

CALTRANS
BMP RETROFIT PILOT PROGRAM



MAINTENANCE INDICATOR
DOCUMENT

VERSION: THRESHOLD 15.DOC

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CALTRANS BMP RETROFIT PILOT PROGRAM BMP MAINTENANCE INDICATORS

The following specific thresholds are for specified and implied criteria which “trigger” maintenance activities for specific BMPs. The maintenance activity shown is for those times when the field measurement exceeds the maintenance indicator. These thresholds do not preclude taking other actions needed to mitigate the given thresholds or taking actions needed to correct unanticipated problems. These indicators are not only for the BMP pilot program, but they are also considered representative of the long-term maintenance requirements for the BMPs.

This document covers routine maintenance. There may be occasions where emergencies arise, such as accidents, toxic spills, or other incidents, where critical response is needed. On those occurrences, Caltrans crews will respond to the emergency, on a priority basis and, if necessary, the BMP will be taken out of service until the BMP functionality can be restored. The goal for such critical situations is to have the BMP back into service within 30 days.

The time period noted, for completion of any maintenance activity, is a goal that will depend on weather, access to the BMP, personnel and equipment availability.

BIOFILTER – STRIPS and SWALES

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
Uniform sheet flow over length of strip and across swale invert	Evidence of significant channeling or ponding	Visual inspection of erosion or major portions of flow discharge across strip/swale	Monthly, during target storms in the wet season	Correct channelized or ponded areas using additional fill and vegetation and/or by removing accumulated sediment. Target completion time is within 10 days.	None
Height of vegetation	Average plant height exceeds 10 inches	Visual inspection of vegetation throughout strip/swale	In October , and January and monthly during dry season	Cut plants to an average height of 6 inches and remove trimmings. Target completion within 10 days.	Palomar Airport Road Site: maximum average height is 13 inches; trim to 9 inches
Assess adequate vegetative cover	Less than 90 percent coverage in strip invert/swale or less than 70 percent on swale side slope	Visual inspection of strip/swale. Prepare a site schematic to record location and distribution of barren or browning spots to be restored. File the schematic for assessment of persistent problems.	Assess quantity needed in May each year	<p>Reseed/replant barren spots by Nov. 1. Wet soil before and after sod is placed.</p> <p>Scarify area to be restored, to a depth of 2-inches. Restore side slope coverage with hydroseed mixture. Irrigate same as saltgrass</p> <p>If after 2 applications (2</p>	<p>Keep a reserve of approximately 10 percent of sodded surface area in saltgrass flats. Use mature flats to restore coverage. Order replacement material in May for delivery in September.</p> <p>Use original design erosion control seed mix on side slopes.</p>

BIOFILTER – STRIPS and SWALES

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
				seasons) or reseeded/replanting and growth is unsuccessful both times, an erosion blanket will be installed along bare areas	
Residence time is less than design criteria	Residence time is less than design criteria	Measure mean residence times in swale using protocol in OMM plan. Calculate residence time for design storm.	Once per year during target storm	Assess the cause of the problem. As soon as weather and moisture conditions allow, take corrective action. If sediment is the cause, in September, remove and dispose of accumulated sediment. Regrade to restore flow gradient. Resod by November 1	Swales only Cerritos MS – 4 min 605/91 – 9 min 5/605 – 7 min 605/Carson – 9 min Palomar – 14 min Melrose – 15 min
Inspect for debris accumulation	Vegetative debris, debris or litter present	Visual observation	Monthly	Remove litter, vegetative debris, and debris. Target completion period within 10 days.	None
Inspect for accumulated sediment	Sediment at or near plant height, channeling of flow, inhibited flow due to change in slope	Visual observation	Monthly during wet season	Remove sediment. If flow is channeled, determine cause and take corrective action. If sediment becomes deep enough to change the flow gradient, remove sediment, conduct sediment characterization according to OMM Plan	None

BIOFILTER – STRIPS and SWALES

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
				Vol II, dispose of sediment, and replant. Regrade to design specification and replant swale/strip with sod. If regrading is necessary, the process should start near May 1. Resod strip/swale in Nov. Target completion period within 10 days.	
Inspect for burrowing rodent activity	Ground squirrel holes, vole or gopher mounds	Visual observation	Monthly, for rodent activity with abatement immediately if the activity affects the performance of the BMP otherwise abate annually in September	<ul style="list-style-type: none"> • Where ground squirrels are active, firmly backfill the burrows to prevent seepage, erosion and leakage. • Where ground squirrels are not active, confirm that no owl activity is present (a biologist may be needed if uncertain). Firmly backfill the burrows to prevent seepage, erosion and leakage. • Where gophers are present, level the mounds and firmly backfill the burrows to prevent seepage, 	None

BIOFILTER – STRIPS and SWALES

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
				erosion and leakage. <ul style="list-style-type: none"> • Where voles are present, firmly backfill the burrows to prevent seepage, erosion and leakage. • If ground squirrel abatement is needed conduct a one time poisoning program. After the appropriate amount of time has passed (determined by the pesticide applicator), firmly backfill the burrows to prevent seepage, erosion and leakage. 	
Inspect for possible endangered species, threatened species and species of special concern within the BMP maintenance perimeter	Evidence of ponding, emergence of woody vegetation, shrubs, or burrowing animal damage. Presence of logs, woodpiles rocks, or large debris.	Visual observation	Weekly, during the wet season	<ul style="list-style-type: none"> • Remove woody vegetation, shrubs, and large debris within strip/swale within 10 days. • Correct ponded areas using sand fill within 3 days. • If burrows are found between Mar 1 and Aug 30, a biologist needs to confirm that no birds are nesting in the burrow 	Vulnerable sites are: SR-78/Melrose I-5/Palomar Airport Rd

