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STORMWATER CONTROL PLAN
FOR
DISNEY'S BOAT RENTALS

2200 LAKESHORE BOULEVARD
LAKEPORT, CA 95453
APN 026-031-290-000

PREPARED FOR:
DISNEY'S BOAT RENTALS
401 SOUTH MAIN STREET
LAKEPORT, CA 95453

PREPARED BY:
CORNERSTONE CIVIL DESIGN
1491 GAMAY PLACE
UKIAH, CA 95482

Tyler J Pearson

TYLER J. PEARSON, PE
R.C.E 85194
EXPIRES: 06-30-2024

REPORT PREPARATION DATE: 11/10/2023

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PART 1.

APPENDIX 3 OF LAKE COUNTY CLEAN WATER PROGRAM LOW IMPACT DEVELOPMENTS STANDARDS MANUAL:

STORMWATER CONTROL PLAN FOR REGULATED PROJECTS

Storm Water Control Plan for Regulated Projects

For Office Use Only
Application No._____
Received By: _____

Project Name: DISNEY BOAT RENTALS DEVELOPMENT

Physical Site Address and/or APN: 2200 LAKESHORE BLVD LAKEPORT, CA APN 026-031-290-00

Project Applicant: BRANDON AND CONNOR DISNEY

Mailing Address: 401 SOUTH MAIN ST. LAKEPORT, CA 95453

Phone: 707-263-0969

Project Description: NEW BOAT RENTAL BUILDING, PARKING LOT, BOAT RAMP, AND FUELING AREA

Instructions
Based on the answers that you provided in the Construction and Post Construction Storm Water Stormwater Runoff Control Checklist, you have determined that your project is classified as "regulated" for the purposes of the County of Lake MS4 Permit. Use this form to assist you in designing your project to comply with the County of Lake MS4 Permit design standards for regulated projects. The completed, signed SCP for Regulated Projects, plus any applicable, approved BMP Fact Sheets, must be submitted with your application to Lake County Community Development Department.

Type of Application/Project:
What type of application is this checklist accompanying?

- ☑ Subdivision
- ☐ Grading Permit
- ☐ Building Permit
- ☑ Design Review
- ☑ Use Permit
- ☐ Other (please specify) _____

A. Project Description

Project Site Size (square feet or acres): 49,028 SF

Area of new or replaced impervious surface (square feet): 17,328 SF
*Please note if your project will create 1-acre or more of impervious surface then it should consider hydromodification management guidelines

Name and address of project consultant, if any (e.g., engineer, architect, designer):

CORNERSTONE CIVIL DESIGN

1491 GAMAY PLACE

UKIAH, CA 95482

Storm Water Control Plan for Regulated Projects

If your project includes more than 5,000 square feet in new or replaced impervious area, is your project one of the following project types?

- Detached single family homes that create and/or replace 2,500 square feet or more and are not part of a larger plan of development
- Interior remodels
- Routine maintenance or repair, such as exterior wall surface replacement or pavement resurfacing within an existing footprint
- Linear Underground/Overhead Projects (LUPs), unless the project has a discrete location that has 5,000 square feet or more of newly constructed contiguous impervious surface.
- Sidewalks built as part of new streets or roads and built to direct storm water runoff to adjacent vegetated areas
- Bicycle lanes that are built as part of new streets or roads that direct storm water runoff to adjacent vegetated areas
- Impervious trails built to direct storm water runoff to adjacent vegetated areas, or other non-erodible permeable areas
- Sidewalks, bicycle lanes, or trails constructed with permeable surfaces
- Trenching excavation and resurfacing associated with LUPs
- Grinding and resurfacing of existing roadways and parking lots
- Construction of new sidewalks, pedestrian ramps, or bike lanes on existing roadways
- Routine replacement of damaged pavement such as pothole repair, or replacement of short, non-contiguous sections of roadway

☐ Yes ☑ No

If you answered "Yes" above, your project is a small project or a single family home under the definitions in the County of Lake MS4 Permit. Please use the Checklist for Small Project and Single Family Homes *to assist you in your project design and application submittal.*

B. Site Assessment (Opportunities and Constraints)

1. Soil Characteristics

I. Soil characterization method USDA WEB SOIL SURVEY

II. Were infiltration rates assessed for the site? ☐ Yes ☑ No

If Yes, please attach soils testing report

2. Depth to Groundwater

I. What is the depth (below ground surface) to groundwater (in feet)? OVER 6.5 FEET

II. How was this determined? USDA WEB SOIL SURVEY

Storm Water Control Plan for Regulated Projects

3. Existing Vegetation and Natural Areas

I. Are there any key natural vegetation areas, sensitive habitats, or mature trees on the site?

☑ Yes ☐ No

If yes, please draw and label these features on the existing conditions site plan map, and attach to this document a description of them.

4. Drainage and Hydrograph

I. Are there any natural drainage features or modified natural drainage features on the site or directly adjacent to the site?

☑ Yes ☐ No

If yes, follow hydromodification management requirements contained in Section E.12.f of the MS4 Permit (directly adjacent is defined as, "within 100-feet of the top of bank").

5. Potential Contamination

I. Is the project site within or near to a registered contaminated site, according to the State Water Resources Control Board Geotracker Website (http://geotracker.waterboards.ca.gov/)?

☐ Yes ☑ No

If yes, please attach the applicable contaminated site report from the Geotracker website, and note the location of the contaminated site on the existing conditions site plan map. Please attach a description how this contamination will affect your project design.

C. Project Layout Optimization

Optimizing the site layout can be done through the following methods:

1. Define the development envelope and protected areas, identifying areas that are most suitable for development and areas to be left undisturbed. ✓
2. Concentrate development on portions of the site with less permeable soils and preserve areas that can promote infiltration. ✓
3. Limit overall impervious coverage of the site from paving and roofs. ✓
4. Set back development from creek, wetlands, and riparian habitats, to maximize vegetative buffer widths. ✓
5. Preserve significant trees. ✓
6. Conform the site layout along natural landforms. ✓
7. Avoid excessive grading and disturbance of vegetation and soils. ✓
8. Replicate the site's natural drainage patterns. ✓
9. Detain and retain runoff throughout the site. ✓

Based on the features included in the existing conditions site plan, please ensure your project site plan applies project layout optimization measures to the greatest extent practicable, while still meeting the objectives of your project. Please attach a short description on how the project has utilized site optimization methods.

Narrative: The site is optimized by placing the building and parking areas to the west on the uphill side of the site which allows for treatment and infiltration by means of disconnected impervious areas and vegetated swales prior to entering the bioretention areas. The site improvements were designed to save as many existing trees as possible. Aggregate base will be used for parking lots which allows for more infiltration than asphalt. Minimal disturbance will occur in the shoreline marsh and the lake to minimize impact to these sensitive areas.

Storm Water Control Plan for Regulated Projects

D. Source Controls

Does your project contain potential pollutant-generating activities or sources?

☑ Yes ☐ No

If Yes, please complete the Source Control Worksheet available as Appendix 4 of the County of Lake Low Impact Development Technical Design Manual; and, list and identify, using a simple table format, the source or treatment control measure and locations as an attachment to the SCP document.

E. Drainage Management Areas

On the project site plan please delineate and label all drainage management areas (refer to Sec. 4 of the manual). Record the DMA names and Areas in the table below.

Table 1. DMAs

DMA name	Area (square feet)
SEE TABLE 1 ON FOLLOWING PAGE	

F. Site Design Measures

Please identify the site design measures incorporated into the project design and attach the applicable, approved BMP Fact Sheet or equivalent to this checklist. These measures must be discussed in the SCP and shown on the site design map.

☑ Rooftop and Impervious Area Disconnection

☑ Tree Planting and Preservation

☐ Rain Barrels and Cisterns

☐ Porous Pavement

☐ Flow-Through Planter

☑ Bioretention

STORMWATER CONTROL PLAN
FOR REGULATED PROJECTS

TABLE 1. DMAs

DMA NAME	AREA (SF)
B1.0	7510
B1.1	2263
B2.0	3261
B2.1	13499
B3.0	2034
B3.1	570
B3.2	996
T1.0	15744
T2.0	6864

T=SELF TREATING DMA

B=DMA DRAINING TO BIORETENTION FACILITY

F. SITE DESIGN MEASURES USED

ROOFTOP AND IMPERVIOUS AREA DISCONNECTION	X
TREE PLANTING AND PRESERVATION	X
RAIN BARRELS AND CISTERNS	
POROUS PAVEMENT	
FLOW-THROUGH PLANTER	
BIORETENTION	X

Storm Water Control Plan Worksheet for Regulated Projects

Table 2. Area Calculations of *Self-retaining Areas* Used to Treat Impervious Areas

1 DMA Name	2 Area (sq. ft.)
NONE	

Table 3. Runoff Factor (surface type)

Roofs and Paving	1.0
Landscaped Area	0.1
Bricks or solid pavers- grouted	1.0
Bricks or solid Pavers-on sand base	0.5
Pervious Concrete Asphalt	0.1
Turfblock or gravel	0.1
Open or Porous pavers	0.1

Tables 4-6 below should be used to quantify the amount of runoff that is reduced by using site design measures. Using the tables in chronological order will calculate the minimum size for your bioretention facility in order to meet the MS4 permit requirements. Several iterations may be need to size facilities according to the site design.

Table 4. Area draining to self-retaining areas

1 DMA Name (must correspond to area on the site map and on Table 1)	2 DMA Area (sq. ft.) (Table 1)	3 Type of Surface (Runoff Factor Table 3)	4 Surface with Runoff Factor Column **2** X Column **3**	5 Area of Self-retaining Area Receiving the Runoff (Table 2, Col. 2)	6 Ratio Col. **5 :** Col. **4** Not to exceed 2:1 ratio (if number exceeds 2:1 use table 5 - 6 to reduce tributary area and recalculate or go directly to Table 7)
Example	700	Roof (1.0)	700	100	7:1 (must use site design measures, bioretention or both)
NONE					

Storm Water Control Plan Worksheet for Regulated Projects

Table 5. Tree Planting and Preservation (if not planting trees go to Table 6)

1 DMA Name (must correspond to area on the site map)	2 DMA sq. ft. (from Table 4. Col. 6)	3 Deciduous (Input 100 for each deciduous tree)	4 Evergreen (Input 200 for each evergreen tree)	5 Total Tree Credit (Col. **4** + Col. **5**) (DMA runoff reduction)	6 New DMA Area Col. **2** – Col. **5** (for use in Table 6 - 8)
Example	700	--------	200	200	500 (new DMA size that must be treated with methods below Table 6-7)
NOT USED					

Table 6. Rain Barrels and Cisterns (if not using Rain Barrels or Cisterns go to Table 8)

1 DMA Name (must correspond to area on the site map)	2 New DMA sq. ft. (Table 5 Col. 7 or if no trees used, value from Table 4 Col. 2)	3 Number of Rain Barrels	4 Runoff Reduction from using a standard 55 gallon Rain Barrel = 200 sq. ft. Use the following if size is other than the standard (for every gallon of storage approx.. 3.65 sq. ft. of reduction is achieved)	5 Col. **3** **X** Col. **4** (DMA runoff reduction)	6 New DMA Area Col. **2** - Col. **5**
Example	500	1	200	200	300 (go to Table 7 to recalculate Ratio)
NONE					

Storm Water Control Plan Worksheet for Regulated Projects

Table 7. <u>New</u> Tabulation of areas draining to self-retaining area after use of site design measures (must achieve a 2:1 ratio; if not achievable, use table 8 to calculate the size of bioretention required)

1 DMA Name (must correspond to area on the site map)	**2** New Square footage of DMA (Col 6, Table 4,5,6)	**3** Area of Self-retaining Area Receiving the Runoff (Table 2, Col. 2)	**4** Ratio Column **2 :** Column **3** Not to exceed 2:1
Example	300 (Table 6)	100	3:1 (still exceeds 2:1 go back, add more trees, rain barrels, or use bioretention – example uses bioretention, Table 8)
NOT USED			

Storm Water Control Plan Worksheet for Regulated Projects

Table 8. Tabulation of areas draining to Bioretention Facility

1 DMA Name (must correspond to area on the site map)	**2** DMA sq. ft. (Table 1, Col 2) or new DMA sq. ft. Table 7, Col. 2)	**3** Runoff Factor Table 6a (skip if coming from Table 1)	**5** DMA Area Col. **2** x Col. **3**	**6** Standard Sizing Factor	**Minimum facility size** Col. **5** X Col. **6**	If site does not allow for the minimum size, recalculate DMA using additional Site Design Measures to further reduce the tributary size
Example	300	1 (already calculated in above steps for this example)	300	0.04	12 sq. ft.	(proposed facility size from site plans)
REFER TO TABLE				0.04		
				0.04		
				0.04		
				0.04		
				0.04		
				0.04		

Table 6a. Runoff Factors

Roofs and Paving	1.0
Landscaped Area	0.1
Bricks or solid pavers- grouted	1.0
Bricks or solid Pavers-on sand base	0.5
Pervious Concrete Asphalt	0.1
Turfblock or gravel	0.1
Open or Porous pavers	0.1

STORMWATER CONTROL PLAN
FOR REGULATED PROJECTS

CORNERSTONE CIVIL DESIGN
CIVIL ENGINEERING LAND PLANNING PROJECT MANAGEMENT
(707) 972-7147 CORNERSTONECIVILDESIGN@GMAIL.COM

TABLE 8. TABULATION OF AREAS DRAINING TO BIORETENTION FACILITY

BIORETENTION FACILITY NAME	1 DMA NAME	2 DMA (SF)	3A TYPE OF SURFACE	3B RUNOFF FACTOR	4 DMA AREA COL. 2 X COL. 3	5 STANDARD SIZING FACTOR	MINIMUM BMP FACILITY SIZE FOR DMA (SF) COL. 4 X COL. 5	TOTAL MINIMUM BIORETENTION FACILITY SIZE (SF) (SUM OF ALL DMA'S FLOWING TO BIORETENTION FACILITY)
BR-1	B1.0	7510	LANDSCAPED AREA	0.1	751	0.04	30	121
	B1.1	2263	ROOFS AND PAVING	1.0	2263	0.04	91	
BR-2	B2.0	3261	LANDSCAPED AREA	0.1	326.1	0.04	13	553
	B2.1	13499	ROOFS AND PAVING	1.0	13499	0.04	540	
BR-3	B3.0	2034	LANDSCAPED AREA	0.1	203.4	0.04	8	71
	B3.1	570	ROOFS AND PAVING	1.0	570	0.04	23	
	B3.2	996	ROOFS AND PAVING	1.0	996	0.04	40	

*NOTE THAT DMA B3.2 IS WITHIN THE FLOODPLAIN SO BIORETENTION BR-3 WAS UPSIZED TO ACCOUNT FOR THIS DMA'S IMPERVIOUS AREA

Storm Water Control Plan Worksheet for Regulated Projects

G. Operation and Maintenance in Perpetuity

Indicate whether an *Operation and Maintenance Plan* is accompanying this document (Appendix 9).

