

Combined Stormwater Site Plan and Construction Stormwater Pollution Prevention Plan Report– Freshwater

Permit Number(s): 5-100

Prepared By: Smart E. Gineer

Date Prepared: Sept 2019

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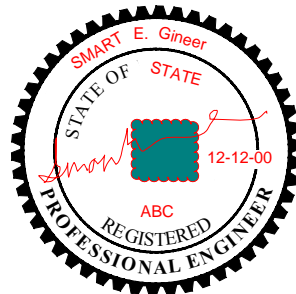
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Chapter 1 – Project Overview

Project Address: Match and Example Street

Parcel Number: 125125125

Size of Parcel (acres or square feet): 55,936 square feet

Brief description of project: Create access road and utility stubouts for a 6 lot residential plat, complete onsite clearing and grading. The existing site is covered with a mix of shrubs, brush and small trees. There is no formal site drainage.

Associated Permit Number(s) (e.g., land use permits, residential building permits): [Click here to enter text.](#)

Applicant Name: Smart Gineer

Applicant Address: 84 1st Place, Town, State

Applicant Phone Number: 111-111-1111

Applicant E-mail: sgineer@st.com

Property Owner Name: Person

Property Owner Address: 124564 Street

Property Owner Phone Number: 222-222-2222

Property Owner E-mail: platsrus@email.com

Identify other agency permits required or associated with the subject parcel (e.g., hydraulic permits, Army Corps 404 permits). Provide Permit numbers if available: NA

Project Location Watershed: Nice Creek

First Waterbody Encountered in Entire Downstream Flowpath: Puget Sound

Final (Ultimate) Discharge Waterbody: Nice Creek

Complete the following table as applicable to the proposed project (include onsite and offsite improvements):

Description ^a	Onsite	Offsite	Total
Existing Conditions			
Total Project Area ^b (ft ²)	55,936	6,155	62,091
Existing hard surface (ft ²)	0	5,000	5,000
Existing vegetation area (ft ²)	55,936	1,155	57,091
Proposed Conditions			
Total Project Area ^b (ft ²)	55,936	6,155	62,091
Amount of new hard surface (ft ²)	16,949	1,155	18,104
Amount of new pollution generating hard surface (PGHS) ^c (ft ²)	7,679	696	8,375
Amount of replaced hard surface (ft ²)	0	5,000	5,000
Amount of replaced PGHS ^d (ft ²)	0	4,759	4,759
Amount of new plus replaced hard surface (ft ²)	16,949	5,455	22,645
Amount of new + replaced PGHS (ft ²)	7,679	6,392	14,071
Amount of existing hard surfaces converted to vegetation (ft ²)	0	241	241
Amount of Land Disturbed (ft ²)	55,936	6,155	62,091
Vegetation to Lawn/Landscaped (acres)	39,037	696	39,733
Native Vegetation to Pasture (acres)	0	0	0
Existing hard surface to remain unaltered (ft ²)	0	0	0
Existing vegetation area to remain unaltered (ft ²)	0	0	0

a. All terms are defined in the SWMM glossary.

b. The total project area in the existing condition should typically match the total project area in the proposed condition. The total project area includes those areas that remain unaltered and those areas that will be altered.

c. The “amount of new PGHS” should be part of or all of “amount of new hard surfaces”

d. The “amount of replaced PGHS” should be part of or all of the “amount of replaced hard surfaces”.

Chapter 2 – Existing Condition Summary

Existing Site Conditions

1. Existing site conditions. (Check all that apply)

- Forest
 Pasture/prairie grass
 Pavement
 Landscaping
 Brush
 Trees
 Structure/Building
 Other: Click here to enter text.

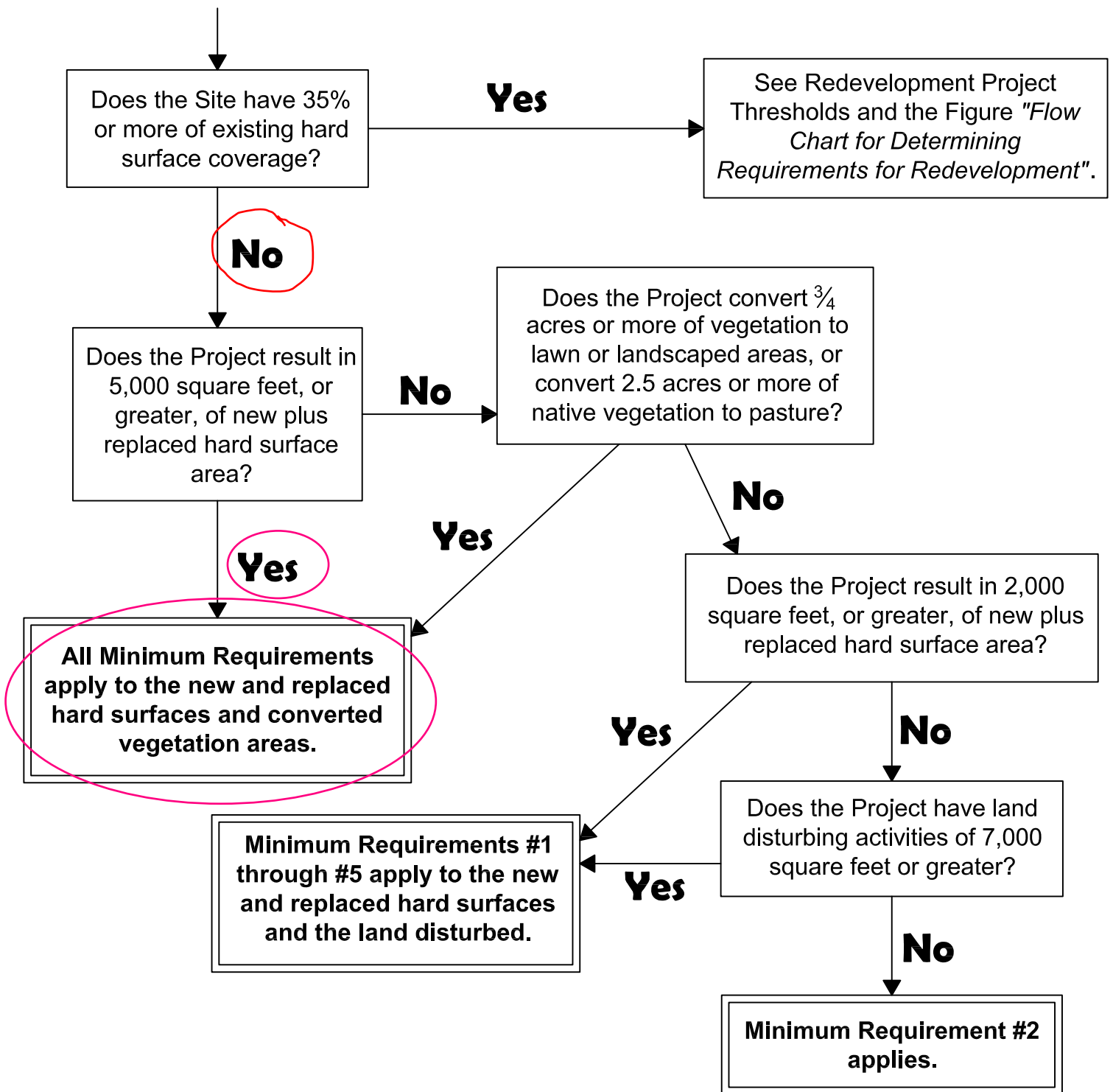
2. Describe how stormwater flows across/from the site. (Check all that apply)

