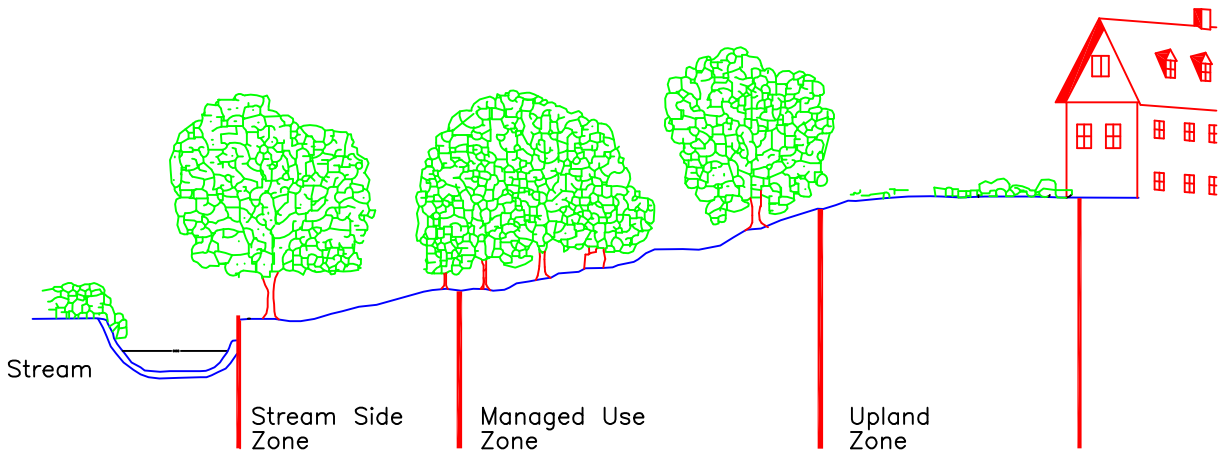
APPENDIX J

WATER QUALITY STANDARD DETAILS

Standard Details

No.	Description
WQ-01	Stream Buffer
WQ-02	Wet Detention Pond
WQ-02	Wet Detention Pond (page 2)
WQ-02A	Extended Detention Shallow Wetland
WQ-02A	Extended Detention Shallow Wetland (page 2)
WQ-02B	Micropool Extended Detention Pond
WQ-02B	Micropool Extended Detention Pond (page 2)
WQ-03	Dry Ponds
WQ-03	Dry Ponds (page 2)
WQ-03	Dry Ponds (page 3)
WQ-04A	Shallow Wetland
WQ-04A	Shallow Wetland (page 2)
WQ-04B	Wet Extended Detention Pond
WQ-04B	Wet Extended Detention Pond (page 2)
WQ-04C	Pond/Wetland System
WQ-04C	Pond/Wetland System (page 2)
WQ-04D	Pocket Wetland
WQ-04D	Pocket Wetland (page 2)
WQ-05	Typical Bioretention Area
WQ-05	Typical Bioretention Area (page 2)
WQ-05	Typical Bioretention Area (page 3)
WQ-06	Infiltration Trench
WQ-06	Infiltration Trench (page 2)
WQ-07	Enhanced Dry Swale
WQ-07	Enhanced Dry Swale (page 2)
WQ-08	Vegetated Filter Strip



Stream Class	Stream Side Zone (ft)	Managed Use Zone (ft)	Upland Zone (ft)	Total Buffer Width on Each Side of the Stream (ft)
1	30	None	15	45
2	30	20	15	65
3	30	45	25	100

** All buffer widths shall be measured from the top of the stream bank.

Class 1: Streams that have a drainage area greater than or equal to 100 acres.
Class 2: Streams that have a drainage area greater than or equal to 300 acres.
Class 3: Streams that have a drainage araa greater than or equal to 640 acres.

Three Zoned Urban Stream Buffer

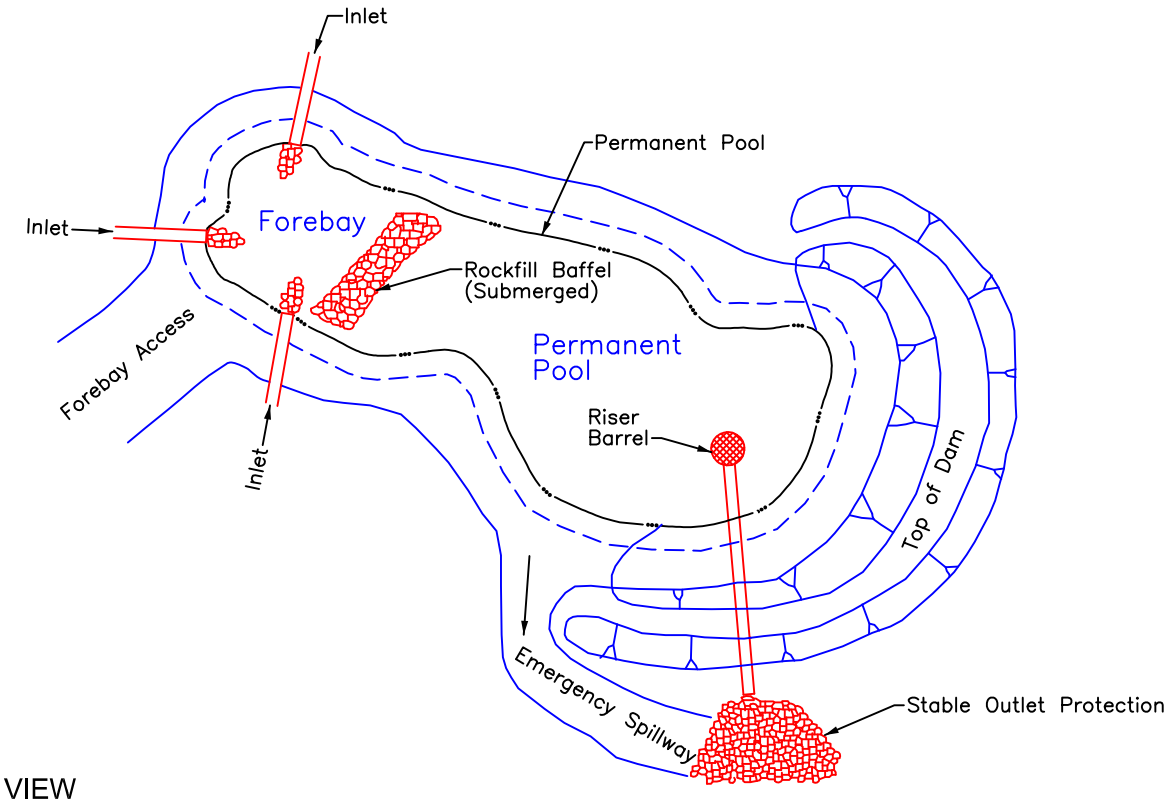
South Carolina Department of Environmental Services

STREAM BUFFER

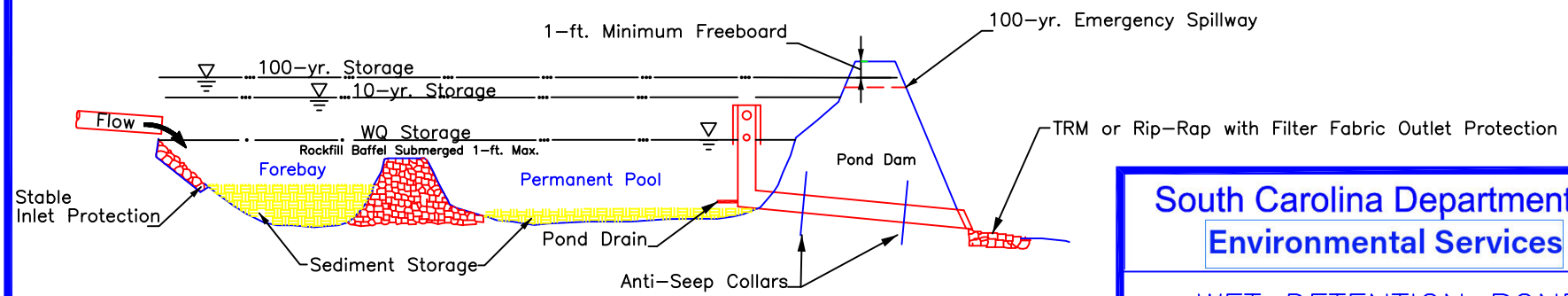
STANDARD DRAWING NO. WQ-01 Page 1

APPROVED BY: _____ SCDES

MARCH 2025 DATE



PLAN VIEW



PROFILE

South Carolina Department of
Environmental Services

WET DETENTION POND

STANDARD DRAWING NO. WQ–02 Page 1 of 2

APPROVED BY: SCDES DATE MARCH 2025

WET DETENTION POND

Installation:

A forebay shall be provided for all inlets to a wet water quality pond and shall be placed upstream of the main wet pond area. The forebay is separated from the larger wet detention pond area by barriers or baffles that may be constructed of earth, stones, riprap, gabions, or geotextiles. The top of the forebay barrier shall be a maximum of one (1)–foot below the normal pool elevation, and may extend above the elevation of the permanent pool.

The permanent pool shall be four (4) to six (6) feet in depth.

Acceptable trash guards include:

Hoods that extend at least 6–inches below the permanent pool water surface elevation.

Reverse flow pipes where the outlet structure inlet is located at least 6–inches below the permanent pool water surface elevation.

Trash boxes made of sturdy wire mesh.

Inspection and Maintenance:

The side slopes of the pond shall be mowed monthly.

Since decomposing vegetation captured in the wetpond can release pollutants, especially nutrients, it may be necessary to harvest dead vegetation annually. Otherwise the decaying vegetation can export pollutants out of the pond and also can cause nuisance conditions to occur.

Debris shall be cleared from all inlet and outlet structures monthly.

All eroded or undercut areas shall be repaired as needed.

A sediment marker shall be placed in the forebay to determine when sediment removal is required.

Sediment accumulations in the main pond area shall be monitored and sediment shall be removed when the permanent pool volume has been significantly filled and/or the pond becomes eutrophic.

South Carolina Department of
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WET DETENTION POND

STANDARD DRAWING NO. WQ–02 Page 2 of 2

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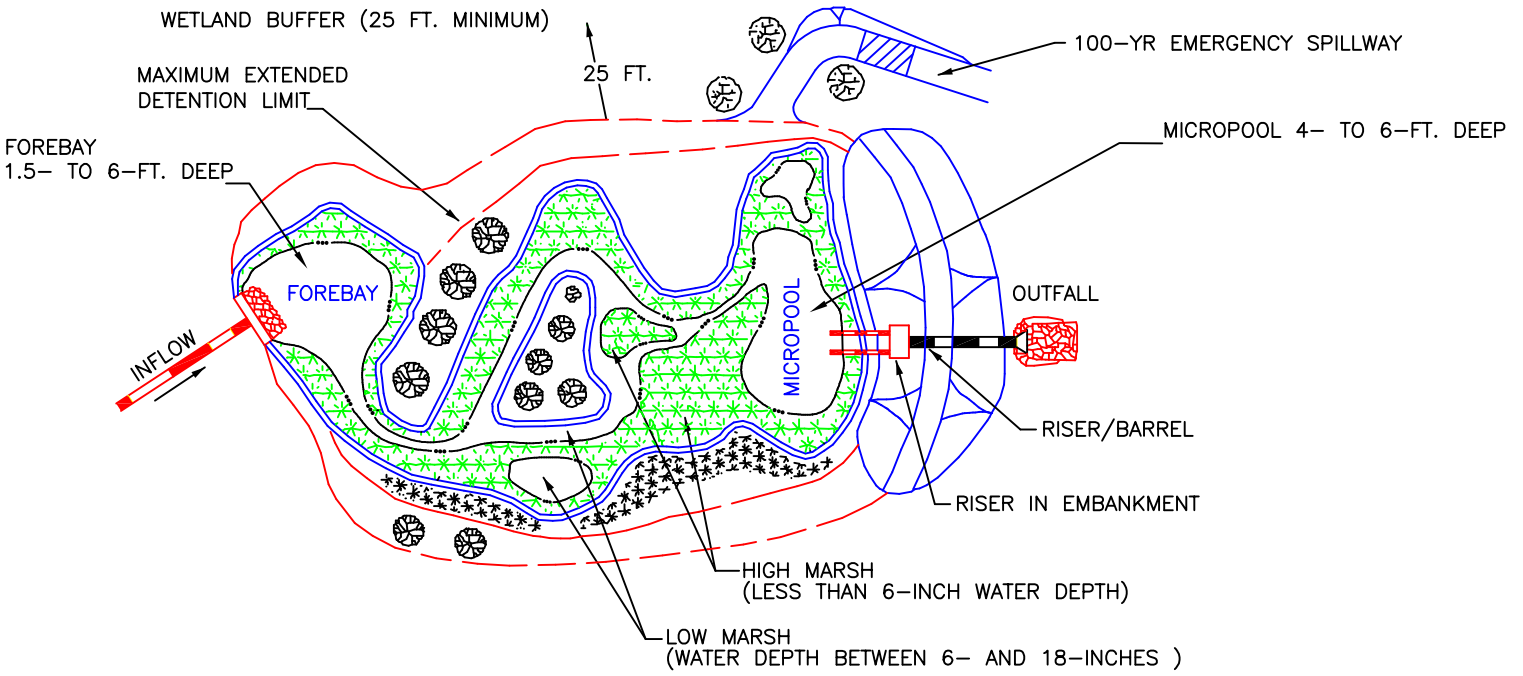