BIOFILTER – STRIPS and SWALES

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
				before sealing the hole. <ul style="list-style-type: none"> At vulnerable sites, remove debris, woodpiles etc. within 10 days. 	
Inspect for standing water	Water accumulation in spreader ditch	Standing water in spreader ditch	Within 72 hours after a storm event unless a subsequent storm event is forecasted to occur within 72 hours	De-water the spreader ditch to a depth of less than 0.25 inches. If sediment impedes the de-watering activity, then move or remove that portion of the sediment. Store any removed sediment in one 55-gallon drum and log the amount of sediment deposited in the drum. Up to 55-gallons of sediment may be stored in the drum for up to one year. Before the end of the one-year period or when the drum is completely full, characterize ⁵ and dispose of the waste.	Altadena Maintenance Station: De-water the spreader ditch to a depth of less than 0.25” by removing the bypass plug and allowing the water to drain into the infiltration trench. Use care to prevent sediment from discharging into the infiltration trench. Replace the bypass plug once the de-watering has been completed. At the end of the wet season (May 1), remove the bypass plug and allow the spreader ditch to drain. Use care to prevent sediment from discharging into the infiltration trench. Remove, characterize, and dispose of sediment

BIOFILTER – STRIPS and SWALES

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
					<p>from the spreader ditch. Replace the bypass plug before the beginning of the wet season (October 1).</p> <p>Carlsbad Maintenance Station:</p> <p>De-water the spreader ditch to a depth of less than 0.25". Remove, characterize, and dispose of sediment from the spreader ditch. Clean weep holes in spreader ditch and drain the maximum amount of water.</p> <p>At the end of the wet season (May 1), remove, characterize, and dispose of sediment from the spreader ditch.</p>
General Maintenance Inspection	Inlet structures, outlet structures, side slopes or other features damaged, significant erosion, emergence of trees, woody vegetation or weeds, fence damage, etc.	Visual observation	Monthly	Take action as needed to correct problems. Target completion period within 30 days.	Remove any trees, woody vegetation, or weeds taller than 12-inches.

CONTINUOUS DEFLECTIVE SEPARATION (CDS) UNITS

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
Inspect for accumulation of trash and debris	Unit 85 percent full	Visual observation	Monthly during the wet season	Empty unit when the it is 85 percent full or annually in May, effect cleaning within 30 days	
Inspect for vector harborage	Standing water for more than 72 hours	Visual observation	Monthly and 72 hours after target storm event	Immediately notify VCD for vector abatement assessment.	None
Inspect the screen for damage and to ensure that it is properly fastened.	Screen becomes clogged, damaged or loose	Visual observation	Annually between September 15 and October 1)	Brush or high pressure wash the screen	None
Inspection for structural integrity	Holes in screen, large debris, damage to housing or weir box	Visual observation	Monthly or prior to a target storm during the wet season, and annually in May	Immediately consult with engineer and manufacturer's representative to develop a course of action, effect repairs within 10 working days	None

DRAIN INLET INSERTS – FOSSIL FILTER

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
Inspect for debris/trash	Sufficient debris/trash that could interfere with proper functioning of insert	Visual observation	<ul style="list-style-type: none"> • Before and once during each target storm event • Weekly during extended wet periods • Monthly during the dry season 	Remove and dispose of debris/trash. Target completion period within 1 day.	None
Oil and grease removal	Absorbent granules dark gray, or darker, or unit clogged with sediment.	Visual observation	<ul style="list-style-type: none"> • At the end of each target storm event • Weekly during extended wet periods • Monthly during the dry season 	Replace Fossil Filter™ adsorbent within 10 working days.	None
Inspection for structural integrity	Broken or otherwise damaged insert	Visual observation	Monthly	Replace insert or immediately consult design engineer to develop course of action, effect repairs within 10 working days	None
Annual renewal of medium	End of wet season, April 30	None	Annually	Remove media and analyze for parameters shown in OMM Plans. Replace media before Oct 1	None

DRAIN INLET INSERTS – STREAM GUARD

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
Sediment removal	Sediment more than 6-inches	Visual inspection of sediment collected within insert	<ul style="list-style-type: none"> • Before each target storm event • Weekly during extended wet periods • Monthly during periods of dry weather 	Replace insert. Target completion period within 10 days.	None
Inspect for debris/trash	Sufficient debris/trash that could interfere with proper functioning of insert	Visual observation	<ul style="list-style-type: none"> • Before and once during each target storm event • Weekly during extended wet periods 	Remove and dispose of debris/trash. Target completion period within 1 day.	None
Oil and grease removal	When oil absorbent polymer becomes saturated with oil	Visual observation (absorbent polymer expansion indicates oil saturation)	During each target storm event and monthly during the dry season	Within 10 working days, replace oil absorbent polymer	None
Inspection for structural integrity	When absorbent material becomes saturated with oil Signs of rips, gashes, and/or fallen media	Visual observation	Monthly	Replace insert or immediately consult with design engineer to develop a course of action, effect repairs within 10 working days	None
Annual renewal of medium	End of wet season, April 30	None	Annually	Remove media and analyze for parameters shown in OMM Plans. Replace media before Oct 1	None

EXTENDED DETENTION BASINS

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
Drain time is 72 hours for design volume	Less than 48 hours or more than 72 hours for full basin	Determine drain time based on effluent flow meter activity or visual observation	Immediately after each target storm	<ul style="list-style-type: none"> If time too long, open gate to discharge remaining volume, within 1 day. Per direction from design engineer, modify holes on standpipe after basin drains, within 30 days Remove and dispose of debris/trash from outlet/outlet screen, within 10 days. 	<ul style="list-style-type: none"> Does not apply to District 7 Extended detention Basins Clean rip-rap and standpipes in District 7
Basin side slope planted for erosion protection and planted invert	Average plant height greater than 18-inches	Visual observation and random measurements through out the side slope area	Monthly	Cut vegetation to an average height of 12-inches and remove trimmings. May cut to 8 inches after July 1. Target completion period within 30 days Do not cut more than four times per year.	None
Inspect for adequate vegetative cover	Less than 70 percent coverage on invert and side slopes	Visual observation	October each year	Reseed/replant barren spots by Nov. 1. Scarify surface if needed. If after two applications (2 seasons) of reseeding/replanting and growth is unsuccessful	

