Temporary Water Diversion Plan

San Francisquito Creek Flood Reduction, Ecosystem Restoration, and Recreation Project

Water diversion shall be implemented by the Contractor to maintain the work site in as water-free as possible. The full width of the channel shall be dewatered. Water encroachment is expected from Bay tides, natural and urban runoff flows from upstream, outfalls near the East Bayshore Road bridge, and discharge from the O'Connor Pump Station in East Palo Alto. Contractor is advised that the channel invert is expected to remain muddy after dewatering, and contractor should use appropriate equipment and stabilizing pads as necessary.

Please note that what is presented below is the initial dewatering plan for the project. The design and implementation of the dewatering plan may be modified in the field as necessary upon agreement between the Contractor and the District.

Standard specifications referenced are those of Caltrans 2010.

Contractor shall install cofferdams to prevent tidal and stream flows from entering the work site. The term "cofferdam" will be used to identify a structure preventing the intrusion of water into the work area. Construction phasing will determine the specific locations of the cofferdams during what activity.

Contractor shall comply with best management practices in accordance with the Stormwater Pollution Prevention Program, Article 18.01, and the Discharge Activities Suite, District Best Management Practices, W751M01, attached.

Cofferdam Design

The downstream cofferdam will prevent Bay tidal waters from entering the work site and shall be installed below the most downstream construction element scheduled for installation during a specific construction season. The cofferdam shall be as high as the highest immediately adjacent point on the right-hand bank (looking upstream), approximately 12 ft above the channel invert. The Mean Higher High Water tide is 7.1 ft NAVD 88; in no case will the downstream cofferdam height be below this elevation.

The upstream cofferdam will prevent stream flows from entering the work site. If dewatering will be required adjacent to the East Bayshore Road bridge, the cofferdam will be installed above the Caltrans West Bayshore Road bridge, within 50 feet of the upstream face of that bridge. If dewatering will begin downstream of the East Bayshore Road bridge, the cofferdam shall be installed no more than 100 feet above the most upstream construction element scheduled for construction during a specific construction season (see table below).

Summer water flows are anticipated based on the maximum 73-year mean daily flow at the USGS gage on SF Creek at the Stanford golf course between June 1 and October 15. This flow is 0.5 cubic feet per second (cfs) with a gage height of 0.3 ft. For a value at the project site, an additional 1 cfs is added for summer urban runoff, bringing the total anticipated flow to 1.5 cfs, with a gage height of 0.4 ft.

Preliminary Cofferdam Locations

C-line locations	d/s C-line location/height	u/s location/height
2013-2014 Utility Crossings: Gas & Sanitary Sewer	27+00 / elevation of northerly levee (~13 ft)	34+00/ 8 ft
Downstream Levee Construction Season	22+00 / elevation of northerly levee (~12 ft)	58+00/ 8 ft
Upstream Floodwall Construction Season	49+00/ 10 ft	Within 50 ft upstream of West Bayshore Road Bridge/ 8 ft

Contractor shall install 30-inch diameter pipe from the upstream cofferdam to the downstream to allow anticipated summer stream flows and higher summer storm stream flow to pass through the work area. Gravel bags wrapped in plastic sheeting shall be used to prevent leakage through the cofferdam at the pipe entry/exit and to prevent leakage around the cofferdam as necessary.

The contractor is advised that summer stream flows can vary significantly depending on off-season storm events, and high flows can last several hours. Recent historical summer storms have produced flows of 3.2 cfs (2012), 32 cfs (2011), and 4.1 cfs (2010). The temporary water diversion structure shall be able to pass the 2011 32 cfs flow without pumps being required

If there is a forecast storm event as determined in accordance with the requirements of the NPDES Construction permit for the project (see Article 18.01), Contractor shall prepare and implement the Rain Event Action Plan. If stream flow from a significant storm event overtops the upstream cofferdam, Contractor shall pump this overflow, and any direct flows, into Baker tanks to be tested before discharge as described below.

Contractor shall make available an appropriate number of Baker tanks and pumps in preparation for collecting any water from the work site. Water from the work site will be collected in the Baker tanks and tested prior to discharge downstream if water will meet the requirements of the NPDES Construction permit. Water backed up behind the upstream cofferdam shall be piped and/or pumped past the work area and be discharged below the downstream coffer dam.

The project area shall be dewatered by means of pumping the water from the stream or ponded locations past the downstream coffer dam or via the diversion pipe system, if installed.

Cofferdams shall remain in place and functional throughout the in-stream construction periods. When removed at annual cessation of in-channel work, channel and bank shall be restored to pre-construction condition.

Utility crossings are proposed to be completed before levee/floodwall construction begins. Phasing of project and coordination with later utility work will be determined with Contractor.

Materials

Cofferdam

Cofferdam shall be constructed of steel sheet pile embedded no less than 10 feet below the channel invert. Steel sheet piles for cofferdam must comply with section 49-2.058.

Gravel Bags

The gravel materials used in each gravel bag will have less than 15% fine content. The gravel bags will be placed on top of the plastic sheeting, which will be laid upon the channel invert or bank to prevent leakage. The gravel bags will be arranged so that each layer of gravel bag placed will be staggered in pyramid-like fashion. After the final height has been reached, the original plastic sheeting shall be placed on top of the sandbags. To hold the plastic sheeting in place, gravel bags will be placed above the top plastic sheeting. Gravel bags on top of the plastic sheeting will be spaced no more than 3 feet apart.

Gravel must:

1. Be clean, hard, sound, durable, uniform in quality, and free of any detrimental quantity of soft, thin, elongated or laminated pieces, disintegrated material, organic matter, or other deleterious substances
2. Be composed entirely of particles that have no more than one fractured face
3. Have a cleanliness value of at least 85, as determined by the Cleanliness Value Test Method for California Test No. 227.

Gravel bags must comply with Section 13-5.02G. The second paragraph of this section does not apply.

Plastic sheeting must be:

1. Single ply, commercial quality, non-photodegradable polyethylene with a minimum thickness of 10 mils under ASTM D 5199.
2. Free of holes, punctures, tears or other defects that compromise the impermeability of the material.
3. Suitable for use as an impermeable membrane.

Pipe

Pipe shall be of 30-inch nominal diameter minimum HDPE to be fused together. Piping will be installed between upstream and downstream cofferdams as necessary to allow

upstream flows to pass the work site. Installation time and duration shall be at the discretion of the Contractor but shall ensure that flows will not spill in uncontrolled fashion into the work site. Flow need not be maintained through the work area under normal conditions. Pipe shall be maintained on site in sufficient quantity to convey the flow through the work site in the event of an off-season storm.

Pipe shall:

1. Be clean, uncoated, in good condition, paint oil dirt or other residues that could potentially contribute to water pollution;
2. Be adequately supported for planned loads as identified by the Contractor;
3. Use watertight joints;
4 Be made of HDPE material suitable for clean water and which does not contain banned, hazardous, or unlawful substances;
5. Be smooth walled.

Any breach in the sheet piling to accommodate the pipe shall be sealed with plastic sheeting held in place by gravel bags on the water side. Gravel and gravel bags shall meet the requirements above. When pipe is installed in the sheet piling, pipe will be sealed with plastic sheeting and gravel bags.

There will be inlet and outlet pipe locations in the cofferdams. The pipe outlet will be rocked with rock riprap in such fashion as to prevent erosion at the outlet. If necessary, a series of check dams (straw/hale bales) would be used to slow down the summer storm flow of water as stated above. All construction work will be implemented under dry creek conditions.

Pumps

Pumps shall be on site to dewater the work site as necessary. Pumps shall be sized by the Contractor. Discharge from the dewatered area shall be contained and tested in accordance with the requirements of the NPDES Construction permit..

If groundwater seepage is encountered, pumps will be used to discharge the incidental flows to various intakes of the 30-inch pipe structure. When discharging into the intakes of the 30-inch pipe, the top opening of the intake will also be sealed to maintain air pressure within the pipe.

O'Connor Street Pump Station

Construction work within the City of East Palo Alto will discharge dewatering flows through municipal storm drains to the O'Connor Street Pump Station, which normally outfalls to the work area. In addition, urban runoff also flows to the pump station. To prevent flows from the pump station entering the work area, Contractor shall pump water which accumulates in the pump station wet well directly to the channel downstream of the downstream cofferdam. Pump and pipe shall be determined by Contractor based on information provided by the City of East Palo Alto.

Additional Storm Drain Outfalls in the Work Area

1. Storm drain outfall on the south bank at approximate C-line station 76+00. The entire line including the inlet and outfall will be removed as part of construction.

2. 96-inch diameter City of Palo Alto storm drain outfall on the south bank at approximate C-line station 77+40 for overflows that cannot be handled by the City's San Francisquito Creek Pump Station. This line will be reduced and rerouted into the new East Bayshore Road bridge abutment by Caltrans.

3. Outfall channel from the San Francisquito Creek Pump Station on the south bank at approximate C-line station 74+00. Minimal flows are expected during construction season unless a storm occurs.

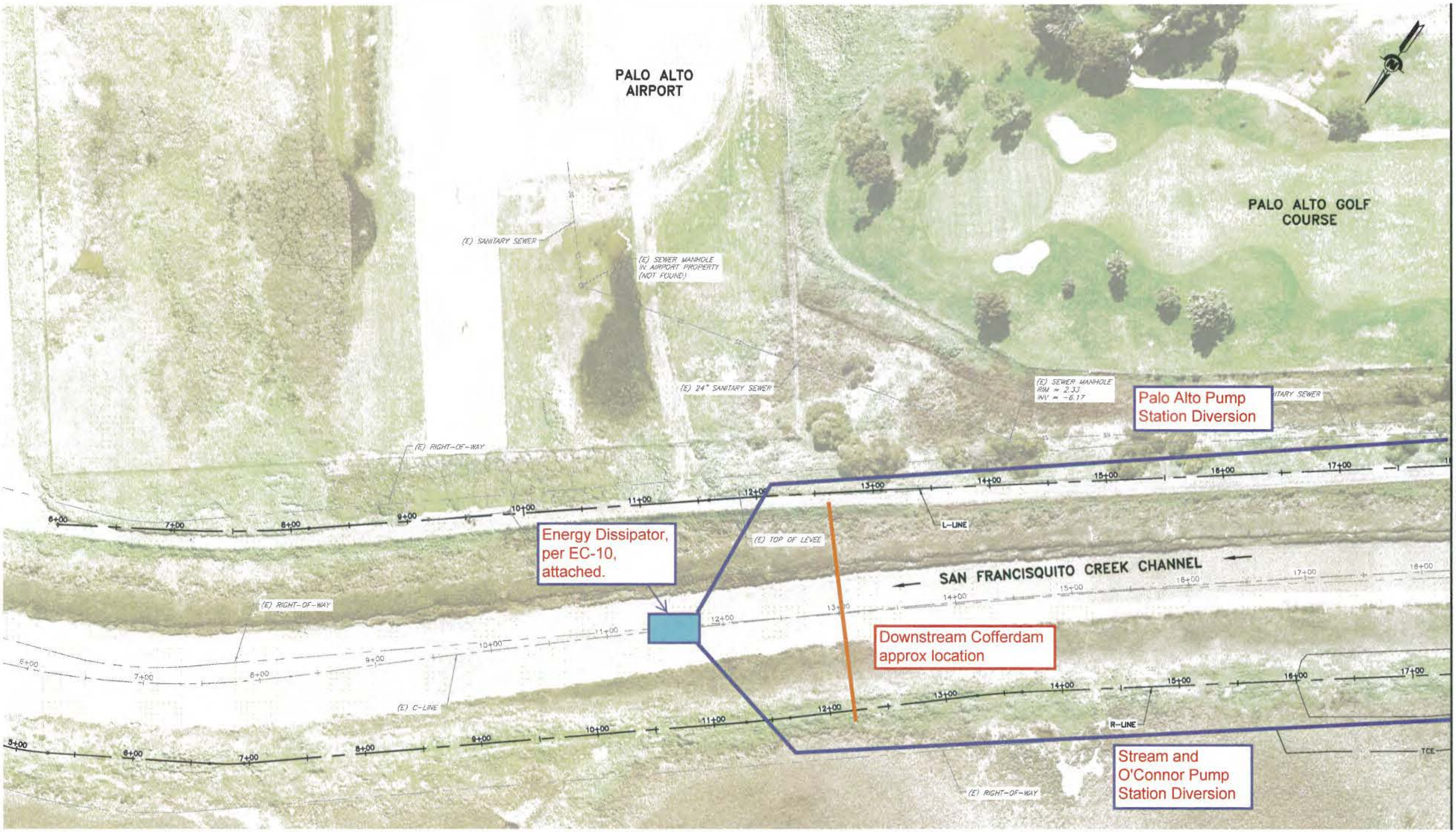
4. Storm drain outfall on the north bank at approximate C-line station 56+70. Minimal flows are expected during construction season unless a storm occurs.

5. Contractor is responsible for identifying and managing flows from other outfalls into the work area.

Removal

When all work within a construction area is complete and no access to the channel will be required, except for plantings, irrigation, and plant maintenance, the temporary water diversion system and cofferdams shall be removed by October 15 of each construction season, or later as permitted by the California Regional Water Quality Control Board, San Francisco Bay Region, and the District. Flows shall be restored within the new construction area in a manner that minimizes erosion. Ponded waters shall be directed into the established channel. Flows shall be gradually restored to the channel to avoid a surge of water. The removal of a diversion pipe shall start from the downstream cofferdam to the upstream cofferdam.

[Attach District Best Management Practices, W751M01.]



PLAN
SCALE: 1"=40'

REV	DESCRIPTION	DATE	APPR.
	95% PRELIMINARY 11-14-2012		

HDR Engineering, Inc.

DATE: 09-30-12
DESIGN: L. JONES
DRAWN: H. SUAREZ
CHECKED: P. HRADILEK

ENGINEERING CERTIFICATION — PROJECT ENGINEER — DATE

SAN FRANCISQUITO CREEK JOINT POWERS AUTHORITY
ACCEPTED BY DISTRICT
PROJECT ENGINEER — DATE

PROJECT NAME AND SHEET DESCRIPTION:
SAN FRANCISQUITO CREEK FLOOD REDUCTION, ECOSYSTEM RESTORATION, & RECREATION PROJECT
Temporary Water Diversion Plan
STA 6+00 TO STA 18+00 (C-LINE)

SCALE: 1" = 40'
VERIFY SCALES: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY
PROJECT NUMBER: 26284002
SHEET CODE: C-32
SHEET NUMBER: 45 OF 107

DOCUMENT NUMBER: SFC_LP-C-1028-XXXXXX

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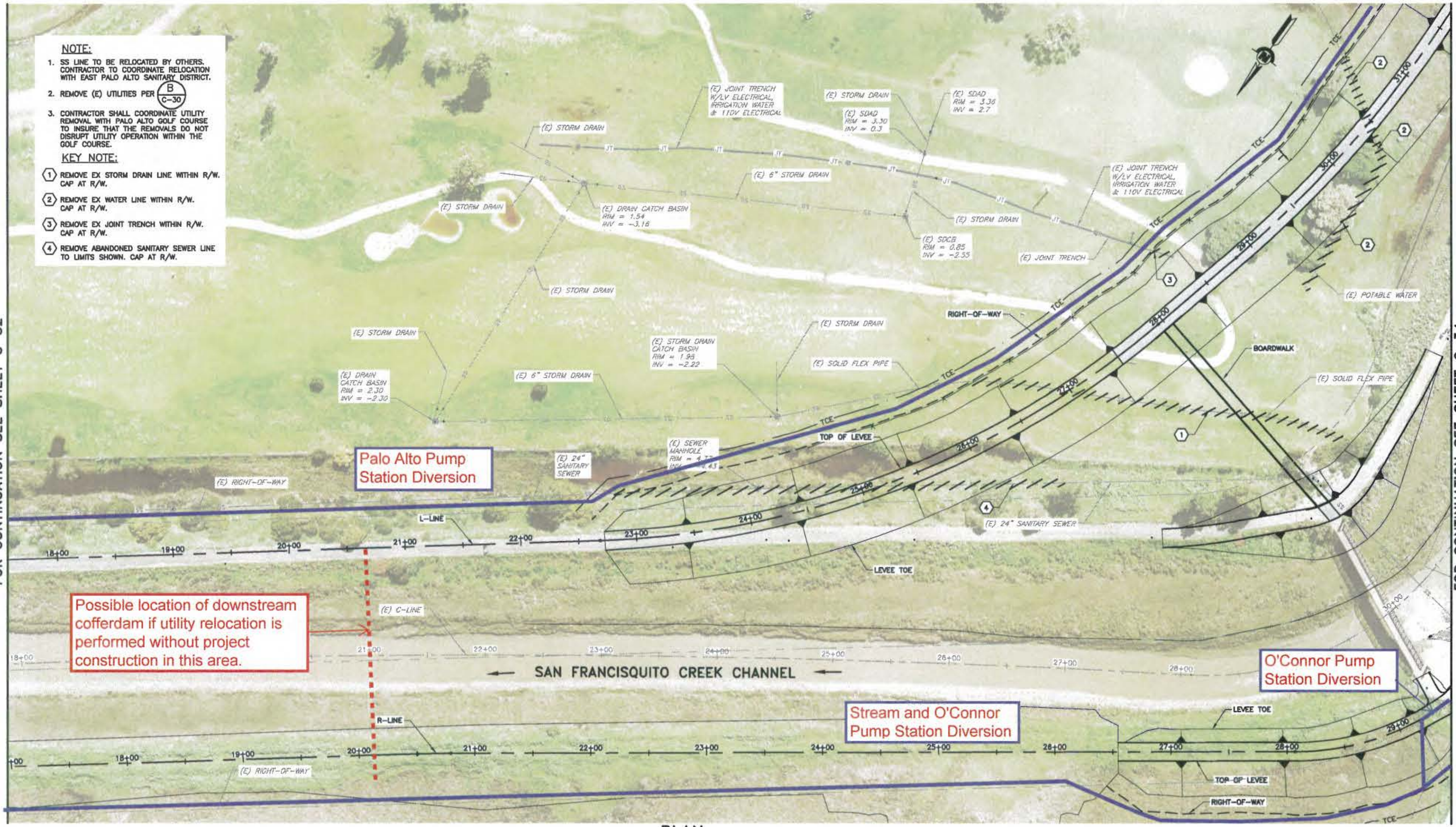
FOR CONTINUATION SEE SHEET C-32

FOR CONTINUATION SEE SHEET C-34



PLAN
SCALE: 1"=40'

REV	DESCRIPTION	DATE	APPR.
	95% PRELIMINARY 11-14-2012		

HDR Engineering, Inc.

