Hearings Examiner Meeting Agenda
Thursday, January 19, 2023, 5:00 PM
Council Chambers, 616 NE 4th AVE

NOTE: The City welcomes public meeting citizen participation. TTY Relay Service: 711. In compliance with the ADA, if you need special assistance to participate in a meeting, contact the City Clerk's office at (360) 834-6864, 72 hours prior to the meeting so reasonable accommodations can be made (28 CFR 35.102-35.104 ADA Title 1)

To Participate Remotely:

OPTION 1 - 1. Go to www.zoom.us and download the app or click "Join A Meeting" and use Meeting ID – 865 5259 1950

2. Or, from any device click https://us06web.zoom.us/j/86552591950

OPTION 2 - Join by phone (audio only): 1. Dial 877-853-5257 and enter meeting ID# 865 5259 1950

For Public Comment:

1. Click the raise hand icon in the app or by phone, hit *9 to "raise your hand"
2. Or, email to communitydevelopment@cityofcamas.us

These will be entered into the meeting record. Emails received up until one hour before the start of the meeting will be emailed to the Meeting Body prior to the meeting start time.

CALL TO ORDER

INTRODUCTIONS AND INSTRUCTIONS

HEARING ITEM

1. Lower Prune Hill Booster Station and Reservoir (SPRV22-06)

   Presenter: Yvette Sennewald, Senior Planner

CLOSE OF MEETING

LAND USE DECISION

STAFF REPORT

Lower Prune Hill Booster Pump Station & Reservoir

File No. SPRV22-06

CONSOLIDATED FILES: ARCH22-16, CA22-18, DR22-08, MAJVAR22-01, SEPA22-25

Report Date: January 09, 2023

TO	Hearings Examiner	**HEARING DATE**	January 19, 2023
PROPOSAL	To replace the Lower Prune Hill Booster Pump Station and the existing 0.5-million-gallon reservoir.		
LOCATION	The 1.42-acre project site is located at 600 NW 18th Loop in the NE ¼ of Section 10, Township 1 North, Range 3 East, of the Willamette Meridian; and described as Parcel Number 85145001.		
APPLICANT/ OWNER	City of Camas 616 NE 4th Avenue Camas, WA 98607	**CONTACT**	Jim Hodges 616 NE 4th Avenue Camas, WA 98607
APPLICATION SUBMITTED	July 5, 2022	**APPLICATION COMPLETE**	October 6, 2022
SEPA	The City issued a SEPA Determination of Non-significance (DNS) on October 27, 2022, with a comment period that ended on November 10, 2022. The SEPA DNS was mailed to property owners and published in the Post Record on October 27, 2022. Legal publication #737840.		
PUBLIC NOTICES	A Notice of Application was mailed to property owners within 300 feet of the site and published in the Post Record on December 15, 2022. Legal publication #762830. A Notice of Public Hearing was mailed to property owners within 300 feet of the site and published in the Post Record on January 5, 2023. Legal publication #767810.		

APPLICABLE LAW: The application was submitted on July 5, 2022, and the applicable codes are those codes that were in effect at the date of the application's first submittal. Camas Municipal Code (CMC) Title 16 Environment, Title 17 Land Development, and Title 18 Zoning, specifically (but not limited to): Chapter 18.11 - Parking, Chapter 18.13 - Landscaping, Chapter 18.18 - Site Plan Review, Chapter 18.19 – Design Review, 18.45 – Variances, and Chapter 18.55 - Administrative Procedures. [Note: Citations from Camas Municipal Code (CMC) are indicated in *italic* type.]

CONTENTS

SUMMARY

The City of Camas Public Works Department (Public Works) is proposing to replace the Lower Prune Hill Booster Pump Station (LPH BPS) and the existing 0.5 million-gallon (MG) reservoir located near the intersection of Northwest 18th Loop and Northwest Ostenson Canyon Road within the Camas city limits.

The proposed booster pump station replacement will consist of a 38-foot by 21-foot concrete masonry block security building. The concrete masonry building would have an accent stripe, cement fiber siding above the masonry, and a standing seam metal roof. The new pump station will be constructed at the southwest corner of the site, within the footprint of the existing reservoir and immediately north of the proposed 0.58 MG reservoir

The LPH BPS is equipped with three pumps that are supplied from two on-site storage tanks in the 455-pressure zone. The pumps discharge to a 12-inch cast iron main line and a 16-inch ductile iron main line that supply a storage tank in the 852-pressure zone at Upper Prune Hill. LPH BPS is the only pump station to supply water to the 852-pressure zone, making it critical to the operation of the city water system. The City's Water System Plan Update identified the need for additional pumping capacity at LPH BPS to meet the projected maximum demand for the 852-pressure zone. The existing LPH BPS and backup generator will remain in operation during construction of the new booster pump station and will be disconnected, removed, and backfilled after the new booster pump station has been brought online.

Public Works also proposes to replace the existing 0.5-MG reservoir with a new 0.58 MG welded steel reservoir with a height of approximately 32-feet in height. A roof vent would extend above the reservoir an additional 2-feet for a total reservoir height of 34-feet, which would comply with the 35-foot height limit in the R-7.5 zone. A poured in-place concrete retaining wall, with handrail at the top of the wall, will be constructed around and downhill from the new reservoir. The retaining wall is approximate 260-feet in length and will vary in height from 4.5-feet to 17.5-feet at the peak. The retaining wall is an interior facing and will only be visible by employees when on site. The new reservoir would be located immediately downhill of the existing 0.5-MG reservoir. The existing 1.5-MG reservoir north of the existing 0.5-MG reservoir would remain unaltered by the proposed project.

Existing site improvements include a 0.5-MG reservoir, a 1.5-MG reservoir, a 5-foot to 6-foot-tall masonry block wall, telecommunications equipment, access road from Northwest 18th Loop, utility riser/cabinet cluster, and yard piping. The 1.5 MG reservoir was constructed in 1971. The 0.5 MG reservoir was built in 1935. The existing booster pump station was constructed in 1971 and upgraded in 2004. Northern portions of the site include an ivy-covered slope and a lawn-covered area.

The surrounding areas consist of a combination of developed residential (R-7.5) and open space. Areas to the north, east, and west are developed as residential and areas to the south, across Northwest 18th Loop and Northwest Ostenson Canyon Road is the Ostensen Canyon Greenway. Benton Park is located approximately 1,000-feet south of the Ostensen Canyon Greenway. The site is accessed by a gravel road off NW 18th Loop, via an access easement across 602 NW 18th Loop to the south.

The proposed project requires permits and approvals from the city that include site plan review, minor design review, SEPA review, critical areas review, archaeological review, major variance, engineering site construction approvals and building permits.

FINDINGS

Chapter 16.07 State Environmental Policy Act

A SEPA checklist was submitted, and a Determination of Non-Significance was issued October 26, 2022, for the proposed development due to the presence of environmentally sensitive areas on site.

A comment was submitted by the Department of Ecology in regard to the Construction Stormwater General Permit (CSGP) and erosion control measures. A CSGP is required for clearing, grading, and/or disturbance of one acre or more and discharges to waters of the State. The site is approximately 61,855 sq. ft or 1.42 acres in size.

The applicant is required to obtain an NPDES CSGP prior to any land-disturbing activities. Additionally, all erosion control measures are to be in-place prior to clearing, grading or construction.

> **FINDING:** Staff finds the comments provided by the Department of Ecology should be complied with.

Chapter 16.31 Archaeological Preservation

An Archaeological Survey was performed by Archaeological Investigations Northwest, Inc. on July August 20, 2020, for the proposed project. Based on the survey report, no further study was necessary. A copy of the report was forwarded to Tribes and the Department of Archaeological and Historic Preservation (DAHP). The report and findings are not subject to the open public records act and as such, the city cannot disclose the results.

> **FINDING:** Staff finds a condition of approval is warranted that if potential artifacts are discovered during construction, work must immediately cease, and both the Department of Archaeological and Historic Preservation and the City must be notified.

Chapter 16.51 Critical Areas

CMC Chapter 16.61 – Geological Hazardous Areas

City mapping identified the subject property within an area of geologically hazardous areas (i.e., steep slopes). As such, the applicant submitted a draft Geotechnical Report (Exhibit #10) prepared by GRI, originally dated November 12, 2021, and revised on February 15, 2022, which identified slopes on the property that are primarily located to the east of the proposed reservoir. The draft geotechnical report concludes the property is geotechnically sound for the project with recommendations discussed throughout the report.

Submittal of a final Geotechnical report should be required with any revisions to the draft findings and/or recommendations clearly noted in the final report. Staff recommends a condition of approval that prior to final engineering plan approval, a final Geotechnical report is to be submitted for review and approval with any revisions to the draft Geotechnical report clearly noted.

FINDING: Staff finds the property to be developable based on the findings and recommendations in the draft Geotechnical Report, however, a final Geotechnical report is to be submitted prior to final engineering plan approval. The applicant should comply with the recommendations of the final geotechnical report from GRI.

Chapter 18.18 Site Plan Review

A. Compatibility with the city's comprehensive plan;

The reservoir is consistent with the following comprehensive plan policies:

- *LU-1.6: Ensure adequate public facilities (including roads, emergency services, utilities, and schools) exist to serve new development, and mitigate potential impacts to current residents*
- *U-7: Plan public utility services so that service provision maximizes efficiency and cost effectiveness and ensures concurrency.*
- *WS-1: Extend adequate public water service throughout the City's urban areas. An adequate public water system is one that meets Washington requirements and provides minimum fire flow as required by the Fire Marshal.*
- *WS-2: Provide safe, clean, high quality drinking water to residents.*
- *WS-3: Ensure water infrastructure is designed to City standards and is in place prior to land development.*

DISCUSSION: The replacement of the reservoir and booster pump station will create additional water supply to the surrounding neighborhoods. The proposal will extend adequate water service within the City's urban areas and provide safe and clean water to residents.

FINDING: Staff finds that the proposed project is compatible with and complements the Comprehensive Plan.

B. Compliance with all applicable design and development regulations;

Parking

The proposed project is a reservoir. There are no employees or visitors besides occasional maintenance workers. CMC 18.11.130 does not contain parking requirements for this type of use or a similar use.

FINDING: Staff finds the existing gravel access area per the site plan will adequately serve for parking for an occasional maintenance vehicle.

Dimensional Standards

Per CMC 18.09.030, the R-7500 (R-7.5) Single-Family Residential Zone requires a minimum front setback of 30-feet, side yard setbacks of 15 feet, and a minimum rear yard setback of 35 feet. The maximum lot coverage is 40% and a maximum height limit of 35-feet.

The proposed 0.58 MG tank will be located approximately 18 feet from the rear property line (west) and 11 feet from the front property line (east), which is less than the 35-foot and 30-foot minimum required setbacks. The front and rear setback reduction requires a major variance as the setbacks would be modified by more than 10 percent as per CMC 18.45.020.

FINDING: Staff finds the proposed reservoir does not meet the dimensional requirements of the R-7.5 Single-Family Residential Zone and a variance is required to allow a reduced front and rear setback.

Landscaping

CMC 18.13.055 Table 1 requires a 10-foot, L2 landscape buffer with F2 fence. The landscape buffer should consist of low shrubs to form a continuous screen three feet high and ninety-five percent opaque year-round. In addition, one tree is required per thirty lineal feet of landscaped area, or as appropriate to provide a tree canopy over the landscaped area. Groundcover plants must fully cover the remainder of the landscaped area. A three-foot high masonry wall or fence at an F2 standard may be substituted for shrubs, but the trees and groundcover plants are still required. The F2 fence standard provides visual separation where complete screening is needed to protect abutting uses, and landscaping alone cannot provide that separation. A fence or wall that complies with the F2 standard shall be six feet high, and one hundred percent sight obscuring. Fences may be made of wood, metal, bricks, masonry, or other permanent materials.

The applicant is proposing to place a 10-foot wide, L2 buffer along the site's western and southern boundary with the exception of areas where the access road around the reservoir is closer than 10 feet to the property line. In these limited locations, the applicant cannot provide the 10-foot buffer, but is still planting these locations and is requesting a variance for the minimum width of the buffer. The buffer will contain groundcover, but trees and shrubs cannot be provided due to the presence of water lines along the western property boundary that would require removal of landscaping to access and maintain the water lines. In addition, tree roots may damage the water lines. A sight-obscuring fencing will be installed along the southern most property line, adjacent to existing single-family residential development. A 16-foot retaining wall will encompass the north, west, and south sides of the reservoir and pump station development to stabilize slopes along the west side of the site to accommodate the circular access road.

The applicant is proposing development only within the previously developed areas of the site and will only be removing four trees that would negatively impact long term maintenance of facilities. The larger, undeveloped, and heavily vegetated areas of the site will remain undisturbed. The 1.42-acre project site is required to have a minimum of 29 tree units. The applicant is proposing development only within the previously developed areas of the site and will be removing four trees, which would negatively impact long term maintenance of facilities. The larger, undeveloped, and heavily vegetated areas of the site will remain undisturbed. Existing groupings of trees will be retained within the steeply sloped and undeveloped portions of the site. As the site is heavily wooded with existing trees in the undeveloped area of the project site, the tree density requirement should be met. In order to ensure that the minimum tree units are met, staff recommends a condition of approval that prior to any land-disturbing activities, the applicant is to submit a tree survey documenting the existing tree units.

> **FINDING:** Staff finds the minimum tree density requirement and general landscaping requirements can or will be met. The proposed fence along the southern property line will need to be six feet tall, 100 percent sight-obscuring and have a residential like feel. A final landscape plan is required to be submitted prior to engineering approval. Irrigation and landscaping should be installed or bonded for prior to final acceptance. The applicant should take appropriate measures to ensure landscaping success for a minimum of three years after issuance of building permits. If plantings fail to survive, the property owner should promptly replace them. A condition of approval is warranted.

Signage

Signage has not been proposed at this time.

> **FINDING:** Future proposed signage would be submitted to the city for review and incompliance with CMC 18.15.

Roads

The Lower Prune Hill Booster Station abuts NW 18th Loop along the eastern property line and NW 18th Avenue, east of NW Fargo Street, and NW Edgehill Drive along the northern property line. NW 18th Avenue, NW 18th Loop, and NW Fargo Street are classified as existing 2 or 3-lane collectors. NW 18th Avenue, east of NW Fargo Street, and NW Edgehill Drive are classified as existing unimproved 2-lane local roads. There is an existing sidewalk on south side of NW 18th Loop, but there aren't any sidewalks on the north side of NW 18th Loop due to site topography. There are not any existing sidewalks along NW 18th Avenue, east of NW Fargo Street, or on NW Edgehill Drive in the vicinity of the booster station.

The existing access to the Lower Prune Hill Booster Station has been off NW 18th Loop, via an existing gravel road along the eastern side of 602 NW 18th Loop. The preliminary site plans are proposing a new concrete driveway approach and a 12-foot-wide paved driveway from NW 18th Loop heading north to the site of the new reservoir and to pave the access road around the reservoir and in front of the existing and new pump stations. The applicant has not in the past nor is proposing to take access off NW 18th Avenue on the northern property line. Therefore, staff finds that based on the preliminary site plans, additional conditions would not apply.

> **FINDING:** Staff finds the development can and will meet the street requirements of the Camas Design Standards.

Traffic and Transportation

Per CMC 18.18.040.E a transportation impact analysis (TIA) is required when the development will generate more than 100 average daily trips (ADTs). The proposed development improvements will not generate more than 100 ADTs. Therefore, a transportation impact analysis is not required.

> **FINDING:** Staff finds that the development can and will meet the transportation requirements of the Camas Design Standards.

Sanitary Sewage Disposal

Per CMC 17.19.040.C.2 sanitary sewers shall be designed and installed in accordance with city design standards.

The existing and the proposed improvements to the Lower Prune Hill Booster station are not maned facilities. Operations staff will conduct site visits as necessary to inspect the pump stations, therefore, sanitary facilities are not required.

> **FINDING:** Staff finds that the development can and will meet the sanitary sewer requirements of the Camas Design Standards.

Storm Drainage

Per CMC 17.19.040.C.3 storm drainage collection systems shall meet the requirements of the city's officially adopted stormwater standards and CMC 14.02 Stormwater Control.

A draft stormwater report (TIR) dated March 2022 was prepared and submitted by Murraysmith (Exhibit #13). As noted in the TIR, the site slopes from northwest to southeast and consists of 'gentle' slopes to steep slopes along the southeast. There is an existing catch basin to the north that provides catchment from the north and through the site via an underground conveyance system.

The geotechnical report indicated that there is a 'low risk of deep-seated slope failure and no observed indication of superficial sloughing', the stormwater design will avoid any infiltration measures in order to

'promote slope stability'. The preliminary stormwater plans will take advantage of the existing flow patterns with stormwater runoff discharging to the existing city storm system.

The preliminary site grading and drainage plans provide for on-site swales, catch basins, manholes, and a conveyance system that will collect surface water and discharge to the city's storm main.

Per Ecology's Figure I-3.*2 Flow Chart for Determining Requirements for Re-Development (Vol. I, Chapter 3)* and the Camas Stormwater Design Standards.

a. All redevelopment projects shall comply with Minimum Requirement (MR) #2 – Submittal of a Stormwater Pollution Prevent Plan (SWPPP).
b. If the project adds 5,000 sf, or more on few hard surfaces or converts ¾ acres, or more, of vegetation to lawn or landscaped areas, then Minimum Requirements (MR) #1-#9 will apply.

The existing improvements are located on a parcel that is approximately 1.42 acres (61,855 SF) in size. The proposed improvements will add 5,000 SF or more of new hard surfaces, which requires MRs #1-#9 be met. The draft TIR sufficiently addresses MRs #1-#9. Staff recommends that prior to final engineering plan approval, a final stormwater report (TIR) should be submitted for review and approval. The final TIR is to be submitted as a PDF on a flash drive or CD.

FINDING: Staff finds that the development can and will meet the storm drainage requirements of the Camas Design Standards.

Water

Per CMC 17.19.040.C.4 a proposed development shall be served by a water distribution system designed and installed in accordance with city design standards.

The development is currently served by an existing 12-inch water main. The preliminary site layout plans and the demolition plans consist of abandoning portions of the existing 12-inch main and installation of 4-inch, 8-inch, 12-inch, and 16-inch water mains to serve the existing and new pump stations and the new reservoir. Staff finds that based on the preliminary site layout plans, additional conditions would not apply.

FINDING: Staff finds that the development can and will meet the water utility requirements of the Camas Design Standards.

Erosion Control

Per CMC 17.21.050.B.3 land-disturbing activities in excess of an acre are required to provide an Erosion Control Bond, prior to final engineering plan approval. As this is a city project, it is recommended that the bond requirement should not apply.

Adequate erosion control measures are to be provided at the time of site development. Plans are to be prepared in accordance with adopted city standards. Erosion Sediment Control (ESC) plans will be submitted to the City for review and approval prior to any land-disturbing activities.

Land-disturbing activities in excess of an acre require applicants to obtain an NPDES General Construction Stormwater Permit (GCSWP), which is issued by the Washington State Department of Ecology. The existing parcel is approximately 1.42 acres (61,855 sf) in size. The proposed project will consist of approximately 0.69 acres (30,000 sf) of land-disturbing activities, therefore an NPDES General Construction Stormwater Permit will not be required.

FINDING: Staff finds that the development can and will meet the erosion control requirements of the Camas Design Standards.

FINDING: Staff finds that adequate provisions can or will be made for public roads, sanitary sewer, stormwater, water, and erosion control improvements that will be consistent with City requirements.

C. Adequate provisions are made for other public and private services and utilities, parks and trails;

There are no private services, utilities, parks, or trails associated with this development.

FINDING: Staff finds that adequate provisions can or will made for the private improvements.

D. Adequate provisions are made for maintenance of public utilities;

The existing booster station is city facility and the proposed improvements to said facility is a city project. Therefore, maintenance of the public utilities associated with this development are the requirement of the city and additional maintenance provisions need not be made.

FINDING: Staff concurs that adequate provisions can and will be made for maintenance of public utilities.

E. All relevant statutory codes, regulations, ordinances, and compliance with the same. The review and decision of the city shall be in accordance with the provisions of CMC Chapter 18.55;

Per CMC 18.17.060.B Retaining walls shall not exceed six feet in height, unless otherwise approved by the director. Per CMC 18.17.060.E Interior facing retaining walls are those walls that are supporting cuts.

The new reservoir requires a poured in-place concrete retaining wall to be constructed around and downhill from the new reservoir. The new retaining wall is approximate 260-feet in length and will vary in height from 4.5-feet to 17.5-feet, at the peak, with a handrail at the top of the wall. The retaining wall is an interior facing which will only be visible by employees when on site. The retaining wall will not be visible to any of the surrounding residential areas, as the fill side of the retaining wall is facing neighboring properties and the exposed side of the retaining wall is facing the proposed reservoir.

While the proposed retaining wall is in excess of six feet in height, it is an interior facing retaining wall that supports the fill side of the improvements and is a critical component of said project and is required for construction of the new reservoir. The proposed height is approved by the director.

FINDING: As discussed throughout this staff report, and as conditioned, this proposal can or will meet all relevant codes, regulations, ordinances, and other requirements as identified herein.

Chapter 18.19 Design Review

Design review is required for all new developments within commercial, mixed-use, business park, or multifamily zones, redevelopment (including change in use, e.g., residential to commercial), or major rehabilitation (exterior changes requiring a building permit or other development permit).

18.19.050 - Design principles.

A. Standard Principles.

1. Landscaping shall be done with a purpose. It shall be used as a tool to integrate the proposed development into the surrounding environment.

FINDING: The applicant is proposing to place a 10-foot-wide, L2 landscape buffer along the site's western and southern boundary with the exception of areas where the access road around the reservoir is closer than 10-feet to the property line. In these limited locations, the applicant cannot provide the 10-foot buffer, but is still planting these locations and is requesting a variance

for the minimum width of the buffer as described in Section 5.9 of the project narrative. The buffer will contain groundcover. Trees and shrubs cannot be provided due to the presence of water lines along the western property boundary that would require removal of landscaping to access and maintain the water lines.

2. ***All attempts shall be made at minimizing the removal of significant natural features. Significant natural features shall be integrated into the overall site plan.***

   FINDING: The project site is heavily wooded along the northerly and easterly border, with steep slopes that assist in providing a sight-obscuring border around most of the site. The applicant has proposed to retain the existing trees in the undeveloped areas of the project site which, in total, exceeds the minimum tree density requirement, however, a tree survey was not provided which would verify the existing tree density. Staff recommends a condition of approval that prior to any land-disturbing activities, the applicant is to provide a tree density report.

3. ***Buildings shall have a "finished" look. Any use of panelized materials shall be integrated into the development in a manner that achieves a seamless appearance.***

   FINDING: The proposed project includes a booster pump station to be constructed using split-face CMU block, with a standing seam metal roof and a reservoir that will hold 1.5 million gallons of water and is not proposing panelized building materials. The proposal includes additional screening and plantings that will assist in minimizing the visual impacts to the surrounding area. A condition of approval has been added to require the structures to be neutral or earth toned colors so that they blend into the existing environment.

4. ***A proposed development shall attempt to incorporate or enhance historic/heritage elements related to the specific site or surrounding area.***

   FINDING: The applicant has not proposed any historic elements. The reservoir that is being replaced has been on the site for approximately 80+ years. The proposed replacement is very similar in nature and design. As proposed, this subsection can be met.

Chapter 18.45 Variance

A. CMC 18.45.040.B - Approval of a major variance must demonstrate with findings of compliance with all of the following criteria:

1. ***The variance shall not constitute a grant of special privilege inconsistent with the limitation upon uses of other properties in the vicinity and zone in which the subject property is located;***

DISCUSSION: Per CMC 18.09.040, Table 2, building setbacks for single-family residential zones for properties 15,000 square feet or more, require a minimum front setback of 30-feet, and a minimum rear setback of 35-feet. Also, per CMC.13.055, Table 1, a10-foot, L@ with F/2 Fence is required for industrial uses where abutting residential zones. The applicant is requesting to reduce the rear yard setback from 35 feet to 18 feet, reduce the front yard setback from 30 feet to 11 feet, and to reduce the 10-foot L2 buffer to 5 feet to accommodate the proposed reservoir and circular access road. In addition, the applicant is requesting to vary from the L2 buffer's requirement for tree and shrub plantings to provide groundcover only because of the presence of water lines along the property boundary.

The circular access road around the new reservoir is required for service and emergency vehicles and to prevent emergency vehicles from having to back out of the site. The reservoir and access road cannot comply with the access and buffer requirements to the west because it would push the access road and reservoir east into steeply vegetated slopes along Northwest 18th Loop, requiring the complete redesign of the access road and significant cut and fill slopes to support the road and reservoir, as well as removal of mature vegetation, and further reduction of the setback to the east. To meet the needs of the water system operation, the reservoir must be put at a specific elevation, which is found at the southern end of the site where the lot depth is limited. The reservoir must also be constructed at a minimum size to provide the required volume, provide access around the reservoir for maintenance needs, and provide clearance from the existing 1.5 MG reservoir that is to remain. Due to these constraints and requirements, a variance from the setback requirements does not provide special privilege and is needed for the facility to provide adequate water service to residents. In addition, placing the reservoir further west and south on the site as compared with the existing reservoir will improve the views of residences to the west. Therefore, the proposed variance is not a grant of special privilege but requested to accommodate special circumstance that applies to the site and to provide a view benefit to existing residences to the west.

The existing wireless telecommunications equipment will be relocated onto the new reservoir after construction. As a matter of information, a waiver request for reduced landscape setback for the existing wireless communications equipment facility relocation was approved on December 12, 2022. The proposed site plan shows the existing natural on-site vegetation buffer/forested area on the property. This buffer extends approximately 225' to the east and 25' to the south of the proposed equipment shelter/building location, which exceeds the 15' requirement. This buffer includes several large trees and shrubs, including a large conifer tree that is immediately south of the proposed shelter. This buffer screens the site from the south and east. Removing existing natural landscaping in this area to plant new landscaping would not serve the public interest. Further, there are no homes to the south and east that have views of the shelter.

FINDING: Due to the topography of the site, the existing trees, and project design, staff finds the request does not grant a special privilege.

2. That such variance is necessary, because of special circumstances or conditions relating to the size, shape, topography, location, or surroundings of the subject property, to provide it with use, rights, and privileges permitted to other properties in the vicinity and in the zone in which the subject property is located;

FINDING: The site topography, location adjacent to surrounding residential uses with views, and the proposed continuing use of the site for municipal water infrastructure all constitute special circumstances that necessitate the major variance requests for the reduced front and rear yard setback, reduced width landscape buffer, and request to eliminate the tree and shrubs otherwise required in the buffer.

The proposed reservoir and pump station require a circular access road to provide access to service and emergency vehicles. The reservoir and access road cannot comply with the setbacks and full-width buffer requirements because the reservoir needs to be a minimum size and located at specific elevations to meet the water system operational requirements, and access around the facilities is required to provide safe access and maintenance of facilities. The site is constrained by steep slopes and limited lot depth at the southern end. Moving the proposed facilities north closer to the existing 1.5 MG reservoir to remain would prevent the city from having the ability to properly maintain and replace the facilities in the future. Attempting to increase the rear setback would decrease the front setback and the access road would have

to be moved east into steeply sloped, vegetated areas requiring the complete redesign of the access road that would include significant cut and fill slopes and retaining walls.

In addition, residential uses uphill from the project site have views to the east and south. Due to the site's steeply sloping topography, it is better for the proposed reservoir to be located as close as possible to the southern and western property boundary where the slope will better screen residential views of the reservoir, improving the views as compared with the existing condition the existing condition. Neighbors to the north have expressed concern regarding any impacts to their current views and reservoir's view impacts reduced as much as possible and the best way to do this is to locate it closer to the southwestern property boundary. The applicant will continue to provide a 10-foot L2 buffer along a majority of the site's western boundary, with the reduced buffer requested in a single location adjacent to the required access drive. The applicant's request to eliminate trees and shrubs from the landscape buffer will also help maintain easterly views from the residences.

3. The granting of such variance will not be materially detrimental to the public welfare or injurious to the property or improvements in the vicinity and in the zone in which the subject property is located.

DISCUSSION: Because the site is already used as a reservoir and booster pump station and the replacement reservoir will be located in approximately the same location, a replacement reservoir will have largely the same impacts to the properties in the vicinity as the existing reservoir facility. Reducing the rear setback and landscape buffer allowing the reservoir to be placed closer to the western property boundary will better screen it from the views of the residences to the west, thereby reducing the view impacts to these properties. In addition, reducing the rear yard setback and buffer, will balance the required reduction to the front setback and prevent the removal of mature vegetation on the site's eastern slope that would be necessary to accommodate the reservoir and access road.

Reducing the front yard setback allows the existing access to be maintained while balancing impacts to the rear yard setback. If the reservoir were to comply with the rear yard setback there would be zero front yard setback, and if the reservoir were to comply with the rear yard setback there would be zero rear yard setback. Placing the reservoir further east would require the complete redesign of the access road and the placement of significant cut and fill slopes and removal vegetation that would be unsightly from residences located downhill and traffic along Northwest 18th Loop and be materially detrimental to the public welfare.

Reducing the southern side yard buffer allows clearance between the proposed facilities and the 1.5 MG reservoir that is to remain. Moving the proposed facilities north closer to the existing 1.5 MG reservoir to remain would prevent the city from having the ability to properly maintain and replace the facilities in the future and preventing the City from maintaining these critical facilities would be detrimental to the public welfare. Finally, the request to provide only groundcover in the buffer will help preserve views and eliminate conflicts with maintenance of water lines and tree roots that could damage the water lines that would be a material detriment to the public welfare and possibly lead to interruption of water service.

Therefore, the granting of the variance will not be materially detrimental to the public welfare or injurious to the property or improvements in the vicinity, but rather avoids a design that could negatively impact the public welfare through removal of mature vegetation and interruption of water service.

> **FINDING:** Staff finds the granting of the requested variances will not be detrimental to the public welfare.

PUBLIC COMMENTS

As of the writing of this staff report, staff received written public comments from the Department of Ecology (Exhibit 22) and a resident (Exhibit 23) regarding stormwater and potential changes to the existing views. These comments are addressed throughout the staff report.

CONCLUSIONS OF LAW

Based on the above findings and discussion provided in this staff report, staff concludes that Lower Prune Hill Booster Pump Station and Reservoir (SPRV22-06 and associated consolidated files) should be approved because it does comply with the applicable standards, if all the conditions of approval are met.

As conditioned, **SPRV22-06** meets the approval criteria for Site Plan Review contained in CMC Section 18.18.060.

1. As proposed, SPRV22-06 is compatible with the City of Camas Comprehensive Plan.
2. As proposed, SPRV22-06 will comply with the applicable design and development standards contained in the Camas Municipal Code and other applicable regulations.
3. As proposed, SPRV122-06 will have adequate public services and facilities at the time that the development will occur.
4. The review and decision associated with SPRV22-06, is in compliance with CMC Chapter 18.55.

RECOMMENDATION

Staff recommends APPROVAL of the Site Plan Review (SPRV22-25, SEPA22-23, CA22-18, DR22-08, ARCH22-16, MAJVAR22-01) for the **Lower Prune Hill Booster Pump Station & Reservoir**, subject to the conditions of approval as noted below.

CONDITIONS OF APPROVAL

STANDARD CONDITIONS:

1. Engineering site improvement plans shall be prepared in accordance with the City of Camas Design Standards Manual (CDSM) and CMC 17.19.040.
2. The engineering site plans shall be prepared by a licensed civil engineer in Washington State and submitted to the City's Engineering Department for review and approval.
3. In the event that any item of archaeological interest is uncovered during the course of a permitted ground disturbing action or activity, all ground disturbing activities shall immediately cease, and the applicant shall notify the City, the Tribes and DAHP.
4. The applicant shall remove all temporary erosion prevention and sediment control measures from the site at completion of all site improvements, which includes stabilization of all disturbed soil.
5. Final as-built construction drawing submittals shall meet the requirements of the Camas Design Standards Manual.

SPECIAL CONDITIONS:

<u>Planning Department:</u>

1. The proposed structures shall be painted or utilize building materials that are neutral, or earth toned colors so that they blend into the surrounding natural environment.

2. Significant trees within landscape buffers shall be retained if possible.
3. Prior to any land-disturbing activities, the applicant is to submit a tree survey documenting the existing tree units.
4. The proposed fence surrounding the reservoir shall be six feet tall, sight-obscuring and made of residential-like fencing or a similar permanent material.
5. All proposed grass shall be drought tolerant, if not, then an alternative ground cover shall be required in place of grass.
6. The applicant shall take appropriate measures to ensure landscaping success for a minimum of three years after issuance of building permits. If plantings fail to survive, the property owner shall promptly replace them.
7. Irrigation and landscaping shall be installed or bonded for prior to final acceptance.
8. A final landscape plan shall be submitted to the City for review and approval prior to engineering approval.
9. Prior to final engineering plan approval, a final Geotechnical report is to be submitted for review and approval with any revisions to the draft Geotechnical report clearly noted.
10. Recommendations noted in the final Geotechnical Report shall be followed.

Engineering Department:

11. Prior to final engineering plan approval, a final stormwater report (TIR) shall be submitted for review and approval. The final TIR is to be submitted as a PDF on a flash drive or CD.

APPEALS PROCESS:

This is a Type II Decision and may be appealed to the Hearings Examiner pursuant to CMC18.55.200. All appeals are initiated by filing a notice of appeal and $392 fee with the director within fourteen (14) days of issuance of the decision being appealed. The notice of appeal shall be in writing, include the appeal fee, and contain the following information:

(1) Appellant's name, address, and phone number;
(2) Appellant's statement describing his or other standing to appeal;
(3) Identification of the application which is the subject of the appeal;
(4) Appellant's statement of grounds for the appeal and the facts upon which the appeal is based;
(5) The relief sought, including the specific nature and extent;
(6) A statement that the appellant has read the notice of appeal and believes the content to be true, followed by the appellant's signature.

City of Camas WASHINGTON

Community Development Department | Planning
616 NE Fourth Avenue | Camas, WA 98607
(360) 817-1568
Permits@CityofCamas.us

General Application Form

Case Number: SPRV22-06 / MajVar22-01

Applicant Information

Applicant/Contact:: JAMES HODGES / COC Phone: (360) 817-7234

Address: *Street Address* E-mail Address: jhodges@CITYOFCAMAS.US

City *State* *ZIP Code*

Property Information

Property Address: 600 NW 18TH LOOP *Street Address* 85145001 *County Assessor # / Parcel #*

CAMAS 98607 *City* *State* *ZIP Code*

Zoning District R 7.5 Site Size 1.42 ACRES

Description of Project

Brief description:

REPLACE EXTG WATER PUMP STATION AND 0.5 MG RESERVOIR

Are you requesting a consolidated review per CMC 18.55.020(B)? YES ☐ NO ☐

Permits Requested: ☐ Type I ☐ Type II ☒ Type III ☐ Type IV, BOA, Other

Property Owner or Contract Purchaser

Owner's Name: CITY OF CAMAS *Last* *First* Phone: ( )

Street Address *Apartment/Unit #*

E mail Address:

City *State* *Zip*

Signature

I authorize the applicant to make this application. Further; I grant permission for city staff to conduct site inspections of the property.

Signature: James Hodges Date: 8/15/2022

Note: If multiple property owners are party to the application, an additional application form must be signed by each owner. If it is impractical to obtain a property owner signature, then a letter of authorization from the owner is required.

Date Submitted: 8/5/22 Pre-Application Date: PA 21-45

Staff: YS Related Cases # SPRV22-06

☐ Electronic Copy Submitted

City Journal Transfer #1,295.00

Validation of Fees

Application Checklist and Fees [updated on January 1, 2022]

◊ Annexation	$863 - 10% petition; $3,669 - 60% petition	001-00-345-890-00		$
◊ Appeal Fee		001-00-345-810-00	$399.00	$
◊ Archaeological Review		001-00-345-810-00	$137.00	$
◊ Binding Site Plan	$1,879 + $24 per unit	001-00-345-810-00		$
◊ Boundary Line Adjustment		001-00-345-810-00	$103.00	$
◊ Comprehensive Plan Amendment		001-00-345-810-00	$5,826.00	$
◊ Conditional Use Permit				
Residential	$3,417 + $105 per unit	001-00-345-810-00		$
Non-Residential		001-00-345-810-00	$4,328.00	$
◊ Continuance of Public Hearing		001-00-345-810-00	$524.00	$
◊ Critical or Sensitive Areas (fee per type)		001-00-345-810-00	$775.00	$
(wetlands, steep slopes or potentially unstable soils, streams and watercourses, vegetation removal, wildlife habitat)				
◊ Design Review				
Minor		001-00-345-810-00	$433.00	$
Committee		001-00-345-810-00	$2,375.00	$
◊ Development Agreement	$877 first hearing; $530 ea. add'l hearing/continuance	001-00-345-810-00		$
◊ Engineering Department Review - *Fees Collected at Time of Engineering Plan Approval*				
Construction Plan Review & Inspection	*(3% of approved estimated construction costs)*			
Modification to Approved Construction Plan Review	*(Fee shown for information only)*		$420.00	
Single Family Residence (SFR) - Stormwater Plan Review	*(Fee shown for information only)*		$208.00	
Gates/Barrier on Private Street Plan Review	*(Fee shown for information only)*		$1,041.00	
◊ Fire Department Review				
Short Plat or other Development Construction Plan Review & Insp.		115-09-345-830-10	$284.00	$
Subdivision or PRD Construction Plan Review & Inspection		115-09-345-830-10	$354.00	$
Commercial Construction Plan Review & Inspection		115-09-345-830-10	$424.00	$
◊ Home Occupation				
Minor - Notification (No fee)			$0.00	
Major		001-00-321-900-00	$69.00	$
◊ LI/BP Development	$4,328 + $41.00 per 1000 sf of GFA	001-00-345-810-00		$
◊ Minor Modifications to approved development		001-00-345-810-00	$346.00	$
◊ Planned Residential Development	$35 per unit + subdivision fees	001-00-345-810-00		$
◊ Plat, Preliminary				
Short Plat	4 lots or less: $1,936 per lot	001-00-345-810-00		$
Short Plat	5 lots or more: $7,1755 + $250 per lot	001-00-345-810-00		$
Subdivision	$7,175 + $250 per lot	001-00-345-810-00		$
◊ Plat, Final:				
Short Plat		001-00-345-810-00	$200.00	$
Subdivision		001-00-345-810-00	$2,375.00	$
◊ Plat Modification/Alteration		001-00-345-810-00	$1,196.00	$
◊ Pre-Application (Type III or IV Permits)				
No fee for Type I or II				
General		001-00-345-810-00	$354.00	$
Subdivision (Type III or IV)		001-00-345-810-00	$911.00	$
◊ SEPA		001-00-345-890-00	$810.00	$
◊ Shoreline Permit		001-00-345-890-00	$1,196.00	$
◊ Sign Permit				
General Sign Permit	(Exempt if building permit is required)	001.00.322.400.00	$41.00	$
Master Sign Permit		001.00.322.400.00	$126.00	$
◊ Site Plan Review				
Residential	$1,151 + $34 per unit	001-00-345-810-00		$
Non-Residential	$2,876 + $68 per 1000 sf of GFA	001-00-345-810-00		$
Mixed Residential/Non Residential	(see below)	001-00-345-810-00		$
	$4,055 + $34 per res unit + $68 per 1000 sf of GFA			
◊ Temporary Use Permit		001-00-321-990-00	$80.00	$
◊ Variance (Minor)		001-00-345-810-00	$695.00	$
◊ Variance (Major)		001-00-345-810-00	$1,295.00	$ 1,295.00
◊ Zone Change (single tract)		001-00-345-810-00	$3,345.00	$

Adopted by RES 1023 AUG 2005; Revised by RES 1113 SEPT 2007; Revised by RES 1163 OCT 2009; Revised by RES 1204 NOV 2010; Revised by RES 15-001 JAN 2015; Revised by RES 15-007 MAY 2015; Revised by RES 15-018 DEC 2015; Revised by RES 16-019 NOV 2016; Revised by RES 17-015 NOV 2017; Revised by RES 18-003 APRIL 2018; Revised by RES 18-013 NOV 2018; Revised by RES 19-018 DEC 2019 Revised by RES20-014 DEC 2020

Fees reviewed & approved by Planner: _____ *Initial* *Date*

For office use only

Total Fees Due: $ 1,295.00

C:\Users\abaldwin\Desktop\DAILY PERMITS\Planning Fee Schedule 2022

Project Narrative

Lower Prune Hill Booster Pump Station Improvements

Preliminary Site Plan Review
Major Variance
Minor Design Review
Critical Areas Review
State Environmental Policy Act Review

Submitted to

City of Camas
Community Development Department
Camas, Washington

March 2022

Submitted by

WSP USA
210 East 13th Street, Suite 300
Vancouver, Washington 98660-3231

31000047.001

PERMIT REVIEW NARRATIVE
LOWER PRUNE HILL BOOSTER PUMP STATION IMPROVEMENTS

TABLE OF CONTENTS

SECTION PAGE

LIST OF TABLES

LIST OF ATTACHMENTS

LIST OF ACRONYMS

CARA	critical aquifer recharge area
CMC	Camas Municipal Code
dbh	diameter at breast height
DNR	Washington State Department of Natural Resources
gpm	gallon per minute
LPH BPS	Lower Prune Hill Booster Pump Station
MG	million gallon
Public Works	City of Camas Public Works Department
R-7.5	single-family residential (zone designation)
SEPA	State Environmental Policy Act
TIR	technical information report

1.0 INTRODUCTION

The City of Camas Public Works Department (Public Works) is proposing to replace the Lower Prune Hill Booster Pump Station (LPH BPS) and the existing 0.5-million-gallon (MG) reservoir located near the intersection of Northwest 18th Loop and Northwest Ostenson Canyon Road within the Camas city limits.

The LPH BPS is equipped with three pumps that are supplied from two on-site storage tanks in the 455-pressure zone. The pumps discharge to a 12-inch cast iron main line and a 16-inch ductile iron main line that supply a storage tank in the 852-pressure zone at Upper Prune Hill. LPH BPS is the only pump station to supply water to the 852-pressure zone, making it critical to the operation of the City water system. The City's Water System Plan Update identified the need for additional pumping capacity at LPH BPS to meet the projected maximum demand for the 852-pressure zone. The existing LPH BPS and backup generator will remain in operation during construction of the new booster pump station, and will be disconnected, removed, and backfilled after the new booster pump station has been brought online.

Public Works also proposes to replace the existing 0.5-MG reservoir with a new 0.58 MG reservoir. The new reservoir would be located immediately downhill of the existing 0.5-MG reservoir. The existing 1.5-MG reservoir north of the existing 0.5-MG reservoir would remain unaltered by the proposed project.

The proposed pump station and reservoir replacements are described below in Section 2.0.

The applicant completed a pre-application conference with the City of Camas on February 6, 2020 and October 7, 2021 (Attachment E). The applicant is requesting approval for:

- Preliminary Site Plan Review
- Major Variance
- Minor Design Review
- Critical Areas Review
- State Environmental Policy Act (SEPA) review

2.0 PROJECT DESCRIPTION

The features of the proposed project are described below. All improvements are illustrated on the plan set (Attachment A)

2.1 PROJECT OVERVIEW

The proposed booster pump station replacement will consist of a 38-foot by 21-foot concrete masonry block security building. The concrete masonry building would have an accent stripe, cement fiber siding above the masonry, and a standing seam metal roof. The new pump station will be constructed at the southwest corner of the site, within the footprint of the existing reservoir and immediately north of the proposed 0.58-MG reservoir. Within the building will be three 250-horsepower pumps, and

related equipment. A proposed backup generator would be housed in an sound attenuated outdoor enclosure just west of the proposed pump station building.

The pumps within the building will be configured in a 2+1 arrangement, with primary pumps having a total capacity of 2,750 gallons per minute (gpm), and one standby pump having a capacity of 1,375 gpm. The existing LPH BPS and backup generator will remain in operation during construction. The proposed improvements would provide additional pumping capacity to meet projected maximum demand.

Public Works is also proposing to replace the existing 0.5-MG reservoir with a new 65-foot-diameter, 0.58-MG reservoir. The new reservoir would be a welded steel reservoir with a height of approximately 32 feet to the top of the reservoir. A roof vent would extend above the reservoir an additional 2 feet for a total reservoir height of 34 feet, which would comply with the 35-foot height limit in the R-7.5 zone.

The new reservoir will be setback 18 feet from the west (rear) property line where the setback requirement is 35 feet and 11 feet from the east (front) property line, necessitating a major variance for deviations of more than 10 percent in accordance with Camas Municipal Code (CMC) Section 18.45.040. Setbacks for the side lot lines (south and north property boundaries) of 15 feet and the front property line of 30 feet (east property line) will be met. To preserve the location of the existing site access road from Northwest 18th Loop, provide the necessary volume of water storage, and provide required maintenance access around the reservoir, the proposed reservoir cannot meet the front or rear setback requirements. To meet the needs of the water system operation, the reservoir must be put at a specific elevation, which is found at the southern end of the site where the lot depth is limited. The reservoir must also be constructed at a minimum size to provide the required volume, provide access around the reservoir for maintenance needs, and provide clearance from the existing 1.5 MG reservoir that is to remain.

The applicant is also requesting a reduction of the required 10-foot, L2 buffer along the western and southern property boundary from 10 feet to 5 feet immediately adjacent to the circular access road under the same reasoning, but will provide ground cover within the buffer and the buffer will be 10 feet wide for a majority of the western and southern property line. Trees cannot be provided in the buffer because Public Works needs to be able to access and maintain the water lines running parallel to the western property boundary.

Additional proposed improvements will include a new generator to be located immediately west of the proposed pump station. A 16-foot retaining wall will encompass the north, west, and south sides of the reservoir and pump station development to stabilize slopes along the west side of the site to accommodate the circular access road.

The applicant is combining the two lots into one using a lot combination process with Clark County to prevent property lines from running through proposed structures and to ensure that lot dimensional and setback requirements can be met other than the requested variance for front and rear yard setbacks.

2.2 PROJECT TIMELINE

The anticipated project timeline is to issue construction bids in January 2023, with construction starting in February 2023 and completion by the end of June 2024.

3.0 EXISTING CONDITIONS

3.1 PROJECT LOCATION

The project site is located north of the intersection of Northwest 18th Loop and Northwest Ostenson Canyon Road on Parcels 85173001 and 85145001 and is shown on the attached plan set (Attachment A). The combined site parcels are 1.93 acres in size. The surrounding areas consist of a combination of developed residential and open space. Areas to the north, east, and west are developed as residential and areas to the south across Northwest 18th Loop and Northwest Ostenson Canyon Road are Benton Park. The site is accessed by a gravel access road that connects to NW 18th Loop through the easement south of the property.

3.2 EXISTING SITE IMPROVEMENTS

The site is used for critical water storage and supply facilities. The 1.5 MG reservoir was constructed in 1971. The existing 0.5 MG reservoir was built in 1935. The existing booster pump station was constructed in 1971 and was upgraded in 2004. Existing site include a 0.5-MG reservoir, a 1.5-MG reservoir, a 5-foot to 6-foot-tall masonry block wall, telecommunications equipment, access road from Northwest 18th Loop, utility riser/cabinet cluster, and yard piping. Northern portions of the site include a 1.5H:1V (horizontal to vertical) ivy-covered slope and a lawn-covered area.

3.3 ZONING AND COMPREHENSIVE PLAN

The project site is zoned as a single-family residential 7.5 (R-7.5) designation, and compliance with zoning regulations is addressed in Section 5.0 of this narrative. Permitted uses in the R-7.5 zone are listed in CMC 18.07 and addressed below. The site also has a comprehensive plan designation of R-7.5.

3.4 CRITICAL AREAS

The pre-application notes prepared by the City states that geologically hazardous areas (i.e., steep slopes) were identified on the subject property. The geotechnical report for the project is included in Attachment B for review of a critical areas permit.

3.4.1 Geologically Hazardous Areas

Geologically hazardous areas include areas susceptible to erosion hazard, landslide hazard, seismic hazard, mine hazard, and other geologic events. Steep slopes in combination with certain soil types may create erosion hazards or landslide hazards and are regulated under CMC 16.59. The geotechnical report confirms the presence of landslide and erosion hazards on the site. Due to the presence of geologically hazardous areas, a critical areas permit is required.

According to Washington State Department of Natural Resources (DNR) "Liquefaction Susceptibility and Site Class Maps," and Clark County MapsOnline, the site is mapped as within the "very low to low" risk category for liquefaction susceptibility. The geotechnical investigation prepared by GRI concluded that seismic hazards were not present on the site. (Attachment B).

3.4.2 Critical Aquifer Recharge Areas

According to Clark County MapsOnline, the study area is mapped as a Category 2 critical aquifer recharge area (CARA). According to the map by the U.S. Environmental Protection Agency, the entire city and all of Clark County are within the Troutdale sole source aquifer. Sole source aquifers meet the definition of CARAs in the City's code. However, activities that result in less than 5 percent or 2,500 square feet, whichever is greater, including additions, are not required to provide a critical areas report. The subject application will result in an increase of 2.6 percent impervious surface (1,628 square feet) and is not required to provide a critical areas report.

3.4.3 Archaeological Resources

Archaeological Investigations Northwest, Inc. conducted a records review of the project site in August 2020 as part of an alternatives analysis comparing potential site locations (Appendix J). The records review was used to assess the potential for encountering archaeological resources with the proposed locations and to provide recommendations for further archaeological surveys that may be needed for local and state compliance.

Clark County MapsOnline Archaeological Predictive Model has the subject property classified as Low probability of an archaeological site. The statewide archaeological predictive model (found online in WISAARD) shows the entire site as "Low Risk." The nearest archaeological find is approximately 0.43 miles from the project site. The referenced archaeological memo (submitted under separate cover) included with this submittal has been reviewed by the City Planning Department and was determined by the City that no archaeological predetermination is required. Therefore, the project is not subject to further archaeological review.

4.0 PERMITS REQUIRED

Based on the proposed improvements and the impacts to critical areas, the applicant is applying for the following permits:

- City of Camas Preliminary Site Plan Review
- City of Camas Type III Major Variance
- City of Camas Minor Design Review
- City of Camas Engineering Review (Grading, Stormwater, Utilities)
- City of Camas Critical Areas Review
- City of Camas Building Permit

5.0 REGULATORY COMPLIANCE

This section summarizes compliance with the applicable CMC sections.

5.1 CHAPTER 16.01 STATE ENVIRONMENTAL POLICY ACT

The project is subject to SEPA review because the proposed development is located in mapped geologically hazardous areas. Per CMC 16.07.020.A, projects occurring within critical areas are not exempt from SEPA. This application package includes a

completed and signed SEPA checklist (Attachment D), and the applicant is requesting a concurrent review and determination by the City.

5.2 CHAPTER 16.59 GEOLOGICALLY HAZARDOUS AREAS

The site is located in mapped landslide and erosion hazards and is subject to critical areas review. The applicant is requesting approval of a critical areas permit concurrent with the site plan review, major variance, minor design review, and SEPA review. A geotechnical investigation is attached (Attachment B), which documents the presence of landslide and erosion hazards on the site but concludes that the project will not adversely affect the erosion hazard nor adversely affect the risk of landslide at the site. The project complies with the City's geologically hazardous areas requirements as demonstrated in the geotechnical investigation, and the applicant requests that the City approve a critical areas permit for the proposed development.

5.3 CHAPTER 18.05 ZONING MAP AND DISTRICTS

5.3.1 18.05.040 Residential and Multifamily Zones

D. R-7.5 Residential-7,500. This zone is intended for single-family dwellings with densities of five to six dwellings per acre. This zone should have less slope than lower density zones, and be adjacent to existing high density residential districts. The average lot size is seven thousand five hundred square feet.

Response: The project site is located in the R-7.5. Requirements of the zone are addressed below in this narrative and also under the variance criteria.

5.4 CHAPTER 18.07 USE AUTHORIZATION

5.4.1 18.07.040 - Table 2 - Residential and Multifamily Land Uses

Table 1. CMC 18.07.040-Table 2 - Residential and Multifamily Land Uses

Residential Uses	Use Classification
Public utilities, minor	Conditional
Pumping Station	Conditional

Response: The project site is located in the R-7.5 and the new reservoir and pump station are listed as being subject to a conditional use permit per CMC 18.07.040. Per correspondence with Madeline Sutherland with the City, a conditional use permit is not required as a pump station is currently on site and the proposal does not constitute a change of use (Attachment E).

5.5 CHAPTER 18.09 DENSITY AND DIMENSIONS

5.5.1 18.09.040 Density and Dimensions - Single-family Residential Zones

Table 2. Density and Dimensions for Single-family Residential Zones

Standard New Lots	R-7.5
Maximum density (dwelling units/net acre)	5.8
Average lot area (square feet)	7,500
Minimum lot size (square feet)	6,000

Maximum lot size (square feet)	12,000
Minimum lot width (feet)	70
Minimum lot depth (feet)	90
Maximum building lot coverage	40%
Maximum building height (feet)	35

Response: The proposal involves two existing lots (85173001 and 85145001). Lot 85173001 is approximately 0.09 acres (3,920 square feet) and Lot 8514001 is approximately 1.84 acres (80,530 square feet). A lot consolidation combining these two lots is being processed with Clark County.

The existing improvements on the site cover approximately 14.8 percent of the lot, and the proposed improvements will increase lot coverage to 16.7 percent.

Table 3. Building Setbacks for Single-family Residential Zones

Lot Area	**15,000 or more sq ft**
Minimum Front Yard	30 feet
Minimum Side Yard	15 feet
Minimum Rear Yard	35 feet

Response: The proposed reservoir walls will be 29.5 feet tall and will be 34 feet at highest point in the center and will be below the maximum building height. The pre-application conference notes indicated that the front of the parcel is the south property line, sides are the east and west, and the rear is the north property line, but later correspondence with the City (Attachment F) indicated that the front of the parcel to be the east, the sides north and south, and the rear to the west.. The proposed 0.58-MG tank will be located approximately 18 feet from the rear property line (west) and 11 feet from the front property line (east), which is less than the 35-foot and 30-foot minimum required setbacks. The front and rear setback reduction requires a major variance as the setbacks would be modified by more than 10 percent per CMC 18.45.020. The proposed development will comply with the side setbacks. Section 5.9 of this narrative addresses variance requirements.

5.5.2 18.09.060 Density Transfers

Response: This project is not proposing density transfers; therefore, these criteria are not applicable.

5.6 CHAPTER 18.13 LANDSCAPING

5.6.1 18.13.020 Scope

B. The standards of this chapter shall apply to the following:

4. Development that is subject to Design Review (refer to Chapter 18.19 Design Review)

Response: The proposal is subject to Design Review standards under CMC 18.19 and is, therefore, required to provide a landscaping plan.

5.6.2 18.13.040 Procedure for Landscape, Tree and Vegetation Plans

A. Applicants shall submit a detailed Landscape, Tree and Vegetation Plan with building and site improvement plans. Included in the plans (at a minimum) shall be type, size, and location of plants and materials.

B. A tree survey must be included for any applicable development proposing to remove trees.

Response: A landscape plan is included in this application on Sheet L-1 of the submitted plans (Attachment A). Up to four trees with diameters between 6-inches and 14-inches along the southern and western portions of the property may be removed as part of this proposal, and an arborist report is included as **Attachment K.** The arborist report indicates all trees proposed for removal are good candidates for removal as they are invasive species.

5.6.3 Section 18.13.050 Standards for Landscape, Tree, and Vegetation Plans

A. The property owner shall be responsible for any future damage to a street, curb, or sidewalk caused by landscaping.

B. Landscaping and trees shall be selected and located to deter sound, filter air contaminants, curtail erosion, minimize stormwater run-off, contribute to living privacy, reduce the visual impacts of large buildings and paved areas, screen, and emphasize or separate outdoor spaces of different uses or character.

C. Landscape, Tree and Vegetation Plan must include a combination of trees, shrubs, and ground cover to achieve the purposes of this chapter.

1. Required landscaping shall be comprised of a minimum of sixty percent native vegetation (or adapted to northwest climate), or drought-tolerant vegetation, and fifty percent evergreen.

2. Deciduous trees shall have straight trunks, be fully branched, have a minimum caliper of two inches, be equivalent to a fifteen-gallon container size, and be adequately staked for planting.

3. Evergreen trees shall be a minimum of five feet in height, fully branched, and adequately staked for planting.

D. Street trees will be required as part of the frontage improvements. Species, size and spacing of the trees must be consistent with the Design Standards Manual. Unless otherwise specified, trees must generally be spaced thirty feet apart. Substitute varieties are subject to approval by the City of Camas.

E. Proposed vegetation cannot be an invasive species as listed within the most current edition of the Clark County Noxious Weed List (e.g. English Ivy cultivars).

F. Shrubs shall be a minimum of five-gallon pot size. Upright shrubs shall have a minimum height at planting of eighteen inches. Spreading shrubs at planting shall have a minimum width of eighteen inches (smaller shrub sizes may be approved where it is more appropriate within a particular landscape plan).

G. Ground Cover, defined as living material and not including bark chips or other mulch, shall be from containers of one gallon or larger. Plants shall be planted and spaced in a triangular pattern which will result in eighty percent cover in

three years. Lawn cannot be the primary ground cover within required landscape buffers unless approved for stormwater conveyance. Grass species, if used as ground cover, shall be native or drought-tolerant, and appropriate for the use of the area.

H. Appropriate measures shall be taken, e.g., installation of irrigation system, to assure landscaping success. If plantings fail to survive, it is the responsibility of the property owner to replace them.

I. Required trees, as they grow, shall be pruned in accordance with the International Society of Arboriculture. The pruned tree will provide at least ten feet of clearance above sidewalks and fourteen feet above street roadway surfaces.

J. Existing trees may be used as street trees if there will be no damage from the development which will kill or weaken the tree. Sidewalks of variable width and elevation may be utilized to save existing street trees, subject to approval by the city.

K. Vision clearance hazards shall be prohibited.

L. Street trees and other required landscaping which dies or is removed, must be replaced within one year of death or removal. Replacement street trees may be an alternative species from the city's recommended tree list, and may be in a different location as approved by the city.

Response: The proposed development complies with the standards in 18.13.050 as follows:

- The applicant is not proposing landscaping near streets, curbs, or sidewalks; therefore, there will not be any damage to this infrastructure.
- The applicant is proposing ground cover plantings in the landscape buffer along the western property boundary. Trees and shrubs cannot be provided in the buffer due to the presence of water lines on the western property boundary as detailed in Section 5.9 of this narrative. The applicant selected the ground cover to minimize erosion and runoff on the western slope.
- The applicant is not proposing any frontage improvements; therefore, street trees are not required.
- None of the proposed vegetation is invasive species as shown on the landscape vegetation plan.
- Groundcover meets the minimum size requirements as shown on the landscape plan.
- The applicant has selected native and drought tolerate species, and irrigation is not required.
- Because no trees are proposed, pruning requirements do not apply.
- None of the proposed landscaping is in vision clearance areas.
- The applicant accepts the responsibility for groundcover replacement, if landscaping dies.

5.6.4 Section 18.13.051 Minimum Tree Density Requirement

A. Tree Density. A minimum tree density per net acre is required and must be incorporated within the overall landscape plan. The tree density may consist of existing trees, replacement trees or a combination of existing and replacement trees, pursuant to the priority established in Section 18.13.052.

Proposed Activity	Required Minimum Tree Density per Net Acre	Required Tree Replacement
Developed Commercial and Industrial Properties	20 Tree Units	3 Tree Units for every 1 Tree Unit removed up to the minimum tree density per acre

Response: A minimum tree density of 20 units per net acre is required for developed commercial and industrial properties. The entire site, except the far northeastern corner, is a mapped critical area (landslide and erosion hazards) and the northeastern corner is an open space and tree grove. Net acreage is defined in the City's code to exclude critical areas and open space. Therefore, because the entire site is critical areas or open space, the tree density requirements do not apply.

5.6.5 Tree and Native Vegetation Preservation

A. When determining where to retain or plant trees, locations with healthy soils, native understory vegetation, and mature trees shall have priority when there are feasible alternative locations on site for proposed buildings and site improvements to achieve the minimum tree unit density per acre. This may require site redesign. Provided, where necessary, density transfer areas may be used to ensure protection and retention of trees.

B. In designing a development project and in meeting the required tree density, the applicant must provide a Landscape, Tree and Vegetation plan that retains healthy, wind firm trees in the following priority:

1. *Trees located within critical area buffers. Trees must be identified within a protected tract.*
2. *Significant wildlife habitat, or areas adjacent and buffering habitat.*
3. *Significant trees that are greater than 36 inch dbh.*
4. *Groves of trees, or other individual healthy trees with the intent to retain must be located in separate tract if part of a land division, or other protective mechanism if other development type,*
5. *Trees, that if removed would cause trees on adjacent properties to become hazardous.*

C. Mitigation and Replacement. In areas where there are currently inadequate numbers of existing trees to meet minimum tree density, where the trees are inappropriate for preservation, the soils are poor, or there are significant invasive species, then mitigation shall be required to meet the minimum tree density. The applicant's proposed location for replacement trees or mitigation shall be subject to the city's approval of the Landscape Plan. Replacement trees shall be planted in the following priority:

1. *Onsite.*

a. Within or adjacent to critical area buffers or wildlife habitat areas
b. Adjacent to stormwater facilities
c. Landscaping tracts, such as at entrances, traffic islands or other common areas
d. Removal of invasive species and restorative native vegetation planting equivalent to the area necessary for new tree planting.

