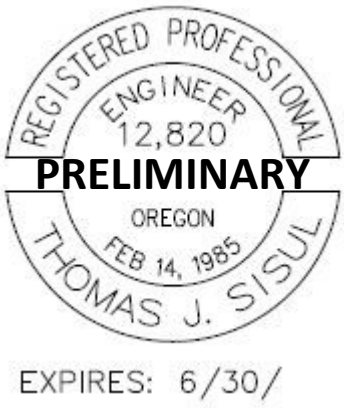
Commercial Building

19452 SW Cipole Road
Tualatin, OR

J.O. SGL 22-051

June 5, 2025

PRELIMINARY STORM REPORT & CALCULATIONS



SISUL ENGINEERING
A Division of Sisul Enterprises, Inc.
375 Portland Avenue
Gladstone, OR 97027
PHONE: (503) 657-0188
FAX: (503) 657-5779

NARRATIVE FOR STORMWATER MANAGEMENT
for the addition of a new Commercial Building at
19452 SW Cipole Road
Tualatin, OR 97062

Site History

Up until the late 1990's an existing structure and storage yard area existed on the site. The exact timing of the development of this facility is unclear, but believed to exist prior to 1990. In 1999-2000 a warehouse facility was constructed including new pavement areas and an improved driveway. The original building remained on the site. As part of this development stormwater facilities, including detention were constructed in accordance with the regulations at that time. In 2014 the original building was largely removed except for the foundation. In 2017 or 2018 the foundation was removed and only gravel pad remained.

Description of Proposed Development

What is proposed now is a new commercial building largely located on the site of the original building. This new building is proposed to be 4220 SF. A new ADA parking and unloading area is also proposed which covers an area of 360 SF. It expected another 1370 SF of reconstructed area surrounding the new building area will be constructed.
In total, the impacted (redeveloped or modified) area of the site will be less than 6,000 SF.

Stormwater History

As the Clean Water Services regulations that the 1999-2000 development, warehouse and pavement areas, were developed under are now outdated, it was decided not to try to redevelop the existing stormwater facilities for this small addition to the site, but rather develop a new stormwater facility for this specific new development area.

How CWS 2019 Stormwater Standards are applicable to the proposed Commercial Building at 19452 SW Cipole Road

Chapter 4 of the CWS Stormwater Manual (Runoff Treatment and Control) the following sections are applicable:

4.02 – Water Quantity Control Requirements for Conveyance

4.02.1 Mitigation Requirement

Each new development shall incorporate techniques for mitigating its impacts on the public stormwater system in accordance with Section 5.05. The District or City shall determine which of the following techniques may be used to satisfy this mitigation requirement.

a. Construction of permanent on-site stormwater quantity detention facilities designed in accordance with this Chapter; or

b. Enlargement or improvement of the downstream conveyance system in accordance with this Chapter and Chapter 5; or

c. Payment of a Storm and Surface Water Management System Development Charge (SWM SDC), as provided in CWS Ordinance 28, which includes a water quantity component to meet these requirements. If District or City requires that an on-site detention facility be constructed, the development shall be eligible for a credit against SWM SDC fees, as provided in District Ordinance and Rules.

4.02.1 – The stormwater facility for the new building and surrounding impervious improvements will be directed to a new storm drain facility proposed in Cipole Road as a part of the frontage improvements for site. At this time the new public storm drain line is thought will likely be a 24 inch storm drain line, although its size could change prior to final approval. Only this new building area ands portions of the existing driveway area will drain to the public storm drain system. The remainder of the site drains directly to Cummins Creek area to the north. The new public storm drain will also drain into the Cummins Creek area at the north end of the subject site.

4.02.2 Criteria for Requiring On-Site Detention for Conveyance Capacity

On-site facilities shall be constructed when any of the following conditions exist:

a. There is an identified downstream deficiency, and the District or City determines that detention rather than conveyance system enlargement is the more effective solution.

b. There is an identified regional detention site within the boundary of the development.

c. Water quantity facilities are required by District-adopted watershed management plans or subbasin master plans or District- approved subbasin strategy.