DATE	09-30-12
DESIGN	L. JONES
DRAWN	H. SUAREZ
CHECKED	P. HRADILEK

ENGINEERING CERTIFICATION — PROJECT ENGINEER — DATE

SAN FRANCISQUITO CREEK JOINT POWERS AUTHORITY

ACCEPTED BY DISTRICT — PROJECT ENGINEER — DATE

PROJECT NAME AND SHEET DESCRIPTION:

SAN FRANCISQUITO CREEK FLOOD REDUCTION, ECOSYSTEM RESTORATION, & RECREATION PROJECT

Temporary Water Diversion Plan

STA 18+00 TO STA 31+00 (C-LINE)

SCALE: 1" = 40'
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PROJECT NUMBER: 26284002
SHEET CODE: C-33
SHEET NUMBER: 46 OF 107

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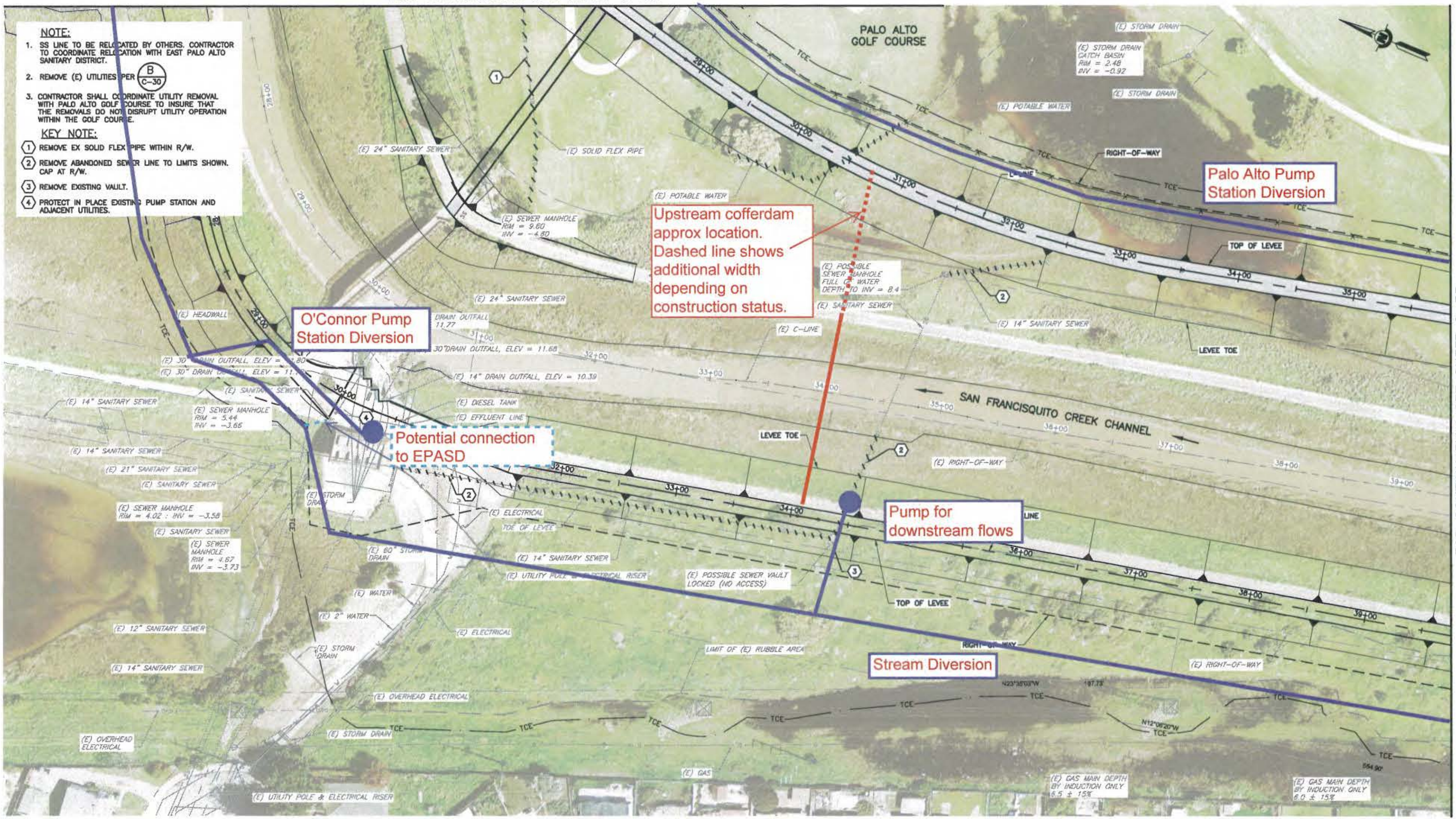


FOR CONTINUATION SEE SHEET C-35

PLAN
SCALE: 1"=40'

REV	DESCRIPTION	DATE	APPR.
	95% PRELIMINARY 11-14-2012		

HDR Engineering, Inc.

DATE: 09-30-12
DESIGN: L. JONES
DRAWN: H. SUAREZ
CHECKED: P. HRADILEK

ENGINEERING CERTIFICATION — PROJECT ENGINEER — DATE

SAN FRANCISQUITO CREEK JOINT POWERS AUTHORITY
ACCEPTED BY DISTRICT
PROJECT ENGINEER — DATE

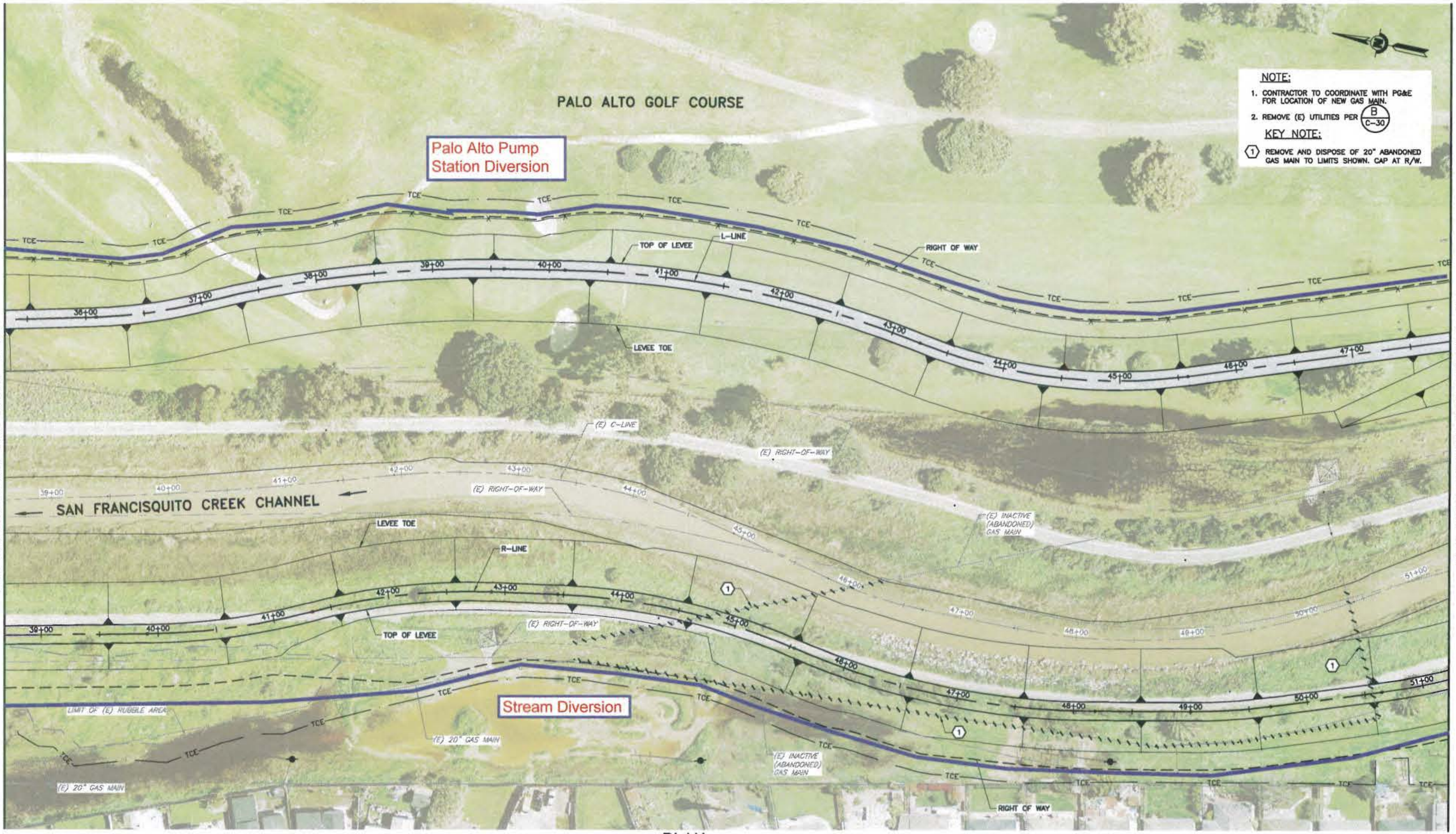
PROJECT NAME AND SHEET DESCRIPTION:
SAN FRANCISQUITO CREEK FLOOD REDUCTION, ECOSYSTEM RESTORATION, & RECREATION PROJECT
Temporary Water Diversion Plan
STA 30+00 TO STA 39+00 (C-LINE)

SCALE: 1" = 40'
VERIFY SCALES: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY
PROJECT NUMBER: 26284002
SHEET CODE: C-34
SHEET NUMBER: 47 OF 107

DOCUMENT NUMBER: SFC_LP-C-1028-XXXXXX

FOR CONTINUATION SEE SHEET C-34

FOR CONTINUATION SEE SHEET C-36



NOTE:

1. CONTRACTOR TO COORDINATE WITH PG&E FOR LOCATION OF NEW GAS MAIN.
2. REMOVE (E) UTILITIES PER B/C-30

KEY NOTE:

(1) REMOVE AND DISPOSE OF 20" ABANDONED GAS MAIN TO LIMITS SHOWN. CAP AT R/W.

PLAN
SCALE: 1"=40'

REV	DESCRIPTION	DATE	APPR.
	95% PRELIMINARY 11-14-2012		

HDR Engineering, Inc.

DATE	09-30-12
DESIGN	L. JONES
DRAWN	H. SUAREZ
CHECKED	P. HRADILEK

ENGINEERING CERTIFICATION — PROJECT ENGINEER — DATE

SAN FRANCISQUITO CREEK JOINT POWERS AUTHORITY

ACCEPTED BY DISTRICT — PROJECT ENGINEER — DATE

PROJECT NAME AND SHEET DESCRIPTION:

SAN FRANCISQUITO CREEK FLOOD REDUCTION, ECOSYSTEM RESTORATION, & RECREATION PROJECT

Temporary Water Diversion Plan

STA 39+00 TO STA 51+00 (C-LINE)

SCALE 1" = 40'

VERIFY SCALES: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER: 26284002

SHEET CODE: C-35

SHEET NUMBER: 48 OF 107

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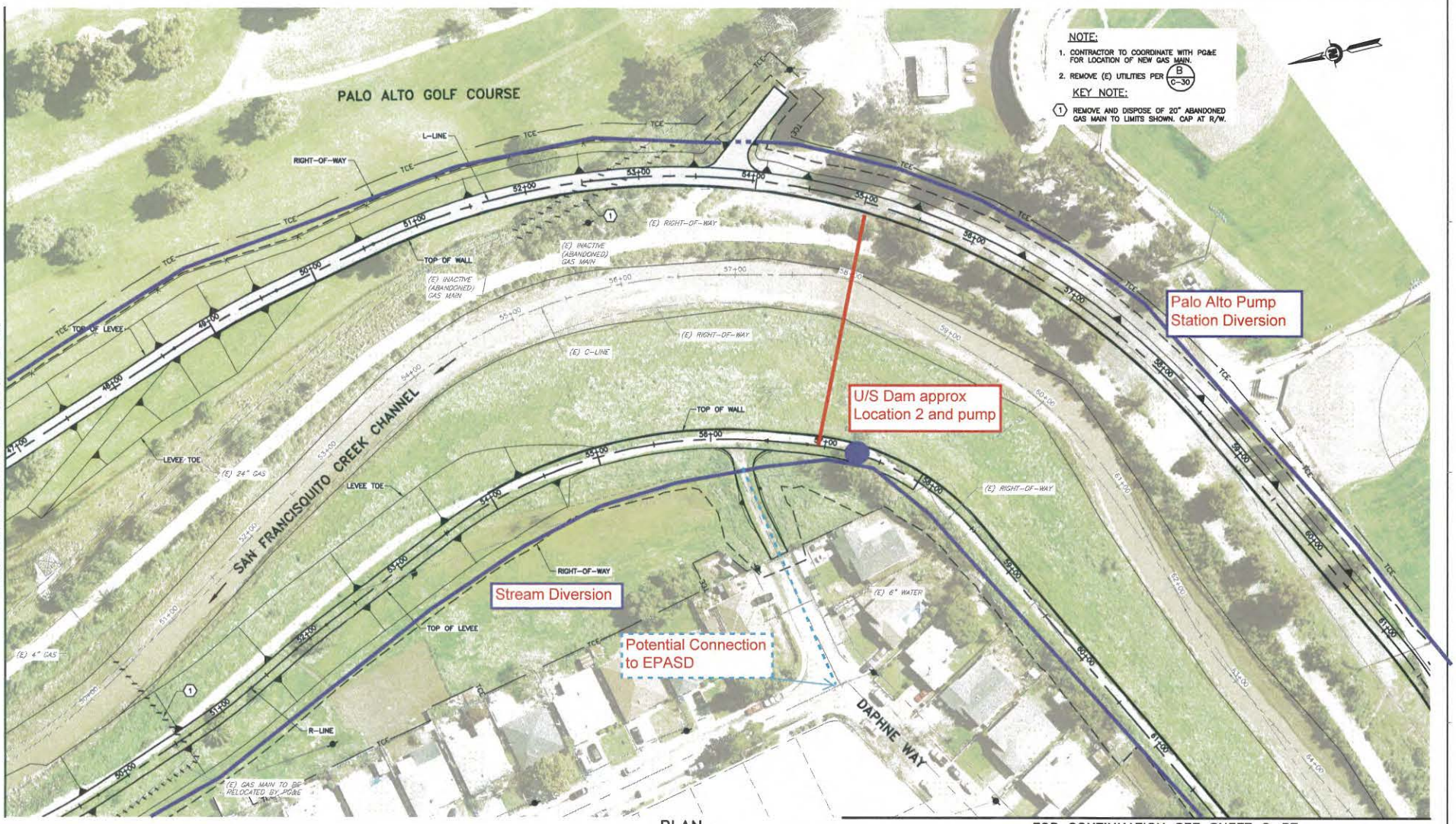

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SCALE: 1"=40'

REV	DESCRIPTION	DATE	APPR
	95% PRELIMINARY 11-14-2012		

HDR Engineering, Inc.

