

MITIGATED DETERMINATION OF NON-SIGNIFICANCE

Proponent: Modern Resources, LLC

Description of Proposal: Cabinet Manufacturing Facility

Location of the Proposal: 1102 & 1002 Rhoton Road SE, Yelm, WA

Section/Township/Range: Section 19, Township 17 North Range 2 East, W.M.

Threshold Determination: The City of Yelm as lead agency for this action has determined that this proposal does not have a probable significant adverse impact on the environment. Therefore, an environmental impact statement (EIS) will not be required under RCW 43.21C.030(2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

Mitigating Measures: See Attachment A

Lead agency: City of Yelm

Responsible Official: Grant Beck, Community Development Director

Date of Issue: May 13, 2021

Comment Deadline: May 27, 2021

Appeal Deadline: There is no local administrative appeal of a MDNS



Grant Beck; Community Development Director

This Mitigated Determination of Non-Significance (MDNS) is issued pursuant to Washington Administrative Code 197-11-340 (2). Comments must be submitted to Grant Beck, Community Development Department, at City of Yelm, 106 2nd Street SE, Yelm, WA 98597, by May 27, 2021 at 5:00 P.M. The City of Yelm will not act on this proposal prior May 27, 2021 at 5:00 P.M.

DO NOT PUBLISH BELOW THIS LINE

Published: Nisqually Valley News, Thursday, May 13, 2021

Posted in public areas: Thursday, May 13, 2021

Copies to: All agencies/citizens on SEPA mailing list

Department of Ecology w/checklist

ATTACHMENT A
Project Number 2021.0003

Findings of Fact

- A. This Mitigated Determination of Non Significance is based on the project as proposed and the impacts and potential mitigation measures reflected in the following documents:
 - ✓ Environmental Checklist dated December 7, 2020, prepared by Skillings, Inc.
 - ✓ Mazama Pocket Gopher Screening dated September 20, 2020, prepared by Capital Land & Water
 - ✓ Drainage Report dated May 2021, prepared by Skillings, Inc.
- B. The City of Yelm is identified as a Critical Aquifer Recharge Area, a designated environmentally sensitive area. Potential Impacts to groundwater quality and quantity will be mitigated through measures that meet or exceed the standards in the most current Stormwater Management Manual for Western Washington, as published by the Washington State Department of Ecology.
- C. The Mazama Pocket Gopher has been listed as a threatened species by the Washington Department of Fish and Wildlife since at least 2008. Yelm has protected this species through the implementation of the Critical Areas Code. In April, 2014, the U.S. Fish and Wildlife Service listed the Yelm subspecies of the Mazama Pocket Gopher as threatened under the Endangered Species Act.

While the City of Yelm is not responsible for implementation or enforcement of the Endangered Species Act, it consults with the Service and provides notice to applicants that the pocket gopher is a federally protected species and a permit from the U.S. Fish and Wildlife Service may be required.

A Mazama Pocket Gopher Screening by Capital Land & Water concluded that soil suitability is marginal or limited, and that there was no evidence of Mazama Pocket Gopher activity on the parcels.

- D. The cabinet manufacturing facility requires a dust collection system to be installed. The dust collection system requires review and approval by the Olympic Region Clean Air Agency (ORCAA).
- E. A compressor room is located on the northern side of the building adjacent to a residential use. Noise levels at property lines are regulated by Chapter 173-60 WAC.
- F. Section 18.57.090 YMC requires the protection of trees over 8 inches in diameter during development. The site plan shows approximately 8 trees along the northern property line, outside of building and construction area, with 23 trees within the construction area to be removed.

Mitigation Measures

- 1. Compliance with ORCAA regulation of emissions is required.
- 2. Noise levels measured at property lines shall not exceed levels established by Chapter 173-60 WAC.
- 3. Retain and protect trees located on northern property line, replace all trees removed on a 1 to 1 basis.



City of Yelm

Fee	_____
Date Received	_____
By	_____
File No.	_____

Community Development *Department* **ENVIRONMENTAL** **CHECKLIST**

Instructions:

The State Environmental Policy Act (SEPA) requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. The purpose of this checklist is to provide information to help identify impacts from your proposal, to reduce or avoid impacts from the proposal if it can be done, and to help the City decide whether an EIS is required. An environmental impact statement (EIS) must be prepared for any proposal with probable significant adverse impacts on environmental quality.

This environmental checklist asks you to describe some basic information about your proposal. The City will use this checklist to determine whether the environmental impacts of your proposal are significant and require preparation of an EIS. You must answer each question accurately, carefully and to the best of your knowledge. Answer the questions briefly, but give the best description you can. In most cases, you should be able to answer the questions from your own observations or project plans without the need for experts. If you do not know the answer, or if a question does not apply to your proposal, write "do not know" or "does not apply". Complete answers to the questions now may avoid delays later. If the space provided is too small, feel free to attach additional sheets.

Some questions ask about governmental regulations, such as zoning, shoreline, and landmark designations. Answer these questions if you can. If you have problems, the city staff can assist you.

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. You may be asked to explain your answers or provide additional information for determining if there may be significant adverse impacts.

Nonproject Proposals Only:

Complete both the checklist (even though many questions may be answered "does not apply") and the **Supplemental Sheet for Nonproject Actions** (part D). For nonproject actions, the references in the checklist to the words "project," "applicant," and "property or site" should be read as "proposal," "proposer," and "affected geographic area," respectively.

CITY OF YELM

ENVIRONMENTAL CHECKLIST

CITY USE ONLY

FEE: \$150.00

DATE REC'D

BY:

FILE NO.

A. BACKGROUND

1. Name of proposed project, if any:

2. Name of applicant:

Emmanuel Mupinganjira

3. Address, phone number and email address of applicant and of any other contact person:

Modern Resources LLC

emmanuelm@moderncw.com

480 Raccoon Valley Rd SE

Olympia, WA 98513

4. Date checklist prepared:

5. Agency requesting checklist: City of Yelm Planning Dept

6. Proposed timing or schedule (including phasing, if applicable): December 2020-July 2021, Site Civil Phase I, Phase II Metal Building Structure

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

NO

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

Site drainage and grading plans, See Skillings Design 2020, Gopher Screening, See Capital Land and Water 2020 Report

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.

NO

10. List any government approvals or permits that will be needed for your proposal, if known.

City of Yelm frontage improvements deferral, See project Per-submissions notes-Transportation

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.

Developing the two lots into a 20,000sf millwork/casework manufacturing facility

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. You need not duplicate maps or detailed plans submitted with any permit applications related to this checklist.

Situated in The City of Yelm, in Thurston County Washington
1002 NW Rhoton Road
Yelm WA 98597

1002 & 1102 NW Rhoton Rd
64300800301& 64300800302
Section 19, Township 17 North
Range 2 East, W.M.

B. ENVIRONMENTAL ELEMENTS

1. **Earth**

- a. General description of the site (circle one):

(flat) rolling, hilly, steep slopes, mountainous, other _____

- b. What is the steepest slope on the site (approximate percent slope)?

3%

- 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 prime farmland.

The soil types comprise of Spanaway gravelly sandy loam

- d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

NO

- e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

Native cut and fill, balanced site approximately 800 cubic yards
Structural fill, import 1200 cubic yards

- f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Yes

- g. About what percent of the site will be covered with impervious surfaces after project construction such as asphalt or buildings?

35%

- h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Infiltration ponds, BMPs per Washington State Storm Water Manual

OK

2. **Air**

- a. What types of emissions to the air would result from the proposal (i.e., dust, automobile exhaust, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.

Fugitive construction dust resulting from earthwork.

Delivery vehicles exhaust

Dust containment

NOC review & approval by

ORCAA

- b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

NO

- c. Proposed measures to reduce or control emissions or other impacts to air, if any:

BMPs per Washington State Storm Water Manual

3. **Water**

- a. Surface Water

- 1) Is there any surface water body or wetland on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds)? If yes, describe type and provide names. State what stream or river it flows into?

NO

- 2) Will the project require any work over, in, or adjacent to (within 300 feet) the described waters? If yes, please describe and attach available plans.

NO

- 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.

NA

- 4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

NO

- 5) Does the proposal lie within a 100-year floodplain? If so, note elevation on the site plan.

NO

- 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.

NO

b. Groundwater:

- 1) Will groundwater be withdrawn, or will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

Infiltration ponds will be used during construction and permanent storm water management

- 2) Describe the underlying aquifer with regard to quality and quantity, sensitivity, protection, recharge areas, etc.

The project is located within the Yelm aquifer with ground water levels ranging in depth from 290 to 300ft. These levels fluctuate with the Nisqually river.

- 3) Describe waste material that will be discharged into or onto the ground from septic tanks or other sources, if any (such as domestic sewage; industrial byproducts; agricultural chemicals).

No discharge expected beyond the surface storm water

c. Water Runoff (including storm water):

- 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.

All surface storm water from roof line and urban surfaces will be directed and collected in permanently constructed bioswells

- 2) Could waste materials enter ground or surface waters? If so, generally describe.

Very low potential for waste materials to enter the ground or surface water

- d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

NA

Stormwater facilities to meet or exceed
SWMMWW

4. **Plants**

- a. Check or circle types of vegetation found on the site:
- ☐ deciduous tree: alder, maple, oak, aspen, other
 - ☒ evergreen tree: fir cedar, pine, other
 - ☒ shrubs
 - ☒ grasses
 - ☐ pasture
 - ☐ crops or grains
 - ☐ wet soil plants: cattail, buttercup, bulrush, skunk cabbage, other
 - ☐ water plants: water lily, eelgrass, milfoil, other
 - ☐ other types of vegetation

- b. What kind and amount of vegetation will be removed or altered?
All existing shrubs and grasses within construction limits, trees within the building footprints and parking lot will be removed

- c. List threatened or endangered species known to be on or near the site.
None

- d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:
None

Old growth trees on property line to remain, 1-1 mitigation required for all trees exceeding 8" diameter.

Design standards require perimeter, parking lot, and stormwater facility landscaping

5. **Animals**

- a. Circle any birds and animals that have been observed on or near the site or are known to be on or near the site:

birds: hawk, heron, ducks, eagle, songbirds,

other: None

mammals: deer, bear, elk, beaver, other: None

fish: bass, salmon, trout, shellfish, other: None

- b. List any priority, threatened or endangered species known to be on or near the site.

None

Mazama Pocket Gopher

Report by Capital Land & Water concluded no evidence of Mazama Pocket Gopher activity on the parcels.

- c. Is the site part of a migration route? If so, explain.

No

- d. Proposed measures to preserve or enhance wildlife, if any:

None

6. **Energy and Natural Resources**

- a. What kinds of energy (electric, natural gas, gasoline, heating oil, wood, solar etc.) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, transportation, etc.

- b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.
- No
- 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:
- None

7. Environmental Health

- a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spills, of hazardous waste, that could occur as a result of this proposal? If so, describe.

No

- 1) Describe special emergency services that might be required.

No

- 2) Proposed measures to reduce or control environmental health hazards, if any:

None

- b. Noise

- 1) What types of noise exist in the area which may affect your project (for example: traffic, equipment operation, other)?

None

Must meet WAC
173-60 at property
lines.

- 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.

Construction equipment and activities 7am to 6pm Monday through Saturday

- 3) Proposed measures to reduce or control noise impacts, if any:

None

8. Land and Shoreline Use

- a. What is the current use of the site and adjacent properties?

Vacant

- b. Has the site been used for mineral excavation, agriculture or forestry? If so, describe.
- None

- c. Describe any structures on the site.
None
- d. Will any structures be demolished? If so, what?
No
- e. What is the current comprehensive plan designation of the site?
Industrial Zoning
- f. What is the current zoning classification of the site?
Industrial Zoning
- g. If applicable, what is the current shoreline master program designation of the site?
NA
- h. Has any part of the site been classified as a "natural resource", "critical" or "environmentally sensitive" area? If so, specify.
No
Critical aquifer recharge area covered by stormwater treatment
- i. Approximately how many people would reside or work in the completed project?
13
- j. Approximately how many people would the completed project displace?
0
- k. Proposed measures to avoid or reduce displacement impacts, if any:
NA
- l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:
NA

9. **Housing**

- a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.
0
- b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.
0

- c. Proposed measures to reduce or control housing impacts, if any:

NA

10. **Aesthetics**

- a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

24ft Metal Siding

- b. What views in the immediate vicinity would be altered or obstructed?

None

- c. Proposed measures to reduce or control aesthetic impacts, if any:

NA

City design standards for
landscaping and screening

11. **Light and Glare**

- a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Parking lot and security lights

- b. Could light or glare from the finished project be a safety hazard or interfere with views?

No

- c. What existing off-site sources of light or glare may affect your proposal?

None

- d. Proposed measures to reduce or control light and glare impacts, if any:

None

12. **Recreation**

- a. What designated and informal recreational opportunities are in the immediate vicinity?

None

- b. Would the proposed project displace any existing recreational uses? If so, describe.

None

- c. Proposed measures to reduce or control impacts or provide recreation opportunities:

None

13. **Historic and Cultural Preservation**

- a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.

None

- b. Generally describe any landmarks or evidence of historic, archeological, scientific, or cultural importance known to be on or next to the site.

None

- c. Proposed measures to reduce or control impacts, if any:

NA

14. **Transportation**

- a. Identify sidewalks, trails, public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.

Rhodon Road

- b. Is site currently served by public transit? By what means? If not, what plans exist for transit service?

No

- c. How many parking spaces would the completed project have? How many would the project eliminate?

14 new and 0 eliminated

- d. Will the proposal require any new sidewalks, trails, roads or streets, or improvements to existing sidewalks, trails, roads or streets, not including driveways? If so, generally describe (indicate whether public or private).

Not at this time. The property owner is requesting all road and street improvements are deferred

- e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

No

- f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

15 trips

- g. Proposed measures to reduce or control transportation impacts, if any:

Employee carpooling will be encouraged

15. **Public Services**

- a. Would the project result in an increased need for public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe:

Fire and Emergency services

- b. Proposed measures to reduce or control direct impacts on public services, if any.

Industrial Safety Plans

16. **Utilities**

- a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.

All of the above

- 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.

City of Yelm, Puget Sound Energy, Comcast and LeMay

C. **SIGNATURE**

The above answers are true and complete to the best of my knowledge. I understand that the City of Yelm is relying on them to make its decision.

Signature:  _____

Date Submitted: 12/07/2020

SUPPLEMENTAL ENVIRONMENTAL CHECKLIST FOR NONPROJECT ACTIONS

(Do not use this sheet for project actions.)

When answering these questions, be aware of the extent of the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

Increase in vehicle traffic(emission and noise)

Proposed measures to avoid or reduce such increases are:

Carpooling and day time deliveries

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

Low probability

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

Tree line protection of the remaining trees and install and maintain landscaping

3. How would the proposal be likely to deplete energy or natural resources?

Very low.

Proposed measures to protect or conserve energy and natural resources are:

All resources provided by public utilities

4. How would the proposal be likely to use or affect critical or environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection, such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or natural resource areas?

Does not apply

Proposed measures to protect such resources or to avoid or reduce impacts are:

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

Does not apply

Proposed measures to avoid or reduce shoreline and land use impacts are:

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

Minimum impact

Proposed measures to reduce or respond to such demand(s) are:

Industrial Safety plan and employee carpool

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

I do not know



CAPITAL LAND & WATER

PO Box 2854, Olympia, WA 98507 | 360.790.5936

September 20, 2020

Mr. Emmanuel Mupinganjira
emmanuelm@moderncw.com

Subject: Mazama Pocket Gopher Screening, Thurston County Tax Parcel Numbers 64300800301 and 64300800302; Yelm, Washington

Dear Mr. Emmanuel Mupinganjira:

This letter summarizes the Mazama pocket gopher (*Thomomys Mazama*) survey conducted by Capital Land & Water, LLC., for the subject property, Thurston County Tax Parcel Numbers 64300800301 and 64300800301 located at 1102 and 1002 Rhoton Road S.E. in incorporated Yelm, Washington (also herein referred to as the “study area”). This screening was conducted at your request to collect necessary information and evaluate the site as part of your purchase and development planning process. The purpose of the survey was to conduct a screening level assessment of potential pocket gopher occupancy and habitat as indicated by the presence/absence of mounds, other indicators observable during site inspections, and other available information. One preliminary field visit and two field surveys involving uniform transects to inspect for signs of potential Mazama pocket gopher activity were conducted. Existing data and observations do not indicate occurrences, habitation, or active use by pocket gophers. Based on this screening we have determined that Mazama pocket gophers are unlikely to be present and therefore are not likely to be affected by property development such as typical commercial or industrial building construction.

This letter is intended to assist you and City of Yelm reviewers in land use and/or development planning and permitting decisions for the subject parcels. The U.S. Fish and Wildlife Service (USFWS) is the Federal agency with jurisdictional authority of Mazama pocket gopher protection according to the Endangered Species Act (ESA).

Regulatory Context

Mazama pocket gopher is a federal- and state-listed sensitive species protected by the (ESA), local (City of Yelm) Critical Areas code, and Washington State Department of Fish and Wildlife regulations and policies. The City of Yelm regulates development proposals according to Yelm municipal code including Section 18.21.110, *Fish and Wildlife Habitat Conservation Areas*.

To assess potential occupancy and presence of regulated Fish and Wildlife Habitat Conservation Areas for Mazama pocket gopher, Capital Land and Water used Thurston County policy related to development permitting review which includes a screening protocol¹ used to assess the likelihood of “take” of three subspecies of Mazama pocket gopher protected by the ESA. The screening methods are generally consistent with USFWS guidance for assessing take,² which was also used in conducting this survey. The USFWS has jurisdictional authority over the protection of ESA-listed threatened Mazama pocket gopher and is ultimately responsible for decisions regarding the take of individuals and their habitat.

Habitat Assessment

The mapped soil types comprising the entire study area is Spanaway gravelly sandy loam, 0 to 3 percent slopes and 3 to 15 percent slopes. This soil type is classified as “more preferred,” indicating the potential for Mazama pocket gopher individuals or habitat to be present³. However, overall conditions on the site range from unsuitable to marginal in terms of potential use. Potential habitat is limited due to forested areas and brushy areas characterized by woody shrubs including Scot’s broom (*Cytisus scoparius*). Other marginal conditions or limiting factors include sloped and hummocky terrain existing and historical roads (visible in historical aerial imagery), relative fragmentation/isolation from suitable habitats by surrounding development, lack of nearby water sources, limited food sources, and frequent predation as evident from signs of mound disturbance and wildlife trails observed during the surveys. The site is littered with debris indicating occasional human activity. There are unimproved access roads and informal trails potentially used by both humans and animals.

Mounds and burrows observed on the site appear to be concentrated in a few small patches within the parcels; not evenly distributed. This pattern along with the dense shrubs and terrain throughout the site, and observations indicative of moles and rabbits, suggest that the site may not be suitable for, or used by, Mazama pocket gophers and burrows present are likely associated with other burrowing and ground dwelling animals.

As part of the screening, we also referenced Washington State Department of Fish and Wildlife’s priority habitat and species (PHS) database prior to inspections to identify any previously documented known occurrences of Mazama pocket gopher. There were no occurrences mapped within 600 feet of the site.

¹ Thurston County. 2020. Site Inspection Protocol and Procedures.

<https://www.thurstoncountywa.gov/planning/planningdocuments/gopher-inspection-protocol-for-consultants-2020.pdf>

² U.S. Fish and Wildlife Service (USFWS). 2018. Letter regarding *Guidance for Assessing Potential Take of Mazama Pocket Gophers in Thurston and Pierce Counties*. USFWS, Washington Fish and Wildlife Office, Lacey, Washington. April 20, 2018.

³ Soil data for this assessment was obtained from Thurston Geodata web mapping application:

<https://map.co.thurston.wa.us/Html5Viewer/Index.html?viewer=Permitting.Main>



Figure 1. Characteristic Grassy Area on Site.



Figure 2. Characteristic Shrubby Area on Site.

Survey Results

The subject parcels were surveyed by USFWS-trained biologist, Erik Schwartz, Capital Land & Water Principal Ecologist. Capital Land and Water conducted one site inspection for mounds and other indicators of Mazama pocket gophers according to Thurston County's Mazama pocket gopher review protocol over two days, August 18 and August 20, 2020. The biologist conducted a second survey on September 19, 2020.

The field survey conducted for this screening involved walking transects in a generally north/south direction throughout the study area, approximately 3 meters apart from each other. Some transects were interrupted by forested or brushy areas. Those areas were examined from the edges and by walking into the interior and then traversing around them. The survey was conducted to focus effort and provide good visual coverage of patchy grassy areas where activity would be most likely to occur. Surveys were conducted with moderately good visibility. Grass height was challenging in some areas, but areas of tall dense grass were patchy and extra effort was applied in those areas to ensure complete visual coverage.

Several mounds, or remnants of old mounds, were observed. Each was carefully examined to determine if it showed indications of what species had created it. No mounds showed classic indicators of Mazama pocket gophers such as offset whole location, crescent or fan shaped soil deposits, sifted soil, "J" shaped entrances, or plugged entrances. Most appeared likely created by moles (centrally located holes) or simply showed signs of disturbance from a predator (Figure 3) and/or varying degrees of use by other types of wildlife that might include moles, voles, or rats. Exposed borrows and larger holes than would be associated with Mazama pocket gophers were the most encountered feature (Figure 4). If these apparently disturbed tunnels/entrances were actively used by gophers we would expect some instances of plugged holes. However, no plugs were observed. Of the mounds which were positively identifiable as either pocket gopher or mole mounds, all were indicative of mole activity, exhibiting classic characteristics of moles pushing dirt upward from the burrow into a conical mound with a "clumpy" texture (Figure 5).



Figure 3. Ground Disturbance Likely Caused by Predator.



Figure 4. Example of Exposed Burrow.



