COMPLETE CHECKLIST IN BLUE PEN AND SUBMIT ELECTRONICALLY OR BY MAIL TO THE ADDRESSES BELOW

San Francisco Water Power Sewer
Services of the San Francisco Public Utilities Commission

Urban Watershed Management Program
ATTN: Stormwater Review
525 Golden Gate Ave, 6th Floor
SAN FRANCISCO, CA 94102
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Annual Self-Inspection Checklist

LINED BIORETENTION

(AKA: lined bioretention cell, bioretention basin, bioretention planter, flow-through planter, stormwater planter, rain garden, bioretention swale)

Inspection Date: _____ **Address:** _____ **Block / Lot #**_____ **Installation Date:** _____

Inspected By: Name: _____ **Phone:** _____ ☐ Property Owner ☐ Site Manager ☐ Contractor ☐ Other: _____

INSTRUCTIONS: All inspections, maintenance tasks, and repairs are to be completed prior to the beginning of the rainy season (October 15). Mark all status boxes with an S or U, where S = Satisfactory (no maintenance required), and U = Unsatisfactory (maintenance required). See the Lined Bioretention Inspection instructions included in this packet for detailed descriptions of conditions requiring maintenance and further action.

Item #	Inspection Item Description	Status	Indicate Action Required or Action Planned	Indicate Action Taken (Include Date Completed)
1	Unpleasant odors			
2	Extended drawdown time (Ponded water > 48 hrs.)			
3	Excessive trash / debris accumulation			
4	Visible surface contaminants / pollution			
5	Vandalism / catastrophic damage to components or entire system			
6	Unauthorized modifications			
7	Excessive weed growth			

8	Impermeable liner visible and/or damaged			

Item #	Inspection Item Description	Status	Indicate Action Required or Action Planned	Indicate Action Taken (Include Date Completed)
9	Liner attachment damaged or sealant missing (if applicable)			
10	Sediment accumulation at curb cut / forebay or planter low point			
11	Erosion at inlet, outlet, overflow, or side slopes			
12	Inlet, outlet or overflow structure blockage			
13	Irrigation system damaged, leaking or out of adjustment			
14	Dead, diseased, dying or missing plants			
15	Mulch – large bare spots / eroded mulch areas			
16	Vegetation obstructing line of sight at roadway or intersection			
17	Vegetation blocking in-flow at curb cut / inlet structure			
18	Vegetation blocking O&M of other components			
19	Structural damage (planter edges, check dams or outlet structure)			
20	Rodent damage / burrowing			
21	Mosquitos or mosquito larvae observed*			

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*If mosquitos or mosquito larvae are observed, please contact the San Francisco Environmental Health Vector Control Program at (415) 252-3806, or email EnvHealth.DPH@sfdph.org.

By completing and signing the Annual Self Certification (ASC), the Owner/Representative of the property subject to this ASC hereby acknowledges receipt of the ASC and agrees to take any and all necessary steps to comply with the ASC, the San Francisco Stormwater Management Requirements and Design Guidelines, the San Francisco Stormwater Management Ordinance (San Francisco Public Works Code Section 147 et seq.), and all other applicable laws, ordinances, and regulations. Failure to complete and provide a signature by the established deadline will result in the issuance of a non-reporting fee in accordance with the SFPUC Rates Schedule.

Signature: _____ Date: _____

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NOTE: These instructions are intended to be a companion piece to the Annual Self-Certification Checklist. The information contained herein is to be used to help the preparer of the Annual Self-Certification Checklist accurately conduct an inspection and properly complete the form.

Abbreviations: SMR: San Francisco Stormwater Management Regulations and Design Guidelines; SCP: Stormwater Control Plan; SMO: San Francisco Stormwater Management Ordinance; BMP: Best Management Practice (Lined Bioretention Planter); GI: Green Infrastructure

Item #	Inspection Item Description	Inspection Instructions and Explanation
1	Unpleasant odors	**Area of Concern:** Several maintenance-related factors can lead to anaerobic soil conditions that create unpleasant odors in GI installations. Any installation that consistently fails to draw down completely within 48 hours can become anaerobic. The buildup of bacteria in anaerobic soils, along with decaying organic materials can cause these odors. **Maintenance Solution:** For more information on ponded water and extended drawdown time, see Item #2 below.