DATE	09-30-12
DESIGN	L. JONES
DRAWN	H. SUAREZ
CHECKED	P. HRADILEK
PROJECT ENGINEER	DATE

ENGINEERING CERTIFICATION
REGISTERED PROFESSIONAL ENGINEER SERGIO E. [illegible] 09-30-12 CIVIL STATE OF CALIFORNIA
PRELIMINARY

SAN FRANCISQUITO CREEK JOINT POWERS AUTHORITY
ACCEPTED BY DISTRICT
PROJECT ENGINEER DATE

PROJECT NAME AND SHEET DESCRIPTION:
SAN FRANCISQUITO CREEK FLOOD REDUCTION, ECOSYSTEM RESTORATION, & RECREATION PROJECT
Temporary Water Diversion Plan
STA 51+00 TO STA 63+00 (C-LINE)

SCALE	1" = 40'
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PROJECT NUMBER	26284002
SHEET CODE:	C-36
SHEET NUMBER:	49 OF 107

DOCUMENT NUMBER: SFC_LP-C-1028-XXXXXX

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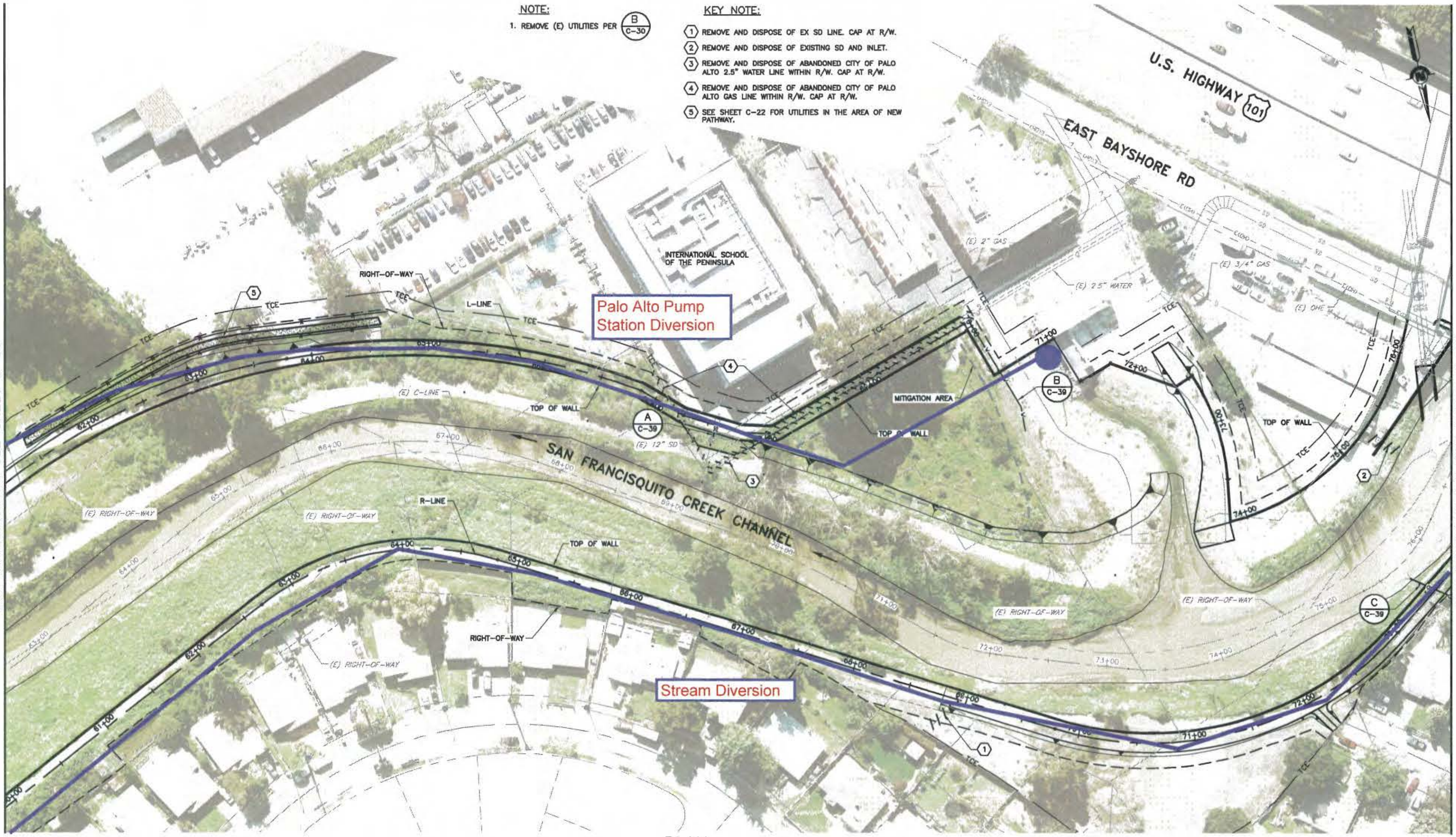
NOTE:

1. REMOVE (E) UTILITIES PER (B / C-30)

KEY NOTE:

1. REMOVE AND DISPOSE OF EX SD LINE. CAP AT R/W.
2. REMOVE AND DISPOSE OF EXISTING SD AND INLET.
3. REMOVE AND DISPOSE OF ABANDONED CITY OF PALO ALTO 2.5" WATER LINE WITHIN R/W. CAP AT R/W.
4. REMOVE AND DISPOSE OF ABANDONED CITY OF PALO ALTO GAS LINE WITHIN R/W. CAP AT R/W.
5. SEE SHEET C-22 FOR UTILITIES IN THE AREA OF NEW PATHWAY.



PLAN
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REV	DESCRIPTION	DATE	APPR.
	95% PRELIMINARY 11-14-2012		

HDR Engineering, Inc.

DATE	09-30-12
DESIGN	L. JONES
DRAWN	H. SUAREZ
CHECKED	P. HRADILEK

ENGINEERING CERTIFICATION — PROJECT ENGINEER — DATE

SAN FRANCISQUITO CREEK JOINT POWERS AUTHORITY

ACCEPTED BY DISTRICT — PROJECT ENGINEER — DATE

PROJECT NAME AND SHEET DESCRIPTION:

SAN FRANCISQUITO CREEK FLOOD REDUCTION, ECOSYSTEM RESTORATION, & RECREATION PROJECT

Temporary Water Diversion Plan

STA 63+00 TO STA 76+00 (C-LINE)

SCALE: 1" = 40'

VERIFY SCALES: BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER: 26284002

SHEET CODE: C-37

SHEET NUMBER: 50 OF 107

DOCUMENT NUMBER: SFC_LP-C-1028-XXXXXX

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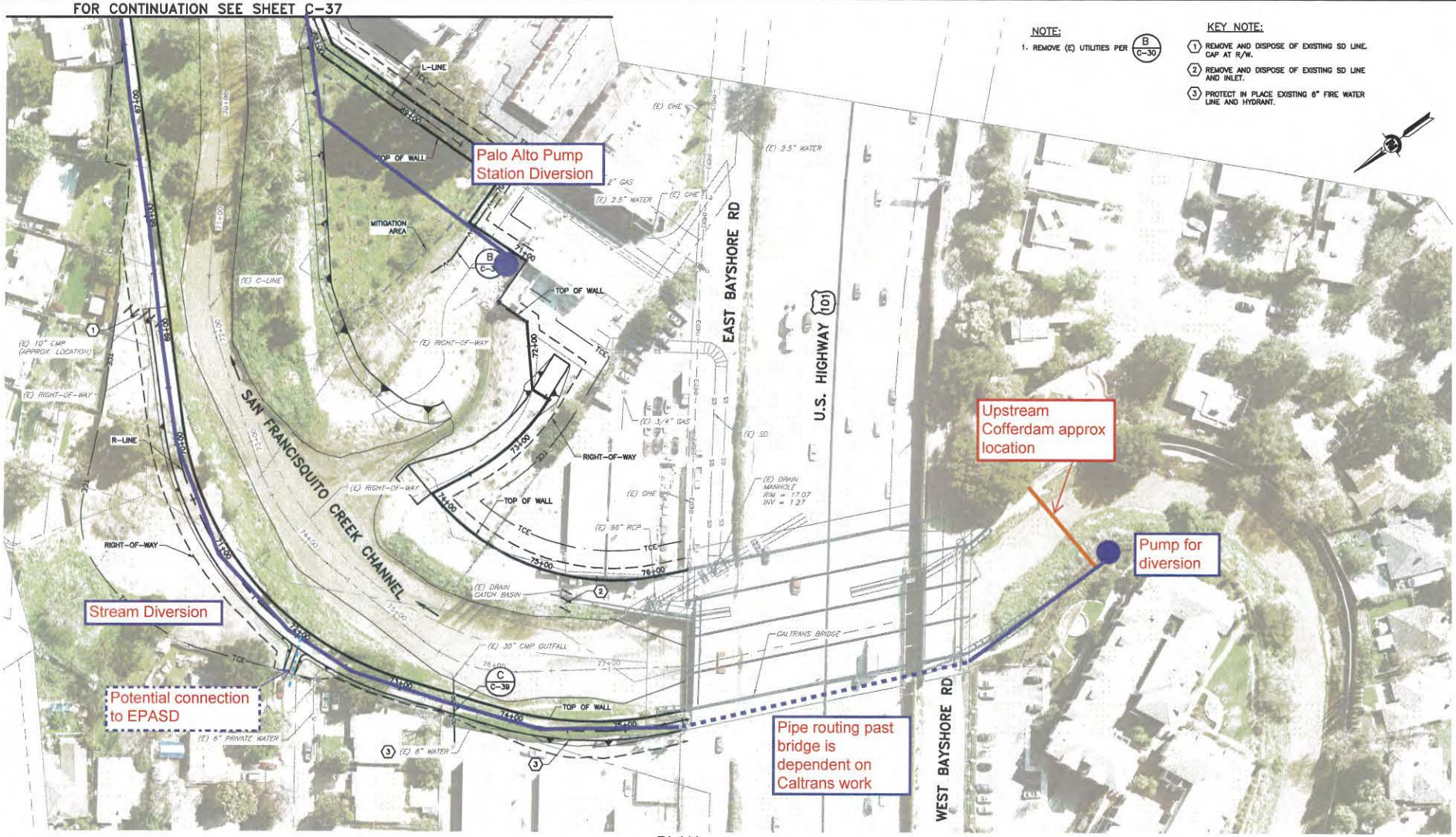

PLAN
SCALE: 1"=40'

REV	DESCRIPTION	DATE	APPR
	95% PRELIMINARY 11-14-2012		

HDR Engineering, Inc.

DATE	09-30-12
DESIGN	L. JONES
DRAWN	H. SUAREZ
CHECKED	P. HRADILEK

ENGINEERING CERTIFICATION
REGISTERED PROFESSIONAL ENGINEER — JOHN E. JONES — No. C — Exp. 12-31-12 — CIVIL — STATE OF CALIFORNIA
PROJECT ENGINEER DATE

SAN FRANCISQUITO CREEK JOINT POWERS AUTHORITY
ACCEPTED BY DISTRICT
PROJECT ENGINEER DATE

PROJECT NAME AND SHEET DESCRIPTION:
SAN FRANCISQUITO CREEK FLOOD REDUCTION, ECOSYSTEM RESTORATION, & RECREATION PROJECT
Temporary Water Diversion Plan
STA 70+00 TO STA 77+50 (C-LINE)

SCALE	1" = 40'
VERIFY SCALES	0 1" BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY
PROJECT NUMBER	26284002
SHEET CODE:	C-38
SHEET NUMBER:	51 OF 107

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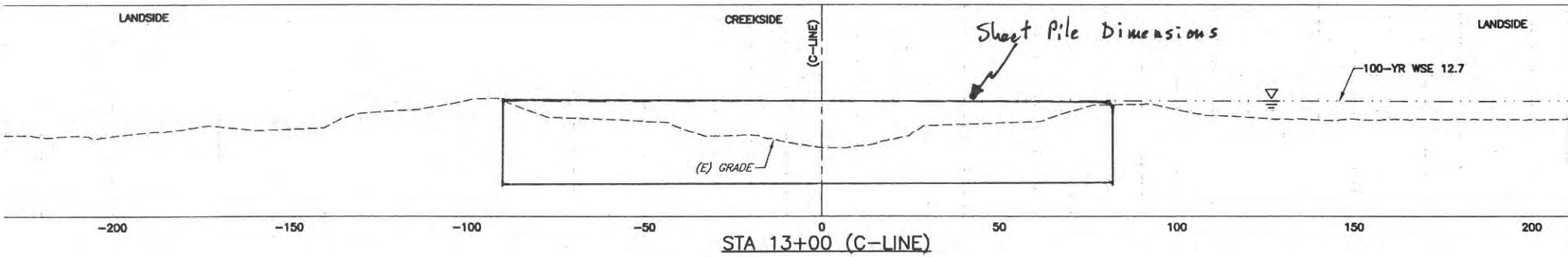
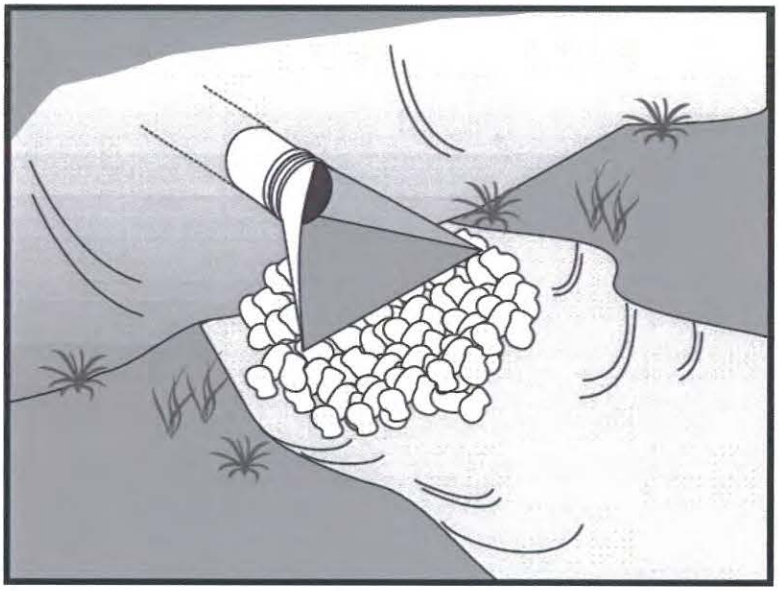


STA 13+00 (C-LINE)

Velocity Dissipation Devices EC-10



Objectives

EC	Erosion Control	☑
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Outlet protection is a physical device composed of rock, grouted riprap, or concrete rubble, which is placed at the outlet of a pipe or channel to prevent scour of the soil caused by concentrated, high velocity flows.

Suitable Applications

Whenever discharge velocities and energies at the outlets of culverts, conduits, or channels are sufficient to erode the next downstream reach. This includes temporary diversion structures to divert runon during construction.

- These devices may be used at the following locations:
  - Outlets of pipes, drains, culverts, slope drains, diversion ditches, swales, conduits, or channels.
  - Outlets located at the bottom of mild to steep slopes.
  - Discharge outlets that carry continuous flows of water.
  - Outlets subject to short, intense flows of water, such as flash floods.
  - Points where lined conveyances discharge to unlined conveyances

Limitations

- Large storms or high flows can wash away the rock outlet protection and leave the area susceptible to erosion.

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- Sediment captured by the rock outlet protection may be difficult to remove without removing the rock.
- Outlet protection may negatively impact the channel habitat.
- Grouted riprap may break up in areas of freeze and thaw.
- If there is not adequate drainage, and water builds up behind grouted riprap, it may cause the grouted riprap to break up due to the resulting hydrostatic pressure.

Implementation

General

Outlet protection is needed where discharge velocities and energies at the outlets of culverts, conduits or channels are sufficient to erode the immediate downstream reach. This practice protects the outlet from developing small eroded pools (plange pools), and protects against gully erosion resulting from scouring at a culvert mouth.

Design and Layout

As with most channel design projects, depth of flow, roughness, gradient, side slopes, discharge rate, and velocity should be considered in the outlet design. Compliance to local and state regulations should also be considered while working in environmentally sensitive streambeds. General recommendations for rock size and length of outlet protection mat are shown in the rock outlet protection figure in this BMP and should be considered minimums. The apron length and rock size gradation are determined using a combination of the discharge pipe diameter and estimate discharge rate: Select the longest apron length and largest rock size suggested by the pipe size and discharge rate. Where flows are conveyed in open channels such as ditches and swales, use the estimated discharge rate for selecting the apron length and rock size. Flows should be same as the culvert or channel design flow but never the less than the peak 5 year flow for temporary structures planned for one rainy season, or the 10 year peak flow for temporary structures planned for two or three rainy seasons.

- There are many types of energy dissipaters, with rock being the one that is represented in the attached figure.
- Best results are obtained when sound, durable, and angular rock is used.
- Install riprap, grouted riprap, or concrete apron at selected outlet. Riprap aprons are best suited for temporary use during construction. Grouted or wired tied rock riprap can minimize maintenance requirements.
- Rock outlet protection is usually less expensive and easier to install than concrete aprons or energy dissipaters. It also serves to trap sediment and reduce flow velocities.
- Carefully place riprap to avoid damaging the filter fabric.
  - Stone 4 in. to 6 in. may be carefully dumped onto filter fabric from a height not to exceed 12 in.
  - Stone 8 in. to 12 in. must be hand placed onto filter fabric, or the filter fabric may be covered with 4 in. of gravel and the 8 in. to 12 in. rock may be dumped from a height not to exceed 16 in.

- Stone greater than 12 in. shall only be dumped onto filter fabric protected with a layer of gravel with a thickness equal to one half the D_{50} rock size, and the dump height limited to twice the depth of the gravel protection layer thickness.

- For proper operation of apron: Align apron with receiving stream and keep straight throughout its length. If a curve is needed to fit site conditions, place it in upper section of apron.
- Outlets on slopes steeper than 10 percent should have additional protection.

Costs

Costs are low if material is readily available. If material is imported, costs will be higher. Average installed cost is $150 per device.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Inspect BMPs subjected to non-stormwater discharges daily while non-stormwater discharges occur.
- Inspect apron for displacement of the riprap and damage to the underlying fabric. Repair fabric and replace riprap that has washed away. If riprap continues to wash away, consider using larger material.
- Inspect for scour beneath the riprap and around the outlet. Repair damage to slopes or underlying filter fabric immediately.
- Temporary devices should be completely removed as soon as the surrounding drainage area has been stabilized or at the completion of construction.

References

County of Sacramento Improvement Standards, Sacramento County, May 1989.

Erosion and Sediment Control Handbook, S.J. Goldman, K. Jackson, T.A. Bursztynsky, P.E., McGraw Hill Book Company, 1986.

Handbook of Steel Drainage & Highway Construction, American Iron and Steel Institute, 1983.

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, state of California Department of Transportation (Caltrans), November 2000.

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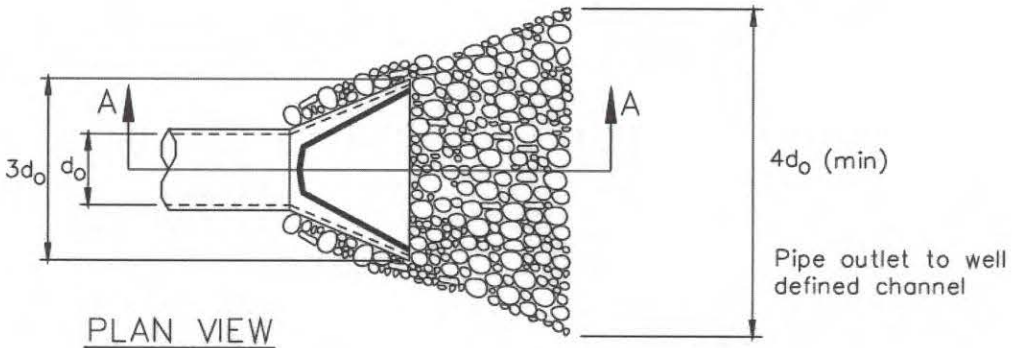
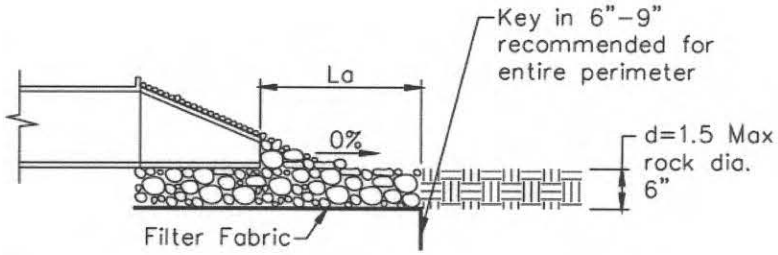


PLAN VIEW



SECTION A–A

Pipe Diameter inches	Discharge ft^3/s	Apron Length, La ft	Rip Rap D_{50} Diameter Min inches
12	5	10	4
	10	13	6
18	10	10	6
	20	16	8
	30	23	12
	40	26	16
24	30	16	8
	40	26	8
	50	26	12
	60	30	16

For larger or higher flows consult a Registered Civil Engineer
Source: USDA - SCS

BEST MANAGEMENT PRACTICES HANDBOOK

SANTA CLARA VALLEY WATER DISTRICT COMPREHENSIVE LIST

Table of Contents

List of Tables

Purpose

The Best Management Practices Handbook (Handbook) provides a list of Santa Clara Valley Water District (District) Best Management Practices (BMPs), intended to be incorporated into projects or activities. It aids in accomplishment of the stewardship component of the District Ends Policies by incorporating the basic principle of avoiding or minimizing the potential to impact the environment negatively in projects and activities.