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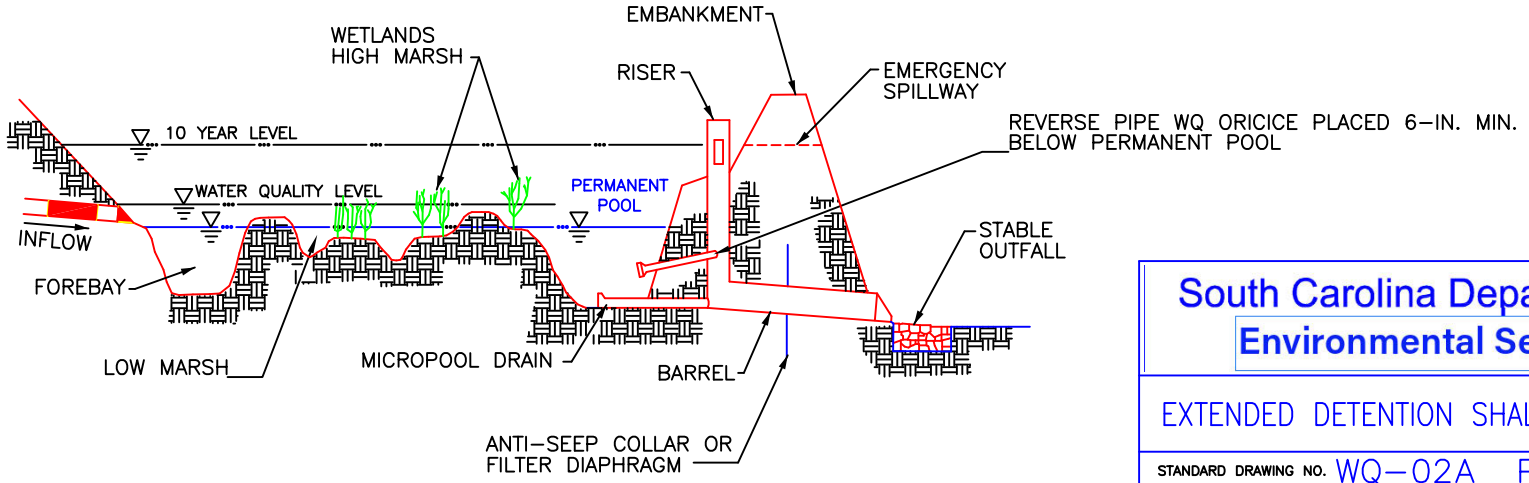

PROFILE

South Carolina Department of
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EXTENDED DETENTION SHALLOW WETLAND

STANDARD DRAWING NO. WQ–02A Page 1 of 2

APPROVED BY: _____ SCDES

MARCH 2025
DATE

EXTENDED DETENTION SHALLOW WETLAND

Installation:

One–half (1/2) of the total shallow water zone shall be designated as being a high marsh. This zone extends up from 6–inches below the permanent pool water level (6–inches deep).

One–half (1/2) of the total shallow water zone shall be designated as low marsh. This zone extends from a depth of 18– to 6–inches below the permanent pool water level.

All inlets shall discharge to the forebay, and be protected with a properly designed Turf Reinforcement Mat. The forebay shall be constructed of an earthen berm that shall be no lower than the normal permanent pool depth.

The outlet micropool shall be required to allow adequate depth for the extended detention release outlet to function properly and allow a drain to be installed to drain the wetland when needed. The outlet micropool shall be 4–6 feet deep.

The water quality orifice shall be protected from clogging by incorporating an appropriate trash guard. The trash guard selected shall be durable and extend at least six (6)–inches below the normal pool surface of the wetland.

Inspection and Maintenance:

Maintenance requirements are particularly high while vegetation is being established. Monitoring during the first year is critical to the success of the wetland, and should be done after all storm events greater than 2–inches of rainfall to assess erosion, flow channelization and sediment accumulation. Inspection shall be made at least once every 6–months during the first 3–years of establishment.

A sediment cleanout stake shall be placed in the forebay area to determine when sediment removal is required.

Debris shall be removed from inlet and outlet structure monthly.

Wetland vegetation shall be monitored and replaced as necessary once every 6–months during the first 3–years of establishment. The depth of the zones within the wetland shall be inspected and maintained annually and invasive vegetation shall be removed annually.

Repair all eroded or undercut areas as needed.

South Carolina Department of
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EXTENDED DETENTION SHALLOW WETLAND

STANDARD DRAWING NO. WQ–02A Page 2 of 2

APPROVED BY: _____ SCDES

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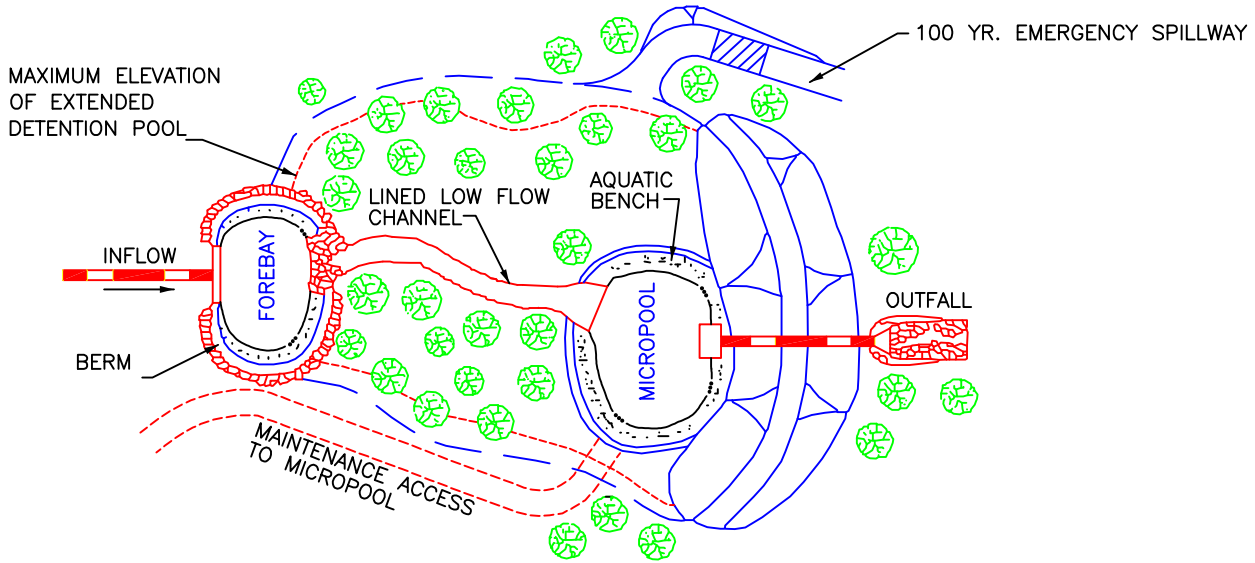

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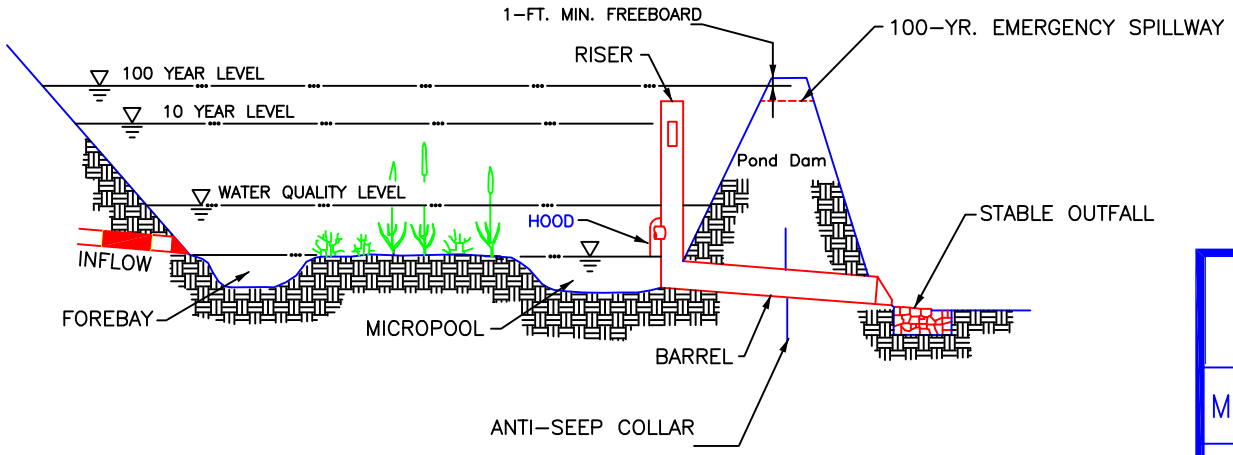

PROFILE

South Carolina Department of
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MICROPOOL EXTENDED DETENTION POND

STANDARD DRAWING NO. WQ–02B Page 1 of 2

APPROVED BY: SCDES DATE MARCH 2025

MICROPOOL EXTENDED DETENTION POND

Installation:

A forebay shall be provided for all inlets to a micropool extended water quality pond and shall be placed upstream of the micropool area. The forebay is separated from the micropool by a berm that may be constructed of earth, stones, riprap, gabions, or geotextiles. The top of the forebay barrier shall be equal to the normal pool elevation, and may extend above the elevation of the permanent pool. A TRM lined low flow channel shall be constructed to convey flow from the forebay to the micropool area.

The micropool shall be four (4) to six (6) feet in depth.

A low flow orifice shall be installed to slowly release the water quality volume. The low flow orifice shall be protected from clogging by designing appropriate trash guards. Acceptable trash guards include:

Hoods that extend at least 6–inches below the water quality pool water surface elevation.

Reverse flow pipes where the outlet structure inlet is located at least 6–inches below the water quality water surface elevation.

Emergency spillways shall be installed to safely pass the post–development 100–year 24–hour storm event without overtopping any dam structures.

Inspection and Maintenance:

The side slopes of the pond shall be mowed monthly.

Since decomposing vegetation captured in the wetpond can release pollutants, especially nutrients, it may be necessary to harvest dead vegetation annually. Otherwise the decaying vegetation can export pollutants out of the pond and can cause nuisance conditions to occur.

Debris shall be cleared from all inlet and outlet structures monthly.

All eroded or undercut areas shall be repaired as needed.

A sediment marker shall be placed in the forebay to determine when sediment removal is required.

Sediment accumulations in the main pond area shall be monitored and sediment shall be removed when the permanent pool volume has been significantly filled and/or the pond becomes eutrophic.