Figure 5. Example Mound Indicative of Mole Activity on Site.

The second site inspection on September 19, 2020 occurred after several days of light, intermittent rain. Several fresh soil disturbances were observed on or near weathered, previously identified mounds. All were determined characteristic mole mounds. Numerous open burrows (holes and near surface tunnels with exposed sections) that were observed in the first inspection were observed still open and exposed during the second inspection. Those features were not indicative of pocket gopher activity since pocket gophers tend to plug holes of inhabited tunnels. No plugged holes were observed during either inspection. Also during the second inspection, the biologist observed wild rabbits; at least three individuals on two separate occasions.

Conclusions / Recommendations

The subject parcel is mapped as containing a soil type that requires Mazama pocket gopher review by USFWS and local jurisdictions. However, the study area does not otherwise exhibit habitat characteristics that would be preferable to Mazama pocket gophers. Habitat is marginal. Suitability is limited in small patches and is unsuitable or marginally suitable in most areas throughout the study area.

Signs that would potentially indicate pocket gopher presence such as classic gopher mound forms, plugged holes, and other characteristics were not observed anywhere within the study area during this screening. Conversely, features observed were indicative of moles and other burrowing and ground dwelling wildlife including rabbits. We have good confidence based on this survey that site characteristics are the result of current and past occupancy by moles and animals other than Mazama pocket gopher.

Mazama pocket gopher occurrence within the study area is unlikely. Based on this assessment, Capital Land & Water recommends that future property development, such as commercial or industrial type buildings and their associated generally accepted land use consistent with local development and building codes, is not likely to adversely affect Mazama pocket gopher or to significantly alter Mazama pocket gopher habitat, including potential habitat.

If you or agency reviewers have questions regarding the screening survey or this assessment, please contact me directly at (360) 790-5936 or email to: erik@caplandwater.com.

Sincerely,



Erik Schwartz, PWS

Principal Ecologist

CAPITAL LAND & WATER

att: Survey #1 Map (Figure A-1)
Survey #2 Map (Figure A-2)
PHS Screen Capture (Figure A-3)
Survey Forms (4p.)
Soil Map (3p.)

cc: CLW project file



Figure A-1. Survey Path (Approximate), Survey #1, August 18-20, 2020.

Mupinganjira MPG Survey #2

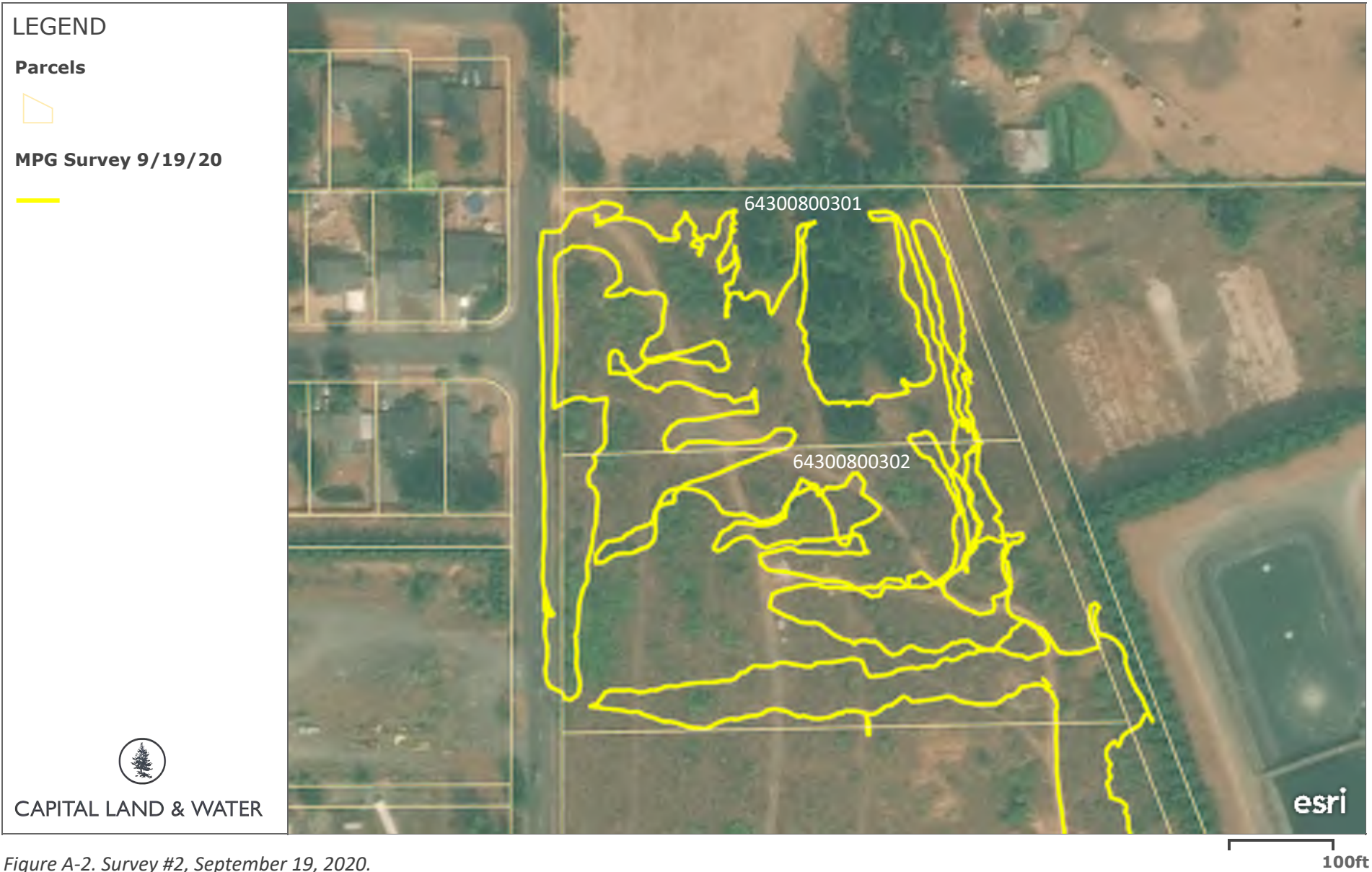


Figure A-2. Survey #2, September 19, 2020.



Figure A-3. Washington Department of Fish and Wildlife Priority Habitat and Species Screen Capture (No MPG records within 1000 feet radius).

Site Name and Parcel # SURVEY #1	Parcel #: <u>64300800301-02</u> Project #: <u>CLW # 2008-1310</u> Site/Landowner: <u>1002 & 1102 Rhoton Rd. SE / OREAR</u>
How were the data collected? (circle the method for each)	Transect: Trimble <u>Garmin</u> Aerial Mounds Trimble Garmin Aerial Notes: <u>GPS w/ ~1m accuracy and aerial used for positioning in field.</u>
Field Team Personnel: (Indicate all staff present, CIRCLE who filled out form)	Name: <u>E. Schwartz, Capital Land and Water</u> Name: Name:
Others onsite (name/affiliation)	
Site visit # (CIRCLE all that apply)	☒ 1st ☐ 2nd ☐ Unable to screen Notes: <u>Preliminary site visit: 8/12/2020</u> <u>Survey start 8/18/2020</u> <u>Survey complete 8/20/2020</u>
Do onsite conditions preclude the need for further visits?	Yes <u>No</u> Dense woody cover that encompasses the entire site (trees/shrubs) that appears to preclude any potential MPG use. Impervious Compacted Graveled Flooded Other _____ Notes: <u>Some areas of dense woody cover.</u>
Describe visibility for mound detection:	Poor Fair <u>Good</u> Notes: <u>Some areas relatively poor visibility. Additional effort spent in those patches to ensure good visual coverage. Overall good confidence.</u>
Request mowing? (CIRCLE and DESCRIBE WHERE MOWING IS NEEDED and SHOW ON AERIAL PHOTO)	Yes <u>No</u> N/A Notes:

Mounds observed over the whole site are characteristic of: Quantify or describe amount of each type and approx. # of mounds <i>Group = 3 mounds or more</i>	MPG Mounds 0	Likely MPG Mounds 0	Indeterminate 0	Likely Mole Mounds 30-40	Mole Mounds 5
No MPG mounds (circle)					
MPG mounds in GPS? (CIRCLE and DESCRIBE) If MPG mounds present, entered in GPS?	None All Most Some Notes: Yes No N/A				
Does woody vegetation onsite match aerial photo?	Yes No - describe differences and show on parcel map/aerial:				
What portion(s) of the property was screened? (CIRCLE and DESCRIBE)	All Part - describe and show on parcel map/aerial: Transects interrupted by some areas of forest/dense shrubs. See attached map.				
Notes -	Describe, and show on parcel map/aerial if applicable: Recommend at least one additional survey in approx. 30 days Best to occur after drought period ends.				
Team reviewed and agreed to data recorded on form? (CIRCLE, and EXPLAIN if "No")	Yes No Reviewed by initials: _____ Notes: Reviewed photos and general observations with colleague to affirm judgment regarding some examples. Offsite review.				

Site Name and Parcel # SURVEY #2	Parcel #: <u>64300800301-02</u> Project #: <u>CLW # 2008-1310</u> Site/Landowner: <u>1002 & 1102 Rhoton Rd. SE / OREAR</u>
How were the data collected? (circle the method for each)	Transect: <u>Trimble</u> Garmin Aerial Mounds Trimble Garmin Aerial Notes: <u>GPS w/ ~1m accuracy and aerial used for positioning in field.</u> <u>No MPG mounds observed/recorded.</u>
Field Team Personnel: (Indicate all staff present, CIRCLE who filled out form)	Name: <u>E. Schwartz, Capital Land and Water</u> Name: Name:
Others onsite (name/affiliation)	
Site visit # (CIRCLE all that apply)	1 st <u>2nd</u> Unable to screen Notes:
Do onsite conditions preclude the need for further visits?	Yes <u>No</u> Partial. See note. Dense woody cover that encompasses the entire site (trees/shrubs) that appears to preclude any potential MPG use. Impervious Compacted Graveled Flooded Other _____ Notes: <u>Some areas of the site are covered by dense woody cover.</u>
Describe visibility for mound detection:	Poor Fair <u>Good</u> Notes: <u>Some areas relatively poor visibility. Additional effort spent in those patches to ensure good visual coverage. Overall good confidence. All grassy, non-shrub areas were inspected.</u>
Request mowing? (CIRCLE and DESCRIBE WHERE MOWING IS NEEDED and SHOW ON AERIAL PHOTO)	Yes <u>No</u> N/A Notes:

Mounds observed over the whole site are characteristic of:	MPG Mounds	Likely MPG Mounds	Indeterminate	Likely Mole Mounds	Mole Mounds
Quantify or describe amount of each type and approx. # of mounds <i>Group = 3 mounds or more</i>	0	0	0	26	9
No MPG mounds (circle)					
MPG mounds in GPS? (CIRCLE and DESCRIBE) If MPG mounds present, entered in GPS?	None All Most Some Notes: No MPG mounds. Several mole mounds were cataloged with waypoint and photos for file. Yes No N/A				
Does woody vegetation onsite match aerial photo?	Yes No - describe differences and show on parcel map/aerial:				
What portion(s) of the property was screened? (CIRCLE and DESCRIBE)	All Part - describe and show on parcel map/aerial: Transects interrupted by some areas of forest/dense shrubs.				
Notes -	Describe, and show on parcel map/aerial if applicable: Pedestrian survey was focused in grassy areas with low or moderate woody shrub cover. Dense shrub areas that were not suitable habitat were precluded (generally not accessible and not traversed). Transects meandered around those areas.				
Team reviewed and agreed to data recorded on form? (CIRCLE, and EXPLAIN if "No")	Yes No Reviewed by initials: _____ Notes: solo inspection				

Soil Map—Thurston County Area, Washington
(1102 Rhoton Rd SE Vicinity)



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 1:24,000.

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: Thurston County Area, Washington
Survey Area Data: Version 14, 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: Mar 29, 2016—Oct 10, 2016

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
110	Spanaway gravelly sandy loam, 0 to 3 percent slopes	22.4	80.5%
111	Spanaway gravelly sandy loam, 3 to 15 percent slopes	5.4	19.5%
Totals for Area of Interest		27.8	100.0%

DRAINAGE REPORT

FINAL

MODERN RESOURCES LLC

SITE DEVELOPMENT

SC Project #20136

MAY 2021

CITY OF YELM

1102 & 1002 Rhoton Road Southeast
Yelm, WA 98597



City of Yelm
EST. 1924
WASHINGTON

Prepared By:



5016 Lacey Boulevard SE, Lacey, Washington 98503
(360) 491-3399 • Fax (360) 491-3857
www.skillings.com

Applicant: Emmanuel Mupinganjira

Modern Resources LLC

Phone: (360) 890-7286

Email: emmanuelm@modernrcw.com

Project Engineer: Ian Y. Lee, P.E.

Skillings, Inc.

Phone: (360) 491-3399

Email: ilee@skillings.com

***ENGINEER'S CERTIFICATE
FOR THE
MODERN RESOURCES LLC SITE DEVELOPMENT***

I hereby state that this Drainage Control Plan for Modern Resources LLC Site Development has been prepared by me or under my supervision and meets the standard of care and expertise which is usual and customary in this community for professional engineers. I understand that Yelm does not and will not assume liability for the sufficiency, suitability, or performance of drainage facilities prepared by me.

Prepared By:



Ian Y. Lee, P.E.
SKILLINGS, INC

4/28/2021

Date

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1 Proposed Project Description	4
2 Existing Conditions Description	8
3 Infiltration Rates / Soils Report.....	8
4 Bioretention Facility Sizing Analysis.....	9

APPENDICES

A. Project Maps

- Vicinity Map
- Existing Surface Coverage Map
- Proposed Surface Coverage Map
- Bioretention Contributing Basin Areas Map
- FEMA Flood Map

B. Analysis

- Flow Chart for Determining Requirements for New Development
- Flow Chart for Determining MR #5 Requirements

C. Site Plan

D. Source Control BMPs

E. Construction Stormwater Pollution Prevention Plan (CSWPPP)

- CSWPPP Narrative
- Vicinity Map
- TESC Drawings
- Best Management Practices (BMPs)

F. Continuous Runoff Modeling Results

- WWHM2012 Report
- LID Performance Standard

G. Runoff Treatment and Flow Control BMPs

- BMP T7.30 Bioretention
- Table V-A.21 Maintenance Standards – Bioretention Facilities

H. Geotechnical Report

SECTION 1 Proposed Project Description

The following Drainage Report has been prepared using the Department of Ecology's 2019 Stormwater Management Manual for Western Washington (2019 SWMMWW) as prescribed by the City of Yelm.

This project consists of construction of a new cabinet manufacturing facility on existing undeveloped land at 1102 and 1002 Rhoton Road Southeast in Yelm, Washington (Thurston County Tax Parcels #64300800301 and #64300800302). See the **Vicinity Map** included in **Appendix A** of this report.

New development will include a 20,000 square foot building, asphalt pavement parking lot, driveway, and offloading zone area, water and sewer utilities, three stormwater bioretention facilities, landscaped areas, and gravel building perimeter. Additionally, the proposed development will require the removal of several trees. Therefore, this project will replace every tree removed (8" diameter, 4.5' tall), per the City of Yelm Municipal Code Section 18.57.090C. These trees will be replanted within and around parcel #64300800301 and #64300800302.

The project site was analyzed as one discharge area. The proposed improvements are located in an area that currently infiltrates 100% of stormwater. **Table 1. Project Surface Coverage** summarizes the existing and proposed surface areas of the proposed project area. For an illustration and additional detail, see **Exhibit 'A' Existing Surface Coverage Map** and **Exhibit 'B' Proposed Surface Coverage Map** included in **Appendix A** of this report.

Table 1. Project Surface Coverage

	Square Feet	% of Total
Total Project Area	84,479	100
Existing Hard Surfaces	0	0
Existing Pervious Surfaces	84,479	100
Replaced Hard Surfaces	0	0
New Hard Surfaces	65,580	77.6
Disturbed Pervious Surfaces	0	0
New Pervious Surfaces	18,899	22.4
Undisturbed Pervious Surfaces	0	0
Total Hard Surfaces After Project	65,580	77.6
Total Pervious Surfaces After Project	18,899	22.4

The values in **Table 1** above were used in conjunction with Figure I-3.1 "**Flow Chart for Determining Requirements for New Development**" of the 2019 SWMMWW to determine the applicability of the Minimum Requirements for this project. A copy of the completed flowchart is included in **Appendix B** of this report.

Per Figure I-3.1, the project was considered new development as the site does not have more than 35% existing impervious coverage and does result in 5,000 square feet or more of new hard surface area. In reference to Figure I-3.1, All Minimum Requirements shall apply to all new and replaced hard surfaces

and converted vegetation areas, as the project will result in more than 5,000 square feet of new plus replaced hard surface area.

The project is anticipated to create more than 5,000 square feet of new hard surfaces. Therefore, All Minimum Requirements, #1 through #9, apply to the new hard surfaces and converted vegetation areas for the project.

Minimum Requirement #1 – Preparation of Stormwater Site Plans

Minimum Requirement #1 is addressed by this Stormwater Site Plan.

Minimum Requirement #2 - Construction Stormwater Pollution Prevention Plan

This minimum requirement is met through the preparation of a Construction Stormwater Pollution Prevention Plan (SWPPP) which addresses the following elements:

- Element 1: Mark Clearing Limits
- Element 2: Establish Construction Access
- Element 3: Control Flow Rates
- Element 4: Install Sediment Controls
- Element 5: Stabilize Soils
- Element 6: Protect Slopes
- Element 7: Protect Drain Inlets
- Element 8: Stabilize Channels and Outlets
- Element 9: Control Pollutants
- Element 10: Control De-Watering
- Element 11: Maintain BMPs
- Element 12: Manage the Project
- Element 13: Protect Low Impact Development BMPs

The SWPPP has been prepared for this project and is attached as **Appendix E**.

Minimum Requirement #3 – Source Control of Pollution

The purpose of source control pollution is to prevent pollutants from mixing with stormwater. The following source control BMPs, in accordance with Volume IV of the 2019 SWMMWW, were identified for this project.

- S408 BMPs for Dust Control at Manufacturing Areas
- S411 Landscaping and Lawn/Vegetation Management
- S417 Maintenance of Stormwater Drainage and Treatment Systems
- S421 Parking and Storage of Vehicle and Equipment
- S424 Roof/Building Drains at Manufacturing and Commercial Buildings
- S447 Roof Vents
- S450 Irrigation
- S453 Formation of a Pollution Prevention Team
- S454 BMPs for Preventative Maintenance / Good Housekeeping
- S455 Spill Prevention and Cleanup

- S456 Employee Training
- S457 Inspections
- S458 Record Keeping

These BMPs are included for reference in **Appendix D**.

Minimum Requirement #4 – Preservation of Natural Drainage Systems and Outfalls

No changes to the existing drainage patterns are anticipated. The proposed improvements will not change the existing flow directions or discharge points of the site.

No changes to the existing drainage patterns are anticipated as a result of this project. At present, runoff from the site is primarily infiltrated through the native soil. The project will maintain existing flow patterns and discharge points of the existing discharge area. The northern half of the site will capture runoff from the existing forest, gravel perimeter, building rooftop, and parking area and convey through sheet flow and roof pipes towards two northern bioretention facilities. Runoff from the proposed driveway, parking, and offloading areas, landscaped areas, gravel perimeter and existing moderate forest will be conveyed by sheet flow to a southern bioretention system. The proposed project will not modify existing flow patterns.

Minimum Requirement #5 – Onsite Stormwater Management

Based on Figure I-3.3 “**Flow Chart for Determining MR #5 Requirements**” of Section I-3.4.5, Volume I of the 2019 SWMMWW, projects that are not flow control exempt that trigger minimum requirements #1 - #9, and are located inside the urban growth area, must either meet the LID Performance Standard through the use of any Flow Control BMP(s) or consider using BMP(s) from List #2 for each surface, where feasible. The project developer has chosen to meet the LID Performance Standard through the use of any Flow Control BMP in the 2019 SWMMWW. A copy of the completed flowchart is included in **Appendix B** of this report. Additionally, a copy of the **WWHM2012 Report** and **LID Performance Standard** Results are included in **Appendix F** to demonstrate that the LID Performance standard has been met.

This project is also required to implement the following BMPs where feasible:

- BMP T5.13 Post Construction Soil Quality and Depth

BMP T7.30 Bioretention has been chosen to manage the runoff generated from new hard and disturbed surfaces and achieve the LID Performance Standard. The BMP functions as both a Flow Control and Runoff Treatment BMP. The North Bioretention A will collect and infiltrate 100% of runoff generated by the proposed building and northwestern parking area. Roof runoff will be collected and conveyed through roof drain tightlines into North Bioretention A. North Bioretention B will collect and infiltrate 100% of runoff generated by the northern and eastern gravel perimeter and northeast forested area. The South Bioretention will collect and infiltrate 100% of the remaining forested area and gravel perimeter to the southeast, driveway, and southern parking lot. All proposed asphalt parking areas will

be conveyed via sheet flow into these bioretention facilities. A landcover map of these areas entitled “**WVHM2012 Basin Areas**” is included for reference in **Appendix A**.

Minimum Requirement #6 – Runoff Treatment

The project consists of a single Threshold Discharge Area (TDA) with more than 5,000 square feet of pollution-generating hard surface. As such, Runoff Treatment BMP(s) will be required. The following Runoff Treatment BMPs, in accordance with Volume V Chapter 5 of the 2019 SWMMWW, were identified for this proposed project. **Runoff Treatment BMPs** are included as **Appendix G**.

