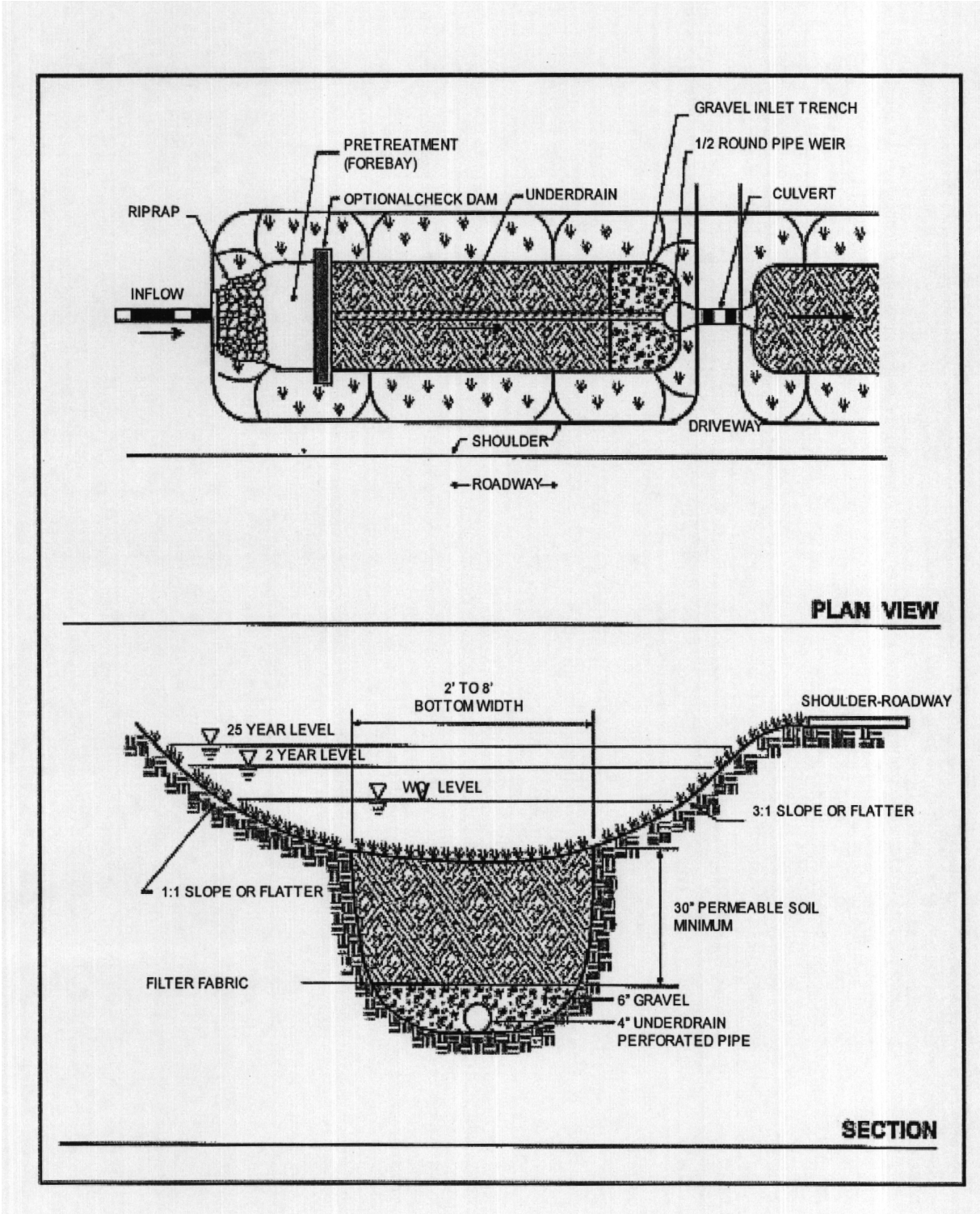
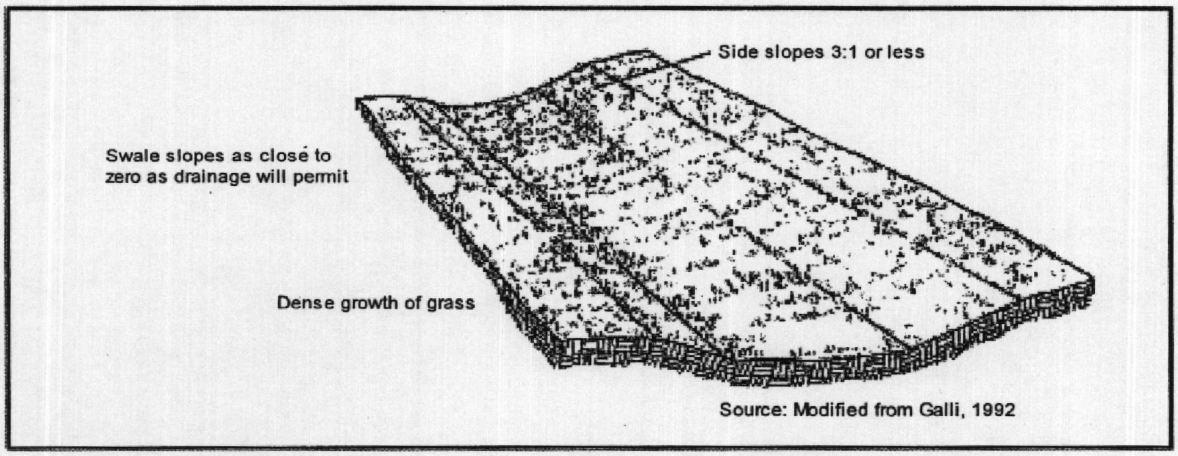
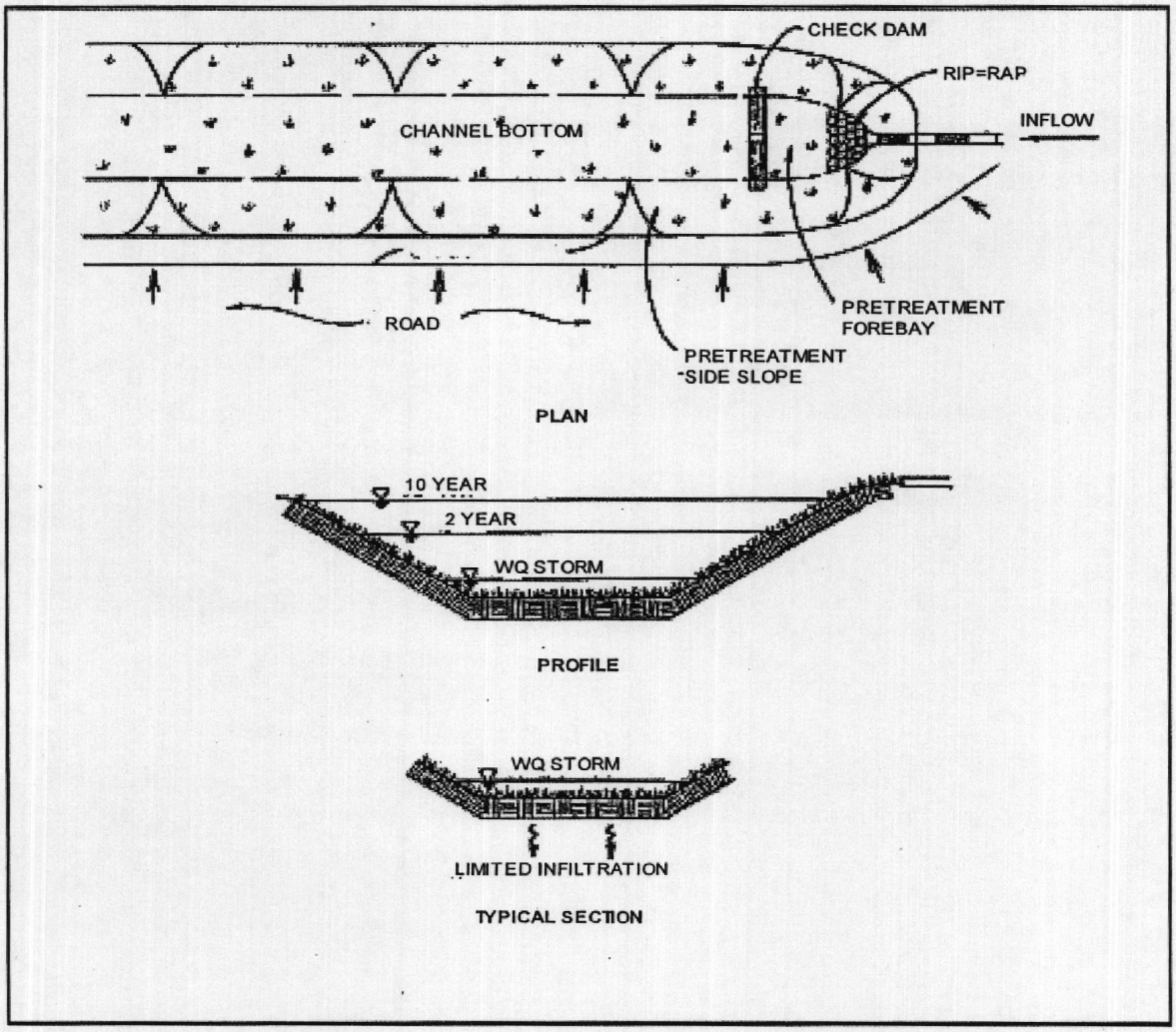