4.02.2 – there is no known downstream deficiency.

4.03.1 General

Owners of new development and other activities which create and/or modify 1,000 square feet or greater of impervious surface, or increase the amount or rate of surface water leaving a site, are required to implement or fund techniques to reduce impacts to the downstream receiving water body. The following techniques may be used to satisfy this requirement:

a. Construction of permanent LIDA designed in accordance with this Chapter; or

b. Construction of a permanent stormwater detention facility designed in accordance with this Chapter; or

c. Construction or funding of a hydromodification approach that is consistent with a District-approved subbasin strategy; or

d. Payment of a Hydromodification Fee-In-Lieu.

4.03.1 – As the redevelopment of the site will exceed 1,000 SF the development is required to implement improvements to reduce impacts to downstream receiving water body.

4.03.2 Hydromodification Assessment Requirement

Unless specifically waived in writing by the District, a Hydromodification Assessment is required of all activities described in Section 4.03.1, unless the activity meets any of the following criteria:

a. The project results in the addition and/or modification of less than 12,000 square feet of impervious surface.

4.03.2(a) – As the addition or modification of the site will be less than 12,000 SF of impervious area, it meets an exception to the requirement to address Hydromodification Assessment requirement. Therefore, hydromodification assessment is not applicable to this development.

4.03.5 Hydromodification Approach Selection

Using the results of the Hydromodification Assessment described in Section 4.03.3, determine the corresponding project category from Table 4-2 below.

TABLE 4-2
HYDROMODIFICATION APPROACH PROJECT CATEGORY TABLE

Development Class/ Risk Level	Small Project 1,000 – 12,000 SF	Medium Project >12,000 – 80,000 SF	Large Project > 80,000 SF
Expansion/High	Category 1	Category 3	Category 3
Expansion/ Moderate			
Expansion/ Low		Category 2	
Developed/ High		Category 3	
Developed/ Moderate		Category 2	Category 2
Developed/ Low			

The site impact area is less than 12,000 SF, therefore this can be a Category 1 approach.

Stormwater management options for each category are listed below:

a. Category 1
Projects in Category 1 represent those with the lowest anticipated risk. Any of the following options may be used to address hydromodification:

1. Infiltration facility, using the Simplified Sizing, as described in Section 4.08.4;or

2. Payment of a Hydromodification Fee-In-Lieu in accordance with District Rates and Charges; or

3. Any option listed in Category 2 or 3.

Simplified sizing from Section 4.08.4 will be used for dealing with the new roof and impervious areas in a stormwater planter.

4.03.7 Criteria for Requiring Implementation of a Hydromodification Approach

a. A Hydromodification Approach shall be implemented on-site unless any of the following conditions exist:

All hydromodification approaches will be onsite.

4.04.1 General

Owners of new development and other activities which create or modify 1,000 square feet or greater of impervious surfaces, or increase the amount of stormwater runoff or pollution leaving the site, are required to implement or fund permanent water quality approaches to reduce contaminants entering the storm and surface water system.

4.04.1 – As more than 1,000 SF of impervious area will be disturbed water quality will be required.

4.04.2 Criteria for Requiring Implementation of a Water Quality Approach

a. A water quality approach shall be implemented on-site unless, in the judgment of the District or City, any of the following conditions exist:

1. Due to topography, soils or other site conditions, implementation of an on-site approach is impractical, ineffective or results in the inefficient use of District or City resources for long-term operations and maintenance; or

2. There is a more efficient and effective regional approach within the subbasin that was designed to incorporate the development, or there is an approach in the subbasin which is demonstrated to have the capacity to treat the site.

4.04.2(a) – Water quality shall be implemented on site. As the it neither Item 1 or 2 appears to be applicable to the development, and the City currently does not have a Fee-in-Lieu (as permitted under 4.04.2(b) setup for such requests, thus this requirement must be met.