- BMP T7.30 Bioretention

This project shall provide treatment of all stormwater generated from new pollution generating hard surfaces. These surfaces include the proposed asphalt pavement, and all surfaces contributing flow to this surface, including gravel and moderate forest areas. The Runoff Treatment BMP shall be BMP T7.30 Bioretention. This proposed new facility was sized for 100% water quality infiltration utilizing the 2012 WVHM Continuous Simulation Method. Modeling results show that North Bioretention A shall require a minimum bottom area of 650 square feet, North Bioretention B requires a minimum bottom area of 400 square feet, and the South Bioretention requires a minimum bottom area of 2,704 square feet. The **WVHM Report** is included as **Appendix F**. The proposed Bioretention facilities are included in the **Site Plan** as **Appendix C**.

Minimum Requirement #7 – Flow Control

The project does not discharge to Flow Control Exempt receiving waters. The project consists of a single TDA with more than 10,000 square feet of effective impervious surfaces. As such, Flow Control BMP(s) will be required. The following Flow Control BMPs, in accordance with Volume V Chapter 5 of the 2019 SWMMWW, were identified for this project to reduce impacts of stormwater runoff from hard surfaces and land cover conversions. Flow Control BMPs are included as **Appendix G**.

- BMP T7.30 Bioretention

Minimum Requirement #8 – Wetland Protection

Minimum Requirement #8 will not be required for this project. The project will not discharge runoff into a wetland, either directly or indirectly through a conveyance system. All runoff will be infiltrated 100% on-site.

Minimum Requirement #9 – Operation and Maintenance

Operation and Maintenance shall be provided for the proposed bioretention facilities by the applicant. The operation shall be in accordance with the Maintenance Section listed in the 2019 SWMMWW guidelines for **BMP T7.30 Bioretention**. The maintenance schedule shall be in accordance with **Table V-A.21 Maintenance Schedule – Bioretention Facilities** included in **Appendix G**.

SECTION 2 Existing Conditions Description

Topography and Ground Cover

Parcels #64300800301 and #64300800302 are located at 1102 & 1002 Rhoton Road Southeast in Yelm, Washington. These parcels represent 2.07 acres and 2.78 acres of undeveloped land, respectively. The eastern half of the site consists of moderate slopes (5-10%) that gently fall from east to west. The western half of both sites consist of flat slopes (< 5%). Native Fir trees ranging between 11 and 48 inches in diameter populate in a row along the northern boundary of parcel #64300800301, with the majority occupying the eastern-central portion of the parcel in clusters where the proposed development is to be located. Other native vegetation covers the remainder of both parcels. For an illustration and additional detail, see **Exhibit 'A' Existing Surface Coverage Map** included in **Appendix A** of this report.

Floodplain Analysis

Federal Emergency Management Agency Flood Insurance Rate Maps indicate a small portion of the southwest corner of parcel #64300800302 is located within the 100-year floodplain of Yelm Creek. This is outside the proposed development for this current project. The **FEMA FIS inundation boundary** is included in **Appendix A** of this report.

Other Information

On site soil conditions indicate suitable habitat for the Mazama Pocket Gopher, a protected species on the Washington Priority Species and Habitat List as well as the Federal Threatened Species List. It is our understanding that the Owner and the City of Yelm previously completed a Critical Areas Report and found no evidence of pocket gopher activity.

SECTION 3 Infiltration Rates / Soils Reports

Quality Geo, PLLC (QG) completed a geotechnical investigation at the project site on April 1, 2021 to determine subsurface soil conditions, design infiltration rate for the proposed bioretention facilities, and groundwater depth. Exploratory borings were excavated at 5 locations to 10-foot depths across the entire site. Exploratory borings indicated the top 1.5 feet of soil beneath brush and grass consisted of Silty Sand with Gravel. Soils greater than 1.5 feet in depth consisted of Outwash – Well Graded Gravel with Sand (GW). Groundwater was consistently encountered across these 5 borings at approximately 8 feet below present grade.

QG recommends a maximum design infiltration rate of 10 inches per hour for depths greater than 1.5 feet below present grade. This is the design infiltration rate used for North Bioretention A and B as well as South Bioretention to size for 100% infiltration using WWHM2012. All Bioretention systems were designed according to Geotechnical recommendations. The **Geotechnical Report** is included in **Appendix H**.

SECTION 4 Bioretention Facility Sizing Analysis

The Western Washington Hydrologic Model version 2012 (WWHM2012) was the method chosen for continuous runoff simulation.

Existing Surface Coverage

The existing project site consists of one threshold discharge area (TDA) consisting of forested area with moderate to flat slopes. **Existing Surface Coverage** was defined within the limits of construction and included for reference in **Appendix A**. For Predeveloped Scenario, refer to **WWHM2012 Report** included in **Appendix F**.

Proposed Surface Coverage

The proposed project site consists of one threshold discharge area divided into three basins:

North Basin A consists of 20,097 square feet (0.46 acres) of flat rooftop, 4,070 square feet (0.093 acres) of landscaped area (modeled as “flat lawn” in WWHM2012), and 4,633 square feet (0.11 acres) of asphalt pavement. Aside of the rooftop runoff, which will be routed through roof tight lines, the parking and lawn areas will sheet flow into the **North Bioretention A** facility located west of the proposed building on parcel #64300800301.

North Basin B consists of 337 square feet (0.0077 acres) of forested area with flat slopes, 4,149 square feet (0.095 acres) of forested area with moderate slopes, and 2,685 square feet (0.062 acres) of gravel (modeled as “flat road” in WWHM2012). All runoff generated by new impervious surface, and run-on from forested area will sheet flow away from the proposed building into **North Bioretention B** facility located north of the proposed building on parcel #64300800301.

The **South Basin** consists of 23,205 square feet (0.53 acres) of forested area with moderate slopes, 1,609 square feet of landscaped area (modeled as “flat lawn” in WWHM2012), 1,964 square feet of gravel (modeled as “flat road” in WWHM2012), and 34,241 square feet (0.79 acres) of asphalt pavement. All runoff generated by new impervious surface, and run-on from forested area will sheet flow away from the proposed building into the **South Bioretention** facility located southeast of the proposed building on parcel #64300800302.

Proposed Surface Coverage and **WWHM Basin Areas** were defined within the limits of construction and included for reference in **Appendix A**. For Mitigated Scenario, refer to **WWHM2012 Report** included in **Appendix F**.

Design and Results

North Bioretention A is designed with at least 1 foot of ponding depth and 0.5 feet of freeboard. A one-foot-wide berm of constant elevation is provided along of the top of pond where existing ground is lower elevation to provide that minimum requirement. Side slopes remain constant along the walls at 3:1 (H:V) to maintain the maximum slope requirements of the 2019 SWMMWW. The soil layers consist of 0.25 feet of mulch and 1.5 feet of bioretention soil mix (BSM), as a layer of treatment. The native soil design infiltration rate is 10 inches per hour, according to the Quality Geo, PLLC Geotechnical Report.

The minimum bottom area of the pond required to infiltrate 100% of all stormwater runoff generated by **North Basin A** was determined to be 650 square feet using the WWHM2012 Bioretention Element and was design accordingly.

North Bioretention B is also designed with at least 1 foot of ponding depth and 0.5 feet of freeboard. A one-foot-wide berm of constant elevation is also provided along of the top of pond where existing ground is lower elevation to provide that minimum requirement. Side slopes remain constant along the walls at 3:1 (H:V) to maintain the maximum slope requirements of the 2019 SWMMWW. The soil layers consist of 0.25 feet of mulch and 1.5 feet of bioretention soil mix (BSM), as a layer of treatment. The native soil design infiltration rate is 10 inches per hour, according to the Quality Geo, PLLC Geotechnical Report.

The minimum bottom area of the pond required to infiltrate 100% of all stormwater runoff generated by **North Basin B** was determined to be 400 square feet using the WWHM2012 Bioretention Element and was designed accordingly.

The **South Bioretention** is designed with at least 0.5 feet of ponding depth and 0.5 feet of freeboard. A one-foot-wide berm of constant elevation is provided along of the top of pond where existing ground is lower elevation to provide that minimum requirement. Side slopes remain constant along the walls at 3:1 (H:V) to maintain the maximum slope requirements of the 2019 SWMMWW. The soil layers consist of 0.25 feet of mulch and 1.5 feet of bioretention soil mix (BSM), as a layer of treatment. The native soil design infiltration rate is 10 inches per hour, according to the Quality Geo, PLLC Geotechnical Report.

The minimum bottom area of the pond required to infiltrate 100% of all stormwater runoff generated by the **South Basin** was determined to be 2704 square feet using the WWHM2012 Bioretention Element and was designed accordingly.

Emergency Overflow

A concrete inlet structure with a rim elevation 1-foot above pond bottom will be constructed in North Bioretention A and B, and connected by a 12-inch pipe, such that any unexpected runoff will be able to overflow from North Bioretention B into North Bioretention A. If the capacity of both North Bioretention A and B are exceeded, then North Bioretention A is expected to overflow into the roadside ditch along Rhoton Road Southeast. The South Bioretention system is also expected to overflow into the same roadside ditch at an elevation of 1-foot above pond bottom.

APPENDIX A – Project Maps

Vicinity Map

Existing Surface Coverage Map

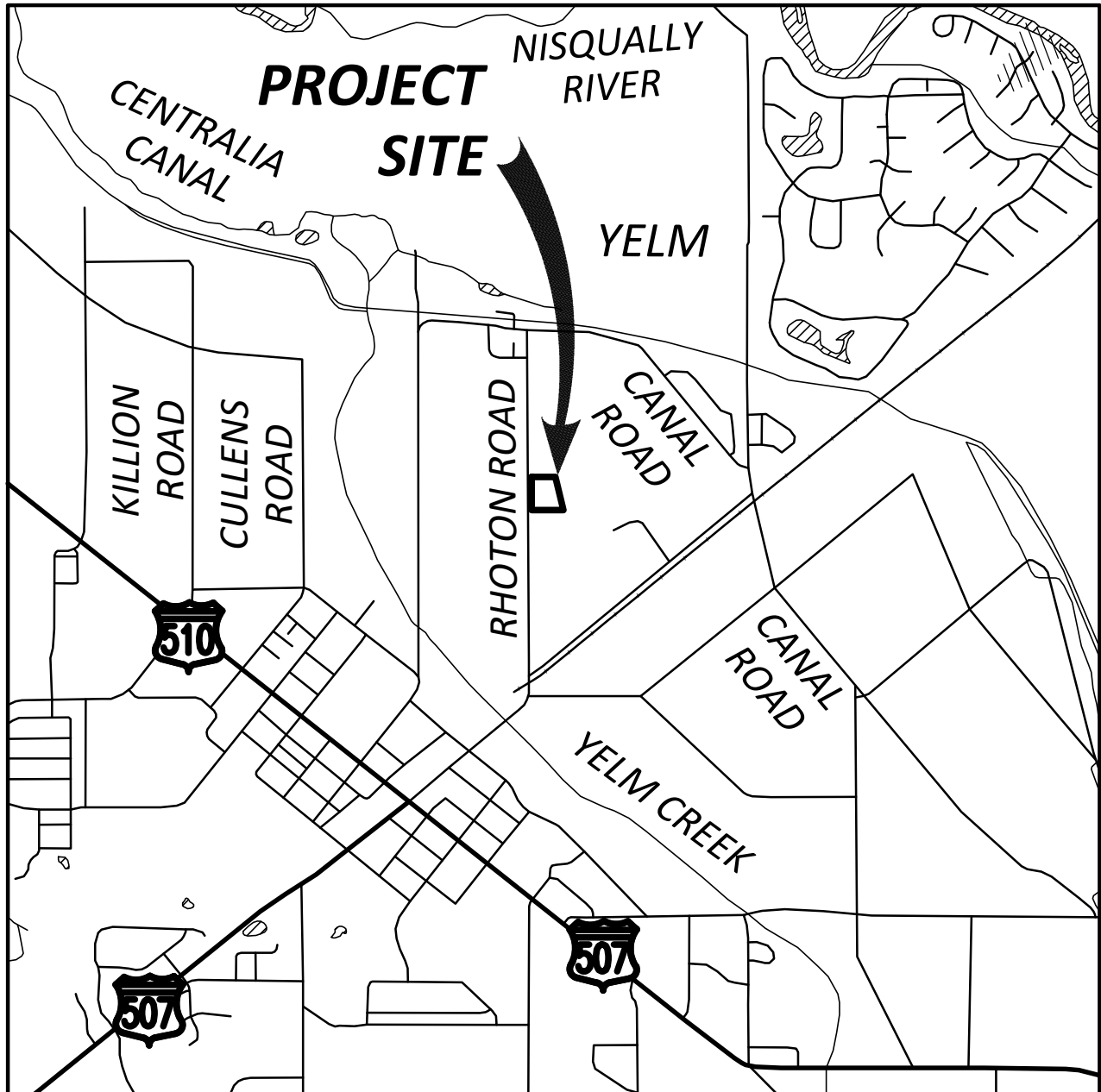
Proposed Surface Coverage Map

WWHM2012 Basin Areas Map

FEMA Flood Map



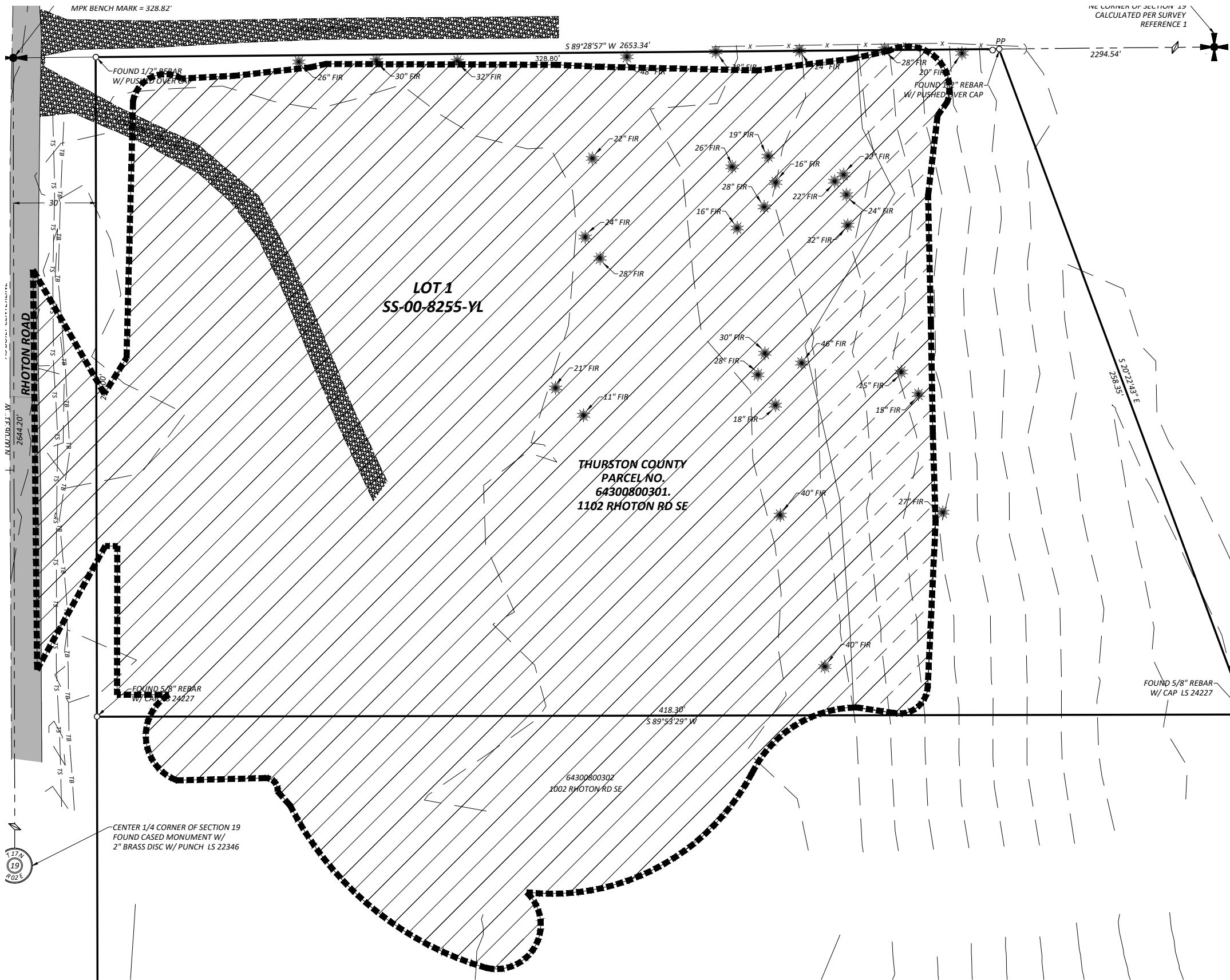
N.T.S.



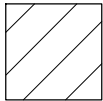
MODERN RESOURCES LLC SITE DEVELOPMENT
1102 RHOTON ROAD SE YELM, WA 98597

YELM, WA

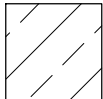
Vicinity Map



EXISTING SURFACE COVERAGE



A/B FLAT, FOREST (76,961 SF)



A/B MODERATE, FOREST (7,518 SF)



CONSTRUCTION LIMITS

DESIGNED BY: I. LEE, PE		DATE	REVISIONS	
ENTERED BY: A. GUERRERO, EIT		4/27/202	NO.	DATE
CHECKED BY: I. LEE, PE		4/27/202		
PROJ. ENGR.: I LEE, PE		4/27/202		
Plotted By: Anthony D. Guerrero, EIT on 4/28/21 9:41 AM				
Saved By: Aguerro on 4/28/21 9:40 AM				
G:\Project\2020\20136 Modern Resources Yelm Development\CAD\SHEETS\EXISTING SURFACE COVERAGE MAP.dwg				



5016 Lacey Boulevard SE, Lacey, Washington 98503
(360) 491-3399 Fax (360) 491-3857



City of Yelm
WASHINGTON

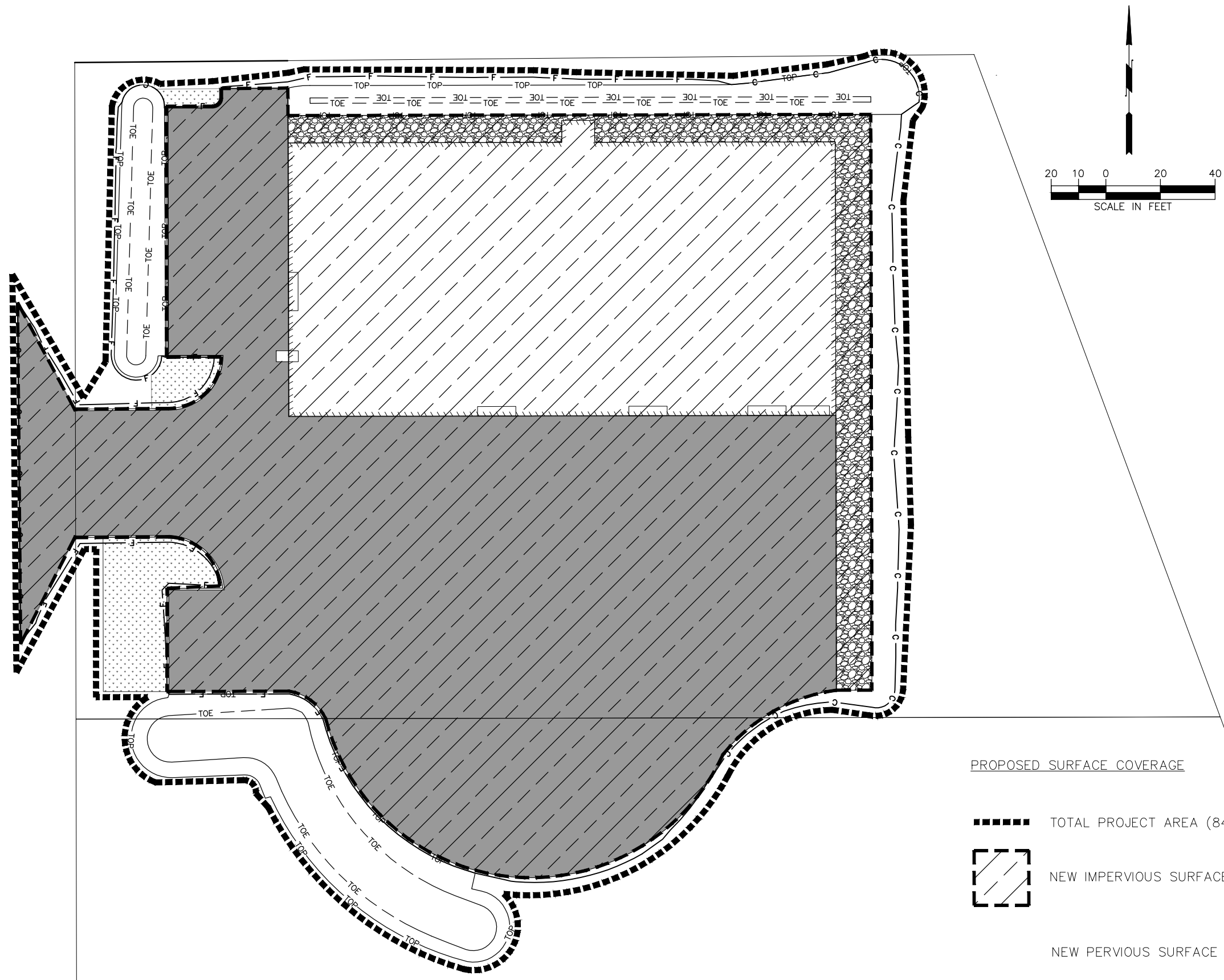
YELM

WA

MODERN RESOURCES LLC
SITE DEVELOPMENT

EXHIBIT A - EXISTING SURFACE COVERAGE MAP

JOB NUMBER
20136
100%
SHEET
1
OF
1
SHEETS



PROPOSED SURFACE COVERAGE

----- TOTAL PROJECT AREA (84,479 SF)