EXTENDED DETENTION BASINS

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
				both times, an erosion blanket will be installed along bare areas. No erosion blanket will be installed in the basin invert.	
Inspect for possible vector harborage	Standing water for more than 72 hours	Visual observation	Monthly and 72 hours after target storm event	Immediately notify VCD for vector abatement assessment.	None
Inspection for trash and debris at inlet and outlet structures	Debris/trash present	Visual observation	Monthly and before every target storm	Remove and dispose of trash and debris Target completion period within 10 days.	None
Inspection for sediment management and characterization of sediment for removal	<ul style="list-style-type: none"> Sediment depth averages 18-inches or 10 percent of basin volume which ever is less Any parameter concentration (See Table 5.2, Vol II) exceeds 50% of Title 22 TTLC. Or, if the parameter concentration falls between 10X STLC and TTLC, is less than 50% TTLC, and the WET results 	<ul style="list-style-type: none"> Measure depth at apparent maximum and minimum accumulation of sediment. Calculate average depth Sample according to OMM plan and send samples to lab 	June 1 each year	Remove and dispose of sediment. Regrade and revegetate if vegetation coverage drops below 70 percent. Revegetate with seed as required by threshold on Nov. 1	None

EXTENDED DETENTION BASINS

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
	exceed 50 % of the STLC value.				
Inspect for burrowing rodent activity	Ground squirrel holes, vole or gopher mounds	Visual observation	Monthly, for rodent activity with abatement immediately if the activity affects the performance of the BMP otherwise abate annually in September	<ul style="list-style-type: none"> • Where ground squirrels are active, firmly backfill the burrows to prevent seepage, erosion and leakage. • Where ground squirrels are not active, confirm that no owl activity is present (a biologist may be needed if uncertain). Firmly backfill the burrows to prevent seepage, erosion and leakage. • Where gophers are present, level the mounds and firmly backfill the burrows to prevent seepage, erosion and leakage. • Where voles are present, firmly backfill the burrows to prevent seepage, erosion and leakage. • If ground squirrel abatement is needed conduct a one time 	None

EXTENDED DETENTION BASINS

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
				poisoning program. After the appropriate amount of time has passed (determined by the pesticide applicator), firmly backfill the burrows to prevent seepage, erosion and leakage.	
Inspect for possible endangered species, threatened species and species of special concern. within the BMP maintenance perimeter.	Evidence of ponding, emergence of woody vegetation, shrubs, , or burrowing animal damage. Presence of logs, woodpiles, rocks, or large debris.	Visual observation	Weekly, during the wet season	<ul style="list-style-type: none"> • Remove woody vegetation, shrubs, in the basin within 10 days. • Remove debris, woodpiles etc. within 10 days. • Correct ponded areas using sand fill • For vulnerable sites, on Mar 1, deploy stakes with mylar strips and place scarecrow device around BMP. • If burrows are found between Mar 1 and Aug 30, a biologist needs to confirm that no birds are nesting in the burrow before sealing the hole. 	Vulnerable sites are: I-5/SR56 I-5/Manchester I-15/SR-78
Inspect for standing water	Water accumulation in any structure or other	Standing water in any structure or other	Annually, May 1	Where gravity draining is possible, drain the	None

EXTENDED DETENTION BASINS

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
	location within the basin	location within the basin		standing water	
General Maintenance Inspection	Inlet structures, outlet structures, side slopes or other features damaged, significant erosion, emergence of trees or woody vegetation, graffiti or vandalism, fence damage, etc.	Visual observation	Monthly	Within 10 working days, take corrective action. Consult engineers if immediate solution is not evident.	None

INFILTRATION BASINS

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
72 hour infiltration of design volume	Evidence of ponding water after 72 hours	Evaluation of water level within basin using data logging bubbler or visual observation of basin for evidence of ponding water	72 hours after target storm event	Remove sediment, scarify invert and revegetate before November 1. If problem persists, immediately notify engineer. Undertake investigation for course of action to achieve acceptable infiltration rate or other acceptable solution. If unable to achieve acceptable infiltration rate or implement alternative solution then move to decommission	None
Vegetation of basin invert and side slopes	Plant height exceeds 12 inches	Visual observation and random measurements through out the side slope and invert area	Monthly	Cut vegetation to a height of 6 inches and remove cuttings. Target completion period within 30 days.	None
Inspect for possible vector harborage	Standing water for more than 72 hours	Visual observation	Monthly and 72 hours after target storm event	Immediately notify VCD for vector abatement assessment	None
Inspect for standing water	Water accumulation in any structure or other location within the basin	Standing water in any structure or other location within the basin	Annually, May 1	Where gravity draining is possible, drain the standing water	None
Inspection for trash and debris at inlet structures	Debris/trash present	Visual observation	Monthly	Remove and dispose of debris/trash. Target completion period	None