Process

The Handbook is a controlled ISO document. It is a technical guidance document (W751M01) under ISO 14001 Environmental Management System Environmental Planning Q520D01 designed to ensure that the District meets its responsibilities under the California Environmental Quality Act (CEQA).[1] Work Instruction *W520M03 Section 3 – Mitigation, Monitoring and Reporting Programs* describes the standard policies for environmental review process used to apply these BMPs to projects and activities, consistent with CEQA Guidelines §15097(e).

The handbook is an electronic repository of information that allows staff to access and incorporate standardized BMPs, as/if appropriate, into CEQA documents efficiently, while maintaining the flexibility to create language that is consistent with the details of a particular project or activity. BMPs are incorporated into project design or activity implementation during an analytical process to identify and avoid or minimize project impacts for a particular project. They can be included as a component of the project description for projects at all levels of review, including categorical and/or statutory exemptions. The BMPs are selected by an Environmental Planner, with assistance from other project team members, (including Biologists, as well as design-, construction-, and maintenance engineers), to identify the appropriate BMPs for the proposed work activities. Thus, they only become official for the project after the CEQA document for that project has been certified or approved.

For projects or activities where implementation of BMP's would not suffice to avoid or minimize the impacts to a level below that of significance, a higher level of environmental evaluation would be required, leading to a higher level of documentation (e.g., (MND or EIR). In instances where a project requires additional avoidance or minimization measures not included in this handbook, such practices and/or measures would be evaluated appropriately during the environmental review process and incorporated as project-specific mitigation measures and, potentially, be incorporated in a future revision of the Handbook.

Organization

For ease in application, the BMP's have been organized into the standard environmental factors found in the Initial Study Checklist, which is consistent with the CEQA Guidelines.[2] This supports the 'activities and impacts matrix' (AIM) approach contained in *W520M03 Section 3 – Mitigation, Monitoring and Reporting Program.* Generally, these practices are either structural treatments (e.g., devices) or non-structural behaviors, methods, actions, procedures, or other management practices that have been shown to avoid or minimize potential adverse environmental effects.

The Handbook also includes sets of BMPs grouped together to address more commonly conducted activities such as bank protection; storm water management; discharge activities; grading and excavation; pesticide use; sediment removal and storage; vegetation management; and, well and exploratory boring construction-, modification-, and destruction operations. These '*BMP Suites*' make it easier for environmental planners to

[1] Public Resources Code Section 21000 *et seq.*
[2] Title 14 Code of Regulations Section 15000 *et seq.* Appendix G

include the applicable BMPs consistently in a project's environmental document. When using a set of activity-based BMPs, individual practices should be reviewed to ensure its applicability.

Limitations

Under no circumstances should the entire contents of the Handbook be included as supporting information in an Initial Determination Memorandum (IDM), or in a project's design (i.e., plans and specifications) to circumvent an analysis of impacts from project activities. The consideration of the suitability of *individual* BMP's, to avoid or minimize the significance of impacts, is central to the environmental review process.

Furthermore, since BMPs are District standard operating procedures, and are not project-specific, they are not mitigations and are not to be used as a substitute for mitigation (i.e., they are not measures to reduce, rectify, or compensate for project-specific impacts).

The BMPs reflect how the District currently conducts business. They are updated as new methods or industry standards are identified that provide an opportunity to further improve upon our practice of environmental stewardship, while maintaining a high level of service to the public. Thus, these BMPs are a guideline and not a substitute for analytical decision-making on how to avoid and minimize impacts.

QEMS Elements

Reference Documents:

See page 62 for a listing of both external and internal references

Requirements:

ISO 9001

7.5.1 Control of Production and Service Provision

ISO 14001

4.4.6 Operational Control

Quality Records:

None

Change History:

DATE	REVISION	COMMENTS
11/2006	A	Converted Watershed QEMS WW75109 into W751M01
1/2009	B	BMP updated
03/22/10	C	The Process Owner was changed from Debra Caldon to Jennifer Castillo
08/31/10	D	Stakeholder working group (WG) made some final changes including: Bill Smith, David Dunlap, Jamie McLeod and Janell Hillman and Jennifer Castillo. Prior to the WG, the document was sent for review by biologists, environmental planners and vegetation specialists.
01/24/11	E	Added QEMS Elements (Reference documents, Requirements, Quality Records. Added references to CEQA, Q520D01, & Q751D02 on last page. Changed BI-7 Avoid Secondary Poisoning from Rodenticide Use to inspect on a weekly basis instead of the fifth day.

Table 1 - Comprehensive BMP List

BMP No.	BMP Name	
Air Quality		
AQ-1	Use Basic Dust Control Measures for All Construction Sites,	
AQ-2	Use Enhanced Dust Control Measures For Sites Greater Than Four Acres in Size,	
AQ-3	Incorporate Additional Dust Control Measures, As Appropriate	
AQ-4	Avoid Stockpiling Potentially Odorous Materials	
Biological Resources		
BI-1	Avoid Relocating Mitten Crabs	
BI-2	Avoid and Minimize Impacts on Native Aquatic Vertebrates	
BI-3	Minimize Impacts to Steelhead	
BI-4	Minimize Waterway Access Impacts	
BI-5	Remove Temporary Fills as Appropriate	
BI-6	Minimize Adverse Effects of Pesticides on Non-target Species	
BI-7	Avoid Secondary Poisoning from Rodenticide Use	
BI-8	Avoid Impacts to Nesting Migratory Birds	
BI-9	Use Exclusion Devices to Prevent Migratory Bird Nesting	
BI-10	Minimize Impacts to Vegetation Whenever Clearing (or Trimming) is Necessary	
BI-11	Minimize Root Impacts to Woody Vegetation	
BI-12	Avoid Special Status Plant Species and Special Status Natural Communities	
BI-13	Plant Local Ecotypes Of Native Plants and Choose Appropriate Erosion-Control Seed Mixes	
BI-14	Maintain Low-Flow Fish Passage	
BI-15	Restore Riffle/Pool Configuration of Channel Bottom	
BI-16	Avoid Animal Entry and Entrapment	
BI-17	Minimize Predator-Attraction Effects on Wildlife	
BI-18	Disallow Feral Cat Feeding Stations on District Property	
Cultural Resources		
CU-1	Review Projects with Native Soil	
CU-2	Stop Work and Report Archaeological Finds	
CU-3	Stop Work and Report Burial Finds	
Hazards & Hazardous Materials		
HM-1	Comply with All Pesticide Application Restrictions	
HM-2	Use Appropriate Type(s) of Pest Control	
HM-3	Consult the Pest Control Advisor for Alternatives Evaluation & Approval of Pest Control	
HM-4	Follow All Posting & Notification Requirements for Pesticide Use	
HM-5	Comply with All Pesticide Usage Requirements	
HM-6	Coordinate Pesticide Use Reporting with the Vegetation Management Unit Manager	
HM-7	Comply with Restrictions on Herbicide Use in Upland Areas	
HM-8	Comply with Restrictions on Herbicide Use in Aquatic Areas	
HM-9	Clean Vehicles and Equipment	
HM-10	Assure Proper Vehicle and Equipment Fueling	
HM-11	Assure Proper Vehicle and Equipment Maintenance	
HM-12	Assure Proper Hazardous Materials Management	
HM-13	Prevent Spills	
HM-14	Know the Spill Kit Location	
HM-15	Avoid Exposing Soils with High Mercury Levels	

Table 1 - Comprehensive BMP List

BMP No.	BMP Name	
Hydrology/Water Quality		
WQ-1	Conduct Work from Top of Bank	
WQ-2	Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms	
WQ-3	Assess Pump/Generator Set Operations and Maintenance	
WQ-4	Handle Sediments so as to Minimize Water Quality Impacts	
WQ-5	Avoid Runoff from Soil Stockpiles	
WQ-6	Stabilize Construction Entrances and Exits	
WQ-7	Prevent Erosion Downstream of Bank Protection Sites	
WQ-8	Minimize Sediment Transport Downstream from In-channel Herbicide Sites	
WQ-9	Minimize Local Erosion Increase from In-channel Vegetation Removal	
WQ-10	Evaluate and Select the Most Appropriate Use of Concrete Near Waterways	
WQ-11	Use Coffer Dams for Tidal Work Areas	
WQ-12	Divert/ Bypass Water at Non-tidal Sites	
WQ-13	Minimize Hardscape in Bank Protection Design	
WQ-14	Use Temporary Seeding for Erosion Control As Appropriate	
WQ-15	Manage Groundwater At Work Sites	
WQ-16	Avoid Erosion When Restoring Flows	
WQ-17	Prevent Scour Downstream of Sediment Removal	
WQ-18	Maintain Clean Conditions at Work Sites	
WQ-19	Control Emergency Discharges	
WQ-20	Control Unplanned Discharges	
WQ-21	Control Sediment/ Turbidity for Discharges Less than 50 NTU	
WQ-22	Control Sediment/ Turbidity for Discharge Greater than 50 NTU	
WQ-23	Evaluate Use of Flow Path – Vegetation Filtration	
WQ-24	Evaluate Use of Flow Path – Check Filters	
WQ-25	Evaluate Use of On-Line Filter Systems	
WQ-26	Evaluate Use of Silt Fence Culvert Entrance Protection	
WQ-27	Evaluate Use of Surface Protection - Armoring	
WQ-28	Evaluate Use of Surface Protection – Flow Diversion	
WQ-29	Evaluate Use of Storm Drain Curb & Drop Inlet Protection	
WQ-30	Evaluate Use of Discharging to Sanitary Sewer System	
WQ-31	Control Small-Volume Chlorinated Discharges (less than or equal 50,000 gallons)	
WQ-32	Control Medium-Volume Chlorinated Discharges (50,000 to 100,000 gallons)	
WQ-33	Control Large-Volume Chlorinated Discharges (greater than 100,000 gallons)	
WQ-34	Control Superchlorinated Discharge (Chlorine Concentration greater than 1.5 mg/l [ppm])	
WQ-35	Control Chemical Additives in Discharges of Less Than 1,000 Gallons	
WQ-36	Control Chemical Additives in Discharges of More Than 1,000 Gallons	
WQ-37	Manage Well or Exploratory Boring Materials	
WQ-38	Protect Well or Exploratory Borings from Contaminants	
WQ-39	Backfill or Otherwise Destroy Exploratory Borings	
WQ-40	Prevent Water Pollution	
WQ-41	Prevent Stormwater Pollution	
Noise		
NO-1	Minimize Noise Pollution	
NO-2	Minimize Disturbances to Residential Neighborhoods Due to Noise	

Table 1 - Comprehensive BMP List

BMP No.	BMP Name	
Transportation/Traffic		
TR-1	Use Suitable Public Safety Measures	
Utilities/Service Systems		
UT-1	Manage Sanitary/Septic Waste	

Table 2
Santa Clara Valley Water District
BMP Suite List

BMP Suite
Bank Protection BMP Suite
Stormwater Management BMP Suite
Discharge Activities BMP Suite
Grading and Excavation BMP Suite
Sediment Removal and Storage BMP Suite
Vegetation Management and Removal BMP Suite
Well and Exploratory Boring Construction, Modification, or Destruction BMP Suite

Air Quality

AQ-1	**Use Basic Dust Control Measures For All Construction Sites,**	Implement Bay Area Air Quality Management District (BAAQMD) Basic Control Measures for construction emissions of PM_{10} at all construction sites. Current measures stipulated by the BAAQMD CEQA Guidelines include the following (BAAQMD 1999): 1. Active areas shall be watered at least twice per day unless soils are already sufficiently moist to avoid dust. The amount of water must be controlled so that runoff from the site does not occur, yet dust control is achieved. 2. Trucks hauling soil, sand, and other loose materials shall be covered or shall maintain at least two feet of freeboard. 3. Unpaved access roads, parking areas and staging areas at construction sites shall be paved, watered three times daily, or non-toxic soil stabilizers shall be applied to control dust generation. 4. Paved site access roads, parking areas, and staging areas shall be swept daily (with vacuum-powered street sweepers). 5. Paved public streets shall be swept (with vacuum-powered street sweepers) if visible soil material is carried onto adjacent paved surfaces.
AQ-2	**Use Enhanced Dust Control Measures For Sites Greater Than Four Acres in Size,**	Implement Bay Area Air Quality Management District Enhanced Dust Control Measures. Current measures stipulated by the BAAQMD CEQA Guidelines include the following (BAAQMD 1999): 1. All BAAQMD “Basic” control measures. 2. Inactive areas (previously graded areas inactive for ten days or more) shall be sprayed with soil stabilizer or seeded. 3. Exposed stockpiles (dirt, sand, etc.) shall be watered twice daily, enclosed, covered, or sprayed with soil stabilizers. 4. Traffic speeds on unpaved roads shall be limited to 15 mph. 5. Sandbags or other bank protections shall be installed to prevent silt runoff to roadways. 6. Vegetation in disturbed areas shall be replanted as soon as horticulturally appropriate. For example, plant material may not be ready as soon as the job is done (e.g. willow cuttings have to be collected during winter dormancy).

Air Quality

AQ-3	**Incorporate Additional Dust Control Measure, As Appropriate**	Implement appropriate Bay Area Air Quality Management District (BAAQMD) Optional Control Measures for construction emissions of PM_{10} at all construction sites. BAAQMD Optional Control Measures are strongly encouraged at construction sites that are large in area, located near sensitive receptors, or which for any other reason may warrant additional emissions reductions. Current measures stipulated by the BAAQMD CEQA Guidelines include the following (BAAQMD 1999): 1. Install wheel washers for all exiting trucks, or wash off the tires or tracks of all trucks and equipment leaving the site. 2. Install wind breaks or plant trees/vegetation wind breaks at windward side(s) of construction areas. 3. Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph. 4. Limit the area subject to excavation, grading, and other construction activity at any one time. 5. Tailgates of trucks shall be sealed. 6. Trucks shall be brushed down before leaving the site.
AQ-4	**Avoid Stockpiling Potentially Odorous Materials**	Some sites will have materials that are rich in organic matter decaying in an anaerobic condition, which generates assorted malodorous gases, such as reduced sulfur compounds. These materials will be handled in a manner that avoids impacting sensitive receptors. 1. Avoid stockpiling potentially odorous materials within 1,000 feet of residential areas or other odor sensitive land uses. 2. Where appropriate, odorous stockpiles will be disposed of at an appropriate landfill.

Biological Resources

The BMPs for biological resources are designed to minimize impacts to sensitive resources, including special status and listed species, and sensitive natural communities and habitats. Sensitive species and habitats may be directly or indirectly affected by project activities such as excavation, fill, vegetation management including pruning or removal, alteration of hydrological regime, etc. Impacts to species and natural communities are regulated by agencies such as the Department of Fish and Game, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, and the Bay Conservation and Development Commission; and corresponding laws such as the State and Federal Endangered Species Acts, the Migratory Bird Treaty Act, the Clean Water Act, the Fish and Game Code, the Native Plant Protection Act, and the California Environmental Quality Act. In addition, the California Native Plant Society publishes a rarity listing status for plants that is used by the California Department of Fish and Game and is required for review under CEQA.