☑ Yes ☐ No

H. Stormwater Control Plan

A Stormwater Control Plan is required for all Regulated Projects. This worksheet is designed to be the SCP if all requested descriptions and site plans have been attached. This document will be used by the plan checker to confirm that adequate storm water control measures are being implemented on the project.

Indicate whether all supporting descriptions and worksheets are accompanying this document, Stormwater Control *Plan*

☑ Yes ☐ No

I. Signature and Certification:

I, the below signed, confirm that I have accurately described my project to the best of my ability, and that I have not purposely omitted any detail affecting my project's classification for storm water regulation. I hereby certify that the site design measures and storm water flow treatment measures identified herein as being incorporated into my project have been designed in accordance with the approved BMP Fact Sheet or equivalent, which is attached to this checklist, and is included in the final site plans submitted to Lake County Community Development Department. I also hereby certify that my project meets the storm water runoff reduction criteria identified in the County of Lake MS4 Permit as determined through approved means.

Signature

11/9/2023
Date

TYLER PEARSON
Print Name

I am the:

☐ Property Owner ☐ Contractor ☑ Applicant

Stormwater Control Plan Checklist for Regulated Projects

Applicant Checklist for Regulated Projects; items that must be included in the Permit Packet

Items that must be on the Project Site Map

- ☑ Exiting natural hydrological features (depressions watercourses, wetlands, riparian areas, undisturbed natural areas, significant natural resource areas)
- ☑ Existing and proposed site drainage network and connections to MS4 conveyances off-site
- ☑ Proposed design features and surface treatments used to minimize imperviousness and reduce runoff
- ☑ DMAs are delineated for the entire site and each is labeled with a unique identifier and is characterized as draining to self-retaining, self-treating, or draining to a bioretention facility
- ☑ Proposed locations and footprints of bioretention facilities
- ☑ Pollutant-generating source areas, including loading docks, food service areas, refuse areas, outdoor processes and storage, vehicle cleaning, repair or maintenance, fuel dispensing, equipment washing, etc… (Appendix 5)

Contents of Storm Water Control Plan (SCP)

- ☑ Narrative or description of site features and conditions that constrain or provide opportunities for stormwater control
- ☑ Narrative of Site Design characteristics, building features, and pavement selections that reduce imperviousness of the site including the quantified runoff reduction.
- ☑ Completed tables showing square footage of proposed pervious and impervious areas, self-treating areas, self-retaining areas, areas draining to bioretention facilities,
- ☑ Preliminary designs, including calculations, for each bioretention facility. Elevations should show sufficient hydraulic head for each bioretention facility.
- ☑ General Maintenance requirements for bioretention facilities
- ☑ Statement accepting responsibility for interim operation and maintenance of facilities
- ☑ Bioretention Checklist submitting indicates all requirements were met
- ☑ Certification/stamped Site Plan by professional civil engineer, architect, or landscape architect

PART 2.

APPENDIX 4 OF LAKE COUNTY CLEAN WATER PROGRAM LOW IMPACT DEVELOPMENTS STANDARDS MANUAL:
SOURCE CONTROL WORKSHEET

Storm water Pollutant Sources/Source Controls Checklist

How to use this worksheet (also see instructions on Checklist for Regulated Projects):

1. Review Column 1 and identify which of these potential sources of storm water pollutants apply to your site. Check each box that applies.
2. Review Column 2 and incorporate all of the corresponding applicable Structural Source Control BMPs in your Storm water Control Plan drawings.
3. Review Columns 3 and 4 and incorporate all of the corresponding applicable Structural Source Control BMPs and Operational Source Control BMPs in a table in your Storm Water Control Plan. Use this table and an accompanying narrative in the SCP, and explain any special conditions or situations that required omitting BMPs or substituting alternative BMPs.

IF THESE SOURCES WILL BE ON THE PROJECT SITE…	**… THEN YOUR STORM WATER CONTROL PLAN (SCP) SHOULD INCLUDE THESE SOURCE CONTROL BMPS**		
1 **Potential Sources of Runoff Pollutants**	2 **Structural Source Controls – Show on SCP Drawings**	3 **Structural Source Control – List in SCP Table and Narrative**	4 **Operational Source Control BMPs – Include in SCP Table and Narrative**
☑ **A.** On-site storm drain inlets (unauthorized non-storm water discharges and accidental spills or leaks)	☑ Location of inlets	☑ Mark all inlets with the words "No Dumping! Flows to River/Ocean" or similar.	☑ Maintain and periodically repaint or replace inlet markings. ☑ Provide storm water pollution prevention information to new site owners, lessees, or operators. See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Storm water Quality Handbooks at www.casqa.org/resources/bmp¬handbooks ☑ Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."

IF THESE SOURCES WILL BE ON THE PROJECT SITE…	**… THEN YOUR STORM WATER CONTROL PLAN (SCP) SHOULD INCLUDE THESE SOURCE CONTROL BMPS**		
1 **Potential Sources of Runoff Pollutants**	2 **Structural Source Controls – Show on SCP Drawings**	3 **Structural Source Control – List in SCP Table and Narrative**	4 **Operational Source Control BMPs – Include in SCP Table and Narrative**
☐ **B.** Interior floor drains and elevator shaft sump pumps	☐ Show drain and pump locations	☐ State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer	☐ Inspect and maintain drains to prevent blockages and overflow.
☐ **C.** Interior parking garages	☐ Show drain locations	☐ State that parking garage floor drains will be plumbed to the sanitary sewer	☐ Inspect and maintain drains to prevent blockages and overflow.
☐ **D_1.** Need for future indoor & structural pest control		☐ Note building design features that discourage entry of pests	☐ Provide Integrated Pest Management information to owners, lessees, and operators.
☑ **D_2.** Landscape/ Outdoor Pesticide Use/Building and Grounds Maintenance	☑ Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained. ☐ Show self-retaining landscape areas, if any. ☑ Show bioretention facilities. (See instructions in Chapter 4.)	State that final landscape plans will accomplish all of the following. ☑ Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. ☑ Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to storm water pollution. ☑ Where landscaped areas are used to retain or detain storm water, specify plants that are tolerant of saturated soil conditions. ☑ Consider using pest-resistant plants, especially adjacent to hardscape. ☑ To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	☑ Maintain landscaping using minimum or no pesticides. ☑ See applicable operational BMPs in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Storm water Quality Handbooks at www.casqa.org/resources/bmp¬handbooks ☑ Provide IPM information to new owners, lessees and operators.

IF THESE SOURCES WILL BE ON THE PROJECT SITE…	… THEN YOUR STORM WATER CONTROL PLAN (SCP) SHOULD INCLUDE THESE SOURCE CONTROL BMPS		
1 **Potential Sources of Runoff Pollutants**	2 **Structural Source Controls – Show on SCP Drawings**	3 **Structural Source Control – List in SCP Table and Narrative**	4 **Operational Source Control BMPs – Include in SCP Table and Narrative**
☐ **E.** Pools, spas, ponds, decorative fountains, and other water features	☐ Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet.	☐ If the local municipality requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.	☐ See applicable operational BMPs in Fact Sheet SC-72, "Fountain and Pool Maintenance," in the CASQA Storm water Quality Handbooks at www.casqa.org/resources/bmp¬handbooks ☐ The sanitary sewer operator must be notified and a clean out identified when pools are to be drained to the sanitary sewer.
☐ **F.** Food Service	☐ For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment. ☐ On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer	☐ Describe the location and features of the designated cleaning area. ☐ Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.	☐ State maintenance schedule for grease interceptor
☑ **G.** Refuse areas	☑ Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas. ☑ If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area. ☐ Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.	☑ State how site refuse will be handled and provide supporting detail to what is shown on plans. ☑ State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	☑ State how the following will be implemented: Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Storm water Quality Handbooks at www.casqa.org/resources/bmp-handbooks

IF THESE SOURCES WILL BE ON THE PROJECT SITE…	… THEN YOUR STORM WATER CONTROL PLAN (SCP) SHOULD INCLUDE THESE SOURCE CONTROL BMPS		
1 **Potential Sources of Runoff Pollutants**	2 **Structural Source Controls – Show on SCP Drawings**	3 **Structural Source Control – List in SCP Table and Narrative**	4 **Operational Source Control BMPs – Include in SCP Table and Narrative**
☐ **H.** Industrial Process area	☐ Show process area.	☐ If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."	☐ See Fact Sheet SC-10, "Non-Storm water Discharges" in the CASQA Storm water Quality Handbooks at www.casqa.org/resources/bmp¬handbooks
☐ **I.** Outdoor storage of equipment or materials (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)	☐ Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area. ☐ Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. ☐ Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.	☐ Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains. ☐ Where appropriate, reference documentation of compliance with the requirements of programs for: • Hazardous Waste Generation • Hazardous Materials Release Response and Inventory • California Accidental Release (CalARP) • Aboveground Storage Tank • Uniform Fire Code Article 80 Section 103(b) & (c) 1991 • Underground Storage Tank	☐ See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Storm water Quality Handbooks at www.casqa.org/resources/bmp¬handbooks

IF THESE SOURCES WILL BE ON THE PROJECT SITE…	… THEN YOUR STORM WATER CONTROL PLAN (SCP) SHOULD INCLUDE THESE SOURCE CONTROL BMPS		
1 **Potential Sources of Runoff Pollutants**	2 **Structural Source Controls – Show on SCP Drawings**	3 **Structural Source Control – List in SCP Table and Narrative**	4 **Operational Source Control BMPs – Include in SCP Table and Narrative**
☐ **J.** Vehicle and Equipment Cleaning	☐ Show on drawings as appropriate: (1) Commercial/industrial facilities having vehicle/ equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses. (2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use). (3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer. (4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.	☐ If a car wash area is not provided, describe measures taken to discourage on-site car washing and explain how these will be enforced.	☐ Describe operational measures to implement the following (if applicable): Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system. Car dealerships and similar may rinse cars with water only. ☐ See Fact Sheet SC-21, “Vehicle and Equipment Cleaning,” in the CASQA Storm water Quality Handbooks at www.casqa.org/resources/bmp-handbooks

IF THESE SOURCES WILL BE ON THE PROJECT SITE…	… THEN YOUR STORM WATER CONTROL PLAN (SCP) SHOULD INCLUDE THESE SOURCE CONTROL BMPS		
1 **Potential Sources of Runoff Pollutants**	2 **Structural Source Controls – Show on SCP Drawings**	3 **Structural Source Control – List in SCP Table and Narrative**	4 **Operational Source Control BMPs – Include in SCP Table and Narrative**
☑ **K.** Vehicle and Equipment Repair and Maintenance **Repair and maintenance will be done inside of building**	☐ Accommodate all vehicle equipment designate an outdoor work area and design the area to prevent run-on and runoff of storm water. ☐ Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas. ☐ Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.	☐ State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area. ☐ State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements. ☐ State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.	In the Storm water Control Plan, note that all of the following restrictions apply to use the site: ☐ No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains. ☐ No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately. ☐ No person shall leave unattended parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.

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☑ **L.** Fuel Dispensing Areas	☐ Fueling areas shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of storm water to the maximum extent practicable. ☐ Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area1.] The canopy [or cover] shall not drain onto the fueling area	☐ State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area. ☐ State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements. ☐ State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.	☐ The property owner shall dry sweep the fueling area routinely. ☐ See the Business Guide Sheet, "Automotive Service—Service Stations" in the CASQA Storm water Quality Handbooks at www.casqa.org/resources/bmp-handbooks

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☐ **M.** Loading Docks	☐ Show the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct storm water away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer. ☐ Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation. ☐ Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.		☐ Move loaded and unloaded items indoors as soon as possible. ☐ See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Storm water Quality Handbooks at www.casqa.org/resources/bmp¬handbooks
☑ **N.** Fire Sprinkler Test Water		☑ Provide a means to drain fire sprinkler test water to the sanitary sewer	☑ See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Storm water Quality Handbooks at www.casqa.org/resources/bmp¬handbooks

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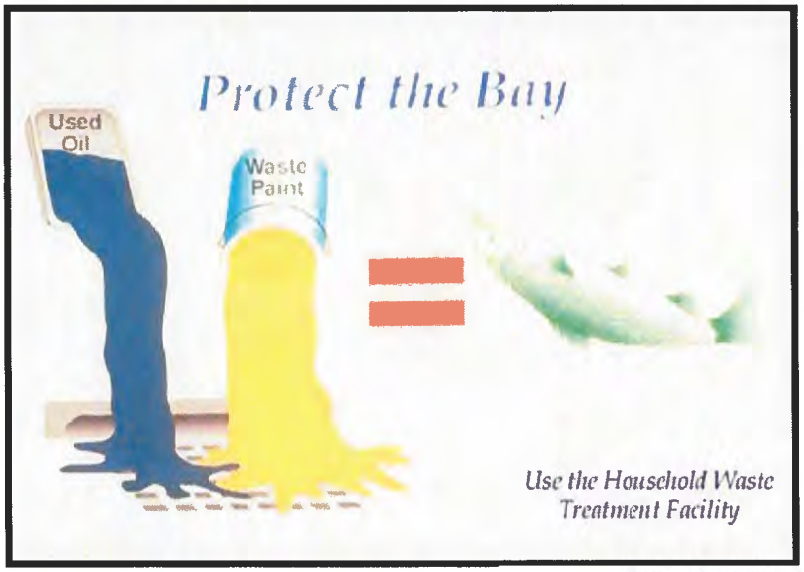
O. Miscellaneous Drain or Wash Water or Other Sources ☐ Boiler drain lines ☐ Condensate drain lines ☐ Rooftop equipment ☐ Drainage sumps ☑ Roofing, gutters, and trim ☐ Other sources	☑ Show drain lines and drainage sumps	☐ Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system. ☐ Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. ☐ Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment. ☐ Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water. ☐ Include controls for other sources as specified by local reviewer.	If architectural copper is used, implement the following BMPs for management of rinse water during installation: ☐ If possible, purchase copper materials that have been pre-patinated at the factory. ☐ If patination is done on-site, prevent rinse water from entering storm drains by discharging to landscaping or by collecting in a tank and hauling off-site. ☐ Consider coating the copper materials with an impervious coating that prevents further corrosion and runoff. Implement the following BMPs during routine maintenance: ☐ Prevent rinse water from entering storm drains by discharging to landscaping or by collecting in a tank and hauling off-site.
☐ **P.** Plazas, sidewalks, and parking lots.	☐ Show extent of permeable paving materials		☐ Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. ☐ Collect debris from pressure washing to prevent entry into the storm drain system. ☐ Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.

PART 3.

