects private spaces on adjoining properties from view and noise,

2. Residential buildings shall be located on the portion of the site having the lowest noise levels, and

3. On-site uses which create noise, lights, or glare shall be buffered from adjoining residential uses;

E. Private outdoor area: residential use:

1. Structures which include residential dwelling units shall provide private outdoor areas which is screened from view by adjoining units,

2. Private open space such as a patio or balcony shall be provided and shall be designed for the exclusive use of individual units and shall be at least forty-eight square feet in size with a minimum width dimension of four feet, and

a. Balconies used for entrances or exits shall not be considered as open space except where such exits or entrances are for the sole use of the unit, and

b. Required open space may include roofed or enclosed structures such as a recreation center or covered picnic area,

3. Wherever possible, private outdoor open spaces should be oriented toward the sun;

F. Shared outdoor recreation areas: residential use:

1. In addition to the requirements of subsections D and E of this section, usable outdoor recreation space shall be provided in multifamily, mixed-use, and live/work residential developments for the shared or common use of all the residents in the following amounts:

a. Studio up to and including two-bedroom units, two hundred square feet per unit, and

b. Three or more bedroom units, three hundred square feet per unit,

2. The required recreation space may be provided as follows:

a. It may be all outdoor space, or

b. It may be part outdoor space and part indoor space; for example, an outdoor tennis court, and indoor recreation room,

c. It may be all public or common space,

d. It may be part common space and part private; for example, it could be an outdoor tennis court, indoor recreation room and balconies on each unit, and

e. Where balconies are added to units, the balconies shall not be less than forty-eight square feet.

3. Shared outdoor recreation space shall be readily observable for reasons of crime prevention and safety;

G. Where landfill and/or development is allowed within and adjacent to the one hundred-year floodplain, the city may require the dedication of sufficient open land area for greenway adjoining and within the floodplain. This area shall include portions at a suitable elevation for the construction of a pedestrian/bicycle pathway within the floodplain;

H. Demarcation of public, semipublic, and private spaces; crime prevention:

1. The structures and site improvements shall be designed so that public areas such as streets or public gathering places, semipublic areas and private outdoor areas are clearly defined in order to establish persons having a right to be in the space, in order to provide for crime prevention and to establish maintenance responsibility; and

2. These areas may be defined by a deck, patio, low wall, hedge or draping vine, a trellis or arbor, a change in level or landscaping;

I. Crime prevention and safety:

1. Windows shall be located so that areas vulnerable to crime can be surveyed by the occupants,

2. Interior laundry and service areas shall be located in a way that they can be observed by others,

3. Mail boxes shall be located in lighted areas having vehicular or pedestrian traffic,

4. The exterior lighting levels shall be selected and the angles shall be oriented towards areas vulnerable to crime, and

5. Light fixtures shall be provided in areas having heavy pedestrian or vehicular traffic and in potentially dangerous areas such as parking lots, stairs, ramps and abrupt grade changes. Fixtures shall be placed at a height so that light patterns overlap at a height of seven feet which is sufficient to illuminate a person;

J. Access and circulation:

1. The number of allowed access points for a development shall be as provided in the public works design standards.

2. All circulation patterns within a development shall be designed to accommodate emergency vehicles.

3. Provisions shall be made for pedestrian ways and bicycle ways consistent with 17.120.180(Q);

K. Public transit:

1. Provisions within the plan shall be included for providing for transit if the development proposal is adjacent to existing or proposed transit route.

2. The requirements for transit facilities shall be based on:

a. The location of other transit facilities in the area,

b. The size and type of the proposal.

3. The following facilities may be required:

a. Bus stop shelters,

b. Turnouts for buses, and

c. Connecting paths to the shelters;

L. All parking and loading areas shall be designed in accordance with the requirements set forth in Sections 17.106.050 and 17.106.080, Chapter 12.10, and the public works design standards;

M. All landscaping shall be designed in accordance with the requirements set forth in Chapter 17.100;

N. All drainage plans shall be submitted to the public works director for review and approval;

O. All facilities for the handicapped shall be designed in accordance with the requirements set forth in the ADA requirements; and

P. All of the provisions and regulations of the underlying zone shall apply.

Q. Pedestrian Access and Circulation Standards. Developments shall conform to all of the following standards for pedestrian access and circulation:

1. Continuous Walkway System. A pedestrian walkway system shall extend throughout the development site and connect to adjacent sidewalks, if any, and to all future phases of the development, as applicable.

2. Safe, Direct, and Convenient. Walkways within developments shall provide safe, reasonably direct, and convenient connections between primary building entrances and all adjacent parking areas, transit stops, recreational areas/playgrounds, and public rights-of-way based on all of the following criteria:

a. The walkway is reasonably direct. A walkway is reasonably direct when it follows a route that does not deviate unnecessarily from a straight line or it does not involve a significant amount of out-of-direction travel;

b. The walkway is designed primarily for pedestrian safety and convenience, meaning it is reasonably free from hazards and provides a reasonably smooth and consistent surface and direct route of travel between destinations. The city planning commission may require landscape buffering between walkways and adjacent parking lots or driveways to mitigate safety concerns.

c. The walkway network connects to all primary building entrances and, where required, Americans With Disabilities Act requirements.

3. Vehicle/Walkway Separation. Except as required for crosswalks, pursuant to Subsection 4, below, where a walkway abuts a driveway or street it shall be raised 6 inches and curbed along the edge of the driveway/street. Alternatively, the city planning commission may approve a walkway abutting a driveway at the same grade as the driveway if the walkway is physically separated from all vehicle-maneuvering areas. An example of such separation is a row of bollards (designed for use in parking areas) with adequate minimum spacing between them to prevent vehicles from entering the walkway.

4. Crosswalks. Where a walkway crosses a parking area or driveway ("crosswalk"), it shall be clearly marked with contrasting paving materials (e.g., pavers, light-color concrete inlay between asphalt, or similar contrast). The crosswalk may be part of a speed table to improve driver-visibility of pedestrians. Painted or thermo-plastic striping and similar types of non-permanent applications are discouraged, but may be approved for lesser used crosswalks not exceeding 20 feet in length.

5. Walkway Width and Surface. Walkways, including access ways required for subdivisions pursuant with Chapter 17.150, shall be constructed of concrete, asphalt, brick/masonry pavers, or other durable surface, as approved by the city engineer, and not less than 5 feet wide. Multi-use paths (i.e., designed for shared use by bicyclists and pedestrians) shall be concrete or asphalt and shall conform to the public works design standards.

6. Walkway Construction. Walkway surfaces may be concrete, asphalt, brick/masonry pavers, or other city-approved durable surface meeting Americans with Disabilities Act requirements. Walkways shall be not less than 5 feet in width, except that concrete walkways a minimum of 6 feet in width are required in commercial developments and where access ways are required for subdivisions under Chapter 17.150 the planning commission may also require 6 foot wide, or wider, concrete sidewalks in other developments where pedestrian traffic warrants walkways wider than 5 feet.

7. Multi-Use Pathways. Multi-use pathways, where approved, shall be 12 feet wide and constructed of asphalt or concrete, consistent with the applicable public works design

standards. (Ord. 868, 2018; Ord. 857, 2016; Ord. 820 § 9, 2012; Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

Regarding Requirement A:

The applicant understands this requirement; this requirement can be met.

Regarding Requirement B:

The new water tank is proposed to be located in place of the tank to be removed. Topography around the tank generally will be maintained. Some fill will be added to an adjacent hillside to improve maintenance access on the existing steep slope. The tank site is not generally subject to slumping or sliding. The low risk of liquefaction identified in the GER (Attachment C, Section 5.2.1) is proposed to be mitigated with foundation improvements. The proposed tank location maintains at least 50 feet from the nearest residential building and 23 feet from the existing on-site pump station building, providing light and air circulation. Paved area between these noted buildings generally meet the requirements of the Oregon Fire Code, including "Acceptable Alternative to 120 feet Hammerhead." The proposed tank location considers prevailing wind directions and will not obstruct the sun more than the existing site plantings do.

These requirements are met.

Regarding Requirement C:

Existing on-site trees are preserved except for 7 trees of 6-inches or greater caliper. These 7 trees are replaced with the 7 street trees proposed to be planted along the west side of the property.

Regarding Requirement D:

1. **The proposed tank is in a location and height similar to that of the existing tank. The nearest residential building is screened by a 16-foot-tall arborvitae hedge. This requirement is met.**
2. **The proposed tank is not a residential building; therefore, this requirement is not applicable.**
3. **The proposed water tank will be buffered from the adjoining residential uses to the east per the standards of Section 17.100.090.**

Regarding Requirement E and F:

The proposed development is not a residential use; therefore, this requirement is not applicable.

Regarding Requirement G:

The proposed development is located outside of the 100-year floodplain; therefore, this requirement is not applicable.

Regarding Requirements H and I:

Site areas limited to access by City employees currently are demarked and secured by fencing around the perimeter of the site. The proposed development proposes to maintain or replace that fencing. This requirement is met.

Regarding Requirement J:

1. **The number of access points is not changing as part of the on-site development; therefore, this requirement is not applicable.**
2. **The development does not contain circulation patterns; therefore, this requirement is not applicable.**
3. **The exterior frontage of the site already includes sidewalk. Therefore, this requirement is met.**

Regarding Requirement K:

The proposed development is not adjacent to an existing or proposed public transit route; therefore, this requirement is not applicable.

Regarding Requirement L:

The parking and loading is within the site and is not accessible to the public. Therefore, the requirements of 17.106.050 are not applicable. The proposed building (a water tank) does not receive or distribute material or merchandise by truck; therefore, the requirements of 17.106.080 are not applicable. Regardless of applicability of the requirements of 17.106.080, off-street parking is provided near the tank that generally meets the requirements of 17.106.080. The on-site parking and loading areas proposed meet the requirements of Chapter 12.10 and the Public Works Design Standards.

Regarding Requirement M:

All landscaping is designed in accordance with Chapter 17.100 as described earlier in this narrative.

Regarding Requirement N:

The applicant understands this requirement. This requirement will be met.

Regarding Requirement O:

The proposed development does not include any facilities for the handicapped; therefore, this requirement is not applicable.

Regarding Requirement P:

The applicant understands this requirement. This requirement can be met.

Regarding Requirement Q:

The only public access on the proposed site is along the outside edge on the existing sidewalk, and no street/frontage improvements are required. Therefore, these requirements are not applicable.

17.140 PUBLIC LAND TREE REMOVAL

17.140.020 PERMIT REQUIRED/APPLICABILITY

A. *The provisions of this chapter shall apply to all publicly owned or maintained properties and to street trees as regulated by Chapter 17.104.*

B. No person shall cut a tree upon these properties without first obtaining a permit from the city.

C. For the purpose of this chapter, tree removal shall not include tree topping and pruning under power and utility lines, or pruning of trees located with visual clearance areas Chapter 12.10.

D. For the purpose of this chapter, tree removal permits shall be required for all trees having a trunk six inches or more in diameter, measured four feet above the ground level. (Ord. 820 § 10, 2012; Ord. 817 Exh. A, 2011; Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

A tree removal permit will be obtained before the removal of the 7 on-site trees (Douglas Fir trees) measured at 6 inches or greater. This requirement will be met.

The Douglas Fir trees to be removed are of the following breast height diameter sizes: (one) at 14 inches, (two) at 18 inches, (two) at 24 inches, (one) at 28 inches, and (one) at 32 inches.

17.140.025 ADMINISTRATION AND APPROVAL PROCESS

A. Applications shall be processed according to Chapter 17.162.

B. The planning commission shall be the approval authority for requests associated with timber harvesting and clearing from designated public recreation areas. Timber harvesting shall also comply with the provisions of Chapter 9.22, Timber Harvesting and Exporting Rules.

C. The planner shall be the approval authority for all other requests. (Ord. 817 Exh. A, 2011)

Applicant's Response

The applicant understands the process. This requirement can be met.

17.140.030 CRITERIA FOR ISSUANCE OF PERMITS

A. The planner may approve, approve with conditions, or deny an application for a tree cutting permit based on the criteria below. A permit for tree removal may be granted if any of the following criteria apply:

1. The trees are unsafe, dead, or diseased as determined by a Certified Arborist and there is a danger the trees may fall on existing or proposed structures;

2. The trees conflict with public improvements or interfere with utility services or traffic safety;

3. The proposed removal is part of an approved development project, a public improvement project, or a street tree improvement program; or

4. The trees are causing repeated and excessive damage to sidewalks or other public or private improvements or structures.

B. The planning commission may approve, approve with conditions, or deny an application for a tree cutting permit associated with timber harvesting and clearing from designated public recreation areas based on the following criteria:

1. The recreational purposes of the site are protected to the extent possible;

2. A certified forester has prepared a timber harvesting and reforestation plan identifying the location, species, size, and number of trees to be removed and replanted;

3. The proposal is for selective cutting rather than clear cutting;

4. The plan provides adequate buffers for adjoining properties and riparian corridors; and

5. *Evidence has been submitted to demonstrate appropriate erosion control measures and other protective steps to maintain soil and slope stability and water quality. (Ord. 817 Exh. A, 2011; Ord. 634 § 1 Exh. A, 1995)*

Applicant's Response

Regarding Requirement A:

The trees proposed to be removed conflict with public improvements/utility services. Therefore, this requirement is met.

Regarding Requirement B:

The proposed tree removal is not associated with timber harvesting; therefore, this requirement is not applicable.

17.140.031 GENERAL PROVISIONS

A. The applicant shall be responsible for all costs associated with the tree removal and shall ensure that all work is done in a manner which maintains safety to individuals and public and private property.

B. The applicant shall replace each removed tree on a one-for-one basis within one year of approval. Replacement trees for all permits other than timber harvesting and clearing shall comply with the standards of Section 13.28.020 (Public Tree Standards). If site conditions do not allow replacement near the location of the trees removed, the approval authority may authorize replanting at other locations.

C. For all permits other than timber harvesting and clearing, the applicant shall remove or grind stumps and surface roots at least six inches below grade.

D. Following removal of the tree(s), the applicant shall perform erosion control, slope stability measures, and seeding to restore the surface. (Ord. 817 Exh. A, 2011)

Applicant's Response

Regarding Requirement A:

The applicant understands this requirement; this requirement will be met.

Regarding Requirement B:

The 7 trees designated for removal will be replaced with the 7 street trees indicated on the Landscaping Plan (Attachment B).

Regarding Requirement C:

Stumps and roots of removed trees will be ground at least 6 inches below grade; therefore, this requirement is met.

Regarding Requirement D:

The project Temporary Erosion and Sediment Control (TESC) Plan and Landscaping Plan (Attachment B) provide for erosion control and seeding to restore the surface. This requirement is met.

17.140.035 EXPIRATION OF APPROVAL

A. Approval of a tree removal permit shall be effective for a six-month period.

B. The approval authority may renew the permit for a maximum period up to one year upon finding that:

1. All of the conditions of approval have been satisfied;

2. There has been no change in the original approved application;

3. The applicable approval criteria in Section 17.140.030 are satisfied;

4. The applicant certifies that he/she is complying with the conditions of approval and agrees to comply in the future.

C. The planner may revoke a tree removal permit if the conditions are not satisfied as required by the original permit. (Ord. 817 Exh. A, 2011; Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

The applicant understands these requirements; these requirements can be met.

17.140.040 EMERGENCIES--AUTHORITY

In the event of emergency conditions requiring the immediate cutting or removal of trees in order to avoid damage to persons or property, a permit shall not be required. However, only the trees constituting an actual threat to life or property shall be removed without the issuance of a permit. The planner shall be notified the number of trees removed and their location. The applicant shall be required to complete necessary slope stability measures as outlined by Chapter 17.86 if site warrants. (Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

The applicant understands these requirements; these requirements can be met.

17.140.050 APPLICATION SUBMISSION REQUIREMENTS

A. All applications shall be made on forms provided by the planner and shall be accompanied by the site plan and narrative.

B. The site plan and narrative shall include:

1. The specific location of the property by address and assessor map number and tax lot and a scaled site plan indicating parcel dimensions and structure locations;

2. The number, size, species and location of the trees to be cut and an assessment of tree health by a Certified Arborist if health is the basis for the request;

3. The time and method of cutting or removal and the reason for the tree removal;

4. The number, size, species and location of the replacement trees to be planted; and

5. A narrative as to how the criteria in Sections 17.140.030 and 17.140.031 are satisfied. (Ord. 817 Exh. A, 2011; Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

The Existing Site Plan and Proposed Utility Plan and the narrative provided in this application meet these requirements.

17.154 STREET AND UTILITY IMPROVEMENT STANDARDS

17.154.020 GENERAL PROVISIONS

A. The standard specifications for construction, reconstruction or repair of streets, sidewalks, curbs and other public improvements within the city shall occur in accordance with the standards of this title, the public works design standards, the transportation system plan, and in accordance with county or state standards where appropriate.

B. The public works director may require changes or supplements to the standard specifications consistent with the application of engineering principles.

C. Subject to approval of the planner and the public works director, street sections may be modified administratively based on geographical constraints of steep slopes, wetlands, floodplains, and constraints imposed by existing structures. Modifications may include, but are not limited to, reduced paving widths, elimination of on-street parking and eliminating sidewalks on one side of the street. (Ord. 857, 2016; Ord. 658 § 3, 1997; Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

The proposed development is not currently anticipated to include any public street or sidewalk improvements. If street or sidewalk repair becomes necessary due to construction traffic, City of Scappoose Public Works Standards or more stringent standards from the project specifications will be applied for repair or reconstruction. This requirement will be met.

17.154.030 STREETS

A. No development shall occur unless the development has frontage or approved access to a public street:

1. Streets within a development and streets adjacent to a development shall be improved in accordance with this title and the public works design standards and specifications.

2. Any new street or additional street width planned as a portion of an approved street plan shall be dedicated and improved in accordance with this title and the public works design standards and specifications.

3. Subject to approval of the city engineer and the planner, the planner may accept and record a non-remonstrance agreement in lieu of street improvements if two or more of the following conditions exist:

a. A partial improvement is not feasible due to the inability to achieve a cohesive design for the overall street;

b. A partial improvement may create a potential safety hazard to motorists or pedestrians;

c. Due to the nature of existing development on adjacent properties it is unlikely that street improvements would be extended in the foreseeable future and the improvement associated with the project under review does not, by itself, provide a significant improvement to street safety or capacity;

d. The improvement would be in conflict with an adopted capital improvement plan;

e. Additional planning work is required to define the appropriate design standards for the street and the application is for a project which would contribute only a minor portion of the anticipated future traffic on the street.

B. Rights-of-way shall be created through the approval of a final subdivision plat or major partition; however, the council may approve the creation of a street by acceptance of a deed, provided that such street is deemed essential by the council for the purpose of general traffic circulation:

1. The council may approve the creation of a street by deed of dedication without full compliance with the regulations applicable to subdivisions or major partitions if any one or more of the following conditions are found by the council to be present:

a. Establishment of a street is initiated by the council and is found to be essential for the purpose of general traffic circulation, and partitioning of subdivision of land has an incidental effect rather than being the primary objective in establishing the road or street for public use; and

b. The tract in which the road or street is to be dedicated is an isolated ownership of one acre or less and such dedication is recommended by the commission to the council based

on a finding that the proposal is not an attempt to evade the provisions of this title governing the control of subdivisions or major partitions.

2. With each application for approval of a road or street right-of-way not in full compliance with the regulations applicable to the standards, the proposed dedication shall be made a condition of subdivision and major partition approval:

a. The applicant shall submit such additional information and justification as may be necessary to enable the commission in its review to determine whether or not a recommendation for approval by the council shall be made;

b. The recommendation, if any, shall be based upon a finding that the proposal is not in conflict with the purpose of this title or the city's public works design standards relating to street standards and street acceptance policies;

c. The commission, in submitting the proposal with a recommendation to the council, may attach conditions which are necessary to preserve the standards of this title;

d. All deeds of dedication shall be in a form prescribed by the city and shall name "the city of Scappoose, Oregon" or "the public," whichever the city may require, as grantee;

e. All instruments dedicating land to public use shall bear the approval by the city manager accepting the dedication prior to recording.

3. No person shall create a street or road for the purpose of partitioning an area or tract of land without the approval of the city.

C. The planning commission may approve an access easement established by deed without full compliance with this title provided such an easement is the only reasonable method by which a lot large enough to develop can develop:

1. Vehicular access easements which exceed one hundred fifty feet shall be improved in accordance with the Uniform Fire Code.

2. Vehicular access shall be improved in accordance with the public works design standards.

D. The location, width and grade of all streets shall conform to an approved street plan and shall be considered in their relation to existing and planned streets, to topographic conditions, to public convenience and safety, and in their appropriate relation to the proposed use of the land to be served by such streets:

1. Street grades shall be approved by the public works director in accordance with the city's public works design standards; and

2. Where the location of a street is not shown in an approved street plan, the arrangement of streets in a development shall either:

a. Provide for the continuation or appropriate projection of existing streets in the surrounding areas, or

b. Conform to a plan adopted by the council, if it is impractical to conform to existing street patterns because of particular topographical or other existing conditions of the land. Such a plan shall be based on the type of land use to be served, the volume of traffic, the capacity of adjoining streets and the need for public convenience and safety.

3. New streets shall be laid out to provide reasonably direct and convenient routes for walking and cycling within neighborhoods and accessing adjacent development.

E. The street right-of-way and roadway widths shall not be less than the minimum widths described in the city's public works design standards.

F. Where necessary to give access or permit a satisfactory future division of adjoining land, streets shall be extended to the boundary lines of the tract to be developed. A reserve strip across the end of a dedicated street shall be deeded to the city; and a barricade shall be constructed at the end of the street by the property owners which shall not be removed until authorized by the public works director, the cost of which shall be included in the street construction cost.

G. No street name shall be used which will duplicate or be confused with the names of existing streets within the city's urban growth boundary, except for extensions of existing streets. Street names and numbers are subject to review and approval the Scappoose rural fire district.

H. Concrete vertical curbs, curb cuts, wheelchair, bicycle ramps and driveway approaches shall be constructed in accordance with standards specified in this chapter and the city's public works design standards. Concrete curbs and driveway approaches are required and shall be built to the city's configuration standards.

I. Wherever the proposed development contains or is adjacent to a railroad right-of-way, provision shall be made for a street approximately parallel to and on each side of such right-of-way at a distance suitable for the appropriate use of the land, and the distance shall be determined with due consideration at cross streets or the minimum distance required for approach grades and to provide sufficient depth to allow screen planting along the railroad right-of-way in nonindustrial areas.

J. Where a development abuts or is traversed by an existing or proposed arterial street, the development design shall provide adequate protection for residential properties and shall separate residential access and through traffic, or if separation is not feasible, the design shall minimize the traffic conflicts. The design requirements shall include any of the following:

1. A parallel access street along the arterial;

2. Lots of suitable depth abutting the arterial to provide adequate buffering with frontage along another street;

3. Screen planting at the rear or side property line to be contained in a nonaccess reservation along the arterial; or

4. Other treatment suitable to meet the objectives of this subsection.

K. Upon completion of a street improvement and prior to acceptance by the city, it shall be the responsibility of the developer's registered professional land surveyor to provide certification to the city that all boundary and interior monuments shall be established or re-established, protected and recorded.

L. Private streets are permitted within manufactured home parks, and the city shall require legal assurances for the continued maintenance of private streets, such as:

1. A bonded maintenance agreement; and

2. The creation of a homeowners association;

M. Where an adjacent development results in a need to install or improve a railroad crossing, the cost for such improvements may be a condition of development approval, or another equitable means of cost distribution shall be determined by the public works director and approved by the commission.

O. The developer shall install all street signs, relative to traffic control and street names, as specified by the public works director for any development. The cost of signs shall be the responsibility of the developer.

P. Joint mailbox facilities shall be provided in all residential developments, with each joint mailbox serving at least two dwelling units.

1. Joint mailbox structures shall be placed adjacent to roadway curbs and shall comply with provisions of the Americans with Disabilities Act and implementing federal and state regulations;

2. Proposed locations of joint mailboxes shall be designated on a copy of the tentative plan, and shall be approved by the U.S. Post Office prior to plan approval; and

3. Plans for the joint mailbox structures to be used shall be submitted for approval by the planner prior to final approval.

Q. The location of traffic signals shall be noted on approved street plans, and where a proposed street intersection will result in an immediate need for a traffic signal, a city-approved signal shall be installed. The cost shall be included as a condition of development.

R. Street lights shall be installed in accordance with the city's public works design standards.

S. A Transportation Impact Study (TIS) must be submitted with a land use application if the conditions in (1) or (2) apply in order to determine whether conditions are needed to protect and minimize impacts to transportation facilities, consistent with Section 660-012-0045(2)(b) and (e) of the State Transportation Planning Rule.

1. Applicability - TIS letter. A TIS letter shall be required to be submitted with a land use application to document the expected vehicle trip generation of the proposal. The expected number of trips shall be documented in both total peak hour trips and total daily trips. Trip generation shall be estimated for the proposed project using the latest edition of the Institute of Engineers Trip Generation Manual or, when verified with the City prior to use, trip generation surveys conducted at similar facilities.

2. Applicability - TIS report. A TIS report shall be required to be submitted with a land use application if the proposal is expected to involve one or more of the following:

a. The proposed development would generate more than 10 peak hour trips or more than 100 daily trips.

b. The proposal is immediately adjacent to an intersection that is functioning at a poor level of service, as determined by the city engineer.

c. A new direct approach to US 30 is proposed.

d. A proposed development or land use action that the road authority states may contribute to operational or safety concerns on its facility(ies).

e. An amendment to the Scappoose Comprehensive Plan or Zoning Map is proposed.

3. Consistent with the city's Traffic Impact Study (TIS) Guidelines, the city engineer will determine the project study area, intersections for analysis, scenarios to be evaluated and any other pertinent information concerning the study and what must be addressed in either a TIS letter or a TIS report.

4. Approval Criteria. When a TIS Letter or Report is required, a proposal is subject to the following criteria:

a. The TIS addresses the applicable elements identified by the city engineer, consistent with the Traffic Impact Study Guidelines;

b. The TIS demonstrates that adequate transportation facilities exist to serve the proposed development or, in the case of a TIS report, identifies mitigation measures that resolve identified traffic safety problems in a manner that is satisfactory to the city engineer and, when state highway facilities are affected, to ODOT;

c. For affected non-highway facilities, the TIS report establishes that mobility standards adopted by the city have been met; and

d. Proposed public improvements are designed and will be constructed consistent with Public Works Design Standards and access standards in the Transportation System Plan.

5. Conditions of Approval.

a. The city may deny, approve, or approve a proposal with conditions necessary to meet operational and safety standards; provide the necessary right-of-way for improvements; and to require construction of improvements to ensure consistency with the future planned transportation system.

b. Construction of off-site improvements may be required to mitigate impacts resulting from development that relate to capacity deficiencies and public safety; and/or to upgrade or construct public facilities to city standards.

c. Improvements required as a condition of development approval, when not voluntarily provided by the applicant, shall be roughly proportional to the impact of the development on transportation facilities. Findings in the development approval shall indicate how the required improvements directly relate to and are roughly proportional to the impact of development.

Applicant's Response

The proposed development is all within a site closed to the public; it does not include any public streets. As described in response to Section 17.01.060, no improvement of existing streets are proposed (the response to Section 17.01.060 is repeated below for convenience*): For these two reasons, street requirements generally are not applicable. Regardless of applicability, comments are as follows:

- **Requirement D is addressed as follows: The on-site access roadway grade and layout will be reviewed by the Public Works Director.**
- **Regarding Requirement S, a Transportation Impact Study (TIS) letter typically would be required for a development of this scale. However, the Planning Department indicated the following: Given that trips to and from the site are nearly exclusively City employees or City contractors and the number of daily and peak hour trips is unlikely to be significantly altered as a result of this development, no TIS letter will be required.**

***Applicable portions of the response to Section 17.01.060**:

In the pre-application conference for this project, a potential right-of-way (ROW) dedication was identified: 1. SW Keys Road width. Background and response are as follows:

Background:

The 2016 Transportation System Plan (TSP) requires Neighborhood Routes to have a ROW width of 60 feet and a paved width of 36 feet. SW Keys Road appears to have a ROW width between 48 and 54 feet and a paved width between 20 and 32 feet (depending on the section of SW Keys Road). Typically, a ROW dedication and half street improvements would be required to bring the road adjacent to the subject site up to standard. Alternatively, the applicant can propose to record a waiver of non-remonstrance agreement if certain conditions apply, including the following two conditions:

a. A partial improvement is not feasible due to the inability to achieve a cohesive design for the overall street.

b. [Not applicable condition]

c. Due to the nature of existing development on adjacent properties, it is unlikely that street improvements would be extended in the foreseeable future and the

improvement associated with the project under review does not, by itself, provide a significant improvement to street safety or capacity.

Findings regarding the applicability of these conditions are as follows:

- **Half street improvements have already been performed on this section of SW Keys Road during past site projects and were approved by the City Planning Commission at a 22-foot paved width as noted in the 2002 notice of final approval (Attachment A, Condition of Approval No. 4). These street improvements resulted in a consistent curbline along the subject property. The majority of the ROW width adjacent to the subject property is 50 feet. Further widening of the ROW and street into the subject property would result in a non-cohesive street design since the edge of street is already offset around 5 feet into the subject property compared to the adjacent section of street. A tapered transition currently accommodates this offset; additional offset would require an abrupt offset. Additional offset would also require moving stormwater features and sidewalk. Additional offset would also require removing large Douglas Fir trees or creating non-cohesive curbline offsets near the trees. A partial improvement is not feasible due to the inability to achieve a cohesive design for the overall street.**

  For these reasons, Condition "a." applies.

- **The adjacent properties along the east side of the street (north of the subject property) are already developed with curb, gutter, and sidewalk. In addition, the ground slopes away from this developed east edge into front yard areas with developed landscaping. Widening eastward would likely require retaining walls to support a new sidewalk location. This existing development and topography makes the extension of any road widening unlikely. Further widening of the street just along the subject property would result in further offset of the curbline. This would result in a short, isolated section of wider roadway. The offset could create safety issues. Due to its isolation and already wider dimension, the widening would likely not provide significant improvements to the overall capacity of the street.**

  For these reasons, condition "c." applies.

Since these two conditions apply, an exemption from ROW dedication (and related street improvements) is possible. This is typically established with a waiver of non-remonstrance agreement. However, such an agreement is not appropriate since this is a City project. The City cannot enter into a waiver of non-remonstrance agreement with itself. Therefore, an exemption is allowed with the previous supporting findings.

17.154.040 BLOCKS

A. *The length width, and shape of blocks shall be designed with regard to providing adequate building sites for the use contemplated, consideration of needs for safe and convenient*

pedestrian and vehicular access and circulation and recognition of limitations and opportunities of topography.

B. Except for arterial streets, no block face shall be more than five hundred and thirty (530) feet in length between street corner lines and no block perimeter formed by the intersection of pedestrian access ways and local, collector and arterial streets shall be more than one thousand five hundred feet in length. If the maximum block size is exceeded, mid-block pedestrian and bicycle access ways should be provided at spacing no more than 330 feet, unless one or all of the conditions in Subsection C can be met. Minimum access spacing along an arterial street must meet the standards in the city's adopted Transportation System Plan. A block shall have sufficient width to provide for two tiers of building sites. Reverse frontage on arterial streets may be required by the planning commission.

C. Exemptions from requirement of Subsection B of this section may be allowed, upon approval by the planner and the city engineer, where one or all of the following conditions apply:

1. Where topography and/or other natural conditions, such as wetlands or stream corridors, preclude a local street connection consistent with the stated block length standards. When such conditions exist, a pedestrian access way shall be required in lieu of a public street connection if the access way is necessary to provide safe, direct and convenient circulation and access to nearby destinations such as schools, parks, stores, etc.

2. Where access management standards along an arterial street preclude a full local street connection. Where such conditions exist, and in order to provide for adequate connectivity and respect the needs for access management, the approval authority shall require either a right in/right-out public street connection or public roadway connection to the arterial in lieu of a full public street connection. Where a right-in/right-out street connection is provided, turning movements shall be defined and limited by raised medians to preclude inappropriate turning movements.

3. A cul-de-sac street shall only be used where the city engineer and planner determine that environmental or topographical constraints, existing development patterns, or compliance with other applicable City requirements preclude a street extension. Where the City determines that a cul-de-sac is allowed, all of the following standards shall be met:

a. The cul-de-sac shall not exceed a length of 500 feet, except where the city engineer and planner determine that topographic or other physical constraints of the site require a longer cul-de-sac. The length of the cul-de-sac shall be measured along the centerline of the roadway from the near side of the intersecting street to the farthest point of the cul-de-sac.

b. The cul-de-sac shall terminate with a circular or hammer-head turnaround meeting the Uniform Fire Code and the standards of Public Works Design Standards.

c. The cul-de-sac shall provide, or not preclude the opportunity to later install, a pedestrian and bicycle access way between it and adjacent developable lands. Such access ways shall conform to the standards in Section 17.120.180(Q), as applicable. (Ord. 857, 2016; Ord. 828, 2013; Ord. 658 § 3, 1997; Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

The proposed development is all within a site closed to the public; it does not include any public streets or public street improvements. Therefore, streets and blocks requirements are not applicable.

17.154.*050 EASEMENTS*

A. Easements for sewers, drainage, water mains, electric lines or other public utilities shall be either dedicated or provided for in the deed restrictions, and where a subdivision is traversed by a watercourse, drainageway, channel or stream, there shall be provided a stormwater easement or drainage right-of-way conforming substantially with the lines of such watercourse and such further width as will be adequate for conveyance and maintenance.

B. A property owner proposing a development shall make arrangements with the city, the applicable district and each utility franchise for the provision and dedication of utility easements necessary to provide full services to the development. (Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

The proposed utilities are within the City's property and no easements are required; therefore, these requirements are not applicable.

17.154.070 SIDEWALKS

A. *Sidewalks are required and shall be constructed, replaced or repaired in accordance with the city's public works design standards.*

B. Maintenance of sidewalks and curbs is the continuing obligation of the adjacent property owner.

C. Subject to approval by the public works director and planner, planner may accept and record a nonremonstrance agreement for the required sidewalks from the applicant for a building permit for a single-family residence when the public works director determines the construction of the sidewalk is impractical for one or more of the following reasons:

1. The residence is an in-fill property in an existing neighborhood and adjacent residences do not have sidewalks;

2. Sidewalk grades have not and will not be established for the property in question within a one-year period;

3. Topography or elevation of the sidewalk base area makes construction of a sidewalk impractical.

D. In the event one or more of the following situations are found by the council to exist, the council may adopt a resolution to initiate construction of a sidewalk in accordance with city ordinances:

1. A safety hazard exists for children walking to or from school and sidewalks are necessary to eliminate the hazard;

2. A safety hazard exists for pedestrians walking to or from a public building, commercial area, place of assembly or other general pedestrian traffic, and sidewalks are necessary to eliminate the ;

3. Fifty percent or more of the area in a given block has been improved by the construction of dwellings, multiple dwellings, commercial buildings or public buildings and/or parks. (Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

The sides of the subject property are bounded by public ROW and an existing sidewalk constructed during half-street improvements of the last site project in 2002. No sidewalk improvements are proposed. These requirements are not applicable.

17.154.080 PUBLIC USE AREAS

A. Where a proposed park, playground or other public use shown in a development plan adopted by the city is located in whole or in part in a subdivision, the commission may require the dedication or reservation of such area within the subdivision.

B. Where considered desirable by the commission in accordance with adopted comprehensive plan policies, and where a development plan of the city does not indicate proposed public use areas, the commission may require the dedication or reservation of areas within the subdivision or sites of a character, extent and location suitable for the development of parks and other public use.

C. If the declarant is required to reserve land area for a park, playground or other public use, such land shall be acquired by the appropriate public agency within eighteen months following plat approval, at a price agreed upon prior to approval of the plat, or such reservation shall be released to the declarant. (Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

The proposed development is within a site closed to the public (to safeguard the potable water supply). The proposed development does not include public use areas; therefore, the requirements of this section are not applicable.

17.154.090 SANITARY SEWERS

A. Sanitary sewers shall be installed to serve each new development and to connect developments to existing mains in accordance with the provisions set forth by the city's public works design standards and the adopted policies of the comprehensive plan.

B. The public works director shall approve all sanitary sewer plans and proposed systems prior to issuance of development permits involving sewer service.

C. Proposed sewer systems shall include consideration of additional development within the area as projected by the comprehensive plan and the wastewater treatment facility plan and potential flow upstream in the sewer sub-basin.

D. Applications shall be denied by the approval authority where a deficiency exists in the existing sewer system or portion thereof which cannot be rectified within the development and which if not rectified will result in a threat to public health or safety, surcharging of existing mains, or violations of state or federal standards pertaining to operation of the sewage treatment system. (Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

Regarding Requirement A:

No new sewer lines within the ROW are proposed for the project. Therefore, this requirement is not applicable.

Regarding Requirement B:

The project will replace some existing on-site sewer lines to provide a minor horizontal realignment around the proposed water tank. The design of this alignment will comply with the City's Public Works Design Standards or more stringent, project-specific standards. The design will be reviewed by the Public Works Director during detailed design. Therefore, this requirement will be met.

Regarding Requirements C and D:

No new sanitary sewer discharge sources or new flow rates are proposed for the project and the subject property is largely developed; therefore, these requirements are not applicable.

During construction, the applicant will provide camera inspection from the end of the new on-site sewer pipes through the existing sewer pipe connecting to the sewer main in SW Keys

Road to review that there are no observable deficiencies in the existing sewer piping which is intended to be left in place.

17.154.100 STORM DRAINAGE

A. The planner and public works director shall issue permits only where adequate provisions for stormwater and floodwater runoff have been made, and:

1. The stormwater drainage system shall be separate and independent of any sanitary sewerage system.

2. Where possible, inlets shall be provided so surface water is not carried across any intersection or allowed to flood any street.

3. Surface water drainage patterns shall be shown on every development proposal plan.

4. All stormwater analysis and calculations shall be submitted with proposed plans for public works directors review and approval.