BI-1	**Avoid Relocating Mitten Crabs**	Sediment potentially containing Chinese Mitten Crabs will not be transported between San Francisco Bay Watersheds and Monterey Bay Watersheds, specifically: 1. Sediment removed from creeks in the San Francisco Bay watersheds (Lower Peninsula/West Valley, Guadalupe, Coyote) will not be transported into the Monterey Bay Watershed (Pajaro); 2. Sediment removed from the San Francisco Bay watersheds will not be transported south of Metcalf Road in Coyote Valley, or south of the entrance to Calero County Park on McKean Road; and, 3. Earth moving equipment used in the San Francisco Bay watershed will be cleaned before being moved to and used in the Pajaro Watershed.
BI-2	**Avoid and Minimize Impacts on Native Aquatic Vertebrates**	Native aquatic vertebrates (fish, amphibians and reptiles) are important components of stream ecosystems. Native aquatic vertebrates may or may not be able to rapidly re-colonize a stream reach if the population is eliminated from that stream reach. If native aquatic vertebrates are present when cofferdams, water bypass structures, and silt barriers are to be installed, an evaluation of the stream and the native aquatic vertebrates will be conducted by a qualified biologist. The qualified biologist will consider : 1. Which native aquatic species are present; 2. The ability of the species to naturally re-colonize the stream reach; 3. The life stages of the native aquatic vertebrates present; 4. The flow, depth, topography, substrate, chemistry and temperature of the stream reach; 5. The feasibility of relocating the aquatic species present; and 6. The likelihood the stream reach will naturally dry up during the work season. Based on consideration of these factors the qualified biologist may make a decision to relocate native aquatic vertebrates. The qualified biologist will document in writing the reasons to relocate native aquatic species, or

Biological Resources

		not to relocate native aquatic species, prior to installation of cofferdams, water bypass structures or silt barriers. If the decision is made to relocate the native aquatic species, then the operation will be based on the District's Fish Relocation Guidelines.
BI-3	**Minimize Impacts to Steelhead**	Steelhead migrate upstream during the winter months to lay eggs. Eggs remain in the gravels for several weeks. Fry emerge from the gravel and may spend up to a year in local streams before migrating to the ocean. To avoid and minimize impacts to salmonids, routine use of vehicles and equipment in live salmonid streams will be avoided between January 1 and June 15.
BI-4	**Minimize Access Impacts**	Existing access ramps and roads to waterways will be used where possible. If temporary access points are necessary, they will be constructed in a manner that minimizes impacts: 1. Temporary project-access points will be created as close to the work area as possible to minimize running equipment in waterways and will be constructed so as to minimize adverse impacts. 2. Any temporary fill used for access will be removed upon completion of the project. Site topography and geometry will be restored to pre-project conditions to the extent possible. 3. Off-road vehicular access routes will be surveyed and flagged by a qualified biologist prior to use to avoid sensitive plants, animal burrows, wetlands and vernal pools, or other sensitive habitat. Whenever possible, routes should be not more than 15 feet wide. Personnel and vehicles are required to stay within marked access areas.
BI-5	**Remove Temporary Fills as Appropriate**	Temporary fills, such as for diversion structures or cofferdams, will be removed upon finishing the work. The creek channels and banks will be re-contoured to match pre-construction conditions to the extent possible.
BI-6	**Minimize Adverse Effects of Pesticides on Non-target Species**	Pesticides will be handled, stored, transported, and used in a manner that minimizes negative environmental effects on non-target species and sensitive habitats. This includes all rodenticides, insecticides, herbicides, algaecides, and fungicides. The proposed project plan for handling, storing, transporting and using pesticides must be reviewed and approved by <u>both</u> of the following subject matter experts: 1. District's Pest Control Advisor (a State-certified Qualified Applicator) – the plan will be reviewed, and modified as deemed appropriate, for compliance with: District policy, label restrictions and any advisories published by the California Department of Pesticide Regulation, the Santa Clara County Division of Agriculture, and the U.S. EPA bulletin *Protecting Endangered*

Biological Resources

		Species, Interim Measures for Use of Pesticides in Santa Clara County (USEPA 2000). 2. Qualified District Biologist (as defined in EMAP-30264) – the plan will be reviewed, and modified as deemed appropriate, for compliance with: District policy, approved environmental review documents, project permits, and avoidance of all known listed (Threatened or Endangered) and sensitive species. Information sources for determination of all known locations of species that may be harmed by pesticides include the District's GIS system and California Natural Diversity Database (CNDDB). Either the District's Pest Control Advisor or the Qualified District Biologist may modify the proposed pesticide plan, such as establishing buffer areas or prohibiting the use of pesticides outright, based on site-specific data, current regulatory requirements, and District policy. 1. The purchase of all pesticides should be approved by the District's Pest Control Advisor to ensure compliance with the District's *Control and Oversight of Pesticide Use* policy and appropriate regulatory agency reporting requirements.
BI-7	**Avoid Secondary Poisoning from Rodenticide Use**	Rodenticides are only to be used to protect District water storage and conveyance facilities from structural damage or mitigation sites. The use of rodenticides is limited to locations that will not impact protected species and will minimize the potential impacts to non-target species. Any use of rodenticides must comply with the BMP to *Minimize Adverse Effects of Pesticides on Non-target Species* (BMP BI-6), which requires review and approval by the District's Pest Control Advisor and a Qualified District Biologist. Any plan for rodenticide use shall include consideration of potential use of alternative non-lethal pest control methods. Once a rodenticide plan has been approved, controls shall be established for before, during and after the rodenticide is used: 1. Prior to Use – a Qualified District Biologist shall establish buffers, as they deem necessary, to protect listed (Threatened or Endangered) and sensitive species and/or habitat, such as: a. At least 47 meters (approx. 155 feet) from a San Francisco Dusky-Footed Woodrat nest; b. At least a ½ mile buffer zone around burrowing owl locations; and c. No use of lethal rodent control methods within the potential range of salt marsh harvest mouse (SMHM). 2. During use – the person applying the rodenticide will be fully certified for the rodenticide used. The bait station shall be designed and the rodenticide applied in a manner that restricts access from non-target species. The applicator will inspect the site on a weekly basis at a

Biological Resources

		minimum during the time that the rodenticide is available. The site inspection will include ensuring that the rodenticide is being properly dispensed, monitoring the amount of rodenticide available, inspecting the site and vicinity for carcasses, and removing all animal carcasses. Carcass disposal will be performed in compliance with all applicable federal, state and local regulations, making the carcasses inaccessible to potential predators. 3. After use – survey the area for unintended impacts such as secondary poisoning. Carcass surveys should be designed to address the following: a. Location – designed to include a range beyond the activity area, as deemed reasonably sufficient to determine the potential for secondary poisoning on listed and/or sensitive species, including raptors and other predators; b. Timing – conduct survey when the rodenticide is most likely to be lethal, based on when it is applied, and repeated at appropriate intervals during the application period (e.g. for chlorophacinone, survey every seven days while it is available; if a carcass is found, survey daily until no carcasses are found for three consecutive days); c. Response – any dead non-target wildlife found in the vicinity of the treated area during the carcass surveys will be turned over to California Department of Fish and Game's pesticide lab for analysis.
BI-8	**Avoid Impacts to Nesting Migratory Birds**	Nesting birds are protected by state and federal laws. The District will protect nesting birds and their nests from abandonment, loss, damage or destruction. Nesting bird surveys will be performed by a qualified individual (EMAP-30230) prior to any activity that could result in the abandonment, loss, damage or destruction of birds, bird nests, or nestling migratory birds. Inactive bird nests may be removed, with the exception of raptor nests. No birds, nests with eggs, or nests with hatchlings will be disturbed.
BI-9	**Use Exclusion Devices to Prevent Migratory Bird Nesting**	Nesting exclusion devices may be installed to prevent potential establishment or occurrence of nests in areas where construction activities would occur. All nesting exclusion devices will be maintained throughout the nesting season or until completion of work in an area makes the devices unnecessary. All exclusion devices will be removed and disposed of when work in the area is complete.
BI-10	**Minimize Impacts to Vegetation Whenever**	Vegetation to be trimmed or cleared will be evaluated by a qualified vegetation specialist or qualified biologist prior to impacts and the qualified vegetation specialist or qualified biologist recommendations will be

Biological Resources

	Clearing (or Trimming) is Necessary	followed. Survey cross-sections will be moved, within acceptable tolerances, to avoid cutting dense riparian vegetation and minimize cutting of woody vegetation, taking advantage of natural breaks in foliage. If the cross-section cannot be moved within the established acceptable tolerances to avoid impacts to dense riparian or woody vegetation, the cross-section will be abandoned. Cutting vegetation will be limited to the minimum length, width, and height necessary for safely accessing survey locations, and completing the cross-section surveys. Tree pruning will conform to International Society of Arboriculture (ISA) pruning standards. No trees with a 6-inch or greater diameter at breast height will be removed; and, no branches greater than 4" diameter will be removed. Woody vegetation (i.e. native trees and shrubs) which require pruning for equipment access, construction operations, etc, shall be pruned correctly such that health status is maintained and no post-construction impacts accrue. Woody vegetation will be pruned consistent with all three of the following complementary guidance or their updates: 1. 'BEST MANAGEMENT PRACTICES, TREE PRUNING' 2008, INTERNATIONAL SOCIETY OF ARBORICULTURE; and 2. ANSI A300 (Part 1) – 2008 PRUNING; and 3. ANSI Z133.1, 2008, SAFTEY REQUIREMENTS. Woody material (including live leaning trees, dead trees, tree trunks, large limbs, and stumps) will be retained on site, unless it is threatening a structure or impedes access, in which case it must moved to a less threatening position.
BI-11	**Minimize Root Impacts to Woody Vegetation**	Construction activities, including cut and fill, will be minimized to the extent practicable within the root zones of existing woody vegetation to remain post project. In general, root extent can be estimated as 2-3 times canopy radius, but vary depending on slope and soil conditions. To the extent practicable, construction setbacks will be calculated using all of the following: 1. Tree DBH (diameter at breast height); and 2. Age class and sensitivity to disturbance (species dependent) per *Guidelines and Standards, Design Guide 1: Protection of Existing Riparian Vegetation* (ISO document WQ71001) and *Trees and Development, a Technical Guide to Preservation of Trees During Land Development, by Nelda Matheny and James Clark published by International Society of Arboriculture [ISA] 1998* Additionally, mulching the root zone will be employed to provide root protection from unavoidable equipment traffic during construction, specifically:

Biological Resources

		1. Use 6 inches minimum depth of wood chips; or, 2. 4 inches minimum depth of ¾-inch (or greater) gravel, per *Trees and Development, a Technical Guide to Preservation of Trees During Land Development, by Nelda Matheny and James Clark published by International Society of Arboriculture [ISA] 1998, p. 108*. Both may remain in place after work if approved by a qualified biologist or vegetation specialist.
BI-12	**Avoid Special Status Plant Species and Special Status Natural Communities**	Project areas are to be pre-surveyed for special status plant species and sensitive natural communities, which have the potential to occur on District facilities. In order to avoid and/or minimize potential impacts to special status plants and natural communities, the following actions will be taken: 1. Surveys of the project area for special status plant species and sensitive natural communities will be conducted by a qualified biologist prior to commencement of work; and, 2. The qualified biologist will ensure avoidance of impacts to special status plant species and special status natural communities by implementing one, or more, of the following, as appropriate, per the biologist's recommendation: a. Flag the population or natural community areas to be protected; b. Allow adequate buffers; and/or, c. Time construction or other activities during dormant and/or non-critical life cycle periods.
BI-13	**Plant Local Ecotypes Of Native Plants and Choose Appropriate Erosion-Control Seed Mixes**	Whenever native species are prescribed for installation on SCVWD fee properties or easements, the following steps will be taken by a qualified biologist or vegetation specialist: 1. Evaluate whether the plant species currently grows wild in Santa Clara County; and, 2. If so, the qualified biologist or vegetation specialist will determine if any need to be local natives, i.e. grown from propagules collected in the same or adjacent watershed, and as close to the project site as feasible. Also, consult a qualified biologist or vegetation specialist to determine which seeding option is ecologically appropriate and effective, specifically: 1. For areas that are disturbed, an erosion control seed mix may be used consistent with the SCVWD *Guidelines and Standards for Land Use Near Streams, Design Guide 5, 'Temporary Erosion Control Options.'* 2. In areas with remnant native plants, the qualified biologist or

Biological Resources

		vegetation specialist may choose an abiotic application instead, such as an erosion control blanket or seedless hydro-mulch and tackifier to facilitate passive revegetation of native species. 3. Temporary earthen access roads may be seeded when site and horticultural conditions are suitable. 4. If a gravel or wood mulch has been used to prevent soil compaction per BI-11, this material may be left in place [if ecologically appropriate] instead of seeding. Seed selection shall be ecologically appropriate as determined by a qualified biologist, per *Guidelines and Standards for Land Use Near Streams, Design Guide 2: Use of Local Native Species*; and, *Supplemental Landscaping\Revegetation Guidelines* (ISO document WQ71001).
BI-14	**Maintain Low-Flow Fish Passage**	If a non-tidal stream channel has been altered during instream operations/maintenance, its low-flow channel shall be returned, as nearly as possible, to its approximate, prior location. The low-flow channel shall have the appropriate depth/width for fish passage and sediment transport without creating a possible, future bank erosion problem.
BI-15	**Restore Riffle/Pool Configuration of Channel Bottom**	The District shall re-grade the channel bottom at the end of the work project to as close to original conditions as possible. In salmonid streams, restore pool and riffle configurations to emulate pre-project instream conditions, taking into account channel morphological features (i.e. slope), which affects riffle/pool sequence.
BI-16	**Avoid Animal Entry and Entrapment**	All pipes, hoses, or similar structures less than 12 inches diameter will be closed or covered to prevent animal entry. All construction pipes, culverts, or similar structures, greater than 2-inches diameter, stored at a construction site overnight, will be inspected thoroughly for wildlife by a qualified biologist or properly trained construction personnel before the pipe is buried, capped, used, or moved. If inspection indicates presence of sensitive or state- or federally-listed species inside stored materials or equipment, work on those materials will cease until a qualified biologist determines the appropriate course of action. To prevent entrapment of animals, all excavations, steep-walled holes or trenches more than 6-inches deep will be secured against animal entry at the close of each day. Any of the following measures may be employed, depending on the size of the hole and method feasibility: 1. Hole to be securely covered (no gaps) with plywood, or similar materials, at the close of each working day, or any time the opening will be left unattended for more than one hour; or 2. In the absence of covers, the excavation will be provided with escape ramps constructed of earth or untreated wood, sloped no

Biological Resources

		steeper than 2:1, and located no farther than 15 feet apart; or 3. In situations where escape ramps are infeasible, the hole or trench will be surrounded by filter fabric fencing or a similar barrier with the bottom edge buried to prevent entry.
BI-17	**Minimize Predator-Attraction Effects on Wildlife**	Remove trash daily from the worksite to avoid attracting potential predators to the site.
BI-18	**Disallow Feral Cat Feeding Stations on District Property**	Feral cat feeding stations are detrimental to native wildlife including species of special concern and can pose health and safety concerns to the public. To minimize impacts on native wildlife and potential public health issues, feral cat feeding stations will not be permitted on district property.

Cultural Resources

CU-1	**Review Projects with Native Soil**	A cultural resources specialist will conduct a review and evaluation of those sites that would involve disturbance/excavation of native soil previously undisturbed by contemporary human activities to determine their potential for affecting significant cultural resources. The evaluation of the potential to disturb cultural resources will be based on an initial review of archival information provided by the California Historical Resources System/Northwest Information Center (CHRIS/NWIC) in regard to the project area based on a 0.25 mile search radius. It is recommended that this initial archival review be completed by a professional archaeologist who will be able to view confidential site location data and literature to arrive at a preliminary sensitivity determination. If necessary, a further archival record search and literature review (including a review of the Sacred Lands Inventory of the Native American Heritage Commission); and a field inventory of the project area will be conducted to determine the presence/absence of surface cultural materials associated with either prehistoric or historic occupation. The results, along with any mitigation and/or management recommendations, would be presented in an appropriate report format and include any necessary maps, figures, and correspondence with interested parties. A summary table indicating appropriate management actions (e.g., monitoring during construction, presence/absence testing for subsurface resources; data recovery, etc.) will be developed for each project site reviewed. The management actions will be implemented on-site to avoid significant effects to cultural resources.
CU-2	**Stop Work and Report Archaeological Finds**	Work in areas where archaeological artifacts are found will be restricted or stopped until proper protocols are met. Work at the location of the find will halt immediately within 30 feet of the find. A Consulting Archaeologist will visit the discovery site as soon as practicable for identification and evaluation pursuant to Section 21083.2 of the Public Resources Code and Section 15126.4 of the California Code of Regulations. If the archaeologist determines that the artifact is not significant, construction may resume. If the archaeologist determines that the artifact is significant, the archaeologist will determine if the artifact can be avoided and, if so, will detail avoidance procedures. If the artifact cannot be avoided, the archaeologist will develop within 48 hours an Action Plan which will include provisions to minimize impacts and, if required, a Data Recovery Plan for recovery of artifacts in accordance with Public Resources Code Section 21083.2 and Section 15126.4 of the CEQA Guidelines.

Cultural Resources

CU-3	**Stop Work and Report Burial Finds**	Work in areas where any burial site is found will be restricted or stopped until proper protocols are met. Upon discovering any burial site as evidenced by human skeletal remains, the County Coroner will be immediately notified. No further excavation or disturbance within 30 feet of the site or any nearby area reasonably suspected to overlie adjacent remains may be made except as authorized by the County Coroner, California Native American Heritage Commission, and/or the County Coordinator of Indian Affairs.

Hazards & Hazardous Materials

The District's projects and operations often require exposure to, and the use of, potentially hazardous materials. The BMPs listed in this section reflect the District's standard procedures for their handling and use.

Pesticides are one tool for pest control on district properties and facilities. The most common pesticide use is herbicide application to manage vegetation. Insecticides and rodenticides are used infrequently and in small quantities. All BMPs associated with pesticide use comply with, Q751D02, *Control and Oversight of Pesticide Use***.**

ISO document **Q751D02** defines District policies and procedures for pesticide use and reporting. The policies and procedures specified therein apply to all District-owned or operated facilities, as well as to pesticide use by staff, contractors, permittees, and suppliers.

It is the District policy to minimize the environmental risk, and exposure, resulting from its pesticide use, by employing alternatives to the maximum extent practicable.

To assure avoidance and minimization of impacts from the use of pesticides, all proposed pesticide applications must be reviewed by the District's Pest Control Adviser (PCA). The PCA is responsible for coordinating, reviewing, tracking, documenting and reporting pest control practices at the District.

<table>
<tr><td>HM-1</td><td>Comply with All Pesticide Application Restrictions</td><td colspan="2">All pesticide use will be consistent with approved product specifications. Applications will be made by, or under the direct supervision of, State Certified applicators under the direction of, or in a manner approved by the District's Pest Control Advisor (PCA). Refer to Q751D02, Control and Oversight of Pesticide Use.</td></tr>
<tr><td>HM-2</td><td>Use Appropriate Type(s) of Pest Control</td><td colspan="2">Pesticide products are to be used only after an assessment has been made regarding environmental, economic, and public health aspects of each of the alternatives by the PCA. Refer to Q751D02, Control and Oversight of Pesticide Use.

