Stormwater Management Report

June 20, 2017

Village Community Services
Parking Lot Resurfacing

Phase 1 & 2

Prepared for:

Tami Wierman
Village Community Services
3210 Smokey Point Drive
Suite 200
Arlington, WA 98223
(360) 653-7752

Prepared by:

TerraVista NW LLC
Consulting Engineers

526 N West Ave, #18
Arlington, WA 98223

www.TerraVistaNW.com
(425) 422-0840

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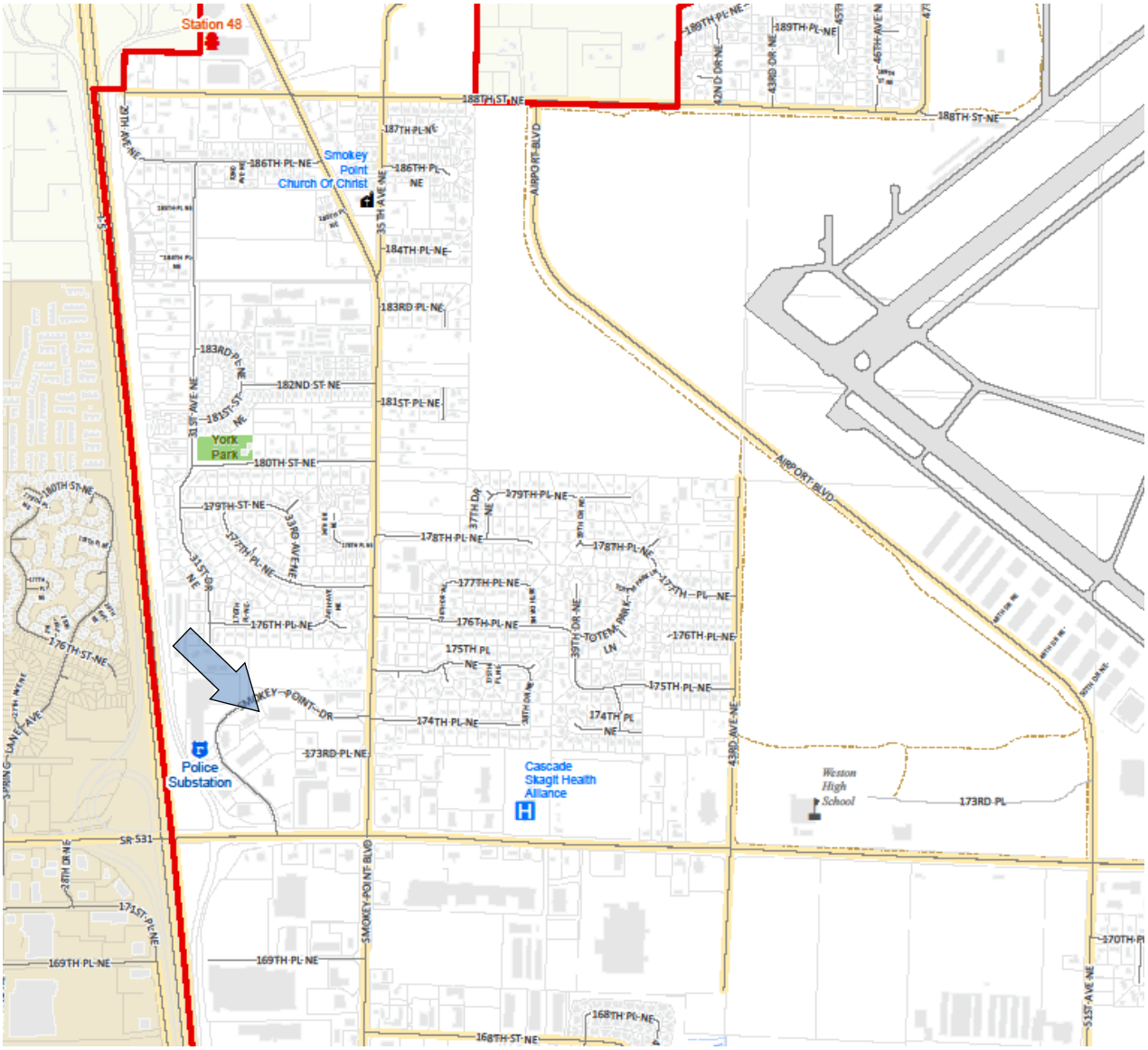
Project Overview