South Carolina Department of
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MICROPOOL EXTENDED DETENTION POND

STANDARD DRAWING NO. WQ–02B Page 2 of 2

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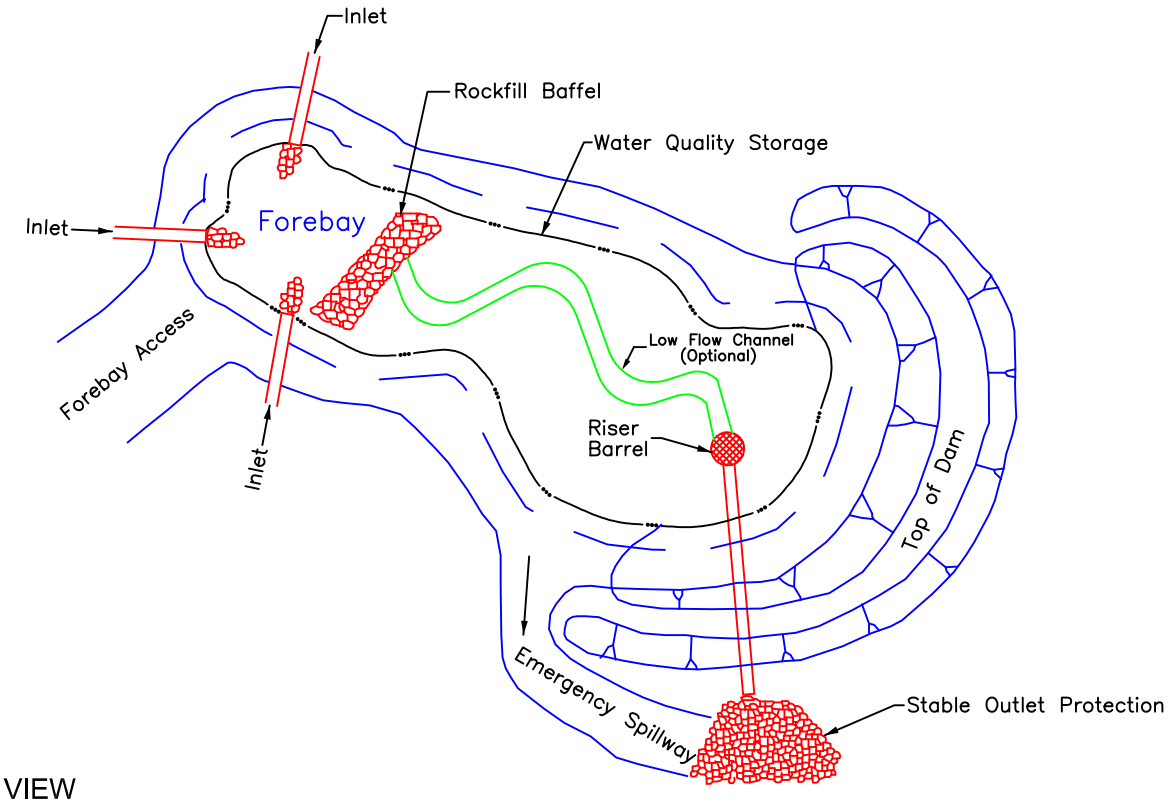

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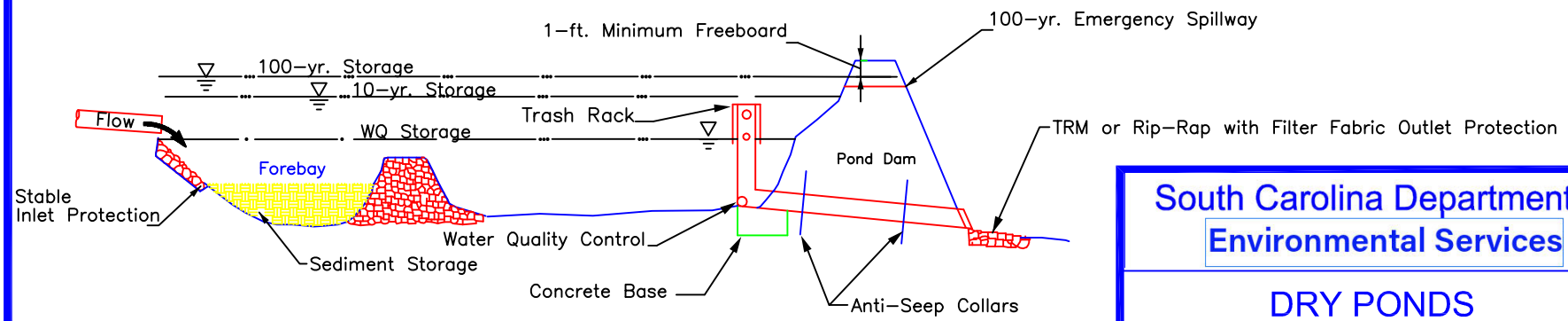

PROFILE

South Carolina Department of
Environmental Services

DRY PONDS

STANDARD DRAWING NO. WQ–03 Page 1 of 3

APPROVED BY: SCDES DATE MARCH 2025

Dry Storm Water Detention Ponds

Dry pond inside slopes should not be more than 3:1

The pond floor should have a minimum slope of 2% toward the outlet or underdrain system.
Adequate maintenance access must be provided for all dry detention and dry ED ponds.

Low Flow Channel

A low flow channel should be provided to prevent standing water conditions. This channel should be protected to prevent scouring. The remainder of the pond should drain toward this channel. Where recreational uses are desired, the low-flow channel should be placed to one side instead in the middle of the pond.

Outfall

For a dry detention pond, the outlet structure is sized for water quality control and water quantitiy control (based upon hydrologicrouting calculations) and can consist of a weir, orifice, outlet pipe, combination outlet, or other acceptable control structure.

A low flow orifice capable of releasing the water quality volume over 24 hours must be provided. The water quality orifice should have a minimum diameter of 2-inches and should be adequately protected from clogging by an acceptable external trash rack.

The outfall of dry ponds should always be stabilized to prevent scour and erosion. If the pond discharges to a channel with dry weather flow, care should be taken to minimize tree clearing along the downstream channel, and to reestablish a forested riparian zone in the shortest possible distance.

Emergency Spillway:

An emergency spillway must be included to pass the 100-year storm event. The spillway prevents pond water levels from overtopping the embankment and causing structural damage. The spillway must be designed and installed to protect against erosion problems.

Anti-seep Collars:

Seepage control or anti-seep collars should be provided for all outlet pipes.

Inspection and Maintenance:

Regular inspection and maintenance is critical to the effective operation of dry ponds as designed. Maintenance responsibility for a pond should be vested with a responsible authority by means of a legally binding and enforceable maintenance agreement that is executed as a condition of plan approval.

Inspections should be conducted semi-annually and after significant storm events to identify potential problems early. Most maintenance efforts will need to be directed toward vegetation management and basic housekeeping practices such as removal of debris accumulations and vegetation management to ensure that the pond dewaters completely to prevent mosquito and other habitats.

South Carolina Department of
Environmental Services

DRY PONDS

STANDARD DRAWING NO. WQ-03 Page 2 of 2

APPROVED BY: _____ SCDES

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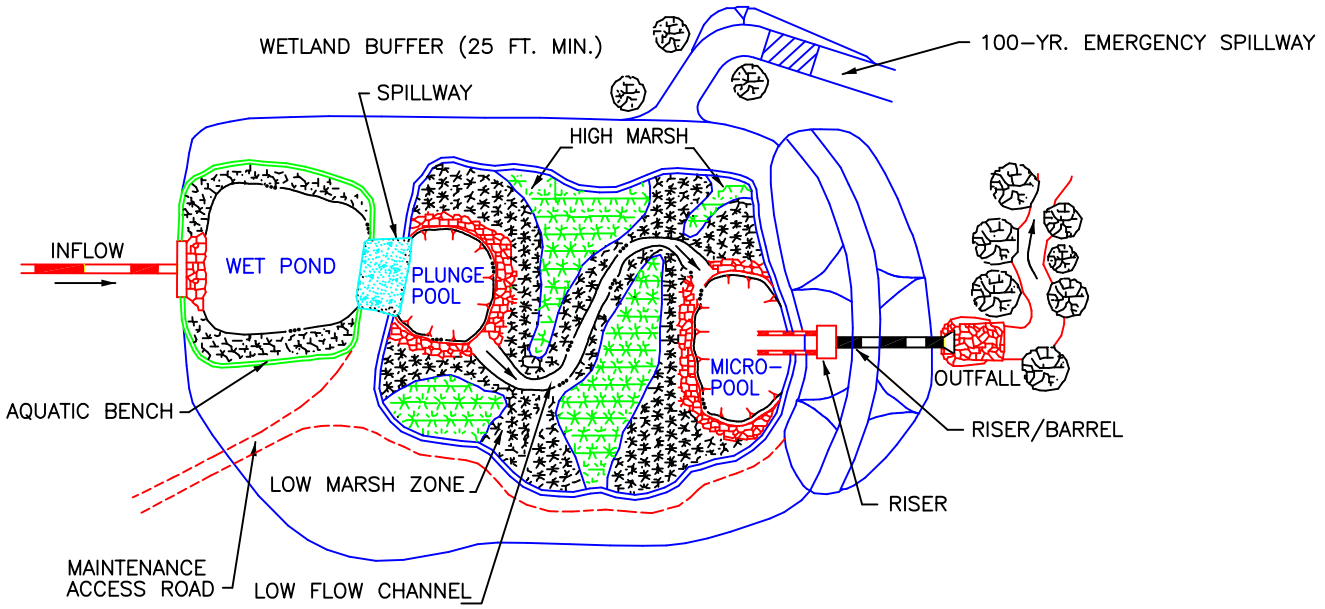

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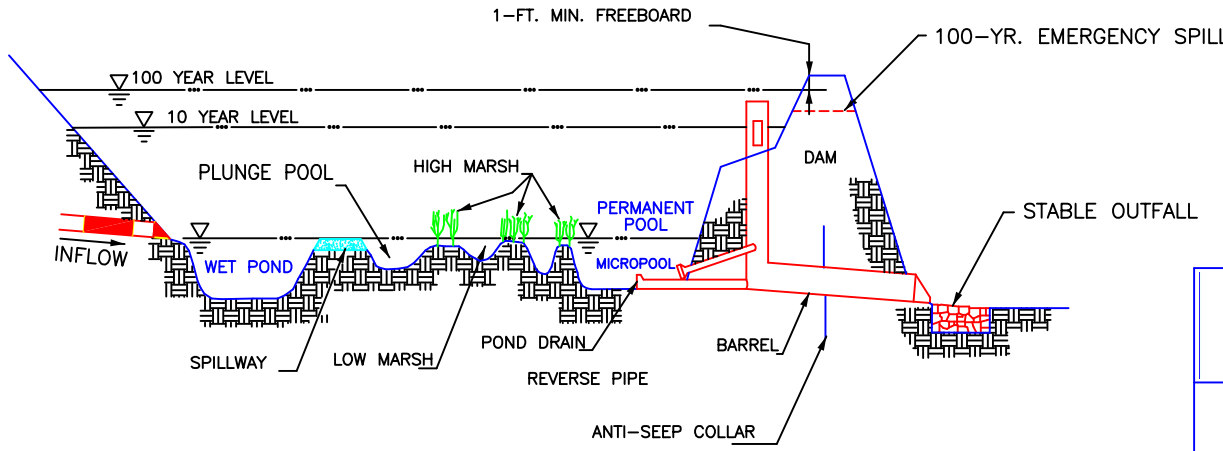

PROFILE

South Carolina Department of
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POND/WETLAND SYSTEM

STANDARD DRAWING NO. WQ–04 Page 1 of 2

APPROVED BY: _____ SCDES

MARCH 2025
DATE

POND/WETLAND SYSTEM

Installation:

All inlets shall discharge to wet pond area, and be protected with a properly designed Turf Reinforcement Mat or other acceptable inlet protection. The wet pond shall be 4– to 6–feet deep and have a designed overflow spillway that discharges to a plunge pool. The plunge pool shall be 4– to 6–feet deep that having a lined low flow channel to convey flow from the plunge pool to the micropool area.

The outlet micropool shall be required to allow adequate depth for the extended detention release outlet to function properly and allow a drain to be installed to drain the wetland when needed. The outlet micropool shall be 4–6 feet deep.

The water quality orifice shall be protected from clogging by incorporating an appropriate trash guard. The trash guard selected shall be durable and extend at least six (6)–inches below the normal pool surface of the wetland.

A principle spillway of the constructed storm water wetland shall be installed to safely pass the 25–year 24–hour storm event. The spillway shall be equipped with a trash rack.

An emergency spillway shall be installed to safely convey discharges resulting from the 100–year 24–hour storm event.

Inspection and Maintenance:

Maintenance requirements for constructed storm water wetlands are particularly high while vegetation is being established. Monitoring during the first year is critical to the success of the wetland. Wetlands shall be monitored after all storm events greater than 2–inches of rainfall during the first year to assess erosion, flow channelization and sediment accumulation. Inspection shall be made at least once every 6–months during the first 3–years of establishment.

A sediment cleanout stake shall be placed in the forebay area to determine when sediment removal is required.

Debris shall be removed from inlet and outlet structure monthly.

Wetland vegetation shall be monitored and replaced as necessary once every 6–months during the first 3–years of establishment. The depth of the zones within the wetland shall be inspected and maintained annually, and invasive vegetation shall be removed annually.

Repair all eroded or undercut areas as needed.