- Sheet Flow
 Gutter
 Catch Basin
 Ditch/Swale
 Stormwater Pipes
 Stream/Creek
 Other: Click here to enter text.

3. Existing Site Topography (Check all that apply)

- Flat
 Rolling
 Steep

Start Here



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Flow Chart for Determining Requirements for New Development

Revised March 2019

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Does the entire project qualify as Flow Control exempt (per MR #7)?

Yes

No

Did the project developer choose to meet the LID Performance Standard?

Yes

No

REQUIRED: For each surface, consider the BMPs in the order listed in List #3 for that type of surface. Use the first BMP that is considered feasible.
NOT REQUIRED: Achievement of the LID Performance Standard.

Does the project trigger only MRs #1 - #5? (Per the Project Thresholds in Applicability of the Minimum Requirements Section).

Yes

Did the project developer choose to meet the LID Performance Standard?

No

Yes

REQUIRED: For each surface, consider the BMPs in the order listed in List #1 for that type of surface. Use the first BMP that is considered feasible.
NOT REQUIRED: Achievement of the LID Performance Standard.

(the project triggers MRs #1 - #9)

No

Is the project outside the UGA on a parcel that is 5 acres or larger?

No

Did the project developer choose to meet the LID Performance Standard?

No

Yes

Yes

REQUIRED: Meet the LID Performance Standard through the use of any Flow Control BMP(s) in this manual.
REQUIRED: Apply BMP T5.13 Post Construction Soil Quality and Depth.
NOT REQUIRED: Applying the BMPs in Lists #1, #2, or #3.

REQUIRED: For each surface, consider the BMPs in the order listed in List #2 for that type of surface. Use the first BMP that is considered feasible.
NOT REQUIRED: Achievement of the LID Performance Standard.

REQUIRED: Meet the LID Performance Standard through the use of any Flow Control BMP(s) in this manual.
REQUIRED: Apply BMP T5.13 Post-Construction Soil Quality and Depth.
NOT REQUIRED: Applying the BMPs in Lists #1, #2, or #3.