The following pesticide classes are used by the District:</td></tr>
<tr><td></td><td></td><td><u>Pesticide</u></td><td><u>Type of Use</u></td></tr>
<tr><td></td><td></td><td>Herbicides

Refer to BI-6:

Minimize Adverse Effects of Pesticides on Non-target Species</td><td>· To control algae, weeds and undesirable vegetation;
· To minimize fire hazards;
· To maintain flood conveyance of waterways; and,
· To maintain compliance with State and Federal requirements.</td></tr>
<tr><td></td><td></td><td>Insecticides

Refer to BI-6:

Minimize Adverse Effects of Pesticides on Non-</td><td>· Use only in and around District buildings, or in the case of a serious pest outbreak, on landscape and re-vegetation facilities;
· Use only after all other methods, such as prevention or natural nontoxic control methods,</td></tr>
</table>

Hazards & Hazardous Materials

		target Species	have proven ineffective; and, · Where required, the lowest toxicity will be used in accordance with the label and the details specified in Q751D02: *Control and Oversight of Pesticide Use*.
		Rodenticides Refer to BI-7: *Avoid Secondary Poisoning from Rodenticide Use*	· To control burrowing rodents, including ground squirrels, moles and gophers, in District flood control levees · Alternatives such as trapping and smoke bombs are used wherever practical prior to rodenticide use
HM-3	**Consult the Pest Control Advisor for Alternatives Evaluation & Approval of Pest Control**	In all cases, where some form of pest control is deemed necessary by the PCA, a process of evaluating pest control methods will be used to include consideration of alternatives to pesticides. Refer to Q751D02: *Control and Oversight of Pesticide Use*.	
HM-4	**Follow All Posting & Notification Requirements for Pesticide Use**	Posting of areas where pesticides are to be used shall be performed in compliance with Q751D02: *Control and Oversight of Pesticide Use*, including, but not necessarily limited to the following: · Posting shall be performed in compliance with the label requirements of the product being applied. In addition, the District shall provide posting for **any** products applied in areas used by the public for recreational purposes, and areas readily accessible to the public, regardless of whether the label requires such notification, including: · Sign postings shall notify staff and the general public of the date and time of application; the product's active ingredients, and common name; and, the time of allowable re-entry into the treated area. · A District staff contact phone number shall be posted on the sign. · Signs shall not be removed until after the end of the specified re-entry interval. · Right-to-know literature on the product shall be made available upon request to anyone in the Area. The District shall maintain records of neighbors with specific needs relative to notification prior to treatment of an adjacent area to ensure such needs are met; and, District facilities pesticide use should be listed on a log maintained by the Facilities unit.	

Hazards & Hazardous Materials

HM-5	**Comply with All Pesticide Usage Requirements**	All projects that propose ongoing use of pesticides will comply with all provisions of Q751D02: *Control and Oversight of Pesticide Use*, including, but not necessarily limited to the following: 1. All pest control methods will be performed only after a written Pest Control Recommendation for use has been prepared by the District's PCA in accordance with requirements of the California Food and Agricultural Code. 2. F751D01 – *Pest Control Recommendation & Spray Operators Report* will be completed for each pesticide application.
HM-6	**Coordinate Pesticide Use Reporting with the Vegetation Management Unit Manager**	Consistent with provisions of Q751D02: *Control and Oversight of Pesticide Use, a* report will be run monthly from Maximo, by the Vegetation Management Unit Manager, listing the total amount of products used for pest control including the common name. This listing will be submitted to the Agricultural commissioner no later than the 10th of each month.
HM-7	**Comply with Restrictions on Herbicide Use in Upland Areas**	Consistent with provisions of Q751D02: *Control and Oversight of Pesticide Use,* application of pre emergence (residual) herbicides to upland areas will not be made within 72 hours of predicted significant rainfall. Predicted significant rainfall for the purposes of this BMP will be described as local rainfall greater than 0.5 inch in a 24-hour period with greater than a 50% probability of precipitation.
HM-8	**Comply with Restrictions on Herbicide Use in Aquatic Areas**	Consistent with provisions of Q751D02: *Control and Oversight of Pesticide Use,* only herbicides and surfactants registered for aquatic use will be applied within the banks of channels within 20 feet of any water present. Furthermore, aquatic herbicide use will be limited to July 1st through October 15th, except on Guadalupe River, where applications within 20 feet of the low flow channel are limited to July 1st to August 15th. If rain is forecast then application of aquatic herbicide will be rescheduled.
HM-9	**Clean Vehicles and Equipment**	Vehicles will be washed only at the approved area in the corporation yard. No washing of vehicles will occur at job sites.

Hazards & Hazardous Materials

HM-10	**Assure Proper Vehicle and Equipment Fueling**	No fueling will be done in a waterway or immediate flood plain, unless equipment stationed in these locations is not readily relocated (i.e., pumps, generators). 1. For stationary equipment that must be fueled on-site, containment will be provided in such a manner that any accidental spill of fuel will not be able to enter the water or contaminate sediments that may come in contact with water. 2. Any equipment that is readily moved out of the waterway will not be fueled in the waterway or immediate flood plain. 3. All fueling done at the job site will provide containment to the degree that any spill will be unable to enter any waterway or damage riparian vegetation.
HM-11	**Assure Proper Vehicle and Equipment Maintenance**	No equipment servicing will be done in a stream channel or immediate flood plain, unless equipment stationed in these locations cannot be readily relocated (i.e., pumps, generators). 1. Any equipment that can be readily moved out of the channel will not be serviced in the channel or immediate flood plain. 2. All servicing of equipment done at the job site will provide containment to the degree that any spill will be unable to enter any channel or damage stream vegetation. 3. If emergency repairs are required in the field, only those repairs necessary to move equipment to a more secure location will be done in a channel or flood plain. 4. If emergency repairs are required, containment will be provided equivalent to that done for fueling or servicing.
HM-12	**Assure Proper Hazardous Materials Management**	Measures will be implemented to ensure that hazardous materials are properly handled and the quality of water resources is protected by all reasonable means. 1. Prior to entering the work site, all field personnel will know how to respond when toxic materials are discovered. 2. The discharge of any hazardous or non-hazardous waste as defined in Division 2, Subdivision 1, Chapter 2 of the California Code of Regulations will be conducted in accordance with applicable State and federal regulations. 3. In the event of any hazardous material emergencies or spills, personnel will call the Chemical Emergencies/Spills Hotline at 1-800-510-5151.
HM-13	**Prevent Spills**	Prevent the accidental release of chemicals, fuels, lubricants, and non-storm drainage water.

Hazards & Hazardous Materials

		1. Field personnel will be appropriately trained in spill prevention, hazardous material control, and clean-up of accidental spills. 2. No fueling, repair, cleaning, maintenance, or vehicle washing will be performed in a creek channel or in areas at the top of a channel bank that may flow into a creek channel.
HM-14	**Know the Spill Kit Location**	Spill prevention kits appropriate to the hazard will always be in close proximity when using hazardous materials (e.g., crew trucks and other logical locations). 1. Prior to entering the work site, all field personnel will know the location of spill kits on crew trucks and at other locations within District facilities. 2. All field personnel will be advised of these locations and trained in their appropriate use.
HM-15	**Avoid Exposing Soils with High Mercury Levels**	To ensure worker safety is protected in areas with elevated mercury concentrations in exposed surfaces, personal protective equipment will be required during project construction to maintain exposure below levels established by the California Division of Occupational Safety and Health (Cal/OSHA).

Hydrology/Water Quality

The District's projects and operations often pose situations that warrant standard measures to avoid or minimize impacts to water quality. As of this Handbook revision (D), the following best management practices represent measures currently used by the District; however, since many of these measures are based on industry standards for stormwater management maintained by the California Stormwater Quality Association (**CASQA**), the selection of appropriate BMPs from this list **must be verified** by comparison with the most current standards found on the CASQA website by clicking on User Log In and entering the following login and password information: Login ID = **brettc** and Password = **password**.

WQ-1	**Conduct Work from Top of Bank**	For minor work activities that will occur in the channel, work will be conducted from the top of the bank if access is available and there are flows in the channel.
WQ-2	**Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms**	Field personnel will use the appropriate equipment for the job that minimizes disturbance to the stream bottom. Appropriately tired vehicles, either tracked or wheeled, will be used depending on the situation. Tracked vehicles (bulldozers, loaders) may cause scarification. Wheeled vehicles may cause compaction. Heavy equipment will not operate in the live stream.
WQ-3	**Assess Pump/Generator Set Operations and Maintenance**	Pumps and generators will be maintained and operated in a manner that minimizes impacts to water quality and aquatic species. 1. Pumps and generators will be maintained according to manufacturers' specifications to regulate flows to prevent dry-back or washout conditions. 2. Pumps will be operated and monitored to prevent low water conditions, which could pump muddy bottom water, or high water conditions, which creates ponding. 3. Pump intakes will be screened to prevent uptake of fish and other vertebrates. 4. Sufficient back-up pumps and generators will be onsite to replace defective or damaged pumps and generators.
WQ-4	**Handle Sediments so as to Minimize Water Quality Impacts**	Sediments will be stored and transported in a manner that minimizes water quality impacts. 1. Wet sediments may be stockpiled outside of a live stream or may be stockpiled within a dewatered stream so water can drain or evaporate before removal. 2. This measure applies to saturated, not damp, sediments and depends upon the availability of a stockpile site. 3. For those stockpiles located outside the channel, water draining from them will not be allowed to flow back into the creek or into local storm drains that enter the creek, unless water quality protection measures recommended by the RWQCB are implemented. 4. Trucks may be lined with an impervious material (e.g. plastic), or the tail gate blocked with dry dirt or hay bales, for example, or trucks may

Hydrology/Water Quality

		drain excess water by slightly tilting their loads and allowing the water to drain out. 5. Water will not drain directly into channels (outside of the work area) or onto public streets without providing water quality control measures. 6. Streets will be cleared of mud and/or dirt by street sweeping (with a vacuum-powered street sweeper), as necessary, and not by hosing down the street.
WQ-5	**Avoid Runoff from Soil Stockpiles**	If soil is to be stockpiled, no run-off will be allowed to flow to a creek.
WQ-6	**Stabilize Construction Entrances and Exits**	Measures will be implemented to minimize soil from being tracked onto streets near work sites: 1. Methods used to prevent mud from being tracked out of work sites onto roadways include installing a layer of geotextile mat, followed by a 4-inch thick layer of 1 to 3-inch diameter gravel on unsurfaced access roads. 2. Access will be provided as close to the work area as possible, using existing ramps where available and planning work site access so as to minimize disturbance to the water body bed and banks, and the surrounding land uses.
WQ-7	**Prevent Erosion Downstream of Bank Protection Sites**	Increased water velocity at work sites may increase erosion downstream. Project design will assess hydraulic effects immediately upstream and downstream of the work area. If the hardscape revetment would cause significant increase in erosion potential, downstream energy dissipation features such as pools or grade control structures will be considered in the design. If the evaluation identifies possible downstream impacts, proactive protection of these areas will be provided. Such measures include, but are not limited to, appropriately keyed-in coir logs, riparian enhancement planting, strategic placement of rock, and flow deflectors.
WQ-8	**Minimize Sediment Transport Downstream from In-channel Herbicide Sites**	Where sediment has accumulated due to vegetation in-channel, herbicide application may result in release of sediment downstream. Prior to herbicide application within active channels, the potential for significant sediment release will be assessed. If the site has the potential for significant sediment release, then one of two techniques will be considered: 1. Where an area has not been routinely treated with herbicides, new herbicide applications will be phased over several seasons, or 2. Remove the excess sediment through mechanical means after the vegetation is killed.

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WQ-9	**Minimize Local Erosion Increase from In-channel Vegetation Removal**	In-channel vegetation removal may result in increased local erosion due to increased flow velocity. To minimize the effect, the toe of the bank will be protected by leaving vegetation to the maximum extent practicable consistent with the SMP maintenance guidelines.
WQ-10	**Evaluate and Select the Most Appropriate Use of Concrete Near Waterways**	Concrete that has not been cured is alkaline and can increase the pH of the water; fresh concrete will be isolated until it no longer poses a threat to water quality using the following appropriate measures: 1. Wet sacked concrete will be excluded from the wetted channel for a period of two weeks after installation. During that time, the wet sacked concrete will be kept moist (such as covering with wet carpet) and runoff from the wet sacked concrete will not be allowed to enter a live stream. 2. Poured concrete will be excluded from the wetted channel for a period of two weeks after it is poured. During that time, the poured concrete will be kept moist, and runoff from the wet concrete will not be allowed to enter a live stream. Commercial sealants (e.g., Deep Seal, Elasto-Deck Reservoir Grade) may be applied to the poured concrete surface where difficulty in excluding water flow for a long period may occur. If a sealant is used, water will be excluded from the site until the sealant is dry. 3. Dry sacked concrete will not be used in any channel. 4. An area outside of the channel and floodplain will be designated to clean out concrete transit vehicles.
WQ-11	**Use Coffer Dams for Tidal Work Areas**	For tidal areas, a downstream cofferdam will be constructed to prevent the work area from being inundated by tidal flows. By isolating the work area from tidal flows, water quality impacts are minimized. Downstream flows continue through the work area and through pipes within the cofferdam. 1. Installation of coffer dams will begin at low tide. 2. Waters discharged through tidal coffer dam bypass pipes will not exceed 50 NTU over the background levels of the tidal waters into which they are discharged. 3. Coffer dams in tidal areas may be made from earthen material. If earth is used, the downstream and upstream faces will be covered by a protected covering (e.g., plastic or fabric) if needed to minimize erosion.

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WQ-12	**Divert/ Bypass Water at Non-tidal Sites**	When work in a flowing stream is unavoidable, the entire streamflow will be diverted around the work area by a barrier. Construction of the barrier will normally begin in the upstream area and continue in a downstream direction, and the flow will be diverted only when construction of the diversion is completed. The water diversion plan will allow stream flows to gravity flow around or through the work site using temporary culverts or stream flow is pumped around the work site using pumps and screened intake hoses. Coffer dam construction will be adequate to prevent seepage into or from the work area. Coffer dams will be constructed of river run gravel with a fines content that is less than 15%. Fines are defined as material that is able to pass through a #20 sieve. Coffer dams may also be constructed of sheet piles, inflatable dams, or sand bags. Coffer dams will be installed both upstream and downstream not more than 100 feet from the extent of the work areas. In-channel berms that only deflect water to one side of the channel during sediment removal may be constructed of channel material. The enclosure and the supportive material will be removed when the work is completed and the removal will normally proceed from downstream in an upstream direction. Normal flows will be restored to the affected stream immediately upon completion of work at that location: 1. All water will be discharged in a non-erosive manner (e.g., gravel or vegetated bars, on hay bales, on plastic, on concrete, or in storm drains when equipped with filtering devices, etc.). 2. Sumps or basins may also be used to collect water, where appropriate (e.g., in channels with low flows). 3. Where feasible and appropriate, diversion structures will be installed on concrete sections of the channels or constructed of materials specified above. Earth fill will not be used for cofferdams in non-tidal areas. 4. In conjunction with diversion structures, pumps or gravity-fed pipe systems will be used to dewater sites. 5. Depending on the channel configurations, sediment removal may occur where the flows are not bypassed around the work site; as long as during excavation activities, a berm of sediment is left between the work area and stream flows to minimize water quality impacts. 6. Diversions will maintain ambient stream flows below the diversion, and waters discharged below the project site will not be diminished or degraded by the diversion.
WQ-13	**Minimize Hardscape in Bank Protection Design**	Bank repair techniques appropriate to a given site based on hydraulic and other site conditions will be selected. Refer to SMP Appendix E, Programmatic Impact Assessment and Mitigation for Routine Bank

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		Protection Activities. 1. Biotechnical repair methods include construction with living materials; willow wattling; erosion control blankets; brush matting; and, installation of root wads and boulders in banks. 2. The repair will be designed and installed so that it will be self-sustaining and use vegetation that adds structural integrity to the stream bank.
WQ-14	**Use Temporary Seeding for Erosion Control As Appropriate**	For banks that are scraped, an erosion control seed mix will be used. Temporary earthen access roads will be seeded when site and horticultural conditions are suitable.
WQ-15	**Manage Groundwater at Work Sites**	If high levels of groundwater in a work area are encountered, the water will be pumped out of the work site. If necessary to protect water quality, the water will be directed into specifically constructed infiltration basins, into holding ponds, or onto areas with vegetation to remove sediment prior to the water re-entering a receiving water body. Water pumped into vegetated areas will be pumped in a manner that will not create erosion around vegetation.
WQ-16	**Avoid Erosion When Restoring Flows**	All temporary diversion structures and the supportive material will be removed no longer than 48 hours after work is completed. The removal will normally proceed from downstream in an upstream direction. Normal flows will be restored to the affected stream immediately upon completion of work at that location. Flows will be restored in a manner that minimizes erosion. 1. When diversion structures are removed, to the extent practicable, the ponded flows will be directed into the low-flow channel within the work site to minimize downstream water quality impacts. 2. Flows will gradually be restored to the channel to avoid a surge of water that would cause erosion or scouring. 3. Bypassed flows may be slowly reintroduced into the dewatered area by leaving a silt barrier in place to allow water to slow and drop sediment to the extent possible.

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WQ-17	**Prevent Scour Downstream of Sediment Removal**	Sites in the transport zone on alluvial fans may cause increased scour downstream if they experience rapid sediment accumulation after sediment removal. Channel reaches up to 500 feet downstream from such sediment removal sites will be monitored to determine whether accelerated erosion is occurring. If downstream monitoring indicates that erosion is occurring, then remedial action such as rock vortex weirs or similar protection will be carried out.
WQ-18	**Maintain Clean Conditions at Work Sites**	The work site, areas adjacent to the work site, and access roads will be maintained in an orderly condition, free and clear from debris and discarded materials. Personnel will not sweep, grade, or flush surplus materials, rubbish, debris, or dust into storm drains or waterways. Upon completion of work, all building materials, debris, unused materials, concrete forms, and other construction-related materials will be removed from the work site.
WQ-19	**Control Emergency Discharges**	To control emergency discharges of treated water, recycled water, raw water, and groundwater should they occur (emergency discharges are discharges that are performed in an emergency due to public health concerns related to water quality or the result of an area-wide natural disaster): 1. Follow the procedures outlined in the Emergency Discharge Checklist. 2. Inspect the flow path of the discharged water. 3. Identify areas with erosion potential that may require repair or protection during subsequent repairs or corrective actions. 4. Identify and remove pollutants that could be discharged into a storm drain or receiving water. 5. Implement the appropriate control measures. 6. Inspection and Maintenance: a. Monitor the discharge to ensure the control measure is effective. b. Monitor the discharge to make sure it is not causing flooding. c. When the discharge is complete, remove sediment deposited in the flow path and dispose of appropriately. d. Remove control measures when discharge is complete. e. If the discharge was to a receiving water body, inspect the receiving water for impacts. f. Complete the Emergency Discharge Activities Checklist and submit it to District staff responsible for Water Utility Discharge Pollution Prevention Plan reporting.