Response: The applicant complies with Section 18.13.052 as follows:

- The applicant is proposing development only within the previously developed areas of the site and will only be removing four trees that would negatively impact long term maintenance of facilities. The larger, undeveloped, and heavily vegetated areas of the site will remain undisturbed.
- Groves of trees will be retained within the steeply sloped and undeveloped portions of the site that are located in mapped landslide and erosion hazard areas.
- The applicant is not proposing and is not required to plant trees to meet tree density requirements because the entirety of the site is mapped critical areas or open space. There is no net acreage of the site outside of critical areas or open space.

5.6.6 18.13.055 Landscape Buffering Standards

Abutting Zone	**Residential**
Uses on Site	**Not Separated by a Street**
Industrial	10' L2 w/F2 Fence

Response: Landscaping buffering is required between residential and industrial uses as specified in the City's code. A landscaping plan is submitted along with this application (Attachment A). The applicant is proposing to place a 10-foot-wide, L2 buffer along the site's western and southern boundary with the exception of areas where the access road around the reservoir is closer than 10 feet to the property line. In these limited locations, the applicant cannot provide the 10-foot buffer, but is still planting these locations and is requesting a variance for the minimum width of the buffer as described in Section 5.9 of this narrative. The buffer will contain groundcover, but trees and shrubs cannot be provided due to the presence of water lines along the western property boundary that would require removal of landscaping to access and maintain the water lines. In addition, tree roots may damage the water lines.

5.7 CHAPTER 18.18 SITE PLAN REVIEW

5.7.1 18.18.020 Site Plan Applicability

A. Site plan review and approval shall be required for the following development activities prior to issuance of a building permit:
1. All new nonresidential uses for the location of any building(s);

Response: The proposal does not qualify for any exemptions listed in this chapter and requires a Type III review as the project also includes a major variance.

5.7.2 18.18.040 Submittal and contents of a complete application

In addition to the submittal requirements under CMC Chapter 18.55 Administration and Procedures, each application for site plan review shall contain the following information. Items may be waived if, in the judgment of the community development department, the items are not applicable to the particular proposal.

A. A written description addressing the scope of the project, the nature and size in gross floor area of each use, and the total amount of square feet to be covered by impervious surfaces;
B. A vicinity map showing site boundaries, and existing roads and accesses within and bounding the site;
C. A topographic map based upon a site survey delineating contours, existing and proposed, at no less than five-foot intervals, and which locates existing streams, marshes, and other natural features;
D. Site plans drawn to a scale no smaller than one inch equals fifty feet showing location and size of uses, buffer areas, proposed areas of disturbance or construction outside of the building footprint, yards, open spaces and landscaped areas, and any existing structures, easements and utilities;
E. A circulation plan drawn to a scale acceptable to the community development director illustrating all access points for the site, the size and location of all driveways, streets, and roads, with proposed width and outside turning radius, the location, size, and design of parking and loading areas, and existing and proposed pedestrian circulation system. If a project would generate more than one hundred average daily trips either based on the latest edition of the International Transportation Engineer's (ITE) Trip Generation Manual or evidence substantiated by a professional engineer licensed in the state of Washington with expertise in traffic engineering, a traffic impact study shall be submitted;
F. A preliminary stormwater technical information report (TIR) supporting the preliminary stormwater drainage and runoff plan. The preliminary stormwater TIR is to be prepared in accordance with Ecology's latest edition Stormwater Management Manual for Western Washington (SWMMWW);
G. A utility plan;
H. A plot plan of all proposed landscaping including the treatment and materials used for open spaces, and the types of plants and screening to be used;
I. Typical building elevation and architectural style; and
J. Reserved.

Response: The applicant is providing the required materials, which are attached to this application package. This requirement is met.

5.7.3 18.18.060 Criteria for approval

The city shall consider approval of the site plans with specific attention to the following:

A. Compatibility with the city's comprehensive plan;

Response: The project site has a comprehensive plan designation of Single-Family Medium per the 2035 Comprehensive Plan. The city's comprehensive plan adopts the city's capital improvement plan, which includes the improvements included in this proposal. Therefore, this proposal is consistent with the goals and policies of the comprehensive plan. In addition, the site is already used as a public facility for water infrastructure and this use will be continued with the subject application and the replacement facilities.

B. Compliance with all applicable design and development standards contained in this title and other applicable regulations;

Response: This project narrative details how the proposal is compliant and meets the design and development standards that are applicable under the CMC.

C. Availability and accessibility of adequate public services such as roads, sanitary and storm sewer, and water to serve the site at the time development is to occur, unless otherwise provided for by the applicable regulations;

Response: The proposal is for improvements to a booster pump station and reservoir for Camas's municipal water system. The site is currently accessible via a driveway from Northwest 18th Loop that will be improved to serve the development. Stormwater from the site will be captured through a series of inlets and routed to existing City of Camas stormwater system. Domestic water and sanitary sewer service is not required for the reservoir and pump station. Therefore, this criterion is met.

D. Adequate provisions are made for other public and private services and utilities, parks and trails (e.g., provide copies of private covenant documents);

Response: The existing and proposed use of the site is for public utilities as a booster pump station and reservoir and does not generate demand for parks or trails. Electric service is available at the site and will power the pumps station and reservoir monitoring equipment. The newly constructed driveway leading to the site and encompassing the new reservoir will provide access for service and emergency access vehicles.

E. Adequate provisions are made for maintenance of public utilities; and

Response: The site is owned and will be maintained by the City of Camas Public Works Department. Clark Public Utility District will service electric facilities at the site.

F. All relevant statutory codes, regulations, ordinances and compliance with the same. The review and decision of the city shall be in accordance with the provisions of CMC Chapter 18.55 Administration and Procedures.

Response: This project narrative details how the proposal is compliant with all codes, ordinances, and statutory requirements. The project requires review under a Type III process with a public hearing and decision by the City's Hearing Examiner.

5.8 CHAPTER 18.19 DESIGN REVIEW

5.8.1 18.19. 020 Scope

Design review is required for all new developments within commercial, mixed-use, business park, or multifamily zones, redevelopment (including change in use, e.g., residential to commercial), or major rehabilitation (exterior changes requiring a building permit or other development permit). Commercial uses in the context of design review include both traditional uses listed as commercial under the zoning code as well as recreational, religious, cultural, educational, and governmental buildings and associated properties. Additionally, design review is applicable to all new developments or redevelopments within a gateway area as defined in the design review manual

Response: As stated in the pre-application conference, the project constitutes a major redevelopment and is required to undergo minor design review. Minor design review is an administrative process and is consolidated with this site plan review permit narrative. This narrative addresses CMC 18.19.050A, as required in the pre-application conference notes.

5.8.2 18.19.050 Design Principles

A. Standard Principles

1. Landscaping shall be done with a purpose. It shall be used as a tool to integrate the proposed development into the surrounding environment.

Response: The applicant is proposing to provide groundcover landscaping along the site's western and southern boundary within the 10-foot L2 buffer. Because water lines are present in this area, trees and shrubs cannot be provided for maintenance reasons and to prevent roots from damaging water lines. Trees and shrubs cannot be provided elsewhere on the site to prevent conflict with water system infrastructure and to prevent blocking the views of uphill residences. Four trees in the southwest corner of the site will be removed from the site for maintenance reasons, but the large groves of trees will be preserved. Therefore, landscaping is being provided with purpose.

2. All attempts shall be made at minimizing the removal of significant natural features. Significant natural features shall be integrated into the overall site plan.

Response: The site is already developed and is currently used as reservoir and booster pump station. The existing reservoir and booster pump station will be upgraded with this proposal. Natural features on the site include a steeply vegetated hillside on the eastern and northern sides of the project site. The site's natural topography and groves of trees will be preserved. The proposed project will use the site's natural topography to help screen the reservoir and pump station from residences north and west of the site.

3. Buildings shall have a "finished" look. Any use of panelized materials shall be integrated into the development in a manner that achieves a seamless appearance.

Response: The proposed improvements will be consistent with the established and previously approved facilities on site. The proposed reservoir will be a painted welded steel reservoir and the pump station will be a concrete masonry structure with accents, including a standing seam metal roof, cement fiber siding, and accent strip at the base of the building. The colors of the structures and additional detailing of the pump station building will be determined during final design to provide a finished look.

4. *A proposed development shall attempt to incorporate or enhance historic/heritage elements related to the specific site or surrounding area.*

Response: The site is located in a residential area of Camas. The buildings range in age from approximately about 2 to 75 years old. Pitched roofs are common features of these buildings. The proposed pump station will also have a pitched room to match the architectural aesthetic of structures both recent and historic in the project vicinity.

5.8.3 18.18.070 Application Requirements

Application for design review shall be submitted on the most current forms provided by, and in a manner set forth by the community development director or designee. The application shall include such drawings, sketches, and narrative as to allow the approval authority review of the specific project on the merits of the city's design review manual and other applicable city codes. An application shall not be deemed complete unless all information requested is provided.

Response: The project submittal includes detailed site plans, structural elevations, and drawings depicting the proposed improvements and their location on the project site. This project narrative addresses design review manual and city standards.

5.9 CHAPTER 18.45 VARIANCES

5.9.1 18.45.020 Variance Approval Process

B. *Major Variance. A major variance is one that results in the modification of a numerical development standard by more than ten percent. The board of adjustment is generally the decision maker regarding major variances. Where a variance is consolidated with an application for a Type III decision, the decision maker shall be the same as that for the Type III application. A major variance shall not be approved unless findings are made by the approval authority that all of the approval criteria under CMC Section 18.45.030 are satisfied.*

Response: The proposal is requesting a variance for setback standards to the rear yard setback reducing the required setback from 35 feet to 18 feet and the front yard setback reducing the required setback from 30 feet to 11 feet. This variance request is greater than 10 percent and qualifies as a major variance. How the project meets the variance criteria are addressed below.

The applicant is also requesting to reduce the required 10-foot, L2 buffer on the site's western and southern property line to as small as 5 feet wide (50 percent wide) to accommodate the circular configuration of the access drive around the reservoir also requiring a major variance. The required 10-foot-wide buffer will continue to be

provided along the majority of the site's western and southern property line. In addition, the applicant is requesting to vary from the L2 buffer's requirement for trees and shrubs, which cannot be provided due to the presence of the water lines on the western property boundary. Trees and shrubs would interfere with maintenance of the water lines, which could also be damaged by tree roots.

5.9.2 18.45.040 Major Variance

A. The board of adjustment (or hearing examiner, or planning commission, in accordance with Section 18.45.020(B)) shall consider all requests for major variances from the zoning code.

B. Approval of a major variance must demonstrate with findings of compliance with all of the following criteria:

1. The variance shall not constitute a grant of special privilege inconsistent with the limitation upon uses of other properties in the vicinity and zone in which the subject property is located;

Response: The applicant is requesting to reduce the rear yard setback from 35 feet to 18 feet, reduce the front yard setback from 30 feet to 11 feet, and to reduce the 10-foot L2 buffer to 5 feet to accommodate the proposed reservoir and circular access road. In addition, the applicant is requesting to vary from the L2 buffer's requirement for tree and shrub plantings to provide groundcover only because of the presence of water lines along the property boundary.

The circular access road around the new reservoir is required for service and emergency vehicles and to prevent emergency vehicles from having to back out of the site. The reservoir and access road cannot comply with the access and buffer requirements to the west because it would push the access road and reservoir east into steeply vegetated slopes along Northwest 18th Loop, requiring the complete redesign of the access road and significant cut and fill slopes to support the road and reservoir, as well as removal of mature vegetation, and further reduction of the setback to the east. To meet the needs of the water system operation, the reservoir must be put at a specific elevation, which is found at the southern end of the site where the lot depth is limited. The reservoir must also be constructed at a minimum size to provide the required volume, provide access around the reservoir for maintenance needs, and provide clearance from the existing 1.5 MG reservoir that is to remain. Due to these constraints and requirements, a variance from the setback requirements does not provide special privilege and is needed for the facility to provide adequate water service to residents. In addition, placing the reservoir further west and south on the site as compared with the existing reservoir will improve the views of residences to the west. Therefore, the proposed variance is not a grant of special privilege, but requested to accommodate special circumstance that applies to the site and to provide a view benefit to residences to the west.

2. That such variance is necessary, because of special circumstances or conditions relating to the size, shape, topography, location, or surroundings of the subject property, to provide it with use, rights, and privileges permitted to other properties in the vicinity and in the zone in which the subject property is located;

Response: The site topography, location adjacent to surrounding residential uses with views, and the proposed continuing use of the site for municipal water infrastructure all constitute special circumstances that necessitate the major variance requests for the reduced front and rear yard setback, reduced width landscape buffer, and request to eliminate the tree and shrubs otherwise required in the buffer.

The newly proposed reservoir and pump station require a circular access road to provide access to service and emergency vehicles. The reservoir and access road cannot comply with the setbacks and full-width buffer requirements, because the reservoir needs to be a minimum size and located at specific elevations to meet the water system operational requirements, and access around the facilities is required to provide safe access and maintenance of facilities. The site is constrained by steep slopes and limited lot depth at the southern end. Moving the proposed facilities north closer to the existing 1.5 MG reservoir to remain would prevent the City from having the ability to properly maintain and replace the facilities in the future. Attempting to increase the rear setback would decrease the front setback and the access road would have to be moved east into steeply sloped, vegetated areas requiring the complete redesign of the access road that would include significant cut and fill slopes and retaining walls.

In addition, residential uses uphill from the project site have views to the east and south. Due to the site's steeply sloping topography, it is better for the proposed reservoir to be located as close as possible to the southern and western property boundary where the slope will better screen residential views of the reservoir, improving the views as compared with the existing condition the existing condition. Neighbors to the north have expressed concern regarding any impacts to their current views and reservoir's view impacts reduced as much as possible and the best way to do this is to locate it closer to the southwestern property boundary. The applicant will continue to provide a 10-foot L2 buffer along a majority of the site's western boundary, with the reduced buffer requested in a single location adjacent to the required access drive. The applicant's request to eliminate trees and shrubs from the landscape buffer will also help maintain easterly views from the residences.

3. *The granting of such variance will not be materially detrimental to the public welfare or injurious to the property or improvements in the vicinity and in the zone in which the subject property is located.*

Response: Because the site is already used as a reservoir and booster pump station and the replacement reservoir will be located in approximately the same location, a replacement reservoir will have largely the same impacts to the properties in the vicinity as the existing reservoir facility. Reducing the rear setback and landscape buffer allowing the reservoir to be placed closer to the western property boundary will better screen it from the views of the residences to the west, thereby reducing the view impacts to these properties. In addition, reducing the rear yard setback and buffer, will balance the required reduction to the front setback and prevent the removal of mature vegetation on the site's eastern slope that would be necessary to accommodate the reservoir and access road.

Reducing the front yard setback allows the existing access to be maintained while balancing impacts to the rear yard setback. If the reservoir were to comply with the rear yard setback there would be zero front yard setback, and if the reservoir were to comply with the rear yard setback there would be zero rear yard setback. Placing the reservoir further east would require the complete redesign of the access road and the placement of significant cut and fill slopes and removal vegetation that would be unsightly from residences located downhill and traffic along Northwest 18th Loop and be materially detrimental to the public welfare.

Reducing the southern side yard buffer allows clearance between the proposed facilities and the 1.5 MG reservoir that is to remain. Moving the proposed facilities north closer to the existing 1.5 MG reservoir to remain would prevent the City from having the ability to properly maintain and replace the facilities in the future, and preventing the City from maintaining these critical facilities would be detrimental to the public welfare. Finally, the request to provide only groundcover in the buffer will help preserve views and eliminate conflicts with maintenance of water lines and tree roots that could damage the water lines that would be a material detriment to the public welfare and possibly lead to interruption of water service.

Therefore, the granting of the variance will not be materially detrimental to the public welfare or injurious to the property or improvements in the vicinity, but rather avoids a design that could negatively impact the public welfare through removal of mature vegetation and interruption of water service.

6.0 CONCLUSION

As this narrative and the materials that together comprise the submittal packet demonstrate, the proposed project has been designed to comply with the applicable provisions of the CMC, and we request application approval.

Narrative
Lower Prune Hill Booster Pump Station Improvements
Camas, Washington

Appendix A
Project Plans

Project Narrative
Lower Prune Hill Booster Pump Station Improvements
Camas, Washington

Appendix B
Geotechnical Report

Project Narrative
Lower Prune Hill Booster Pump Station Improvements
Camas, Washington

Appendix C
Site Assessment Memorandum

Project Narrative
Lower Prune Hill Booster Pump Station Improvements
Camas, Washington

Attachment D
SEPA Checklist

Project Narrative
Lower Prune Hill Booster Pump Station Improvements
Camas, Washington

Attachment E
Pre-Application Conference Notes

Project Narrative
Lower Prune Hill Booster Pump Station Improvements
Camas, Washington

Attachment F
City Communication

Project Narrative
Lower Prune Hill Booster Pump Station Improvements
Camas, Washington

Attachment G
Application Form

Project Narrative
Lower Prune Hill Booster Pump Station Improvements
Camas, Washington

Attachment H
Mailing Labels

Notice of Proposed Development
Lower Prune Hill Water Pump Station and Reservoir Improvements

An application is on file with the City of Camas for review of Archaeological, Critical Areas, Minor Design review, SEPA, Site Plan Review, and Major Set-back Variance to establish proposed use.

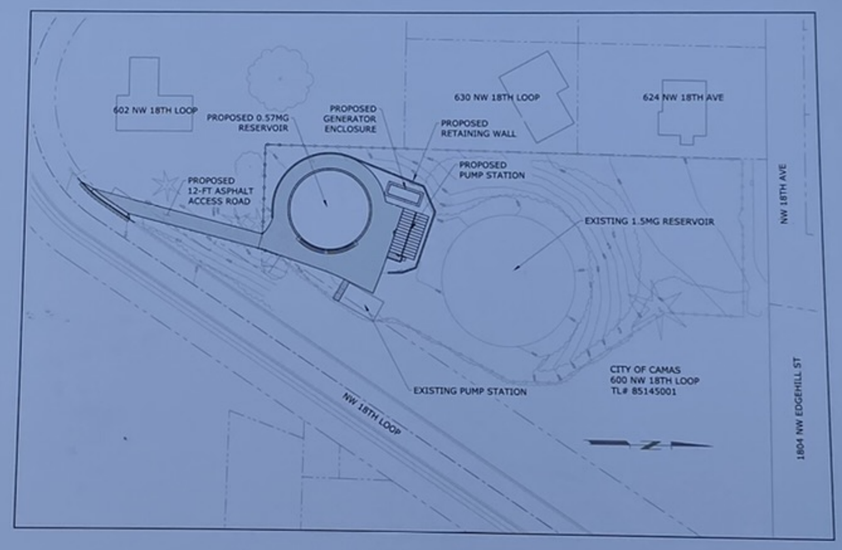
For information regarding this project contact:

Applicant Contact:

James Hodges
Project Manager
(360) 817-7234

City Contact:

Yvette Sennewald
City of Camas Senior Planner
(360) 817-7269



Public Hearing Schedule:

Hearing Date/Time: TBD

Hearing Location: TBD

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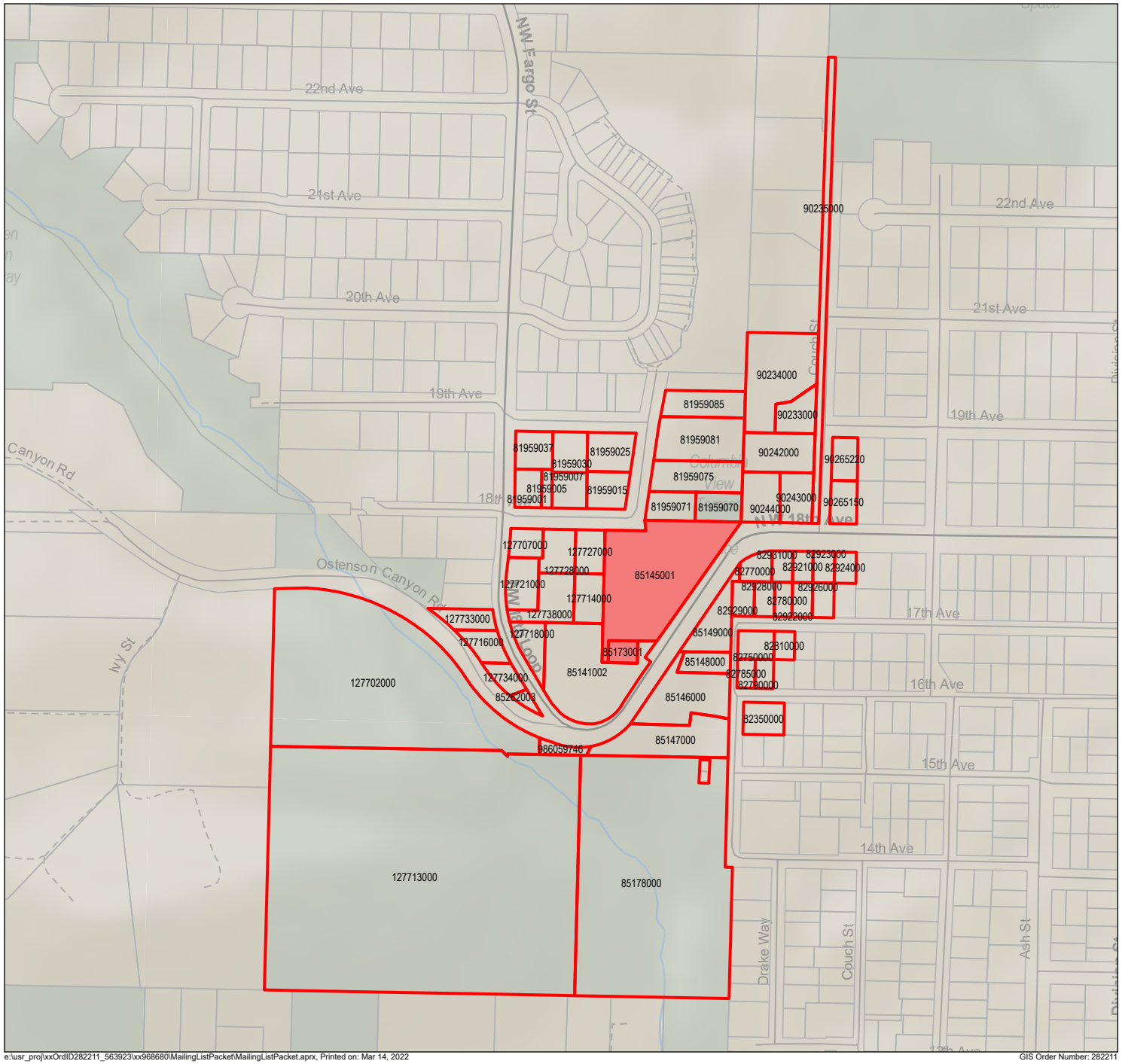

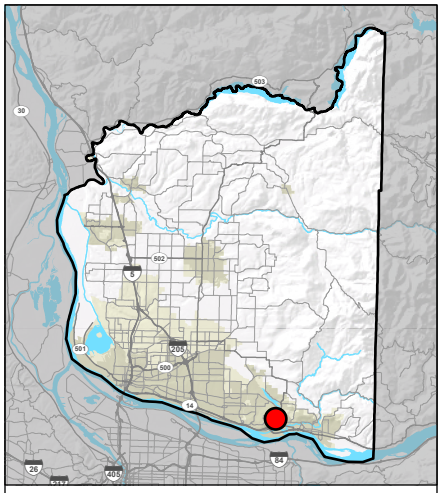

PID(s): 85145001, 85173001, 300-Foot Buffer

KEY

- Subject Property
- Buffer Selection
- Parcels

CLARK COUNTY, WASHINGTON

NOTE: *Information shown on this map was collected from several sources. Clark County accepts no responsibility for any inaccuracies that may be present.*

0 200 400 600 Feet

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GIS Order Number: 282211

PRE-APPLICATION MEETING NOTES
Lower Prune Hill booster pump station
PA20-07

Thursday, February 6, 2020
2:30pm, Public Works Conference Room
616 NE 4th Ave. Camas, WA. 98607

Applicant:	City of Camas Public Works Engineering, Allen Westersund
City of Camas:	Lauren Hollenbeck, Senior Planner Madeline Sutherland, Assistant Planner Anita Ashton, Engineering Bob Cunningham, Building Official Randy Miller, Fire Dept.
Location:	NW 18th Loop and NW Ostensen Canyon Road Parcel Number: 85145001
Zoning:	Single-Family Residential (R-7.5) zone
Description:	Reconstruct the existing booster pump station

NOTICE: Notwithstanding any representation by City staff at a pre-application conference, staff is not authorized to waive any requirement of the City Code. Any omission or failure by staff to recite to an applicant all relevant applicable code requirements shall not constitute a waiver by the City of any standard or requirement. [CMC 18.55.060 (C)] This pre-application conference shall be valid for a period of 180 days from the date it is held. If no application is filed within 180 days of the conference or meeting, the applicant must schedule and attend another conference before the City will accept a permit application. [CMC 18.55.060 (D)] Any changes to the code or other applicable laws, which take effect between the pre-application conference and submittal of an application, shall be applicable. [CMC 18.55.060 (D)]. A link to the Camas Municipal Code (CMC) can be found on the City of Camas website, http://www.cityofcamas.us/ on the main page under "Business and Development".

PLANNING DIVISION **LAUREN HOLLENBECK (360) 817-7253**

Applicable codes for development include Title 16 Environment, Title 17 Land Development and Title 18 Zoning of the Camas Municipal Code (CMC), which can be found on the city website. Please note it remains the **applicant's responsibility** to review the CMC and address all applicable provisions. The following pre-application notes are based on application materials and site plan submitted to the City on January 21, 2020:

Application Requirements
Your proposal will need to comply with the general application requirements per **CMC Section 18.55.110** as follows:

1. A completed city application form and required fee(s);

Fees will be based on the adopted fees at the time of land use application submittal. The current fees include the following:

1.	Conditional Use Permit	$4,256.00
2.	Site Plan Review	$2,828 + $67 per 1000sf of GFA
3.	Variance (major)	$1,273.00
4.	Design Review (minor)	$426.00
5.	Critical Areas Review	$762.00
6.	SEPA	$796.00
7.	Archaeological Review	$135.00
8.	Fire Department Review	$416.00
9.	Building Permit and Plan Review	based on the valuation of the project
10.	Engineering Review	3% of estimated construction costs

2. A complete list of the permit approvals sought by the applicant;
3. A current (within thirty days prior to application) mailing list and mailing labels of owners of real property within three hundred feet of the subject parcel, certified as based on the records of Clark County assessor;
4. A complete and detailed narrative description that describes the proposed development, existing site conditions, existing buildings, public facilities and services, and other natural features. The **narrative shall also explain how the criteria are or can be met**, and address any other information indicated by staff at the pre-application conference as being required;
5. Necessary drawings- three sets and an electronic copy (send as a PDF by email or on a disc);
6. Copy of the preapplication meeting notes (Type II and Type III);

Lot line Consolidation
It appears the pump station is located on Parcel 85173001. To accommodate the size of the proposed pump station, a lot line consolidation would be required to comply with the required setbacks and should be recorded with the County prior to Conditional Use Permit approval.

Conditional Use Permit (CUP)
Per CMC Section 18.07.050, Pump Stations are permitted in residential zoning districts subject to a CUP which is a Type III decision. Type III decisions are subject to a public hearing with a final decision by a hearings examiner. Specific information required for a complete CUP application includes a written response that supports the criteria of approval of CMC Section 18.43.050. All other required permit reviews may be consolidated and issued with the Type III decision.

Site Plan Review
The application for Site Plan Review shall contain information outlined in CMC 18.18.040 (A-J). The application shall address in a narrative the **criteria for approval** in CMC 18.18.060 (A-F). Building height, setback, and lot coverage requirements can be found in CMC 18.09.040 Table 1 and Table 2.

Min. front yard	**30 feet**
Min. side yard	**15 feet**
Min. rear yard	**35 feet**
Max. building lot coverage	**40%**
Max. building height	**35 feet**

Variance (major)
Due to the existing location of underground piping per the applicant, the proposed booster station is therefore placed 15-feet from the rear yard property line. As such, a major variance is required as the modification to the 35-foot rear yard setback is more than 10 percent per CMC 18.45.020.B. Since the variance is consolidated with a Type III decision, it will be heard before the Hearings Examiner per CMC 18.45.020.B.

Design Review (minor)
Per footnote 1 of CMC Section 18.07.040 Table 2 Authorized Uses in Residential and Multifamily Zones, Design Review. The standards applicable to this property for Design Review are found in the Design Review Manual to include the Standard Principles & Guidelines. A submittal for Design Review should include a site plan drawing, a detailed landscape plan, exterior building materials and colors, elevation views and a lighting plan with specifications.

Landscaping Regulations
Landscaping standards shall apply to development that is subject to Design Review per CMC 18.13.020.B.4. A Landscape, Tree and Vegetation plan must be submitted pursuant to CMC 18.13.040.A. If trees are proposed for removal, a Tree Survey is required per CMC 18.13.040.B and must be prepared by a certified arborist or professional forester pursuant to the requirements outlined in CMC 18.13.045. A minimum 20-unt tree density per net acre is required and needs to be incorporated in the overall landscape plan per CMC 18.13.051.A.

Critical Areas Review
Per Clark County GIS mapping, geologically hazardous areas (i.e. steep slopes) have been identified on the subject property. As such, per CMC Section 16.51.130, a critical areas report prepared by a qualified professional is required if a proposed development is within or adjacent to a critical area. The general requirements for a critical areas report is found in CMC Section 16.51.140. The City's code contains additional requirements for each type of critical area:

1) Geologically Hazardous Areas are addressed in CMC Section 16.59.060 and 16.59.070.

SEPA
You proposal is not categorically exempt from the requirements of the State Environmental Policy Act (SEPA) per CMC Section 16.07.020.A as the proposal includes critical areas. A SEPA checklist is required.

Archaeological Review
The site is located in an area of high probability for the presence of archaeological objects. As such, an archaeological predetermination report is required consistent with the requirements of CMC 16.31.070.A and shall be submitted to the City, DAHP and the tribes. Proof of mailing or emailing to the tribes shall be submitted to the City per CMC 16.31.160.A.3.

ENGINEERING DIVISION ANITA ASHTON (360) 817-7231 aashton@cityofcamas.us

General Requirements:

1. Construction plans shall be prepared by a licensed Washington State engineer in accordance with City of Camas Design Standards Manual (CDSM).
2. The applicant will be responsible for the design and submittal of the utility plan showing the locations for underground power and any associated appurtenances.

Traffic/Transportation:

3. Not Applicable

Streets:

4. Access to the existing booster station is off NW 18th Loop, which is identified as an existing 2 lane collector per the City's 2016 Comprehensive Plan.
5. The applicant will be required to construct a driveway approach and pave the access road, a minimum of 12-feet in width, from NW 18th Loop to the new building.

Stormwater:

6. Refer to Ecology's Figure I-3.*2 Flow Chart for Determining Requirements for Re-Development (Vol. I, Chapter 3)* and the Camas Stormwater Design Standards.
   a. All redevelopment projects shall comply with Minimum Requirement (MR) #2 – Submittal of a Stormwater Pollution Prevent Plan (SWPPP). Contact Engineering for Abbreviated Construction SWPPP Form.
   b. If the project results in 2,000 sf, or more, of new plus replaced hard surface area or if the land disturbing activity totals 7,000 sf of greater then Minimum Requirements (MR) #1- #5 will apply.
   c. If the project adds 5,000 sf, or more on few hard surfaces or converts ¾ acres, or more, of vegetation to lawn or landscaped areas, then Minimum Requirements (MR) #1-#9 will apply.

Erosion Control

7. If land-disturbing activities are less than one acre, an Erosion Control Bond will not be required. However, the applicant will be responsible for all erosion and sediment control measures to ensure that sediment laden water does not leave the site or impact adjacent parcels.
8. Mud tracking onto the road surface is discouraged and any mud tracking is to be cleaned up immediately.

Water, Sewer, Parks & Trails:

9. Not applicable

Impact Fees:

10. Not applicable

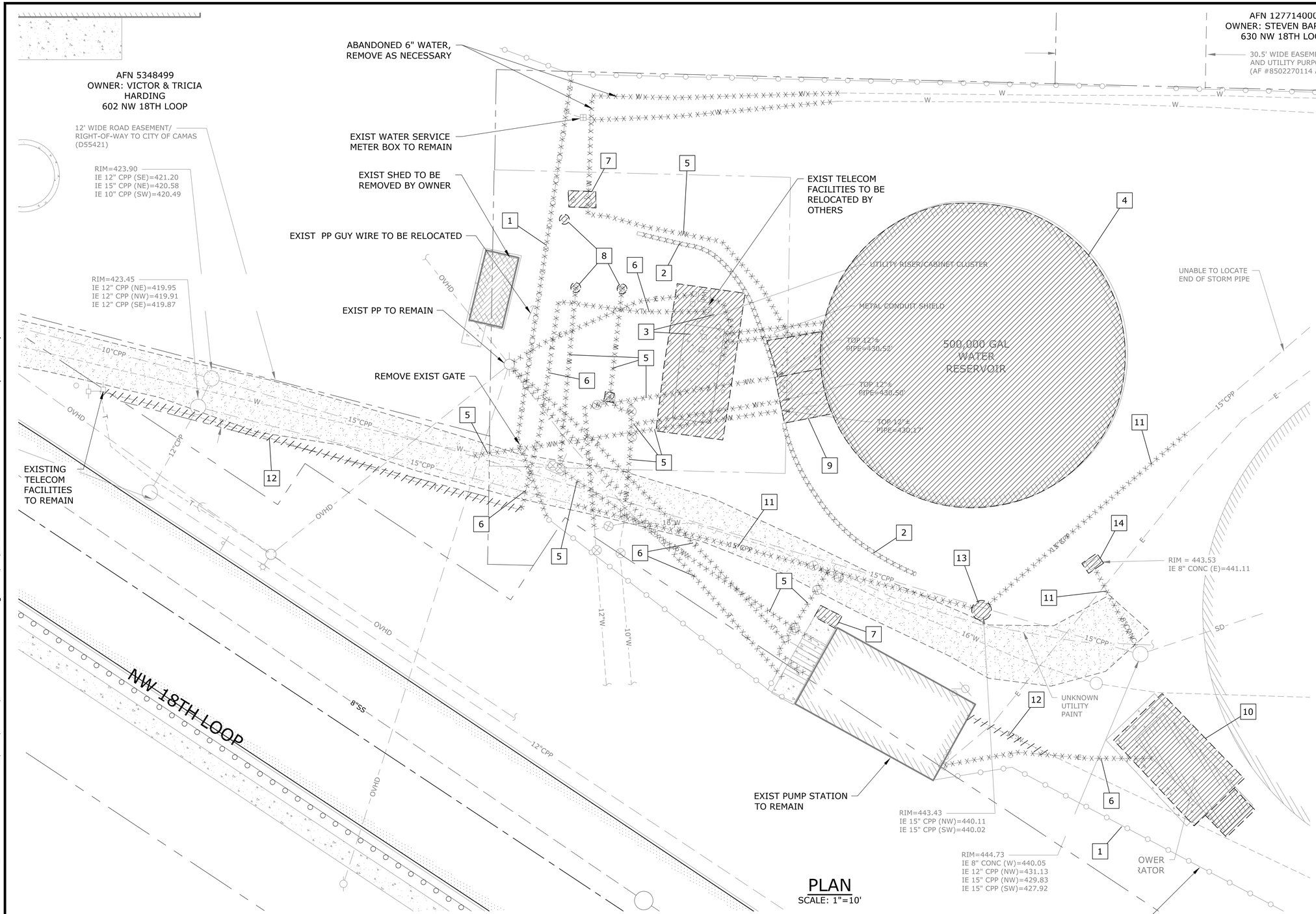
BUILDING DIVISION **BOB CUNNINGHAM (360) 817-7243**

1. The structures will be reviewed under the most current building codes as adopted by The State of Washington.
2. The structural drawings and calculations shall be prepared and stamped by a Professional Engineer licensed by the State of Washington.

FIRE DEPARTMENT **RANDY MILLER (360) 834-6191**

No building or structure regulated by the building and/or fire code shall be erected, constructed, enlarged, altered, repaired, moved, converted or demolished unless a separate permit for each building or structure has been obtained from the fire marshal's office. Camas Municipal Code 15.04.030.D.12.a

1. New Construction Permit with the FMO required. Provide drawings including site plan and any explanatory materials needed such as chemicals over code exempt amounts.
2. NFPA 110 Generator permit required with the Fire Marshal's Office. Provide drawings, cut sheets.



PLAN
SCALE: 1"=10'

DEMOLITION KEY NOTES

1. REMOVE EXIST CHAIN LINK FENCE AS NEEDED
2. REMOVE EXIST RETAINING WALL
3. EXIST TELECOM FACILITIES TO BE RELOCATED
4. REMOVE EXIST 0.5 MG RESERVOIR
5. REMOVE EXIST WATER MAIN
6. REMOVE EXIST UTILITY
7. REMOVE EXIST CONC
8. REMOVE EXIST STANDPIPES
9. REMOVE EXIST VALVE VAULT
10. REMOVE EXIST GENERATOR AND PAD
11. REMOVE EXIST STORM DRAIN
12. EXIST WATER MAIN OR UTILTY TO BE ABANDONED
13. REMOVE EXIST STORM DRAIN MANHOLE
14. REMOVE EXIST STORM DRAIN CATCH BASIN

NOTES:

1. SEE SPECIFICATION 01 12 16 FOR WORK SEQUENCE AND CONSTRAINTS.
2. ALL CONCRETE AND ASPHALT TO BE REMOVED SHALL BE SAWCUT NEAT PRIOR TO REMOVAL.
3. DEMOLITION AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF INTERNATIONAL FIRE CODE CHAPTER 33.

LEGEND

ABANDON

REMOVE

DEMOLISH/REMOVE

PERMIT REVIEW - NOT FOR CONSTRUCTION

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

GDP DESIGNED
MNF DRAWN
NCR CHECKED

PRELIMINARY ONLY
DO NOT USE FOR CONSTRUCTION
NOVEMBER 2021
Murraysmith
55848
REGISTERED PROFESSIONAL ENGINEER
STATE OF WASHINGTON

murraysmith

City of Camas WASHINGTON

LOWER PRUNE HILL BOOSTER PUMP STATION & 0.5 MG RESERVOIR IMPROVEMENTS

DEMOLITION PLAN

PROJECT NO.: 20-2849.01 | SCALE: AS SHOWN | DATE: NOVEMBER 2021

SHEET C-1 of XX

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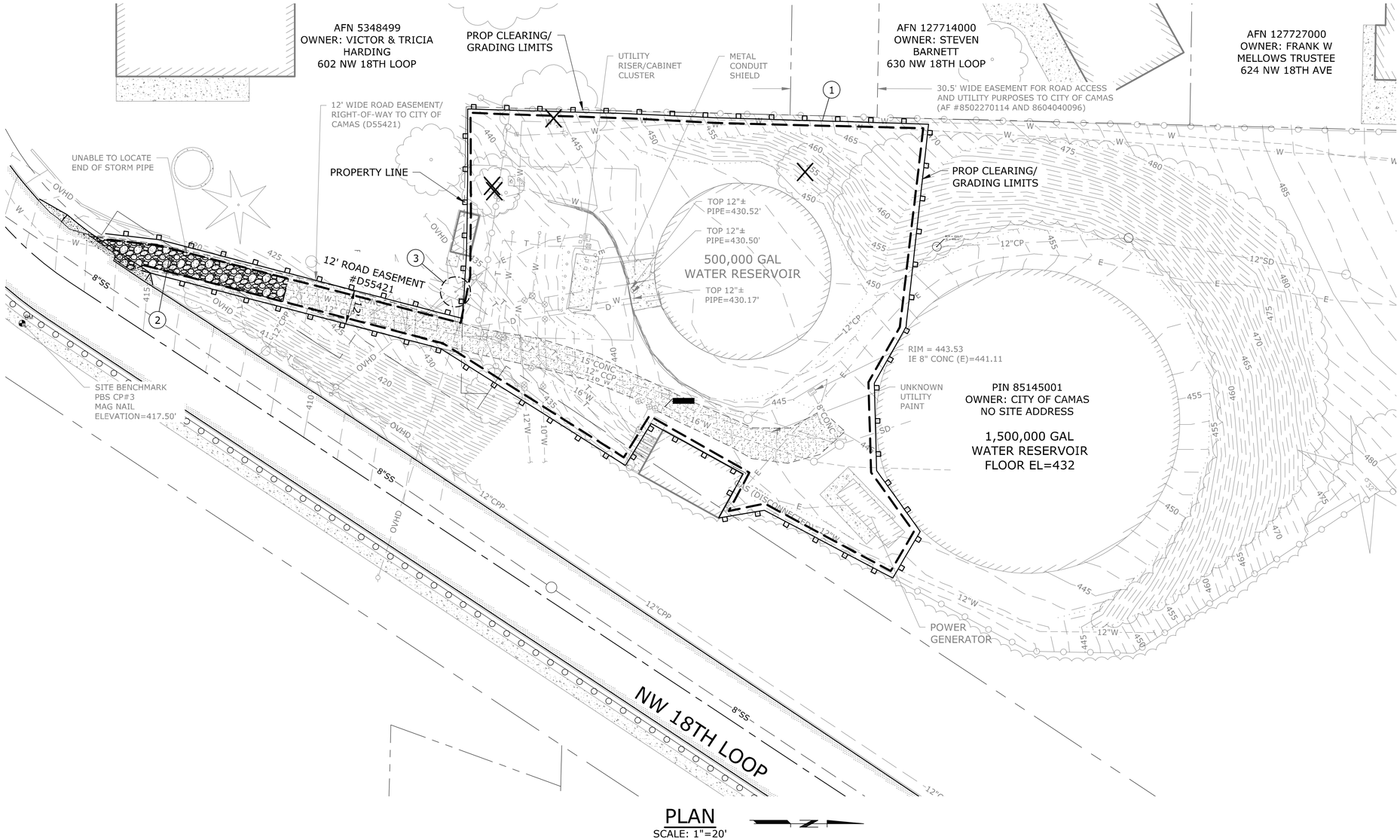

PLAN
SCALE: 1"=20'

EROSION CONTROL KEY NOTES

1. INSTALL HIGH VISIBILITY SILT FENCE PER WSDOT STD PLAN I-30.16-01
2. INSTALL STABILIZED CONSTRUCTION ENTRANCE PER WSDOT STD PLAN I-80.10-02
3. INSTALL TREE PROTECTION FOR TREES TO REMAIN IN PLACE

LEGEND

- HIGH VISIBILITY SILT FENCE
- PROP CLEARING/GRADING LIMITS
- TREE PROTECTION
- TREE REMOVAL

NOTES:

1. DISTURBED AREAS SHALL BE RETURNED TO ORIGINAL GRADING AND SEEDING UNLESS OTHERWISE SHOWN ON SHEET C-3.

2. CONTRACTOR SHALL HAVE EXISTING TREES EVALUATED BY AN ARBORIST FOR SURVIVABILITY FOLLOWING EXCAVATION FOR THE PUMP STATION AND RESERVOIR, AND PRIOR TO FINAL ACCEPTANCE. CONTRACTOR SHALL RETAIN OR REMOVE TREE ACCORDING TO ARBORIST RECOMMENDATIONS.

3.COORDINATE TEMPORARY SUPPORT OF EXISTING UTILITIES WITHIN THE PROJECT VICINITY WITH THE UTILITY COMPANY.

4. TREE PROTECTION FENCING IS REQUIRED TO BE INSTALLED AS SHOWN. ANY WORK IN THE AREA OF TREE PROJECTION MUST BE GUIDED BY A CERTIFIED ARBORIST.

5. ALL EXCAVATION AND TEMPORARY SHORING SHALL CONFORM WITH THE GEOTECHNICAL REPORT AND RECOMMENDATIONS AS PREPARED BY GRI AND INCLUDED IN THE CONTRACT.

60% SUBMITTAL

NO.	DATE	BY	REVISION

NOTICE
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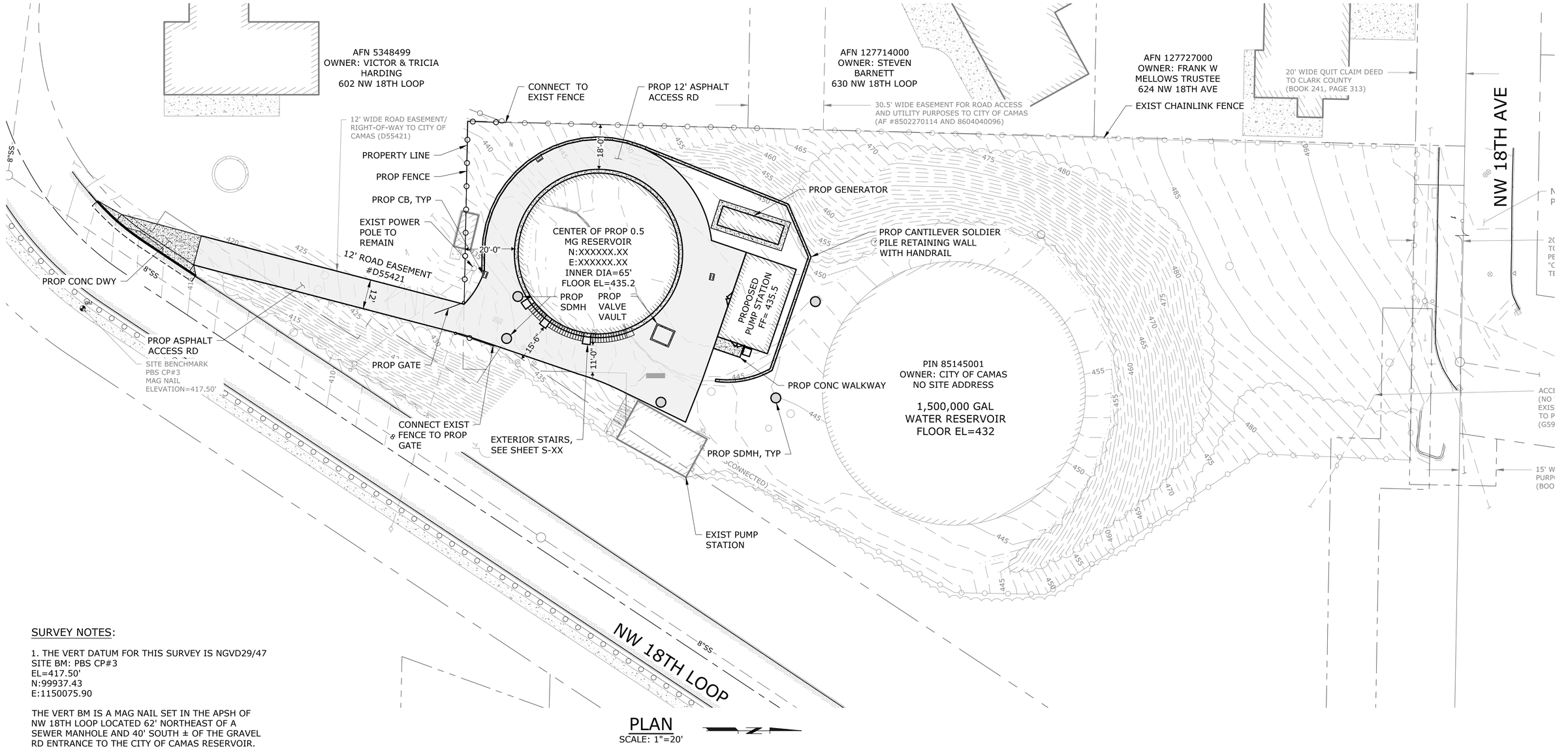
City of Camas WASHINGTON

LOWER PRUNE HILL BOOSTER STATION & 0.5 MG RESERVOIR IMPROVEMENTS

SITE PREPARATION AND EROSION CONTROL PLAN

PROJECT NO.: 20-2849.01 | SCALE: AS SHOWN | DATE: MARCH 2022

SHEET C-2 of 87



PLAN
SCALE: 1"=20'

SURVEY NOTES:

1. THE VERT DATUM FOR THIS SURVEY IS NGVD29/47
SITE BM: PBS CP#3
EL=417.50'
N:99937.43
E:1150075.90

THE VERT BM IS A MAG NAIL SET IN THE APSH OF NW 18TH LOOP LOCATED 62' NORTHEAST OF A SEWER MANHOLE AND 40' SOUTH ± OF THE GRAVEL RD ENTRANCE TO THE CITY OF CAMAS RESERVOIR.

*ELEVATION WAS TRANSFERRED FROM CLARK COUNTY CONTROL POINT ELLSWORTH (EL=178.589') THROUGH GNSS OBSERVATION.

2. THE BASIS OF BEARINGS FOR THIS SURVEY IS BASED ON TIES TO THE CLARK COUNTY SURVEY CONTROL NETWORK.

HORIZONTAL DATUM: NAD 83/91

DISTANCES SHOWN HEREON ARE GRND DISTANCES.

PERMIT REVIEW - NOT FOR CONSTRUCTION

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
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City of Camas WASHINGTON

LOWER PRUNE HILL BOOSTER STATION & 0.5 MG RESERVOIR IMPROVEMENTS

SITE LAYOUT PLAN AND SURVEY CONTROL

PROJECT NO.: 20-2849.01 | SCALE: AS SHOWN | DATE: MARCH 2022

SHEET C-3 of 87

AFN 5348499
OWNER: VICTOR & TRICIA HARDING
602 NW 18TH LOOP

AFN 127714000
OWNER: STEVEN BARNETT
630 NW 18TH LOOP

30.5' WIDE EASEMENT FOR ROAD ACCESS AND UTILITY PURPOSES TO CITY OF CAMAS (AF #8502270114 AND 8604040096)

12' WIDE ROAD EASEMENT/ RIGHT-OF-WAY TO CITY OF CAMAS (D55421)

RIM=423.90
IE 12" CPP (SE)=421.20
IE 15" CPP (NE)=420.58
IE 10" CPP (SW)=420.49

RIM=423.45
IE 12" CPP (NE)=419.95
IE 12" CPP (NW)=419.91
IE 12" CPP (SE)=419.87

TOP NUT=441.49'

TOP NUT=430.86'
TOP=431.64

TOP NUT=430.64'
TOP=431.64

12' ROAD EASEMENT #D55421

TOP NUT=434.42'

DECHLORINATION MANHOLE

VALVE BOX FULL OF DIRT

NW 18TH LOOP

A
C-7

CENTER OF PROP 0.5 MG RESERVOIR
N:XXXXXX.XX
E:XXXXXX.XX
INNER DIA=65'
FLOOR EL=435.2

FG=434.8

FG=434.9

FG=434.6

FG=434.3

FG=435.0

4" FDN DRAIN
IE=432.3

4" RING DRAIN
IE=432.8

OVERFLOW AIR GAP STRUCTURE

12" OF 8" TANK DRAIN

4" WASHDOWN

16" OUTLET

12" INLET

RETAINING WALL WITH HANDRAIL

UNABLE TO LOCATE END OF STORM PIPE

SWALE, SEE DET X SHT X

EL=435.3

EL=435.3

PROPOSED PUMP STATION FF= 435.5

SWALE HIGH POINT=436.3

SWALE SEE DET X, SHT X

EXIST 1.5 MG RESERVOIR

UNKNOWN UTILITY PAINT

RIM=443.43
IE 15" CPP (NW)=440.11
IE 15" CPP (SW)=440.02

RIM=444.73
IE 8" CONC (W)=440.05
IE 12" CPP (NW)=431.13
IE 15" CPP (NW)=429.83
IE 15" CPP (SW)=427.92

RESERVOIR OF AND DRAIN SCHEDULE

1. CB-2, 48"Ø SDMH, AIR GAP
   STA FX+XX
   N:XXXXXX.X, E:XXXXXXX.X
   RIM=XXX
   IE 10" IN (S)=430.0
   IE 16" OUT (E)=429.9
   IE 4" IN (N/S) RD=430.7
   IE 4" IN (E) FD=431.8

2. STA FX+XX
   N:XXXXXX.X, E:XXXXXXX.X
   1-8" GV, FLG
   1-8" FLEX EXP JT, FLGxMJ

3. CB-3, TYPE 1 DECHLOR MH
   STA FX+XX
   N:XXXXXX.X, E:XXXXXXX.X
   RIM=XXX
   IE 8" IN (NW)=429.7
   IE 16" IN (W)=429.7
   IE 15" IN (N)=429.6
   IE 15" OUT (S)=429.5 (EXIST)

STORM DRAIN SCHEDULE

1. CB-1, TYPE 1 CB
   STA FX+XX
   N:XXXXXX.X, E:XXXXXXX.X
   RIM=XXX
   IE 10" IN (NW)=430.3
   IE 10" OUT (N)=430.2

2. CB-4, 48"Ø DROP MH
   STA FX+XX
   N:XXXXXX.X, E:XXXXXXX.X
   RIM=XXX
   IE 10" IN (NW)=430.4
   IE 15" IN (NW)=432.5
   IE 15" OUT (S)=430.3

3. CB-5, 48"Ø MH
   STA FX+XX
   N:XXXXXX.X, E:XXXXXXX.X
   RIM=XXX
   IE 15" IN (NW)=440.5
   IE 15" OUT (SE)=437.0

4. CB-6, 48"Ø MH
   STA FX+XX
   N:XXXXXX.X, E:XXXXXXX.X
   RIM=XXX
   IE 15" IN (W)=443.8± (EXIST)
   IE 15" OUT (E)=443.7

5. CB-7, TYPE 1 CB
   STA X+XX
   N:XXXXXX.X, E:XXXXXXX.X
   RIM= XXX
   IE 10" OUT (E)=431.0

6. CB-8, TYPE 1 CB
   STA X+XX
   N:XXXXXX.X, E:XXXXXXX.X
   RIM=XXX
   IE 10" OUT (SE)=430.8

NOTES:

1. ALL CATCH BASINS SHALL BE PER COC STANDARD DRAWING SD2.

2. ALL STORM DRAIN MANHOLES SHALL BE PER COC STANDARD DRAWING SD9 OR SD10.

PLAN
SCALE: 1"=10'

PERMIT REVIEW - NOT FOR CONSTRUCTION

NO.	DATE	BY	REVISION

NOTICE
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NOVEMBER 2021
Murraysmith

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City of Camas WASHINGTON

LOWER PRUNE HILL BOOSTER PUMP STATION & 0.5 MG RESERVOIR IMPROVEMENTS

SITE GRADING AND DRAINAGE PLAN

PROJECT NO.: 20-2849.01 | SCALE: AS SHOWN | DATE: NOVEMBER 2021

SHEET C-5 of XX

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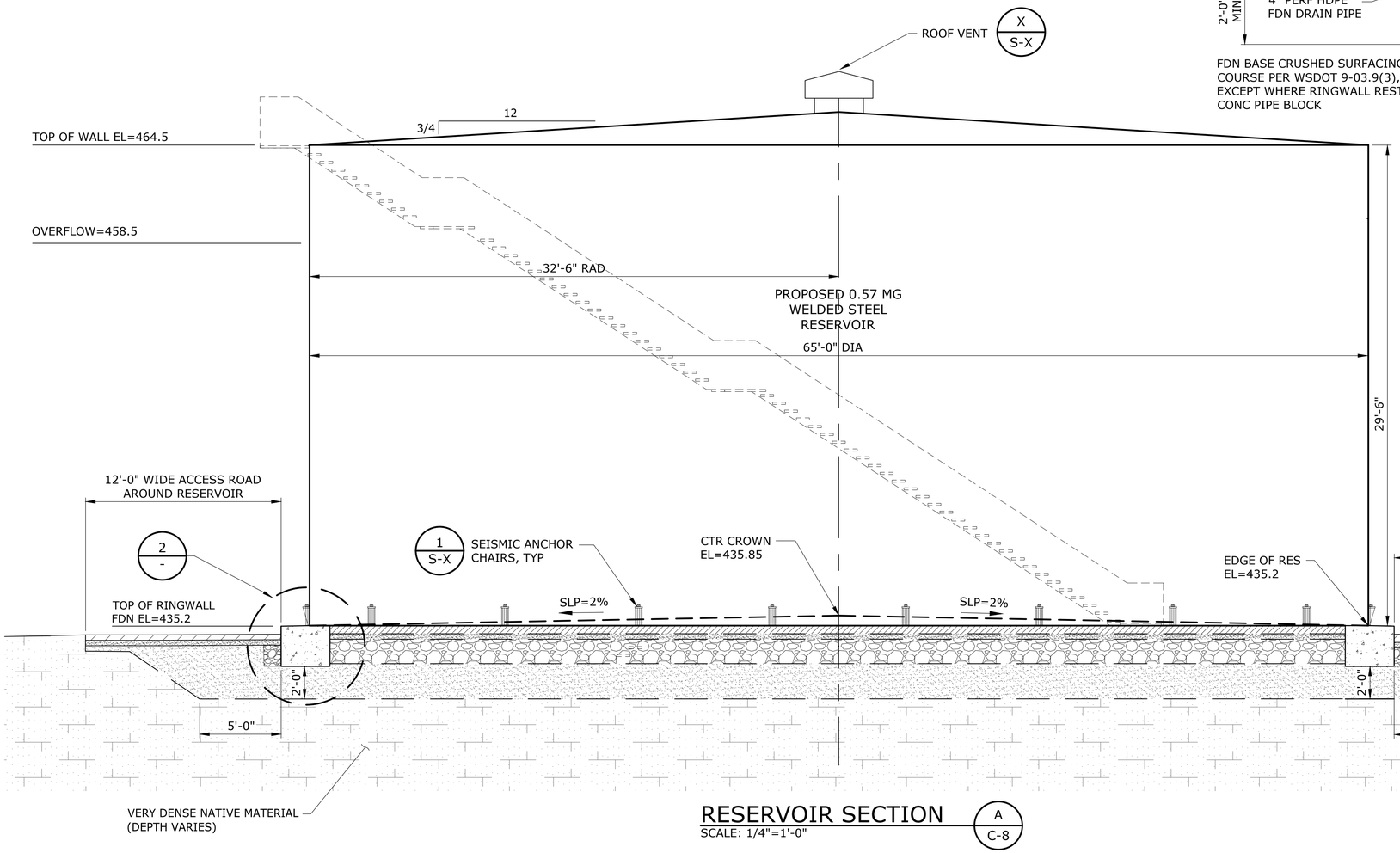
NOTES:

1. RESERVOIR FTG, SEE SHEET S-X.

2. PERIMETER HANDRAIL ON TOP OF RESERVOIR NOT SHOWN FOR CLARITY.

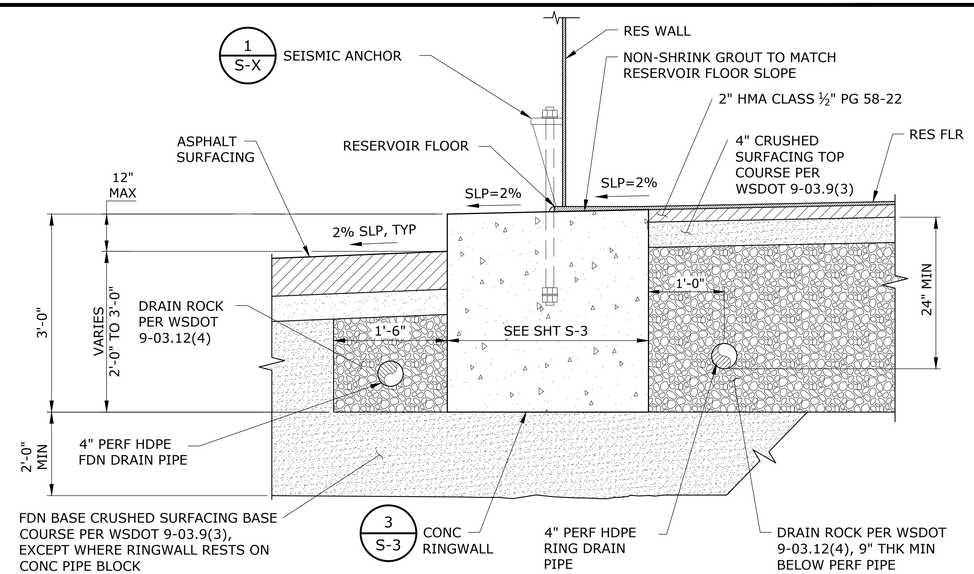
3. CRUSHED SURFACING BASE COURSE 9-03.9(3) PROVIDED FOR LEVELING FOOTING.