Site Location

Project is located at 3210 Smokey Point Drive, Arlington, WA 98223



Code Compliance

The project will comply with Arlington Design and Construction Standards, dated July 2008, and the Arlington Municipal Code (AMC). Arlington has adopted the 2012/14 Stormwater Management Manual for Western Washington (SWMMWW) as the Stormwater Guidelines.

Executive Summary

The project encompasses removal and replacement of the existing asphalt in the parking lot. The project is partially funded through a CDBG grant as well as other funding sources. Due to the stringent requirements of the CDBG grant, the project had to be separated into two phases, for funding tracking purposes. Each phase will be bid separately, however, the entire project is being permitted at the same time. The project will comply with Minimum Requirement 1-5, as the project is able to claim a "Pavement Maintenance" exception under DOE Volume I, Section 2.2.

The east parking lot currently drains to the adjacent parcel owned by the Stillaguamish Tribe. The catch basin located at the SW corner of the Tribe building does not function well. It is presumed that the infiltration system has been clogged with debris, and/or the vegetation over the infiltration system has impacted it through root intrusion. To provide a viable drainage path, Phase 2 of the project will install an infiltration system on the VCS parcel.

Existing Conditions

Description

The existing site is a fully developed site with a commercial building and adjacent parking lot. The site is comprised of two parcels.

Pervious / Impervious Area

Pervious Area……..…0.139 acres

Building…….....0.133 acres

Ph 1 Imp. Area……0.240 acres

Ph 2 Imp. Area……0.188 acres

TOTAL 0.700 acres

Soils

A soils report was not prepared for the site due to the maintenance nature of the work. However for reference, a soils report was prepared for the Community Transit transfer station very near the site. Per that report, soils are typically recessional outwash sand with secondary silt and gravel. The USGS classifies the soil as fine sandy loam material, which is consistent with the soil in the Smokey Point Area. The CT Transfer Station soils report identifies the design soil infiltration rate as 2 in/hr.

Developed Conditions

Description

Proposed improvements will include removal and replacement of the asphalt surfacing, as well as installing an infiltration system with Phase 2. Phase 1 drainage will utilize the existing storm drain system in the parking area.