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WQ-20	**Control Unplanned Discharges**	To control unplanned discharges of treated water, recycled water, raw water, and groundwater systems operation and maintenance activities: 1. Follow the procedures outlined in the Emergency Discharge Checklist. 2. Inspect the flow path of the discharged water. 3. Identify areas with erosion potential that may require repair or protection during subsequent repairs or corrective actions. 4. Identify and remove pollutants that could be discharged into a storm drain or receiving water. 5. If repairs or corrective actions will cause additional discharges of water, select appropriate control measures. 6. Inspection and Maintenance: a. Monitor the discharge to ensure the control measure is effective. b. Sweep up sediment deposited in the flow path and dispose of appropriately. c. Make repairs to eroded areas as necessary to prevent further erosion. d. Complete the Unplanned Discharge Activities Checklist and submit it to District staff responsible for Water Utility Discharge Pollution Prevention Plan reporting.
WQ-21	**Control Sediment/ Turbidity for Discharges Less than 50 NTU**	To control sediment and turbidity in discharges from project activities where the source is treated water, recycled water, raw water, or groundwater with a turbidity of less than 50 NTU: 1. Characterize the discharge appropriately (follow the Planned Discharge Activities Checklist to ensure the correct BMPs are used): a. Identify the source of water. b. Determine the volume of the water to be discharged. c. Determine if operations may cause the turbidity to be greater than 50 NTU, refer to the BMP Sediment/ Turbidity Control for Discharges Greater than 50 NTU. 2. Choose the option for discharging the water (in order of preference): a. Reuse water, either for dust suppression, irrigation, or construction compaction. b. Discharge to sanitary sewer system (requires approval from local sanitary district). c. Discharge to storm drain system or water body. 3. Use appropriate control measures when discharging water:

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		a. Use sanitary sewer BMPs if discharging to the sanitary sewer. b. Visually monitor the turbidity if it is suspected to be above 50 NTU. c. Terminate the discharge or implement appropriate control measures if the turbidity exceeds 50 NTU (refer to Sediment/ Turbidity Control for Discharges Greater than 50 NTU). d. There are no additional control measures required if the source water is hydrant flushing, fire flow testing, a main line break or blow off, and the discharge volume is not greater than 50,000 gallons. 4. Inspection and Maintenance: a. Before discharging any water, inspect the discharge flow path for debris and erosion, and cleanup the flow path as needed. b. Monitor the discharge to make sure it is not interfering with the normal operation of the sanitary sewer, or flooding the storm drain system. c. When the discharge is complete, inspect the flow path and receiving water (if discharging directly to a water body, if practicable) for evidence of erosion or deposited sediment. d. Sweep up sediment deposited in the flow path and dispose of appropriately. e. Complete the Planned Discharge Activities Checklist and submit it to District staff responsible for Water Utility Discharge Pollution Prevention Plan reporting.
WQ-22	**Control Sediment/ Turbidity for Discharge Greater than 50 NTU**	To control sediment and turbidity in discharges from project activities where the source is treated water, recycled water, raw water, or groundwater with a turbidity of greater than 50 NTU: 1. Characterize the discharge appropriately (follow the Planned Discharge Activities Checklist to ensure the correct BMPs are used): a. Identify the source of water. b. Determine the volume of water to be discharged. c. Determine the turbidity of the discharge. 2. Choose the option for discharging the water (in order of preference): a. Reuse water, either for dust suppression, irrigation, or construction compaction. b. Discharge to sanitary sewer system (requires approval from local sanitary district). c. Discharge to storm drain system or water body (requires use of

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sediment/ turbidity control measures).

3. Select control measures appropriately.
   Consider the following criteria when selecting the appropriate control measure:
   a. Suitability of area for discharge (vegetated surface, chlorine neutralization requirements).
   b. Proximity to storm drains or receiving waters.
   c. Length of time BMP is to be in place.
   d. Ease of installation, operation and removal.

   Choose from the following control measures and refer to the individual fact sheets for guidance on implementation:
   a. Discharges to Sanitary Sewer Systems (CM-A).
   b. Flow Path – Vegetation Filtration (CM-B).
   c. Flow Path – Check Filters (CM-C).
   d. On-Line Filter System (CM-D).
   e. Storm Drain Inlet Protection (CM-E).
   f. Silt Fence Culvert Entrance Protection (CM-F).
   g. Surface Protection – Armoring (CM-G).
   h. Surface Protection – Flow Diversion (CM-H).
4. Inspection and Maintenance:
   a. Before discharging any water, inspect the discharge flow path for debris and erosion, and cleanup the flow path as needed.
   b. Monitor the discharge to make sure it is not interfering with the normal operation of the sanitary sewer, or flooding the storm drain system.
   c. Monitor the discharge turbidity to evaluate the effectiveness of the control measure.
   d. When the discharge is complete, inspect the flow path and receiving water (if discharging directly to a water body, if practicable) for evidence of erosion or deposited sediment.
   e. Sweep up sediment deposited in the flow path and dispose of appropriately.
   f. Complete the Planned Discharge Activities Checklist and submit it to District staff responsible for Water Utility Discharge Pollution Prevention Plan reporting.

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WQ-23	**Evaluate Use of Discharge Flow Path – Vegetation Filtration**	To remove sediments and prevent sediments from entering local creeks and the bay: 1. Confirm applicability: a. Use this control measure where an existing vegetated area can be used to filter the sediments from the discharged water. b. Make sure the vegetated area is of sufficient density to filter the sediments and of such strength that it will not be uprooted by the discharged water. 2. Design Considerations: a. Ensure that the area to receive the discharge has tight, dense, well-established vegetation similar to a grassy area. b. Control the energy of the discharge or dissipate to prevent erosion of the soil within the vegetated area, and to prevent the destruction and uprooting of the vegetation. c. Adjust the discharge to avoid flooding and excessive runoff. d. Remove debris from the flow path. 3. Construction specifications: a. Ensure that at least 50 feet of grassy ground is available between the point of discharge and the location where the water drains into the receiving storm drain system or the creek. 4. Inspection and Maintenance: a. Ensure that there is no breakthrough of sediments. b. Ensure that there is no erosion of grassy areas.
WQ-24	**Evaluate Use of Discharge Flow Path – Check Filters**	To remove sediment from discharges with a turbidity more than 50 NTU, place check filters at single or multiple location along the flow path accordingly: 1. Design Check Filters Properly: a. Consider the slope, erosion potential, and flow rate of the discharge when choosing filter materials and locating filters. b. Avoid creating large pools and/or obstructive flow paths. 2. Construct Check Filters Correctly: a. Place sandbags, socks filled with sand or gravel, and/or dikes made of filter fabric and gravel perpendicular to the flow path. b. Line the sandbags, socks, and dikes tight to divert the flow at least 2 feet outside its normal path. c. Construct an overflow (low spot) in the check filter. If the flow rate of the discharge is high and considerable amounts of sediment

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		appear to be passing by the filter, construct a series of two or more filters until effective removal of sediment is achieved. 3. Inspection and Maintenance: a. Monitor the discharge for breakthrough of sediments and potential traffic hazards caused by ponded water. b. Add more check dams and implement traffic control as necessary. c. After the discharge is finished, sweep up sediment deposited behind check filters and dispose of properly. d. Complete the Planned Discharge Activities Checklist and submit it to District staff responsible for Water Utility Discharge Pollution Prevention Plan reporting.
WQ-25	**Evaluate Use of Discharge On-Line Filter Systems**	To remove sediments and impurities from discharges with a turbidity that exceeds approximately 50 NTU: 1. Select and Use On-Line Filter Systems Appropriately: a. Use when the discharge is planned and filter assembly can be fitted to the discharge point either permanently or prior to each discharge. b. Choose an on-line filter system capable of removing fine and medium size particulate matter and sediments at the desired discharge flow rate and duration. c. Follow the instructions for use provided by the designer or manufacturer. 2. Inspection and Maintenance: a. Inspect the filter during the discharge for clogging and deterioration, and breakthrough of sediment. Replace the filter as necessary. b. After the discharge is finished, sweep up sediment deposited in the flow path and dispose of the sediment properly. c. Dispose of the filter and sediment captured by the filter properly. d. Complete the Planned Discharge Activities Checklist and submit it to District staff responsible for Water Utility Discharge Pollution Prevention Plan reporting.

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WQ-26	**Evaluate Use of Silt Fence Culvert Entrance Protection**	To reduce flow velocity of runoff, allowing sediment to settle out before discharge enters a culvert and its drainage system: 1. Install silt fence culvert protection in appropriate locations: a. Where sheet and rill erosion would occur. b. Where protection of adjacent property or areas is needed. c. Where the maximum slope length behind the silt fence is 100 feet (30 meters) and the maximum slope gradient is 50% (2:1). d. Where the flow volume does not exceed 1 cfs. e. Where ponded water will not damage adjacent areas or structures, or create a traffic hazard or other nuisance. 2. Select the correct construction materials: a. Select a woven or non-woven filter fabric made of at least 85% by weight, ethylene, propylene, amide, ester, or vinylidene yarn. b. The Equivalent Opening size of the filter fabric (U.S. Standard Sieve) will be 70-100, and the tensile strength will be at least 120 lbs (54 kg) if a wire support fence is used and 200 lbs (90 kg) if a wire support fence is not used. c. Posts should be either 4-inch diameter wood or 1.33 pounds per linear foot steel. Posts should be at least 5 feet long. Steel posts should have projections for fastening wire. d. Wire fence reinforcement will be a minimum of 42 in (1.1 m) tall and a minimum width of 14-gauge. The maximum mesh spacing should be 6 in (15 cm). 3. Construct the silt fence properly: a. The height of the silt fence should be between 16 in (40 cm) and 36 in (90 cm). The most effective height range is 24 to 36 in (60 to 90 cm). Shorter fences may be breached during small discharges and require more maintenance. b. If possible, cut the filter fabric from a continuous roll to avoid the use of joints. If joints are necessary, splice the filter fabric only at a support post. Overlap the fabric pieces a minimum of 6 in (15 cm) and secure both ends to the post. c. If a wire mesh support fence is used, install posts at least 3 feet (1 meter) apart. Install posts closer together if a support fence is not used. Drive posts into the ground to a depth of at least 1 foot (30 cm). d. Excavate a 4-in (10 cm) deep trench that is at least 4 in (10 cm) wide upslope of the silt fence along the line of posts.

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WQ-27	**Evaluate Use of Discharge Surface Protection - Armoring**	To protect exposed soil and vegetated surfaces from erosion during discharges by placing protective armor (e.g. plastic sheeting, cloth fabric, gravel bedding) over the erodible surface: 1. Select and install armoring materials properly: a. Choose a material whose strength is proportionate to the velocities and materials in the discharged water (e.g. sediment). b. Clear the area to be protected of rocks and debris which may puncture the armor. c. Anchor the armor using sandbags, gravel, or stakes along the perimeter. d. Anchor the armor so it can withstand movement of the discharge. e. Account for potential changes in the flow direction of the discharge when laying the armor. f. If there is to be a direct stream of high velocity flow, an energy dissipating device may be necessary to prevent failure of the armor. 2. Inspection and Maintenance: a. During the discharge, monitor the armor for failure (tearing) and erosion at the edges of the armor. b. If erosion does occur, implement sediment/turbidity control measures. c. Remove armor when the discharge is complete. d. Sweep up any sediment deposited in the flow path and dispose of appropriately. e. Complete the Planned Discharge Activities Checklist and submit it to District staff responsible for Water Utility Discharge Pollution Prevention Plan reporting.
WQ-28	**Evaluate Use of Discharge Surface Protection – Flow Diversion**	To protect bare soil and vegetated surfaces from erosion by diverting, channeling, or temporarily piping flows over erodible areas to protected areas not subject to erosion: 1. When considering the use of flow diversion, take into account the following: a. There must be a storm drain or paved surface nearby to which the discharge can be diverted. b. The flow channel must be aligned to avoid disruption of traffic, or traffic control measures must be used. c. The flow channel must have sufficient slope to allow the discharge to flow to the storm drain or paved surface.

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		d. The flow channel must be designed to handle the anticipated flow rate. e. Protective armor or temporary piping can be used for high velocity discharges or large flow volume discharges over bare soils or vegetated surfaces. The armor material selected must be able to withstand the flow velocity and movement of the discharge. 2. Divert flows correctly: a. Divert water to a channel using fixed or flexible piping, or another system to capture this flow (e.g. sand bags). b. If armor is used to create a flow channel over the erodible surface clear the area to be protected of rocks and debris which may puncture the armor. c. Anchor the armor using sandbags, gravel, or stakes along the perimeter. d. If there is to be a direct stream of high velocity flow, an energy dissipating device may be necessary to prevent failure of the armor. 3. Inspection and Maintenance: a. Inspect the area for flooding resulting from failure of the channel diversion structure or the flow rate exceeding the diversion channel capacity. b. Inspect the channel for erosion along the edges due to overtopping of the channel. c. Monitor the armor for failure (tearing) and erosion at the edges of the armor. d. If erosion does occur along the edges of the channel or armor, implement sediment/turbidity control measures. e. Remove armor when the discharge is complete. f. Sweep up any sediment deposited in the flow path and dispose of appropriately. g. Complete the Planned Discharge Activities Checklist and submit it to District staff responsible for Water Utility Discharge Pollution Prevention Plan reporting.
WQ-29	**Evaluate Use of Discharge Storm Drain Curb & Drop Inlet Protection**	To install temporary devices around drain inlets using gravel, wire mesh, and /or concrete blocks that may prevent sediment-laden runoff from entering the storm drain system or watercourses (These devices reduce the velocity of runoff, allowing sediments to settle. The gravel can also filter out coarse sediment from runoff.): 1. Use drain inlet protection in appropriate locations:

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		a. Use in drainage areas less than one acre. b. Place anywhere sediment-laden runoff could discharge into a storm drain inlet. c. If the inlet protection device could pond water, install only where ponded water will not contact materials, flood structures, or cause a nuisance. d. Completely cover inlet where work activities could result in vegetation, raw materials or sediment being deposited into the inlet, or when a small spill occurs near the inlet. Cover inlets with rubber or polyurethane mats, or plastic sheeting anchored with gravel bags. 2. Install inlet protection properly: a. To prevent seepage of sediment-laden runoff into the drain inlet, install drain inlet protection so there are no gaps around the drain inlet. b. Do not place filter fabric over the inlet grate as it can become clogged with sediment and contribute to flooding. 3. Gravel and Wire Mesh Drop Inlet Protection: a. Place wire mesh over the inlet so the wire extends a minimum of 12 inches beyond each side of the inlet structure. Use hardware cloth or comparable wire mesh with ½-inch openings. If more than one mesh strip is required, overlap the strips. b. Pile ¾ to 3-inch washed gravel on top of the mesh surrounding the inlet to a minimum depth of 12 inches. Extend the gravel at least 18 inches beyond the inlet on all sides. 4. Gravel and Wire Mesh Curb Inlet Protection: a. Place wire mesh over the inlet so the wire extends a minimum of 12 inches beyond each side of the inlet structure. Use hardware cloth or comparable wire mesh with ½-inch openings. b. Pile ¾ to 3-inch washed gravel against the mesh to anchor it against the gutter and inlet cover and to surround the inlet completely. 5. Block and Gravel Curb Inlet Protection: a. Place two concrete blocks on their sides abutting the curb at either side of the inlet opening. These are the space blocks. b. Place a 2-inch by 4-inch stud through the outer holes of each spacer block to align the front blocks. c. Place more concrete blocks on their sides across the front of the inlet and abutting the spacer blocks. Do not use mortar.

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d. Place wire mesh with ½-inch openings over the outside vertical face of the blocks to keep gravel out of the inlet.

e. Place ¾ to 3-inch washed gravel against the wire mesh to the top of the blocks, on slopes of 2:1 or flatter.

6. Block and Gravel Drop Inlet Protection:

   a. Place wire mesh over the inlet so the wire extends a minimum of 12 inches beyond each side of the inlet structure. Use hardware cloth or comparable wire mesh with ½-inch openings. If more than one mesh strip is required, overlap the strips.

   b. Place concrete blocks lengthwise on their sides in a single row around the perimeter of the inlet, so the open end face outward not upward. Abut the ends of the adjacent blocks.

   c. Stack blocks to at least 12 inches but not more than 24 inches above the inlet, depending on design requirements.

   d. Place wire mesh with ½-inch openings over the outside vertical face of the blocks to keep gravel out of the inlet.

   e. Place ¾ to 3-inch washed gravel against the wire mesh to the top of the blocks, on slopes of 2:1 or flatter.

7. Gravel Bag Barriers:

   a. Use bags made of geotextile fabric, not burlap. Fill bags with washed ¾-inch rock or ¼-inch pea gravel.

   b. Place gravel bags around the perimeter of the drop inlet, packing bags together tightly. For a cub inlet, abut the curb at either side of the inlet opening.

   c. If additional flow retention is required, construct a barrier upgradient of the inlet by placing gravel bags perpendicular to the direction of flow. Overlap the bags and pack them tightly together. Construct each barrier using several layers of bags. Leave a one bag gap on the top row to act as a spillway to prevent flooding. If more than one barrier is used, place barriers at 20-foot intervals.