4.04.3 Required Treatment Design Efficiency

a. Stormwater quality approaches shall be designed to remove 65 percent of the total phosphorous from the runoff from the impervious area that is tributary to the facility.

b. The phosphorous removal efficiency specifies only the design requirements and is not intended as a basis for performance evaluation or compliance determination of the stormwater quality control approach installed or constructed pursuant to this Chapter.

c. The following approaches are available for meeting the treatment design efficiency standard in this section:

1. Pretreatment as specified in Section 4.07.1 in combination with one of the following vegetated water quality approaches:
   A) Vegetated Swale
   B) Extended Dry Basin
   C) Constructed Water Quality Wetland
   D) Structural Infiltration Planter
   E) Non-structural Infiltration Planter (rain garden)
   F) Structural Flow-through Planter
   G) Non-Structural Flow-Through Planter/Rain Garden
   H) Street-Side Planter
   I) Landscape Filter Strip
   J) Vegetated Corridor as a Filter Strip

2. Proprietary treatment systems meeting the requirements of Section4.07.8.
3. Alternative water quality approaches that can be demonstrated, to the satisfaction of the District, to meet the removal efficiency standard in this section.

4.04.3 – The requirements of Treatment Design and Efficiency is required.

4.05.1 Purpose

LIDA provides pollutant reduction associated with urban development. Generally, the first priority for LIDA is to conserve existing resources and minimize stormwater runoff generated from urban development to mimic natural hydrologic processes.

Selection of appropriate LIDA, including surface infiltration, should ensure there are no adverse downstream drainage impacts and an appropriate maintenance program can be developed to sustain the functionality of the LIDA.

4.05.1 – LIDA requirements are a potential option for this redevelopment area.

4.05.2 LIDA Design Considerations

Through conservation of natural resources, minimization of impervious surface, and mimicking natural hydrologic processes, each development shall reduce its hydrologic impacts through approaches described in Section4.05.3, unless any of the following criteria apply:

a. Due to topography, soils or other site conditions, implementation of an onsite approach is impractical or inefficient.

b. Hydromodification or stormwater quality treatment requirements are being met by a regional or subbasin approach.

c. The hydromodification and water quality treatment requirements are being met through a Fee-In-Lieu in accordance with Section 4.03.7.b and 4.04.2.b.

4.05.2 – Appears to require LIDA facilities if possible.

4.05.3 LIDA Approvable by the District

a. Vegetated water quality treatment as specified in Section 4.04.3.c.1.

4.05.3(a) – Refers back to facilities noted in 4.04.3(c)1.

4.06 Summary of Stormwater Management Approaches

Table 4-3 shows the approaches the City or District may approve to meet the requirements of this Chapter and whether these approaches may be used in a publicly maintained system.

TABLE 4-3
SUMMARY OF APPROVABLE APROACHES

Stormwater Management Approach	May be approved for Public System[2]	Quantity for Conveyance Capacity	Hydromod-ification Approach	Water Quality Treatment Approach	Low Impact Development Approach
Water Quality Manhole[1]	✓	✓	✓	✓	
Detention Pond	✓	✓	✓		✓
Underground Detention	✓	✓	✓		
Vegetated Swale	✓			✓	✓
Extended Dry Basin	✓	✓	✓	✓	✓
Constructed Water Quality Wetland	✓	✓	✓	✓	✓
Structural Infiltration Planter	✓	✓	✓	✓	✓
Non-Structural Infiltration Planter (Rain Garden)	✓	✓	✓	✓	✓
Structural Flow-Through Planter	✓			✓	✓
Non-Structural FlowThrough Planter/Rain Garden	✓			✓	✓
Street-Side Planter	✓	✓	✓	✓	✓
Landscape Filter Strip	✓			✓	✓
Vegetated Corridor as a Filter Strip	✓			✓	✓
Green Roofs		✓	✓		✓
Porous Pavement	✓	✓	✓		✓
Stormwater Tree			✓		✓
Structural Soils	✓		✓		✓
Proprietary Treatment System	✓			✓	
Vegetated Corridor Preservation					✓

1. Pretreatment only.
2. Approaches in the right-of-way must be approved by the local road authority.

4.06 – Summary of Stormwater Management Approaches. Table 4-3 provides some choices for meeting the requirements of Chapter 4.