RESERVOIR SECTION

SCALE: 1/4"=1'-0"

A
C-8



RESERVOIR FOUNDATION

SCALE: NTS

PERMIT REVIEW - NOT FOR CONSTRUCTION

NO.	DATE	BY	REVISION

NOTICE
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City of Camas WASHINGTON

LOWER PRUNE HILL BOOSTER PUMP STATION & 0.5 MG RESERVOIR IMPROVEMENTS

RESERVOIR SECTION AND DETAILS

PROJECT NO.: 20-2849.01 | SCALE: AS SHOWN | DATE: NOVEMBER 2021

SHEET C-9 of XX

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AFN 5348499
OWNER: VICTOR & TRICIA HARDING
602 NW 18TH LOOP

12' WIDE ROAD EASEMENT/ RIGHT-OF-WAY TO CITY OF CAMAS (D55421)

RECONNECT 2" WATER METER PER COC STD DWG W6

AFN 127714000
OWNER: STEVEN BARNETT
630 NW 18TH LOOP

30.5' WIDE EASEMENT FOR ROAD ACCESS AND UTILITY PURPOSES TO CITY OF CAMAS (AF #8502270114 AND 8604040096)

UNABLE TO LOCATE END OF STORM PIPE

12" OVERFLOW
4" WASH DOWN
8" TANK DRAIN
16" OUTLET
CONTROL VALVE VAULT, SEE SHEET M-X
12" INLET
FLEX-TEND, TYP

PROPOSED PUMP STATION FF= 435.5

EXIST 12" CAST IRON FROM 455 ZONE

EXIST 10" STEEL FROM 455 ZONE

UNKNOWN UTILITY PAINT

POWER GENERATOR

NW 18TH LOOP

WATER PIPING SCHEDULE

(A1) N:XXX, E:XXX
FURNISH AND INSTALL:
1-12" BFV, FLGxMJ
1-16"x12" 90° BEND, FLGxMJ
1-12" LONG BODY SLV, MJ
SEE SHT M-X FOR CONNECTION TO PUMP STATION

(A2) N:XXX, E:XXX
FURNISH AND INSTALL:
1-12" BFV, FLGxMJ
1-16"x12" TEE, FLGxMJ
1-12" LONG BODY SLV, MJ
SEE SHT M-X FOR CONNECTION TO PUMP STATION

(A3) N:XXX, E:XXX
FURNISH AND INSTALL:
1-12" BFV, FLGxMJ
1-16"x12" TEE, FLGxMJ
1-12" LONG BODY SLV, MJ
SEE SHT M-X FOR CONNECTION TO PUMP STATION

(A4) N:XXX, E:XXX
FURNISH AND INSTALL:
1-8" GV, FLGxMJ
1-16"x8" TEE, FLGxMJ
1-8" LONG BODY SLV, MJ
SEE SHT M-X FOR CONNECTION TO PUMP STATION

(A5) N:XXX, E:XXX
FURNISH AND INSTALL:
1-16" 45° BEND, MJ

(A6) N:XXX, E:XXX
FURNISH AND INSTALL:
1-16" 45° BEND, MJ

(A7) N:XXX, E:XXX
FURNISH AND INSTALL:
1-16" CROSS, MJxFLG
1-16"x12" RDCR, FLGxMJ
1-16" ADAPTER, FLGxMJ

(A8) N:XXX, E:XXX
FURNISH AND INSTALL:
1-12" 45° BEND, FLGxMJ
1-12" FLEX-TEND, FLG
1-12" BFV, FLGxMJ

(B1) N:XXX, E:XXX
FURNISH AND INSTALL:
1-16" TEE, FLG
1-16"x12" RDCR, FLGxMJ
2-16" ADAPTER FLGXMJ
1-12" LONG BODY SLV, MJ
SEE SHT M-X FOR CONNECTION TO PUMP STATION

(B2) N:XXX, E:XXX
FURNISH AND INSTALL:
1-16" 45° BEND, MJ

(B3) N:XXX, E:XXX
FURNISH AND INSTALL:
1-16" 45° BEND, FLGxMJ
1-16"x12" RDCR, FLGxMJ
1-12" LONG BODY SLV, MJ
CONNECT TO 852 ZONE PIPING, SEE DET X, SHT X

(C1) N:XXX, E:XXX
FURNISH AND INSTALL:
1-16" 45° BEND, MJ

(C2) N:XXX, E:XXX
FURNISH AND INSTALL:
1-16" 45° BEND, MJ

(C3) N:XXX, E:XXX
FURNISH AND INSTALL:
1 - 16"x6" TEE, FLGxMJ
1 - 4" GV, FLGxMJ
1-6"x4" RDCR, FLG

(C4) N:XXX, E:XXX
CONNECT TO EXIST 16" BFV, SEE DETAIL X, SHEET X

(D1) N:XXX, E:XXX
FURNISH AND INSTALL:
1-16" TEE, FLG
2-16" BFV, FLGxMJ
1-16" LONG BODY SLV, MJ
1-16" ADAPTER, FLGxMJ
CONNECT TO 455 ZONE
SEE DET X, SHT X

(D2) N:XXX, E:XXX
FURNISH AND INSTALL:
1-12" BFV, FLG
1-12" 90° BEND, FLG
1- 12" FLEX-TEND, FLGxMJ

(E1) N:XXX, E:XXX
FURNISH AND INSTALL:
1-4" 90° BEND, FLGxMJ
1-4" FLEX-TEND, FLGxMJ

NOTES:

1. VALVE BOXES, TO BE INSTALLED ON ALL BURIED VALVES PER COC STANDARD DRAWING W-12.
2. ALL WATER PIPING AND FITTINGS TO BE RESTRAINED DUCTILE IRON.
3. THE CONTRACTOR SHALL PROTECT EXIST DI WATER MAINS DURING CONSTRUCTION AND AVOID DISRUPTION TO SERVICE. SHALLOW PIPE MAY BREAK UNDER HEAVY LOADS.
5. BURIED WATER MAIN PIPE MATERIAL SHALL BE PER COC STANDARD DRAWING W-13.
6. CONTRACTOR SHALL POTHOLE EXIST UTILITIES AT ALL PROPOSED CROSSINGS AND POINTS OF CONNECTION.

PLAN
SCALE: 1"=10'

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NOTICE
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NOVEMBER 2021
Murraysmith

murraysmith

City of Camas WASHINGTON

LOWER PRUNE HILL BOOSTER PUMP STATION & 0.5 MG RESERVOIR IMPROVEMENTS

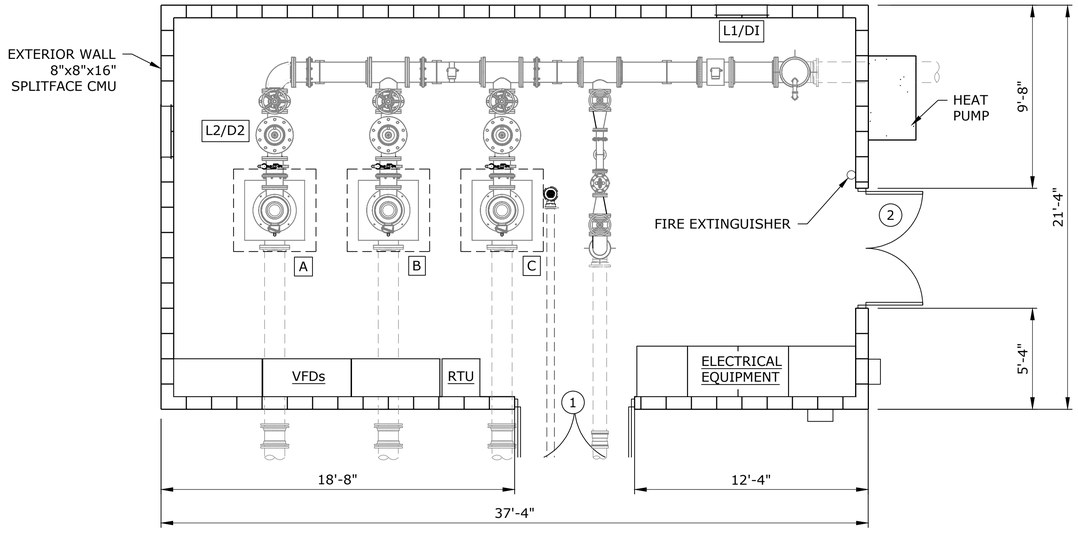
SITE PIPING PLAN

PROJECT NO.: 20-2849.01 | SCALE: AS SHOWN | DATE: NOVEMBER 2021

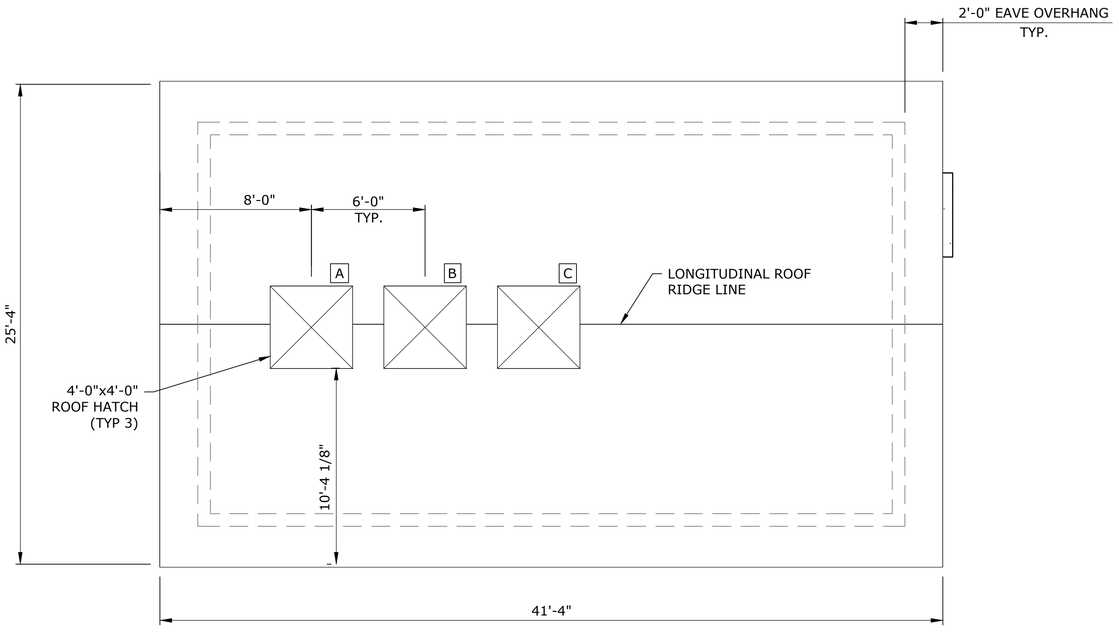
SHEET C-10 of XX

NOTES:

1. [X] AND (X) REFERS TO DOOR AND HATCH SCHEDULES. SEE SHEET A-1.
2. SEE SHEET M-1 FOR LOUVER SCHEDULE.



FLOOR PLAN
SCALE: 1/4" = 1'-0"



ROOF PLAN
SCALE: 1/4" = 1'-0"

PERMIT REVIEW - NOT FOR CONSTRUCTION

NO.	DATE	BY	REVISION

NOTICE
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STATE OF WASHINGTON
55144
REGISTERED PROFESSIONAL ENGINEER
MARCH 2022

murraysmith

City of Camas WASHINGTON

LOWER PRUNE HILL BOOSTER STATION & 0.5 MG RESERVOIR IMPROVEMENTS

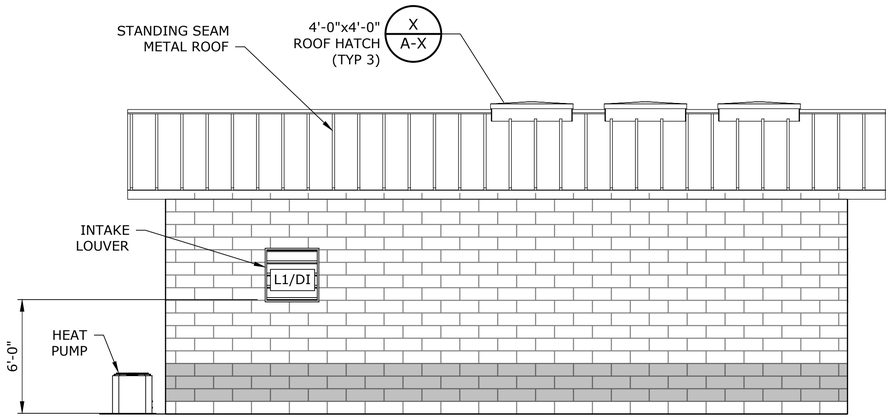
PUMP STATION FLOOR PLAN AND ROOF PLAN

PROJECT NO.: 20-2849.01 | SCALE: AS SHOWN | DATE: MARCH 2022

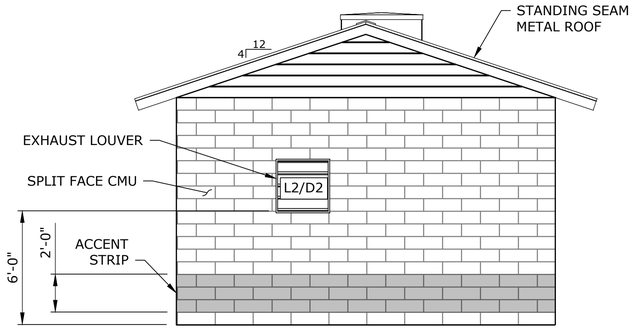
SHEET A-2 of 87

NOTES:

1. [X] AND (X) REFERS TO DOOR AND HATCH SCHEDULES. SEE SHEET A-1.
2. SEE SHEET M-1 FOR LOUVER SCHEDULE.



NORTH ELEVATION
SCALE: 1/4"=1'-0"



WEST ELEVATION
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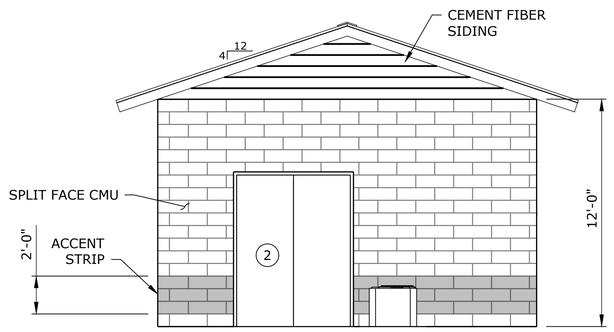
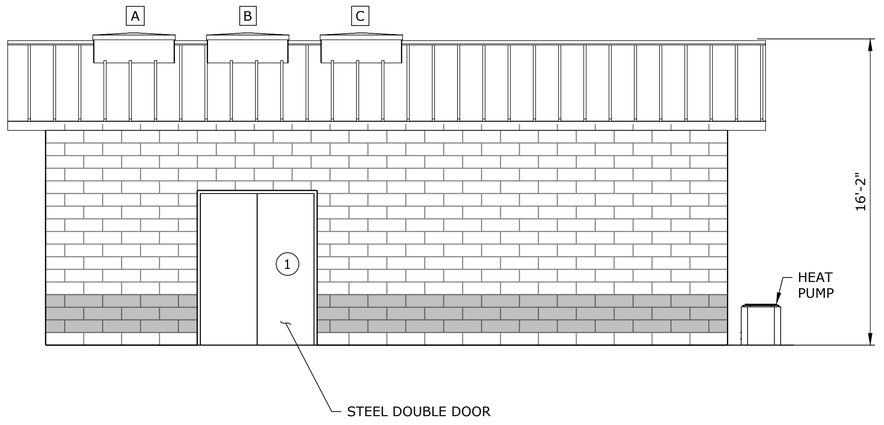


EAST ELEVATION
SCALE: 1/4"=1'-0"



SOUTH ELEVATION
SCALE: 1/4"=1'-0"

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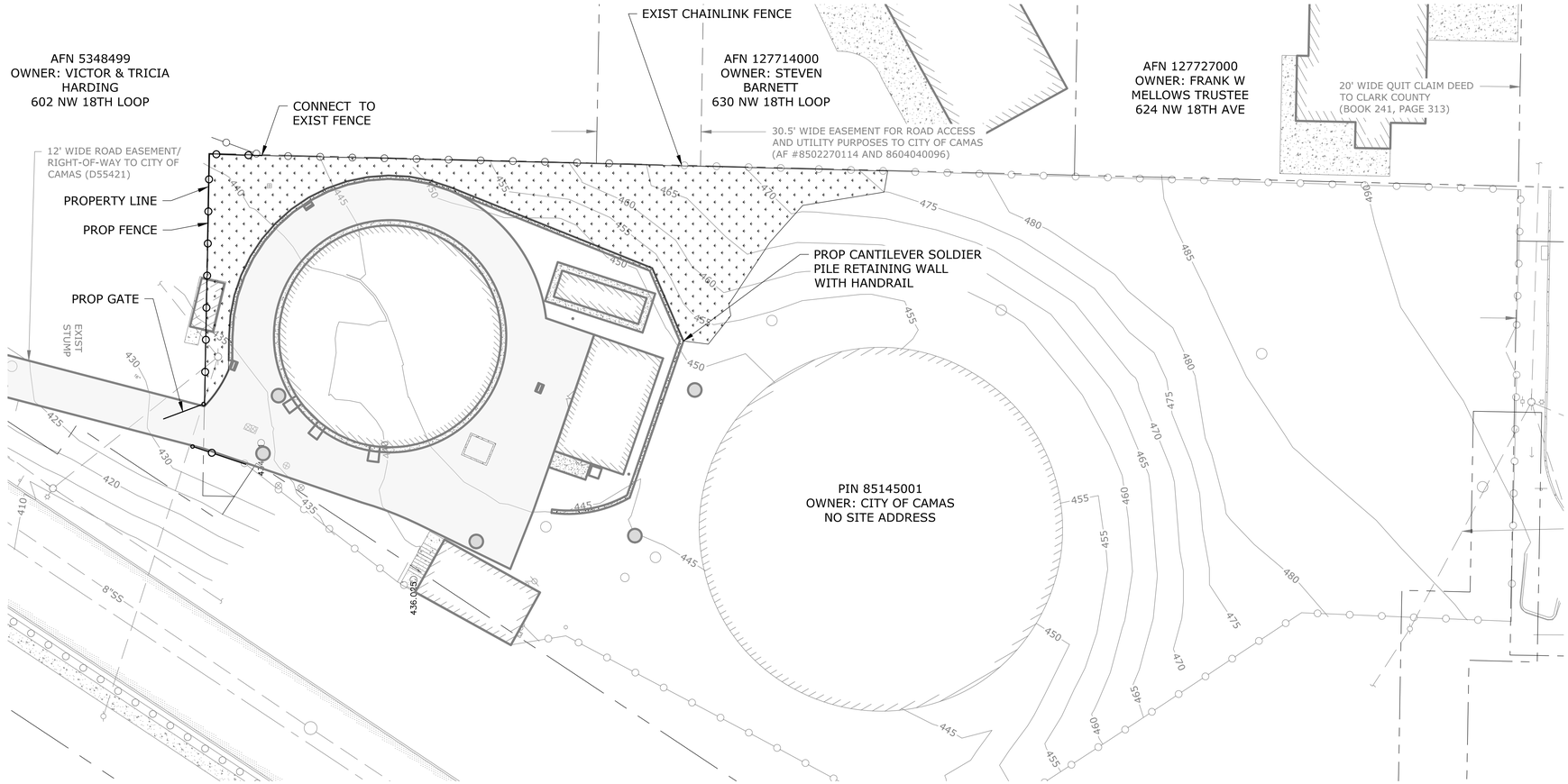
City of Camas WASHINGTON

LOWER PRUNE HILL BOOSTER STATION & 0.5 MG RESERVOIR IMPROVEMENTS

EXTERIOR ELEVATIONS

PROJECT NO.: 20-2849.01 | SCALE: AS SHOWN | DATE: MARCH 2022

SHEET A-3 of 87



PLAN
SCALE: 1"=20'

SEEDING AREA

SEED MIX SPECIFICATIONS

SEEDING AREA (3950 SF)
SEEDS QUANTITY (6 LBS)

SUNMARK ECO-PRAIRIE SEED MIX
NATIVE SEED MIX WITH NO MOWING REQUIREMENTS.
DROUGHT TOLERANT
LOW-GROWING NATIVE GRASSES
LOW-GROWING WILDFLOWERS.

GRASSES 56.0%
WILDFLOWERS 32.0%
LEGUMES 12.0%

BOTANICAL NAME	COMMON NAME	LBS. PER ACRE
BROMUS CARINATUS	CALIFORNIA BROME	16.26
LUPINUS ALBACULUS	SICKLEKEEL LUPINE	16.26
ELYMUS ELYMODIES	SQUIRRELTAIL	12.36
GAILARDIA ARISTATA	BLANKETFLOWER	7.8
LOTUSPURSHIANUS	SPANISH CLOVER	5.2
FESTUCA OCCIDENTALIS	WESTERN FESCUE	2.6
ESCHSCHOLZIA CALIFORNICA	CALIFORNIA POPPY	2.6
KOELERIA MACRANTHA	PRAIRIE JUNEGRASS	0.98
CLARKIA UNGUICULATA	ELEGANT CLARKIA	0.65
ACHILLEA MILLEFOLIUM	COMMON YARROW	0.33
	TOTAL	65.04

SEEDING RATE
1.5 PLS LBS. PER 1000 SQ.FT.
65.0 PLS LBS. PER ACRE

SOIL PREPERATION:

1. DISTURBED AREAS SHALL BE RETURNED TO ORIGINAL GRADING AND SEEDING UNLESS OTHERWISE SHOWN ON SHEET C-3.

2. SOIL PREPARATION: TILL THE SUB-GRADE IN THESE AREAS TO A DEPTH OF AT LEAST 6 INCHES AND ADD 3 INCHES OF CLEAN COMPOST-AMENDED TOPSOIL. THE COMPOST-AMENDED TOPSOIL SHALL HAVE A GOOD GROWING MEDIUM WITH TEXTURE MATERIAL THAT PASSES THROUGH ONE-INCH AND 35% ORGANIC MATTER FERTILITY.

PLANTING METHODS:

1. PLANTING TIME SEEDS SHALL BE INSTALLED ONLY FROM FEBRUARY 1 THROUGH MAY 1 AND OCTOBER 1 THROUGH NOVEMBER 15. PLANTINGS OUTSIDE THESE TIMES MAY REQUIRE ADDITIONAL MEASURES TO ENSURE SURVIVAL WHICH SHALL BE SPECIFIED ON THE PLANS.

2. EROSION CONTROL: GRADING, SOIL PREPARATION, AND SEEDING SHALL BE PERFORMED DURING OPTIMAL WEATHER CONDITIONS AND AT LOW FLOW LEVELS TO MINIMIZE SEDIMENT IMPACTS.

PLANTS MAINTENANCE:

1. THE CONTRACTOR SHALL PROVIDE 1 YEARS PLANT ESTABLISHMENT PERIOD TO MAINTAIN PLANTS IN A VIGOROUS GROWING CONDITION.

2. THROUGH PERIODIC INSPECTIONS. THE CONTRACTOR SHALL ENSURE PLANTING AREAS ARE FREE OF INVASIVE WEEDS AND PLANTS SHALL BE FREE OF INSECTS AND DISEASES WHILE SHOWING SIGNS OF CONTINUING HEALTH. THE CONTRACTOR SHALL REPLACE ALL PLANTS THAT SHOW UNHEALTHY SIGNS OR ARE DEAD.

3. THE MAINTENANCE PERIOD BEGINS IMMEDIATELY AFTER THE COMPLETION OF ALL PLANTING OPERATION AND WRITTEN NOTIFICATION TO THE ENGINEER.

4. OTHER MAINTENANCE OPERATIONS DURING THE ONE-YEAR GUARANTEE PERIOD:

- REPAIR DAMAGED OR WASHED OUT EROSION CONTROL SEEDING.
- DISEASE CONTROL.
- REPORT ANY PROBLEMS THAT MAY BE A HINDRANCE TO COMPLETING AND FULFILLING THE CONDITIONS OF THE PLANT GUARANTEE WITHIN 7 DAYS TO THE OWNER.

5. PLANT REPLACEMENT AND PRESERVATION: INSTALLED PLANTS THAT ARE UNHEALTHY OR DAMAGED SHALL BE REPLACED DURING THE MAINTENANCE PERIOD. PRIOR TO REPLACEMENT, THE CAUSE OF LOSS (WILDLIFE DAMAGE, POOR PLANT STOCK, ETC.) SHALL BE DOCUMENTED WITH A DESCRIPTION OF THE CORRECTIVE ACTIONS TAKEN.

PERMIT REVIEW - NOT FOR CONSTRUCTION

NO.	DATE	BY	REVISION

NOTICE
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Murraysmith

murraysmith

City of Camas WASHINGTON

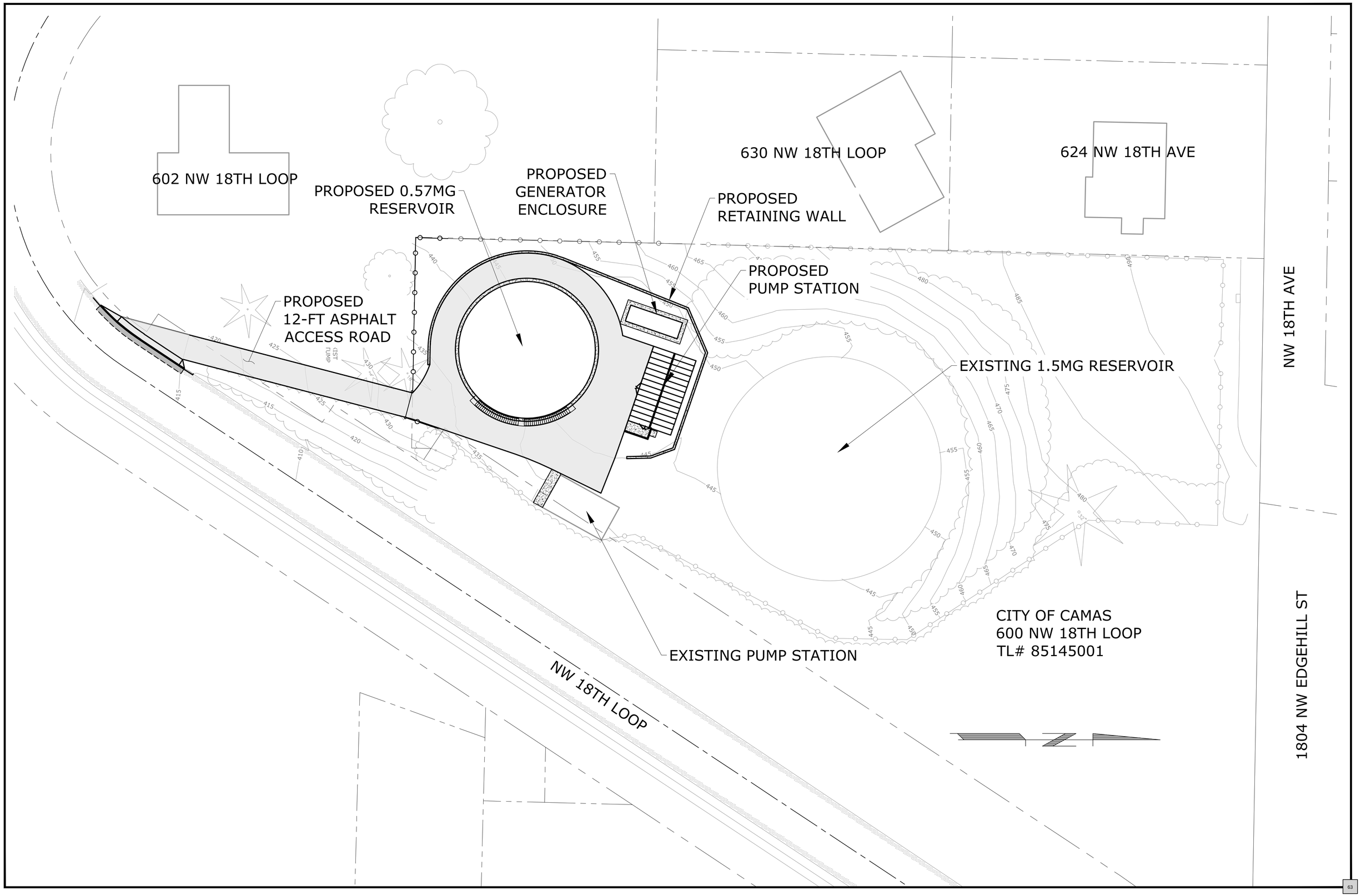
LOWER PRUNE HILL BOOSTER STATION & 0.5 MG RESERVOIR IMPROVEMENTS

PLANTING PLAN

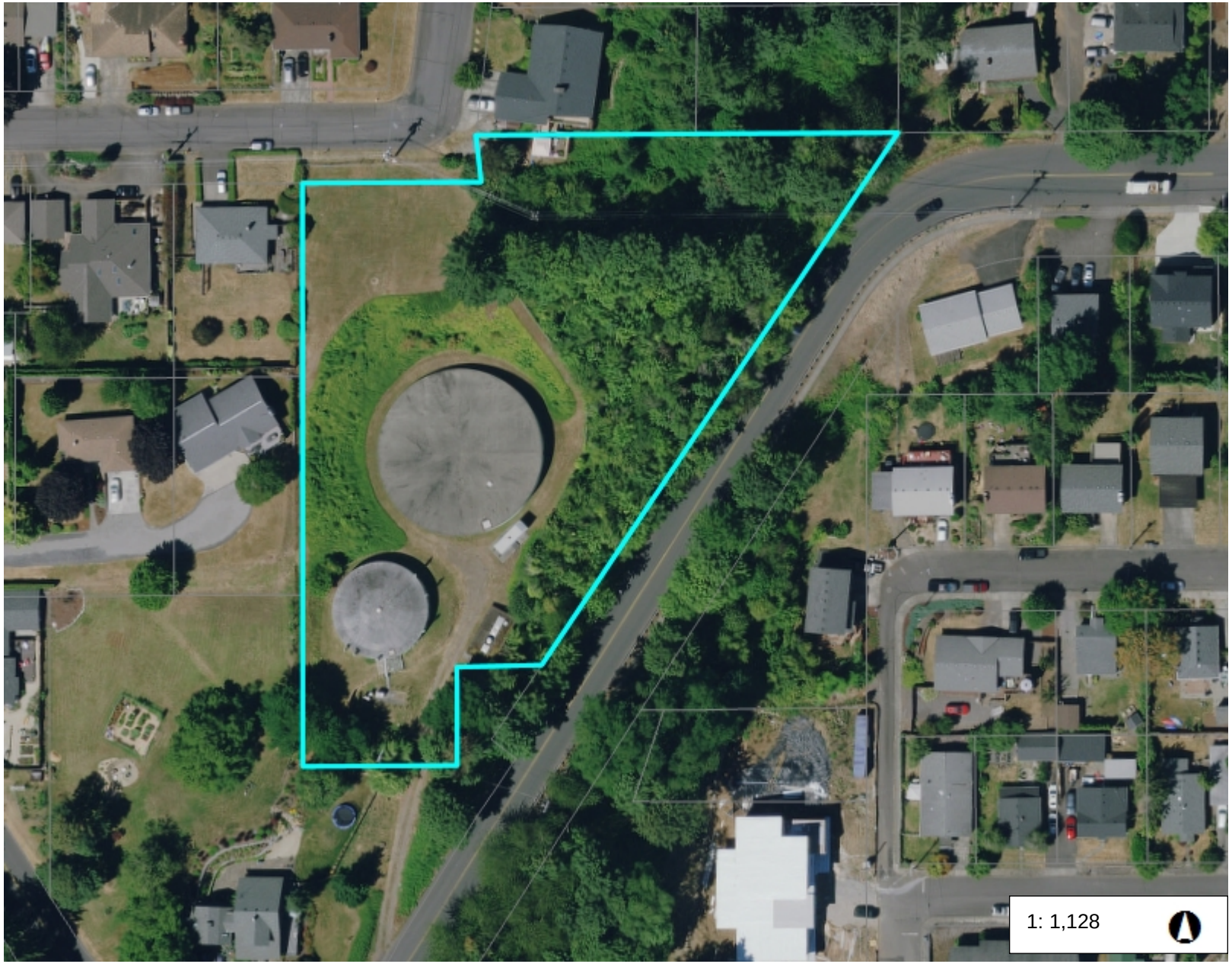
PROJECT NO.: 20-2849.01 | SCALE: AS SHOWN | DATE: MARCH 2022

SHEET
L-1
of 87

G:\PDX_Projects\20\2849.01 - Camas - Lower Prune Hill Phase 2\CAD\Sheets\20-2849.01-WA-L1.dwg L-1 3/25/2022 8:13 AM NATHAN.ROSTAD 23.0s (LMS Tech)


602 NW 18TH LOOP
PROPOSED 0.57MG RESERVOIR
PROPOSED GENERATOR ENCLOSURE
PROPOSED RETAINING WALL
630 NW 18TH LOOP
624 NW 18TH AVE
PROPOSED 12-FT ASPHALT ACCESS ROAD
PROPOSED PUMP STATION
EXISTING 1.5MG RESERVOIR
NW 18TH AVE
EXISTING PUMP STATION
CITY OF CAMAS
600 NW 18TH LOOP
TL# 85145001
NW 18TH LOOP
1804 NW EDGEHILL ST

Prune Hill Booster Station & Reservoir



Legend

- Taxlots

Notes:

188.0 0 94.00 188.0 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov

Geotechnical Investigation Lower Prune Hill Booster Pump Station and Reservoir Replacement

Camas, Washington

November 12, 2021
(REVISED: 02/15/2022)

Prepared for

Murraysmith.
400 E Mill Plain Blvd, Suite 400
Vancouver, WA 98660

Prepared by

1101 Broadway, Suite 215
Vancouver, WA 98660
(360) 213-1690 | www.gri.com

TABLE OF CONTENTS

TABLES

FIGURES

DRAFT

APPENDICES

Appendix A: Field Explorations and Laboratory Testing
Appendix B: Rotosonic Core Photos

DRAFT

1 INTRODUCTION

As requested, GRI completed a geotechnical investigation for the construction of a new booster pump station and replacement of the existing 0.5 MG reservoir located at the Prune Hill Reservoir site located at 600 NW 18th Loop in Camas, Washington. The general location of the project is shown on the Vicinity Map, Figure 1. Our investigation included a review of available geotechnical information and relevant geologic maps for the site, subsurface explorations, laboratory testing, and engineering studies and analyses. The report describes the work accomplished and provides our conclusions and recommendations for the design and construction of the proposed replacement reservoir and booster pump station.

2 PROJECT DESCRIPTION

We understand that the project includes the replacement of the existing 0.5 MG reservoir with a new 0.5 MG welded steel reservoir south of the existing 0.5 MG reservoir and at the southern edge of the property. The floor elevation of the new reservoir will be at elevation 435 feet. The reservoir will have an interior diameter of 65 feet and a water height of 20 feet when full. The reservoir roof will be supported by interior columns and the walls of the reservoir will be supported by a continuous ring foundation.

The new booster pump station is planned at the location of the existing 0.5 MG reservoir and will include pump cans embedded approximately 10 feet below existing site grades. The floor elevation of the new pump station will be at elevation 435.5 feet. Cuts up to 19 feet will be required in the hillside on the southern and western property boundary to accommodate the new reservoir and pump station A permanent, cantilevered soldier pile retaining wall is planned to support the new cuts along the south, west, and north side of the new reservoir and pump station. The inclination of the backslope behind the proposed retaining wall will not exceed 2H:1V. Due to site constraints, we understand that tiebacks or a soil nail wall are not being considered.

3 SITE DESCRIPTION

3.1 Site Conditions

The Lower Prune Hill Reservoir site is located on the southeastern flank of Prune Hill. The proposed improvements are planned for the southernmost portion of the site, where existing improvements include the 0.5 MG reservoir, a 5-foot to 6-foot-tall masonry block wall, telecommunications equipment, and yard piping. A 1.5 MG reservoir, a 1½H:1V (Horizontal to Vertical) ivy-covered slope, and a lawn-covered area are in the northern portion of the site. Residential developments are located to the south, west, and north of the reservoir site. A tree-covered slope, which is bisected by NW 18th Loop Road, and residential properties are located east of the site.

Site grades in the southern portion of the site and around the proposed improvements range from about elevation 430 feet to 450 feet. Grades above the proposed cantilevered retaining wall location range from near horizontal to 3H:1V. The slope to the southeast of the proposed new reservoir improvements drops about 25 feet to 40 feet to NW 18th Loop Road. The slope between the site and NW 18th Loop Road is relatively uniform at about 1½H:1V with no significant indications of slope movement. Below NW 18th Loop Road, the grades are flatter with typical inclinations in the range of 2H:1V to 2¼H:1V. Springs or seeps were not observed on the portion of the slope located between the reservoir site and NW 18th Loop Road at the time of our field-exploration program.

3.2 Geology

Based on our review of readily available geologic mapping, the Prune Hill Reservoir site is underlain by a sedimentary rock unit mapped as quaternary unnamed conglomerate (QTc). This unit consists of unconsolidated to cemented, well-rounded gravel, cobble, and boulder (i.e., conglomerate) interbedded with sandstone.

4 SUBSURFACE CONDITIONS

4.1 General

Subsurface materials and conditions at the site were investigated on September 10 and 11, 2020, with two Rotosonic borings, designated B-1 and B-2, and one mud-rotary boring, designated B-3 completed on July 7, 2021, at the approximate locations shown on the Site Plan, Figure 2. Borings B-1 and B-2 were advanced to a depth of 31.5 feet using the Rotosonic drilling method, while boring B-3 was advanced to a depth of 51.5 feet using mud-rotary drilling techniques. Logs of the borings are provided on Figures 1A through 3A. Discussion of the field-exploration and laboratory-testing programs are provided in Appendix A. The terms and symbols used to describe the soils encountered in the borings are defined in Table 1A and the attached legend. Photographs of the core samples recovered from the Rotosonic borings B-1 and B-2 are provided in Appendix B.

A soil boring was advanced in April 1971 by CH2M at the location of the existing 1.5-MG reservoir as part of the original design of this structure. The boring disclosed approximately 5 feet of clayey silt at the surface underlain by weathered conglomerate to the maximum depth explored of about 70 feet. The location of the historical boring is shown on Figure 2, and the historical boring log is included as an attachment at the end of Appendix A.

4.2 Soils

For the purpose of discussion, the materials disclosed by the borings have been grouped into the following units based on their physical characteristics and engineering properties and listed as they were encountered from the ground surface:

a. Sandy SILT to Silty SAND (Decomposed QTc Sandstone)
b. Silty GRAVEL (Decomposed QTc Conglomerate)
c. CONGLOMERATE (QTc)

The following paragraphs provide a description of the materials encountered and a discussion of the groundwater conditions at the site. A 4- to 6-inch-thick, heavily rooted zone was encountered at the ground surface in each of the explorations completed for this study.

a. Sandy SILT to Silty SAND (Decomposed QTc Sandstone)

Sandy silt and silty sand were encountered in boring B-1 to a depth of 3 feet; in boring B-2 between 6 feet and 7.5 feet, between 8.5 feet and 14 feet, and between 17 feet and 20 feet below the ground surface; and in boring B-3 to a depth of 12.5 feet. The sandy silt includes a trace of clay and has low plasticity, and the sand is fine to coarse grained. Based on SPT N-values, the relative consistency of the sandy silt is stiff to very stiff. The relative density of the silty sand is loose to medium dense.

b. Silty GRAVEL (Decomposed QTc Conglomerate)

The silty sand to sandy silt is underlain by silty gravel to the maximum depth explored, about 31.5 feet, in boring B-1 and to a depth of 40 feet in boring B-3. In boring B-2, silty gravel was encountered below the heavily rooted zone to a depth of 6 feet, between 7.5 feet and 8.5 feet, between 14 feet and 17 feet, and from 20 feet to 31.5 feet (maximum depth explored). The silty gravel unit contains variable fine- to coarse-grained sand content, ranging from a trace of sand to sandy. The unit contains cobbles, and the gravel is typically subangular. Although not observed in our explorations, boulders are commonly encountered within the decomposed conglomerate. Based on SPT N-values and modified California N*-values, the silty gravel is medium dense to very dense in density.

c. CONGLOMERATE (QTc Conglomerate)

Extremely soft to very soft (R0 to R1) conglomerate rock was encountered at a depth of 40 feet in boring B-3. The conglomerate rock is predominately decomposed and unconsolidated to poorly cemented and extends to the maximum depth explored, 51.5 feet, in this boring.

4.3 Groundwater

At the time of drilling in September 2020, groundwater was encountered at a depth of about 26.5 feet (elevation 422.5 feet) in boring B-1 and at a depth of about 29 feet in

boring B-2 (elevation 408.5 feet). Due to the mud-rotary drilling method, direct measurement of groundwater was not possible at the time of drilling in boring B-3 in July 2021. Groundwater was encountered at a depth of about 36 feet (elevation 440 feet) on April 8, 1971, in a boring advanced as part of the design of the existing 1.5 MG reservoir. A vibrating-wire piezometer was installed in boring B-2 at the time of drilling to measure the depth to groundwater. The groundwater measurements from the vibrating-wire piezometer are inconsistent with the measurements at the time of drilling. and our experience in the project area and are being further evaluated by GRI.

The groundwater data indicate the groundwater elevation decreases with the elevation of the ground surface to the southwest and southeast of the site. We anticipate that zones of perched groundwater may be present within the decomposed conglomerate or sandstone, especially during periods of high precipitation.

5 FINDINGS AND RECOMMENDATIONS

5.1 General

The explorations completed for this investigation disclosed decomposed sandstone or conglomerate consisting of sandy silt, silty sand, or silty gravel to about elevation 410 feet. Below this depth, extremely soft to very soft (R0 to R1) conglomerate rock was encountered. Based on groundwater measurements made at the time of drilling (September 2020) and the historical geotechnical data, we anticipate that groundwater is present at depths of at least 25 feet below the ground surface in the vicinity of the proposed new reservoir, pump station, and retaining walls. We anticipate that perched groundwater conditions may approach the ground surface during periods of extended wet weather after heavy rainfall.

The primary geotechnical considerations associated with the project include the presence of moisture-sensitive, fine-grained soils; temporary excavation shoring; permanent retaining walls; and foundation support and settlement. Our conclusions and recommendations for the design and construction of the project are discussed below.

5.2 Geologically Hazardous Areas

5.2.1 General

This section of this report documents potential geological hazards at the project site with respect to reporting requirements of the Critical Areas protection guidance provided in the City of Camas Municipal Code Chapter 16.59.

5.2.2 Erosion Hazard Area

This slope located to the east of the proposed water reservoir is greater than 10 feet tall and declined at about 1.5H:1V (horizontal to vertical) or 67% and classifies as an Erosion

Hazard Area per City of Camas Municipal Code. We did not observe indications of significant erosion during our June 15, 2020, site reconnaissance or on other site visits completed during the geotechnical investigation.

5.2.3 Landslide Hazard Area

Published landslide mapping of the area was reviewed (Fiksdal, 1975; and Walsh, 1987). According to Fiksdal, the project site is in a mapped area of potential instability due to the underlying geologic conditions and physical characteristics associated with steepness and therefore classifies as a Landslide Hazard Area per the City of Camas Municipal Code. During a site reconnaissance on June 15, 2020, and on subsequent site visits, GRI did not observe obvious indications of large-scale or deep-seated landslide movement such as new ground cracking, fresh scarps, or accumulations of recent landslide debris on the project site.

As discussed in Section 5.7 of this report, slope stability modeling was completed to evaluate the impact of the proposed development on the stability of the slope. The analysis indicates that the slope has an adequate factor of safety during both sustained long-term and the level of seismic loading required by the 2018 *International Building Code* (IBC).

5.2.4 Seismic Hazard Area

Based on the conditions observed in the borings completed for this investigation, the near-surface soils at the site consist of decomposed sandstone, decomposed conglomerate, or conglomerate. As a result of their density, these materials are not considered to be susceptible to liquefaction and the risk of significant ground-shaking amplification is low. These findings are consistent with mapping provided by Palmer (2004), which indicates that the near-surface soils have a very low susceptibility to liquefaction. Additional discussion of the seismic hazards at the site, including recommended seismic design parameters are provided in Section 5.5 of this report.

5.2.5 Geological Hazards Area Conclusions

The following conclusions are based on the work completed for this evaluation:

1. The slope located east of the proposed reservoir classifies as an erosion hazard area per the City of Camas Municipal Code. However, based on our observations, the erosion risk is low provided the vegetation is maintained on the slope and that grading at the top of the slope, if completed, directs stormwater away from the top of the slope. In our opinion, the project as currently designed will not adversely affect the erosion hazard.

2. The project site is located within a landslide hazard area; however, our site reconnaissance and engineering analysis indicates that the risk of landslide is relatively low and the proposed improvements will not significantly adversely affect the overall stability of the slope under both static and seismic loading conditions.

5.3 Earthwork

5.3.1 Site Preparation

Demolition within the limits of the new structures, structural fills, or pavement and hardscape areas should include the removal of existing structures, pavements, and underground utilities. The project site is mantled with a 4- to 6-inch-thick, heavily rooted topsoil layer. Where vegetation is present, the ground surface should be stripped to remove the surface vegetation and rooted zone. Deeper stripping and grubbing depths should be anticipated to remove stumps and roots larger than about ½ inch in diameter. Strippings will not be suitable for structural fill and should only be used in landscaped areas or removed from the site. The lateral limits of stripping and grubbing should extend at least 10 feet beyond improvement areas.

To reduce the risk of disturbing the near-surface soils during demolition and stripping and grubbing activities, we recommend using hydraulic excavators equipped with smooth-cutting edges. Excavations made during demolition, stripping, and grubbing should be backfilled with structural fill prepared in accordance with the Structural Fill section of this report.

5.3.2 Subgrade Preparation and Wet Weather Construction

Following site preparation activities and any additional excavation needed to reach the planned subgrade in areas to receive fill or other improvements, the exposed subgrade should be evaluated by a member of GRI's geotechnical engineering staff. Loose, soft, or disturbed areas should either be moisture conditioned and recompacted as structural fill (dry weather conditions only) or removed and replaced with imported structural fill. Proof rolling with a loaded dump truck or other heavy, rubber-tired vehicle may be part of the evaluation.

Near-surface soils that mantle the site consist primarily of silty gravel, silty sand, or sandy silt with considerable fines (i.e., material passing the No. 200 sieve) content. These soils are sensitive to moisture content, and during wet ground or weather conditions can be easily disturbed, rutted, and weakened by construction activities. For this reason, we recommend, if possible, all earthwork activities be accomplished during the normally dry summer and early fall months. We recommend making all excavations using large hydraulic excavators equipped with smooth-cutting edges in lieu of bulldozers to prevent softening of the subgrade soils. Also, the contractor should plan the earthwork operations so that no

construction equipment, e.g., bulldozers, dump trucks, etc., traffic the exposed, moisture-sensitive soils. This will require the placement of imported granular fill for working pads and/or haul roads as the excavation progresses. If the subgrade is disturbed during construction, soft, disturbed soils should be overexcavated to firm soil and backfilled with clean, granular materials.

During wet weather or wet ground conditions, it should be anticipated haul roads or granular work pads constructed of Select Granular Fill as described in this report will be necessary to provide access and protect the subgrade from damage due to construction traffic. In our opinion, a 12-inch-thick granular work pad should be sufficient to prevent disturbance of the fine-grained sand and silt subgrade by lighter construction equipment and limited traffic by dump trucks. Haul roads and other high-density traffic areas will require at least 18 inches to 24 inches of crushed rock to prevent subgrade deterioration. Haul road requirements will be minimized if work is accomplished during the driest months of the year. The performance of haul roads can usually be improved by placing a woven geotextile fabric over the fine-grained subgrade prior to placing the rock.

5.3.3 Structural Fill

In our opinion, on-site soils free of organics, debris, and cobbles less than about 6 inches in diameter are suitable for use in structural fills. As noted above, the on-site soils contain a significant amount of silt and fine-grained sand. These silty soils are moisture sensitive and can be placed and adequately compacted only during the dry summer months when they can be moisture conditioned. For construction during the wet winter and spring months, site fills should be constructed using relatively clean granular materials.

In general, approved on-site or imported, organic-free, fine-grained sand and silty soils used to construct structural fills should be placed in 9-inch-thick lifts (loose) and compacted using medium-size (48-inch-diameter), segmented-pad rollers to a density not less than 95% of the maximum dry density determined by ASTM International (ASTM) D698. Pieces of rock and cobbles larger than about 6 inches and boulders should be removed from the fill prior to compaction. In our opinion, the moisture content of fine-grained soils at the time of compaction should be controlled to within 3% of optimum. Moisture conditioning of the on-site, fine-grained sand and silty soils will be required to achieve the recommended compaction criteria. All structural fills should extend a minimum horizontal distance of 5 feet beyond the limits of the structural improvements.

Imported granular material used to construct structural fills or work pads during wet ground or wet weather can consist of relatively clean, granular material with a maximum particle size of 4 inches and not more than about 7% passing the No. 200 sieve (washed analyses), such as sand, sand and gravel, or crushed rock. Gravel Borrow meeting the

requirements of Section 9-03.14(1) of the 2022 Washington State Department of Transportation (WSDOT) *Standard Specifications* can be used for this purpose. The first lift of granular-fill material placed over a silty subgrade should be in the range of 12-inch- to 18-inch-thick (loose) and subsequent lifts should be 12-inch-thick (loose). All lifts should be compacted to at least 95% of the maximum dry density determined by ASTM D698 using a medium-weight (48-inch-diameter drum), smooth, steel-wheeled, vibratory roller. Generally, compaction should be achieved by a minimum of four passes with the roller.

5.4 Excavations

5.4.1 General

We understand that the existing 0.5 MG reservoir will be removed as part of the proposed improvements and that the base of the existing reservoir is at about elevation 432 feet. The new pump station will be located within the footprint of the existing 0.5 MG reservoir and the base of the pump station pump cans will be between elevation 425 feet to elevation 430 feet and about 10 feet below the surrounding final site grades. The 1.5 MG reservoir is located approximately 30 feet to the north of the existing 0.5 MG reservoir and the planned pump station. According to the 1971 as-built drawings, the top of the foundation elevation for the 1.5 MG reservoir is at an elevation of 431.85 feet. The new 0.5 MG reservoir will be constructed south of the existing 0.5 MG reservoir. A permanent retaining wall will be used to support the excavations necessary for the new reservoir and pump station.

The method of excavation and design of temporary shoring, trench support, and groundwater-management system are the responsibilities of the contractor. The means methods and sequencing of construction operations and site safety are also the responsibilities of the contractor. We recommend that the contractor submit an excavation and dewatering plan prepared by a Washington-registered professional engineer or hydrogeologist for review by the owner and engineer. The information provided below is for use by the owner and engineer and should not be interpreted to mean GRI is assuming responsibility for the contractor's actions, site safety, or design.

It has been our experience that good trench excavation, shoring, and backfilling procedures will reduce, but may not eliminate, the settlement at the ground surface following backfilling.

5.4.2 Excavation and Groundwater Control

The explorations completed for this investigation encountered decomposed sandstone and decomposed conglomerate consisting of loose to medium-dense, silty sandy; stiff to very stiff sandy silt, or medium-dense to very dense, silty gravel. Cobbles were

encountered within the decomposed conglomerate. We anticipate that fill of unknown composition and density/consistency surrounds the existing 0.5 MG reservoir.

Based on our experience with similar materials in the region, we anticipate that the fill, weathered sandstone, and weathered conglomerate can be excavated using conventional excavation methods, such as a large (e.g., a 75,000-pound machine with more than 270 hp) hydraulic excavator equipped with rock teeth (i.e., replacement hardened-steel points). Cobbles were encountered in the explorations and boulders and less-weathered zones of conglomerate rock and sandstone are present in the area. The contractor should be prepared to handle and excavate these materials. We recommend that the contract documents include unit pricing for removal of boulders and bedrock.

At the time of drilling, groundwater was observed at a depth of about 26.5 feet (elevation 422.5 feet) in boring B-1 and at a depth of 29 feet (elevation 408.5 feet) in boring B-2. Groundwater was encountered at about 36 feet below the original site grades (elevation 440 feet) in a boring advanced on April 8, 1971, during design of the 1.5 MG reservoir. Depending on the time of year and precipitation, it is our opinion that groundwater could rise and be encountered at shallower depths and be encountered in the deeper excavations made for the project. Furthermore, we anticipate shallow, perched-groundwater conditions may develop above the silty soils, especially during periods of wet weather.

Control of groundwater, if encountered, will depend on the soils and groundwater levels encountered in the excavation and the contractor/owner's approach to the work. To minimize dewatering requirements, we recommend construction of the deeper structures occur during the late-summer and early-fall months when the groundwater levels are near their seasonal lows. In our opinion, perched groundwater seepage entering from the sides of the shored excavations can be managed by pumping from sumps in the bottom of the excavation.

To provide a level and firm surface to place the foundations and facilitate any necessary dewatering, if required, we recommend placing a minimum-1-foot thickness of free-draining base course at the bottom of the excavation. All soft or loose material present in the bottom of the excavation should be removed prior to placement of the base course and the prepared subgrade should be observed by GRI. The base-course material should consist of clean, open-graded, angular, crushed rock with a maximum size of about 2.5 inches and containing less than 2% passing the No. 200 sieve (washed analysis). Permeable ballast material meeting the requirements of Section 9-03.9(2) of the 2022 WSDOT *Standard Specifications* can be used for this purpose. Base-course material should be placed in a maximum of 12-inch-thick lifts and compacted until well keyed. The open-

graded base-course material may need to be capped with about 3 inches to 6 inches of well-compacted, 1½- or ¾-inch-minus, crushed rock to serve as a leveling course and choke off the surface of the coarser-graded stabilization material to facilitate placement of the wet-well base. If the subgrade consists of sand or silt, a woven geotextile fabric meeting the requirements for soil stabilization in Table 3 of Section 9-33.2 of the 2022 WSDOT *Standard Specifications* should be placed over the subgrade prior to placing the stabilization material.

5.4.3 Temporary Excavation Slopes and Shoring

5.4.3.1 Temporary Excavation Slopes

Temporary excavations may be necessary to demolish the existing 0.5 MG reservoir and construct the new pump station. Temporary excavations will likely encounter fill or decomposed sandstone or conglomerate. In our opinion, the fill should be classified as Type C soil according to current Occupational Safety and Health Administration (OSHA) regulations, while the decomposed sandstone and conglomerate would classify as Type B soil. If groundwater seepage is present, all soil within the excavation depth would be classified as Type C soil. Per OSHA regulations, the maximum temporary excavation slope in Type B soils is 1H:1V, and the maximum temporary excavation slope in Type C soils is 1½H:1V. Construction equipment, vehicle parking, material lay down, etc., should not be allowed within 10 feet of the top of slopes.

Depending on the actual conditions encountered, flatter slopes may be necessary to reduce the risk of instability, particularly if groundwater is encountered. If groundwater seepage is encountered, a blanket of relatively clean, well-graded, 2- to 4-inch-minus crushed rock placed against the slopes may be required to reduce the risk of running soils and sloughing. The required thickness of the granular blanket should be evaluated based on the actual conditions but could be in the range of 1 foot to 2 feet.

Additional measures that should be implemented to reduce the risk of localized failures of temporary slopes include (1) using woven geotextile fabric or plastic sheeting to protect the exposed cut slopes from surface erosion; (2) providing positive drainage away from the tops and bottoms of the cut slopes; (3) constructing and backfilling walls as soon as practical after completing the excavation; and (4) periodically monitoring the area around the top of the excavation for evidence of ground cracking. It must be emphasized that following these recommendations does not guarantee sloughing or movement of the temporary cut slopes will not occur; however, the measures should serve to reduce the risk of major slope failures. It should be realized, however, that blocks of ground and/or localized slumps may tend to move into the excavation during construction. In our opinion, all temporary excavation slopes should be periodically observed by a qualified geotechnical engineer.

5.4.3.2 Shoring Criteria

We anticipate engineered shoring systems will be used for temporary excavation support in areas where existing infrastructure is present and/or site access constraints do not permit the use of open-cut excavations. It is common practice in the region to use shoring systems consisting of soldier pile and lagging, either cantilevered or with tieback anchors, or potentially a soil nail wall. The use of tiebacks or soil nail walls may not be feasible due to the proximity of property lines or other features behind the proposed wall.

The design of temporary shoring systems depends on the total magnitude of forces that the system is designed to resist and the tolerable yielding of the system and the surrounding ground. The pattern and intensity of the lateral earth pressures on the shoring wall will be governed by the height of the wall, soil type, the degree to which the walls are structurally supported, surcharge loads behind the wall, and whether the walls are drained. The lateral earth pressure diagram on Figure 3 can be used for the design of a cantilevered shoring system with a backslope of up to 1½H:1V or flatter. Cantilevered shoring wall systems are typically feasible where the retained height is relatively small and where the shoring can be allowed to yield somewhat into the excavation during construction and that settlement behind the wall system can be tolerated. The lateral earth pressure criteria on Figure 4 can be used for tieback shoring with a backslope of about 1½H:1V or flatter. Tieback shoring is typically required for taller walls or in areas where minimizing settlement behind the walls is important, such as where an existing structure, road, or other critical infrastructure element is present.

If a soldier pile and lagging wall are used, we anticipate the soldier piles will consist of steel H-pile sections placed into drilled shafts backfilled with either controlled density fill (CDF) or pumpable lean concrete. The subsurface explorations completed at the site encountered silty sand and sandy silt (decomposed sandstone), silty gravel (decomposed conglomerate), or predominately decomposed conglomerate. Based on the conditions observed in our explorations, cobbles and potentially boulders, as well as more cemented zones and less decomposed zones of conglomerate rock, should be anticipated within a predominately decomposed conglomerate unit. Groundwater was encountered at about elevation 408.5 feet in boring B-2 and may be encountered during the construction of the soldier piles.

Caving conditions may occur during the construction of the soldier piles, which may require the use of temporary casing. In addition, the contractor should anticipate that different tooling may be required to advance shafts through the gravel and cobble material, more cemented and less decomposed conglomerate rock, and to remove boulders. Although not observed in our explorations, open-work zones of gravel and cobbles are often encountered in the conglomerate unit. Therefore, the possibility of CDF

or pumpable lean concrete loss should be anticipated during the installation of the shafts. Upon completion of drilling and setting the steel section, the temporary casing should be withdrawn as the CDF or pumpable lean concrete is placed; however, the top of the CDF or pumpable lean concrete should be maintained at least 5 feet above the bottom of the casing. We recommend placing the CDF or pumpable lean concrete using tremie methods. The bottom of the tremie pipe should be maintained at least 4 feet below the top of the CDF or pumpable lean concrete. The soldier pile specifications should require that the contractor assume that grout take will be at least 120% of the theoretical volume of the drilled shaft.

We recommend that all tieback anchors for a tieback soldier pile shoring system (if feasible) develop their pull-out resistance beyond a no-load zone defined by a plane that extends a horizontal distance equal to H/4 (where H is the height of the wall) or 5 feet (whichever is greatest) from the bottom of the excavation into the retained earth and then upwards at an angle of 30° from vertical. The no-load zone is presented graphically on Figure 4. Verification tests should be completed for at least one anchor per level. Verification anchor tests should be conducted to at least 200% of the design anchor load. The results of the tests will be used to review and revise, if necessary, the anchor design criteria. In addition, each production anchor should be proof tested to at least 133% of the design load for temporary anchors. The temporary shoring contractor and designer should have a proven record of successful shoring and tieback installations in similar materials.

If shoring is required, we recommend the following monitoring and performance provisions be included in the project specifications.

1. Horizontal movement of the shoring system in the vicinity of adjacent streets or property lines should be accurately measured and recorded at each stage of the excavation by the project surveyor or contractor's surveyor. Horizontal movement should be measured at the top and at each intermediate bracing level, on at least every second soldier pile. Settlement of the ground surface near adjacent streets should be monitored at a minimum spacing of 25 feet along the curb line closest to the excavation.

2. Horizontal movement of the shoring system should not exceed ½ inch toward the excavation.

3. Lagging should be installed, and any voids backfilled using controlled-density fill, if necessary, as the excavation proceeds.

4. The excavation should not extend more than about 3 feet below a bracing level until the tiebacks, lagging, and backfill at that level are in place.

5. The excavation for cantilever shoring should not extend more than 3 feet below the depth of lagging.

5.4.4 Backfill and Compaction Criteria

Backfill placed in utility-trench excavations and the annulus between the embedded structures and the excavation sides should consist of sand, sand and gravel, or crushed rock with a maximum size of up to 1½ inches and not more than 10% passing the No. 200 sieve (washed analysis). An example of a material that satisfies this requirement is Gravel Backfill for Pipe Zone Bedding meeting the requirements of Section 9-03.12(3) of the 2022 WSDOT Standard Specifications. The granular material should be placed in lifts and compacted to at least 95% of the maximum dry density determined by ASTM D698. Lift thicknesses should be no thicker than 8 inches for hand-operated equipment and 12 inches for trackhoe-mounted vibratory compactors (hoepack). The groundwater level should be maintained at least 2 feet below the backfill surface while the excavation is being backfilled. Flooding or jetting the backfill with water to achieve the recommended compaction should not be permitted.

Compaction techniques can significantly affect the actual lateral earth pressure. Overcompaction of the backfill behind cast-in-place concrete walls should be avoided. We recommend compacting backfill within 5 feet of concrete walls to at least 95% of the maximum dry density determined by ASTM D698 using hand-operated, vibratory-plate compactors. Heavy compactors and large pieces of construction equipment should not operate within 5 feet of any of the concrete walls to avoid the buildup of excessive lateral pressures.

5.5 Seismic Considerations

5.5.1 General

We understand the project will be designed using both the American Water Works Association document AWWA D100-11, *Welded Carbon Steel Tanks for Water Storage* and the 2018 IBC. Both the AWWA Standard D100-11 and the 2018 IBC are based on the American Society of Civil Engineers (ASCE) 7-16 document, titled *Minimum Design Loads for Buildings and Other Structures*.

The IBC design methodology uses two spectral response parameters, S_S and S_1, corresponding to periods of 0.2 second and 1.0 second, to develop the Risk-Targeted Maximum Considered Earthquake (MCE_R) response spectrum. The spectral response parameters were obtained from the U.S. Geological Survey Hazard Response Spectra Curves for the coordinates of 45.5919° N latitude and 122.4154° W longitude. Based on soil characteristics, the soil column at the site would be classified as IBC Site Class D. The S_S and S_1 parameters identified for the site are 0.82 and 0.35 g, respectively. These spectral

response parameters are adjusted for Site Class with the 0.2- and 1-second period site coefficients, F_a and F_v, based on the soil profile in the upper 100 feet. This spectrum is designated the MCE_R-level spectrum. The design-level response spectrum is calculated as two-thirds of the Site Class-adjusted MCE_R-level spectrum.