APPENDIX 4 OF LAKE COUNTY CLEAN WATER PROGRAM LOW IMPACT DEVELOPMENTS STANDARDS MANUAL:
CASQA BMP HANDBOOK FACT SHEETS

Non-Stormwater Discharges SC-10



Graphic by: Margie Winter

Objectives

- Contain
- Educate
- Reduce/Minimize

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Description

Non-stormwater discharges are those flows that do not consist entirely of stormwater. For municipalities non-stormwater discharges present themselves in two situations. One is from fixed facilities owned and/or operated by the municipality. The other situation is non-stormwater discharges that are discovered during the normal operation of a field program. Some non-stormwater discharges do not include pollutants and may be discharged to the storm drain. These include uncontaminated groundwater and natural springs. There are also some non-stormwater discharges that typically do not contain pollutants and may be discharged to the storm drain with conditions. These include car washing, and surface cleaning. However, there are certain non-stormwater discharges that pose environmental concern. These discharges may originate from illegal dumping or from internal floor drains, appliances, industrial processes, sinks, and toilets that are connected to the nearby storm drainage system. These discharges (which may include: process waste waters, cooling waters, wash waters, and sanitary wastewater) can carry substances (such as paint, oil, fuel and other automotive fluids, chemicals and other pollutants) into storm drains. The ultimate goal is to effectively eliminate non-stormwater discharges to the stormwater drainage system through implementation of measures to detect, correct, and enforce against illicit connections and illegal discharges.

Approach

The municipality must address non-stormwater discharges from its fixed facilities by assessing the types of non-stormwater discharges and implementing BMPs for the discharges determined to pose environmental concern. For field programs

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the field staff must be trained to now what to look for regarding non-stormwater discharges and the procedures to follow in investigating the detected discharges.

Suggested Protocols

Fixed Facility

General

- Post "No Dumping" signs with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.
- Stencil storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- Landscaping and beautification efforts of hot spots might also discourage future dumping, as well as provide open space and increase property values.
- Lighting or barriers may also be needed to discourage future dumping.

Illicit Connections

- Locate discharges from the fixed facility drainage system to the municipal storm drain system through review of "as-built" piping schematics.
- Use techniques such as smoke testing, dye testing and television camera inspection (as noted below) to verify physical connections.
- Isolate problem areas and plug illicit discharge points.

Visual Inspection and Inventory

- Inventory and inspect each discharge point during dry weather.
- Keep in mind that drainage from a storm event can continue for several days following the end of a storm and groundwater may infiltrate the underground stormwater collection system. Also, non-stormwater discharges are often intermittent and may require periodic inspections.

Review Infield Piping

- Review the "as-built" piping schematic as a way to determine if there are any connections to the stormwater collection system.
- Inspect the path of floor drains in older buildings.

Smoke Testing

- Smoke testing of wastewater and stormwater collection systems is used to detect connections between the two systems.

- During dry weather the stormwater collection system is filled with smoke and then traced to sources. The appearance of smoke at the base of a toilet indicates that there may be a connection between the sanitary and the stormwater system.

Dye Testing

- A dye test can be performed by simply releasing a dye into either your sanitary or process wastewater system and examining the discharge points from the stormwater collection system for discoloration.

TV Inspection of Storm Sewer

- TV Cameras can be employed to visually identify illicit connections to the fixed facility storm drain system.

Illegal Dumping

- Regularly inspect and clean up hot spots and other storm drainage areas where illegal dumping and disposal occurs.
- Clean up spills on paved surfaces with as little water as possible. Use a rag for small spills, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to a certified laundry (rags) or disposed of as hazardous waste.
- Never hose down or bury dry material spills. Sweep up the material and dispose of properly.
- Use adsorbent materials on small spills rather than hosing down the spill. Remove the adsorbent materials promptly and dispose of properly.
- For larger spills, a private spill cleanup company or Hazmat team may be necessary.
- See fact sheet SC-11 Spill Prevention, Control, and Clean Up.

Field Program

General

- Develop clear protocols and lines of communication for effectively prohibiting non-stormwater discharges, especially ones that involve more than one jurisdiction and those that are not classified as hazardous, which are often not responded to as effectively as they need to be.
- Stencil storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- See SC-74 Stormwater Drainage System Maintenance for additional information.

Field Inspection

- Regularly inspect and clean up hot spots and other storm drainage areas where illegal dumping and disposal occurs.
- During routine field program maintenance field staff should look for evidence of illegal discharges or illicit connection:
  - Is there evidence of spills such as paints, discoloring, etc.
  - Are there any odors associated with the drainage system
  - Record locations of apparent illegal discharges/illicit connections and notify appropriate investigating agency.
- If trained, conduct field investigation of non-stormwater discharges to determine whether they pose a threat to water quality.

Recommended Complaint Investigation Equipment

- Field Screening Analysis
  - pH paper or meter
  - Commercial stormwater pollutant screening kit that can detect for reactive phosphorus, nitrate nitrogen, ammonium nitrogen, specific conductance, and turbidity
  - Sample jars
  - Sample collection pole
  - A tool to remove access hole covers
- Laboratory Analysis
  - Sample cooler
  - Ice
  - Sample jars and labels
  - Chain of custody forms.
- Documentation
  - Camera
  - Notebook
  - Pens
  - Notice of Violation forms

- Educational materials

Reporting

- A database is useful for defining and tracking the magnitude and location of the problem.
- Report prohibited non-stormwater discharges observed during the course of normal daily activities so they can be investigated, contained and cleaned up or eliminated.
- Document that non-stormwater discharges have been eliminated by recording tests performed, methods used, dates of testing, and any onsite drainage points observed.
- Maintain documentation of illicit connection and illegal dumping incidents, including significant conditionally exempt discharges that are not properly managed.

Enforcement

- Educate the responsible party if identified on the impacts of their actions, explain the stormwater requirements, and provide information regarding Best Management Practices (BMP), as appropriate. Initiate follow-up and/or enforcement procedures.
- If an illegal discharge is traced to a commercial, residential or industrial source, conduct the following activities or coordinate the following activities with the appropriate agency:
  - Contact the responsible party to discuss methods of eliminating the non-stormwater discharge, including disposal options, recycling, and possible discharge to the sanitary sewer (if within POTW limits).
  - Provide information regarding BMPs to the responsible party, where appropriate.
  - Begin enforcement procedures, if appropriate.
  - Continue inspection and follow-up activities until the illicit discharge activity has ceased.
- If an illegal discharge is traced to a commercial or industrial activity, coordinate information on the discharge with the jurisdiction's commercial and industrial facility inspection program.

Training

- Train technical staff to identify and document illegal dumping incidents.
- Well-trained employees can reduce human errors that lead to accidental releases or spills. The employee should have the tools and knowledge to immediately begin cleaning up a spill if one should occur. Employees should be familiar with the Spill Prevention Control and Countermeasure Plan.
- Train employees to identify non-stormwater discharges and report them to the appropriate departments.
- Train staff who have the authority to conduct surveillance and inspections, and write citations for those caught illegally dumping.

- Train municipal staff responsible for surveillance and inspection in the following:
  - OSHA-required Health and Safety Training (29 CFR 1910.120) plus annual refresher training (as needed).
  - OSHA Confined Space Entry training (Cal-OSHA Confined Space, Title 8 and federal OSHA 29 CFR 1910.146).
  - Procedural training (field screening, sampling, smoke/dye testing, TV inspection).
- Educate the identified responsible party on the impacts of his or her actions.

Spill Response and Prevention

- See SC-11 Spill Prevention Control and Clean Up

Other Considerations

- The elimination of illegal dumping is dependent on the availability, convenience, and cost of alternative means of disposal. The cost of fees for dumping at a proper waste disposal facility are often more than the fine for an illegal dumping offense, thereby discouraging people from complying with the law. The absence of routine or affordable pickup service for trash and recyclables in some communities also encourages illegal dumping. A lack of understanding regarding applicable laws or the inadequacy of existing laws may also contribute to the problem.
- Municipal codes should include sections prohibiting the discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the storm drain system.
- Many facilities do not have accurate, up-to-date schematic drawings.
- Can be difficult to locate illicit connections especially if there is groundwater infiltration.

Requirements

Costs

- Eliminating illicit connections can be expensive especially if structural modifications are required such re-plumbing cross connections under an existing slab.
- Minor cost to train field crews regarding the identification of non-stormwater discharges. The primary cost is for a fully integrated program to identify and eliminate illicit connections and illegal dumping. However, by combining with other municipal programs (i.e. pretreatment program) cost may be lowered.
- Municipal cost for containment and disposal may be borne by the discharger.

Maintenance

Not applicable

Supplemental Information

Further Detail of the BMP

What constitutes a "non-stormwater" discharge?

- Non-stormwater discharges are discharges not made up entirely of stormwater and include water used directly in the manufacturing process (process wastewater), air conditioning condensate and coolant, non-contact cooling water, cooling equipment condensate, outdoor secondary containment water, vehicle and equipment wash water, landscape irrigation, sink and drinking fountain wastewater, sanitary wastes, or other wastewaters.

Permit Requirements

- Current municipal NPDES permits require municipalities to effectively prohibit non-stormwater discharges unless authorized by a separate NPDES permit or allowed in accordance with the current NPDES permit conditions. Typically the current permits allow certain non-stormwater discharges in the storm drain system as long as the discharges are not significant sources of pollutants. In this context the following non-stormwater discharges are typically allowed:
  - Diverted stream flows;
  - Rising found waters;
  - Uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20));
  - Uncontaminated pumped ground water;
  - Foundation drains;
  - Springs;
  - Water from crawl space pumps;
  - Footing drains;
  - Air conditioning condensation;
  - Flows from riparian habitats and wetlands;
  - Water line and hydrant flushing ;
  - Landscape irrigation;
  - Planned and unplanned discharges from potable water sources;
  - Irrigation water;
  - Individual residential car washing; and
  - Lawn watering.

Municipal facilities subject to industrial general permit requirements must include a certification that the stormwater collection system has been tested or evaluated for the presence of non-stormwater discharges. The state's General Industrial Stormwater Permit requires that non-stormwater discharges be eliminated prior to implementation of the facility's SWPPP.

Illegal Dumping

- Establish a system for tracking incidents. The system should be designed to identify the following:
  - Illegal dumping hot spots
  - Types and quantities (in some cases) of wastes
  - Patterns in time of occurrence (time of day/night, month, or year)
  - Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills)
  - Responsible parties

Outreach

One of the keys to success of reducing or eliminating illegal dumping is increasing the number of people on the street who are aware of the problem and who have the tools to at least identify the incident, if not correct it. There we a number of ways of accomplishing this:

- Train municipal staff from all departments (public works, utilities, street cleaning, parks and recreation, industrial waste inspection, hazardous waste inspection, sewer maintenance) to recognize and report the incidents.
- Deputize municipal staff who may come into contact with illegal dumping with the authority to write illegal dumping tickets for offenders caught in the act (see below).
- Educate the public. As many as 3 out of 4 people do not understand that in most communities the storm drain does not go to the wastewater treatment plant. Unfortunately, with the heavy emphasis in recent years on public education about solid waste management, including recycling and household hazardous waste, the sewer system (both storm and sanitary) has been the likely recipient of cross-media transfers of waste.
- Provide the public with a mechanism for reporting incidents such as a hot line and/or door hanger (see below).
- Help areas where incidents occur more frequently set up environmental watch programs (like crime watch programs).
- Train volunteers to notice and report the presence and suspected source of an observed pollutant to the appropriate public agency.

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  - Footing drains;
  - Air conditioning condensation;
  - Flows from riparian habitats and wetlands;
  - Water line and hydrant flushing ;
  - Landscape irrigation;
  - Planned and unplanned discharges from potable water sources;
  - Irrigation water;
  - Individual residential car washing; and
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of non-stormwater discharges. The state's General Industrial Stormwater Permit requires that non-stormwater discharges be eliminated prior to implementation of the facility's SWPPP.

Storm Drain Stenciling

- Stencil storm drain inlets with a message to prohibit illegal dumpings, especially in areas with waste handling facilities.
- Encourage public reporting of improper waste disposal by a HOTLINE number stenciled onto the storm drain inlet.
- See Supplemental Information section of this fact sheet for further detail on stenciling program approach.

Oil Recycling

- Contract collection and hauling of used oil to a private licensed used oil hauler/recycler.
- Comply with all applicable state and federal regulations regarding storage, handling, and transport of petroleum products.
- Create procedures for collection such as; collection locations and schedule, acceptable containers, and maximum amounts accepted.
- The California Integrated Waste Management Board has a Recycling Hotline, (800) 553-2962, that provides information and recycling locations for used oil.

Household Hazardous Waste

- Provide household hazardous waste (HHW) collection facilities. Several types of collection approaches are available including permanent, periodic, or mobile centers, curbside collection, or a combination of these systems.

Training

- Train municipal employees and contractors in proper and consistent methods for waste disposal.
- Train municipal employees to recognize and report illegal dumping.
- Train employees and subcontractors in proper hazardous waste management.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Federal Regulations (RCRA, SARA, CERCLA) and state regulations exist regarding the disposal of hazardous waste.
- Municipalities are required to have a used oil recycling element and a HHW element within their integrated waste management plan.
- Significant liability issues are involved with the collection, handling, and disposal of HHW.

Examples

The City of Palo Alto has developed a public participation program for reporting dumping violations. When a concerned citizen or public employee encounters evidence of illegal dumping, a door hanger (similar in format to hotel "Do Not Disturb" signs) is placed on the front doors in the neighborhood. The door hanger notes that a violation has occurred in the neighborhood, informs the reader why illegal dumping is a problem, and notes that illegal dumping carries a significant financial penalty. Information is also provided on what citizens can do as well as contact numbers for more information or to report a violation.

The Port of Long Beach has a state of the art database incorporating storm drain infrastructure, potential pollutant sources, facility management practices, and a pollutant tracking system.

The State Department of Fish and Game has a hotline for reporting violations called CalTIP (1-800-952-5400). The phone number may be used to report any violation of a Fish and Game code (illegal dumping, poaching, etc.).

The California Department of Toxic Substances Control's Waste Alert Hotline, 1-800-69TOXIC, can be used to report hazardous waste violations.

References and Resources

http://www.stormwatercenter.net/

California's Nonpoint Source Program Plan http://www.co.clark.wa.us/pubworks/bmpman.pdf

King County Stormwater Pollution Control Manual - http://dnr.metrokc.gov/wlr/dss/spcm.htm

Orange County Stormwater Program,
http://www.ocwatersheds.com/stormwater/swp_introduction.asp

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program
(http://www.projectcleanwater.org)

Santa Clara Valley Urban Runoff Pollution Prevention Program
http://www.scvurppp-w2k.com/pdf%20documents/PS_ICID.PDF

Vehicle and Equipment Cleaning SC-21

Photo Credit: Geoff Brosseau

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑
Oxygen Demanding	

Description

Wash water from vehicle and equipment cleaning activities performed outdoors or in areas where wash water flows onto the ground can contribute toxic hydrocarbons and other organic compounds, oils and greases, nutrients, phosphates, heavy metals, and suspended solids to stormwater runoff. Use of the procedures outlined below can prevent or reduce the discharge of pollutants to stormwater during vehicle and equipment cleaning.