5. All stormwater construction materials shall be subject to approval of the public works director.

B. Where a subdivision is traversed by a watercourse, drainageway, channel or stream, there shall be provided a stormwater easement or drainage right-of-way conforming substantially with the lines of such watercourse and such further width as will be adequate for conveyance and maintenance.

C. A culvert or other drainage facility shall, and in each case be, large enough to accommodate potential runoff from its entire upstream drainage area, whether inside or outside the development. The public works director shall determine the necessary size of the facility.

D. Where it is anticipated by the public works director that the additional runoff resulting from the development will overload an existing drainage facility, the planner and engineer shall withhold approval of the development until provisions have been made for improvement of the potential condition or until provisions have been made for storage of additional runoff caused by the development. (Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

Regarding Requirement A:

Provisions on the site are proposed to address runoff from the new impervious areas.

1. **The existing and proposed site stormwater system is separate and independent of the sanitary sewer system. This requirement is met.**
2. **The proposed stormwater system is entirely onsite and will not impact public street intersections. If anything, it will create a small reduction of runoff to the portion of SW Keys Road abutting the site. This requirement is met.**
3. **Surface water drainage patterns are shown with arrows on the Proposed Drainage Plan (Attachment B). This requirement is met.**
4. **Stormwater analysis and calculations are provided in the project Storm Report (Attachment D). This requirement is met.**
5. **The proposed stormwater materials will be submitted for review by the Public Works Director. This requirement can be met.**

Regarding Requirement B:

The proposed development is not a subdivision or other private development; therefore, this requirement is not applicable.

Regarding Requirement C:

The proposed storm elements are affected only by drainage basins that are entirely within the subject property boundaries. The storm elements are sized for these drainage basins; therefore, this requirement is met.

Regarding Requirement D:

The proposed stormwater system is designed to not exceed pre-development runoff rates. Therefore, this requirement likely is not applicable.

17.154.105 WATER SYSTEM

The planner and public works director shall issue permits only where provisions for municipal water system extensions have been made, and:

A. Any water system extension shall be designed in compliance with the comprehensive plan existing water system plans.

B. Extensions shall be made in such a manner as to provide for adequate flow and gridding of the system.

C. The public works director shall approve all water system construction materials. (Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

Regarding Requirements A and B:

The proposed development is water infrastructure not a development requiring any water system extension. Therefore, these requirements are not applicable.

The proposed water system infrastructure will be submitted to the Public Works Director for review during final design. This requirement can be met.

17.154.107 EROSION CONTROLS

A. Any time the natural soils are disturbed and the potential for erosion exists, measures shall be taken to prevent the movement of any soils off site. The public works director shall determine if the potential for erosion exists and appropriate control measures.

B. The city shall use the city's public works design standards as the guidelines for erosion control. (Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

The project will involve ground disturbance and includes erosion control requirements. Refer to the general temporary erosion and sediment control (TESC) notes on the General Information drawing and the Construction Grading and TESC Plan (Attachment B). This requirement is met.

17.154.110 BIKEWAYS

A. Developments adjoining proposed bikeways shall include provisions for the future extension of such bikeways through the dedication of easements or rights-of-way.

B. Where possible, bikeways should be separated from other modes of travel including pedestrians.

C. Minimum width for bikeways is four paved feet per travel lane. (Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

The proposed development does not adjoin proposed bikeways; therefore, these requirements are not applicable.

17.154.120 UTILITIES

A. All utility lines including, but not limited to those required for electric, communication, lighting and cable television services and related facilities shall be placed underground, except for surface mounted transformers, surface mounted connection boxes and meter cabinets which may be placed above ground, temporary utility service facilities during construction, high capacity electric lines operating at fifty thousand volts or above, and:

1. The applicant shall make all necessary arrangements with the serving utility to provide the underground services;

2. The city reserves the right to approve location of all surface mounted facilities;

3. All underground utilities, including sanitary sewers, water lines, and storm drains installed in streets by the applicant, shall be constructed prior to the surfacing of the streets; and

4. Stubs for service connections shall be long enough to avoid disturbing the street improvements when service connections are made.

B. The applicant for a subdivision shall show on the development plan or in the explanatory information, easements for all underground utility facilities, and:

1. Plans showing the location of all underground facilities as described herein shall be submitted to the public works director for review and approval; and

2. Above ground equipment shall not obstruct visual clearance areas for vehicular traffic. (Ord. 820 § 11, 2012; Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

Regarding Requirement A:

The proposed development does not require routing of any new utilities in public ROW; therefore, these requirements are not applicable. Regardless, most of the utilities proposed on the site are planned to be routed underground.

Regarding Requirement B:

The proposed development is not a subdivision; therefore, this requirement is not applicable.

17.154.130 CASH OR BOND REQUIRED

A. All improvements installed by the applicant shall be guaranteed as to workmanship and material for a period of one year following acceptance by the city council.

B. Such guarantee shall be secured by cash deposit or bond for one hundred ten percent of the actual cost of the value of the improvements as set by the public works director.

C. The cash or bond shall comply with the terms and conditions of Section 17.150.180. (Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

The applicant will comply with the provisions of this section, as detailed in the Conditions of Approval and any contract documents. This requirement will be met.

17.154.140 MONUMENTS

Any monuments that are disturbed before all improvements are completed by the applicant shall be replaced and recorded prior to final acceptance of the improvements. (Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

The applicant understands this requirement. This requirement will be met.

17.154.150 INSTALLATION/PERMIT FEE

A. No land division improvements, including sanitary sewers, storm sewers, streets, sidewalks, curbs, lighting or other requirements shall be undertaken except after the plans have been approved by the city, and all applicable fees paid. (Ord. 828, 2013; Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

The applicant understands this requirement. This requirement will be met.

17.154.160 INSTALLATION--CONFORMATION REQUIRED

In addition to other requirements, improvements installed by the land divider either as a requirement of these regulations or at the developers own option, shall conform to the requirements of this chapter and to improvement standards and specifications followed by the city. (Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

The applicant understands this requirement. This requirement will be met.

17.154.170 PLAN CHECKING REQUIRED

A. Work shall not begin until construction plans and a construction estimate have been submitted and checked for adequacy and approved by the city in writing. Three sets of plans shall be submitted for review.

B. Three sets of revised plans (as approved) shall be provided.

C. All such plans shall be prepared in accordance with requirements of the city's public works design standards. (Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

The applicant understands this requirement. This requirement will be met.

17.154.180 NOTICE TO CITY REQUIRED

A. Work shall not begin until the city has been notified in advance.

B. If work is discontinued for any reason, it shall not be resumed until the city is notified. If work is discontinued, the site shall be protected from erosion. (Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

The applicant understands this requirement. This requirement will be met.

17.154.190 CITY INSPECTION REQUIRED

Improvements shall be constructed under the inspection and to the satisfaction of the city. The city may require changes in typical sections and details if unusual conditions arising during construction warrant such changes in the public interest. (Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

The applicant understands this requirement. This requirement can be met.

17.154.200 ENGINEER'S CERTIFICATION REQUIRED

The land divider's engineer shall provide written certification that all improvements, workmanship and materials are in accord with current and standard engineering and construction practices, and are of high grade and that improvements were built according to plans and specifications, prior to city acceptance of the subdivision's improvements or any portion thereof for operation and maintenance. (Ord. 634 § 1 Exh. A, 1995)

Applicant's Response

The applicant understands this requirement. This requirement will be met.

Photographs to Accompany Development Application Code Response Narrative

Date: 12/22/2023

Photographs

Photo 1: Existing plantings south of proposed tank (viewed from the east)

Photo 2: Existing plantings west of proposed tank (viewed from Keys Road northwest of the grove)

Photo 3: Existing plantings east of the proposed tank bordering existing residence (viewed from the west near exist tank)

Photo 4: Existing plantings east of the proposed tank (viewed from the west near existing tank)

Photo 5: Existing plantings east of the proposed tank (viewed from the northwest above existing tank, which is proposed to be replaced)

Photo 6: Existing plantings northeast of the proposed tank (viewed from hill to the west)

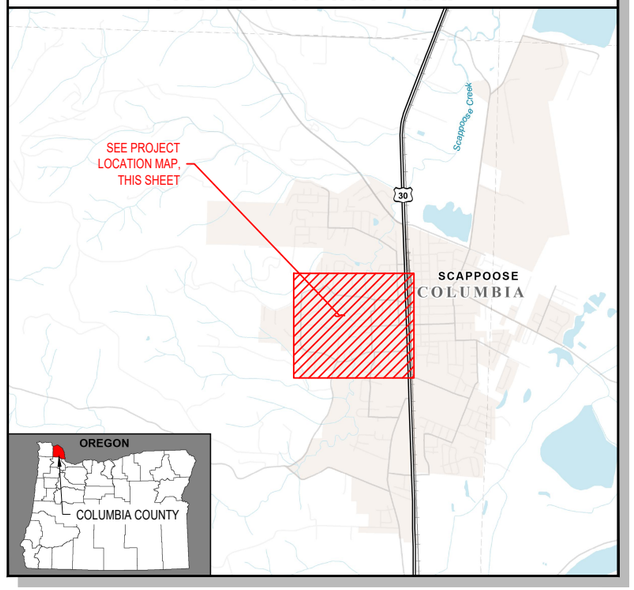
Photo 7: Existing plantings further northeast of the proposed tank (viewed from hill to the west), existing tank to remain on the left.

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

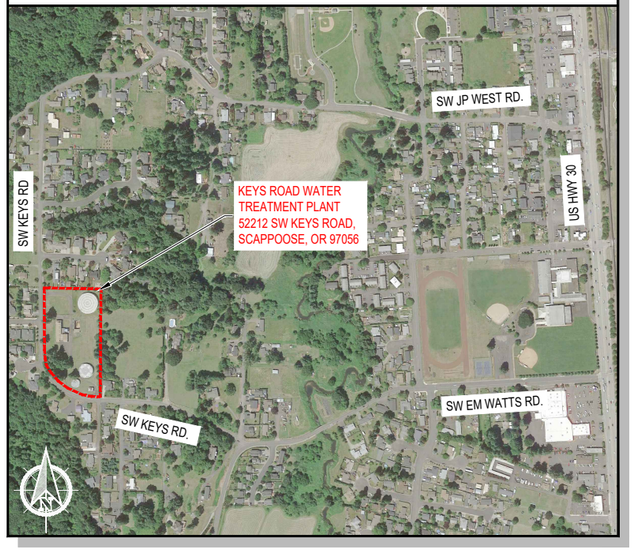
SPRING 2024
VOLUME III

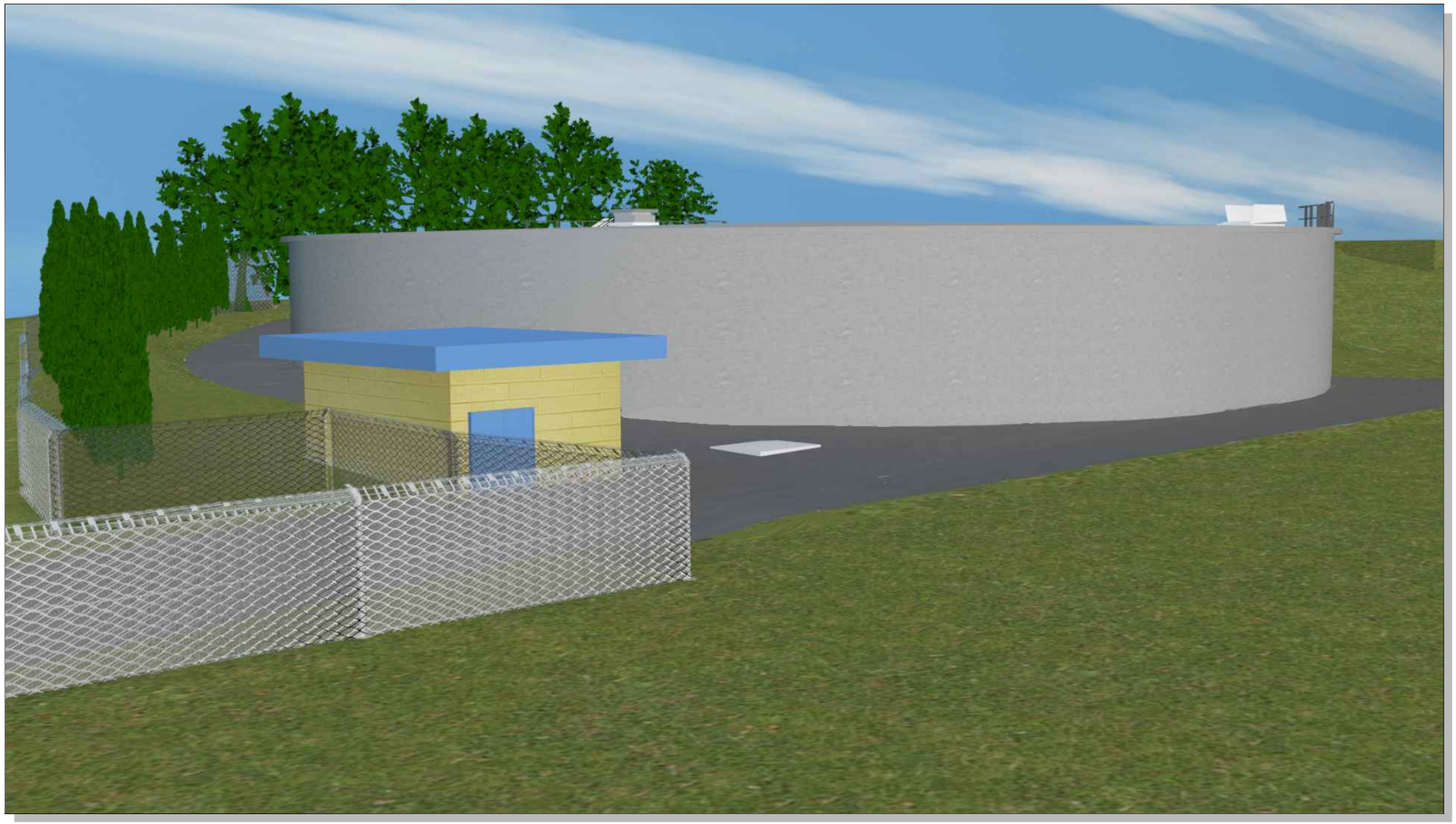
PRELIMINARY

PROJECT VICINITY MAP



PROJECT LOCATION MAP





NO.	DATE	DESCRIPTION	BY	REVIEW

PREPARED BY:

REGISTERED PROFESSIONAL ENGINEER
94740
PRELIMINARY
OREGON
MARCH 12, 2018
JUSTIN R. BARROW
EXPIRES: 12/31/2025

RH2

Exhibit 4A

SHEET INDEX

SHEET NO.	SHEET TITLE	DWG NO.
01	COVER	C0V
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03	CIVIL NOTES AND LEGENDS	C01
04	EXISTING SITE PLAN	C02
05	STORM AND SEWER STRUCTURE TABLES	C03
06	DEMOLITION PLAN	C04
07	UTILITY RELOCATION PLAN	C05
08	UTILITY RELOCATION PROFILES	C06 *
09	CONSTRUCTION GRADING AND TESC PLAN	C07
10	CONSTRUCTION GRADING SECTIONS 1	C08
11	CONSTRUCTION GRADING SECTIONS 2	C09
12	PROPOSED GRADING PLAN	C10
13	PROPOSED SITE GRADING SECTIONS 1	C11
14	PROPOSED SITE GRADING SECTION 2	C12
15	PROPOSED UTILITY PLAN	C13
16	PROPOSED DRAINAGE PLAN	C14
17	PROPOSED UTILITY PROFILES	C15 *
18	LANDSCAPING PLAN	C16
19	SITE AND UTILITY DETAILS 1	C19 *
20	SITE AND UTILTY DETAILS 2	C20 *
21	RESERVOIR FLOOR AND FOUNDATION PLAN	S01
22	RESERVOIR ROOF PLAN	S02 *
23	RESERVOIR FOUNDATION DETAILS I	S03 *
24	RESERVOIR FOUNDATION DETAILS II	S04 *
25	RESERVOIR WALL DETAILS	S05 *
26	RESERVOIR WALL AND PRESTRESSING DETAILS	S06 *
27	RESERVOIR ROOF REINFORCING PLAN	S07 *
28	RESERVOIR COLUMN & ROOF DETAILS	S08 *
29	RESERVOIR GENERAL STRUCTURAL NOTES	S09 *
30	RESERVOIR STANDARD STRUCTURAL DETAILS	S10 *
31	MECHANICAL PLAN	M01
32	MECHANICAL SECTIONS	M02 *
33	MECHANICAL DETAILS I	M03 *
34	MECHANICAL DETAILS II	M04 *
35	ELECTRICAL LEGEND	E01
36	ELECTRICAL SITE PLAN	E02
37	ELECTRICAL PLAN	E03 *
38	PRELIMINARY SITE PLAN	T01

* DRAWING NOT INCLUDED FOR DEVELOPMENT REVIEW

CONTACTS

CONTACT	AGENCY	PHONE
CHRIS NEGELSPACH, PE	CITY OF SCAPPOOSE	(503) 543-7184
DAVE SAKAU	CITY OF SCAPPOOSE	(503) 543-7146 X801
DARRYL SYKES	CITY OF SCAPPOOSE	(503) 369-0297
EDWIN HALIM, PE	RH2 ENGINEERING	(425) 951-5332
TAYLOR STOCKTON, PE	RH2 ENGINEERING	(503) 278-5356
JUSTIN BARROW, PE	RH2 ENGINEERING	(503) 446-2911

SECTION AND DETAIL REFERENCES

THE FOLLOWING CONVENTIONS HAVE BEEN USED WITHIN THESE DRAWINGS TO REFER THE READER BETWEEN THE SECTION/DETAIL AND THE PLAN FROM WHICH IT IS REFERENCED.

REFERENCE BUBBLES

ID / #XX — PLAN REFERENCE BUBBLE – REFERS READER BACK TO THE PLAN FROM WHICH THE DETAIL OR SECTION ORIGINATED.

ID / #XX — DETAIL/SECTION REFERENCE BUBBLE – REFERS READER TO THE DRAWING ON WHICH THE DETAIL OR SECTION IS LOCATED.

WHERE, ID = SECTION/DETAIL REFERENCE NUMBER
#XX = DRAWING NUMBER ON WHICH DETAIL ORIGINATED OR RESIDES.

CALL 48 HOURS BEFORE YOU DIG
ONE CALL 1-800-332-2344

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 503-232-1978.

SURVEY NOTES

1. FIELD WORK WAS COMPLETED ON MAY 31, 2023.
2. HORIZONTAL DATUM (BASIS OF BEARINGS): OREGON NORTH STATE PLANE COORDINATE SYSTEM NAD 83 (2011) BASED ON GPS OBSERVATIONS. DISTANCES SHOWN HEREON ARE GROUND DISTANCES, INTERNATIONAL FEET, SCALED ABOUT CONTROL POINT NO 110 WITH A NORTHING OF 769781.879 AND A EASTING OF 7591521.246 TO CONVERT TO GRID DISTANCES MULTIPLY BY THE COMBINED FACTOR OF 0.9999394839.
3. VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) BASED ON STATIC OBSERVATION ON CONTROL POINT 110.
4. THE LOCATION OF EXISTING UNDERGROUND UTILITY FACILITIES SHOWN HEREON ARE BASED ON LOCATE MARKS REQUESTED FOR THIS SURVEY PER ONE CALL PUBLIC LOCATE TICKET 23130290, ON-SITE UTILITY LOCATES PROVIDED BY CITY OF SCAPPOOSE. THE SURVEYOR ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE DELINEATION OF SUCH UNDERGROUND UTILITIES BY THE RESPECTIVE UTILITY OWNERS, NOR FOR THE EXISTENCE OF BURIED OBJECTS WHICH ARE NOT SHOWN ON THE PLAN. ALL UTILITY LOCATIONS SHOULD BE FIELD VERIFIED PRIOR TO CONSTRUCTION.
5. THE LOCATION OF EXISTING UNDERGROUND UTILITY FACILITIES SHOWN HEREON ARE BASED ON FIELD MEASUREMENTS BETWEEN UTILITY STRUCTURES WITHIN THE PROJECT AREA. THE SURVEYOR ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE DELINEATION OF SUCH UNDERGROUND UTILITIES BY THE RESPECTIVE UTILITY OWNERS/BUILDERS, NOR FOR THE EXISTENCE OF BURIED OBJECTS WHICH ARE NOT SHOWN ON THE PLAN. DUE TO THE HAZARDOUS NATURE AND APPLICABLE OSHA REQUIREMENTS REGARDING CONFINED SPACES, IT IS S&F LAND SERVICES POLICY TO NOT SEND FIELD STAFF INTO UTILITY MANHOLES OR CONFINED SPACES TO RETRIEVE DEPTH AND SIZE INFORMATION. INFORMATION SHOWN HEREON IS SUBJECT TO AN UNCERTAINTY IN ACCURACY DEPENDING ON DEPTH, SIZE, FLOW, AND CONSTRUCTION OF MANHOLES. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITY LINES BETWEEN STRUCTURES.
6. BOUNDARY OF SUBJECT PROPERTY AND RIGHT-OF-WAY OF SOUTHWEST KEYS ROAD COMPUTED FROM COLUMBIA COUNTY RECORD OF SURVEY NO. 5086
7. RECTIFIED ORTHOPHOTOGRAPHY AND PHOTOGRAMMETRIC MAPPING (PERFORMED BY AN ASPRS CERTIFIED PHOTOGRAMMETRIST) WAS UTILIZED TO OBTAIN PLANIMETRIC AND ELEVATION/SURFACE DATA (EXCLUDING BOUNDARIES) WHERE GROUND MEASUREMENTS ARE NOT OTHERWISE NECESSARY TO LOCATE THOSE FEATURES TO AN APPROPRIATE AND ACCEPTABLE ACCURACY. AERIAL PHOTOGRAPHY WAS COLLECTED WITH 80/80 FORWARD AND SIDE OVERLAP ON 5/31/2023.

CONTROL POINT TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
110	7769781.88	759152125	223.63	FOUND MAG NAIL
301	7769876.27	7592206.19	186.47	SET MAG NAIL
302	7769483.18	7591823.36	202.49	SET MAG NAIL
303	7769222.44	7592224.19	175.65	SET MAG NAIL
304	7769621.06	7592165.81	186.74	SET SPIKE
305	7769741.08	7591828.60	210.69	SET MAG NAIL
306	7769595.46	7592037.83	206.69	SET MAG NAIL
307	7769277.46	7592003.67	192.12	SET MAG NAIL
308	7769324.76	7592174.56	185.51	SET MAG NAIL
310	7769807.08	7591981.74	205.74	SET SPIKE
311	7769932.80	7591840.98	214.26	SET MAG NAIL

GENERAL CONSTRUCTION NOTES

ADDRESSES

PROJECT SITE: 52212 SW KEYS RD, SCAPPOOSE, OR 97056
OWNER: CITY OF SCAPPOOSE
33568 E COLUMBIA AVE, SCAPPOOSE, OR 97056
ENGINEER: RH2 ENGINEERING, INC.
5335 MEADOWS RD, SUITE 420, LAKE OSWEGO, OR 97035

CRITERIA

1) CONSTRUCTION OF SITE, ROAD, AND UTILITY IMPROVEMENTS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, LATEST EDITION, AS ISSUED BY THE OREGON STATE DEPT. OF TRANSPORTATION AND THE AMERICAN PUBLIC WORKS ASSOC. AND CURRENT AWWA SPECIFICATIONS.

2) ALL BUILDING MATERIALS, WORKMANSHIP, DESIGN, AND CONSTRUCTION SHALL CONFORM TO THE DRAWINGS, SPECIFICATIONS, AND THE 2022 OREGON STRUCTURAL SPECIALITY CODE.

3) ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS, CITY OF SCAPPOOSE (CITY) STANDARDS.

4) THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH THE PROVISIONS OF ALL PERMITS AND APPROVALS ISSUED BY CITY OF SCAPPOOSE, COLUMBIA COUNTY OR OTHER REGULATORY AUTHORITY FOR THIS PROJECT.

GEOTECHNICAL NOTES

SEE CIVIL DRAWING SHEET NO. CXX AND STRUCTURAL DRAWING SHEET NO. S01

GENERAL CONSTRUCTION

1) A COPY OF THE APPROVED PLANS AND SPECIFICATIONS MUST BE ON-SITE WHENEVER CONSTRUCTION IS IN PROGRESS. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY OTHER REQUIRED OR RELATED PERMITS PRIOR TO BEGINNING CONSTRUCTION.

2) IN THE EVENT THAT STANDARD CONSTRUCTION NOTES ARE FOUND TO BE IN CONFLICT WITH PROJECT SPECIFIC NOTES, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY. WHERE CONFLICTS ARISE, THE CONTRACTOR SHALL ASSUME THAT THE THE MORE RESTRICTIVE CONDITION SHALL APPLY.

GENERAL NOTES

1) THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE SAFEGUARDS, SAFETY DEVICES, PROTECTIVE EQUIPMENT, FLAGGERS, AND ANY OTHER NEEDED ACTIONS TO PROTECT THE LIFE, HEALTH, AND SAFETY OF THE PUBLIC, AND TO PROTECT PROPERTY IN CONNECTION WITH THE PERFORMANCE OF WORK COVERED BY THE CONTRACTOR.

2) A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE 48 HOUR ADVANCE NOTIFICATION TO THE OWNER, ENGINEER AND ALL AFFECTED UTILITY COMPANIES PRIOR TO ACTUAL START OF WORK.

3) CONTRACTOR SHALL HAVE A PROFESSIONAL LAND SURVEYOR PROVIDE STAKING OF CONSTRUCTION FOR OWNER INSPECTION A MINIMUM OF 72 HRS. PRIOR TO CONSTRUCTION. CONTRACTOR TO FURNISH ALL MATERIALS.

4) PROTECTION OF THE ENVIRONMENT: NO CONSTRUCTION RELATED ACTIVITY SHALL CONTRIBUTE TO THE DEGRADATION OF THE ENVIRONMENT, ALLOW MATERIAL TO ENTER SURFACE OR GROUND WATERS, OR ALLOW PARTICULATE EMISSIONS TO THE ATMOSPHERE, WHICH EXCEED STATE OR FEDERAL STANDARDS. ANY ACTIONS THAT POTENTIALLY ALLOW DISCHARGE TO STATE WATERS MUST HAVE PRIOR APPROVAL.

SITE

1) STORAGE OF ALL MATERIALS AND EQUIPMENT IS TO BE CONFINED TO WITHIN THE CONSTRUCTION LIMITS AS DEFINED ON THE PLANS. IF STORAGE IS NEEDED OUTSIDE THE DEFINED CONSTRUCTION LIMITS THE CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION FROM THE OWNER AND ADJACENT PROPERTY OWNERS.

2) DO NOT DISTURB OUTSIDE OF CONSTRUCTION LIMITS. MAINTAIN INTEGRITY AND SECURITY OF EXISTING SITE FENCE TO DISCOURAGE SITE ACCESS BY UNAUTHORIZED PERSONNEL.

3) CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO EXISTING OR BETTER CONDITION UNLESS OTHERWISE STATED ON THE PLANS.

4) ALL VEHICLES ARE TO BE CLEANED OF ALL EXCESS CONCRETE AND DIRT PRIOR TO LEAVING THE SITE. PROTECT ALL ROADS FROM DAMAGE OR SEDIMENT TRANSPORT DURING CONSTRUCTION. ANY DAMAGE OR CLEANUP SHALL BE SOLELY AT THE CONTRACTOR'S EXPENSE AND BE COMPLETED TO THE SATISFACTION OF THE OWNER.

5) THE CONTRACTOR SHALL CLEANUP ALL AREAS AFFECTED BY HIS ACTIVITIES TO THE SATISFACTION OF THE OWNER BY THE END OF EACH WORKING DAY OR MORE FREQUENTLY IF REQUIRED BY THE OWNER. THIS INCLUDES REMOVAL OF ALL DUST, MUD, ROCKS, ASPHALT DEBRIS, AND REFUSE FROM STREETS, SIDEWALKS, DRIVEWAYS, AND ANY OTHER AREAS AFFECTED BY THE CONSTRUCTION ACTIVITIES. FAILURE TO CLEANUP TO THE SATISFACTION OF THE OWNER WILL NECESSITATE A SHUTDOWN OF THE PROJECT UNTIL CLEANUP IS PROPERLY PERFORMED. DAILY CLEANUP IS AN INTEGRAL PART OF EROSION AND POLLUTION CONTROL.

6) CONTRACTOR IS RESPONSIBLE FOR MEETING ALL REQUIREMENTS FOR OFF SITE DISPOSAL INCLUDING ONLY DISPOSING OF WASTE MATERIAL AT APPROVED SITES.

7) AT THE END OF EACH WORKING WEEK, THE OWNER WILL, AT THEIR DISCRETION INSPECT ALL TEMPORARY RESTORATION. IF THE TEMPORARY RESTORATION DOES NOT PROVIDE AN ADEQUATE DRIVING SURFACE, AS DETERMINED BY THE OWNER, THEN THE CONTRACTOR SHALL IMMEDIATELY PROCEED WITH THE PERMANENT RESTORATION AS DESCRIBED IN THE SPECIFICATIONS.

UTILITIES

1) UTILITY LOCATIONS SHOWN HEREON ARE BASED UPON ASBUILT FIELD LOCATION OF EXISTING STRUCTURES, FIELD LOCATION OF UTILITIES BASED ON LOCATOR PAINT MARKINGS AND LOCATIONS BASED ON UTILITY LOCATION MAPS FROM THE UTILITY PURVEYORS. OTHER UTILITIES OR DEVIATIONS FROM THESE PLANS MAY EXIST. NO SUB-SURFACE EXPLORATION WAS MADE TO VERIFY UTILITY ROUTINGS AND THE ROUTING OF ALL BURIED UTILITIES SHOULD BE CONFIRMED WITH THE UTILITY PURVEYOR AND EXPOSED IN AREAS CRITICAL TO CONSTRUCTION FOR VERIFICATION. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION, ELEVATION AND SIZE OF EXISTING UTILITIES PRIOR TO CONSTRUCTION OF ANY BURIED PROPOSED UTILITIES. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND THE UTILITY COMPANY WHEN A CONFLICT OCCURS OR WHEN A CONFLICT IS ANTICIPATED.

2) OVERHEAD UTILITIES: NOT ALL OVERHEAD UTILITIES MAY BE SHOWN ON THE PLANS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VISIT THE SITE TO INDEPENDENTLY VERIFY ALL OVERHEAD UTILITIES. THE CONTRACTOR SHALL ACCOUNT FOR ACCOMMODATING ALL OVERHEAD UTILITIES IN THEIR BID AND NO ADDITIONAL COMPENSATION WILL BE PROVIDED FOR FACILITATING OVERHEAD UTILITIES.

3) EXISTING WATER AND POWER FACILITIES MAY NOT BE SHUT DOWN FOR ANY PERIOD WITHOUT PRIOR APPROVAL FROM OWNER. A MINIMUM OF ONE WEEK NOTICE TO THE OWNER IS REQUIRED FOR ANY SHUT DOWN. THE CONTRACTOR SHALL NOT OPERATE EXISTING WATER, SEWER, OR POWER SYSTEM EQUIPMENT (VALVES, SWITCHES, ETC.). NO SHUTDOWNS SHALL BE ALLOWED ON MONDAYS, FRIDAYS OR THE DAYS BEFORE OR AFTER A HOLIDAY.

UTILITIES (Continued)

4) THE CONTRACTOR SHALL NOTIFY FRANCHISE OFFICIAL, A MINIMUM OF 48 HOURS IN ADVANCE OF ANY PLANNED DISRUPTION TO UTILITIES INCLUDING, BUT NOT LIMITED TO WATER, SEWER, NATURAL GAS, IRRIGATION, TELEPHONE, POWER, CABLE AND FIBER OPTICS.

5) ALL UTILITY CONSTRUCTION SHALL COMPLY WITH THE OREGON DEPARTMENT OF TRANSPORTATION AND UTILITY FRANCHISE STANDARDS.

6) CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING UTILITIES AND STRUCTURES AND SHALL PROVIDE SHORING AND SUPPORT AS NECESSARY.

7) CUT-INS AND LIVE TAPS SHALL BE DIRECTLY SUPERVISED BY AN AUTHORIZED REPRESENTATIVE OF THE OWNER. PARTS MUST BE ON-SITE AND APPROVED BY OWNER AUTHORIZED REPRESENTATIVE PRIOR TO SCHEDULING CUT-INS OR CONNECTIONS.

8) ALL PRESSURE PIPE SHALL BE RESTRAINED FROM UNRESOLVED HYDROSTATIC THRUST FORCES BY MECHANICAL RESTRAINTS UNLESS SPECIFIED OTHERWISE.

9) AT POINTS WHERE EXISTING THRUST BLOCKING IS FOUND, MINIMUM HORIZONTAL CLEARANCE BETWEEN THE CONCRETE BLOCKING AND OTHER BURIED UTILITIES OR STRUCTURES SHALL BE 5 FEET.

10) CONTRACTOR SHALL CONNECT THE PROPOSED WATER MAIN TO THE EXISTING SYSTEM ONLY AFTER PROPOSED MAIN IS PRESSURE TESTED, FLUSHED, DISINFECTED AND SATISFACTORY BACTERIOLOGICAL SAMPLE RESULTS ARE OBTAINED. ALL TESTING SHALL BE DONE IN THE PRESENCE OF A REPRESENTATIVE OF THE OWNER.

11) SEE DWG NO. C01 FOR ADDITIONAL UTILITY NOTES.

TRAFFIC CONTROL

1) CONTRACTOR IS RESPONSIBLE FOR SUBMITTING AND OBTAINING ANY REQUIRED PERMITS, SUCH AS STREET USE AND/OR TRANSPORTATION, PRIOR TO BEGINNING CONSTRUCTION. CONTRACTOR SHALL COORDINATE WITH THE CITY PRIOR TO AND DURING CONSTRUCTION TO ENSURE TRAFFIC CONTROL AND DETOURS EMPLOYED MEET CITY REQUIREMENTS AND APPROVAL.

2) ALL TRAFFIC CONTROL DEVICES SHALL MEET MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES STANDARDS.

GENERAL TESC

1) EROSION CONTROL MEASURES SHOWN REPRESENT THE MINIMUM REQUIREMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING EROSION AND SEDIMENTATION CONTROL MEASURES, FACILITIES AND PLAN IN ACCORDANCE WITH THE CITY OF SCAPPOOSE STANDARDS, BMPS AND AS APPROPRIATE FOR SITE AND ENVIRONMENTAL CONDITIONS.

2) ANY DISCHARGE OF SEDIMENT-LADEN RUN-OFF OR OTHER POLLUTANTS TO WATERS OF THE STATE IS SUBJECT TO ENFORCEMENT ACTION, THE COST FOR WHICH SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

3) DURING CONSTRUCTION, ALL RELEASES OF OILS, HYDRAULIC FLUIDS, FUELS, OTHER PETROLEUM PRODUCTS, PAINTS, SOLVENTS, AND OTHER DELETERIOUS MATERIALS MUST BE CONTAINED AND REMOVED IN A MANNER THAT WILL PREVENT THEIR DISCHARGE TO WATERS AND SOILS. THE CLEANUP OF SPILLS SHALL TAKE PRECEDENCE OVER OTHER WORK ON THE PROJECT. BARRELS, PETROPHILIC PADS, TARPS, AND OTHER EQUIPMENT NECESSARY FOR CAPTURING, CONTROLLING, AND DISPOSING OF HAZARDOUS FLUIDS SHALL BE AVAILABLE ON-SITE AT ALL TIMES.

4) PROPER EROSION AND SEDIMENT CONTROL PRACTICES MUST BE USED ON THE CONSTRUCTION SITE AND ADJACENT AREAS TO PREVENT UPLAND SEDIMENTS FROM ENTERING THE NATURAL DRAINAGE SYSTEM. ALL SURFACE AREAS DISTURBED AND ANY EMBANKMENTS OR EXCAVATIONS CREATED BY CONSTRUCTION ACTIVITIES MUST BE RE-VEGETATED OR PROVIDED AN EQUIVALENT TYPE OF PROTECTION AGAINST EROSION.

5) OWNER REPRESENTATIVES MAY DIRECT MAINTENANCE AND REPAIR OF TESC MEASURES AND/OR FACILITIES AS THE HIGHEST PRIORITY WORK AT ANY TIME THE TESC MEASURES AND/OR FACILITIES DO NOT MEET THE PERMIT, CITY AND PLAN REQUIREMENTS. TESC MEASURES AND FACILITIES ARE NOT SHOWN ON THE PLANS, BUT SHALL BE PROVIDED BASED ON WEATHER CONDITIONS AND CONSTRUCTION PRACTICES AT THE DISCRETION OF THE OWNER.

6) DUST CONTROL MUST BE PROVIDED BY THE CONTRACTOR. THE CONTRACTOR SHALL USE A VACUUM STREET SWEEPER TO REMOVE DUST AND DEBRIS FROM PAVEMENT AREAS AS DIRECTED BY THE ENGINEER OR OWNER'S REPRESENTATIVE. FLUSHING OF STREETS SHALL NOT BE PERMITTED WITHOUT PRIOR COUNTY APPROVAL. POWER BROOMS SHALL NOT BE USED, NOR PERMITTED ON SITE.

7) THE IMPLEMENTATION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF TESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS APPROVED.

8) TESC FACILITIES MUST BE CONSTRUCTED PRIOR TO, OR IN CONJUNCTION WITH, ALL CLEARING AND GRADING SO AS TO ENSURE THAT THE TRANSPORT OF SEDIMENT TO SURFACE WATERS, DRAINAGE SYSTEMS, AND ADJACENT PROPERTIES IS MINIMIZED.