We recommend using the code-based 0.2- and 1-second period site coefficients, F_a and F_v, for Site Class D to estimate the ground surface MCE_R spectrum. The F_a and F_v factors are 1.17 and 1.95, respectively. The spectral values are generally based on a damping ratio of 5%. To evaluate water sloshing within the tank at a damping ratio of 0.5%, the design spectrum for Site Class D can be multiplied by a factor of 1.5. The code-based MCE_R and design response spectra values are tabulated below.

Table 5-1: 2018 IBC SEISMIC DESIGN RECOMMENDATIONS, 5% DAMPING

Seismic Variable	Recommended Value
Site Class	D
MCE_R 0.2-Sec Period Spectral Response Acceleration, S_{MS}	0.96 g
MCE_R 1.0-Sec Period Spectral Response Acceleration, S_{M1}	0.69 g
Design 0.2-Sec Period Spectral Response Accelerations, S_{DS}	0.64 g
Design 0.2-Sec Period Spectral Response Accelerations, S_{D1}	0.46 g

5.5.2 Other Seismic Considerations

In our opinion, the potential for earthquake-induced fault rupture at the ground surface is low unless occurring on a previously unknown or unmapped fault. Based on the location of the site and the grain size and stiffness of the soil beneath the site, it is our opinion the risk for liquefaction and liquefaction-induced lateral spreading, settlement, and subsidence is low. The risk of tsunamis or seiches at the site is absent. Additional discussion regarding the static and seismic stability of the slope located southeast of the reservoir is provided in Section 5.7 of this report.

5.6 Structures

5.6.1 Reservoir Foundation Support

We understand that foundation support of the reservoir will be provided by a conventional concrete ring-type continuous footing and center interior spread footings and that the maximum gravity ring-type foundation loads will be on the order of 4,000 pounds per foot and that the maximum gravity interior spread footing loads will be on the order of 6,000 pounds. In our opinion, foundation support for the reservoir can be provided using

these foundation types assuming the structure can tolerate some settlement as described in the settlement section below.

Footings should be established at a minimum depth of 18 inches below the lowest adjacent finished grade and the width of the footings should not be less than 24 inches. To provide uniform foundation support and to facilitate foundation drainage, we recommend the subgrade for the tank floor and footings and extending 5 feet beyond the tank footprint be overexcavated a minimum depth of 24 inches and backfilled with drain rock. The foundation subgrade should be evaluated by a qualified geotechnical engineer prior to placing the drainage layer. Any soft areas should be overexcavated to firm soil and backfilled with crushed rock.

The drain rock should consist of a well-graded angular crushed rock with a maximum size of 1½ inches and less than 2% passing the No. 200 sieve (washed analysis). Material meeting the requirements for Gravel Backfill for Drains in Section 9-03.12(4) of the of the 2022 WSDOT *Standard Specifications* can be used for this purpose. The drainage layer should be provided with rigid 4-inch-diameter perforated drainage pipes designed for the imposed loads of the reservoir or construction traffic, whichever is greater. The drainage layer may be capped with 3 inches to 6 inches of Crushed Surfacing Top Course, meeting the requirements of Section 9-03.9(3) of the 2022 WSDOT *Standard Specifications* to facilitate compaction of the drain rock and limit contamination from construction activities prior to constructing the floor slab. All fill placed beneath the tank should be compacted to at least 95% of the maximum dry density as determined by ASTM D698.

For reservoir subgrade prepared as discussed above, spread footings can be designed to impose an allowable soil bearing pressure of 2,500 pounds per square foot (psf). This value applies to the total of dead load plus frequently and/or permanently applied live loads and can be increased by one-third for the total of dead, live, wind, and seismic loads. The allowable soil bearing pressure is a net value and applies to the structural loads imposed by the tank structure and the load on the roof. The gross footing bearing pressure, including the water load and structural loads, will be less than about 4,000 psf. The allowable bearing pressure includes a factor of safety of at least 3 on the estimated ultimate bearing pressure.

The total settlement of the continuous ring footings and interior spread footings due to wall and roof loads is estimated to be on the order of ½ inch. Total settlement in the middle of the tank after filling with water is estimated to be in the range of 1 inch to 2 inches. Settlement at the edge of the tank is estimated to be ½ to ⅔ of the settlement in the middle of the tank. Some differential settlement around the perimeter should be anticipated due to variations in the soil properties. We anticipate that differential

settlement around the perimeter of the tank will be less than 1 inch. In our opinion, the differential settlement will be gradual and can be estimated to be a linear change across the diameter of the tank, i.e., no abrupt differential is anticipated over short distances. The majority of the tank floor and footing settlement will occur rapidly as the tank is filled with water.

Lateral loads (seismic, soil, etc.) can be resisted partially or completely by frictional forces developed between the base of footings or tank bottom and underlying crushed rock. The total frictional resistance between the tank and the underlying material is the normal force times the coefficient of friction between the crushed rock and the base of the footing and reservoir. We recommend ultimate values for the coefficient of friction of 0.50 and 0.40 for cast-in-place concrete and steel, respectively, placed over a minimum of 12 inches of crushed rock fill. If additional lateral resistance is required, passive earth pressure against the perimeter footing and the walls of the tank can be computed on the basis of an equivalent fluid having a unit weight of 250 pounds per cubic foot (pcf). This passive earth pressure assumes the backfill for the footings is placed as granular structural fill and does not slope downward away from the tank.

The embedded reservoir walls must be fully drained. The drainage system should consist of a minimum 2-foot-wide zone of free-draining granular material, such as Gravel Backfill for Drains as described in Section 9-03.12(4) of the 2022 WSDOT *Standard Specifications*. A minimum 4-inch-diameter rigid, perforated drainpipe should be provided near the bottom of the reservoir foundation. A non-woven geotextile, meeting the requirements for Moderate Survivability, in Table 1 of Section 9-33.2(1) of the 2022 WSDOT *Standard Specifications* is recommended between the free draining backfill and general site fill to reduce the risk of contamination of the wall drain system.

5.6.2 Booster Pump Station and Generator Pad Mat Foundations

Based on information provided by the team, the booster pump station will be supported by a 20-foot-wide and 36-foot-long mat foundation with thickened edges or an inverted T-stem wall. The average sustained bearing pressure (dead plus real live loads) on the mat foundation subgrade is estimated to be less than 300 pounds per square foot. A generator, weighing approximately 45,000 pounds, is planned to the west of the booster pump station. The generator will be supported by a 215-square-foot mat foundation.

We anticipate that the mat foundations for the new booster pump station and generator will be established in decomposed conglomerate or decomposed sandstone or on structural fill placed on these materials. To provide uniform support, the mat foundation should be underlain by a minimum of 6 inches of well-graded, crushed rock with a maximum particle size of 1½ inches and containing less than 8% passing the No. 200 sieve

(washed analysis). Crushed Surfacing Base Course meeting the requirements of Section 9-03.9(3) of the 2022 WSDOT *Standard Specifications* meets these criteria and can be used to provide uniform mat foundation support. The crushed rock should be compacted to at least 95% of the maximum dry density as determined by ASTM D698.

For frost protection, the bottom of the thickened edges of the mat foundation should be embedded at least 12 inches below adjacent site grades. For the loads provided above, we estimate that settlement of the booster pump station and generator mat foundation will in the range of ¼ inch to ½ inch, with differential settlement across the length of the mat foundation on the order of half of the total settlement. It is anticipated that the settlement described above will occur during construction and as the loads are applied to the mat foundation. For evaluating point or short-term loads on the mat, a subgrade modulus of 150 pci can be considered.

Recommendations for resistance to lateral loads are provided in Section 5.5.1 of this report.

5.6.3 Pump Can Design Considerations

We anticipate that the base of the pump cans will be established in decomposed conglomerate or decomposed sandstone or on structural fill placed on these materials. The foundation subgrade for the pump cans should be prepared in accordance with Section 5.3.2 of this report. Pump can foundations established in accordance with the above criteria can be designed to impose an allowable bearing pressure of 3,000 psf. This value applies to the total of all dead plus frequently or permanently applied live loads and can be increased by one-third for the total of all loads: dead, live, and wind or seismic. We estimate the total settlement of the wet-well facility during static loads will be less than 1 inch and this settlement will occur rapidly as the wet well is installed and backfilled.

The walls of the below-grade structures (e.g., utility access holes, wet wells, and vaults) should be considered rigid and non-yielding for design purposes. We recommend lateral earth pressures be evaluated on the basis of an equivalent fluid having a unit weight of 90 pcf. This value assumes the groundwater level could rise to near the ground surface and the surrounding ground is level. This value does not include the influence of additional surface surcharge loads. Additional lateral loading induced by surcharge loads should be evaluated in accordance with the criteria shown on Figure 5.

We recommend designing below-grade structures to resist the full hydrostatic uplift pressure. The uplift force is computed by multiplying the submerged volume of the structure by the unit weight of water (62.4 pcf). Common methods used to resist the uplift force include increasing the thickness of the walls and/or base or extending the base slab beyond the sidewalls of the structure.

Only the compacted backfill directly over the extended base slab should be considered an additional load to resist the uplift force. The effective unit weight of the submerged backfill should be evaluated using a buoyant unit weight of 60 pcf. This assumes the backfill consists of imported granular material.

5.7 Slope Stability Analysis

Slope stability analyses were completed to evaluate the potential risk of local slope instability affecting the proposed reservoir. The cross-section of the slope that was used to develop the slope stability model is oriented in a generally northwest-southeast direction through the center of the planned reservoir. At this location, the reservoir is setback approximately 30 feet from the edge of the 1½H:1V cut slope down to NW 18th Loop. The slope stability analysis was completed using a generalized limit equilibrium (GLE) analysis with the assistance of the Slide2 software developed by Rocscience, Inc. of Toronto, Ontario, Canada. The basic input for the models included the existing topography and proposed grading provided to GRI by Murraysmith, subsurface profiles disclosed by the subsurface investigations completed by GRI, correlations of soil strengths to N-values obtained during drilling, and our experience with similar soils. In our analyses, groundwater was assumed to be present at about elevation 420 feet beneath the proposed reservoir and about 20 feet below the ground surface along the slope to the southeast of the proposed reservoir.

Factors of safety against sliding were computed using Spencer's Method of Slices, which satisfies both force and moment equilibrium while assuming the resultant of interslice forces are of constant orientation throughout the sliding mass. The computed factor of safety is defined as the ratio of the forces (or moments) tending to resist sliding to the forces (or moments) tending to cause sliding within the slope. Computed factors of safety less than 1.0 indicate instability or incipient slope movement. Slopes supporting critical structures are typically designed to have an estimated factor of safety of at least 1.5 under static and 1.1 under seismic loading conditions. A horizontal pseudo-static coefficient, $k_{h,}$ of 0.23g was used to model seismic inertial loads. In our slope stability model, a uniform surcharge load of 1,500 psf was used to model the weight of the water within the replacement reservoir. Uniform surcharge load of 250 psf and 125 psf were used to model the weight of vehicular traffic around the perimeter of the reservoir and along NW 18th Loop for static and seismic loading conditions, respectively. Figures 6 and 7 show the groundwater level and locations/boundaries of soil units and associated physical properties used in our slope stability models and the minimum factor of safety for a potential failure surface that impacts the proposed tank.

The analyses indicate that potential failure surfaces, which extend back to the reservoir, have a factor of safety of at least 1.5 under static loading conditions and 1.1 under seismic

loading conditions. In this regard, it is our opinion that the risk of a deep-seated failure impacting the new reservoir is low. The slope stability analyses indicate that the shallow surface of the slope is over-steepened and has a low factor and that there is a potential for surficial sloughing or raveling of the slope. Our observations indicate the slope has performed relatively well over its life and no obvious indication of sloughing was observed. However, we recommend setting back all critical yard piping and other utilities a minimum of 10 feet away from the crest of the slope.

Based on the conditions observed in the explorations completed for this study and the proximity of the site to the steep slopes to the west, it is our opinion that infiltration of significant quantities of groundwater will result in a decreased factor of safety. In this regard, stormwater infiltration is not recommended for this project.

5.8 Retaining Walls

5.8.1 General

A permanent soldier pile wall is planned near the perimeter of the proposed 0.5 MG reservoir and booster pump station. It will begin on the south side of the reservoir, extend northward to the west of both proposed structures, and end to the north of the proposed pump station. The soldier pile wall will be up to 19 feet tall and will be cantilevered. Slopes behind the proposed reservoir may be inclined up to 2H:1V. The project may also include shorter modular blocks or mechanically stabilized earth fill walls as necessary.

5.8.2 Cantilevered Soldier Pile Wall

A lateral earth pressure diagram for the design of the permanent cantilevered soldier pile wall is provided on Figure 8 for walls with level backslope, walls with backslopes of about 2H:1V, and for walls with backslopes of 3H:1V. The lateral earth pressure diagram assumes that groundwater is at about elevation 420 feet at the location of the wall.

The lateral earth pressure diagram includes active earth pressures, uniform surcharge earth pressures, dynamic lateral earth pressure increment, and passive earth pressures. The dynamic lateral earth pressure increment should be added to the static lateral earth pressure for design load cases, including seismic. The soldier pile wall may be subjected to the influence of surcharge loading, and the wall should be designed to accommodate this additional horizontal pressure. It is typical to accommodate traffic and typical construction equipment loading with a uniform vertical surcharge pressure, q_s, of 250 psf, for static loading conditions. Non-uniform surcharge loads, such as from soil stockpiles or construction equipment, can be estimated using the criteria on Figure 5. Transient surcharge loads, such as wheel loading, do not need to be included in the seismic-loading case. The active earth pressure and surcharge lateral earth pressures should be applied

over the width of the wall in the portion of the wall that is lagged and over the soldier pile drilled-shaft diameter where lagging is not used between soldier piles.

The passive earth pressure provided on Figure 8 assumes that the ground surface in front of the wall is flat and has been reduced by a factor of safety of 1.5. The passive earth pressure should be applied over two pile soldier pile diameters or the spacing of the soldier piles, whichever is less.

We recommend installing permanent drainage behind the lagged portion of the wall to reduce the risk of perched hydrostatic groundwater developing. Typical drainage systems for similar applications have consisted of 16-inch-wide drainage panels spaced about every 6 feet to 8 feet along the embedded wall or between each set of soldier piles. The drainage strips should extend to the base of the wall fascia, where any water would be collected in a perforated plastic pipe and discharged away from the wall.

Additional discussion regarding the construction of soldier pile walls is provided in Section 5.3.3.2 of this report.

5.8.3 Modular Block Walls

5.8.3.1 General

Design lateral earth pressures for embedded walls will depend on the drainage condition behind the wall and the ability of the wall to yield. We recommend a drainage system be provided behind the wall. Modular block or mechanically stabilized earth walls that can yield or rotate slightly away from the backfill can be designed using active earth pressures.

5.8.3.2 Foundation Design

The base of all modular-block or mechanically stabilized earth walls should be embedded a minimum of 1 foot below adjacent site grades and founded on firm, on-site soil, or structural fill placed above these on-site materials. Excavation for the walls should be made with excavators equipped with a smooth-edged bucket and the wall subgrade should be evaluated by a member of GRI's geotechnical engineering staff. If soft soils are encountered at the base of the excavation, it will be necessary to overexcavate and replace the unsuitable materials with well-graded, crushed rock, such as Crushed Surfacing Base Course meeting the requirements of Section 9-03.9(3) of the 2022 WSDOT *Standard Specifications*. All prepared foundation-bearing surfaces should be free of loose soil and water. The modular block or the facing units of mechanically stabilized earth walls should be founded on a minimum-6-inch thickness of compacted crushed rock to provide uniform support.

Provided the subgrade is prepared as described above, retaining walls can be designed on the basis of an allowable bearing pressure of 2,000 psf. The total settlement of the

modular-block or mechanically stabilized earth retaining walls are estimated to be less than 1 inch.

5.8.3.3 Lateral Earth Pressures

Modular-block or mechanically stabilized earth retaining walls free to yield and for drained conditions can be designed using an equivalent fluid unit weight of 35 pcf for level backfill and 50 pcf for slopes inclined at 2H:1V or flatter. Additional lateral pressures due to surcharge loading in the backfill area, such as vehicle or construction traffic or soil stockpiles, can be estimated using the guidelines provided on Figure 5. The dynamic lateral earth pressure increment for yielding walls can be estimated using an equivalent fluid unit weight of 6 pcf and 23 pcf for walls with level backslopes and walls with backslopes inclined at 2H:1V. The dynamic lateral earth pressure increment should be added to the static lateral earth pressure. Transient surcharge loads, such as wheel loads, do not need to be included in the seismic-loading case.

If the internal design of the retaining wall is completed using a wall-design software program, the following soil parameters in Table 5-1 can be used for the design of modular-block walls and mechanically stabilized earth walls, assuming on-site soils are used to raise site grades and backfill behind the wall and this material is compacted as structural fill. A peak horizontal ground acceleration of 0.45g can be used for evaluating seismic loading. Lateral earth pressures due to surcharge loading should be considered, as discussed above.

Table 5-2: MODULAR BLOCK OR MECHANICALLY STABILIZED EARTH WALL SOIL DESIGN PARAMETERS

Soil Property	Wall Backfill	Retained Soil	Foundation Soil
Unit Weight, pcf	130	125	125
Friction Angle	36	35	35
Cohesion, psf	0	0	0

5.8.3.4 Resistance to Lateral Loads

Lateral loads (seismic, soil, etc.) can be resisted partially or completely by frictional forces developed between the base of the wall foundation and underlying crushed rock. Assuming a minimum-6-inch-thick leveling course of compacted crushed-rock fill placed over foundation subgrade, we recommend an ultimate value for the coefficient of friction of 0.35 for precast concrete block facing elements and a coefficient of friction of 0.50 for gabion basket facing elements. If additional lateral resistance is required, passive earth pressure against the embedded portion of the wall can be computed on the basis of an equivalent fluid having a unit weight of 250 pcf. This passive earth pressure assumes the backfill for the footings is placed as granular structural fill and does not slope downward away from the retaining wall.

5.8.3.5 Wall Backfill and Compaction Criteria

The use of on-site soils for wall backfill will only be practical during periods of dry weather or dry conditions when the moisture content of the on-site soils can be maintained near optimum. Furthermore, it will be necessary to screen gravels, cobbles, and boulder materials greater than about 2 inches if the on-site soils will be used for backfill in the reinforced zone of mechanically stabilized earth walls. If used, an imported backfill for modular-block walls should consist of Gravel Backfill for Walls as described in Section 9-03.12(2) of the 2022 WSDOT *Standard Specifications*. Imported backfill for mechanically stabilized earth walls, if used, should consist of Gravel Borrow for Structural Earth Wall as described in Section 9-03.14(4) of the 2022 WSDOT *Standard Specifications*. Wall backfill should be compacted to at least 95% of the maximum dry density determined by ASTM D698. Heavy compactors and large pieces of construction equipment should not operate within 5 feet of any backs of modular-block- or mechanically stabilized earth wall-facing units to avoid the buildup of excessive lateral pressures. Compaction close to the backs of modular-block- or mechanically stabilized earth wall-facing units should be accomplished using hand-operated vibratory-plate compactors.

Drainage of the wall backfill is an essential element of wall design. Drainage requirements depend on the type of backfill used. If on-site soil is used as backfill, we recommend a full-height drainage blanket at the back of the mechanically stabilized earth wall-reinforcement zone, a drainage blanket at the base of the wall-reinforcement zone, and a vertical drainage blanket between the backfill and the wall's facing units. Figure 9 shows the recommended drainage for a mechanically stabilized earth wall constructed of on-site soils. The drainage blankets behind the reinforced zone and the facing units should be a minimum of 18 inches wide and extend the full height of the wall. The drainage blanket at the base of the wall should be at least 12 inches thick. All drainage blankets behind and under the wall should be interconnected with each other and consist of open-graded, angular, crushed rock with a maximum size of 1 inch and not more than about 2% passing the No. 200 sieve (washed analysis). Crushed rock meeting the gradation requirements for Gravel Backfill for Drains in Section 9-03.12(4) of the 2022 WSDOT *Standard Specifications* is suitable for this purpose. A minimum-4-inch-diameter perforated drainpipe should be placed at the bottom of the drainage blanket located behind the zone of reinforcement and at the bottom of the drainage blanket behind the wall's facing units. The perforated drainpipe should be surrounded by a minimum of 12 inches of open-graded, angular, crushed rock encapsulated with non-woven geotextile fabric, such as Mirafi 160N, meeting the requirements for moderate survivability in Section 9-33.2 of the 2022 WSDOT *Standard Specifications*. If imported granular backfill is used for wall construction, only the drainpipe system behind the reinforcement zone is required. For modular-block walls, a full-height drainage blanket should be placed behind the modular blocks as described above.

6 DESIGN REVIEW AND CONSTRUCTION SERVICES

We welcome the opportunity to review and discuss construction plans and specifications for this project as they are being developed. In addition, GRI should be retained to review all geotechnical-related portions of the plans and specifications to evaluate whether they are in conformance with the recommendations provided in our report. To observe compliance with the intent of our recommendations, the design concepts, and the plans and specifications, it is our opinion all construction operations dealing with earthwork, retaining walls, foundations, and pile installations should be observed by a GRI representative. Our construction-phase services will allow for timely design changes if site conditions are encountered that are different from those described in our report. If we do not have the opportunity to confirm our interpretations, assumptions, and analyses during construction, we cannot be responsible for the application of our recommendations to subsurface conditions different from those described in this report.

7 LIMITATIONS

This report has been prepared to aid the project team in the design of this project. The scope is limited to the specific project and location described within this report. Our project description represents our understanding of the significant aspects of the project relevant to earthwork and design and construction of the new booster pump station and replacement reservoir. In the event any changes in the design and location of the project elements as outlined in this report are planned, we should be given the opportunity to review the changes and modify or reaffirm the conclusions and recommendations of this report in writing.

The conclusions and recommendations in this report are based on the data obtained from the subsurface explorations at the locations shown on Figure 2 and other sources of information discussed in this report. In the performance of subsurface investigations, specific information is obtained at specific locations at specific times. However, it is acknowledged variations in subsurface conditions may exist between exploration locations. This report does not reflect variations that may occur between these explorations. The nature and extent of variation may not become evident until construction. If during construction, subsurface conditions differ from those encountered in the explorations, we should be advised at once so we can observe and review these conditions and reconsider our recommendations where necessary.

DRAFT

Submitted for GRI,

Matthew S. Shanahan, PE
Principal

Brian A. Bennetts, PE
Senior Engineer

This document has been submitted electronically.

8 REFERENCES

Fiksdal, A. J., 1975, Slope stability of Clark County, Washington: Washington Department of Natural Resources, Division of Geology and Earth Resources Report 75-10.

Palmer, S. P., Magsino, S. L, Poelstra, J. L., and Niggeman, R. A., 2004, Alternative liquefaction susceptibility map of Clark County, Washington, based on Swanson's groundwater model: State Department of Natural Resources, Division of Geology and Earth Resources.

Phillips, W.M., 1987, Geologic map of the Vancouver quadrangle, Washington and Oregon: Washington Department of Natural Resources, Division of Earth Resources Open File Report 87-10.

0 0.5 1 Miles

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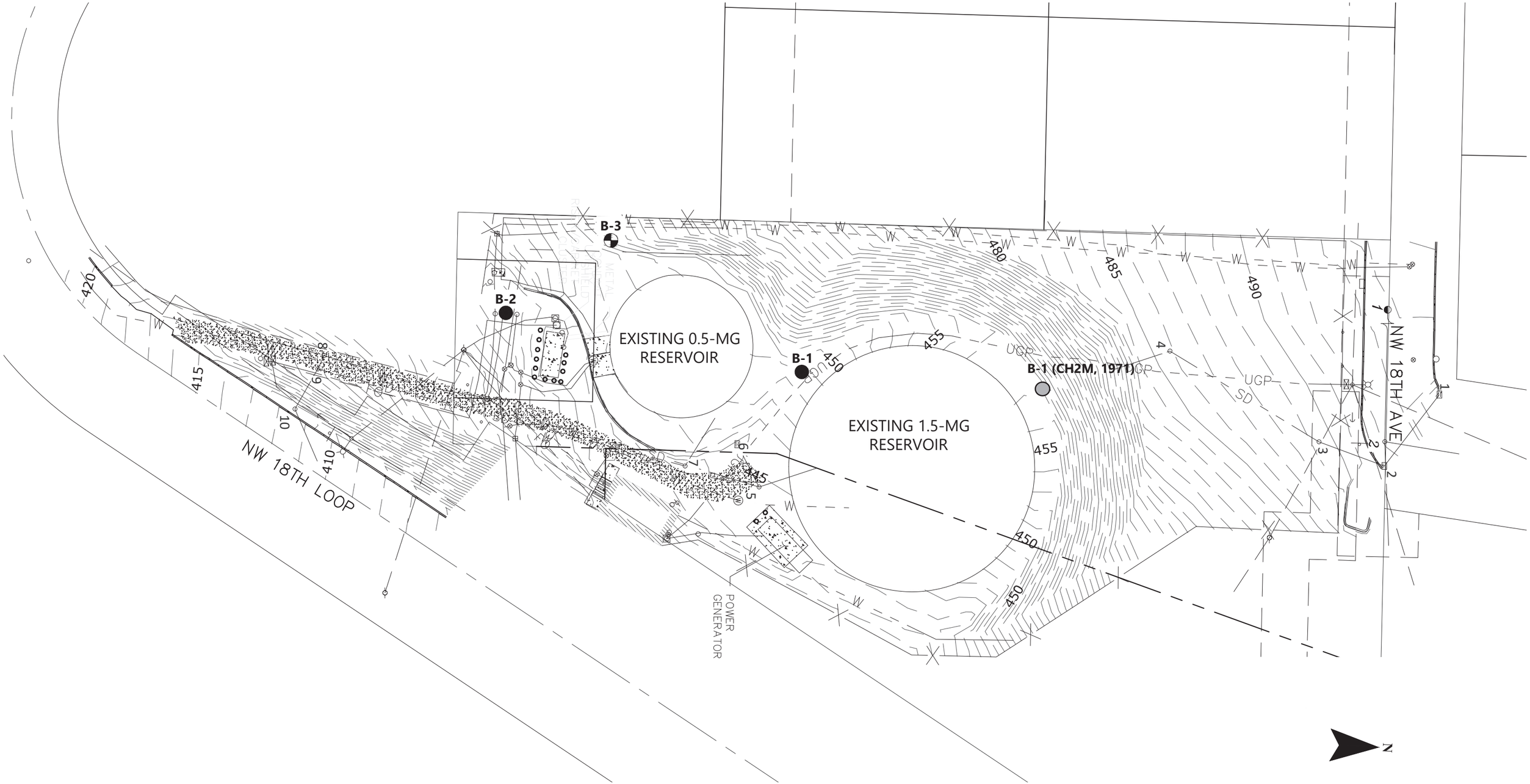
VICINITY MAP

OCT. 2021 JOB NO. W1277 FIG. 1



- ROTOSONIC BORING COMPLETED BY GRI (SEPTEMBER 10, 2020)
- MUD ROTARY BORING COMPLETED BY GRI (JULY 7, 2021)
- BORING COMPLETED BY CH2M (APRIL 1971)

SITE PLAN FROM FILE BY CITY OF CAMAS & MURRAYSMITH, 2020

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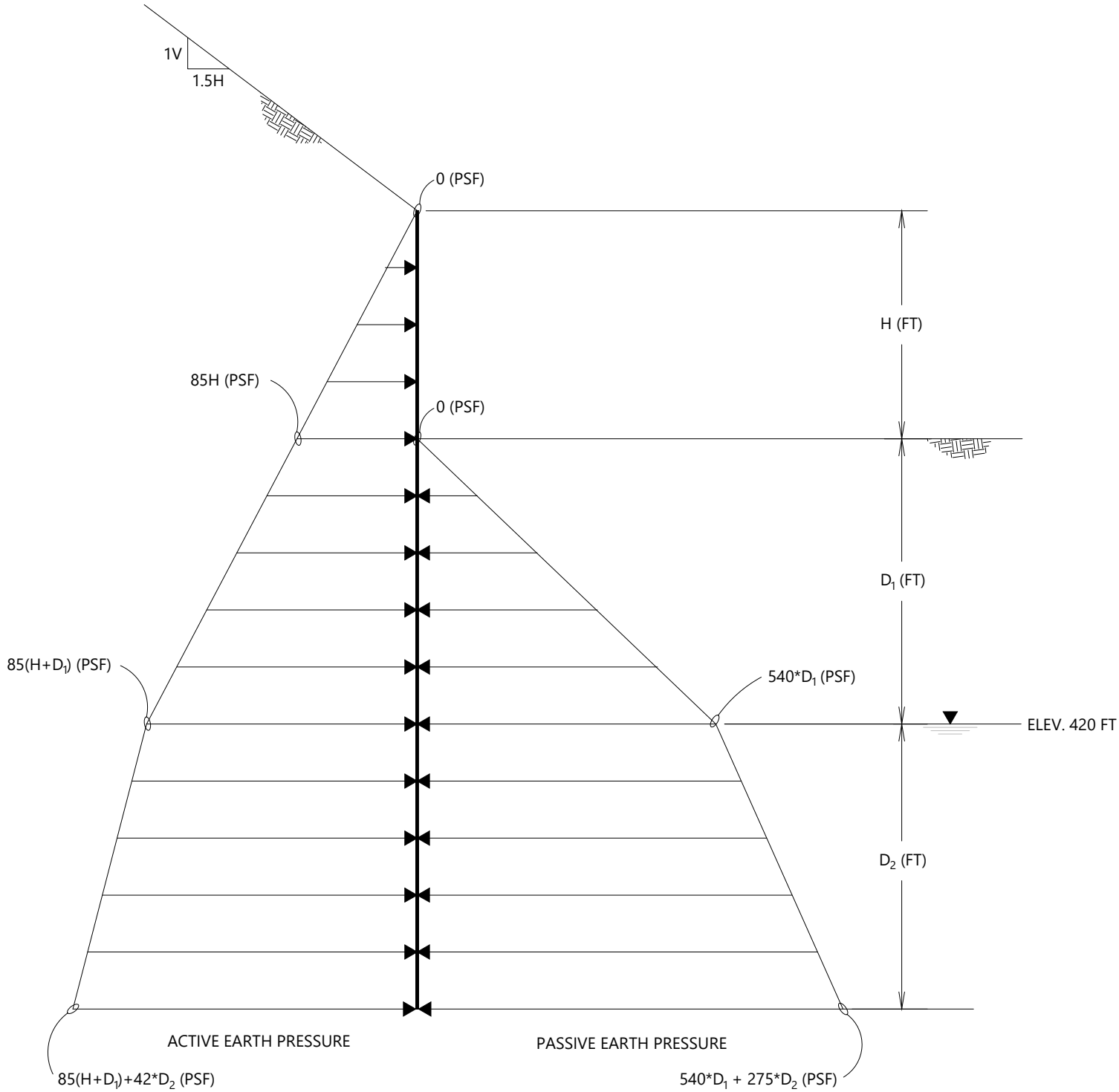
SITE PLAN

OCT. 2021 JOB NO. W1277



NOTES:

1) LATERAL EARTH PRESSURES DIAGRAM IS FOR A TEMPORARY CANTILEVERED SOLDIER PILE SHORING WALL WITH A $1\frac{1}{2}$H:1V BACKSLOPE.

2) ACTIVE EARTH PRESSURE CAN BE ASSUMED TO ACT OVER THE ENTIRE EXPOSED WALL AREA AND OVER THE WIDTH OF THE SOLDIER PILE BELOW THE LAGGING.

3) THE DESIGN GROUNDWATER TABLE AT THE WALL LOCATION IS ASSUMED TO BE AT ELEVATION 420 FEET. THE DISTANCE D_1 IS THE DISTANCE BETWEEN THE GROUND SURFACE AND ELEVATION 420 FEET. THE DISTANCE D_2 IS THE DISTANCE BETWEEN THE BOTTOM OF THE PILE AND ELEVATION 420 FEET.

4) THE PASSIVE EARTH PRESSURE SHOULD BE ASSUMED TO ACT OVER TWO SOLDIER PILE DIAMETERS OR THE SOLDIER PILE SPACING, WHICHEVER IS LESS.

5) DRAWING NOT TO SCALE.

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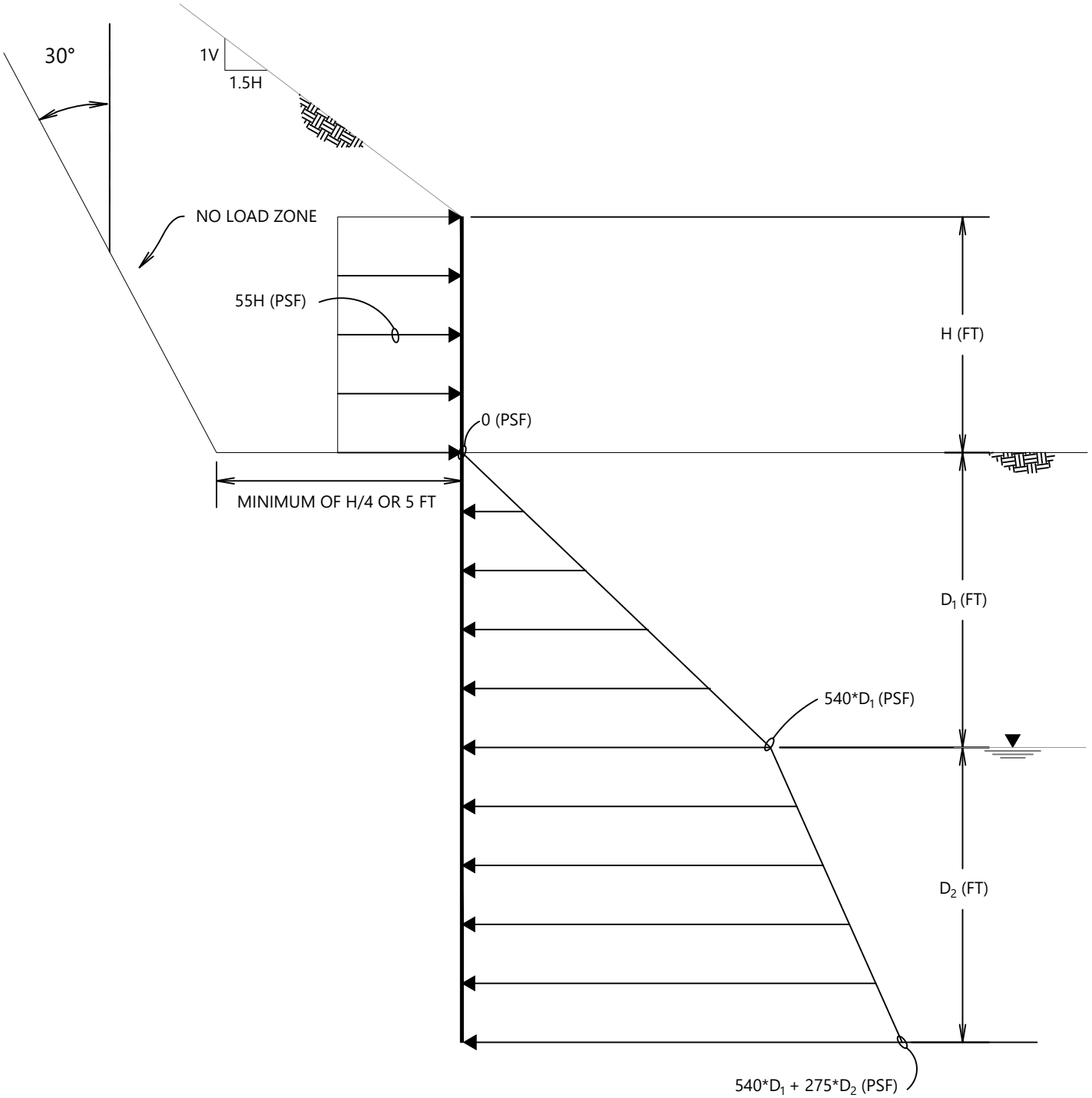
LATERAL EARTH PRESSURES FOR CANTILEVERED SHORING

OCT. 2021 JOB NO. W1277 FIG



NOTES:

1) LATERAL EARTH PRESSURES DIAGRAM IS FOR A TEMPORARY BRACED SOLDIER PILE SHORING WALL WITH A 1 ½ H:1V BACKSLOPE.

2) ACTIVE EARTH PRESSURE CAN BE ASSUMED TO ACT OVER THE ENTIRE EXPOSED WALL AREA AND OVER THE WIDTH OF THE SOLDIER PILE BELOW THE LAGGING.

3) THE DESIGN GROUNDWATER TABLE AT THE WALL LOCATION IS ASSUMED TO BE AT ELEVATION 420 FEET. THE DISTANCE D1 IS THE DISTANCE BETWEEN THE GROUND SURFACE AND ELEVATION 420 FEET. THE DISTANCE D2 IS THE DISTANCE BETWEEN THE BOTTOM OF THE PILE AND ELEVATION 420 FEET.

4) THE PASSIVE EARTH PRESSURE SHOULD BE ASSUMED TO ACT OVER TWO SOLDIER PILE DIAMETERS OR THE SOLDIER PILE SPACING, WHICHEVER IS LESS.

5) SOLDIER PILES SHOULD EXTEND AT LEAST 8 FEET BELOW THE LOWEST ADJACENT EXCAVATION LEVEL.

6) DRAWING NOT TO SCALE.

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LATERAL EARTH PRESSURE FOR BRACED SHORING

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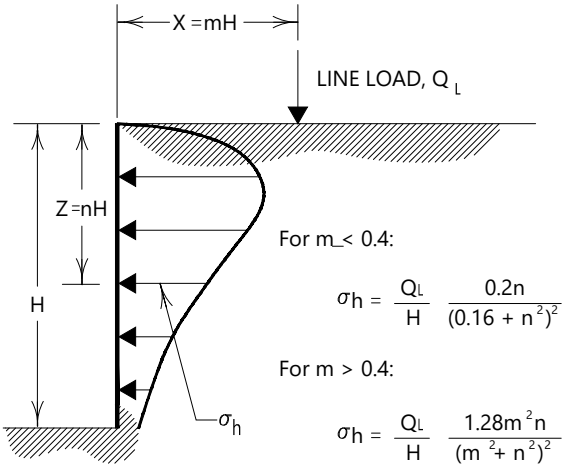
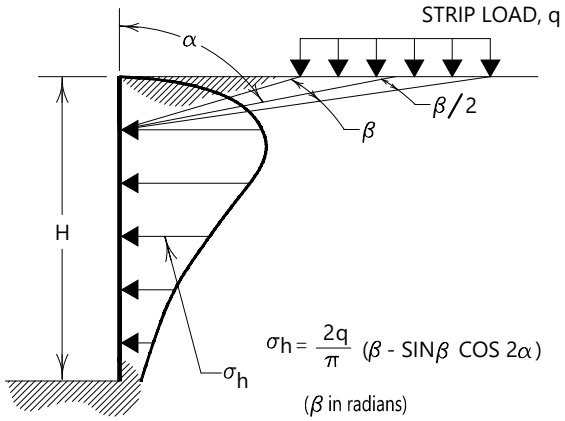
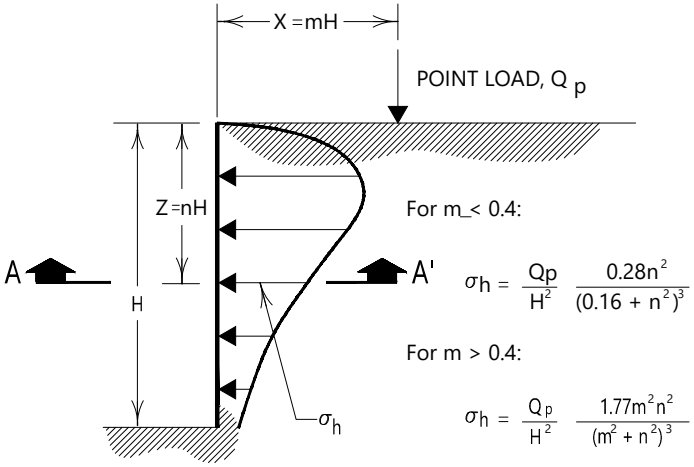
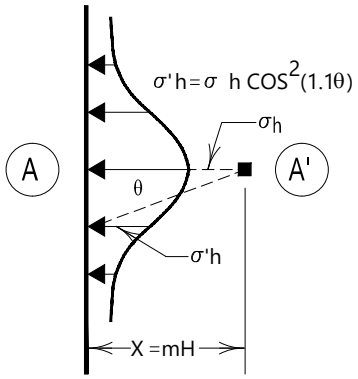


LINE LOAD PARALLEL TO WALL



STRIP LOAD PARALLEL TO WALL





DISTRIBUTION OF HORIZONTAL PRESSURES

VERTICAL POINT LOAD

NOTES:

1. THESE GUIDELINES APPLY TO RIGID WALLS WITH POISSON'S RATIO ASSUMED TO BE 0.5 FOR BACKFILL MATERIALS.

2. LATERAL PRESSURES FROM ANY COMBINATION OF ABOVE LOADS MAY BE DETERMINED BY THE PRINCIPLE OF SUPERPOSITION.

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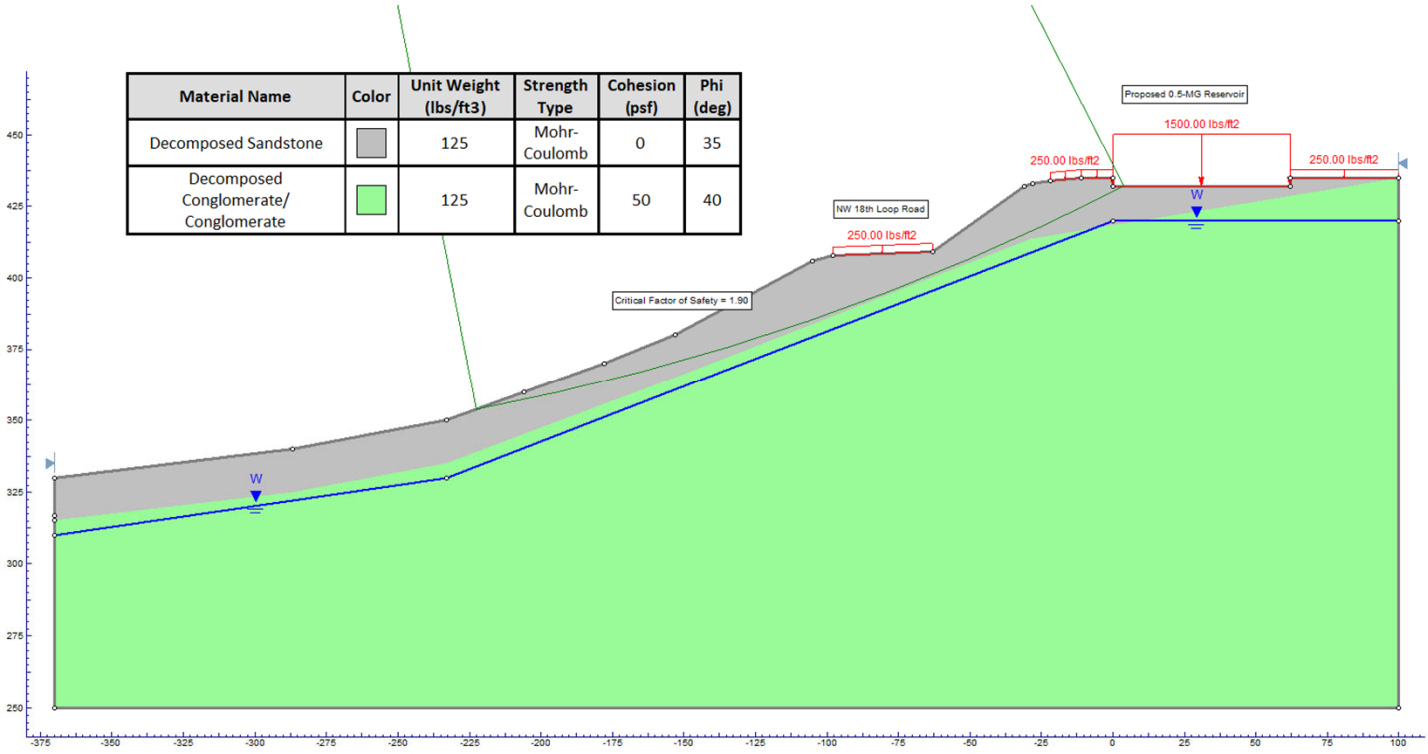
SURCHARGE-INDUCED LATERAL PRESSURE

OCT. 2021 JOB NO. W1277 FIG. 5



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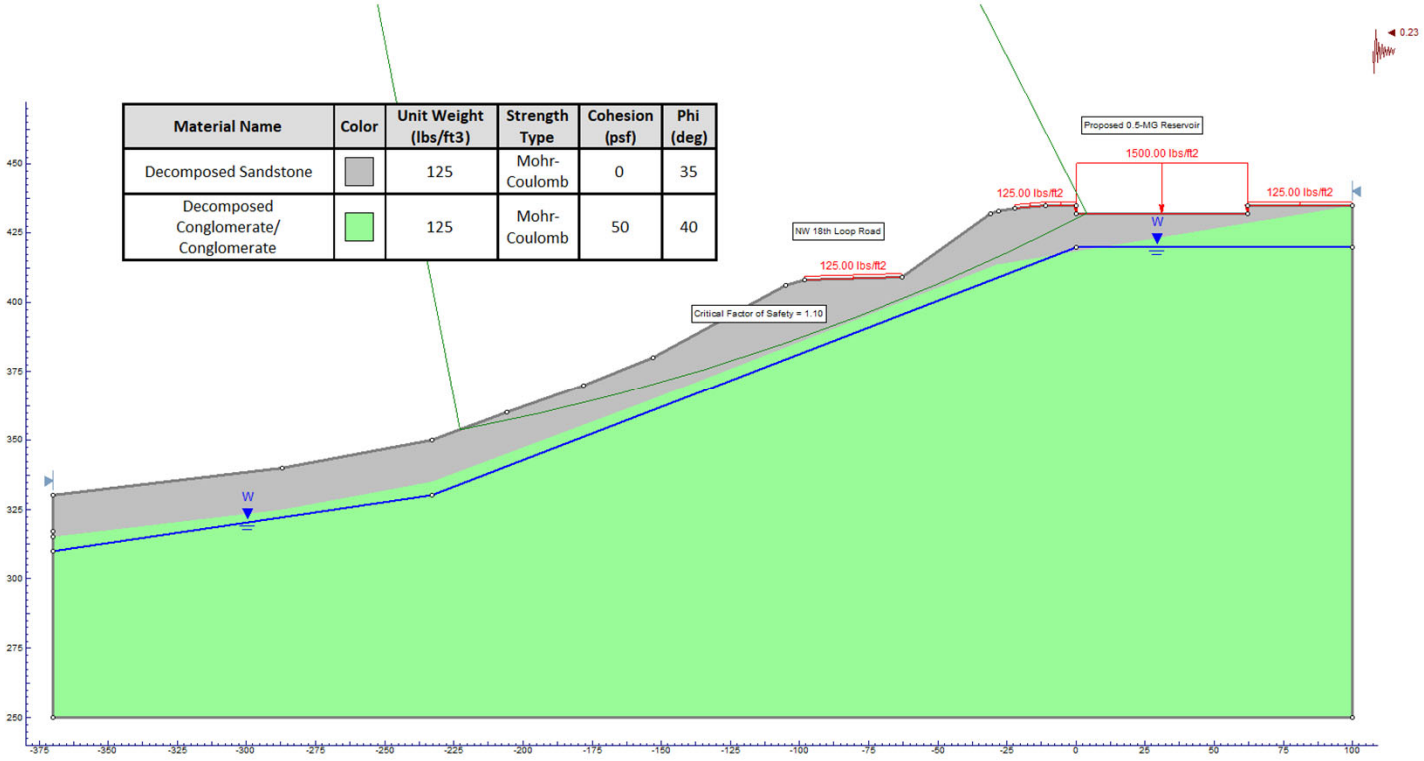
STATIC SLOPE STABILITY RESULTS

OCT. 2021 JOB NO. W1277 FIG. 6



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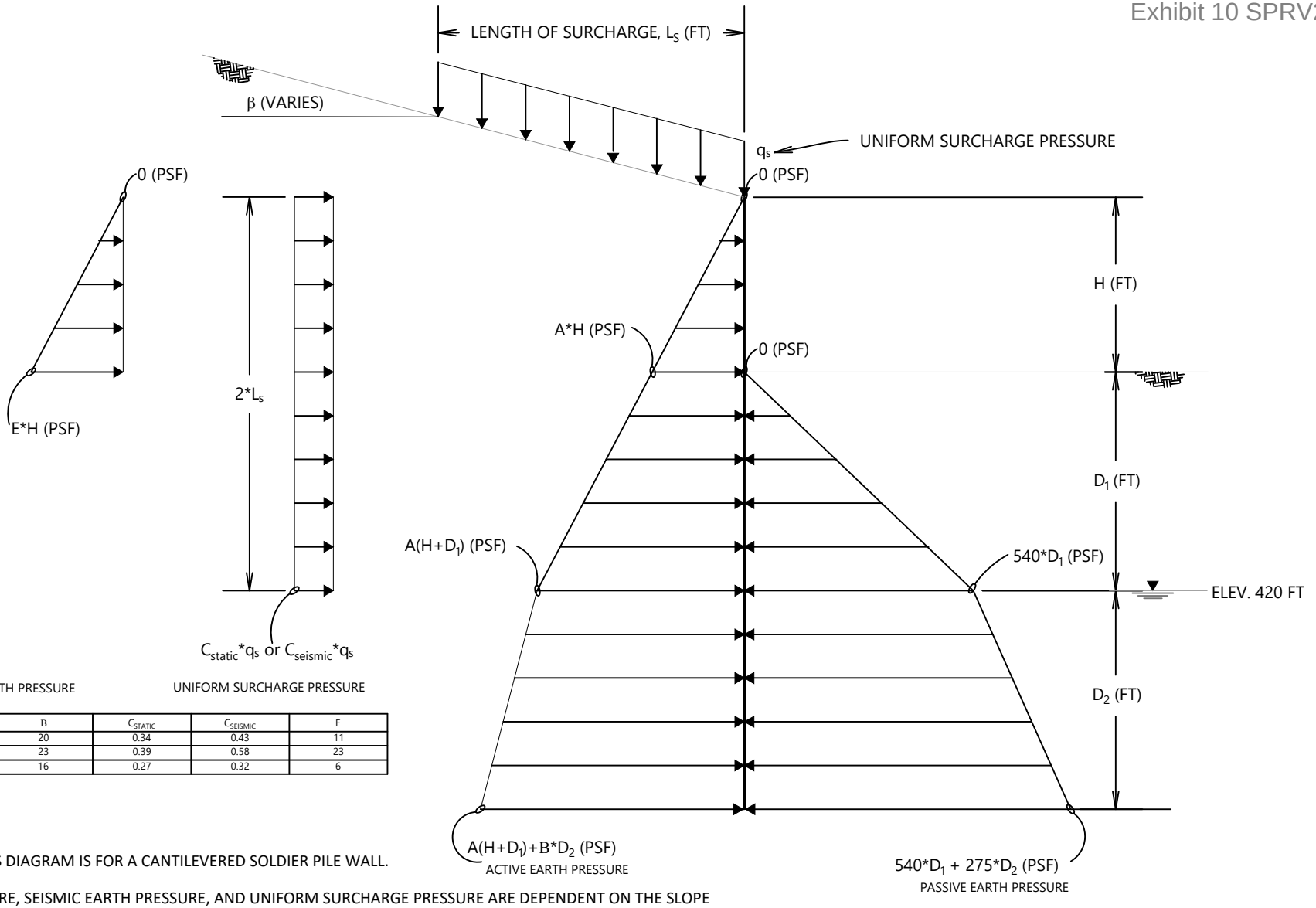
SEISMIC SLOPE STABILITY RESULTS

OCT. 2021 JOB NO. W1277 FIG. 7



SLOPE, β	A	B	C_{STATIC}	$C_{SEISMIC}$	E
3H:1V, β=18.9°	42	20	0.34	0.43	11
2H:1V, β=26.6°	49	23	0.39	0.58	23
HORIZONTAL, β=0°	34	16	0.27	0.32	6

NOTES:

1) LATERAL EARTH PRESSURES DIAGRAM IS FOR A CANTILEVERED SOLDIER PILE WALL.

2) THE ACTIVE EARTH PRESSURE, SEISMIC EARTH PRESSURE, AND UNIFORM SURCHARGE PRESSURE ARE DEPENDENT ON THE SLOPE BEHIND THE WALL. REFER TO TABLE FOR VALUES OF COEFFICIENT A, B, C, AND E FOR LEVEL BACKSLOPES, SLOPES INCLINED AT 2H:1V, AND FOR SLOPES INCLINED AT 3H:1V. TWO VALUES ARE PROVIDED FOR C - C_{STATIC} FOR EVALUATING STATIC LOADING CONDITIONS AND $C_{SEISMIC}$ FOR LOAD CASES INCLUDING SEISMIC LOADING.

3) ADDITIONAL SURCHARGE PRESSURES DUE TO NON-UNIFORM LOADS, IF ANY, SHOULD BE INCLUDED IN THE DESIGN USING THE GUIDELINES PROVIDED ON FIGURE 5.

4) ACTIVE, SURCHARGE-INDUCED LATERAL PRESSURES, AND SEISMIC EARTH PRESSES CAN BE ASSUMED TO ACT OVER THE ENTIRE EXPOSED WALL AREA AND OVER THE WIDTH OF THE SOLDIER PILE BELOW THE LAGGING.

5) THE DESIGN GROUNDWATER TABLE AT THE WALL LOCATION IS ASSUMED TO BE AT ELEVATION 420 FT. THE DISTANCE D_1 IS THE DISTANCE BETWEEN THE GROUND SURFACE AND ELEVATION 420 FT. THE DISTANCE D_2 IS THE DISTANCE BETWEEN THE BOTTOM OF THE PILE AND ELEVATION 420 FT.

6) THE PASSIVE EARTH PRESSURE SHOULD BE ASSUMED TO ACT OVER TWO SOLDIER PILE DIAMETERS OR THE SOLDIER PILE SPACING, WHICHEVER IS LESS.

7) DRAWING NOT TO SCALE.

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PERMANENT WALL LATERAL EARTH PRESSURE DIAGRAM

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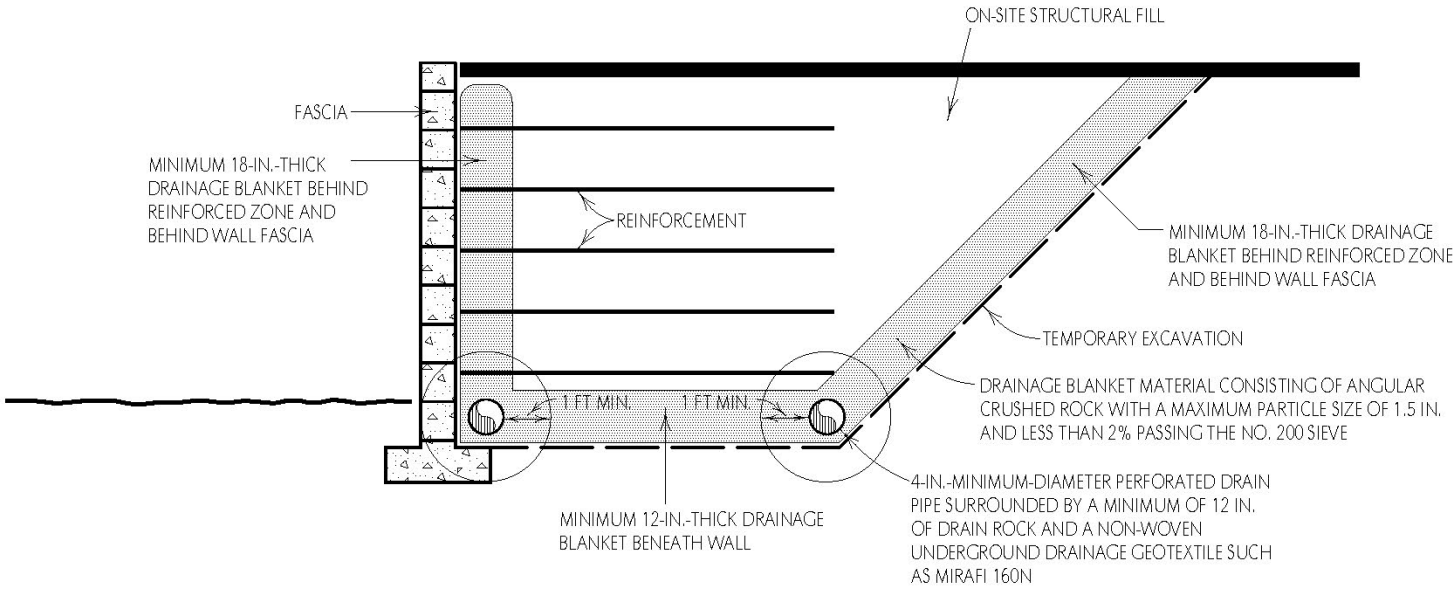

NO SCALE

GRI

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TYPICAL DRAINAGE FOR MSE WALL CONSTRUCTED WITH ON-SITE SC

OCT. 2021 JOB NO. W1277 FIG. 9

APPENDIX A

Field Explorations and Laboratory Testing

APPENDIX A

FIELD EXPLORATIONS AND LABORATORY TESTING

A.1 FIELD EXPLORATIONS

A.1.1 General

Subsurface materials and conditions at the site were evaluated between September 10, 2020, and July 7, 2021. The field program included two Rotosonic borings and one mud-rotary boring. The approximate locations of the explorations are shown on Figure 2. An experienced member of the GRI's staff directed the explorations and maintained a log of the materials and conditions disclosed during the work.

A.1.2 Machine-Drilled Borings

Borings B-1 and B-2 were completed on September 10 and 11, 2020, to a depth of 31.5 feet using Rotosonic drilling techniques and a track-mounted Boart Longyear LS 250 MiniSonic drill rig provided and operated by Cascade Drilling, Inc. of Clackamas, Oregon. Continuous, 6-inch-diameter runs were obtained from the Rotosonic borings in flexible plastic tubing. The plastic tubing was opened in the field for visual classifications, and photographs were taken of each of the runs. Selected samples were returned to our laboratory for further examination in our laboratory. The photographs of the runs from borings B-1 and B-2 are provided at the end of this Appendix. In addition, the Standard Penetration Test (SPT) was conducted at 3- to 5-foot intervals of depth during the advancement of the boring. This test consists of driving a standard split-spoon sampler into the soil a distance of 18 inches using a 140-pound hammer dropped 30 inches. The number of blows required to drive the sampler the last 12 inches is known as the standard penetration resistance, or SPT N-value. SPT N-values provides a measure of the relative density of granular soils, such as sand, and the relative consistency, or stiffness, of cohesive soils, such as silt. The split-spoon samples were carefully examined in the field, and representative portions were saved in airtight jars.

Boring B-3 was completed on July 7, 2021, to a depth of 51.5 feet using mud-rotary drilling techniques and a track-mounted Mobile Drill B-57 drill rig provided and operated by Holt Drilling, Inc. of Vancouver, Washington. Disturbed samples were obtained from the boring at 2.5-foot intervals of depth in the upper 15 feet and 5-foot intervals below this depth. Disturbed soil samples were obtained using either a standard split spoon sampler or a California-modified sampler (CMS) split-spoon sampler with an outside diameter of 3 inches. The CMS sampler was used at selected depths to collect more representative sample of the soil than is possible with the smaller 2-inch Standard Penetration Test sampler. An approximation of standard penetration test (SPT) N-values from N*-value can be made by multiplying N*-value by a factor of 0.7. Samples obtained from the boring

were placed in airtight jars and returned to our laboratory for further classification and testing.

Logs of the machine-drilled borings discussed above are provided on Figures 1A through 3A. Each log presents a descriptive summary of the various types of materials encountered in the boring and notes the depths at which the materials and/or characteristics of the materials change. To the right of the descriptive summary, the numbers and types of samples taken during the drilling operation are indicated. Farther to the right, N- and N*-values are shown graphically along with the natural moisture contents, Atterberg limits, and percentage of material passing the No. 200 sieve. The terms and symbols used to describe the soils encountered in the borings are defined in Table 1A and the attached legend.

A.1.3 Instrumentation

An RST Instruments Model VW2100 vibrating-wire piezometer was installed at a depth of about 28 feet (elevation 409.5 feet) in boring B-2. The piezometer is equipped with an RST Model DT2011B single-channel data logger programmed to record data at regular intervals. At the time of installation, the piezometer was saturated with water, taped to a 1-inch-outside-diameter polyvinyl chloride grout pipe in an inverted position to maintain saturation and inserted into the open borehole to the desired depth. The boring was then filled with cement-bentonite grout near the ground surface. The performance of the piezometer was verified before installation and immediately after insertion to design depth. The installation is equipped with a steel monument casing that was cement grouted into the borehole collar to protect the data logger and readout cables from vehicle traffic and the elements. The data logger is being downloaded periodically to evaluate the data.

A.2 LABORATORY TESTING

A.2.1 General

The samples obtained from the borings were examined in our laboratory, where the physical characteristics of the samples were noted, and the field classifications modified where necessary. At the time of classification, the natural moisture content of each sample was determined. Additional testing included Atterberg limits and grain size testing. A summary of the laboratory test results is provided in Table 2A. The following sections describe the testing program in more detail.