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives

Pollution Prevention

- If possible, use properly maintained off-site commercial washing and steam cleaning businesses whenever possible. These businesses are better equipped to handle and properly dispose of the wash waters.
- Good housekeeping practices can minimize the risk of contamination from wash water discharges.

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Suggested Protocols

General

- Use biodegradable, phosphate-free detergents for washing vehicles as appropriate.
- Mark the area clearly as a wash area.
- Post signs stating that only washing is allowed in wash area and that discharges to the storm drain are prohibited.
- Provide a trash container in wash area.
- Map on-site storm drain locations to avoid discharges to the storm drain system.
- Emphasize the connection between the storm drain system and runoff and help reinforce that car washing activities can have an affect on local water quality. This can be accomplished through storm drain stenciling programs.

Vehicle and Equipment Cleaning

- Design wash areas to properly collect and dispose of wash water when engine cleaning is conducted and when chemical additives, solvents, or degreasers are used. This may include installation of sumps or drain lines to collect wash water or construction of a berm around the designated area and grading of the area to collect wash water as well as prevent stormwater run-on.
- Consider washing vehicles and equipment inside the building if washing/cleaning must occur on-site. This will help to control the targeted constituents by directing them to the sanitary sewer.
- If washing must occur on-site and outdoor:
  - Use designated paved wash areas. Designated wash areas must be well marked with signs indicating where and how washing must be done. This area must be covered or bermed to collect the wash water and graded to direct the wash water to a treatment or disposal facility.
  - Oil changes and other engine maintenance cannot be conducted in the designated washing area. Perform these activities in a place designated for such activities.
  - Cover the wash area when not in use to prevent contact with rain water.
- Use hoses with nozzles that automatically turn off when left unattended.
- Perform pressure cleaning and steam cleaning off-site to avoid generating runoff with high pollutant concentrations. If done on-site, no pressure cleaning and steam cleaning should be done in areas designated as wellhead protection areas for public water supply.

Disposal

- Consider filtering and recycling wash water.

- Discharge equipment wash water to the sanitary sewer, a holding tank, or a process treatment system, regardless of the washing method used.
- Discharge vehicle wash water to (1) the sanitary sewer, a holding tank, or process treatment system or (2) an enclosed recycling system.
- Discharge wash water to sanitary sewer only after contacting the local sewer authority to find out if pretreatment is required.

Training

- Train employees on proper cleaning and wash water disposal procedures and conduct "refresher" courses on a regular basis.
- Train staff on proper maintenance measures for the wash area.
- Train employees and contractors on proper spill containment and cleanup. The employee should have the tools and knowledge to immediately begin cleaning up a spill if one should occur.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control and Cleanup.
- Keep your Spill Prevention Control and Counter Measure (SPCC) Plan up-to-date, and implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Clean up spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations (Limitations and Regulations)

- Some municipalities may require pretreatment and monitoring of wash water discharges to the sanitary sewer.
- Steam cleaning can generate significant pollutant concentrations requiring that careful consideration be given to the environmental impacts and compliance issues related to steam cleaning.
- Most car washing best management practices are inexpensive, and rely more on good housekeeping practices (where vehicles are washed, planning for the collection of wash water) than on expensive technology. However, the construction of a specialized area for vehicle washing can be expensive for municipal facilities. Also, for facilities that cannot recycle their wash water the cost of pre-treating wash water through either structural practices or planning for collection and hauling of contaminated water to sewage treatment plants can represent a cost limitation.

Requirements

Costs

- Capital costs vary depending on measures implemented

  - Low cost ($500-1,000) for berm construction,
  - Medium cost ($5,000-20,000) for plumbing modifications (including re-routing discharge to sanitary sewer and installing simple sump).
  - High cost ($30,000-150,000) for on-site treatment and recycling.
- O&M costs increase with increasing capital investment.

Maintenance

- Berm repair and patching.
- Sweep washing areas frequently to remove solid debris.
- Inspect and maintain sumps, oil/water separators, and on-site treatment/recycling units.

Supplemental Information

Design Considerations

Designated Cleaning Areas

- Washing operations outside should be conducted in a designated wash area having the following characteristics:
  - Paved with Portland cement concrete,
  - Covered and bermed to prevent contact with stormwater and contain wash water,
  - Sloped for wash water collection,
  - Equipped with an oil/water separator, if necessary.

Examples

The City of Palo Alto has an effective program for commercial vehicle service facilities. Many of the program's elements, including specific BMP guidance and lists of equipment suppliers, are applicable to industrial vehicle service facilities.

The U.S. Postal Service in West Sacramento has a new vehicle wash system that collects, filters, and recycles the wash water.

References and Resources

http://www.stormwatercenter.net/

King County - ftp://dnr.metrokc.gov/wlr/dss/spcm/Chapter%203.PDF

Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program (URMP)
http://www.projectcleanwater.org/pdf/Model%20Program%20Municipal%20Facilities.pdf

Outdoor Container Storage SC-31

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Description

Accidental releases of materials from above ground liquid storage tanks, drums, and dumpsters present the potential for contaminating stormwaters with many different pollutants. Tanks may store many potential stormwater runoff pollutants, such as gasoline, aviation gas, diesel fuel, ammonia, solvents, syrups, etc. Materials spilled, leaked, or lost from storage tanks may accumulate in soils or on other surfaces and be carried away by rainfall runoff. These source controls apply to containers located outside of a building used to temporarily store liquid materials and include installing safeguards against accidental releases, installing secondary containment, conducting regular inspections, and training employees in standard operating procedures and spill cleanup techniques.

Targeted Constituents

Sediment	
Nutrients	☑
Trash	
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Approach

Pollution Prevention

- Educate employees about pollution prevention measures and goals
- Keep an accurate, up-to-date inventory of the materials delivered and stored on-site. Re-evaluate inventory needs and consider purchasing alternative products. Properly dispose of outdated products.
- Try to keep chemicals in their original containers, and keep them well labeled.

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Suggested Protocols

General

- Develop an operations plan that describes procedures for loading and/or unloading. Refer to SC-30 Outdoor Loading/Unloading for more detailed BMP information pertaining to loading and unloading of liquids.
- Protect materials from rainfall, runon, runoff, and wind dispersal:
  - Cover the storage area with a roof.
  - Minimize stormwater runon by enclosing the area or building a berm around it.
  - Use a "doghouse" structure for storage of liquid containers.
  - Use covered dumpsters for waste product containers.
- Employ safeguards against accidental releases:
  - Provide overflow protection devices to warn operator or automatic shut down transfer pumps.
  - Provide protection guards (bollards) around tanks and piping to prevent vehicle or forklift damage, and
  - Provide clear tagging or labeling, and restricting access to valves to reduce human error.
- Berm or surround tank or container with secondary containment system using dikes, liners, vaults, or double walled tanks.
- Contact the appropriate regulatory agency regarding environmental compliance for facilities with "spill ponds" designed to intercept, treat, and/or divert spills.
- Have registered and specifically trained professional engineers can identify and correct potential problems such as loose fittings, poor welding, and improper or poorly fitted gaskets for newly installed tank systems.

Storage Areas

- Provide storage tank piping located below product level with a shut-off valve at the tank; ideally this valve should be an automatic shear valve with the shut-off located inside the tank.
- Provide barriers such as posts or guard rails, where tanks are exposed, to prevent collision damage with vehicles.
- Provide secure storage to prevent vandalism.
- Place tight-fitting lids on all containers.
- Enclose or cover the containers where they are stored.

- Raise the containers off the ground by use of pallet or similar method, with provisions for spill control and secondary containment.
- Contain the material in such a manner that if the container leaks or spills, the contents will not discharge, flow, or be washed into the storm drainage system, surface waters or groundwater.
- Place drip pans or absorbent materials beneath all mounted container taps, and at all potential drip and spill locations during filling and unloading of containers. Drip pans must be cleaned periodically, and all collected liquids and soiled absorbent materials must be reused/recycled or properly disposed.
- Ensure that any underground or aboveground storage tanks shall be designed and managed in accordance with applicable regulations, be identified as a potential pollution source, have secondary containment, such as a berm or dike with an impervious surface.
- Rainfall collected in secondary containment system must not contain pollutants for discharge to storm drain system.

Container Management

- Keep containers in good condition without corrosion or leaky seams.
- Place containers in a lean-to structure or otherwise covered to keep rainfall from reaching the drums.
- Replace containers if they are deteriorating to the point where leakage is occurring. Keep all containers undercover to prevent the entry of stormwater. Employees should be made aware of the importance of keeping the containers free from leaks.
- Keep waste container drums in an area such as a service bay. Drums stored outside must be stored in a lean-to type structure, shed or walk-in container.

Storage of Hazardous Materials

- Storage of reactive, ignitable, or flammable liquids must comply with the fire and hazardous waste codes.
- Place containers in a designated area that is paved, free of cracks and gaps, and impervious in order to contain leaks and spills. The area should also be covered.
- Surround stored hazardous materials and waste with a curb or dike to provide the volume to contain 10 percent of the volume of all of the containers or 110 percent of the volume of the largest container, whichever is greater. The area inside the curb should slope to a drain and a dead-end sump should be installed in the drain.

Inspection

- Provide regular inspections:
  - Inspect storage areas regularly for leaks or spills.

- Conduct routine inspections and check for external corrosion of material containers. Also check for structural failure, spills and overfills due to operator error, failure of piping system.
- Check for leaks or spills during pumping of liquids or gases from truck or rail car to a storage facility or vice versa.
- Visually inspect new tank or container installations for loose fittings, poor welding, and improper or poorly fitted gaskets.
- Inspect tank foundations, connections, coatings, and tank walls and piping system. Look for corrosion, leaks, cracks, scratches, and other physical damage that may weaken the tank or container system.
- Replace containers that are leaking, corroded, or otherwise deteriorating with ones in good condition. If the liquid chemicals are corrosive, containers made of compatible materials must be used instead of metal drums.
- Label new or secondary containers with the product name and hazards.

Training

- Train employees (e.g. fork lift operators) and contractors in proper spill containment and cleanup. The employee should have the tools and knowledge to immediately begin cleaning up a spill if one should occur.
- Train employees in proper storage measures.
- Use a training log or similar method to document training.

Spill Response and Prevention

- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date, and implement accordingly.
- Have an emergency plan, equipment and trained personnel ready at all times to deal immediately with major spills.
- Collect all spilled liquids and properly dispose of them.
- Employees trained in emergency spill cleanup procedures should be present when dangerous waste, liquid chemicals, or other wastes are delivered.
- Operator errors can be prevented by using engineering safe guards and thus reducing accidental releases of pollutant.
- Store and maintain appropriate spill cleanup materials in a location known to all near the tank storage area.
- See Aboveground Tank Leak and Spill Control section of the Spill Prevention, Control & Cleanup fact sheet (SC-11) for additional information.

Other Considerations

- Storage sheds often must meet building and fire code requirements.
- The local fire district must be consulted for limitations on clearance of roof covers over containers used to store flammable materials.
- All specific standards set by federal and state laws concerning the storage of oil and hazardous materials must be met.
- Storage of reactive, ignitable, or flammable liquids should comply with the Uniform Fire Code and the National Electric Code.
- Storage of oil and hazardous materials must meet specific federal and state standards including:
  - Spill Prevention Control and Countermeasure Plan (SPCC) Plan
  - Secondary containment
  - Integrity and leak detection monitoring
  - Emergency preparedness plans

Requirements

Costs

- Will vary depending on the size of the facility and the necessary controls, such as berms or safeguards against accidental controls.

Maintenance

- Conduct weekly inspection.
- Sweep and clean the storage area regularly if it is paved, do not hose down the area to a storm drain.

Supplemental Information

- The most common causes of unintentional releases are:
  - Installation problems,
  - Failure of piping systems (pipes, pumps, flanges, couplings, hoses, and valves),
  - External corrosion and structural failure,
  - Spills and overfills due to operator error, and
  - Leaks during pumping of liquids or gases from truck or rail car to a storage tank or vice versa

Further Detail of the BMP

Dikes

One of the best protective measures against contamination of stormwater is diking. Containment dikes are berms or retaining walls that are designed to hold spills. Diking is an effective pollution prevention measure for above ground storage tanks and railcar or tank truck loading and unloading areas. The dike surrounds the area of concern and holds the spill, keeping spill materials separated from the stormwater side of the dike area. Diking can be used in any industrial or municipal facility, but it is most commonly used for controlling large spills or releases from liquid storage areas and liquid transfer areas.

- For single-wall tanks, containment dikes should be large enough to hold the contents of the storage tank for the facility plus rain water.
- For trucks, diked areas should be capable of holding an amount equal to the volume of the tank truck compartment. Diked construction material should be strong enough to safely hold spilled materials.
- Dike materials can consist of earth, concrete, synthetic materials, metal, or other impervious materials.
- Strong acids or bases may react with metal containers, concrete, and some plastics.
- Where strong acids or bases or stored, alternative dike materials should be considered. More active organic chemicals may need certain special liners for dikes.
- Dikes may also be designed with impermeable materials to increase containment capabilities.
- Dikes should be inspected during or after significant storms or spills to check for washouts or overflows.
- Regular checks of containment dikes to insure the dikes are capable of holding spills should be conducted.
- Inability of a structure to retain stormwater, dike erosion, soggy areas, or changes in vegetation indicate problems with dike structures. Damaged areas should be patched and stabilized immediately.
- Accumulated stormwater in the containment are should be analyzed for pollutants before it is released to surface waters. If pollutants are found or if stormwater quality is not determined, then methods other than discharging to surface waters should be employed (e.g., discharge to sanitary sewer if allowed).
- Earthen dikes may require special maintenance of vegetation such as mulching and irrigation.

Curbing

Curbing is a barrier that surrounds an area of concern. Curbing is similar to containment diking in the way that it prevents spills and leaks from being released into the environment. The curbing is usually small scaled and does not contain large spills like diking. Curbing is common at many facilities in small areas where handling and transfer liquid materials occur. Curbing can redirect stormwater away from the storage area. It is useful in areas where liquid materials are transferred from one container to another. Asphalt is a common material used for curbing; however, curbing materials include earth, concrete, synthetic materials, metal, or other impenetrable materials.

- Spilled materials should be removed immediately from curbed areas to allow space for future spills.
- Curbs should have manually-controlled pump systems rather than common drainage systems for collection of spilled materials.
- The curbed area should be inspected regularly to clear clogging debris.
- Maintenance should also be conducted frequently to prevent overflow of any spilled materials as curbed areas are designed only for smaller spills.
- Curbing has the following advantages:
  - Excellent runon control,
  - Inexpensive,
  - Ease of installment,
  - Provides option to recycle materials spilled in curb areas, and
  - Common industry practice.

Examples

The "doghouse" design has been used to store small liquid containers. The roof and flooring design prevent contact with direct rain or runoff. The doghouse has two solid structural walls and two canvas covered walls. The flooring is wire mesh about secondary containment. The unit has been used successfully at Lockheed Missile and Space Company in Sunnyvale.

