

Prepared by and Return to:

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Tax Parcel No. 27- _____

**NORTH LEBANON TOWNSHIP
STORMWATER MANAGEMENT FEE PROGRAM
STORMWATER BEST MANAGEMENT PRACTICES
OPERATION AND MAINTENANCE (O&M) AGREEMENT**

THIS AGREEMENT, made and entered into this _____ day of _____, 20____, by and between _____, (hereinafter the “Landowner”), and North Lebanon Township, Lebanon County; Pennsylvania, (hereinafter “Township”);

WITNESSETH

WHEREAS, the Landowner is the owner of certain real property located at _____ with a Tax Parcel Number of _____, as recorded by deed in the land records of Lebanon County, Pennsylvania, Deed Book _____ at Page _____ (hereinafter “Property”).

WHEREAS, the Landowner owns, operates and maintains a stormwater best management practice on the Property; and

WHEREAS, the Landowner was approved to receive a credit from North Lebanon Township’s assessed Stormwater Management Fee; and

WHEREAS, the Subdivision and/or Land Development Plan or the Stormwater Management (SWM) Site Plan for _____ as recorded in the land records of Lebanon County, Pennsylvania, Plan Book _____ at Page _____ (hereinafter “Plan”) which is expressly made a part hereof, as approved by the Township, provides for management of stormwater within the confines of the Property; and

WHEREAS, the SWM Operation and Maintenance (O&M) Plan, hereinafter referred to as the “O&M Plan,” which is attached hereto as Exhibit A and made part hereof, provides for the operation and maintenance of SWM best management practices (BMPs) within the confines of the Property; and

WHEREAS, the Township and the Landowner, his successors and assigns agree that protection of water quality for the health, safety, and welfare of Township residents requires that the SWM BMPs on the Property be adequately operated and maintained by the Landowner.

NOW, THEREFORE, in consideration of the foregoing premises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

1. The Landowner, his successors and assigns shall operate and maintain the SWM BMPs in good working condition in accordance with the operation and maintenance requirements for the applicable SWM BMPs noted in the O&M Plan, which is attached hereto as Exhibit A.
2. The Landowner, his successors and assigns shall regularly inspect the SWM BMPs and maintain inspection records in accordance with the post-construction SWM BMP inspection schedule provided in the O&M Plan. Inspection reports generated by the Landowner, his successors and assigns shall be available to the Township upon request.
3. The Landowner, his successors and assigns hereby grants permission to the Township, its authorized agents and employees, upon presentation of proper identification, to enter upon the Property at reasonable times, and to inspect the SWM BMPs whenever the Township deems necessary. Whenever possible, the Township shall notify the Landowner, his successors and assigns prior to entering the Property. The purpose of the inspection is to assure safe and proper functioning of the SWM BMPs. The inspection shall cover all facilities, pipes, berms, outlet structures, pond areas, access roads, etc. When inspections are conducted, the Township shall give the Landowner, his successors and assigns copies of the inspection report with findings and evaluations. Generally, the Township may perform inspections in accordance with the following schedule:
 - Once every NPDES PAG-13 permit cycle (i.e. once every five (5) years) or during or immediately upon the cessation of a 10 year (i.e. 4.8 inches of rainfall in 24 hours) or greater precipitation event.
4. The owner shall convey to the Township and its agents the right of access for periodic inspections when required.
5. In the event the Landowner, his successors and assigns fail to maintain the SWM BMPs in good working condition acceptable to the Township, the Township or its representatives may, after giving notice to the Landowner, his successors and assigns that he is not properly maintaining the SWM BMPs, and by making demand that such compliance shall be made within thirty (30) days, enter upon the Property and take such necessary and prudent action to maintain said SWM BMPs and to charge the costs of the maintenance and/or repairs to the Landowner, his successors and assigns. This provision shall not be construed as to allow the Township to erect any structure of a permanent nature on the land of the Landowner, his successors and assigns outside of any easement belonging to the Township. It is expressly understood and agreed that the Township is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the Township.
6. In the event the Township, pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies,

materials, and the like on account of the Landowner's or his successors' and assigns' failure to perform such work, the Landowner, his successors and assigns shall reimburse the Township upon demand, within 30 days of receipt of invoice thereof, for all costs incurred by the Township hereunder. If not paid within said 30-day period, the Township may enter a lien against the property in accordance with the Municipal Claims and Tax Liens Act, 53 P.S. § 7101 *et seq.*, or may proceed to recover his costs through proceedings in equity or at law as authorized under the provisions of the Second-Class Township Code.