A.2.2 Natural Moisture Content

Natural moisture content determinations were made in conformance with ASTM International (ASTM) D2216. The results are summarized on Figures 1A through 3A and in Table 2A.

A.2.3 Atterberg Limits

Atterberg-limits testing was conducted on a select soil sample in conformance with ASTM D4318. The test results are summarized on the boring log, Figure 2A; the Plasticity Chart, Figure 4A, and in Table 2A.

A.2.4 Grain-Size Analysis

Washed-sieve grain-size analyses were performed on selected soil samples to evaluate the percentage of material passing the No. 200 sieve. The test is performed by taking a sample of known dry weight and washing it over a No. 200 sieve. The material retained on the sieve is oven-dried and weighed. The percentage of material passing the No. 200 sieve is then calculated. The results are summarized on Figures 1A through 3A and in Table 2A.

Dry sieve analyses were completed on selected samples in substantial conformance with ASTM D6913-04. The test is performed by taking a sample of known dry weight and washing it over a No. 200 sieve. The material retained on the sieve is oven-dried and weighed, and the percentage of material passing the No. 200 sieve is calculated. The soil retained on the No. 200 sieve is then screened through a series of sieves of various sizes using a sieve shaker. The weight of each sieve is measured prior to and after the test. The weight of the sample retained on each sieve is recorded and expressed as a percentage of the total sample weight. The test results are shown on Figures 5A through 6A.

Table 1A

GUIDELINES FOR CLASSIFICATION OF SOIL

Description of Relative Density for Granular Soil

Relative Density	Standard Penetration Resistance, (N-values) blows/ft
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	over 50

Description of Consistency for Fine-Grained (Cohesive) Soils

Consistency	Standard Penetration Resistance (N-values), blows/ft	Torvane or Undrained Shear Strength, tsf
Very Soft	0 - 2	less than 0.125
Soft	2 - 4	0.125 - 0.25
Medium Stiff	4 - 8	0.25 - 0.50
Stiff	8 - 15	0.50 - 1.0
Very Stiff	15 - 30	1.0 - 2.0
Hard	over 30	over 2.0

Grain-Size Classification	Modifier for Subclassification		
		Primary Constituent SAND or GRAVEL	Primary Constituent SILT or CLAY
	Adjective	Percentage of Other Material (By Weight)	
Boulders: >12 in.	trace:	5 - 15 (sand, gravel)	5 - 15 (sand, gravel)
Cobbles: 3-12 in.	some:	15 - 30 (sand, gravel)	15 - 30 (sand, gravel)
Gravel: ¼ - ¾ in. (fine); ¾ - 3 in. (coarse)	sandy, gravelly:	30 - 50 (sand, gravel)	30 - 50 (sand, gravel)
Sand: No. 200 - No. 40 sieve (fine); No. 40 - No. 10 sieve (medium); No. 10 - No. 4 sieve (coarse)	trace:	<5 (silt, clay)	*Relationship of clay and silt determined by plasticity index test*
	some:	5 - 12 (silt, clay)	
Silt/Clay: Pass No. 200 sieve	silty, clayey:	12 - 50 (silt, clay)	

Table 2A

SUMMARY OF LABORATORY RESULTS

Sample Information						Atterberg Limits			
Location	Sample	Depth, ft	Elevation, ft	Moisture Content, %	Dry Unit Weight, pcf	Liquid Limit, %	Plasticity Index, %	Fines Content, %	Soil Type
B-1	G-1	1.0	--	18	--	--	--	46	Silty SAND
	G-2	4.5	--	30	--	--	--	--	Clayey GRAVEL
	S-1	5.0	--	31	--	--	--	--	Clayey GRAVEL
	G-3	7.5	--	13	--	--	--	18	Clayey GRAVEL
	G-4	8.5	--	17	--	--	--	--	Clayey GRAVEL
	S-2	10.0	--	34	--	--	--	--	Clayey GRAVEL
	G-5	13.5	--	32	--	--	--	31	Clayey GRAVEL
	S-3	15.0	--	25	--	--	--	--	Clayey GRAVEL
	S-4	20.0	--	26	--	--	--	--	Clayey GRAVEL
	G-8	23.0	--	20	--	--	--	27	Clayey GRAVEL
	S-5	25.0	--	33	--	--	--	--	Clayey GRAVEL
	G-9	28.5	--	37	--	--	--	--	Clayey GRAVEL
	S-6	30.0	--	33	--	--	--	29	Gravelly SAND
B-2	G-2	6.0	--	20	--	--	--	47	Silty SAND
	S-1	7.0	--	35	--	--	--	--	Silty SAND
	G-3	9.0	--	32	--	--	--	55	Sandy CLAY
	S-2	10.0	--	38	--	43	11	54	Sandy CLAY
	G-4	14.0	--	34	--	--	--	--	Clayey GRAVEL
	S-3	15.0	--	29	--	--	--	--	Clayey GRAVEL
	G-5	19.5	--	35	--	--	--	52	Sandy CLAY
	S-4	20.0	--	32	--	--	--	21	Clayey SAND
	G-6	22.0	--	27	--	--	--	37	Clayey SAND
	G-7	24.0	--	31	--	--	--	--	Clayey GRAVEL
	S-5	25.0	--	22	--	--	--	--	Clayey GRAVEL
	G-8	27.0	--	26	--	--	--	29	Clayey GRAVEL
	S-6	30.0	--	39	--	--	--	29	Clayey GRAVEL

BORING AND TEST PIT LOG LEGEND

SOIL SYMBOLS

Symbol	Typical Description
	LANDSCAPE MATERIALS
	FILL
	GRAVEL; clean to some silt, clay, and sand
	Sandy GRAVEL; clean to some silt and clay
	Silty GRAVEL; up to some clay and sand
	Clayey GRAVEL; up to some silt and sand
	SAND; clean to some silt, clay, and gravel
	Gravelly SAND; clean to some silt and clay
	Silty SAND; up to some clay and gravel
	Clayey SAND; up to some silt and gravel
	SILT; up to some clay, sand, and gravel
	Gravelly SILT; up to some clay and sand
	Sandy SILT; up to some clay and gravel
	Clayey SILT; up to some sand and gravel
	CLAY; up to some silt, sand, and gravel
	Gravelly CLAY; up to some silt and sand
	Sandy CLAY; up to some silt and gravel
	Silty CLAY; up to some sand and gravel
	PEAT

BEDROCK SYMBOLS

Symbol	Typical Description
	BASALT
	MUDSTONE
	SILTSTONE
	SANDSTONE

SURFACE MATERIAL SYMBOLS

Symbol	Typical Description
	Asphalt concrete PAVEMENT
	Portland cement concrete PAVEMENT
	Crushed rock BASE COURSE

SAMPLER SYMBOLS

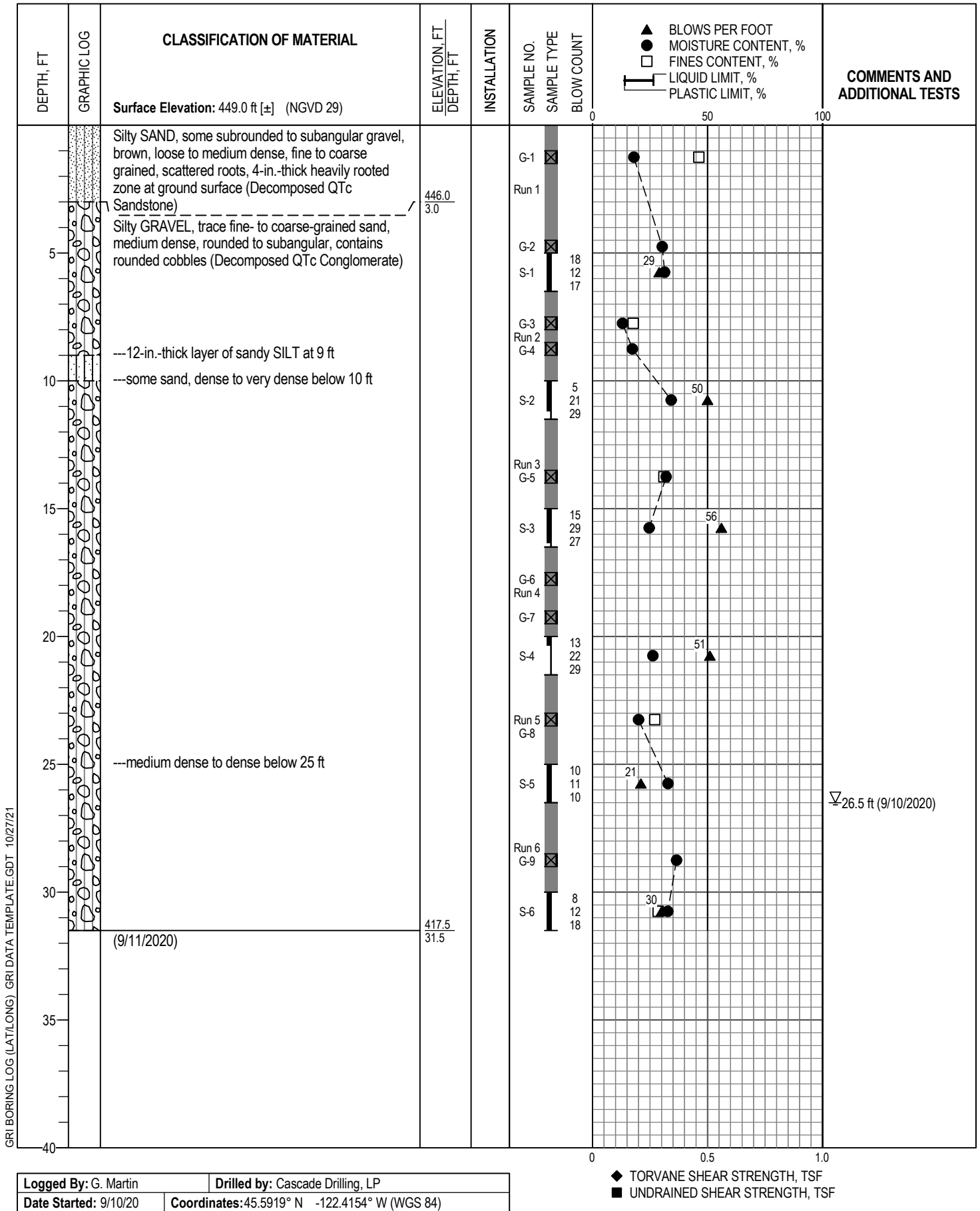
Symbol	Sampler Description
	2.0 in. O.D. split-spoon sampler and Standard Penetration Test with recovery (ASTM D1586)
	Shelby tube sampler with recovery (ASTM D1587)
	3.0 in. O.D. split-spoon sampler with recovery (ASTM D3550)
	Grab Sample
	Rock core sample interval
	Sonic core sample interval
	Push probe sample interval

INSTALLATION SYMBOLS

Symbol	Symbol Description
	Flush-mount monument set in concrete
	Concrete, well casing shown where applicable
	Bentonite seal, well casing shown if applicable
	Filter pack, machine-slotted well casing shown where applicable
	Grout, vibrating-wire transducer cable shown where applicable
	Vibrating-wire pressure transducer
	1-in.-diameter solid PVC
	1-in.-diameter hand-slotted PVC
	Grout, inclinometer casing shown where applicable

FIELD MEASUREMENTS

Symbol	Typical Description
	Groundwater level during drilling and date measured
	Groundwater level after drilling and date measured
	Rock/sonic core or push probe recovery (%)
	Rock quality designation (RQD, %)



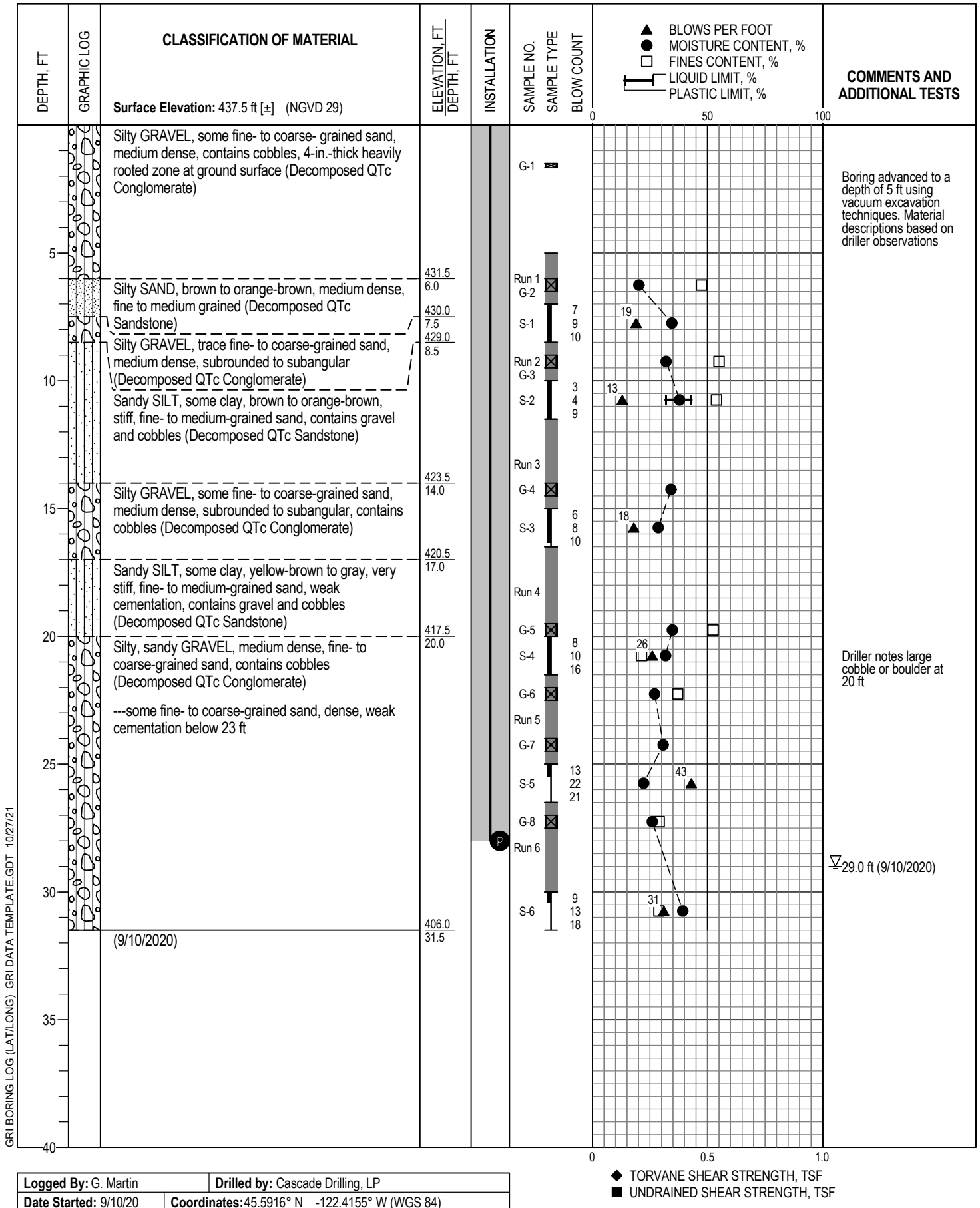
GRI BORING LOG (LAT/LONG) GRI DATA TEMPLATE.GDT 10/27/21

Logged By: G. Martin	**Drilled by:** Cascade Drilling, LP
Date Started: 9/10/20	**Coordinates:** 45.5919° N -122.4154° W (WGS 84)
Drilling Method: Roto Sonic **Equipment:** Boart Longyear LS 250 MiniSonic **Hole Diameter:** 6 in.	**Hammer Type:** Auto Hammer **Weight:** 140 lb **Drop:** 30 in. **Energy Ratio:** Not Available
Note: See Legend for Explanation of Symbols	

GRI

BORING B-1

OCT. 2021 JOB NO. W1277 FI

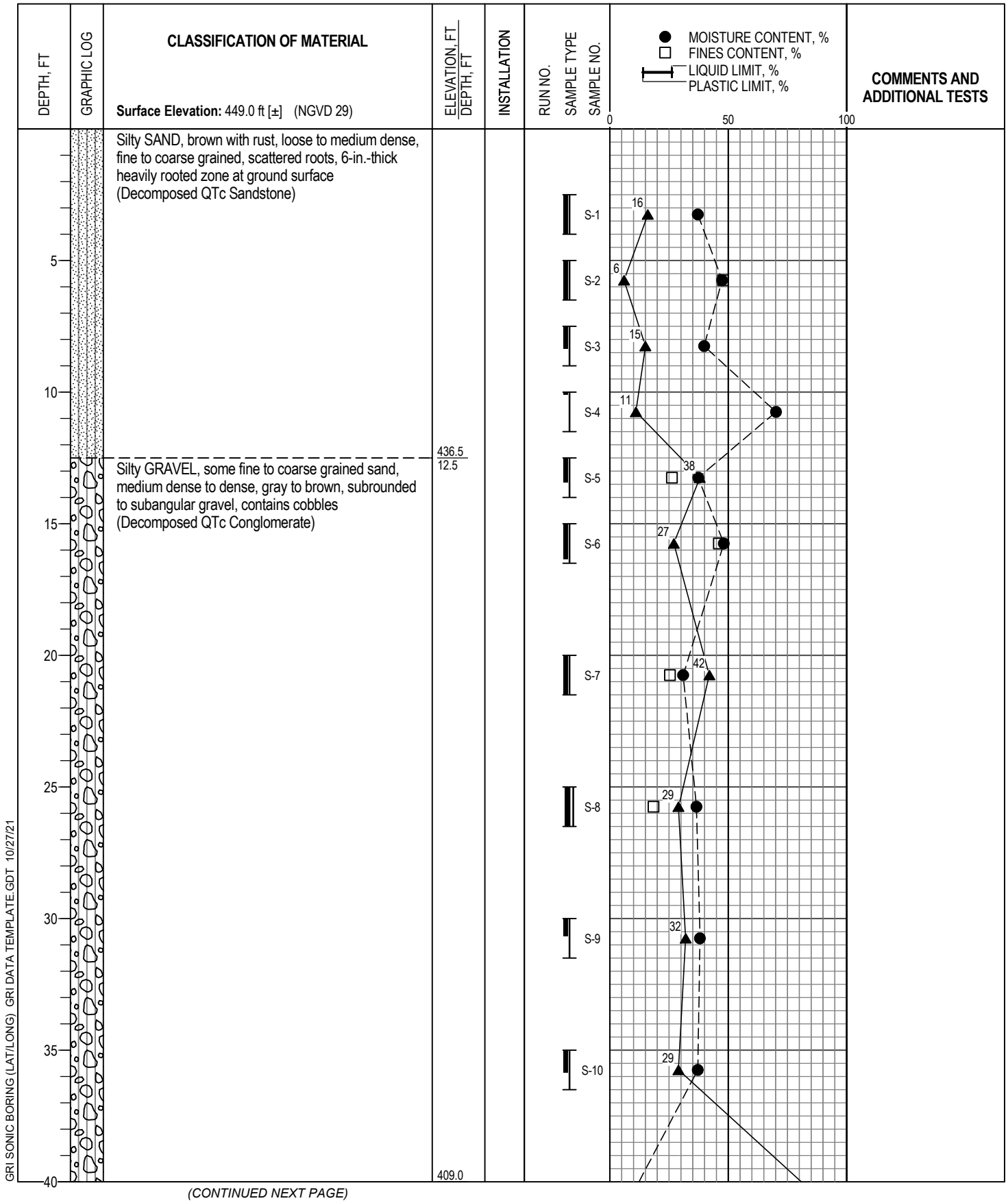


GRI BORING LOG (LAT/LONG) GRI DATA TEMPLATE.GDT 10/27/21

Logged By: G. Martin	**Drilled by:** Cascade Drilling, LP
Date Started: 9/10/20	**Coordinates:** 45.5916° N -122.4155° W (WGS 84)
Drilling Method: Roto Sonic **Equipment:** Boart Longyear LS 250 MiniSonic **Hole Diameter:** 6 in.	**Hammer Type:** Auto Hammer **Weight:** 140 lb **Drop:** 30 in. **Energy Ratio:** Not Available
Note: See Legend for Explanation of Symbols	

BORING B-2

OCT. 2021 JOB NO. W1277 FI



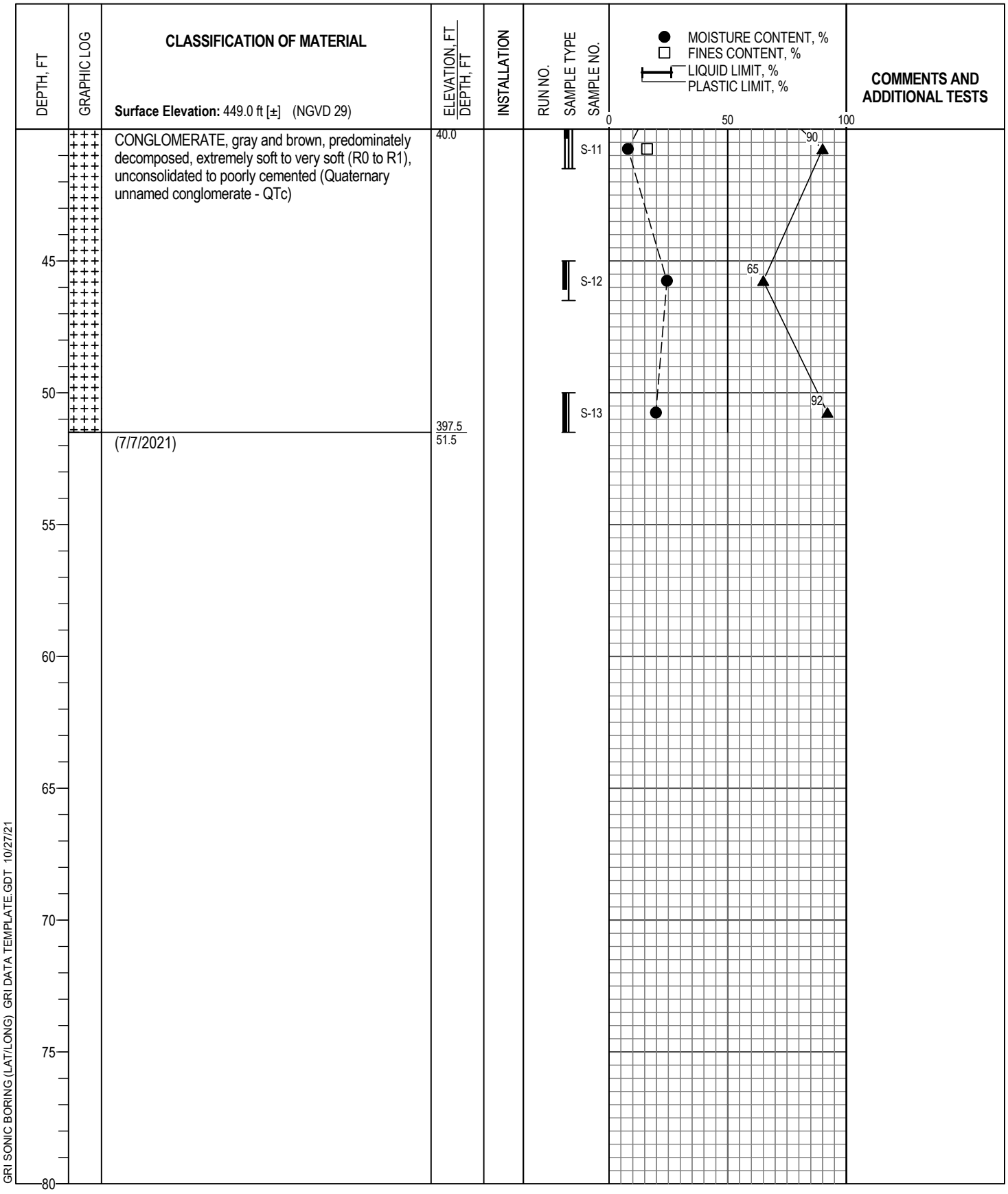
(CONTINUED NEXT PAGE)

Logged By: D. Schade	**Drilled by:** Holt Services, Inc.
Date Started: 7/7/21	**Coordinates:** 45.5917° N -122.4157° W (WGS 84)
Drilling Method: Mud Rotary **Equipment:** Mobile B-57 Track-Mounted Drill Rig **Hole Diameter:** 4.5 in.	**Hammer Type:** Auto Hammer **Weight:** 140 lb **Drop:** 30 in. **Energy Ratio:** Not Available
Note: See Legend for Explanation of Symbols	

GRI

BORING B-3

OCT. 2021 JOB NO. W1277 FI

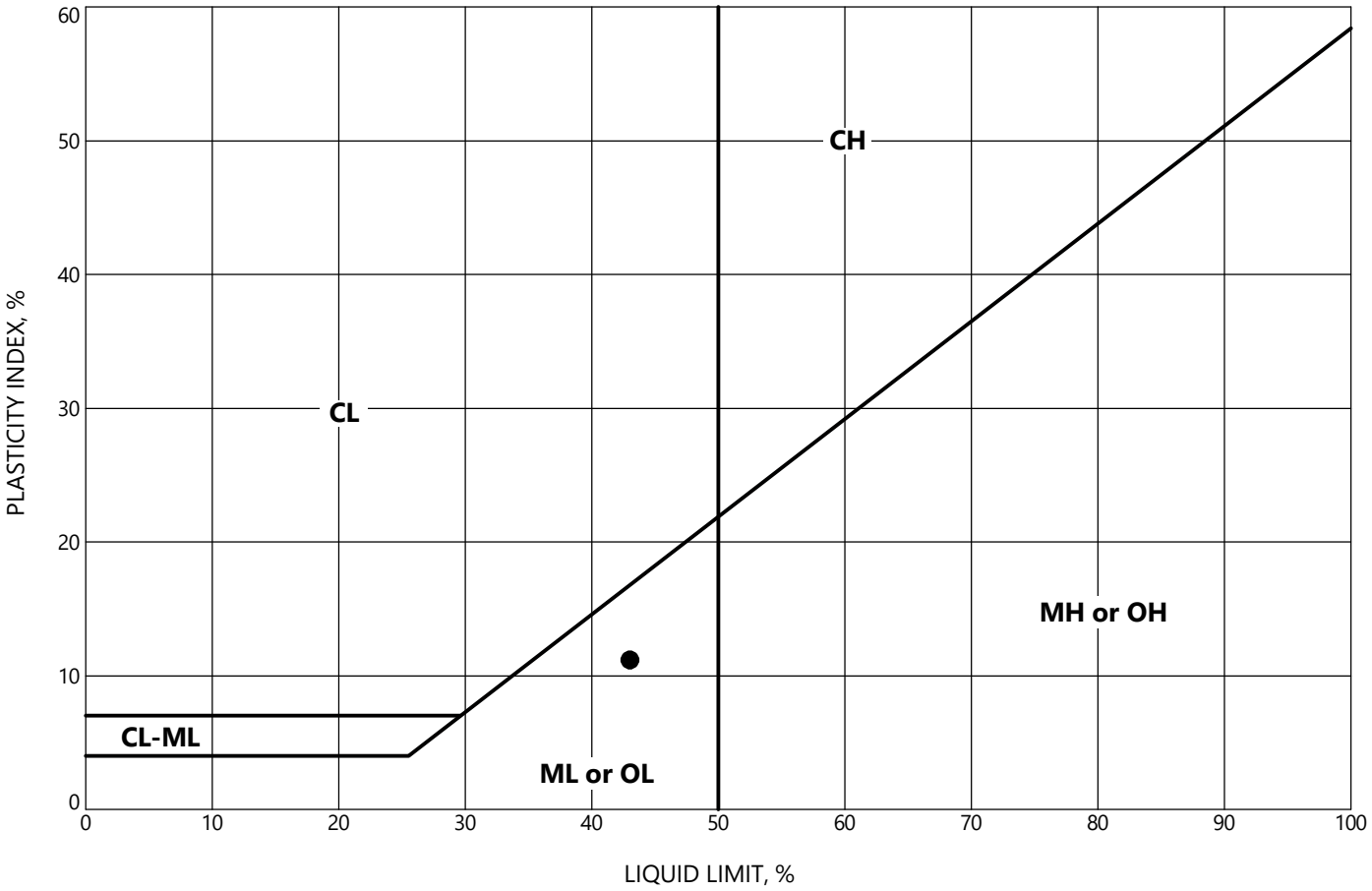


GRI BORING B-3

OCT. 2021 JOB NO. W1277 FI

GROUP SYMBOL	UNIFIED SOIL CLASSIFICATION FINE-GRAINED SOIL GROUPS
OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
ML	INORGANIC CLAYEY SILTS TO VERY FINE SANDS OF SLIGHT PLASTICITY
CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY

GROUP SYMBOL	UNIFIED SOIL CLASSIFICATION FINE-GRAINED SOIL GROUPS
OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
MH	INORGANIC SILTS AND CLAYEY SILT
CH	INORGANIC CLAYS OF HIGH PLASTICITY



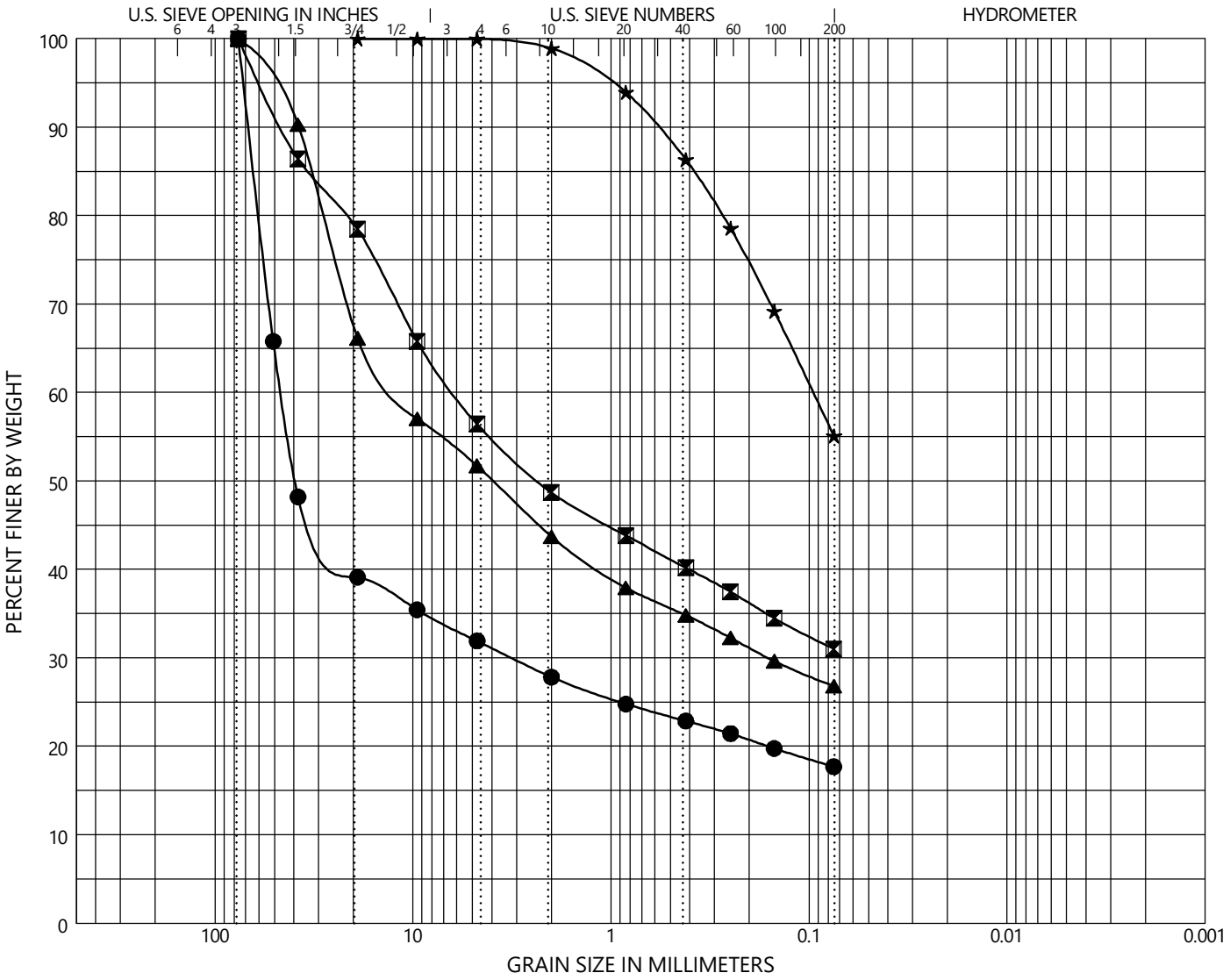
	Location	Sample	Depth, ft	Classification	LL	PL	PI	MC, %
●	B-2	S-2	10.0	Sandy SILT, some clay, brown to orange-brown, fine- to medium-grained sand	43	32	11	38

ATTERBERG-PLASTICITY 1 PER PAGE GRI DATA TEMPLATE.GDT 10/7/21

GRI

PLASTICITY CHART

OCT. 2021 JOB NO. W1277 FI



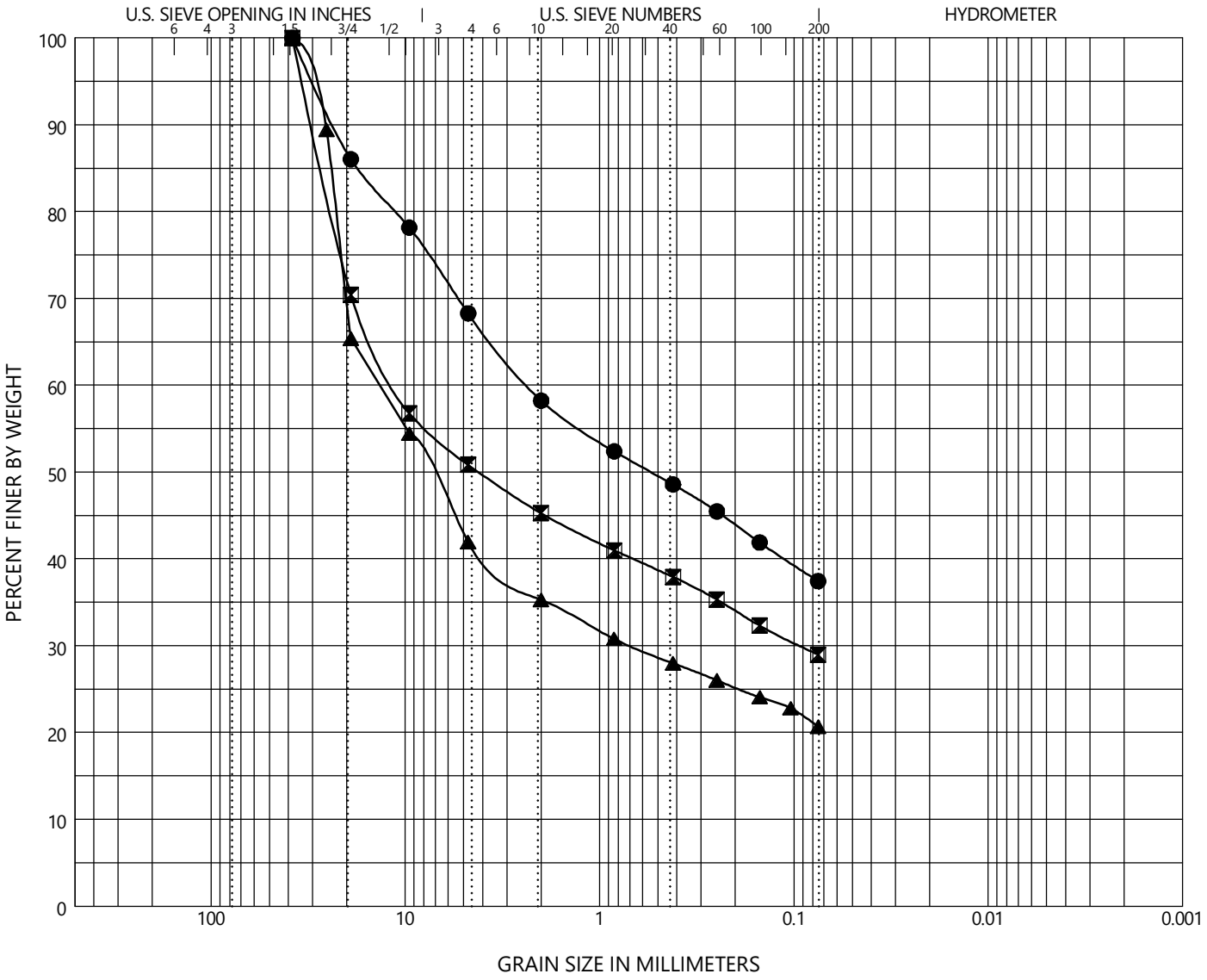
COBBLES	GRAVEL		SAND			SILT OR CLAY
	Coarse	Fine	Coarse	Medium	Fine	

	Location	Sample	Depth, ft	Classification	Gravel, %	Sand, %	Fines, %
●	B-1	G-3	7.5	Silty GRAVEL, trace fine- to coarse-grained sand, trace to some silt	66.8	14.2	17.7
⊠	B-1	G-5	13.5	Silty GRAVEL, some fine- to coarse-grained sand	43.3	25.4	31.0
▲	B-1	G-8	23.0	Silty GRAVEL, some fine- to coarse-grained sand	48.1	24.9	26.8
★	B-2	G-3	9.0	Sandy SILT, some clay, fine- to medium-grained sand	0.0	44.9	55.1

GRI

GRAIN SIZE DISTRIBUTION

OCT. 2021 JOB NO. W1277 FI



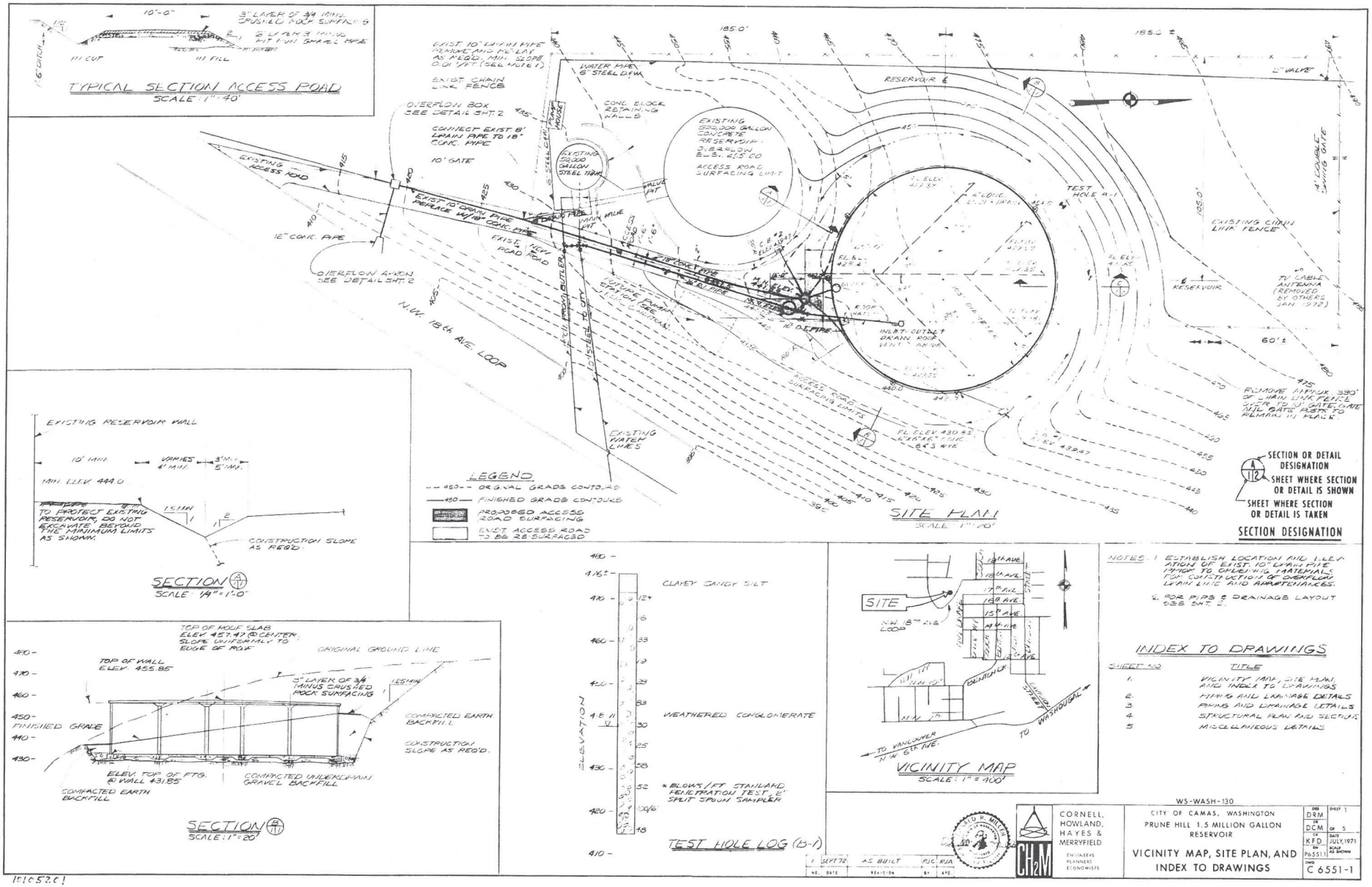
COBBLES	GRAVEL		SAND			SILT OR CLAY
	Coarse	Fine	Coarse	Medium	Fine	

	Location	Sample	Depth, ft	Classification	Gravel, %	Sand, %	Fines, %
●	B-2	G-6	22.0	Silty, sandy GRAVEL, fine- to coarse-grained sand	31.7	30.9	37.4
⊠	B-2	G-8	27.0	Silty GRAVEL, some fine- to coarse-grained sand	49.2	21.9	29.0
▲	B-3	S-8	25.0	Silty GRAVEL, some fine- to coarse-grained sand	58.1	21.3	20.7

GRI

GRAIN SIZE DISTRIBUTION

OCT. 2021 JOB NO. W1277 FI



SHEET NO.	TITLE
1.	VICINITY MAP, SITE PLAN, AND INDEX TO DRAWINGS
2.	PIPING AND DRAINAGE DETAILS
3	PIPING AND DRAINAGE DETAILS
4	STRUCTURAL PLAN AND SECTIONS
5	MISCELLANEOUS DETAILS

APPENDIX B

Rotosonic Core Photos

GRI

MURRAYSMITH
LOWER PRUNE HILL BOOSTER PUMP STATION IMPROVEMENTS

BORING B-1 CORE PHOTOS

GRI

MURRAYSMITH
LOWER PRUNE HILL BOOSTER PUMP STATION IMPROVEMENTS

BORING B-1 CORE PHOTOS

GRI

MURRAYSMITH
LOWER PRUNE HILL BOOSTER PUMP STATION IMPROVEMENTS

BORING B-1 CORE PHOTOS

GRI

MURRAYSMITH
LOWER PRUNE HILL BOOSTER PUMP STATION IMPROVEMENTS

BORING B-2 CORE PHOTOS

GRI

MURRAYSMITH
LOWER PRUNE HILL BOOSTER PUMP STATION IMPROVEMENTS

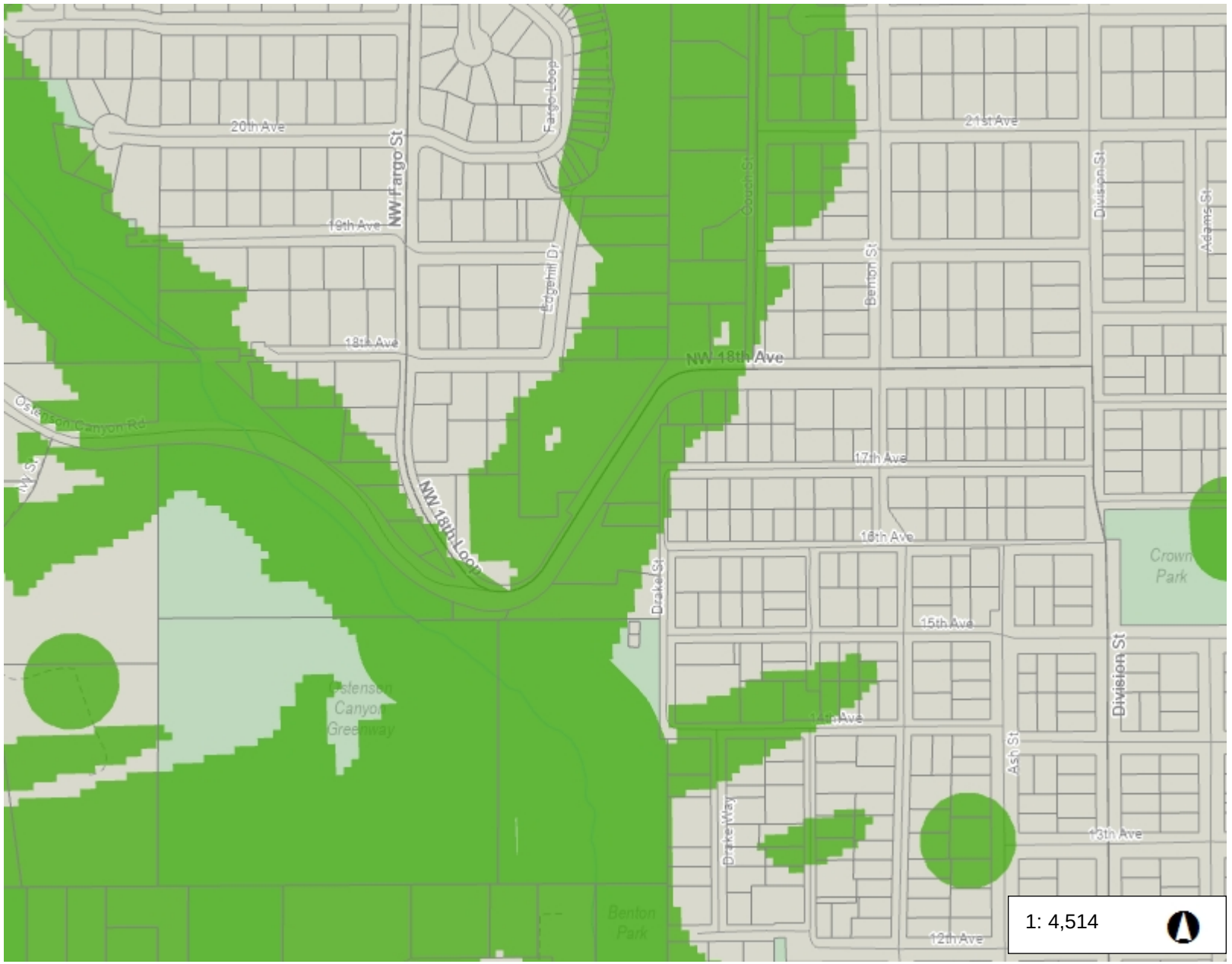
BORING B-2 CORE PHOTOS

GRI

MURRAYSMITH
LOWER PRUNE HILL BOOSTER PUMP STATION IMPROVEMENTS

BORING B-2 CORE PHOTOS

SPRV22-06 Lower Prune Hill Reservoir & Booster Station



Legend

- Taxlots
- Environmental Constraints Are

Notes:

1: 4,514

752.3 0 376.17 752.3 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov

Memorandum

Date:	August 17, 2020
Subject:	Site Assessment and Permit Evaluation Lower Prune Hill Booster Pump Station (31000047.000)
From:	Don Hardy, Senior Planner and Dustin Day, Senior Biologist
To:	Andy Miles, PE, Murraysmith
Route To:	Brent Gruber, PE, Murraysmith

INTRODUCTION

The City of Camas (City) Public Works Department proposes to replace the Lower Prune Hill Booster Pump Station (LPH BPS) located at the intersection of Northwest 18th Loop and Northwest Ostensen Canyon Road within the Camas city limits. The proposed replacement will consist of three 300-horsepower pumps, a concrete masonry block security building, and a backup generator. The existing LPH BPS and backup generator will remain in operation during construction of the new booster pump station, and disconnected, removed, and backfilled after the new booster pump station has been brought online.

WSP conducted a site assessment to determine the general extent of any wetlands, streams, and/or fish and wildlife habitat conservation areas that could be impacted by the LPH BPS and conducted a permit evaluation to confirm permitting requirements and submittal requirements for the Camas land use and environmental permitting processes. The results of the site assessment and permit evaluation are discussed in detail in this technical memorandum.

SITE ALTERNATIVES

Site alternatives for the Camas Lower Prune Hill Pump Station project initially include four siting alternatives: Site 1 (PS1), Site 2 (PS2), Site 3 (PS3), and Site 4 (PS4), as shown in the figure below. However, since the inception of the project PS3 and PS4 have been eliminated from consideration and only PS1 and PS2 are discussed in this memorandum.

WSP USA
Suite 300
210 East 13th Street
Vancouver, WA 98660-3231
+1 360-823-6100
WSP.com

Figure 1. Initial siting options

PS1 is located on City-owned parcel 85173001 and PS2 is located on City-owned parcel 85145001, which contains the existing Lower Prune Hill Pump Station at 600 NW 18th Loop in Camas, Washington. The PS1 site has access from the existing access off NW 18th Loop and possibly from the north off NW 18th Avenue. The PS2 site would have access from NW 18th Avenue. The parcel, and subsequently both alternatives, is zoned Single-Family Residential R1-7.5.

LAND USE AND ENVIRONMENTAL PERMITS

Based on a review of city code and project understanding, the applicable City land use permits/review for the PS1 site include:

- Conditional Use Permit
- Major Variance
- Site Plan Review
- Minor Design Review
- State Environmental Policy Act (SEPA) Checklist
- Tree Permit
- Critical Areas Permit (for Geologic Hazard Areas)
- Lot or Boundary Line Adjustment Consolidation

City-required permits for PS2 include:

- Conditional Use Permit
- Exempt from Major Variance as it appears setbacks can be met
- Site Plan Review
- Minor Design Review
- SEPA Checklist
- Tree Permit
- Critical Areas Permit (for Geologic Hazard Areas)
- Lot or Boundary Line Adjustment Consolidation

Each permit and their requirements are discussed in detail in the following sections. Permits for the other alternatives that are not discussed further in this memorandum include:

- Archaeological Review
- Fire Department Review (Murraysmith should check on planned building materials and property line separation, especially for the PS1 alternative with the neighbor's shed close to the property line.)
- Building Permit and Plan Review based on the valuation of the project
- Engineering Review (It will be critical to determine if the existing PS1 access drive can be expanded to a 12-foot paved width per request by the Public Works Department in the pre-application conference summary report, and if there is sufficient room based on the assumed easement to the Lower Prune Hill Pump Station.)

Conditional Use Permit and Major Variance

The conditional use permit, variance, and site plan review processes would be consolidated into one review process with one hearing before the hearings examiner. (The site plan review and design review processes would also be included in that hearing.)

The conditional use permit criteria focus on compatibility of the proposed development. Key to this compatibility will be landscaping and screening from adjacent land uses. The City code does not specify landscaping and screening standards for public pump station development adjacent to residential areas, so it will be important to develop a landscaping and screening plan that properly screens the pump station and ancillary improvements.

The variance process requires addressing several approval criteria that fundamentally require a detailed explanation justifying the need and explaining why other alternatives that wouldn't require a variance are not practicable. As a conditional use permit is also required, the previously discussed compatibility issues with adjacent land uses will be equally important to the need for a variance.

The city setback and dimensional requirements are:

- Min. front yard 30 feet
- Min. side yard 15 feet
- Min. rear yard 35 feet

- Max. building lot coverage 40 percent
- Max. building height 35 feet

Per conversation with Lauren Hollenbeck, City planner, there are options for determining the front yard setback based on access to each alternative; front yard setbacks are typically determined from where the access drive is oriented and the location of the front of the building. It appears that the PS2 can meet City setback requirements; however, the PS1 pump station location will require a major variance for either the front or rear yard setback.

Site Plan Review

A site plan review application will be required for the proposed pump station development improvements, per Camas Municipal Code (CMC) 18.18.

Detailed development plans will be needed as part of this permitting process. The site plan review application process includes a preliminary and final site plan review application process which are identified below.

Minor Design Review

The minor design review process requires submittal of information explaining building materials and colors, and building elevations, and a lighting plan with specifications. The City will require photos showing the building and roof materials and colors. The minor design review process will not require review by the City Design Review Committee.

State Environmental Policy Act

As the site contains critical areas, (geologic hazard areas as detailed below) it is not categorically exempt from the requirements of the State Environmental Policy Act (SEPA) per CMC Section 16.07 and a SEPA checklist is required.

Tree permit

Tree permits are based on meeting tree density requirements for the overall site. If it can be shown through a tree survey completed by a licensed arborist that the site has 20 tree units per acre with planned tree removal, then a tree permit is not needed, just a tree survey. A portion of the site is mapped on the Clark County GIS as having geohazard areas. Per conversation with Lauren Hollenbeck, tree units cannot be counted within areas on site that are determined by a geotechnical engineer to be geologic hazards areas. Tree density for the remaining portion of the site is calculated for both hazardous trees and healthy trees. If the 20 tree units per acre tree density will not be achieved, then a landscape, tree, and vegetation plan will be required per CMC 18.13.040 and CMC 18.13.050 showing that 20 tree units per acre will be achieved. Tree removal will need to be supported explaining the need for tree removal. Particular attention will be focused on justifying removal of larger trees.

Critical Areas Permit

CMC 16.51.010 designates and classifies ecologically sensitive and hazardous areas and protects these areas and their functions and values, while allowing for some reasonable use of the property. Critical areas regulated by this chapter include wetlands, critical aquifer recharge areas (CARAs), frequently flooded areas, geologically hazardous areas, and fish and wildlife habitat

conservation areas. Additionally, all areas within the city meeting the definition of one or more critical area, platted natural open space areas, and conservation covenant areas – regardless of any formal identification – are designated critical areas and are subject to the provisions of the chapter.

Site Visit

On June 18, 2020, a WSP senior scientists visited the subject site to review existing environmental conditions, confirm the presence or absence of critical areas, and evaluate the site for potential constraints regarding development of the proposed pump station. The scientists walked the study area and noted the existing vegetation, topography, hydrology, and habitat features, as well as other conditions that may constitute a critical area. Prior to completing the site visit, the scientists reviewed the following resources to determine if any critical or sensitive areas were mapped within the study area:

- National Wetlands Inventory (NWI) database produced by the U.S. Fish and Wildlife Service (USFWS)
- The Washington Department of Fish and Wildlife Priority Habitats and Species PHS on the Web database
- Clark County GIS MapsOnline database
- USFWS Information for Planning and Consultation (IPaC)
- Washington Department of Natural Resources (DNR) Natural Hazards mapper

Observed Conditions

The approximately 1.42-acre study area is located within the City-owned Parcel Nos. 85145001 and 85173001. The site is located in residential neighborhood on Prune Hill and is fenced with two water reservoirs and an existing pump station. Vegetation within the fenced area mainly consists of mowed grasses with English ivy (*Hedera helix*) located on the hillslopes. Vegetation outside of the fence along the eastern portion of the site includes a canopy of Douglas fir (*Pseudotsuga menziesii*) and bigleaf maple (*Acer macrophyllum*), with a sub-canopy dominated by hazelnut (*Corylus cornuta*) and Indian plum (*Oemleria cerasiformis*). The herbaceous layer is composed mostly of English ivy. The topography of the area slopes down to the southeast, with the steepest slopes in the northeast corner and along the eastern boundaries of the study area. The study area does not contain any defined hydrologic channels or waterways.

Critical Areas Ordinance

Wetlands (CMC Chapter 16.53)

Clark County Maps Online and the USFWS NWI databases do not indicate the presence of any wetlands within the boundaries of the study area, and the site investigation confirmed that no wetlands are present at the site. Therefore, it is anticipated that development on the site will not trigger the need for compliance with the wetland provisions of the City's critical areas ordinance.

Critical Area Aquifer Recharge Areas (CMC Chapter 16.55)

According to the City's adopted CARA map, the subject site is not located within a CARA (confirmed by the City), and therefore, is exempt from CARA standards.

Frequently Flooded Areas (CMC Chapter 16.57)
Under CMC 16.57, frequently flooded areas include the areas of special flood hazard identified by the Federal Insurance Administration. Special flood hazard areas are those areas subject to inundation by the 1 percent annual chance flood (100-year flood). Review of FEMA Flood Insurance Rate Map panels 53011C0533D indicate that the site is not within an area of special flood hazard; therefore, the frequently flooded provisions of the CMC do not apply.

Geologically Hazardous Areas (CMC Chapter 16.59)
Geologically hazardous areas, as defined by CMC 16.59, are those areas susceptible to erosion hazard, landslide hazard, seismic hazard, mine hazard, and other geologic events. These sites, and their presence within the study area, are addressed individually below.

- Areas susceptible to erosion hazards include areas with slopes equal to or greater than 40 percent slopes; Clark County Maps Online indicates that the greatest slopes within the study area range between 40 and 80 percent, and WSP scientists confirmed that the topography of the site is very steep in the northeast corner and along the eastern boundary. Therefore, the site contains erosion hazards that will need to be addressed with a geotechnical report and critical areas report.
- The CMC indicates that landslide hazard areas are those potentially subject to landslides based on a combination of geologic, topographic, and hydrologic factors. Clark County Maps Online indicates the presence potentially unstable slopes within the study area that will need to be addressed in the critical areas report.
- Seismic hazard areas are those areas subject to severe risk of damage as a result of earthquake-induced soil liquefaction, ground shaking amplification, slope failure, settlement, or surface faulting. Relative seismic hazards are mapped on the National Earthquake Hazards Reduction Program site class map of Clark County. According to Clark County Maps Online, the entire site is mapped as very low to low susceptibility of liquefaction and does not qualify as a seismic hazard.

For the geologic hazards area the project will need a geotechnical professional to determine the slope and slope stability. CMC 16.59.050 identifies that “Construction of new buildings with less than two thousand five hundred square feet of floor area or roof area, whichever is greater, and which are not residential structures or used as places of employment or public assembly are allowed in geologically hazard areas and do not require submission of a critical areas report.”

CMC 16.59.090(A)(5) states that “Utility lines and pipes shall be permitted in erosion and landslide hazard areas only when the applicant demonstrates that no other practical alternative is likely. The line or pipe shall be appropriately located and designed so that it will continue to function in the event of an underlying failure.” And CMC16.59.090(A)(7) states that “Roads and utilities may be permitted within a geologic hazard area or management zone if the city determines that no other reasonable alternative exists which could avoid or minimize impacts to a greater extent.”

According to these to provisions, it appears that a critical areas report will be required to address the utility lines and pipes, but the pump station structure may not require under this section of the critical areas ordinance.

Fish and Wildlife Habitat Conservation Areas (CMC Chapter 16.61)
Fish and wildlife habitat conservation areas include:

- Areas with which state or federally designated endangered, threatened, and sensitive species have a primary association
- State priority habitats and areas associated with State priority species
- Habitat of local importance
- Naturally occurring ponds under 20 acres
- Waters of the state
- Bodies of water planted with game fish by a governmental or tribal entity
- State natural area preserves and natural resources conservation areas

The USFWS IPaC database indicates that six ESA-listed species could potentially exist at the study site: grey wolf (*Canis lupus*), streaked horned lark (*Eremophila alpestris strigata*), yellow-billed cuckoo (*Coccyzus americanus*), bull trout (*Salvelinus confluentus*), golden paint brush (*Castilleja levisecta*), and water howellia (*Howellia aquatillis*); however, none of these species, or suitable habitat for any of these species was identified within the boundaries of the study area during the site visit. No other state or federal priority habitats or species are mapped within the boundaries or vicinity of the site, and scientists confirmed that no other fish and wildlife habitat conservation areas, as they are designated in the code, exist within or near the proposed well site. Therefore, the project will not require a critical areas permit or a demonstration of compliance with the Fish and Wildlife Habitat Conservation Area provisions.

LOT OR BOUNDARY LINE ADJUSTMENT CONSOLIDATION

The PS1 site has a separate tax parcel number from the PS2 site and the City has requested that a tax lot or legal lot consolidation be completed, depending on the legal lot status of the tax lots. WSP understands that PBS surveying is evaluating the tax lot versus legal lot issue. The tax lot consolidation process can be completed through the Clark County Assessor's office, but the boundary line adjustment process requires the submittal of an administrative boundary line adjustment application to the City followed by recording at the Clark County Assessor's office.

PERMITTING PROCESS

The permitting process timelines include a 28 day fully complete process, followed by a 120-day approval process including a hearings examiner hearing for the conditional use permit, variance, site plan review, and design review.

The final site plan review process will follow the preliminary site plan review process with the Hearings Examiner and this process includes a 28-day fully completed process. If revisions to the application are necessary, then another 14 days will be added to this review timeline following resubmittal of application materials. The overall final site plan approval process, which is typically submitted with the final engineering process, requires approximately 60 days of City review time, assuming one round of review/redlines from the City. This does not include the time for the consultant team to revise the engineering plans. Final design review permitting issues will also be addressed concurrently with the final site plan review process.

SUMMARY AND RECOMMENDATIONS

From a land use compatibility and city code compliance standpoint, the PS1 site appears to be the best alternative because of the sunken grade that screens it from adjacent homes and the home to the south is partially buffered by a shed. The existing piping in place with the water tank to the north also makes the PS1 option more desirable. The limited distance to the southern property line for the PS1 will require some creative design with fencing and screening; using a decorative wood fence, similar to the neighbor to the south with arborvitae (or other columnar shrubbery) behind the fence might be best.