References and Resources

British Columbia Lake Stewardship Society. Best Management Practices to Protect Water Quality from Non-Point Source Pollution. March 2000
http://www.nalms.org/bclss/storage.html

King County Stormwater Pollution Control Manual –
http://dnr.metrokc.gov/wlr/dss/spcm.htm

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program (URMP) -
http://www.projectcleanwater.org/pdf/Model%20Program%20Municipal%20Facilities.pdf

Outdoor Storage of Raw Materials SC-33

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize

Description

Raw materials, by-products, finished products, containers, and material storage areas exposed to rain and/or runoff can pollute stormwater. Stormwater can become contaminated when materials wash off or dissolve into water or are added to runoff by spills and leaks. Improper storage of these materials can result in accidental spills and the release of materials. To prevent or reduce the discharge of pollutants to stormwater from material delivery and storage, pollution prevention and source control measures, such as minimizing the storage of hazardous materials on-site, enclosing or covering materials, storing materials in a designated area, installing secondary containment, conducting regular inspections, preventing stormwater runon and runoff, and training employees and subcontractors must be implemented.

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	
Bacteria	
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Approach

Pollution Prevention

- Employee education is paramount for successful BMP implementation.
- Minimize inventory of raw materials.
- Keep an accurate, up-to-date inventory of the materials delivered and stored on-site.
- Try to keep chemicals in their original containers, and keep them well labeled.

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SC-33 Outdoor Storage of Raw Materials

Suggested Protocols

General

- Store all materials inside. If this is not feasible, then all outside storage areas should be covered with a roof, and bermed, or enclosed to prevent stormwater contact. At the very minimum, a temporary waterproof covering made of polyethylene, polypropylene or hypalon should be used over all materials stored outside.
- Cover and contain the stockpiles of raw materials to prevent stormwater from running into the covered piles. The covers must be in place at all times when work with the stockpiles is not occurring. (applicable to small stockpiles only).
- If the stockpiles are so large that they cannot feasibly be covered and contained, implement erosion control practices at the perimeter of your site and at any catch basins to prevent erosion of the stockpiled material off site,
- Keep liquids in a designated area on a paved impervious surface within a secondary containment.
- Keep outdoor storage containers in good condition.
- Keep storage areas clean and dry.
- Design paved areas to be sloped in a manner that minimizes the pooling of water on the site, particularly with materials that may leach pollutants into stormwater and/or groundwater, such as compost, logs, and wood chips. A minimum slope of 1.5 percent is recommended.
- Secure drums stored in an area where unauthorized persons may gain access to prevent accidental spillage, pilferage, or any unauthorized use.
- Cover wood products treated with chromated copper arsenate, ammonical copper zinc arsenate, creosote, or pentachlorophenol with tarps or store indoors.

Raw Material Containment

- Do not store chemicals, drums, or bagged materials directly on the ground. Place these items in secondary containers if applicable.
- Prevent the run-on of uncontaminated stormwater from adjacent areas as well as runoff of stormwater from the stockpile areas, by placing a curb along the perimeter of the area. The area inside the curb should slope to a drain. Liquids should be drained to the sanitary sewer if allowed. The drain must have a positive control such as a lock, valve, or plug to prevent release of contaminated liquids.
- Tanks should be bermed or surrounded by a secondary containment system.
- Release accumulated stormwater in petroleum storage areas prior to the next storm. At a minimum, water should pass through an oil/water separator and, if allowed, discharged to a sanitary sewer.

Inspection

- Conduct regular inspections of storage areas so that leaks and spills are detected as soon as possible.
- Conduct routine inspections and check for external corrosion of material containers. Also check for structural failure, spills and overfills due to operator error, failure of piping system.
- Check for leaks or spills during pumping of liquids or gases from truck or rail car to a storage facility or vice versa.
- Visually inspect new tank or container installations for loose fittings, poor welding, and improper or poorly fitted gaskets.
- Inspect tank foundations, connections, coatings, and tank walls and piping system. Look for corrosion, leaks, cracks, scratches, and other physical damage that may weaken the tank or container system.

Training

- Employees should be well trained in proper material storage.
- Train employees and contractors in proper techniques for spill containment and cleanup.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Keep your Spill Prevention Control and countermeasure (SPCC) plan up-to-date, and implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.
- Have employees trained in spill containment and cleanup present during loading/unloading of dangerous waste, liquid chemicals and other potentially hazardous materials.

Other Considerations

- Storage sheds often must meet building and fire code requirements. Storage of reactive, ignitable, or flammable liquids must comply with the Uniform Fire Code and the National Electric Code.
- Space limitations may preclude storing some materials indoors.
- Some municipalities require that secondary containment areas (regardless of size) be connected to the sanitary sewer, prohibiting any hard connections to the storm drain. Storage sheds often must meet building and fire code requirements.
- The local fire district must be consulted for limitations on clearance of roof covers over containers used to store flammable materials.

SC-33 Outdoor Storage of Raw Materials

Requirements

Costs

- Costs will vary depending on the size of the facility and the necessary controls. They should be low except where large areas may have to be covered.

Maintenance

- Accurate and up-to-date inventories should be kept of all stored materials.
- Berms and curbs may require periodic repair and patching.
- Parking lots or other surfaces near bulk materials storage areas should be swept periodically to remove debris blown or washed from storage area.
- Sweep paved storage areas regularly for collection and disposal of loose solid materials, do not hose down the area to a storm drain or conveyance ditch.
- Keep outdoor storage areas in good condition (e.g. repair roofs, floors, etc. to limit releases to runoff).

Supplemental Information

Further Detail of the BMP

Raw Material Containment

Paved areas should be sloped in a manner that minimize the pooling of water on the site, particularly with materials that may leach pollutants into stormwater and/or groundwater, such as compost, logs, and wood chips. A minimum slope of 1.5 percent is recommended.

- Curbing should be placed along the perimeter of the area to prevent the runon of uncontaminated stormwater from adjacent areas as well as runoff of stormwater from the stockpile areas.
- The storm drainage system should be designed to minimize the use of catch basins in the interior of the area as they tend to rapidly fill with manufacturing material.
- The area should be sloped to drain stormwater to the perimeter where it can be collected or to internal drainage alleyways where material is not stockpiled.
- If the raw material, by-product, or product is a liquid, more information for outside storage of liquids can be found under SC-31, Outdoor Container Storage.

Examples

The "doghouse" design has been used to store small liquid containers. The roof and flooring design prevent contact with direct rain or runoff. The doghouse has two solid structural walls and two canvas covered walls. The flooring is wire mesh about secondary containment. The unit has been used successively at Lockheed Missile and Space Company in Sunnyvale.

References and Resources

King County Stormwater Pollution Control Manual - http://dnr.metrokc.gov/wlr/dss/spcm.htm

Model Urban Runoff Program: A How-To-Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July 1998 (Revised February 2002 by the California Coastal Commission).

Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program (URMP)
http://www.projectcleanwater.org/pdf/Model%20Program%20Municipal%20Facilities.pdf

Waste Handling & Disposal SC-34

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Description

Improper storage and handling of solid wastes can allow toxic compounds, oils and greases, heavy metals, nutrients, suspended solids, and other pollutants to enter stormwater runoff. The discharge of pollutants to stormwater from waste handling and disposal can be prevented and reduced by tracking waste generation, storage, and disposal; reducing waste generation and disposal through source reduction, re-use, and recycling; and preventing runon and runoff.

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Approach

Pollution Prevention

- Reduction in the amount of waste generated can be accomplished using the following source controls such as:
  - Production planning and sequencing
  - Process or equipment modification
  - Raw material substitution or elimination
  - Loss prevention and housekeeping
  - Waste segregation and separation
  - Close loop recycling
- Establish a material tracking system to increase awareness about material usage. This may reduce spills and minimize contamination, thus reducing the amount of waste produced.
- Recycle materials whenever possible.

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Suggested Protocols

General

- Cover storage containers with leak proof lids or some other means. If waste is not in containers, cover all waste piles (plastic tarps are acceptable coverage) and prevent stormwater runon and runoff with a berm. The waste containers or piles must be covered except when in use.
- Use drip pans or absorbent materials whenever grease containers are emptied by vacuum trucks or other means. Grease cannot be left on the ground. Collected grease must be properly disposed of as garbage.
- Check storage containers weekly for leaks and to ensure that lids are on tightly. Replace any that are leaking, corroded, or otherwise deteriorating.
- Sweep and clean the storage area regularly. If it is paved, do not hose down the area to a storm drain.
- Dispose of rinse and wash water from cleaning waste containers into a sanitary sewer if allowed by the local sewer authority. Do not discharge wash water to the street or storm drain.
- Transfer waste from damaged containers into safe containers.
- Take special care when loading or unloading wastes to minimize losses. Loading systems can be used to minimize spills and fugitive emission losses such as dust or mist. Vacuum transfer systems can minimize waste loss.

Controlling Litter

- Post "No Littering" signs and enforce anti-litter laws.
- Provide a sufficient number of litter receptacles for the facility.
- Clean out and cover litter receptacles frequently to prevent spillage.

Waste Collection

- Keep waste collection areas clean.
- Inspect solid waste containers for structural damage or leaks regularly. Repair or replace damaged containers as necessary.
- Secure solid waste containers; containers must be closed tightly when not in use.
- Place waste containers under cover if possible.
- Do not fill waste containers with washout water or any other liquid.
- Ensure that only appropriate solid wastes are added to the solid waste container. Certain wastes such as hazardous wastes, appliances, fluorescent lamps, pesticides, etc. may not be

disposed of in solid waste containers (see chemical/ hazardous waste collection section below).

- Do not mix wastes; this can cause chemical reactions, make recycling impossible, and complicate disposal.

Good Housekeeping

- Use all of the product before disposing of the container.
- Keep the waste management area clean at all times by sweeping and cleaning up spills immediately.
- Use dry methods when possible (e.g. sweeping, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.
- Stencil storm drains on the facility's property with prohibitive message regarding waste disposal.

Chemical/Hazardous Wastes

- Select designated hazardous waste collection areas on-site.
- Store hazardous materials and wastes in covered containers protected from vandalism, and in compliance with fire and hazardous waste codes.
- Place hazardous waste containers in secondary containment.
- Make sure that hazardous waste is collected, removed, and disposed of only at authorized disposal areas.

Runon/Runoff Prevention

- Prevent stormwater runon from entering the waste management area by enclosing the area or building a berm around the area.
- Prevent the waste materials from directly contacting rain.
- Cover waste piles with temporary covering material such as reinforced tarpaulin, polyethylene, polyurethane, polypropyleneor hypalon.
- Cover the area with a permanent roof if feasible.
- Cover dumpsters to prevent rain from washing waste out of holes or cracks in the bottom of the dumpster.
- Move the activity indoor after ensuring all safety concerns such as fire hazard and ventilation are addressed.

Inspection

- Inspect and replace faulty pumps or hoses regularly to minimize the potential of releases and spills.
- Check waste management areas for leaking containers or spills.
- Repair leaking equipment including valves, lines, seals, or pumps promptly.

Training

- Train staff pollution prevention measures and proper disposal methods.
- Train employees and contractors proper spill containment and cleanup. The employee should have the tools and knowledge to immediately begin cleaning up a spill if one should occur.
- Train employees and subcontractors in proper hazardous waste management.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Keep your Spill Prevention Control and countermeasure (SPCC) plan up-to-date, and implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.
- Vehicles transporting waste should have spill prevention equipment that can prevent spills during transport. The spill prevention equipment includes:
  - Vehicles equipped with baffles for liquid waste
  - Trucks with sealed gates and spill guards for solid waste

Other Considerations

- Hazardous waste cannot be re-used or recycled; it must be disposed of by a licensed hazardous waste hauler.

Requirements

Costs

- Capital and operation and maintenance costs will vary substantially depending on the size of the facility and the types of waste handled. Costs should be low if there is an inventory program in place.

Maintenance

- None except for maintaining equipment for material tracking program.

Supplemental Information

Further Detail of the BMP

Land Treatment System

- Minimize the runoff of polluted stormwater from land application of municipal waste on-site by:
  - Choosing a site where slopes are under 6%, the soil is permeable, there is a low water table, it is located away from wetlands or marshes, there is a closed drainage system.
  - Avoiding application of waste to the site when it is raining or when the ground is saturated with water.
  - Growing vegetation on land disposal areas to stabilize soils and reduce the volume of surface water runoff from the site.
  - Maintaining adequate barriers between the land application site and the receiving waters. Planted strips are particularly good.
  - Using erosion control techniques such as mulching and matting, filter fences, straw bales, diversion terracing, and sediment basins.
  - Performing routine maintenance to ensure the erosion control or site stabilization measures are working.

References and Resources

King County Stormwater Pollution Control Manual - http://dnr.metrokc.gov/wlr/dss/spcm.htm

Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Associations (BASMAA). On-line: http://www.basmaa.org

Building & Grounds Maintenance SC-41

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Description

Stormwater runoff from building and grounds maintenance activities can be contaminated with toxic hydrocarbons in solvents, fertilizers and pesticides, suspended solids, heavy metals, and abnormal pH. Utilizing the following protocols will prevent or reduce the discharge of pollutants to stormwater from building and grounds maintenance activities by washing and cleaning up with as little water as possible, following good landscape management practices, preventing and cleaning up spills immediately, keeping debris from entering the storm drains, and maintaining the stormwater collection system.

Approach

Pollution Prevention

- Switch to non-toxic chemicals for maintenance when possible.
- Choose cleaning agents that can be recycled.
- Encourage proper lawn management and landscaping, including use of native vegetation.
- Encourage use of Integrated Pest Management techniques for pest control.
- Encourage proper onsite recycling of yard trimmings.
- Recycle residual paints, solvents, lumber, and other material as much as possible.

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Suggested Protocols

Pressure Washing of Buildings, Rooftops, and Other Large Objects

- In situations where soaps or detergents are used and the surrounding area is paved, pressure washers must use a waste water collection device that enables collection of wash water and associated solids. A sump pump, wet vacuum or similarly effective device must be used to collect the runoff and loose materials. The collected runoff and solids must be disposed of properly.
- If soaps or detergents are not used, and the surrounding area is paved, wash water runoff does not have to be collected but must be screened. Pressure washers must use filter fabric or some other type of screen on the ground and/or in he catch basin to trap the particles in wash water runoff.
- If you are pressure washing on a grassed area (with or without soap), runoff must be dispersed as sheet flow as much as possible, rather than as a concentrated stream. The wash runoff must remain on the grass and not drain to pavement. Ensure that this practice does not kill grass.

Landscaping Activities

- Do not apply any chemicals (insecticide, herbicide, or fertilizer) directly to surface waters, unless the application is approved and permitted by the state.
- Dispose of grass clippings, leaves, sticks, or other collected vegetation as garbage, or by composting. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Use mulch or other erosion control measures on exposed soils.
- Check irrigation schedules so pesticides will not be washed away and to minimize non-stormwater discharge.