South Carolina Department of
Environmental Services

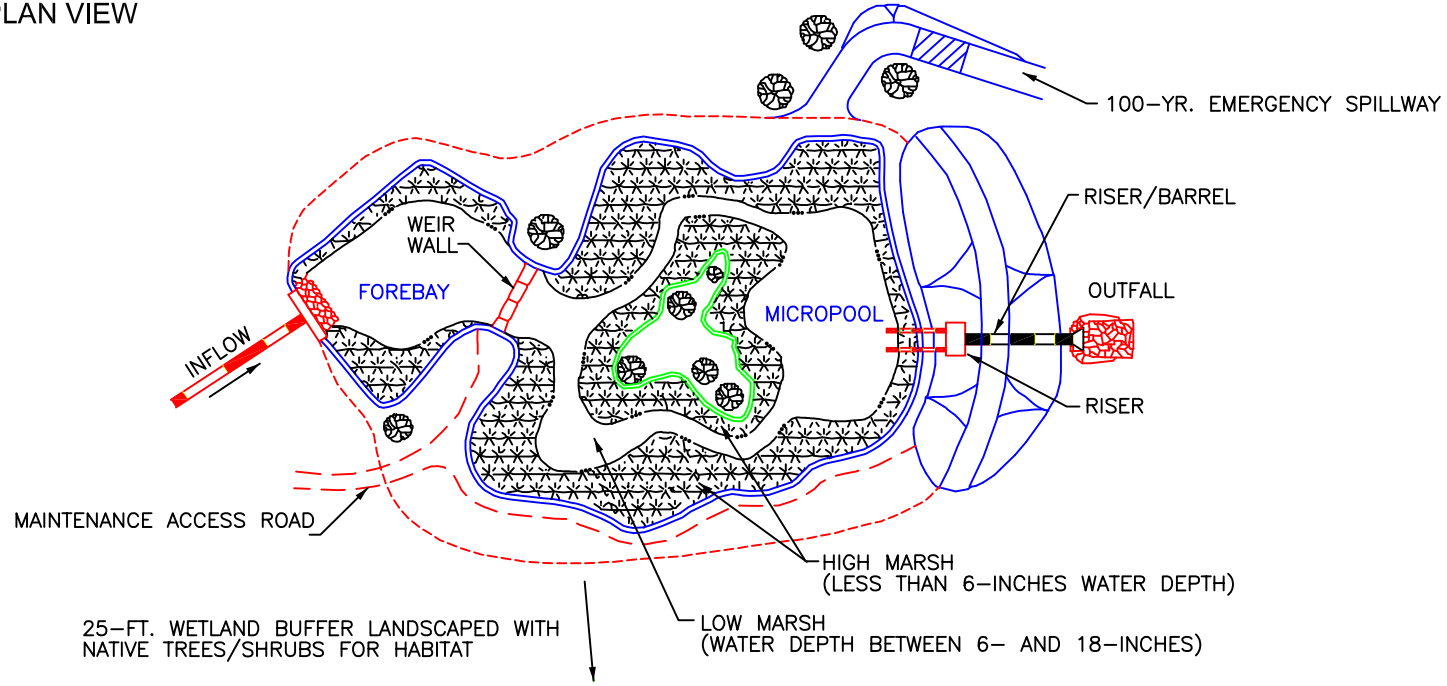
POND/WETLAND SYSTEM

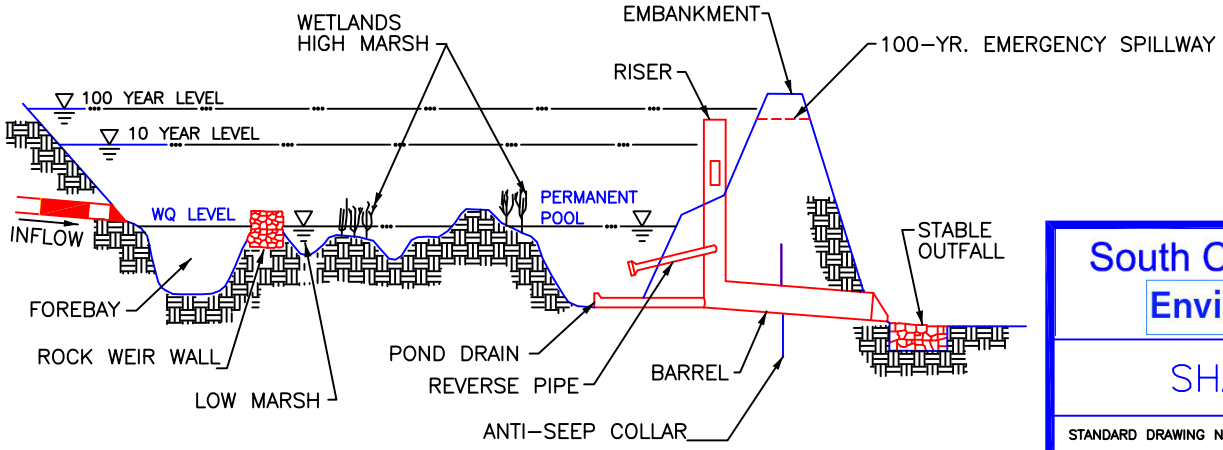
STANDARD DRAWING NO. WQ–04 Page 2 of 2

APPROVED BY: _____ SCDES

MARCH 2025
DATE

PLAN VIEW





PROFILE

South Carolina Department of
Environmental Services

SHALLOW WETLAND

STANDARD DRAWING NO. WQ–04A Page 1 of 2

APPROVED BY: SCDES DATE MARCH 2025

SHALLOW WETLAND

Installation:

All inlets shall discharge to the forebay, and be protected with a properly designed Turf Reinforcement Mat. The forebay shall be constructed of a rock berm that shall be no lower than the water quality pool depth.

The outlet micropool shall be required to allow adequate depth for the extended detention release outlet to function properly and allow a drain to be installed to drain the wetland when needed. The outlet micropool shall be 4–6 feet deep.

The water quality orifice shall be protected from clogging by incorporating an appropriate trash guard. The trash guard selected shall be durable and extend at least six (6)–inches below the normal pool surface of the wetland.

A principle spillway of the constructed storm water wetland shall be installed to safely pass the 25–year 24–hour storm event. The spillway shall be equipped with a trash rack.

An emergency spillway shall be installed to safely convey discharges resulting from the 100–year 24–hour storm event.

Inspection and Maintenance:

Maintenance requirements for constructed storm water wetlands are particularly high while vegetation is being established. Monitoring during the first year is critical to the success of the wetland. Wetlands shall be monitored after all storm events greater than 2–inches of rainfall during the first year to assess erosion, flow channelization and sediment accumulation. Inspection shall be made at least once every 6–months during the first 3–years of establishment.

A sediment cleanout stake shall be placed in the forebay area to determine when sediment removal is required.

Debris shall be removed from inlet and outlet structure monthly.

Wetland vegetation shall be monitored and replaced as necessary once every 6–months during the first 3–years of establishment. The depth of the zones within the wetland shall be inspected and maintained annually, and invasive vegetation shall be removed annually.

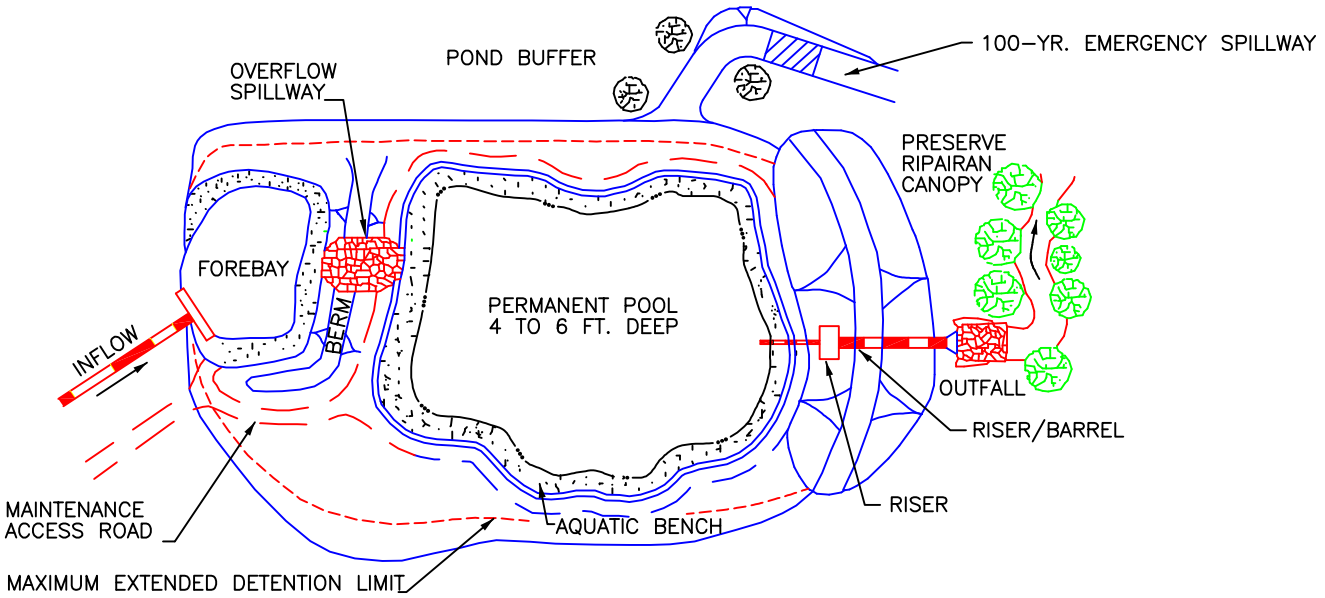
Repair all eroded or undercut areas as needed.

South Carolina Department of
Environmental Services

SHALLOW WETLAND

STANDARD DRAWING NO. WQ–04A Page 2 of 2

APPROVED BY: SCDES DATE MARCH 2025



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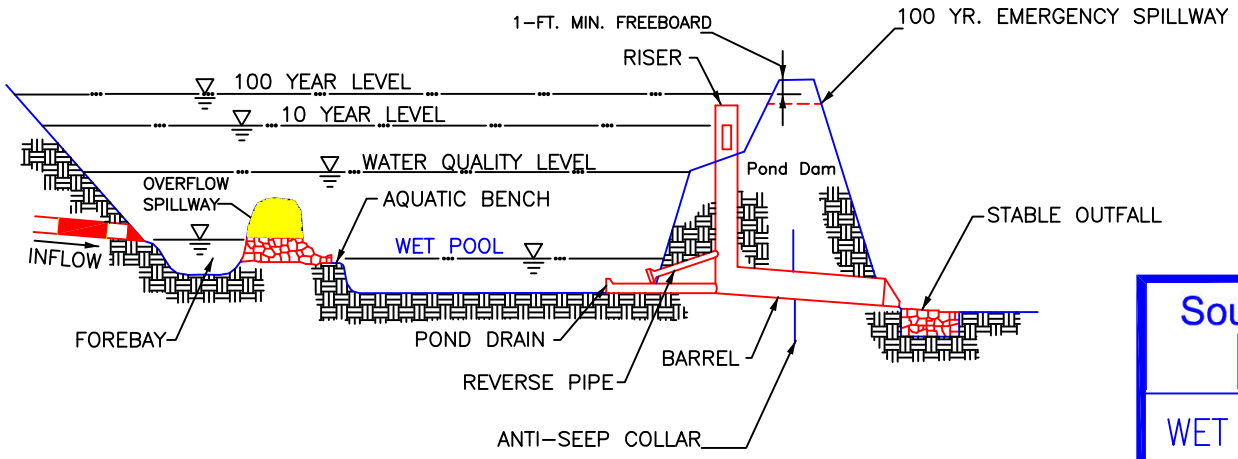

PROFILE

South Carolina Department of
Environmental Services

WET EXTENDED DETENTION POND

STANDARD DRAWING NO. WQ–04B Page 1 of 2

APPROVED BY: SCDES DATE MARCH 2025

WET EXTENDED DETENTION POND

Installation:

A forebay shall be provided for all inlets to a wet extended water quality pond and shall be placed upstream of the main wet pond area. The forebay is separated from the larger wet detention pond area by a berm that may be constructed of earth, stones, riprap, gabions, or geotextiles. The top of the forebay barrier shall be equal to the normal pool elevation, and may extend above the elevation of the permanent pool. A spillway shall be constructed to convey flow from the forebay to the wet detention pond area.

A low flow orifice shall be installed to slowly release the water quality volume. The low flow orifice shall be protected from clogging by designing appropriate trash guards. Acceptable trash guards include:

Hoods that extend at least 6–inches below the permanent pool water surface elevation.

Reverse flow pipes where the outlet structure inlet is located at least 6–inches below the permanent pool water surface elevation.

Trash boxes made of sturdy wire mesh.