Item #	Inspection Item Description	Inspection Instructions and Explanation
2	Extended drawdown time (Ponded water > 48 hrs.)	**Area of Concern:** Ponded water resulting from extended drawdown times beyond 48 hours can lead to several problems such as: lack of filtration capacity, unpleasant odors, plant die-off, and creation of mosquito habitats. Ponded water and drawdown failure can be caused by the following: • crusting or sealing of the bioretention soil surface via accumulation of fine-grained soil, organic matter, etc. • heavily compacted bioretention soil • large amounts of sediment accumulation in the bioretention soil • blocked, clogged, or broken underdrains • blocked or clogged outflow structures and/or sand traps • the improper use of weed barrier fabric or geotextiles in the planter structure **Maintenance Solution:** Infiltration testing can determine if soil compaction or sediment clogging may be the cause of the problem, which can be remedied by scarifying, tilling, shallow or deep aerating, or by replacing the soil in extreme cases. Inspecting the underdrain for clogging can be done visually by looking for standing water in the cleanout or by running a garden hose into the cleanout and determining if the water flows freely or backs up and overtops the cleanout pipe. Video inspection of the underdrain pipe may be performed to determine the source of the underdrain failure. Inspecting the outflow structure or sand trap can be done by removing the lid or grate from the structure and visually inspecting for standing water or excessive debris accumulation. Clogged underdrains and outflow structures can be cleared by jetting or snaking the underdrain pipe or culvert that connects the structure to the sewer, and by removing accumulated debris and sediment from the bottom of the structure with hand tools or by use of a vactor truck. If weed barriers are determined to be the cause of ponding, removal of the weed barrier within the footprint of the bioretention planter is required. The removal of clogged subsurface geotextiles requires the excavation of the bioretention soil.
3	Excessive trash / debris accumulation	**Area of Concern:** Excessive trash or debris accumulation causes problems in GI installations that extend beyond poor aesthetics. Trash and debris accumulation can inhibit plant growth, clog or inhibit the infiltration capacity of the bioretention soil and clog outflow structure grates. Clogged or inhibited filtration capacity could lead to extended drawdown times and unwanted ponding. Additionally, clogged outflow structure grates can lead to overflowing and flooding. **Maintenance Solution:** All trash and debris should be removed from bioretention planters before the start of the rainy season (October 15), or as frequently as site conditions dictate. All material should be discarded at an appropriate facility.
4	Visible surface contaminants / pollution	**Area of Concern:** Visible surface contaminants and pollution can range from inert substances that can cause bioretention soil clogging, to hazardous substances that impact plant, environmental, or human health. Examples of inert contaminants are masonry, plaster or concrete “washout,” and masonry or roadway saw cutting slurry and residue. Examples of hazardous contaminants are petroleum based substances, caustic chemicals, pesticides and herbicides. These pollutants can often be identified by sight or smell when they become deposited on the surface of a bioretention planter. **Maintenance Solution:** If pollutants are detected, investigations must be conducted to determine the source of the contaminant, mitigate that source, and then take steps to clean up the contamination. For inert substances, cleanup can typically be conducted by regular maintenance personnel by simply scraping off the contaminated material and discarding at an appropriate facility. If bioretention soil is removed by the cleanup process, any lost bioretention soil materials must be replaced. Hazardous substance cleanup will require specially trained and licensed contractors and special disposal requirements conforming to local and national laws and regulations.

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5	Vandalism / catastrophic damage to components or entire system	**Area of Concern:** Vandalism can range from minor issues like graffiti, tearing out or stealing plants, to destruction of the entire irrigation system. Catastrophic damage can result from vehicles driving into or through the bioretention planter, trampling caused by large amounts of pedestrians or animals walking through the BMP, or construction/repair of nearby utilities and structures that impact the BMP. **Maintenance Solution:** Repair of vandalism can consist of simply removing graffiti and planting individual replacement plants. Repair of catastrophic damage could consist of completely reconstructing the BMP.
6	Unauthorized modifications	**Area of Concern:** Unauthorized modifications consist of any changes to a BMP that deviate from the approved construction documents included in the project's SMR Maintenance Agreement Exhibit B. These modifications can take place during construction (i.e., soil or plant substitutions with inferior components) or can happen after the BMP is constructed (i.e., reducing the footprint of the BMP to accommodate an addition to a nearby structure). **Maintenance Solution:** The SMR Maintenance Agreement Exhibit B recorded on the deed of the property provides the original approved construction documents that can be referred to and used to determine if modifications have been made. All unauthorized modifications must be corrected by returning the BMP to its original configuration as described in the approved construction documents contained in the SMR Maintenance Agreement Exhibit B.
7	Excessive weed growth	**Area of Concern:** Noxious and invasive weeds must be removed when they cover more than 25% of the BMP surface. Noxious and invasive weeds are highly damaging to the natural and built environment – these weeds interfere with the beneficial use of the land and reduce the effectiveness of the bioretention planter. **Maintenance Solution:** Best practices call for weed removal on a monthly basis, regardless of cover percentage. Weed removal must include the entire root structure and the weeds must be disposed of at an appropriate facility to prevent spreading of invasive species. California's Pest Prevention System (PPS) and the California Food and Agricultural Code (FAC) Appendix D set regulations and laws pertaining to weed removal and disposal.
8	Impermeable liner visible and/or damaged	**Area of Concern:** Impermeable liners are intended to remain buried with bioretention soil and mulch protecting the liner from impact damage and photodegradation from exposure to sunlight. **Maintenance Solution:** If the liner becomes exposed through the settlement of the bioretention soil or by erosion at the sides of the planter, then soil and/or mulch should be added to keep the liner covered. If the liner has been damaged, such as having holes, cracks, splits, or open seams, then the damage must be repaired with a patch to ensure that the liner remains watertight.