7. The Landowner, his successors and assigns shall indemnify and hold harmless the Township and its agents and employees against any and all damages, accidents, casualties, occurrences or claims which might arise or be asserted against the Township for the construction, presence, existence or maintenance of the stormwater management facilities by the Landowner, his successors and assigns.
8. In the event a claim or action is asserted against the Township, its agents or employees, the Township shall promptly notify the Landowner, his successors and assigns and they shall defend, at their own expense, any suit based on such claim or action. If any judgment, decree or claim against the Township, its agents or employees shall be granted, the Landowner, his successors and assigns shall pay all costs and expenses in connection with said judgment, decree or claim including any attorney fees, costs and expenses incurred in the defense of the Township.
9. In the advent of an emergency or the occurrence of special or unusual circumstances or situations, the Township may enter the Property, if the Landowner, his successors and assigns is not immediately available, without notification or identification, to inspect and perform necessary maintenance and repairs, if needed, when the health, safety or welfare of the citizens is in jeopardy. However, the Township shall notify the Landowner, his successors and assigns of any inspection, maintenance, or repair undertaken within 5 days of the activity. The Landowner, his successors and assigns shall reimburse the Township for any associated costs.
10. The intent and purpose of this Agreement is to ensure the proper operation and maintenance of the BMPs on the Property by the Landowner, his successors and assigns; provided, however, that this Agreement shall not be deemed to create or affect any additional liability of any party for damage alleged to result from or be caused by stormwater runoff.
11. The Landowner, his executors, administrators, assigns, and other successors in interests, shall release and hold harmless the Township from all damages, accidents, casualties, occurrences, or claims which might arise or be asserted against said Township employees and representatives from the construction, presence, existence, or maintenance of the BMP(s) by the Landowner, his successors and assigns or Township.

This Agreement shall be recorded among the land records of Lebanon County, Pennsylvania and shall constitute a covenant running with the Property and/or equitable servitude, and shall be binding on the Landowner, his administrators, executors, assigns, heirs and any other successors in interests, in perpetuity.

WITNESS the following signatures and seals:

ATTEST:

Landowner:

ATTEST:
(SEAL)

For the Township:

Cheri F. Grumbine, Secretary

Edward A. Brensinger, Chairman

For Landowner:

ACKNOWLEDGMENT

COMMONWEALTH OF PENNSYLVANIA :
: ss.
COUNTY OF LEBANON :

On this, the ____ day of _____, 20 ____, before me a notary public, the undersigned officer, personally appeared _____, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he executed the same for the purposes therein contained, and desired the same might be recorded as such.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Notary Public

(SEAL)

For North Lebanon Township, County of Lebanon, Pennsylvania:

ACKNOWLEDGMENT

COMMONWEALTH OF PENNSYLVANIA :
: ss.
COUNTY OF LEBANON :

On this, the ____ day of _____, 20____, before me a notary public, the undersigned officer, personally appeared Edward A. Brensinger, Chairman, Board of Supervisors, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he executed the same for the purposes therein contained, and desired the same might be recorded as such.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

Notary Public

(SEAL)

EXHIBIT A: OPERATION AND MAINTENANCE (O&M) PLAN

This Operation and Maintenance (O&M) Plan describes the minimum operation and maintenance activities required for the BMP(s) on the subject property. This document provides a full listing of all BMPs eligible for credit under North Lebanon Township's Stormwater Management Fee Program.

Check the box next to all BMPs that apply to the subject property. BMPs not applicable to the subject property can be removed from this document prior to recording.

Dry Detention Basin:

1. Remove trash and debris from the basin as necessary.
2. Mow and trim vegetation a minimum of twice per year to ensure safety, aesthetics, proper basin operation, and to suppress weeds and invasive vegetation. Dispose of cuttings in a local composting facility. Mow only when basin is dry to avoid rutting.
3. Reseed bare areas using native grass species. Install appropriate erosion control measures when native soil is exposed, or erosion channels are forming. Vegetative cover should be maintained at a minimum of 95%. If vegetative cover has been reduced by 10%, vegetation should be reestablished.
4. Plant alternative grass species in the event of unsuccessful vegetation establishment.
5. Replace damaged vegetation without disturbing remaining vegetation.
6. It may be necessary to water the basin vegetation during dry periods to maintain vegetative health.
7. Sediment removal should be conducted when the basin is completely dry. Sediment should be disposed of properly and once sediment is removed, disturbed areas need to be immediately stabilized and revegetated.
8. Inspections of the basin shall be conducted within 48 hours after every storm event of greater than one (1) inch of rain, or four times per year at a minimum.
 - a. Inspect and correct erosion problems, damage to vegetation, and the growth of unwanted or invasive vegetation.
 - b. All basin structures expected to receive and/or trap debris and sediment, including the basin bottom, trash racks, outlets structures, riprap or gabion structures, and inlets, should be inspected for clogging and excessive debris and sediment accumulation. Sediment accumulation shall be addressed when sediment is greater than 3 inches deep at any spot or is covering vegetation.
 - c. Inspect for conformance with original design cross-section and correct as needed.
 - d. Inspect all pipes, catch basins, inlet and outlet structures for deficiencies and repair or replace if required. Common deficiencies include broken concrete, crushed or rusted pipes, missing grout, or blockages caused by litter or foreign materials.
9. Access shall be granted to all authorized local, state, and federal agencies for BMP inspections at reasonable times and with reasonable frequency.
10. Written reports documenting all inspections, repairs, and maintenance activities shall be maintained on site by the property owner at all times.