Pervious / Impervious Area

Pervious Area……..…0.139 acres

Building…….....0.133 acres

Ph 1 Imp. Area……0.240 acres

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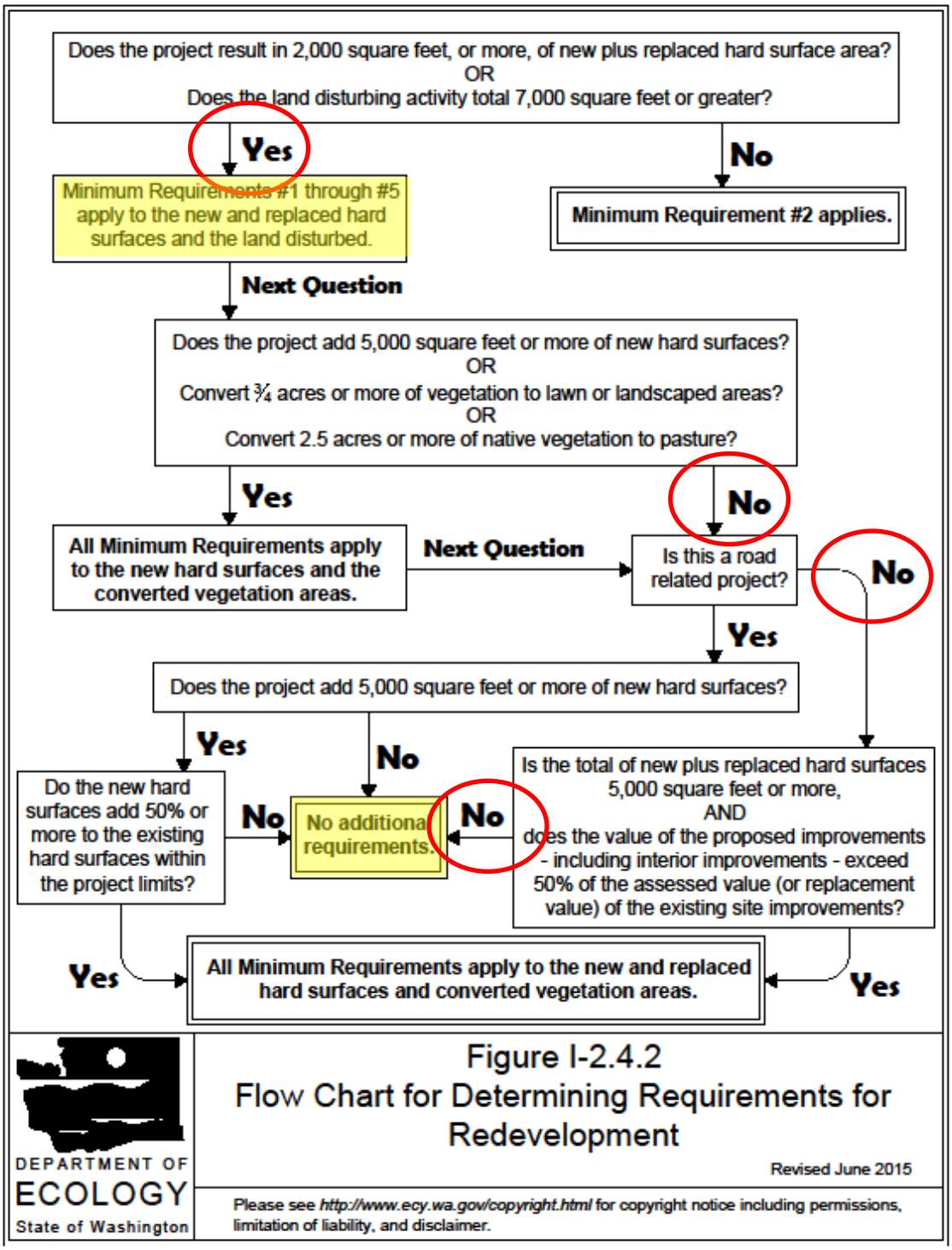
TOTAL 0.700 acres

Minimum Stormwater Management Requirements

Overview of Minimum Requirements

Minimum requirements 1-5 shall apply to the project.



1-Preparation of Stormwater Site Plans

Stormwater site plans were prepared in accordance with Volume I, Chapter 3 of the SWMMWW.

2-Construction Stormwater Pollution Prevention Plan (SWPPP)

A SWPPP narrative has been prepared and is included in the plan set.