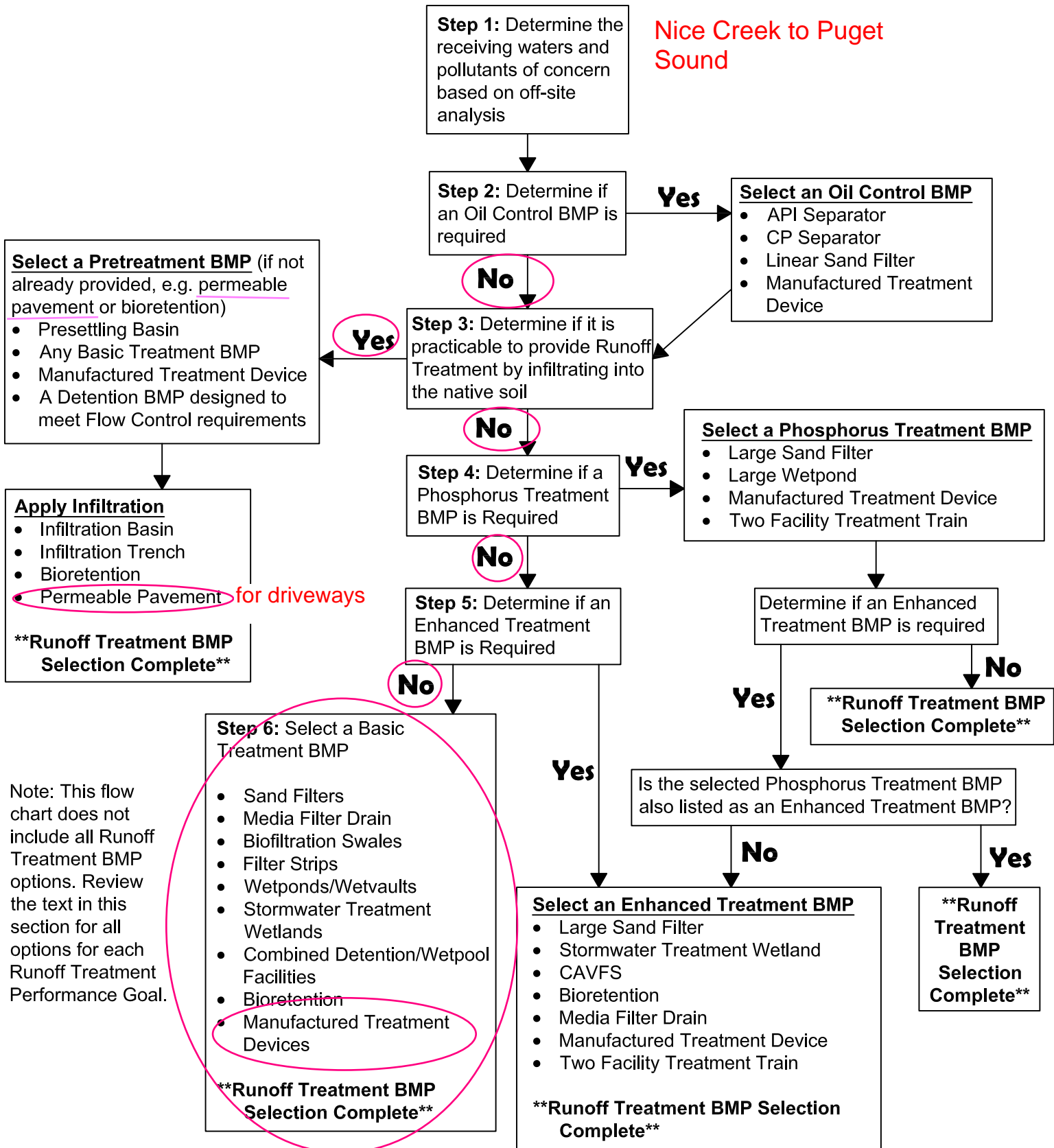
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Flow Chart for Determining MR #5 Requirements

Revised March 2019

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Nice Creek to Puget Sound



Note: This flow chart does not include all Runoff Treatment BMP options. Review the text in this section for all options for each Runoff Treatment Performance Goal.



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Runoff Treatment BMP Selection Flow Chart

Revised January 2019

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4. Are there any known historical drainage problems such as flooding, erosion, etc.?
Yes (show on site plan) No
5. Existing utilities (Check all that are on the site and show on site map with legend)
Stormwater Water Wastewater Other: gas, cable
6. Are sensitive and critical areas present on or near the site (i.e. vegetative buffers, wetlands, steep slopes, floodplains, geologic hazard areas, streams, creeks, ponds, ravines, springs, etc.)?
Yes (show on site plan) No
7. Are existing fuel tanks present on the site?
Yes (show on site plan) No
8. Is the site within the aquifer recharge area?
Yes No
9. Are groundwater wells present onsite and/or within 100 feet of the site?
Yes (show on site plan) No
10. Are septic systems present onsite and/or within 100 feet of the site?
Yes (show on site plan) No
11. Are there existing public and/or private easements on the project site?
Yes (show on site plan & provide recording numbers) No
12. Soils report as Appendix to this SSP Report.

Chapter 3 – Offsite Analysis (Qualitative)

1. Provide a map showing the downstream drainage path leading from the site to the receiving waterbody or ¼ mile (whichever is less). The map must show the location of the stormwater conveyance location and describe pipe diameters. Include map in appendices of this stormwater site plan. Alternatively, in writing below, describe the downstream drainage path leading from the site to the receiving waterbody or ¼ mile (whichever is less). {e.g. water flows from the project site into the existing concrete curb-line which connects to a catch basin at intersection of X and Y streets. A 12-inch pipe system conveys water another 1000 feet to a ravine/wetland.}; The majority of the site will infiltrate. The connection to the stormwater system will occur at the approximate intersection of Match and Example Streets. The pipe will connect into 876 feet of 24 inch pipe and flow downstream to outfall #17 at Nice Creek. Two existing catchbasins near Match Street and 64th Ave were full of soil and trees were going out of the catchbasins. See attached downstream analysis map.
2. Perform a site visit to investigate the drainage system ¼ mile downstream from the project and check the boxes below indicating any visual signs of drainage problems:
No sign of drainage problems
Damaged catch basins
Damaged pipes
Excessive leaf fall or debris blocking catch basin

- Localized flooding (large puddles)
- Signs of erosion (sediment build-up in curb line)
- Other: [Click here to enter text.](#)

Date of Inspection: July 5, 2018

Weather at the time of the inspection (was it raining during site visit?): Sunny and hot

Chapter 4 – Permanent Stormwater Controls

4-1. Low Impact Development Principles

Where feasible, sites shall use the following low impact development site design principles. Check those principles that will be used onsite. The applicant is not required to revise their proposed design in order to accommodate these principles, but shall use the principles when feasible.

- Minimization of land disturbance by fitting development to the natural terrain.
- Minimization of land disturbance by confining construction to the smallest area feasible and away from critical areas.
- Preservation of natural vegetation.
- Locating impervious surfaces over less permeable soils.
- Clustering buildings
- Minimizing Impervious Surfaces

4-2 – Discussion of Minimum Requirements

Check the box which describes how each of the Minimum Requirements will be satisfied. The applicant can check the boxes that apply or describe the alternate means used to comply with the Minimum Requirements. Review Volume 1 of the SWMM to determine which Minimum Requirements apply to a project.