Building Repair, Remodeling, and Construction

- Do not dump any toxic substance or liquid waste on the pavement, the ground, or toward a storm drain.
- Use ground or drop cloths underneath outdoor painting, scraping, and sandblasting work, and properly dispose of collected material daily.
- Use a ground cloth or oversized tub for activities such as paint mixing and tool cleaning.
- Clean paint brushes and tools covered with water-based paints in sinks connected to sanitary sewers or in portable containers that can be dumped into a sanitary sewer drain. Brushes and tools covered with non-water-based paints, finishes, or other materials must be cleaned in a manner that enables collection of used solvents (e.g., paint thinner, turpentine, etc.) for recycling or proper disposal.

- Use a storm drain cover, filter fabric, or similarly effective runoff control mechanism if dust, grit, wash water, or other pollutants may escape the work area and enter a catch basin. The containment device(s) must be in place at the beginning of the work day, and accumulated dirty runoff and solids must be collected and disposed of before removing the containment device(s) at the end of the work day.
- If you need to de-water an excavation site, you may need to filter the water before discharging to a catch basin or off-site. In which case you should direct the water through hay bales and filter fabric or use other sediment filters or traps.
- Store toxic material under cover with secondary containment during precipitation events and when not in use. A cover would include tarps or other temporary cover material.

Mowing, Trimming, and Planting

- Dispose of leaves, sticks, or other collected vegetation as garbage, by composting or at a permitted landfill. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Use mulch or other erosion control measures when soils are exposed.
- Place temporarily stockpiled material away from watercourses and drain inlets, and berm or cover stockpiles to prevent material releases to the storm drain system.
- Consider an alternative approach when bailing out muddy water; do not put it in the storm drain, pour over landscaped areas.
- Use hand or mechanical weeding where practical.

Fertilizer and Pesticide Management

- Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of fertilizers and pesticides and training of applicators and pest control advisors.
- Follow manufacturers' recommendations and label directions. Pesticides must never be applied if precipitation is occuring or predicted. Do not apply insecticides within 100 feet of surface waters such as lakes, ponds, wetlands, and streams.
- Use less toxic pesticides that will do the job, whenever possible. Avoid use of copper-based pesticides if possible.
- Do not use pesticides if rain is expected.
- Do not mix or prepare pesticides for application near storm drains.
- Use the minimum amount needed for the job.
- Calibrate fertilizer distributors to avoid excessive application.
- Employ techniques to minimize off-target application (e.g. spray drift) of pesticides, including consideration of alternative application techniques.

- Apply pesticides only when wind speeds are low.
- Work fertilizers into the soil rather than dumping or broadcasting them onto the surface.
- Irrigate slowly to prevent runoff and then only as much as is needed.
- Clean pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water.
- Dispose of empty pesticide containers according to the instructions on the container label.
- Use up the pesticides. Rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- Implement storage requirements for pesticide products with guidance from the local fire department and County Agricultural Commissioner. Provide secondary containment for pesticides.

Inspection

- Inspect irrigation system periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering, and repair leaks in the irrigation system as soon as they are observed.

Training

- Educate and train employees on use of pesticides and in pesticide application techniques to prevent pollution.
- Train employees and contractors in proper techniques for spill containment and cleanup.
- Be sure the frequency of training takes into account the complexity of the operations and the nature of the staff.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup
- Keep your Spill Prevention Control and countermeasure (SPCC) plan up-to-date, and implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Alternative pest/weed controls may not be available, suitable, or effective in many cases.

Requirements

Costs

- Overall costs should be low in comparison to other BMPs.

Maintenance

- Sweep paved areas regularly to collect loose particles, and wipe up spills with rags and other absorbent material immediately, do not hose down the area to a storm drain.

Supplemental Information

Further Detail of the BMP

Fire Sprinkler Line Flushing

Building fire sprinkler line flushing may be a source of non-stormwater runoff pollution. The water entering the system is usually potable water though in some areas it may be non-potable reclaimed wastewater. There are subsequent factors that may drastically reduce the quality of the water in such systems. Black iron pipe is usually used since it is cheaper than potable piping but it is subject to rusting and results in lower quality water. Initially the black iron pipe has an oil coating to protect it from rusting between manufacture and installation; this will contaminate the water from the first flush but not from subsequent flushes. Nitrates, poly-phosphates and other corrosion inhibitors, as well as fire suppressants and antifreeze may be added to the sprinkler water system. Water generally remains in the sprinkler system a long time, typically a year, between flushes and may accumulate iron, manganese, lead, copper, nickel and zinc. The water generally becomes anoxic and contains living and dead bacteria and breakdown products from chlorination. This may result in a significant BOD problem and the water often smells. Consequently dispose fire sprinkler line flush water into the sanitary sewer. Do not allow discharge to storm drain or infiltration due to potential high levels of pollutants in fire sprinkler line water.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

King County - ftp://dnr.metrokc.gov/wlr/dss/spcm/Chapter%203.PDF

Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp

Mobile Cleaners Pilot Program: Final Report. 1997. Bay Area Stormwater Management Agencies Association (BASSMA) http://www.basmaa.org/

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Association (BASMAA) http://www.basmaa.org/

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program (URMP) -
http://www.projectcleanwater.org/pdf/Model%20Program%20Municipal%20Facilities.pdf

PART 4.

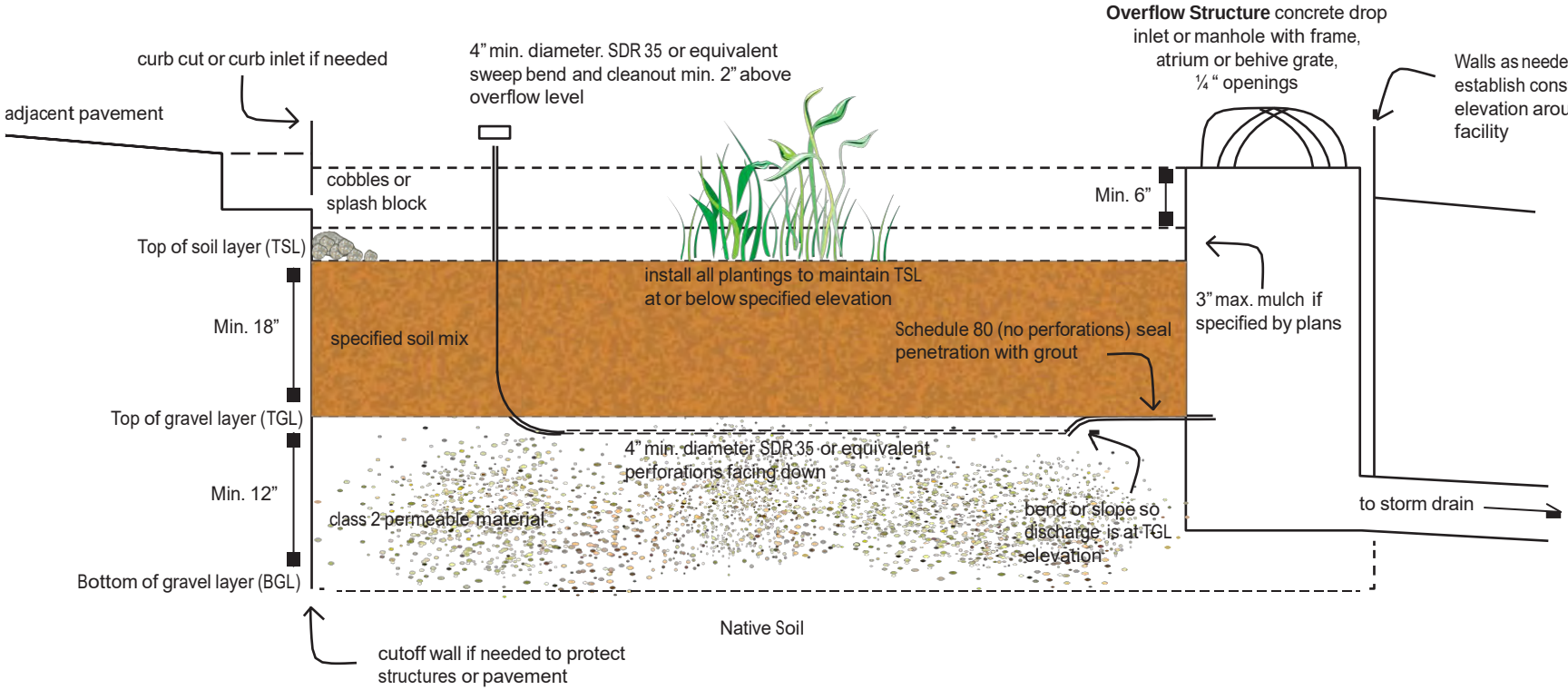
APPENDIX 5 OF LAKE COUNTY CLEAN WATER PROGRAM LOW IMPACT DEVELOPMENTS STANDARDS MANUAL:
BIORETENTION SPECIFICATIONS AND CHECKLIST

APPENDIX 5

Bioretention Specifications and Checklist

Bioretention Facility

not to scale



Allowed variations for special site conditions:

- Facilities located within 10 feet of structures or other potential geotechnical hazards may incorporate an impervious cutoff wall

- Facilities with documented high concentrations of pollutants in underlying soil or groundwater, facilities where infiltration could contribute to a geotechnical hazard, and facilities located on elevated plazas or other s structures may incorporate an impervious liner between the native soil and the BGL and locate the underdrain discharge at the BGL (flow-through planter configuration)

- Facilities located in areas of high groundwater, highly infiltrative soils, or where connection of the underdrain to a surface drain or subsurface storm drain are infeasible may omit the underdrain

Notes:

- No liner, no filter fabric, no landscape cloth.

- Maintain BGL, TGL, TSL throughout facility area at elevations to be specified in plan.

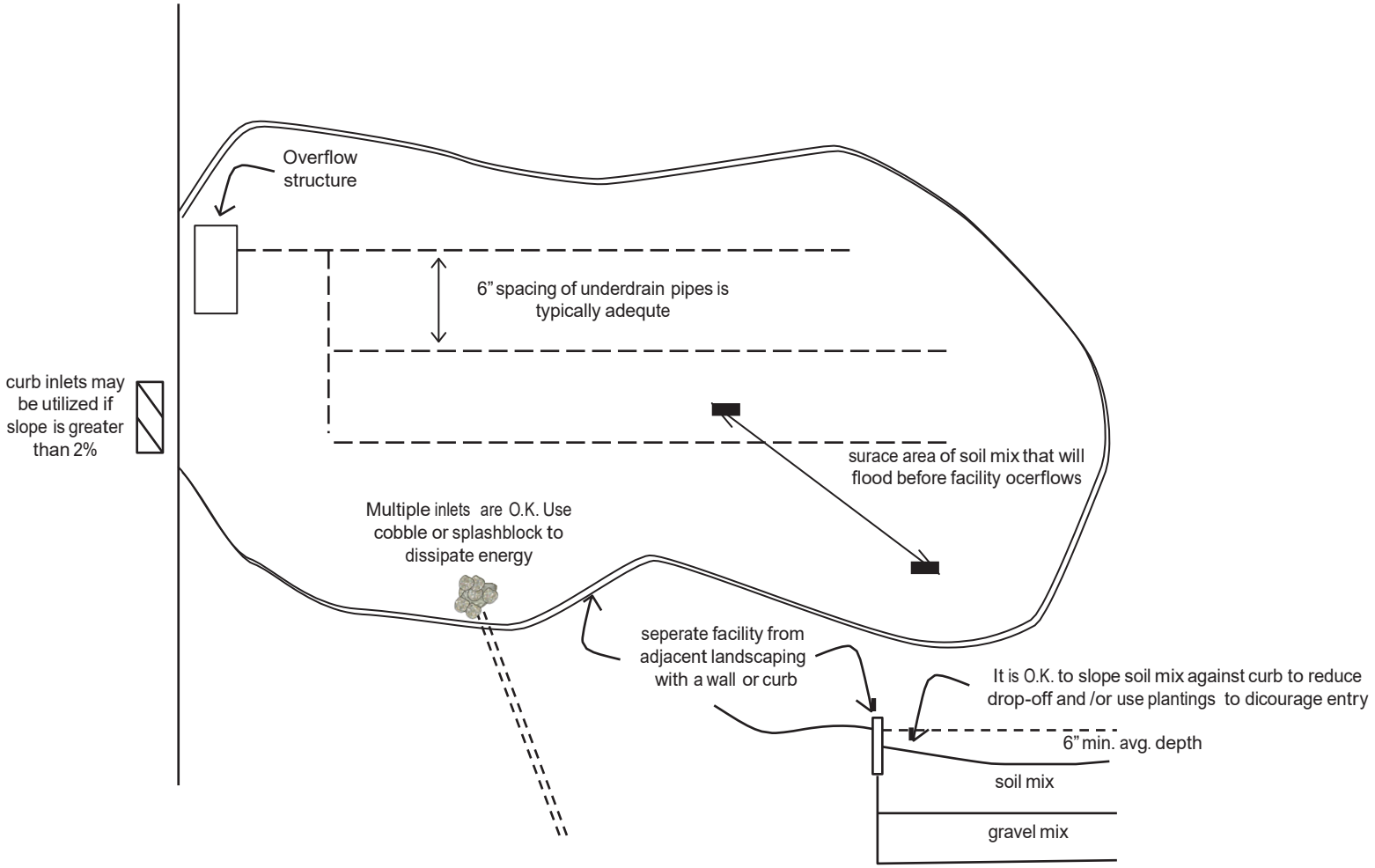
- Class 7 permeable layer may extend below and underneath drop inlet.

- Elevation or underdrain discharge is at top of gravel layer.

- See Chapter X for instructions on facility sizing and additional specifications

Bioretention Facility - Overview

not to scale



Note:

Show all elevations of curb, pavement, inlet, top of soil layer (TSL), top of gravel layer (TGL), and bottom of gravel layer (BGL) at all inlets and outlets and at key points along edge of facility.

Soil/Compost and Gravel Specifications for Bioretention Facility

Compost shall be a well-decomposed, stable, weed-free organic matter source derived from waste materials including yard debris, wood wastes or other organic materials not including manure or biosolids, and shall meet the standards developed by the US Composting Council (USCC). The product shall be certified through the USCC Seal of Testing Assurance (STA) Program (a compost testing and information disclosure program).

Compost Quality Analysis:

Before delivery of the soil, the supplier shall submit a copy of the lab analysis performed by a laboratory that is enrolled in the USCC's Compost Analysis Proficiency (CAP) program and using approved Test Methods for the Evaluation of Composting and Compost (TMECC). The lab report shall verify that the compost parameters are within the limits specified below.