9) DURING THE CONSTRUCTION PERIOD, THE TESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND MODIFIED TO ACCOUNT FOR CHANGING SITE CONDITIONS (E.G. ADDITIONAL COVER MEASURES, RELOCATION OF DITCHES AND SILT FENCES, PERIMETER PROTECTION ETC.) AS DIRECTED BY THE ENGINEER, OWNER, OR REGULATORY AGENCY. THE CONTRACTOR SHALL BE COGNIZANT OF FUTURE WEATHER PATTERNS AND PLAN ACCORDINGLY.

10) THE BOUNDARIES OF THE CONSTRUCTION LIMITS SHALL BE CLEARLY FLAGGED BY SURVEY TAPE OR FENCING PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE CLEARING LIMITS SHALL BE PERMITTED. THE CONSTRUCTION LIMITS SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION, OR REVISED AS CONSTRUCTION ACTIVITIES DICTATE.

11) CLEARING AND GRUBBING WHERE REQUIRED SHALL BE PERFORMED WITHIN THE CONSTRUCTION LIMITS NOTED ON THE PLANS. DEBRIS RESULTING FROM THE CLEARING AND GRUBBING SHALL BE DISPOSED OF BY THE CONTRACTOR AND IN ACCORDANCE WITH THE TERMS OF ALL APPLICABLE PERMITS.

12) THE CONTRACTOR SHALL FENCE ALL VEGETATION TO BE RETAINED ON SITE TO THE DRIPLINE FOR TREES OR OUTER VEGETATION EDGE FOR SHRUBS. FENCING SHALL BE HIGH-VISIBILITY CONSTRUCTION FENCE TO BE RETAINED FOR THE DURATION OF THE CONSTRUCTION.

13) TESC MATERIALS ON HAND – THE CONTRACTOR SHALL KEEP A SUFFICIENT SUPPLY OF TESC MATERIALS ON HAND TO REMEDY ANY FAILURE OF TESC BMPS THAT IS DETRIMENTAL TO DOWNSTREAM OR ADJACENT DRAINAGE DITCHES, CONVEYANCE SYSTEMS, OR OTHER PROPERTIES. THESE MATERIALS INCLUDE, BUT ARE NOT LIMITED TO: SANDBAGS, SILT FENCE, EROSION CONTROL BLANKET, QUARRY SPALLS OR OTHER ROCK, STRAW OR MULCH.

14) THE TESC FACILITIES SHALL BE INSPECTED WEEKLY BY THE CONTRACTOR'S TESC SUPERVISOR AND MAINTAINED TO ENSURE CONTINUED PROPER FUNCTIONING. WRITTEN RECORDS SHALL BE KEPT OF WEEKLY REVIEWS OF THE TESC FACILITIES.

15) ANY AREAS OF EXPOSED SOILS, INCLUDING ROADWAY EMBANKMENTS, THAT WILL NOT BE DISTURBED FOR FOURTEEN CONSECUTIVE DAYS DURING THE WET SEASON OR THIRTY DAYS DURING THE DRY SEASON SHALL BE STABILIZED WITH THE APPROVED TESC METHODS (E.G., SEEDING, MULCHING, PLASTIC COVERING, ETC.).

RH2

REGISTERED PROFESSIONAL ENGINEER
94740
PRELIMINARY
OREGON
MARCH 12, 2019
JUSTIN R. BARROW
EXPIRES: 12/31/2025

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

GENERAL INFORMATION

JOB NO: 230-093
CLIENT: SCAP
FILENAME: KEYS-P-COV.DWG
DATE: Jan 9, 2024
PLOT DATE: Jan 9, 2024
ENGINEER: JLC
REVIEWED: JRB

REVISIONS

NO.	DESCRIPTION	DATE	BY
	PRELIMINARY DESIGN REVIEW		

SCALE: SHOWN
0" 1" 2"
DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: G01
SHEET NO.: 02 38

Exhibit 4B

LEGEND

EXISTING

IRON PIPE	RAW WATER LINE
MONUMENT	WATER DRAIN LINE
REBAR CAP	PROPERTY LINE
MAG NAIL CONTROL POINT	RIGHT OF WAY CENTERLINE
WATER METER	RIGHT OF WAY LINE
FIRE HYDRANT	TOP OF CURB
WATER FIRE DEPT. CONNECT	BUILDING OUTLINE
WATER VALVE	TOP OF WALL
WATER AIR RELIEF VALVE	TOE OF WALL
WATER RISER	FENCE
WATER MANHOLE	FLOW LINE
METER VAULT	MAJOR CONTOUR
STORM MANHOLE	
CATCH BASIN	
CULVERT INLET/OUTLET	
STORM AREA DRAIN	
SANITARY SEWER MANHOLE	
TELEVISION PEDESTAL	
TELEPHONE PEDESTAL	
POWER POLE	
POWER TRANSFORMER	
POWER JUNCTION BOX	
POWER METER	
GAS METER	
POWER POLE WITH LIGHT	
TREE (CONIFER)	
TREE (DESIDUOUS)	
FENCE GATE POST	
UNDERGROUND COMMUNICATION	
NATURAL GAS	
UNDERGROUND POWER	
OVERHEAD POWER	
SANITARY SEWER	
STORM LINE	
WATER LINE	
BACKWASH LINE	

PROPOSED

WATER PIPE	
POWER LINE	
TELEMETRY LINE	
STORM LINE	
ROW DEDICATION	
GRAVEL	
ROCKERY	
ASPHALT	
CATCH BASIN	
STORM MANHOLE	
SANITARY SEWER MANHOLE	
FENCE	
TEE (FLxFL)	
90° & 22.5° BEND (RJxRJ)	
BUTTERFLY VALVE	
GATE VALVE	

TEMPORARY / DEMO

UTILITY LINE TO BE REMOVED	
EXISTING STRUCTURE TO BE REMOVED	

SUBSURFACE UTILITY LEGEND

THE CLASSIFICATIONS FOR SUBSURFACE UTILITIES ARE OUTLINED AND EXPLAINED IN THE FOLLOWING LIST:

UTILITY QUALITY LEVEL A. - PRECISE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES OBTAINED BY THE ACTUAL EXPOSURE OF (OR VERIFICATION OF PREVIOUSLY EXPOSED AND SURVEYED UTILITIES) AND SUBSEQUENT MEASUREMENT OF SUBSURFACE UTILITIES, USUALLY AT A SPECIFIC POINT. UNLESS OTHERWISE NOTED, QUALITY LEVEL A IS ONLY APPLICABLE AT POTHOLED LOCATIONS ON THE PLANS. AT ALL OTHER AREAS, THE UTILITY SHOULD BE ASSUMED TO BE QUALITY LEVEL B.

POTHOLE LOCATION

UTILITY QUALITY LEVEL B. - INFORMATION OBTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF SUBSURFACE UTILITIES.

UTILITY QUALITY LEVEL C. - INFORMATION OBTAINED BY SURVEYING AND PLOTTING VISIBLE ABOVE-GROUND UTILITY FEATURES

UTILITY QUALITY LEVEL D. - INFORMATION DERIVED FROM EXISTING RECORDS OR ORAL RECOLLECTIONS

NOTE: THE USE OF THE LINE TYPES PROVIDED ABOVE WAS A PRIMARY METHOD FOR INDICATING THE ACCURACY OF THE UTILITIES SHOWN WITHIN THESE PLANS. WHEN THE SOURCE OF THE INFORMATION WAS UNKNOWN OR THE METHOD FOR LOCATING THE UTILITIES WAS UNAVAILABLE, QUALITY LEVEL D WAS USED AS THE DEFAULT.

GENERAL CIVIL NOTES

EXISTING UTILITIES

1. ALL UTILITIES: UTILITIES SHOWN ARE BASED ON UNDERGROUND UTILITY LOCATE MARKINGS AS PROVIDED BY OTHERS. THE ENGINEER MAKES NO GUARANTEE THAT THE UNDERGROUND LOCATES REPRESENT THE ONLY UTILITIES IN THE AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS PRIOR TO BEGINNING CONSTRUCTION. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO INDEPENDENTLY VERIFY THE ACCURACY OF ALL UTILITY LOCATIONS AND THE SIZE OF ALL UTILITIES SHOWN TO AVOID DAMAGE AND/OR DISTURBANCE TO SUCH UTILITIES, AND TO FURTHER DISCOVER AND AVOID ANY OTHER UTILITIES NOT SHOWN HEREON WHICH MAY BE AFFECTED BY THE IMPLEMENTATION OF THIS PLAN. CONTRACTOR SHALL PRESERVE, PROTECT AND SUPPORT ALL EXISTING UTILITIES ENCOUNTERED DURING CONSTRUCTION. REPAIR, OR REPLACE ALL EXISTING STRUCTURES DAMAGED DURING CONSTRUCTION, INCLUDING BUT NOT LIMITED TO STORM SEWERS, CATCH BASINS, AND CULVERTS.
2. POWER, TELEPHONE, FIBEROPTIC, GAS AND CABLE: WHERE THESE UTILITIES CROSS THE PROPOSED WATER MAIN, THE DEPTH OF EACH IS SHOWN ON THE PROFILES AND IS BASED ON TYPICAL LAYING DEPTHS FOR EACH OF THESE UTILITIES. ACTUAL DEPTHS ARE UNKNOWN AND MAY VARY SIGNIFICANTLY. CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF UTILITY CROSSING DEPTH CONFLICTS ARISE.
3. WATER: THE VERTICAL AND HORIZONTAL LOCATIONS OF THE EXISTING WATER MAIN SHOWN ON THE PLANS ARE APPROXIMATE. DEVIATIONS FROM THESE PLANS MAY EXIST.
4. IN LOCATIONS WHERE THE EXISTING UTILITY IS EXPOSED IN ORDER TO CONSTRUCT THE NEW UTILITY, THE AMOUNT OF OPEN TRENCH SHALL BE MINIMIZED TO AVOID EXPOSING MORE THAN ONE EXISTING PIPE JOINT WHERE THE EXISTING PIPE IS TO REMAIN. THE CONTRACTOR SHALL CONDUCT THE WORK IN A MANNER THAT PREVENTS DAMAGE TO THE EXISTING UTILITY DURING THE CONSTRUCTION OF THE NEW UTILITY.
5. PROVIDE STYROFOAM CUSHION BETWEEN PIPING AT PIPE CROSSINGS WHERE PIPES CROSS WITH LESS THAN 12 INCHES OF VERTICAL SEPARATION. A SAND CUSHION MAY BE USED IN AREAS WHERE ADEQUATE COMPACTION CAN BE ACHIEVED AND AS APPROVED BY THE ENGINEER.
6. CONFLICTS WHICH MAY OCCUR DURING CONSTRUCTION OF THE PROPOSED WATER MAIN OR SERVICE LINES SHALL BE RESOLVED IN THE FOLLOWING MANNER, AS DIRECTED BY THE OWNER'S REPRESENTATIVE. CONTRACTOR SHALL SUBMIT PROPOSED CHANGES, AS MARK-UPS ON THE PLANS, TO THE ENGINEER FOR REVIEW:
   A. IF THE PROPOSED WATER MAIN CONFLICTS WITH A MAJOR UTILITY SUCH AS A 2" OR GREATER DIAMETER GAS MAIN OR STORM WATER MAIN, THE WATER LINE SHALL BE DEFLECTED WITHIN MANUFACTURER'S STANDARDS OR REALIGNED USING VERTICAL OR HORIZONTAL BENDS AS APPROVED BY THE ENGINEER. PAYMENT FOR THESE ALIGNMENT CHANGES SHALL BE BASED ON THE UNIT PRICES FOR BENDS AND FITTINGS AND TRENCH OVER-EXCAVATION AND BACKFILL AS ESTABLISHED PRIOR TO THE CHANGES BEING CONSTRUCTED AND AS APPROVED BY THE ENGINEER.
   B. IF THE PROPOSED WATER MAIN CONFLICTS WITH A MINOR UTILITY SUCH AS POWER, CABLE, GAS SERVICE AND TELEPHONE LINES, THE UTILITY COMPANY SHALL BE CONTACTED AND THE CONTRACTOR SHALL COORDINATE WITH THE UTILITY COMPANY TO REALIGN THE CONFLICTING UTILITY, UNLESS OTHERWISE APPROVED BY THE ENGINEER. PAYMENT FOR THESE ALIGNMENT CHANGES SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT.

WATER MAIN CONSTRUCTION NOTES

1. WATER MAINS SHALL BE DUCTILE IRON PIPE CONFORMING TO AWWA C151. PIPE IS TO HAVE CEMENT MORTAR LINING AND BITUMINOUS SEAL COAT CONFORMING TO AWWA C104. JOINTS ARE TO BE TYTON JOINT. (6-INCH TO 8- INCH PIPE IS TO BE CLASS 52: 12-INCH AND UP SHALL BE CLASS 52, UNLESS SPECIFIED BY THE AUTHORITY.) PIPE FITTINGS ARE TO BE CAST IRON, OR DUCTILE IRON, CONFORMING TO AWWA C110 OR C153. PIPE IS TO BE LAID SUCH THAT IT IS SUPPORTED ALONG ITS FULL LENGTH, INCLUDING DIGGING OF "BELL HOLES".
2. WATER MAIN IS TO HAVE A MINIMUM COVER OF 42-INCHES.
3. AN APPROVED MECHANICAL RESTRAINT SYSTEM IS TO BE USED AT ALL BRANCHES AND CHANGES IN DIRECTION.
4. GATE VALVES (6-INCH THROUGH 12-INCH) SHALL BE RESILIENT-SEATED TYPE CONFORMING TO AWWA C509. BUTTERFLY VALVES 18-INCH AND LARGER SHALL BE CLASS 150 SHORT BODY TYPE IN CONFORMANCE WITH AWWA C504. WHERE WATER SYSTEM STATIC PRESSURES EXCEED 100 PSI, BUTTERFLY VALVES SHALL BE CLASS 250B, SHORT BODY TYPE IN CONFORMANCE WITH AWWA C504. VALVE BOXES SHALL BE VANCOUVER 910/18-INCHES LONG WITH 6-INCH P.V.C. 3034 AS BOTTOM SECTION. VALVE BOXES THAT ARE LOCATED OUTSIDE AREAS TO BE PAVED SHALL HAVE A 2' X 2' X 2' THICK COLLAR OF HOT ASPHALT PLACED AROUND THEM. WHERE THE TOP OF THE VALVE OPERATING NUT IS 48-INCHES OR MORE BELOW FINISH GRADE, OPERATING EXTENSIONS SHALL BE PROVIDED TO BRING THE OPERATING NUT TO A POINT 18-INCHES BELOW FINISH GRADE. THE EXTENSION STEM SHALL BE CONSTRUCTED OF STEEL.
5. GRANULAR MATERIAL USED FOR PIPE BASE, PIPE ZONE AND TRENCH BACKFILL SHALL BE 3/4"- 0" CRUSHED ROCK. PIPE BASE SHALL BE A MINIMUM OF 4-INCHES DEEP AT THE PIPE BARREL, AND NOT LESS THAN 3-INCHES DEEP AT THE BELL. GRANULAR BACKFILL IS TO BE COMPACTED TO 95% MAXIMUM DENSITY PER AASHTO T99 TEST METHOD AND NATIVE MATERIAL SHALL BE COMPACTED TO 85% OF IN-PLACE DENSITY OF SURROUNDING SOIL. BACKFILL WITHIN RIGHT-OF-WAY SHALL BE IN ACCORDANCE WITH APWA CLASS B BACKFILL.
6. INSPECTION OF THE WATER IMPROVEMENTS WILL BE MADE BY CITY PERSONNEL OR OTHERS DESIGNATED BY THE CITY. THE PRESSURE TEST IS TO BE MADE AFTER ALL SERVICES ARE INSTALLED, CURBS ARE IN, AND ROAD BASE ROCK IS PLACED. TEST PRESSURE SHALL BE 1.5 TIMES STATIC LINE PRESSURE (MINIMUM 150PSI) AT THE LOWEST POINT IN THE SYSTEM BEING TESTED; 30 MINUTES DURATION; NO PRESSURE LOSS.
7. ALL MATERIALS, INSTALLATIONS, TESTS, AND CHLORINATION ARE TO BE IN ACCORDANCE WITH THE STANDARDS AND CODES OF THE CITY OF SCAPPOOSE AND THE OREGON ADMINISTRATIVE RULES, CHAPTER 333, DIVISION 061.
8. WHERE SANITARY LINES CROSS WATER LINES, THE SYSTEMS NEED TO BE CONSTRUCTED SUCH THAT THE CROSSING WILL OCCUR AT THE CENTER OF A PIPE SEGMENT FOR BOTH LINES.
9. DEFLECTION AT PIPE AND FITTING JOINTS SHALL BE ALLOWED UP TO 3.0° OR AS RECOMMENDED BY MANUFACTURER, WHICHEVER IS LESS.
10. ALL VAULT HATCHES 2'X2' OR LARGER SHALL BE HINGED, SPRING ASSIST OPENING, INCLUDE RECESSED PADLOCK HASP, DRAINABLE FRAME (C OR U CHANNEL WITH PIPE CONNECTION), H20 RATED MINIMUM, ALUMINUM OR GALVANIZED STEEL. IF HATCH WILL BE LOCATED IN A TRAVELED AREA (ROAD OR DRIVEWAY), SUBMIT MANUFACTURER'S STATEMENT THAT HATCH IS RATED FOR CONTINUOUS AND DELIBERATE H20 TRAFFIC SERVICE. HATCHES SHALL BE CAST INTO VAULT LID OR RISER.

EROSION CONTROL NOTES

NOTE: PROJECT IS SUBJECT TO OREGON DEQ PERMIT 1200-C. THE FOLLOWING ARE STANDARD NOTES REQUIRED BY DEQ AND ALL REFERENCES LISTED HEREIN ARE TO THE 1200-C PERMIT.

1. HOLD A PRE-CONSTRUCTION MEETING OF PROJECT CONSTRUCTION PERSONNEL THAT INCLUDES THE INSPECTOR TO DISCUSS EROSION AND SEDIMENT CONTROL MEASURES AND CONSTRUCTION LIMITS. (SCHEDULE A.8.C.I.(3))
2. ALL INSPECTIONS MUST BE MADE IN ACCORDANCE WITH DEQ 1200-C PERMIT REQUIREMENTS. (SCHEDULE A.12.B AND SCHEDULE B.1)
3. INSPECTION LOGS MUST BE KEPT IN ACCORDANCE WITH DEQ'S 1200-C PERMIT REQUIREMENTS. (SCHEDULE B.1.C AND B.2)
4. RETAIN A COPY OF THE ESCP AND ALL REVISIONS ON SITE AND MAKE IT AVAILABLE ON REQUEST TO DEQ, AGENT, OR THE LOCAL MUNICIPALITY. DURING INACTIVE PERIODS OF GREATER THAN SEVEN (7) CONSECUTIVE CALENDAR DAYS, THE ABOVE RECORDS MUST BE RETAINED BY THE PERMIT REGISTRANT BUT DO NOT NEED TO BE AT THE CONSTRUCTION SITE. (SCHEDULE B.2.C)
5. ALL PERMIT REGISTRANTS MUST IMPLEMENT THE ESCP. FAILURE TO IMPLEMENT ANY OF THE CONTROL MEASURES OR PRACTICES DESCRIBED IN THE ESCP IS A VIOLATION OF THE PERMIT. (SCHEDULE A 8.A)
6. THE ESCP MUST BE ACCURATE AND REFLECT SITE CONDITIONS. (SCHEDULE A.12.C.I)
7. SUBMISSION OF ALL ESCP REVISIONS IS NOT REQUIRED. SUBMITTAL OF THE ESCP REVISIONS IS ONLY UNDER SPECIFIC CONDITIONS. SUBMIT ALL NECESSARY REVISION TO DEQ OR AGENT WITHIN 10 DAYS. (SCHEDULE A.12.C.IV. AND V)
8. PHASE CLEARING AND GRADING TO THE MAXIMUM EXTENT PRACTICAL TO PREVENT EXPOSED INACTIVE AREAS FROM BECOMING A SOURCE OF EROSION. (SCHEDULE A.7.A.III)
9. IDENTIFY, MARK, AND PROTECT (BY CONSTRUCTION FENCING OR OTHER MEANS) CRITICAL RIPARIAN AREAS AND VEGETATION INCLUDING IMPORTANT TREES AND ASSOCIATED ROOTING ZONES, AND VEGETATION AREAS TO BE PRESERVED. IDENTIFY VEGETATIVE BUFFER ZONES BETWEEN THE SITE AND SENSITIVE AREAS (E.G., WETLANDS), AND OTHER AREAS TO BE PRESERVED, ESPECIALLY IN PERIMETER AREAS. (SCHEDULE A.8.C.I.(1) AND (2))
10. PRESERVE EXISTING VEGETATION WHEN PRACTICAL AND RE-VEGETATE OPEN AREAS. RE-VEGETATE OPEN AREAS WHEN PRACTICABLE BEFORE AND AFTER GRADING OR CONSTRUCTION. IDENTIFY THE TYPE OF VEGETATIVE SEED MIX USED. (SCHEDULE A.7.A.V)
11. MAINTAIN AND DELINEATE ANY EXISTING NATURAL BUFFER WITHIN THE 50-FEET OF WATERS OF THE STATE. (SCHEDULE A.7.B.I.AND (2(A)(B))
12. INSTALL PERIMETER SEDIMENT CONTROL, INCLUDING STORM DRAIN INLET PROTECTION AS WELL AS ALL SEDIMENT BASINS, TRAPS, AND BARRIERS PRIOR TO LAND DISTURBANCE. (SCHEDULE A.8.C.I.(5))
13. CONTROL BOTH PEAK FLOW RATES AND TOTAL STORMWATER VOLUME, TO MINIMIZE EROSION AT OUTLETS AND DOWNSTREAM CHANNELS AND STREAMBANKS. (SCHEDULE A.7.C)
14. CONTROL SEDIMENT AS NEEDED ALONG THE SITE PERIMETER AND AT ALL OPERATIONAL INTERNAL STORM DRAIN INLETS AT ALL TIMES DURING CONSTRUCTION, BOTH INTERNALLY AND AT THE SITE BOUNDARY. (SCHEDULE A.7.D.I)
15. ESTABLISH CONCRETE TRUCK AND OTHER CONCRETE EQUIPMENT WASHOUT AREAS BEFORE BEGINNING CONCRETE WORK. (SCHEDULE A.8.C.I.(6))
16. APPLY TEMPORARY AND/OR PERMANENT SOIL STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS AS GRADING PROGRESSES. TEMPORARY OR PERMANENT STABILIZATION MEASURES ARE NOT REQUIRED FOR AREAS THAT ARE INTENDED TO BE LEFT UNVEGETATED, SUCH AS DIRT ACCESS ROADS OR UTILITY POLE PADS.(SCHEDULE A.8.C.II.(3))
17. ESTABLISH MATERIAL AND WASTE STORAGE AREAS, AND OTHER NON-STORMWATER CONTROLS. (SCHEDULE A.8.C.I.(7))
18. PREVENT TRACKING OF SEDIMENT ONTO PUBLIC OR PRIVATE ROADS USING BMPS SUCH AS: CONSTRUCTION ENTRANCE, GRAVELED (OR PAVED) EXITS AND PARKING AREAS, GRAVEL ALL UNPAVED ROADS LOCATED ONSITE, OR USE AN EXIT TIRE WASH. THESE BMPS MUST BE IN PLACE PRIOR TO LAND-DISTURBING ACTIVITIES. (SCHEDULE A 7.D.II AND A.8.C.I(4))
19. WHEN TRUCKING SATURATED SOILS FROM THE SITE, EITHER USE WATER-TIGHT TRUCKS OR DRAIN LOADS ON SITE. (SCHEDULE A.7.D.II.(5))
20. CONTROL PROHIBITED DISCHARGES FROM LEAVING THE CONSTRUCTION SITE, I.E., CONCRETE WASH-OUT, WASTEWATER FROM CLEANOUT OF STUCCO, PAINT AND CURING COMPOUNDS. (SCHEDULE A.6)
21. USE BMPS TO PREVENT OR MINIMIZE STORMWATER EXPOSURE TO POLLUTANTS FROM SPILLS; VEHICLE AND EQUIPMENT FUELING, MAINTENANCE, AND STORAGE; OTHER CLEANING AND MAINTENANCE ACTIVITIES; AND WASTE HANDLING ACTIVITIES. THESE POLLUTANTS INCLUDE FUEL, HYDRAULIC FLUID, AND OTHER OILS FROM VEHICLES AND MACHINERY, AS WELL AS DEBRIS, FERTILIZER, PESTICIDES AND HERBICIDES, PAINTS, SOLVENTS, CURING COMPOUNDS AND ADHESIVES FROM CONSTRUCTION OPERATIONS. (SCHEDULE A.7.E.I.(2))
22. IMPLEMENT THE FOLLOWING BMPS WHEN APPLICABLE: WRITTEN SPILL PREVENTION AND RESPONSE PROCEDURES, EMPLOYEE TRAINING ON SPILL PREVENTION AND PROPER DISPOSAL PROCEDURES, SPILL KITS IN ALL VEHICLES, REGULAR MAINTENANCE SCHEDULE FOR VEHICLES AND MACHINERY, MATERIAL DELIVERY AND STORAGE CONTROLS, TRAINING AND SIGNAGE, AND COVERED STORAGE AREAS FOR WASTE AND SUPPLIES. (SCHEDULE A. 7.E.III.)
23. USE WATER, SOIL-BINDING AGENT OR OTHER DUST CONTROL TECHNIQUE AS NEEDED TO AVOID WIND-BLOWN SOIL. (SCHEDULE A 7.A.IV)
24. THE APPLICATION RATE OF FERTILIZERS USED TO REESTABLISH VEGETATION MUST FOLLOW MANUFACTURER'S RECOMMENDATIONS TO MINIMIZE NUTRIENT RELEASES TO SURFACE WATERS. EXERCISE CAUTION WHEN USING TIME-RELEASE FERTILIZERS WITHIN ANY WATERWAY RIPARIAN ZONE. (SCHEDULE A.9.B.III)
25. IF AN ACTIVE TREATMENT SYSTEM (FOR EXAMPLE, ELECTRO-COAGULATION, FLOCCULATION, FILTRATION, ETC.) FOR SEDIMENT OR OTHER POLLUTANT REMOVAL IS EMPLOYED, SUBMIT AN OPERATION AND MAINTENANCE PLAN (INCLUDING SYSTEM SCHEMATIC, LOCATION OF SYSTEM, LOCATION OF INLET, LOCATION OF DISCHARGE, DISCHARGE DISPERSION DEVICE DESIGN, AND A SAMPLING PLAN AND FREQUENCY) BEFORE OPERATING THE TREATMENT SYSTEM. OBTAIN PLAN APPROVAL BEFORE OPERATING THE TREATMENT SYSTEM. OPERATE AND MAINTAIN THE TREATMENT SYSTEM ACCORDING TO MANUFACTURER'S SPECIFICATIONS. (SCHEDULE A.9.D)
26. TEMPORARILY STABILIZE SOILS AT THE END OF THE SHIFT BEFORE HOLIDAYS AND WEEKENDS, IF NEEDED. THE REGISTRANT IS RESPONSIBLE FOR ENSURING THAT SOILS ARE STABLE DURING RAIN EVENTS AT ALL TIMES OF THE YEAR. (SCHEDULE A 7.B)
27. AS NEEDED BASED ON WEATHER CONDITIONS, AT THE END OF EACH WORKDAY SOIL STOCKPILES MUST BE STABILIZED OR COVERED, OR OTHER BMPS MUST BE IMPLEMENTED TO PREVENT DISCHARGES TO SURFACE WATERS OR CONVEYANCE SYSTEMS LEADING TO SURFACE WATERS. (SCHEDULE A 7.E.II.(2))
28. CONSTRUCTION ACTIVITIES MUST AVOID OR MINIMIZE EXCAVATION AND BARE GROUND ACTIVITIES DURING WET WEATHER. (SCHEDULE A.7.A.I)
29. SEDIMENT FENCE: REMOVE TRAPPED SEDIMENT BEFORE IT REACHES ONE THIRD OF THE ABOVE GROUND FENCE HEIGHT AND BEFORE FENCE REMOVAL. (SCHEDULE A.9.C.I)
30. OTHER SEDIMENT BARRIERS (SUCH AS BIOBAGS): REMOVE SEDIMENT BEFORE IT REACHES TWO INCHES DEPTH ABOVE GROUND HEIGHT AND BEFORE BMP REMOVAL. (SCHEDULE A.9.C.I)
31. CATCH BASINS: CLEAN BEFORE RETENTION CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT. SEDIMENT BASINS AND SEDIMENT TRAPS: REMOVE TRAPPED SEDIMENTS BEFORE DESIGN CAPACITY HAS BEEN REDUCED BY FIFTY PERCENT AND AT COMPLETION OF PROJECT. (SCHEDULE A.9.C.III & IV)
32. WITHIN 24 HOURS, SIGNIFICANT SEDIMENT THAT HAS LEFT THE CONSTRUCTION SITE, MUST BE REMEDIATED. INVESTIGATE THE CAUSE OF THE SEDIMENT RELEASE AND IMPLEMENT STEPS TO PREVENT A RECURRENCE OF THE DISCHARGE WITHIN THE SAME 24 HOURS. ANY IN-STREAMCLEAN-UP OF SEDIMENT SHALL BE PERFORMED ACCORDING TO THE OREGON DIVISION OF STATE LANDS REQUIRED TIMEFRAME. (SCHEDULE A.9.B.I)
33. THE INTENTIONAL WASHING OF SEDIMENT INTO STORM SEWERS OR DRAINAGE WAYS MUST NOT OCCUR. VACUUMING OR DRY SWEEPING AND MATERIAL PICKUP MUST BE USED TO CLEANUP RELEASED SEDIMENTS. (SCHEDULE A.9.B.II)
34. THE ENTIRE SITE MUST BE TEMPORARILY STABILIZED USING VEGETATION OR A HEAVY MULCH LAYER, TEMPORARY SEEDING, OR OTHER METHOD SHOULD ALL CONSTRUCTION ACTIVITIES CEASE FOR 30 DAYS OR MORE. (SCHEDULE A.7.F.I)
35. PROVIDE TEMPORARY STABILIZATION FOR THAT PORTION OF THE SITE WHERE CONSTRUCTION ACTIVITIES CEASE FOR 14 DAYS OR MORE WITH A COVERING OF BLOWN STRAW AND A TACKIFIER, LOOSE STRAW, OR AN ADEQUATE COVERING OF COMPOST MULCH UNTIL WORK RESUMES ON THAT PORTION OF THE SITE. (SCHEDULE A.7.F.II)
36. DO NOT REMOVE TEMPORARY SEDIMENT CONTROL PRACTICES UNTIL PERMANENT VEGETATION OR OTHER COVER OF EXPOSED AREAS IS ESTABLISHED. ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED, ALL TEMPORARY EROSION CONTROLS AND RETAINED SOILS MUST BE REMOVED AND DISPOSED OF PROPERLY, UNLESS DOING SO CONFLICTS WITH LOCAL REQUIREMENTS. (SCHEDULE A.8.C.III(1) AND D.3.C.II AND III)

RH2

REGISTERED PROFESSIONAL ENGINEER
94740
PRELIMINARY
OREGON
MARCH 12, 2019
JUSTIN R. BARRON
EXPIRES: 12/31/2025

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

CIVIL NOTES AND LEGENDS

JOB NO.: 230-093
CLIENT: SCAP
FILENAME: KEYS-P-COV.DWG
SAVE DATE: Jan 8, 2024
PLOT DATE: Jan 9, 2024
ENGINEER: JLC
REVIEWED: JRB

REVISIONS

NO.	DESCRIPTION	DATE	BY	REVIEW
	PRELIMINARY DESIGN			

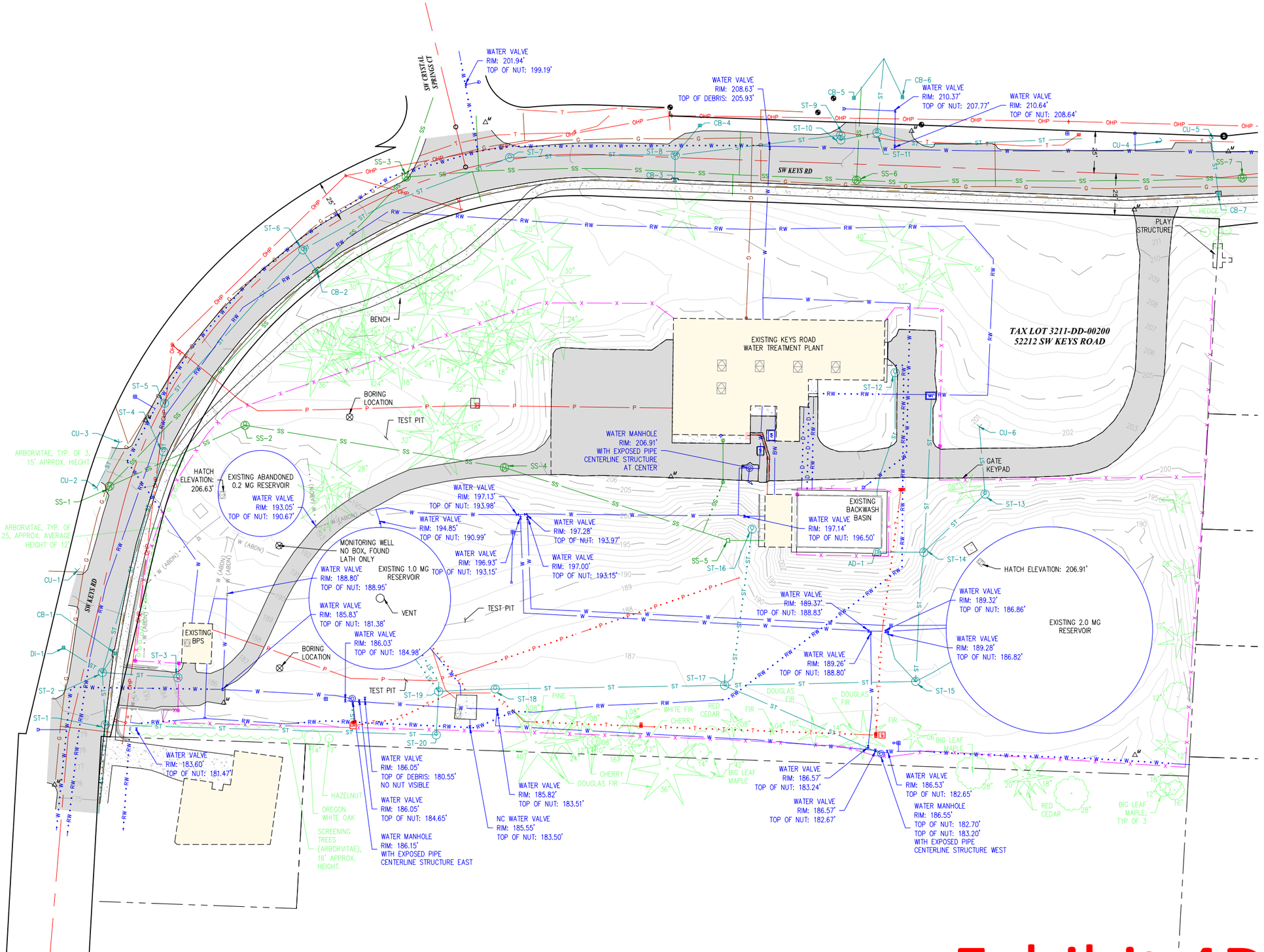
SCALE: SHOWN
0" 1" 2"
DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: C01
SHEET NO.: 03 38

Exhibit 4C

PROPERTY INFO

ADDRESS: 52212 SW KEYS ROAD
SCAPPOOSE, OR 97056
TOWNSHIP/RANGE/SECTION: T3N, R2W, SECTION 11
TAX MAP#: 03 02 11 DD
TAX LOT#: 3211-DD-00200
OWNER NAME: CITY OF SCAPPOOSE
OWNER ADDRESS: 33568 E COLUMBIA AVENUE
SCAPPOOSE, OR 97056
DIMENSIONS: 650 FT x 340 FT (APPROX.)
AREA: 4.70 ACRE
ZONING: PUBLIC LANDS-UTILITY (PL-U)



EXISTING SITE PLAN
1" = 30'

Exhibit 4D

RH2

REGISTERED PROFESSIONAL ENGINEER
94740
OREGON
MARCH 12, 2019
JUSTIN R. BARRON
EXPIRES: 12/31/2025

PRELIMINARY

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

EXISTING SITE PLAN

JOB NO: 230-093
CLIENT: SCAP
FILENAME: KEYS-P-SITEX.DWG
SAVE DATE: Dec 22, 2023
PLOT DATE: Jan 9, 2024
ENGINEER: JLC
REVIEWED: JRB

REVISIONS

NO.	DATE	DESCRIPTION	BY	REVIEW

PRELIMINARY DESIGN

SCALE: SHOWN
0" 1" 2"
DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: C02
SHEET NO.: 04 38