Of the choices available the following is most potentially suitable for the site:

- *LIDA flow through planter*

4.08.1 Impervious Area Used In Design

The following apply for development which creates or modifies 1,000 square feet or greater of impervious surface. Development which results in both new and modified impervious surface will result in a combined stormwater management requirement, as described below:

d. For all developments and re-development, other than single family and duplex, stormwater management approaches shall be sized based on the following:

1. Quality:
   All new impervious surfaces and three times the modified impervious surface, up to the total existing impervious surface on the site. The area requiring treatment is shown in the formula below:
   Area = New Impervious + 3(Modified Impervious)
   When modification results in the permanent removal of 1,000 square feet or greater of impervious surface, the treatment approach shall be sized for three times the replaced impervious surface, in addition to the new impervious surface. In this case, the area requiring treatment is shown in the formula below:
   Area = New Imp. + 3(Modified Imp. - Permanently Removed Imp.)
   Impervious areas shall be determined based upon building permits, construction plans, or other appropriate methods of measurement deemed reliable by District and/or City.

2. Quantity required for conveyance capacity or hydromodification:
   All new and modified impervious area created by the development.

4.08.1(d) – As this industrial site will modify more than 1,000 SF of impervious surface, water quality must meet the standard of new impervious area + 3 times the modified impervious area less the Permanently Removed Impervious area.

4.08.4 Simplified Sizing

a. Simplified sizing may be used for facilities where the contributing impervious area to an individual water quality approach is no greater than 15,000 square feet per facility inlet or contributing drainage area.

4.08.4(a) – is applicable as each contributing area will be less than 15,000 SF.

b. Water Quality Sizing

A 6% sizing factor shall be used to calculate the required water quality surface area of the selected treatment facility. A sizing factor of 6% assumes the site infiltration rate is less than 2 inches/hour.

4.08.4(b) – is applicable for sizing factor (for water quality) as the infiltration rate will be less than 2 inches per hour. (The soils for this site are listed as Labish Mucky Clay with a hydrologic soil group listing of C/D. While the Labish Mucky Clay is not noted in Table 4-5, other C/D soils, such as Aloha, Amity, Huberly and Wapato soils are noted to have an infiltration rate of 0.2 inches/hr according to Table 4-5)

c. Hydromodification Sizing

A 12% sizing factor shall be used to calculate the required vegetated surface area of the selected facility to meet both the hydromodification and water quality requirement. A sizing factor of 12% assumes the site infiltration rate is less than 2 inches per hour.

4.08.4(c) – is applicable for a sizing factor as hydromodification is required, therefore the sizing factor to be used for the LIDA facility will be 12%.

d. Alternative Sizing

1. The vegetated surface area of the facility may be reduced by 25% when the growing media depth is increased to 30 inches or more.

4.08.4(d) – The growing media depth will be increased to 30 inches so that the vegetated surface area can be reduced by 25%.

4.09.9 Flow-through Planter

a. Applications
   1. Water Quality
   2. LIDA

b. Hydraulic Design Criteria

   1. Sizing: Simplified LIDA Sizing per Section 4.08.4
   2. Minimum Freeboard: 2 inches

4.09.9(b) – For Flow-through Planter: Simplified Sizing of Section 4.08.4(c) may be used. Six inches of freeboard will be allowed for.