□ **Filter Strip for Stormwater Treatment:**

1. Biweekly inspections are recommended for at least the first growing season, or until the vegetation is permanently established. Inspections should be completed on a quarterly basis for the first two years following installation, and twice per year thereafter. Inspections should be performed during both the growing and non-growing seasons to ensure the health, diversity, and density of vegetation. Inspections should also be made after every storm event greater than one (1) inch.
2. Vegetated filter strip components that receive or trap sediment and debris should be inspected for clogging, density of vegetation, damage by foot or vehicular traffic, excessive accumulations, and channelization. Sediment and debris should be routinely removed upon observation, but never less than biannually, when buildup exceeds two (2) inches in depth. Sediment should be removed when the filter strip is thoroughly dry. Trash and debris removed from the site should be deposited only at suitable sites and must comply with applicable local, state, and federal waste regulations.
3. If erosion is observed, measures should be taken to improve the level spreader or other dispersion method to address the source of erosion. Rills and gullies observed along the strip may be filled with topsoil, stabilized with erosion control matting, and either seeded or sodded, as desired. For channels less than 12 inches wide, filling with crushed gravel, which allows grass to creep in over time, is acceptable. For wider channels, i.e. greater than 12 inches, regrading and reseeded may be necessary. (Small bare areas may only require overseeding.)
4. Regrading may also be required when pools of standing water are observed along the slope. (In no case should standing water be tolerated for longer than 48-72 hours.)
5. If check dams are proposed, they should be inspected for cracks, rot, structural damage, obstructions, or any other factors that cause altered flow patterns or channelization.
6. Inlets or sediment sumps that drain to filter strips should be cleaned a minimum of twice per year.
7. Grass cover should be mowed, with low ground pressure equipment, as needed to maintain a height of 4-6 inches. Mowing should be done only when the soil is dry, in order to prevent tracking damage to vegetation, soil compaction, and flow concentrations.
8. Reseed with alternate species if initial vegetation establishment is unsuccessful. Replace dead vegetation and remove unwanted or invasive growth as needed.
9. Vegetative cover should be sustained at 85% and reestablished if damage greater than 50% is observed. Whenever possible, deficiencies in vegetation are to be mollified without the use of fertilizers or pesticides.
10. Periodic soil aeration and/or liming may be required if a filter strip exhibits signs of poor drainage and/or vegetative cover.
11. Post rainfall inspections should include evaluations of the filter's actual drain down time compared to the specified time. If significant differences (either increase or decrease) are observed, or if the 72-hour maximum time is exceeded, strip characteristics such as soils, vegetation, and groundwater levels should be reevaluated. Measures should be taken to establish, or reestablish as the case may be, the specified drain down time of the system.
12. Access shall be granted to all authorized local, state, and federal agencies for BMP inspections at reasonable times and with reasonable frequency.
13. Written reports documenting all inspections, repairs, and maintenance activities shall be maintained on site by the property owner at all times.

☐ **Wet Pond or Wetland:**

1. Remove trash and debris from the wetland as necessary.
2. During the first growing season, vegetation in the wetland should be inspected every 2 to 3 weeks. During the first 2 years, wetlands should be inspected at least 4 times per year and after major storms (greater than 2 inches of rain in 24 hours). Once established, properly designed and installed wetlands should be inspected at least semiannually, after major storms (greater than 2 inches of rain in 24 hours), and after periods of warming that generate rapid ice breakups.
3. Inspections shall assess the vegetation, erosion, flow channelization, bank stability, inlet/outlet conditions, and sediment/debris accumulation in the wetland. Structural issues with the wetland such as erosion, bank instability, cross section changes, and damage to inlet or outlet pipes and structures shall be addressed as soon as possible.
4. Wetland and buffer vegetation maintenance including watering, weeding, mulching, replanting, etc. shall be completed in order to maintain at least an 85 percent cover of the emergent vegetation zone. Undesirable and invasive species should be removed and desirable replacements planted if necessary. Damaged vegetation shall be replaced without disturbing remaining vegetation.
5. Sediment should be removed from the forebay before it occupies 50 percent of the forebay, typically every 5 to 10 years.
6. Access shall be granted to all authorized local, state, and federal agencies for BMP inspections at reasonable times and with reasonable frequency.
7. Written reports documenting all inspections, repairs, and maintenance activities shall be maintained on site by the property owner at all times.