INFILTRATION BASINS

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
				within 10 days.	
Inspection for sediment management (accumulation)	Sediment accumulation greater than 18-inches or 10 percent of basin volume which ever is less	Measure depth at apparent maximum and minimum accumulation of sediment. Calculate average depth	June 1 each year	Remove, characterize and dispose of sediment. Regrade and revegetate if vegetation coverage drops below 70 percent. Revegetate with seed as required by threshold on Nov. 1	None
Inspection for sediment management (toxicity)	Any parameter concentration (See Table 5.2, Vol II) exceeds 50% of Title 22 TTLC. Or, if the parameter concentration falls between 10X STLC and TTLC, is less than 50% TTLC, and the WET results exceed 50 % of the STLC value.	Sample according to OMM plan and send samples to lab	May 1 each year	Remove and dispose of sediment regrade basin floor to ensure proper drainage. Revegetate on November 1 if coverage falls below 70%.	None
Vegetation coverage inspection	Coverage falls below 70 percent	Visual observation	During month of September	Reseed/replant barren spots by Nov. 1. Scarify surface if needed. If after two applications (2 seasons) of reseeding/replanting and growth is unsuccessful both times, an erosion blanket will be installed along bare areas. No erosion blanket will be installed in the basin invert.	None

INFILTRATION BASINS

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
Inspect for burrowing rodent activity	Ground squirrel holes, vole or gopher mounds	Visual observation	Monthly, for rodent activity with abatement immediately if the activity affects the performance of the BMP otherwise abate annually in September	<ul style="list-style-type: none"> • Where ground squirrels are active, firmly backfill the burrows to prevent seepage, erosion and leakage. • Where ground squirrels are not active, confirm that no owl activity is present (a biologist may be needed if uncertain). Firmly backfill the burrows to prevent seepage, erosion and leakage. • Where gophers are present, level the mounds and firmly backfill the burrows to prevent seepage, erosion and leakage. • Where voles are present, firmly backfill the burrows to prevent seepage, erosion and leakage. • If ground squirrel abatement is needed conduct a one time poisoning program. 	None

INFILTRATION BASINS

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
				After the appropriate amount of time has passed (determined by the pesticide applicator), firmly backfill the burrows to prevent seepage, erosion and leakage.	
Inspect for possible endangered species, threatened species and species of special concern within the BMP maintenance perimeter.	Evidence of ponding, emergence of woody vegetation, shrubs, or burrowing animal damage. Presence of logs, woodpiles, rocks, or large debris.	Visual observation	Weekly, during the wet season	<ul style="list-style-type: none"> • Remove woody vegetation, shrubs, in the basin within 10 days. • Remove debris, woodpiles etc. within 10 days. • Correct ponded areas using sand fill. If burrows are found between Mar 1 and Aug 30, a biologist needs to confirm that no birds are nesting in the burrow before sealing the hole. 	None
General Maintenance Inspection	Inlet structures, outlet structures, side slopes or other features damaged, significant erosion, emergence of trees or woody vegetation, graffiti or vandalism, fence damage, etc.	Visual observation	Monthly	Within 30 working days, take corrective action. Consult engineer if immediate solution is not evident.	None

INFILTRATION TRENCHES

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
Design infiltration rate	Infiltration rate falls below 90 percent of design rate	Calculate infiltration rate with pressure transducer or measure in observation well	After each target storm	Immediately notify engineer. Undertake investigation for course of action to achieve acceptable infiltration rate. If unable to achieve acceptable infiltration then BMP operations cease.	Carlsbad MS – 1.2 in/hr Altadena MS – 1.5 in/hr
Inspect for possible vector harborage	Standing surface water for more than 72 hours	Visual observation	Monthly and 72 hours after target storm event	Immediately notify VCD for vector abatement assessment	None
Inspection for trash and debris at inlet and outlet structures	Trash/debris present	Visual observation	Monthly	Remove and dispose of trash and debris. Target completion period within 10 days.	None

INFILTRATION TRENCHES

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
Inspect for sediment accumulation	Visible sediment	Visual inspection of the stone aggregate, no sediment should be visible at the top of the trench.	Monthly during the dry season After every storm greater than 0.5-inches	Remove top layer of trench, silt, filter fabric and stone, wash stone and reinstall fabric and stone into trench	None
Inspect for burrowing rodent activity	Ground squirrel holes, vole or gopher mounds	Visual observation	Monthly, for rodent activity with abatement immediately if the activity affects the performance of the BMP otherwise abate annually in September	<ul style="list-style-type: none"> • Where ground squirrels are active, firmly backfill the burrows to prevent seepage, erosion and leakage. • Where ground squirrels are not active, confirm that no owl activity is present (a biologist may be needed if uncertain). Firmly backfill the burrows to prevent seepage, erosion and leakage. • Where gophers are present, level the mounds and firmly backfill the burrows to prevent seepage, erosion and leakage. • Where voles are present, firmly backfill the burrows to prevent seepage, 	None

INFILTRATION TRENCHES

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
				erosion and leakage <ul style="list-style-type: none"> If ground squirrel abatement is needed conduct a one time poisoning program. After the appropriate amount of time has passed (determined by the pesticide applicator), firmly backfill the burrows to prevent seepage, erosion and leakage. 	
Inspect for standing water at end of wet season	Spreader ditch or observation well contains water following the wet season (i.e., June 1 through September 30)	Visual observation	May 1 each year	If the observation well has standing water, assess the problem for water level reduction If ditch has standing water, remove spreader ditch bypass plug during first week of dry season to allow water to drain into infiltration trench. Remove bypass drain blockage monthly.	Bypass plug will be installed throughout the wet season
General Maintenance Inspection	Inlet structures, outlet structures, filter fabric or other features damaged, emergence of trees or woody vegetation, graffiti or vandalism, fence damage, etc.	Visual observation	Monthly	Within 30 working days, take corrective action. Consult engineer if immediate solution is not evident.	None