The PS2 option would place the pump station in a highly visible location from the home on the north side of NW 18th Avenue and from a large window of the home directly to the west. The pump station would also be in a location with a territorial view and impacting that view may be difficult to support if the PS1 option is possible. Additionally, the PS2 drive access looks quite challenging, given the significant grade, and it would run parallel to several homes. This access may be difficult to screen from the adjacent residential properties.

If PS1 is pursued as the preferred alternative, we would recommend that the existing access be maintained. We are not sure if there is an option for a road modification for the driveway access width. It will be important to discuss the expansion of the existing access drive to a 12-foot paved surface (as noted in the City's pre-application conference summary report) with City Public Work's staff.

DDD:llt

murraysmith

CITY OF CAMAS

Lower Prune Hill Stormwater Site Plan

March 2022

Lower Prune Hill Stormwater Site Plan

City of Camas

March 2022

DRAFT

Murraysmith

1102 Broadway Plaza
Suite 401
Tacoma, WA 98402

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Table of Contents

Storm Drainage Report

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Storm Drainage Report

Section A - Project Overview

Murraysmith, Inc. (Murraysmith) has prepared a summary of the storm drainage design for the City of Camas (City) Lower Prune Hill Booster Pump Station and 0.5 million gallons (MG) Reservoir Improvements project. This project consists of replacing the 0.5 MG concrete reservoir with a new 0.5 MG welded steel reservoir, a new pump station and associated onsite water mains, a new asphalt access road, stormwater improvements, and landscaping. A 260-foot long retaining wall with a maximum height of approximately 17 feet will encompass the proposed reservoir and pump station. According to City of Camas Municipal Code (CMC) 14.02.030, the project is subject to the requirements of the most current edition of the City of Camas Design Standards Manual and the latest edition of the Department of Ecology Stormwater Management Manual for Western Washington (DOE SMMWW). This report provides a summary of the stormwater design and will be used by the City for permitting purposes.

The reservoir and pump station are located on approximately 1.93 acres of City-owned property near the intersection of NW 18th Loop and NW Ostensen Canyon Road. The site is bordered by NW 18th Loop to the south and east and by residential lots to the north and west. A portion of the northern property line also has frontage along NW 18th Avenue, near the corner of NW 18th Avenue and NW Edgehill Street. The site contains a pump station and two concrete reservoirs with storage capacities of 0.5 MG and 1.5 MG. There is a permanent standby generator south of the 1.5 MG reservoir and a wireless antennae facility in the southern portion of the site. The parcel boundary, access road, and existing facilities for the site are displayed in Figure 1.

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Figure 1 | Site Overview

The site topography generally slopes from higher elevations at the northwest corner to lower elevations at the southeast corner of the site. The northwest corner of the site contains a gently sloped area with elevations between 480 and 490 feet, prior to dropping 25 feet to the area around the 1.5 MG reservoir at an approximate slope of 2H:1V. The elevation across the developed portion of the site containing the existing reservoirs and pump station varies between approximately 430 feet and 455 feet. The undeveloped portions of the site are constrained by steep slopes down to NW 18th Loop, with slopes between ¾H:1V and 1½H:1V. This topography and the existing storm drain shows the drainage from adjacent properties is collected in a catch basin north of the site limits, then is conveyed through the site with an existing storm drain. The site ground cover generally consists of mowed grass and shrubs.

The site is considered a single threshold discharge area (TDA); all the flow eventually collects in an existing 12-inch storm drain running northeast along NW 18th Loop in the City of Camas' storm drain system. The western portions of the site generally drain to an existing catch basin located between the two existing reservoirs. This connects to the existing reservoir drain lines that run south through the site before connecting to the storm drain system. The remaining area sheet flows east across the site to NW 18th Loop, where it enters the storm drain system via two adjacent catch basins north of the site.

A critical areas survey indicated that geological hazards exist on the project site where slopes exceed 25 percent and there are mapped areas of potential instability. **Exhibit 1** located in **Appendix A** shows critical areas and existing drainage facilities. A subsequent geotechnical analysis showed low risk of deep-seated slope failure and observed no indications of surficial sloughing.

The stormwater design will avoid any infiltration to promote slope stability. There were no other critical areas indicated in the project site or vicinity.

The stormwater design is restricted by the steep slopes and limited working area. The stormwater runoff will generally follow the existing flow patterns before entering the City of Camas storm drain system. Maintaining the existing flow patterns and discharge points avoid impacts to adjacent areas.

Section B - Minimum Requirements

The amount of existing and new surfaces for the project is quantified in **Table 1** and shown in **Exhibit 2** located in **Appendix A.**

Table 1 | Existing and Proposed Areas

Surface	Area (Acre)	Area (SF)
Existing Impervious Surface	0.0163	708
Existing Impervious Surface Converted to Lawn/Landscaping	0.0163	708
New Impervious Surface	0.1409	6,136
Replaced Impervious Surface[1]	0.0513	3,601
Exempt Replaced Impervious Surface[1]	0.0469	2,045
Native Vegetation Converted to Lawn/Landscaping	0.0000	0
Native Vegetation Converted to Pasture	0.0000	0
Total Amount of Land Disturbed	0.4105	17,880

Note:
1. Excludes replaced impervious area related to underground utility improvements per I-3.2 of the 2019 SWMMWW.

Since the project results in greater than 7,000 square feet (SF) of total land disturbing area and adds greater than 5,000 SF of new hard surfaces, Minimum Requirements (MR) 1 through 9 apply to all hard surfaces.

The project will replace 2,045 SF of the existing hard surface with asphalt pavement due to installation of the proposed water mains, electrical conduit, and storm drains. As the proposed asphalt pavement has similar runoff characteristics to the existing surface and the replacement is a result of underground utility installation, this hard surface area is considered exempt from all minimum requirements except MR2, as described in Section I-3.2 Exemptions of the Stormwater Management Manual for Western Washington (SWMMWW) published in July 2019.

MR 1 – Preparation of Stormwater Site Plans

The required elements of the Stormwater Site Plans are provided through the Project Report, Construction Plans, and this storm drainage report.

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MR 2 – Construction Storm Water Pollution Prevention (CSWPP)

A Construction SWPP plan (CSWPPP) has been prepared for this project and all 13 elements have been addressed in accordance with 2019 SWMMWW, which is included in a separate document. The CSWPPP is included in **Appendix B**.

MR 3 – Source Control of Pollution

Source control best management practices (BMPs) are identified through the CSWPPP for construction activities. Source control BMPs will also be used for the protection of on-site material and operational practices.

MR 4 – Preservation of Natural Drainage Systems and Outfalls

Flow is either collected onsite or sheet flows off the site to the locations where runoff currently flows. All flow will ultimately enter the City's existing storm drain on NW 18th Loop in the same location as the existing flow.

MR 5 – On-site Stormwater Management

According to Figure I-3.2: Flow Chart for Determining Requirements for Redevelopment in the 2019 SWMMWW, the proposed site improvements will trigger MRs #1-9. MR 5 requires the implementation of stormwater management BMPs to all new and replaced impervious surfaces to the maximum extent practicable. If the project is exempt from MR 7, BMPs do not need to meet LID performance standard and can utilize LID BMPs from List #3. Since the project is exempt from MR 7 (as shown in **MR 7** of this Section), the feasibility of LID BMPs from List #3 have been considered.

Lawn and Landscape Areas

Post-Construction Soil Quality and Depth (BMP T5.13)

Response: Post-construction soil quality and depth was deemed **feasible**. Per the design guidelines for BMP T5.13, the project will retain soil to the maximum extent practicable. All other disturbed lawn and landscaped areas will be amended per BMP T5.13.

Roofs

Downspout Full Infiltration Systems (BMP T5.10A)

Response: A downspout full infiltration system was deemed **infeasible** due to the steep slopes on the site. Due to project space constraints, BMP T5.10A would be within 50-feet from the top and bottom of slopes greater than 40 percent. Additionally, infiltration could impact the slope stability as much of the project site is also within an erosion or landslide hazard zone as shown in **Exhibit 1**

in **Appendix A**. The Geotechnical Report included as **Appendix F** indicates that infiltration is not recommended for this project.

Downspout Dispersion Systems (BMP T5.10B)

Response: A downspout dispersion system was deemed **infeasible** due to the site space constraints and proximity to steep slopes. The outlet would be within 25 feet of impervious area and within 50-feet from the top and bottom of slopes greater than 40 percent.

Perforated Stub-Out Connections (BMP T5.10C)

Response: Perforated stub-out connections were deemed **infeasible** due to the steep slopes on the site. BMP T5.10C would be within 50-feet from the top and bottom of slopes greater than 40 percent. Additionally, any infiltration could impact the slope stability as much of the project site is also within an erosion hazard zone as shown in **Exhibit 1** in **Appendix A**.

Other Hard Surfaces

Sheet Flow Dispersion (BMP T5.12) or Concentrated Flow Dispersion (BMP T5.11)

Response: Both sheet flow and concentrated flow dispersion are deemed **infeasible** due to the steep slopes on the site. There is not sufficient flat area adjacent to the project hard surfaces for the required vegetated buffers, flow paths, and dispersion trenches before the slopes increase to 40 percent or greater.

MR 6 – Runoff Treatment

The 2019 SWMMWW definition of vehicular use states the replaced maintenance and access roads are not considered subject to regular vehicular use by motor vehicle since the they have restricted access and are infrequently used. This definition exempts the maintenance and access roads from being quantified as a “pollution-generating impervious surfaces”. Section I-3.4.6 of the 2019 SWMMWW states sites with less than 5,000 SF of pollution-generating hard surfaces are exempt from MR 6. Since the project is not adding any new pollution-generating hard surfaces, the project is exempt from water quality treatment requirement.

MR 7 – Flow Control

Exhibit 2 located in **Appendix A** shows the proposed site improvements will result in a total of 9,737 SF of new plus replaced hard surfaces. According to the MR 7 of the 2019 SWMMWW, the project site is exempt from flow control if:

1. The total of effective impervious surfaces is less than 10,000 SF, AND

2. The area of vegetation conversion to lawn/landscape is less than ¾ acres, AND

3. The increase of flow rate in the 100-year recurrence interval flow frequency is less than 0.15-cfs using 15-minute time steps according to the WWHM modeling program.

The project improvements meet the first two exemption requirements. To determine if the project improvements also meet the third exemption, the existing and proposed conditions were modeled in the WWHM modeling program as specified by 2019 SWMMWW. The existing condition is the land cover that existed at the site as of a date when the local jurisdiction first adopted Flow Control requirements into code or rules. The existing 0.5 MG reservoir and access road was constructed on the project site in 1931, well before Camas adopted Flow Control requirements. Therefore, the existing condition land uses are based on the existing development on the site as shown in **Exhibit 3A** located in **Appendix A.**

The land use areas modeled in WWHM are shown in existing **(Exhibit 3A)** and proposed **(Exhibit 3B)** condition maps located in **Appendix A.** The stormwater runoff flow rates of the existing condition and post-developed basins during each storm event are calculated with the WWHM modeling program and shown in **Table 2** below. WWHM modeling results are included in **Appendix C**.

Table 2 | Flow Rates of Existing and Post-developed Basins

Storm Return Period (yrs)	Existing Condition Flow Rate (cfs)	Developed Flow Rate (cfs)	Difference (cfs)
2	0.120	0.176	0.057
5	0.167	0.234	0.068
10	0.204	0.278	0.074
25	0.257	0.340	0.082
50	0.303	0.390	0.087
100	0.353	0.445	0.092

The increase of the stormwater runoff flow rate from the post-developed basin compared to the existing basin *is 0.092-cfs,* which is less than 0.15-cfs using 15-minute time steps during the 100-year storm event. According to the MR 7 of the 2019 SWMMWW, the project site is exempt from flow control requirements as the project meets all three exemptions.

MR 8 – Wetlands Protection

This requirement is not applicable to the project since there are no wetlands on or in the vicinity of the project site.

MR 9 – Operation and Maintenance

Operations and maintenance information has been provided in **Appendix D** found at the end of this report.

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Section C – Soils Evaluation

A geotechnical report was prepared by GRI on November 12, 2021 and is included in Appendix F. Geotechnical explorations performed included two Rotosonic borings (taken on September 10 and 11, 2020) and one mud-rotary boring (taken on July 7, 2021). Data from these borings along with a boring log from April 1971 were used to determine subsurface soil characteristics.

B-1 encountered sandy silt/silty sand to a depth of 3 feet, which was underlain by silty gravel to the maximum depth explored of 31.5 feet. B-2 encountered a mix of soil types to a depth of 20 feet that was primarily sandy silt/silty sand with thin layers of silty gravel. Below 20 feet in depth, B-2 consisted of silty gravel to the maximum depth explored. B-3 encountered sandy silt/silty sand to a depth of 12.5 feet, which was underlain by silty gravel to a depth of 40 feet. Below 40 feet in depth, B-3 consisted of soft conglomerate rock. Based on groundwater measurements made at the time of drilling (September 2020) and the historical geotechnical data, it is estimated that groundwater is present at depths of 25 feet below the ground surface in the vicinity of the proposed new reservoir, pump station, and retaining walls.

Due to the steep slopes present on the site, infiltration was not considered for any stormwater BMPs. Infiltration would increase risk of slope instability and is not suitable for this project site.

Section D – Source Control

As stated in Section B, a Construction SWPPP has been prepared which includes construction related source control measures and is included in Appendix B.

Section E – Onsite Stormwater Management BMPs

As stated in Section B, amended soils (BMP T5.13) will be used to meet MR 5.

Section F – Runoff Treatment Analysis and Design

As stated in Section B, this requirement is not applicable since projects with less than 5,000 SF of pollution-generating hard surfaces are exempt from MR 6.

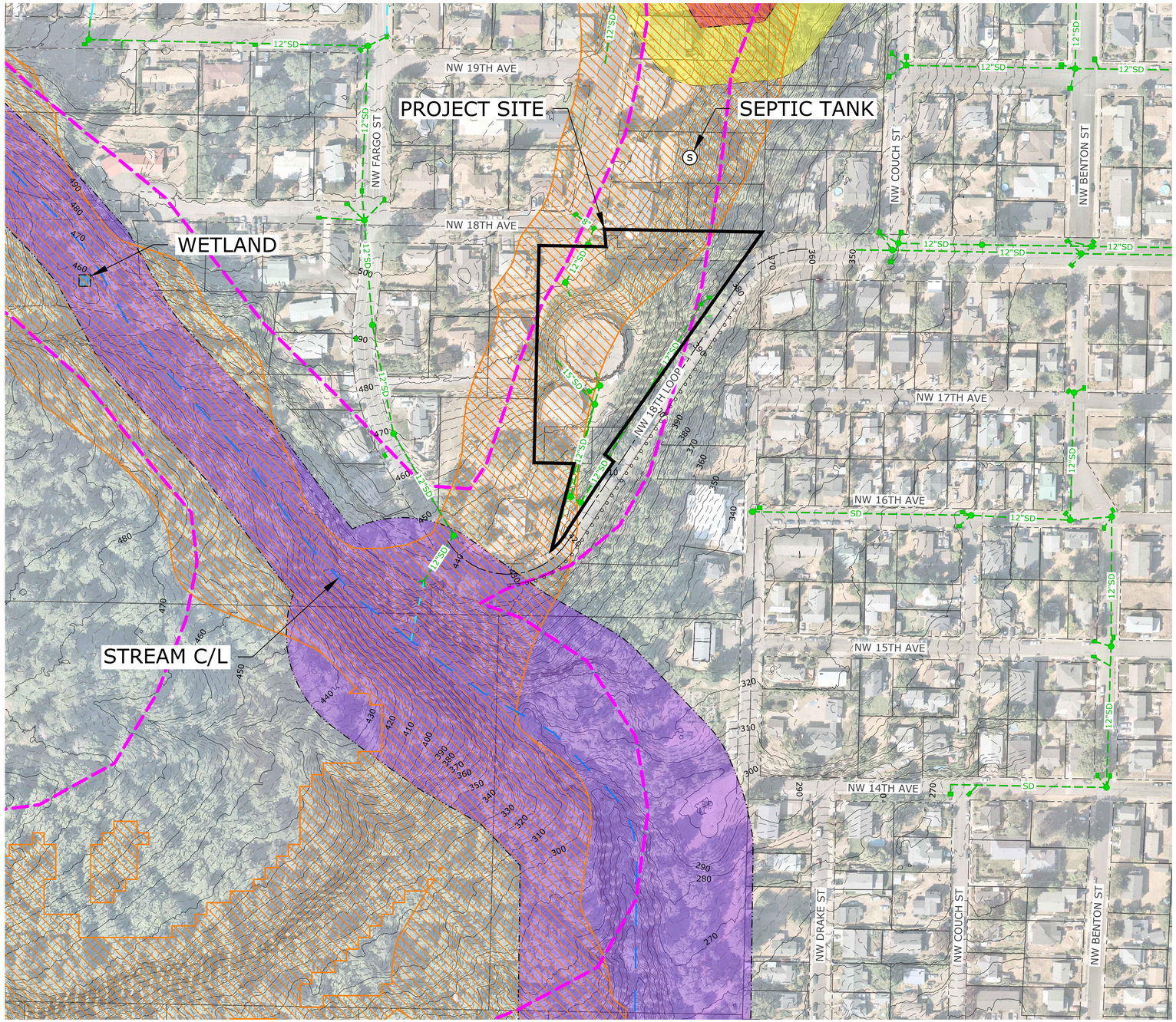
Section G – Flow Control Analysis and Design

As stated in Section B, this requirement is not applicable to since the project meets all three exemption requirements for MR 7 according to the 2019 SWMMWW.

Section H – Wetlands Protection

As stated in Section B, this requirement is not applicable to the project since there are no wetlands on or near the project site.

APPENDIX A



PLAN
SCALE: 1"=100'

LEGEND

- PROJECT SITE
- ADJACENT TO HABITAT AREA
- EROSION HAZARD AREA
- HABITAT AREA
- RIPARIAN HABITAT AREA
- WETLAND
- LANDSLIDE HAZARD
- STORM MANHOLE
- STORM CATCH BASIN/INLET
- STORM OUTFALL
- STORM PIPE — 12"SD
- SEPTIC TANK (S)
- 2-FOOT CONTOUR
- 10-FOOT CONTOUR — 300
- DITCH
- STREAM
- EASEMENT
- RIGHT-OF-WAY
- TAX LOT

NOTES:

1. DATA SOURCES: CLARK COUNTY GIS, NEARMAP (AERIAL PHOTOS) AND WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES (LIDAR NAVD88).

2. PROJECT LOCATION LOCATED IN CATEGORY 2 AQUIFER RECHARGE AREA.

3. NO AGRICULTURAL DRAIN TILES, DRAIN FIELDS, FEMA FLOOD ZONE AREAS, SHORELINE MANAGEMENT AREAS, SINKS, SPRINGS, OR WELLS WITHIN EXHIBIT LIMITS.

4. ALL DATA SHOWN, OTHER THAN AERIAL PHOTOS, ELEVATION CONTOURS AND STREAMS, WERE DOWNLOADED FROM THE COUNTY OPEN DATA HUB IN SEPTEMBER 2021.

Exhibit 1

City of Camas WASHINGTON

Lower Prune Hill Booster Station & Reservoir Improvements - Phase 2

Critical Areas and Existing Drainage Features

March 2022

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20-2849.01

PROPERTY LINE

PROP 12' ASPHALT ACCESS RD

PROP CONCRETE DWY

PROP ASPHALT ACCESS RD

PROP GATE

12' ROAD ESMT #D55421

PROP 0.5 MG RESERVOIR INNER DIA = 65'

12'-0"

PROP PUMP STATION

PROP GENERATOR

1,500,00 GAL WATER RESERVOIR

EXIST CATCH BASINS

NW 18TH AVE

EXIST PUMP STATION

EXIST 12" STORM

NW 18TH LOOP

EXIST CATCH BASINS

LEGEND

TOTAL SF	TOTAL AC		
708 SF	0.0163 AC	EXISTING IMPERVIOUS SURFACE	
6,136 SF	0.1409 AC	NEW IMPERVIOUS SURFACE	
3,601 SF	0.0513 AC	REPLACED IMPERVIOUS SURFACE	
2,045 SF	0.0469 AC	REPLACED IMPERVIOUS SURFACE EXEMPT DUE TO UNDERGROUND UTILITIES PER DOE 2019 SWMMWW I-3.2	
17,880 SF	0.4105 AC	TOTAL LAND DISTURBING ACTIVITY	
		FLOW DIRECTION ARROW	

PLAN
SCALE: 1"=20'

Exhibit 2

City of Camas WASHINGTON

Lower Prune Hill Booster Station & Reservoir Improvements - Phase 2

Impervious Surface Quantities

March 2022

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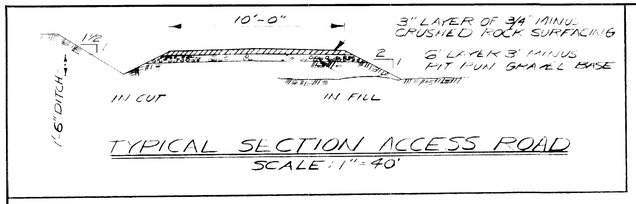
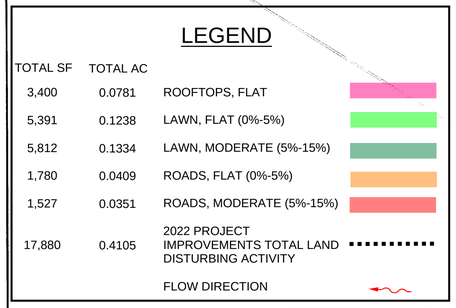
20-2849.01

EXHIBIT 3A

Existing Conditions Pre-Flow Control Criteria

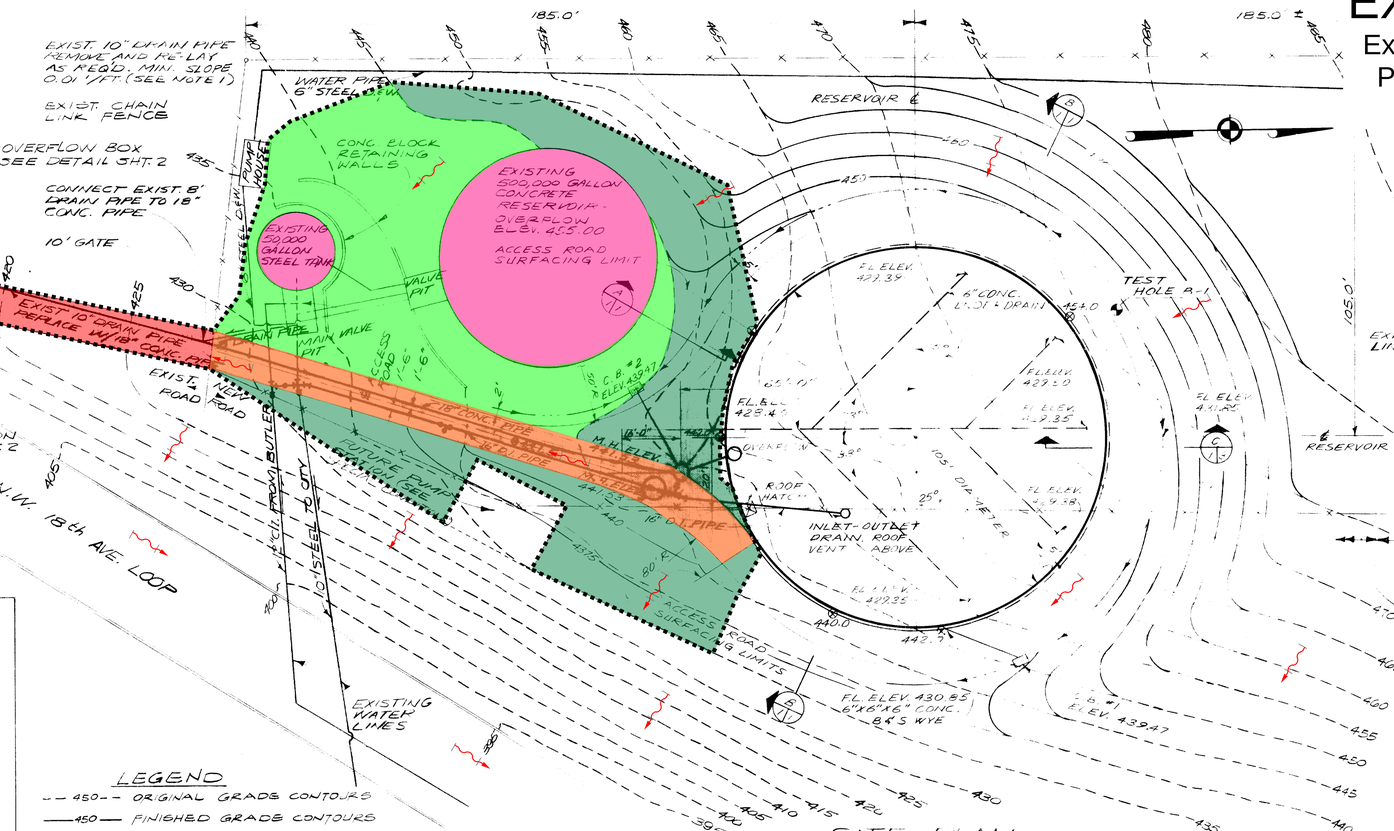


TYPICAL SECTION ACCESS ROAD
SCALE: 1" = 40'



LEGEND

TOTAL SF	TOTAL AC	
3,400	0.0781	ROOFTOPS, FLAT
5,391	0.1238	LAWN, FLAT (0%-5%)
5,812	0.1334	LAWN, MODERATE (5%-15%)
1,780	0.0409	ROADS, FLAT (0%-5%)
1,527	0.0351	ROADS, MODERATE (5%-15%)
17,880	0.4105	2022 PROJECT IMPROVEMENTS TOTAL LAND DISTURBING ACTIVITY
		FLOW DIRECTION

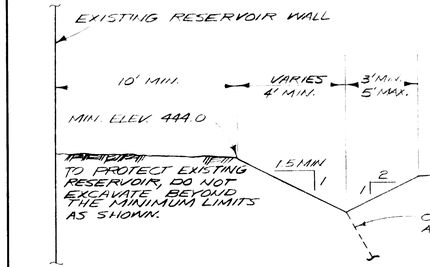


LEGEND

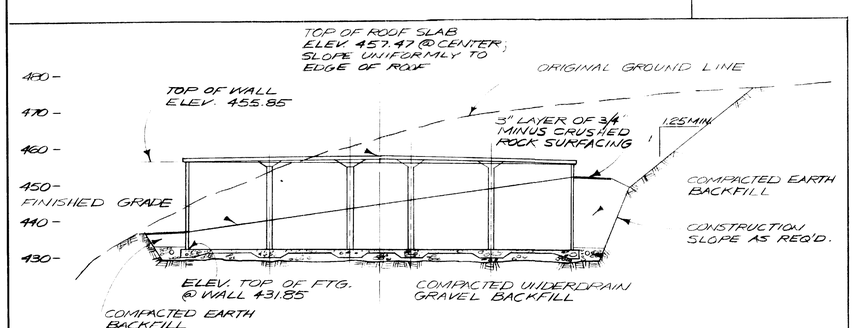
- 450 — ORIGINAL GRADE CONTOURS
- 450 — FINISHED GRADE CONTOURS
- PROPOSED ACCESS ROAD SURFACING
- EXIST. ACCESS ROAD TO BE RE-SURFACED

SITE PLAN
SCALE: 1" = 20'

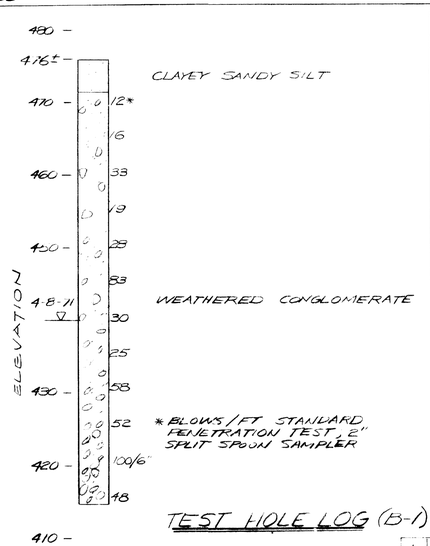
SECTION OR DETAIL DESIGNATION
SHEET WHERE SECTION OR DETAIL IS SHOWN
SHEET WHERE SECTION OR DETAIL IS TAKEN
SECTION DESIGNATION



SECTION A/1
SCALE: 1/4" = 1'-0"

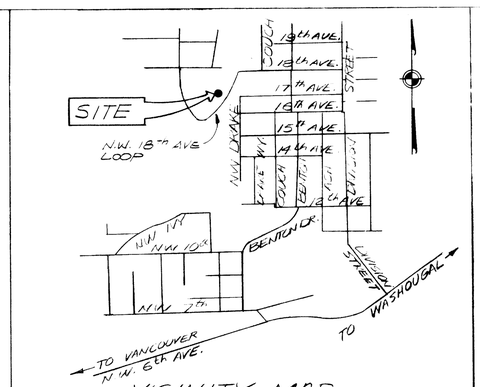


SECTION B/1
SCALE: 1" = 20'



* BLOWS/FT. STANDARD PENETRATION TEST, 2" SPLIT SPOON SAMPLER

TEST HOLE LOG (B-1)



VICINITY MAP
SCALE: 1" = 400'

NOTES:
1. ESTABLISH LOCATION AND ELEVATION OF EXIST. 10" DRAIN PIPE PRIOR TO GRADING, MATERIALS FOR CONSTRUCTION OF OVERFLOW DRAIN LINE AND APPURTENANCES.
2. FOR PIPE & DRAINAGE LAYOUT SEE SHT. 2.

INDEX TO DRAWINGS

NO.	DATE	REVISION	BY	APD.
1	SEPT 72	AS BUILT	PJC	RJA

WS-WASH-130

CORNELL, HOWLAND, HAYES & MERRYFIELD
ENGINEERS PLANNERS ECONOMISTS

CITY OF CAMAS, WASHINGTON
PRUNE HILL 1.5 MILLION GALLON RESERVOIR

VICINITY MAP, SITE PLAN, AND INDEX TO DRAWINGS

DES DRM	SHEET 1
DR DCM	OF 5
CK KFD	DATE JULY, 1971
BW P6551.1	SCALE AS SHOWN
DWG C 6551-1	

10105201

101-52

OWNER: VICTOR & TRICIA HARDING
602 NW 18TH LOOP

OWNER: STEVEN BARNETT
630 NW 18TH LOOP

OWNER: FRANK W MELLOWS TRUSTEE
624 NW 18TH AVE

LAWN, STEEP:
921 SF
0.0211 AC

ROOFTOPS:
360 SF
0.0083 AC

LAWN, FLAT:
267 SF
0.0061 AC

PROJECT GRADING LIMITS

ROOFTOPS:
3,632 SF
0.0834 AC

ROOFTOPS:
720 SF
0.0165 AC

OWNER: CITY OF CAMAS
NO SITE ADDRESS

LAWN, FLAT:
2,809 SF
0.0645 AC

LAWN, STEEP:
1,366 SF
0.0314 AC

ACCESS ROAD, MODERATE:
1,613 SF
0.0370 AC

LAWN, FLAT:
73 SF
0.0017 AC

LAWN, STEEP:
669 SF
0.0154 AC

SIDEWALKS, FLAT:
57 SF
0.0013 AC

ACCESS ROAD, FLAT:
4,516 SF
0.1037 AC

ACCESS ROAD, STEEP:
870 SF
0.0200 AC

NW 18TH LOOP

PLAN
SCALE: 1"=20'

LEGEND

TOTAL SF	TOTAL AC		
4,712 SF	0.1082 AC	ROOFTOPS, FLAT	
58 SF	0.0013 AC	SIDEWALKS, FLAT	
3,149 SF	0.0723 AC	LAWN, FLAT (0%-5%)	
2,957 SF	0.0679 AC	LAWN, STEEP (>15%)	
4,521 SF	0.1038 AC	ROADS, FLAT (0%-5%)	
1,613 SF	0.0370 AC	ROADS, MODERATE (5%-15%)	
870 SF	0.0200 AC	ROADS, STEEP (>15%)	

Exhibit 3B

City of Camas WASHINGTON

Lower Prune Hill Booster Station & Reservoir Improvements - Phase 2

Proposed Land Use Types

March 2022

murraysmith

DRAFT

20-2849.01

G:\PDX_Projects\20\2849.01 - Camas - Lower Prune Hill Phase 2\CAD\Figures\20-2849-WA-EXHIBIT 3.dwg Exhibit 3B 3/3/2022 2:01 PM KENT.HARJALA 23.0s (LMS Tech)

APPENDIX B

Abbreviated Construction Stormwater Pollution Prevention Plan (SWPPP) For Single Family Home Builders

The Abbreviated Construction SWPPP may be used for projects that are required to submit a Construction SWPPP under Minimum Requirement #2 (MR#2) (**2,000 square feet or more of new plus replaced hard surface area, or which disturb 7,000 square feet or more**) for projects that disturb less than 1 acre. Hard surface areas include: footprint of single family residence and driveways.

Release of sediment, mud, and muddy stormwater from construction sites is prohibited. The SWPPP describes how erosion, sediment, and stormwater will be controlled during construction. The document lists and shows all erosion and sediment control (ESC) best management practices (BMPs) selected for the site. The SWPPP is a living document and must be updated if conditions or plans change or if the ESC BMPs are found to be ineffective.

Section 1 – Submittal Requirements

All projects falling under the requirements of MR #2, noted above, shall submit a SWPPP prior to building plan approval or building plan submittal. The following documents shall be submitted prior to issuance of building permits:

- Completed Abbreviated Construction SWPPP form
- Erosion and Sediment Control Site Plan
- Standard details of Best Management Practices (BMPs), when required
- Engineering drawings and calculations of BMPs, when required

Section 2 – Project Overview

Building Permit Number(s): _____

Property Information

Address: 600 NW 18th Loop, Camas, WA 98607

Parcel #: 85145001 & 85173001 Size of Parcel (acres or sq. ft.): 1.93

☒ New Structure/Building ☐ Building Addition ☒ Other Grading/Excavation, Paving, Utilities

Total Project Area (square feet)	17,631
Total Proposed Impervious Hard Area (square feet)	11,360
Total Existing Impervious and Hard Area (square feet)	6,707
Total Area to be Disturbed (square feet or acres)	17,631

☐ This project does not meet MR#2. SWPPP is not applicable. ESC measures still apply.

☒ This project meets MR#2. SWPPP is required prior to Building Permit approval.

Applicant Signature: _____ Date: _____

Applicant Information

Name: City of Camas

Address: 616 NE 4th Ave, Camas, WA 98607

Phone #: _____ Email: _____

Property Owner Information

Name: City of Camas

Address: 616 NE 4th Ave, Camas, WA 98607

Phone #: _____ Email: _____

Erosion Control Inspector: Designate an erosion control inspector who has the skills to assess the site conditions and construction activities that could impact stormwater quality and the effectiveness of ESC BMPs. The inspector musts be on-site or on-call at all time.

Name: _____

Phone #: _____ Email: _____

Section 3 – Project Narrative

The information required in this section is the project narrative. It describes the site and briefly summarizes the planned improvements. Complete Section A – F, below.

A. Project Description (check all that apply):

Brief Project Description:

This project consists of replacing the 0.5 MG concrete reservoir with a new 0.5 MG welded steel reservoir, a new pump station and associated onsite water mains, a new asphalt access road, stormwater improvements, and landscaping.

B. Existing Site Conditions – Describe existing site conditions. If there are multiple choices, check all that applies.

1. Describe the existing site conditions.
   ☒Landscaping ☒Brush ☒Trees ☒Other Pavement

2. Describe how surface water (stormwater) drainage flows across/from the site.
   ☒Overland ☐Gutter ☐Other _____
   ☒Storm sewer pipes ☒Catch Basin ☐Ditch/Swale

3. Are sensitive and/or critical areas present on the site?
   ☐Springs ☐Habitat ☒Steep Slopes/Geohazards

4. Existing utilities and underground objects?
   ☒Storm ☒Water ☐Sewer ☐Other_____

C. Adjacent Areas

1. Check any adjacent off-site areas that may be affected by site disturbance and describe (check all that apply):
   ☒Residential Areas ☒Roads ☒Ditches, pipes, culverts ☒Steep Slopes/Geohazards
   ☒Other Stream

2. Describe how and where surface water enters the site from upstream properties:
   Upstream of the site are residential properties that drain to two catch basins located on NW 18th Ave which is then conveyed through the site with an existing 12-inch storm drain.

3. Describe the downstream drainage path leading from the site to adjacent property, drainage system, or water body. If water is held on-site, describe it:
   All flow from the site collects in an existing storm drain running northeast along NW 18th Loop in the City of Camas' storm drain system. The western portions of the site generally drain to an existing catch basin located between the two reservoirs. This connects to the existing reservoir drain lines that run south through the site before connecting to the City storm drain system. The remaining area sheet flows east across the site to NW 18th Loop, where it enters the storm drain system via two adjacent catch basins north of the site.

D. Soils Information

If the project is proposing construction on or near slopes 15% or greater, or proposing to infiltrate construction stormwater runoff; the City require soils information to be submitted before allowing construction on these sites. Permanent infiltration facilities shall not be used during construction unless approved in writing by the Responsible Official.

1. Does the project propose construction on or near slopes 15% or greater? ☒Yes ☐No
2. Does the project propose to infiltrate construction stormwater? ☐Yes ☒No

   ☐ If yes, provide soils information, obtain and attach approval letter from the Responsible Official.

E. Erosion and Sediment Control Site Plan

The erosion and sediment control site plan is a drawing which shows the location of the proposed BMPs. Provide an erosion and sediment control site plan per City's Design Standard Manual.

F. Construction Sequencing/Phasing

1. The standard construction sequence is as follows:
   - Mark clearing/grading limits.
   - Install initial erosion control practices (construction entrance, silt fence, catch basin inserts).
   - Clear and grade site as outlined in the site plan while implementing and maintaining temporary erosion and sediment control practices at the same time.
   - Install proposed site improvements (building, driveways, landscaping, etc.).
   - Remove erosion control methods as permitted by the inspector and repair permanent erosion protection as necessary.
   - Monitor and maintain permanent erosion protection until fully established.

   List any changes from the standard construction sequence outlined above.

   _____

   _____

2. Construction Schedule:
   Provide a proposed construction schedule (construction start and end dates).
   Start Date: March 2023 End Date: September 2024

   Wet Season Construction Activities:
   Describe any construction activities that will occur between October 1 and July 5.

   _____

   To be determined based upon schedule submitted by selected contractor

   _____

   _____

Section 4 – Thirteen Elements of a Construction SWPPP

The following 13 elements are required for each SWPPP. For each element that applies to the project, at least one BMP must be selected and used on the site. If an element does not apply to the project site describe why the element does not apply.

Instructions for using and installing each BMP are given in the latest Stormwater Manual for Western Washington (SWMMWW) and it is available on Ecology's website. BMPs listed below designated with a "C" will be found in the SWMMWW and designated with an "EC" will be found in the City's Design Standard Manual (IV. Engineering Details) located on the City's website.

Instructions:

1. Review the 13 elements of a construction SWPPP below.
2. Select at least one BMP for each element.
3. For any BMP selected, follow the instructions in the table for including the BMP in the Abbreviated Construction SWPPP.
   a. If instructed to draw the BMP on the site plan, see Section 3E for instructions.

b. If instructed to submit the standard detail, include detail with SWPPP.
c. If instructed to submit detailed drawing and/or calculations, have an engineer provide a detailed drawing of proposed BMP in plan and profile views with dimensions and calculates described in the design criteria.

4. If the element does not apply to the project, check "N/A" and describe why.

The SWPPP is a living document reflecting current conditions and changes throughout the life of the project. These changes may be informal (i.e. hand-written notes and deletions). Update the SWPPP when the CESCL or Inspector has noted a deficiency in BMPs or deviation from original design.

Element #1 – Preserve Vegetation and Mark Clearing Limits

Retain the duff layer, native topsoil, and natural vegetation in an undisturbed state to the maximum extent practicable. If it is not practicable to retain the duff layer in place, it should be stockpiled onsite, covered to prevent erosion, and replaced immediately upon completion of the ground-disturbing activities.

All construction projects must clearly mark any clearing limits, sensitive areas and their buffers, and any trees that will be preserved prior to beginning any land disturbing activities. Clearly mark the limits both in the field and on the plans. Limits shall be marked in such a way that any trees or vegetation to remain will not be harmed.

The BMP(s) being proposed to meet this element are:

Check to Select (*Requires Engineering)	If Selected		
	Draw Location(s) on Site Plan	Submit Standard Detail	Submit Detailed Drawing/Calcs*
☐ C101 Preserving Native Vegetation	x		
☐ C102 Buffer Zones	x		
☒ C103 High Visibility Fence	x		
☐ EC13 Silt Fence for Home Builders	x	x	

OR ☐ Element is N/A: _____

Element #2 – Establish Construction Access

All construction projects subject to vehicular traffic shall provide a means of preventing vehicle "tracking" of soil from the site onto streets or neighboring properties. Limit vehicle ingress and egress to one route. All access points shall be stabilized with a rock pad construction entrance in accordance with BMP EC6 and EC28. The applicant should consider placing the entrance in the area for future driveway(s), as it may be possible to use the rock as a driveway base material.

The entrance(s) must be inspected weekly, at a minimum, to ensure no excess sediment buildup or missing rock. If sediment is tracked offsite, it shall be swept or shoveled from the paved surface immediately. Keep streets clean at all times. **Street washing and the use of mechanical brooms and leaf blowers for sediment removal are not allowed.** Only vacuum sweeping may be used on public streets. The proposed construction entrance must be identified on the site plan.

The BMP(s) being proposed to meet this element are:

Check to Select (*Requires Engineering)	If Selected		
	Draw Location(s) on Site Plan	Submit Standard Detail	Submit Detailed Drawing/Calcs*
☐ EC28 Construction Entrance for Home Builders	x	x	

OR ☐ Element is N/A: _____

☒ C105 Stabilized Construction Entrance × ×

Element #3 – Control Flow Rates

Protect properties and waterways downstream of the development site from erosion due to increases in volume, velocity, and peak flow of stormwater runoff from the project site.

Permanent infiltration facilities shall not be used for flow control during construction unless specifically approved in writing by Responsible Official. Sediment traps can provide flow control for small sites by allowing water to pool and allowing sediment to settle out of the water.

The BMP(s) being proposed to meet this element are:

Check to Select (*Requires Engineering)	If Selected		
	Draw Location(s) on Site Plan	Submit Standard Detail	Submit Detailed Drawing/Calcs*
☐ EC22 Temporary Sediment Trap	x		x
☐ EC15 Straw Wattles Behind Curb	x	x	

OR ☒ Element is N/A: Project is exempt from flow control

Element #4 – Install Sediment Controls

Prior to leaving a construction site, runoff from disturbed areas must pass through a sediment removal device. Sediment barriers are used to slow sheet flow of stormwater and allow the sediment to settle out behind the barrier. Install/construct the sediment control BMPs before site grading.

The BMP(s) being proposed to meet this element are:

Check to Select (*Requires Engineering)	If Selected		
	Draw Location(s) on Site Plan	Submit Standard Detail	Submit Detailed Drawing/Calcs*
☒ C231 Silt Fence ~~for Home Builders~~	x	x	
☐ C234 Vegetated Strip	x		
☐ EC15 Straw Wattles Behind Curb	x	x	
☐ EC22 Temporary Sediment Trap	x		x

OR ☐ Element is N/A: _____

Element #5 – Stabilize Soils

Stabilize exposed and unworked soils by applying BMPs that protect the soils from raindrop impact, flowing water, and wind. **During the wet season from October 1st through July 5th, no soils shall remain exposed or unworked for more than 2 days. From July 6th through September 30th, no soils shall remain exposed and unworked for more than 7 days**. This applies to all soils on site whether at final grade or not. Stabilized soil stockpiles from erosion, protected with sediment trapping measures, shall be located away from storm drain inlets, waterways and drainage channels. Minimize dust with the use of approved BMPs.

The BMP(s) being proposed to meet this element are:

Check to Select (*Requires Engineering)	If Selected		
	Draw Location(s) on Site Plan	Submit Standard Detail	Submit Detailed Drawing/Calcs*
☒ C120 Temporary & Permanent Seeding	x		
☐ EC27 Stockpile Protection	x	x	
☐ C124 Sodding	x		
☐ C125 Compost	x		
☐ C125 Topsoiling	x		
☐ C140 Dust Control	x		

OR ☐ Element is N/A: _____

Element #6 – Protect Slopes

Protect slopes by diverting water away from the top of the slopes. Reduce slope velocities by minimizing the continuous length of the slope, which can be accomplished by terracing and roughening slope sides. Establishing vegetation on slopes will protect slopes as well.

The BMP(s) being proposed to meet this element are:

Check to Select (*Requires Engineering)	If Selected		
	Draw Location(s) on Site Plan	Submit Standard Detail	Submit Detailed Drawing*
☐ EC24 Interceptor Swale and Dike	x		x
☐ EC21 Grass Lined Channel	x		x

OR ☒ Element is N/A: While there are steep slopes on site – work will be on relatively flat portion of the site and outside the steep slopes

Element #7 – Protect Drain Inlets

Protect all storm drain inlets during construction so that site runoff does not enter inlets without first being filtered to remove sediment. Install catch basin protection on all catch basins within 500 feet downstream of the project. Once the site is fully stabilized, catch basin protection must be removed.

The BMP(s) being proposed to meet this element are:

Check to Select (*Requires Engineering)	If Selected		
	Draw Location(s) on Site Plan	Submit Standard Detail	Submit Detailed Drawing*
☒ EC8 Inlet Protection – Curb Sediment Trap	x		
☒ EC9 Inlet Protection – Catch Basin Insert	x		
☒ EC10 Inlet Protection – Combination Inlet	x		
☐ EC11 Inlet Protection - Biobags	x		

OR ☐ Element is N/A: _____

Element #8 – Stabilize Channels and Outlets

Stabilize all temporary and permanent conveyance channels and their outlets.

The BMP(s) being proposed to meet this element are:

Check to Select (*Requires Engineering)	If Selected		
	Draw Location(s) on Site Plan	Submit Standard Detail	Submit Detailed Drawing*
☐ EC20 Erosion Control Blankets	x		
☐ C202 Channel Lining	x		
☐ EC23 Check Dams	x	x	
☐ C209 Outlet Protection	x		

OR ☒ Element is N/A: No channels or outlets exist on site

Element #9 – Control Pollutants

Handle and dispose of all pollutants, including demolition debris and other solid wastes, to keep them out of rain and stormwater. Provide cover and containment for all chemicals, liquid products (including paint), petroleum products, and other materials. Apply fertilizers and pesticides following manufacturers' instructions for application rates and procedures. Handle all concrete and concrete waste appropriately.

Washout of concrete trucks must be performed off-site or in designated concrete washout areas only. Do not wash out concrete trucks, chutes, tools or equipment onto the ground or into storm drains, open ditches, streets, or streams. Do not

dump excess concrete on site, except in designated concrete washout areas. Concrete spillage or concrete discharge to surface waters of the state is prohibited.

The BMP(s) being proposed to meet this element are:

Check to Select (*Requires Engineering)	If Selected		
	Draw Location(s) on Site Plan	Submit Standard Detail	Submit Detailed Drawing*
☐ C150 Materials on Hand	x		
☒ C151 Concrete Handling	x		
☐ C153 Materials, Delivery, Storage, and Containment	x		
☒ C154 Concrete Washout Area	x		x

OR ☐ Element is N/A: _____

Element #10 – Control Dewatering

Clean, non-turbid dewatering water, such as groundwater, can be discharged to the stormwater system provided the dewatering flow does not cause erosion or flooding or downstream conveyances or receiving waters. Do not mix clean dewatering water with turbid or contaminated dewatering water. Treat or dispose of turbid or contaminated dewatering water through a sediment pond or trap or through approved treatment or disposal options.

Dewatering water must be managed to prevent the discharge of the contaminants to waters of the State, including dewatering water that has comingled with stormwater (i.e. treatment system, off-site disposal).

The BMP(s) being proposed to meet this element are:

Check to Select (*Requires Engineering)	If Selected		
	Draw Location(s) on Site Plan	Submit Standard Detail	Submit Detailed Drawing*
☒ EC22 Temporary Sediment Trap	x		x

OR ☐ Element is N/A: _____

Element #11 – Maintain BMPs

Maintain and repair ESC BMPs as needed. Inspect all BMPs at least weekly and after every ½" storm event. Keep an inspection log on site and available for review by the City inspector at all times.

Remove all temporary erosion and sediment control BMPs within 30 days after final site stabilization or if the BMP is no longer needed. Any trapped sediment should be removed or stabilized onsite. No sediment shall be discharged in to the storm drainage system or natural conveyance systems.

The BMP(s) being proposed to meet this element are:

Check to Select (*Requires Engineering)	If Selected		
	Draw Location(s) on Site Plan	Submit Standard Detail	Submit Detailed Drawing*
☒ C150 Materials on Hand	x		
☒ C160 Certified Erosion and Sediment Control Lead			

OR ☐ Element is N/A: _____

Element #12 – Manage the Project

Coordinate all work before initial construction with subcontractors and other utilities to ensure no areas are prematurely worked.

Designate an erosion control inspector for the construction site. If land disturbing activity is undertaken by a licensed contractor, the erosion control inspector must possess a valid CESCL certification. The erosion control inspector must be on site or on-call 24 hours a day.

The erosion control inspector is responsible for:

- Ensuring that the ESC BMPs are appropriate for the site and are functioning.
- Updating the Abbreviated Construction SWPPP when site conditions warrant.
- Maintaining the inspection log on site.

The BMP(s) being proposed to meet this element are:

Check to Select	If Selected		
	Draw Location(s) on Site Plan	Submit Standard Detail	Submit Schedule
☒ C160 Certified Erosion and Sediment Control Lead			
☒ C162 Scheduling			x

OR ☐ Element is N/A: _____

Element #13 – Protect Low Impact Development BMPs

Protect LID BMPs from compaction, erosion, and sedimentation.

Bioretention and Rain Gardens

Prevent compaction of areas planned for bioretention and rain gardens by excluding construction equipment. Avoid unnecessary foot traffic, and allow necessary foot traffic only when soils are not wet.

Protect all bioretention and rain gardens from sedimentation through installation and maintenance of erosion and sediment control BMPs on portions of the site that drain onto them.

If they accumulate sediment during construction, restore the BMPs to their fully functioning condition. Restoration must include removal of sediment and any sediment-laden bioretention/rain garden soils, and replacing the removed soils with soils meeting the design specification.

Permeable Pavement

Control erosion and avoid introducing sediment from surrounding land uses onto permeable pavements. Do not allow muddy construction equipment on the base material or pavement. Do not allow sediment-laden runoff on to permeable pavements.

Permeable pavements fouled with sediment or no longer passing an initial infiltration test must be cleaned in accordance to manufacturer's procedures.

Other LID BMPs

Keep all heavy equipment off areas where LID facilities will be located. Protect completed lawn and landscaped areas from compaction by construction equipment.

The BMP(s) being proposed to meet this element are:

Check to Select (*Requires Engineering)	If Selected		
	Draw Location(s) on Site Plan	Submit Standard Detail	Submit Detailed Drawing*
☐ C102 Buffer Zone	x		
☐ C103 High Visibility Fence	x		
☐ EC13 Silt Fence for Home Builders	x	x	
☐ C234 Vegetated Strip	x		
☐ Sand Bags	x		

OR ☒ Element is N/A: _____

APPENDIX C

WWHM2012

PROJECT REPORT

General Model Information

Project Name:	WWHM2012_1931EC
Site Name:	Lower Prune Hill PS
Site Address:	600 NW 18th Loop
City:	Camas
Report Date:	3/3/2022
Gage:	Troutdale
Data Start:	1948/10/01
Data End:	2008/09/30
Timestep:	15 Minute
Precip Scale:	1.370
Version Date:	2021/08/18
Version:	4.2.18

POC Thresholds

Low Flow Threshold for POC1:	50 Percent of the 2 Year
High Flow Threshold for POC1:	50 Year

Landuse Basin Data

Predeveloped Land Use

Basin 1

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG3, Lawn, Flat	0.1243
SG3, Lawn, Mod	0.1323
Pervious Total	0.2566

Impervious Land Use	acre
ROADS FLAT	0.0409
ROADS MOD	0.035
ROOF TOPS FLAT	0.078
Impervious Total	0.1539
Basin Total	0.4105

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

Basin 1

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG3, Lawn, Flat	0.0723
SG3, Lawn, Steep	0.0679
Pervious Total	0.1402

Impervious Land Use	acre
ROADS FLAT	0.1038
ROADS MOD	0.037
ROADS STEEP	0.02
ROOF TOPS FLAT	0.1082
SIDEWALKS FLAT	0.0013
Impervious Total	0.2703
Basin Total	0.4105

Element Flows To:

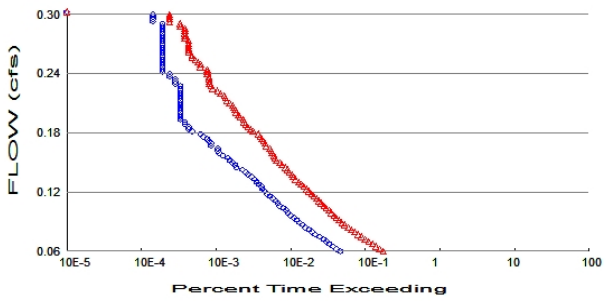
Surface	Interflow	Groundwater

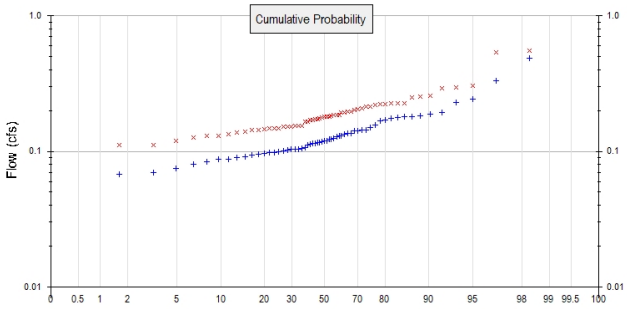
Routing Elements
Predeveloped Routing

Mitigated Routing

Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 0.2566
Total Impervious Area: 0.1539

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0.1402
Total Impervious Area: 0.2703

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.119583
5 year	0.166907
10 year	0.203829
25 year	0.257373
50 year	0.302634
100 year	0.352827

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.17635
5 year	0.23449
10 year	0.278161
25 year	0.339521
50 year	0.389935
100 year	0.444577

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.141	0.248
1950	0.087	0.149
1951	0.119	0.151
1952	0.167	0.225
1953	0.115	0.152
1954	0.130	0.209
1955	0.095	0.126
1956	0.172	0.213
1957	0.098	0.130
1958	0.117	0.170

1959	0.075	0.111
1960	0.092	0.155
1961	0.106	0.145
1962	0.105	0.148
1963	0.122	0.173
1964	0.128	0.176
1965	0.119	0.154
1966	0.129	0.166
1967	0.100	0.153
1968	0.179	0.303
1969	0.149	0.257
1970	0.486	0.551
1971	0.117	0.205
1972	0.103	0.180
1973	0.113	0.196
1974	0.144	0.184
1975	0.116	0.153
1976	0.189	0.224
1977	0.067	0.112
1978	0.124	0.186
1979	0.144	0.202
1980	0.089	0.131
1981	0.133	0.173
1982	0.157	0.195
1983	0.183	0.215
1984	0.137	0.179
1985	0.114	0.185
1986	0.103	0.172
1987	0.096	0.144
1988	0.125	0.219
1989	0.098	0.166
1990	0.080	0.140
1991	0.141	0.194
1992	0.093	0.135
1993	0.230	0.290
1994	0.084	0.147
1995	0.103	0.181
1996	0.243	0.295
1997	0.193	0.255
1998	0.175	0.226
1999	0.087	0.137
2000	0.061	0.108
2001	0.070	0.120
2002	0.181	0.223
2003	0.136	0.182
2004	0.112	0.196
2005	0.103	0.181
2006	0.177	0.226
2007	0.100	0.146
2008	0.330	0.540

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.4865	0.5508
2	0.3300	0.5401
3	0.2430	0.3033
4	0.2302	0.2950

5	0.1930	0.2901
6	0.1886	0.2571
7	0.1829	0.2547
8	0.1812	0.2484
9	0.1793	0.2262
10	0.1774	0.2256
11	0.1751	0.2252
12	0.1715	0.2235
13	0.1675	0.2234
14	0.1566	0.2185
15	0.1494	0.2147
16	0.1441	0.2135
17	0.1437	0.2086
18	0.1414	0.2054
19	0.1411	0.2019
20	0.1366	0.1964
21	0.1357	0.1963
22	0.1331	0.1948
23	0.1299	0.1939
24	0.1295	0.1863
25	0.1280	0.1849
26	0.1248	0.1844
27	0.1238	0.1819
28	0.1223	0.1814
29	0.1194	0.1810
30	0.1187	0.1798
31	0.1171	0.1787
32	0.1169	0.1762
33	0.1158	0.1735
34	0.1150	0.1727
35	0.1138	0.1715
36	0.1132	0.1702
37	0.1121	0.1663
38	0.1062	0.1661
39	0.1049	0.1553
40	0.1034	0.1545
41	0.1033	0.1532
42	0.1033	0.1529
43	0.1025	0.1520
44	0.1004	0.1510
45	0.0997	0.1488
46	0.0985	0.1482
47	0.0976	0.1475
48	0.0959	0.1464
49	0.0951	0.1445
50	0.0934	0.1435
51	0.0918	0.1402
52	0.0895	0.1372
53	0.0873	0.1346
54	0.0871	0.1308
55	0.0841	0.1299
56	0.0804	0.1263
57	0.0746	0.1201
58	0.0696	0.1120
59	0.0674	0.1115
60	0.0613	0.1076

Duration Flows

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0598	973	3675	377	Fail
0.0622	860	3261	379	Fail
0.0647	773	2916	377	Fail
0.0672	692	2611	377	Fail
0.0696	628	2325	370	Fail
0.0721	577	2091	362	Fail
0.0745	517	1877	363	Fail
0.0770	451	1692	375	Fail
0.0794	407	1504	369	Fail
0.0819	368	1353	367	Fail
0.0843	329	1233	374	Fail
0.0868	303	1105	364	Fail
0.0892	278	1021	367	Fail
0.0917	254	928	365	Fail
0.0941	231	855	370	Fail
0.0966	207	801	386	Fail
0.0990	192	738	384	Fail
0.1015	181	686	379	Fail
0.1039	168	630	375	Fail
0.1064	149	589	395	Fail
0.1089	140	542	387	Fail
0.1113	133	505	379	Fail
0.1138	121	465	384	Fail
0.1162	111	429	386	Fail
0.1187	102	403	395	Fail
0.1211	94	369	392	Fail
0.1236	89	345	387	Fail
0.1260	86	315	366	Fail
0.1285	78	290	371	Fail
0.1309	73	269	368	Fail
0.1334	70	244	348	Fail
0.1358	62	228	367	Fail
0.1383	56	218	389	Fail
0.1407	53	202	381	Fail
0.1432	47	192	408	Fail
0.1456	39	177	453	Fail
0.1481	38	160	421	Fail
0.1506	35	150	428	Fail
0.1530	32	134	418	Fail
0.1555	30	129	430	Fail
0.1579	26	124	476	Fail
0.1604	23	118	513	Fail
0.1628	22	115	522	Fail
0.1653	22	111	504	Fail
0.1677	18	98	544	Fail
0.1702	18	95	527	Fail
0.1726	17	91	535	Fail
0.1751	16	86	537	Fail
0.1775	14	82	585	Fail
0.1800	13	78	600	Fail
0.1824	10	66	660	Fail
0.1849	9	61	677	Fail
0.1873	9	56	622	Fail
0.1898	8	52	650	Fail

0.1923	8	50	625	Fail
0.1947	7	49	700	Fail
0.1972	7	44	628	Fail
0.1996	7	42	600	Fail
0.2021	7	39	557	Fail
0.2045	7	38	542	Fail
0.2070	7	36	514	Fail
0.2094	7	35	500	Fail
0.2119	7	32	457	Fail
0.2143	7	29	414	Fail
0.2168	7	28	400	Fail
0.2192	7	27	385	Fail
0.2217	7	24	342	Fail
0.2241	7	22	314	Fail
0.2266	7	19	271	Fail
0.2290	7	18	257	Fail
0.2315	6	17	283	Fail
0.2340	6	17	283	Fail
0.2364	6	17	283	Fail
0.2389	5	17	340	Fail
0.2413	5	16	320	Fail
0.2438	4	16	400	Fail
0.2462	4	16	400	Fail
0.2487	4	13	325	Fail
0.2511	4	13	325	Fail
0.2536	4	12	300	Fail
0.2560	4	11	275	Fail
0.2585	4	10	250	Fail
0.2609	4	10	250	Fail
0.2634	4	9	225	Fail
0.2658	4	9	225	Fail
0.2683	4	9	225	Fail
0.2707	4	9	225	Fail
0.2732	4	9	225	Fail
0.2757	4	9	225	Fail
0.2781	4	8	200	Fail
0.2806	4	8	200	Fail
0.2830	4	8	200	Fail
0.2855	4	8	200	Fail
0.2879	4	8	200	Fail
0.2904	4	7	175	Fail
0.2928	4	7	175	Fail
0.2953	3	5	166	Fail
0.2977	3	5	166	Fail
0.3002	3	5	166	Fail
0.3026	3	5	166	Fail

The development has an increase in flow durations from 1/2 Predeveloped 2 year flow to the 2 year flow or more than a 10% increase from the 2 year to the 50 year flow.
The development has an increase in flow durations for more than 50% of the flows for the range of the duration analysis.