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9	Liner attachment damaged or sealant missing (if applicable)	**Area of Concern:** Impermeable liner attachment points must remain fastened and sealed to adjacent concrete structures (if applicable) to prevent ponded water from leaking between the liner attachment point and the adjacent concrete structure. **Maintenance Solution:** If the liner attachment hardware has become loose, detached from the surrounding concrete structure, or is damaged, then steps must be taken to mechanically re-attach the hardware to the concrete and reseal the joint with the appropriate caulk or mastic sealant. If the liner sealant at the joint between the attachment hardware and the concrete structure is cracked, damaged, or missing, then the joint between the hardware and the surrounding concrete structure must be resealed with the appropriate caulk or mastic sealant.
10	Sediment accumulation at curb cut, forebay, or planter low points	**Area of Concern:** Sediment accumulation in BMPs is normal and expected. Sediment and debris can collect in the curb cut (or inlet structure), in the forebay (or rock cobble energy dissipater), or at the low point of bioretention planters. **Maintenance Solution:** Steps must be taken to remove sediment accumulation on an annual basis (or more often, depending on site conditions) to keep the BMP functioning properly. This built-up sediment must be removed to ensure that water can flow freely into and through the BMP, as well as to maintain bioretention soil infiltration capacity. Typical removal methods consist of scraping up sediment with shovels and properly disposing of the sediment at an approved facility.
11	Erosion at inlet, outlet, overflow, or side slopes	**Area of Concern:** Inflow, outflow, and water movement through a bioretention planter may cause erosion and scouring of the planter surface over time or immediately after construction during the plant grow-in period. Erosion and subsequent sediment deposition can be detrimental to the bioretention soil infiltration capacity, cause damage to plants, and create clogging in underdrains and outflow structures. **Maintenance Solution:** Repair measures must include identifying and correcting the cause of the erosion by adding flow dispersal measures to reduce channelized flow (i.e., rock cobble or rip-rap level spreader, etc.), repairing the erosion damage, and removing any sediment created by the erosion process.
12	Inlet, outlet, or overflow structure blockage	**Area of Concern:** Trash, debris, and poorly-sited or overgrown plant material can create blockages at the inlet and outlet points, or at the overflow structure of bioretention planters, inhibiting the flow of water into, through, or out of the facility. Inlet blockages can cause stormwater flows to bypass the BMP or only allow partial flows into the BMP, creating a situation where the BMP is non-functioning or underperforming. Inlet, outlet, and overflow structure blockages can also create excessive ponding within and around the BMP, potentially leading to hazardous conditions and property damage. **Maintenance Solution:** Blockages must be cleared before the start of the rainy season (October 15), before each forecasted storm if site conditions require, and/or as frequently as site conditions dictate. Trash and debris must be removed by hand or with hand tools, and disposed of at an appropriate facility. Poorly-sited or overgrown plant material can be transplanted to another location within the BMP or discarded as compost. Overflow structure grates, sumps, and traps must be cleared of debris by hand, hand tools, or a vactor truck and disposed of at an appropriate facility.
13	Irrigation system damaged, leaking, or out of adjustment	**Area of Concern:** Damaged or leaking irrigation systems are identifiable by the presence of ponded water or wet spots in the planter during dry periods. Malfunctioning irrigation systems can also be identified by dry areas in the planter and evidence of browning or wilting plants that show signs of under-watering. Systems that are out of adjustment are identifiable by observation during the irrigation cycle. Sprinkler head patterns must be observed to determine that the spray pattern does not deposit water on surrounding paved surfaces or nearby structures. **Maintenance Solution:** Irrigation systems must be maintained year round by a qualified professional. This maintenance includes the repair of leaks, the adjustment of irrigation head spray patterns to avoid buildings and paved surfaces. It also includes the inspection, testing and certification of backflow prevention devices. It is recommended that irrigation systems in bioretention planters are only utilized through the plant establishment and warranty phases of the project. Once the plant material has been established and out of warranty, continued irrigation should not be necessary if proper plants were specified for the installation.