Parameter	Range	Reported as (units)
Organic Matter Content	35-75	%, dry weight basis
Carbon to Nitrogen Ratio	15:1 to 25:1	ratio
Maturity (Seed Emergence and Seedling Vigor)	>80	average % of control
Stability (CO_2 Evolution Rate)	<8	mg $C0_2$-C/g unit OM/day
Soluble Salts (Salinity)	<6.0	mmhos/cm
pH	6.5 - 8.0 May vary with plant species	units
Heavy Metals Content	PASS	PASS/FAIL: US EPA Class A standard, 40 CFR § 503.13, tables 1 and 3.
Pathogens		
Fecal coliform	PASS	PASS/FAIL: US EPA Class A standard, 40 CFR § 503.32(a) levels
Salmonella	PASS	PASS/FAIL: US EPA Class A standard, 40 CFR § 503.32(a) levels
Nutrient Content (provide analysis, including):		
Total Nitrogen (N)	≥0.9	%
Boron (Total B)	<80	ppm
Calcium (Ca)	For information only	%
Sodium (Na)	For information only	%
Magnesium (Mg)	For information only	%
Sulfur (S)	For information only	%

Soil/Compost and Gravel Specifications for Bioretention Facility

Gravel Layer

The gravel layer used in the bioretention facility must consist of *Class 2 Permeable Material* as specified in the State of California's Business, Transportation and Housing Agency, Department of Transportation; Standard Specifications 2010, manual (http://www.dot.ca.gov/hq/esc/oe/construction_contract_standards/std_specs/2010_StdSpecs/2010_StdSpecs.pdf).

The specific section, Subsurface Drains, Sec. 68, of the manual is used because it offers specific specifications for subsurface drains. In addition to the standardized permeable layer, a membrane layer of pea gravel or other intermediate-sized material is recommended at the top of the gravel layer to prevent fines from the soil/compost layer from moving downward into the gravel layer.

68-2.02F(1) General

Permeable material for use in backfilling trenches under, around, and over underdrains must consist of hard, durable, clean sand, gravel , or crushed stone and must be free from organic material, clay balls, or other deleterious substances.

Permeable material must have a durability index of not less than 40.

68-2.02F(3) Class 2 Permeable Material

The percentage composition by weight of Class 2 permeable material in place must comply with the grading requirements shown in the following table:

Class 2 Permeable Material Grading Requirements

Sieve sizes	Percentage passing
1"	100
3/4"	90–100
3/8"	40–100
No. 4	25–40
No. 8	18–33
No. 30	5–15
No. 50	0–7
No. 200	0–3

Class 2 permeable material must have a sand equivalent value of not less than 75.

Bioretention Facility Construction Checklist

Layout (to be confirmed prior to beginning excavation permit approval stage)

☑	Square footage of the facility meets or exceeds minimum shown in Stormwater Control Plan
☑	Site grading and grade breaks are consistent with the boundaries of the tributary Drainage Management Area(s) (DMAs) shown in the Stormwater Control Plan
☑	Inlet elevation of the facility is low enough to receive drainage from the entire tributary DMA
☑	locations and elevations of overland flow or piping, including roof leaders, from impervious areas to the facility have been laid out and any conflicts resolved
☑	Rim elevation of the facility is laid out to be level all the way around, or elevations are consistent with a detailed cross-section showing location and height of interior dams
☐	Locations for vaults, utility boxes, and light standards have been identified so that they will not conflict with the facility To be coordinated at building permit phase
☐	Facility is protected as needed from construction-phase runoff and sediment To be coordinated at building permit phase

Excavation (to be confirmed prior to backfilling or pipe installation)

☐	Excavation conducted with materials and techniques to minimize compaction of soils within the facility area
☐	Excavation is to accurate area and depth
☐	Slopes or side walls protect from sloughing of native soils into the facility
☐	Moisture barrier, if specified, has been added to protect adjacent pavement or structures.
☐	Native soils at bottom of excavation are ripped or loosened to promote infiltration

Overflow or Surface Connection to Storm Drainage (to be confirmed prior to backfilling with any materials)

☐	Grating excludes mulch and litter (beehive or atrium-style grates recommended)
☐	Overflow is connected to storm drain via appropriately sized
☐	No knockouts or side inlets are in overflow riser
☐	Overflow is at specified elevation
☐	Overflow location selected to minimize surface flow velocity (near, but offset from, inlet recommended)
☐	Grating excludes mulch and litter (beehive or atrium-style grates recommended)
☐	Overflow is connected to storm drain via appropriately sized

Bioretention Facility Construction Checklist

Underground connection to storm drain/outlet orifice

☐	Perforated pipe underdrain (PVC SDR 35 or approved equivalent) is installed with holes facing down
☐	Perforated pipe is connected to storm drain at specified elevation (typ. bottom of soil elevation)
☐	Cleanouts are in accessible locations and connected via sweep

Drain Rock/Subdrain (to be confirmed prior to installation of soil mix)

☐	Rock is installed as specified, 12" min. depth. Class 2 permeable, Caltrans specification 68-2.02F(3) recommended
☐	Rock is smoothed to a consistent top elevation. Depth and top elevation are as shown in plans
☐	Slopes or side walls protect from sloughing of native soils into the facility
☐	No filter fabric is placed between the subdrain and soil mix layers

Soil Mix

☐	Soil mix is as specified.
☐	Mix installed in lifts not exceeding 12"
☐	Mix is not compacted during installation but may be thoroughly wetted to encourage consolidation
☐	Mix is smoothed to a consistent top elevation. Depth of mix (18" min.) and top elevation are as shown in plans, accounting for depth of mulch to follow and required reservoir depth

Irrigation

☐	Irrigation system is installed so it can be controlled separately from other landscaped areas
☐	Smart irrigation controllers and drip emitters are recommended and may be required by local code or ordinance.
☐	Spray heads, if any, are positioned to avoid direct spray into outlet structures

Bioretention Facility Construction Checklist

Planting

☐	Plants are installed consistent with approved planting plan, consistent with site water allowance
☐	Any trees and large shrubs are staked securely
☐	No fertilizer is added; compost tea may be used
☐	No native soil or clayey material are imported into the facility with plantings
☐	1"-2" mulch may be applied following planting; mulch selected to avoid floating
☐	Final elevation of soil mix maintained following planting
☐	Curb openings are free of obstructions

Final Engineering Inspection

☐	Drainage Management Area(s) are free of construction sediment and landscaped areas are stabilized
☐	Inlets are installed to provide smooth entry of runoff from adjoining pavement, have sufficient reveal (drop from the adjoining pavement to the top of the mulch or soil mix, and are not blocked
☐	Inflows from roof leaders and pipes are connected and operable
☐	Temporary flow diversions are removed
☐	Rock or other energy dissipation at piped or surface inlets is adequate
☐	Overflow outlets are configured to allow the facility to flood and fill to near rim before overflow
☐	Plantings are healthy and becoming established
☐	Irrigation is operable
☐	Facility drains rapidly; no surface ponding is evident
☐	Any accumulated construction debris, trash, or sediment is removed from facility
☐	Permanent signage is installed and is visible to site users and maintenance personnel

PART 5.

APPENDIX 9 OF LAKE COUNTY CLEAN WATER PROGRAM LOW IMPACT DEVELOPMENTS STANDARDS MANUAL:

OPERATION AND MAINTENANCE DOCUMENT AND MAINTENACE DECLARATION

APPENDIX 9

Operation and Maintenance Template

O&M Plan Checklist and Certification for Regulated Projects

For Office Use Only
Application No._____
Received By: _____

A. Designate the *Responsible Individual (RI).*

The *RI* is the person that will have direct responsibility for the maintenance of storm water controls, maintain self-inspection records, and sign any correspondence with the County of Lake.

Name of RI: BRANDON AND CONNOR DISNEY

Phone: 707-263-0969

Project Name: DISNEY BOAT RENTALS DEVELOPMENT

Physical Site Address and/or APN: 2200 LAKESHORE BLVD LAKEPORT, CA APN 026-031-290-000

THIS WILL BE DONE DURING CONSTRUCTION PHASE

☐ Include from the Storm Water Control Plan Worksheet the *Drainage Management Area*s tabulations (table #1-4)

☐ Include the site plan delineating the DMAs and the locations of the bioretention or equivalent facilities.

☐ Include the final construction drawings of the storm water facilities:

- Plans, elevations, and details of bioretention facilities.
- Construction details and specifications, including: depths of sand and soil, compaction, pipe materials, and bedding.
- Location and layouts of inflow piping and piping to off-site discharge
- Native soils (lenses beneath the facilities)

B. Scheduled Maintenance Activities

The following activities will need to occur on an annual basis, frequency may need to be adjusted depending on facility.

- **Refuse removal,** remove trash the collects near the inlets or that is trapped by vegetation. Clean out soil and debris blocking inlets or overflows.
- **Control weeds,** manual methods and soil amendments; non-natural (synthetic) pesticides should not be used.
- **Add mulch,** add mulch to maintain a mulch layer thickness of ~ 3 inches.
- **Pruning and replanting vegetation,** it may be necessary to replace or remove vegetation to ensure the proper functioning of the facility.
- **Check irrigation**, if irrigation exists, check to make sure the system is working as intended.

An annual self-certification letter will be mailed to the RI. This letter will serve as verification that all the storm water facilities on the property are being maintained and remain operational. The letter should be signed and returned within 30 days.

O&M Plan Checklist and Certification for Regulated Projects

C. Updates to the O & M Plan

Contact information for the Responsible Individual should be current. If the RI changes the County of Lake's Community Development Department should be notified with the appropriate revisions.

D. O & M plans for other Facility Types

If your project included a non-standard storm water treatment facility that was approved by the Community Development Department, such as a tree-box type system, than the O & M should reflect the manufacturer's recommended maintenance scheduling.

E. Signature and Certification:

"I, the RI/applicant accept responsibility for operation and maintenance of storm water treatment and flow-control facilities until such time as this responsibility is transferred to a subsequent owner." Furthermore, a condition on the property deed will be recorded with the County Recorder's office indicating that a storm water facility is present on the property and that the maintenance responsibility will transfer with property ownership in perpetuity.

_____ _____

Signature of the RI Date

_____

Print Name

I am the:

☐ Property Owner

☐ Applicant

☐ Contractor

O and M: Inspection and Maintenance Checklist: Bioretention Facility

Example of Inspection Maintenance Document

Responsible Individual: BRANDON AND CONNOR DISNEY

Facility Name: DISNEY BOAT RENTALS

Date of Inspection: _____

Item	**Conditions When Maintenance Is Needed**	**Maintenance Needed? (Y/N)**	**Comments** (Describe maintenance completed; and if any needed maintenance was not conducted, note what is needed and when it will be done)	**Results Expected When Maintenance Is Performed**
General				
Trash and Debris	Trash and debris accumulated in basin Visual evidence of dumping			Trash and debris cleared from site.
Contaminants and Pollution	Any evidence of oil, gasoline, contaminants or other pollutants			No contaminants or pollutants present.
Vegetation	When the planted vegetation becomes excessively tall. When nuisance weeds and other vegetation start to take over.			Vegetation mowed per specifications or maintenance plan, or nuisance vegetation removed so that flow is not impeded. Vegetation should never be mowed lower than the design flow depth. Remove clippings from the area and dispose appropriately.

This or a similar document should remain with the facility. Inspection and maintenance records should be available upon request from the County of Lake.

Item	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	**Comments** (Describe maintenance completed; and if any needed maintenance was not conducted, note what is needed and when it will be done)	Results Expected When Maintenance Is Performed
Tree/Brush Growth and Hazard Trees	Growth does not allow maintenance access or interferes with maintenance activity. Dead, diseased, or dying trees			
Erosion	Eroded over 2 in. deep where cause of damage is still present or where there is potential for continued erosion.			Cause of erosion is managed appropriately. Areas remulched to fill in void areas.
Sediment	Accumulated sediment affects inletting or outletting condition of the facility.			Sediment removed and area reseeded if necessary to control erosion.
Damaged Pipes	Any part of the piping that is crushed or deformed more than 20% or any other failure to the piping.			Pipe repaired or replaced.
Rodent Holes	If facility acts as a dam or berm, any evidence of rodent holes, or any evidence of water piping through dam or berm via rodent holes.			The design specifications are not compromised by holes. Any rodent control activities are in accordance with applicable laws and do not affect any protected species

This or a similar document should remain with the facility. Inspection and maintenance records should be available upon request from the County of Lake.

PART 6.

EXISTING AND PROPOSED SITE CONDITION MAPS

LEGEND

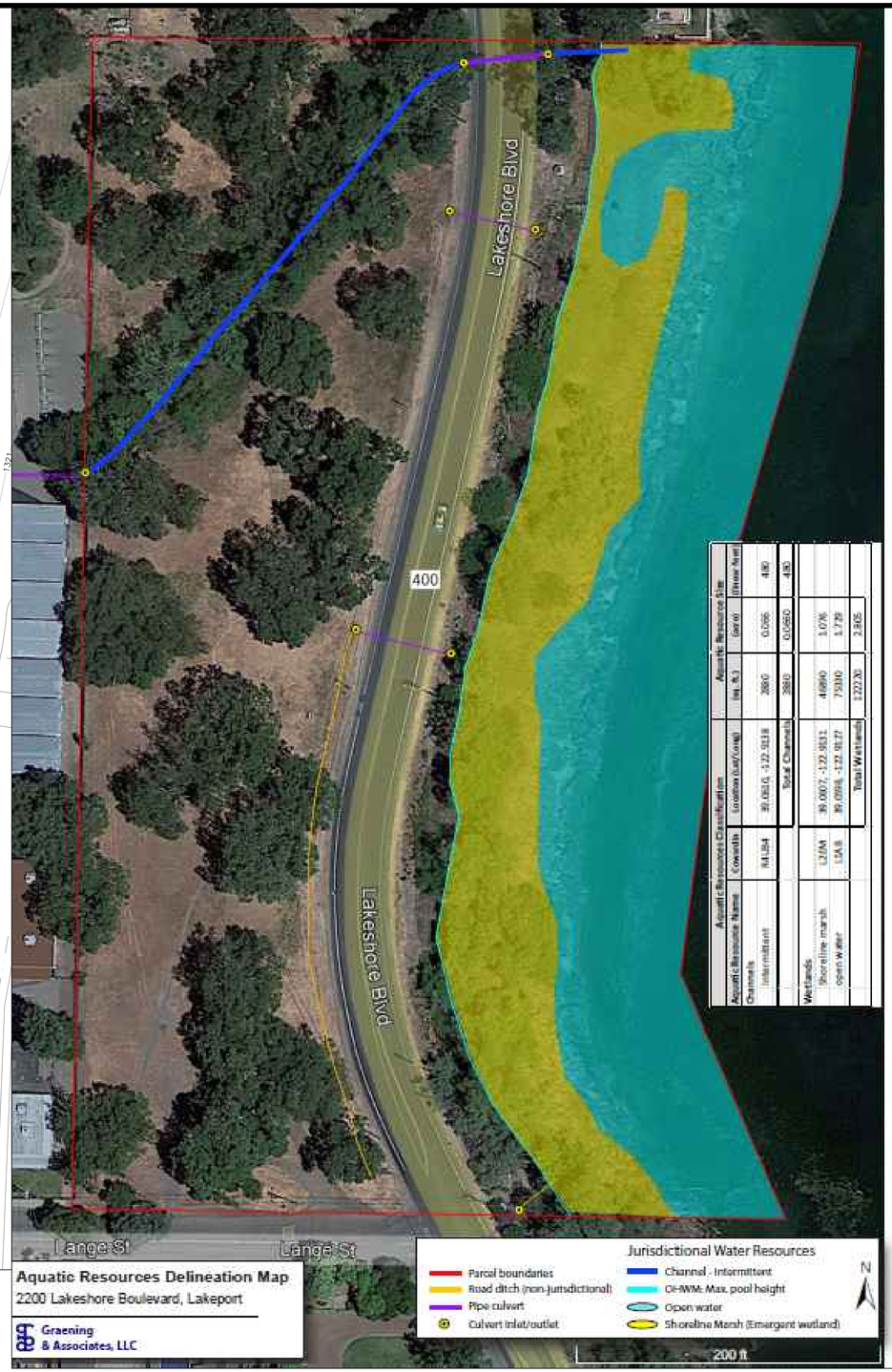
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- RECORD BOUNDARY LINE
- VEGETATED SWALE