 NEW IMPERVIOUS SURFACE (65,580 SF)

NEW PERVIOUS SURFACE = TOTAL PROJECT AREA - NEW IMPERVIOUS SURFACE (18,899 SF)

DATE		REVISIONS		
DESIGNED BY:	DATE	NO.	DATE	
ENTERED BY: A. GUERRERO, EIT	4/27/2021			
CHECKED BY: I. LEE, PE	4/27/2021			
PROJ. ENGR.: I LEE, PE	4/27/2021			
Plotted By: Anthony D. Guerrero, EIT on 4/28/21 9:47 AM				
Saved By: Aguerro on 4/28/21 9:47 AM				
G:\Project\2020\20136 Modern Resources Yelm Development\CAD\SHEETS\PROPOSED SURFACE COVERAGE MAP.dwg				

 **SKILLINGS**
5016 Lacey Boulevard SE, Lacey, Washington 98503
(360) 491-3399 Fax (360) 491-3857



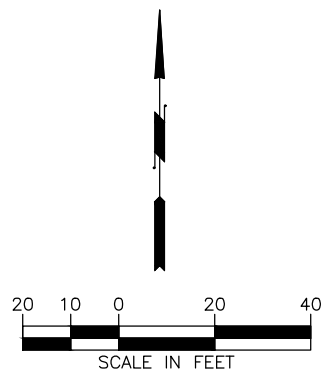
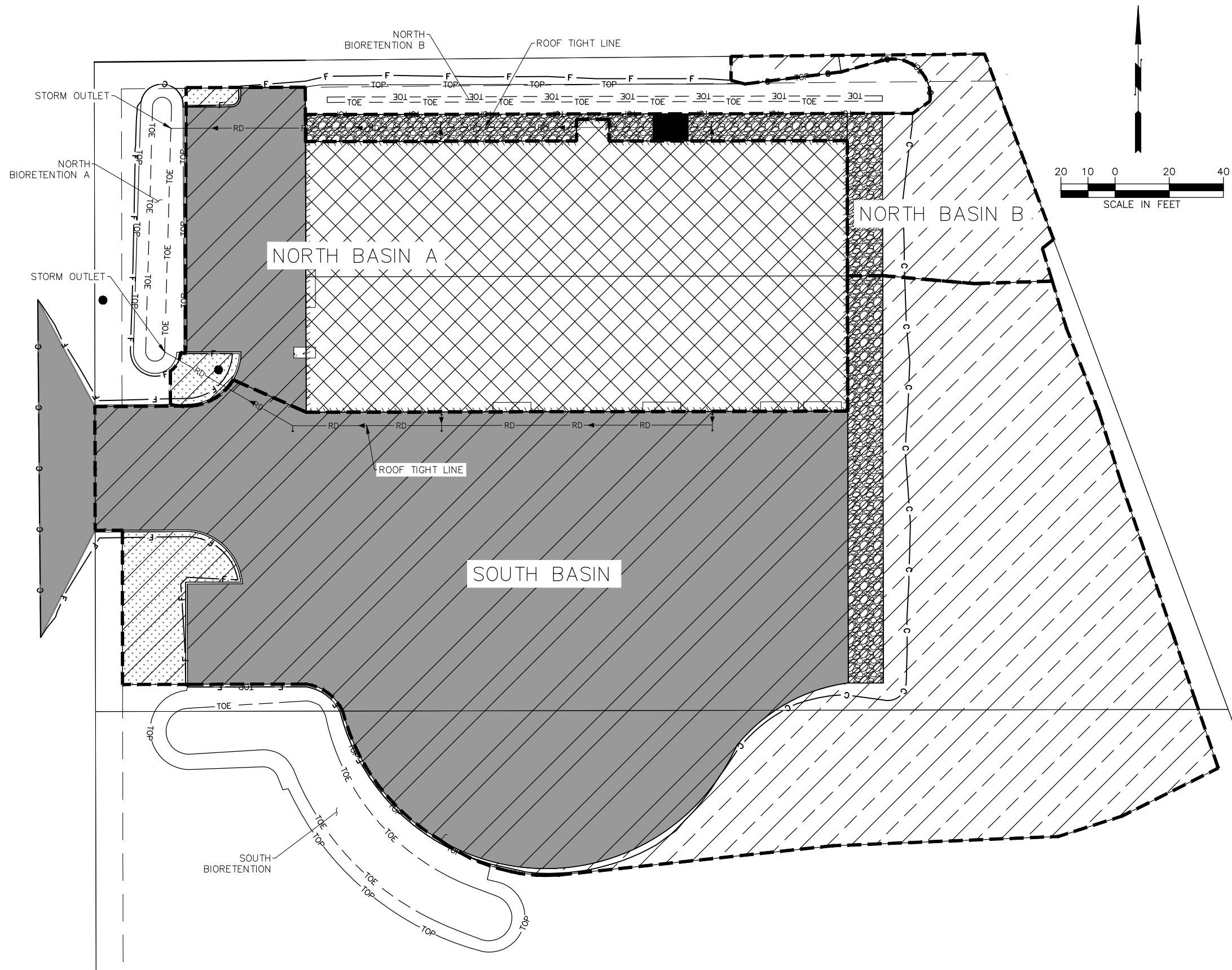
YELM

WA

**MODERN RESOURCES LLC
SITE DEVELOPMENT**

EXHIBIT B - PROPOSED SURFACE COVERAGE MAP

JOB NUMBER
20136
100%
SHEET
1
OF
1
SHEETS



- NORTH BASIN A:**
- ROOFTOP, FLAT (20,097 SF, 0.461 ACRES)
 - A/B LAWN, FLAT (4070 SF, 0.0934 ACRES)
 - PARKING, FLAT (4633 SF, 0.106 ACRES)
- NORTH BASIN B:**
- A/B FLAT, FOREST (337 SF, 0.00774 ACRES)
 - A/B MODERATE, FOREST (4149 SF, 0.0952 ACRES)
 - ROAD, FLAT (2685 SF, 0.0616 ACRES)
- SOUTH BASIN:**
- A/B MODERATE, FOREST (23205 SF, 0.533 ACRES)
 - A/B LAWN, FLAT (1609 SF, 0.0369 ACRES)
 - ROAD, FLAT (1964 SF, 0.0451 ACRES)
 - PARKING, FLAT (34241 SF, 0.786 ACRES)

DESIGNED BY: I. LEE, PE		DATE	REVISIONS	
ENTERED BY: A. GUERRERO, EIT		4/27/202	NO.	DATE
CHECKED BY: I. LEE, PE		4/27/202		
PROJ. ENGR.: I LEE, PE		4/27/202		
Plotted By: Anthony D. Guerrero, EIT on 4/28/21 9:51 AM				
Saved By: Aguerrero on 4/28/21 9:51 AM				
G:\Project\2020\20136 Modern Resources Yelm Development\CAD\SHEETS\WWHM Basin Areas and Drainage Plan.dwg				

**SKILLINGS**

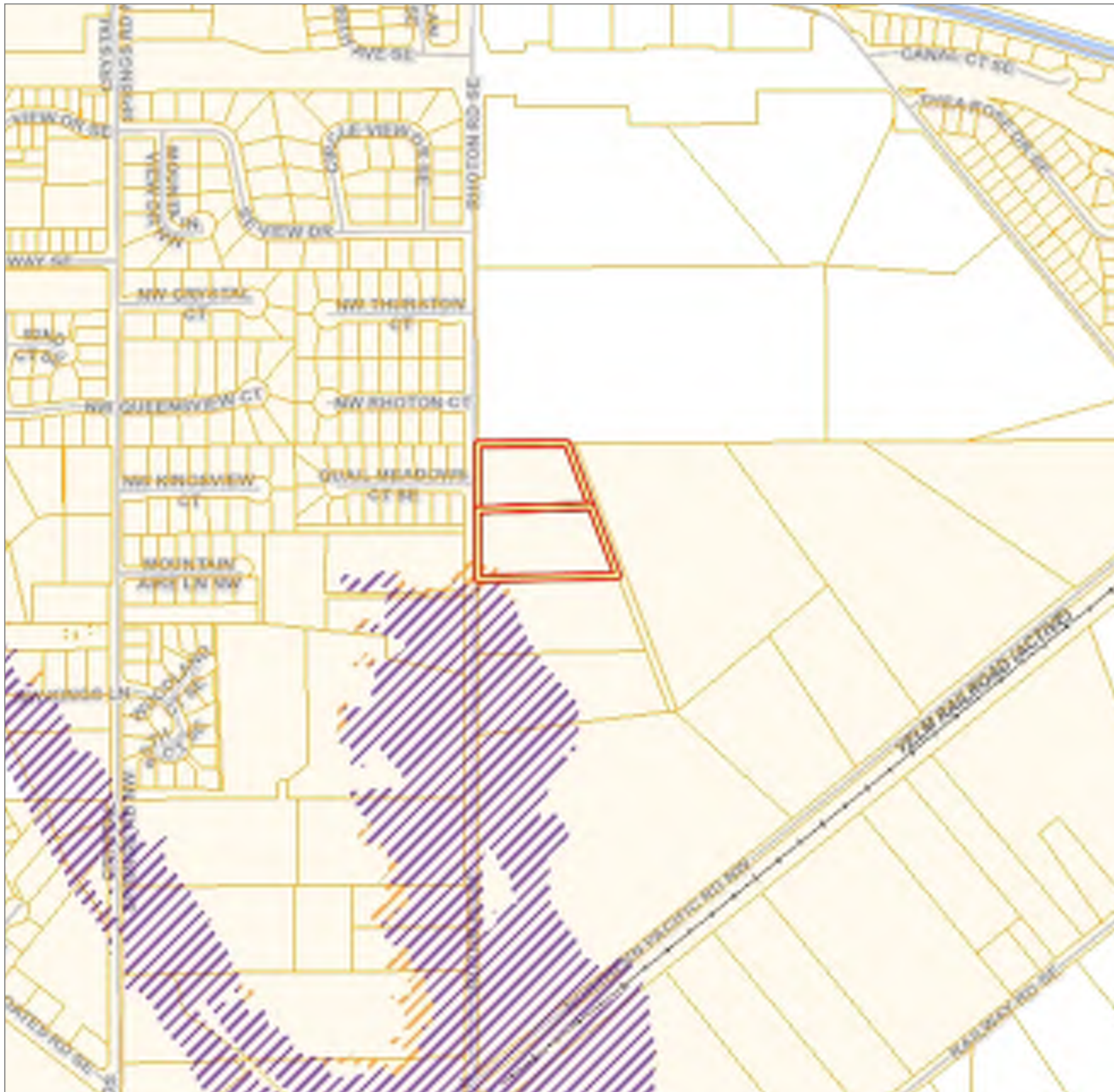
5016 Lacey Boulevard SE, Lacey, Washington 98503
(360) 491-3399 Fax (360) 491-3857

**City of Yelm**
WASHINGTON

YELM

WA

MODERN RESOURCES LLC SITE DEVELOPMENT		JOB NUMBER 20136 100%
WWHM2012 BASIN AREAS		SHEET 1 OF 1 SHEETS

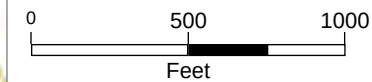


FEMA Flood Map

Legend

- | | |
|---|---|
| Flood Zones FEMA | Water Bodies (Other) |
| 100 Year (1%) | Parks |
| 500 Year (0.2%) | Cities |
| Parcel Boundaries | Capital Forest |
| Roads - Major (Large Scale) | County Background |
| <all other values> | Roads - Major |
| I 5 ACCESS; US 101 ACCESS; US 101 SB OFF RAMP | <all other values> |
| I 5; US 101 | I 5 ACCESS; US 101 ACCESS; US 101 SB OFF RAMP |
| Roads (Large Scale) | I 5; US 101 |
| Railroads | Roads |
| County Border | Railroads |
| Olympia Municipal Airport | County Border |
| Water Bodies (River - Small Scale) | Olympia Municipal Airport |

Scale 1: 10,738



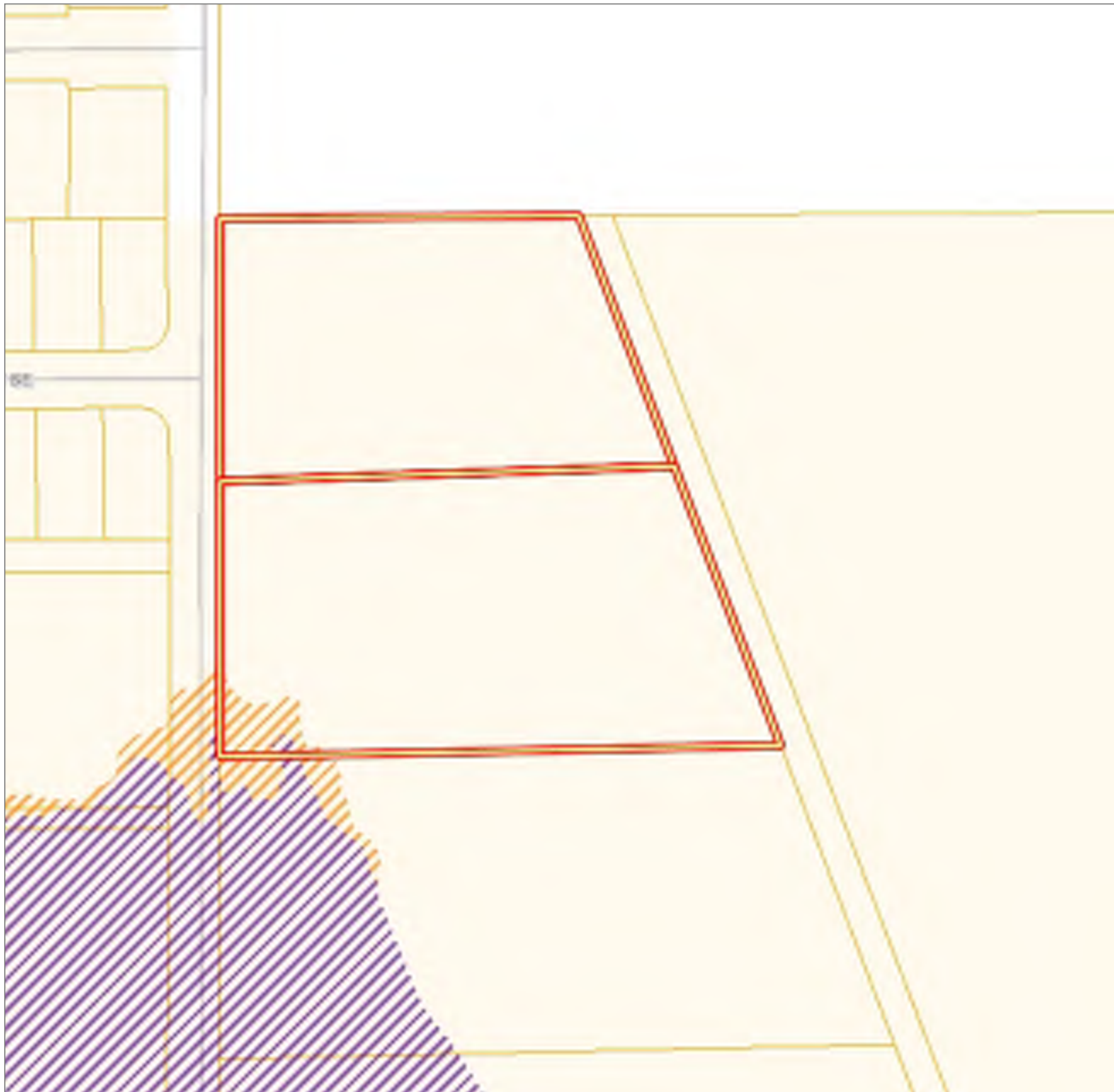
Map Created Using GeoData Public Website

Published: 12/21/2020

Note: 500yr and 100yr



The information included on this map has been compiled by Thurston County staff from a variety of sources and is subject to change without notice. Additional elements may be present in reality that are not represented on the map. Ortho-photos and other data may not align. The boundaries depicted by these datasets are approximate. This document is not intended for use as a survey product. ALL DATA IS EXPRESSLY PROVIDED 'AS IS' AND 'WITH ALL FAULTS'. Thurston County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. In no event shall Thurston County be liable for direct, indirect, incidental, consequential, special, or tort damages of any kind, including, but not limited to, lost revenues or lost profits, real or anticipated, resulting from the use, misuse or reliance of the information contained on this map. If any portion of this map or disclaimer is missing or altered, Thurston County removes itself from all responsibility from the map and the data contained within. The burden for determining fitness for use lies entirely with the user and the user is solely responsible for understanding the accuracy limitation of the information contained in this map. Authorized for 3rd Party reproduction for personal use only.

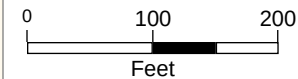


FEMA FLOOD MAP

Legend

- | | |
|---|---|
| Flood Zones FEMA | Water Bodies (Other) |
| 100 Year (1%) | Parks |
| 500 Year (0.2%) | Cities |
| Parcel Boundaries | Capital Forest |
| Roads - Major (Large Scale) | County Background |
| <all other values> | Roads - Major |
| I 5 ACCESS; US 101 ACCESS; US 101 SB OFF RAMP | <all other values> |
| I 5; US 101 | I 5 ACCESS; US 101 ACCESS; US 101 SB OFF RAMP |
| Roads (Large Scale) | I 5; US 101 |
| Railroads | Roads |
| County Border | Railroads |
| Olympia Municipal Airport | County Border |
| Water Bodies (River - Large Scale) | Olympia Municipal Airport |

Scale 1: 2,684



Map Created Using GeoData Public Website

Published: 12/21/2020

Note:



The information included on this map has been compiled by Thurston County staff from a variety of sources and is subject to change without notice. Additional elements may be present in reality that are not represented on the map. Ortho-photos and other data may not align. The boundaries depicted by these datasets are approximate. This document is not intended for use as a survey product. ALL DATA IS EXPRESSLY PROVIDED 'AS IS' AND 'WITH ALL FAULTS'. Thurston County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. In no event shall Thurston County be liable for direct, indirect, incidental, consequential, special, or tort damages of any kind, including, but not limited to, lost revenues or lost profits, real or anticipated, resulting from the use, misuse or reliance of the information contained on this map. If any portion of this map or disclaimer is missing or altered, Thurston County removes itself from all responsibility from the map and the data contained within. The burden for determining fitness for use lies entirely with the user and the user is solely responsible for understanding the accuracy limitation of the information contained in this map. Authorized for 3rd Party reproduction for personal use only.