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14	Dead, diseased, dying, or missing plants	**Area of Concern:** Plants play an important role in the function of a bioretention system. In addition to supporting evapotranspiration, plant roots help aerate the soil and minimize soil compaction, replenish organic materials in the soil, and provide a habitat for beneficial bacteria that aid in the biological breakdown and mitigation of pollutants deposited by stormwater into the bioretention soil. For a bioretention planter to function properly, it needs consistent and healthy plant cover. Bare spots resulting from missing plants give invasive weeds an opportunity to grow. **Maintenance Solution:** Dead, diseased, dying, or missing plants must be replaced. If a large amount of plants have died off, consult with a horticultural expert on the cause of the die-off, and remedy the cause before replanting.
15	Mulch – large bare spots / eroded mulch areas	**Area of Concern:** Rock and organic mulch helps to minimize weed growth, prevents erosion and scour of the planter surface, and helps prevent the soil surface from losing moisture and crusting during dry periods. **Maintenance Solution:** Any bare spots on the planter surface where the bioretention soil is visible must be re-covered with mulch. The added mulch must meet the specs of the material thickness and type used during construction. If the facility was installed with organic mulch, do not substitute bark, “gorilla hair,” or recycled kiln dried lumber type mulches as replacement materials because these types of mulches are floatable materials than can cause other maintenance problems in bioretention planters (i.e., clogging of the overflow structure). If the facility was installed with rock mulch, select a replacement product of similar or larger size to resist washing out. Do not substitute rock mulch materials with high fines content or recycled materials.
16	Vegetation obstructing line of sight at roadway or intersection	**Area of Concern:** If bioretention planters are located close to a roadway or intersection, overgrown plants may cause a hazardous condition by blocking the vision of motorists, bicyclists, and pedestrians. **Maintenance Solution:** Regular pruning on a quarterly basis can alleviate blocked lines of sight, while maintaining the desired plant coverage in the facility. Pruning should only be done by trained landscape professionals in accordance with established horticultural practices and standards.
17	Vegetation blocking in-flow at curb cut / inlet structure	**Area of Concern:** Poorly-sited, spreading, or overgrown plant material can create blockages at the inlet point of a bioretention planter. This can block stormwater flows from entering the facility, potentially causing stormwater to pond upstream of the inlet or bypass the unit entirely. If stormwater cannot enter the bioretention planter, or less than the designed volume of stormwater is able to enter, the function of the facility will be significantly diminished. **Maintenance Solution:** Any plant material that blocks the inlet of a facility must be pruned, thinned, transplanted elsewhere in the planter, or removed and disposed of. Pruning, thinning, and transplanting should only be done by trained landscape professionals in accordance with established horticultural practices and standards.

Item #	Inspection Item Description	Inspection Instructions and Explanation
18	Vegetation blocking Operation & Maintenance of other components	**Area of Concern:** Poorly-sited, spreading, or overgrown plant material can interfere with or block the Operation & Maintenance (O&M) of other key components of a bioretention planter. Some of the bioretention components that may interfere with O&M are: outlet structures, underdrains, and irrigation components. **Maintenance Solution:** Any plant material that blocks the O&M of key components of a facility must be pruned, thinned, transplanted elsewhere in the planter, or removed and disposed of correctly. Pruning should only be done by trained landscape professionals in accordance with established horticultural practices and standards.
19	Structural damage (planter edges, check dams, or outlet structures)	**Area of Concern:** Minor damage to structural components such as curbs, walls, trench drains and outlet structures should be repaired on a yearly basis. More significant structural damage, such as damage caused by auto accidents, nearby construction work, or natural disasters must be repaired as soon as possible. **Maintenance Solution:** Minor repairs can consist of, but are not limited to, patching chips and cracks to concrete structures, and resetting outlet structure frames and grates. Major repairs can consist of removal and replacement of damaged curbs, walls, outflow structures, or structural bracing and supplemental reinforcement of failing structural components.
20	Rodent damage / burrowing	**Area of Concern:** Rodent damage and animal burrows in bioretention planters can cause structural, landscape, and stormwater flow-based issues. Burrows can undermine structural components, leading to unwanted settlement. Burrows may also create preferential flow paths through the section of a bioretention planter that differ significantly from the designed flow path, causing piping and erosion problems in the bioretention soil. Rodents can also damage plants and plant root systems. **Maintenance Solution:** If rodent / animal damage is observed, consult with a licensed professional pest control service for eradication, or trapping and relocation, as appropriate.
21	Mosquitos or mosquito larvae observed	**Area of Concern:** Ponded water resulting from extended drawdown time beyond 48 hours may lead to the development of a mosquito habitat. **Maintenance Solution:** See Item #2 above for remedies to extended drawdown times. For more information on mosquito control visit http://www.sfdph.org/dph/eh/WestNile/default.asp or http://www.sfmosquito.org/. If mosquitos or mosquito larvae are observed, please contact the San Francisco Environmental Health Vector Control Program at (415) 252-3806 or email EnvHealth.DPH@sfdph.org. Also, consult with a licensed professional pest control service for eradication, as appropriate.