STORM SEWER STRUCTURE TABLE

STRUCTURE NAME	STRUCTURE DETAILS
AD-1	AREA DRAIN RIM: 204.73'
CB-1	RIM: 183.01' IE 12" UNKNOWN (E): 178.47'
CB-2	RIM: 197.62' TOP OF WATER: 193.32' UNABLE TO DIP DUE TO FILTER BLOCKING PIPE
CB-3	RIM: 206.53' TOP OF WATER: 202.57' UNABLE TO DIP DUE TO FILTER BLOCKING PIPE
CB-4	CURB INLET RIM: 207.64' IE 12" CPP(SE): 202.30'
CB-5	RIM: 210.06' IE 12" CPP(NW): 207.08'
CB-6	RIM: 210.12' IE 12" CONC(SW): 207.02'
CB-7	RIM: 213.66' IE 12" PVC(E): 211.31' NO VISIBLE PIPES TO THE WEST
CU-1	IE 8" CONC: 184.10' OTHER END NOT FOUND
CU-2	IE 8" CONC: 187.37'
CU-3	IE 8" CONC: 188.78'
CU-4	IE 10" CMP: 211.79'
CU-5	IE 10" CMP: 212.81'
CU-6	IE 10" CMP: 199.73'
DI-1	DITCH INLET RIM: 181.20' IE 12" UNKNOWN (N): 177.00'
ST-1	RIM: 179.13' IE 12" PVC(W): 173.91' IE 12" CONC(N): 173.72' IE 12" CONC(E): 173.67' CENTERLINE STRUCTURE NORTH
ST-2	RIM: 182.28' IE 36" CMP(N): 174.39' IE 12" CMP (E): 172.25' IE 12" PVC(S): 176.45' UNABLE TO DIP PIPE TO THE WEST CENTERLINE STRUCTURE NORTHWEST NOTE: 12" CPM ALSO HAS A 12" VERTICAL PIPE
ST-3	RIM: 185.04' TOP OF GRAVEL: 174.72' IE 7' CONC(S): 174.72
ST-4	RIM: 191.24' IE 12" PVC(W): 184.07' IE 12" PVC(SE): 183.91' CENTERLINE STRUCTURE SOUTHEAST
ST-5	RIM: 192.88' IE 12" PVC(NW): 186.66' IE 12" PVC(E): 186.51' CENTERLINE STRUCTURE SOUTH
ST-6	RIM: 198.41' IE 12" PVC(N): 193.20' IE 12" PVC(E): 193.16' IE 12" PVC(SE): 192.87' CENTERLINE STRUCTURE EAST
ST-7	RIM: 203.63' IE 12" PVC(N): 198.31' IE 12" PVC(S): 198.12' CENTERLINE STRUCTURE NORTHEAST

STORM SEWER STRUCTURE TABLE

STRUCTURE NAME	STRUCTURE DETAILS
ST-8	RIM: 207.30' IE 12" PVC(N): 201.62' IE 12" PVC(E): 201.60' IE 12" PVC(S): 201.56' IE 12" PVC(NW): 201.54' CENTERLINE STRUCTURE NORTHEAST
ST-9	STORM VAULT RIM: 209.66' TOP VERTICAL 24" STEEL: 205.90' IE 15" CONC(E): 202.43' TOP OF WALL(E): 202.28' TOP OF SHELF(S): 203.96' CENTERLINE STRUCTURE WEST
ST-10	STORM VAULT RIM: 209.69' SAME STRUCTURE AS ST-9
ST-11	RIM: 210.37' IE 12" CPP(N): 207.13' IE 15" CPP(S): 202.13' IE 15" CPP(W): 202.28' CENTERLINE STRUCTURE WEST
ST-12	RIM: 204.02' IE 18" CMP(E): 198.87' IE 18" CMP(S): 198.91' CENTERLINE STRUCTURE EAST
ST-13	RIM: 200.26' IE 12" CPP(W): 193.70' IE 12" CPP(S): 193.67' CENTERLINE STRUCTURE SOUTH
ST-14	RIM: 198.98' IE 12" CPP(NW): 191.28' IE 12" CPP(E): 191.33' IE 12" CPP(S): 195.14' IE 5" PVC(W): 191.45' CENTERLINE STRUCTURE SOUTH
ST-15	RIM: 187.27' TOP OF CAPPED METAL PIPE(N): 178.07' IE 12" STEEL(E): 176.60' IE 12" CPP(S): 176.85' IE 12" CPP(SW): 177.00' IE 12" CPP(W): 180.15' CENTERLINE STRUCTURE WEST
ST-16	RIM: 195.70' IE 8" CONC(SE): 184.56' CENTERLINE STRUCTURE SOUTH
ST-17	RIM: 186.84' IE 12" CPP(N): 176.08' IE 6" CPP(NE): 175.77' IE 12" CPP(S): 175.94' IE 8" CONC(W): 180.08' CENTERLINE STRUCTURE WEST
ST-18	RIM: 185.63' IE 12" CONC(N): 175.17' IE 12" CONC(N): 181.26' IE 12" CONC(S): 174.90' NO VISIBLE PIPES GOING WEST CENTERLINE STRUCTURE EAST
ST-19	RIM: 185.84' IE UNKNOW(E): 174.98' IE 6" CONC(S): 183.30' IE 6" CONC(SW): 175.13' IE 12" UNKNOWN(W): 177.02' CENTERLINE STRUCTURE SOUTH
ST-20	RIM: 185.01' IE 12" CONC(W): 174.86' IE 12" CONC(S): 174.71' CENTERLINE STRUCTURE EAST

SANITARY SEWER STRUCTURE TABLE

STRUCTURE NAME	STRUCTURE DETAILS
SS-1	RIM: 189.38' IE 12" CONC(N): 181.20' IE 12" UNKNOWN(E): 181.07' IE 4" CONC(W): 181.19' IE 8" CONC(NW): 181.19' CENTERLINE STRUCTURE NORTH
SS-2	RIM: 196.83' IE 10" CONC(N): 181.88' IE 10" CONC(S): 181.88' CENTERLINE STRUCTURE WEST
SS-3	RIM: 201.23' IE 8" UNKNOWN(N): 192.19' IE 8" UNKNOWN(SE): 191.61' IE 8" PVC(NW): 193.92' CENTERLINE STRUCTURE NORTH
SS-4	RIM: 203.14' IE 10" CONC(N): 183.84' IE 10" CONC(S): 183.74' CENTERLINE STRUCTURE EAST
SS-5	SEWER STRUCTURE RIM: 189.47' IE 6" STEEL(N): 187.77' IE 8" CONC(S): 185.58'
SS-6	RIM: 209.93' IE 8" CONC(N): 196.39' IE 8" CONC(S): 196.33' IE 8" CONC(W): 203.06' CENTERLINE STRUCTURE SOUTHWEST
SS-7	RIM: 214.16' IE 8" CONC(N): 200.36' IE 8" CONC(S): 189.99' CENTERLINE STRUCTURE EAST

RH2

REGISTERED PROFESSIONAL ENGINEER
94740
OREGON
MARCH 12, 2019
JUSTIN R. BARRON
PRELIMINARY
EXPIRES: 12/31/2025

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

STORM AND SEWER STRUCTURE TABLES

JOB NO.: 230-093
CLIENT: SCAP
FILENAME: KEYS-P-SITEX.DWG
SAVE DATE: Dec 22, 2023
PLOT DATE: Jan 9, 2024
ENGINEER: JLC
REVIEWED: JRB

REVISIONS

NO.	DATE	DESCRIPTION	BY	REVIEW

PRELIMINARY DESIGN

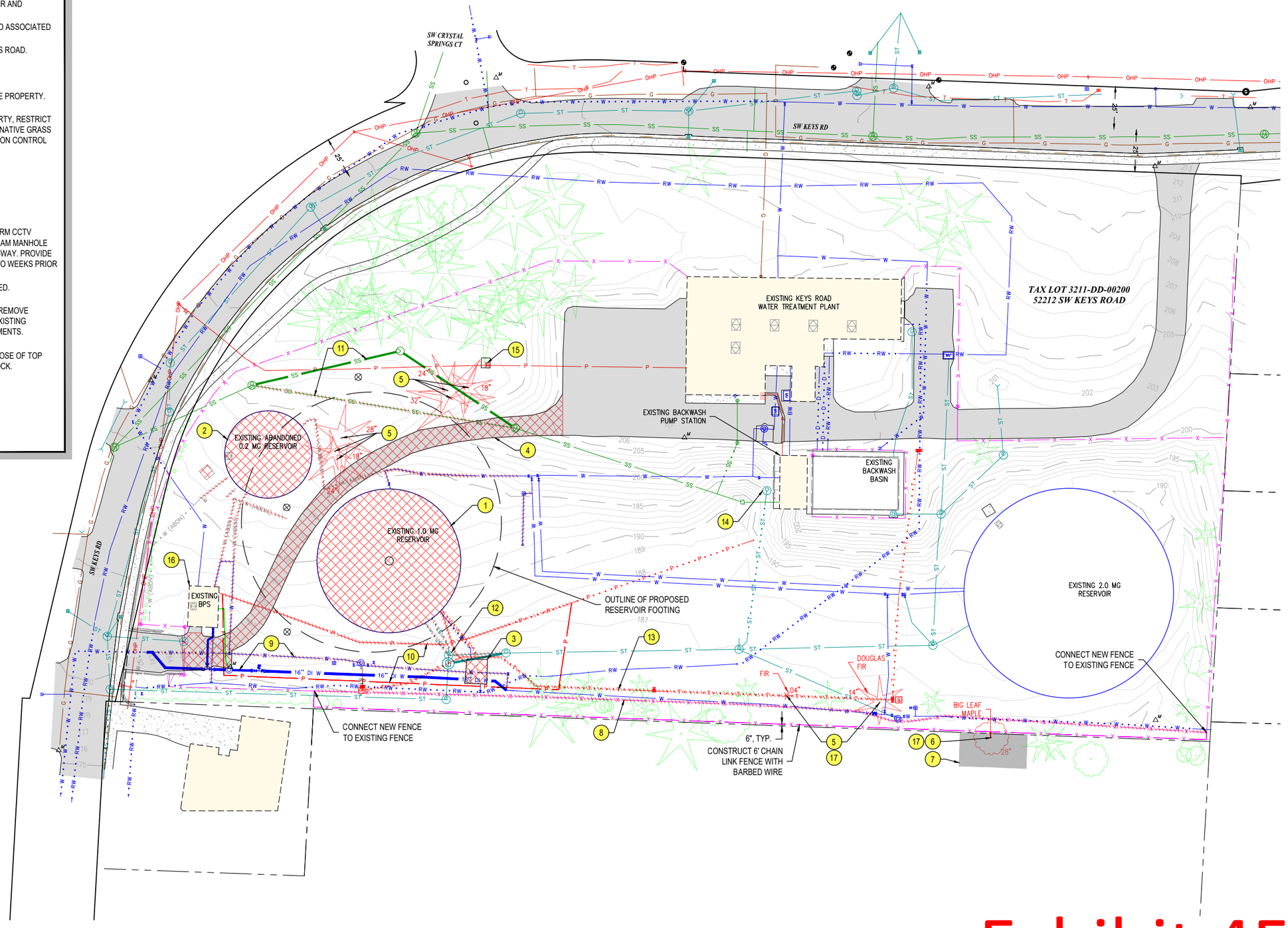
SCALE: SHOWN
0" 1" 2"
DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: C03
SHEET NO.: 05 38

Exhibit 4E

DEMOLITION KEY NOTES

1. REMOVE AND DISPOSE OF EXISTING 1.0 MG RESERVOIR AND ASSOCIATED APPURTENANCES AND PIPING.
2. REMOVE AND DISPOSE OF EXISTING 0.2 MG RESERVOIR AND ASSOCIATED APPURTENANCES AND PIPING.
3. REMOVE AND DISPOSE OF EXISTING VALVE VAULT AND ASSOCIATED APPURTENANCES AND PIPING.
4. REMOVE AND DISPOSE OF EXISTING ASPHALT ACCESS ROAD.
5. REMOVE AND DISPOSE OF EXISTING TREES.
6. REMOVE AND DISPOSE OF EXISTING TREE ON PRIVATE PROPERTY.
7. PROPOSED TEMPORARY ACCESS TO PRIVATE PROPERTY, RESTRICT USE OF ACCESS TO TREE REMOVAL ACTIVITIES. SOW NATIVE GRASS SEED MIX AND DISTRIBUTE STRAW MULCH FOR EROSION CONTROL WITHIN 48-HOURS OF GROUND DISTURBANCE.
8. REMOVE AND DISPOSE OF EXITING FENCE.
9. EXISTING WATER MAIN TO BE RELOCATED.
10. EXISTING POWER TO BPS TO BE RELOCATED.
11. EXISTING SANITARY SEWER TO BE REPLACED. PERFORM CCTV INSPECTION OF EXISTING SEWER LINE FROM UPSTREAM MANHOLE TO EXISTING MANHOLE WITHIN KEYS ROAD RIGHT-OF-WAY. PROVIDE CITY INSPECTION VIDEO FOR REVIEW MINIMUM OF TWO WEEKS PRIOR TO PERFORMING SEWER RELOCATION.
12. EXISTING STORM MH TO BE REPLACED AND RELOCATED.
13. EXISTING TELEMETRY TO BE REMOVED/ABANDONED. REMOVE EXISTING CONDUCTORS. REMOVE AND DISPOSE OF EXISTING CONDUITS AS NECESSARY FOR PROPOSED IMPROVEMENTS. ABANDON IN PLACE CONDUITS REMAINING.
14. EXISTING STORM MH ABANDONED. REMOVE AND DISPOSE OF TOP SECTIONS AND FILL BOTTOM SECTION WITH DRAIN ROCK.
15. EXISTING TRANSFORMER TO BE PROTECTED.
16. EXISTING BPS TO BE PROTECTED.
17. GRIND STUMP AND ROOTS MIN 6" BELOW GRADE.



DEMOLITION PLAN
1" = 30'

Exhibit 4F

RH2

REGISTERED PROFESSIONAL ENGINEER
94740
PRELIMINARY
OREGON
MARCH 12, 2019
JUSTIN R. BARRON
EXPIRES: 12/31/2025

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

DEMOLITION PLAN

PRELIMINARY DESIGN

REVISIONS

NO.	DESCRIPTION	DATE	BY	REVIEW

JOB NO.: 230-093
CLIENT: SCAP
FILENAME: KEYS-P-DEMOP.DWG
SAVE DATE: Jan 5, 2024
PLOT DATE: Jan 9, 2024
ENGINEER: ALC
REVIEWED: JRB

SCALE: SHOWN
2" 1" 2"
DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: C04
SHEET NO.: 06 38

WATER RELOCATION KEY NOTES

01 N: 769708.72 E: 7592202.35, PROVIDE:
(1) - 16" BUTTERFLY VALVE (RJxRJ), CUT-IN VALVE

02 N: 769285.93 E: 7592174.95, PROVIDE:
CONNECTION TO EXISTING — 1 / C19

03 N: 769310.85 E: 7592175.79, PROVIDE:
(1) - 16" x 12" DI TEE (FLxFL)
(1) - 16" BUTTERFLY VALVE (FLxRJ)
(2) - 12" GATE VALVE (FLxRJ)
(1) - 16" x 12" DI REDUCER (FLxFL)

04 N: 769323.98 E: 7592176.23, PROVIDE:
METER MANHOLE — X / CXX

05 N: 769341.9 E: 7592176.83, PROVIDE:
(1) - 16" DI TEE (FLxFL)
(2) - 16" BUTTERFLY VALVE (FLxRJ)
(1) - 16" DI PLUG
(1) - 16" x 12" DI REDUCER (FLxFL)
(1) - 12" GATE VALVE (FLxRJ)

06 N: 769482.63 E: 7592182.91, PROVIDE:
CONNECTION TO EXISTING — 2 / C19

07 N: 769311.43 E: 7592158.3, PROVIDE:
CONNECTION TO EXISTING — 3 / C19

SEWER RELOCATION KEY NOTES

01 N: 769337.67 E: 7592006.61, PROVIDE:
CONNECTION TO EXISTING MH

02 PROVIDE APPROX 91' OF 12" PVC SS PIPE

03 N: 769425.96 E: 7591986.19, PROVIDE:
SANITARY SEWER MANHOLE

04 PROVIDE APPROX 83' OF 12" PVC SS PIPE

05 N: 769494.68 E: 7592032.16, PROVIDE:
CONNECTION TO EXISTING MH

STORM RELOCATION KEY NOTES

01 N: 769337.67 E: 7592006.61, PROVIDE:
72" ST DETENTION MH W/ ORIFICE PLATE.
SEE DWG NOS. C14 AND C15.

02 PROVIDE APPROX 30 LF OF 12" PVC ST PIPE

03 CONNECTION TO EXISTING MH ST-18

SW KEYS RD

OUTLINE OF PROPOSED RESERVOIR FOOTING

DOUGLAS FIR 04"

DOUGLAS FIR 14"

BIG LEAF MAPLE 28"

NOTE: FOR UTILITY RELOCATION PROFILES, SEE DWG C06

UTILITY RELOCATION PLAN
1" = 20'

Exhibit 4G

RH2

REGISTERED PROFESSIONAL ENGINEER
94740
OREGON
MARCH 12, 2019
JUSTIN R. BARROW
PRELIMINARY
EXPIRES: 12/31/2025

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

UTILITY RELOCATION PLAN

JOB NO.: 230-093
CLIENT: SCAP
FILENAME: KEYS-P-UTIL.DWG
SAVE DATE: Jan 9, 2024
PLOT DATE: Jan 9, 2024
ENGINEER: JLC
REVIEWED: JRB

REVISIONS

NO.	DESCRIPTION	DATE	BY	REVIEW
	PRELIMINARY DESIGN			

SCALE: SHOWN
2" 1" 2"
DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: C05
SHEET NO.: 07 / 38

CENTER OF PROPOSED RESERVOIR
N: 769404.5
E: 7592092.22

3' FROM CL, TYP EACH WAY

PROVIDE TEMPORARY SUPPORT FOR EXPOSED CONDUITS DURING CONSTRUCTION

GEOPIERS @ 6' O.C., TYP.

OUTLINE OF PROPOSED RESERVOIR FOOTING

TEMPORARY RETAINING WALL

SILT FENCE

CONSTRUCTION ENTRANCE

CONSTRUCTION STAGING AREA

SW KEYS RD

B C08 — 1 — 20

C C09 — 1 — 20

A C08 — 1 — 20

-1- -00

-1- -20

CONSTRUCTION GRADING AND TEMPORARY EROSION AND SEDIMENT CONTROL PLAN

1" = 20'

NTE: ADD NOTE ABOUT CONTRACTOR DESIGN OF TEMPORARY RETAINING WALL AND SITE DEWATERING

Exhibit 4H

RH2

REGISTERED PROFESSIONAL ENGINEER
94740
OREGON
MARCH 12, 2019
JUSTIN R. BARRON
EXPIRES: 12/31/2025

PRELIMINARY

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

CONSTRUCTION GRADING AND TESC PLAN

JOB NO.: 230-093
CLIENT: SCAP
FILENAME: KEYS-P-GRADC.DWG
DATE DATE: Jan 8, 2024
PLOT DATE: Jan 9, 2024
DESIGNED: JLC
REVIEWED: JRB

REVISIONS

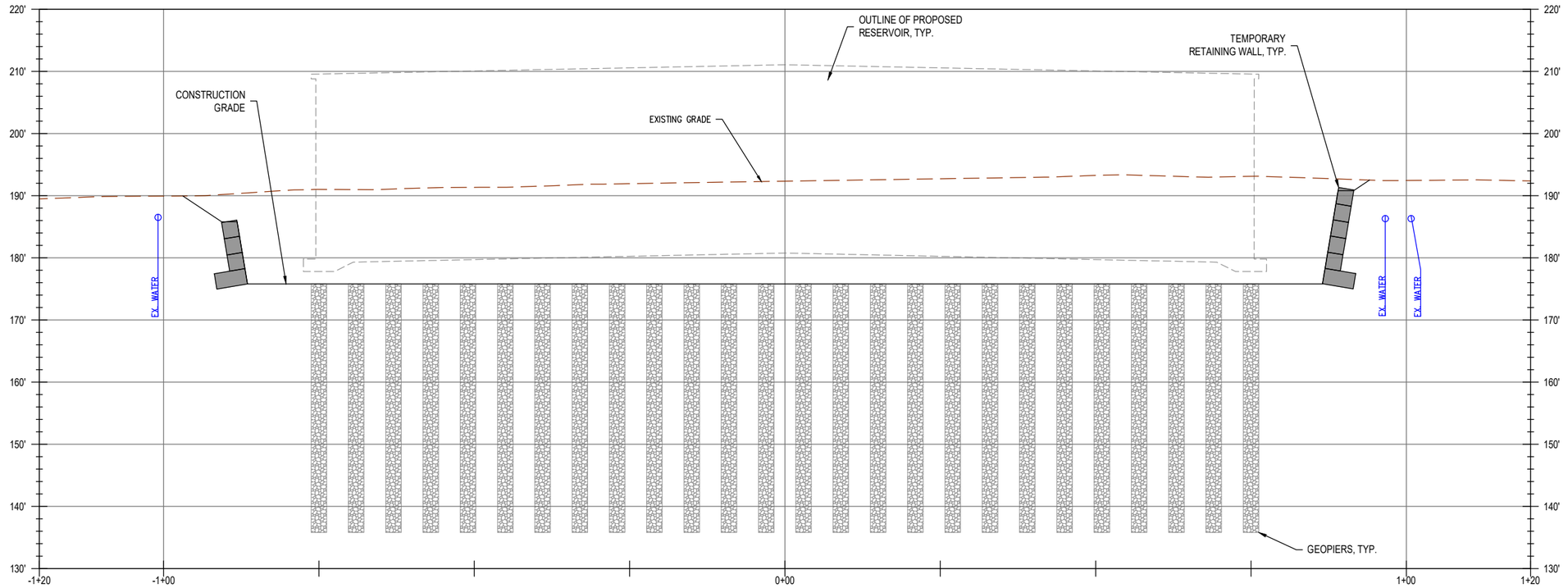
NO.	DATE	DESCRIPTION	BY	REVIEW
		PRELIMINARY DESIGN		

SCALE: SHOWN

2" 1" 2"

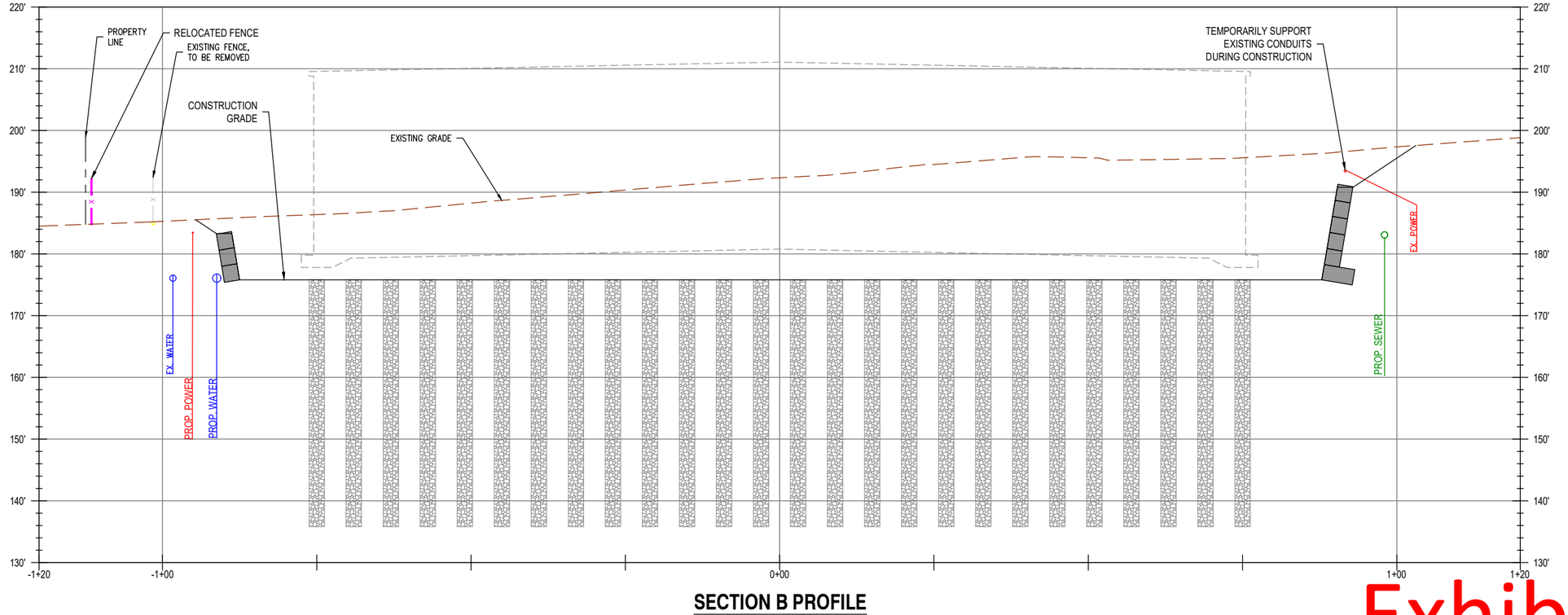
DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: C07
SHEET NO.: 09



SECTION A PROFILE

H: 1" = 10', V: 1" = 10'



SECTION B PROFILE

H: 1" = 10', V: 1" = 10'

RH2

REGISTERED PROFESSIONAL ENGINEER
94740
OREGON
MARCH 12, 2019
JUSTIN R. BARRON
PRELIMINARY
EXPIRES: 12/31/2025

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

CONSTRUCTION GRADING SECTIONS 1

JOB NO.: 230-093
CLIENT: SCAP
FILENAME: KEYS-P-GRADC.DWG
DATE: DESCRIPTION
NO. BY REVIEW

REVISIONS

PRELIMINARY DESIGN

DESIGNED: JLC
DRAWN: JRB
CHECKED: JRB
DATE: Jan 8, 2024
PLOT DATE: Jan 9, 2024

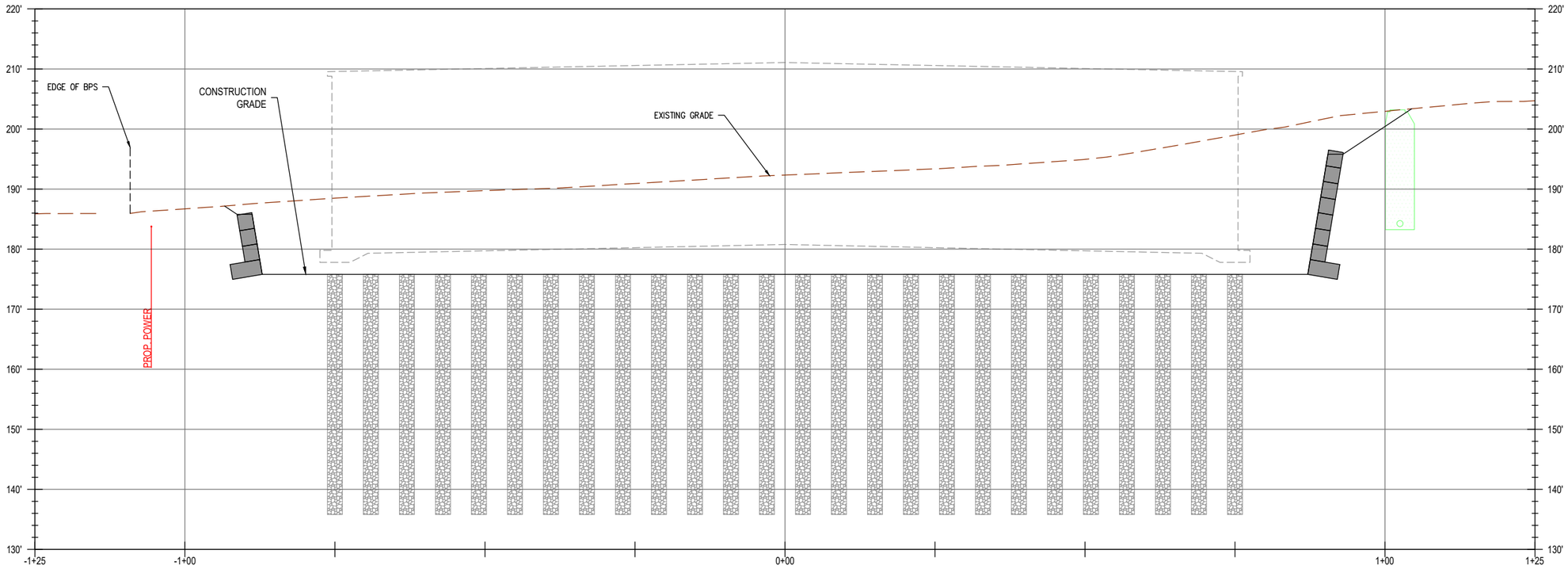
SCALE: SHOWN

3" 1" 2"

DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: C08
SHEET NO.: 10 38

Exhibit 4I



SECTION C PROFILE

H: 1" = 10', V: 1" = 10'

RH2

REGISTERED PROFESSIONAL ENGINEER
94740
OREGON
MARCH 12, 2019
JUSTIN R. BARRON
PRELIMINARY
EXPIRES: 12/31/2025

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

CONSTRUCTION GRADING SECTIONS 2

JOB NO.: 230-093
CLIENT: SCAP
FILENAME: KEYS-P-GRADC.DWG
DRAWN: JLC
REVIEWED: JRB
DATE: Jan 8, 2024
PLOT DATE: Jan 9, 2024

REVISIONS

NO.	DATE	DESCRIPTION	BY	REVIEW

PRELIMINARY DESIGN

SCALE: SHOWN

3" 1" 2"

DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: C09
SHEET NO.: 11 38

Exhibit 4J

1 EXISTING SLOPES GREATER THAN 20%.

PROPOSED 3 MG RESERVOIR

ROCKERY WALL

RETAINING WALL

SW KEYS RD

EXISTING SLOPE GREATER THAN 20% PROPOSED TO BE REDUCED

EXISTING SLOPE GREATER THAN 20% PROPOSED TO BE REDUCED

PROPOSED GRADING PLAN

1" = 20'

Exhibit 4K

RH2

REGISTERED PROFESSIONAL ENGINEER
94740
OREGON
MARCH 12, 2019
JUSTIN R. BARROW

PRELIMINARY

EXPIRES: 12/31/2025

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

PROPOSED GRADING PLAN

REVISIONS

NO.	DESCRIPTION	DATE	BY
	PRELIMINARY DESIGN		REVIEW

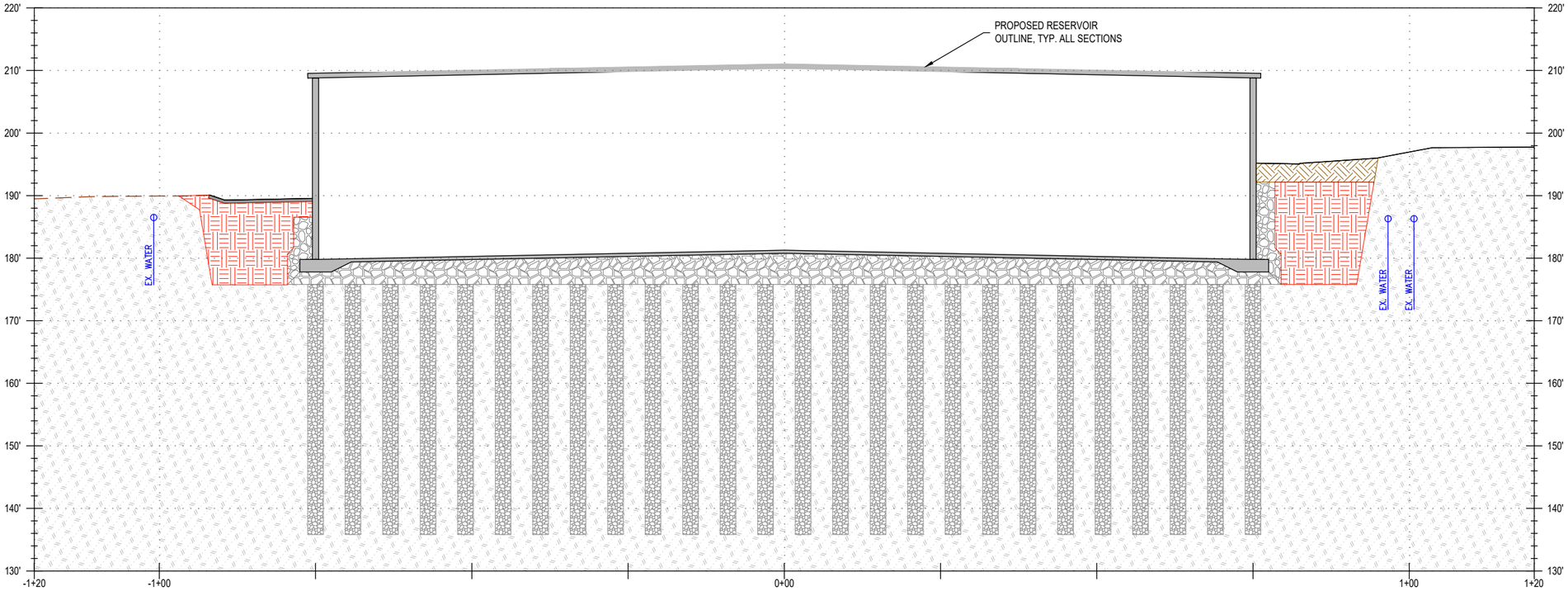
JOB NO.: 230-093
CLIENT: SCAP
FILENAME: KEYS-P-GRADP.DWG
SAVE DATE: Jan 8, 2024
PLOT DATE: Jan 9, 2024
ENGINEER: JLC
REVIEWED: JRB

SCALE: SHOWN

0" 1" 2"

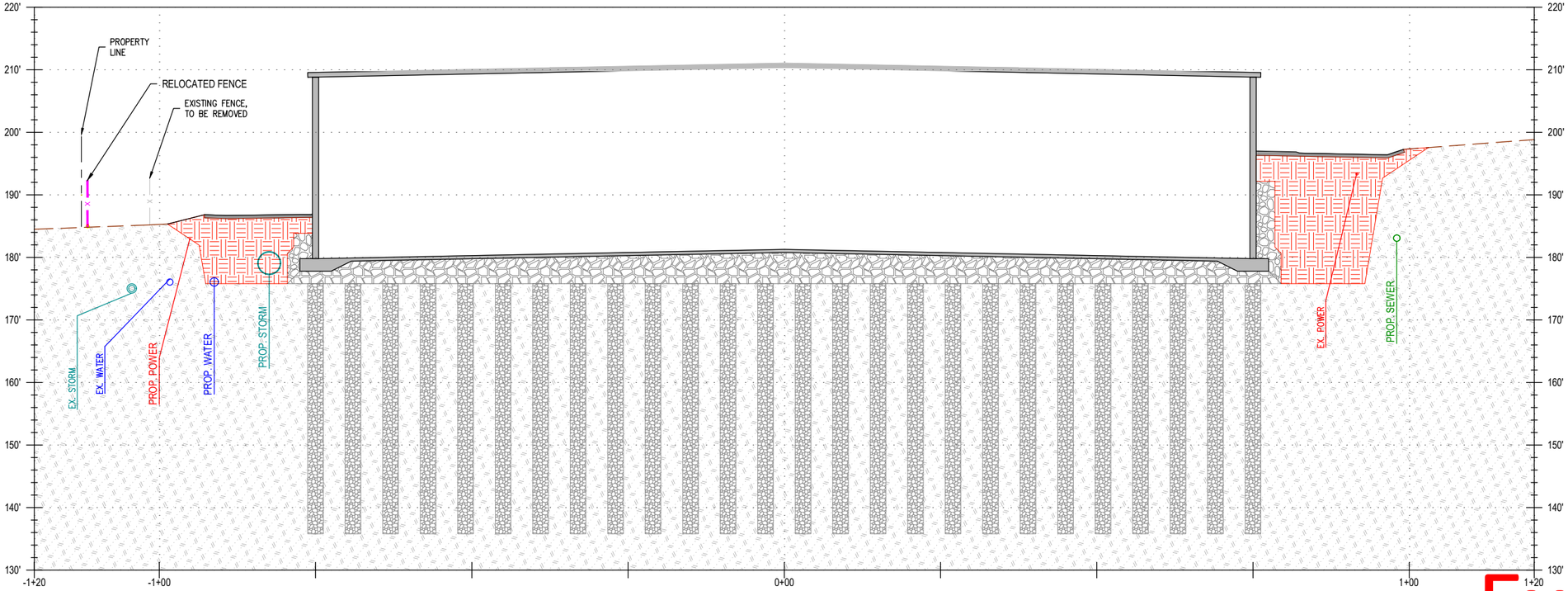
DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: C10
SHEET NO.: 12



SECTION D PROFILE

H: 1" = 10', V: 1" = 10'



SECTION E PROFILE

H: 1" = 10', V: 1" = 10'

GENERAL NOTES

1. THESE SECTIONS ARE CONCEPTUAL IN NATURE AND ARE INTENDED TO PROVIDE THE READER WITH A GENERAL UNDERSTANDING OF THE INTENTION OF THE ENGINEER IN TERMS OF THE CONSTRUCTION STAGING AND FINAL SITE LAYOUT.
2. WALL DETAILS SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY AND SHOULD NOT BE CONSIDERED DESIGN GUIDELINES OR CRITERIA.

