BARGHAUSEN

DRAINAGE REPORT

Port 17 Port of Chehalis
321 Maurin Road
Chehalis, Washington 98532

05/06/2022

Prepared for:
Panattoni Development Company, Inc.
1821 Dock Street, Suite 100
Tacoma, WA 98402

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Our Job No. 22217

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PROJECT ENGINEER'S CERTIFICATION

"I hereby state that this Drainage Control Plan for the Port 17 Port of Chehalis has been prepared by me or under my supervision and meets the standards of care and expertise that is usual and customary in this community for professional engineers. I understand that Lewis County does not and will not assume liability for the sufficiency, suitability, or performance of drainage facilities prepared by me."

Daniel K. Balmelli

Dan Balmelli, Executive VP, Principal Engineer

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1.0 PROPOSED PROJECT DESCRIPTION

1.1 Project Summary

A Drainage Report for prior development of this project site was prepared by RB Engineering in their October 2018 "*MRIS Development Project Record Drainage Report"*.

The project site was described as follows:

Proposed Overall Description

The project site is located on Maurin Road in Chehalis, Washington. The 32.1-acre site is served by City water and sewer. Existing manmade drainage ditches are located along the west property boundary and internally within the site. The drainage ditches flow north to the Dillenbaugh Creek. The northern portion of the property is located in a 100-yr flood plain based on FEMA flood mapping. The project includes constructing a 17.5-acre industrial gravel pad ready for future development. A new stormwater treatment and detention pond was constructed to control runoff from the new industrial pad. A bottomless culvert was installed in preparation of future rail line extension to service the site and other port properties.

Proposed Flow Control Improvements

The flow control facilities proposed for this project were designed and modeled using the latest edition of the Western Washington Hydrology Manual Continuous Simulation Program. The site will utilize a detention pond for the development.

Proposed Water Quality Improvements

The water quality improvements for the project site runoff consist of wetpond facilities set within the limits of the stormwater flow control pond.

Proposed Conveyance System

The proposed conveyance systems will include temporary rock lined conveyance swales. The proposed conveyance system was sized to accommodate a minimum of the 25-year storm event.

Proposed Discharge Location

The project site pond will discharge runoff from the developed areas to a proposed shallow swale to the northwest that drains to the Dillenbough Creek. This is the existing natural drainage for the property.

Onsite Soils and Geology

An onsite soils report was completed for this project site by Insight Geologic. A copy of the report can be found in Section 8 of this report.

1.2 Analysis of the Minimum Requirements

Please refer to Figure 2.4.1 and/or 2.4.2 of Volume I of the 2019 Stormwater Management Manual for Western Washington (SWMMWW), for determining the requirements for new development accompanied in this section of the report, which indicates all Minimum Requirements apply to the new impervious surfaces and converted pervious surfaces on this site.

Minimum Requirement No. 1: Preparation of Stormwater Site Plans.

Response: All projects meeting the thresholds of Section 2.4 of Volume I of the SMMWW shall prepare a Stormwater Site Plan for local government review.

The proposed project will create over 5,000 square feet of new impervious surfacing, and therefore a Stormwater Site Plan complying with minimum requirements #1 through #9 is required.

Minimum Requirement No. 2: Construction Stormwater Pollution Prevention Plan (SWPPP).

Response: The proposed project exceeds the thresholds of Section 2.5 and therefore a Construction Storm Water Pollution Prevention Plan is required for this project. The site will also disturb more than 1 acre of land and discharges to waters of the state. Therefore, a NPDES stormwater construction permit is required. A SWPPP has been previously created as a standalone document for this project by RB Engineering.

Minimum Requirement No. 3: Source Control of Pollution.

Response: The 2019 Stormwater Management Manual for Western Washington (SWMMWW) was used to determine applicable source control measures, which are contained in the Appendix B of the construction SWPPP. All known, available, and reasonable source control BMPs shall be applied to the project to limit pollutants coming in contact with stormwater. The BMPs for this project will be incorporated into the project's Final Operation and Maintenance Plan once the site is fully developed.