APPENDIX B - Analysis

Flow Chart for Determining Requirements for New Development

Flow Chart for Determining MR #5 Requirements

Figure I-3.1: Flow Chart for Determining Requirements for New Development

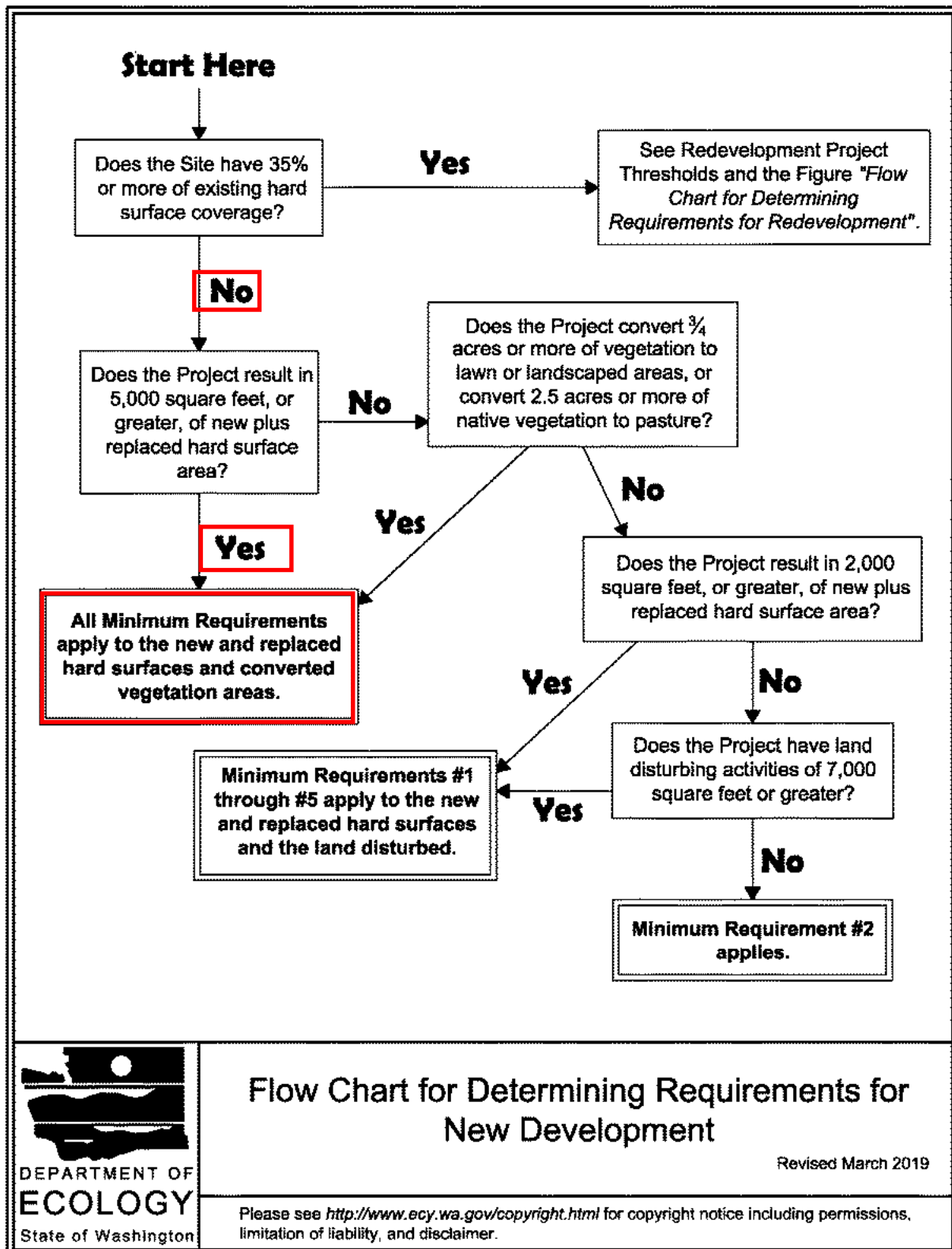
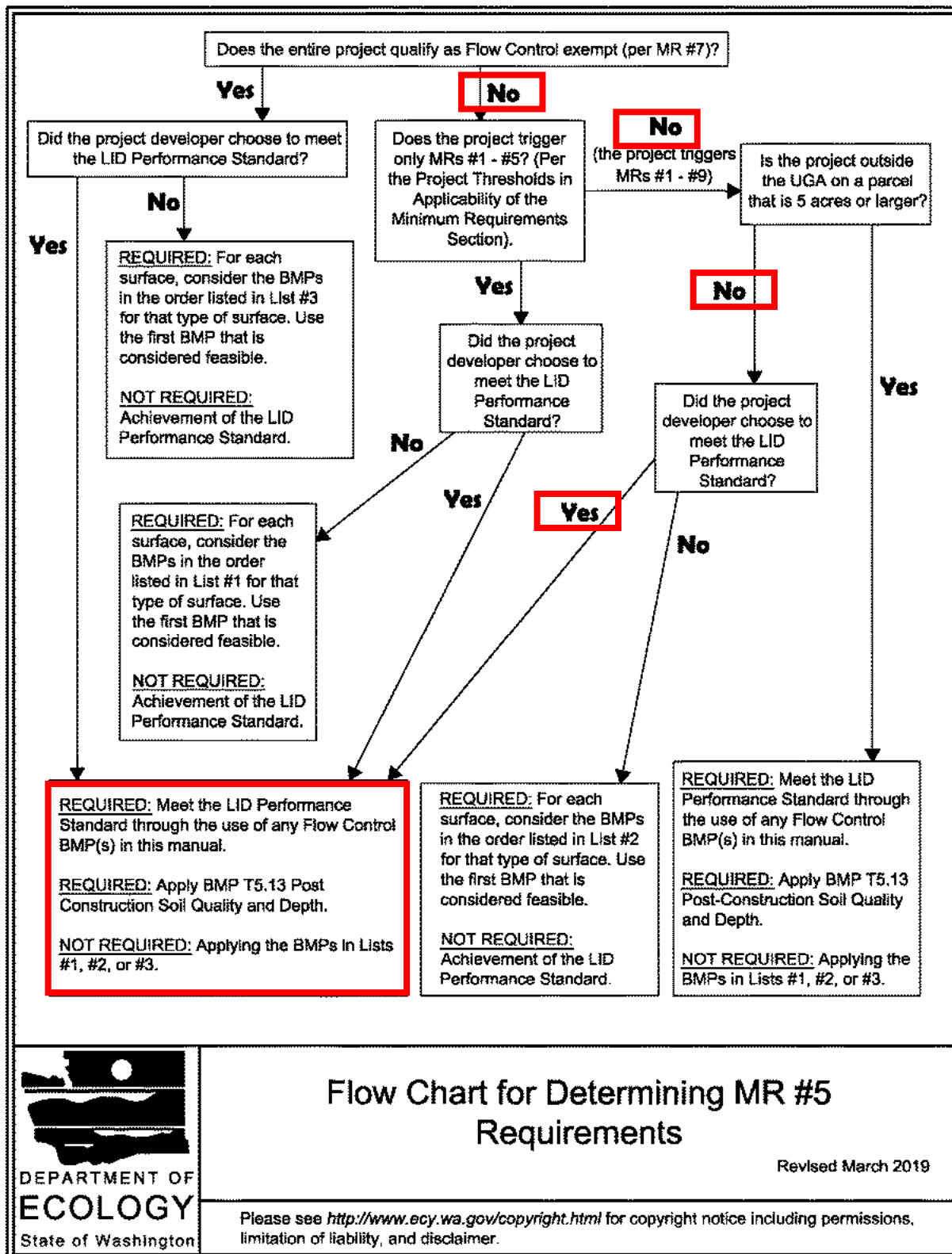
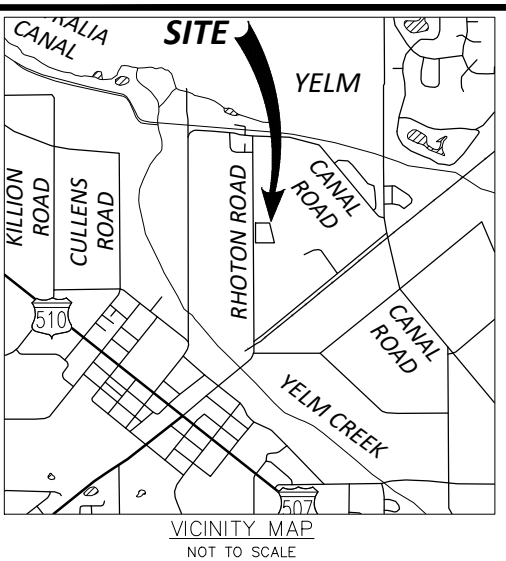
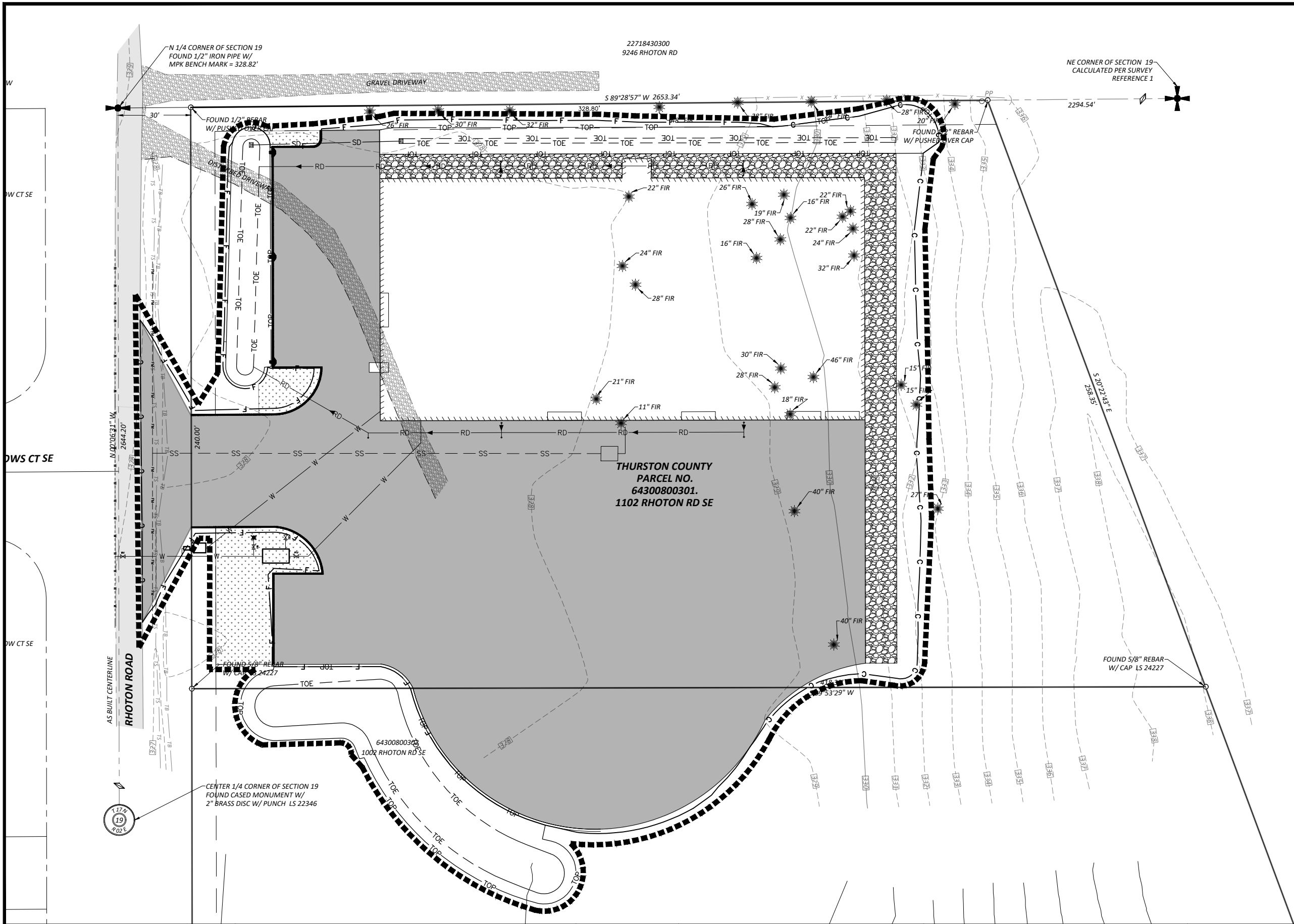


Figure I-3.3: Flow Chart for Determining MR #5 Requirements



APPENDIX C – Site Plan



SITE INFORMATION:	
OWNER/APPLICANT:	MODERN RESOURCES LLC 1225 RUDELL RD SE LACEY, WA 98503
SITE ADDRESS:	1102 & 1002 RHOTON ROAD SE YELM, WA 98597
ENGINEER:	SKILLINGS, INC. IAN LEE, P.E. 5016 LACEY BLVD SE LACEY, WA 98503 (360) 491-3399
PARCEL NUMBER:	T.P. NO. 64300800301 & 64300800302
SITE AREA	4.85 ACRES
ZONING:	INDUSTRIAL DISTRICT (I)
WATER:	CITY
SEWER:	CITY
STORM DRAINAGE:	ON-SITE
POWER:	PUGET SOUND ENERGY

LEGEND:	
	PROPOSED PAVEMENT
	PROPOSED CONCRETE
	PROPOSED GRAVEL BUFFER STRIP
	PROPOSED LANDSCAPED AREA
	LIMITS OF DISTURBANCE
	PROPOSED CUT LINE
	PROPOSED FILL LINE
	PROPOSED ROOF DRAIN
	PROPOSED TOP OF BIORETENTION
	PROPOSED BOTTOM OF BIORETENTION
	PROPOSED BUILDING
	PROPOSED SANITARY SEWER FORCE MAIN
	PROPOSED STORM PIPE
	PROPOSED CONCRETE INLET STRUCTURE

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND UTILITY LOCATE LINE AT PHONE NUMBER: 811
A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION. THE CONTRACTOR WILL ALSO BE RESPONSIBLE FOR MAINTAINING ALL LOCATE MARKS ONCE THE UTILITIES HAVE BEEN LOCATED.

DESIGNED BY: I. LEE, PE	DATE	NO.	DATE	REVISIONS
ENTERED BY: A. GUERRERO, EIT	4/27/21			
CHECKED BY: I. LEE, PE	4/27/21			
PROJ. ENGR.: I. LEE, PE	4/27/21			
Plotted By: Anthony D. Guerrero, EIT on 4/28/21 5:08 PM				
Saved By: Aguerro on 4/28/21 5:06 PM				
G:\Project\2020\20136 Modern Resources Yelm Development\CAD\SHEETS\20136_Stormwater Site Plan.dwg				



5016 Lacey Boulevard SE, Lacey, Washington 98503
(360) 491-3399 Fax (360) 491-3857



YELM WA

SITE PLAN TPN 64300800301 & 64300800302		JOB NUMBER 20136 100%
1102 & 1002 RHOTON RD SE YELM, WA 98597		SHEET 1 OF 1 SHEETS

APPENDIX D – Source Control BMPs

You are here: [2019 SWMMWW](#) > [Volume IV - Source Control BMP Library](#) > [IV-4 Soil Erosion, Sediment Control, and Landscaping Source Control BMPs](#) > [S408 BMPs for Dust Control at Manufacturing Areas](#)

S408 BMPs for Dust Control at Manufacturing Areas

Note: Contact the local air quality authority for appropriate and required BMPs for dust control to implement at your project site. Use the following website to determine the air quality authority for the project site:

<https://ecology.wa.gov/About-us/Our-role-in-the-community/Partnerships-committees/Clean-air-agencies>

Description of Pollutant Sources: Industrial material handling activities can generate considerable amounts of dust that is typically removed using exhaust systems. Mixing cement and concrete products and handling powdered materials can also generate dust. Particulate materials that can cause air pollution include grain dust, sawdust, coal, gravel, crushed rock, cement, and boiler fly ash. Air emissions can contaminate stormwater. The objective of this BMP is to reduce the stormwater pollutants caused by dust generation and control.

Pollutant Control Approach: Prevent dust generation and emissions where feasible, regularly clean-up dust that can contaminate stormwater, and convey dust contaminated stormwater to proper treatment.

Applicable BMPs:

- Clean, as needed, powder material handling equipment and vehicles.
- Regularly sweep dust accumulation areas that can contaminate stormwater. Conduct sweeping using vacuum filter equipment to minimize dust generation and to ensure optimal dust removal.
- Use dust filtration/collection systems such as baghouse filters, cyclone separators, etc. to control vented dust emissions that could contaminate stormwater. Control of zinc dusts in rubber production is one example.
- Maintain on-site controls to prevent vehicle track-out.
- Maintain dust collection devices on a regular basis.

Recommended BMPs:

- In manufacturing operations, train employees to handle powders carefully to prevent generation of dust.
- Use water spray to flush dust accumulations to sanitary sewers where allowed by the local sewer authority or to other appropriate treatment system.
- Use approved dust suppressants such as those listed in *Methods for Dust Control* ([Ecology, 2016b](#)). Application of some products may not be appropriate in close proximity to receiving waters or conveyances close to receiving waters. For more information check with Ecology or the local jurisdiction.

Recommended Treatment BMPs

- During non-stormwater conditions, inspect each storm drain for non-stormwater discharges. Record the locations of all non-stormwater discharges. Include all permitted discharges.
- If useful, prepare a map of each area. Show on the map the known location of storm sewers, sanitary sewers, and permitted and unpermitted discharges. Aerial photos may be useful. Check records such as piping schematics to identify known side sewer connections and show these on the map. Consider using smoke, dye, or chemical analysis tests to detect connections between two conveyance systems (e.g., process water and stormwater). If desirable, conduct TV inspections of the storm drains and record the footage on videotape.
- Compare the observed locations of connections with the information on the map and revise the map accordingly. Note suspect connections that are inconsistent with the field survey.
- Identify all connections to storm sewers or to surface water and take the actions specified above as applicable BMPs.

Washington State Department of Ecology

2019 Stormwater Management Manual for Western Washington (2019 SWMMWW)

Publication No.19-10-021

You are here: [2019 SWMMWW](#) > [Volume IV - Source Control BMP Library](#) > [IV-4 Soil Erosion, Sediment Control, and Landscaping Source Control BMPs](#) > [S411 BMPs for Landscaping and Lawn / Vegetation Management](#)

S411 BMPs for Landscaping and Lawn / Vegetation Management

Description of Pollutant Sources: Landscaping can include grading, soil transfer, vegetation planting, and vegetation removal. Examples include weed control on golf course lawns, access roads, and utility corridors and during landscaping; and residential lawn/plant care. Proper management of vegetation can minimize excess nutrients and pesticides.

Pollutant Control Approach: Maintain appropriate vegetation to control erosion and the discharge of stormwater pollutants. Prevent debris contamination of stormwater. Where practicable, grow plant species appropriate for the site, or adjust the soil properties of the site to grow desired plant species.

Applicable BMPs:

- Install engineered soil/landscape systems to improve the infiltration and regulation of stormwater in landscaped areas.
- Select the right plants for the planting location based on proposed use, available maintenance, soil conditions, sun exposure, water availability, height, sight factors, and space available.
- Ensure that plants selected for planting are not on the noxious weed list. For example, butterfly bush often gets planted as an ornamental but is actually on the noxious weed list.

The Washington State Noxious Weed List can be found at the following webpage:

<https://www.nwcb.wa.gov/printable-noxious-weed-list>

- Do not dispose of collected vegetation into waterways or storm sewer systems.
- Do not blow vegetation or other debris into the drainage system.
- Dispose of collected vegetation such as grass clippings, leaves, sticks by composting or recycling.
- Remove, bag, and dispose of class A & B noxious weeds in the garbage immediately.
- Do not compost noxious weeds as it may lead to spreading through seed or fragment if the composting process is not hot enough.
- Use manual and/or mechanical methods of vegetation removal (pincer-type weeding tools, flame weeders, or hot water weeders as appropriate) rather than applying herbicides, where practical.
- Use at least an eight-inch "topsoil" layer with at least 8 percent organic matter to provide a sufficient vegetation-growing medium.
 - Organic matter is the least water-soluble form of nutrients that can be added to the soil. Composted organic matter generally releases only between 2 and 10 percent of its total nitrogen annually, and this release corresponds closely to the plant growth cycle. Return natural plant debris and mulch to the soil, to continue recycling nutrients indefinitely.
- Select the appropriate turfgrass mixture for the climate and soil type.
 - Certain tall fescues and rye grasses resist insect attack because the symbiotic endophytic fungi found naturally in their tissues repel or kill common leaf and stem-eating lawn insects.

- The fungus causes no known adverse effects to the host plant or to humans.
- Tall fescues and rye grasses do not repel root-feeding lawn pests such as Crane Fly larvae.
- Tall fescues and rye grasses are toxic to ruminants such as cattle and sheep
- Endophytic grasses are commercially available; use them in areas such as parks or golf courses where grazing does not occur.
- Local agricultural or gardening resources such as Washington State University Extension office can offer advice on which types of grass are best suited to the area and soil type.
- Use the following seeding and planting BMPs, or equivalent BMPs, to obtain information on grass mixtures, temporary and permanent seeding procedures, maintenance of a recently planted area, and fertilizer application rates: [BMP C120: Temporary and Permanent Seeding](#), [BMP C121: Mulching](#), [BMP C123: Plastic Covering](#), and [BMP C124: Sodding](#).
- Adjusting the soil properties of the subject site can assist in selection of desired plant species. Consult a soil restoration specialist for site-specific conditions.

Recommended Additional BMPs:

- Conduct mulch-mowing whenever practicable.
- Use native plants in landscaping. Native plants do not require extensive fertilizer or pesticide applications. Native plants may also require less watering.
- Use mulch or other erosion control measures on soils exposed for more than one week during the dry season (May 1 to September 30) or two days during the rainy season (October 1 to April 30).
- Till a topsoil mix or composted organic material into the soil to create a well-mixed transition layer that encourages deeper root systems and drought-resistant plants.
- Apply an annual topdressing application of 3/8" compost. Amending existing landscapes and turf systems by increasing the percent organic matter and depth of topsoil can:
 - Substantially improve the permeability of the soil.
 - Increase the disease and drought resistance of the vegetation.
 - Reduces the demand for fertilizers and pesticides.
- Disinfect gardening tools after pruning diseased plants to prevent the spread of disease.
- Prune trees and shrubs in a manner appropriate for each species.
- If specific plants have a high mortality rate, assess the cause and replace with another more appropriate species.
- When working around and below mature trees, follow the most current American National Standards Institute (ANSI) ANSI A300 standards (see http://www.tcia.org/TCIA/BUSINESS/ANSI_A300_Standards_/TCIA/BUSINESS/A300_Standards/A300_Standards.aspx?hkey=202ff566-4364-4686-b7c1-2a365af59669) and International Society of Arboriculture BMPs to the extent practicable (e.g., take care to minimize any damage to tree roots and avoid compaction of soil).
- Monitor tree support systems (stakes, guys, etc.).
 - Repair and adjust as needed to provide support and prevent tree damage.

- Remove tree supports after one growing season or maximum of 1 year.
- Backfill stake holes after removal.
- When continued, regular pruning (more than one time during the growing season) is required to maintain visual sight lines for safety or clearance along a walk or drive, consider relocating the plant to a more appropriate location.
- Make reasonable attempts to remove and dispose of class C noxious weeds.
- Re-seed bare turf areas until the vegetation fully covers the ground surface.
- Watch for and respond to new occurrences of especially aggressive weeds such as Himalayan blackberry, Japanese knotweed, morning glory, English ivy, and reed canary grass to avoid invasions.
- Plant and protect trees per [BMP T5.16: Tree Retention and Tree Planting](#).
- Aerate lawns regularly in areas of heavy use where the soil tends to become compacted. Conduct aeration while the grasses in the lawn are growing most vigorously. Remove layers of thatch greater than ¾-inch deep.
- Set the mowing height at the highest acceptable level and mow at times and intervals designed to minimize stress on the turf. Generally mowing only 1/3 of the grass blade height will prevent stressing the turf.
 - Mowing is a stress-creating activity for turfgrass.
 - Grass decreases its productivity when mowed too short and there is less growth of roots and rhizomes. The turf becomes less tolerant of environmental stresses, more disease prone and more reliant on outside means such as pesticides, fertilizers, and irrigation to remain healthy.