Schematic of Dry Swale
(Source: Center for Watershed Protection, modified)

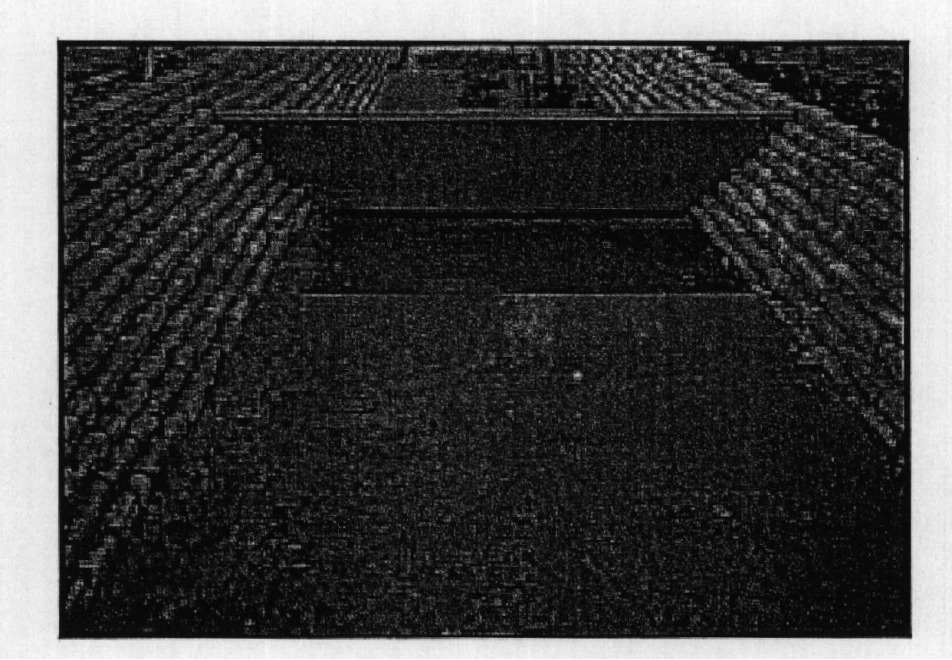




Schematic of Grass Channel

SAND FILTERS

QUICK REFERENCE



Description: Multi-chamber structure consisting of a pretreatment chamber, a sand bed as its primary filter media, and an underdrain collection system - designed to treat storm water run-off through filtration.

Site Feasibility:

Drainage Area:	Maximum 2-10 acres
Residential Subdivision Use:	No
High Density/Ultra-Urban:	Yes

Design Criteria: Pretreatment forebay/chamber required.
Requires 2 to 6 feet of head.
Sand filter media with underdrain system.

Advantages: Good for highly impervious areas.
Good retrofit capability.

Disadvantages: High maintenance burden.
Not recommended for areas with high sediment content in run-off.
Relatively costly.
Possible odor problems.

Maintenance: Inspect for clogging.
Remove sediment from forebay/chamber.
Replace sand filter media as needed.

GENERAL

Description

Sand filters are structural storm water controls that capture and temporarily store storm water run-off and pass it through a filter bed of sand. Most sand filter systems consist of two-chamber structures. The first chamber is a sediment forebay or chamber, which removes floatables and heavy sediments. The second is the filtration chamber, which removes additional pollutants by filtering the run-off through a sand bed. The filtered run-off is collected and returned to the conveyance system by way of an underdrain system.

Sand filters are typically designed as off-line systems. Storm water pollutants are removed through a combination of gravitational settling, filtration and adsorption. Surface sand filters with a grass cover have additional opportunities for bacterial decomposition as well as vegetation uptake of pollutants, particularly nutrients. Sand filter systems are designed for intermittent flow and must be allowed to drain and reaerate between rainfall events. They should not be used on sites with a continuous flow from groundwater, sump pumps, or other sources.

Because they have few site constraints besides head requirements, sand filters can be used on development sites where the use of other structural controls may be precluded. However, sand filter systems can be relatively expensive to construct and install.

Variations

- Surface sand filter - a ground-level open-air structure that consists of a pretreatment sediment forebay and a filter bed chamber. This system can treat drainage areas up to 10 acres in size and is typically located off-line. Surface sand filters can be designed as an excavation with earthen embankments or as a concrete or block structure.
- Perimeter sand filter - an enclosed filter system typically constructed just below grade in a vault along the edge of an impervious area such as a parking lot. The system consists of a sedimentation chamber and a sand bed filter. Run-off flows into the structure through a series of inlet grates located along the top of the control.
- Underground sand filter - located in an underground vault designed for high-density land use or ultra-urban applications. Typically a three-chamber system consisting of a sedimentation chamber, a filter chamber, and an overflow chamber. Underground sand filters have a high maintenance burden and should only be used where adequate inspection and maintenance can be ensured. Underground sand filters are typically constructed on-line, but can be constructed off-line. For off-line construction, the overflow between the second and third chambers is not included.

DESIGN CRITERIA

The following criteria are minimum standards for the design of a sand filter system, which is acceptable for storm water quality treatment only and does not provide detention storage. The WQ_v is generally routed to the sand filter using a diversion structure. Run-off in excess of the WQ_v must be diverted or the sand filter adequately designed to safely pass higher flows to prevent erosion of pretreatment sediment and filter media.

SURFACE SAND FILTER CRITERIA

1. Description - A surface sand filter facility consists of a two-chamber open-air structure, which is located at ground level. The first chamber is the sediment forebay and the second chamber contains the sand filter bed. Flow enters the forebay for settling of larger sediment

particles. Run-off is then discharged from the forebay through a perforated standpipe into the filtration chamber. After passing through the filter bed, run-off is collected by a perforated pipe and gravel underdrain system. In the following pages, a schematic of a surface sand filter is provided.

