BRADLEY HEIGHTS APARTMENTS

Operation and Maintenance Manual

FOR: Timberlane Partners
1816 11th Ave Unit C
Seattle, WA 98122

BY: Azure Green Consultants
409 East Pioneer
Puyallup, WA 98372
253.770.3144

DATE: April 25, 2025

JOB NO: 3227

Overview:

The project site is located on the south side of 27th Ave SE, east of the intersection with S Meridian. The site address is 202 27th Ave SE. Tax parcel number is 041903-6-006. Parcel area is 7.78 acres. The project is an apartment project with 8 apartment buildings and a recreation building.

Improvements for the project will include the parking lot, storm drainage facilities, sanitary sewer main extension, water main extension, construction of 8 multi-family buildings and a recreation building, and construction of curb, gutter, and sidewalk along the project frontage.

Private Improvements:

The on-site storm drainage improvements for this project will be privately owned and operated. The Bradley Heights property owner will be responsible for operation and maintenance of the on-site drainage systems. The on-site storm drainage facilities consist of:

- Conveyance System
- StormFilter vault
- Filterra – 2
- Detention/Wet Vaults - 3
- StormTank Detention Gallery
- Outlet control structure – 1 standalone, 3 within vaults

Public Improvements:

The frontage improvements in 27th Ave SE owned and operated by the City of Puyallup. The city will be responsible for operation and maintenance of the drainage systems in 27th Ave SE. The public storm drainage facilities consist of:

- Conveyance System
- StormFilter Catch Basin

Storm Drain – Catch Basins & Conveyance System

Surface runoff from the paved areas will be collected at low points at catch basins. The runoff will then be conveyed underground in pipes to underground detention systems for flow control then to the existing storm system in 27th Ave SE. The conveyance system should be inspected annually and after large (2 inches in 24 hours) storm events. The conveyance system should be inspected for sediment accumulation, blockage, and overflow. Additional considerations are listed in the maintenance checklists. Checklists #5 and #22 address the catch basins and conveyance system.

StormTank Detention Gallery

Runoff on the west end of the site will be routed to an underground StormTank detention gallery. The StormTank gallery consists of StormTank chambers set in a gravel bed. Runoff will flow into the system and will collect in the system when flow is restricted by the outlet control device. The system should be inspected annually and after major storm events to identify and repair any physical defects. Primary routine maintenance will be to ensure debris is not blocking flows at the inlet structure, to assess accumulated sediment level and determine if removal is necessary. Additional considerations are listed in the maintenance checklists. Checklist #3 addresses the StormTank detention system.

Detention/Wet Vaults

Three detention vaults will be used to control flow rates on the rest of the project site, with dead storage in the bottom to provide initial treatment of runoff. Runoff will flow into the system and will fill the vault when flow is restricted by the outlet control device. The system should be inspected annually and after major storm events to identify and repair any physical defects. Primary routine maintenance will be to ensure debris is not blocking flows at the inlet structure, to assess accumulated sediment level and determine if removal is necessary. Additional considerations are listed in the maintenance checklists. Checklists #3 and #12 address the detention vaults and wet vaults.

StormFilter Vault & StormFilter Catch Basin

Runoff from the detention vaults will be routed through a single StormFilter vault for additional treatment. Runoff in 27th Ave SE will be routed through a StormFilter Catch Basin. Runoff enters and exits the structure through pipes in the side or ends of the structure. Primary routine maintenance will be to ensure the filter cartridges are not clogged and floating debris does not build up in the structure. Additional considerations are listed in the maintenance checklists. Checklist #15 addresses the StormFilter Vault and Catch Basin.