Additional BMP Information:

- King County's *Best Management Practices for Golf Course Development and Operation* ([King County, 1993](#)) has additional BMPs for Turfgrass Maintenance and Operation.
- King County, Seattle Public Utilities, and the Saving Water Partnership have created the following natural lawn and garden care resources that include guidance on building healthy soil with compost and mulch, selecting appropriate plants, watering, using alternatives to pesticides, and implementing natural lawn care techniques.
 - *Natural Yard Care - Five steps to make your piece of the planet a healthier place to live* ([King County and SPU, 2008](#))
 - *The Natural Lawn & Garden Series: Smart Watering* ([Saving Water Partnership, 2006](#))
 - *Natural Lawn Care for Western Washington* ([Saving Water Partnership, 2007](#))
 - *The Natural Lawn & Garden Series: Growing Healthy Soil; Choosing the Right Plants; and Natural Pest, Weed and Disease Control* ([Saving Water Partnership, 2012](#))
- The International Society of Arboriculture (ISA) is a group that promotes the professional practice of arboriculture and fosters a greater worldwide awareness of the benefits of trees through research, technology, and education. ISA standards used for managing trees, shrubs, and other woody plants are the American National Standards Institute (ANSI) A300 standards. The ANSI A300 standards are voluntary industry consensus standards developed by the Tree Care Industry Association (TCIA) and written by the Accredited Standards Committee (ASC). The ANSI standards can be found on the ISA website: www.isa-arbor.com/education/publications/index.aspx

- Washington State University's *Gardening in Washington State* website at <http://gardening.wsu.edu> contains Washington State specific information about vegetation management based on the type of landscape.
- See the *Pacific Northwest Plant Disease Management Handbook* ([Pscheidt and Ocamb, 2016](#)) for information on disease recognition and for additional resources.

Washington State Department of Ecology

2019 Stormwater Management Manual for Western Washington (2019 SWMMWW)

Publication No.19-10-021

You are here: [2019 SWMMWW](#) > [Volume IV - Source Control BMP Library](#) > [IV-3 Roads, Ditches, and Parking Lot Source Control BMPs](#) > S417 BMPs for Maintenance of Stormwater Drainage and Treatment Systems

S417 BMPs for Maintenance of Stormwater Drainage and Treatment Systems

Description of Pollutant Sources: Facilities include roadside catch basins on arterials and within residential areas, conveyance systems, detention facilities such as ponds and vaults, oil/water separators, biofilters, settling basins, infiltration systems, and all other types of stormwater treatment systems presented in [Volume V](#). Oil and grease, hydrocarbons, debris, heavy metals, sediments and contaminated water are found in catch basins, oil and water separators, settling basins, etc.

Pollutant Control Approach: Provide maintenance and cleaning of debris, sediments, and other pollutants from stormwater collection, conveyance, and treatment systems to maintain proper operation.

Applicable Operational BMPs:

Maintain stormwater treatment facilities per the operations and maintenance (O&M) procedures presented in [Appendix V-A: BMP Maintenance Tables](#) in addition to the following BMPs:

- Inspect and clean treatment BMPs, conveyance systems, and catch basins as needed, and determine necessary O&M improvements.
- Promptly repair any deterioration threatening the structural integrity of stormwater facilities. These include replacement of clean-out gates, catch basin lids, and rock in emergency spillways.
- Ensure adequacy of storm sewer capacities and prevent heavy sediment discharges to the sewer system.
- Regularly remove debris and sludge from BMPs used for peak-rate control, treatment, etc. and discharge to a sanitary sewer if approved by the sewer authority, or truck to an appropriate local or state government approved disposal site.
- Clean catch basins when the depth of deposits reaches 60 percent of the sump depth as measured from the bottom of basin to the invert of the lowest pipe into or out of the basin. However, in no case should there be less than six inches clearance from the debris surface to the invert of the lowest pipe. Some catch basins (for example, WSDOT's *Catch Basin Type 1L* ([WSDOT, 2011](#))) may have as little as 12 inches sediment storage below the invert. These catch basins need frequent inspection and cleaning to prevent scouring. Where these catch basins are part of a stormwater collection and treatment system, the system owner/operator may choose to concentrate maintenance efforts on downstream control devices as part of a systems approach.
- Properly dispose of all solids, polluted material, and stagnant water collected through system cleaning. Do not decant water back into the drainage system from eductor trucks or vacuum equipment since there may be residual contaminants in the cleaning equipment. Do not jet material downstream into the public drainage system.

- Clean woody debris in a catch basin as frequently as needed to ensure proper operation of the catch basin.
- Post warning signs; “Dump No Waste - Drains to Ground Water,” “Streams,” “Lakes,” or emboss on or adjacent to all storm drain inlets where possible.
- Disposal of sediments and liquids from the catch basins must comply with [Appendix IV-B: Management of Street Waste Solids and Liquids](#).

Washington State Department of Ecology

2019 Stormwater Management Manual for Western Washington (2019 SWMMWW)

Publication No.19-10-021

You are here: [2019 SWMMWW](#) > [Volume IV - Source Control BMP Library](#) > [IV-3 Roads, Ditches, and Parking Lot Source Control BMPs](#) > [S421 BMPs for Parking and Storage of Vehicles and Equipment](#)

S421 BMPs for Parking and Storage of Vehicles and Equipment

Description of Pollutant Sources: Public and commercial parking lots such as retail store, fleet vehicle (including rent-a-car lots and car dealerships), equipment sale and rental parking lots, and parking lot driveways, can be sources of toxic hydrocarbons and other organic compounds, including oils and greases, metals, and suspended solids.

Pollutant Control Approach: If the parking lot meets the site use thresholds to determine if the site is expected to generate high concentrations of oil, as defined in [Step 2: Determine if an Oil Control BMP is Required](#) in [III-1.2 Choosing Your Runoff Treatment BMPs](#), provide oil removal equipment for the contaminated stormwater runoff.

Applicable Operational BMPs:

- If a parking lot must be washed, discharge the washwater to a sanitary sewer, if allowed by the local sewer authority, or other approved wastewater treatment system, or collect washwater for off-site disposal.
- Do not hose down the area to a storm sewer or receiving water. Vacuum sweep parking lots, storage areas, and driveways regularly to collect dirt, waste, and debris. Mechanical or hand sweeping may be necessary for areas where a vacuum sweeper cannot reach.
- Clean up vehicle and equipment fluid drips and spills immediately.
- Place drip pans below leaking vehicles (including inoperative vehicles and equipment) in a manner that catches leaks or spills, including employee vehicles. Drip pans must be managed to prevent overfilling and the contents disposed of properly.

Recommended Operational BMPs:

- Encourage employees to repair leaking personal vehicles.
- Encourage employees to carpool or use public transit through incentives.
- Encourage customers to use public transit by rewarding valid transit pass holders with discounts.
- Install catch basin inserts to collect excess sediment and oil if necessary. Inspect and maintain catch basin inserts to ensure they are working correctly.

Applicable Treatment BMPs:

Establishments subject to high-use intensity are significant sources of oil contamination of stormwater. Examples of potential high use areas include customer parking lots at fast food stores, grocery stores, taverns, restaurants,

large shopping malls, discount warehouse stores, quick-lube shops, and banks.

Refer to [Step 2: Determine if an Oil Control BMP is Required](#) in [III-1.2 Choosing Your Runoff Treatment BMPs](#) for the site use thresholds that determine if an oil control BMP is required, and for a list of oil control BMPs.

Washington State Department of Ecology

2019 Stormwater Management Manual for Western Washington (2019 SWMMWW)

Publication No.19-10-021

You are here: [2019 SWMMWW](#) > [Volume IV - Source Control BMP Library](#) > [IV-7 Other Source Control BMPs](#) > S424 BMPs for Roof / Building Drains at Manufacturing and Commercial Buildings

S424 BMPs for Roof / Building Drains at Manufacturing and Commercial Buildings

Description of Pollutant Sources: Stormwater runoff from roofs and sides of manufacturing and commercial buildings can be sources of pollutants caused by leaching of roofing materials, paints, caulking, building vents, and other air emission sources. Research has identified vapors and entrained liquid and solid droplets/particles as potential pollutants in roof/building runoff. Metals, solvents, acidic/alkaline pH, BOD, PCBs, and organics are some of the pollutant constituents identified.

Ecology has performed a study on zinc in industrial stormwater. The study is presented in *Suggested Practices to Reduce Zinc Concentrations in Industrial Stormwater Discharges* ([Ecology, 2008](#)). The user should refer to this document for more details on addressing zinc in stormwater.

Pollutant Control Approach: Evaluate the potential sources of stormwater pollutants and apply source control BMPs where feasible.

Applicable Operational Source Control BMPs:

- If leachates and/or emissions from buildings are suspected sources of stormwater pollutants, then sample and analyze the stormwater draining from the building.
- Sweep the area routinely to remove any residual pollutants.
- If a roof/building stormwater pollutant source is identified, implement appropriate source control measures such as air pollution control equipment, selection of materials, operational changes, material recycle, process changes, etc.

Applicable Structural Source Control BMPs:

- Paint/coat the galvanized surfaces as described in *Suggested Practices to Reduce Zinc Concentrations in Industrial Stormwater Discharges* ([Ecology, 2008](#)).

Applicable Treatment BMPs:

Treat runoff from roofs to the appropriate level. The facility may use Enhanced Treatment BMPs as described in [III-1.2 Choosing Your Runoff Treatment BMPs](#). Some facilities regulated by the Industrial Stormwater General Permit, or local jurisdiction, may have requirements that cannot be achieved with Enhanced Treatment BMPs. In these cases, additional treatment measures may be required. A treatment method for meeting stringent requirements such as Chitosan-Enhanced Sand Filtration may be appropriate.

You are here: [2019 SWMMWW](#) > [Volume IV - Source Control BMP Library](#) > [IV-7 Other Source Control BMPs](#) > [S447 BMPs for Roof Vents](#)

S447 BMPs for Roof Vents

Description of Pollutant Sources: This activity applies to processes that vent emissions to the roof and/or the accumulation of pollutants on roofs. Processes of special concern are stone cutting, metal grinding, spray painting, paint stripping, galvanizing and electroplating. Pollutants from these processes may build up on roofs and may pollute stormwater roof runoff.

Pollutant Control Approach: Evaluate the potential sources of stormwater pollutants and apply source control BMPs where feasible.

Applicable BMPs:

- Identify processes that are vented and may contribute pollutants to the roof. Pollutants of concern include and are not limited to:
 - Metal dust
 - Grease from food preparation
 - Solvents
 - Hydrocarbons
 - Fines
 - Stone dust
- Look for chemical deposition around vents, pipes, and other surfaces.
- Install and maintain appropriate source control measures such as air pollution control equipment (filters, scrubbers, and other treatment). ([City of San José Environmental Services, 2004](#))
 - Check that your scrubber solution is appropriate for the chemistry of the fumes.
 - Install vent covers and drip pans where there are none.
 - Prevent leaks in pipefittings and containment vessels with routine maintenance.
- Consider instituting operational or process changes to reduce pollution.
- If proper installation and maintenance of air pollution control equipment does not prevent pollutant fallout on your roof, additional treatment of the roof runoff may be necessary.
 - Install/provide appropriate devices for roof runoff before it is discharged off site. This may include approved water quality treatment BMPs or structural stormwater treatment systems.

- Maintain air filters and pollution control equipment on a regular basis to ensure they are working properly. (The smell of odors from outside the building indicates that the pollution control equipment may need maintenance or evaluation.)
- When cleaning accumulated emissions from roof tops, collect the washwater and loose materials using a sump pump, wet vacuum or similar device. Discharge the collected runoff to the sanitary sewer after approval by the local sewer authority, or have a waste disposal company remove it.

Washington State Department of Ecology

2019 Stormwater Management Manual for Western Washington (2019 SWMMWW)

Publication No.19-10-021

You are here: [2019 SWMMWW](#) > [Volume IV - Source Control BMP Library](#) > [IV-4 Soil Erosion, Sediment Control, and Landscaping Source Control BMPs](#) > [S450 BMPs for Irrigation](#)

S450 BMPs for Irrigation

Description of Pollutant Sources: Irrigation consists of discharges from irrigation water lines, landscape irrigation, and lawn or garden watering. Excessive watering can lead to discharges of chlorinated potable water runoff into drainage systems; it can also cause erosion; and negatively affect plant health. Improper irrigation can encourage pest problems, leach nutrients, and make a lawn completely dependent on artificial watering. Mosquito breeding habitats may form through excessive watering.

Pollutant Control Approach: Limit the amount and location of watering to prevent runoff and discharges to drainage systems.

Applicable Operational BMPs:

- Irrigate with the minimum amount of water needed. Never water at rates that exceed the infiltration rate of the soil.
- Maintain all irrigation systems so that irrigation water is applied evenly and where it is needed.
- Ensure sprinkler systems do not overspray vegetated areas resulting in excess water discharging into the drainage system.
- Inspect irrigated areas for excess watering. Adjust watering times and schedules to ensure that the appropriate amount of water is being used to minimize runoff. Consider factors such as soil structure, grade, time of year, and type of plant material in determining the proper amounts of water for a specific area.
- Inspect irrigated areas regularly for signs of erosion and / or discharge.
- Place sprinkler systems appropriately so that water is not being sprayed on impervious surfaces instead of vegetation.
- Repair broken or leaking sprinkler nozzles as soon as possible.
- Appropriately irrigate lawns based on the species planted, the available water holding capacity of the soil, and the efficiency of the irrigation system.
 - The depth from which a plant normally extracts water depends on the rooting depth of the plant. Appropriately irrigated lawn grasses normally root in the top 6 to 12 inches of soil; lawns irrigated on a daily basis often root only in the top 1 inch of soil.
- Do not irrigate plants during or immediately after fertilizer application. The longer the period between fertilizer application and irrigation, the less fertilizer runoff occurs.
- Do not irrigate plants during or immediately after pesticide application (unless the pesticide label directs such timing).

- Reduce frequency and / or intensity of watering as appropriate for the wet season (October 1 to April 30).
- Place irrigation systems to ensure that plants receive water where they need it. For example, do not place irrigation systems downgradient of plant's root zones on hillsides.

Recommended Operational BMPs:

- Add a tree bag or slow-release watering device (e.g., bucket with a perforated bottom) for watering newly installed trees when irrigation system is not present.
- Water deeply, but infrequently, so that the top 6 to 12 inches of the root zone is moist.
- Use soaker hoses or spot water with a shower type wand when an irrigation system is not present.
 - Pulse water to enhance soil absorption, when feasible.
 - Pre-moisten soil to break surface tension of dry or hydrophobic soils/mulch, followed by several more passes. With this method, each pass increases soil absorption and allows more water to infiltrate prior to runoff.
- Identify trigger mechanisms for drought-stress (e.g., leaf wilt, leaf senescence, etc.) of different species and water immediately after initial signs of stress appear.
- Water during drought conditions or more often if necessary to maintain plant cover.
- Adjust irrigation frequency / intensity as appropriate after plant establishment.
- Annually inspect irrigation systems to ensure:
 - That there are no blockages of sprayer nozzles.
 - Sprayer nozzles are rotating as appropriate.
 - Sprayer systems are still aligned with the plant locations and root zones.
- Consult with the local water utility, Conservation District, or Cooperative Extension office to help determine optimum irrigation practices.
- Do not use chemigation and fertigation in irrigation systems. This will help avoid over application of pesticides and fertilizers.

Washington State Department of Ecology

2019 Stormwater Management Manual for Western Washington (2019 SWMMWW)

Publication No.19-10-021

You are here: [2019 SWMMWW](#) > [Volume IV - Source Control BMP Library](#) > [IV-1 Source Control BMPs Applicable to All Sites](#) > [S453 BMPs for Formation of a Pollution Prevention Team](#)

S453 BMPs for Formation of a Pollution Prevention Team

The pollution prevention team should be responsible for implementing and maintaining all BMPs and treatment for the site. This team should be able to address any corrective actions needed on site to mitigate potential stormwater contamination. The team members should:

- Consist of those people who are familiar with the facility and its operations.
- Possess the knowledge and skills to assess conditions and activities that could impact stormwater quality at your facility, and who can evaluate the effectiveness of control measures.
- Assign pollution prevention team staff to be on duty on a daily basis to cover applicable permittee facilities when those facilities are in operation.
- Have the primary responsibility for developing and overseeing facility activities necessary to comply with stormwater requirements.
- Have access to all applicable permit, monitoring, SWPPP, and other records.
- Be trained in the operation, maintenance and inspections of all BMPs and reporting procedures.
- Establish responsibilities for inspections, operation, maintenance, and emergencies.
- Regularly meet to review overall facility operations and BMP effectiveness.

Washington State Department of Ecology

2019 Stormwater Management Manual for Western Washington (2019 SWMMWW)

Publication No.19-10-021

You are here: [2019 SWMMWW](#) > [Volume IV - Source Control BMP Library](#) > [IV-1 Source Control BMPs Applicable to All Sites](#) > [S454 BMPs for Preventive Maintenance / Good Housekeeping](#)

S454 BMPs for Preventive Maintenance / Good Housekeeping

Preventative maintenance and good housekeeping practices reduce the potential for stormwater to come into contact with pollutants and can reduce maintenance intervals for the drainage system and sewer system.

Applicable BMPs:

- Prevent the discharge of unpermitted liquid or solid wastes, process wastewater, and sewage to ground or surface water, or to storm drains that discharge to surface water, or to the ground. Conduct all oily parts cleaning, steam cleaning, or pressure washing of equipment or containers inside a building, or on an impervious contained area, such as a concrete pad. Direct contaminated stormwater from such an area to a sanitary sewer where allowed by local sewer authority, or to other approved treatment.
- Promptly contain and clean up solid and liquid pollutant leaks and spills including oils, solvents, fuels, and dust from manufacturing operations on an exposed soil, vegetation, or paved area.
- If a contaminated surface must be pressure washed, collect the resulting washwater for proper disposal (usually involves plugging storm drains, or otherwise preventing discharge and pumping or vactoring up washwater, for discharge to sanitary sewer or for vactor truck transport to a waste water treatment plant for disposal).
- Do not hose down pollutants from any area to the ground, storm drains, conveyance ditches, or receiving water. Convey pollutants before discharge to a treatment system approved by the local jurisdiction.
- Sweep all appropriate surfaces with vacuum sweepers quarterly, or more frequently as needed, for the collection and disposal of dust and debris that could contaminate stormwater. Use mechanical sweepers, and manual sweeping as necessary to access areas that a vacuum sweeper can't reach to ensure that all surface contaminants are routinely removed.
- Do not pave over contaminated soil unless it has been determined that ground water has not been and will not be contaminated by the soil. Call Ecology for assistance.
- Construct impervious areas that are compatible with the materials handled. Portland cement concrete, asphalt, or equivalent material may be considered.
- Use drip pans to collect leaks and spills from industrial/commercial equipment such as cranes at ship/boat building and repair facilities, log stackers, industrial parts, trucks and other vehicles stored outside.
- At industrial and commercial facilities, drain oil and fuel filters before disposal. Discard empty oil and fuel filters, oily rags, and other oily solid waste into appropriately closed and properly labeled containers, and in compliance with the Uniform Fire Code or International Building Code.

- For the storage of liquids use containers, such as steel and plastic drums, that are rigid and durable, corrosion resistant to the weather and fluid content, non-absorbent, water tight, rodent-proof, and equipped with a close fitting cover.
- For the temporary storage of solid wastes contaminated with liquids or other potential polluted materials use dumpsters, garbage cans, drums, and comparable containers, which are durable, corrosion resistant, non-absorbent, non-leaking, and equipped with either a solid cover or screen cover to prevent littering. If covered with a screen, the container must be stored under a roof or other form of adequate cover.
- Where exposed to stormwater, use containers, piping, tubing, pumps, fittings, and valves that are appropriate for their intended use and for the contained liquid.
- Clean oils, debris, sludge, etc. from all stormwater facilities regularly, including catch basins, settling/detention basins, oil/water separators, boomed areas, and conveyance systems to prevent the contamination of stormwater. Refer to [Ecology Requirements for Generators of Dangerous Wastes](#) in [I-2.15 Other Requirements](#) for references to assist in handling potentially dangerous waste.
- Promptly repair or replace all substantially cracked or otherwise damaged paved secondary containment, high-intensity parking, and any other drainage areas, subjected to pollutant material leaks or spills. Promptly repair or replace all leaking connections, pipes, hoses, valves, etc., which can contaminate stormwater.
- Do not connect floor drains in potential pollutant source areas to storm drains, surface water, or to the ground.

Recommended BMPs:

- Where feasible, store potential stormwater pollutant materials inside a building or under a cover and/or containment.
- Minimize use of toxic cleaning solvents, such as chlorinated solvents, and other toxic chemicals.
- Use environmentally safe raw materials, products, additives, etc. such as substitutes for zinc used in rubber production.
- Recycle waste materials such as solvents, coolants, oils, degreasers, and batteries to the maximum extent feasible. Contact Ecology's *Hazardous Waste & Toxics Reduction Program* at <https://ecology.wa.gov/About-us/Get-to-know-us/Our-Programs/Hazardous-Waste-Toxics-Reduction> for recommendations on recycling or disposal of vehicle waste liquids and other waste materials.
- Empty drip pans immediately after a spill or leak is collected in an uncovered area.
- Stencil warning signs at stormwater catch basins and drains, e.g., “Dump no waste – Drains to waterbody”.
- Use solid absorbents, e.g., clay and peat absorbents and rags for cleanup of liquid spills/leaks, where practicable.
- Promptly repair/replace/reseal damaged paved areas at industrial facilities.

- Recycle materials, such as oils, solvents, and wood waste, to the maximum extent practicable.

Note: Evidence of stormwater contamination by oils and grease can include the presence of visible sheen, color, or turbidity in the runoff, or present or historical operational problems at the facility. Operators can use simple pH tests, for example with litmus or pH paper. These tests can screen for high or low pH levels (anything outside a 6.5-8.5 range) due to contamination in stormwater.

Washington State Department of Ecology

2019 Stormwater Management Manual for Western Washington (2019 SWMMWW)

Publication No.19-10-021

You are here: [2019 SWMMWW](#) > [Volume IV - Source Control BMP Library](#) > [IV-1 Source Control BMPs Applicable to All Sites](#) > [S455 BMPs for Spill Prevention and Cleanup](#)

S455 BMPs for Spill Prevention and Cleanup

Description of Pollutant Sources: Spills and leaks can damage public infrastructure, interfere with sewage treatment, and cause a threat to human health or the environment. Spills are often preventable if appropriate chemical and waste handling techniques are practiced effectively and the spill response plan is immediately implemented. Additional spill control requirements may be required based on the specific activity occurring on site.