☐ **Dry Extended Detention Basin:**

1. Remove trash and debris from the basin as necessary.
2. Mow and trim vegetation a minimum of twice per year to ensure safety, aesthetics, proper basin operation, and to suppress weeds and invasive vegetation. Dispose of cuttings in a local composting facility. Mow only when basin is dry to avoid rutting.
3. Reseed bare areas using native grass species. Install appropriate erosion control measures when native soil is exposed or erosion channels are forming. Vegetative cover should be maintained at a minimum of 95%. If vegetative cover has been reduced by 10%, vegetation should be reestablished.
4. Plant alternative grass species in the event of unsuccessful vegetation establishment.
5. Replace damaged vegetation without disturbing remaining vegetation.
6. It may be necessary to water the basin vegetation during dry periods to maintain vegetative health.
7. Sediment removal should be conducted when the basin is completely dry. Sediment should be disposed of properly and once sediment is removed, disturbed areas need to be immediately stabilized and revegetated.
8. Inspections of the basin shall be conducted within 48 hours after every storm event of greater than one (1) inch of rain, or four times per year at a minimum.
 - a. Inspect and correct erosion problems, damage to vegetation, and the growth of unwanted or invasive vegetation
 - b. All basin structures expected to receive and/or trap debris and sediment, including the basin bottom, trash racks, outlets structures, riprap or gabion structures, and inlets, should be inspected for clogging and excessive debris and sediment accumulation. Sediment accumulation shall be addressed when sediment is greater than 3 inches deep at any spot or is covering vegetation.
 - c. Inspect for conformance with original design cross-section, and correct as needed.
 - d. Inspect all pipes, catch basins, inlet and outlet structures for deficiencies and repair or replace if required. Common deficiencies include broken concrete, crushed or rusted pipes, missing grout, or blockages caused by litter or foreign materials.
9. Access shall be granted to all authorized local, state, and federal agencies for BMP inspections at reasonable times and with reasonable frequency.
10. Written reports documenting all inspections, repairs, and maintenance activities shall be maintained on site by the property owner at all times.

☐ **Infiltration Practices with Sand and Vegetation:**

1. Remove trash and debris from the infiltration area as necessary.
2. Mow and trim vegetation only as appropriate for the cover species, generally a minimum of twice per year. Mow to ensure safety, aesthetics, proper basin operation, and to suppress weeds and invasive vegetation. Dispose of cuttings in a local composting facility. Mow only when the area is dry to avoid rutting.
3. Care shall be taken to avoid compaction by mowers. Do not allow other vehicular access to the infiltration area or the surface above the infiltration area.
4. Reseed bare areas using native grass species. Install appropriate erosion control measures when native soil is exposed or erosion channels are forming. Vegetative cover should be maintained at a minimum of 95%. If vegetative cover has been reduced by 10%, vegetation should be reestablished.
5. Plant alternative grass species in the event of unsuccessful vegetation establishment.
6. Replace damaged vegetation without disturbing remaining vegetation.
7. It may be necessary to water the vegetation in the infiltration area during dry periods to maintain vegetative health. Trees and shrubs may require annual mulching.
8. The underlying soil in the infiltration facility may need to be rototilled or otherwise aerated if the draw down time in the facility is more than 48 hours. This soil restoration process may need to be repeated over time due to natural soil compaction and settling.
9. Sediment removal should be conducted when the facility is completely dry. Sediment should be disposed of properly and once sediment is removed, disturbed areas need to be immediately stabilized and revegetated. Do not compact the underlying soil during this process. If soil is compacted, the facility may require tilling, mechanical scraping, or soil amendment to restore the original infiltration rate.
10. Catch basins, inlets, and cleanout vaults upgradient of the infiltration facilities should be inspected and cleaned at least two times per year and after runoff events of greater than one (1) inch of rain.
11. Inspections of the infiltration facilities shall be conducted within 48 hours after every storm event of greater than one (1) inch of rain, or four times per year at a minimum.
 - a. Inspect and correct erosion problems, slope stability problems, flow channelization, damage to vegetation, and the growth of unwanted or invasive vegetation.
 - b. Verify that all water in the facility has drained down within 72 hours after the rainfall event. The facility may require tilling, mechanical scraping, soil amendment, or the replacement of storage media such as stone (if applicable) to restore permeability if the drawdown time exceeds 72 hours.
 - c. All structures expected to receive and/or trap debris and sediment, including basin bottoms, storage matrixes, trash racks, outlets structures, riprap or gabion structures, and inlets, should be inspected for clogging and excessive debris and sediment accumulation. Sediment accumulation shall be addressed when sediment is greater than 3 inches deep at any spot or is covering vegetation.
 - d. Inspect for conformance with original design cross-section, and correct as needed.
 - e. Inspect all pipes, catch basins, inlet and outlet structures for deficiencies and repair or replace if required. Common deficiencies include broken concrete, crushed or rusted pipes, missing grout, or blockages caused by litter or foreign materials.
 - f. Notify municipal officials if there is evidence of water contamination or hazardous material spills.
12. Access shall be granted to all authorized local, state, and federal agencies for BMP inspections at reasonable times and with reasonable frequency.
13. Written reports documenting all inspections, repairs, and maintenance activities shall be maintained on site by the property owner at all times.