MEDIA FILTERS – PERLITE/ZEOLITE

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
Design flow rate through canisters: 15 gpm per canister	Standing water in the filter vault, visible scum line in the vault that is higher than the overflow weir.	Remove top of canister check to see if media is discolored AND packed with sediment.	During one storm per month during wet season	Replace canisters. After canisters are replaced, stabilize the media by flushing with water according to manufacturers recommendation. When canisters are changed send canisters to manufacturer to determine remaining life of the media	None
Inspect for sediment accumulation in pre-treatment sedimentation chamber	Maximum 12-inches Any parameter concentration (See Vol II) exceeds 50% of Title 22 TTLC. Or, if the parameter concentration falls between 10X STLC and TTLC, is less than 50% TTLC, and the WET results exceed 50 % of the STLC value.	Measure with appropriate device Characterize sediment by sampling according to OMM plan Vol II	Measure sediment depth monthly during period of extended wet weather. Characterize sediment annually on May 1	Remove sediment within 10 days during wet season, characterize sediment and dispose of the sediment within 30 days If sediment characterization exceeds maintenance indicator, remove and dispose of sediment.	None None

MEDIA FILTERS – PERLITE/ZEOLITE

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
Inspect for minor maintenance	Per manufacture's guidelines	None	Monthly	Flush underdrains and other maintenance per manufacturer's guidelines.	None.
Manufacturer's recommended major maintenance	Per manufacture's guidelines	Per manufacture's guidelines	Annually, in August/ September	<p>Consult with manufacturer regarding need for replacement of canisters. If manufacturer confirms need, replace canisters. After canisters are replaced, stabilize the media by flushing with water according to manufacturers recommendation</p> <p>When canisters are changed and at the end of the pilot program, send canisters to manufacturer to determine remaining life of the media. Remove sediment and other maintenance per manufacturer's product guidelines.</p>	None

MEDIA FILTERS – PERLITE/ZEOLITE

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
Inspection for trash and debris at inlet and outlet structures and within vaults	Trash/debris present	Visual observation	Weekly during periods of extended wet weather (rain within previous week of 0.10 in) and monthly during the dry season.	Remove and dispose of trash and debris. Target completion period within 1 day during wet season and 10 days during dry season.	None
Inspect for standing water	Water accumulation in any structure or other location within the filter	Standing water in any structure or other location within the filter	Annually, May 1	Where gravity draining is possible, drain the standing water	None
General Maintenance Inspection	Inlet structures, outlet structures, vault, piping, or other features damaged and for graffiti or vandalism	Visual observation	Monthly	Within 30 working days, take corrective action. Consult engineer if immediate solution is not evident.	None

MEDIA FILTERS – SAND

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
<p>Design filter loading rate of 0.0545 gpm/sf (10.5 ft/d), or</p> <p>Drain time of 48 hours</p>	<p>Loading rate drops below 9 ft/d or</p> <p>Drain time exceeds 48 hours</p>	<p>Use staff gage in vault to measure loading rate, or</p> <p>Evaluate peak and average loading rates from inlet and outlet flow data loggers or.</p>	<p>During one storm event per month if staff gage is used.</p> <p>After one storm event per month during wet season</p>	<p>Remove sediment, trash and debris., remove top 2 inches of media and dispose of sediment. Restore media depth to 18 inches when overall media depth drops to 12 inches. Target completion period within 10 days. If problem persists, consult with engineer.</p>	<p>None.</p>
<p>Inspect for sediment accumulation in sedimentation chamber</p>	<p>Maximum 12-inches, or</p> <p>Any parameter concentration (See Vol II) exceeds 50% of Title 22 TTLC. Or, if the parameter concentration falls between 10X STLC and TTLC, is less than 50% TTLC, and the WET results exceed 50 % of the STLC value.</p>	<p>Measure with appropriate device</p> <p>Characterize sediment by sampling according to OMM plan Vol II and send samples to lab</p>	<p>Measure sediment depth monthly during period of extended wet weather.</p> <p>Characterize sediment annually on May 1</p>	<p>Remove sediment within 10 days during wet season, characterize sediment and dispose of the sediment within 30 days</p> <p>If sediment characterization exceeds maintenance indicator, remove and dispose of sediment.</p>	

MEDIA FILTERS – SAND

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
Inspection for trash / debris at inlet and outlet structures and on media surface	Trash and debris present	Visual observation	Weekly during periods of extended wet weather (rain within previous week of 0.10 in) and monthly during the dry season.	Remove and dispose of trash and debris. Target completion period within 1 day during wet season and 10 days during dry season.	None
Inspect pumps for proper functioning	Pump does not operate	Energize pump to see if water is discharged	September or after one month of inactivity during the wet season	Make assessment to determine if problem is electrical or mechanical. Take appropriate action. Replace pump if needed. Target completion time is 10 days (keep one pump in storage as back-up)	District 7 filters only
Inspect pumps for serviceability and periodic maintenance	Per manufacture's guidelines	Per manufacture's guidelines	Per manufacture's guidelines	Per manufacture's guidelines	District 7 filters only
Inspect for burrowing rodent activity	Ground squirrel holes, vole or gopher mounds	Visual observation	Monthly, for rodent activity with abatement immediately if the activity affects the performance of the BMP otherwise abate annually in September	<ul style="list-style-type: none"> Where ground squirrels are active, firmly backfill the burrows to prevent seepage, erosion and leakage. Where ground squirrels are not active, confirm that no owl activity is present (a biologist may be needed if uncertain). Firmly backfill the burrows 	None

MEDIA FILTERS – SAND

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
				to prevent seepage, erosion and leakage. <ul style="list-style-type: none"> • Where gophers are present, level the mounds and firmly backfill the burrows to prevent seepage, erosion and leakage. • Where voles are present, firmly backfill the burrows to prevent seepage, erosion and leakage • If ground squirrel abatement is needed conduct a one time poisoning program. After the appropriate amount of time has passed (determined by the pesticide applicator), firmly backfill the burrows to prevent seepage, erosion and leakage. 	
Inspect for possible endangered species, threatened species and species of special concern within the BMP maintenance perimeter.	Presence of bare ground, sparse ground cover, woodpiles, rocks, logs, rocks, evidence of burrowing animal damage or evidence of ponding, emergence of woody vegetation, or	Visual observation	Weekly, during the wet season	<ul style="list-style-type: none"> • On March 1 place nylon/plastic mesh with mylar strips over the filter sand area to prevent bird nesting. Remove the mesh and mylar in September each year. If nesting occurs 	Vulnerable sites: I-5/La Costa PR I-5/SR-78 PR