Minimum Requirement #1 – Preparation of a Stormwater Site Plan

- This Combined SSP and SWPPP Report Short Form and associated plan set satisfy this requirement.

Minimum Requirement #2 – Construction Stormwater Pollution Prevention

- This Combined SSP and SWPPP Report Short Form and associated plan set satisfy this requirement.

Minimum Requirement #3 – Source Control of Pollution

- For a single family residence*, the homeowner shall comply with all Best Management Practices (as applicable) contained in Volume 4 of the SWMMWW.
- For commercial or industrial facilities*, complete the “Worksheet for Commercial and Industrial Activities” contained in Volume 4 of the SWMMWW. Attach the worksheet as an appendix to this Report. The owner or operator shall comply with all BMPs checked.

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

All boxes should be checked for this Minimum Requirement. If all boxes cannot be checked an exception to the Minimum Requirement may be required per Volume 1, Section 3.5 of the SWMM.

- The natural (or existing) drainage patterns have been maintained to the maximum extent feasible.
- Discharges from the project site occur at the natural (or existing) location to the maximum extent feasible.
- Discharge from the project site will not cause a significant adverse impact to downstream receiving waters and downgradient properties.

Minimum Requirement #5 – Onsite Stormwater Management This project will use list #1 and List #2

List #2 - One of the following for each surface type must be utilized if feasible.

Roofs:

Required BMPs: The following BMPs must be analyzed for feasibility in the order shown. If all BMPs required to be analyzed are found to be infeasible the applicant may utilize BMP L605: Collect and Convey per the SWMM.

1. Analyze All For Feasibility (if no options are feasible continue to 2)
 - BMP L614: Full Dispersion
 - Not feasible – see infeasibility checklist in appendices
 - BMP L602: Downspout Infiltration Trench
 - Not feasible – see infeasibility checklist in appendices
 - BMP L602: Downspout Dry Well
 - Not feasible – see infeasibility checklist in appendices
 2. Analyze Either for Feasibility (if not feasible continue to 3)
 - BMP L630: Bioretention
 - Not feasible – see infeasibility checklist in appendices
 3. Analyze Both for Feasibility (if not feasible continue to 4)
 - BMP L603: Dispersion Trench
 - Not feasible – see infeasibility checklist in appendices
 - BMP L603: Splashblocks
 - Not feasible – see infeasibility checklist in appendices
 4. Analyze for Feasibility
 - BMP L604: Perforated Stubout
 - Not feasible – see infeasibility checklist in appendices
- No Roofs – Not Required
Required BMPs are not feasible – utilize BMP L605: Collect and Convey

Other Hard Surfaces:

Required BMPs: The following BMPs must be analyzed for feasibility in the order shown. If all BMPs required to be analyzed are found to be infeasible the applicant may utilize BMP L605: Collect and Convey per the SWMM. Additional treatment may be required if proposing to infiltrate pollution generating surfaces in the South Tacoma Groundwater Protection District. See Volume 5, Appendix D of the SWMM.

1. Analyze for feasibility (if not feasible continue to 2)
 - BMP L614: Full Dispersion
 - Not feasible – see infeasibility checklist in appendices
 2. Analyze for feasibility (if not feasible continue to 3)
 - BMP L633: Permeable Pavement **Driveways will be pervious.**
 - Not feasible – see infeasibility checklist in appendices – **Roads and sidewalks will be impervious.**
 3. Analyze for feasibility (if not feasible continue to 4)
 - BMP L630: Bioretention
 - Not feasible – **Insufficient space.**
 4. Analyze all for feasibility
 - BMP L611: Concentrated Flow Dispersion
 - Not feasible – see infeasibility checklist in appendices
 - BMP L612: Sheet Flow Dispersion
 - Not feasible – see infeasibility checklist in appendices
- Required BMPs are not feasible for road and sidewalk– utilize BMP L605: Collect and Convey**

Lawn and Landscaped Areas:

Required BMP: The following BMP must be analyzed for feasibility. Place a checkmark next to the option(s) that will be utilized onsite.

- BMP L613: Post Construction Soil Quality and Depth
 - Option 1: Leave Native Vegetation and Soil Undisturbed
 - Option 2: Amend the Existing Site Topsoil
 - Option 3: Stockpile existing topsoil during grading and replace it prior to planting.
 - Option 4: Import Topsoil Mix
- Required BMP is not feasible – see infeasibility checklist attached in appendices

Minimum Requirement # 6 – Runoff Treatment – Per SWMMWW – this project has more than 5,000 sft of PGHS and requires runoff treatment for all PGHS. The driveways will be treated with permeable pavement and the road will be treated with a stormfilter unit in the right of way. The roofs will be treated through onsite infiltration.

Minimum Requirement # 7 – Flow Control This project exceeds the flow control standards and will require flow control mitigation. The entire onsite will be infiltrated. Roofs through infiltration trenches, driveways through permeable pavement, Lawn and Landscaped areas with BMP T5.13. Because no other item from List #2 is feasible for the right – of-way, MR #7 compliance is met.

Minimum Requirement #8 – Wetlands – the site does not drain to wetlands so this requirement does not apply.

Minimum Requirement #9 – Operation and Maintenance

- See operation and maintenance manual contained in appendix of this Stormwater Site Plan Short Form Report.
- No stormwater facilities are proposed for this project (all stormwater is being collected and conveyed to the City system).

Minimum Requirement #10 – Offsite Analysis and Mitigation

See Chapter 3 of this Stormwater Site Plan Short Form Report.