SECTION LEGEND

- SELECT NATIVE BACKFILL
- UNDISTURBED NATIVE
- IMPORTED CRUSHED ROCK MATERIALS
- PIT-RUN GRAVEL OR STRUCTURAL FILL

RH2

REGISTERED PROFESSIONAL ENGINEER
94740
OREGON
MARCH 12, 2019
JUSTIN R. BARROW
PRELIMINARY
EXPIRES: 12/31/2025

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

PROPOSED SITE GRADING SECTIONS 1

JOB NO.: 230-093
CLIENT: SCAP
FILENAME: KEYS-P-SECTIONS.DWG
SAVE DATE: Jan 9, 2024
PLOT DATE: Jan 9, 2024
ENGINEER: ALC
REVIEWED: JRB

REVISIONS

NO.	DESCRIPTION	DATE	BY	REVIEW

PRELIMINARY DESIGN

SCALE: SHOWN

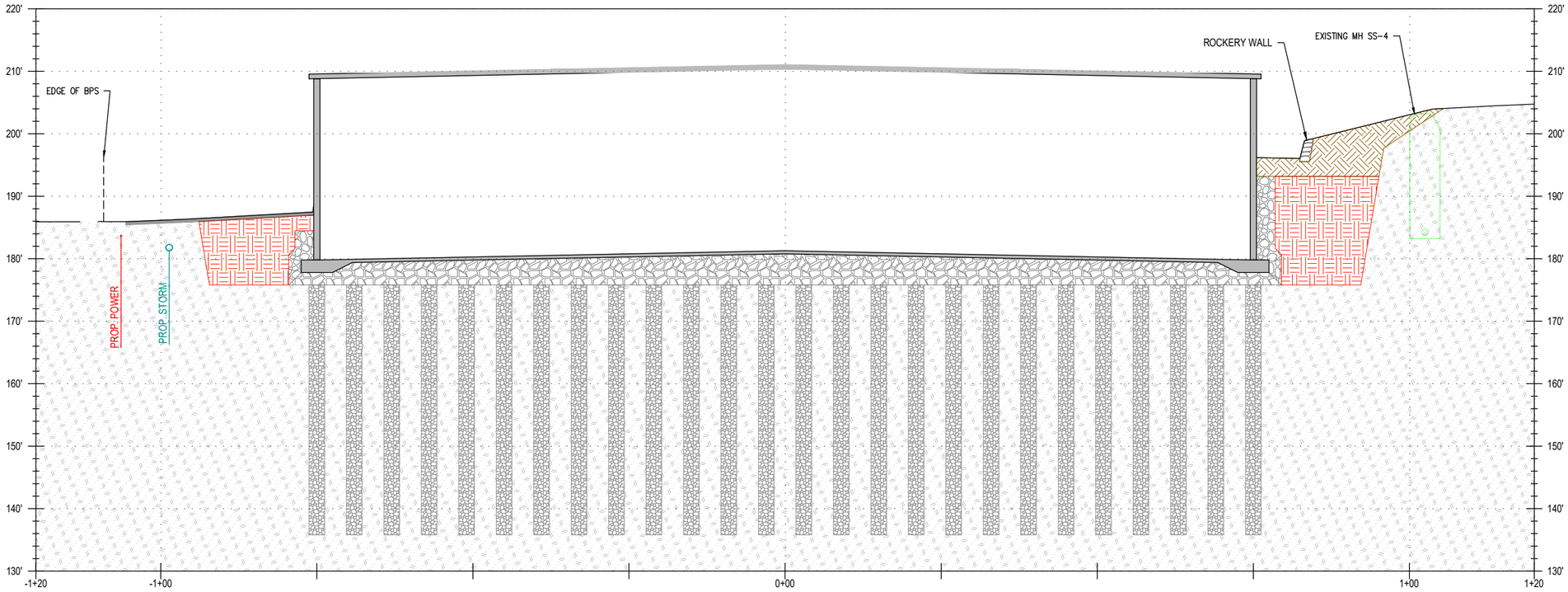
2" 1" 2"

DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: C11

SHEET NO.: 13 38

Exhibit 4L



SECTION F PROFILE

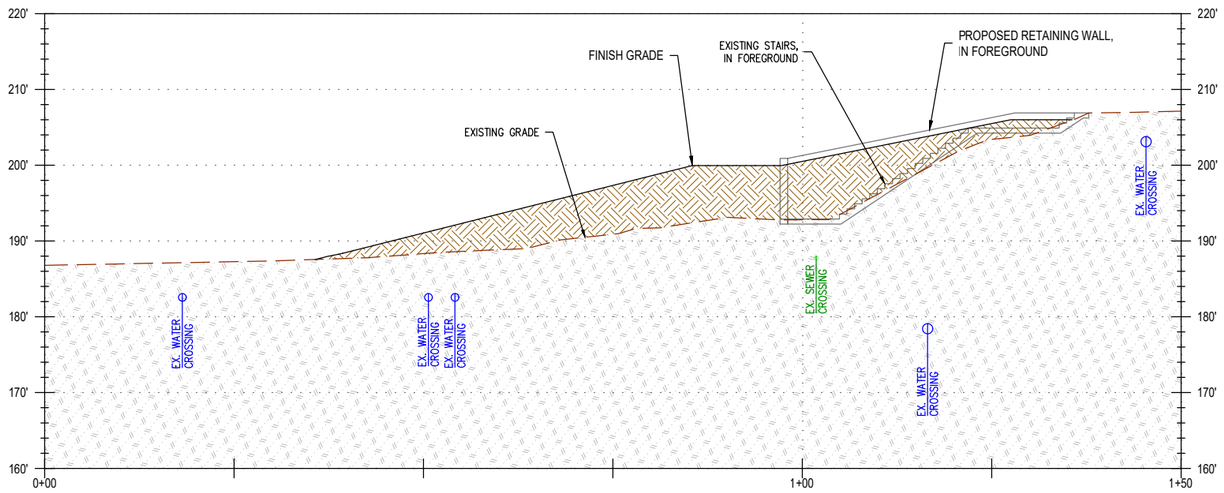
H: 1" = 10', V: 1" = 10'

GENERAL NOTES

1. THESE SECTIONS ARE CONCEPTUAL IN NATURE AND ARE INTENDED TO PROVIDE THE READER WITH A GENERAL UNDERSTANDING OF THE INTENTION OF THE ENGINEER IN TERMS OF THE CONSTRUCTION STAGING AND FINAL SITE LAYOUT.
2. WALL DETAILS SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY AND SHOULD NOT BE CONSIDERED DESIGN GUIDELINES OR CRITERIA.

SECTION LEGEND

- SELECT NATIVE BACKFILL
- UNDISTURBED NATIVE
- IMPORTED CRUSHED ROCK MATERIALS
- PIT-RUN GRAVEL OR STRUCTURAL FILL



SECTION G PROFILE

H: 1" = 10', V: 1" = 10'

RH2

REGISTERED PROFESSIONAL ENGINEER
94740
OREGON
MARCH 12, 2019
JUSTIN R. BARRON
PRELIMINARY
EXPIRES: 12/31/2025

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

PROPOSED SITE GRADING SECTION 2

JOB NO.: 230-093
CLIENT: SCAP
FILENAME: KEYS-P-SECTIONS.DWG
DRAWN DATE: Jan 9, 2024
PLOT DATE: Jan 9, 2024
ENGINEER: JLC
REVIEWED: JRB

REVISIONS

NO.	DESCRIPTION	DATE	BY	REVIEW

PRELIMINARY DESIGN

SCALE: SHOWN

2" 1" 2"

DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: C12
SHEET NO.: 14

Exhibit 4M

WATER KEY NOTES

01 N: 769483.83 E: 7592038.05, PROVIDE: (1) - 16" DI 90° BEND (RJxRJ)

02 N: 769501.65 E: 7592060.67, PROVIDE: CONNECTION TO EXISTING — 4 / C20

03 N: 769532.57 E: 7592060.64, PROVIDE: (1) - 16" DI 22-1/2° BEND (RJxRJ)

04 N: 769600.68 E: 7592032.43, PROVIDE: (1) - 16" DI 22-1/2° BEND (RJxRJ)

05 N: 769636.83 E: 7592032.43, PROVIDE: CONNECTION TO EXISTING — 5 / C20

SEE DWG NO. C05

RESTORE AC PAVING (DETAIL XX/DWG XX)

SEE NORTH END WATER PROFILE, DWG NO. C15

PROPOSED 3 MG RESERVOIR

16" INLET

ROOF VENT

SEE XX PROFILE, DWG NO. XX

12" DRAIN, SEE DWG NO. M02

12" OVERFLOW, SEE DWG NO. M02

ACCESS HATCH

16" OUTLET, SEE DWG NO. M02

CONNECT TO 16" WATER

RESERVOIR FOOTING DRAIN (DETAIL XX/DWG XX), ROUTE TO OVERFLOW MANHOLE

SW KEYS RD

PROPOSED ROW DEDICATION

SEE DWG NO. C05

STORM WATER IMPROVEMENTS, SEE DWG NO. C14

205

200

195

190

100'

132'

50'

0'

16" DI W

16" DI W

16" DI W

16" DI W

16" DI W

PROPOSED UTILITY PLAN

1" = 20'

Exhibit 4N

RH2

REGISTERED PROFESSIONAL ENGINEER
94740
OREGON
MARCH 12, 2019
JUSTIN R. BARROW
EXPIRES: 12/31/2025

PRELIMINARY

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

PROPOSED UTILITY PLAN

JOB NO.: 230-093
CLIENT: SCAP
FILENAME: KEYS-P-SITEP.DWG
SAVE DATE: Jan 9, 2024
PLOT DATE: Jan 9, 2024
ENGINEER: JLC
REVIEWED: JRB

REVISIONS

NO.	DESCRIPTION	DATE	BY
	PRELIMINARY DESIGN REVIEW		

SCALE: SHOWN

0" 1" 2"

DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: C13

SHEET NO.: 15

PROPOSED THICKENED EDGE

PROPOSED 3 MG RESERVOIR

PROPOSED AREA DRAIN W/ ORIFICE PLATE

SW KEYS RD

PROPOSED CATCH BASIN

PROPOSED 12" STORM PIPE

PROPOSED 12" STORM PIPE, SEE DWG NO. C05

PROPOSED STORM DETENTION MH W/ GRATED TOP

PROPOSED 42" STORM DETENTION PIPE

PROPOSED STORM DETENTION MH W/ ORIFICE PLATE

NOTE: SEE DWG NO. C15 FOR PROPOSED STORM PROFILE

PROPOSED DRAINAGE PLAN

1" = 20'

Exhibit 40

RH2

REGISTERED PROFESSIONAL ENGINEER
94740
OREGON
MARCH 12, 2019
JUSTIN R. BARRON
EXPIRES: 12/31/2025
PRELIMINARY

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

PROPOSED DRAINAGE PLAN

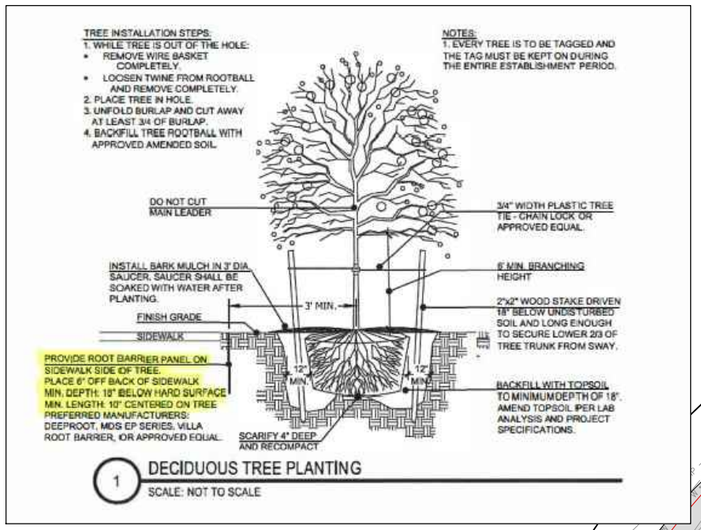
REVISIONS

NO.	DESCRIPTION	DATE	BY	REVIEW
	PRELIMINARY DESIGN			

JOB NO.: 230-093
CLIENT: SCAP
FILENAME: KEYS-P-STORMP.DWG
SAVE DATE: Jan 9, 2024
PLOT DATE: Jan 9, 2024
ENGINEER: JLC
REVIEWED: JRB

SCALE: SHOWN
0" 1" 2"
DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: C14
SHEET NO.: 16 38



1 DECIDUOUS TREE PLANTING

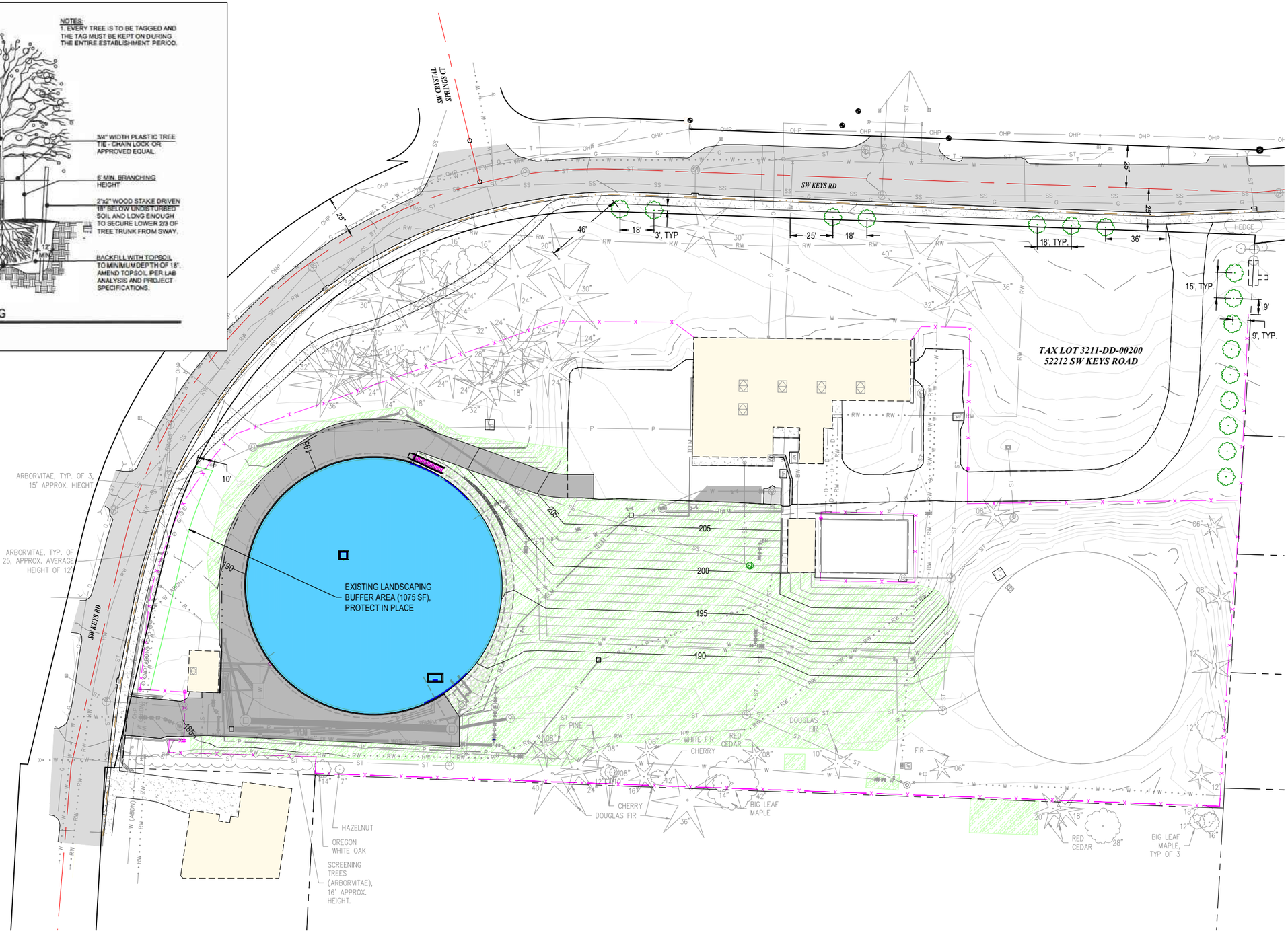
SCALE: NOT TO SCALE

EXISTING LANDSCAPING

- DECIDUOUS TREE WITH DIAMETER AT BREAST HEIGHT
- CONIFEROUS TREE WITH DIAMETER AT BREAST HEIGHT
- ARBORVITAE TREE
- SCREENING ARBORVITAE TREES

PROPOSED LANDSCAPING

- GRASS SEED (NATIVE SEED MIX SOWN AT MIN 4 LB PER 1,000 SF)
- GOLDEN DESERT ASH, 2" MIN CALIPER AT 6" ABOVE THE GROUND, 10' MIN HEIGHT (18' WIDTH AT MATURITY). PLANT PER DETAIL 1, THIS SHEET.



LANDSCAPING PLAN

1" = 30'

Exhibit 4P

RH2

REGISTERED PROFESSIONAL ENGINEER
94740
OREGON
MARCH 12, 2019
JUSTIN R. BARRON
EXPIRES: 12/31/2025
PRELIMINARY

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

LANDSCAPING PLAN

JOB NO.:	230-093
CLIENT:	SCAP
FILENAME:	KEYSP-LANDP.DWG
DRAWN DATE:	Mar 27, 2024
PLOT DATE:	Mar 27, 2024
ENGINEER:	JLC
REVIEWED:	JRB

REVISIONS

NO.	DATE	DESCRIPTION	BY	REVIEW
		60% DESIGN		

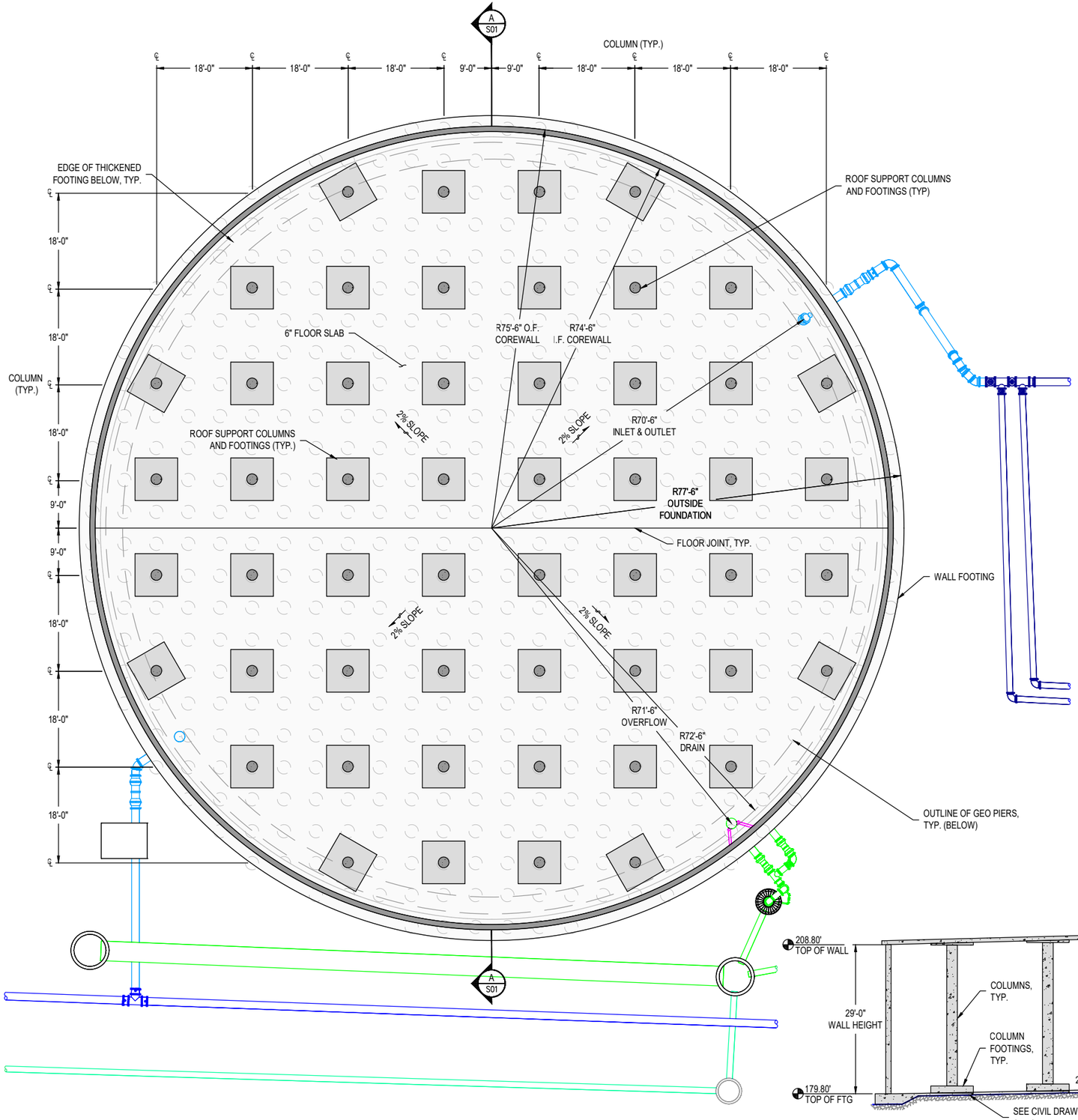
SCALE: SHOWN

2" 1" 2"

DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

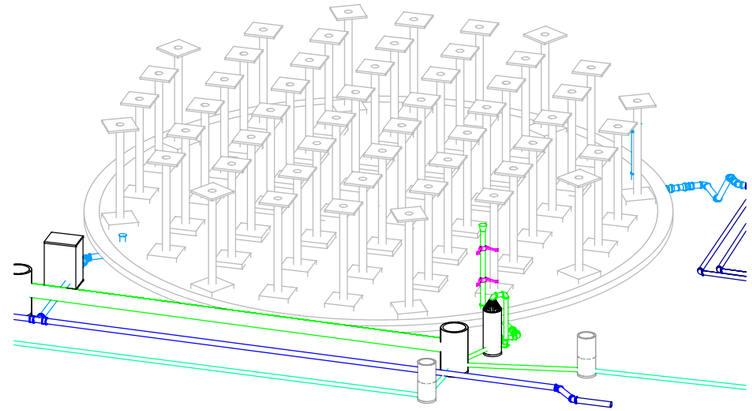
DWG NO.: C18

SHEET NO.: 20



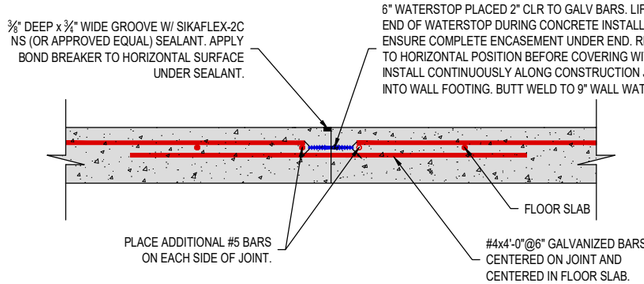
FOUNDATION AND FLOOR PLAN

3/32" = 1'-0"



FLOOR & COLUMN OBLIQUE

NOT TO SCALE

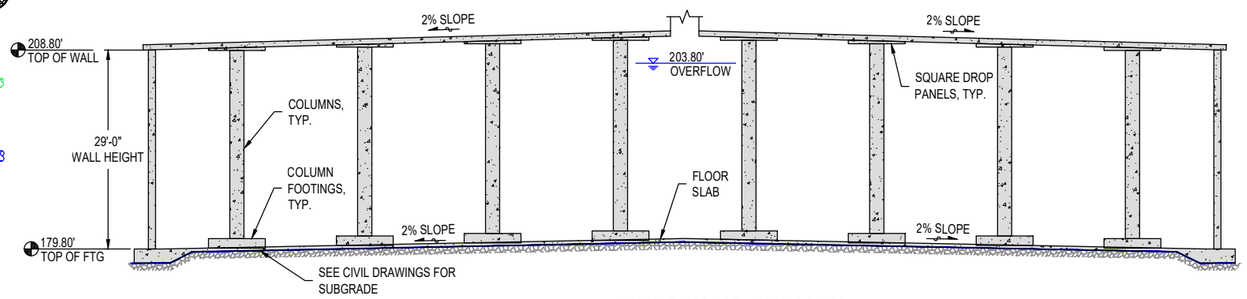


FLOOR JOINT DETAIL

1 1/2" = 1'-0" (1/S01)

PRESTRESSING WALL ANCHOR ASSEMBLY NOTES:

1. WALL ANCHOR ASSEMBLY SHALL BE DESIGNED, FABRICATED, AND SUPPLIED BY THE PRESTRESSING CONTRACTOR.
2. VERTICAL SPACING OF WALL ANCHORS SHALL BE DETERMINED BY THE PRESTRESSING CONTRACTOR
3. FINAL LOCATION OF WALL ANCHOR ASSEMBLY SHALL BE DETERMINED BY THE PRESTRESSING CONTRACTOR AND SHALL BE 12 FEET (MIN) FROM A VERTICAL WALL JOINT AND CENTERED BETWEEN VERTICAL THREADBARS.



RESERVOIR SECTION

3/32" = 1'-0" (A/S01)

RH2

STRUCTURAL REGISTERED PROFESSIONAL ENGINEER 87075 OREGON MAY 13, 2015 JON MARSHALL COMER

PRELIMINARY

EXPIRES: 12/31/2023

CITY OF SCAPPOOSE

KEYS ROAD RESERVOIR

RESERVOIR FLOOR AND FOUNDATION PLAN

REVISIONS			
NO.	DESCRIPTION	BY	REVIEW

PRELIMINARY DESIGN

JOB NO: 230-093
CLIENT: SCAP
FILENAME: KEYS-P-S01.DWG
DATE: Jan 8, 2024
PLOT DATE: Jan 9, 2024
ENGINEER: JLC
REVIEWED: JRB

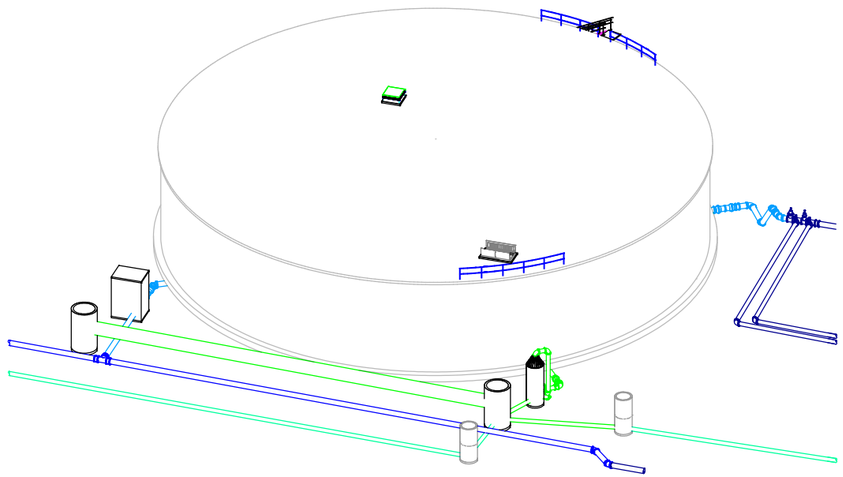
SCALE: SHOWN

0" 1" 2"

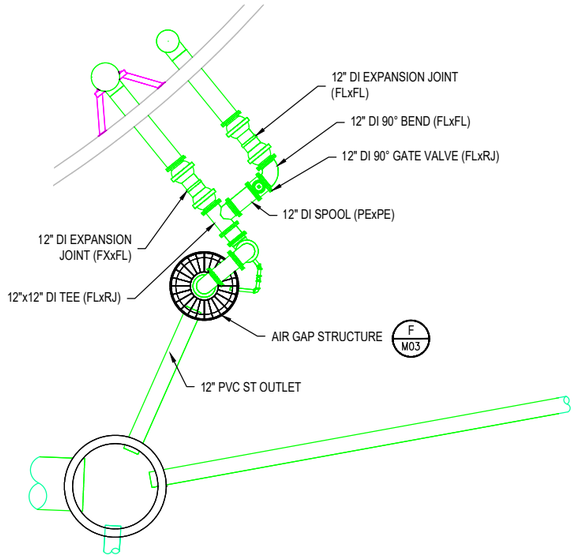
DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: S01

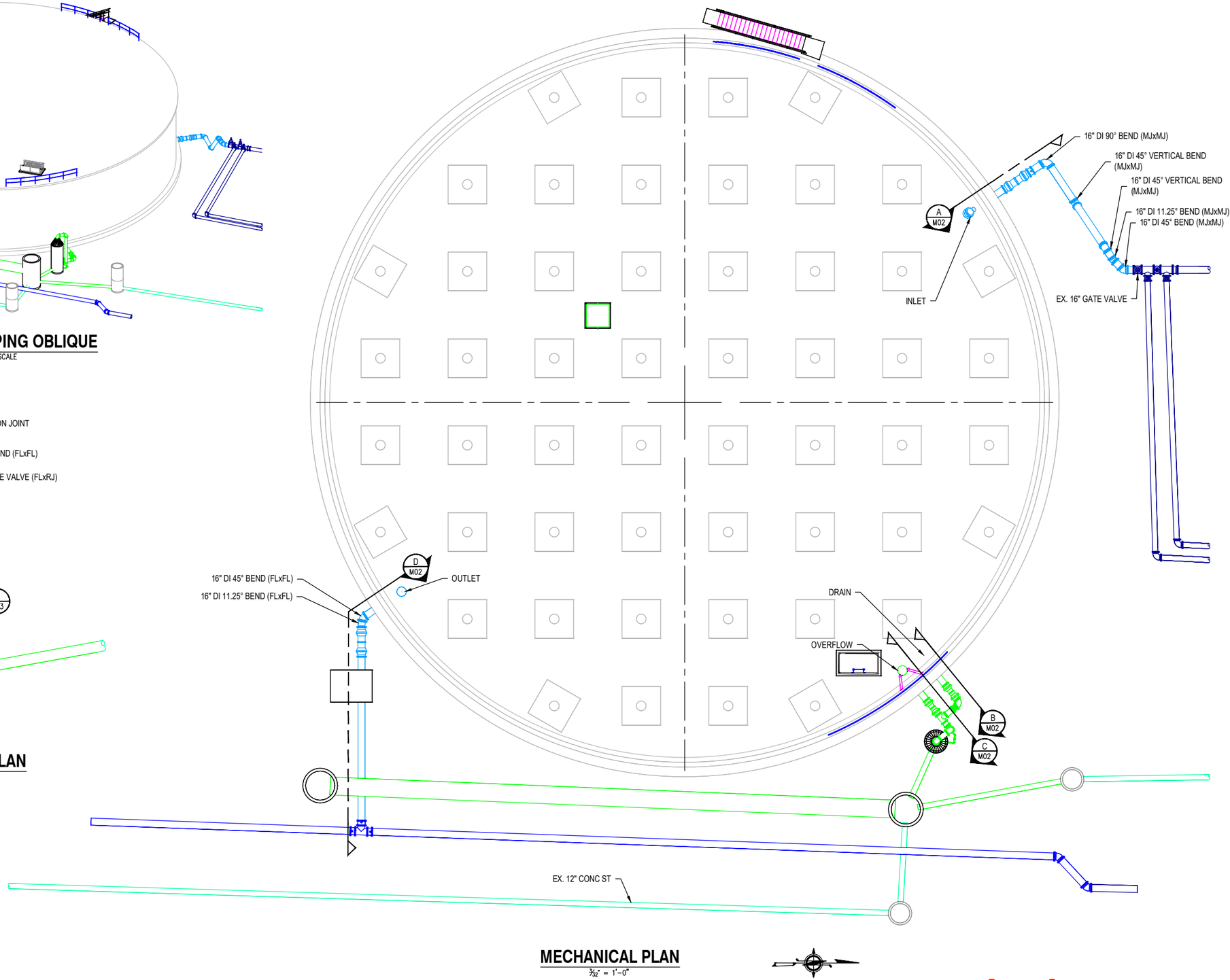
SHEET NO.: 21 38



RESERVOIR PIPING OBLIQUE
NOT TO SCALE



OVERFLOW/DRAIN MECHANICAL PLAN
3/16" = 1'-0"



MECHANICAL PLAN
3/32" = 1'-0"

Exhibit 4R

RH2

REGISTERED PROFESSIONAL ENGINEER
94740
OREGON
MARCH 12, 2019
JUSTIN R. BARRON
PRELIMINARY
EXPIRES: 12/31/2025

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

MECHANICAL PLAN

JOB NO.: 230-093
CLIENT: SCAP
FILENAME: KEYS-P-M01.DWG
DRAWN DATE: Jan 8, 2024
PLOT DATE: Jan 9, 2024
ENGINEER: JLC
REVIEWED: JRB

REVISIONS

NO.	DESCRIPTION	DATE	BY	REVIEW

PRELIMINARY DESIGN

SCALE: SHOWN
0" 1" 2"
DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: M01
SHEET NO.: 31 38

ONE-LINE DIAGRAM SYMBOLS

- CIRCUIT BREAKER
  XXX/YY – CB SIZE & NO. OF POLES
  ET – ELECTRONIC TRIP
  TM – THERMAL MAGNETIC BREAKER
  MCP – MOTOR CIRCUIT PROTECTOR
  SE – SERVICE ENTRANCE
  GFI – GROUND FAULT INTERRUPTER
- FUSE
- FUSED DISCONNECT SWITCH
- PLUG–IN CONNECTION
- RTM — RUN TIME METER
- OC — MOTOR OPERATION COUNTER
- SSRVS — SSRVS – SOLID STATE REDUCED VOLTAGE STARTER
- VARIABLE FREQUENCY DRIVE
- MOTOR STARTER
- MOTOR STARTER W/ OPERATOR DEVICES (A B / C D)
  A – HAND–OFF–AUTO
  B – OPERATIONAL COUNTER
  C – RUN TIME METER
  D – RUN LIGHT
  E – FAIL LIGHT
  F – EMERGENCY STOP
- K — KIRK KEY INTERLOCK
- POWER TRANSFORMER
- CONTROL POWER TRANSFORMER
- TRANSFORMER
- CURRENT TRANSFORMER
- VOLTAGE TRANSFORMER
- CONTACTOR
- CAPACITOR
- ENGINE GENERATOR
- GENERATOR CONNECTION RECEPTACLE
- S/N — SOLID NEUTRAL
- TB — TERMINAL BLOCK
- SURGE PROTECTION DEVICE
- SPD — SURGE PROTECTION DEVICE (ALTERNATIVE)

GROUNDING SYSTEM SYMBOLS

- GROUND
- METAL PIPE GROUND
- CONNECTION POINT, EXOTHERMIC WELD. CADWELD OR APPROVED EQUAL.
- GROUND ROD SIZED PER N.E.C. USE EXOTHERMIC WELD CONNECTION AT THE GROUND ROD.
- PIGTAIL, BARE COPPER, LENGTH AS REQUIRED, 8' MINIMUM.
- CONNECTION POINT, MECHANICAL, COMPRESSION TYPE.