MEDIA FILTERS – SAND

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
	shrubs,			in the BMP, immediately notify the engineer. • Remove debris, woodpiles etc. within 10 days. • On Mar 1, deploy stakes with mylar strips and place scarecrow device around BMP. If burrows are found between Mar 1 and Aug 30, a biologist needs to confirm that no birds are nesting in the burrows before sealing the hole.	
Inspect for standing water	Water accumulation in any structure or other location within the filter	Standing water in any structure or other location within the filter	Annually, May 1	Where gravity draining is possible, drain the standing water	None
General Maintenance Inspection	Inlet structures, outlet structures, filter fabric or other features damaged, emergence of vegetation, graffiti or vandalism, fence damage, etc.	Visual observation	Monthly	Within 30 working days, take corrective action. Consult engineer if immediate solution is not evident.	None

MULTI-CHAMBER TREATMENT TRAINS

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
Maximum filter drain time of 72 hrs for design and smaller storms	Drain time greater than 72 hours or sediment accumulation is greater than 0.1 inch over more than 50 percent of the fabric surface area.	Visual observation	After each target storm	Remove and replace filter fabric blanket. Target completion period within 10 days. If problem persists, consult with engineer, the media may need to be replaced.	None
Inspection for trash/debris at inlet and outlet structures and the MCTT	Trash/debris present	Visual observation	Weekly during periods of extended wet weather (rain within previous week of 0.10 in) and monthly during the dry season.	Remove and dispose of trash and debris. Target completion period within 1 day during wet season, 10 days during dry season.	None
Inspection for sediment accumulation	Maximum of 6-inches in main settling chamber Maximum of 2-feet grit chamber, or Any parameter concentration (See Vol II) exceeds 50% of Title 22 TTLC. Or, if the parameter concentration falls between 10X STLC and TTLC, is less than 50% TTLC, and the WET results exceed 50 % of the STLC value.	Measure with appropriate device Characterize sediment by sampling according to OMM plan Vol II and send samples to lab	Measure sediment depth monthly during period of extended wet weather. Characterize sediment annually on May 1	Remove sediment within 10 days during wet season, characterize sediment and dispose of the sediment within 30 days If sediment characterization exceeds maintenance indicator, remove and dispose of sediment.	None

MULTI-CHAMBER TREATMENT TRAINS

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
Inspect for possible vector harborage	Standing water for more than 72 hours	Visual observation	Monthly and 72 hours after target storm event	Immediately notify VCD for vector abatement assessment.	None
Inspect for standing water	Water accumulation in any structure or other location within the device	Standing water in any structure or other location within the device	Annually, May 1	Where gravity draining is possible, drain the standing water. Where gravity draining is not possible, pump water from the structure. All structures should be as dry as possible at the end of the Wet Season (June 1 each year) to prevent possible mosquito breeding.	None
Replace filter media every 3 years per designer's specification	Operation greater than 3 years	Not applicable	Every 3 years	Remove and replace filter media	None
Inspect sorbent pillows in main settling chamber	Darkened by oily material	Visual Observation	Semi-annually, once at the end of the wet season	Annually, renew sorbent pillows, or immediately if pillows are darkened by oily material	None
Inspect pumps for proper functioning	Pump does not operate	Energize pump to see if water is discharged	September or after one month of inactivity during the wet season	Make assessment to determine if problem is electrical or mechanical. Take appropriate action. Replace pump if needed. Target completion time is 10 days (keep one pump in storage as back-up)	None

MULTI-CHAMBER TREATMENT TRAINS

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
Inspect pumps for serviceability and periodic maintenance	Per manufacture's guidelines	Per manufacture's guidelines	Per manufacture's guidelines	Per manufacture's guidelines	None
General Maintenance Inspection	Inlet structures, outlet structures, filter fabric, settling tubes or other features damaged, emergence of vegetation, graffiti or vandalism, fence damage, etc.	Visual observation	Monthly	Within 30 working days, take corrective action. Consult engineer if immediate solution is not evident.	None

OIL-WATER SEPARATOR

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
Inspect for sediment accumulation in the pre-separator and separator chamber	Greater than 12-inches	Measure with appropriate device	Quarterly	Within 10 working days remove the accumulated material with a suction hose from a vacuum vehicle or portable pump.	None
Inspect for oil accumulation in oil chamber	Oil depth is not more than 50 percent of chamber volume	Gauge the level of oil/water with a wooden gauge stick	Quarterly	Within 10 working days remove and dispose of oil and grease.	None
Inspect coalescer for debris and gummy deposits	Debris or gummy deposits present	Visual observation	Two times per year – at the beginning and end of each wet season (Sep 1 and April 15)	Wash the coalescer with a high-pressure hot water.	None
Inspect water level in tank	Less than full	Visual observation	Monthly	Fill with water within 1 day	None
Inspect for general mechanical integrity	Per manufacture's guidelines	Per manufacture's guidelines	Monthly during the wet season and before the beginning of the wet season	Operate each mechanical component to ensure proper operation. Repair as needed	None