☐ **Infiltration Practices (Subsurface Beds, Dry Wells, Seepage Pits & Trenches):**

1. Regularly clean out roof gutter systems which are connected to infiltration facility.
2. Clean and/or replace filter screens that intercept roof runoff as necessary.
3. Catch basins, inlets, and cleanouts upgradient of the infiltration facilities should be inspected and cleaned as necessary or at least two times per year and after runoff events of greater than one (1) inch of rain.
4. Vegetation along the surface of the infiltration facility shall be maintained in good condition. Mow to ensure safety, aesthetics, proper facility operation, and to suppress weeds and invasive vegetation. Dispose of cuttings in a local composting facility. Mow only when the area is dry to avoid rutting.
5. Care shall be taken to avoid compaction by mowers. Vehicular access on the surface above the infiltration area shall be prohibited.
6. Reseed bare areas using native grass species. Install appropriate erosion control measures when native soil is exposed or erosion channels are forming.
7. It may be necessary to water the vegetation above the infiltration facility during dry periods to maintain vegetative health.
8. Inspections of the infiltration facilities shall be conducted within 48 hours after every storm event of greater than one (1) inch of rain, or four times per year at a minimum.
 - a. Inspect and correct erosion problems, subsidence, sinkholes, damage to vegetation, and the growth of unwanted or invasive vegetation.
 - b. Verify that all water in the facility has drained down within 72 hours after the rainfall event. If draw-down times are exceeding 72 hours, drain the facility via pumping and clean out any perforated piping or other storage structures. If slow drainage persists, the facility may require replacement.
 - c. All structures expected to receive and/or trap debris and sediment, including catch basins, inlets, cleanouts, pipes and other storage structures should be inspected for clogging and excessive debris and sediment accumulation. Sediment accumulation shall be addressed when sediment is greater than 3 inches deep. Dispose of sediment and debris in compliance with local, state and federal regulations.
 - d. Inspect all pipes, catch basins, inlets, cleanouts and outlet structures for deficiencies and repair or replace if required. Common deficiencies include broken concrete, crushed or rusted pipes, missing grout, or blockages caused by litter or foreign materials.
 - e. Notify municipal officials if there is evidence of water contamination or hazardous material spills.
9. Access shall be granted to all authorized local, state, and federal agencies for BMP inspections at reasonable times and with reasonable frequency.
10. Written reports documenting all inspections, repairs, and maintenance activities shall be maintained on site by the property owner at all times.

□ **Filtering Practice (Constructed Filter):**

1. Remove trash and debris from the filter as necessary.
2. The constructed filter shall be inspected a minimum of four times per year. During inspection the following conditions shall be considered:
 - a. Standing water – any water left in a surface filter after the design drain down time (72 hours maximum) indicates the filter is not optimally functioning.
 - b. Film or discoloration of any surface filter material indicates organics or debris have clogged the filter surface.
 - c. Inspect all pipes, catch basins, inlet and outlet structures for deficiencies and repair or replace if required. Common deficiencies include broken concrete, crushed or rusted pipes, missing grout, or blockages caused by litter or foreign materials.
3. The filter area shall be scraped with a rake or tilled and aerated. If an inspection reveals that the filter is clogged or not optimally functioning.
4. Replace filtering medium if scraping/removal has reduced depth of filtering media.
5. If scraping, raking, or tilling and aerating does not restore the filter media to full functionality, the filter media shall be replaced.
6. In areas where the potential exists for the discharge and accumulation of toxic pollutants (such as metals), filter media removed from filters must be handled and disposed of in accordance with all state and federal regulations.
7. Access shall be granted to all authorized local, state, and federal agencies for BMP inspections at reasonable times and with reasonable frequency.
8. Written reports documenting all inspections, repairs, and maintenance activities shall be maintained on site by the property owner at all times.