Emergency spillways shall be installed to safely pass the post–development 100–year 24–hour storm event without overtopping any dam structures.

Inspection and Maintenance:

The side slopes of the pond shall be mowed monthly.

Since decomposing vegetation captured in the wetpond can release pollutants, especially nutrients, it may be necessary to harvest dead vegetation annually. Otherwise the decaying vegetation can export pollutants out of the pond and also can cause nuisance conditions to occur.

Debris shall be cleared from all inlet and outlet structures monthly.

All eroded or undercut areas shall be repaired as needed.

A sediment marker shall be placed in the forebay to determine when sediment removal is required.

Sediment accumulations in the main pond area shall be monitored and sediment shall be removed when the permanent pool volume has been significantly filled and/or the pond becomes eutrophic.

South Carolina Department of
Environmental Services

WET EXTENDED DETENTION POND

STANDARD DRAWING NO. WQ–04B Page 2 of 2

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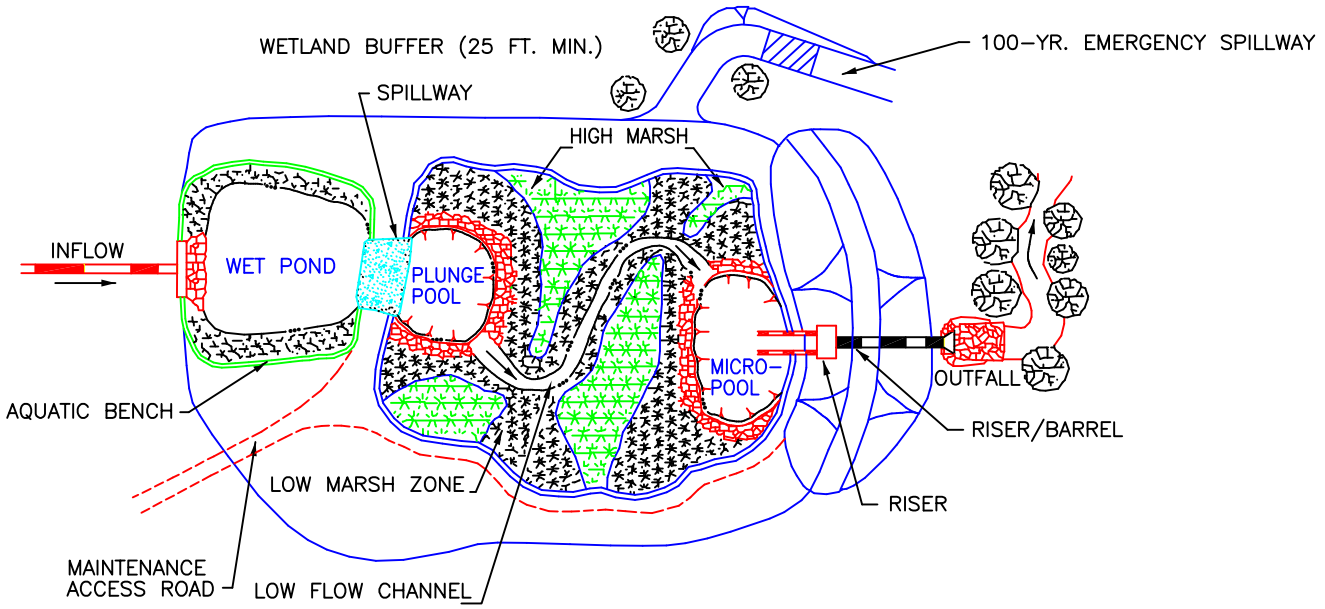

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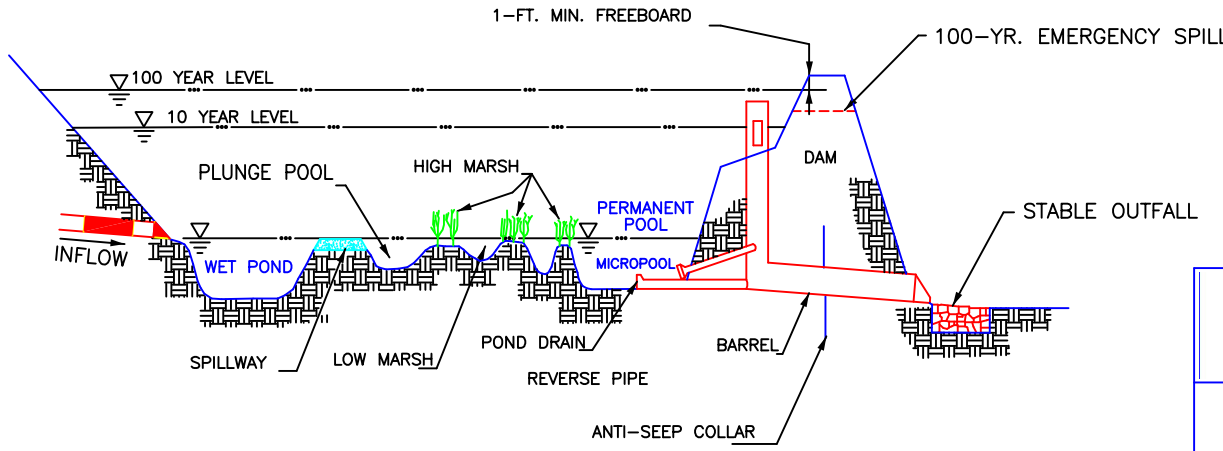

PROFILE

South Carolina Department of
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POND/WETLAND SYSTEM

STANDARD DRAWING NO. WQ–04C Page 1 of 2

APPROVED BY: _____ SCDES

MARCH 2025
DATE

POND/WETLAND SYSTEM

When and Where to Use It:

The system has two separate cells, a wet pond and a shallow marsh. The wet pond is designed to trap sediment and reduce runoff velocities before the runoff enters the shallow marsh. The primary water quality benefits are achieved in the shallow wetland. Less land is required for the pond/wetland system than the shallow wetland and the extended detention shallow wetland.

Installation:

One–half ($\frac{1}{2}$) of the total shallow water zone shall be high marsh. This zone extends up from 6–inches below the permanent pool water level (6–in deep).

One–half ($\frac{1}{2}$) of the total shallow water zone shall be low marsh. This zone extends from a depth of 18– to 6–inches below the permanent pool water level.

All inlets shall discharge to wet pond area, and be protected with a properly designed Turf Reinforcement Mat or other acceptable inlet protection. The wet pond shall be 4– to 6–feet deep and have a designed overflow spillway that discharges to a plunge pool. The plunge pool shall be 4– to 6–feet deep that having a lined low flow channel to convey flow from the plunge pool to the micropool area.

The outlet micropool shall be required to allow adequate depth for the extended detention release outlet to function properly and allow a drain to be installed to drain the wetland when needed. The outlet micropool shall be 4–6 feet deep.

The water quality orifice shall be protected from clogging by incorporating an appropriate trash guard. The trash guard selected shall be durable and extend at least six (6)–inches below the normal pool surface of the wetland.

A principle spillway of the constructed storm water wetland shall be installed to safely pass the 10–year 24–hour storm event. The spillway shall be equipped with a trash rack.

An emergency spillway shall be installed to safely convey discharges resulting from the 100–year 24–hour storm event.

Inspection and Maintenance:

Maintenance requirements for constructed storm water wetlands are particularly high while vegetation is being established. Monitoring during the first year is critical to the success of the wetland. Wetlands shall be monitored after all storm events greater than 2–inches of rainfall during the first year to assess erosion, flow channelization and sediment accumulation. Inspection shall be made at least once every 6–months during the first 3–years of establishment.

A sediment cleanout stake shall be placed in the forebay area to determine when sediment removal is required.

Debris shall be removed from inlet and outlet structure monthly.

Wetland vegetation shall be monitored and replaced as necessary once every 6–months during the first 3–years of establishment. The depth of the zones within the wetland shall be inspected and maintained annually, and invasive vegetation shall be removed annually.

Repair all eroded or undercut areas as needed.

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POND/WETLAND SYSTEM

STANDARD DRAWING NO. WQ–04C Page 2 of 2

APPROVED BY: _____ SCDES

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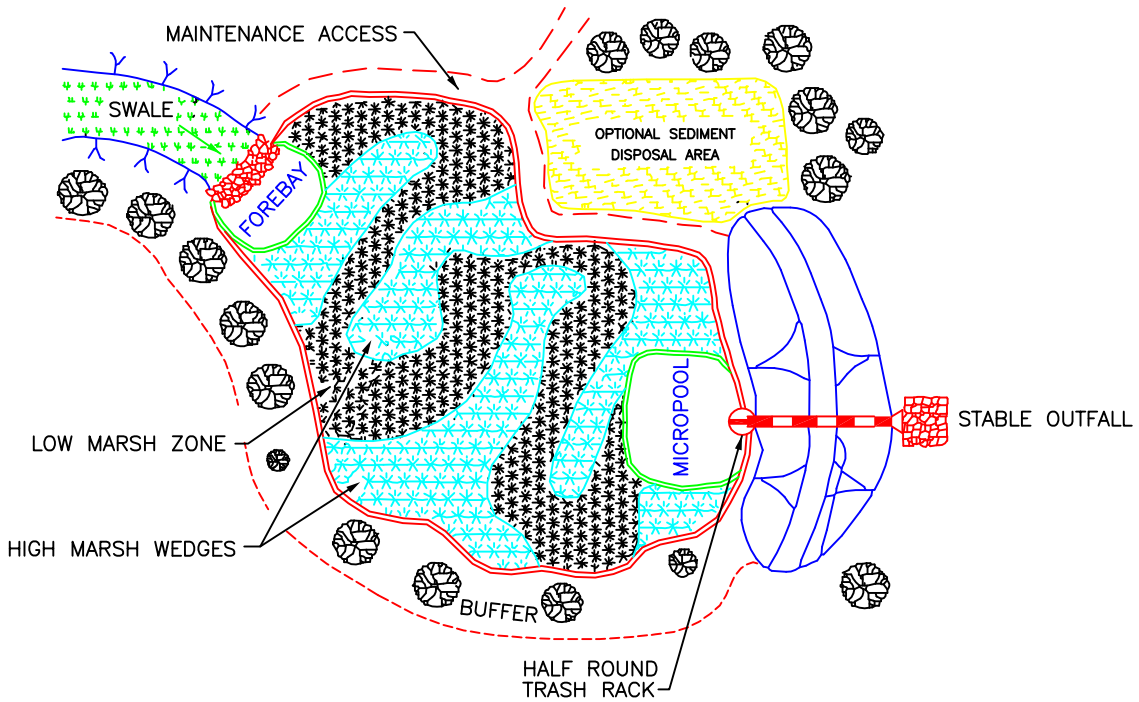
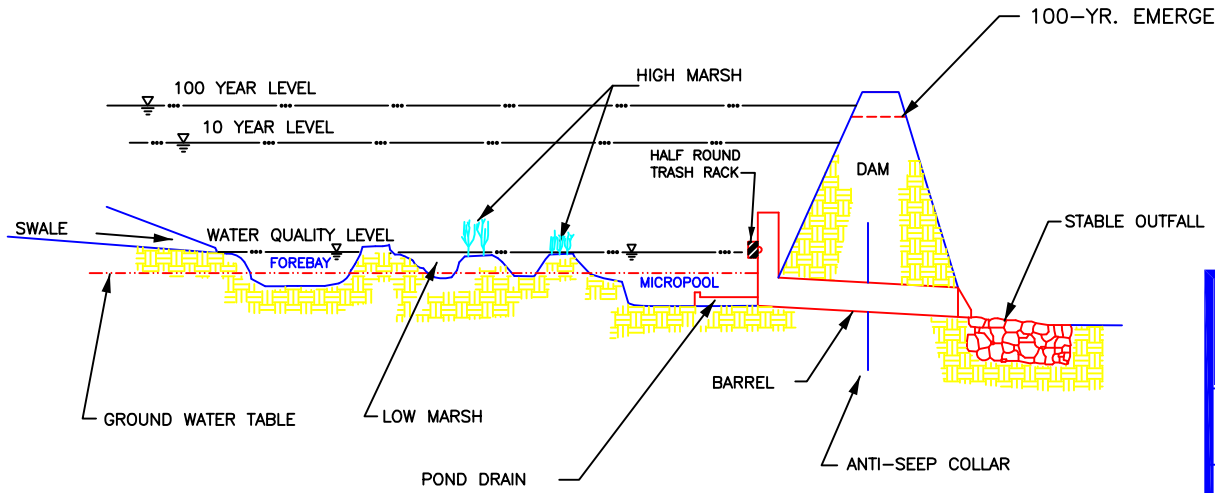


PLAN VIEW



PROFILE

South Carolina Department of
Environmental Services

POCKET WETLAND

STANDARD DRAWING NO. WQ-04D Page 1 of 2

APPROVED BY: _____ SCDES

DATE: MARCH 2025

POCKET WETLAND

Installation:

One–half ($\frac{1}{2}$) of the total shallow water zone shall be designated as being a high marsh. This zone extends up from 6–inches below the permanent pool water level (6–inches deep).