Water Quality

Water Quality BMP Flow and Volume for POC #1

On-line facility volume:	0 acre-feet
On-line facility target flow:	0 cfs.
Adjusted for 15 min:	0 cfs.
Off-line facility target flow:	0 cfs.
Adjusted for 15 min:	0 cfs.

LID Report

LID Technique	Used for Treatment ?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Water Quality	Percent Water Quality Treated	Comment
Total Volume Infiltrated		0.00	0.00	0.00		0.00	0.00	0%	No Treat. Credit
Compliance with LID Standard 8% of 2-yr to 50% of 2-yr									Duration Analysis Result = Failed

Model Default Modifications

Total of 0 changes have been made.

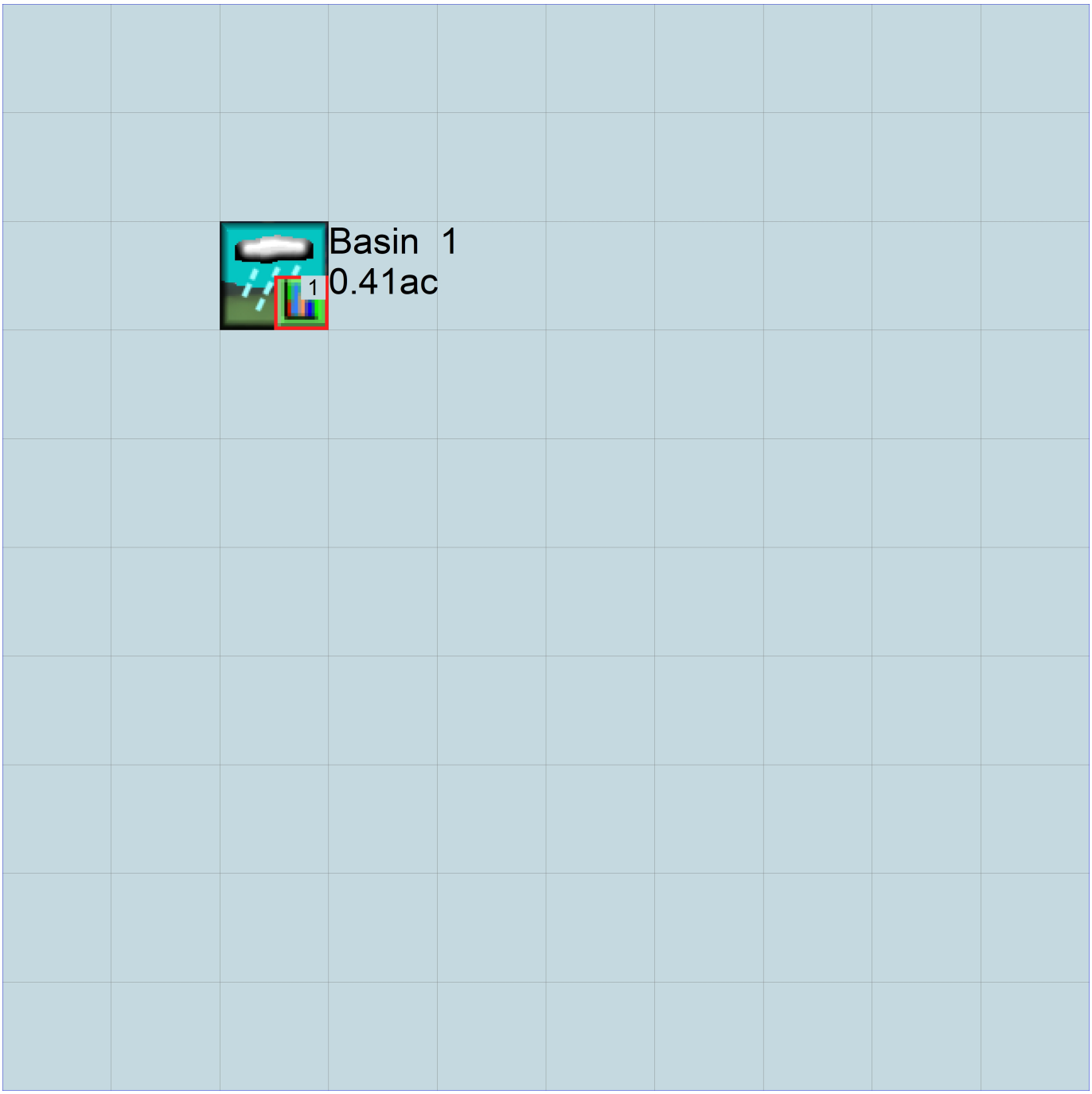
PERLND Changes

No PERLND changes have been made.

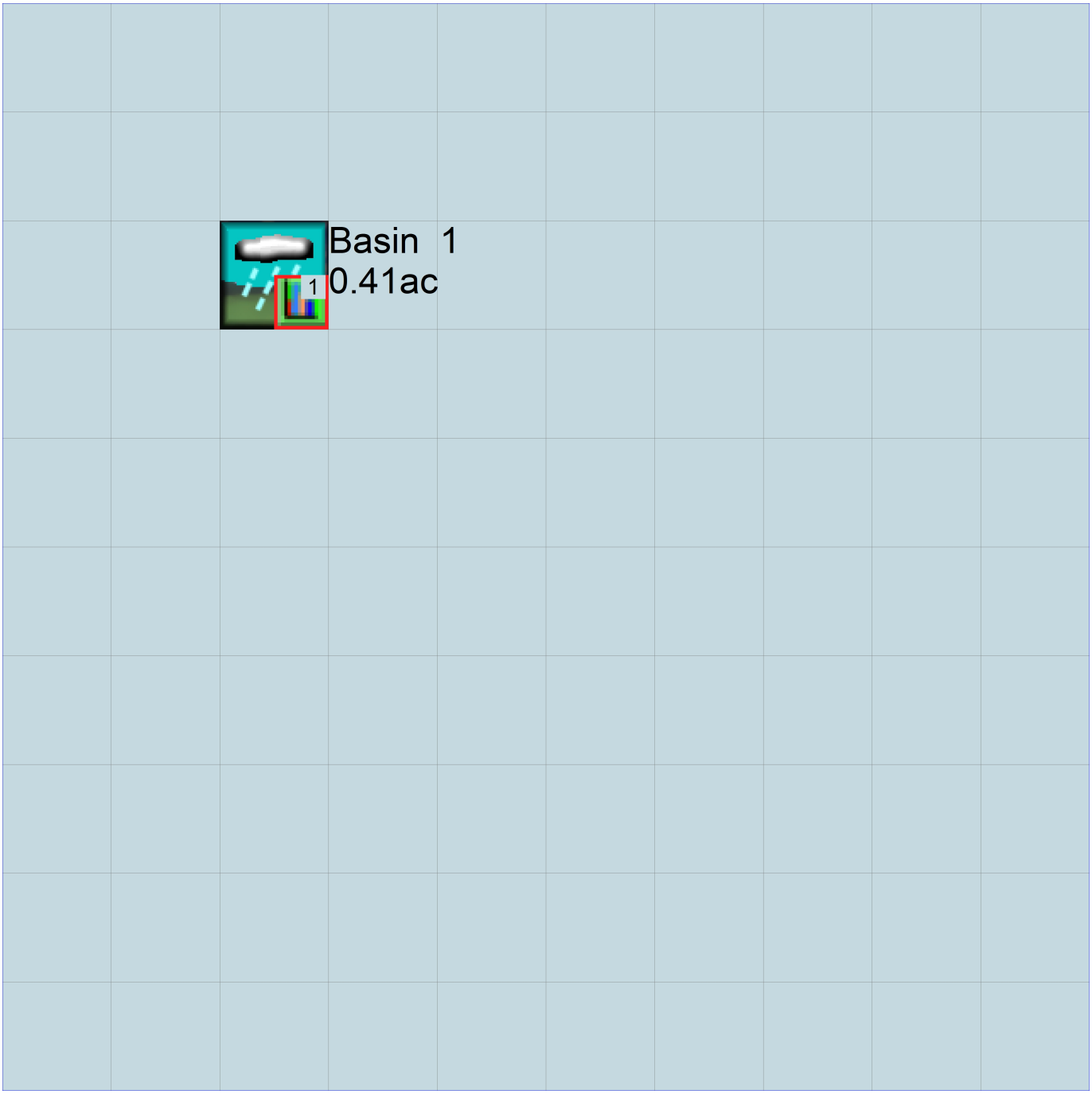
IMPLND Changes

No IMPLND changes have been made.

Appendix
Predeveloped Schematic



Mitigated Schematic



Predeveloped UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2008 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   WWHM2012_1931EC.wdm
MESSU       25   PreWWHM2012_1931EC.MES
            27   PreWWHM2012_1931EC.L61
            28   PreWWHM2012_1931EC.L62
            30   POCWWHM2012_1931EC1.dat
END FILES

OPN SEQUENCE
    INGRP              INDELT 00:15
      PERLND      25
      PERLND      26
      IMPLND       1
      IMPLND       2
      IMPLND       4
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Basin  1                   MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                          in  out            ***
   25     SG3, Lawn, Flat         1    1    1    1   27    0
   26     SG3, Lawn, Mod          1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   25         0    0    1    0    0    0    0    0    0    0    0    0
   26         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY
```

```
  PRINT-INFO
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   25         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   26         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   25         0    0    0    0    0    0    0    0    0    0    0
   26         0    0    0    0    0    0    0    0    0    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
   25              0         9      0.05       400      0.05         0      0.96
   26              0         9      0.05       400       0.1         0      0.96
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   25              0         0       2.5         2         0         0         0
   26              0         0       2.5         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   25            0.1       0.8      0.25         4       0.4      0.25
   26            0.1       0.8      0.25         4       0.4      0.25
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
               ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   25              0         0         0         0         3         1         0
   26              0         0         0         0         3         1         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                     in  out           ***
    1      ROADS/FLAT             1    1    1   27    0
    2      ROADS/MOD              1    1    1   27    0
    4      ROOF TOPS/FLAT         1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************* Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    1         0    0    1    0    0    0
    2         0    0    1    0    0    0
    4         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    0    1    9
    2         0    0    4    0    0    0    1    9
    4         0    0    4    0    0    0    1    9
  END PRINT-INFO
```

```
  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    0
    2         0    0    0    0    0
    4         0    0    0    0    0
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1            400      0.01       0.1       0.1
    2            400      0.05       0.1      0.08
    4            400      0.01       0.1       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1              0         0
    2              0         0
    4              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1              0         0
    2              0         0
    4              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                 <--Area-->     <-Target->   MBLK   ***
<Name>   #                 <-factor->     <Name>   #   Tbl#   ***
Basin  1***
PERLND  25                     0.1243     COPY   501     12
PERLND  25                     0.1243     COPY   501     13
PERLND  26                     0.1323     COPY   501     12
PERLND  26                     0.1323     COPY   501     13
IMPLND   1                     0.0409     COPY   501     15
IMPLND   2                      0.035     COPY   501     15
IMPLND   4                      0.078     COPY   501     15

******Routing******
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG           ***
                                       in  out                              ***
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
```

```
    <PLS > ************* Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ****************** PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                    ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
           FG FG FG FG  possible  exit  *** possible  exit      possible  exit
            *  *  *  *    *  *  *  *  *       *  *  *  *  *        ***
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                       ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1.37           PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1.37           IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    0.8            PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.8            IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY   501 OUTPUT MEAN   1 1     48.4      WDM    501 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15


END MASS-LINK

END RUN
```

Mitigated UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2008 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   WWHM2012_1931EC.wdm
MESSU       25   MitWWHM2012_1931EC.MES
            27   MitWWHM2012_1931EC.L61
            28   MitWWHM2012_1931EC.L62
            30   POCWWHM2012_1931EC1.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:15
      PERLND      25
      PERLND      27
      IMPLND       1
      IMPLND       2
      IMPLND       3
      IMPLND       4
      IMPLND       8
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title---------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Basin  1                   MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                          in  out            ***
   25     SG3, Lawn, Flat         1    1    1    1   27    0
   27     SG3, Lawn, Steep        1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   25         0    0    1    0    0    0    0    0    0    0    0    0
   27         0    0    1    0    0    0    0    0    0    0    0    0
```

```
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   25         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   27         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   25         0    0    0    0    0    0    0    0    0    0    0
   27         0    0    0    0    0    0    0    0    0    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
   25              0         9      0.05       400      0.05         0      0.96
   27              0         9      0.05       400      0.15         0      0.96
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   25              0         0       2.5         2         0         0         0
   27              0         0       2.5         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   25            0.1       0.8      0.25         4       0.4      0.25
   27            0.1       0.8      0.25         4       0.4      0.25
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
               ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS       AGWS      GWVS
   25              0         0         0         0         3          1         0
   27              0         0         0         0         3          1         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                     in  out           ***
    1      ROADS/FLAT             1    1    1   27    0
    2      ROADS/MOD              1    1    1   27    0
    3      ROADS/STEEP            1    1    1   27    0
    4      ROOF TOPS/FLAT         1    1    1   27    0
    8      SIDEWALKS/FLAT         1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************* Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    1         0    0    1    0    0    0
    2         0    0    1    0    0    0
    3         0    0    1    0    0    0
    4         0    0    1    0    0    0
    8         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
```

```
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    0    1    9
    2         0    0    4    0    0    0    1    9
    3         0    0    4    0    0    0    1    9
    4         0    0    4    0    0    0    1    9
    8         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    0
    2         0    0    0    0    0
    3         0    0    0    0    0
    4         0    0    0    0    0
    8         0    0    0    0    0
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1            400      0.01       0.1       0.1
    2            400      0.05       0.1      0.08
    3            400       0.1       0.1      0.05
    4            400      0.01       0.1       0.1
    8            400      0.01       0.1       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1              0         0
    2              0         0
    3              0         0
    4              0         0
    8              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1              0         0
    2              0         0
    3              0         0
    4              0         0
    8              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                 <--Area-->     <-Target->   MBLK   ***
<Name>   #                 <-factor->     <Name>   #   Tbl#   ***
Basin  1***
PERLND  25                     0.0723     COPY   501     12
PERLND  25                     0.0723     COPY   501     13
PERLND  27                     0.0679     COPY   501     12
PERLND  27                     0.0679     COPY   501     13
IMPLND   1                     0.1038     COPY   501     15
IMPLND   2                      0.037     COPY   501     15
IMPLND   3                       0.02     COPY   501     15
IMPLND   4                     0.1082     COPY   501     15
IMPLND   8                     0.0013     COPY   501     15

******Routing******
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
```

```
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG            ***
                                       in  out                               ***
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************* Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ******************* PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                    ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit      possible  exit
             *  *  *  *    *  *  *  *  *       *  *  *  *  *         ***
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                       ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1.37           PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1.37           IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    0.8            PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.8            IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY     1 OUTPUT MEAN   1 1     48.4      WDM    701 FLOW     ENGL      REPL
COPY   501 OUTPUT MEAN   1 1     48.4      WDM    801 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
```

```
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15


END MASS-LINK

END RUN
```

Predeveloped HSPF Message File

Mitigated HSPF Message File

Disclaimer

Legal Notice

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Toll Free 1(866)943-0304
Local (360)943-0304

www.clearcreeksolutions.com

APPENDIX D

Table V-A.5: Maintenance Standards - Catch Basins

Maintenance Component	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is performed
General	Trash & Debris	Trash or debris which is located immediately in front of the catch basin opening or is blocking inletting capacity of the basin by more than 10%. Trash or debris (in the basin) that exceeds 60 percent of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case less than a minimum of six inches clearance from the debris surface to the invert of the lowest pipe. Trash or debris in any inlet or outlet pipe blocking more than 1/3 of its height. Dead animals or vegetation that could generate odors that could cause complaints or dangerous gases (e.g., methane).	No Trash or debris located immediately in front of catch basin or on grate opening. No trash or debris in the catch basin. Inlet and outlet pipes free of trash or debris. No dead animals or vegetation present within the catch basin.
	Sediment	Sediment (in the basin) that exceeds 60 percent of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case less than a minimum of 6 inches clearance from the sediment surface to the invert of the lowest pipe.	No sediment in the catch basin
	Structure Damage to Frame and/or Top Slab	Top slab has holes larger than 2 square inches or cracks wider than 1/4 inch. (Intent is to make sure no material is running into basin). Frame not sitting flush on top slab, i.e., separation of more than 3/4 inch of the frame from the top slab. Frame not securely attached	Top slab is free of holes and cracks. Frame is sitting flush on the riser rings or top slab and firmly attached.
	Fractures or Cracks in Basin Walls/ Bottom	Maintenance person judges that structure is unsound. Grout fillet has separated or cracked wider than 1/2 inch and longer than 1 foot at the joint of any inlet/outlet pipe or any evidence of soil particles entering catch basin through cracks.	Basin replaced or repaired to design standards. Pipe is regrouted and secure at basin wall.
	Settlement/ Misalignment	If failure of basin has created a safety, function, or design problem.	Basin replaced or repaired to design standards.
	Vegetation	Vegetation growing across and blocking more than 10% of the basin opening. Vegetation growing in inlet/outlet pipe joints that is more than six inches tall and less than six inches apart.	No vegetation blocking opening to basin. No vegetation or root growth present.
	Contamination and Pollution	See Table V-A.1: Maintenance Standards - Detention Ponds	No pollution present.
Catch Basin Cover	Cover Not in Place	Cover is missing or only partially in place. Any open catch basin requires maintenance.	Cover/grate is in place, meets design standards, and is secured
	Locking Mechanism Not Working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts into frame have less than 1/2 inch of thread.	Mechanism opens with proper tools.
	Cover Difficult to Remove	One maintenance person cannot remove lid after applying normal lifting pressure. (Intent is keep cover from sealing off access to maintenance.)	Cover can be removed by one maintenance person.
Ladder	Ladder Rungs Unsafe	Ladder is unsafe due to missing rungs, not securely attached to basin wall, misalignment, rust, cracks, or sharp edges.	Ladder meets design standards and allows maintenance person safe access.
Metal Grates (If Applicable)	Grate opening Unsafe	Grate with opening wider than 7/8 inch.	Grate opening meets design standards.
	Trash and Debris	Trash and debris that is blocking more than 20% of grate surface inletting capacity.	Grate free of trash and debris.
	Damaged or Missing.	Grate missing or broken member(s) of the grate.	Grate is in place, meets the design standards, and is installed and aligned with the flow path.

APPENDIX E

Custom Soil Resource Report
Soil Map

Map Scale: 1:845 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 10 20 40 60

Feet: 0 40 80 160 240

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Clark County, Washington
Survey Area Data: Version 18, Jun 4, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 15, 2018—Oct 18, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
OlF	Olympic clay loam, 30 to 60 percent slopes	1.2	59.1%
VaC	Vader silt loam, 8 to 15 percent slopes	0.8	40.9%
Totals for Area of Interest		**2.1**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Clark County, Washington

OlF—Olympic clay loam, 30 to 60 percent slopes

Map Unit Setting

National map unit symbol: 2dz1
Elevation: 200 to 2,000 feet
Mean annual precipitation: 40 to 70 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 160 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Olympic and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Olympic

Setting

Landform: Mountain slopes
Parent material: Residuum and colluvium from igneous rock

Typical profile

H1 - 0 to 10 inches: clay loam
H2 - 10 to 41 inches: clay loam
H3 - 41 to 60 inches: gravelly clay loam

Properties and qualities

Slope: 30 to 60 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Hydric soil rating: No

VaC—Vader silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2dzz
Elevation: 50 to 1,800 feet
Mean annual precipitation: 50 to 70 inches
Mean annual air temperature: 48 to 50 degrees F

Frost-free period: 170 to 210 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Vader and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Vader

Setting

Parent material: Residuum and colluvium from sandstone with a mixture of volcanic ash in the upper part

Typical profile

H1 - 0 to 6 inches: ashy silt loam
H2 - 6 to 30 inches: ashy loam
H3 - 30 to 34 inches: weathered bedrock

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Forage suitability group: Limited Depth Soils (G002XV302WA)
Other vegetative classification: Limited Depth Soils (G002XV302WA)
Hydric soil rating: No

APPENDIX F

Arborscape Ltd, Inc.

11113 NE 95th Street
Vancouver WA 98662
360-944-5124
arborscapetreecare@gmail.com
OR CCB # 173431 WA # ARBORLI062Q8

Project: Lower Prune Hill BP and Reservoir Improvements for City of Camas
616 NW 18th Loop, Camas WA

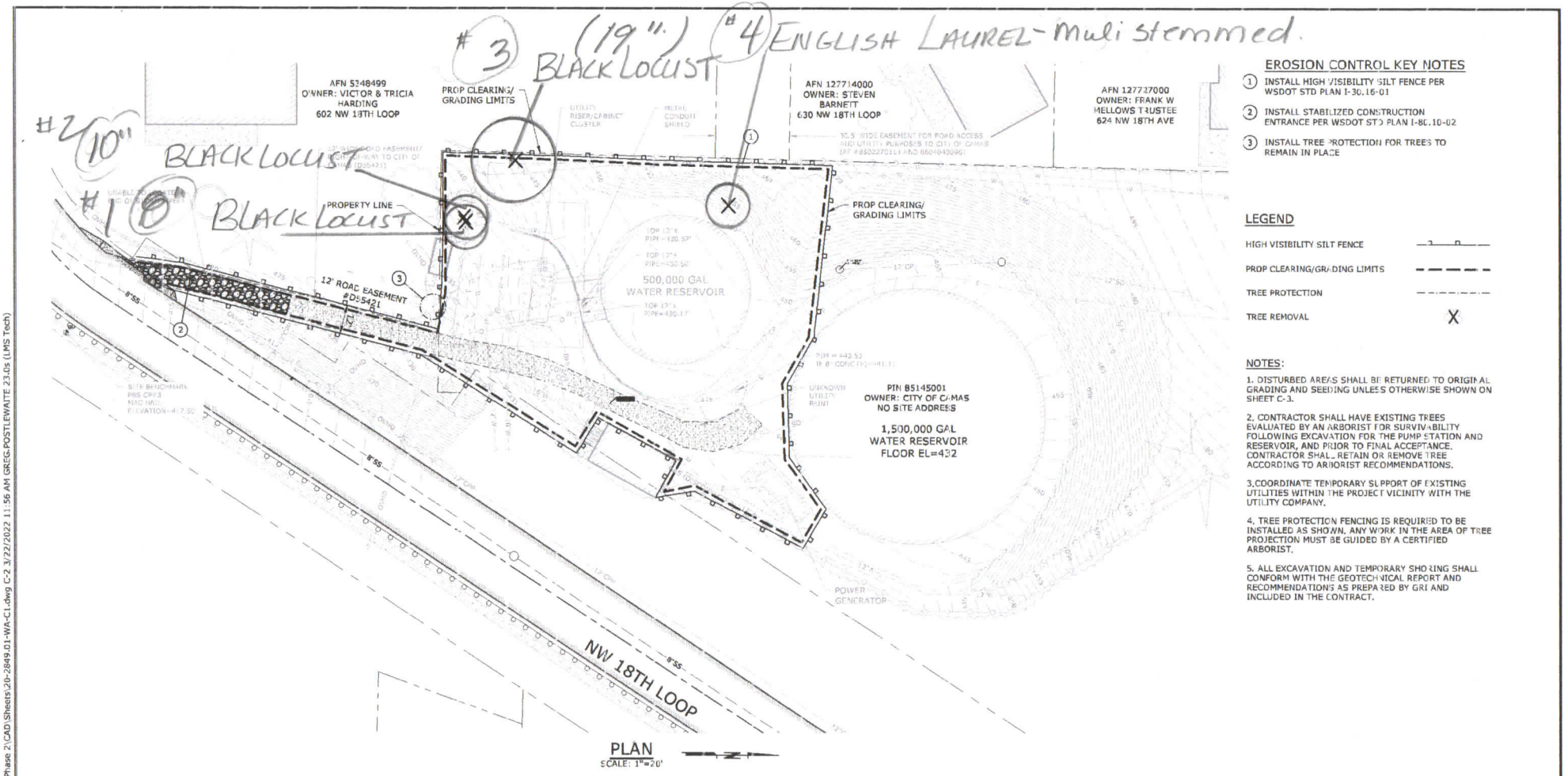
Contact: Greg Postlewaite PE
P 206.462.7030
Murraysmith | www.murraysmith.us

Arborist Report
A site visit was made on March 24, 2022

Observations and Recommendations
This site will continue to be used by the City of Camas for the current reservoir facility. Improvements are proposed on the south side that will require the removal of 3 trees and a large shrub. The 3 trees and overgrown shrub are good candidates for removal. The Black locust and English laurel are considered invasive species. See the tree survey following.

Tree #	Species	DBH (inches)	Condition and Health	Location on property	Action
1	Black Locust - Robinia pseudoacacia	8"	Fair- structurally stable - some die back present in canopy . Invasive Species	Along South fence line - south side of the chain link fence	Remove
2	Black Locust - Robinia pseudoacacia	10"	Fair- structurally stable - some die back present in canopy . Invasive Species	Along South fence line - south side of the chain link fence	Remove
3	Black Locust - Robinia pseudoacacia	adjusted DBH - 19"	Poor- has co dominate stems 12" and 15".Potential to split in wind or ice. Invasive Species	SW corner of property	Remove
4	English Laurel - Prunus laurocerasus	Multi stemmed large evergreen shrub	Fair - overgrown shrub multiple stems that emerged from previously made pruning cuts .Invasive species	West side of small tank	Remove

Prepared by:
Channah Buttrell ISA Certified Arborist PN-8266A
John Buttrell ISA Certified Arborist PN-0138A



EROSION CONTROL KEY NOTES

1. INSTALL HIGH VISIBILITY SILT FENCE PER WSDOT STD PLAN I-30.16-01
2. INSTALL STABILIZED CONSTRUCTION ENTRANCE PER WSDOT STD PLAN I-80.10-02
3. INSTALL TREE PROTECTION FOR TREES TO REMAIN IN PLACE

LEGEND

HIGH VISIBILITY SILT FENCE

PROP CLEARING/GRADING LIMITS

TREE PROTECTION

TREE REMOVAL X

NOTES:

1. DISTURBED AREAS SHALL BE RETURNED TO ORIGINAL GRADING AND SEEDING UNLESS OTHERWISE SHOWN ON SHEET C-3.
2. CONTRACTOR SHALL HAVE EXISTING TREES EVALUATED BY AN ARBORIST FOR SURVIVABILITY FOLLOWING EXCAVATION FOR THE PUMP STATION AND RESERVOIR, AND PRIOR TO FINAL ACCEPTANCE. CONTRACTOR SHALL RETAIN OR REMOVE TREE ACCORDING TO ARBORIST RECOMMENDATIONS.
3. COORDINATE TEMPORARY SUPPORT OF EXISTING UTILITIES WITHIN THE PROJECT VICINITY WITH THE UTILITY COMPANY.
4. TREE PROTECTION FENCING IS REQUIRED TO BE INSTALLED AS SHOWN. ANY WORK IN THE AREA OF TREE PROJECTION MUST BE GUIDED BY A CERTIFIED ARBORIST.
5. ALL EXCAVATION AND TEMPORARY SHORING SHALL CONFORM WITH THE GEOTECHNICAL REPORT AND RECOMMENDATIONS AS PREPARED BY GRI AND INCLUDED IN THE CONTRACT.

60% SUBMITTAL

NO.	DATE	BY	REVISION

NOTICE: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

GDP DESIGNED | MNF DRAWN | NCR CHECKED

PRELIMINARY NOT FOR CONSTRUCTION — MARCH 2022

murraysmith

City of Camas WASHINGTON

LOWER PRUNE HILL BOOSTER STATION & 0.5 MG RESERVOIR IMPROVEMENTS

SITE PREPARATION AND EROSION CONTROL PLAN

SHEET C-2 of 87

PROJECT NO. 20-2849.01 | SCALE: AS SHOWN | DATE: MARCH 2022

G:\PDX_Projects\20\2849.01 - Camas - Lower Prune Hill Phase 2\CAD\Sheets\20-2849.01-WA-C1.dwg C-2 3/22/2022 11:56 AM GREG.POSTLEWAITE 23.0s (LMS Tech)

State Environmental Policy Act
Determination of Non-Significance

CASE NO: SEPA22-25 Lower Prune Hill Booster Station & Reservoir

APPLICANT: James Hodges
City of Camas
616 NE 4th Avenue
Camas, WA 98607

REQUEST: To replace the Lower Prune Hill Booster Pump Station (LPH BPS) and the existing 0.5 million-gallon (MG) reservoir located near the intersection of Northwest 18th Loop and Northwest Ostenson Canyon Road.

LOCATION: 600 NW 18TH LOOP, CAMAS, WA 98607
PARCEL NUMBER 85173001 AND 85145001

LEGAL DESCRIPTION: THE PROJECT IS LOCATED IN THE CITY OF CAMAS IN THE NE ¼ OF SECTION 10, TOWNSHIP 1 NORTH, RANGE 3 EAST OF THE WILLAMETTE MERIDIAN

SEPA DETERMINATION: DETERMINATION OF NON-SIGNIFICANCE (DNS)

COMMENT DEADLINE: **NOVEMBER 10, 2022, AT 5:00 P.M.**

As lead agency under the State Environmental Policy Act (SEPA) Rules [Chapter 197-11, Washington Administrative Code (WAC)], the City of Camas must determine if there are possible significant adverse environmental impacts associated with this proposal. The options include the following:

- DS = Determination of Significance (The impacts cannot be mitigated through conditions of approval and, therefore, requiring the preparation of an Environmental Impact Statement (EIS).
- MDNS = Mitigated Determination of Non-Significance (The impacts can be addressed through conditions of approval), or;
- DNS = Determination of Non-Significance (The impacts can be addressed by applying the Camas Municipal Code).

Published in the Post Record on October 27, 2022 Legal Publication #737840
Mailed to property owners within 300-feet on October 26, 2022
Posted on bulletin boards at Camas City Hall, Camas Library and the City of Camas web site at: http://www.cityofcamas.us

Determination:

Determination of Non-Significance (DNS). The City of Camas, as lead agency for review of this proposal, has determined that this proposal does not have a probable significant adverse impact on the environment. An Environmental Impact Statement (EIS) is not required under RCW 43.21C.030(2)(e). This decision was made after review of a completed environmental checklist, and other information on file with the City of Camas.

Date of Publication & Comment Period:

Publication date of this DNS is **October 27, 2022,** and is issued under WAC 197-11-340. The lead agency will not act on this proposal until the close of the 14-day comment period which ends on **November 10, 2022**. Comments may be sent by email to communitydevelopment@cityofcamas.us or regular mail to:

City of Camas SEPA Official
Community Development Department
616 NE Fourth Avenue
Camas, Washington 98607

Responsible Official: Robert Maul (360) 817-1568

Robert Maul, Planning Manager and Responsible Official

October 27, 2022
Date of publication


NW 18th Ave
NW 18th Loop
NW 18th Ave
NW 18th Ave
NW Benton St
NW 17th Ave
NW 17th Ave
NW 16th Ave
NW 16th Ave
NW Drake St
NW Couch St
NW Benton St
NW 15th Ave
NW 15th Ave
NW Orchenson Canyon Rd
NW 18th Loop

N

Community Development
616 NE Fourth Avenue ○ Camas, WA 98607
(360) 817-1568
http://www.cityofcamas.us

SEPA ENVIRONMENTAL CHECKLIST

UPDATED 2016

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

***Instructions for applicants*:**

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals: [help]

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

Community Development
616 NE Fourth Avenue ○ Camas, WA 98607
(360) 817-1568
http://www.cityofcamas.us

A. Background [help]

1. Name of proposed project, if applicable: [help]

   Lower Prune Hill Booster Pump Station (LPH BPS) Improvements

2. Name of applicant: [help]

   City of Camas, Washington

   James Hodges, jhodges@cityofcamas.us

3. Address and phone number of applicant and contact person: [help]

   Camas City Hall
   616 NE 4th Avenue
   Camas, WA 98607
   Phone: 360-817-1561

4. Date checklist prepared: [help]

   March 2022

5. Agency requesting checklist: [help]

   City of Camas

6. Proposed timing or schedule (including phasing, if applicable): [help]

   The anticipated project timeline is to issue construction bids in January 2023, with construction starting in February 2023, and completion by June 2024.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. [help]

   No future additions, expansions, or other related activities are planned.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal. [help]

   - *Site Assessment and Permit Evaluation Lower Prune Hill Booster Pump Station (WSP, 2020)*
   - *Lower Prune Hill Booster Pump Station Improvements Alternative Analysis Review of Archaeological Resources (AINW, 2020)*

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- *Geotechnical Investigation (GRI, 2021)*
- *Stormwater Site Plan Report (Murraysmith, 2022)*

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. [help]

There are no known pending government approvals for properties directly affected by the proposed project.

10. List any government approvals or permits that will be needed for your proposal, if known. [help]

The following government approvals will be required for the proposed project:

- *Preliminary Site Plan Review (City)*
- *Major Variance (City)*
- *Minor Design Review (City)*
- *Critical Areas Permit for Geologically Hazardous Areas (City)*
- *Engineering and Construction Plan Approval (City)*
- *Grading Permit (City)*
- *Building and Plumbing Permit (City of Camas)*
- *Auxilliary Generator Permit (Camas Fire Marshall's Office)*

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.) [help]

The proposed booster pump station replacement will consist of three 250-horsepower (hp) pumps and a 38-foot by 21-foot concrete masonry block security building. The concrete masonry building will have an accent stripe, cement fiber siding above the masonry, and a standing seam metal roof. The new pump station will be constructed at the southwest corner of the site, within the footprint of the existing reservoir, and immediately north of the proposed 0.58-million-gallon (MG) reservoir. Within the building will be three 250-hp pumps. A new backup generator will be placed on a concrete pad just west of the proposed pump station building. The pumps within the building will be configured in a 2+1 arrangement, with primary pumps having a total capacity of 2,750 gallons per minute (gpm), and one standby pump having a capacity of 1,375 gpm. The existing LPH BPS and backup generator will remain in operation during construction. The proposed improvements would provide additional pumping capacity to meet projected maximum demand.

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(360) 817-1568
http://www.cityofcamas.us

City of Camas Public Works Department (Public Works) is also proposing to replace the existing 0.5-MG reservoir with a new 65-foot-diameter, 0.58-MG reservoir. The new reservoir will be a welded steel reservoir with a height of approximately 32 feet to the top of the reservoir. Additional improvements will include a new 12-foot-wide asphalt access road from Northwest 18th Loop that will surround the reservoir on all sides and also provide access to the proposed pump station. A new generator will be located immediately west of the proposed pump station. A 16-foot retaining wall will encompass the north, west, and south sides of the reservoir and pump station development.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist. [help]

The project area is located north of the intersection of Northwest 18th Loop and Northwest Ostenson Canyon Road on Parcels 85173001 and 85145001. The project site is located in the NE quarter of Section 10, Township 1 North, Range 03 East of the Willamette Meridian. A site plan, vicinity map, and topographic survey are provided in the accompanying plan set in Attachment A

B. ENVIRONMENTAL ELEMENTS [help]

1. Earth [help]

a. General description of the site: [help]

(circle one): Flat, rolling, hilly, steep slopes, mountainous, other _____

The study area has elevation ranges from approximately 386 feet in the northeast corner to 496 feet in the northwest corner. The majority of the site contains sloping topography with the eastern side at lower elevation and the western side at higher elevations. Portions of the site in the center and the south have been previously leveled and are relatively flat, leaving upper and lower benches, north and south respectively.

b. What is the steepest slope on the site (approximate percent slope)? [help]

According to the project's plans (on file with the City) and Clark County MapsOnline, the steepest slope occurs on the eastern and northeastern portions of the site and is between 40 to 80 percent.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils. [help]

The U.S. Department of Agriculture-Natural Resources Conservation Service identifies two soil types in the project area, as follows:

Community Development
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(360) 817-1568
http://www.cityofcamas.us

Olympic clay loam, 30 to 60 percent slopes

- *Typical profile: 0 to 10 inches: clay loam; 10 to 41 inches: clay loam; 41 to 60 inches: gravelly clay loam*
- *Hydrologic Group: C*
- *Hydric Rating: No*
- *Drainage Class: Well drained*
- *Western Washington Hydrology Model (WWHM) Soil Group: 3*
- *Farmland Classification: Not prime farmland*

Vader silt loam, 8 to 15 percent slopes

- *Typical profile: 0 to 6 inches: ashy silt loam; 6 to 30 inches: ashy loam; 30 to 34 inches: weathered bedrock*
- *Hydrologic Group: B*
- *Hydric Rating: No*
- *Drainage Class: Well drained*
- *WWHM Soil Group: 2*
- *Farmland Classification: Farmland of statewide importance*

According to the 2015-2035 Clark County Comprehensive Growth Management Plan, there are no designated agricultural lands of long-term commercial significance within urban growth areas (UGAs) in the county. As the property is located within the City of Camas' UGA and city limits, there are no agricultural lands of long-term commercial significance on or near the property.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe. [help]

According to Ecology's SEPA guidance, "unstable soils" refers to areas subject to mass wasting (rapid erosion) or landslides. Clark County MapsOnline indicates that the area is classified as an "Area of Potential Instability" and that portions of the site are classified as a "Severe Erosion Hazard." GRI conducted a geotechnical investigation in November 2021 for the proposed project and determined the following.

- *The slope located east of the proposed reservoir classifies as an erosion hazard area per the City of Camas Municipal Code (CMC). However, based on our observations, the erosion risk is low provided the vegetation is maintained on the slope and that grading at the top of the slope, if completed, directs stormwater away from the top of the slope. In our opinion, the project as currently designed will not adversely affect the erosion hazard.*
- *The project site is located within a landslide hazard area; however, our site reconnaissance and engineering analysis indicates that the risk of landslide is relatively low and the proposed improvements will not significantly adversely affect the overall stability of the slope under both static and seismic loading conditions.*

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e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill. [help]

Approximately 17,600 square feet of the project site will be disturbed. Approximately 5,000 cubic yards (cy) of cut and 1,000 cy of fill are required. Fill materials will be imported structural fill from an approved local fill source.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe. [help]

Yes. Clearing, grading, and construction of the proposed improvements could potentially cause erosion, if not properly designed and mitigated.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)? [help]

Approximately 16.7 percent of the project site will be covered with impervious surfaces, a slight increase from 14.8 percent prior to construction.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any: [help]

The applicant proposes to implement erosion control best management practices (BMPs), as described below, to reduce and mitigate the potential for erosion during construction.

- *Disturbed areas shall be returned to original grading and seeding unless otherwise shown on Sheet C-3 of the submitted plans on file with the City.*
- *All excavation and temporary shoring shall conform with the geotechnical report and recommendations as prepared by GRI and included in the contract.*
- *Install high-visibility silt fence per Washington State Department of Transportation (WSDOT) STD Plan I-30.16-01.*
- *Install stabilized construction entrance per WSDOT STD Plan I-80.10-02.*
- *Install tree protection for trees to remain in place.*

In addition to the above-stated erosion control techniques, the applicant is proposing to stabilize western cut-slopes using retaining walls. GRI completed a geotechnical report that lists other mitigation measures pertaining to site preparation, subgrade preparation, wet weather construction, structural fill, excavations, temporary excavation slopes and shoring, backfill and compaction, seismic design, structural design, and slope stability. These recommendations will be incorporated into the design of the project.

2. Air [help]

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known. [help]

Construction activities would result in the types of short-term emissions generally associated with construction vehicles and equipment, dust, etc. These emissions would cease upon completion of the

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project activities. Additionally, the auxilliary backup generator could generate diesel emissions during the infrequent periods of operation.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe. [help]

No known off-site sources of emissions or odor would affect the project.

c. Proposed measures to reduce or control emissions or other impacts to air, if any: [help]

Typical dust control measures, such as water application, would be used as appropriate for all on-site activities, including grading and storage piles. Equipment and vehicles would be outfitted with standard manufacturer's emission control equipment and may also operate using bio-based lubricants and fuels, such as biodiesel. These measures would reduce emissions during construction.

3. **Water** [help]

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into. [help]

There are no surface water bodies on or in the immediate vicinity of the site. Clark County MapsOnline shows nearest water body is unnamed non-fish-bearing seasonal stream approximately 350 feet to the southwest of the project site. The stream flows to the Columbia River.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans. [help]

The project will not require work over, in, or adjacent to waters within 200 feet of the project site.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material. [help]

The project does not included any fill or dredge material that would be placed in or removed from surface waters or wetlands.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known. [help]

No surface water withdrawals or diversions would occur.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan. [help]

The project is not located within the 100-year floodplain.

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6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge. [help]

The completed project will not discharge waste materials surface waters. A stormwater system has been proposed, which will capture, convey, treat, and discharge runoff generated by the project.

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known. [help]

No water would be discharged into groundwater and no groundwater would be withdrawn as a result of the project.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve. [help]

No waste material would be discharged into groundwater sources.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe. [help]

Stormwater would be generated from the impervious surfaces on the site. The applicant is proposing a series of inlets and pipes that would convey stormwater to the City of Camas existing stormwater water system.

2) Could waste materials enter ground or surface waters? If so, generally describe. [help]

As explained above, waste materials will not enter ground or surface waters as runoff will enter a stormwater collection system.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe. [help]

The overall site drainage pattern will not change. Stormwater generated by the proposal will be captured on site and conveyed within an existing system.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any: [help]

As stated above, the overall site drainage pattern will not change. The proposed stormwater systems have been designed to meet the City's stormwater requirements.

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616 NE Fourth Avenue ○ Camas, WA 98607
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Additional BMPs that will be used include:

- *The contractor will provide a site-specific spill prevention plan, which will include proactive measures for prevention, as well as spill response methodologies.*
- *To ensure that equipment is clean and free of external petroleum-based products, it will be inspected daily for leaks and proper function.*
- *Any waste resulting from the project will be disposed of at a site properly permitted for that type of waste.*
- *The project will comply fully with local agency-approved erosion control plans.*

4. **Plants** [help]

a. Check the types of vegetation found on the site: [help]

__X__deciduous tree: alder, maple, aspen, other
__X__evergreen tree: fir, cedar, pine, other
__X__shrubs
__X__grass
____pasture
____crop or grain
____ Orchards, vineyards or other permanent crops.
____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
____water plants: water lily, eelgrass, milfoil, other
__X__other types of vegetation

Vegetation species noted throughout the site and in Camas include Big leaf maple, Alder, Douglas Fir, among others.

b. What kind and amount of vegetation will be removed or altered? [help]

Removal of up to four trees between 6 and 14 inches diameter is anticipated as part of this project.

c. List threatened and endangered species known to be on or near the site. [help]

According to a review of the U.S. Fish and Wildlife Service (USFWS) IPaC database, the following federally listed plant species have been identified as potentially occurring within the vicinity of the project site:

- *Golden Paintbrush (*Castilleja levisecta*)*
- *Nelson's Checker-mallow (*Sidalcea nelsoniana*)*

While the species identified above may potentially occur within the vicinity of the project area, there is no suitable habitat for either species within the project site and they are not known or expected to occur at the project site. The project would not affect any Endangered Species Act (ESA)-listed plant species.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any: [help]

Community Development
616 NE Fourth Avenue ○ Camas, WA 98607
(360) 817-1568
http://www.cityofcamas.us

A combination of grass and groundcover will be placed along the site's western boundary within the City-required landscape buffer.

e. List all noxious weeds and invasive species known to be on or near the site. [help]

English ivy and Himalayan blackberry are common throughout Camas and have been identified in the project area.

5. **Animals** [help]

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site. [help]

Examples include:

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____

The general project area can be characterized as developed land consisting of open areas of grasses and forbs, areas of thick brushy vegetation, and deciduous and evergreen trees. Generally, these habitats are known to contain, or are suitable for songbirds, deer, hawks, rabbits, raccoons, opossums, and mice.

b. List any threatened and endangered species known to be on or near the site. [help]

According to the USFWS IPaC database, the following federally listed wildlife species have been identified as potentially occurring within the vicinity of the project site:

- Streaked Horned Lark (Eremophila alpestris strigata)
- Yellow-billed Cuckoo (Coccyzus americanus)

There is no suitable habitat for these species within the project area and they are not known or expected to occur within the project area. The project would not affect any ESA-listed species or designated critical habitats.

c. Is the site part of a migration route? If so, explain. [help]

The general project area is within the Pacific Flyway, a broad migratory corridor that extends from Alaska to Central America.

d. Proposed measures to preserve or enhance wildlife, if any: [help]

There are no mapped habitats on the project site either by Clark County or the Washington Department of Fish and Wildlife. However, the applicant will preserve all mature vegetation on the site and no mature trees are proposed to be removed, which will preserve any habitats that may exist for birds, deer, hawks, rabbits, raccoons, opossums, and mice.

e. List any invasive animal species known to be on or near the site. [help]

Community Development
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(360) 817-1568
http://www.cityofcamas.us

No invasive animal species are known to be located on or near the site.

6. **Energy and Natural Resources** [help]

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc. [help]

The construction process will require the use of gasoline- and/or diesel-powered combustion engines associated with construction equipment. The project includes three 250-hp pumps that will run on electricity and a backup generator that will run on diesel.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe. [help]

The construction of the proposed improvements will have no effect on the use of solar energy by adjacent properties. Vertical elements included in this proposal are typically at a lower elevation than the surrounding area and will not impact adjacent property's ability to use solar.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any: [help]

The project will use LED lighting and the pumps will be installed with variable frequency drives, which will reduce energy consumption during periods of low water demand.

7. **Environmental Health** [help]

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe. [help]

The project includes the construction of retaining walls, stormwater facilities, utility relocation or modification, and reservoir construction. The completed project is not anticipated to result in any increased environmental health hazards. However, exposure to potential environmental conditions is possible and is further described in the question below. Any waste resulting from the project will be disposed of at a site properly permitted for that type of waste.

New paving for the driveway will include the use of hot mixed asphaltic concrete and will be constructed in accordance with City standards.

1) Describe any known or possible contamination at the site from present or past uses. [help]

Ecology's Cleanup Database identifies two cleanup sites within 0.5 miles of the project area. Both of the sites are downgradient and do not pose any threat of contamination to the site. These sites are listed below.

- *Georgia-Pacific Camas Business Center (Cleanup Site ID 2961)*
- *Ronals Brown Property (Cleanup Site ID 6933)*

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2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity. [help]

There are no known underground hazardous liquid or gas transmission pipelines within or adjacent to the project site. The National Pipeline Mapping System Public Viewer shows the nearest pipeline is a hazardous gas transmission pipeline over 0.75 miles to the northeast of the project site. Project activities would not take place near the pipeline and no disturbance would occur.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project. [help]

During construction, fossil fuels may be stored on the site for equipment fueling with appropriate containment. The completed project will not increase the presence of toxic or hazardous chemicals on the site. Pesticides may be used in controlled amounts in landscaping areas; however, pesticide use will be authorized by pertinent authorities prior to its application.

The facility requires installation of a new auxiliary power diesel fueled generator to maintain operations in case of power failure. The generator will be out-fitted with a sound-attenuating enclosure and have a dual wall sub-base fuel tank included with the equipment for operation.

4) Describe special emergency services that might be required. [help]

The project will not require special emergency services pertaining to hazardous or toxic materials during construction or operation.

5) Proposed measures to reduce or control environmental health hazards, if any: [help]

Project activities will be completed in compliance with local, state, and federal regulations to reduce or control environmental health hazards. A spill kit will be kept on site should a spill from construction equipment occur.

b. Noise [help]

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)? [help]

Existing sources of noise in the project area include vehicular traffic. The noise generated by vehicle traffic would have no significant adverse effect on the project.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site. [help]

Construction noise and related vibration will be generated during the approximate 18-month construction duration for the project. Approximately 5,000 c.y. of material will be excavated and removed from the project site by dump truck, and 1,000 C.Y. of structural fill material will be

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616 NE Fourth Avenue ○ Camas, WA 98607
(360) 817-1568
http://www.cityofcamas.us

imported to the site by the same means. Exacavators, compaction equipment, dump trucks, air-compressors, portable 2-cycle saws, cranes, lifts, back-up beepers, and other equipment will create noise and vibration during work hours, as is typical for a municipal construction project. Efforts to mitigate some of these effects include: A) Specifying drilled shafts for the retaining wall piles, rather than pile-driving, 2) Employing the use of compaction equipment appropriate for the size and depth of the structural fills. Contract construction hours will generally be limited to 10-hour work days between the hours of 7 A.M. and 7 P.M., during week-days, excepting 60 minutes for lunch. Work on Saturdays may only occur with approval from the City of Camas, between 7 A.M. and 5 P.M.. No work will be allowed on Sundays. These provisions are consistent with the City's noise ordinance outlined in CMC 9.32.050(5), which states that "the use of equipment and activities producing intermittent or repetitive noise commonly associated with site improvements is not allowed before 7 a.m. or after 7 p.m. Monday through Friday, before 7 a.m. or after 5 p.m. on Saturdays, or anytime on Sundays." Periods of construction would remain consistent with these regulations.

The long-term noise levels are expected to approximate existing decibel levels upon the completion of the improvements. The noise generated from equipment on site, vehicles using the driveway, and infrequent operation of the backup generator would be the only source of noise.

3) Proposed measures to reduce or control noise impacts, if any: [help]

As stated above normal construction hours will be limited to 7 A.M. to 7 P.M. during week days; Saturdays from 7 A.M. to 5 P.M., with permission from Camas Engineering Staff. These limitations are consistent with the City of Camas Noise Ordinance contained in CMC 9.32.050(A)(5), which allows construction-related noise between 7 a.m. to 7 p.m. Monday through Friday, between 7 a.m. to 5 p.m. on Saturdays, and never on Sundays or federal holidays.

Efforts to mitigate temporary noise and construction vibration include: A) Retaining wall piles will be drilled rather than using pile-driving equipment, 2) Vibratory compaction of structural fills will be minimized when reasonably practical. There are no known alternative construction techniques readily available to mitigate temporary noise and vibration for this project.

The new standby generator will be furnished with a sound attenuated encloser. No additional noise reduction measures will be implemented, as the completed project will not significantly increase the amount of noise produced in the area.

8. **Land and Shoreline Use** [help]

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe. [help]

The site is currently in use as a reservoir and pump station for municipal services. The project will not change uses and will not affect current land uses on nearby or adjacent properties.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use? [help]

Community Development
616 NE Fourth Avenue ○ Camas, WA 98607
(360) 817-1568
http://www.cityofcamas.us

The project alignment is located in an urbanized area and does not occur adjacent to or within the vicinity of working farm or forest lands. The project site is not known to have been used as working farmlands or forest lands.

As previously noted, there are no designated agricultural lands of long-term commercial significance within the City of Camas UGA; therefore, there are no agricultural lands of long-term commercial significance on or near the property.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how: [help]

As stated above, the project does not occur adjacent to or within the vicinity of working farm or forest land; therefore, the proposal will have no effect on farm or forest land.

c. Describe any structures on the site. [help]

Structures on the site include two reservoirs, a pump station, and telecommunication facilities.

d. Will any structures be demolished? If so, what? [help]

Structures that will be demolished for this proposal include:

- *0.5-MG reservoir*
- *Existing retaining wall*
- *Existing generator and generator pad*
- *Telecommunications facility to be relocated*
- *Existing reservoir valve vault*

e. What is the current zoning classification of the site? [help]

The project site is zoned Single-Family Residential 7.5 (R-7.5).

f. What is the current comprehensive plan designation of the site? [help]

The project site has a comprehensive plan designation of Single-Family Medium.

g. If applicable, what is the current shoreline master program designation of the site? [help]

The project site is not within shoreline jurisdiction and is not regulated by the City of Camas shoreline master program.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify. [help]

Portions of the site are designated as geologically hazardous areas (i.e., landslide and erosion hazards).

Community Development
616 NE Fourth Avenue ○ Camas, WA 98607
(360) 817-1568
http://www.cityofcamas.us

i. Approximately how many people would reside or work in the completed project? [help]

As a utility project, the project would not result in housing or provide employment upon its completion.

j. Approximately how many people would the completed project displace? [help]

No persons would be displaced upon completion of the project.

k. Proposed measures to avoid or reduce displacement impacts, if any: [help]

The project will not result in any displacement impacts; therefore, no mitigation measures are proposed.

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any: [help]

The project will comply with the City of Camas municipal code, which regulates the alteration or development of land uses. The project is an existing use that would be upgraded with new facilities that meet the City's design and development standards. LPH BPS is listed in the Capital Improvement Plan for the City of Camas.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any: [help]

The project is not located in close proximity to agricultural or forest lands of long-term significance; therefore, there are no impacts or mitigations proposed.

9. **Housing** [help]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. [help]

This project is not proposing any additional housing units.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. [help]

The project is not proposing to eliminate any units of housing.

c. Proposed measures to reduce or control housing impacts, if any: [help]

There are no proposed measures to reduce or control housing impacts because this project would not eliminate or create any units.

Community Development
616 NE Fourth Avenue ○ Camas, WA 98607
(360) 817-1568
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10. **Aesthetics** [help]

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed? [help]

The tallest proposed structure is the 0.5-MG reservoir. The new reservoir will be a welded steel reservoir with an approximate height of 32 feet to the top of the reservoir. A roof vent would extend above the reservoir an additional 2 feet for a total reservoir height of 34 feet.

b. What views in the immediate vicinity would be altered or obstructed? [help]

No views would be altered or obstructed due to the project. The vertical structures associated with the project (reservoir) would not obstruct views because it will be constructed on the lower bench of the property, well below neighboring properties .The new reservoir would be located behind a natural slope and would largely not be visible from residences to the west that have easterly views.

b. Proposed measures to reduce or control aesthetic impacts, if any: [help]

This project is being designed, consistent with the Camas Design Manual. Landscaping will consist of groundcover plantings along the property line. The existing views across the site from uphill residences would be improved by placing the reservoir closer to the western property line.

11. **Light and Glare** [help]

a. What type of light or glare will the proposal produce? What time of day would it mainly occur? [help]

The project does not anticipate producing any glare to adjacent properties. Lighting proposed will be directed towards the ground.

b. Could light or glare from the finished project be a safety hazard or interfere with views? [help]

The lighting associated with the proposed improvements would not be a safety hazard or interfere with views. Downward directed and shielded lighting would prevent light trespass on adjacent properties.

c. What existing off-site sources of light or glare may affect your proposal? [help]

Off-site land uses may produce minor, insignificant light impacts typical of an urbanized environment. These land uses include residences, but the impacts are not expected to be significant.

d. Proposed measures to reduce or control light and glare impacts, if any: [help]

Proposed lighting will be directed toward the ground.

Community Development
616 NE Fourth Avenue ○ Camas, WA 98607
(360) 817-1568
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12. **Recreation** [help]

a. What designated and informal recreational opportunities are in the immediate vicinity? [help]

Designated recreational facilities in the project area include Ostenson Canyon, which provides access to developed and undeveloped hiking. Benton Park is approximately 0.15 miles to the southeast of the project site, although the park does not have direct access from Northwest 18th Loop.

b. Would the proposed project displace any existing recreational uses? If so, describe. [help]

The project would not displace any existing recreational uses.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any: [help]

No measures are proposed as there are no impacts anticipated to recreation opportunities.

13. **Historic and cultural preservation** [help]

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers ? If so, specifically describe. [help]

There are no buildings, structures, or sites located on or near the site that are over 45 years old or listed in or eligible for listing on any registers.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources. [help]

Archaeological Investigations Northwest, Inc. (AINW) conducted a records review of the project site in August 2020 as part of an alternatives analysis comparing potential site locations. The records review was used to assess the potential for encountering archaeological resources with the proposed locations and to provide recommendations for further archaeological surveys that may be needed for local and state compliance.

Clark County MapsOnline Archaeological Predictive Model has the subject property classified as Low probability of an archaeological site. The statewide archaeological predictive model (found online in the Washington Information System for Architectural and Archaeological Records Data [WISAARD]) shows the entire site as "Low Risk." The nearest archaeological isolated find is approximately 0.43 miles from the project site. The referenced archaeological memo included with this submittal has been reviewed by the City Planning Department, which determined that no additional archaeological review was required.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc. [help]

Community Development
616 NE Fourth Avenue ○ Camas, WA 98607
(360) 817-1568
http://www.cityofcamas.us

In 2020, AINW conducted a review of records and reports held by the Washington State Department of Archaeology and Historic Preservation (DAHP) that are available through WISAARD, an online database. Other reports, maps, and documents in AINW's library were reviewed to determine if resources have been identified in or near the project area and to determine whether archaeological surveys have been previously conducted near the project area. Historic-period maps were examined to determine the likelihood of pre-contact or historic-period resources being present within the project area. AINW determined that no archaeological studies had been conducted for the project area. AINW determined that no known archaeological resources were located within 0.25 miles of this project area.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required. [help]

Consistent with state laws, contractors in charge of site development shall halt all ground disturbing activates if any unanticipated archaeological resources are encountered during construction. In the event of a discovery of an archeological resource, DAHP is notified so that a proper evaluation of the resource can occur.

The SEPA comment period will be used to provide Tribes and DAHP with the opportunity to review and comment on the proposed project.

14. **Transportation** [help]

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any. [help]

The project site is accessed from a driveway off of Northwest 18th Loop. Surfacing improvements to the access driveway are proposed, but the improvements would not change access to the existing street system.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop? [help]

C-TRAN provides public transit (bus) service to the city of Camas. The nearest transit stop is at Northwest Sixth Avenue and Northwest Drake Street approximately 1 mile south of the project site.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate? [help]

The project would not add or eliminate parking.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). [help]

This project includes improvements to an existing pump station and reservoir and does not include improvements to existing roads, streets, pedestrian, bicycle, or state transportation facilities.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe. [help]

Community Development
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This project would not use or occur in the vicinity of any water, rail, or air transportation.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates? [help]

This project would not generate additional vehicular trips. Infrequently, Public Works personnel would visit the site for occasional maintenance and monitoring of the infrastructure.

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe. [help]

As stated above, the project alignment is not adjacent to, or within the vicinity of agricultural or forest harvest practices. In addition, there are numerous alternative routes of travel in the area to accommodate the movement of agricultural or forest products if necessary; therefore, it is anticipated that neither project construction, or the completed project will have an adverse effect on the movement of agricultural or forest products.

h. Proposed measures to reduce or control transportation impacts, if any: [help]

No measures are proposed as it is not anticipated that the project will generate any transportation impacts.

15. **Public Services** [help]

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe. [help]

As a utility project, this project would not result in an increased need to current public services. The LPH BPS is the only pump station to supply water to the 852-pressure zone, making it critical to the operation of the City water system. The proposed improvements will improve the existing facilities to meet the projected maximum demand for the 852-pressure zone. Emergency service routes (police and fire) are not anticipated to be affected by project construction.

b. Proposed measures to reduce or control direct impacts on public services, if any. [help]

The existing booster pump station and backup generator will remain in operation during construction of the new booster pump station, and will be disconnected and removed to ensure there are no direct impacts on public services during construction.

16. **Utilities** [help]

a. Circle utilities currently available at the site: [help]
electricity, natural gas, water , refuse service, telephone, sanitary sewer, septic system, other storm sewer

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b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed. [help]

The project is a municipal utility upgrade project for critical infrastructure for the City's water system. The project includes replacing the existing 0.58-MG reservoir with a new reservoir of the same capacity. The booster pump station replacement will consist of a 38-foot by 21-foot concrete masonry block security building. The new pump station will contain three 250-hp pumps. A backup generator will be located outside the proposed pump station. The project includes the removal and modification of existing water lines on the project site.

C. Signature [help]

Under the penalty of perjury, the above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: 

Name of Signee: Ethan Spoo, AICP

Position and Agency/Organization: Senior Consultant – Land/Urban Planner

Date Submitted: 7/25/2022

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

Date Published: October 27, 2022

To Whom It May Concern:

Please find enclosed a Determination of Non-Significance (DNS) for the **Lower Prune Hill Booster Station and Reservoir (SEPA22-25)** that was issued pursuant to the State Environmental Policy Act (SEPA) Rules, Chapter 197-11, Washington Administrative Code. The enclosed review comments reflect evaluation of the environmental checklist by the lead agency as required by WAC 197-11-330(1)(a)(i).

The following materials were submitted with the initial application:

- Application Form and Fees
- Applicant's narrative
- Arborist Report
- Archaeological Predetermination*
- Geotechnical Study
- Project Plans
- SEPA checklist
- Stormwater Drainage Report

All application materials are available for review upon request from the Community Development Department. *Archaeological information is exempt from public disclosure, consistent with RCW 42.56.300.

Written comments may be submitted on this determination within fourteen (14) days of its issuance, after which the DNS will be reconsidered in light of the comments received.