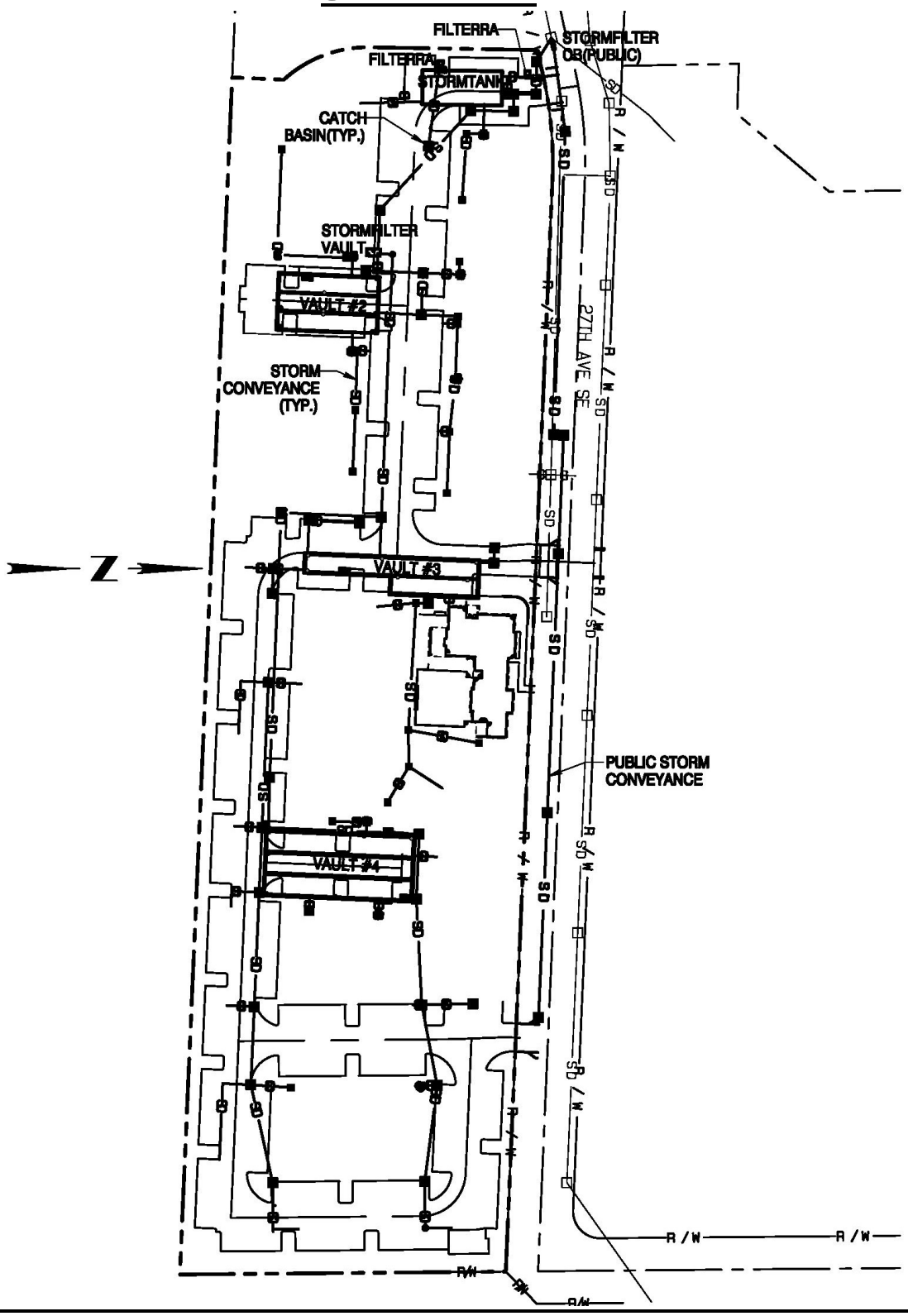
Filterra Vault

Two Filterra vaults will be used to provide enhanced treatment on the west end of the site. With the vault configuration, inflow and discharge is through the closed conveyance system. Runoff will flow over and through the treatment media. An internal bypass mechanism will direct flows greater than the treatment flow rate directly to the outlet. Checklist #26 addresses the Filterra vaults.

Outlet Constol Structure

An outlet riser pipe will be used to limit release rates from each of the detention systems. In the case of the StormTank system, a standalone storm structure will be used. For each of the three vaults, the outlet riser will be within the vault. Release rates will be limited through the use of an orifice in a plate at the bottom of the standpipe, and through either a notch cut into the standpipe, or additional orifices in downturned elbows on the standpipe. The standpipes will include valves that can be opened in order to drain the detention systems more quickly. Typical maintenance consists of ensuring the outlet mechanisms are not blocked with debris. Additional considerations are listed in the maintenance checklists. Checklist #4 addresses the control structure/flow restrictors.