ELECTRICAL SITE PLAN SYMBOLS

- UTILITY POLE AND GUY WIRE
- HH — MANHOLE OR HANDHOLE
- P — BURIED POWER VAULT OR MANHOLE
- T — TELEPHONE VAULT OR PEDESTAL
- F — FIBER OPTICS VAULT OR PEDESTAL
- LUMINAIRE
- PAD–MOUNT TRANSFORMER

PANELBOARDS, SWITCHES, AND EQUIPMENT

- SERVICE ENTRANCE, SWITCHGEAR, MOTOR CONTROL CENTER, OR PANELBOARD
- SURFACE MOUNTED PANELBOARD
- FLUSHED MOUNTED PANELBOARD
- NXX — FIELD CONTROL STATION WITH NEMA REQUIREMENTS.
  N1 – NEMA 1
  N3R – NEMA 3R
  N4 – NEMA 4
  N4SS – NEMA 4 STAINLESS STEEL
  N4F – NEMA 4 FIBERGLASS
  N6 – NEMA 6
  N12 – NEMA 12 GASKETED
- EQUIPMENT MOUNTING STAND
- T — HEATER, WATTAGE NOTED
- EQUIPMENT CONNECTION
- M — SINGLE PHASE MOTOR. HORSEPOWER AS NOTED
- HP — THREE PHASE MOTOR. HORSEPOWER AS NOTED
- HP — SINGLE PHASE MOTOR. HORSEPOWER AS NOTED
- ELECTRICAL PLUG
- DISCONNECT SWITCH
- F — FUSED DISCONNECT SWITCH
- COMBINATION MOTOR STARTER AND DISCONNECT SWITCH

RECEPTACLES AND JUNCTION BOX SYMBOLS

- J — CEILING JUNCTION BOX
- J — WALL JUNCTION BOX
- J — FLOOR JUNCTION BOX
- DUPLEX WALL RECEPTACLE , 120V
  WP = WEATHERPROOF
  G = GROUNDED
  IG = ISOLATED GROUND
  GFI = GROUND FAULT INTERRUPTER
- DOUBLE DUPLEX
- SINGLE RECEPTACLE, 120V
- SINGLE RECEPTACLE, 208V
- DUPLEX FLOOR RECEPTACLE, 120V
- SPECIAL PURPOSE WALL RECEPTACLE, RATING AS NOTED
- CLOCK
- TV — TELEVISION
- TELEPHONE
- TELEPHONE/DATA WITH CABLE
- TELEPHONE/DATA WITHOUT CABLE

SWITCH OUTLETS

- S — STANDARD SWITCH, 120VAC, 20 AMP
- S3 — 3WAY — 3–WAY SWITCH, 120VAC, 20 AMP
- SHOA — HOA — 3–POSITION SWITCH, 120VAC, 20 AMP, LABEL SWITCH POSITION HAND–OFF–MOTION OR PHOTO

- SDEE — SINGLE–POLE
- S2 — DOUBLE–POLE
- S3 — THREE WAY
- S4 — FOUR WAY
- SD — DIMMER
- SOS — OCCUPANCY SENSOR
- SP — PILOT–LIGHTED
- SK — KEY–OPERATED
- SLV — LOW VOLTAGE
- SM — MASTER
- PUSHBUTTON

LIGHTING FIXTURES/DEVICES

- FLUORESCENT FIXTURE
- WALL/CEILING MOUNTED FIXTURE
- EMERGENCY LIGHT WITH SELF CONTAINED BATTERY
- SURFACE OR PENDANT MOUNTED FIXTURE
- RECESSED FIXTURE
- MD — MOTION DETECTOR
- PC — PHOTO CONTROL CELL

FIRE SYSTEM SYMBOLS

- H — HEAT DETECTOR
- S — SMOKE DETECTOR
- D — FIRE ALARM DISPATCH STROBE ALARM
- A — FIRE ALARM AUDIBLE/VISUAL ALARM
- F — FIRE ALARM MANUAL PULL STATION

ADDITIONAL SYMBOLS

- S — SOUND SYSTEM SPEAKER
- V — SOUND SYSTEM VOLUME CONTROL
- B — DOORBELL

VALVE SYMBOLS

- PILOT VALVE SOLENOID
- VALVE
- CHECK VALVE
- CONTROL VALVE

ABBREVIATIONS

SPDT – SINGLE POLE, DOUBLE THROW
SPST – SINGLE POLE, SINGLE THROW
DPST – DOUBLE POLE, SINGLE THROW
WP – WEATHER–PROOF
GFI – GROUND FAULT INTERRUPT
P – POWER
C – CONTROL
J – INSTRUMENTATION
PC – POWER & CONTROL
CJ – CONTROL & INSTRUMENTATION
CKT. – CIRCUIT
C.O. – CONDUIT ONLY
N.L. – NIGHT LIGHT
AL. – ALUMINUM
CU. – COPPER

HOA	HAND–OFF–AUTO SWITCH
RTM	RUN TIME METER
OC	OPERATION COUNTER
MRIL	MOTOR RUN INDICATION LIGHT
SFIL	SEAL FAIL INDICATION LIGHT
SFTR	SEAL FAIL TRIP RESET
OTIL	OVER TEMPERATURE INDICATION LIGHT
MOIL	MOTOR OVERLOAD INDICATION LIGHT

INDICATE TYPE BY LETTER

- V — VAR – VARMETER; VARH – VARHOUR METER; W – WATTMETER; WH – WATTHOUR METER
- AH — A – AMMETER; AH – AMPERE–HOUR; PF – POWER FACTOR; V – VOLTMETER; VA – VOLT AMMETER

INSTRUMENT METER

RACEWAY LEGEND

SITE PLAN LEGEND

- P — PROPOSED POWER
- TEL — PROPOSED TELEPHONE
- TELM — PROPOSED INSTRUMENTATION
- FO — PROPOSED FIBER OPTICS

BUILDING OR FACILITY PLAN LEGEND

- 480 VOLT EXPOSED RACEWAY
- 480 VOLT WIRING CONCEALED, UNDERGROUND, EMBEDDED, OR CONCRETE ENCASED RACEWAY
- 120/208/240 VOLT EXPOSED RACEWAY
- 120/208/240V WIRING CONCEALED, UNDERGROUND, EMBEDDED, OR CONCRETE ENCASED RACEWAY
- CONTROL OR INSTRUMENTATION EXPOSED RACEWAY
- CONTROL OR INSTRUMENTATION, UNDERGROUND, EMBEDDED, OR CONCRETE ENCASED RACEWAY
- HOME RUN TO PANELBOARD OR AS INDICATED
- CONDUIT RUN, BROKEN AND CONTINUED SAME SHEET OR AS NOTED
- FLEXIBLE CONDUIT
- CONDUIT RUN. HATCH MARKS INDICATE NUMBER OF CONDUCTORS
- CALLOUT INDICATING CONDUIT SIZE, NUMBER AND SIZE OF WIRE. (½" GRC, 2–#12)
- CALLOUT INDICATING CONDUIT PER SCHEDULE (XXX)
- CONDUIT BENT UP OR TOWARD
- CONDUIT BENT DOWN OR AWAY
- CAPPED CONDUIT

LADDER LOGIC SYMBOL LEGEND

- INDICATOR LIGHT — INDICATOR LIGHT: A – AMBER G – GREEN; B – BLUE R – RED; C – CLEAR W – WHITE
- RELAY (XYZ 123) — RELAY; TR – TIMED RELAY; CR – CONTROL RELAY
- LIMIT SWITCH — LIMIT SWITCH, NORMALLY OPEN
- FLOAT SWITCH — FLOAT SWITCH, NORMALLY OPEN
- LIMIT SWITCH — LIMIT SWITCH, NORMALLY CLOSED
- FLOAT SWITCH — FLOAT SWITCH, NORMALLY CLOSED
- TIME DELAY CONTACT — TIME DELAY CONTACT, NORMALLY OPEN, TIME TO CLOSE
- PUSHBUTTON — PUSHBUTTON, NORMALLY CLOSED
- TIME DELAY CONTACT — TIME DELAY CONTACT, NORMALLY CLOSED, TIME TO OPEN
- PUSHBUTTON — PUSHBUTTON, NORMALLY OPEN
- TIME DELAY CONTACT — TIME DELAY CONTACT, NORMALLY OPEN, TIME TO OPEN
- THERMOSTAT — THERMO SWITCH, NORMALLY OPEN
- TIME DELAY CONTACT — TIME DELAY CONTACT, NORMALLY CLOSED, TIME TO CLOSE
- THERMOSTAT — THERMO SWITCH, NORMALLY CLOSED
- RELAY CONTACT, NC / RELAY CONTACT, NO — RELAY CONTACT, INSTANTANEOUS CHANGE
- FLOWSWITCH — FLOWSWITCH, NORMALLY OPEN
- PRESSURE SWITCH — PRESSURE SWITCH, NORMALLY OPEN
- FLOWSWITCH — FLOWSWITCH, NORMALLY CLOSED
- PRESSURE SWITCH — PRESSURE SWITCH, NORMALLY CLOSED
- 2 POLE SWITCH

LADDER LOGIC LINETYPES

- COMPONENT INSTALLED INSIDE ENCLOSURE
- COMPONENT INSTALLED ON FRONT OF ENCLOSURE
- FIELD CONNECTED COMPONENT

- 3 POLE SWITCH

GENERAL NOTES

1. THIS IS A STANDARD LEGEND. NOT ALL OF THE INFORMATION SHOWN ON THIS PAGE WILL APPEAR IN THIS SET OF PLANS.

2. THESE DRAWINGS ARE DIAGRAMMATIC ONLY; EXACT LOCATIONS OF ELECTRICAL EQUIPMENT SHALL BE DETERMINED IN THE FIELD BY THE CONTRACTOR. THE INSTALLATION OF ALL EQUIPMENT SHOWN ON THESE DRAWINGS OR DESCRIBED IN THE SPECIFICATIONS SHALL CONFORM TO THE REQUIREMENTS SET FORTH IN THE LATEST EDITIONS OF ALL APPLICABLE CODES AND UTILITY COMPANY STANDARDS. CONTACT THE UTILITY COMPANY REPRESENTATIVES AND VERIFY THEIR REQUIREMENTS.

3. NOTIFY THE ENGINEER IMMEDIATELY IF CONFLICTS IN EQUIPMENT LOCATIONS ARE DISCOVERED OR IF PROBLEMS ARISE DUE TO FIELD CONDITIONS, LACK OF INFORMATION OR ANY OTHER REASON. NO PAYMENT WILL BE MADE FOR CHANGES WHICH HAVE NOT BEEN REVIEWED BY THE ENGINEER.

Exhibit 4S

RH2

REGISTERED PROFESSIONAL ENGINEER
86610
OREGON
MARCH 13, 2012
CHRISTOPHER M. ROBERTS
PRELIMINARY
EXPIRES: 12/31/2024

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

ELECTRICAL LEGEND

JOB NO.: 230-093
CLIENT: SCAP
FILENAME: KEYS-P-E01.DWG
SAVE DATE: Jan 5, 2024
PLOT DATE: Jan 9, 2024
ENGINEER: KES
REVIEWED: MWB

REVISIONS

NO.	DESCRIPTION	DATE	BY	REVIEW
	PRELIMINARY DESIGN			

SCALE: SHOWN
2" 1" 2"
DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: E01
SHEET NO.: 35 38

RESERVOIR

SW KEYS RD

SEE EXISTING BPS OUTDOOR PHOTO ON DWG NO. E03

EXISTING BPS

ACCESS HATCH

VALVE VAULT

A / E06 PROPOSED HANDHOLE

P1 P2 P3 J1 J2 C2 C3

16" DI W

205 200 195 190

ELECTRICAL SITE PLAN

1" = 20'

ELECTRICAL NOTES	
1	1.
XX	2. SEE DWG NO. E07 FOR CONDUIT AND CONDUCTOR SCHEDULE.
X	3. SEE DWG NO. E07 FOR ELECTRICAL EQUIPMENT SCHEDULE.

Exhibit 4T

RH2

REGISTERED PROFESSIONAL ENGINEER
94740
OREGON
MARCH 12, 2019
JUSTIN R. BARROW

PRELIMINARY

EXPIRES: 12/31/2025

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

ELECTRICAL SITE PLAN

PRELIMINARY DESIGN

REVISIONS

NO.	DESCRIPTION	DATE	BY	REVIEW

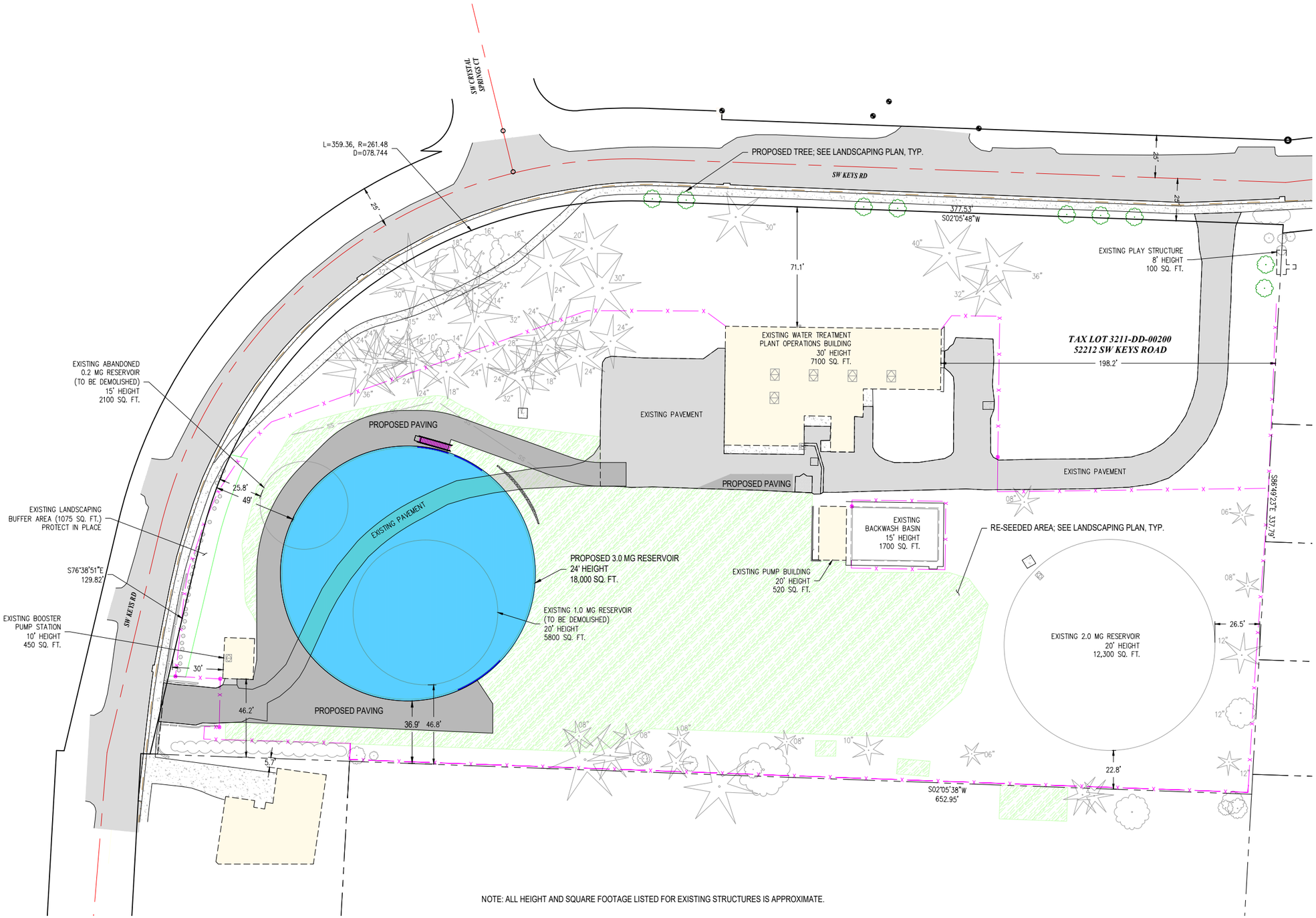
JOB NO.: 230-093
CLIENT: SCAP
FILENAME: KEYS-P-E02.DWG
DRAWN DATE: Jan 9, 2024
PLOT DATE: Jan 9, 2024
ENGINEER: KES
REVIEWED: MWB

SCALE: SHOWN

0" 1" 2"

DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: E02
SHEET NO.: 36 / 38



NOTE: ALL HEIGHT AND SQUARE FOOTAGE LISTED FOR EXISTING STRUCTURES IS APPROXIMATE.

PRELIMINARY SITE PLAN

1" = 30'

Exhibit 4U

RH2

REGISTERED PROFESSIONAL ENGINEER
94740
OREGON
MARCH 12, 2019
JUSTIN R. BARRON
PRELIMINARY
EXPIRES: 12/31/2025

CITY OF SCAPPOOSE
KEYS ROAD RESERVOIR

PRELIMINARY SITE PLAN

JOB NO.: 230-093
CLIENT: SCAP
FILENAME: KEYSE-LANDP.DWG
SAVE DATE: Feb 13, 2024
PLOT DATE: Feb 13, 2024
ENGINEER: JLC
REVIEWED: JRB

REVISIONS

NO.	DATE	DESCRIPTION	BY	REVIEW
		60% DESIGN		

SCALE: SHOWN

3" 1' 2'

DRAWING IS FULL SCALE WHEN BAR MEASURES 2"

DWG NO.: T01
SHEET NO.: 38 / 38

Exhibit 5

SUBMITTED TO:
RH2 Engineering, Inc.
5335 Meadows Road, Ste. 420
Lake Oswego, OR 97035

BY:
Shannon & Wilson
3990 Collins Way, Ste. 100
Lake Oswego, OR 97035

(503) 210-4750
www.shannonwilson.com

GEOTECHNICAL ENGINEERING REPORT

Scappoose Reservoir Improvements

SCAPPOOSE, OREGON

SHANNON & WILSON

December 2023

Shannon & Wilson No: 110687

Submitted To: RH2 Engineering, Inc.
5335 Meadows Road, Ste. 420
Lake Oswego, OR 97035
Attn: Edwin Halim

Subject: GEOTECHNICAL ENGINEERING REPORT, SCAPPOOSE RESERVOIR IMPROVEMENTS, SCAPPOOSE, OREGON

Shannon & Wilson, Inc. (Shannon & Wilson) prepared this report and participated in this project as a subconsultant to RH2 Engineering, Inc. (RH2). Our scope of services was specified in Agreement Number 0230093.00 with RH2 dated May 16, 2023. This report presents our geotechnical engineering recommendations and was prepared by the undersigned.

We appreciate the opportunity to be of service to you on this project. If you have questions concerning this report, or we may be of further service, please contact us.

Sincerely,

SHANNON & WILSON

Kevin Wood, PE
Senior Engineer

Elliott Mecham, PE
Senior Associate | Engineer

KJW:ECM/aec:mmb

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1 INTRODUCTION

We have prepared this Geotechnical Engineering Report for a new reservoir at the Keys Road Water Treatment Plant (WTP) site in Scappoose, Oregon. The site location is presented on Figure 1, Vicinity Map. Below we summarize our understanding of the project, our field explorations, the anticipated geologic hazards, and our recommendations for the reservoir foundation. The City of Scappoose (the City) is the project owner and RH2 is the lead civil consultant for the project. Shannon & Wilson, Inc. (Shannon & Wilson) is supporting the geotechnical engineering components of the project under subcontract with RH2.

1.1 Project Understanding

The City is planning to increase their water storage capacity at the Keys Road Water Treatment Plant site based on projected demands. The Keys Road Water Treatment Plant site currently includes three existing reservoirs ranging in size from 0.2 to 2.0 million gallons (MG). The 2.0 MG reservoir is the newest reservoir and was constructed in 2004 and 2005. Based on historic plans provided to us, the 1.0 MG reservoir was constructed in 1967 and the 0.2MG reservoir is the oldest reservoir on the site and was constructed prior to 1967.

To meet the projected water demands, the City proposed to add an approximately 120-foot diameter, 2.0 MG reservoir to the existing Keys Road Water Treatment Plant Site. This concept would require performing seismic improvements to the existing 1.0 MG reservoir. The proposed 2.0 MG reservoir would be situated north of the existing 1.0 MG reservoir. Based on historic as-built plans from 1967, the 1.0 MG reservoir appears to be shallowly founded on native soils without any improvements or enhancements. Based on our understanding of the subsurface conditions described below, the existing reservoir would be vulnerable during a design seismic event and would require improvements to mitigate the seismic hazards underlying the reservoir. Further discussion on the seismic hazards that underlie the existing reservoir and conceptual mitigation are discussed in Section 5.2.4.

During the proposal phase, RH2 identified drawbacks to this concept and proposed an alternative consisting of removal of both the existing 0.2 and 1.0 MG reservoirs and replacement with a larger, approximately 150-foot diameter, 3.0 MG reservoir. We understand that both alternatives are currently being evaluated, but the 3.0 MG reservoir alternative was selected for the locations of explorations shown on Figure 2, Site and Exploration Plan.

Preliminary loads for the 3.0 MG reservoir were provided to us and are presented below:

- Reservoir Floor: 1,600 pounds per square foot (psf);
- Column Footings: 2,300 psf; and
- Wall Footings: 2,200 psf.

Also, preliminary plans provided to us indicate that the floor elevation for the proposed 3.0 MG reservoir would be at an elevation of approximately 180 feet. Reference to elevation in this report is to the NAVD 88 Datum unless otherwise noted. Construction of the reservoir will require either sloping the ground or constructing a temporary retaining wall. If used, the retaining wall is anticipated to be temporary if concrete is selected as the preferred reservoir material type, resulting in a partially backfilled (buried) reservoir. Based on the existing ground surface conditions, the wall would be required to be approximately 550 feet long with a minimum height of 8 feet, maximum height of 22 feet, and average wall height of 12 feet. However, we understand that the preferred excavation option would be to use a temporary cut slope rather than the retaining wall option.

1.2 Scope of Services

The consultant shall perform a field geologic reconnaissance along the slopes adjacent to the existing WTP and reservoir site. The field reconnaissance included the following services:

- Performed a site reconnaissance, visiting the site and walking the slopes adjacent to the existing WTP and reservoirs;
- Performed a subsurface exploration program consisting of three borings, three test pits, and two Cone Penetrometer Tests;
- Installed three vibrating wire piezometers and data loggers to record the groundwater level and record seasonal variations;
- Performed a laboratory testing program.
- Summarized subsurface conditions and developed soil engineering properties and design parameters at the reservoir site;
- Provided code-based seismic design parameters based on IBC 2018 and ASCE 7-16;
- Evaluated seismic hazards underlying the proposed reservoir;
- Provided foundation support options for the reservoir site, including a discussion on the pros and cons of different foundation options for deep foundation systems (piles and augercast piles and ground improvement options such as rammed aggregate piers); and
- Provide construction considerations related to earthwork and deep foundation installation.

2 GEOLOGIC AND SEISMIC SETTING

2.1 Regional and Local Geology

The Scappoose area is located at the northern end of the Portland Basin, the northernmost of several sediment-filled, topographic depressions that make up the Willamette Valley segment of the Puget-Willamette Lowland. The Portland Basin has been interpreted as a pull-apart basin located between two en-echelon, northwest-striking fault zones: the Portland Hills Fault zone at the base of the Tualatin Mountains, and a less well-defined zone to the north. The fault zones are thought to result from oblique subduction along the Cascadia Subduction Zone (CSZ).

The bedrock unit in the Scappoose area is a thick bed of marine sandstone, siltstone, and mudstone believed to be deposited in an ancient ocean as early as 23 million years ago (Madin and Niewendorp, 2008). These sedimentary rocks were subsequently covered by a thick layer of lava during a period of regional volcanism dating back about 16 million years, referred to as the Columbia River Basalt. This period of regional volcanism was followed by a long period of weathering in which the basalt surface was weathered to clay. Tectonic forces reshaped and reoriented the originally flat basalt into the Tualatin Mountains. The period of squeezing and folding was followed by a second period of deposition of waterborne sediment referred to as the Scappoose Formation.

Down cutting of the Columbia River valley occurred in the Pleistocene due to glacially induced lowering of the sea level. The resulting paleovalley, about 400 feet below current sea level, is infilled with alluvium from episodic, cataclysmic flooding in the Quaternary period and from recent Holocene alluvium consisting of silt and fine sand.

Fine-grained Missoula Flood Deposits overlie the Scappoose Formation and mantle the ground surface across the basin floor and up to 250 feet high on adjacent highlands (Schlicker and Deacon, 1967). The late-Pleistocene Fine-grained Missoula Flood Deposits were laid down during repeated ice-age glacial floods known as the Missoula Floods. During the late stages of the last great ice age, a lobe of the continental ice sheet repeatedly blocked and dammed the Clark Fork River in western Montana, which then formed an immense glacial lake called Lake Missoula. The lake grew until its depth was sufficient to rupture the ice dam, which allowed the entire massive lake to empty catastrophically. Once the lake had emptied, the ice sheet again gradually dammed the Clark Fork Valley and the lake refilled, leading to 40 or more repetitive outburst floods at intervals of decades (Allen and others, 2009). During each short-lived episode, floodwaters washed across the Idaho panhandle, through the eastern Washington scablands, and through the Columbia River Gorge. When the floodwater emerged from the western end of the gorge, it spread out over

the Portland Basin and up the Willamette Valley as far south as Junction City, depositing a tremendous load of sediment (O'Connor and others, 2001).

2.2 Seismic Setting

2.2.1 Earthquake Sources

The contemporary tectonics and seismicity of the region are the result of oblique, northeastward subduction at a rate of about 40 millimeters per year (mm/yr) of the Juan de Fuca oceanic plate beneath the North American continental plate (e.g., Wells and others, 1998; Wells and Simpson, 2001). This complex tectonic setting produces east-west compressive strain along the Cascadia Subduction Zone (CSZ), as well as northward translation and rotation of the mobile, crustal, Cascadia fore-arc blocks that span the leading edge of the North America plate (Wells and others, 1998; McCaffrey and others, 2007, 2013). Rotation of the Sierra-Nevada block and expansion of the Basin and Range drive the northward migration and clockwise rotation of the Cascadia fore-arc blocks (e.g., Pezzopane and Weldon, 1993; Wells and others, 1998; Wells and Simpson, 2001). As a result, the southern portion of the forearc, the Oregon Coast block, is impinging on western Washington at a rate of about 8 to 12 mm/yr causing crustal shortening in northwest Oregon and western Washington (Wells and others, 1998; Wells and Simpson, 2001; Mazzotti and others, 2002).

The combined effect of margin-normal subduction and margin-parallel shortening produces complex and diverse deformation within the northern edge of the Cascadia fore-arc and triggers large (greater than magnitude [Mw] 6.0), damaging earthquakes from three seismogenic source zones:

- The locked zone of the CSZ fault interface, which produces great mega-thrust earthquakes;
- The deep intraslab portion of the CSZ (i.e., the subducted portion of the Juan de Fuca Plate), the source of Wadati-Benioff zone earthquakes; and
- The overriding North American Plate, where shallow crustal faults rupture.

All three sources potentially produce earthquakes that impact the ground motion hazards at the project site. Offshore, elastic release of strain accumulated in the locked plate interface of the CSZ produces great megathrust earthquakes (greater than Mw 8.0) occurring at irregular intervals that span from about 100 to more than 1,200 years, with an average recurrence interval of about 300 to 500 years (Atwater and Hemphill-Haley, 1997; Clague, 1997; Goldfinger and others, 2003 and 2012); and the most recent rupture occurred in A.D. 1700 (Satake and others, 1996; Atwater and Hemphill-Haley, 1997; Clague, 1997; Yamaguchi and others, 1997; Goldfinger and others, 2003 and 2012). Onshore, migration

and rotation of tectonic blocks produce deformation along shallow faults within the upper part of the crust. At depth, rupture within the subducting slab, referred to as the intraslab, has produced some of the largest recorded earthquakes (Mw 6.5 to 7.0) to strike the Pacific Northwest, the northern California Coast, and Western Washington. However, over the past century, intraslab earthquakes have been markedly infrequent in Oregon. The following sections briefly describe the location, characteristics, and seismicity of each of the sources.

2.2.2 Cascadia Subduction Zone: Mega-Thrust Source

CSZ mega-thrust earthquakes originate along the interface between the subducting oceanic plates and the North American plate. Because of the significant uncertainty of the landward extent of a potential rupture surface, estimates of the closest distance between the project and potential rupture surface range from about 65 to 140 horizontal miles. Focal depths for mega-thrust earthquakes are commonly on the order of about 15 to 25 miles. Rupture of the interface could result in earthquakes with Mw on the order of 8.5 to over 9.0, with strong shaking that lasts for several minutes. No large earthquakes have occurred in this zone during historic times (in the last 170 years). However, geologic evidence suggests that coastal estuaries have experienced rapid subsidence at various times within the last 2,000 years (e.g., Atwater, 1987; Atwater and Hemphill-Haley, 1997) as a result of tectonic movement associated with mega-thrust earthquakes on the CSZ. It appears that ruptures of this zone have occurred at irregular intervals that span from about 100 to more than 1,200 years, with an average recurrence interval of about 300 to 500 years (Atwater and Hemphill-Haley, 1997). Based on historical tsunami records in Japan (Satake and others, 1996) the most recent interplate event on the CSZ was a Mw 9.0 event on January 26, 1700.

2.2.3 Cascadia Subduction Zone: Intraslab Source

CSZ intraslab earthquakes originate from within the subducting Juan de Fuca oceanic plate as a result of the downward bending and contortion of the plate in the CSZ. These earthquakes typically occur at a depth of 28 to 38 miles. Such events could be as large as magnitude 7.5. Examples of this type of earthquake include the 1949 magnitude 7.1 Olympia earthquake, the 1965 magnitude 6.5 earthquake between Tacoma and Seattle, and the 2001 magnitude 6.8 Nisqually earthquake. The highest rates of CSZ intraslab activity occur beneath the Puget Sound area, with much lower rates observed beneath western Oregon.

2.2.4 Shallow Crustal Sources

Shallow crustal earthquakes within the North American Plate have historically occurred in a diffuse pattern within Pacific Northwest, typically within the upper 4 to 19 miles of the

continental crust. Mabey and others (1993) concluded from their analysis of local geologic features that a crustal earthquake of up to Mw 6.5 could occur virtually anywhere in the Portland area. Based on their fault model, Wong and others (2000) determined that an earthquake of up to Mw 6.8 is possible on the Portland Hills Fault, which is mapped within about one half-mile of the project site. The largest known crustal earthquake in the Pacific Northwest is the 1872 North Cascades earthquake at approximate Mw 6.5 to 7.0. Other examples include the 1993 Mw 5.6 Scotts Mill earthquake and the 1993 Mw 6.0 Klamath Falls earthquake.

2.2.5 Local Faults and Folds

Shallow crustal faults and folds throughout Oregon have been located and characterized by the United States Geological Survey (USGS). The USGS provides approximate fault locations and a detailed summary of available fault information in the USGS Quaternary Fault and Fold Database. The database defines four categories of faults, Class A through D, based on evidence of tectonic movement known or presumed to be associated with large earthquakes during the Quaternary time (within the last 2.6 million years). For Class A faults, geologic evidence demonstrates that a tectonic fault exists and that it has likely been active within the Quaternary period. For Class B faults, there is equivocal geologic evidence of Quaternary tectonic deformation, or the fault may not extend deep enough to be considered a source of significant earthquakes. Class C and D faults lack convincing geologic evidence of Quaternary tectonic deformation or have been studied carefully enough to determine that they are not likely to generate significant earthquakes.

3 FIELD EXPLORATIONS AND LABORATORY TESTING

3.1 Subsurface Explorations

Subsurface conditions at the site were explored with three geotechnical borings, designated B-01 through B-03, and three test pits designated TP-01 through TP-03. The approximate locations of the explorations were measured in the field with a handheld GPS, and their approximate locations are shown on Figure 2, Site and Exploration Plan. The geotechnical borings were drilled on May 26, 2023, and June 2, 2023, using a track-mounted CME-55 drill rig provided and operated by Western States Soil Conservation, Inc., of Hubbard, Oregon. The borings were advanced to depths ranging from 85.1 to 100.2 feet below the ground surface (bgs). To measure the groundwater underlying the site, two vibrating wire piezometers (VWPs) were installed in borings B-01 and B-03.

The test pits were also excavated on May 26, 2023, and June 2, 2023, using a John Deere Backhoe provided and operated by the City. The test pits were excavated to depths ranging

from 6 to 9 feet bgs. A Shannon & Wilson geology staff member was present throughout the exploration program to locate the borings, observe the drilling, collect soil samples, and log the materials encountered.

To help provide additional information for foundation recommendations, additional explorations were performed on August 17, 2023. The additional explorations consisted of two cone penetration tests, designated CPT-01 and CPT-02. The CPTs were performed by Oregon Geotechnical Explorations, Inc. of Keizer, Oregon. To better define the seismic hazard, shear wave velocity measurements were performed in each CPT. Pore pressure dissipation tests were also performed to characterize the presence of the perched water described in Section 4.2 below. In addition, a shallow VWP was installed at the location of CPT-01 to obtain further measurements of the shallow perched groundwater.

Logs of the explorations are included as Appendix A.

3.2 Laboratory Testing

The samples we obtained during our subsurface explorations were transported to our laboratory for additional observations. We then selected some samples for laboratory testing. The laboratory testing program included moisture content tests, Atterberg limits tests, and particle-size analyses. Testing was performed by Shannon & Wilson. All tests were performed in accordance with applicable ASTM International (ASTM) standards. Results of the laboratory tests are included as Appendix B.

4 SUMMARY OF SUBSURFACE CONDITIONS

4.1 Geotechnical Soil Units

We grouped the materials encountered in our field explorations into three geotechnical units. Our interpretation of the subsurface conditions is based on our explorations and regional geologic information from published sources. The geotechnical units are as follows:

- **Fill;** includes loose Silty Sand (SM); loose Sandy Silt (ML); Silty Gravel with varying amounts sand and cobbles (GM); contains rootlets and wood fragments. Strength and compressibility characteristics of fill can vary from low strength and high compressibility to high strength and low compressibility. Without documentation of how the fill was placed, the strength and compressibility characteristics are impossible to predict.
- **Missoula Flood Deposits – Fine-Grained Facies;** includes soft to stiff Silt with varying amounts of sand (ML); very loose to loose Silty Sand (SM); medium stiff Clay with sand

(CL). The Missoula Flood Deposits typically have very low to moderate strength and moderate to high compressibility characteristics.

- **Scappoose Formation;** includes medium stiff to hard Silt (ML); very stiff to hard Elastic Silt (MH); Stiff to Very Stiff Fat Clay (CH); very soft to hard Lean Clay (CL); dense Poorly Graded Silt with Sand (SP-SM), very dense Silty Gravel with Sand, with Cobbles (GM); very dense Gravelly Silt with sand (ML); and very dense Clayey Gravel with Sand (GC). Some layers of low strength and moderately compressible soils were encountered in the Scappoose Formation; however, the soils encountered typically had moderate to very high strength, and very low to moderate compressibility characteristics,

These geotechnical units were grouped based on their engineering properties, geologic origins, and their distribution in the subsurface. An interpretive geologic profile is shown in Figure 3. Contacts between units may be more gradational than shown in the exploration logs included as Appendix A and on Figure 3.

4.2 Groundwater

The borings were drilled using mud rotary techniques which make it difficult to discern the depth to groundwater if it is encountered during drilling. However, two VWPs and data loggers were installed for continuous groundwater monitoring in borings B-01 and B-03. The data was downloaded on June 30, 2023. Data collected from the data loggers indicates that the static groundwater has fluctuated from an elevation of approximately 160 to 146 feet at boring B-01 and has remained relatively level at boring B-03 at an elevation of 144.5 to 142.5 feet.

Shallow, perched groundwater was noted at a depth of approximately 7 feet during drilling of boring B-03 and active seepage was observed at a depth of approximately 7.5 feet during excavation of test pit TP-01. Groundwater was measured at a depth of 10.8 feet on August 17th, 2023 in a hole advanced adjacent to CPT-1 for the purposes of installing a VWP at the interface of the Missoula Flood Deposits during the wet season.

Groundwater/perched water levels should be expected to vary with changes in precipitation, time of year, topography, or other factors not observed during our subsurface explorations. Locally, groundwater/perched water highs typically occur in the late fall to spring, and groundwater/perched water lows typically occur in the late summer and early fall. A data logger is currently monitoring groundwater levels at a piezometer installed near the interface of the Scappoose Formation and the Missoula Flood Deposits. Future readings will be collected to determine the sensitivity of the shallow groundwater elevation to precipitation. Groundwater elevation increases on the order 5 feet are typical in the area. However, groundwater elevation fluctuations of up to 10 feet or more have occurred at other sites.

5 SEISMIC GROUND MOTIONS AND GEOLOGIC HAZARD EVALUATION

The seismic hazard evaluation for this project was conducted in accordance with the American Society of Civil Engineers (ASCE) Minimum Design Loads for Buildings and Other Structures, 2016 Edition (ASCE 7-16), which is based on earthquake ground motions with a 2,475-year return period.

5.1 Code-Based Ground Motion Parameters

In accordance with Section 1613.2.2 of IBC 2021, Site Class is defined by ASCE 7-16 Chapter 20. Based on the SPT N-value resistances from our subsurface explorations, the seismic Site Class is E. Table 20.3-1 was used to determine the site modification factors of the mapped values in the seismic hazard maps. Exhibit 5-1 provides the recommended seismic design parameters for the site. If ground improvements, such as Geopiers, are properly designed and constructed, the site class can be increased to Site Class D. The site class should not be increased if Augercast Piles are used to support the structure.

Exhibit 5-1: Recommended Seismic Design Parameters

Parameter	Symbol	ASCE 7-16	
Site Class	-	E	D
Mapped Zero Period Spectral Acceleration	PGA	0.403g	
Mapped Short Period Spectral Acceleration	Ss	0.875g	
Mapped 1-Second Period Spectral Acceleration	S1	0.420g	
Zero Period Site Factor	FPGA	1.393	1.197
Short Period Site Factor	Fa	1.3	1.15
1-Second Period Site Factor	Fv	2.36	1.88
Site Adjusted Zero Period Spectral Acceleration	PGAM	0.562g	0.483g
Site Adjusted Short Period Spectral Acceleration	SMS	1.138g	1.007g
Site Adjusted 1-Second Period Spectral Acceleration	SM1	0.991g	0.789g
Short Period Design Spectral Acceleration	SDS	0.759g	0.671g
1-Second Period Design Spectral Acceleration	SD1	0.661g	0.526g

In accordance with Supplement 1 to ASCE 7-16, the value of Fv presented in Exhibit 5-1 should be used for the calculation of Ts (i.e., the ratio of the 1-second and short-period design spectral accelerations). In accordance with Section 11.4.8 of ASCE 7-16 for structures on Site Class E site with S1 greater than 0.2g, a ground motion hazard analysis shall be performed in accordance with Section 21.2 of ASCE 7-16. However, a ground motion

hazard analysis is not required if the fundamental period of the structure, T, is less than or equal to Ts and the equivalent static force procedure is used for design.

5.2 Geologic Hazards

5.2.1 Liquefaction

Liquefaction is a phenomenon in which excess pore water pressure in loose to medium dense, saturated, nonplastic to low plasticity silts, and granular soils develop during ground shaking. The increase in excess pore pressure may result in a reduction of soil shear strength and a quicksand-like condition. Liquefaction typically occurs in soils with low strength and cohesion below the groundwater table.

Based on groundwater levels at the ground surface considered in previous studies (CDM Smith, Evaluation of Liquefaction, Scappoose Water Treatment Plant, November 19, 2003), areas of low plasticity silt in the upper Missoula Flood Deposits would be susceptible to liquefaction. Missoula Flood Deposits were encountered in borings B-1 through B-3 at elevations between 168.5 and 174.9 feet (NAVD 88), which is below the planned finish floor elevation of approximately 180 feet for the new reservoir. The static ground water table was measured below the Missoula Flood deposits during the groundwater monitoring performed in the summer of 2023; however, some limited perched water was observed and a piezometer was installed at the interface of the Missoula Flood Deposits and the relatively impermeable Scappoose Formation adjacent to CPT-1 to understand the extent of perched water that may develop during the winter months.

Based on the groundwater measured in the VWP installed in boring B-01 and B-02, the static groundwater is relatively deep and within the Scappoose Formation, which generally consists of high plasticity silts and clays. There is a zone of lower plasticity silt that was encountered in borings B-01 and B-02, which may be susceptible to liquefaction based on the plasticity alone. However, based on the age of the geologic unit and shear wave velocity data collected in the CPT's, we estimate the risk of liquefaction within this layer to be low despite its low plasticity.

5.2.2 Lateral Spreading

Lateral spreading is a liquefaction-related seismic hazard. Areas subject to lateral spreading are typically gently sloping or flat sites underlain by liquefiable sediments adjacent to an open face, such as riverbanks. Liquefied soils adjacent to open faces may “flow” in that direction, resulting in lateral displacement and surface cracking. The closest named downslope creek is the relatively shallow South Scapoose Creek more than 1000 feet from

the site. Based on the distance of the proposed reservoir site to any sizeable channel, we do not consider lateral spread as a hazard for this site.

5.2.3 Fault Rupture

The closest Class A quaternary fault trace to the site is approximately 1,500 feet southeast of the site. The mapped fault trace belongs to the Portland Hills Fault. Based on the distance to the closest mapped fault trace, we estimate the risk of fault rupture through the reservoir site is low.

5.2.4 Seismic Impacts on Existing 1.0 MG Reservoir

As discussed previously in Section 1.1, we understand that the existing 1.0 MG reservoir is shallowly founded on native soils with no ground improvement or other reinforcements noted in the as-built plans. Based on our understanding of the subsurface conditions from the current explorations and the discussion presented previously in Section 5.2.1, the soils underlying the existing reservoir have a low risk of liquefaction based on the current water table. However, the unimproved soils underlying the existing 1.0 MG reservoir would still be susceptible to cyclic softening and strength reduction, which could lead to performance issues following a design seismic event. Additionally, ongoing groundwater monitoring is being performed to determine the extent of perched groundwater that may develop in the Missoula Flood deposits during the rainy season. If a continuous zone of perched groundwater develops on top of the Scappoose formation, the saturated Missoula Flood deposits may be prone to liquefaction. Therefore, if the existing reservoir is proposed to remain in service, we would recommend that the potential seismic hazard be mitigated.