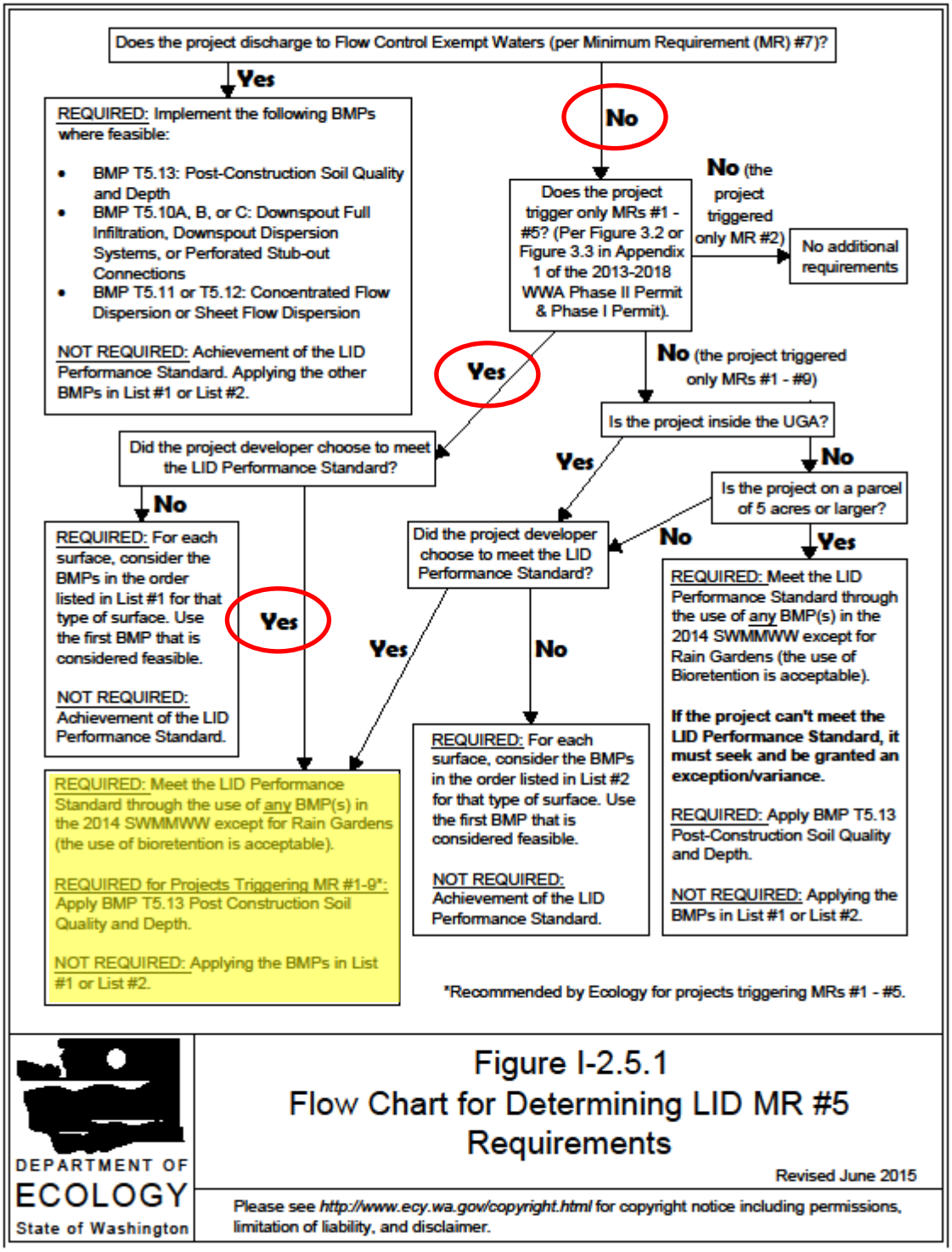
3-Source Control of Pollution

The project will not pose any source of pollution for the site. The site is not considered a high use site. The SWPPP provided will address the source control of pollution during the construction phase.