c. Design Criteria

1. Provide pretreatment when contributing impervious area is greater than 15,000 square feet.
2. Minimum length: Facility length to be calculated based on incoming flows and facility width.
3. Maximum slope: Planters are designed to evenly distribute and filter flows. Surface longitudinal slopes should be less than 0.5%.
4. Minimum Width: 30 inches
5. Maximum Treatment Depth (measured from top of soil medium): 0.5 feet
6. Minimum Cross-Sectional Depths:
   A) Growing medium: 18 inches
   B) Choker course: 3 inches
   C) Drain rock: 9 inches
7. Provide an energy dissipater at the entrance to the planter. It will be designed to reduce velocities and prevent scour.
8. Provide an approved outlet (overflow) structure for all flows.
9. Rain drains and overflow structure to maintain maximum linear separation.
10. Building jurisdiction approval required for: building setback distance, impermeable liner, structural wall and when depth of the facility is below the building footing.
11. A perforated pipe system under the planter drains water that has filtered through the topsoil to prevent long-term ponding.
12. Vegetation quantities per 100 square feet:
    A) 115 herbaceous plants, evergreen, 1 foot on center spacing, ½-gallon container size; or
    B) 100 herbaceous plants, evergreen, 1 foot on center, and 4 shrubs, 1-gallon container size, 2 feet on center.

4.09.9(c) – The contributing treatment area will be approximately 13,990 SF (365 SF New Impervious; 5585 SF Replacement Impervious; and 8040 SF Existing Impervious) The growing medium section will be increase to 30 inches, all other minimum and maximums will be met.

ANALYSIS:

Per Section 4.03.1, as the redevelopment area exceeds 1,000 SF the site is required to reduce impacts to downstream receiving water bodies through hydromodification, and to provide water quality.
However, per Section 4.03.2(a) as the redevelopment area will be less than 12,000 SF, hydromodification assessment is not required.

Therefore, water quality and hydromodification must be addressed per CWS standards but for the redevelopment area only (or an area equal to or larger than to the multiplier and reductions as permitted using the Simplified method for a Flow Through Planter.

WATER QUALITY & HYDROMODIFICATION PER SIMPLIFIED METHOD:

Per Section 4.08.1(d) as more than 1,000 SF of impervious area will be reconstructed the water quality treatment upgrade must equal the new impervious area + 3 times the redevelopment area less the permanently removed impervious area, or the entire site, whichever is less. For this site the New Development area of the building will be 365 SF, redevelopment the new building area will be 3870 SF and the new reconstructed pavement area is expected to be approximately 1715 SF., or a total of approximately 5585 SF of reconstructed impervious area. Permanently removed area (gravel and concrete areas) will be approximately 1075 SF.

Based on the Section 4.08.4(a) the treatment area can use the simplified area if the contributing area will be less than 15,000 SF. As the treatment area is 365 SF + (5585 SF -1075 SF) times 3 the total required treatment area will be 13,895 SF. *(Note due to areas available for runoff collection, that actual capture area will be 13,990 SF).* Therefore, one facility will be sufficient.

- Based on the simplified method for a Flow Through Planter – The existing pavement area being routed through the planter to meet the treatment threshold will be approximately 8040 SF. With the New (365 SF) and Redevelopment (5585 SF) area a flow planter of 1678 SF is required ([8040 + 365 + 5585 SF] x 0.12= 1678 SF). Because at least 30 inches of soil medium depth will be installed in the planter the size of the planter can be reduced 25% per 4.08.4(d)1. Therefore, for the planter could be as small as 1258 SF. A new flow through planter area is proposed along portions of the west and south sides of the building, being sized to be 1326 SF. Therefore, the simplified minimum planter size will be met.

Proposed Frontage Improvements at 19452 SW Cipole Road and Stormwater Treatment

Per discussion with the City staff, due to the constraints of the frontage area, it was agreed that the water quality facility along the street frontage had to account for only the increase of impervious area. The increase in square footage of impervious area, is expected to be approximately 2122 SF.

To address this additional impervious area, a stormwater planter is proposed, between the future curbline and the future public sidewalk, in areas that would be at least 5 feet distance from a public sanitary line behind the curb area and a water service line that serves a CWS sanitary pump station.

Based on Section 4.08.(b) allows for a simplified design based on upon 6% sizing factor the minimum size of the WQ planter shall be 127 .3 SF. A planter facility that is 21' x 6.5' is proposed for a facility size of 136.5 SF. It will be sufficiently sized.