WET BASIN

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
24-hour draw down measured between the rim of the outlet structure and invert of the WQ orifice in the outlet structure.	Drawdown greater than 25 hours or water is flowing over weir.	Evaluate drain time from inlet and outlet flow data loggers or observe 25 hours after target storm. Observation of water flowing over spillway	After each target storm event	If >25-hours: Open gate to discharge water to permanent pool elevation, clear outlet of debris. Consult engineer if needed. If water is spilling over weir, open canal gate until water level is at permanent pool elevation. Check/clear outlet of debris.	None
Inspect for burrowing rodent activity	Ground squirrel holes, vole or gopher mounds	Visual observation	Monthly, for rodent activity with abatement immediately if the activity affects the performance of the BMP otherwise abate annually in September	<ul style="list-style-type: none"> Where ground squirrels are active, firmly backfill the burrows to prevent seepage, erosion and leakage. Where ground squirrels are not active, confirm that no owl activity is present (a biologist may be needed if uncertain). Firmly backfill the burrows to prevent seepage, erosion and leakage. Where gophers are present, level the 	None

WET BASIN

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
				mounds and firmly backfill the burrows to prevent seepage, erosion and leakage. <ul style="list-style-type: none"> • Where voles are present, firmly backfill the burrows prevent seepage, erosion and leakage. • If ground squirrel abatement is needed conduct a one time poisoning program. After the appropriate amount of time has passed (determined by the pesticide applicator), firmly backfill the burrows to prevent seepage, erosion and leakage. 	
Inspect for possible endangered species, threatened species and species of special concern within the BMP maintenance perimeter.	Evidence of emergence of woody vegetation, shrubs, burrowing animal damage. Presence of logs, woodpiles, rocks, or large debris.	Visual observation	Monthly, during the wet season	<ul style="list-style-type: none"> • Remove debris, woodpiles etc. within 10 days. • On Mar 1, deploy stakes with mylar strips and place scarecrow device around BMP. If burrows are found between Mar 1 and Aug 30, a biologist needs to 	None

WET BASIN

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
				confirm that no birds are nesting in the burrows before sealing the hole. Remove floating debris and dead and floating vegetation mats within 10 days.	
General Maintenance Inspection	Inlet structures, outlet structures, side slopes or other features damaged, significant erosion, graffiti or vandalism, fence damage, etc.	Visual observation	Monthly	Within 10 working days, take corrective action, or restore to as-constructed condition. Consult engineers if immediate solution is not evident.	None
Inspect Zone 1 ⁴ for plant coverage and density to sustain vector abatement efficacy <i>(See attachments for zone locations.)</i>	Observable plant coverage/density	Visual, visible plant growth or emergent plant growth	Annually, at the end of the monitoring season or about May 30	<ol style="list-style-type: none"> 1. Have a biologist survey the Wet Basin to determine if any birds are nesting or other sensitive animals are present. If birds are nesting, with advice from the biologist, proceed with the maintenance. 2. Lower and maintain the water level to expose the area to be maintained, do not completely drain basin 3. Mechanically remove all plants 	None

WET BASIN

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
Inspect Zone 2 ⁴ for plant coverage and density to sustain vector abatement efficacy ⁶	Plant density is such that mosquito fish cannot swim freely in the planted area.	Mosquito fish cannot be seen in the planted area, plant density approximately 80 to 100 percent	Monitor Quarterly, and annually, at the end of the monitoring season or about May 30	Annually, or at a special request of the local vector control agency <ol style="list-style-type: none"> 1. Have a biologist survey the Wet Basin to determine if any birds are nesting or other sensitive animals are present. If birds are nesting, with advice from the biologist, proceed with the maintenance. 2. Lower and maintain the water level to expose the area to be maintained, do not completely drain basin 3. Mechanically remove Typha sp. (cattail), Scirpus sp. (bulrush) to produce random plant clusters (2-5 plants) with clusters at approximately 0.5 meters on center⁴. An effort should be made to maintain a ratio of Scirpus to 	None

WET BASIN

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
				Typha of 2:1. If the plants are cut, cut the plant to below the permanent pool water surface. 4. Dispose of the plant material in a landfill or other appropriate disposal area. 5. Monitor plant density quarterly to determine grow back rate.	
Maintain Vegetated Access Road to reduce fire hazard from contact with vehicle catalytic converters. <i>(See attachments.)</i>	Average plant height exceeds 6 inches.	Visual inspection of vegetation throughout maintenance access road.	In October, and January and monthly during dry season.	Cut plants to an average height of 4 inches.	None

WET BASIN

Preventive Maintenance and Routine Inspections

DESIGN CRITERIA, ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS
Inspect for sediment accumulation in forebay and main pond	<p>More than 2 inches in the forebay and 4 inches in the main pond, or</p> <p>Any parameter concentration (See Vol II) exceeds 50% of Title 22 TTLC. Or, if the parameter concentration falls between 10X STLC and TTLC, is less than 50% TTLC, and the WET results exceed 50 % of the STLC value.</p>	<p>Measure in forebay by estimating depth using stationing along concrete maintenance ramp. In main pond by measuring down from water quality orifice and comparing to as-constructed grade.</p> <p>Sample according to OMM plan Vol II and send samples to lab</p>	<p>When pond is drained for Zone 1 plant removal, or every 3 years.</p> <p>Test May 1 each year</p>	<p>Remove and dispose of sediment. Target completion period within 30 days. By November 1, restore vegetation to the plan shown on the as-built drawings.</p> <p>If sediment characterization exceeds maintenance indicator, remove and dispose of sediment. Regrade. By November 1, restore vegetation to the plan shown on the as-built drawings.</p>	<p>La Costa site only</p>

NOTES:

1. The design storm event is a storm that has a one year, 24 hour recurrence frequency.
2. A target storm event is a storm with a prediction of greater than 0.25 inches of rainfall or 0.1 inches for drain inlet inserts. Storm events should be separated by at least 72 hours of dry weather from the previous storm event.
3. Woody wetland vegetation consists of: willows (*Salix spp*), mule fat (*baccharis salicifolia*), cottonwood (*populus fremontii*), and western sycamore (*plantanus racemosa*). Note, this criterion is not applicable to the wet basin.
4. Zone 1, open water area of the basin, average depth is about 3 feet. Zone 2, shallow water bench, depth of water 0 –12 inches. Zone 3, periodic inundation is the temporary water storage volume impounded between the permanent pool and the overflow weir, i.e. the water quality storage. (*See attachments for zone locations.*) *Zone A is the remaining upland slope between Zone 3 and the maintenance road.*
5. Sediment characterization is the testing required for disposal as specified in Title 22 – Environmental Health Standards, Article 3 – Characterization of Materials for Waste Disposal
6. This action should be revisited in April 2001 to determine its efficacy and if any modifications are needed.