□ **Filter Strip for Runoff Reduction:**

1. Biweekly inspections are recommended for at least the first growing season, or until the vegetation is permanently established. Inspections should be completed on a quarterly basis for the first two years following installation, and twice per year thereafter. Inspections should be performed during both the growing and non-growing seasons to ensure the health, diversity, and density of vegetation. Inspections should also be made after every storm event greater than one (1) inch.
2. Vegetated filter strip components that receive or trap sediment and debris should be inspected for clogging, density of vegetation, damage by foot or vehicular traffic, excessive accumulations, and channelization. Sediment and debris should be routinely removed upon observation, but never less than biannually, when buildup exceeds two (2) inches in depth. Sediment should be removed when the filter strip is thoroughly dry. Trash and debris removed from the site should be deposited only at suitable sites and must comply with applicable local, state, and federal waste regulations.
3. If erosion is observed, measures should be taken to improve the level spreader or other dispersion method to address the source of erosion. Rills and gullies observed along the strip may be filled with topsoil, stabilized with erosion control matting, and either seeded or sodded, as desired. For channels less than 12 inches wide, filling with crushed gravel, which allows grass to creep in over time, is acceptable. For wider channels, i.e. greater than 12 inches, regrading and reseeded may be necessary. (Small bare areas may only require overseeding.)
4. Regrading may also be required when pools of standing water are observed along the slope. (In no case should standing water be tolerated for longer than 48-72 hours.)
5. If check dams are proposed, they should be inspected for cracks, rot, structural damage, obstructions, or any other factors that cause altered flow patterns or channelization.
6. Inlets or sediment sumps that drain to filter strips should be cleaned a minimum of twice per year.
7. Grass cover should be mowed, with low ground pressure equipment, as needed to maintain a height of 4-6 inches. Mowing should be done only when the soil is dry, in order to prevent tracking damage to vegetation, soil compaction, and flow concentrations.
8. Reseed with alternate species if initial vegetation establishment is unsuccessful. Replace dead vegetation and remove unwanted or invasive growth as needed.
9. Vegetative cover should be sustained at 85% and reestablished if damage greater than 50% is observed. Whenever possible, deficiencies in vegetation are to be mollified without the use of fertilizers or pesticides.
10. Periodic soil aeration and/or liming may be required if a filter strip exhibits signs of poor drainage and/or vegetative cover.
11. Post rainfall inspections should include evaluations of the filter's actual drain down time compared to the specified time. If significant differences (either increase or decrease) are observed, or if the 72-hour maximum time is exceeded, strip characteristics such as soils, vegetation, and groundwater levels should be reevaluated. Measures should be taken to establish, or reestablish as the case may be, the specified drain down time of the system.
12. Access shall be granted to all authorized local, state, and federal agencies for BMP inspections at reasonable times and with reasonable frequency.
13. Written reports documenting all inspections, repairs, and maintenance activities shall be maintained on site by the property owner at all times.

□ **Bioretention/Rain Garden:**

1. Remove trash and debris from the bioretention basin or rain garden as necessary.
2. Mow and trim vegetation a minimum of twice per year to ensure safety, aesthetics, proper basin operation, and to suppress weeds and invasive vegetation. Dispose of cuttings in a local composting facility. Mow only when basin is dry to avoid rutting.
3. While vegetation is being established, pruning and weeding may be required.
4. Trees and shrubs should be inspected twice per year to evaluate health. Replace any dead or dying vegetation without disturbing remaining vegetation.
5. Detritus may also need to be removed every year. Perennial plantings may be cut down at the end of the growing season.
6. Mulch should be re-spread when erosion is evident and be replenished as needed. Once every 2 to 3 years the entire area may require mulch replacement.
7. During periods of extended drought, bioretention areas may require watering.
8. The underlying soil in the rain garden/bioretention basin may need to be rototilled or otherwise aerated if the draw down time in the basin is more than 48 hours. This soil restoration process may need to be repeated over time due to natural soil compaction and settling.
9. Sediment removal should be conducted when the basin is completely dry. Sediment should be disposed of properly and once sediment is removed, disturbed areas need to be immediately stabilized and revegetated.
10. Inspections of the basin shall be conducted within 48 hours after every storm event of greater than one (1) inch of rain, or twice per year at a minimum.
 - a. Inspect and correct erosion problems, damage to vegetation, and the growth of unwanted or invasive vegetation
 - b. All basin structures expected to receive and/or trap debris and sediment, including the basin bottom, trash racks, outlets structures, riprap or gabion structures, and inlets, should be inspected for clogging and excessive debris and sediment accumulation. Sediment accumulation shall be addressed when sediment is greater than 3 inches deep at any spot or is covering vegetation.
 - c. Inspect for conformance with original design cross-section, and correct as needed.
 - d. Inspect all pipes, catch basins, inlet and outlet structures for deficiencies and repair or replace if required. Common deficiencies include broken concrete, crushed or rusted pipes, missing grout, or blockages caused by litter or foreign materials.
11. Access shall be granted to all authorized local, state, and federal agencies for BMP inspections at reasonable times and with reasonable frequency.
12. Written reports documenting all inspections, repairs, and maintenance activities shall be maintained on site by the property owner at all times.