2. The maximum drainage area tributary to a surface sand filter is 10 acres.
3. Surface sand filter geometry:
   a. The elevation difference (head) needed from inflow to outflow is 5 feet.
   b. The slope across the filter location shall be a maximum of 6%.
   c. The area of the filter bed is sized using Darcy's Law equation with a filter bed drain time of 36 hours and a coefficient of permeability (k) of 3.5 ft/day.

$$Af = (WQ_v)(d_f)/[(k)(h_f+d_f)(t_f)]$$

where:
A_f = surface area of filter bed (ft^2)
WQ_v = water quality volume (ft^3)
d_f = filter bed depth (1.5 feet minimum)
k = coefficient of permeability of filter media (ft/day) (use 3.5 ft/day for sand)
h_f = average height of water above filter bed (ft)
t_f = design filter bed drain time (days) (1.5 days maximum)

4. Pretreatment:
   a. The surface sand filter system shall include a sediment forebay that consists of a separate cell, formed by an acceptable barrier. The forebay shall be sized to contain 25% of the WQ_v.
   b. The forebay shall have a minimum length-to-width ratio of 2:1.
   c. Inlet and outlet structures shall be located at opposite ends of the forebay.
   d. Entrance and exit velocities to the forebay shall be non-erosive. A flow distribution chamber shall be provided at the entrance to the filter media to spread the flow evenly across the surface of the filter media. Erosion protection shall be provided over the filter media using riprap, grass or other dissipation devices.
5. Filter media shall be a minimum 18-inch layer of clean washed medium sand (ASTM C-33 concrete sand) on top of an underdrain system. Three inches of topsoil (or other erosion protection) are placed over the sand bed. Permeable filter fabric is required above and below the sand bed to prevent clogging of the sand filter and underdrain system.
6. The underdrain collection system shall consist of a 4- to 6-inch perforated PVC pipe (Schedule 40 or greater in strength) in an 8-inch gravel layer (clean washed aggregate 0.5 to 2-inches in diameter). The underdrain shall have a minimum slope of 1%. A clean-out must be provided and the underdrain pipe must discharge to an appropriate facility.
7. The surface sand filter structure may be constructed of concrete or earthen embankments. When constructed with earthen walls/embankments, filter fabric shall be used to line the bottom and side slopes of the structures before installation of the underdrain system and filter media.
8. An emergency spillway must be included to safely pass flows that exceed the design storm flows.

PERIMETER SAND FILTER CRITERIA

1. Description - A perimeter sand filter facility is a vault structure located just below grade level. Run-off enters a sedimentation chamber through inlet grates along the top of the structure. Run-off is discharged from the sedimentation chamber through a weir into the filtration chamber. After passing through the filter, run-off is collected by a perforated pipe and gravel underdrain system. Refer to the schematics on the following pages for a perimeter sand filter.

2. The maximum drainage area tributary to a perimeter sand filter is 2 acres.
3. Perimeter sand filter geometry:
   a. The elevation difference (head) needed from inflow to outflow is 2 to 3 feet.
   b. The area of the filter bed is sized using Darcy's Law equation with a filter bed drain time of 36 hours and a coefficient of permeability (k) of 3.5 ft/day. (See 3.c. above - surface sand filter criteria.)
4. Pretreatment:
   a. The perimeter sand filter system shall include a sediment chamber that consists of a separate cell. The sediment chamber shall be sized to contain 50% of the WQ_v.
5. Filter media shall be a minimum 18-inch layer of clean washed medium sand (ASTM C-33 concrete sand) on top of an underdrain system. Permeable filter fabric is required between the sand bed and the underdrain gravel layer to prevent clogging.
6. The underdrain collection system shall consist of a 4- to 6-inch perforated PVC pipe (Schedule 40 or greater in strength) in an 8-inch gravel layer (clean washed aggregate 0.5 to 2-inches in diameter). The underdrain shall have a minimum slope of 1%. A clean-out must be provided and the underdrain pipe must discharge to an appropriate facility.

UNDERGROUND SAND FILTER CRITERIA

1. Description - An underground sand filter is located in an underground vault. The filter is a three-chamber system. The first chamber is a sedimentation chamber that temporarily stores run-off and utilizes a wet pool to capture sediment. The sedimentation chamber is connected to the sand filter chamber by a submerged wall that protects the filter bed from oil and trash. The filter bed is 18 to 24 inches deep and may have a protective screen of gravel or permeable geotextile to limit clogging. The sand filter chamber also includes an underdrain system with inspection and clean-out wells. Perforated pipes under the sand filter bed extend into a third chamber that collects filtered run-off. Flows beyond the filter capacity are diverted through an overflow weir.
2. The maximum drainage area tributary to a perimeter sand filter is 2 acres.
3. Underground sand filters are typically constructed on-line, but can be constructed off-line. For off-line construction, the overflow between the second and third chambers is not included.
4. The underground vault shall be tested for water tightness prior to placement of filter layers.
5. Adequate maintenance access must be provided to the sedimentation and filter bed chambers.

GENERAL

1. Sand filter facilities must be constructed within an easement either platted or legally described and recorded as a perpetual storm water drainage easement. The easement shall extend a minimum of 30 feet horizontally outside of the facility limits and provide a minimum 10-foot wide access easement. A copy of the easement should be included in the BMP operations and maintenance manual.
2. The sand filter facility shall not be constructed until all contributing drainage area has been stabilized. The sand filter facility shall not be used as a sediment control measure during active construction.

MAINTENANCE AND INSPECTION CHECKLIST

Regular inspection and maintenance is critical to the effective operation of sand filter facilities. The following inspection checklist, to be completed at periods indicated, is provided for the BMP owner and should be retained as a record by the owner for a period of five (5) years from the approval date

of the Storm Water Pollution Prevention Plan. Evidence of inspection and maintenance shall be provided to the Town of Edgewood upon request.

Project Name/Site Location: _____

Owner Name: _____ Phone: _____

Owner Address: _____

Date: _____ Inspector: _____

MAINTENANCE ITEM	***YES/NO***	***COMMENTS***
Pretreatment		***Inspect Monthly***
1. Any evidence of erosion?		
2. Are grass clippings removed from contributing areas that are mowed?		
3. Are inlets, outlets, and filter area clear of debris?		
4. Is normal pool level being retained (perimeter and underground facilities)? Any leaks evident?		
5. Other problems evident?		
Filter Bed		***Inspect Monthly***
1. Is filter bed free of sediments? Is sediment clean-out needed (50% of full or 6 inches, whichever is less)?		
2. Is filter bed free of oil and grease?		
3. If clogging of filter bed is present, remove the top few inches of sand and replace.		
4. Any clogging of underdrain?		
5. Any clogging of filter fabric?		
6. Other problems evident?		
Structural		***Inspect Annually***
1. Any evidence of deterioration, spalling or cracking of concrete vault, spillway, etc.?		
2. Are inlet grates in good condition?		
3. Is overflow structure operating properly?		
4. Other problems evident?		

MAINTENANCE ITEM	***YES/NO***	***COMMENTS***
Other		***Inspect Monthly***
1. Any odors?		
2. Any evidence of flow by passing the facility?		