SITE PLAN


FILTERRA
FILTERRA
STORMFILTER OB(PUBLIC)
STORMTANK
CATCH BASIN(TYP.)
STORMFILTER VAULT
VAULT #2
STORM CONVEYANCE (TYP.)
27TH AVE SE
VAULT #3
PUBLIC STORM CONVEYANCE
VAULT #4
N
R/W
SD

MAINTENANCE ACTIVITY LOG

Date: _____

Site Address: _____

Facility Inspected: _____

Reason for Inspection: ____ A =Annual (March or April preferred)
____ M =Monthly (see schedule)
____ S =after major storms (use 1-inch in 24 hours as a guideline) Problems Encountered (See

Maintenance Checklist):

Actions Taken (note as routine or emergency):

Inspection performed by: _____

Signature: _____

Annual Inspection Report

City of Puyallup – Stormwater BMP Facilities Inspection and Maintenance Log

Return Form to:
Stormwater Engineer/ City of Puyallup
333 South Meridian
Puyallup, WA 98371

Facility Name: _____

Address: _____

Begin Date: _____ End Date: _____

Date	BMP ID#	BMP facility Description	Inspected By	Cause for Inspection	Exceptions Noted	Notes / Actions Taken

Instructions:

Record all inspections and maintenance for all treatment BMP's on this form. Use additional log sheets and/or attach extended comments or documentation as necessary. Submit a copy of the completed log with the Annual Independent Inspector Report to the City, and start a new log at that time. Checklists provided should be used prior to filling out this form. If you have any questions on how to complete your inspection, please contact City staff.

BMP ID #- always use ID# from the Operation and Maintenance Manual.
Inspected by- Note all Inspections and maintenance on this form, including the required independent annual inspection.
Cause for Inspection- Note if the inspection is routine, pre-rainy season, post storm, annual, or in response to a noted problem or complaint.
Exceptions Noted- Note any condition that requires correction or indicates a need for maintenance.
Notes / Actions Taken- Describe any maintenance done and need for follow up.

#3 – Closed Detention Systems (Tanks/Vaults)

Drainage System Feature	Defect or Problem	Condition When Maintenance Is Needed	Results Expected When Maintenance Is Performed
Storage Area	Plugged Air Vents	One-half of the cross-section of a vent is blocked at any point or the vent is damaged.	Vents open and functioning. Remove blockage or replace air vent if damaged.
Storage Area	Debris and Sediment	Accumulated sediment depth exceeds 10 percent of the diameter of the storage area for one-half length of storage vault or any point depth exceeds 15 percent of diameter.	All sediment and debris removed from storage area.
Storage Area	Joints Between Tank/Pipe Section	Any openings or voids allowing material to be transported into facility. (Will require engineering analysis to determine structural stability.)	All joint between tank/pipe sections are sealed.
Storage Area	Tank Pipe Bent Out of Shape	Any part of tank/pipe is bent out of shape more than 10 percent of its design shape. (Review required by engineer to determine structural stability.)	Tank/pipe repaired or replaced to design.
Storage Area	Vault Structure Includes Cracks in Wall, Bottom, Damage to Frame and/or Top Slab	Cracks wider than one-half inch and any evidence of soil particles entering the structure through the cracks, or maintenance/inspection personnel determines that the vault is not structurally sound.	Vault replaced or repaired to design specifications and is structurally sound.
Storage Area	Vault Structure Includes Cracks in Wall, Bottom, Damage to Frame and/or Top Slab	Cracks wider than one-half inch at the joint of any inlet/outlet pipe or any evidence of soil particles entering the vault through the walls.	No cracks more than one-fourth inch wide at the joint of the inlet/outlet pipe. No water or soil entering vault through joints or walls.
Crest Gauge	Crest Gauge Missing/ Broken	Crest gauge is not functioning properly, has been vandalized, or is missing.	Crest gauge present and functioning. *Repair/replace crest gauge if missing or broken.*
Manhole	Cover Not in Place	Cover is missing or only partially in place. Any open manhole requires maintenance.	Manhole access cover/ lid is in place and secure.
Manhole	Locking Mechanism Not Working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts into frame have less than one-half inch of thread (may not apply to self-locking lids).	Mechanism opens with proper tools.