□ **Vegetated Open Channel:**

1. Mow and trim vegetation a minimum of twice per year to ensure safety, aesthetics, proper swale operation, and to suppress weeds and invasive vegetation. Dispose of cuttings in a local composting facility. Mow only when swale is dry to avoid rutting.
2. Reseed bare areas using native, salt-tolerant grass species. Install appropriate erosion control measures when native soil is exposed or erosion channels are forming. Vegetative cover should be maintained at a minimum of 95%.
3. Plant alternative grass species in the event of unsuccessful vegetation establishment.
4. Replace damaged vegetation without disturbing remaining vegetation.
5. It may be necessary to water the swale during dry periods to maintain vegetative health.
6. Rototill and replant swale if draw down time is more than 48 hours. This soil restoration process may need to be repeated over time due to natural soil compaction and settling.
7. Any check dams shall be repaired or replaced when signs of altered water flow (channelization, obstructions, erosion, etc.) are identified
8. Inspections of the swale shall be conducted within 48 hours after every storm event of greater than one (1) inch of rain, or annually at a minimum.
 - a. Inspect and correct erosion problems, damage to vegetation, and sediment and debris accumulation (address when > 3 inches at any spot or covering vegetation).
 - b. Inspect vegetation on side slopes for erosion and formation of rills or gullies, correct as needed.
 - c. Inspect for pools of standing water; dewater and discharge to an approved location and restore to design grade.
 - d. Inspect for litter; remove prior to mowing.
 - e. Inspect for uniformity in cross-section and longitudinal slope, correct as needed.
 - f. Inspect swale inlet (curb cuts, pipes, etc.) and outlet for signs of erosion or blockage, correct as needed.
 - g. Inspect any pipes, catch basins, or outlet structures for deficiencies and repair or replace if required. Common deficiencies include broken concrete, crushed or rusted pipes, or missing grout.
9. Access shall be granted to all authorized local, state, and federal agencies for BMP inspections at reasonable times and with reasonable frequency.
10. Written reports documenting all inspections, repairs, and maintenance activities shall be maintained on site by the property owner at all times.

□ **Bioswale:**

1. Remove trash and debris from the bioswale as necessary.
2. Mow and trim vegetation a minimum of twice per year to ensure safety, aesthetics, proper basin operation, and to suppress weeds and invasive vegetation. Dispose of cuttings in a local composting facility. Mow only when bioswale is dry to avoid rutting.
3. While vegetation is being established, pruning and weeding may be required.
4. Reseed bare areas using native, salt-tolerant grass species. Install appropriate erosion control measures when native soil is exposed or erosion channels are forming. Vegetative cover should be maintained at a minimum of 95%.
5. Plant alternative grass species in the event of unsuccessful vegetation establishment.
6. Replace damaged vegetation without disturbing remaining vegetation.
7. It may be necessary to water the bioswale during dry periods to maintain vegetative health.
8. The underlying soil in the bioswale may need to be rototilled or otherwise aerated if the draw down time in the basin is more than 48 hours. This soil restoration process may need to be repeated over time due to natural soil compaction and settling.
9. Any check dams shall be repaired or replaced when signs of altered water flow (channelization, obstructions, erosion, etc.) are identified.
10. Inspections of the bioswale shall be conducted within 48 hours after every storm event of greater than one (1) inch of rain, or annually at a minimum.
 - a. Inspect and correct erosion problems, damage to vegetation, and sediment and debris accumulation (address when > 3 inches at any spot or covering vegetation).
 - b. Inspect vegetation on side slopes for erosion and formation of rills or gullies, correct as needed.
 - c. Inspect for uniformity in cross-section and longitudinal slope, correct as needed.
 - d. Inspect swale inlet (curb cuts, pipes, etc.) and outlet for signs of erosion or blockage, correct as needed.
 - e. Inspect any pipes, catch basins, or outlet structures for deficiencies and repair or replace if required. Common deficiencies include broken concrete, crushed or rusted pipes, or missing grout.
11. Access shall be granted to all authorized local, state, and federal agencies for BMP inspections at reasonable times and with reasonable frequency.
12. Written reports documenting all inspections, repairs, and maintenance activities shall be maintained on site by the property owner at all times.