Additional Comments: _____

_____

_____

Recommended Action: _____

_____

_____

Recommended Timeframe for Actions: _____

_____

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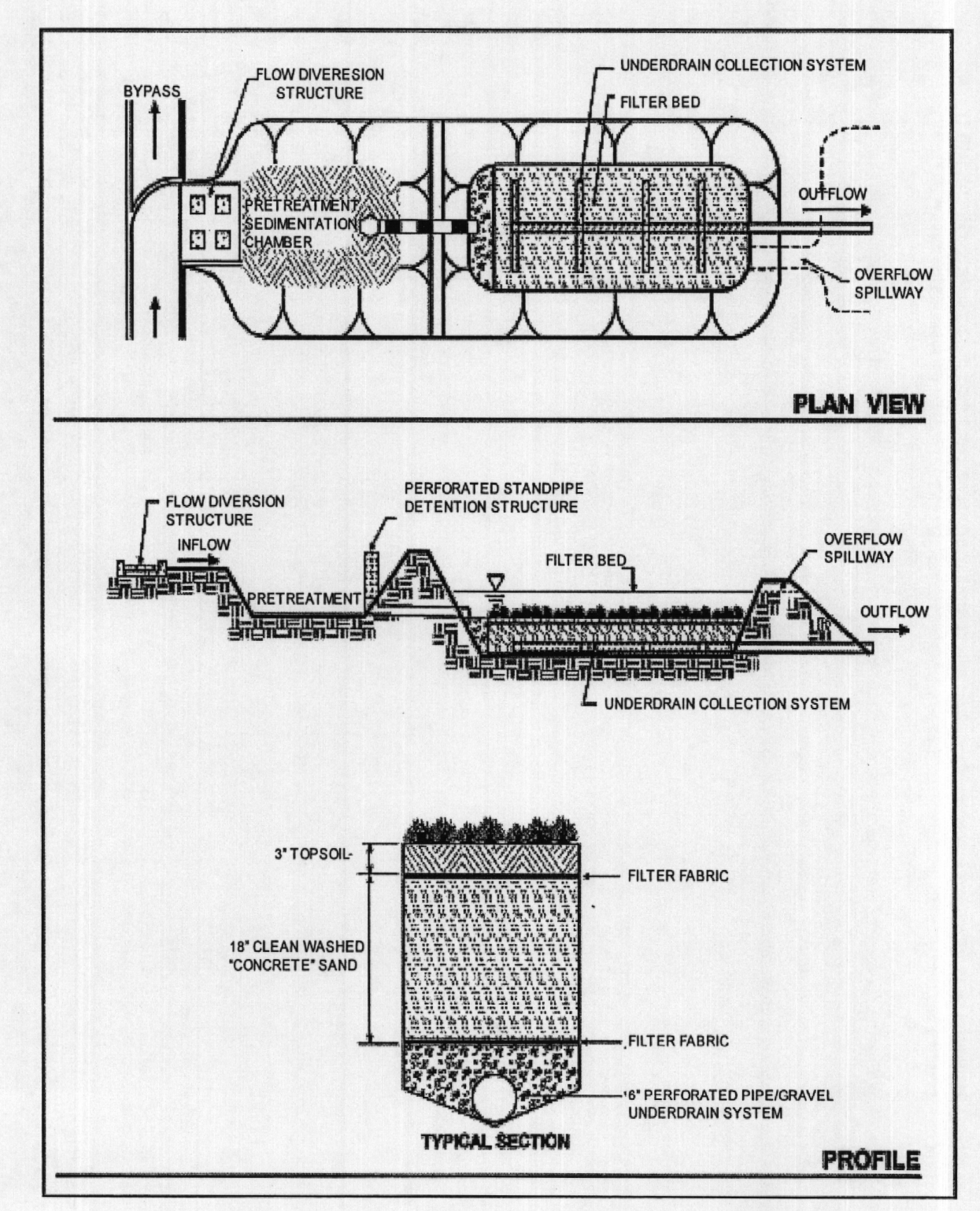
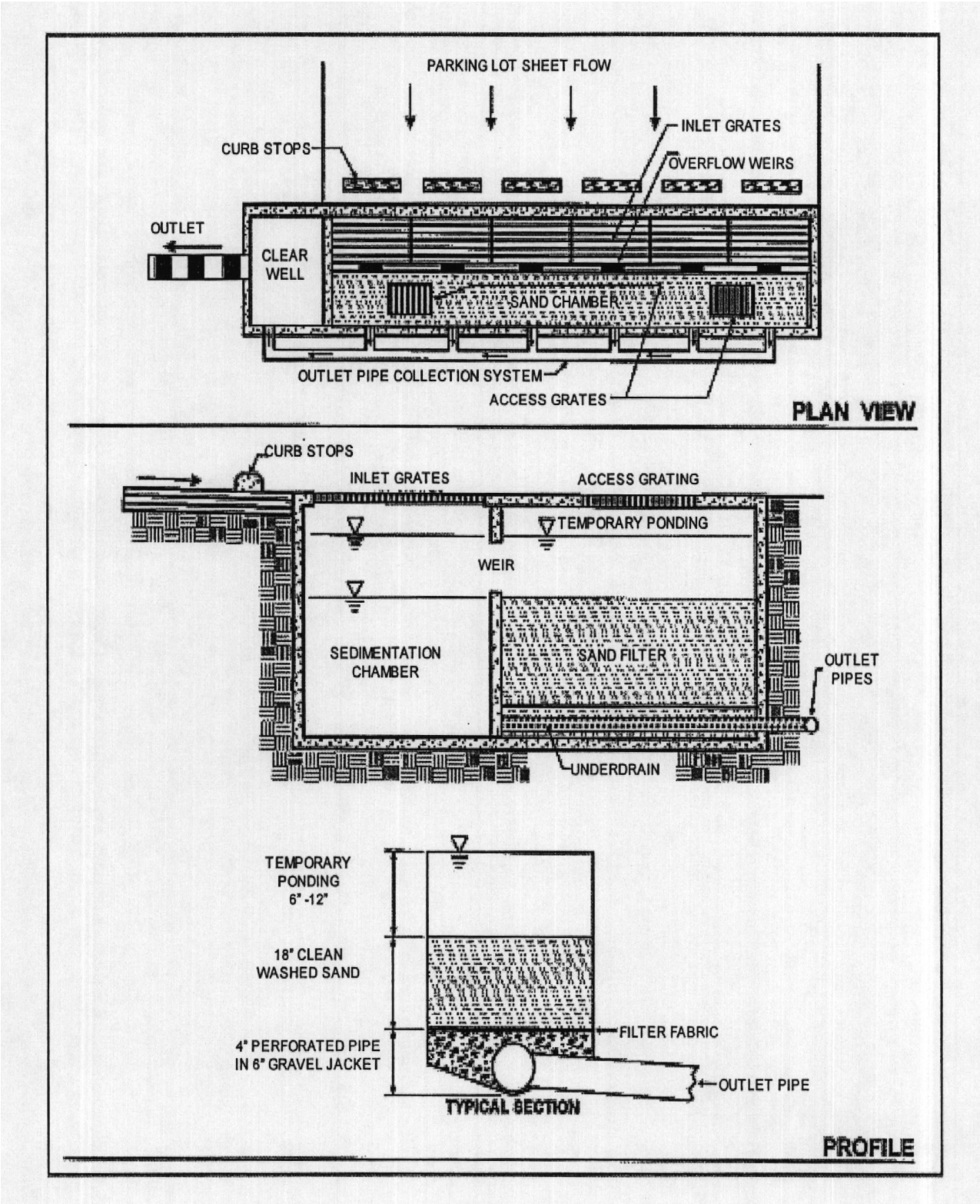
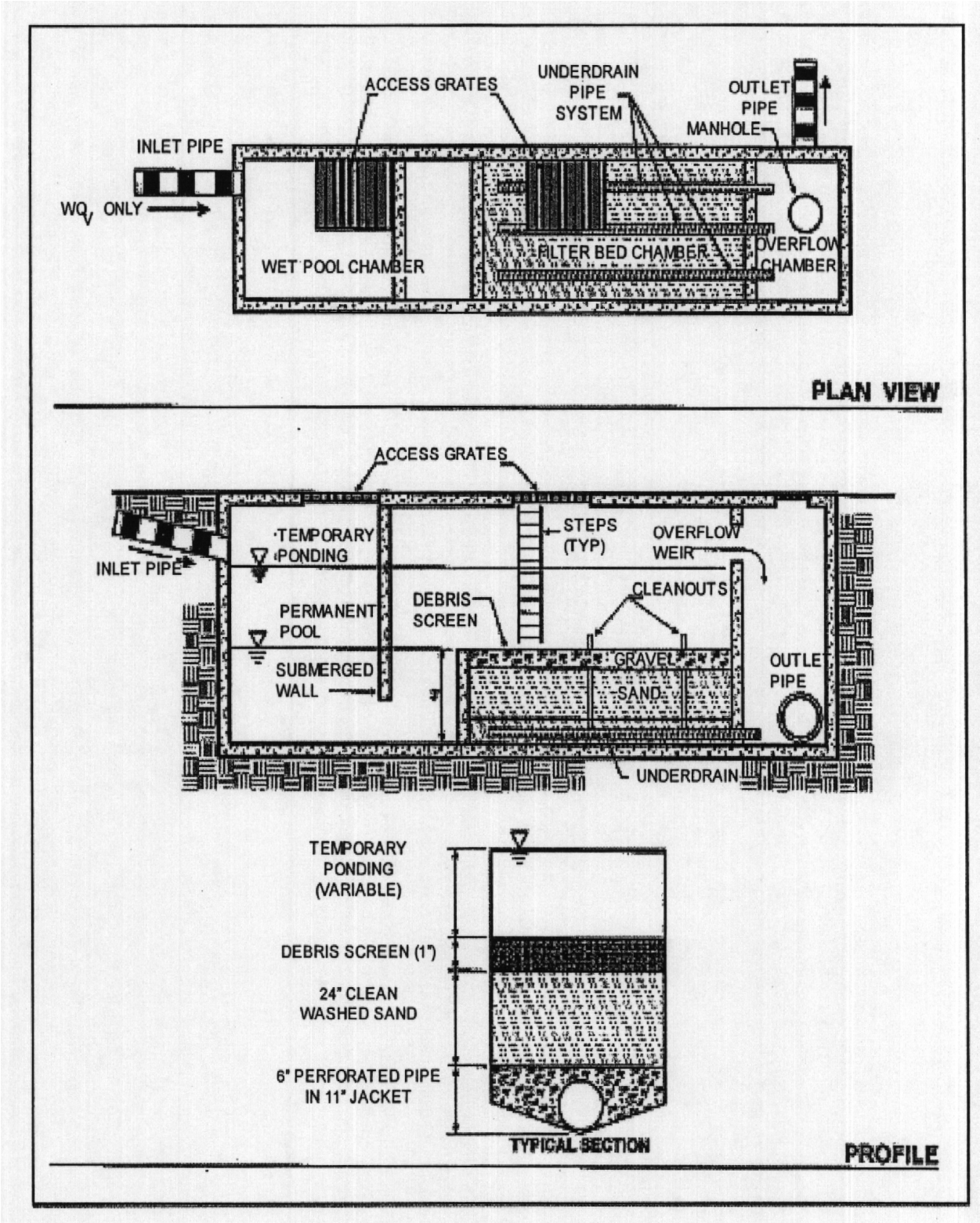