Chapter 5 - Construction Stormwater Pollution Prevention Plan

13 Elements of a Construction SWPPP

The **following 13 elements are required for each SWPPP**. If an element does not apply to the project site, describe why the element does not apply. Check off those BMPs that are proposed to be used to meet the requirements of the 13 elements below. Everything that is checked below must be shown on the site plan. If a BMP is checked as a possible contingent BMP, state that in this report. Only those erosion and sediment control techniques most pertinent to small construction sites are included here. More detailed information on construction BMPs can be found in Volume 2 of the City of Tacoma Stormwater Management Manual. The BMP numbers referenced are BMPs located in the City of Tacoma SWMM. Attach those BMPs from the SWMM that will be used for the project as a separate appendix.

Element #1 – Preserve Vegetation and Mark Clearing Limits

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

All construction projects must clearly mark any clearing limits, sensitive areas and their buffers, and any trees that will be preserved prior to beginning any land disturbing activities, including clearing and grading. Clearly mark the limits both in the field and on the plans. Limits shall be marked in such a way that any trees

or vegetation to remain will not be harmed. See Figure 3 - 13 of the SWMM.

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

- BMP C101: Preserving Natural Vegetation
- BMP C102: Buffer Zones
- BMP C103: High Visibility Fence
- BMP C233: Silt Fence
- Other (Describe Method): [Click here to enter text.](#)

Or

- This element is not required for this project because: [Click here to enter text.](#)

Element #2 – Establish Construction Access

All construction projects subject to vehicular traffic shall provide a means of preventing vehicle “tracking” of soil from the site onto City streets or neighboring properties. Limit vehicle ingress and egress to one route if possible. All access points shall be stabilized with a rock pad construction entrance per BMP C105 or other City of Tacoma approved BMP. The applicant should consider placing the entrance in the area for future driveway(s), as it may be possible to use the rock as a driveway base material. The entrance(s) must be inspected weekly, at a minimum, to ensure no excess sediment buildup or missing rock.

If sediment is tracked offsite, it shall be swept or shoveled from the paved surface immediately. Keep streets clean at all times. Street washing for sediment removal is not allowed as it can transport sediment to downstream water courses and clog the downstream stormwater system.

The location of the proposed construction entrance must be identified on the site plan.

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

- BMP C105: Stabilized Construction Entrance/Exit
- BMP C107: Construction Road/Parking Area Stabilization
- Other (Describe Method): [Click here to enter text.](#)

Or

- This element is not required for this project because: [Click here to enter text.](#)

Element #3 – Control Flowrates

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

Permanent infiltration facilities shall not be used to control flowrates during construction unless specifically approved in writing by Environmental Services.

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

- BMP C203: Water Bars
- BMP C207: Check Dams
- BMP C209: Outlet Protection
- BMP C235: Wattles
- BMP C240: Sediment Trap
- Other (Describe Method): [Click here to enter text.](#)

Or

- This element is not required for this project because: **Too difficult to do on this site**

Element #4 – Install Sediment Controls

Stormwater runoff from disturbed areas must pass through an appropriate sediment removal device prior to leaving a construction site or discharging into an infiltration facility.

Install/construct the sediment removal BMP before site grading.

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

BMP C233: Silt Fence

BMP C234: Vegetated Strip

BMP C235: Wattles

BMP C240: Sediment Trap

Other (Describe Method): [Click here to enter text.](#)

Or

This element is not required for this project because: [Click here to enter text.](#)

Element #5 – Stabilize Soils

Stabilize exposed and unworked soils by applying BMPs that protect the soils from raindrop impact, flowing water, and wind. Minimize the amount of soil exposed during construction activity. Minimize the disturbance of steep slopes. Minimize soil compaction and, unless infeasible, preserve topsoil.

From October 1 through April 30, no soils shall remain exposed or unworked for more than 2 days. From May 1 to September 30, no soils shall remain exposed and unworked for more than 7 days. This applies to all soils on site whether at final grade or not.

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

BMP C120: Temporary and Permanent Seeding

BMP C121: Mulching

BMP C122: Nets and Blankets

BMP C123: Plastic Covering

BMP C124: Sodding

BMP C125: Compost

BMP C126: Topsoiling

BMP C140: Dust Control

Other (Describe Method): [Click here to enter text.](#)

Or

This element is not required for this project because: [Click here to enter text.](#)

Element #6 – Protect Slopes

Design and construct cut-and-fill slopes in a manner to minimize erosion.

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

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

BMP C120: Temporary and Permanent Seeding

BMP C121: Mulching

BMP C122: Nets and Blankets

BMP C200: Interceptor Dike and Swale

BMP C203: Water Bars

BMP C204: Pipe Slope Drains

- BMP C205: Subsurface Drains
- BMP C207: Check Dams
- BMP C208: Triangular Silt Dike
- Other (Describe Method): [Click here to enter text.](#)

Or
This element is not required for this project because: **There are no steep slopes that will be disturbed.**

Element #7 – Protect Drain Inlets

Protect all storm drain inlets that are operable during construction to ensure untreated stormwater does not enter conveyance system. Install catch basin protection on all catch basins within 500 feet downstream of the project. The catch basin inlet protection shown in Figure 2-45 is the only catch basin protection allowed within the City right of way. Once the site is fully stabilized, catch basin protection must be removed.

- The BMP(s) being proposed to meet this element are:
- BMP C220: Storm Drain Inlet Protection
 - Other (Describe Method):
- Or
This element is not required for this project because:

Element #8 – Stabilize Channels and Outlets

Stabilize all temporary onsite conveyance channels. Provide stabilization to prevent erosion of outlets, adjacent stream banks, slopes, and downstream reaches at the outlets of conveyance systems.