One–half ($\frac{1}{2}$) of the total shallow water zone shall be low marsh. This zone extends from a depth of 18– to 6–inches below the permanent pool water level.

All inlets shall discharge to forebay through open vegetated swales. The forebay is separated from the pocket wetland area by barriers or baffles that may be constructed of earth, stones, riprap, gabions, or geotextiles. The top of the forebay shall be equal to or may extend above the water quality permanent pool elevation.

The outlet micropool shall be required to allow adequate depth for the extended detention release outlet to function properly and allow a drain to be installed to drain the wetland when needed. The outlet micropool shall be 4– to 6–feet deep.

The water quality orifice shall be protected from clogging by incorporating an appropriate trash guard. The trash guard selected shall be durable and extend at least six (6)–inches below the normal pool surface of the micropool.

A principle spillway of the constructed storm water wetland shall be installed to safely pass the 10–year 24–hour storm event. The spillway shall be equipped with a trash rack.

An emergency spillway shall be installed to safely convey discharges resulting from the 100–year 24–hour storm event.

Inspection and Maintenance:

Maintenance requirements for constructed storm water wetlands are particularly high while vegetation is being established. Monitoring during the first year is critical to the success of the wetland. Wetlands shall be monitored after all storm events greater than 2–inches of rainfall during the first year to assess erosion, flow channelization and sediment accumulation. Inspection shall be made at least once every 6–months during the first 3–years of establishment.

A sediment cleanout stake shall be placed in the forebay area to determine when sediment removal is required.

Debris shall be removed from inlet and outlet structure monthly.

Wetland vegetation shall be monitored and replaced as necessary once every 6–months during the first 3–years of establishment. The depth of the zones within the wetland shall be inspected and maintained annually, and invasive vegetation shall be removed annually.

Repair all eroded or undercut areas as needed.

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POCKET WETLAND

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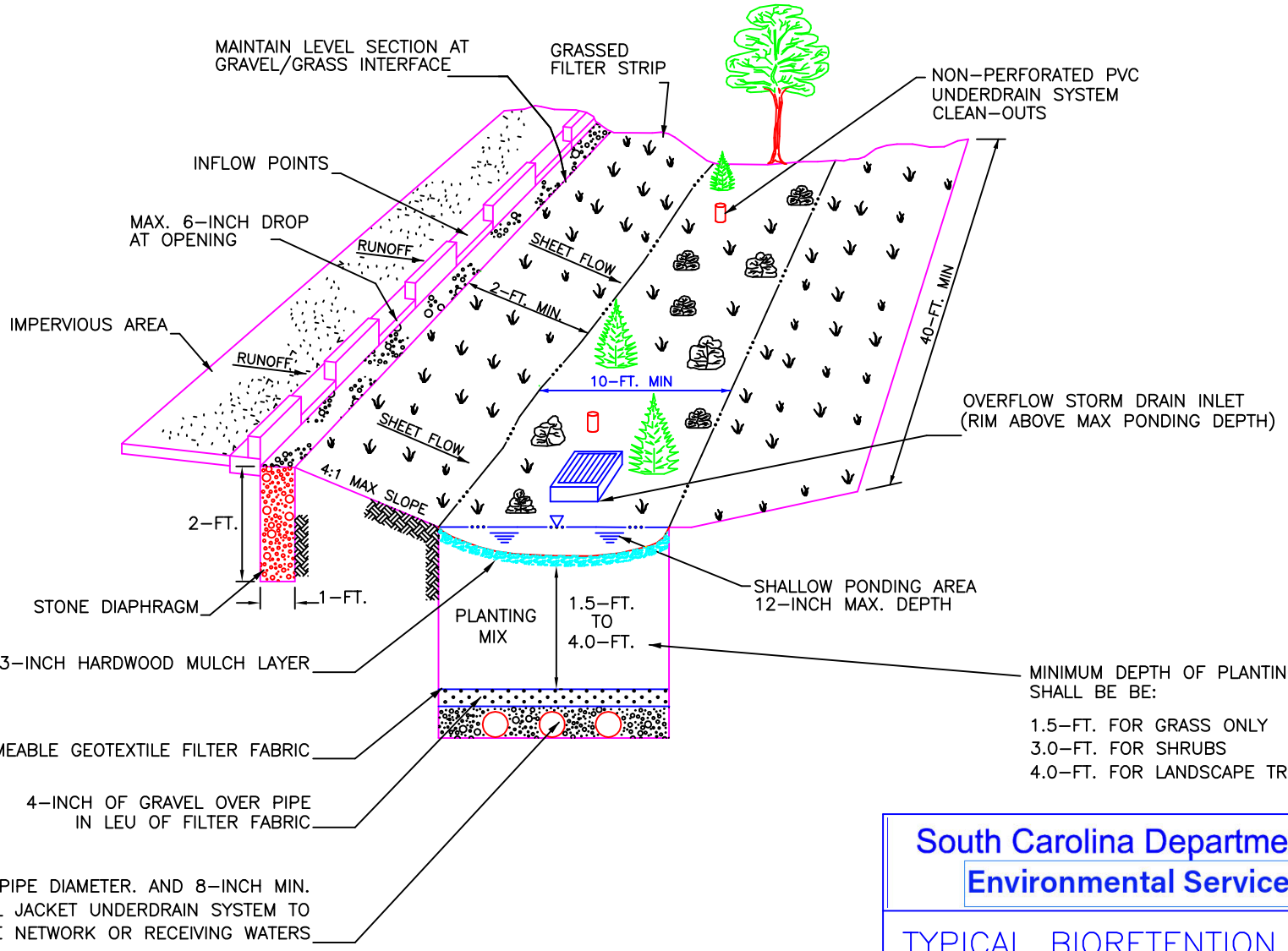

SOURCE: ADAPTED FROM PRINCE GEORGE'S COUNTY DESIGN MANUAL FOR THE USE OF BIORETENTION IN STORMWATER MANAGEMENT, 1993

South Carolina Department of Environmental Services

TYPICAL BIORETENTION AREA

STANDARD DRAWING NO. WQ–05 Page 1 of 3

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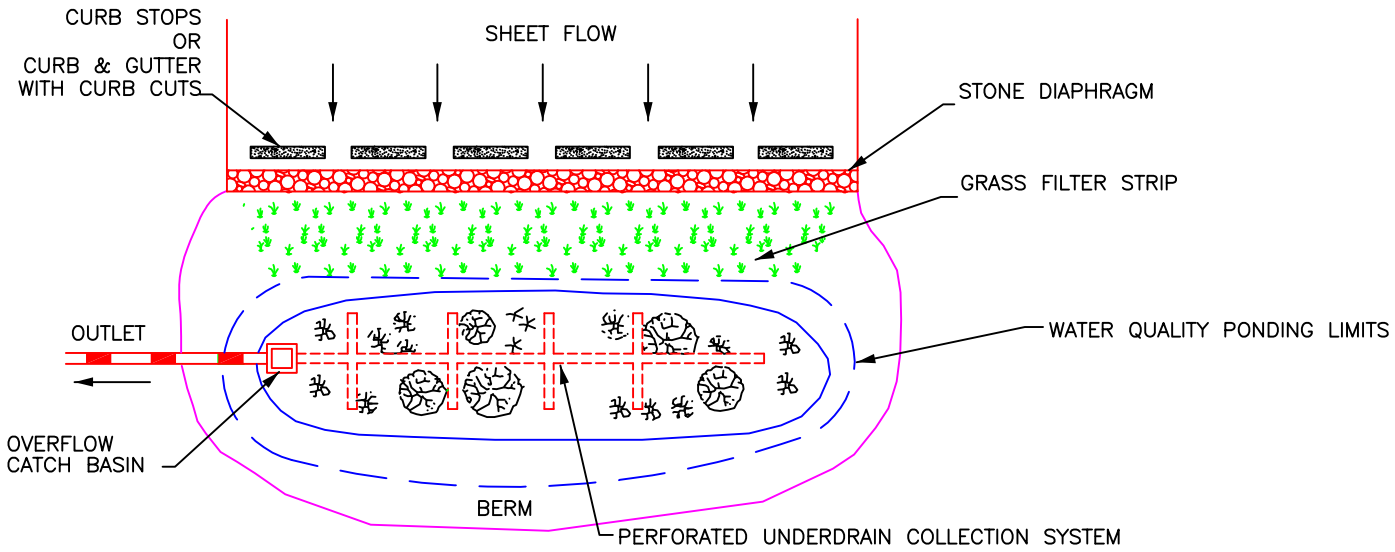
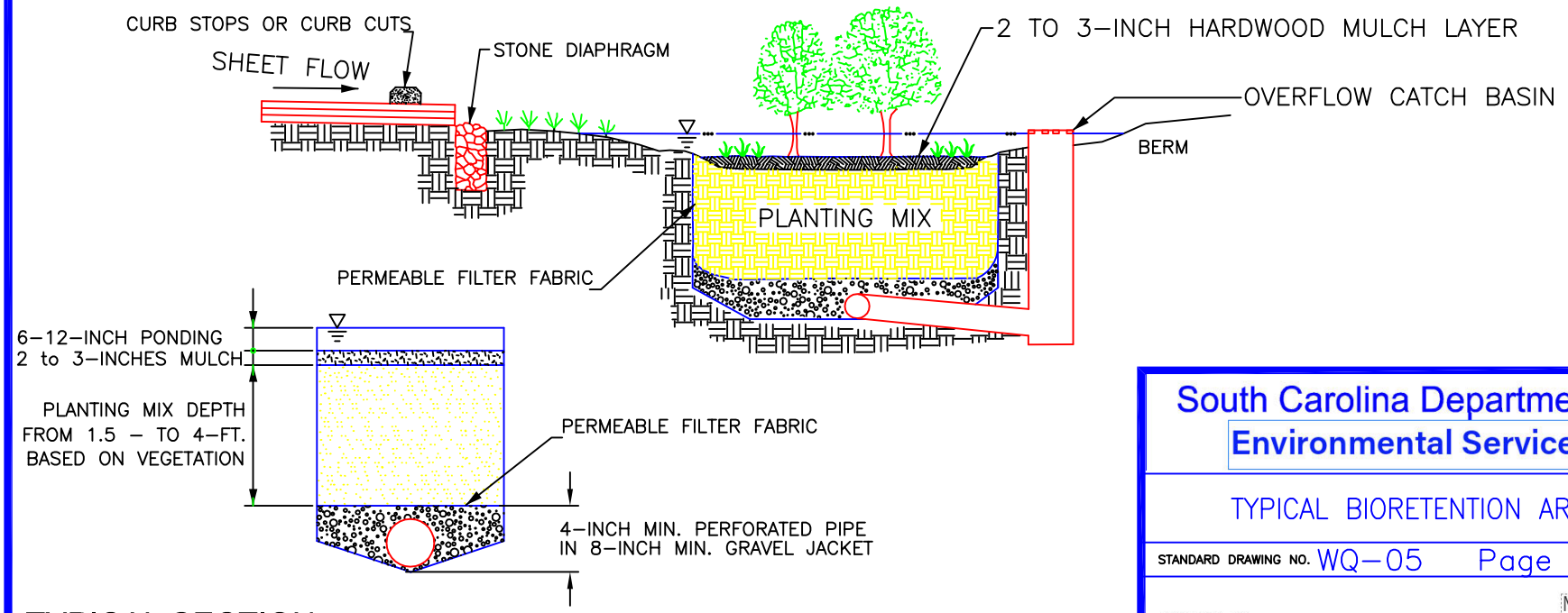


PLAN VIEW



TYPICAL SECTION

South Carolina Department of
Environmental Services

TYPICAL BIORETENTION AREA

STANDARD DRAWING NO. WQ–05 Page 2 of 3

APPROVED BY: SCDES DATE MARCH 2025

TYPICAL BIORETENTION AREA

Installation:

The minimum width of the bioretention area shall be ten (10)–feet and the minimum length shall be forty (40)–feet.

The planting mix should be approximately 65–75% sand, 25% silt or topsoil, and 10% organic or leaf compost. The maximum clay content shall be less than 10%. The minimum depth of the planting mix shall be based on the following:

1.5–feet for grass only bioretention areas,
3.0–feet for bioretention areas that utilize shrubs, and
4.0–feet for bioretention areas that utilize trees.