#3 – Closed Detention Systems (Tanks/Vaults)

Drainage System Feature	Defect or Problem	Condition When Maintenance Is Needed	Results Expected When Maintenance Is Performed
Manhole	Cover Difficult to Remove	One maintenance person cannot remove lid after applying normal lifting pressure. Intent is to keep cover from sealing off access to maintenance.	Cover can be removed and reinstalled by one maintenance person.
Manhole	Ladder Rungs Unsafe	Ladder is unsafe due to missing rungs, misalignment, not securely attached to structure wall, rust, or cracks.	Ladder meets design standards. Allows maintenance person safe access.

If you are unsure whether a problem exists, contact a professional engineer.

Tanks and vaults are a confined space. Visual inspections should be performed aboveground. If entry is required, it should be performed by qualified personnel.

#4 – Control Structure/Flow Restrictor

Drainage System Feature	Defect or Problem	Condition When Maintenance Is Needed	Results Expected When Maintenance Is Performed
General	Trash and Debris (Includes Sediment)	Material exceeds 25 percent of sump depth or 1 foot below orifice plate.	No trash and debris blocking or potentially blocking control structure orifice.
General	Structural Damage	Structure is not securely attached to manhole wall.	Structure securely attached to wall and outlet pipe.
General	Structural Damage	Structure is not in upright position (allow up to 10 percent from plumb).	Structure in correct position.
General	Structural Damage	Connections to outlet pipe are not watertight and show signs of rust.	Connections to outlet pipe are water tight; structure repaired or replaced and works as designed.
General	Structural Damage	Any holes–other than designed holes–in the structure.	Structure has no holes other than designed holes.
Cleanout Gate	Damaged or Missing	Cleanout gate is not watertight or is missing.	Gate is watertight and works as designed.
Cleanout Gate	Damaged or Missing	Gate cannot be moved up and down by one maintenance person.	Gate moves up and down easily and is watertight.
Cleanout Gate	Damaged or Missing	Chain/rod leading to gate is missing or damaged.	Chain is in place and works as designed.
Cleanout Gate	Damaged or Missing	Gate is rusted over 50 percent of its surface area.	Gate is repaired or replaced to meet design standards.
Orifice Plate	Damaged or Missing	Control device is not working properly due to missing, out of place, or bent orifice plate.	Plate is in place and works as designed.
Orifice Plate	Obstructions	Any trash, debris, sediment, or vegetation blocking the plate.	Plate is free of all obstructions and works as designed.
Overflow Pipe	Obstructions	Any trash or debris blocking (or having the potential of blocking) the overflow pipe.	Pipe is free of all obstructions and works as designed.
Manhole	Cover Not in Place	Cover is missing or only partially in place. Any open manhole requires maintenance.	Manhole access cover/ lid is in place and secure.
Manhole	Locking Mechanism Not Working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts into frame have less than one-half inch of thread (may not apply to self-locking lids).	Mechanism opens with proper tools.
Manhole	Cover Difficult to Remove	One maintenance person cannot remove lid after applying normal lifting pressure. Intent is to keep cover from sealing off access to maintenance.	Cover can be removed and reinstalled by one maintenance person.

#4 – Control Structure/Flow Restrictor

Drainage System Feature	Defect or Problem	Condition When Maintenance Is Needed	Results Expected When Maintenance Is Performed
Manhole	Ladder Rungs Unsafe	Ladder is unsafe due to missing rungs, misalignment, not securely attached to structure wall, rust, or cracks.	Ladder meets design standards. Allows maintenance person safe access.

If you are unsure whether a problem exists, contact a professional engineer.

Control structures are usually considered a confined space. Visual inspections should be performed aboveground. If entry is required, it should be performed by qualified personnel.