4-Preservation of Natural Drainage Systems and Outfalls

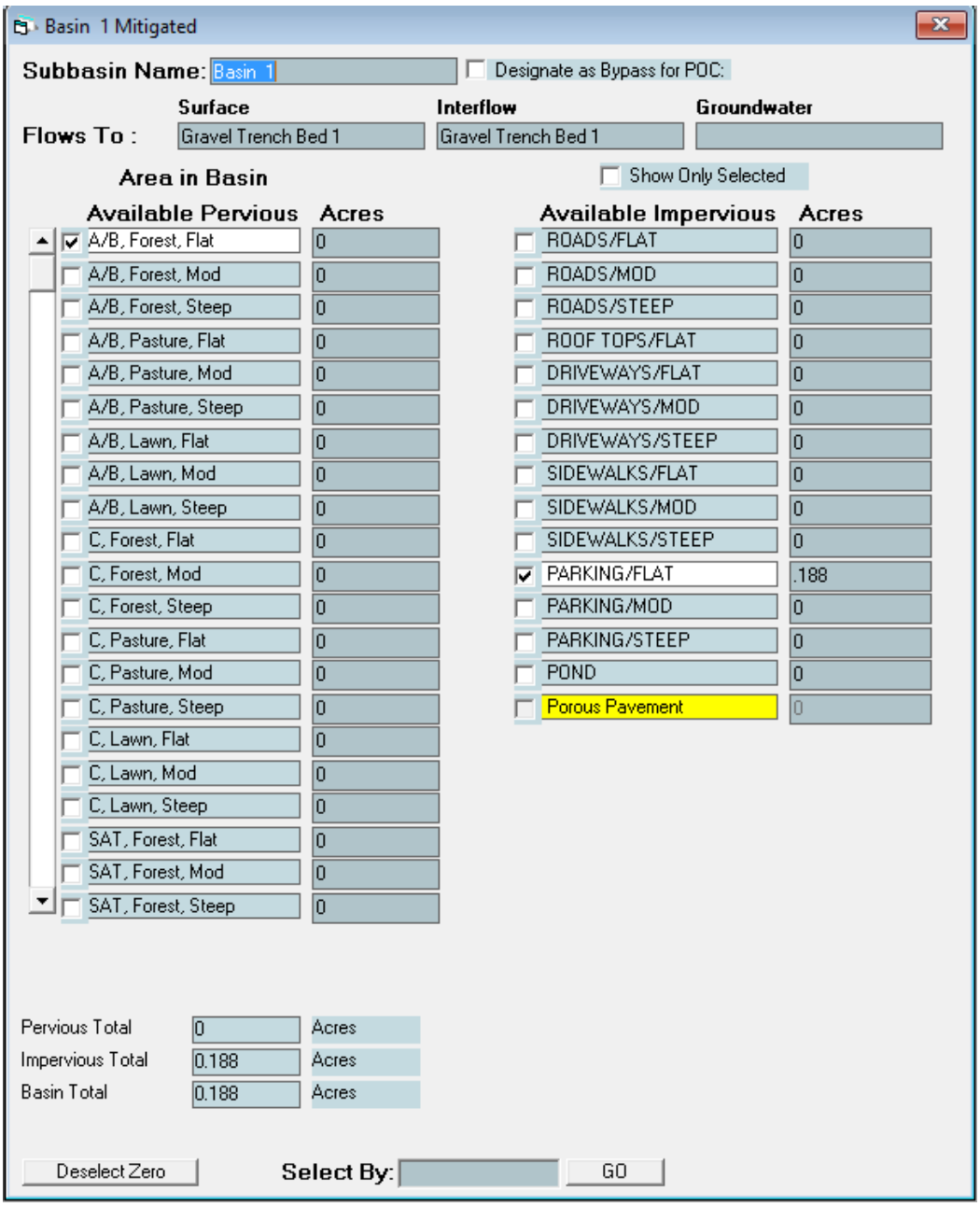
Existing onsite drainage flows to infiltration systems. Drainage will continue to flow to the onsite storm drain systems, therefore, preservation of natural drainage systems and outfall is being met.