Inspection and Maintenance:

Regular inspection and maintenance is critical to the effective operation of bioretention areas as designed. Maintenance responsibility of the bioretention area shall be vested with a responsible authority by means of a legally binding and enforceable maintenance agreement that is executed as a condition of plan approval.

The surface of the ponding area may become clogged with fine sediments over time. Core aeration or cultivating unvegetated areas may be required to ensure adequate filtration.

Other required maintenance includes but is not limited to:

Pruning and weeding to maintain appearance shall be done periodically as needed.
Hardwood mulch shall be replaced or replenished 2–to 3–inches thick periodically as needed.
Trash and debris shall be removed periodically as needed.

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TYPICAL BIORETENTION AREA

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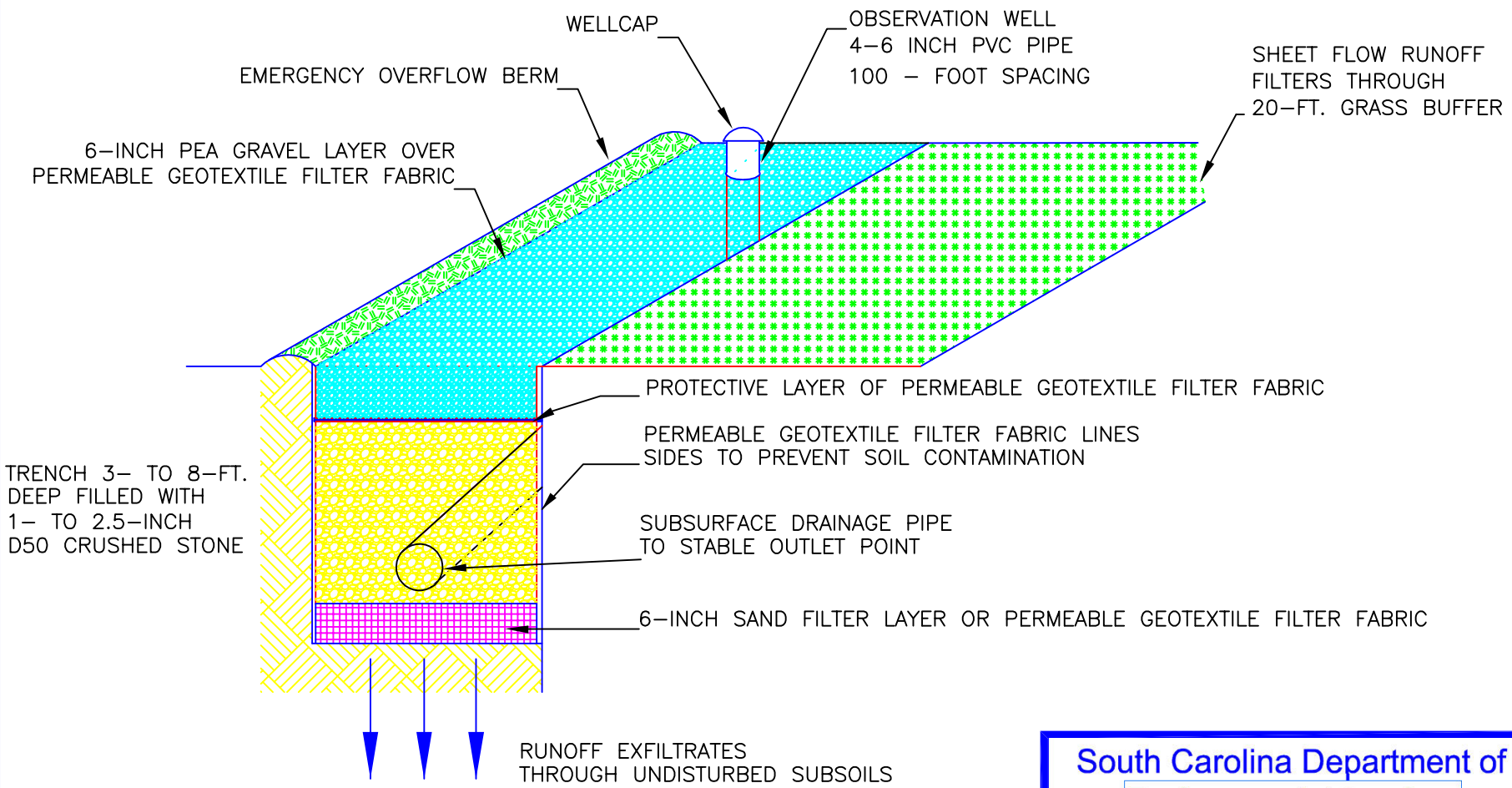

SCHEMATIC OF AN INFILTRATION TRENCHES

South Carolina Department of
Environmental Services

INFILTRATION TRENCH

STANDARD DRAWING NO. WQ–06 Page 1 of 2

APPROVED BY: _____ SCDES

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INFILTRATION TRENCH

Installation:

A 6–inch sand filter shall be located on the bottom of the trench.

The stone fill media shall consist of 1.0– to 2.5– inch D50 crushed stone with 6–inches of pea gravel located on top separated by a permeable filter fabric. This filter fabric prevents should be easily separated from the geotextiles that protect the sides of the excavated trench.

Observation wells a maximum of 100–ft apart shall be installed in every infiltration trench and shall be made of 4– to 6–inch PVC pipe. The well shall extend to the bottom of the trench. The observation well shall be installed along the centerline of the trench, and be flush with the ground elevation of the trench. The top of the well shall be capped and locked to discourage vandalism and tampering.

Inspection and Maintenance:

Regular inspection and maintenance is critical to the effective operation of infiltration trenches as designed. Maintenance responsibility shall be vested with a responsible authority by means of a legally binding and enforceable maintenance agreement that is executed as a condition of the Storm Water Management Permit approval.

A record shall be kept of the average de–watering time of the infiltration trench to determine if maintenance is required.

The top 6–inch layer of pea gravel and the geotextile separating the pea gravel from the stone media serve as a sediment barrier and will be required to be replaced when full of sediment.

Debris and trash shall be cleared from all inlet and outlet structures monthly.

The observation well shall be checked following 72 hours (3–days) of dry weather after a rainfall event. If complete de–watering is not observed, there may clogging and proper maintenance shall be performed.

Trees, shrubs, or invasive vegetation shall be removes semi–annually.

If complete failure is observed, total rehabilitation of the trench shall be performed by excavating the trench walls to expose clean soil, and replacing the sand, filter media, gravel, and geotextiles.

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INFILTRATION TRENCH

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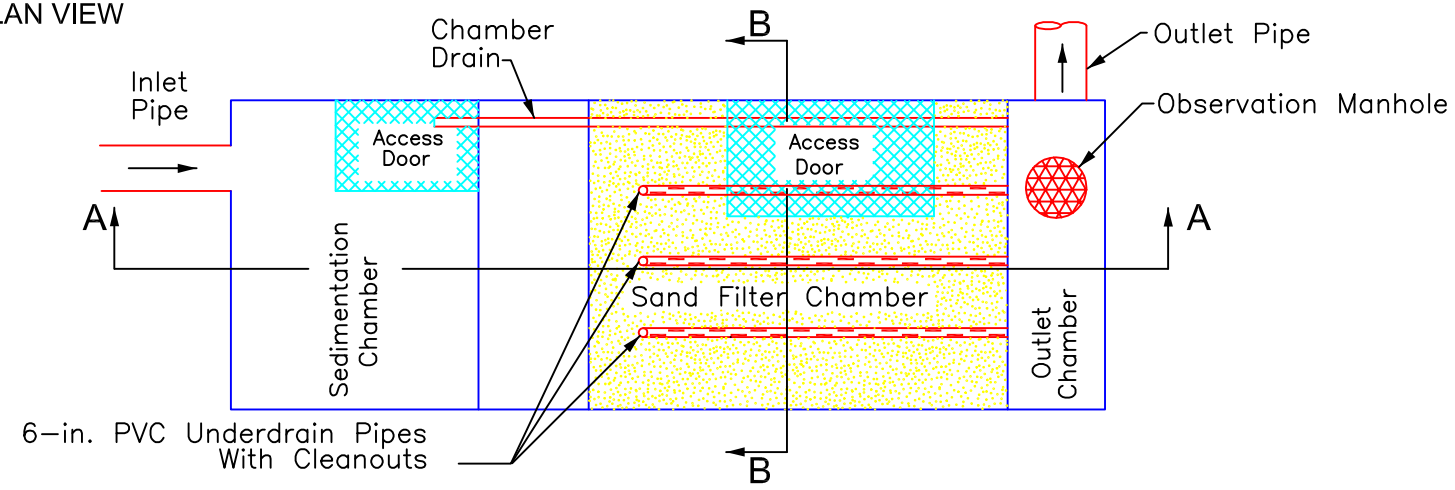
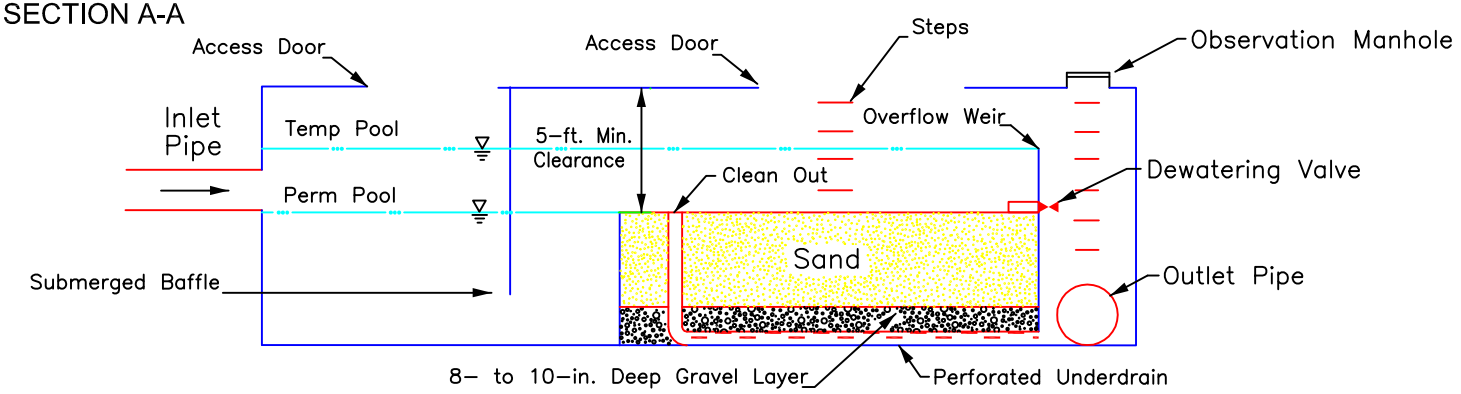
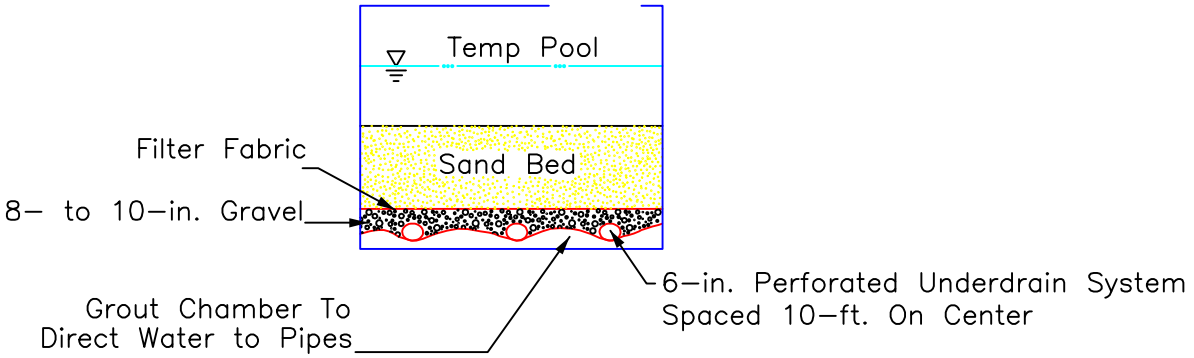
PLAN VIEW



SECTION A-A



SECTION B-B



South Carolina Department of
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UNDERGROUND SAND FILTER (DC FILTER)

STANDARD DRAWING NO. WQ–6 Page 1 of 2

APPROVED BY: SCDES DATE MARCH 2025

SAND FILTERS

When and Where to Use It

Sand filtration facilities are most applicable for smaller sites of 5 acres or less where the percent imperviousness of the site is very high. Sand filters shall be used on sites where the drainage area to the facility will remain well stabilized after the construction phase to prevent excess sediment and debris from permanently clogging the filter.