#5 – Catch Basins

Drainage System Feature	Defect or Problem	Condition When Maintenance Is Needed	Results Expected When Maintenance Is Performed
General	"Dump no pollutants" (or similar) stencil or stamp not visible	Stencil or stamp should be visible and easily read.	Warning signs (e.g., "Dump No Waste-Drains to Stream" or "Only rain down the drain"/ "Puget Sound starts here") painted or embossed on or adjacent to all storm drain inlets.
General	Trash and Debris	Trash or debris which is located immediately in front of the catch basin opening or is blocking inlet capacity by more than 10 percent.	No trash or debris located immediately in front of catch basin or on grate opening.
General	Trash and Debris	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 6 inches clearance from the debris surface to the invert of the lowest pipe.	No trash or debris in the catch basin.
General	Trash and Debris	Trash or debris in any inlet or outlet pipe blocking more than one-third of its height.	Inlet and outlet pipes free of trash or debris.
General	Trash and 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.
General	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.
General	Structure Damage to Frame and/or Top Slab	Top slab has holes larger than 2 square inches or cracks wider than one-fourth inch.	No holes and cracks in the top slab allowing material to run into the basin.
General	Structure Damage to Frame and/or Top Slab	Frame not sitting flush on top slab, i.e., separation of more than three-fourth 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.
General	Fractures or Cracks in Basin Walls/ Bottom	Maintenance person judges that structure is unsound.	Basin replaced or repaired to design standards.

#5 – Catch Basins

Drainage System Feature	Defect or Problem	Condition When Maintenance Is Needed	Results Expected When Maintenance Is Performed
General	Fractures or Cracks in Basin Walls/ Bottom	Grout fillet has separated or cracked wider than one-half-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.
General	Settlement/ Misalignment	If failure of basin has created a safety, function, or design problem.	Basin replaced or repaired to design standards.
General	Vegetation	Vegetation growing across and blocking more than 10 percent of the basin opening.	No vegetation blocking opening to basin.
General	Vegetation	Vegetation growing in inlet/outlet pipe joints that is more than 6 inches tall and less than 6 inches apart.	No vegetation or root growth present.
General	Contamination and Pollution	Any evidence of oil, gasoline, contaminants or other pollutants.	No contaminants or pollutants present. *(Coordinate removal/cleanup with Pierce County Surface Water Management 253-798-2725 and/or Dept. of Ecology Spill Response 800-424-8802.)*
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 in place and secured.
Catch Basin Cover	Locking Mechanism Not Working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts into frame have less than one-half-inch of thread.	Mechanism opens with proper tools.
Catch Basin Cover	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	Ladder 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.
Grates	Grate Opening Unsafe	Grate with opening wider than seven-eighths of an inch.	Grate opening meets design standards.
Grates	Trash and Debris	Trash and debris that is blocking more than 20 percent of grate surface inletting capacity.	Grate free of trash and debris.
Grates	Damaged or Missing	Grate missing or broken member(s) of the grate.	Grate is in place and meets design standards.

If you are unsure whether a problem exists, contact a professional engineer.

#12 – Wet Vaults

Drainage System Feature	Problem	Conditions to Check For	Results Expected When Maintenance is Performed
General	Trash/Debris Accumulation	Trash and debris accumulated in vault, pipe or inlet/outlet (includes floatables and non-floatables).	No trash or debris present. Any trash and debris removed from vault.
General	Sediment Accumulation in Vault	Sediment accumulation in vault bottom exceeds the depth of the sediment zone plus 6 inches.	No sediment in vault. *(If sediment contamination is a potential problem, sediment should be tested regularly to determine leaching potential prior to disposal.)*
General	Damaged Pipes	Inlet/outlet piping damaged or broken and in need of repair.	Pipe repaired and/or replaced.
General	Access Cover Damaged/Not Working	Cover cannot be opened or removed, especially by one person.	Pipe repaired or replaced to proper working specifications.
General	Ventilation	Ventilation area blocked or plugged.	Blocking material removed or cleared from ventilation area. A specified percentage of the vault surface area must provide ventilation to the vault interior (see design specifications).
Vault Structure	Damage – Includes Cracks in Walls Bottom, Damage to Frame and/or Top Slab	Maintenance/inspection personnel determine that the vault is not structurally sound.	Vault replaced or repairs made so that vault meets design specifications and is structurally sound.
Vault Structure	Damage – Includes Cracks in Walls Bottom, Damage to Frame and/or Top Slab	Cracks wider than one-half-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 one-fourth inch at the joint of the inlet/outlet pipe.
Vault Structure	Baffles	Baffles corroding, cracking, warping and/or showing signs of failure as determined by maintenance/inspection staff.	Baffles repaired or replaced to specifications.
Access Ladder	Damage	Ladder is corroded or deteriorated, not functioning properly, not attached to structure wall, missing rungs, has cracks and/or misaligned. Confined space warning sign missing.	Ladder replaced or repaired to specifications, and is safe to use as determined by inspection personnel. Replace sign warning of confined space entry requirements.