5-Onsite Stormwater Management



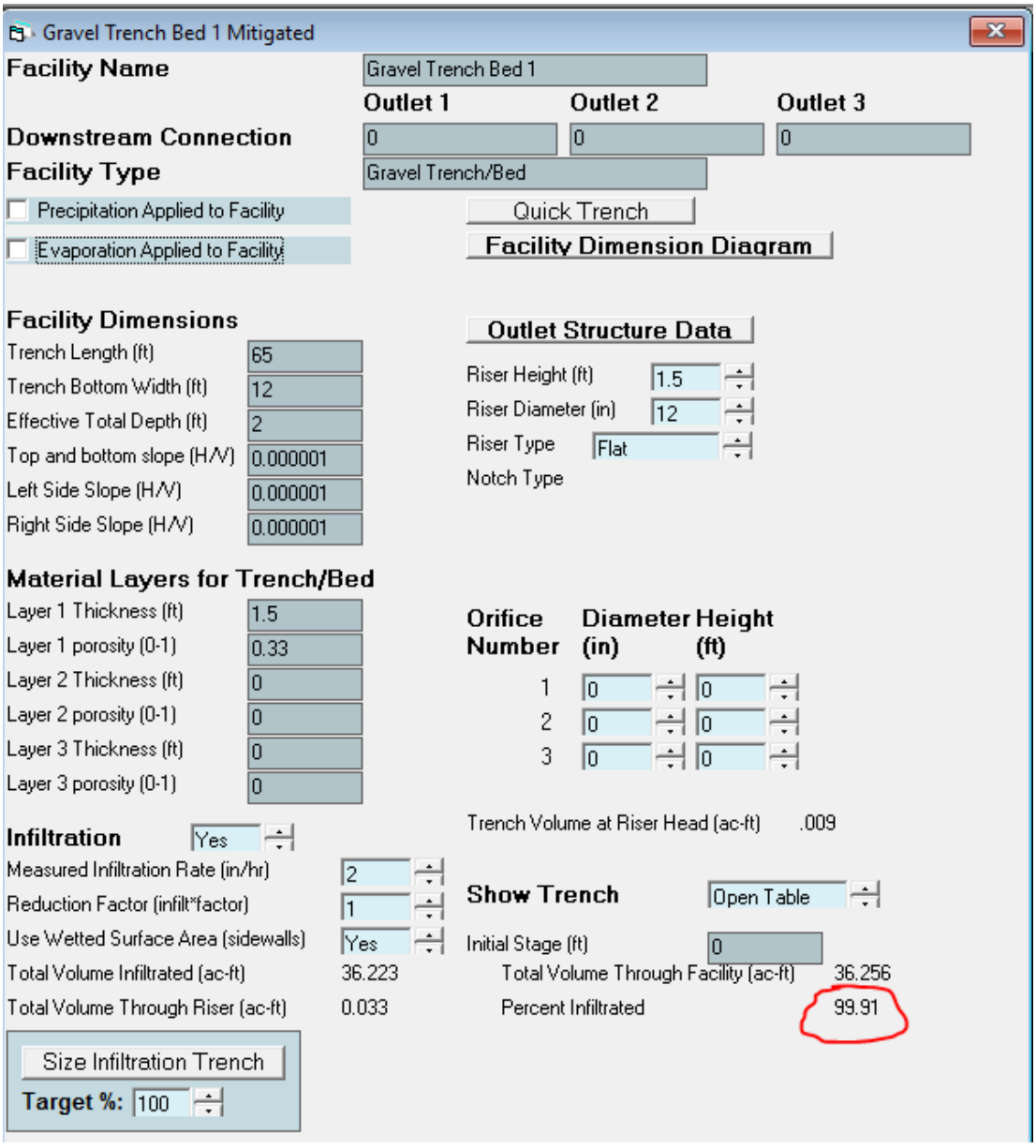
The project will infiltrate 100% of the stormwater, therefore the LID standard is being met. The Phase 1 Parking Lot will drain to the existing infiltration system, which infiltrates 100% of the stormwater. Due to the failure of the existing storm drain system for the Phase 2 lot, Phase 2 will utilize a newly constructed infiltration system with the following parameters.

The Phase 2 infiltration system was modeled using just the impervious area of the parking area. The facility is designed to infiltrate 100% of the stormwater, a predeveloped basin was not necessary for program input, as there will not be a compliance comparison with predeveloped flows.