Applicable BMPs:

Spill Prevention

- Clearly label or mark all containers that contain potential pollutants.
- Store and transport liquid materials in appropriate containers with tight-fitting lids.
- Place drip pans underneath all containers, fittings, valves, and where materials are likely to spill or leak.
- Use tarpaulins, ground cloths, or drip pans in areas where materials are mixed, carried, and applied to capture any spilled materials.
- Train employees on the safe techniques for handling materials used on the site and to check for leaks and spills.

Spill Plan

- Develop and implement a spill plan and update it annually or whenever there is a change in activities or staff responsible for spill cleanup. Post a written summary of the plan at areas with a high potential for spills, such as loading docks, product storage areas, waste storage areas, and near a phone. The spill plan may need to be posted at multiple locations. Describe the facility, including the owner's name, address, and telephone number; the nature of the facility activity; and the general types of chemicals used at the facility.
- Designate spill response employees to be on-site during business activities. Provide a current list of the names and telephone numbers (home and office) of designated spill response employees who are responsible for implementing the spill plan.
- Provide a site plan showing the locations of storage areas for chemicals, inlets/catch basins, spill kits and other relevant infrastructure or materials information.
- Describe the emergency cleanup and disposal procedures. Note the location of all spill kits in the spill plan.
- List the names and telephone numbers of public agencies to contact in the event of a spill.

Spill Cleanup Kits

- Store all cleanup kits near areas with a high potential for spills so that they are easily accessible in the event of a spill. The contents of the spill kit must be appropriate to the types and quantities of materials stored or otherwise used at the facility, and refilled when the materials are used. Spill kits must be located within 25 feet of all fueling/fuel transfer areas, including on-board mobile fuel trucks.

Note: Ecology recommends that the kit(s) include salvage drums or containers, such as high density polyethylene, polypropylene or polyethylene sheet-lined steel; polyethylene or equivalent disposal bags; an emergency response guidebook; safety gloves/clothes/equipment; shovels or other soil removal equipment; and oil containment booms and absorbent pads; all stored in an impervious container.

Spill Cleanup and Proper Disposal of Waste

- Stop, contain, and clean up all spills immediately upon discovery.
- Implement the spill plan immediately.
- Contact the designated spill response employees.
- Block off and seal nearby inlets/catch basins to prevent materials from entering the drainage system or combined sewer.
- Use the appropriate material to clean up the spill.
- Do not use emulsifiers or dispersants such as liquid detergents or degreasers unless disposed of properly. Emulsifiers and dispersants are not allowed to be used on surface water, or in a place where they may enter storm drains, surface waters, treatments systems, or sanitary sewers.
- Immediately notify Ecology and the local jurisdiction if a spill has reached or may reach a sanitary or storm sewer, ground water, or surface water. Notification must comply with state and federal spill reporting requirements.
- Do not wash absorbent material into interior floor drains or inlets/catch basins.
- Place used spill control materials in appropriate containers and dispose of according to regulations.

Washington State Department of Ecology

2019 Stormwater Management Manual for Western Washington (2019 SWMMWW)

Publication No.19-10-021

You are here: [2019 SWMMWW](#) > [Volume IV - Source Control BMP Library](#) > [IV-1 Source Control BMPs Applicable to All Sites](#) > [S456 BMPs for Employee Training](#)

S456 BMPs for Employee Training

Train all employees that work in pollutant source areas about the following topics:

- Identifying Pollution Prevention Team Members.
- Identifying pollutant sources.
- Understanding pollutant control measures.
- Spill prevention and response.
- Emergency response procedures.
- Handling practices that are environmentally acceptable. Particularly those related to vehicle/equipment liquids such as fuels, and vehicle/equipment cleaning.

Additional specialized training may be needed for staff who will be responsible for handling hazardous materials.

Washington State Department of Ecology

2019 Stormwater Management Manual for Western Washington (2019 SWMMWW)

Publication No.19-10-021

You are here: [2019 SWMMWW](#) > [Volume IV - Source Control BMP Library](#) > [IV-1 Source Control BMPs Applicable to All Sites](#) > [S457 BMPS for Inspections](#)

S457 BMPS for Inspections

Qualified personnel shall conduct inspections monthly. Make and maintain a record of each inspection on-site. The following requirements apply to inspections:

- Be conducted by someone familiar with the facility's site, operations, and BMPs.
- Verify the accuracy of the pollutant source descriptions in the SWPPP.
- Assess all BMPs that have been implemented for effectiveness and needed maintenance and locate areas where additional BMPs are needed.
- Reflect current conditions on the site.
- Include written observations of the presence of floating materials, suspended solids, oil and grease, discoloration, turbidity and odor in the stormwater discharges; in outside vehicle maintenance/repair; and liquid handling, and storage areas. In areas where acid or alkaline materials are handled or stored use a simple litmus or pH paper to identify those types of stormwater contaminants where needed.
- Eliminate or obtain a permit for unpermitted non-stormwater discharges to storm drains or receiving waters, such as process wastewater and vehicle/equipment washwater.
- Identify actions to address inspection deficiencies.

Washington State Department of Ecology

2019 Stormwater Management Manual for Western Washington (2019 SWMMWW)

Publication No.19-10-021

You are here: [2019 SWMMWW](#) > [Volume IV - Source Control BMP Library](#) > [IV-1 Source Control BMPs Applicable to All Sites](#) > [S458 BMPs for Record Keeping](#)

S458 BMPs for Record Keeping

See the applicable permit for specific record-keeping requirements and retention schedules for the following reports. At a minimum, retain the following reports for five years:

- Inspection reports which should include:
 - Time and date of the inspection
 - Locations inspected
 - Statement on status of compliance with the permit
 - Summary report of any remediation activities required
 - Name, title, and signature of person conducting the inspection
- Reports on spills of oil or hazardous substances in greater than Reportable Quantities (Code of Federal Regulations Title 40 Parts 302.4 and 117). Report spills of the following: antifreeze, oil, gasoline, or diesel fuel, that cause:
 - A violation of the State of Washington's Water Quality Standards.
 - A film or sheen upon or discoloration of the waters of the State or adjoining shorelines.
 - A sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.

To report a spill or to determine if a spill is a substance of a Reportable Quantity, call the Ecology regional office and ask for an oil spill operations or a dangerous waste specialist:

- Northwest Region  (425)649-7000
- Southwest Region  (360)407-6300
- Eastern Region  (509)329-3400
- Central Region  (509) 575-2490

In addition, call the Washington Emergency Management Division at  1-800-258-5990 or 1-800-OILS-911 AND the National Response Center at  1-800-424-8802.

Also, refer to *Focus on Emergency Spill Response* ([Ecology, 2009](#)).

The following is additional recommended record keeping:

Maintain records of all related pollutant control and pollutant generating activities such as training, materials purchased, material use and disposal, maintenance performed, etc.

Washington State Department of Ecology

2019 Stormwater Management Manual for Western Washington (2019 SWMMWW)

Publication No.19-10-021

APPENDIX E – Construction SWPPP

CSWPPP Narrative

Vicinity Map

Site Plan

TESC Plan & Details

Best Management Practices (BMPs)

Construction Stormwater Pollution Prevention Plan (CSWPPP)

Modern Resources LLC Site Development

SC Project #20136

MAY 2021

Applicant / Owner:

Modern Resources LLC
1225 Ruddell Road Southeast
Lacey, WA 98503

Contractor:

Prepared By:



5016 Lacey Boulevard SE, Lacey, Washington 98503
(360) 491-3399 • Fax (360) 491-3857
www.skillings.com

Table of Contents

Table of Contents	ii
Project Description	1
Construction Activities	1
TESC Element 1: Mark clearing limits	2
TESC Element 2: Establish construction access	2
TESC Element 3: Control flow rates	2
TESC Element 4: Install sediment controls	2
TESC Element 5: Stabilize soils.	3
TESC Element 6: Protect slopes	3
TESC Element 7: Protect Drain Inlets.	4
TESC Element 8: Stabilize channels and outlets	4
TESC Element 9: Control pollutants	4
TESC Element 10: Control Dewatering	4
TESC Element 11: Maintain BMPs.	4
TESC Element 12: Manage the project	5
TESC Element 13: Protect Low Impact Development BMPs.	5

Appendix A – Vicinity Map

Appendix B – Construction SWPPP TESC Drawings

Appendix C – Best Management Practices (BMP's)

Project Description

Modern Resources LLC is located at 1102 and 1002 Rhoton Road SE, Yelm (TPN 64300800301 and 64300800302). A **Vicinity Map** is included for reference in **Appendix A** of this report.

Parcels #64300800301 and #64300800302 represent 2.07 acres and 2.78 acres of undeveloped land, respectively. The eastern half of the site consists of moderate slopes (5-10%) that gently fall from east to west. The western half of both sites consist of flat slopes (< 5%). Native Fir trees ranging between 11 and 48 inches in diameter populate in a row along the northern boundary of parcel #64300800301, with the majority occupying the eastern-central portion of the parcel in clusters where the proposed development is to be located. Other native vegetation covers the remainder of both parcels.

This project consists of constructing a 20,000 square foot cabinet manufacturing building, asphalt paved driveway, parking lot, and offloading area, gravel building perimeter, water and sewer utilities, three bioretention facilities, and landscaped areas on existing undeveloped land. This project will be constructed in accordance with the requirements of the 2019 SWMMWW adopted by the City of Yelm. A **SITE PLAN** is included for reference in **Appendix B** of this report.

Construction Activities

This project will involve the construction of a commercial cabinet manufacturing building with dimensions of 200'x100'. The construction activities are anticipated to include clearing and grubbing for the construction of a new building area, excavation and grading, paving of the driveway, parking lot, and offloading zone areas with HMA, constructing a gravel building perimeter, installing water and wastewater utilities, constructing three bioretention facilities, tree planting, and landscaping around the site. A **TESC PLAN** is include for reference in **Appendix B** of this report. All applicable **Construction BMPs** have been included in **Appendix C**.

TESC Element 1: Preserving Natural Vegetation/Mark Clearing Limits.

Prior to any site clearing or grading, all clearing limits, sensitive areas and their buffers, and trees that are to be preserved within the construction area will be clearly marked. All native vegetation, top soil, and duff layer shall be retained to maximum degree practicable. Limits of disturbance for the project activities will remain within the project property boundary, and are shown in the attached Site Plan. Additionally, the proposed development will require the removal of several trees. Therefore, this project will replace every tree removed (8" diameter, 4.5' tall), per the City of Yelm Municipal Code Section 18.57.090C. These trees will be replanted within and around parcels #64300800301 and #64300800302. All applicable **Construction BMPs** have been included in **Appendix C** of this report.

Applicable BMPs:

BMP C101: Preserving Natural Vegetation

BMP C102: Buffer Zones

BMP C103: High Visibility Fence

BMP C233: Silt Fence

TESC Element 2: Establish construction access.

Tracking of sediment onto paved roads shall be minimized through constructing a construction access driveway approach from Rhoton Road Southeast using crushed rock, CSBC, or gravel base. This entrance will be graded to a minimum of 6-inch depth and serve as the construction access. If sediment is transported onto a road surface, the road will be cleaned at the end of each work day or more often if necessary. Sediment will be removed from the roadway by sweeping or other comparable means. Sweeping operations shall utilize moisture, as necessary, to limit the generation of dust. All applicable **Construction BMPs** have been included in **Appendix C** of this report.

Applicable BMPs:

BMP C105: Stabilized Construction Access

BMP C106: Wheel Wash

BMP C107: Construction Road/Parking Area Stabilization

TESC Element 3: Control flow rates.

During construction, downstream properties and waterways shall be protected from erosion and the associated discharge of turbid waters due to increases in the velocity and peak volumetric flow rate of stormwater runoff from the project site. Install energy dissipation / filtration structures on sloped areas, steeper slopes will require closer placement of dissipation facilities. Install velocity dissipation structures to ensure reduction of flow velocity to a non-erosive level. Velocity of water leaving the site should not exceed 3 feet/second. All applicable **Construction BMPs** have been included in **Appendix C** of this report.

Applicable BMPs:

BMP C235: Wattles

TESC Element 4: Install sediment controls.

Any sediment control BMP shall be installed prior to all soil-disturbing activities. The intention of these controls shall be to retain sediment on the project site. Work activities will include excavation, material removal, and grading. Soil shall be prevented from leaving exposed and excavated areas. Wattles shall be installed on existing mild slopes for stabilization. All applicable **Construction BMPs** have been included in **Appendix C** of this report.

Applicable BMPs:
BMP C233: Silt Fence
BMP C235: Wattles

TESC Element 5: Stabilize soils.

All exposed and unworked soils shall be stabilized by application of effective BMPs that protect the soil from the erosive forces of raindrop impact, flowing water, and wind erosion. The number of days that soils can remain exposed and unworked is dependent on the time of year the construction is being done; from October 1 through April 30, no soils shall remain exposed and unworked for more than 2 days and from May 1 to September 30, no soils shall remain exposed and unworked for more than 7 days. This condition applies to all onsite soils, whether at final grade or not. Soils shall be stabilized at the end of the shift before a holiday, or weekend, if needed, based on the weather forecast. Soil stockpiles shall be stabilized from erosion and protected with sediment trapping measures, and where possible, located away from storm drain inlets, waterways, and drainage channels. Soil compaction shall be minimized and, unless infeasible topsoil shall be preserved. All applicable **Construction BMPs** have been included in **Appendix C** of this report.

Applicable BMPs:
BMP C120: Temporary and Permanent Seeding
BMP C121: Mulching
BMP C124: Sodding
BMP C125: Topsoiling/Composting
BMP C130: Surface Roughening
BMP C140: Dust Control

TESC Element 6: Protect slopes.

The majority of construction will occur within flat slopes of less than 5%. The eastern portion of the site will consist of constructing cut slopes that match existing ground surface at mild slopes.

The following guidelines shall be observed throughout construction:

- Consider soil type and its potential for erosion.
- Off-site stormwater (run-on) shall be diverted away from slopes and disturbed areas with interceptor dikes and/or swales. Off-site stormwater should be managed separately from stormwater generated on the site.
- Place excavated material on the uphill side of trenches, consistent with safety and space considerations.

All applicable **Construction BMPs** have been included in **Appendix C** of this report.

Applicable BMPs:
BMP C120: Temporary and Permanent Seeding
BMP C121: Mulching
BMP C122: Nets and Blankets
BMP C124: Sodding

TESC Element 7: Protect Drain Inlets.

It is anticipated that no drain inlet protection will be needed for this project.

TESC Element 8: Stabilize channels and outlets.

It is anticipated that no temporary on-site conveyance channels will be needed for the project.

TESC Element 9: Control pollutants

Methods for controlling pollutants that can be considered hazardous materials, such as hydrocarbons and pH-modifying substances, must be described in the contractor's SPCC plan. The plan must be prepared to meet Standard Specification 1-07.15(1) and the Washington State Department of Ecology's (Ecology's) standards as described in WSDOT SPCC Plan Preparation Instructions and Spill Plan Reviewers Protocols: "www.wsdot.wa.gov/Environment/HazMat/SpillPrevention.htm"

Source pollutants and construction debris shall be handled and disposed of in a manner that will not cause contamination of stormwater, surface waters, or ground water. Process water (for example, concrete washout, slurry water, and hydro-demolition) must be contained and cannot be discharged to waters of the state. All applicable **Construction BMPs** have been included in **Appendix C** of this report.

Applicable BMPs:

BMP C151: Concrete Handling

BMP C152: Saw cutting and Surfacing Pollution Prevention

BMP C153: Material Delivery, Storage and Containment

BMP C154: Concrete Washout Area

BMP C250: Construction Stormwater Chemical Treatment

BMP C251: Construction Stormwater Filtration

TESC Element 10: Control Dewatering.

Ground water is not anticipated as part of this project. If groundwater is encountered in an excavation or other area, control, treat, and discharge it as described in WSDOT Standard Specification 8-01.3(1)C.

TESC Element 11: Maintain BMPs.

All temporary and permanent erosion and sediment control BMPs shall be maintained and repaired in order to assure continued performance of their intended function. All maintenance and repair shall be done in accordance with the BMP specifications or applicable standards.

Sediment control BMPs shall be inspected weekly or after a runoff-producing event during the dry season, and daily during the wet season. The inspection shall be performed by a Certified Erosion and Sediment Control Lead (CESCL). Documentation of inspection and maintenance of BMPs shall be kept in the Site Log Book.

All temporary erosion and sediment control BMPs shall be removed within 30 days after final site stabilization is achieved, or when the Engineer determines that the temporary BMP is no longer needed. Trapped sediment shall be removed from the site. Any soil areas disturbed when the BMPs are removed shall be permanently stabilized. All applicable **Construction BMPs** have been included in **Appendix C** of this report.

Applicable BMPs:

BMP C150: Materials on Hand

TESC Element 12: Manage the project.

The following action shall apply to this project:

Establish areas of clearing, grading, cutting, and filling in accordance with the site development plan. Minimize the removal of trees and disturbance of native soils when establishing limits of disturbance. Phase development where feasible to prevent soil erosion and transport of sediment from the site during construction. Revegetate exposed areas and maintain vegetation as a part of the clearing activities for any phase.

A CESCL must be identified in the SWPPP, and must be on site or on call at all times for this project. All BMPs are inspected, monitored, and maintained in accordance with TESC Element 11. The TESC and SPCC plans will be kept on-site or within reasonable access to the site. Due to the unpredictable nature of weather and construction conditions, the TESC plan is a flexible document that should be modified whenever field conditions change. Whenever inspections and/or monitoring reveal that the BMPs identified in the TESC plan are inadequate the plan must be modified. Most of these updates can be drawn onto the plan sheets. The plan must also be updated whenever there are changes in the project design or in construction methods that could affect the potential for erosion or spills.

The Construction SWPPP shall be retained onsite or within reasonable access to the site. The SWPPP shall be modified whenever there is a significant change in the design, construction, operation, or maintenance at the construction site that has, or could have, a significant effect on the discharge of pollutants to waters of the state. The SWPPP shall be modified if during inspections or investigations conducted by the owner, the engineer or by the City of Yelm, it is determined that the SWPPP is ineffective at eliminating or significantly minimizing pollutants in stormwater discharges from the site. The SWPPP shall be modified as necessary to include additional or modified BMPs designed to correct problems identified. Revisions to the SWPPP shall be completed within seven (7) calendar days following the inspection. If a Construction SWPPP is found to be inadequate (with respect to erosion and sediment control requirements), the City shall require that additional BMPs be implemented, as appropriate.

Sequencing a construction project reduces the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking. The construction sequence schedule is an orderly listing of all major land-disturbing activities together with the necessary erosion and sedimentation control measures planned for the project. This type of schedule guides the contractor on work to be done before other work is started so that serious erosion and sedimentation problems can be avoided. All applicable **Construction BMPs** have been included in **Appendix C** of this report.

Applicable BMPs:

BMP C160: Certified Erosion and Sediment Control Lead

BMP C162: Scheduling

TESC Element 13: Protect Low Impact Development BMPs.

Protect all Low Impact Development (LID) BMPs from sedimentation through the installation and maintenance of erosion and sediment control BMPs on portions of the site that drain into the LID BMPs. Restoring BMPs must include removal of sediment and any sediment-laden Bioretention soils,

and replacing the removed soils with soils meeting the design specification. Maintain the infiltration capabilities of LID BMPs by protecting against compaction by construction equipment and foot traffic. Protect completed lawn and landscaped areas from compaction due to construction equipment. Heavy equipment and foot traffic shall be kept off existing soils under LID BMPs that have been excavated to final grade to protect against compaction and preserve the infiltration rate of the soils. All applicable **Construction BMPs** have been included in **Appendix C** of this report.