If you are unsure whether a problem exists, contact a professional engineer.

A vault is a confined space. Visual inspections should be performed aboveground. If entry is required, it should be performed by qualified personnel.

#15 – Manufactured Media Filters

Drainage System Feature	Defect or Problem	Condition When Maintenance Is Needed	Results Expected When Maintenance Is Performed
Media filter vault	Sediment Accumulation on Top of Filter Cartridges	Sediment accumulation exceeds 0.25 inches on top of cartridges.	No sediment deposits on top of cartridges. Sediment on cartridges likely indicates that cartridges are plugged and require maintenance.
Media filter vault	Sediment Accumulation in Vault	Sediment accumulation in vault exceeds 6 inches. Look for other indicators of clogged cartridges or overflow.	No sediment accumulation in vault. *Sediment in vault should be removed. Cartridges should be checked and replaced or serviced as needed.*
Media filter vault	Trash and Floatable Debris Accumulation	Trash and floatable debris accumulation in vault.	No trash or other floatable debris in filter vault.
Media filter vault	Filter Cartridges Submerged	Filter vault does not drain within 24 hours following storm. Look for evidence of submergence due to backwater or excessive hydrocarbon loading.	Filter media checked and replaced if needed. *If cartridges are plugged with oil additional treatment or source control BMP may be needed.*
Forebay	Sediment Accumulation	Sediment accumulation exceeds 6 inches or one-third of the available sump.	Sediment accumulation less than 6 inches.
Forebay	Trash and Floatable Debris Accumulation	Trash and/or floatable debris accumulation.	No trash or other floatable debris accumulation in forebay. Trash and/or floatable debris should be removed during inspections. *Significant oil accumulation may indicate the need for additional treatment or source control.*
Underdrain Pipes/ Cleanouts	Sediment in Underdrain Pipes/ Cleanouts	Accumulated sediment that exceeds 20 percent of the diameter.	No sediment or debris in underdrain pipes or cleanouts. Sediment and debris removed.
Below ground vault	Access cover Damaged/ Not working	One maintenance person cannot remove lid after applying 80 pounds of lift, corrosion of deformation of cover.	Cover repaired to proper working specifications or replaced.
Below ground vault	Damaged Pipes	Any part of the pipes are crushed or damaged due to corrosion and/or settlement.	Pipe repaired or replaced.
Below ground vault	Vault Structure Has Cracks in Wall, Bottom, and Damage to Frame and/or Top Slab.	Cracks wider than 0.5 inch or evidence of soil particles entering the structure through the cracks, or maintenance/inspection personnel determine that the vault is not structurally sound.	Vault repaired or replaced so that vaults meets design specifications and is structurally sound.

#15 – Manufactured Media Filters

Drainage System Feature	Defect or Problem	Condition When Maintenance Is Needed	Results Expected When Maintenance Is Performed
Below ground vault	Vault Structure has Cracks in Wall, Bottom, and Damage to Frame and/ or Top Slab.	Cracks wider than 0.5 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 0.25 inch at the joint of inlet/outlet pipe.
Below ground vault	Baffles	Baffles corroding, cracking, warping, and/or showing signs of failure as determined by maintenance/inspection person.	Baffles repaired or replaced to design specifications.
Below ground vault	Ladder Rungs Unsafe	Maintenance person judges that ladder is unsafe due to missing rungs, misalignment, rust, or cracks. Ladder must be fixed or secured immediately.	Ladder meets design standards and allows maintenance persons safe access.
Below Ground Cartridge Type	Media	Drawdown of water through the media takes longer than 1 hour, and/or overflow occurs frequently.	Media cartridges replaced.
Below Ground Cartridge Type	Short Circuiting	Flows do not properly enter filter cartridges.	Filter cartridges replaced.

Also check Department of Ecology website and manufacturer guidelines for updates to O&M requirements.

If you are unsure whether a problem exists, contact a professional engineer.

A vault is a confined space. Visual inspections should be performed aboveground. If entry is required, it should be performed by qualified personnel.