Schematic of Surface Sand Filter
(Source: Center for Watershed Protection)



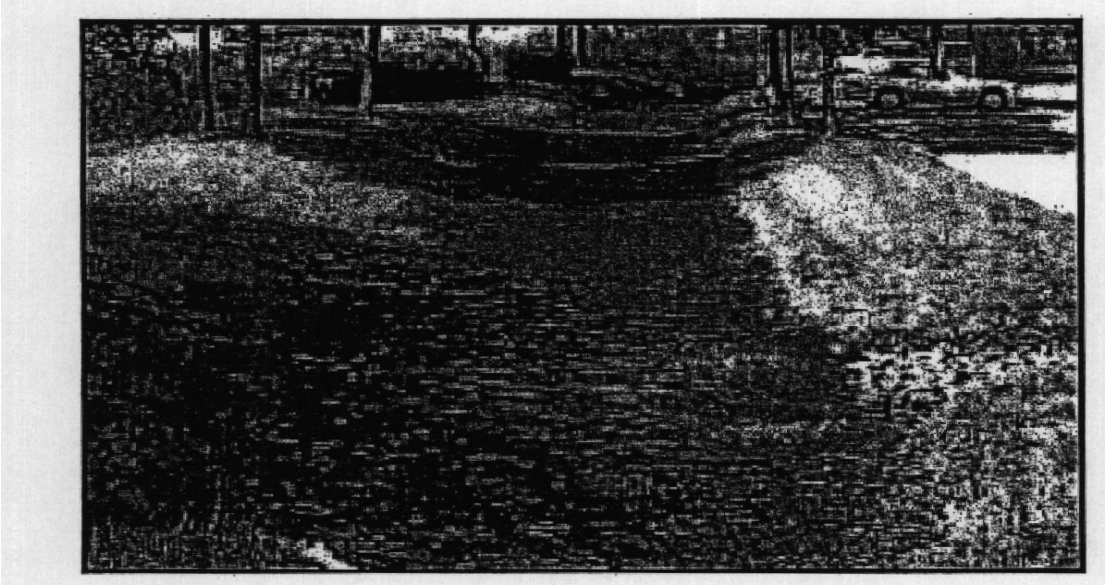
Schematic of Perimeter Sand Filter
(Source: Center for Watershed Protection)



Schematic of Underground Sand Filter
(Source: Center for Watershed Protection)

INFILTRATION TRENCHES

QUICK REFERENCE



Description: Excavated trench filled with stone aggregate used to capture and allow infiltration of storm water run-off into the surrounding soils from the bottom and sides of the trench.

Site Feasibility:

Drainage Area:	Maximum 5 acres
Residential Subdivision Use:	Yes
High Density/Ultra-Urban:	Yes

Design Criteria: Pretreatment forebay required.
Minimum surrounding soil infiltration rate of 0.5 inches per hour.
Excavated trench filled with stone media, pea gravel and sand filter layers.
Observation well required to monitor percolation.

Advantages: Good for small sites with porous soils.

Disadvantages: Good retrofit capability for redevelopment.
Geotechnical testing required.
High clogging potential; not to be used on sites with fine-particle soils in drainage area.

Maintenance: Remove sediment from forebay. Inspect for clogging.
Replace pea gravel layer as needed.

GENERAL

Description

Infiltration trenches are excavations filled with stone to create an underground reservoir of storm water run-off. The run-off volume gradually exfiltrates through the bottom and sides of the trench into

the subsoil over a 2-day period and eventually reaches the water table. By diverting run-off into the soil, an infiltration trench treats the water quality volume and helps to preserve the natural water balance on a site and can recharge groundwater and preserve base flow. Due to this fact, infiltration systems are limited to areas with highly porous soils where the water table and/or bedrock are located well below the bottom of the trench. Infiltration trenches must be carefully sited to avoid the potential of groundwater contamination.

Infiltration trenches are not intended to trap sediment and must always be designed with a sediment forebay and grass channel or filter strip, or other appropriate pretreatment measures to prevent clogging and failure. The facility is only for impervious areas where there are not high levels of fine particulates (clay/silt soils) in the run-off and will only be considered for sites where the sediment load is relatively low.