It is recommended that individual sand filters be sized to treat relatively small drainage area of 1 to 2 acres. The implementation of several filters on the site will prevent the entire site from being untreated if one of the filter facilities becomes clogged, requiring maintenance.

Installation:

A 5–foot minimum clearance height shall be provided between the top of the sand bed and the bottom of the concrete slab to provide clearance for maintenance. A de–watering valve shall be placed just above the sand bed layer to drain the facility in situation where the sand filter becomes clogged and requires maintenance.

An under drain system shall be used to collect the runoff water that has percolated through the sand filter. The pipe shall be 6–inch perforated schedule 40 PVC piping placed in a 8– to 10–inch deep gravel jacket. A permeable geotextile filter fabric layer shall be placed between the sand and the gravel. To ensure adequate drainage, the bottom chamber shall be sloped towards the under drain pipes that shall be spaced 10–feet apart along the filter bed. The under drain system may discharge to the main storm sewer system or may outfall to an outlet chamber.

Inspection and Maintenance:

Regular inspection and maintenance is critical to the effective operation of sand filter facilities as designed. Maintenance responsibility for the sand filter shall be vested with a responsible authority by means of a legally binding and enforceable maintenance agreement that is executed as a condition of plan approval. Typical maintenance responsibilities include clearing debris and trash from all inlet and outlet structures monthly, removing trash and debris from the sediment chamber monthly, and removing all sediment from the sediment chamber annually.

A record shall be kept of the average de–watering time of the sand filter facility to determine if maintenance is required. When the filtering capacity of the sand has diminished, the top layers of the sand (2– to 3–inches) shall be removed and replaced. This typically will need to be done every 3– to 5–years.

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UNDERGROUND SAND FILTER (DC FILTER)

STANDARD DRAWING NO. WQ–6 Page 2 of 2

APPROVED BY: _____ SCDES

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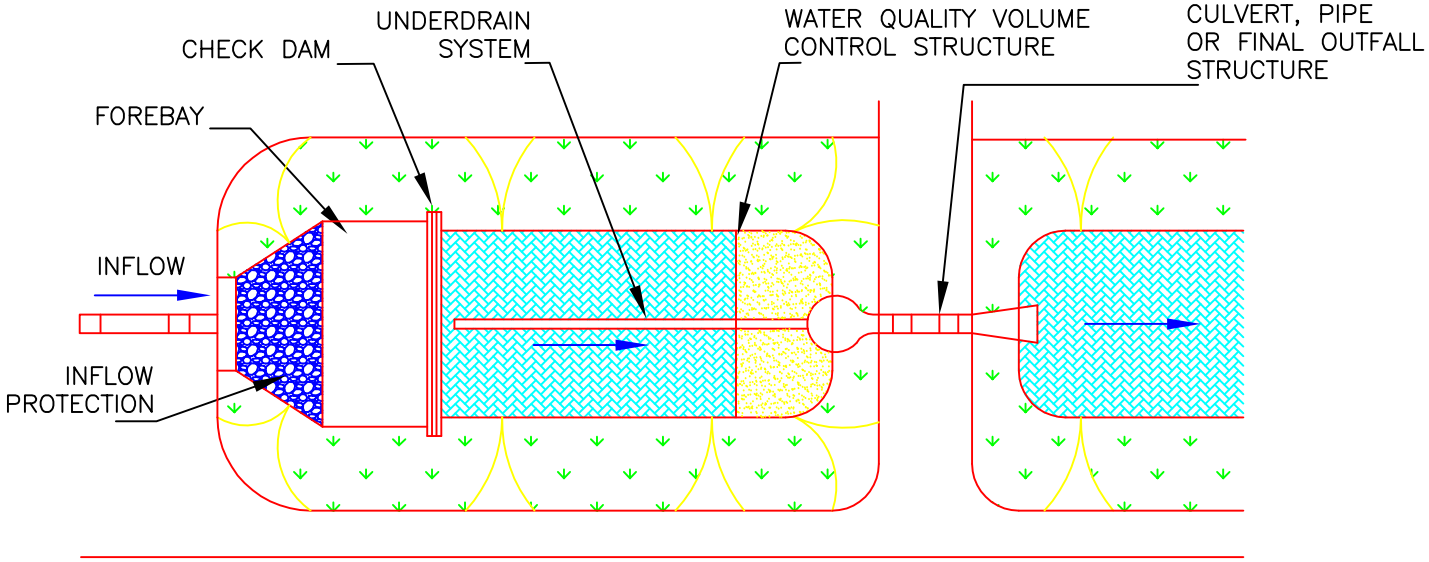

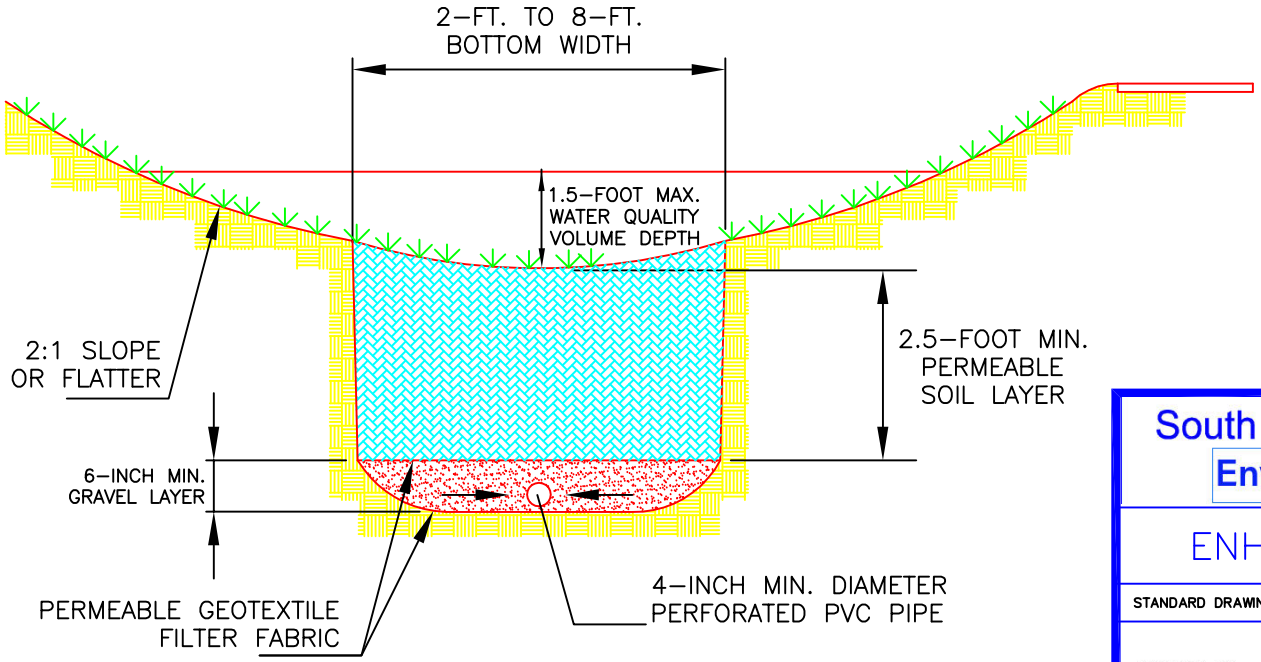

South Carolina Department of Environmental Services

ENHANCED DRY SWALE

STANDARD DRAWING NO. WQ–07 Page 1 of 2

APPROVED BY: _____ SCDES

MARCH 2025 DATE

ENHANCED DRY SWALE

Installation:

Swale slopes should be limited between 1 and 2 %, unless site topography dictates larger slopes. In this instance, drop structures may be placed in the swale to limit the slope of a particular section of the swale. Spacing between drop structures should be a minimum of 50–feet and energy dissipation techniques may need to be added on the downstream side of the drop structures.

The overall depth of the water quality runoff volume detained in the channel shall not exceed 1.5–feet.

The bottom width of the swale should range between 2– and 8–feet where applicable to ensure an adequate filtration area

The side slopes of the swale shall not exceed 2H:1V, and 4H:1V is recommended for ease of maintenance and for side inflow to remain as sheet flow.

The filter bed for an enhanced dry swale shall consist of a permeable soil layer at least 2.5–feet deep. The drainage pipe shall be a minimum 4–inch diameter perforated PVC pipe (AASHTO M 252) in a 6–inch gravel layer.

Inspection and Maintenance:

The surface of the filter bed may become clogged with fine sediments over time. Light core aeration may be required to ensure adequate filtration. Other required maintenance includes but is not limited to periodic mowing to maintain the storage volume and to maintain appearance, and the periodic removal of trash and debris as needed.

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ENHANCED DRY SWALE

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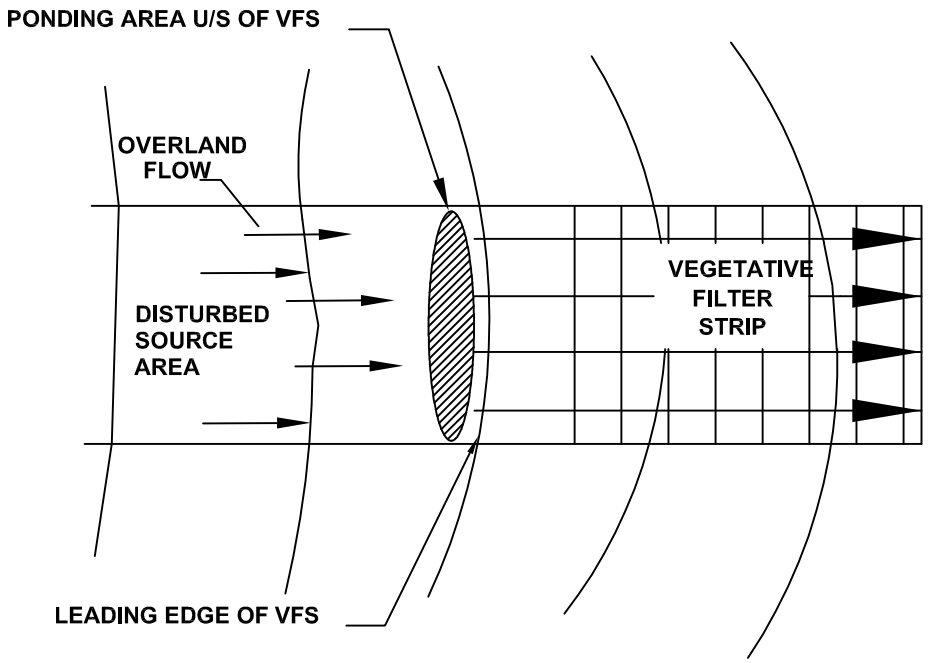
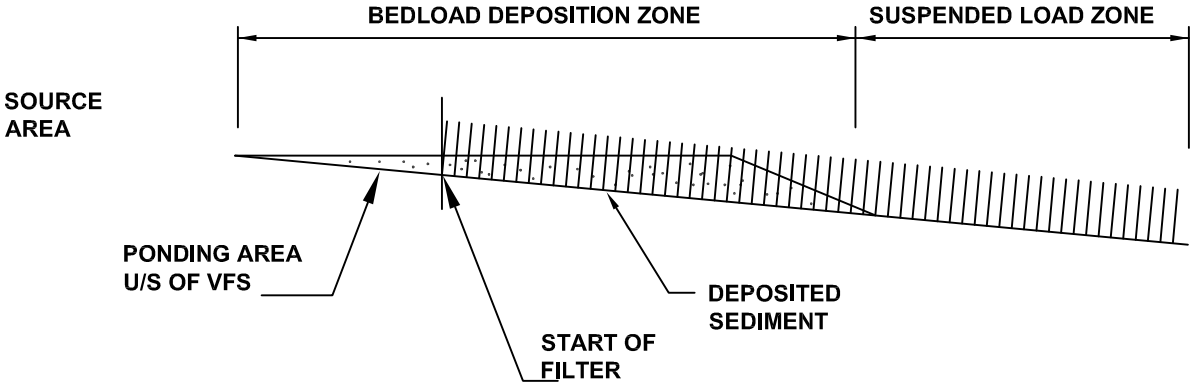


PLAN VIEW



PROFILE VIEW

SCHEMATIC OF A TYPICAL VEGETATIVE FILTER STRIP

South Carolina Department of Environmental Services

VEGETATED FILTER STRIP

STANDARD DRAWING NO. WQ–08 Page 1

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