This Maintenance Indicator Document has been developed using site-specific information gathered by specialists trained in the identification of threatened and endangered species and their habitat. Information contained in this document includes guidance for inspection for possible threatened and endangered species harborage. Further, some of the maintenance recommendations are based on the requirements of specific plant species used in this Pilot Program. The recommendations provided in this document must be reassessed with respect to species and plant materials if the guidance contained herein is to be used for a separate project in another area.

NB I-5 OFF RAMP

MAINTENANCE ACCESS ROAD

WATER QUALITY
OUTLET STRUCTURE
WITH OVER FLOW WEIR



LEGEND

-  ZONE 1 - OPEN WATER
-  ZONE 2 - SHALLOW WATER BENCH
-  ZONE 3 - PERIODIC INUNDATION
-  ZONE 4 - RIPARIAN, FLOODPLAIN TERRACE,
AND UPLAND SLOPE
-  ROCK
-  MAINTENANCE ACCESS ROAD - CONCRETE
-  MAINTENANCE ACCESS ROAD - VEGETATED
-  BMP PILOT PROGRAM MAINTENANCE LIMITS
-  MISCELLANEOUS CONCRETE STRUCTURES

CONCRETE TRAPEZOIDAL CHANNEL
SEE SHT 2

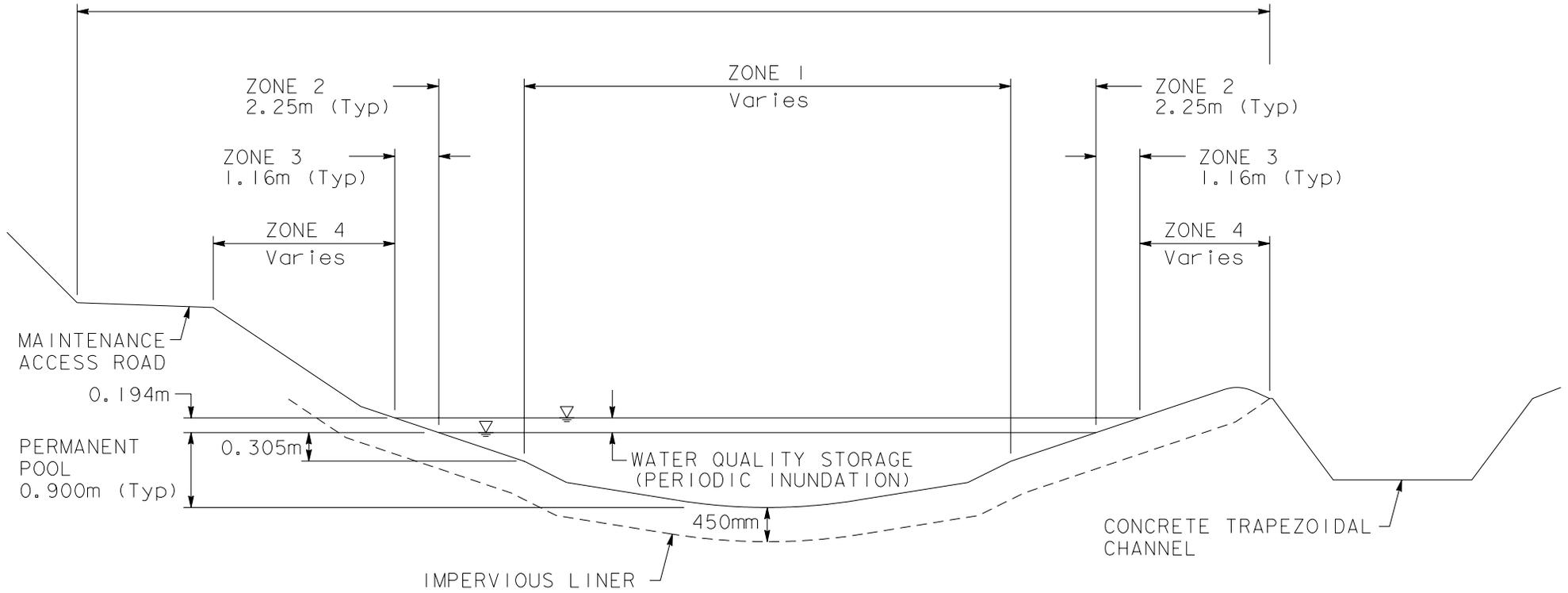
PIRAEUS STREET

LA COSTA AVENUE

SITE 111104
OVERVIEW OF THE
I-5/LA COSTA AVENUE
WET BASIN BMP
ZONE DELINEATION
SHT 1 OF 2
SCALE: 1:400

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BMP PILOT PROGRAM MAINTENANCE LIMITS



LEGEND

- ZONE 1 - OPEN WATER
- ZONE 2 - SHALLOW WATER BENCH
- ZONE 3 - PERIODIC INUNDATION
- ZONE 4 - RIPARIAN, FLOODPLAIN TERRACE, AND UPLAND SLOPE

SECTION A-A

**SITE 111104
OVERVIEW OF THE
I-5/LA COSTA AVENUE
WET BASIN BMP
ZONE DELINEATION
SHT 2 OF 2**

NOT TO SCALE