A separation distance of 4 feet is required between the bottom of the infiltration trench and the elevation of the seasonally high water table.

Infiltration trenches are designed for intermittent flow and need to drain and reaerate between rainfall events. The systems should not be used on sites with a continuous flow from groundwater, sump pumps, or other sources.

Infiltration trenches shall not be used for manufacturing and industrial sites, where there is a potential for high concentrations of soluble pollutants and heavy metals. In addition, infiltration shall not be considered for areas with a high pesticide concentration.

DESIGN CRITERIA

The following criteria are minimum standards for the design of an infiltration trench, which is designed for storm water quality treatment only. Flow from run-off in excess of the WQ_v must be diverted. The WQ_v in the infiltration trench can be subtracted from detention storage requirements for the contributing area.

1. The maximum drainage area tributary to an infiltration trench is 5 acres.
2. Underlying soils shall have a minimum infiltration rate (f_c) of 0.5 inches per hour as determined from geotechnical tests. The minimum geotechnical testing is one test hole per 5,000 ft^2, with a minimum of two borings per facility taken within the limits of the facility. Infiltration trenches cannot be used in fill soils.
3. Soils on the drainage area tributary to an infiltration trench shall have a clay content of less than 20% and a silt/clay content of less than 40% to prevent clogging and failure.
4. Clay lenses, bedrock and other restrictive layers below the bottom of the trench will reduce infiltration rates unless excavated.
5. To reduce the potential for costly maintenance and/or system reconstruction, the trench should be located in an open or lawn area. Infiltration trenches shall not be located beneath paved surfaces.
6. Minimum setback requirements for infiltration trench facilities (unless otherwise specified by local ordinance or criteria):
   a. From a property line - 10 feet
   b. From a building foundation - 25 feet
   c. From a private well - 100 feet
   d. From a public water supply well - 1,200 feet
   e. From a septic system tank/leach field - 100 feet
   f. From surface waters - 100 feet
   g. From surface drinking water sources - 400 feet (100 feet for a tributary)

7. Infiltration trench geometry:
   a. The required trench storage volume is equal to the WQ_v.
   b. The trench must be designed to fully dewater the WQ_v within 24 to 48 hours. The slowest infiltration rate obtained from geotechnical tests performed at the site should be used in the design calculations.
   c. Trench depths should be 3 to 8 feet. The width of the trench must be less than 25 feet.
   d. Broader, shallow trenches reduce the risk of clogging by spreading the flow over a larger area for infiltration.
   e. The surface area is calculated based on the trench depth, soil infiltration rate, aggregate void space, and fill time (assume a fill time of 2 hours for most designs).
   f. The bottom of a trench shall be flat across its length and width to evenly distribute flow, encourage uniform infiltration through the bottom, and reduce the risk of clogging.
   g. Stone aggregate should be washed, bank-run gravel, 1.5 to 2.5 inches in diameter with a void space of about 40%. Aggregate contaminated with soil shall not be used. A porosity value (void space/total volume) of 0.32 should be used in calculations, unless aggregate specific data exist.
   h. A 6-inch layer of clean, washed sand is placed on the bottom of the trench to encourage drainage and prevent compaction of the native soil while the stone aggregate is added.
   i. The trench shall be lined on the sides and top by an appropriate geotextile filter fabric that prevents soil piping but has greater permeability than the parent soil. The top layer of filter fabric is placed 2 to 6 inches from the top of the trench to prevent sediment from passing into the stone aggregate. This top layer will need to be replaced more frequently and must be readily separated from the side section.
   j. The top surface of the trench above the filter fabric is covered with pea gravel to improve sediment filtering. It shall be removed and replaced should the device clog. Alternatively, the trench can be covered with permeable topsoil and planted with grass in a landscaped area.
   k. An observation well consisting of 4- to 6-inch perforated PVC pipe must be installed and extend to the bottom of the trench. The well should be installed along the centerline of the structure, flush with the ground elevation of the trench. A visible floating marker shall be provided to indicate the water level.
   l. The trench excavation shall be limited to the width and depth specified in the design. The bottom of the excavated trench shall not be loaded in a way that causes soil compaction and shall be scarified prior to placement of sand. The sides of the trench shall be trimmed of all large roots.
8. Pretreatment:
   a. For an infiltration trench receiving sheet flow from an adjacent drainage area, the pretreatment system may consist of a vegetated filter strip with a minimum 25-foot length. A vegetated buffer strip around the entire trench is required if the facility is receiving run-off from other directions. See the schematic for design criteria for the vegetated filter strip.
   b. For off-line applications, pretreatment shall consist of a sediment forebay or similar sedimentation chamber (with energy dissipaters) sized to 25% of the WQ_v. Exit velocities from the pretreatment chamber must be nonerosive.
9. Overflow structure - a nonerosive overflow channel must be provided to safely pass flows from the infiltration trench that exceeds the system storage capacity to a stabilized downstream area or watercourse.
10. Infiltration trenches must be constructed within an easement either platted or legally described and recorded as a perpetual storm water drainage easement. The easement shall extend a minimum of 30 feet horizontally outside of the system limits and provide a minimum 10-foot wide access easement. A copy of the easement should be included in the BMP operations and maintenance manual.
11. The infiltration trench shall not be constructed until all contributing drainage area has been stabilized. The infiltration trench shall not be used as a sediment control measure during active construction.

MAINTENANCE AND INSPECTION CHECKLIST

Regular inspection and maintenance is critical to the effective operation of infiltration trenches. The following inspection checklist, to be completed at periods indicated, is provided for the BMP owner and should be retained as a record by the owner for a period of five (5) years from the approval date of the Storm Water Pollution Prevention Plan. Evidence of inspection and maintenance shall be provided to the Town of Edgewood upon request.

Project Name/Site Location: _____

Owner Name: _____ Phone: _____

Owner Address: _____

Date: _____ Inspector: _____

MAINTENANCE ITEM	***YES/NO***	***COMMENTS***
Vegetation/Pretreatment		***Inspect Monthly***
1. Any evidence of erosion? Does filter strip need to be reseeded?		
2. Are grass clippings removed from contributing areas that are mowed?		
3. Are inlets and filter area clear of debris?		
4. Sedimentation marker visible?		
5. Sediment cleanout needed (50% full)?		
6. Other problems evident?		
Trench		***Inspect Monthly***
1. Any vegetative growth in trench area?		
2. Are observation wells clear of water after 3 days of dry weather?		
3. Does pea gravel/topsoil need to be replaced due to clogging?		
4. Does top surface filter fabric need to be replaced due to clogging?		
5. Other problems evident?		
6. Upon failure of trench, perform total rehabilitation to maintain design storage capacity. Excavate trench walls to expose clean soil.		