The output screen indicates that 99.91% of the stormwater infiltrates, which is technically less than 100%. However, it is statistically insignificant. Additionally, the facility length would have to grow to a length of 100' to result in the WWHM2012 program registering 100% infiltration; which is an increase in 54% increase in facility size for only a 0.09% increase in infiltration. It is presumed to be a quirk of the WWHM program, and again statistically insignificant for the facility.

In the unlikely event that stormwater ponds at the inlet, it will simply be parking lot storage until the infiltration system catches up. No offsite flows would be anticipated nor would there be potential damage to structures.



Pretreatment for the infiltration system will include an oil/water separator to remove floatables, debris, and grit prior to discharge to the infiltration media.

6-Runoff Treatment

Not required

7-Flow Control

Not required

8-Wetland Protection

No wetlands are present on the site or within the adjacent downstream area.

9-Operation and Maintenance

Operation and maintenance procedures are included in Appendix A.

Appendix A

Operation and Maintenance

Maintenance Standards – Catch Basins

Maintenance Component	Defect	Conditions When Maintenance Is Needed	Results Expected When Maintenance Is Performed
General	Trash and Debris	Trash or debris which is located immediately in front of the catch basin opening or is blocking inletting capacity of the basin by more than 10%.	No Trash or debris located immediately in front of catch basin or on grate opening.
		Trash or debris (in the basin) that exceeds 60 percent of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case less than a minimum of six inches clearance from the debris surface to the invert of the lowest pipe.	No trash or debris in the catch basin.
		Trash or debris in any inlet or outlet pipe blocking more than 1/3 of its height.	Inlet and outlet pipes free of trash or debris.
		Dead animals or vegetation that could generate odors that could cause complaints or dangerous gases (e.g., methane).	No dead animals or vegetation present within the catch basin.
	Sediment	Sediment (in the basin) that exceeds 60 percent of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case less than a minimum of 6 inches clearance from the sediment surface to the invert of the lowest pipe.	No sediment in the catch basin

Maintenance Component	Defect	Conditions When Maintenance Is Needed	Results Expected When Maintenance Is Performed
	Structure Damage to Frame and/or Top Slab	Top slab has holes larger than 2 square inches or cracks wider than 1/4 inch (Intent is to make sure no material is running into basin).	Top slab is free of holes and cracks
		Frame not sitting flush on top slab, i.e., separation of more than 3/4 inch of the frame from the top slab. Frame not securely attached	Frame is sitting flush on the riser rings or top slab and firmly attached.
	Fractures or Cracks in Basin Walls/Bottom	Maintenance person judges that structure is unsound.	Basin replaced or repaired to design standards.
		Grout fillet has separated or cracked wider than 1/2 inch and longer than 1 foot at the joint of any inlet/outlet pipe or any evidence of soil particles entering catch basin through cracks.	Pipe is regrouted and secure at basin wall.
	Settlement/ Misalignment	If failure of basin has created a safety, function, or design problem.	Basin replaced or repaired to design standards.
	Vegetation	Vegetation growing across and blocking more than 10% of the basin opening.	No vegetation blocking opening to basin.
		Vegetation growing in inlet/outlet pipe joints that is more than six inches tall and less than six inches apart.	No vegetation or root growth present