Minimum Requirement No. 4: Preservation of Natural Drainage System and Outfalls.

Response: Proposed stormwater discharges from the project site shall be treated and detained and then released to the original natural drainage location. The natural site drainage outfall will be maintained but will have a reduced flow due to the onsite drainage design facility.

Minimum Requirement No. 5: On-Site Stormwater Management.

Response: The project has developed a complete stormwater management plan that is included in Section 12 of RB Engineering's MRIS Development Project Drainage Report (October 2018) and further discussed in MR #6 and #7 below.

Minimum Requirement No. 6: Runoff Treatment.

Response: This project required treatment of runoff from the new impervious surfaces. Treatment for this project has been designed using the sizing methods outlined in the DOE manual for large wetpond facilities. See Section 5.2 of RB Engineering's MRIS Development Project Drainage Report (October 2018) for the sizing calculations and data.

Minimum Requirement No. 7: Flow Control.

Response: This project required flow control for runoff from the new impervious surfaces. Flow control for this project has been designed using the latest WWHM stormwater model prepared for the DOE manual. See Section 5.1 of RB Engineering's MRIS Development Project Drainage Report (October 2018) for the sizing calculations and data.

Minimum Requirement No. 8: Wetlands Protection.

Response: There are no wetlands within the proposed project limits. All previous onsite wetlands were filled under the Army Corp. of Engineers Permit and Mitigation plan RGP-9 and NWS-2008-549 prior to construction start.

Minimum Requirement No. 9: Operation and Maintenance

Response: An operation and maintenance agreement and manual was prepared previously by RB Engineering and functions as a standalone document for the developer and property owners. See RB Engineering's MRIS Development Project Drainage Report (October 2018) for more information.

Additional Protective Measure (APM) No. 1: Financial Liability.

Response: This project will conform to all financial liability requirements of Lewis County for projects of this nature.

Additional Protective Measure (APM) No. 2: Offsite Analysis Report.

Response: The offsite analysis done for this project previously under RB Engineering did not yield any mitigation required for this project.

1.3 Summary of Facilities and Land Coverage Areas

Land Use Category	Area (square feet)	Area (acres)
New Asphalt/Concrete	351,850	8.08
New building	467,700	10.74
New landscape/undisturbed area	116,910	2.68
Total	936,460	21.50

Values provided under previous development in RB Engineering's MRIS Development Project Drainage Report (October 2018):

Applicable Criteria	Areas
Existing Site Impervious Coverage	0 acres
New Plus Replaced Impervious Surface	20.95 acres
Vegetation Area Converted to Lawn or Landscaped Area	0 acres
Land Disturbing Area	20.95 acres

2.0 EXISTING CONDITIONS

The approximately 37.56-acre site is currently a partially developed portion of land located within a Lewis County regulated floodplain area. The site encompasses three Lewis County tax parcels totaling approximately 37.56 acres (1,636,290-square feet) in area. The site generally slopes towards the northeast. The elevations of the site range from approximately 222 to 237. The greatest slope on the project site is approximately 30 percent. The existing site is partially developed, with approximately 17.5 acres of gravel and 20.06 acres of bare dirt and existing vegetation. The vegetation consists primarily of grass, small shrubs, and a few larger trees.

3.0 SOILS REPORT

The Geotechnical Report was prepared for this site by Insight Geologic, Inc. on March 29, 2018.

See Section 8.0 of RB Engineering's MRIS Development Project Drainage Report (October 2018) for the previously provided Geotechnical Report.

4.0 WELLS AND SEPTIC SYSTEMS

There are no known wells or septic systems on the project site to our knowledge. However, if any wells or septic systems are found, they will be abandoned in accordance with requirements of the Lewis County Health Department.