Additional Comments: _____

_____

_____

Recommended Actions: _____

_____

_____

Recommended Timeframe for Actions: _____

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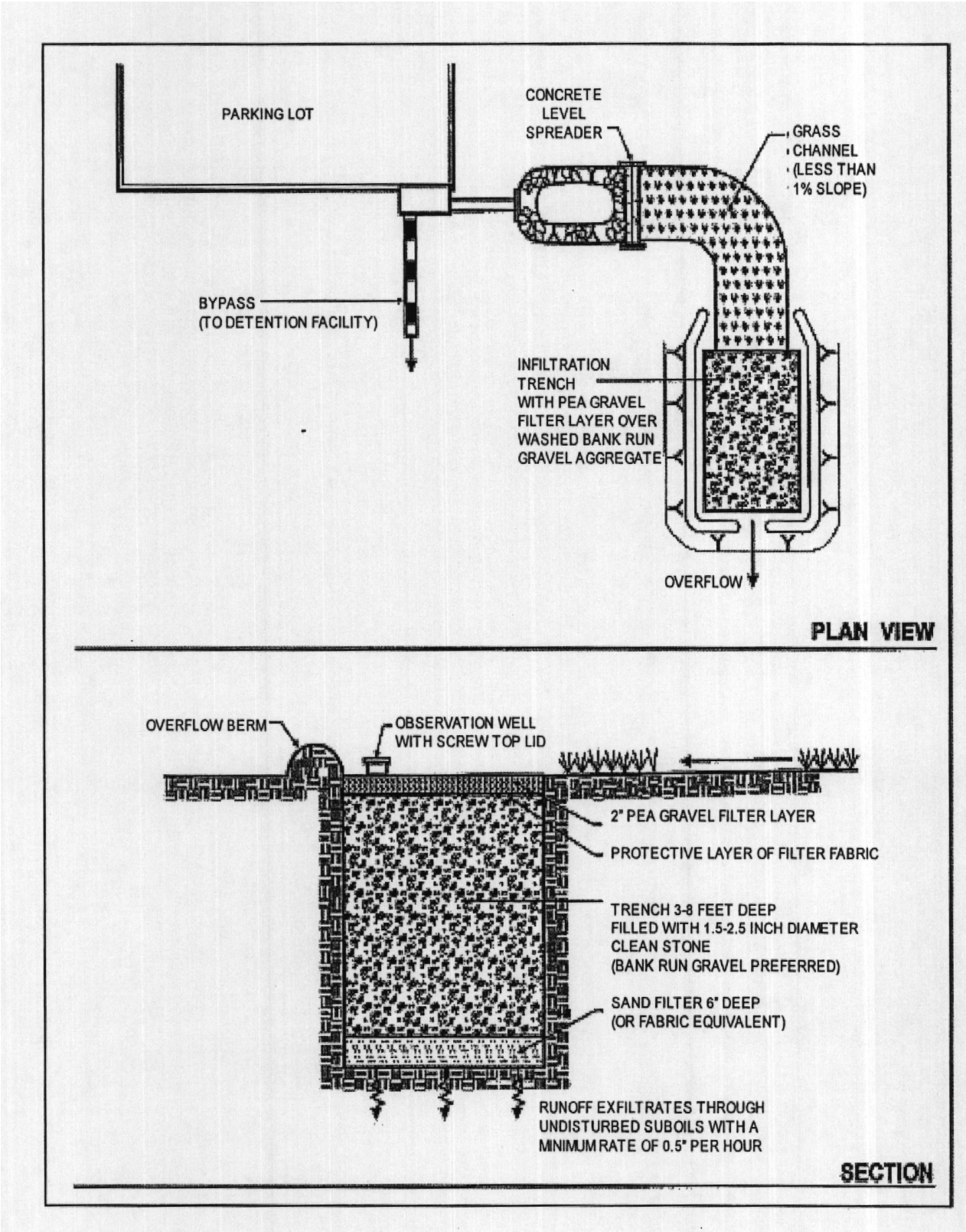
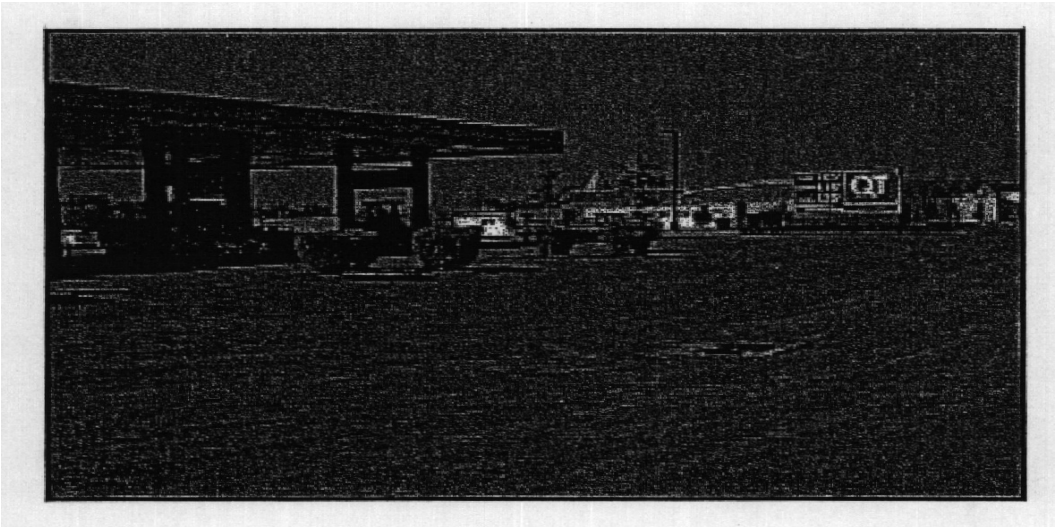
_____



Schematic of Infiltration Trench
(Source: Center of Watershed Protection)

BIOFILTERS

QUICK REFERENCE



Description: Uniformly graded and densely vegetated sections of land engineered and designed to treat run-off and remove pollutants through vegetative filtering and infiltration.

Site Feasibility:

Drainage Area:	10 acres maximum - 5 preferred
Residential Subdivision Use:	Yes
High Density/Ultra-Urban:	No

Design Criteria: Requires slopes between 2% and 6%
Level spreader required where concentrated run-off flows into biofilter

Advantages: Relatively inexpensive to install
Reduces runoff velocities
Aesthetic qualities and preservation of riparian zones

Disadvantages: TSS removal is less than 80%
Cannot be used on steep slopes
Large land requirement

Maintenance: Maintain grass height of 2 to 6 inches
Requires periodic sediment removal.

GENERAL

Description

Biofilters are densely vegetated sections of land designed to treat run-off and remove pollutants through vegetative filtering and infiltration. Biofilters must receive run-off from adjacent areas as sheet flow to provide treatment and prevent erosion. The vegetation slows the run-off and filters out sediment and other pollutants. Biofilters provide less than 80% TSS removal but can be used as pretreatment measures in conjunction with other water quality treatment practices.

Biofilters are best suited to treat run-off from roads and highways, rooftops, small parking lots, and pervious surfaces. Biofilters can be incorporated into residential developments as land-use buffers and setbacks.

Variations

Filter strip - a uniformly graded and densely vegetated strip of land. The vegetation can be grasses or a combination of grass and woody plants.

Riparian buffer - a strip of land with natural, woody vegetation along a stream or other watercourse. The riparian zone includes deep-rooted trees with undergrowth of grasses and herbaceous vegetation.

DESIGN CRITERIA

The following criteria are minimum standards for the design of biofilters, which can be used as pretreatment in conjunction with other water quality measures. Biofilters alone do not fulfill the 80% TSS removal requirement.