- The BMP(s) being proposed to meet this element are:
- BMP C122: Nets and Blankets
 - BMP C202: Channel Lining
 - BMP C207: Check Dams
 - BMP C209: Outlet Protection
 - Other (Describe Method):
- Or
This element is not required for this project because: **No runoff will occur.**

Element #9 – Control Pollutants

Handle and dispose of all pollutants, including demolition debris and other solid wastes in a manner that does not cause contamination of the stormwater. Provide cover and containment for all chemicals, liquid products (including paint), petroleum products, and other materials. Handle all concrete and concrete waste appropriately. All discharges to the City sanitary sewer system require City approval, which may include a Special Approved Discharge (SAD) permit, see http://www.cityoftacoma.org/government/city_departments/environmentalservices/wastewater/wastewater_permits_and_manuals for additional information.

- The BMP(s) being proposed to meet this element are:
- BMP C151: Concrete Handling
 - BMP C152: Sawcutting and Surfacing Pollution Prevention
 - BMP C153: Material Delivery, Storage, and Containment
 - BMP C154: Concrete Washout Area
 - Other (Describe Method):
- Or
This element is not required for this project because:

Element #10 – Control Dewatering

Clean, non-turbid dewatering water, such as groundwater, can be discharged to the stormwater system provided the dewatering flow does not cause erosion or flooding of receiving waters. All other water shall be discharged to the City wastewater system.

All discharges to the City wastewater system require City approval, which may include a Special Approved Discharge (SAD) permit.

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

- BMP C203: Water Bars
- BMP C236: Vegetative Filtration
- Other (Describe Method):

Or

This element is not required for this project because: **No dewatering will be required.**

Element #11 – Maintain BMPs

Maintain and repair temporary erosion and sediment control BMPs as needed. Inspect all BMPs at least weekly and after every storm event.

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

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

- BMP C150: Materials on Hand
- BMP C160: Erosion and Sediment Control Lead
- Other (Describe Method):

Or

This element is not required for this project because:

Element #12 – Manage the Project

Phase development projects in order to prevent soil erosion and the transport of sediment from the project site during construction.

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

An Erosion Control Lead is required for all construction sites. The Erosion Control Lead is the party responsible for ensuring that the proposed erosion and sediment control BMPs are appropriate for the site and are functioning. They are also responsible for updating the SWPPP as necessary as site conditions warrant. They must be available 24 hours a day to ensure compliance.

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

- BMP C150: Materials on Hand
- BMP C160: Erosion and Sediment Control Lead
 - Name of ESC Lead:
 - Phone Number for ESC Lead:

- BMP C162: Scheduling
- Other (Describe Method):

Or

This element is not required for this project because: **Our project manager quit.**

Element #13 – Protect BMPs

Protect all permanent stormwater BMPs from sedimentation through installation and maintenance of erosion and sediment control BMPs on portions of the site that drain into the BMPs. Restore all BMPs to their fully functioning condition if they accumulate sediment during construction. Restoring the BMP shall include removal of all sediment. Keep heavy equipment off of infiltration surfaces.

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

- BMP C102: Buffer Zone
- BMP C103: High Visibility Fence
- BMP C200: Interceptor Dike and Swale
- BMP C201: Grass-Lined Channels
- BMP C207: Check Dams
- BMP C208: Triangular Silt Dike (TSD) (Geotextile-Encased Check Dam)
- BMP C231: Brush Barrier
- BMP C233: Silt Fence
- BMP C234: Vegetated Strip
- Other (Describe Method): [Click here to enter text.](#)

Or

- This element is not required for this project because: [Click here to enter text.](#)

Complete the following information regarding construction sequencing, phasing, and scheduling:

Construction Sequencing

The standard construction sequence is as follows:

- Mark clearing/grading limits.
- Schedule an inspection with the City to verify clearing/grading limits and TESC BMP placement prior to the start of any work on the site.
- Clear, grade, and fill site as outlined in the site plan while implementing and maintaining TESC BMPs at the same time.
- Install proposed site improvements (hard surface, landscaping, etc.).
- Schedule an inspection with the City for approval of permanent site stabilization protection and site grades.
- Remove TESC BMPs as permitted by the City inspector and repair permanent landscaping as necessary.
- Monitor and maintain permanent erosion protection (lawn/landscaping) until fully established.

List any changes from the standard construction sequence outlined above: [Click here to enter text.](#)

Construction Phasing

Construction phasing: If construction is going to occur in separate phases, describe: NA

Construction Schedule

Provide a proposed construction schedule (dates construction begins and ends and dates for any construction phasing).

Start Date: Oct 31, 2020

End Date: Feb 19, 2021

Wet Season Construction Activities: *Wet season occurs from October 1 to April 30.* Describe construction activities that will occur during this time period: None

NOTE: Additional erosion control measures beyond those shown may be required to manage site runoff.

Temporary Erosion and Sediment Control BMPs

See Plan Set, all BMPs are included on Plan Sheets.

Stormwater Site Plan and Construction Stormwater Pollution Prevention Plan Appendices

The following are potential appendices that may be required for your project. Only includes those items applicable to your project. Additional appendices may be required in addition to those typical appendices shown below.

Appendix A – Qualitative Analysis Map

- See Chapter 3 for additional information of what should be included on this map.

Appendix B – Completed Infeasibility Checklists

- See Chapter 5, Minimum Requirement #5 for additional information for what to include in this appendix.

Appendix C – Stormwater Facility Sizing

- Complete all relevant information in Appendix C.