Maintenance Component	Defect	Conditions When Maintenance Is Needed	Results Expected When Maintenance Is Performed
	Contamination and Pollution	See "Detention Ponds" (No. 1).	No pollution present.
Catch Basin Cover	Cover Not in Place	Cover is missing or only partially in place. Any open catch basin requires maintenance.	Catch basin cover is closed
	Locking Mechanism Not Working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts into frame have less than 1/2 inch of thread.	Mechanism opens with proper tools.
	Cover Difficult to Remove	One maintenance person cannot remove lid after applying normal lifting pressure. (Intent is keep cover from sealing off access to maintenance.)	Cover can be removed by one maintenance person.
Ladder	Latter Rungs Unsafe	Ladder is unsafe due to missing rungs, not securely attached to basin wall, misalignment, rust, cracks, or sharp edges.	Ladder meets design standards and allows maintenance person safe access.
Metal Grates (If Applicable)	Grate Opening Unsafe	Grate with opening wider than 7/8 inch.	Grate opening meets design standards.
	Trash and Debris	Trash and debris that is blocking more than 20% of grate surface inletting capacity.	Grate free of trash and debris.
	Damaged or Missing	Grate missing or broken member(s) of the grate.	Grate is in place and meets design standards.

Maintenance Standards – Catch Basin Inserts

Table V-4.5.2(18) Maintenance Standards - Catchbasin Inserts			
Maintenance Component	**Defect**	**Conditions When Maintenance Is Needed**	**Results Expected When Maintenance is Performed**
General	Sediment Accumulation	When sediment forms a cap over the insert media of the insert and/or unit.	No sediment cap on the insert media and its unit.
	Trash and Debris Accumulation	Trash and debris accumulates on insert unit creating a blockage/restriction.	Trash and debris removed from insert unit. Runoff freely flows into catch basin.
	Media Insert Not Removing Oil	Effluent water from media insert has a visible sheen.	Effluent water from media insert is free of oils and has no visible sheen.
	Media Insert Water Saturated	Catch basin insert is saturated with water and no longer has the capacity to absorb.	Remove and replace media insert.
	Media Insert-Oil Saturated	Media oil saturated due to petroleum spill that drains into catch basin.	Remove and replace media insert.
	Media Insert Use Beyond Normal Product Life	Media has been used beyond the typical average life of media insert product.	Remove and replace media at regular intervals, depending on insert product.

Maintenance Standards – Oil/Water Separator

Table V-4.5.2(16) Maintenance Standards - Baffle Oil/Water Separators (API Type)			
Maintenance Component	**Defect**	**Condition When Maintenance Is Needed**	**Results Expected When Maintenance is Performed**
General	Monitoring	Inspection of discharge water for obvious signs of poor water quality.	Effluent discharge from vault should be clear without thick visible sheen.
	Sediment Accumulation	Sediment depth in bottom of vault exceeds 6-inches in depth.	No sediment deposits on vault bottom that would impede flow through the vault and reduce separation efficiency.
	Trash and Debris Accumulation	Trash and debris accumulation in vault, or pipe inlet/outlet, floatables and non-floatables.	Trash and debris removed from vault, and inlet/outlet piping.
	Oil Accumulation	Oil accumulations that exceed 1-inch, at the surface of the water.	Extract oil from vault by vactoring. Disposal in accordance with state and local rules and regulations.
	Damaged Pipes	Inlet or outlet piping damaged or broken and in need of repair.	Pipe repaired or replaced.
	Access Cover Damaged/Not Working	Cover cannot be opened, corrosion/deformation of cover.	Cover repaired to proper working specifications or replaced.
	Vault Structure Damage - Includes Cracks in Walls Bottom, Damage to	See “Catch Basins” (No. 5)	Vault replaced or repairs made so that vault meets design specifications and is structurally sound.

	Frame and/or Top Slab	Cracks wider than 1/2-inch at the joint of any inlet/outlet pipe or evidence of soil particles entering through the cracks.	Vault repaired so that no cracks exist wider than 1/4-inch at the joint of the inlet/outlet pipe.
	Baffles	Baffles corroding, cracking, warping and/or showing signs of failure as determined by maintenance/inspection person	Baffles repaired or replaced to specifications.
	Access Ladder Damaged	Ladder is corroded or deteriorated, not functioning properly, not securely attached to structure wall, missing rungs, cracks, and misaligned.	Ladder replaced or repaired and meets specifications, and is safe to use as determined by inspection personnel.