Please address all correspondence to:

City of Camas, SEPA Official
Community Development Department
616 NE Fourth Avenue
Camas, Washington 98607
communitydevelopment@cityofcamas.us

Distribution:

Applicant
Bureau of Indian Affairs
C-Tran
Camas School District
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Camas Communications Director, Bryan Rachal
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Camas Engineering Department Managers and Staff
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Camas-Washougal Post Record
Chinook Indian Nation
Cultural Resource Program, Cowlitz Indian Tribe
Cultural Resource Program, Yakama Indian Nation
Clark County Department of Environmental Services
Clark County Department of Transportation
Clark County Natural Resources Council
Clark Public Utilities
Department of Ecology
Department of Fish and Wildlife, Region 5
Department of Natural Resources, SEPA Center
Southwest Clean Air Agency
US Army Corps of Engineers
Vancouver- Clark Parks & Recreation
Washington Office of Archaeology & Historic Preservation
Washington State Department of Transportation
Washington State Parks and Recreation Commission, Environmental Program
Property Owners within 300 feet *(mailed the SEPA Determination & map)*

State Environmental Policy Act
Determination of Non-Significance

CASE NO: SEPA22-25 Lower Prune Hill Booster Station & Reservoir

APPLICANT: James Hodges
City of Camas
616 NE 4th Avenue
Camas, WA 98607

REQUEST: To replace the Lower Prune Hill Booster Pump Station (LPH BPS) and the existing 0.5 million-gallon (MG) reservoir located near the intersection of Northwest 18th Loop and Northwest Ostenson Canyon Road.

LOCATION: 600 NW 18TH LOOP, CAMAS, WA 98607
PARCEL NUMBER 85173001 AND 85145001

LEGAL DESCRIPTION: THE PROJECT IS LOCATED IN THE CITY OF CAMAS IN THE NE ¼ OF SECTION 10, TOWNSHIP 1 NORTH, RANGE 3 EAST OF THE WILLAMETTE MERIDIAN

SEPA DETERMINATION: DETERMINATION OF NON-SIGNIFICANCE (DNS)

COMMENT DEADLINE: **NOVEMBER 10, 2022, AT 5:00 P.M.**

As lead agency under the State Environmental Policy Act (SEPA) Rules [Chapter 197-11, Washington Administrative Code (WAC)], the City of Camas must determine if there are possible significant adverse environmental impacts associated with this proposal. The options include the following:

- DS = Determination of Significance (The impacts cannot be mitigated through conditions of approval and, therefore, requiring the preparation of an Environmental Impact Statement (EIS).
- MDNS = Mitigated Determination of Non-Significance (The impacts can be addressed through conditions of approval), or;
- DNS = Determination of Non-Significance (The impacts can be addressed by applying the Camas Municipal Code).

Published in the Post Record on October 27, 2022 Legal Publication #737840
Mailed to property owners within 300-feet on October 26, 2022
Posted on bulletin boards at Camas City Hall, Camas Library and the City of Camas web site at: http://www.cityofcamas.us

Determination:

Determination of Non-Significance (DNS). The City of Camas, as lead agency for review of this proposal, has determined that this proposal does not have a probable significant adverse impact on the environment. An Environmental Impact Statement (EIS) is not required under RCW 43.21C.030(2)(e). This decision was made after review of a completed environmental checklist, and other information on file with the City of Camas.

Date of Publication & Comment Period:

Publication date of this DNS is **October 27, 2022,** and is issued under WAC 197-11-340. The lead agency will not act on this proposal until the close of the 14-day comment period which ends on **November 10, 2022**. Comments may be sent by email to communitydevelopment@cityofcamas.us or regular mail to:

City of Camas SEPA Official
Community Development Department
616 NE Fourth Avenue
Camas, Washington 98607

Responsible Official: Robert Maul (360) 817-1568

Robert Maul, Planning Manager and Responsible Official

October 27, 2022
Date of publication


NW 18th Ave
NW 18th Loop
NW 18th Ave
NW 18th Ave
NW Benton St
NW 17th Ave
NW 17th Ave
NW 16th Ave
NW 16th Ave
NW Drake St
NW Couch St
NW 15th Ave
NW 15th Ave
NW Johnson Canyon Rd
NW 18th Loop

N

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SEPA ENVIRONMENTAL CHECKLIST

UPDATED 2016

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

***Instructions for applicants*:**

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals: [help]

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

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A. Background [help]

1. Name of proposed project, if applicable: [help]

   Lower Prune Hill Booster Pump Station (LPH BPS) Improvements

2. Name of applicant: [help]

   City of Camas, Washington

   James Hodges, jhodges@cityofcamas.us

3. Address and phone number of applicant and contact person: [help]

   Camas City Hall
   616 NE 4th Avenue
   Camas, WA 98607
   Phone: 360-817-1561

4. Date checklist prepared: [help]

   March 2022

5. Agency requesting checklist: [help]

   City of Camas

6. Proposed timing or schedule (including phasing, if applicable): [help]

   The anticipated project timeline is to issue construction bids in January 2023, with construction starting in February 2023, and completion by June 2024.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. [help]

   No future additions, expansions, or other related activities are planned.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal. [help]

   - *Site Assessment and Permit Evaluation Lower Prune Hill Booster Pump Station (WSP, 2020)*
   - *Lower Prune Hill Booster Pump Station Improvements Alternative Analysis Review of Archaeological Resources (AINW, 2020)*

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- *Geotechnical Investigation (GRI, 2021)*
- *Stormwater Site Plan Report (Murraysmith, 2022)*

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. [help]

There are no known pending government approvals for properties directly affected by the proposed project.

10. List any government approvals or permits that will be needed for your proposal, if known. [help]

The following government approvals will be required for the proposed project:

- *Preliminary Site Plan Review (City)*
- *Major Variance (City)*
- *Minor Design Review (City)*
- *Critical Areas Permit for Geologically Hazardous Areas (City)*
- *Engineering and Construction Plan Approval (City)*
- *Grading Permit (City)*
- *Building and Plumbing Permit (City of Camas)*
- *Auxilliary Generator Permit (Camas Fire Marshall's Office)*

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.) [help]

The proposed booster pump station replacement will consist of three 250-horsepower (hp) pumps and a 38-foot by 21-foot concrete masonry block security building. The concrete masonry building will have an accent stripe, cement fiber siding above the masonry, and a standing seam metal roof. The new pump station will be constructed at the southwest corner of the site, within the footprint of the existing reservoir, and immediately north of the proposed 0.58-million-gallon (MG) reservoir. Within the building will be three 250-hp pumps. A new backup generator will be placed on a concrete pad just west of the proposed pump station building. The pumps within the building will be configured in a 2+1 arrangement, with primary pumps having a total capacity of 2,750 gallons per minute (gpm), and one standby pump having a capacity of 1,375 gpm. The existing LPH BPS and backup generator will remain in operation during construction. The proposed improvements would provide additional pumping capacity to meet projected maximum demand.

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City of Camas Public Works Department (Public Works) is also proposing to replace the existing 0.5-MG reservoir with a new 65-foot-diameter, 0.58-MG reservoir. The new reservoir will be a welded steel reservoir with a height of approximately 32 feet to the top of the reservoir. Additional improvements will include a new 12-foot-wide asphalt access road from Northwest 18th Loop that will surround the reservoir on all sides and also provide access to the proposed pump station. A new generator will be located immediately west of the proposed pump station. A 16-foot retaining wall will encompass the north, west, and south sides of the reservoir and pump station development.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist. [help]

The project area is located north of the intersection of Northwest 18th Loop and Northwest Ostenson Canyon Road on Parcels 85173001 and 85145001. The project site is located in the NE quarter of Section 10, Township 1 North, Range 03 East of the Willamette Meridian. A site plan, vicinity map, and topographic survey are provided in the accompanying plan set in Attachment A

B. ENVIRONMENTAL ELEMENTS [help]

1. Earth [help]

a. General description of the site: [help]

(circle one): Flat, rolling, hilly, steep slopes, mountainous, other _____

The study area has elevation ranges from approximately 386 feet in the northeast corner to 496 feet in the northwest corner. The majority of the site contains sloping topography with the eastern side at lower elevation and the western side at higher elevations. Portions of the site in the center and the south have been previously leveled and are relatively flat, leaving upper and lower benches, north and south respectively.

b. What is the steepest slope on the site (approximate percent slope)? [help]

According to the project's plans (on file with the City) and Clark County MapsOnline, the steepest slope occurs on the eastern and northeastern portions of the site and is between 40 to 80 percent.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils. [help]

The U.S. Department of Agriculture-Natural Resources Conservation Service identifies two soil types in the project area, as follows:

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Olympic clay loam, 30 to 60 percent slopes

- *Typical profile: 0 to 10 inches: clay loam; 10 to 41 inches: clay loam; 41 to 60 inches: gravelly clay loam*
- *Hydrologic Group: C*
- *Hydric Rating: No*
- *Drainage Class: Well drained*
- *Western Washington Hydrology Model (WWHM) Soil Group: 3*
- *Farmland Classification: Not prime farmland*

Vader silt loam, 8 to 15 percent slopes

- *Typical profile: 0 to 6 inches: ashy silt loam; 6 to 30 inches: ashy loam; 30 to 34 inches: weathered bedrock*
- *Hydrologic Group: B*
- *Hydric Rating: No*
- *Drainage Class: Well drained*
- *WWHM Soil Group: 2*
- *Farmland Classification: Farmland of statewide importance*

According to the 2015-2035 Clark County Comprehensive Growth Management Plan, there are no designated agricultural lands of long-term commercial significance within urban growth areas (UGAs) in the county. As the property is located within the City of Camas' UGA and city limits, there are no agricultural lands of long-term commercial significance on or near the property.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe. [help]

According to Ecology's SEPA guidance, "unstable soils" refers to areas subject to mass wasting (rapid erosion) or landslides. Clark County MapsOnline indicates that the area is classified as an "Area of Potential Instability" and that portions of the site are classified as a "Severe Erosion Hazard." GRI conducted a geotechnical investigation in November 2021 for the proposed project and determined the following.

- *The slope located east of the proposed reservoir classifies as an erosion hazard area per the City of Camas Municipal Code (CMC). However, based on our observations, the erosion risk is low provided the vegetation is maintained on the slope and that grading at the top of the slope, if completed, directs stormwater away from the top of the slope. In our opinion, the project as currently designed will not adversely affect the erosion hazard.*
- *The project site is located within a landslide hazard area; however, our site reconnaissance and engineering analysis indicates that the risk of landslide is relatively low and the proposed improvements will not significantly adversely affect the overall stability of the slope under both static and seismic loading conditions.*

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e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill. [help]

Approximately 17,600 square feet of the project site will be disturbed. Approximately 5,000 cubic yards (cy) of cut and 1,000 cy of fill are required. Fill materials will be imported structural fill from an approved local fill source.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe. [help]

Yes. Clearing, grading, and construction of the proposed improvements could potentially cause erosion, if not properly designed and mitigated.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)? [help]

Approximately 16.7 percent of the project site will be covered with impervious surfaces, a slight increase from 14.8 percent prior to construction.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any: [help]

The applicant proposes to implement erosion control best management practices (BMPs), as described below, to reduce and mitigate the potential for erosion during construction.

- *Disturbed areas shall be returned to original grading and seeding unless otherwise shown on Sheet C-3 of the submitted plans on file with the City.*
- *All excavation and temporary shoring shall conform with the geotechnical report and recommendations as prepared by GRI and included in the contract.*
- *Install high-visibility silt fence per Washington State Department of Transportation (WSDOT) STD Plan I-30.16-01.*
- *Install stabilized construction entrance per WSDOT STD Plan I-80.10-02.*
- *Install tree protection for trees to remain in place.*

In addition to the above-stated erosion control techniques, the applicant is proposing to stabilize western cut-slopes using retaining walls. GRI completed a geotechnical report that lists other mitigation measures pertaining to site preparation, subgrade preparation, wet weather construction, structural fill, excavations, temporary excavation slopes and shoring, backfill and compaction, seismic design, structural design, and slope stability. These recommendations will be incorporated into the design of the project.

2. Air [help]

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known. [help]

Construction activities would result in the types of short-term emissions generally associated with construction vehicles and equipment, dust, etc. These emissions would cease upon completion of the

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project activities. Additionally, the auxilliary backup generator could generate diesel emissions during the infrequent periods of operation.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe. [help]

No known off-site sources of emissions or odor would affect the project.

c. Proposed measures to reduce or control emissions or other impacts to air, if any: [help]

Typical dust control measures, such as water application, would be used as appropriate for all on-site activities, including grading and storage piles. Equipment and vehicles would be outfitted with standard manufacturer's emission control equipment and may also operate using bio-based lubricants and fuels, such as biodiesel. These measures would reduce emissions during construction.

3. **Water** [help]

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into. [help]

There are no surface water bodies on or in the immediate vicinity of the site. Clark County MapsOnline shows nearest water body is unnamed non-fish-bearing seasonal stream approximately 350 feet to the southwest of the project site. The stream flows to the Columbia River.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans. [help]

The project will not require work over, in, or adjacent to waters within 200 feet of the project site.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material. [help]

The project does not included any fill or dredge material that would be placed in or removed from surface waters or wetlands.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known. [help]

No surface water withdrawals or diversions would occur.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan. [help]

The project is not located within the 100-year floodplain.

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6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge. [help]

The completed project will not discharge waste materials surface waters. A stormwater system has been proposed, which will capture, convey, treat, and discharge runoff generated by the project.

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known. [help]

No water would be discharged into groundwater and no groundwater would be withdrawn as a result of the project.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve. [help]

No waste material would be discharged into groundwater sources.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe. [help]

Stormwater would be generated from the impervious surfaces on the site. The applicant is proposing a series of inlets and pipes that would convey stormwater to the City of Camas existing stormwater water system.

2) Could waste materials enter ground or surface waters? If so, generally describe. [help]

As explained above, waste materials will not enter ground or surface waters as runoff will enter a stormwater collection system.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe. [help]

The overall site drainage pattern will not change. Stormwater generated by the proposal will be captured on site and conveyed within an existing system.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any: [help]

As stated above, the overall site drainage pattern will not change. The proposed stormwater systems have been designed to meet the City's stormwater requirements.

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Additional BMPs that will be used include:

- *The contractor will provide a site-specific spill prevention plan, which will include proactive measures for prevention, as well as spill response methodologies.*
- *To ensure that equipment is clean and free of external petroleum-based products, it will be inspected daily for leaks and proper function.*
- *Any waste resulting from the project will be disposed of at a site properly permitted for that type of waste.*
- *The project will comply fully with local agency-approved erosion control plans.*

4. **Plants** [help]

a. Check the types of vegetation found on the site: [help]

__X__deciduous tree: alder, maple, aspen, other
__X__evergreen tree: fir, cedar, pine, other
__X__shrubs
__X__grass
____pasture
____crop or grain
____ Orchards, vineyards or other permanent crops.
____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
____water plants: water lily, eelgrass, milfoil, other
__X__other types of vegetation

Vegetation species noted throughout the site and in Camas include Big leaf maple, Alder, Douglas Fir, among others.

b. What kind and amount of vegetation will be removed or altered? [help]

Removal of up to four trees between 6 and 14 inches diameter is anticipated as part of this project.

c. List threatened and endangered species known to be on or near the site. [help]

According to a review of the U.S. Fish and Wildlife Service (USFWS) IPaC database, the following federally listed plant species have been identified as potentially occurring within the vicinity of the project site:

- *Golden Paintbrush (*Castilleja levisecta*)*
- *Nelson's Checker-mallow (*Sidalcea nelsoniana*)*

While the species identified above may potentially occur within the vicinity of the project area, there is no suitable habitat for either species within the project site and they are not known or expected to occur at the project site. The project would not affect any Endangered Species Act (ESA)-listed plant species.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any: [help]

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A combination of grass and groundcover will be placed along the site's western boundary within the City-required landscape buffer.

e. List all noxious weeds and invasive species known to be on or near the site. [help]

English ivy and Himalayan blackberry are common throughout Camas and have been identified in the project area.

5. **Animals** [help]

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site. [help]

Examples include:

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____

The general project area can be characterized as developed land consisting of open areas of grasses and forbs, areas of thick brushy vegetation, and deciduous and evergreen trees. Generally, these habitats are known to contain, or are suitable for songbirds, deer, hawks, rabbits, raccoons, opossums, and mice.

b. List any threatened and endangered species known to be on or near the site. [help]

According to the USFWS IPaC database, the following federally listed wildlife species have been identified as potentially occurring within the vicinity of the project site:

- Streaked Horned Lark (Eremophila alpestris strigata)
- Yellow-billed Cuckoo (Coccyzus americanus)

There is no suitable habitat for these species within the project area and they are not known or expected to occur within the project area. The project would not affect any ESA-listed species or designated critical habitats.

c. Is the site part of a migration route? If so, explain. [help]

The general project area is within the Pacific Flyway, a broad migratory corridor that extends from Alaska to Central America.

d. Proposed measures to preserve or enhance wildlife, if any: [help]

There are no mapped habitats on the project site either by Clark County or the Washington Department of Fish and Wildlife. However, the applicant will preserve all mature vegetation on the site and no mature trees are proposed to be removed, which will preserve any habitats that may exist for birds, deer, hawks, rabbits, raccoons, opossums, and mice.

e. List any invasive animal species known to be on or near the site. [help]

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No invasive animal species are known to be located on or near the site.

6. **Energy and Natural Resources** [help]

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc. [help]

The construction process will require the use of gasoline- and/or diesel-powered combustion engines associated with construction equipment. The project includes three 250-hp pumps that will run on electricity and a backup generator that will run on diesel.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe. [help]

The construction of the proposed improvements will have no effect on the use of solar energy by adjacent properties. Vertical elements included in this proposal are typically at a lower elevation than the surrounding area and will not impact adjacent property's ability to use solar.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any: [help]

The project will use LED lighting and the pumps will be installed with variable frequency drives, which will reduce energy consumption during periods of low water demand.

7. **Environmental Health** [help]

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe. [help]

The project includes the construction of retaining walls, stormwater facilities, utility relocation or modification, and reservoir construction. The completed project is not anticipated to result in any increased environmental health hazards. However, exposure to potential environmental conditions is possible and is further described in the question below. Any waste resulting from the project will be disposed of at a site properly permitted for that type of waste.

New paving for the driveway will include the use of hot mixed asphaltic concrete and will be constructed in accordance with City standards.

1) Describe any known or possible contamination at the site from present or past uses. [help]

Ecology's Cleanup Database identifies two cleanup sites within 0.5 miles of the project area. Both of the sites are downgradient and do not pose any threat of contamination to the site. These sites are listed below.

- *Georgia-Pacific Camas Business Center (Cleanup Site ID 2961)*
- *Ronals Brown Property (Cleanup Site ID 6933)*

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2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity. [help]

There are no known underground hazardous liquid or gas transmission pipelines within or adjacent to the project site. The National Pipeline Mapping System Public Viewer shows the nearest pipeline is a hazardous gas transmission pipeline over 0.75 miles to the northeast of the project site. Project activities would not take place near the pipeline and no disturbance would occur.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project. [help]

During construction, fossil fuels may be stored on the site for equipment fueling with appropriate containment. The completed project will not increase the presence of toxic or hazardous chemicals on the site. Pesticides may be used in controlled amounts in landscaping areas; however, pesticide use will be authorized by pertinent authorities prior to its application.

The facility requires installation of a new auxiliary power diesel fueled generator to maintain operations in case of power failure. The generator will be out-fitted with a sound-attenuating enclosure and have a dual wall sub-base fuel tank included with the equipment for operation.

4) Describe special emergency services that might be required. [help]

The project will not require special emergency services pertaining to hazardous or toxic materials during construction or operation.

5) Proposed measures to reduce or control environmental health hazards, if any: [help]

Project activities will be completed in compliance with local, state, and federal regulations to reduce or control environmental health hazards. A spill kit will be kept on site should a spill from construction equipment occur.

b. Noise [help]

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)? [help]

Existing sources of noise in the project area include vehicular traffic. The noise generated by vehicle traffic would have no significant adverse effect on the project.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site. [help]

Construction noise and related vibration will be generated during the approximate 18-month construction duration for the project. Approximately 5,000 c.y. of material will be excavated and removed from the project site by dump truck, and 1,000 C.Y. of structural fill material will be

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imported to the site by the same means. Exacavators, compaction equipment, dump trucks, air-compressors, portable 2-cycle saws, cranes, lifts, back-up beepers, and other equipment will create noise and vibration during work hours, as is typical for a municipal construction project. Efforts to mitigate some of these effects include: A) Specifying drilled shafts for the retaining wall piles, rather than pile-driving, 2) Employing the use of compaction equipment appropriate for the size and depth of the structural fills. Contract construction hours will generally be limited to 10-hour work days between the hours of 7 A.M. and 7 P.M., during week-days, excepting 60 minutes for lunch. Work on Saturdays may only occur with approval from the City of Camas, between 7 A.M. and 5 P.M.. No work will be allowed on Sundays. These provisions are consistent with the City's noise ordinance outlined in CMC 9.32.050(5), which states that "the use of equipment and activities producing intermittent or repetitive noise commonly associated with site improvements is not allowed before 7 a.m. or after 7 p.m. Monday through Friday, before 7 a.m. or after 5 p.m. on Saturdays, or anytime on Sundays." Periods of construction would remain consistent with these regulations.

The long-term noise levels are expected to approximate existing decibel levels upon the completion of the improvements. The noise generated from equipment on site, vehicles using the driveway, and infrequent operation of the backup generator would be the only source of noise.

3) Proposed measures to reduce or control noise impacts, if any: [help]

As stated above normal construction hours will be limited to 7 A.M. to 7 P.M. during week days; Saturdays from 7 A.M. to 5 P.M., with permission from Camas Engineering Staff. These limitations are consistent with the City of Camas Noise Ordinance contained in CMC 9.32.050(A)(5), which allows construction-related noise between 7 a.m. to 7 p.m. Monday through Friday, between 7 a.m. to 5 p.m. on Saturdays, and never on Sundays or federal holidays.

Efforts to mitigate temporary noise and construction vibration include: A) Retaining wall piles will be drilled rather than using pile-driving equipment, 2) Vibratory compaction of structural fills will be minimized when reasonably practical. There are no known alternative construction techniques readily available to mitigate temporary noise and vibration for this project.

The new standby generator will be furnished with a sound attenuated encloser. No additional noise reduction measures will be implemented, as the completed project will not significantly increase the amount of noise produced in the area.

8. **Land and Shoreline Use** [help]

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe. [help]

The site is currently in use as a reservoir and pump station for municipal services. The project will not change uses and will not affect current land uses on nearby or adjacent properties.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use? [help]

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The project alignment is located in an urbanized area and does not occur adjacent to or within the vicinity of working farm or forest lands. The project site is not known to have been used as working farmlands or forest lands.

As previously noted, there are no designated agricultural lands of long-term commercial significance within the City of Camas UGA; therefore, there are no agricultural lands of long-term commercial significance on or near the property.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how: [help]

As stated above, the project does not occur adjacent to or within the vicinity of working farm or forest land; therefore, the proposal will have no effect on farm or forest land.

c. Describe any structures on the site. [help]

Structures on the site include two reservoirs, a pump station, and telecommunication facilities.

d. Will any structures be demolished? If so, what? [help]

Structures that will be demolished for this proposal include:

- *0.5-MG reservoir*
- *Existing retaining wall*
- *Existing generator and generator pad*
- *Telecommunications facility to be relocated*
- *Existing reservoir valve vault*

e. What is the current zoning classification of the site? [help]

The project site is zoned Single-Family Residential 7.5 (R-7.5).

f. What is the current comprehensive plan designation of the site? [help]

The project site has a comprehensive plan designation of Single-Family Medium.

g. If applicable, what is the current shoreline master program designation of the site? [help]

The project site is not within shoreline jurisdiction and is not regulated by the City of Camas shoreline master program.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify. [help]

Portions of the site are designated as geologically hazardous areas (i.e., landslide and erosion hazards).

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i. Approximately how many people would reside or work in the completed project? [help]

As a utility project, the project would not result in housing or provide employment upon its completion.

j. Approximately how many people would the completed project displace? [help]

No persons would be displaced upon completion of the project.

k. Proposed measures to avoid or reduce displacement impacts, if any: [help]

The project will not result in any displacement impacts; therefore, no mitigation measures are proposed.

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any: [help]

The project will comply with the City of Camas municipal code, which regulates the alteration or development of land uses. The project is an existing use that would be upgraded with new facilities that meet the City's design and development standards. LPH BPS is listed in the Capital Improvement Plan for the City of Camas.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any: [help]

The project is not located in close proximity to agricultural or forest lands of long-term significance; therefore, there are no impacts or mitigations proposed.

9. **Housing** [help]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. [help]

This project is not proposing any additional housing units.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. [help]

The project is not proposing to eliminate any units of housing.

c. Proposed measures to reduce or control housing impacts, if any: [help]

There are no proposed measures to reduce or control housing impacts because this project would not eliminate or create any units.

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10. **Aesthetics** [help]

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed? [help]

The tallest proposed structure is the 0.5-MG reservoir. The new reservoir will be a welded steel reservoir with an approximate height of 32 feet to the top of the reservoir. A roof vent would extend above the reservoir an additional 2 feet for a total reservoir height of 34 feet.

b. What views in the immediate vicinity would be altered or obstructed? [help]

No views would be altered or obstructed due to the project. The vertical structures associated with the project (reservoir) would not obstruct views because it will be constructed on the lower bench of the property, well below neighboring properties .The new reservoir would be located behind a natural slope and would largely not be visible from residences to the west that have easterly views.

b. Proposed measures to reduce or control aesthetic impacts, if any: [help]

This project is being designed, consistent with the Camas Design Manual. Landscaping will consist of groundcover plantings along the property line. The existing views across the site from uphill residences would be improved by placing the reservoir closer to the western property line.

11. **Light and Glare** [help]

a. What type of light or glare will the proposal produce? What time of day would it mainly occur? [help]

The project does not anticipate producing any glare to adjacent properties. Lighting proposed will be directed towards the ground.

b. Could light or glare from the finished project be a safety hazard or interfere with views? [help]

The lighting associated with the proposed improvements would not be a safety hazard or interfere with views. Downward directed and shielded lighting would prevent light trespass on adjacent properties.

c. What existing off-site sources of light or glare may affect your proposal? [help]

Off-site land uses may produce minor, insignificant light impacts typical of an urbanized environment. These land uses include residences, but the impacts are not expected to be significant.

d. Proposed measures to reduce or control light and glare impacts, if any: [help]

Proposed lighting will be directed toward the ground.

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12. **Recreation** [help]

a. What designated and informal recreational opportunities are in the immediate vicinity? [help]

Designated recreational facilities in the project area include Ostenson Canyon, which provides access to developed and undeveloped hiking. Benton Park is approximately 0.15 miles to the southeast of the project site, although the park does not have direct access from Northwest 18th Loop.

b. Would the proposed project displace any existing recreational uses? If so, describe. [help]

The project would not displace any existing recreational uses.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any: [help]

No measures are proposed as there are no impacts anticipated to recreation opportunities.

13. **Historic and cultural preservation** [help]

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers ? If so, specifically describe. [help]

There are no buildings, structures, or sites located on or near the site that are over 45 years old or listed in or eligible for listing on any registers.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources. [help]

Archaeological Investigations Northwest, Inc. (AINW) conducted a records review of the project site in August 2020 as part of an alternatives analysis comparing potential site locations. The records review was used to assess the potential for encountering archaeological resources with the proposed locations and to provide recommendations for further archaeological surveys that may be needed for local and state compliance.

Clark County MapsOnline Archaeological Predictive Model has the subject property classified as Low probability of an archaeological site. The statewide archaeological predictive model (found online in the Washington Information System for Architectural and Archaeological Records Data [WISAARD]) shows the entire site as "Low Risk." The nearest archaeological isolated find is approximately 0.43 miles from the project site. The referenced archaeological memo included with this submittal has been reviewed by the City Planning Department, which determined that no additional archaeological review was required.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc. [help]

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In 2020, AINW conducted a review of records and reports held by the Washington State Department of Archaeology and Historic Preservation (DAHP) that are available through WISAARD, an online database. Other reports, maps, and documents in AINW's library were reviewed to determine if resources have been identified in or near the project area and to determine whether archaeological surveys have been previously conducted near the project area. Historic-period maps were examined to determine the likelihood of pre-contact or historic-period resources being present within the project area. AINW determined that no archaeological studies had been conducted for the project area. AINW determined that no known archaeological resources were located within 0.25 miles of this project area.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required. [help]

Consistent with state laws, contractors in charge of site development shall halt all ground disturbing activates if any unanticipated archaeological resources are encountered during construction. In the event of a discovery of an archeological resource, DAHP is notified so that a proper evaluation of the resource can occur.

The SEPA comment period will be used to provide Tribes and DAHP with the opportunity to review and comment on the proposed project.

14. **Transportation** [help]

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any. [help]

The project site is accessed from a driveway off of Northwest 18th Loop. Surfacing improvements to the access driveway are proposed, but the improvements would not change access to the existing street system.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop? [help]

C-TRAN provides public transit (bus) service to the city of Camas. The nearest transit stop is at Northwest Sixth Avenue and Northwest Drake Street approximately 1 mile south of the project site.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate? [help]

The project would not add or eliminate parking.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). [help]

This project includes improvements to an existing pump station and reservoir and does not include improvements to existing roads, streets, pedestrian, bicycle, or state transportation facilities.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe. [help]

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This project would not use or occur in the vicinity of any water, rail, or air transportation.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates? [help]

This project would not generate additional vehicular trips. Infrequently, Public Works personnel would visit the site for occasional maintenance and monitoring of the infrastructure.

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe. [help]

As stated above, the project alignment is not adjacent to, or within the vicinity of agricultural or forest harvest practices. In addition, there are numerous alternative routes of travel in the area to accommodate the movement of agricultural or forest products if necessary; therefore, it is anticipated that neither project construction, or the completed project will have an adverse effect on the movement of agricultural or forest products.

h. Proposed measures to reduce or control transportation impacts, if any: [help]

No measures are proposed as it is not anticipated that the project will generate any transportation impacts.

15. **Public Services** [help]

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe. [help]

As a utility project, this project would not result in an increased need to current public services. The LPH BPS is the only pump station to supply water to the 852-pressure zone, making it critical to the operation of the City water system. The proposed improvements will improve the existing facilities to meet the projected maximum demand for the 852-pressure zone. Emergency service routes (police and fire) are not anticipated to be affected by project construction.

b. Proposed measures to reduce or control direct impacts on public services, if any. [help]

The existing booster pump station and backup generator will remain in operation during construction of the new booster pump station, and will be disconnected and removed to ensure there are no direct impacts on public services during construction.

16. **Utilities** [help]

a. Circle utilities currently available at the site: [help]
electricity, natural gas, water , refuse service, telephone, sanitary sewer, septic system, other storm sewer

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b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed. [help]

The project is a municipal utility upgrade project for critical infrastructure for the City's water system. The project includes replacing the existing 0.58-MG reservoir with a new reservoir of the same capacity. The booster pump station replacement will consist of a 38-foot by 21-foot concrete masonry block security building. The new pump station will contain three 250-hp pumps. A backup generator will be located outside the proposed pump station. The project includes the removal and modification of existing water lines on the project site.

C. Signature [help]

Under the penalty of perjury, the above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: 

Name of Signee: Ethan Spoo, AICP

Position and Agency/Organization: Senior Consultant – Land/Urban Planner

Date Submitted: 7/25/2022

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

August 15, 2022

City of Camas Public Works Engineering
Attn: Jim Hodges
Sent via email: jhodges@cityofcamas.us

RE: Application Completeness Review for Planning Case SPRV22-06: Lower Prune Hill Reservoir & Booster Station

Dear Jim,

Thank you for your application submittal for the Lower Prune Hill Reservoir and Booster Station (SPRV22-06). I am the case planner assigned to this project. The purpose of this letter is to inform you that the application submitted on July 5, 2022, has been deemed incomplete in accordance with Camas Municipal Code (CMC) Section 18.55.130 and there are items that need to be addressed to move forward with the review process.

Items necessary for completeness:

Per CMC 18.55.110:

A. Required Fees: Fee for Major Variance was not submitted. Please submit fee in the amount of $1,295.00 so the variance related to reduced setbacks can be processed.
H. A development sign is required for a Type III application.
I. A copy of a full title report is required.

Once the items noted above are submitted, staff will review the information to verify whether the application can be deemed complete. As a reminder, staff is not authorized to waive any requirement of the City Code. Any omission or failure by staff to recite applicable code requirements shall not constitute a waiver by the City of any standard or requirement.

If you have any questions related to this project, please feel free to contact me by email: YSennewald@cityofcamas.us or by phone: (360) 817-7269.

Respectfully,

Yvette Sennewald
Senior Planner

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

October 6, 2022

City of Camas Public Works Engineering
Attn: Jim Hodges
Sent via email: jhodges@cityofcamas.us

RE: Completeness Review for Planning Case SPRV22-06: Lower Prune Hill Reservoir & Booster Station

Dear Jim,

The purpose of this letter is to inform you that the above application submitted on March 1, 2022, has been **deemed complete** in accordance with Camas Municipal Code (CMC) Section 18.55.130. Staff will begin reviewing the application and contact you if we have comments and/or questions.

If you have any questions related to this project, please feel free to contact me by email: YSennewald@cityofcamas.us or by phone: (360) 817-7269.

Respectfully,

Yvette Sennewald, Senior Planner

NOTICE OF APPLICATION FOR
Lower Prune Hill Booster Pump Station & Reservoir
(File Number SPRV22-06)

Consolidated Files: Archaeological Review (ARCH22-16), Critical Areas Review (CA22-18), Design Review (DR22-08), Major Variance (MAJVAR22-01), and State Environmental Policy Act (SEPA22-25)

NOTICE IS HEREBY GIVEN that an application for the "Lower Prune Hill Booster Pump Station & Reservoir" a proposal to replace the Lower Prune Hill Booster Pump Station (LPH BPS) and the existing 0.5 million-gallon (MG) reservoir was received on July 5, 2022 and deemed technically complete on October 6, 2022. A public hearing is required for the development proposal and will be scheduled at a later date. A separate public hearing notice will be mailed to all property owners within 300-feet of the subject development and published in the Post Record.

Location: The 1.42-acre site is zoned Single-Family Residential (R-7.5) in the City of Camas. The site is located at 600 NW 18th Loop in the NE ¼ of Section 10 Township 1 North, Range 3 East, Camas, WA, Parcel Number: 85145001.

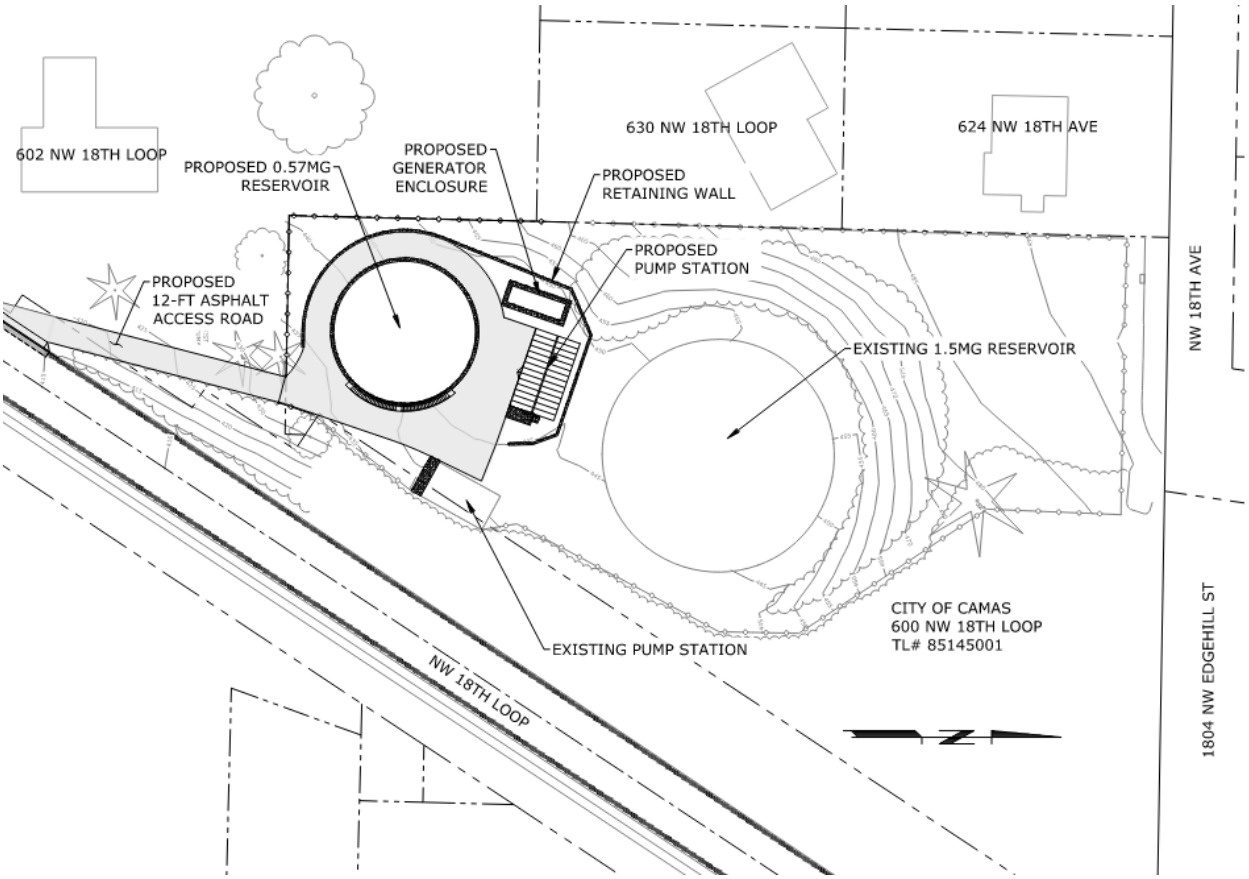
Application Materials: The application included the following: project narrative, SEPA checklist, preliminary development plans, geotechnical report, preliminary stormwater report, archaeological predetermination*, and an arborist report. Application materials are available for review from the Community Development Department during regular business hours Monday – Friday 8am-5pm.

Questions/Comments: For questions related to this application, please contact Yvette Sennewald, Planner, at (360) 817-1568 or by email at communitydevelopment@cityofcamas.us.

*Consistent with RCW 42.56.300, Archaeological information is exempt from public disclosure.

Published in the Post Record on December 15, 2022 Legal Publication Number: 762830
Posted at Camas City Hall, Camas Library and City of Camas website at: http://www.cityofcamas.us
Mailed to property owners within 300-feet of the property on December 12, 2022

Preliminary Site Plan for Lower Prune Hill Booster Pump Station & Reservoir



Community Development Department

Notice of Public Hearing

Lower Prune Hill Booster Pump Station & Reservoir

File No. SPRV22-06

A public hearing will be held on **Thursday, January 19, 2023, at 5:00 p.m.,** or soon thereafter, before the City's Hearings Examiner to consider a proposal for the replacement of the existing Lower Prune Hill Booster Pump Station and the 0.5-million-gallon reservoir. The 1.42-acre site is located at 600 NW 18th Loop in the NE ¼ of Section 10, Township 1 North, Range 3 East, of the Willamette Meridian; and described as tax parcel 85145001. The application was determined technically complete on October 6, 2022. The public hearing will be held remotely and in person at city hall.

Questions/Comments: The public hearing will follow the quasi-judicial process described within Camas Municipal Code §18.55.180. Comments related to this development may be submitted as follows: (1) in person by testifying at the public hearing; (2) by regular mail to Community Development Department staff, Yvette Sennewald, Senior Planner, at Camas City Hall, 616 Northeast Fourth Avenue, Camas, WA 98607; (3) by phone at (360) 817-7269; or (4) by email to: communitydevelopment@cityofcamas.us. It is preferable that written comments be received at least five working days prior to the public hearing, so they will be available with the online agenda and materials. After the agenda has been posted online, any additional written comments must be received no later than noon (12:00 p.m.) the day of the hearing, in order for those comments to be handed to the Hearings Examiner by staff. Written and oral comments may also be submitted in person during the hearing.

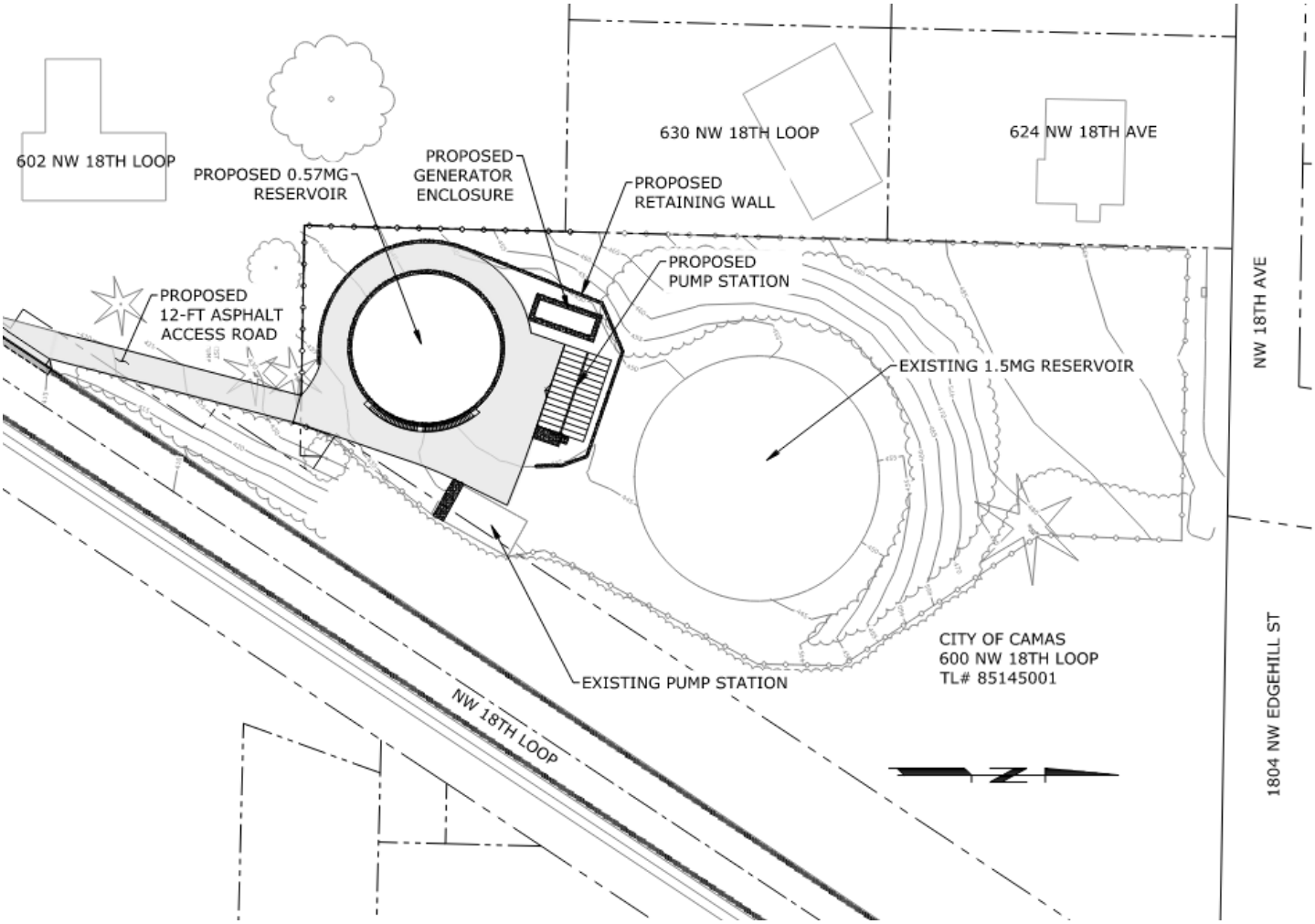
Application Materials: The application included the following: project narrative, development plans and environmental reports, as required for a complete application pursuant to Camas Municipal Code (CMC) §18.55.110. The application materials are also available for viewing at the Community Development Department (616 NE 4th Avenue, Camas, WA) during regular business hours Monday – Friday 8 a.m-5 p.m.

Participate: All citizens are entitled to have equal access to the services, benefits, and programs of the City of Camas. Please contact the **City Clerk at (360) 817-1591** for special accommodations if needed. The city will provide translators for non-English speaking persons who request assistance at least three working days prior to a public meeting or hearing.

More Information: The public hearing agenda and supporting documents will be available for review on the City's website at the "Minutes, Agendas & Videos" link within the drop-down menu that is labeled "Your Government" or follow this link: http://www.cityofcamas.us/yourgovernment/minuteagendavideo.

Published in the Post Record on January 5, 2023. Legal Publication #767810
Posted at Camas City Hall, Camas Library, City of Camas web site at: http://www.cityofcamas.us
Mailed to property owners within 300-feet on January 4, 2023

Excerpt from Preliminary Site Plan
Lower Prune Hill Booster Pump Station & Reservoir (File No. SPRV22-06)



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Mailed to property owners within 300-feet on January 4, 2023

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Southwest Region Office
PO Box 47775, Olympia, WA 98504-7775 • 360-407-6300

November 10, 2022

Robert Maul, SEPA Responsible Official
City of Camas
Community Development Department
616 NE Fourth Avenue
Camas, WA 98607

Dear Robert Maul:

Thank you for the opportunity to comment on the determination of nonsignificance for the Lower Prune Hill Reservoir & Booster Project (SEP22-25) located at 600 Northwest 18th Loop as proposed by James Hodges for City of Camas. The Department of Ecology (Ecology) reviewed the environmental checklist and has the following comment(s):

SOLID WASTE MANAGEMENT: Derek Rockett (360) 407-6287

All grading and filling of land must utilize only clean fill. All other materials may be considered solid waste and permit approval may be required from your local jurisdictional health department prior to filling. All removed debris resulting from this project must be disposed of at an approved site. Contact the local jurisdictional health department or Department of Ecology for proper management of these materials.

TOXICS CLEANUP: Sam Meng (360) 999-9587

No confirmed or suspected cleanup sites within a quarter of mile from the project area. No comment. For questions contact Sam Meng with the Toxics Cleanup Program at the Southwest Regional Office at (360) 999-9587.

WATER QUALITY/WATERSHED RESOURCES UNIT:
Brian Johnson (360) 624-5741

Erosion control measures must be in place prior to any clearing, grading, or construction. These control measures must be effective to prevent stormwater runoff from carrying soil and other pollutants into surface water or stormdrains that lead to waters of the state. Sand, silt, clay particles, and soil will damage aquatic habitat and are considered to be pollutants.

Any discharge of sediment-laden runoff or other pollutants to waters of the state is in violation of Chapter 90.48 RCW, Water Pollution Control, and WAC 173-201A, Water

Quality Standards for Surface Waters of the State of Washington, and is subject to enforcement action.

Construction Stormwater General Permit:
The following construction activities require coverage under the Construction Stormwater General Permit:

1. Clearing, grading and/or excavation that results in the disturbance of one or more acres **and** discharges stormwater to surface waters of the State; and
2. Clearing, grading and/or excavation on sites smaller than one acre that are part of a larger common plan of development or sale, if the common plan of development or sale will ultimately disturb one acre or more **and** discharge stormwater to surface waters of the State.
    a) This includes forest practices (including, but not limited to, class IV conversions) that are part of a construction activity that will result in the disturbance of one or more acres, **and** discharge to surface waters of the State; and
3. Any size construction activity discharging stormwater to waters of the State that Ecology:
    a) Determines to be a significant contributor of pollutants to waters of the State of Washington.
    b) Reasonably expects to cause a violation of any water quality standard.

If there are known soil/ground water contaminants present on-site, additional information (including, but not limited to: temporary erosion and sediment control plans; stormwater pollution prevention plan; list of known contaminants with concentrations and depths found; a site map depicting the sample location(s); and additional studies/reports regarding contaminant(s)) will be required to be submitted. For additional information on contaminated construction sites, please contact Carol Serdar at Carol.Serdar@ecy.wa.gov, or by phone at (360) 742-9751.

Additionally, sites that discharge to segments of waterbodies listed as impaired by the State of Washington under Section 303(d) of the Clean Water Act for turbidity, fine sediment, high pH, or phosphorous, or to waterbodies covered by a TMDL may need to meet additional sampling and record keeping requirements. See condition S8 of the Construction Stormwater General Permit for a description of these requirements. To see if your site discharges to a TMDL or 303(d)-listed waterbody, use Ecology's Water Quality Atlas at: https://fortress.wa.gov/ecy/waterqualityatlas/StartPage.aspx.

The applicant may apply online or obtain an application from Ecology's website at: http://www.ecy.wa.gov/programs/wq/stormwater/construction/ - Application. Construction site operators must apply for a permit at least 60 days prior to discharging stormwater from construction activities and must submit it on or before the date of the first public notice.

Ecology's comments are based upon information provided by the lead agency. As such, they may not constitute an exhaustive list of the various authorizations that must be obtained or legal requirements that must be fulfilled in order to carry out the proposed action.

If you have any questions or would like to respond to these comments, please contact the appropriate reviewing staff listed above.

Department of Ecology
Southwest Regional Office

(GMP:202205405)

cc: Derek Rockett, SWM
Sam Meng, TCP
Brian Johnson, WQ

Carey Certo

From: Susan Lewallen <susan@studiomcl.com>
Sent: Saturday, November 5, 2022 2:30 PM
To: Community Development Email
Subject: case #SEPA22-25 Lower Prune Hill Booster Station and Reservoir

As a homeowner at 641 NW 18th Ave., I cannot speak to possible environmental impacts resulting from this project. However, I can request that the view from my home to the beautiful river below remains intact. I have learned to live with the light pollution from the overhead street lights as well as the low hanging electrical wires and transformers. Anything that you can do to remove equipment for the pump station from the sight lines of my home as well as my neighbor's home would be much appreciated. Thank you for your time in this matter and know that I do appreciate this opportunity to voice my concerns. Sincerely, Susan Lewallen

Carey Certo

From: Jim Hodges
Sent: Monday, November 7, 2022 4:15 PM
To: susan@studiomcl.com
Cc: Yvette Sennewald; Carey Certo
Subject: RE: case #SEPA22-25 Lower Prune Hill Booster Station and Reservoir

Hello Susan –

Thanks for your inquiry about the above-referenced project.

I understand your comments about the view to the east that you and several of your neighbors enjoy now. Here's some information I hope will be helpful.

During construction activity (about 16 months) I expect our contractor will use the upper portion of the reservoir property (the area accessible from NW 18th Avenue) as a staging area. That means they will probably set-up a temporary job trailer and use the area for storage of materials and equipment during construction. It's also possible that some contractor employees will park in that same area, since the project areas is so small. The power for the new pump station will be taken from the power pole near the intersection of NW 18th Avenue and Edgehill Drive. That's where the power for the current pump station comes from. You'll notice that it comes down the power pole and goes underground. The lower hanging "fatter" wire bundles supported by the power poles are communication lines, likely phone and/or cable TV. I don't expect there to be any changes to the existing communication wires with the project. Please call or e-mail me if there are any other questions.

Thanks Much, Jim

James Hodges
Project Manager – Capital Improvements
Desk 360-817-7234
www.cityofcamas.us | jhodges@cityofcamas.us

From: Community Development Email <communitydevelopment@cityofcamas.us>
Sent: Monday, November 7, 2022 11:11 AM
To: Jim Hodges <JHodges@cityofcamas.us>; Yvette Sennewald <YSennewald@cityofcamas.us>
Subject: FW: case #SEPA22-25 Lower Prune Hill Booster Station and Reservoir
, since the job sight is confined and there's
Jim & Yvette,

Please see email below that was sent to the community development email.

Thanks!
Carey

Carey Certo
Administrative Support Assistant for Community Development
Desk: 360.817.7239
www.cityofcamas.us I CCerto@cityofcamas.us

The Permit Center is closed from 12pm-1pm daily

From: Susan Lewallen <susan@studiomcl.com>
Sent: Saturday, November 5, 2022 2:30 PM
To: Community Development Email <communitydevelopment@cityofcamas.us>
Subject: case #SEPA22-25 Lower Prune Hill Booster Station and Reservoir

As a homeowner at 641 NW 18th Ave., I cannot speak to possible environmental impacts resulting from this project. However, I can request that the view from my home to the beautiful river below remains intact. I have learned to live with the light pollution from the overhead street lights as well as the low hanging electrical wires and transformers. Anything that you can do to remove equipment for the pump station from the sight lines of my home as well as my neighbor's home would be much appreciated. Thank you for your time in this matter and know that I do appreciate this opportunity to voice my concerns. Sincerely, Susan Lewallen

Community Development Department
616 NE Fourth Avenue
Camas, WA 98607
(360) 817-1568
www.cityofcamas.us

December 12, 2022

Michael Birndorf
Smart Link, Real Estate Specialist
Michael.birndorf@smartlinkgroup.com

RE: Waiver request for reduced landscape setback for the wireless facility at the Lower Prune Hill water reservoir.

Dear Mr. Birndorf,

As per CMC 18.35.070.B., a 15-foot landscape buffer is required to screen the wireless communications shelter on the subject property however; the approval authority may grant a waiver from this requirement based on findings that a different requirement would better serve the public interest.

The site plan provided shows the existing natural on-site vegetation buffer/forested area on the property. This buffer extends approximately 225' to the east and 25' to the south of the proposed equipment shelter/building location, which exceeds the 15' requirement. This buffer includes several large trees and shrubs, including a large conifer tree that is immediately south of the proposed shelter. As previously described, this buffer screens the site from the south and east. Removing existing natural landscaping in this area to plant new landscaping would not serve the public interest. Further, there are no homes to the south and east that have views of the shelter.

The area to the north and west of the proposed equipment shelter/building location is mostly open lawn. As proposed, a 5-foot evergreen hedge will be planted as a buffer that will provide an opaque screen. The primary objective of the landscaping is to provide a visual screen for the shelter. This can be achieved with the proposed 5' buffer that includes an evergreen hedge that can grow to 10'-15' in height at maturity, which would fully screen the 10'-4" tall shelter. The existing topography slopes down from the road (NW 18th) approx. 7'-9', which further mitigates any visual impact from the neighborhood. Based on the forgoing, the public interest is better served with the proposed tall and opaque 5' landscape buffer than a wider buffer that doesn't provide a solid screen. Installing a 15' landscape buffer around the shelter could compromise the operations of the water reservoir, as the city needs to maintain access around the shelter, particularly to the west and south. Your waiver is justified per the information provided above and on file.

Sincerely,

Yvette Sennewald
Senior Planner

Carey Certo

From: Robert Maul
Sent: Wednesday, January 11, 2023 11:09 AM
To: Carey Certo
Cc: Jim Hodges; Yvette Sennewald
Subject: Fwd: LPH BPS Staff Report Comments

Begin forwarded message:

From: Jim Hodges <JHodges@cityofcamas.us>
Date: January 11, 2023 at 10:55:50 AM PST
To: Robert Maul <RMaul@cityofcamas.us>, Yvette Sennewald <YSennewald@cityofcamas.us>
Subject: FW: LPH BPS Staff Report Comments

Robert/Yvette:

Forwarding comments from my planning Consultant for LPH Reservoir/Booster Staff Report. I'm not sure if the FINAL has been issued. If it has, we will ask if the conditions can be modified as described herein. Ethan will attend the hearing in-person.

Thanks Much, Jim

James Hodges
Project Manager – Capital Improvements
Desk: 360-817-7234
jhodges@cityofcamas.us

From: Spoo, Ethan <ethan.spoo@wsp.com>
Sent: Wednesday, January 11, 2023 9:59 AM
To: Jim Hodges <JHodges@cityofcamas.us>
Cc: Nathan Rostad <Nathan.Rostad@consoreng.com>; Rubin, Sam <sam.rubin@wsp.com>
Subject: LPH BPS Staff Report Comments

Hi Jim,

Following are my comments on the staff report for your coordination with Robert and Yvette.

1. Planning condition #3: This condition requires a tree survey prior to land disturbing activities to document that the tree density requirements are met. Given that there are many trees on the site, I would suggest this condition be revised to: (1) allow an aerial survey method or (2) allow the survey to count 29 tree units and then stop and document that there are many more trees

beyond that. Suggested revised condition language is below for the two alternatives depending on what staff is comfortable with:

1. Prior to any land disturbing activities, the applicant must submit a tree survey documenting that there are a minimum of 29 tree units on site. Because there is a large grove of trees on the north and east side of the site, an aerial county method establishing an approximate number of trees is acceptable.
2. Prior to any land disturbing activities, the applicant must submit a tree survey documenting that there are a minimum of 29 tree units on site. Once it has been established that there are a minimum of 29 tree units on site, a full count of all onsite trees is unnecessary.

2. Planning condition #4: This condition requires "residential-like fencing" and does not specify that this be on the south side of the site versus south, west, and north. Public Works desires that there be wooden fencing only on the south side of the site. Proposed revised condition language is below.
    1. The proposed fencing on the south side of the site shall be six feet tall, sight-obscuring and made of wood. Fencing along the western and northern site boundaries is required to be chain link to preserve the views of adjacent residences.
3. Planning condition #7. This condition requires that irrigation and landscaping be installed or bonded for prior to final acceptance. We are not proposing irrigation for the landscaping since we do not want to saturate the slope. CMC 18.13.050.H says that "appropriate measures shall be taken, e.g. installation of irrigation system, to assure landscaping success." It does not absolutely require irrigation only that the landscaping survive. Therefore, the condition should be revised as follows:
    1. Landscaping shall be installed or bonded for prior to final acceptance.

Thanks and let me know if you have questions.

Ethan Spoo, AICP
Sr. Lead Consultant, Land/Urban Planner
Pronouns: he/him

T+ 1 360-823-6138
F+ 1 360-823-6101
M+ 1 971-219-5169

January 19, 2023

Joe Turner
Hearing Examiner
City of Camas
616 NE 4th Ave,
Camas, WA 98607

Subject: Lower Prune Hill Booster Pump Station (SPRV22-06)
Request to Revise Conditions of Approval Numbers 3, 4, and 7

Dear Mr. Turner

WSP USA represents the applicant, the City of Camas Public Works Department, in the subject application. Public works is requesting that the conditions of approval included in the staff report be revised as discussed below corresponding to the City's conditions numbering in their staff report.

Special Conditions, Planning Department

3. This condition requires a tree survey prior to land disturbing activities to document that the tree density requirements are met. Given that there are a large number of trees on the east and north side of the site far exceeding the overall tree density required by Camas Municipal Code (CMC) 18.15.051 of 20 tree units per net acre, the applicant is requesting that the condition be revised to allow: (1) an aerial count method or (2) a tree field survey to count 29 tree units (the number of tree units required). Requested revised condition language is below.

    a. *Prior to any land disturbing activities, the applicant must submit a tree survey documenting that there are a minimum of 29 tree units on site. Because there is a large grove of trees on the north and east side of the site, an alternative survey method such as a count by aerial photo or a field survey documenting that 29 trees units are on the site be completed.*

4. This condition requires "residential-like fencing" and requires it surround the reservoir. To preserve their eastward and southward views, neighbors to the west including the Barnetts, Mellows, and Marthens are requesting a chain link fence that is not sight obscuring. The Hardings prefer a 6-foot, wooden, sight-obscuring fence. See attached exhibit "LPH Reservoir & Booster." In addition, it is important to note that the existing fence on the property is chain link. For these reasons, the applicant is requesting that condition of approval number 4, be revised as follows:

WSP USA
Suite 115
1207 Washington Street
Vancouver, WA 98660
+1 360-823-6138
WSP.com

a. *The proposed fencing bordering the Harding property (parcel number 85141002) shall be six feet tall and sight-obscuring. Fencing bordering the Barnett (parcel number 127714000), Mellows (parcel number 127727000), and across the street from the Marthens property (parcel number 81959015) is required to be chain link to preserve the views of these residences.*

7. This condition requires that irrigation and landscaping be installed or bonded for prior to final acceptance. The applicant is not proposing irrigation for the landscaping since we do not want to saturate the slope. CMC 18.13.050.H says that "appropriate measures shall be taken, e.g. installation of irrigation system, to assure landscaping success." It does not absolutely require irrigation only that the landscaping survive. Therefore, the condition should be revised as follows:

    a. *Landscaping shall be installed or bonded for prior to final acceptance.*

Thank you for your consideration of the requested revisions to the conditions of approval.

Sincerely,

Ethan Spoo

Ethan Spoo, AICP
Senior Consultant – Land/Urban Planner

Attachment
LPH Reservoir and Booster

LPH Reservoir & Booster

Legend

TAX LOTS

RESERVOIR PL

OWNER REQUESTS

F2 FENCE

6' CHAIN LINK FENCE

CITY STAFF REQUEST

6' CHAIN LINK FENCE IN LIEW OF F2

ALT., RETAIN EXISTING CHAIN LINK FENCE IN PLACE.

Notes:

0.0 0 0.02 0.0 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov

Lower Prune Hill Booster Station & Reservoir
(SPRV22-06)
Index of Exhibits

Exhibit No.	Title/Description	Date Submitted
1	Application and Fee Sheet	8/15/22
2	Narrative	3/2022
3	Development Sign	9/23/22
4	Mailing Labels	3/2022
5	Mailing List	3/2022
6	Pre-App Notes	2/6/20
7	Preliminary Plans	11/2021
8	Site Plan	3/2022
9	Vicinity Map	3/2022
10	Draft Geotechnical Report	2/15/22
11	Critical Areas Map	3/2022
12	Site Assessment and Permit Evaluation	8/17/20
13	Draft Stormwater Drainage Report	3/2022
14	Arborist Report	3/2022
15	SEPA Determination of Non-Significance	10/27/22
16	SEPA Checklist	7/25/22
17	SEPA Distribution Packet	10/27/22
18	Incomplete Review Letter	8/15/22
19	Completeness Review Letter	10/6/22
20	Notice of Application	10/15/22
21	Notice of Public Hearing	1/5/23
22	Ecology Comment	11/10/22
23	Lewallen Public Comment	11/5/22
24	Jim Hodges response to Lewallen Public Comment	11/7/22
25	SmartLink Landscape Waiver Request	12/12/22
26	Email from consultant with comments on staff report	1/11/23
27	Memo from consultant requesting to revise conditions of approval	1/19/23