Applicable BMPs:

BMP C102: Buffer Zones

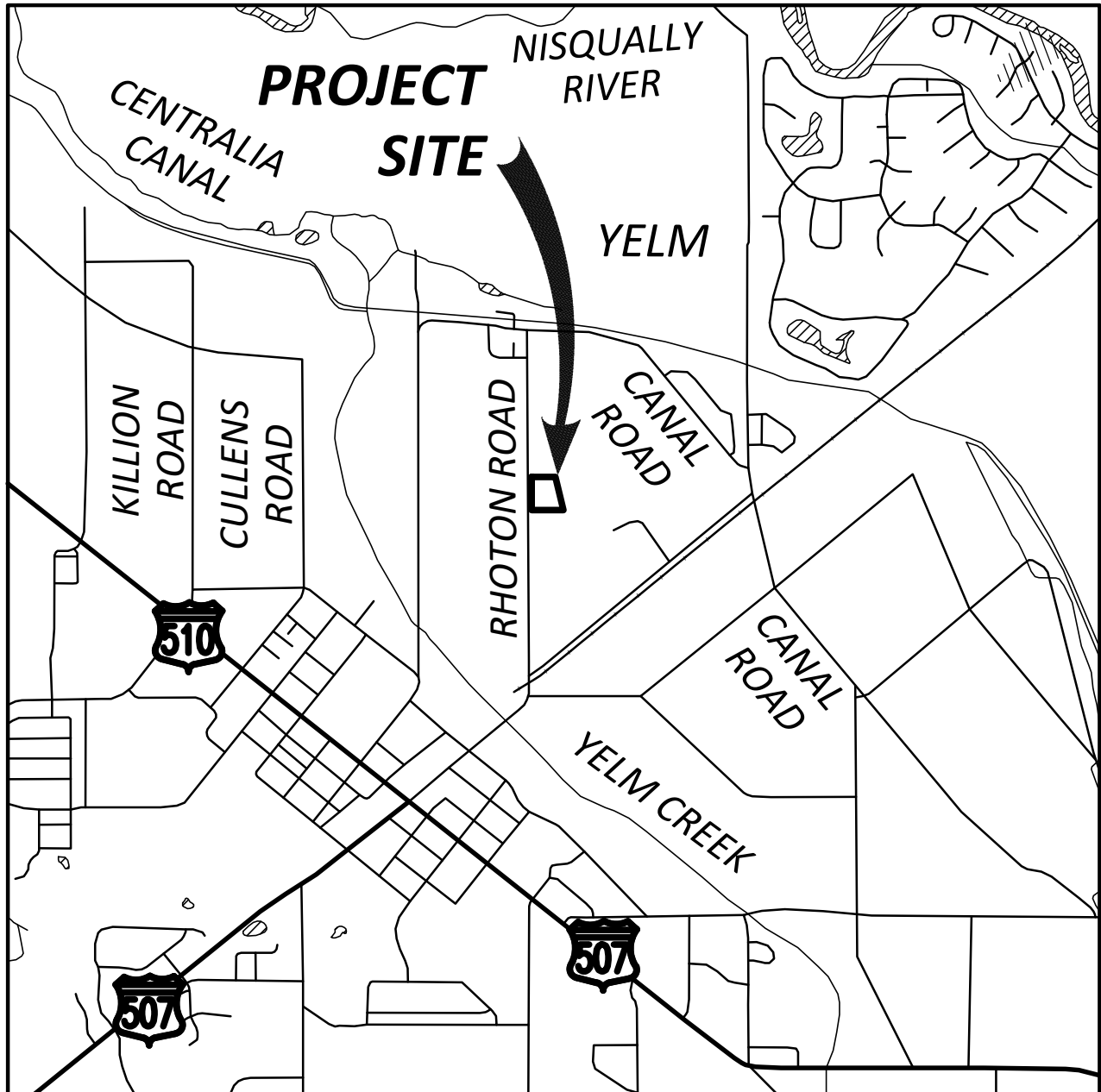
BMP C103: High-Visibility Fence

BMP C233: Silt Fence

APPENDIX A – VICINITY MAP



N.T.S.

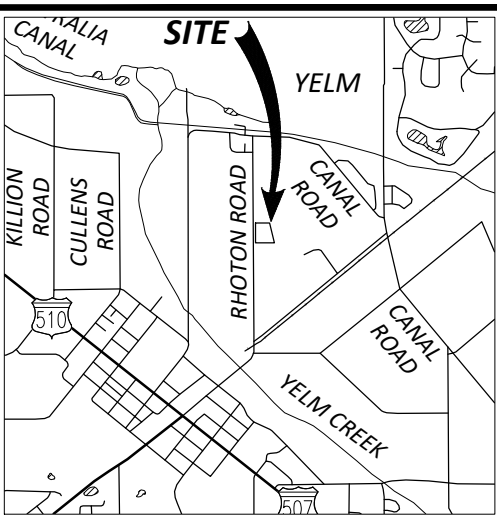
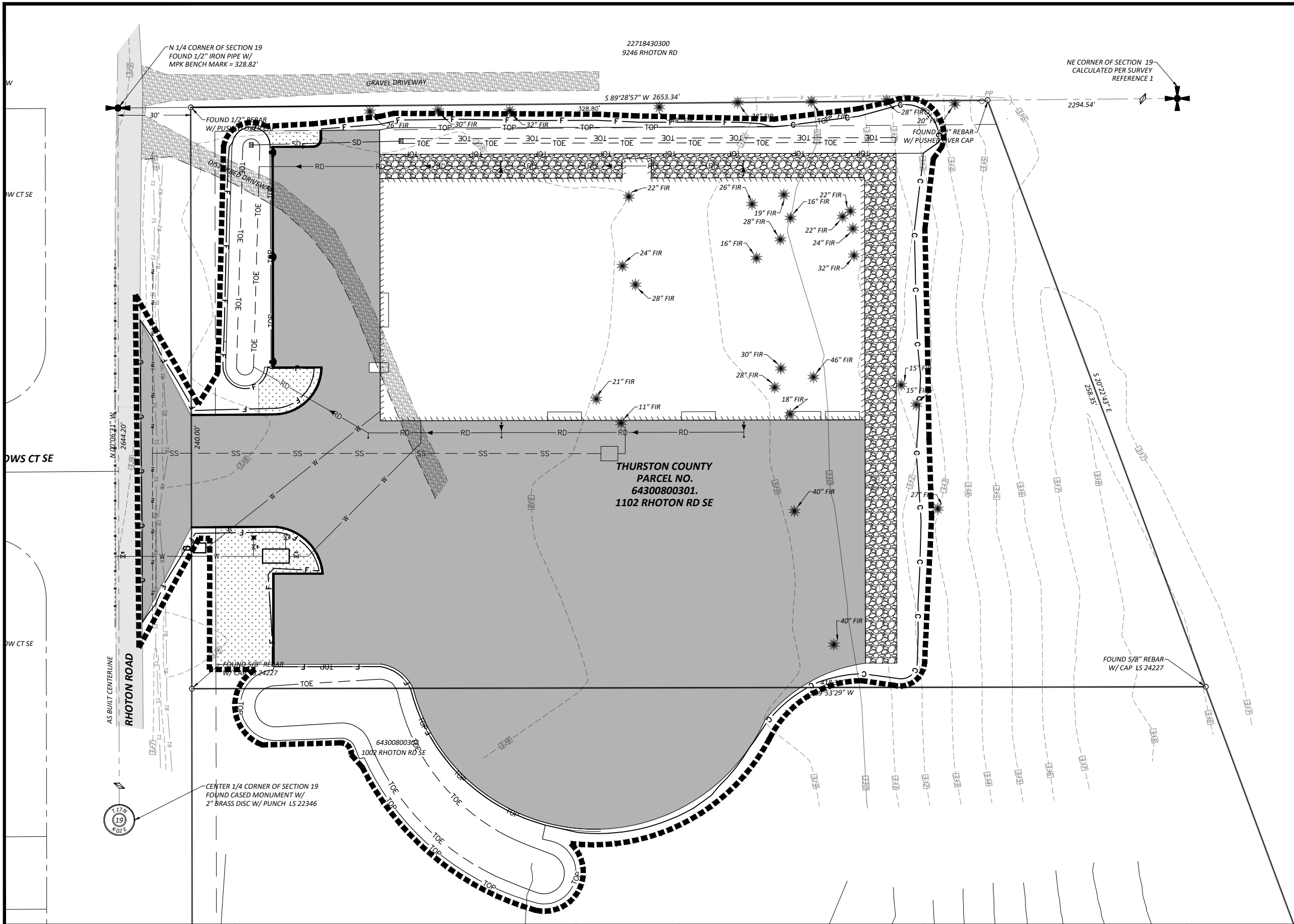


MODERN RESOURCES LLC SITE DEVELOPMENT
1102 RHOTON ROAD SE YELM, WA 98597

YELM, WA

Vicinity Map

APPENDIX B – SITE AND TESC PLAN



VICINITY MAP
NOT TO SCALE

SITE INFORMATION:

OWNER/APPLICANT: MODERN RESOURCES LLC
1225 RUDELL RD SE
LACEY, WA 98503

SITE ADDRESS: 1102 & 1002 RHOTON ROAD SE
YELM, WA 98597

ENGINEER: SKILLINGS, INC.
IAN LEE, P.E.
5016 LACEY BLVD SE
LACEY, WA 98503
(360) 491-3399

PARCEL NUMBER: T.P. NO. 64300800301 & 64300800302

SITE AREA: 4.85 ACRES

ZONING: INDUSTRIAL DISTRICT (I)

WATER: CITY

SEWER: CITY

STORM DRAINAGE: ON-SITE

POWER: PUGET SOUND ENERGY

LEGEND:

- PROPOSED PAVEMENT
- PROPOSED CONCRETE
- PROPOSED GRAVEL BUFFER STRIP
- PROPOSED LANDSCAPED AREA
- LIMITS OF DISTURBANCE
- PROPOSED CUT LINE
- PROPOSED FILL LINE
- PROPOSED ROOF DRAIN
- PROPOSED TOP OF BIORETENTION
- PROPOSED BOTTOM OF BIORETENTION
- PROPOSED BUILDING
- PROPOSED SANITARY SEWER FORCE MAIN
- PROPOSED STORM PIPE
- PROPOSED CONCRETE INLET STRUCTURE

THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND UTILITY LOCATE LINE AT PHONE NUMBER: 811

A MINIMUM OF 48 HOURS PRIOR TO ANY EXCAVATION, THE CONTRACTOR WILL ALSO BE RESPONSIBLE FOR MAINTAINING ALL LOCATE MARKS ONCE THE UTILITIES HAVE BEEN LOCATED.

DESIGNED BY: I. LEE, PE	DATE	NO.	DATE	REVISIONS
ENTERED BY: A. GUERRERO, EIT	4/27/21			
CHECKED BY: I. LEE, PE	4/27/21			
PROJ. ENGR.: I. LEE, PE	4/27/21			
Plotted By: Anthony D. Guerrero, EIT on 4/28/21 5:06 PM				
Saved By: Aguerro on 4/28/21 5:06 PM				
G:\Project\2020\20136 Modern Resources Yelm Development\CAD\SHEETS\20136_Stormwater Site Plan.dwg				



5016 Lacey Boulevard SE, Lacey, Washington 98503
(360) 491-3399 Fax (360) 491-3857



YELM WA

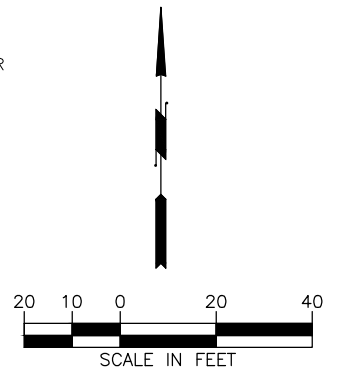
SITE PLAN
TPN 64300800301 & 64300800302

1102 & 1002 RHOTON RD SE
YELM, WA 98597

JOB NUMBER	20136
	100%
SHEET	1
OF	1
SHEETS	

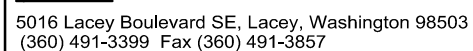
- 1 INSTALL SILT FENCE PER DETAIL 3 ON SHEET 4.
- 2 INSTALL CONSTRUCTION FENCING ALONG CONSTRUCTION LIMITS.
- 3 INSTALL TEMPORARY CONSTRUCTION ENTRANCE PER DETAIL 1 ON SHEET 4.
- 4 INSTALL 6' RADIUS OF TREE PROTECTION FENCING PER TREE PER DETAIL 2 ON SHEET 4.
- 5 CLEAR AND GRUB WITHIN CONSTRUCTION LIMITS (EXCEPT FOR PAVEMENT AREAS TO REMAIN)

1. ALL EROSION CONTROL MEASURES TO BE INSTALLED PRIOR TO ANY DEMOLITION.
2. EXISTING TREES SHOWN TO REMAIN SHALL BE PROTECTED USING TREE PROTECTION FENCING AS DETERMINED BY THE PROJECT FORESTER.
3. CONTRACTOR SHALL PROVIDE FULL DEPTH SAW CUTS AT EXISTING ASPHALT/CONCRETE SIDEWALKS WHERE A PORTION IS TO REMAIN.
4. REMOVAL OF TREES SHALL INCLUDE THE REMOVAL OF STUMPS AND BACKFILLING THE VOIDS LEFT BY THE REMOVAL OPERATION.



1. CITY OF YELM SHORT PLAT NO.
SS-00-8255-YL AFN. 3327634

	DATE	REVISIONS		
DESIGNED BY: C. BOOTH, EIT	12/03/20	NO.	DATE	
ENTERED BY: A. GUERRERO, EIT	12/29/20			
CHECKED BY: I. LEE, PE	----			
PROJ. ENGR.: I. LEE, PE	----			
Plotted By: Anthony D. Guerrero, EIT on 4/27/21 3:34 PM				
Saved By: Aguerro on 4/27/21 3:34 PM				
G:\Project\2020\20136 Modern Resources Yelm Development\CAD\SHEETS\20136_CSWPPP.dwg				



TESC & DEMOLITION PLAN

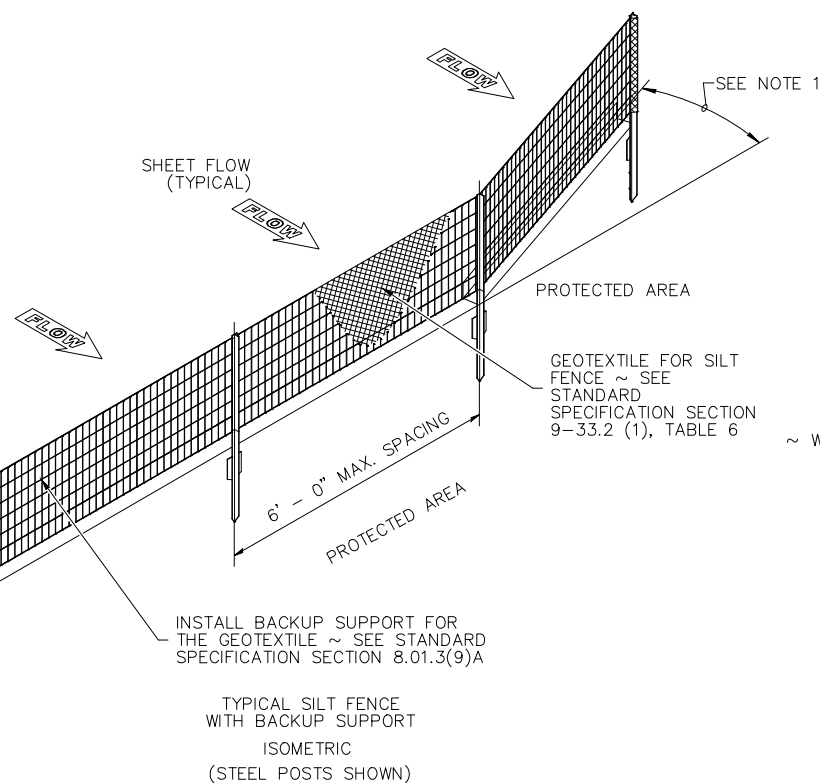
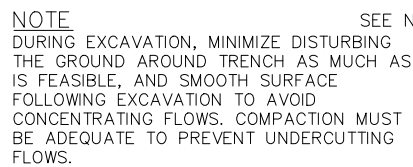
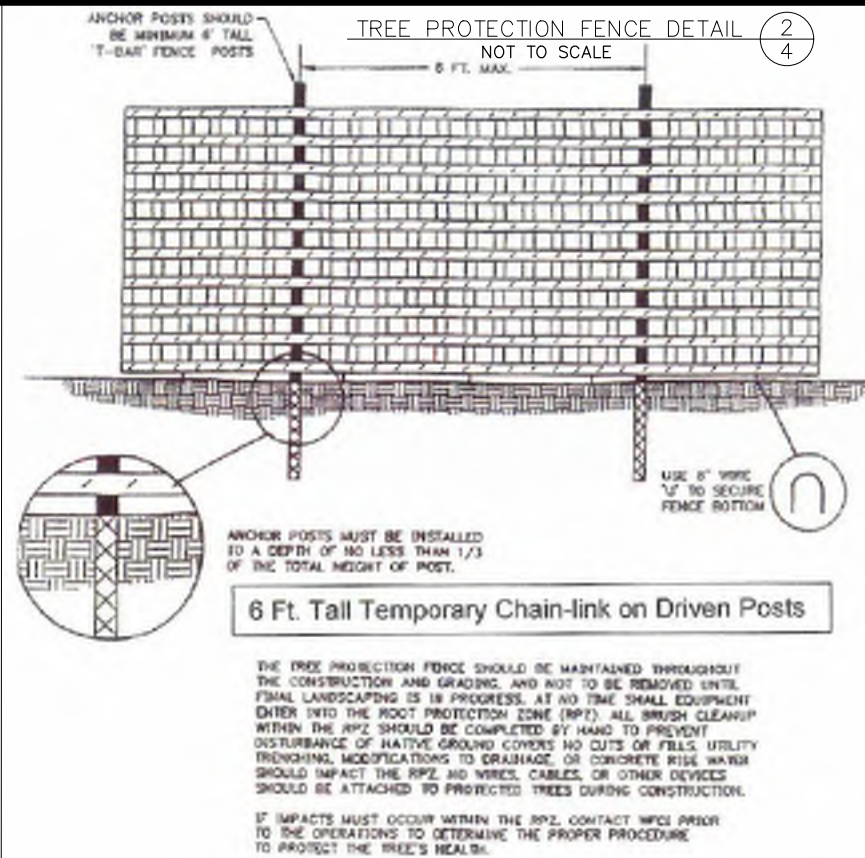
B NUMBER
20136
75%

SHEET
3
OF
22
SHEETS

1. QUARRY SPALLS SHALL BE ADDED IF THE PAD IS NO LONGER IN ACCORDANCE WITH THE SPECIFICATIONS.
2. IF THE ENTRANCE IS NOT PREVENTING SEDIMENT FROM BEING TRACKED ONTO PAVEMENT, THEN ALTERNATIVE MEASURES TO KEEP THE STREETS FREE OF SEDIMENT SHALL BE USED. THIS MAY INCLUDE STREET SWEEPING, AN INCREASE IN THE DIMENSIONS OF THE ENTRANCE, OR THE INSTALLATION OF A WHEEL WASH.
3. ANY SEDIMENT THAT IS TRACKED ONTO PAVEMENT SHALL BE REMOVED BY SHOVELING OR STREET SWEEPING. THE SEDIMENT COLLECTED BY SWEEPING
4. SHALL BE REMOVED OR STABILIZED ON SITE. THE PAVEMENT SHALL NOT BE CLEANED BY WASHING DOWN THE STREET, EXCEPT WHEN SWEEPING IS INEFFECTIVE AND THERE IS A THREAT TO PUBLIC SAFETY. IF IT IS NECESSARY TO WASH THE STREETS, THE CONSTRUCTION OF A SMALL SUMP SHALL BE CONSIDERED. THE SEDIMENT WOULD THEN BE WASHED INTO THE SUMP WHERE IT CAN BE CONTROLLED.
5. ANY QUARRY SPALLS THAT ARE LOOSENEED FROM THE PAD, WHICH END UP ON THE ROADWAY SHALL BE REMOVED IMMEDIATELY.
6. IF VEHICLES ARE ENTERING OR EXITING THE SITE AT POINTS OTHER THAN THE CONSTRUCTION ENTRANCE(S), FENCING (SEE BMPS C103 AND C104) SHALL BE INSTALLED TO CONTROL TRAFFIC.
7. UPON PROJECT COMPLETION, THE TEMPORARY CONSTRUCTION ENTRANCE SHALL BE REMOVED AND SURFACING SHALL BE CONSTRUCTED PER SECTION A-A FOR THE FIRE DEPARTMENT ALL-WEATHER SURFACE ACCESS ROAD.



CONSTRUCTION ENTRANCE DETAIL (1)
NOT TO SCALE (4)

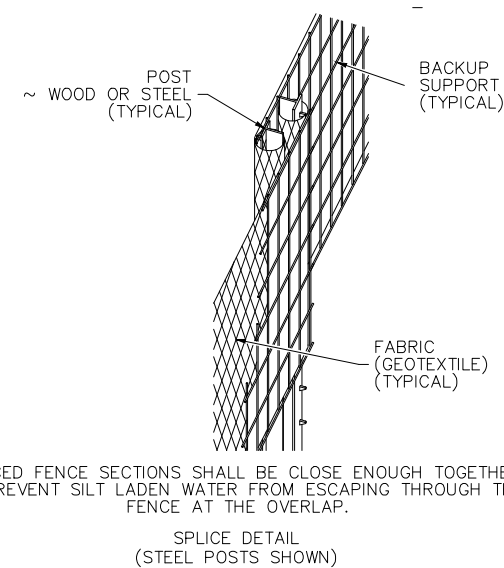


SILT FENCE DETAIL

NOT TO SCALE

3
4

1. INSTALL THE ENDS OF THE SILT FENCE TO POINT SLIGHTLY UPSLOPE TO PREVENT SEDIMENT FROM FLOWING AROUND THE ENDS OF THE FENCE.
2. PERFORM MAINTENANCE IN ACCORDANCE WITH STANDARD SPECIFICATIONS 8-01.3(9)A AND 8-01.3(15).
3. SPLICES SHALL NEVER BE PLACED IN LOW SPOTS OR SUMP LOCATIONS. IF SPLICES ARE LOCATED IN LOW OR SUMP AREAS, THE FENCE MAY NEED TO BE REINSTALLED UNLESS THE ENGINEER APPROVES THE INSTALLATION.
4. INSTALL SILT FENCING PARALLEL TO MAPPED CONTOUR LINES.



	DATE	REVISIONS		
DESIGNED BY: A. GUERRERO, EIT	12/29/20	NO.	DATE	
ENTERED BY: A. GUERRERO, EIT	12/29/20			
CHECKED BY: I. LEE, PE	----			
PROJ. ENGR.: I. LEE, PE	----			
Plotted By: Anthony D. Guerrero, EIT on 4/27/21 3:36 PM				
Saved By: Aguerro on 4/27/21 2:53 PM				
G:\Project\2020\20136 Modern Resources Yelm Development\CAD\SHEETS\20136_TESC Notes & Details.dwg				



5016 Lacey Boulevard SE, Lacey, Washington 98503
(360) 491-3399 Fax (360) 491-3857



YELM

WA

**MODERN RESOURCES LLC
SITE DEVELOPMENT**

TESC DETAILS & NOTES

JOB NUMBER

20136

75%

SHEET

4

22

SHEETS