A conceptual mitigation option would be jet grouting. Jet grouting could be performed through the floor of the existing reservoir. However, such improvements would require more off-line time for the reservoir and would be costly. Based on our experience, the typical base unit cost for jet grouting would be approximately $300 to $400 per cubic yard. However, for challenging sites (i.e., difficult access, low overhead, etc.) such as the existing 1.0 MG reservoir site, the unit cost could be as high as $750 per cubic yard. Based on the reservoir floor elevation and our explorations, we would anticipate a treatment zone that extends down to 35 feet. This would equate to an improvement volume of approximately 15,400 cubic yards. We assume an area replacement ratio for jet grouting may be as high as 50 percent.

6 GEOTECHNICAL CONCLUSIONS AND RECOMMENDATIONS

6.1 General

To mitigate the settlement of soft soils and a potential liquefaction hazard associated with shallow groundwater, we recommend supporting the proposed new reservoir on augercast piles or rammed aggregate piers (Geopiers). Augercast piles are a recommended option as they are a traditional foundation support mechanism for this type of structure and, given the depth of the very stiff / very dense layers, would be able to provide significant vertical and lateral capacities with piles that could be spaced relatively far apart.

Geopiers are also a suitable ground improvement option for the subsurface conditions as they can be installed using displacement techniques that can stiffen the relatively soft silts and clays. The Geopiers typically would need to be installed at closer spacing than augercast piles. Further discussion of the advantages and disadvantages of both options is presented in Exhibit 6-1.

Exhibit 6-1: Comparison of Foundation / Ground Improvement Alternatives

Foundation / Ground Improvement Type	Advantages	Disadvantages
Foundation Option: Augercast Piles (2-foot-diameter)	▪ Feasible for proposed construction sequence. ▪ Can be constructed using non-vibratory methods. ▪ Better for resisting seismic lateral forces if structural engineer identifies a sliding issue based on unbalanced forces generated by site grading; piles structurally connected to structure mat foundation.	▪ Requires a specialty contractor. ▪ Higher cost than rammed aggregate piers. ▪ Always requires the use of a structural mat slab which adds additional cost.
Ground Improvement Option: Rammed Aggregate Piers (Geopiers®)	▪ Allows the utilization of conventional shallow foundation design. ▪ Can be installed without using vibratory probes required in other ground improvement techniques (stone columns) ▪ Feasible for proposed construction sequence.	▪ Requires a specialty contractor. ▪ More optimal for a design-build project contracting mechanism, where specialty design-build ground improvement contractors can be engaged. ▪ Causes more vibration than augercast piles.

- Cost-effective for anticipated improvement zone.
- Will improve site class from E to D.

Based on discussions with the project team, Geopiers are the preferred alternative due to the cost advantage over auger cast piles and the ability to achieve the required settlement tolerances. Recommendations for both augercast pile foundations and Geopiers are presented in the following sections to allow flexibility to the design team if during the design process augercast piles are required to satisfy structural requirements.

6.2 Augercast Piles

An augercast pile is constructed by drilling down to the prescribed bearing stratum with a hollow stem, continuous flight auger. The auger is left in place to support the walls of the borehole. Concrete is then pumped through the hollow stem under pressure while the auger is slowly withdrawn from the hole. Care is required to coordinate the rate of concrete placement with the rate of auger withdrawal to prevent the sides of the hole from necking thereby reducing the pile cross section area. This type of pile requires installation by an experienced and competent foundation contractor as well as construction observation and QA/QC documentation under the supervision of an experienced geotechnical engineer to ensure satisfactory installation.

6.2.1 Axial Capacity and Settlement

We recommend that the augercast piles be placed with the tip at an elevation of 120 feet. We recommend 24-inch diameter augercast piles be used and that axial capacities are based on Figure 6. Figure 6 presents the ultimate and allowable axial compressive and uplift capacities of a 24-inch-diameter augercast pile. We recommend that the piles should be installed no closer together than three pile diameters, measured from center-to-center, and within a tolerance of three (3) inches of the locations shown on the plans. See the lateral resistance section for additional information on pile spacing. Piles should be installed with a maximum deviation from vertical of not more than 4 inches in 10 feet.

Pile settlements will result from the proposed structural loads. Based upon our experience and engineering analyses, we anticipate that the maximum total settlement for the augercast piles should be less than ½-inch.

Further, we recommend that the pile construction specification and construction procedures follow the most recent edition of the "Augered Cast-in-Place Piles Manual" developed by Deep Foundation Institute (DFI).

6.2.2 Lateral Resistance

Augercast piles are typically embedded in a 2- to 3-foot-thick structural mat and tied into the reservoir using structural steel. The structural mat foundation transfers loads from the reservoir to the augercast piles.

Lateral forces would be resisted by a combination of soil passive earth pressure against the buried portions of the structures, and lateral resistance of the piles. Partial passive earth pressures of 160D (where D is the height of the buried portion of the structure) could be used to estimate the soil passive earth pressure resistance. The partial passive pressure is based on select native material being used as backfill around the reservoir. If greater passive resistance is needed, then imported crushed rock could be used to backfill the reservoir. A partial passive pressure of 225D could be used if imported crushed rock is used.

Passive resistance should be ignored in the upper 24 inches if not covered by floor slabs/mats or pavements, or ignored entirely if future development would result in removal of the soils providing resistance. Partial passive pressure is recommended since the large amounts of wall movement that would be necessary to mobilize full passive resistance are typically considered unacceptable by the structural engineer.

The augercast pile foundations will be subjected to lateral loads resulting from live and seismic loading. Actual pile spacing has not been developed at the time of this report. If the pile spacing is at least 5D (where D is the shaft diameters), then there will be no group effects for lateral resistance. The lateral resistance parameters provided in this report do not consider group effects. If during final design the pile spacing will be required to be less than 5D, then group effects should be considered.

We anticipate that the computer program LPILE will be used by the structural engineer to generate discrete load-deflection (P-Y) curves for estimating lateral deflection of the augercast piles, and distribution of moment and shear along the length of the pile. The L-pile parameters in the table are based on groundwater levels at the time of our report. If the augercast pile option is taken to final design prior to the completion of the groundwater monitoring in the rainy season, the design team should contact Shannon & Wilson for seismic parameters and a team decision should be made on the extent of possible liquefaction in the Missoula Flood deposits based on the latest available groundwater readings. The LPILE input parameters are presented in Table 1.

6.2.3 Conceptual Augercast Pile Cost

Based on the preliminary loads provided to us and the recommended tip elevation of 120 feet, we anticipate that up to 150 augercast piles may be necessary for foundation support of the proposed 3.0 MG reservoir. If the finish floor elevation of the reservoir is at 180 feet, then this would result in piles that are approximately 60 feet long based on groundwater levels measured at the time of our exploration program. If groundwater levels rise to the base of the reservoir, additional length may be required to compensate for additional strength loss in the Missoula Flood deposits from liquefaction.

Shannon & Wilson does not employ professional estimators. Our understanding of relative cost is based on a limited number of historic bid tabs, and conversations with local contractors. Costs presented by Shannon & Wilson are approximate in nature and may not fully take into account future escalation and should be considered approximate. Based on our experience, the unit cost of augercast piles may be $100 per linear foot or greater, not including any contingency. Actual costs will vary based on multiple factors including the amount of steel in the reinforcing cage. If an assumed mobilization cost of $50,000 is included, then the conceptual cost for an augercast pile foundation would be approximately $1.1 million, which also includes a 10 percent contingency cost. This does not include site work to level the site and remove spoils, or construction of retaining walls. Cost for spoils removal would likely be in the range of $50,000 to $60,000.

6.3 Rammed Aggregate Piers (Geopiers)

Rammed Aggregate Piers (Geopiers) is a Contractor-designed system for soil improvement. Geopiers are aggregate piers constructed in predrilled holes using a proprietary ramming (stone-compaction) technique and are available through companies such as Geopier Northwest, Inc., Keller, and Geotech Foundation West. Both Geopiers and traditional stone columns are constructed with sequential lifts of aggregate. However, traditional stone columns are installed using suspended vibratory probes that only deliver horizontal vibration, while Geopier elements are constructed using a beveled tamper to deliver a high magnitude of vertical compaction energy. The use of vertical ramming rather than horizontal vibration is more conducive to the soft silts and clays that are underlying the proposed reservoir. The beveled tamper system used for rammed aggregate piers was originally developed and patented by Geopier. Although the patent for the beveled tamper system has expired, the term Geopier is frequently applied to rammed aggregate piers installed using this method. Geopier still holds an unexpired patent for systems that install rammed aggregate piers through cased or partially cased holes where the casing is removed in real-time during installation and ramming.

When rammed aggregate piers are installed using non-proprietary systems, the hole is generally pre-drilled prior to the placement of the rock and compaction into a rammed aggregate pier. Based on the potential for perched groundwater, we recommend consideration be given to casing the upper Missoula Flood Deposits either using a temporary casing with the Geopier system or a casing installed by another contractor during or prior to pre-drilling and installation of the rammed aggregate pier.

Based on the underlying soils, we anticipate the need for Geopiers to extend below the very soft clays approximately 40 feet below the proposed reservoir bottom to an elevation of 140 feet. Geopiers are typically spaced at 5 to 6 feet on center with typical area replacement ratios of 0.15 and maximum area replacement ratio of approximately 0.3. The conceptual diameter of the Geopier would be 24-inch diameter. A load transfer platform is typically utilized to transfer the applied loads from the reservoir bottom to the tops of the Geopiers. The load transfer platform is anticipated to be a minimum of 2 feet thick and consist of imported crushed rock. The imported crushed rock used for the load transfer platform shall be compacted to 95 percent of the maximum dry density in accordance with ASTM D1557.

Ground improvement systems, such as Geopiers, are frequently installed as design-build systems and different configurations and depths may be acceptable provided the ground improvement contractor can demonstrate through detailed calculations and similar case histories that the proposed system can support the structure within the required settlement tolerance and the design is approved by the Owner and Engineer.

6.3.1 Rammed Aggregate Pier Bearing Capacity and Settlement

Based on estimates of settlement and a floor elevation of 180 feet for the proposed reservoir, we recommend using a gross allowable bearing pressure of 2,500 pounds per square foot (psf) for design. The allowable bearing pressure may be increased by one-third when including transient wind or seismic loads. If the recommended gross allowable bearing pressure is used for design, then we estimate total settlements will be up to 1.5 inches and differential settlements will be up to 0.5-inches over 50 feet. Our estimate is based on correlations between SPT-N values / shear wave velocity and elastic modulus.

Additional groundwater data will be provided when it is available. However, we anticipate the Rammed Aggregate Pier System can achieve the settlement estimates discussed above for both the current groundwater condition and an elevated groundwater condition where the water is near the ground surface.

6.3.2 Rammed Aggregate Pier Lateral Resistance

Lateral resistance for the Geopier alternative will be derived by a combination of soil passive earth pressure against the buried portions of the structures, and friction between the bottom of the reservoir and the underlying imported crushed rock. Partial passive earth pressures of 160D (where D is the height of the buried portion of the structure) could be used to estimate the soil passive earth pressure resistance. The partial passive pressure is based on select native material being used as backfill around the reservoir. If greater passive resistance is needed, then imported crushed rock could be used to backfill the reservoir. A partial passive pressure of 225D could be used if imported crushed rock is used.

Passive resistance should be ignored in the upper 24 inches if not covered by floor slabs/mats or pavements, or ignored entirely if future development would result in removal of the soils providing resistance. Partial passive pressure is recommended since the large amounts of wall movement that would be necessary to mobilize full passive resistance are typically considered unacceptable by the structural engineer.

The allowable frictional resistance may be computed using a coefficient of friction of 0.45, which includes a factor of safety of 1.5. Note that only the dead load should be considered in calculating the lateral sliding resistance.

6.3.3 Conceptual Rammed Aggregate Pier Cost

For the assumed Geopier size, depth, and typical area replacement ratio described above, we anticipate a total cost of $930,000 for the 3.0 MG reservoir, which includes the cost for mobilization, installation, spoils disposal, load transfer platform construction, and a 10 percent contingency. It does not include costs related to site work to level the site and construction of a retaining wall.

6.4 Reservoir Under Drain System

Below the reservoir slab, we recommend a drainage layer and a leak detection layer (as needed). Typical underdrain slab layers may consist of combined crushed rock underdrain, membrane liner, and leveling course layers. However, we defer to the project civil engineer who typically designs the reservoir and underdrain. In our experience, typical drainage layer thicknesses are 12 to 18 inches and may include the following layering:

- 2 inches of leveling course material - top;
- 12 inches of underdrain material;
- 2 inches of leveling course material (to be placed on top of the liner for protection);

- 30 mil membrane liner (used for leak detection);
- Load Transfer Platform (if Geopiers are utilized).

We recommend the underdrain material be imported, crushed rock, that is clean and relatively open-graded (free-draining) such as ODOT's 1½ inches to No. 4 coarse PCC aggregate (Oregon Standard Specifications for Construction (OSSC) Section 02690) and contain less than 2 percent passing the No. 200 sieve based on a washed sieve analysis, ASTM D 1140. The underdrain material should be placed in a single lift of loose material, in order to provide additional protection to the underlying membrane. The underdrain material layer should be compacted using a "procedural" approach, as described below. The lift of compacted underdrain material should be observed by an experienced geotechnical representative prior to placement of the top leveling course.

The leveling course material should be a maximum ¾-inch particle size, well-graded, crushed rock and contain less than 7 percent passing the No. 200 sieve based on a washed sieve analysis (ASTM D 1140), such as ODOT's 3/4" to 0" Dense-Graded Aggregate (Oregon Standard Specifications for Construction, Section 02630). The leveling course material should be placed in one 2-inch thick lift. The bottom and top leveling course layers should be compacted using a "procedural" approach, as described below; however, the leveling course placed directly on the 30 mil membrane should "not" be compacted. The placement of these leveling courses should be observed by an experienced geotechnical representative prior to placement of the other materials. Thickness of the leveling course is independent of the load transfer platform and may vary depending on the difference in thickness of the footings and floor slab.

The procedural approach to obtain proper compaction below the membrane should consist of proof rolling each lift or placement with self-propelled compaction equipment weighing at least 10 tons (dead weight) with a minimum of two vibratory coverages followed by two coverages with equipment in static mode. The exception to this is the procedural compaction for the leveling courses where the vibratory coverages should not be used and only static coverages; again, the leveling course over the 30 mil membrane should not be compacted. These procedural approaches should be witnessed by a competent geotechnical engineer for each lift placed.

6.5 Embedded Wall Recommendations

We understand that the new reservoir will have partially embedded walls. The embedded wall should be designed as a non-yielding wall by applying at-rest earth pressures in the design.

We assume no groundwater will be encountered within the embedment depths. However, surface water infiltration or perched water seepage into the backfill around the embedded walls could create hydrostatic pressure, if not properly drained. Therefore, to maintain a "drained condition," we recommend a vertical drain consisting of a 3-foot-wide layer of imported, crushed rock, that is clean and open-graded, same as the underdrain material described above, be placed full height along the buried portion of the wall and connected to the perimeter drain pipe near the base of the wall or as recommended by the structural engineer. The vertical drain material should be placed in 12-inch thick loose lifts. The vertical drain material compaction along the reservoir wall should be accomplished with three passes using a 1,000-pound vibratory plate compactor in the presence of a competent geotechnical engineer, or using alternative equipment with a lift thickness approved by the Geotechnical Engineer in writing.

We recommend the top 2 or 3 feet of reservoir backfill consist of a low permeability soil to reduce migration of surface water into the backfill zone, especially above the vertical drain. Also, on the top of this 3-foot-wide vertical drain, a non-woven geotextile (ODOT's Type 2 drainage geotextile, OSSC Section 02320) should be placed as a separation layer. If the backfill against this vertical drain is a select native soil, then this non-woven geotextile should be placed vertically along the entire outside edge of this vertical drain.

For the lateral earth pressure evaluation, we assume that the backfill surface has several conditions along the perimeter consisting of; 1) a 2H:1V surface sloping down to the wall, 2) a level surface for a short transition distance, and 3) a 2H:1V slope away from reservoir wall. These three backfill surface conditions were used to estimate lateral earth pressures presented in the tables below. At this time, it has not been determined whether the backfill material will be imported crushed rock or selected native soil. Therefore, the recommended lateral earth pressure values as equivalent fluid pressures for both imported crushed rock backfill (lowest pressure) and select native soil backfill are presented in Exhibits 6-2 and 6-3. If pit-run gravel or a "dirty" crushed rock is used, the lateral earth pressures will likely be in between the values in these tables. We do not recommend using sand as a backfill material due to its potential to migrate as water passes through it, its potential to create adverse impacts to the buried drainage systems, and its likelihood of settling significantly more than other backfill materials.

Exhibit 6-2: Lateral Earth Pressures for Imported Crushed Rock Backfill

Wall Backslope Angle	Static At-rest Pressure (psf)	Surcharge Static Pressure (psf)	Seismic Pressure (psf)
26.5 degrees (2H:1V)	70H	0.52q	53H
0 degrees (Flat)	48H	0.36q	28H
-26.5 degrees (-2H:1V)	27H	0.20q	28H

Exhibit 6-3: Lateral Earth Pressures for Select Native Soil Backfill

Wall Backslope Angle	Static At-rest Pressure (psf)	Surcharge Static Pressure (psf)	Seismic Pressure (psf)
26.5 degrees (2H:1V)	77H	0.62q	41H
0 degrees (Flat)	53H	0.43q	26H
-26.5 degrees (-2H:1V)	30H	0.24q	26H

In the above exhibits, H is defined as the total height of the buried wall. Again, since the wall is assumed to be in a drained condition due to the inclusion of a vertical drain surrounding the perimeter of the reservoir, no hydrostatic water pressure has been included. In case a surcharge could exist that would add additional lateral pressure, a value of surcharge pressure, q, is shown, with q in units of psf. The distribution and resultants of these lateral pressures are shown on Figure 7. Lateral earth pressure due to seismic loading can be applied in an inverted triangular distribution and is additive to the static at-rest soil pressure. The resultant seismic load acts at a point above the bottom of the wall that is about 0.6 times the height of the wall, as shown on Figure 7.

6.6 Permanent Cuts and Embankment Slopes

It is our opinion that permanent slopes should not be steeper than 2H:1V. For slopes that will be planted with mowing, we recommend a flatter slope such as 3H:1V for easier maintenance to minimize erosion. If select native material slopes are 2H:1V, then special erosion control techniques and materials may be needed to prevent erosion.

6.7 Global Stability

The proposed larger-diameter reservoir is planned to occupy the footprint of the existing smaller-diameter reservoirs. In our opinion, the proposed reservoir will not degrade the global stability of the site provided the grading recommendations in this report are followed. As described above, the proposed reservoir is recommended to be supported by either a deep foundation or ground improvement foundation option. If no significant grading changes are made, the new foundation is anticipated to reduce the risk of shallow instability at this site due to the proposed reinforcing at the toe of the slope with ground improvement or foundation elements.

6.8 Temporary Excavation Support

To support the reservoir excavation, we have considered two options:

- Utilize temporary cut slopes, and
- Construct a temporary retaining wall.

Based on discussion with the design team, we understand that temporary cut slopes are the preferred alternative. Both options are described below.

6.8.1 Temporary Cut Slopes

The safety of temporary excavation and cut slopes should be made the responsibility of the earthwork contractor. The earthwork contractor should be aware of, and familiar with, applicable local, state, and federal safety regulations, including the current OSHA Excavation and Trench Safety Standards. Site safety is generally the sole responsibility of the contractor, who also is solely responsible for the means, methods, and sequencing of construction operations.

We are providing the following information and opinions solely as a service to our client. Under no circumstances should the information provided and opinions expressed below be interpreted to mean that Shannon & Wilson is assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

Based on the subsurface conditions encountered in our borings, the soils can be classified as OSHA Type C. Thus, temporary cut slopes for construction of the proposed reservoir should be sloped no steeper than 1.5H:1V (1.5 horizontal:1 vertical). The cut slopes should be protected from erosion with erosion systems designed by the contractor, and have adequate drainage systems at the base of the cut slopes designed by the contractor.

6.8.2 Conceptual Retaining Wall

To support construction of the reservoir, we understand that a retaining wall will be necessary along approximately 550 feet of the reservoir excavation. We understand that the retaining wall is anticipated to be temporary if the reservoir is designed using concrete as the preferred material, which we assume would result in a partially backfilled reservoir wall.

Based on discussions with a local shoring contractor, a soil nail wall is anticipated to be the most cost-effective wall type. A soil nail wall consists of drilling and grouting a series of near horizontal steel bars or "nails" behind the excavation face, installing drainage panels, and then covering the face with reinforced shotcrete. The placement of relatively closely spaced steel nails in the retained soil mass increases the shear resistance of the soil against rotational sliding, increases the tensile strength of the nail system behind potential slip surfaces, and moderately increases the shear resistance of a potential slip surface due to the bending stiffness of the nails.

The construction procedure for soil nails is considered "top down" and includes three steps for each horizontal row of nails:

1. Staged excavation and pre-production soil nail performance tests (verification tests);
2. Nail installation and select nail proof testing; and
3. Drainage and shotcrete facing construction.

This sequence of staged excavation, nail installation, and drainage/facing construction in horizontal rows is repeated until the excavation and shoring is complete. Soil nails consist of solid or hollow steel bars (typically 3/4 to 1-3/8 inches in diameter), which are installed by tremie grouting the nail in a predrilled hole. Soil nails are located in square or rectangular grid patterns (i.e., 4- to 8-foot grid) and are typically installed at an inclination angle of 15 degrees below horizontal. Drainage is provided behind the wall facing by placing vertical rows of geosynthetic drainage composites between the grids of soil nails before shotcrete application, then connecting the drainage system to weep holes between soil nail lifts and to a discharge pipe at the bottom of the wall. Facing typically consists of shotcrete sprayed over welded wire mesh and steel reinforcement on the face of the cut excavation, connected to the soil nails.

6.8.3 Conceptual Soil Nail Wall Cost

Based on discussion with a local shoring contractor, the conceptual cost for a temporary retaining wall is $65 per square foot of facing for a temporary wall. This does not include an assumed approximately $40,000 mobilization cost. If the wall were designed to be a permanent wall, then the cost would increase to $100 per square foot of facing without mobilization and demobilization costs.

7 CONSTRUCTION CONSIDERATIONS

7.1 Stripping and Grubbing

Organic material and topsoil should be stripped and removed from all proposed reservoir, building, cut, embankment, wall, and roadway areas. We recommend that the primary root systems for trees and other vegetation be completely removed. Trees and their root balls should be grubbed to the depth of the roots, which could exceed 3 feet below ground surface (bgs). Depending on the methods used to remove the root balls, considerable disturbance of the subgrade could occur during site clearing and grubbing. We recommend that soil disturbed during clearing and grubbing operations be removed and replaced with crushed rock materials as described in text sections above.

7.2 Wet Weather Construction

Excavation and construction operations may expose the on-site soils that are sensitive to inclement weather conditions. The stability of exposed soils may rapidly deteriorate due to a change in moisture content (i.e., wetting or drying) or the action or repeated vibrations of construction equipment. Accordingly, excavations and subgrade should be adequately protected during construction activities. The subgrade should be covered with crushed rock as soon as practicable to prevent the subgrade from softening from rainfall.

The use of granular haul roads or staging areas will be necessary for support of construction traffic on silty subgrades during the rainy season or when the moisture content of the surface soil is more than a few percentage points above optimum. A 12- to 18-inch thickness of imported granular material generally should be sufficient for light staging areas and the basic building pad, but is generally not expected to be adequate to support heavy equipment or truck traffic. Haul roads and areas with repeated heavy construction traffic should be constructed with 18 to 24 inches of stabilization material. Stabilization material should consist of well-graded crushed gravel, or crushed rock with a maximum particle size of 4 inches and less than 5 percent by dry weight passing the U.S. Standard No. 4 Sieve. Stabilization material should be placed in one lift and compacted.

In addition, we recommend that a non-woven geotextile be placed as a barrier between silty subgrade materials and imported granular material in areas of repeated construction traffic. The geotextile should meet the requirements of OSSC Section 02320.20 for soil separation.

7.3 Dewatering and Groundwater Control

Groundwater seepage was observed in the test pits at a depth of 7 feet. If pipeline trenches and other excavations deeper than 7 feet are constructed/performed, perched groundwater should be anticipated. Traditionally, the means and methods for temporary dewatering are the contractor's responsibility. It is our opinion that shallow water may be perched on the Scappoose Formation. If perched groundwater is limited to 4 or 5 feet of head above the Scappoose Formation an external dewatering system outside the trench may not be required to maintain a stable subgrade surface and internal sumping through well filtered sumps designed by the contractor are anticipated to be adequate for controlling the groundwater. For dewatering inside the trench or in mass excavations with less than 5 feet of head, the dewatering system should consist of an open-graded aggregate layer (drainage layer), typically 12 inches thick, at the base of the excavations with a separation layer of non-woven geotextile on the soil subgrade and sumping within the drainage layer.

An active external dewatering system (well points or deep wells) will likely be required if the perched groundwater is greater than 5 feet above the Scappoose Formation. These

systems should be designed by the Contractor and in conjunction with observation wells to confirm groundwater has been lowered prior to beginning excavations. Any water collected during dewatering, as well as any excavated soil, should be treated and disposed of in a manner that meets local, state, and federal environmental regulations and requirements. For planning purposes, we recommend deep temporary construction slopes of 1.5H:1V or flatter. Temporary excavations and trenches are typically the responsibility of the contractor and should comply with applicable local, state, and federal safety guidelines, including the current OSHA Excavation and Trench Safety Standards.

7.4 Backfill Placement and Compaction

Unless otherwise noted (such as in the crushed rock pad above the Geopiers), structural fill in settlement-sensitive areas should be compacted to 92 percent of the modified Proctor test (ASTM D1557). The crushed rock pad above the Geopiers should be compacted to 95 percent of the modified Proctor. The structural fill should be placed in maximum lifts of 8 inches of loose material. The structural fill materials should be compacted within the range of ±2 percent of the optimum moisture content value or with moisture content allowing compaction requirements to be obtained.

Each lift of compacted structural fill should be tested by the project's special inspection firm and the results provided to the Geotechnical Engineer for their review, prior to placement of subsequent lifts.

In non-settlement sensitive areas reworked native material may be used if it is compacted to a minimum of 88 percent of optimum (according to ASTM D1557) and to a firm and unyielding condition. Based on our experience in the area, the moisture content of the on-site silty soil will be much higher than the optimum moisture content required for compaction. Therefore, significant moisture conditioning (drying) would be required to reuse on-site silty soil and is often not cost-effective.

7.5 Augercast Pile Installation

The quality of augercast piles depends on the procedure, workmanship, and equipment of the contractor who installs them. We recommend that the contract documents require the contractor to install a pressure gage on the pump discharge line and a stroke counter on the grout pump. The approximate volume of grout pumped is computed by counting the number of strokes of a displacement-type grout pump. The pressure gage is used to monitor the pressure of the grout to evaluate the rate at which the auger should be extracted and to check if the auger or hoses are plugged. If insufficient grout is pumped into the auger, a proper grout column will not be formed. If the pressure in the grout line is not maintained, or if the auger is withdrawn too rapidly, the auger hole may cave, creating a

discontinuity in the grout column. Either condition will reduce the load-carrying capacity of the pile. Therefore, the pump should be calibrated in the presence of the geotechnical engineer prior to its use, and the pressure gage should be checked for proper functioning.

The auger should not be pulled until the grout has been pumped at least 5 feet above the auger tip. It should then be withdrawn with slow, positive rotation at a slow, continuous, steady pull. The 5-foot head of grout should be maintained at all times during the withdrawal operations. The minimum grout head should be increased to 10 feet if grout settlement is observed after the auger is withdrawn. The Contractor should be required to establish accurate methods of determining the depth of the auger at all times, such as marking the leads at 1-foot intervals. The ratio between the volume of grout pumped and the theoretical volume of each augercast pile hole should be greater than or equal to 1.10.

The time required to install foundations is a function of the contractor's schedule, the contractor's means and methods, the availability of materials, the weather, and other factors beyond our control. When augercast pile equipment is continuously operating, in our experience, augercast pile contractors are able to install 8 to 10 or more augercast piles per day. Final design has not been performed for augercast piles; however, assuming 150 augercast piles will be installed, the total time for augercast pile installation could be 3 to 4 weeks. This does not include the time required for site grading, spoils removal, construction of temporary access roads, or other activities. When communicating project schedules to community stakeholders we also recommend including some contingency in the project schedule for factors such as equipment repairs, delays associated with procurement of materials, wet weather, and other factors.

7.6 Rammed Aggregate Piers (Geopiers) Installation

Rammed aggregate piers can be installed using different and proprietary techniques. They may be constructed in drilled, open holes using a proprietary ramming technique, or they may be installed using a bottom-feed vibrator mandrel, which is advanced to specified depths, then advanced and withdrawn repeatedly to compact the aggregate material fed through the mandrel. Due to the relatively soft / loose soils within the upper 20 feet, we would recommend requiring an installation method that utilizes a bottom feed mandrel or temporary casing should be utilized in the upper 20 feet to maintain stability of the hole during installation.

Geopier has indicated that the construction will require 17 to 23 days (3 to 5 weeks) of installation for the conceptual design developed for the 3 MG reservoir. This does not include the time required for site grading, spoils removal, construction of temporary access roads, or other activities. When communicating project schedules to community

stakeholders we also recommend including some contingency in the project schedule for factors such as equipment repairs, delays associated with procurement of materials, wet weather, and other factors.

7.6.1 Noise and Vibration

The proposed reservoir footprint would be approximately 50 feet from the nearest residential structure. Therefore, considerations for construction vibration and noise are an important issue. The effect of vibrations on adjacent buildings depends on the building's construction (i.e., wood, masonry, steel, concrete), building age, distance of the adjacent building from the source of vibration, duration of vibration, vibration frequency, vibration amplitude, and soil conditions (Geopier, 2016). Based on guidance prepared by Geopier, at a distance of 50 feet, the peak particle velocities are anticipated to be less than 0.1 inch per second and the relative noise would be in the range of 80 to 90 decibels (i.e., equivalent to an air compressor). Based on NCHRP Synthesis Report 253 Dynamic Effects of Pile Installations on Structures, a peak particle velocity of 0.1 inches per second or less is deemed as potentially troublesome to people, but is below the conservative threshold for damage of 0.5 inches per second. However, to help protect the City from potential construction claims, we recommend a pre-construction crack and building survey of the nearest residential structure be considered to document the pre-construction condition of the structure. Vibration monitoring should also be established at the property line to measure the actual vibrations during construction.

8 LIMITATIONS

The preliminary analysis, conclusions, and recommendations contained in this memorandum report are based on site conditions as they currently exist. We have assumed that the explorations are representative of the subsurface conditions at the site of the proposed structures and that subsurface conditions everywhere are not significantly different from those disclosed by the explorations. Within the limitations of the scope, schedule and budget, the analyses, conclusions, and recommendations presented in this report were prepared in accordance with generally accepted professional geotechnical engineering principles and practice in this area at the time this report was prepared. We make no warranty, either express or implied. Our conclusions and recommendations are based on our understanding of the project as described in this report and the site conditions as interpreted from the explorations.

If, later in the project stages, the project changes from descriptions in this report or new or additional subsurface information indicates that conditions different from those

encountered in the field explorations are or appear to be present, we should be advised at once so that we can review these conditions and reconsider our recommendations where necessary. If there is a substantial lapse of time between the submission of this report and the final design report, or if conditions have changed because of natural forces or construction operations at or adjacent to the site, we recommend that this report be reviewed to determine the applicability of the conclusions and recommendations concerning the changed conditions and/or the time-lapse.

This report was prepared for the exclusive use of RH2, the City of Scappoose, and their design team for design of the proposed reservoir. This report is not a warranty of subsurface conditions, such as those interpreted from the exploration logs, including conclusions of subsurface conditions. Unanticipated soil conditions are commonly encountered and cannot fully be determined by the limited explorations conducted on-site. Such unexpected conditions frequently require that additional expenditures be made to attain properly constructed projects. Therefore, some contingency fund is recommended to accommodate the potential for extra costs.

The scope of Shannon & Wilson's geotechnical services did not include any environmental assessment or evaluation regarding the presence or absence of hazardous or toxic materials in the soil, surface water, groundwater, or air, on or below the site, or for evaluation of disposal of contaminated soils or groundwater, should any be encountered, except as noted in this report.

Shannon & Wilson, Inc., has prepared the attached "Important Information About Your Geotechnical/Environmental Report," to assist you and others in understanding the use and limitations of Shannon & Wilson's reports.

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IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors that were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the Geoprofessional Business Association (https://www.geoprofessional.org)

Exhibit 6

Keys Road Reservoir

Stormwater Design Report

Prepared for City of Scappoose

March 2024

Project Number 0230093.00

RH2 ENGINEERING
Portland
5335 Meadows Road, Suite 420
Lake Oswego, OR 97035
1.800.720.8052 / rh2.com

City of Scappoose

Keys Road Reservoir

Stormwater Design Report

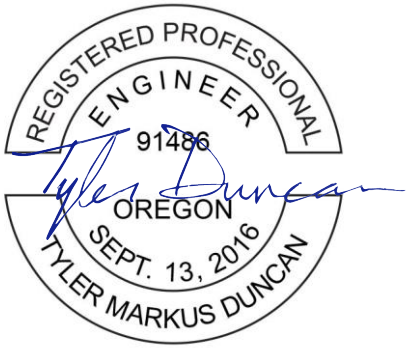
Prepared by RH2 Engineering, Inc.

Prepared for the City of Scappoose

Note: This Stormwater Design Report was completed under the direct supervision of the following Licensed Professional Engineer registered in the State of Oregon.

Sincerely,

RH2 ENGINEERING, INC.



EXPIRES: 12/31/2025

City of Scappoose
Keys Road Reservoir
Stormwater Design Report

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City of Scappoose
Keys Road Reservoir
Stormwater Design Report

Introduction

The City of Scappoose (City) has retained RH2 Engineering, Inc., (RH2) to develop a design for the Keys Road Reservoir project. The project includes the demolition of two existing reservoirs and the construction of a new 3.0 million gallon (MG) reservoir at the Keys Road Water Treatment Plant site.

The project will change site stormwater characteristics due to an increase in impervious area and will modify existing drainage patterns, resulting in a larger area of the subject property draining to the existing storm sewer system.

This report presents RH2's stormwater analysis for this project, including background information, design criteria, analysis methodology, results, and conclusions.

Project Narrative

Existing Site Description

The Keys Road Water Treatment Plant site is located at 52239 Southwest Keys Road, Scappoose, Oregon. Refer to the existing site aerial image in **Figure 1**. Existing structures onsite include the water treatment plant, backwash basin, and three cylindrical water tanks (0.2 MG, 1.0 MG, and 2.0 MG). An asphalt paved driveway meanders through the site. Open areas are predominantly lawns with a few clusters of large, mature trees at various locations. The site is bounded by Keys Road to the west and south, low-density residences to the north, and open land to the east, with one single-family residence adjacent to the southeast corner of the property. Refer also to the Existing Site Plan included in **Appendix A**.

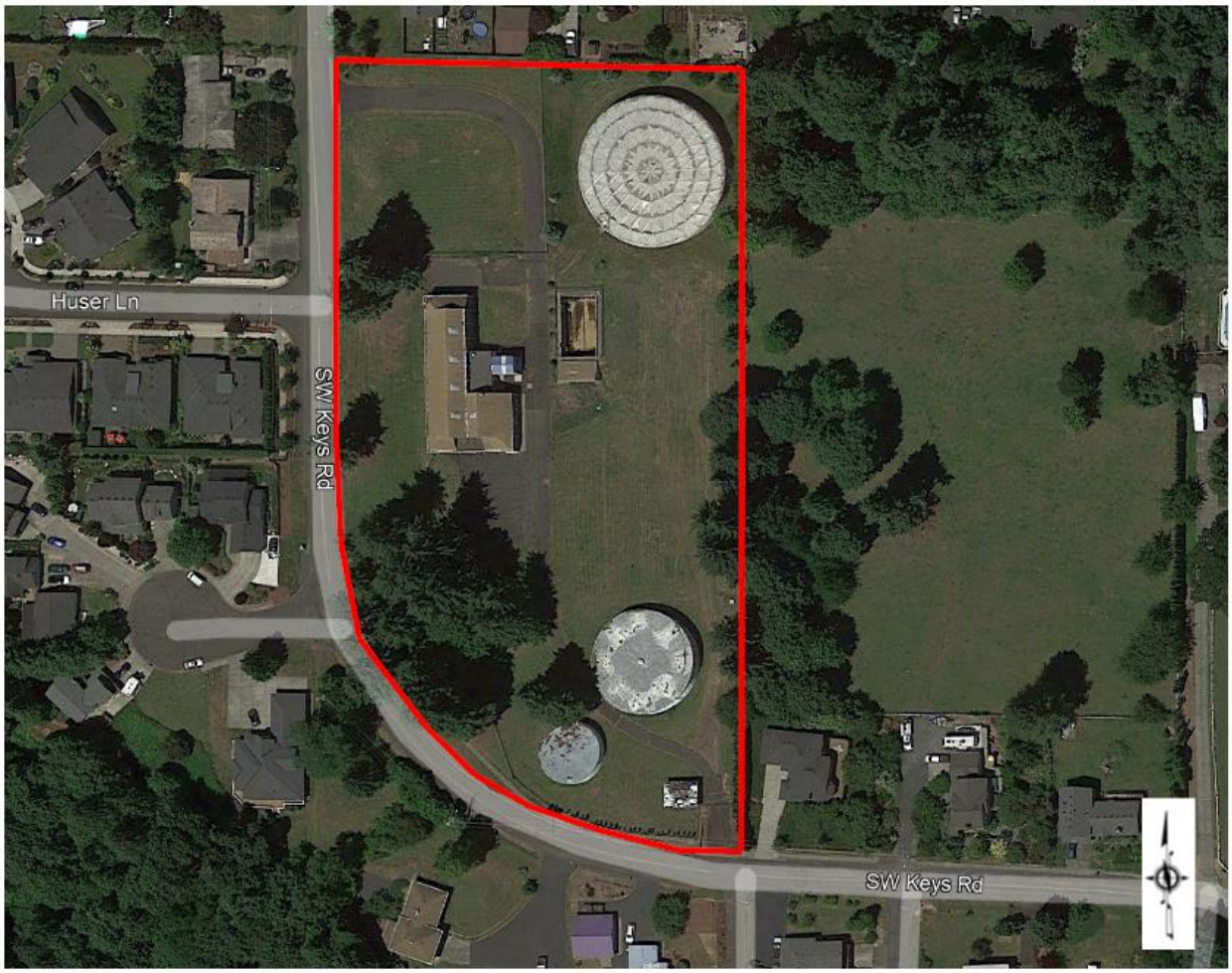

Figure 1: Aerial Image of Existing Project Site

Project Improvements

Project improvements include the demolition of the existing 0.2 MG and 2.0 MG water tanks at the south end of the project site, and construction of a new 3.0 MG water in approximately the same location, along with associated piping. The existing access road will be revised to accommodate the new water tank. Grading improvements include grading for the new tank, as well as minor grading north of the new tank and east of the existing water treatment plant to lessen slopes for ease of mowing. Drainage improvements include new catch basins and storm pipes to collect runoff from the new impervious areas associated with the new tank and access road, as well as stormwater detention improvements. Refer also to the Proposed Drainage Plan included in **Appendix A**.