#22 – Conveyance Systems (Pipes and Ditches)

Drainage System Feature	Defect or Problem	Condition When Maintenance Is Needed	Results Expected When Maintenance Is Performed
Pipes	Sediment & Debris	Accumulated sediment that exceeds 20 percent of the diameter of the pipe.	Pipe cleaned of all sediment and debris.
Pipes	Vegetation	Vegetation that reduces free movement of water though pipes.	Vegetation does not impede free movement of water through pipes. *Prohibit use of sand and sealant application and protect from construction runoff.*
Pipes	Damaged (Rusted, Bent or Crushed)	Protective coating is damaged: rust is causing more than 50 percent deterioration to any part of pipe.	Pipe repaired or replaced.
Pipes	Damaged (Rusted, Bent or Crushed)	Any dent that significantly impedes flow (i.e. decreases the cross section area of pipe by more than 20 percent).	Pipe repaired or replaced.
Pipes	Damaged (Rusted, Bent or Crushed)	Pipe has major cracks or tears allowing groundwater leakage.	Pipe repaired or replaced.
Open Ditches	Trash & Debris	Dumping of yard wastes such as grass clippings and branches. Unsightly accumulation of non-degradable materials such as glass, plastic, metal, foam, and coated paper.	No trash or debris present. Trash and debris removed and disposed of as prescribed by the County.
Open Ditches	Sediment Buildup	Accumulated sediment that exceeds 20 percent of the design depth.	Ditch cleaned of all sediment and debris so that it matches design.
Open Ditches	Vegetation	Vegetation (e.g. weedy shrubs or saplings) that reduces free movements of water through ditches.	Water flows freely though ditches. Grassy vegetation should be left alone.
Open Ditches	Erosion Damage to Slopes	Erosion damage over 2 inches deep where cause of damage is still present or where there is potential for continued erosion.	No erosion damage present. Slopes stabilized using appropriate erosion control measure(s); e.g., rock reinforcement, planting of grass, compaction.
Open Ditches	Erosion Damage to Slopes	Any erosion observed on a compacted berm embankment.	*If erosion is occurring on compacted berms a professional engineer should be consulted to resolve source of erosion.*
Open Ditches	Rock Lining Out of Place or Missing (If Applicable)	Native soil is exposed beneath the rock lining.	Rocks replaced to design standards.

If you are unsure whether a problem exists, contact a professional engineer.

#26 – Filterra

Drainage System Feature	Defect or Problem	Condition When Maintenance Is Needed	Results Expected When Maintenance Is Performed
Inlet	Excessive Sediment or Trash Accumulation	Accumulated sediments or trash impair free flow of water into Filterra system.	Inlet free of obstructions and allows free distributed flow of water into Filterra system. Sediments and/or trash removed.
Mulch Cover	Trash and Floatable Debris Accumulation	Excessive trash and/or debris accumulation.	Minimal trash or other debris on mulch cover. Trash and debris removed and mulch cover raked level.
Mulch Cover	Ponding of Water on Mulch Cover	Ponding in unit could be indicative of clogging due to excessive fine sediment accumulation or spill of petroleum oils.	Stormwater drains freely and evenly through mulch cover. *Recommend contact manufacturer and replace mulch or soil if necessary.*
Vegetation	Plants not Growing or in Poor Condition	Soil/ mulch too wet, evidence of spill. Incorrect plant selection. Pest infestation. Vandalism to plants.	Plants healthy and pest free. *Contact manufacturer for advice.*
Vegetation	Excessive Plant Growth	Excessive plant growth inhibits facility function or becomes a hazard for pedestrian and vehicular circulation and safety.	Plants trimmed/pruned in accordance with manufacturer's recommendations to maintain appropriate plant density and aesthetics. Appropriate plants are present.
Structure	Structure has Cracks in Wall, Bottom, and Damage to Frame and/or Top Slab	Cracks wider than 0.5 inch or evidence of soil particles entering the structure through the cracks, or maintenance/inspection personnel determine that the structure is not structurally sound.	Structure sealed and structurally sound.
Structure	Structure has Cracks at the Joint of any Inlet/ Outlet Pipe	Cracks wider than 0.5 inch at the joint of any inlet/outlet pipe or evidence of soil particles entering through the cracks.	Structure repaired so that no cracks exist wider than 0.25 inch at the joint of inlet/outlet pipe.

Designers must also review the most current manufacturer guidelines for any updates or additions to the following O&M requirements.

If you are unsure whether a problem exists, contact a professional engineer or the manufacturer's representative.