☐ **Pervious Pavement:**

1. Remove trash and debris from the pervious pavement system as necessary.
2. Pervious pavement surfaces shall be vacuumed a minimum of twice per year.
3. Planted areas adjacent to pervious pavement shall be maintained at a minimum of 95% vegetative cover in order to prevent soil washing onto the pavement.
4. Immediately clean any soil deposited on pavement
5. Do not allow construction staging, soil/mulch storage, etc. on unprotected pavement surface
6. Clean inlets draining to the subsurface bed twice per year
7. Do not apply abrasives such as sand or cinders on or adjacent to the pervious pavement. Only apply salt for winter maintenance.
8. Snow plowing shall be performed only by setting the plow blade one (1) inch above the pavement.
9. Areas in need of repair that are less than 50 square feet in size may be patched using conventional pavement. Areas which are 50 or more square feet in size shall be repaired using new pervious pavement material.
10. Under no circumstance should the pavement surface ever be seal coated.
11. Access shall be granted to all authorized local, state, and federal agencies for BMP inspections at reasonable times and with reasonable frequency.
12. Written reports documenting all inspections, repairs, and maintenance activities shall be maintained on site by the property owner at all times.

□ **Stream Restoration:**

1. Vegetation establishment is paramount to the stability of the restored streambanks and the floodplain. Vegetation established along the streambanks and within the floodplain should maintain a minimal 85 percent survival rate, which should be documented through the implementation of a monitoring plan. The vegetation shall be monitored and inspections completed monthly for the first year of establishment, yearly for the first five years following establishment, and once every five years thereafter.
2. Plantings that are part of a riparian forest buffer shall be maintained in accordance with the specified Riparian Forest Buffer Operation and Maintenance Plan.
3. Additional items which require inspection and maintenance are any livestock crossings and habitat enhancement structures. These shall be inspected as part of the regular inspections for the BMP and replaced if found to be missing or damaged.
4. The restored streambanks shall be inspected in accordance with the above inspection schedule for vegetation establishment. Chief among the concerns for restored stream banks is the potential for destabilization and erosion. Any streambanks become destabilized shall be immediately re-stabilized using live stakes, boulders, or any other means necessary to prevent continued accelerated erosion.
5. Access shall be granted to all authorized local, state, and federal agencies for BMP inspections at reasonable times and with reasonable frequency.
6. Written reports documenting all inspections, repairs, and maintenance activities shall be maintained on site by the property owner at all times.

□ **Riparian Forest Buffer:**

1. General maintenance of the buffer includes watering, weeding, mowing, pruning, and applying fertilizer and pesticides to the buffer.
2. The site shall be monitored regularly for growth and potential problems. Inspections shall occur a minimum of 2 times per year.
3. During inspections, inspect for damaged or dead vegetation, proper guying and staking, weeds and invasive species, and trash and other foreign debris.
4. During the inspections, inspect for damage to vegetation and dead vegetation. If observed, immediately prune and remove all damaged or dead vegetation, mulch, and re-plant in accordance with the original planting requirements. Newly installed plantings shall be selectively pruned, if necessary, to provide a neat and uniform appearance.
5. Weeds and invasive species shall be controlled if found during an inspection. Planted areas may require semi-annual mowing in order to control invasive species. Selective cutting/manual removal is the preferred method for the removal of weeds and invasive species. Herbicides may also be utilized but must be applied carefully by hand so that they do not spread and kill desirable vegetation.
6. Trash and other foreign debris shall be removed if discovered during an inspection.
7. In the first year of maintenance, weeds must be carefully controlled and the planted area shall be consistently mowed back to 4-6 inches tall when it reaches 12 inches in height. All maintenance required by the results of the minimum twice-yearly inspections shall be performed in a timely fashion following the inspections. All guying and staking shall be maintained to support plant stabilization and straight, uniform growth for at least the first year following the date of planting. Newly planted trees and shrubs shall be watered regularly during any dry periods to completely saturate the root ball during the first growing season. Insect control and prevention should be performed in accordance with manufacturer's recommendations for newly planted landscapes during the first season.
8. In the second year of maintenance, weeds shall continue to be monitored and consistent mowing, pruning, watering, guying and staking repair, and pesticide application shall continue. Rhizomatous weeds may be hand treated with herbicide. Weeds shall not be sprayed with herbicide as the drift from the spray may kill large patches of desirable plants, allowing weeds to move in to these new open areas. Inspections of the planting area will determine the need for additional general maintenance as described in maintenance schedule items nos. 1-6.
9. Continue mowing a maximum of twice per year beginning in year 3 until a native underbed is established. Mowed material shall be composted at a local yard waste facility. Inspections of the planted area will determine the need for additional general maintenance as described in maintenance schedule items nos. 1-6. The initial maintenance routine is necessary for the first 2 to 3 years of growth and may be necessary for up to 5 years until planting growth and unilateral coverage begins to form, naturally inhibiting weed growth. Once tree and shrub growth is adequate, growth of invasive species and other weeds will be naturally prevented, and the landscape becomes self-maintaining.
10. Access shall be granted to all authorized local, state, and federal agencies for BMP inspections at reasonable times and with reasonable frequency.
11. Written reports documenting all inspections, repairs, and maintenance activities shall be maintained by the property owner at all times.