Existing Drainage Patterns and Basin Delineation

The existing site can be divided into three primary subbasins, two of which were delineated and modeled as depicted in **Figure 2**.

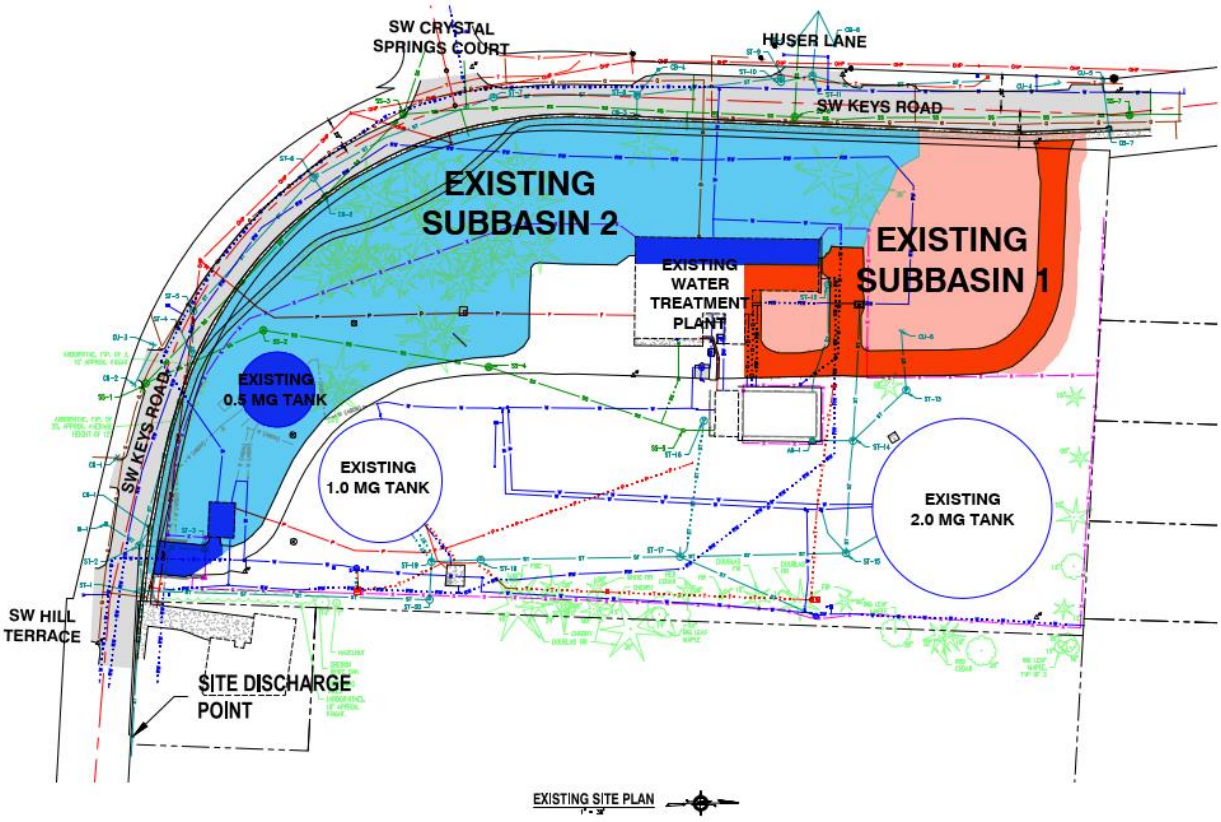

Figure 2: Existing Site and Subbasin Drainage Areas

Note: North is to the right. Different colored hatching represents different tributary areas, with dark hatching representing impervious areas and light hatching representing pervious areas.

Existing Subbasin 1 – The northwest portion of the property drains to a low point north of the treatment plant where it enters the existing on-site storm sewer system, which conveys stormwater south and ties into an existing manhole on SW Keys Road near the southwest corner of the site.

Existing Subbasin 2 – The majority of the western part of the site generally drains south and then east. Some of this area sheet flows onto SW Keys Road, where it enters the gutter and drains south until it is intercepted by the storm sewer system. The majority of this section is conveyed by a shallow grassy swale across the site to the south and then east, where it flows over the paved area at the southeast corner of the site, onto SW Keys Road. Stormwater flows along the gutter and enters the storm sewer system through multiple curb inlets or catch basins.

Existing East Subbasin – The eastern half of the property (not delineated in **Figure 2**) drains east primarily by overland sheet flow to the adjacent open land. This part of the project site was not analyzed in this report because drainage patterns will remain the same. The proposed improvements will route some of the runoff from this area into the storm sewers system, which will result in a net reduction of stormwater flowing to the east.

A small amount of stormwater is believed to sheet flow from adjacent properties on the north onto the northern part of the project site, where it is conveyed immediately to the east. This

off-site stormwater was not analyzed because the proposed improvements will not change the drainage patterns in this area.

This analysis considers on-site drainage only; therefore, the existing drainage from upstream of the site that is conveyed along SW Keys Road is excluded from this analysis.

As discussed previously, flows from Existing Subbasin 2 flow onto SW Keys Road. These flows are intercepted by an existing catch basin to the southeast of the site, which is indicated in **Figure 2** as the "Site Discharge Point." This point is considered the convergence point for flows from Existing Subbasins 1 and 2, where overland flows enter the piped storm sewer system; this is the point where system hydrographs were modeled. Beyond this point, the stormwater system continues through pipe, several culverts, and some open channels towards the South Fork of Scappoose Creek.

Improved Site Drainage Patterns and Basin Delineation

The improved site was divided into four primary subbasins, three of which were delineated and modeled as depicted in **Figure 3**.

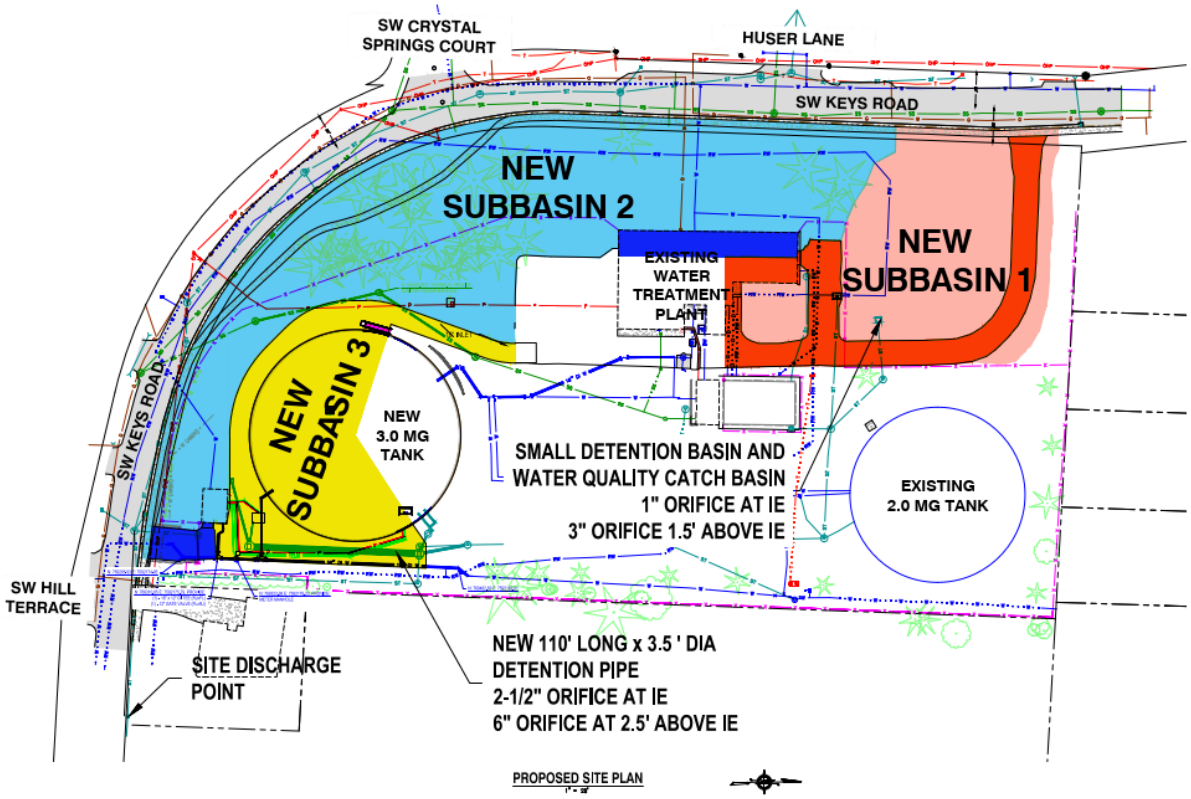

Figure 3: Improved Site and Subbasin Drainage Areas

Note: Different colored hatching represents differed tributary areas, with dark hatching representing impervious areas and light hatching representing pervious areas.

New Subbasin 1 – This subbasin remains exactly the same as Existing Subbasin 1.

New Subbasin 2 – This subbasin remains similar to the Existing Subbasin 2, with the difference being that a portion of Existing Subbasin 2 is now part of New Subbasin 3.

New Subbasin 3 – This subbasin accounts for runoff from the majority of the new 3.0 MG water tank and access road. The area is comprised of part of Existing Subbasin 2 and part of the Existing East Subbasin that drains to the east. Runoff from New Subbasin 3 is routed into the existing storm sewer system.

New East Subbasin – A portion of the new tank will be tributary to this subbasin; however, the New East Subbasin is 30,400 square feet (sf) smaller than the Existing East Subbasin, and reduces the total impervious area draining east (overland) by 2,300 sf. A reduction in runoff to the east is achieved; however, the reduction in runoff is not calculated in this report since the design goals (refer to next section) are not concerned with reductions in overland sheet flow to the east.

When considered across all subbasins the proposed improved site will result in a net increase of impervious area by 15,580 sf (71,130 sf total impervious area after development, vs. 55,550 sf impervious area pre-development). This increase occurs in New Subbasin 3. Therefore, most of the proposed stormwater design occurs in New Subbasin 3. As discussed in **Results and Discussion** section, some storm system design modifications are also proposed in Subbasin 1.

Design Goals

The primary project goals related to the stormwater design are as follows:

1. Collect runoff from the developed portion of the site and route it into the City's existing storm sewer system.
2. Ensure that the peak flow rate entering the City's existing storm sewer system from the improved site is equal to or less than the peak flow rate from the existing site for the 2-year through 25-year, 24-hour design storm events.

Analysis Methodology

Design Criteria

This stormwater analysis and design was performed in accordance with the requirements of the *City of Scappose Public Works Design Standards* dated July 1, 2002. Per conversations with City staff, only the detention requirements described in these standards must be followed for this project.

The following are the key design criteria used when developing the project design.

1. Runoff
    a. Time of concentration was calculated using the Natural Resources Conservation Service Soil Conservation Service's (SCS) small watersheds method as described in

Urban Hydrology for Small Watersheds Technical Release 55 (1986) as published by the United States Department of Agriculture.

b. Design storm hyetographs were developed by allocating the respective design storm depth to a Type 1A distribution.

c. Hydrographs were developed using the Santa Barbara Urban Hydrograph (SBUH) method for each catch basin.

d. Runoff was calculated for the 2- and 25-year, 24-hour duration design storm events.

Background on design storm runoff calculation methodology is as follows:

Design storms are developed based upon statistical analysis of measured precipitation data, and can be defined by three different factors:

1) Depth – The quantity of precipitation measured in depth that falls in a given storm duration and frequency. Based on data compiled by the Oregon Department of Transportation (Retrieved from TransGIS) the 2- and 25-year precipitation depths are 2.29 inches and 3.57 inches, respectively. Refer also to the **Hydrograph Development** section of this report.

2) Duration – The period of time over which a precipitation event occurs. Storm duration is selected based upon the objective of the hydrologic analysis. For small watersheds, 24-hour and shorter duration design storms are typically used. The subject analysis is a small watershed and the 24-hour duration was used for both storms.

3) Frequency – The frequency, or more specifically, the frequency of exceedance, is the time period (return period) in which a particular storm depth is expected to be statistically equaled or exceeded. The frequency can also be described in terms of exceedance probability. The 2-year frequency storm event has a 50 percent statistical probability of occurring or being exceeded in a given year; in similar fashion the 25-year frequency storm event has a 4 percent probability.

Design storms are applied to a watershed area to quantify runoff based on temporal and spatial distributions. These distributions are defined as follows:

1) Temporal Distribution – The time-related distribution over which the design storm event occurs. The temporal distribution simulates how the storm intensity (how hard it is raining) changes over the duration of the storm event, which is statistically determined based upon past rainfall events in a given region and is usually simulated by applying the storm depth to a particular distribution. In Western Oregon the Type 1A (Gumbel) distribution is typically used.

2) Spatial Distribution – The distribution of the precipitation depth over a given watershed area. For small subbasins (such as that of the subject analysis), spatial distribution is generally assumed to be homogeneous, in other words the rainfall intensity is the same over the entire watershed area.

2. Detention
    a. The proposed detention facilities shall be sized sufficiently such that peak flow rates from the developed site are equal to or less than the peak flow rates from the pre-developed site.
    b. Detention must be analyzed for the 2-year through 25-year design storms.
3. Conveyance
    a. The minimum storm drain pipe size shall be 12-inch diameter.
    b. Pipe shall be sloped adequately to produce a mean velocity of 3 feet per second when flowing full.
    c. A minimum Manning's pipe coefficient of 0.013 will be used.
    d. A minimum pipe cover of 30 inches in paved areas and 36 inches in all other areas is required.

Analysis

Subbasin Delineation

Subbasins were delineated for the existing site (**Figure 1**) and improved site (**Figure 2**) based on observed site conditions, topographic data, and storm sewer infrastructure shown in the survey, which was prepared by S&F Land Services, dated June 23, 2023. A discussion of site drainage patterns for both the existing and improved sites and of sub-basins to be analyzed is included in the **Project Narrative** section of this report.

Hydrograph Development

Design storm precipitation depths were estimated based on information obtained using the Oregon Department of Transportation's (ODOT) TransGIS portal. The TransGIS precipitation depth data was compared to the precipitation depths shown in the *Precipitation-Frequency Atlas of the Western United States, Atlas 2, Volume X-Oregon* (1973), as published by the National Oceanic and Atmospheric Administration. Precipitation depths shown in ODOT's TransGIS were slightly higher and were used to provide a more conservative analysis. The precipitation depths were allocated to a Type 1A distribution, resulting in the design hyetograph.

The SBUH method was used to generate hydrographs for each delineated subbasin. For each such subbasin, the time of concentration was calculated using the SCS method; however, for subbasins where the calculated time of concentration was less than 5 minutes, the minimum time of concentration of 5 minutes was used.

TR-55 was referenced; for structures and paved areas, an SCS curve number of 98 was used, and for grassy/lawn areas, an SCS curve number of 74 was used given on-site soils and cover conditions. The United States Geological Survey Web Soil Survey mapping indicates that soils consist of poorly draining Wapato silt loam comprised of silts and clays classified as hydrologic soil group C/D. This is consistent with the clays and silts reportedly encountered during past

geotechnical investigations. Impervious and pervious areas were calculated and a composite curve number was calculated for each subbasin and was used in the SBUH calculations.

Model Development

The existing storm sewer conveyance system was modeled using the US Environmental Protection Agency's Stormwater Management Model Version 5.2 (SWMM 5.2) software. Manholes and storm pipes were input into the model based on the information included in the survey. Hydrographs for each delineated subbasin were input into the model and routed to appropriate locations in the modeled conveyance system. As previously discussed, the existing catch basin on SW Keys Road east of the subject property was selected as the site discharge point for the existing system (refer to **Figure 2's** "Site Discharge Point"). Modeled flows at this location were used to generate the existing storm sewer system hydrographs at the 2- and 25-year, 24-hour design storm events.

Results and Discussion

Development of Alternative Designs

Under the existing condition, a large portion of the site drains by overland flow offsite to the east, and in the improved site condition, some of this area is re-routed into the storm sewer system. Therefore, the tributary drainage area to the site discharge point (**Figures 2** and **3**) is increased. Due to this increase in tributary area and the increase in impervious area, detention will be required to keep the improved site peak discharge flow rate equal to or less than the existing site.

RH2 reviewed drainage patterns and existing infrastructure, and considered several strategies for detaining stormwater to achieve existing peak flow rates. Two are described herein.

Detention Pipe Plus Small Detention Basin Alternative (Preferred)

The solution RH2 developed, which is shown on the design drawings, is to install a 110-foot long, 42-inch-diameter detention pipe near the new 3.0 MG tank to detain runoff generated from within New Subbasin 3. Modeling showed that two flow control orifices would be needed, which are indicated in **Figure 3**. Modeling showed that the detention pipe alone could not provide adequate detention to reduce the peak flow down to less than or equal to the existing peak flow rate. To provide the additional detention required, the open pipe inlet in New Subbasin 1 can be retrofitted with a catch basin and orifice plate such that the small depression north of the water plant can serve as a small detention basin. Refer to **Figure 3** for orifice sizing and elevations. A water quality catch basin (lynch basin) could be installed at this location that would provide some water quality benefit as an oil water separator and sediment trap as well.

Centralized Dry Pit Detention Basin Alternative

One alternative to the Detention Pipe Plus Small Detention Basin strategy, would be to install a large centralized dry pit detention basin. The grassy area north of the new 3.0 MG water tank could be graded to create a depression that would allow water to pond above ground, with outflow controlled by an orifice plate. A preliminary analysis showed that the basin would need to be approximately 130 feet long by 20 feet wide at the base and 3 feet deep to provide

adequate detention. The centralized dry pit detention basin would collect and impound runoff from a larger portion of the project site, which would further reduce runoff that currently sheet flows to the east onto adjacent, private property. Another benefit is that the basin could help remove accumulated stormwater from the existing low lying area and thus alleviate some of the site access challenges due to saturated ground that have been described when vehicles trying to access the City's existing 2.0 MG tank during wet weather. This detention basin could be reinforced using open, permeable pavers or other methods to support vehicle loads while still allowing grass to grow.

Alternative Selection

RH2 chose to move forward with the detention pipe plus small detention basin as the preferred design because it would remain within the project footprint, it would be the simplest to construct, and it would change drainage patterns less than implementation of the larger centralized dry pit detention basin concept.

Hydrograph Development

The SWMM 5.2 model was used to generate three hydrographs at the site discharge point under three conditions for the 2- and 25-year, 24-hour design storm events:

1. Existing Site Condition.
2. Improved Site Condition without Stormwater Detention.
3. Improved Site Condition with Stormwater Detention.

The resulting hydrographs for the three conditions at the 2- and 25-year storm events are shown in **Figure 4** and **Figure 5**, respectively, and peak flows are tabulated in **Table 1**. Refer also to **Appendix B – Tabulated Hydrograph Data**.

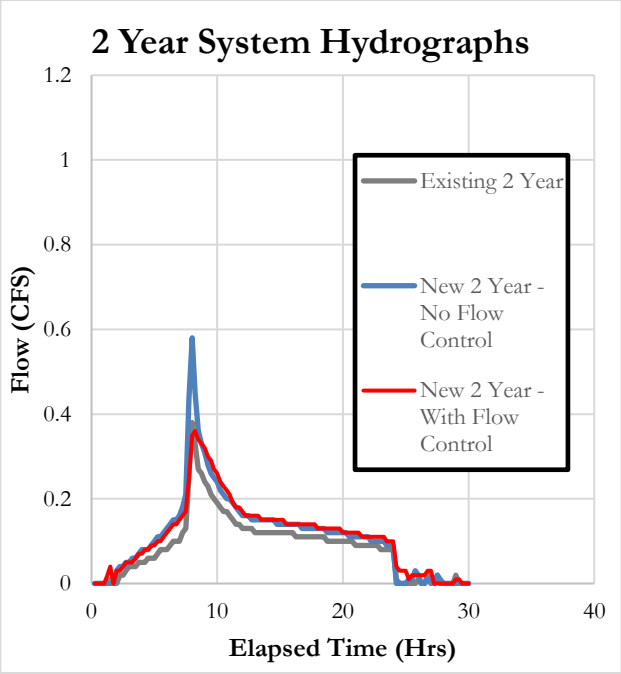

Figure 4: 2-Year System Hydrographs

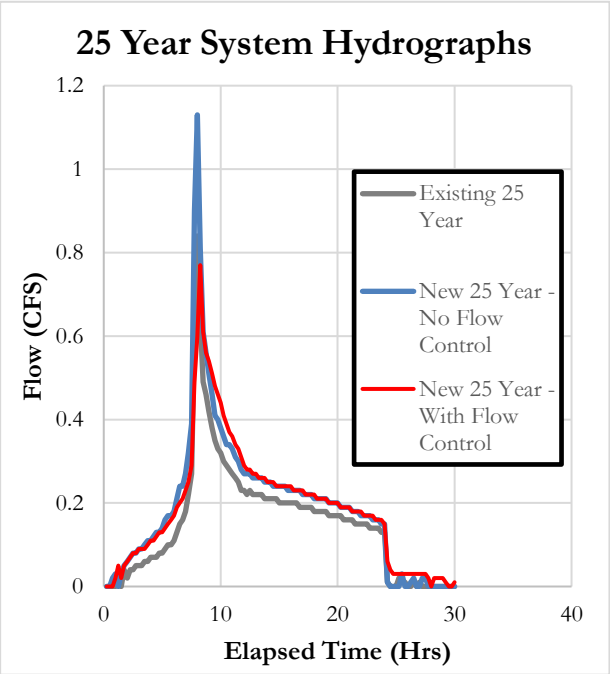

Figure 5: 25-Year System Hydrographs

Table 1

Peak Runoff Flows for Existing Conditions and New Conditions with Flow Control

	2-Year Event Peak Flow (cfs)	25-Year Event Peak Flow (cfs)
Existing Site Condition Runoff	0.38	0.84
New (Improved Site) Runoff without Flow Control	0.58	1.13
New (Improved Site) Runoff with Flow Control	0.36	0.77

Table 1 shows that the detention pipe in New Subbasin 3 plus a small detention facility in New Subbasin 1 are adequate to reduce the peak flow to less than or equal to the existing site condition in the 2-year through 25-year events.

Conclusions

City staff have concurred with selection of the preferred alternative. The stormwater modeling conclusively shows that a 110-foot-long, 42-inch-diameter detention pipe receiving runoff from New Subbasin 3, and a small dry pit detention basin receiving water from New Subbasin 1, with outflows controlled by orifices are adequate to reduce post-construction peak flows (generated on the project site and entering the City's storm sewer system) to under existing peak flow conditions at the 2-and 25-year storm events.

The final bid package will lay out facility geometry, outlet and overflow configuration, sizes and elevations of stormwater infrasturcte, conveyance improvements, and other aspects that will be detailed for construction of the stormwater improvements.

The design presented herein conforms with or exceeds the applicable requirements of the *Oregon Standard Specifications for Construction* as published by APWA/ODOT.

Exhibit 7

December 23, 2002

Mac E. Robison, P.E.
32910 SW Keys Landing
Scappoose, OR 97056

RE: Notice of Final Decision for Approval of ZC 5-02/SDR 9-02 (Keys Road Treatment Plant Water Reservoir), Columbia County Assessor Map No. 3211-044-00200.

Mr. and Mrs. Burkhart:

This letter serves as notice of the final decision by the Scappoose Planning Commission recommending approval to the Scappoose City Council on an application for a Zone Changes (ZC 5-02). If approved, the Planning Commission has also made a decision for approval of the development of an approximately 26-foot tall, 119-foot diameter, water reservoir (SDR 9-02). All notices required by Scappoose Municipal Code Chapters 17.162 and 17.164 have been met for this application.

At the December 19, 2002 hearing, the Scappoose Planning Commission adopted the findings contained in the December 19, 2002 staff report and approved the application subject to the following conditions of approval:

1. That if approved, SDR 9-02 shall not take effect until and unless ZC 5-02 is approved by the City Council.

2. That prior to the issuance of any grading or building permit, the applicant perform a wetland determination within the subject site by a qualified wetlands biologist, and as necessary, submit all required documentation (including wetland delineation) needed to secure a Sensitive Lands Development Permit--Wetlands.

3. That prior to the issuance of any construction permit, the applicant submit an erosion control and drainage plan for the review and approval of the City Engineer, and obtain all necessary grading and building permits from the Building Division.

4. The applicant shall construct a ½-street improvement along the entire length of Keys Road, to include curb, gutter, six-foot wide sidewalk and a 22-foot wide paved section. In addition, a cross-section for the ½-street improvement shall be prepared that illustrates utility location, street improvement elevation and grade,

sidewalk location, and sidewalk elevation and grade per the requirements of the Public Works Design Standards and Standard Specifications.

The approval of SDR 9-02 by the Planning Commission may be appealed by filing a written notice of appeal complying with Scappoose Municipal Code 17.162, including the required $500 fee, *before 5:00 p.m. on Tuesday, January 7, 2003*. However, please be advised that as delineated within Condition of Approval No. 1, the zone change request itself is required to go before the City Council prior to final approval of SDR 9-02. I anticipate this public hearing to occur at 7:00 p.m. on January 21, 2003. Please feel free to call or e-mail with any questions or need for additional information.

Respectfully,

CITY OF SCAPPOOSE

Michael D. Walter, AICP
Planning Services Manager

cc: Post on Municipal Bulletin Board (Remove 1/7/03)

Exhibit 8

SCAPPOOSE Oregon

LAND USE ACTION REFERRAL (SDR 1-24, SLDP 2-24) ***April 4, 2024***

RETURN TO: N.J. Johnson by April 25, 2024 via email at njohnson@scappoose.gov. If you have any questions, please call N.J. Johnson at (503) 543 - 7184, ext. 403.

REGARDING: The City of Scappoose has requested approval of a consolidated application for Site Development Review and Sensitive Lands Development Permit (SDR 1-24, SLDP 2-24) to allow for the demolition of two existing water reservoirs, construction of a new 3-million-gallon water reservoir, and improvements to various site amenities. The site is located at 52212 SW Keys Road, southeast of the SW Keys Landing Road and SW Keys Road intersection, on property described as Columbia County Assessor Map #3211-DD-00200.

1. X We have reviewed the enclosed application and have no objection to its approval as submitted.

2. _____ Please see either our comments (below) or attached letter.

3. _____ We are considering the proposal further and will have comments to you by _____.

4. _____ Our board must meet to consider this; we will return their comments to you by _____.

5. _____ Please contact our office so we may discuss this.

6. _____ We recommend denial of the application. Please see either our comments (below) or attached letter:

COMMENTS: _____

Name: Dave Sukau Title: Public Works Director

Signed: _____ Date: 4/5/2024

Exhibit 9

SCAPPOOSE Oregon

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5. _____ Please contact our office so we may discuss this.

6. _____ We recommend denial of the application. Please see either our comments (below) or attached letter:

COMMENTS: Contractor will be required TO obtain all Building, Plumbing and Electrical Permits.

Name: Don VAN Domelen Title: Building Official

Signed: [signature] Date: 4-22-24

Exhibit 10

SCAPPOOSE Oregon

LAND USE ACTION REFERRAL (SDR 1-24, SLDP 2-24) ***April 4, 2024***

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5. _____ Please contact our office so we may discuss this.

6. _____ We recommend denial of the application. Please see either our comments (below) or attached letter:

COMMENTS: _____

Name: Miguel Bautista Title: Division Chief

Signed: _____ Date: 4/30/2024

Fire Service Referral and Acknowledgement

Site Address: 52212 SW Keys Road
Map & Tax Lot: Map #3211-DD-00200.
Description of Proposed Use: The demolition of two existing water reservoirs, construction of a new 3-million-gallon water reservoir, and improvements to various site amenities.
Applicant Name(s): The City of Scappoose
Phone Number: (503) 543 - 7184, ext. 403

This document serves as official comment for the permit application for Tax Map ID No. 3211-DD-00200 in Scappoose, Oregon.

The following requirements are required by Scappoose Fire District:

Address

Commercial Properties shall have address numbers at a minimum of 8 inches tall by 1.5 inch (stroke) wide. This includes buildings that are on roads that serve a speed limit 29 miles an hour and below. Numbers shall be contrasting in color (ORD17-2.1).

Address numbers on commercial buildings shall be fixed to the building facing the street at a height that is not obstructed by passenger vehicles, delivery trucks or other obstructions (trees and bushes). Address numbers shall not be affixed to glass windows or doors (ORD17-2.0).

Fire Apparatus Roads

Fire apparatus access roads shall be provided and maintained in accordance with Sections 503.1.1 through 503.1.3 (See Appendix D). Approved fire apparatus access roads shall be provided for every facility, building or portion of a building hereafter constructed or moved into or within the jurisdiction. The fire apparatus access road shall comply with the requirements of this section and shall extend to within 150 feet (45 720 mm) of all portions of the facility and all portions of the exterior walls of the first story of the building as measured by an approved route around the exterior of the building or facility. Exception: The fire code official is authorized to modify Sections 503.1 and 503.2 where any of the following applies: 1. The building is equipped throughout with an approved automatic sprinkler system installed in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3. 2. Fire apparatus access roads cannot be installed because of location on property, topography, waterways, nonnegotiable grades or other similar conditions, and an approved alternative means of fire protection is provided. 3. There are

not more than two Group R-3 or Group U occupancies (OFC 503.1.1).

Fire apparatus access roads and fire lanes shall have an unobstructed width of not less than 20 feet and unobstructed vertical clearance of not less than 13 feet 6 inches. The required width of a fire apparatus access road or fire lane shall not be obstructed in any manner, including parking of vehicles. Minimum required widths and clearances established under section 503.2.1, shall be maintained at all times. The fire apparatus access road or fire lane shall be constructed as asphalt, concrete or other approved all-weather driving surface capable of supporting the imposed load of fire apparatus weighing up to 75,000 pounds. (See also OFC 503.4; D102.1) The turning radius and angle of approach on fire department access roads and fire lanes shall meet local requirements. (OFC 503.2.4).

SECTION D105-AERIAL FIRE APPARATUS ACCESS ROADS D105.1 Where required. Where the vertical distance between the grade plane and the highest roof surface exceeds 30 feet (9144 mm), approved aerial fire apparatus access roads shall be provided. For purposes of this section, the highest roof surface shall be determined by measurement to the eave of a pitched roof, the intersection of the roof to the exterior wall, or the top of parapet walls, whichever is greater.

Exception: Where approved by the fire code official, buildings of Type IA, Type IB or Type IIA construction equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 and having fire fighter access through an enclosed stairway with a Class I standpipe from the lowest level of fire department vehicle access to all roof surfaces.

D105.2 Width. Aerial fire apparatus access roads shall have a minimum unobstructed width of 26 feet (7925 mm), exclusive of shoulders, in the immediate vicinity of the building or portion thereof.

Hydrants

Bollards and Concrete Pad per SRFD specifications needs to be added for the existing fire hydrants on the property.

Emergency Access

An approved Knox system will need to be installed for emergency access due to gates blocking access to structures. Knox padlock for manual gate and Knox key switch for electrical gate (Section 5.5 B of the Columbia County Fire Services Fire Apparatus Access Roads & Driveways Standard**)**

B. When security gates and openings to or within a structure or an area is unduly difficult because of secured openings or where immediate access is necessary for life-saving or fire-fighting purposes, the Fire Code Official may require a key box to be installed in an accessible location. The key box shall be a type approved by the Fire Code Official and shall contain keys, codes, or other devices to gain necessary access as required by the Fire Code Official, see OFC 503.5 and 503.6.

Adhere to any applicable code requirements for occupancy as designated per the Oregon Fire Code and Oregon Structural Specialty Code.

If you have any questions, please let me know.

Thank you,

Miguel Bautista, PhD
Division Chief of Prevention & Training
Scappoose Rural Fire Protection District
52751 Columbia River Highway
P.O. BOX 625
Scappoose, Oregon 97056
Phone: 503-543-5026
FAX: 503-543-2670

Exhibit 11

SCAPPOOSE Oregon

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2. _____ Please see either our comments (below) or attached letter.

3. _____ We are considering the proposal further and will have comments to you by _____.

4. _____ Our board must meet to consider this; we will return their comments to you by _____.

5. _____ Please contact our office so we may discuss this.

6. _____ We recommend denial of the application. Please see either our comments (below) or attached letter:

COMMENTS: _____

Name: Brandon Strehely Title: Engineering manager

Signed: [signature] Date: 5/1/24

Exhibit 12

SCAPPOOSE Oregon

LAND USE ACTION REFERRAL (SDR 1-24, SLDP 2-24) ***April 4, 2024***

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6. _____ We recommend denial of the application. Please see either our comments (below) or attached letter:

COMMENTS: *The applicant must obtain an access permit for each connection to Keys Road. Applicant must obtain a construction permit for any work that occurs within the right-of-way. No additional storm water may be added to Keys Road. The applicant will help develop an Intergovernmental Agreement with the County to address any needed road rehabilitation attributable to the construction. Applicant must meet all City of Scappoose standards. The portion of newly dedicated right-of-way should be dedicated to the County.*

Name: Scott Toenjes Title: Engineering Technician II

Signed: Scott Toenjes Date: 5/2/2024

PLANNING COMMISSION 2024 TEAM AGREEMENT

Agreements for Conducting Planning Commission Meetings and Business

1. Attendance at Planning Commission meetings is a priority; if unable to attend, please contact the CDC Office Administrator.
2. Be on time to meetings and read the packet prior to the meeting - be prepared to work.
3. Chair will take the lead in keeping the meeting and discussion focused.
4. Distribute information in advance of Planning Commission discussion.
5. Chair will recognize Commissioners when indicating they wish to speak.
6. Put a time limit on audience testimony, if needed, and ask them not to repeat previous speakers concerns (no repetitive testimony).
7. Use formal procedure (point of order, call for question, etc.) to focus the meeting. Formal procedure may be used when necessary for effective discussion in lieu of Planning Commission's usual, more informal, process. Individuals should use procedure appropriately and courteously.
8. Planning Commission meetings are televised live; this requires the Planning Commission to act professionally by:
    - Speaking in turn and on the issue;
    - Not interrupting;
    - Not engaging in side-conversations, and
    - Treating the public and each other with courtesy.
9. Refrain from personal attacks, including to presenters, staff and Planning Commission.
10. Agree to be diplomatic about disagreement and do not try to polarize other Commissioners.
11. Call the City Planner or designee with questions and requests prior to the meeting.
12. Information made available to one Planning Commissioner will be available to all, in a timely manner.
13. Every effort will be made to adjourn meetings by 9:00 p.m.

Individual Planning Commission Member Conduct Agreements

Planning Commission members agree to:

- Be straightforward about goals and issues.
- Cultivate exchange of views with other Commissioners.
- Avoid saying or doing anything that would discredit or harm the City.
- Attend trainings that are offered by the city for the success & betterment of the Commission.
- Respect the decision of a majority of the Planning Commission members, after a decision has been made.

Commitments as a Planning Commission

Planning Commission strives to:

- Continue to improve citizen involvement, awareness and participation.
- Improve follow-up and resolution of citizen concerns or complaints.
- Act as an advocate for the City.

ADOPTED BY PLANNING COMMISSION ON _____

_____	_____	_____
Chair Scott Jensen	Vice Chair Bill Blank	Commissioner Rita Bernhard
_____	_____	_____
Commissioner Monica Ahlers	Commissioner Harlow Vernwald	Commissioner Marty Marquis
_____	_____	
Commissioner Sara Jones-Graham	Alternate Commissioner	

CITY OF SCAPPOOSE

May 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	2	3	4 Opening Day; Farmers Market 9am – 2pm
5	6 City Council work session 6pm meeting 7pm	7	8	9 Planning Commission 7pm	10	11 Farmers Market 9am – 2pm
12	13 Budget Committee 5pm	14 Budget Committee 5pm	15	16 Parks & Rec 6pm	17	18 Farmers Market 9am – 2pm
19	20 City Council work session 6pm meeting 7pm	21 Budget Committee 5pm	22	23 Economic Development noon	24	25 Farmers Market 9am – 2pm
26	27 City Offices closed in observance of  	28	29	30	31	

CITY OF SCAPPOOSE

June 2024

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1 Farmers Market 9am – 2pm
2	3 City Council work session 6pm meeting 7pm	4	5	6	7	8 Farmers Market 9am – 2pm
9	10	11	12	13 Planning Commission 7pm	14 	15 Farmers Market 9am – 2pm
16	17 City Council work session 6pm meeting 7pm	18	19 City Offices closed in observance of 	20	21	22 Farmers Market 9am – 2pm
23 ---------- 30	24	25	26	27 Planning Commission 7pm	28	29 Farmers Market 9am – 2pm