EXISTING CONDITIONS MAP

20 0 10 20 40

SCALE: 1" = 20'

N W E S



Aquatic Resource Name	Cowardin Classification	Location (Lat/Long)	Aquatic Resource Size (sq. ft.)	(acre)	(linear feet)
Channels	R4SB4	39.0616, -122.9318	2880	0.066	480
		Total Channels	2880	0.0660	480
Wetlands	L2UBM	39.0007, -122.9631	46890	1.076	
	L1UB	39.0004, -122.9627	73310	1.729	
		Total Wetlands	122200	2.805	

AQUATIC RESOURCES DELINEATION MAP BY GRAENING & ASSOCIATES, LLC

PRELIMINARY

REGISTERED PROFESSIONAL ENGINEER
TYLER J. PEARSON
No. 87191
CIVIL
STATE OF CALIFORNIA

Tyler J Pearson

REVISIONS

REV.	DATE	DESCRIPTION	BY

CORNERSTONE CIVIL DESIGN
CIVIL ENGINEERING LAND PLANNING PROJECT MANAGEMENT
149 GAMAY PLACE UKIAH, CA 9482
(707) 972-7647 CORNERSTONECIVILDESIGN@GMAIL.COM

DISNEY'S BOAT RENTALS

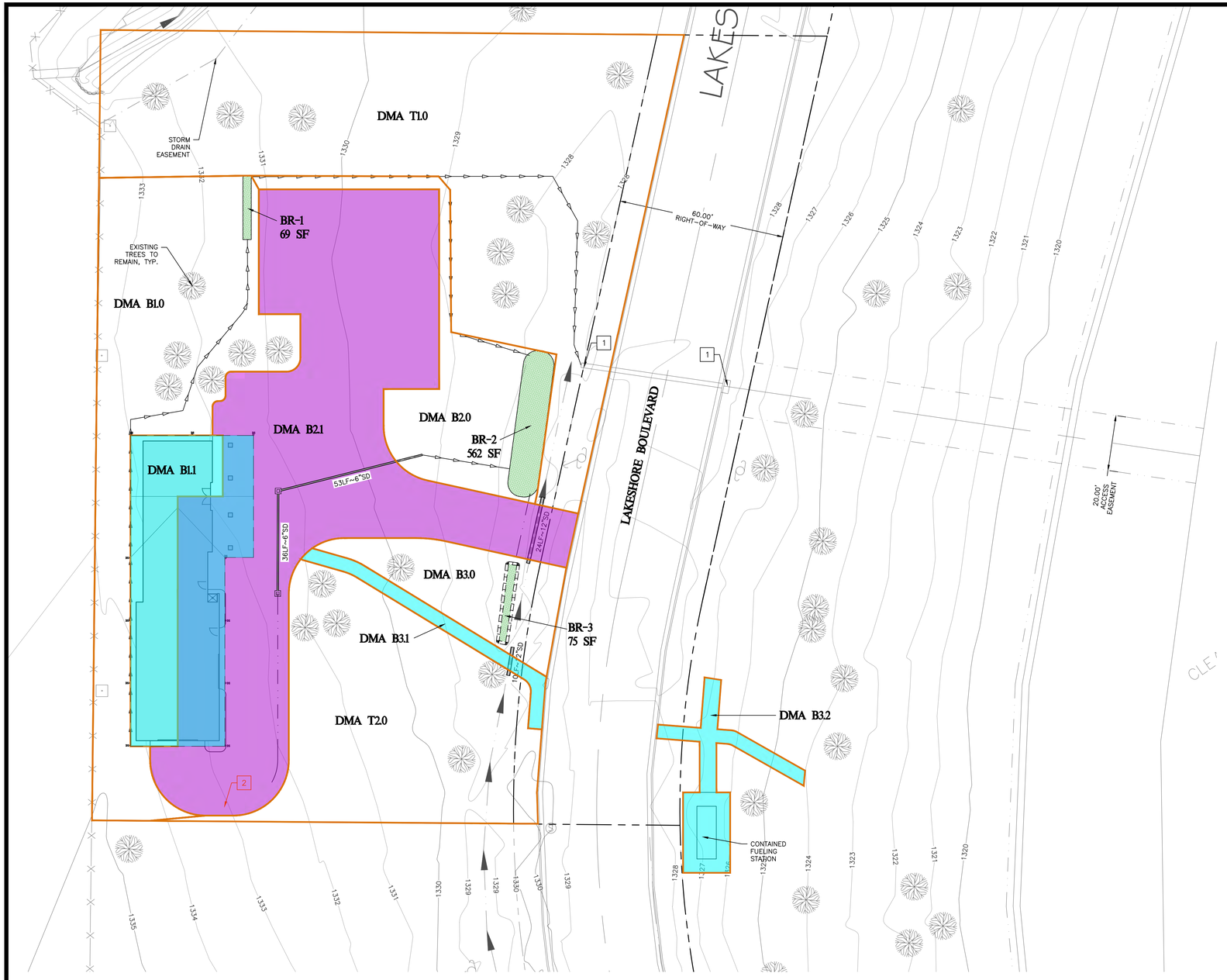
STORM WATER CONTROL PLAN
EXISTING CONDITIONS MAP

2200 LAKESHORE BLVD LAKEPORT, CA
APN 026-031-290-000

DATE: 11/9/2023

JOB #: 2350

SHEET
C1
OF 2 SHEETS



LEGEND

- NEW AGGREGATE BASE ROCK IMPERVIOUS AREA
- NEW CONCRETE/ROOFTOP IMPERVIOUS AREA
- BIORETENTION AREA PER DETAIL B2 ON THIS SHEET
- 90 EXISTING MAJOR CONTOUR
- 89 EXISTING MINOR CONTOUR
- 90 PROPOSED MAJOR CONTOUR
- 89 PROPOSED MINOR CONTOUR
- RECORD BOUNDARY LINE
- VEGETATED SWALE
- DMA TRIBUTARY BOUNDARY
- PROPOSED STORM DRAIN PIPE

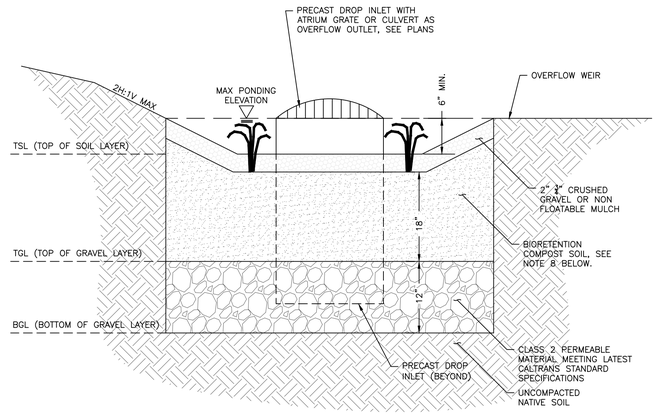
BR-# BIORETENTION NUMBER
DMA DRAINAGE MANAGEMENT AREA

1 STORM DRAIN INLET–MARK INLET WITH THE WORDS "NO DUMPING! FLOWS TO LAKE"

2 REFUSE AREA, POST SIGNS NEAR DUMPSTERS WITH THE WORDS: "DO NOT DUMP HAZARDOUS MATERIALS HERE" OR SIMILAR.

ABBREVIATIONS

BW	BOTTOM OF WALL ELEVATION AT FINISH GRADE (NOT FOOTING ELEV.)
BSL	BUILDING SETBACK LINE
EP	EDGE OF PAVEMENT ELEVATION
FF	FINISH FLOOR OF BUILDING ELEVATION
FG	FINISH GRADE (LANDSCAPE OR DIRT) ELEVATION
FL	FLOWLINE OF SURFACE, GUTTER OR DITCH ELEVATION
FL HP	FLOWLINE HIGH POINT
FS	FINISH SURFACE (HARDSCAPE) ELEVATION
HP	HIGH POINT ELEVATION
INV	PIPE INVERT ELEVATION
PG	PAD GRADE BENEATH THE HOUSE
LFS	LOWER LEVEL FINISH SURFACE
RIM	TOP OF MANHOLE, DRAINAGE INLET, OR UTILITY BOX ELEVATION
TC	TOP OF CURB ELEVATION
TSL	TOP OF BIORETENTION SOIL LAYER ELEVATION
TW	TOP OF WALL ELEVATION
UFS	UPPER LEVEL FINISH SURFACE



CROSS SECTION

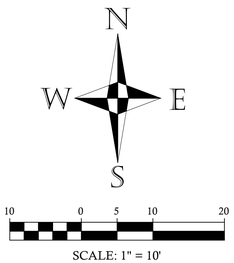
NOTES:
1. DO NOT USE A LINER, FILTER FABRIC, OR LANDSCAPE CLOTH
2. MAINTAIN BGL, TGL AND TSL THROUGHOUT THE BIORETENTION FACILITY AT ELEVATIONS SHOWN ON THE PLANS.
3. CLASS 2 PERMEABLE LAYER MAY EXTEND BELOW AND UNDERNEATH DROP INLET.
4. THE GRAVEL LAYER SHALL BE CLASS 2 PERMEABLE MATERIAL AS SPECIFIED IN CALTRANS STANDARD SPECIFICATIONS.
5. BIORETENTION SOIL SHALL MEET SPECIFICATIONS OF LATEST VERSION OF MENDOCINO COUNTY LOW IMPACT DEVELOPMENT STANDARDS MANUAL.
6. FOR ALLOWABLE PLANTS IN BIORETENTION, REFER TO PLANT LIST IN LATEST VERSION OF MENDOCINO COUNTY LOW IMPACT DEVELOPMENT STANDARDS MANUAL
7. CONTRACTOR SHALL NOTIFY CORNERSTONE CIVIL DESIGN TO INSPECT BOTTOM OF BIORETENTION AREA PRIOR TO FILLING IN WITH GRAVEL AND SOIL LAYERS TO ENSURE THE BIORETENTION HAS REACHED A SOIL LAYER WITH ADEQUATE PERMEABILITY.
8. COMPOST SHALL BE A WELL-DECOMPOSED, STABLE, WEED-FREE ORGANIC MATTER SOURCE DERIVED FROM WASTE MATERIALS INCLUDING YARD DEBRIS, WOOD WASTES OR OTHER ORGANIC MATERIALS NOT INCLUDING MANURE OR BIOSOLIDS, AND SHALL MEET THE STANDARDS DEVELOPED BY THE US COMPOSTING COUNCIL (USCC). THE PRODUCT SHALL BE CERTIFIED THROUGH THE USCC SEAL OF TESTING ASSURANCE (STA) PROGRAM (A COMPOST TESTING AND INFORMATION DISCLOSURE PROGRAM). BEFORE DELIVERY OF THE SOIL, THE SUPPLIER SHALL SUBMIT A COPY OF THE LAB ANALYSIS PERFORMED BY A LABORATORY THAT IS ENROLLED IN THE USCC'S COMPOST ANALYSIS PROFICIENCY (CAP) PROGRAM AND USING APPROVED TEST METHODS FOR THE EVALUATION OF COMPOSTING AND COMPOST (TMECC). THE LAB REPORT SHALL VERIFY THAT THE COMPOST PARAMETERS ARE WITHIN THE LIMITS SPECIFIED BELOW.

B2 BIORETENTION WITHOUT SUBDRAIN DETAIL

NOT TO SCALE

BIORETENTION SIZING CALCULATIONS

BIORETENTION FACILITY NAME	1 DMA NAME	2 DMA (SF)	3A TYPE OF SURFACE	3B RUNOFF FACTOR	4 DMA AREA COL. 2 X COL. 3	5 STANDARD SIZING FACTOR	MINIMUM BMP FACILITY SIZE FOR DMA (SF) COL. 4 X COL. 5	TOTAL MINIMUM BIORETENTION FACILITY SIZE (SF) (SUM OF ALL DMA'S FLOWING TO BIORETENTION FACILITY)
BR-1	B1.0	7510	LANDSCAPED AREA	0.1	751	0.04	30	121
	B1.1	2263	ROOFS AND PAVING	1.0	2263	0.04	91	
BR-2	B2.0	3261	LANDSCAPED AREA	0.1	326.1	0.04	13	553
	B2.1	13499	ROOFS AND PAVING	1.0	13499	0.04	540	
BR-3	B3.0	2034	LANDSCAPED AREA	0.1	203.4	0.04	8	71
	B3.1	570	ROOFS AND PAVING	1.0	570	0.04	23	
	B3.2	996	ROOFS AND PAVING	1.0	996	0.04	40	



SCALE: 1" = 10'

AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY

CALL 811 BEFORE YOU DIG

UNDERGROUND SERVICE ALERT (USA)
NOTICE TO CALL A MIN. 48 HOURS PRIOR TO CONSTRUCTION.

REGISTERED PROFESSIONAL ENGINEER
TYLER J. PEARSON
No. 87111
CIVIL
STATE OF CALIFORNIA
PRELIMINARY
Tyler J Pearson

REVISIONS

REV.	DATE	DESCRIPTION	BY

CORNERSTONE CIVIL DESIGN
CIVIL ENGINEERING LAND PLANNING PROJECT MANAGEMENT
1491 GAMAY PLACE UKIAH, CA 95482
(707) 972-7947 CORNERSTONECIVILDESIGN@GMAIL.COM

DISNEY'S BOAT RENTALS

STORM WATER CONTROL PLAN
PROPOSED CONDITIONS MAP

2200 LAKESHORE BLVD LAKEPORT, CA
APN 026-031-290-000

DATE: 11/9/2023

JOB #: 2350

SHEET
C2
OF 2 SHEETS