1. Uniform sheet flow must be maintained across the entire biofilter through the use of consistent grades and low slopes. The biofilter area shall be free of gullies or rills that can concentrate overland flow.
2. Filter strips can be used as pretreatment measures. The minimum length (parallel to the flow path) sizing criteria shall be:
   a. Impervious area approach length of 35 feet or less - 15 feet minimum filter strip length.
   b. Impervious area approach length of 35 to 75 feet - 25 feet minimum filter strip length.
   c. Pervious area approach length of 75 feet or less - 12 feet minimum filter strip length.
   d. Pervious area approach length of 75 to 100 feet - 18 feet minimum filter strip length.
3. A level spreader is required at the end of sheet flow paths longer than 75 feet for impervious surfaces and 100 feet for pervious surfaces. In addition, areas of concentrated runoff tributary to a biofilter shall require a level spreader.
   a. The maximum drainage area tributary to a biofilter is 10 acres with 5 acres preferred.
   b. The level spreader shall have a 0% slope and encompass the entire width of the biofilter (perpendicular to the flow path).
   c. The slope of the surface prior to the level spreader should provide a smooth transition into the spreader.
      i. If a channel is directing runoff to the level spreader, the last 20 feet of the channel shall have a slope of 1% or less and shall provide a smooth transition of flow to the level spreader. The depth of the level spreader must be a minimum of six inches. The level spreader lip must be constructed on undisturbed soil to a uniform height and 0% slope over the length of the spreader to ensure even runoff distribution.
      ii. If the runoff is being directed to the level spreader overland as sheet flow, the last 20 feet of the ground shall be 6% or less.
   d. A pea gravel diaphragm at the top of the slope of a biofilter receiving sheet flow provides settling of sediment particles and acts as a level spreader, maintaining sheet flow over the biofilter.
4. Filter strip geometry:
   The filter strip should be designed based on Manning's equation for channel design using the following criteria:
   a. Rectangular shape for the filter strip.
   b. Maximum design flow depth of 0.5 inches.
   c. Velocity no greater than 0.9 ft/s to prevent flattening of grasses.

d. Manning's *n* of 0.02 for grassed strips, 0.024 for infrequently mowed strips, or appropriate *n* for wooded strips.
e. Width of the strip shall be dependent upon where uniform flow is obtained from the site.
f. Because the strip is wide, the hydraulic radius approaches the flow depth and is taken to be equal to the design flow depth.
g. Slope is between 2% and 6%.
h. Dense grasses must be specified.

5. Riparian zone geometry:
   At a minimum, a riparian zone should consist of a 20-foot strip of trees and herbaceous vegetation closest to the stream or watercourse and a 30-foot strip of dense grasses prior to the tree zone.
6. Biofilters must be constructed within an easement either platted or legally described and recorded as a perpetual storm water drainage easement. The easement shall encompass the biofilter and level spreader and provide a minimum 10-foot wide access easement. A copy of the easement should be included in the BMP operations and maintenance manual.

MAINTENANCE AND INSPECTION CHECKLIST

Regular inspection and maintenance is critical to the effective operation of biofilters. The following inspection checklist, to be completed at periods indicated, is provided for the BMP owner and should be retained as a record by the owner for a period of five (5) years from the approval date of the Storm Water Pollution Prevention Plan. Evidence of inspection and maintenance shall be provided to the Town of Edgewood upon request.

Project Name/Site Location: _____

Owner Name: _____ Phone: _____

Owner Address: _____

Date: _____ Inspector: _____

MAINTENANCE ITEM	***YES/NO***	***COMMENTS***
Vegetation		***Inspect Monthly***
1. Is vegetation and/or grass cover dense and vigorous?		
2. Any gullies or rills present?		
3. Any erosion evident?		
4. Any sediment build-up present?		
5. Is grass height maintained at 2 to 6 inches?		
6. Other problems evident?		

MAINTENANCE ITEM	***YES/NO***	***COMMENTS***
Level Spreader		***Inspect Monthly***
1. Is vegetation and/or grass cover dense and vigorous?		
2. Any signs of erosion on lip of spreader?		
3. Any sediment build-up present?		
4. Does pea gravel diaphragm need to be cleaned out due to sediment build-up?		
5. Does pea gravel diaphragm need to be replaced due to clogging?		
6. Other problems evident?		

Additional Comments: _____

_____

_____

Recommended Actions: _____

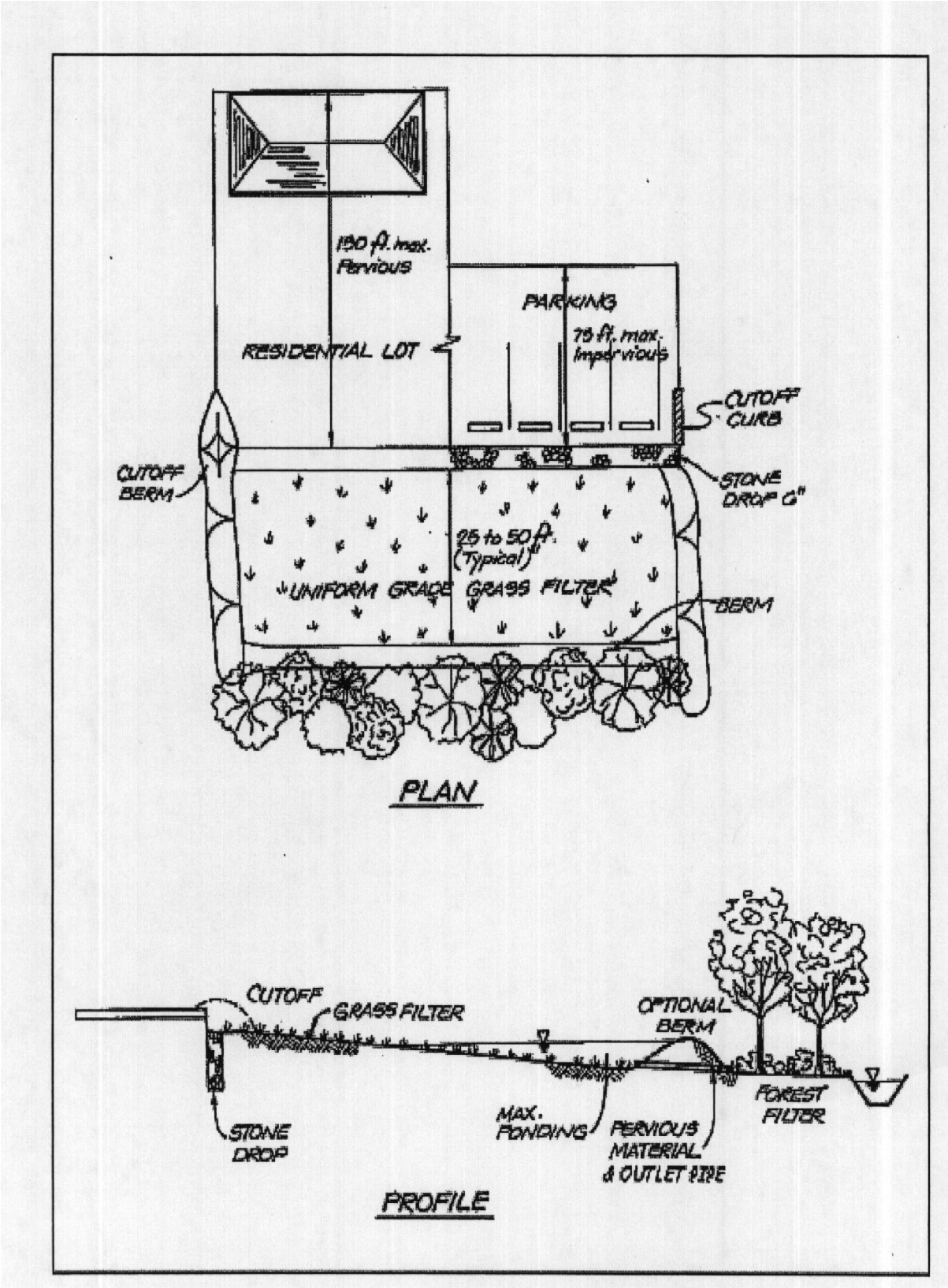
_____

_____

Recommended Timeframe for Actions: _____

_____

_____



Schematic of Filter Strip (with Berm)