5.0 FUEL TANKS

To the best of our knowledge there are no fuel tanks located on the site, however, if fuel tanks are found they will be abandoned in accordance with requirements of the Lewis County Health Department.

6.0 SUBBASIN DESCRIPTION

All runoff from this development will be routed through an on-site conveyance system to the existing detention pond on the site. This system was sized to handle approximately 20.95 acres of the 37.56 acre site; the remaining site area will remain undeveloped. All stormwater generated from this project will be detained and discharged on the site. There is no upstream basin to the site, nor are there any points of discharge from the site.

Please refer to the Pre-Developed and Post-Developed Basin Maps previously provided in Section 5 of RB Engineering's MRIS Development Project Drainage Report (October 2018) for more information.

7.0 AESTHETIC CONSIDERATIONS FOR FACILITIES

This development will match other developments within the surrounding area, which is located within an industrial area. The proposed landscaping and vegetation throughout the site will also provide screening to obscure the site from adjacent properties and provide a more aesthetically pleasing site.

8.0 FACILITY SIZING AND DOWNSTREAM ANAYSIS

8.1 Water Quality Facility Analysis and Design

Enhanced water quality treatment will be provided by Water Quality Units. All stormwater runoff from pollution-generating surfaces will be treated by these Water Quality Units prior to discharging into the existing detention pond on the northwest end of the site. The roofing material for the building will be compliant with ECY requirements for water quality exemption. Because of this, roof runoff will bypass the proposed water quality system and will directly discharge into the detention pond.

The Western Washington Hydrology Model 2012 (WWHM2012) will be used to size these Water Quality Units in the final engineering phase of design for this project site. The relevant calculations and data will be provided at that time.

8.2 Flow Control Facility Analysis and Design

Please refer to the flow control calculations and data provided previously in Section 5.1 of RB Engineering's MRIS Development Project Drainage Report (October 2018). RB Engineering used the Western Washington Hydrology Model 2012 (WWHM2012) in sizing the existing detention pond for the project site.

According to RB Engineering's WWHM2012 model for the detention pond, the total impervious area of the site contributing to the flow control facility is 20.95 acres, which includes 17.25 acres of parking and 3.70 acres of pond area. These areas excluded the remaining 16.61 acres on the site, which will be left undisturbed, as they lie in a Lewis County Flood Zone region. Impervious surfaces of 60 percent was assumed if developed, while the pervious areas of this site include all landscaped or undisturbed areas. The existing detention pond was sized using WWHM to accommodate a minimum of the 25-year storm event, according to Section 1 of RB Engineering's MRIS Development Project Drainage Report (October 2018).

8.3 Conveyance System Analysis and Design

The on-site conveyance will sized for all storm events through the 100-year event, and will accommodate for backwater effects by using Autodesk's 2021 Storm and Sanitary Analysis in the final engineering phase of design for this project site.

9.0 UTILITIES

All future utilities on the site will be laid out in a clear and coherent manner so as to maintain the maximum separation possible between utilities at all locations. At crossing locations, minimum allowable vertical separation has been maintained. Appropriate design standards have been utilized to address those areas where minimum allowable vertical or horizontal separation has not been maintained.

10.0 COVENANTS, DEDICATIONS, EASEMENTS

Documents will be provided as applicable to the project.

11.0 PROPERTY OWNERS' ASSOCIATION ARTICLES OF INCORPORATION

This is not applicable as the site is not a subdivision.

12.0 OTHER PERMITS OR CONDITIONS PLACED ON THE PROJECT

The following is a list of regulatory permits needed for this project and copies were attached if available in the previously provided MRIS Development Project Drainage Report (October 2018) prepared by RB Engineering.

SEPA Review – MDNS Issued by City of Chehalis.

Grading and Drainage – Issued by City Chehalis.

HPA Hydraulic Permit – Issued by Dept. of Fish and Wildlife.

NPDES Construction Stormwater Permit – Issued by WSDOE.