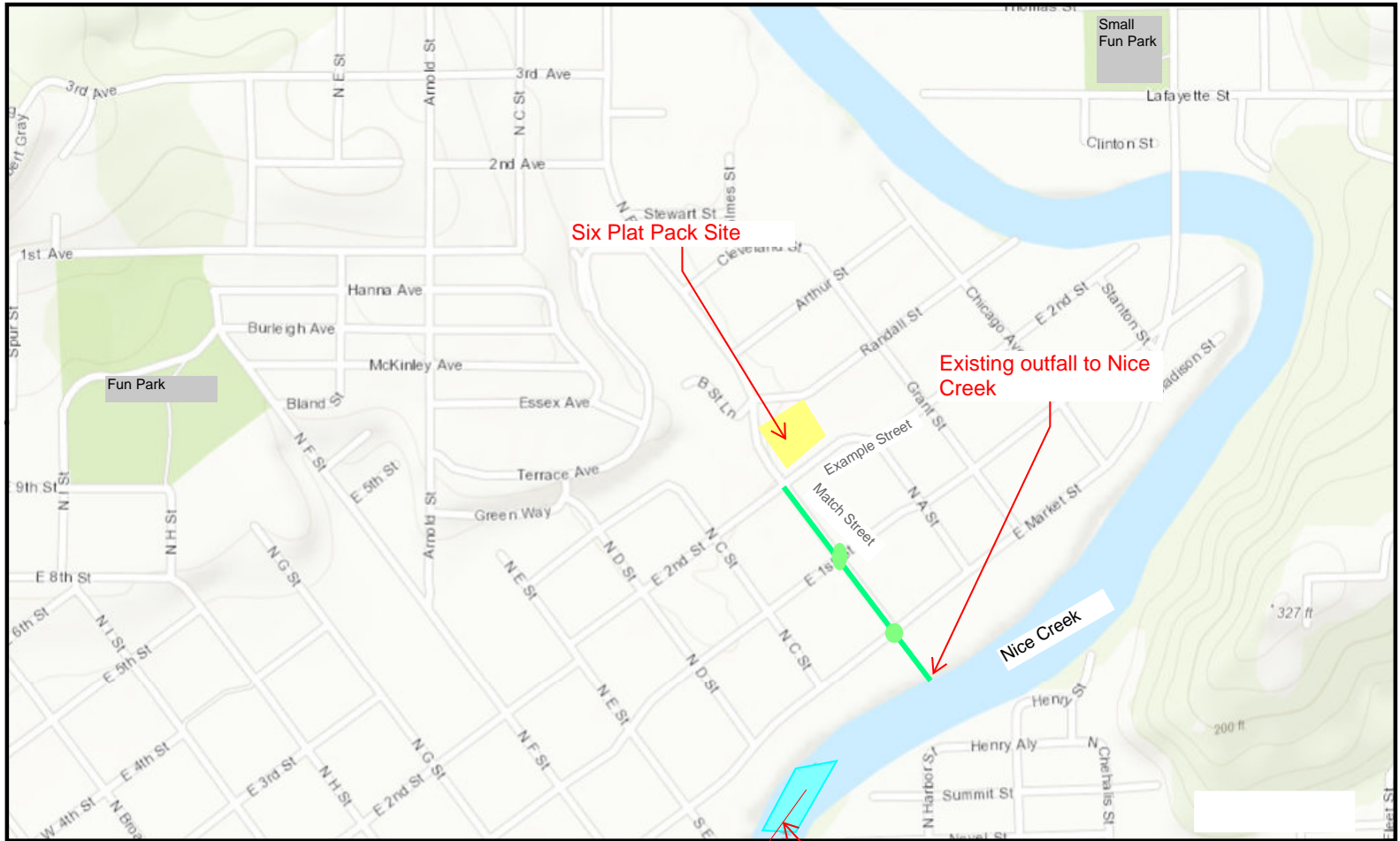
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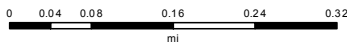
- If a permanent stormwater BMP is proposed for this project, an O&M Manual is required.

Appendix A – Qualitative Analysis Map

Qualitative Downstream Map - 6 Plat Pack



Map Date: 10/22/2019



Appendix B – Completed Infeasibility Checklists

Full dispersion will not be used as it cannot meet the full dispersion criteria from BMP T5.30 – Full Dispersion

Full Dispersion from Impervious Surfaces in Residential Projects

Impervious surfaces within residential projects may be "fully dispersed" if they are within a TDA that is less than 10% impervious. If the TDA has more than 10% impervious area, the design may still fully disperse up to 10% of the TDA's area. The impervious areas that are beyond the 10% cannot drain to the dispersion area, and are subject to the thresholds in [I-3.4.6 MR6, Runoff Treatment](#) and [I-3.4.7 MR7, Flow Control](#).

The lawn and landscaping areas associated with the impervious area being mitigated may be dispersed into the dispersion area. The lawn and landscaped area must comply with [BMP T5.13, Post-Construction Soil Quality and Depth](#).

The dispersion area must be preserved as forest or native vegetation.

The dispersion area shall have a minimum area 6.5 times the area of the impervious surface draining to it.

The flow path from the impervious surface through the area preserved as forest or native vegetation must be at least 100 feet in length, or 25 feet for sheet flow from lawn and landscaping areas associated with the impervious area being mitigated.

This is the infeasibility criteria for Permeable pavement on the Right of Way Road. From BMP T5.15

Where replacing existing impervious surfaces, unless the existing surface is a non-pollution generating surface over an outwash soil with a measured (initial) saturated hydraulic conductivity (K_{sat}) of four inches per hour or greater.

Appendix C – Stormwater Facility Sizing
BMP L602.a - Roof Downspout Infiltration Trench Sizing

Lot #	House footprint (sft)	Trench Area (ft)	Trench Depth (ft)	Soil Type		
1	1296	34 by 5.5	72			
2	850	40X 9	12			
3	811	38 by 6.5	36			
4	850	40 by 8	30			
5	811	44 x 7	30			
6	1296	32 x11	24			

The trench area is per WWHM sizing, see provided WWHM files.

The long term infiltration rate has been determined by the geotechnical engineer. See Soils Report Appendix D.

Here is the WWHM report for each of the infiltration trenches.

Appendix C – Stormwater Facility Sizing Stormfilter sizing

Per the 2017 GULD for Stormwater Management Stormfilter with ZPG Media at 1 gpm/sq ft media surface area.

Table 1. StormFilter Design Flow Rates per Cartridge

Effective Cartridge Height (inches)	12	18	27
Cartridge Flow Rate (gpm/cartridge)	5	7.5	11.3

From WWHM Water Quality flow Rate = 0.0542 cfs

Peak Flow Rate = 0.67 cfs

Use 18 inch cartridges, 7.5 gpm per cartridges. Then need

$(7.5 \text{ gpm}) / ((60 \text{ sec}) (7.481 \text{ gal})) = 0.0167 \text{ cfs per cartridge}$

$0.0542 \text{ cfs} / 0.0167 \text{ cfs/cart} = 3.24 \text{ cart} - \text{use } 4$

Note to plan reviewer's it is a great idea to attach the exact GULD in effect at the time of project design and approval because GULDs are revised and the old versions are not kept. That can make it difficult in the future if someone is trying to figure out if the device is still adequate or if more flow could go to it, etc.

Appendix D – Soils Report

Appendix E – BMP Operation and Maintenance Manual

At a minimum, include the following in the operation and maintenance manual along with a site plan showing the location of each permanent stormwater BMP:

Responsible Party Information

- Name of person or organization responsible for maintenance: Six Pack Plat HOA
- Phone Number of Responsible Party: 777-777-7777
- Address of Responsible Party: Lot 1 Six Pack Plat
- Email Address of Responsible Party: sixpackhoa@email.com

Operation and Maintenance Manual Location

- Indicate where the Operation and Maintenance manual will be kept. Note that it must be made available for inspection. Each homeowner will retain a copy of the O&M manual.

Facility Type	Facility Description	Estimated Operation and Maintenance Cost
Runoff Treatment	Stormfilter in street	Free – Jurisdiction will maintain.
Runoff Treatment	Permeable driveways	Free – no maintainanc
Flow control	Infiltration Trenches	2,000.00 per year

Maintenance Schedules

- Attach the maintenance schedules from SWMMWW for all facilities/stormwater components used on the site, or create maintenance schedules for the proposed facilities.
- Attach manufacturer's manuals if applicable.

Maintenance Activity Log

- Provide a sample maintenance activity log indicating emergency and routine actions to be taken. Attach to this document.

Table V-A.2: Maintenance Standards - Infiltration

Maintenance Component	Defect	Conditions When Maintenance Is Needed	Results Expected When Maintenance Is Performed
General	Trash & Debris	See Table V-A.1: Maintenance Standards - Detention Ponds	See Table V-A.1: Maintenance Standards - Detention Ponds
	Poisonous/Noxious Vegetation	See Table V-A.1: Maintenance Standards - Detention Ponds	See Table V-A.1: Maintenance Standards - Detention Ponds
	Contaminants and Pollution	See Table V-A.1: Maintenance Standards - Detention Ponds	See Table V-A.1: Maintenance Standards - Detention Ponds
	Rodent Holes	See Table V-A.1: Maintenance Standards - Detention Ponds	See Table V-A.1: Maintenance Standards - Detention Ponds
Storage Area	Sediment	Water ponding in infiltration pond after rainfall ceases and appropriate time allowed for infiltration. Treatment basins should infiltrate Water Quality Design Storm Volume within 48 hours, and empty within 24 hours after cessation of most rain events.	Sediment is removed and/or facility is cleaned so that infiltration system works according to design.

Table V-A.2: Maintenance Standards - Infiltration

Maintenance Component	Defect	Conditions When Maintenance Is Needed	Results Expected When Maintenance Is Performed
		(A percolation test pit or test of facility indicates facility is only working at 90% of its designed capabilities. Test every 2 to 5 years. If two inches or more sediment is present, remove).	
Filter Bags (if applicable)	Filled with Sediment and Debris	Sediment and debris fill bag more than 1/2 full.	Filter bag is replaced or system is redesigned.
Rock Filters	Sediment and Debris	By visual inspection, little or no water flows through filter during heavy rain storms.	Gravel in rock filter is replaced.
Side Slopes of Pond	Erosion	See Table V-A.1: Maintenance Standards - Detention Ponds	See Table V-A.1: Maintenance Standards - Detention Ponds
Emergency Overflow Spillway and Berms over 4 feet in height.	Tree Growth	See Table V-A.1: Maintenance Standards - Detention Ponds	See Table V-A.1: Maintenance Standards - Detention Ponds
	Piping	See Table V-A.1: Maintenance Standards - Detention Ponds	See Table V-A.1: Maintenance Standards - Detention Ponds

Table V-A.2: Maintenance Standards - Infiltration

Maintenance Component	Defect	Conditions When Maintenance Is Needed	Results Expected When Maintenance Is Performed
Emergency Overflow Spillway	Rock Missing	See Table V-A.1: Maintenance Standards - Detention Ponds	See Table V-A.1: Maintenance Standards - Detention Ponds
	Erosion	See Table V-A.1: Maintenance Standards - Detention Ponds	See Table V-A.1: Maintenance Standards - Detention Ponds
Pre-settling Ponds and Vaults	Facility or sump filled with Sediment and/or debris	6" or designed sediment trap depth of sediment.	Sediment is removed.