8. Wooden Weir (and Fabric) Curb Inlet Protection:

   a. Construct a wooden weir using 2-inch by 4-inch construction grade lumber, with a total length equal to the throat length plus 2 feet.

   b. Attach a continuous piece of wire mesh of at least 30 inches in width and a length equal to the inlet's throat length plus 4 feet.

   c. Place a piece of approved "extra strength" filter cloth, equal to the dimensions of the wire mesh, over the mesh and secure it to the

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		weir. d. Nail the weir to the 9-inch long vertical spacers, which will be located between the weir and the inlet face at no more than 6-foot intervals. e. Place the assembly against the inlet throat and nail 2-inch by 4-inch boards, in minimum lengths of 2 feet, to the top of the weir at the spacers. Extend these anchors across the inlet tops and hold them in place by sandbags or alternate weight. f. Place the assembly such that the end spacers are at least 1 foot beyond both ends of the throat opening. g. Form the mesh and cloth to the concrete gutter and against the face of the curb on both sides of the inlet. Place coarse aggregate over the mesh and cloth so that water is prevented from entering the inlet either under or around the filter fabric. 9. Inspection and Maintenance: a. Let ponded water evaporate provided it does not cause a nuisance. b. Inspect before anticipated storms and after storms for gaps, clogging of gravel, ruptured gravel bags, and sediment accumulated behind inlet protection. During extended rainfall events, inspect at least once every 24 hours. c. Carefully remove accumulated sediment when the depth reaches half the height of the inlet protection device. Dispose of sediment properly. d. Clean or replace gravel that is clogged with sediment. Do not clean gravel near the inlet.
WQ-30	**Evaluate Use of Discharges to Sanitary Sewer System**	To prevent sediments from entering local creeks and the bay by removing pollutants in the wastewater treatment processes: 1. Obtain necessary approval from wastewater treatment plant or sanitary sewer agency: a. Obtain approval or permit for a one-time discharge, or b. Obtain approval or permit for annual or ongoing discharge. 2. Design Considerations: a. Determine the feasibility of implementing this control measure by identifying access to a sanitary manhole near the discharge location. b. Construct discharge system with an air gap between the outlet pipe of the discharge line and the sewerage. If an adequate air gap cannot be maintained at all times to prevent cross

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contamination, select another control measure.

c. Develop adequate traffic control plan and implement it prior to the discharge operation. Typically, sanitary sewer manholes are located in traffic lanes. Discharging to these manholes will cause a disruption of the vehicular traffic flow.

d. Obtain a confined-space entry permit if it is necessary to enter a manhole.

3. Construction Specifications:

   a. Maintain flow within the limits that are acceptable to the local sanitary sewer agencies.

   b. Direct the discharge water to the sanitary sewer system by fixed piping, flexible piping, or a system to capture surface flow discharging (e.g. sand bags).

   c. Install the piping outlet above the manhole at height of at least twice the diameter of the outlet pipe.

   d. Anchor the piping such that the energy from the discharge water will not cause the piping to thrust out of position.

4. Inspection and Maintenance:

   a. Check for leaks from the piping system.

   b. Observe the system in operation and make repairs as required to keep the discharge flowing into the sanitary sewer system.

   c. Ensure that the air gap is maintained at all times.

   d. Observe the water quality and record on a discharge activity checklist.

   e. Monitor the flow of the discharge and record on a discharge activity checklist.

   f. If the wastewater treatment plant or sanitary sewer agency has dictated water quality requirements, monitor accordingly.

   g. After the discharge has ended, remove pipe from sanitary manhole.

   h. Complete a discharge activity checklist and send to your unit supervisor. Include any water quality monitoring results and control measure evaluations on the checklist.

   i. Unit supervisors will prepare a monthly inventory of discharges and send it (along with discharge activity checklists) to the Countywide Watershed Programs Unit.

   j. Notify wastewater treatment plant or sanitary sewer agency that the discharge has ceased.

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WQ-31	**Control Small-Volume Chlorinated Discharges (less than or equal 50,000 gallons)**	To control chlorine in discharges that will not exceed 50,000 gallons of potable water, recycled water, or chlorinated groundwater, where chlorine concentrations do not exceed 1.5 mg/l (ppm). 1. Characterize the discharge appropriately (follow the Planned Discharge Activities Checklist to ensure the correct BMPs are used): a. Identify source of water. b. Determine the volume of water to be discharged. c. Determine the chlorine concentration of the water. 2. Choose the option for discharging the water (in preferred order): a. Reuse water, either for dust suppression, irrigation, or construction compaction. b. Discharge to sanitary sewer system (requires approval from the local sanitary district). c. Discharge to storm drain system or water body. 3. Use appropriate control measures when discharging the water: a. Use sanitary sewer discharge BMPs if discharging to sanitary sewer. b. If discharging to a storm drain or creek, the chlorine concentration must not exceed detectable levels (0.2 mg/l [ppm]). Measure the chlorine concentration and neutralize the water using correct amounts of chemicals. Measure the chlorine concentration after neutralization to make sure the treatment was effective. c. If discharging to a storm drain or creek, also implement sediment/turbidity control measures. d. Monitor the flow rate and discharge duration to ensure the discharge volume does not exceed 50,000 gallons (limiting volume for this BMP). 4. Inspection and Maintenance: a. Before discharging any water, inspect the discharge flow path for debris and erosion, and cleanup the flow path as needed. b. Monitor the discharge to make sure it is not interfering with the normal operation of the sanitary sewer, or flooding the storm drain system. c. When the discharge is complete, inspect the flow path and receiving water (if discharging directly to a water body) for evidence of erosion or deposited sediment. d. Sweep up sediment deposited in the flow path and dispose of appropriately.

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		e. Complete the Planned Discharge Activities Checklist and submit it to District staff responsible for Water Utility Discharge Pollution Prevention Plan reporting.
WQ-32	**Control Medium Volume Chlorinated Discharges (50,000 to 100,000 gallons)**	To control chlorine in discharges between 50,000 and 100,000 gallons of potable water, recycled water, or chlorinated groundwater, where chlorine concentrations do not exceed 1.5 mg/l (ppm). 1. Characterize the discharge appropriately (follow the Planned Discharge Activities Checklist to ensure the correct BMPs are used): a. Identify source of water. b. Determine the volume of water to be discharged. c. Determine the chlorine concentration of the water. 2. Choose the option for discharging the water (in preferred order): a. Reuse water, either for dust suppression, irrigation, or construction compaction. b. Discharge to sanitary sewer system (requires approval from the local sanitary district). c. Discharge to storm drain system or water body. 3. Use appropriate control measures when discharging the water: a. Use sanitary sewer discharge BMPs if discharging to sanitary sewer. b. If discharging to a storm drain or creek, the chlorine concentration must not exceed detectable levels (0.2 mg/l [ppm]). Treat the water using one of the following methods: i. Measure the chlorine concentration and neutralize the water using the correct amounts of chemicals. Measure the chlorine concentration after neutralization to make sure no residual chlorine remains. ii. Store the chlorinated water until chlorine levels are non-detectable (less than 0.2 mg/l). Periodically measure chlorine levels during discharge to ensure that no residual chlorine remains. c. If discharging to a storm drain or water body, also implement sediment/turbidity control measures. d. Monitor the flow rate and discharge duration to ensure the discharge volume does not exceed 100,000 gallons (limiting volume for this BMP). 4. Inspection and Maintenance: a. Before discharging any water, inspect the discharge flow path for

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		debris and erosion, and cleanup the flow path as needed. b. Monitor the discharge to make sure it is not interfering with the normal operation of the sanitary sewer, or flooding the storm drain system. c. When the discharge is complete, inspect the flow path and receiving water (if discharging directly to a water body) for evidence of erosion or deposited sediment. d. Sweep up sediment deposited in the flow path and dispose of appropriately. e. Complete the Planned Discharge Activities Checklist and submit it to District staff responsible for Water Utility Discharge Pollution Prevention Plan reporting.
WQ-33	**Control Large Volume Chlorinated Discharges (greater than 100,000 gallons)**	To control chlorine in discharges greater than 100,000 gallons of potable water, recycled water, or chlorinated groundwater, where chlorine concentrations do not exceed 1.5 mg/l (ppm). 1. Characterize the discharge appropriately (follow the Planned Discharge Activities Checklist to ensure the correct BMPs are used): a. Identify source of water. b. Determine the volume of water to be discharged. c. Determine the chlorine concentration of the water. 2. Choose the option for discharging the water (in preferred order): a. Reuse water, either for dust suppression, irrigation, or construction compaction. b. Discharge to sanitary sewer system (requires approval from the local sanitary district). c. Discharge to storm drain system or water body. 3. Use appropriate control measures when discharging the water: a. Use sanitary sewer discharge BMPs if discharging to sanitary sewer. b. If discharging to a storm drain or water body, the chlorine concentration must not exceed detectable levels (0.2 mg/l [ppm]). Treat the water using one of the following methods: i. Measure the chlorine concentration and neutralize the water using the correct amounts of chemicals. Measure the chlorine concentration after neutralization to make sure no residual chlorine remains. ii. Store the chlorinated water until chlorine levels are non-detectable (less than 0.2 mg/l). Periodically measure chlorine

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		levels during discharge to ensure that no residual chlorine remains. c. If discharging to a storm drain or water body, also implement sediment/turbidity control measures. 4. Inspection and Maintenance: a. Before discharging any water, inspect the discharge flow path for debris and erosion, and cleanup the flow path as needed. b. Monitor the discharge to make sure it is not interfering with the normal operation of the sanitary sewer, or flooding the storm drain system. c. When the discharge is complete, inspect the flow path and receiving water (if discharging directly to a water body) for evidence of erosion or deposited sediment. d. Sweep up sediment deposited in the flow path and dispose of appropriately. e. Complete the Planned Discharge Activities Checklist and submit it to District staff responsible for Water Utility Discharge Pollution Prevention Plan reporting.
WQ-34	**Control Super-chlorinated Discharges (Chlorine Concentration greater than 1.5 mg/l [ppm])**	To control super-chlorinated discharges where chlorine concentrations exceed 1.5 mg/l (ppm): 1. Characterize the discharge appropriately (follow the Planned Discharge Activities Checklist to ensure the correct BMPs are used): a. Identify source of water. b. Determine the volume of water to be discharged. c. Determine the chlorine concentration of the water. 2. Choose the option for discharging the water (in preferred order): a. Discharge to sanitary sewer system (requires approval from the local sanitary district). b. Discharge to storm drain system or water body. 3. Use appropriate control measures when discharging the water: a. Use sanitary sewer discharge BMPs if discharging to the sanitary sewer. b. If discharging to a storm drain or creek, the chlorine concentration must not exceed detectable levels (0.2 mg/l [ppm]). Treat the water using one of the following: i. Measure the chlorine concentration and neutralize the water using the correct amounts of chemicals. Measure the chlorine concentration after neutralization to make sure no residual

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		chlorine remains. ii. Store the chlorinated water until chlorine levels are non-detectable (less than 0.2 mg/l). Periodically measure chlorine levels during discharge to ensure that no residual chlorine remains. c. If discharging to a storm drain or water body, also implement sediment/turbidity control measures. 4. Inspection and Maintenance: a. Before discharging any water, inspect the discharge flow path for debris and erosion, and cleanup the flow path as needed. b. Monitor the discharge to make sure it is not interfering with the normal operation of the sanitary sewer, or flooding the storm drain system. c. When the discharge is complete, inspect the flow path and receiving water (if discharging directly to a water body) for evidence of erosion or deposited sediment. d. Sweep up sediment deposited in the flow path and dispose of appropriately. e. Complete the Planned Discharge Activities Checklist and submit it to District staff responsible for Water Utility Discharge Pollution Prevention Plan reporting.
WQ-35	**Control Chemical Additives in Discharges of Less Than 1,000 Gallons**	To control chemical additives that may be present in discharges from water utility operations less than 1,000 gallons: 1. Characterize the discharge appropriately (follow the Planned Discharge Activities Checklist to ensure the correct BMPs are used): a. Identify source of water. b. Determine the volume of water to be discharged. c. Determine the chlorine concentration of the water. d. Determine if chemicals used for water treatment or other chemicals could be present. 2. Choose the option for discharging the water (in preferred order): a. Discharge to sanitary sewer system (requires approval from the local sanitary district). b. Discharge to storm drain system or water body. 3. Use appropriate control measures when discharging the water: a. Use sanitary sewer discharge BMPs if discharging to sanitary sewer.

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		b. If discharging to a storm drain or water body, the chlorine concentration must not exceed detectable levels (0.2 mg/l [ppm]). i. Measure the chlorine concentration and neutralize the water using the correct amounts of chemicals. Measure the chlorine concentration after neutralization to make sure no residual chlorine remains. ii. Store the chlorinated water until chlorine levels are non-detectable (less than 0.2 mg/l). Periodically measure chlorine levels during discharge to ensure that no residual chlorine remains. c. If discharging to a storm drain or water body, also implement sediment/turbidity control measures. d. Monitor the flow rate and discharge duration to ensure the discharge volume does not exceed 1,000 gallons (limiting volume for this BMP). 4. Inspection and Maintenance: a. Before discharging any water, inspect the discharge flow path for debris and erosion, and cleanup the flow path as needed. b. Monitor the discharge to make sure it is not interfering with the normal operation of the sanitary sewer, or flooding the storm drain system. c. When the discharge is complete, inspect the flow path and receiving water (if discharging directly to a water body) for evidence of erosion or deposited sediment. d. Sweep up sediment deposited in the flow path and dispose of appropriately. e. Complete the Planned Discharge Activities Checklist and submit it to District staff responsible for Water Utility Discharge Pollution Prevention Plan reporting.

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WQ-36	**Control Chemical Additives in Discharges of More Than 1,000 Gallons**	To control chemical additives that may be present in discharges from water utility operations greater than 1,000 gallons: 1. Characterize the discharge appropriately (follow the Planned Discharge Activities Checklist to ensure the correct BMPs are used): a. Identify source of water. b. Determine the volume of water to be discharged. c. Determine the chlorine concentration of the water. d. Determine if chemicals used for water treatment or other chemicals could be present. 2. Use appropriate control measures when discharging or disposing of the water: a. Discharge to the sanitary sewer system (requires approval from the local sanitary district). Use sanitary sewer discharge BMPs if discharging to the sanitary sewer. b. Contain the water and dispose at a facility authorized to accept the water. Chemical analysis of the water may be required for disposal. 3. Inspection and Maintenance: a. Initially and as needed, verify that the discharge into the sanitary sewer is not interfering with the normal operation of the sanitary sewer. b. Maintain records of the sanitary sewer discharge or disposal at an authorized facility. c. Complete the Planned Discharge Activities Checklist and submit it to District staff responsible for Water Utility Discharge Pollution Prevention Plan reporting.
WQ-37	**Manage Well or Exploratory Boring Materials**	All materials or waters generated during drilling, well or exploratory boring construction, well development, pump testing, or other activities associated with wells or exploratory borings, will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case will these materials and/or waters be allowed to enter, or potentially enter, on- or off-site storm sewers, dry wells, or waterways. Such materials/waters must not be allowed to move off the property where the work is being completed.
WQ-38	**Protect Well or Exploratory Borings from Contaminants**	Any substances or materials that may degrade groundwater quality will not be allowed to enter any well or boring. Lubricants used on drill bits, drill pipe, or tremie pipe will not be comprised of oily or greasy substances or other materials that may degrade groundwater quality. Well openings or entrances will be sealed or secured in such a way as to

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		prevent the introduction of contaminants.
WQ-39	**Backfill or Otherwise Destroy Exploratory Borings**	All borings should be backfilled within 24 hours of termination of testing. Borings will not be left in such a condition as to allow for the introduction of surface waters or foreign materials into them. Borings will be secured such that they do not endanger public health. All borings must be properly destroyed by backfilling with acceptable sealing materials. Acceptable sealing materials are: 1. 27 sack neat cement (four 94-pound bags/55-gallon drum), 2. 10 sack cement sand grout, or 3. hydrated high solids 20 percent bentonite slurry. No soil cuttings may be used for backfilling boreholes. No bentonite chips or pellets may be used to backfill borings. Free fall of sealing material will not be allowed if greater than 30 feet or if more than 3 feet of standing water exists in borehole. A tremie pipe must be used to place the cement sealing material if exploratory boring is over 30 feet deep or if more than 3 feet of standing water exists in borehole. Exploratory borings located in Geologic Setting Zone 4 (bedrock) may be backfilled with borehole cuttings from total depth of the boring up to a depth of 50 feet from the surface grade. The top 50 feet of the borehole must be backfilled with above described sealing materials.
WQ-40	**Prevent Water Pollution**	Oily, greasy, or sediment laden substances or other material that originate from the project operations and may degrade the quality of surface water or adversely affect aquatic life, fish, or wildlife will not be allowed to enter, or be placed where they may later enter, any waterway. The project will not increase the turbidity of any watercourse flowing past the construction site by taking all necessary precautions to limit the increase in turbidity as follows: 1. where natural turbidity is between 0 and 50 Nephelometric Turbidity Units (NTU), increases will not exceed 5 percent; 2. where natural turbidity is greater than 50 NTU, increases will not exceed 10 percent; 3. where the receiving water body is a dry creek bed or storm drain, waters in excess of 50 NTU will not be discharged from the project. Water turbidity changes will be monitored. The discharge water measurements will be made at the point where the discharge water exits the water control system for tidal sites and 100 feet downstream of the discharge point for non-tidal sites. Natural watercourse turbidity measurements will be made in the receiving water 100 feet upstream of the discharge site. Natural watercourse turbidity measurements will be made prior to initiation of project discharges, preferably at least 2 days

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		prior to commencement of operations.
WQ-41	**Prevent Stormwater Pollution**	Suitable erosion control, sediment control, source control, treatment control, material management, and non-stormwater management BMPs will be implemented consistent with the latest edition of the California Stormwater Quality Association "Stormwater Best Management Practices Handbook," which is available at www.cabmphandbooks.com.

Noise

NO-1	**Minimize Noise Pollution**	Noise produced by construction activities will not exceed the applicable local noise ordinance standards.
NO-2	**Minimize Disturbances to Residential Neighborhoods Due to Noise**	The District will implement practices that minimize disturbances to residential neighborhoods surrounding work sites. 1. In general, work will be conducted during normal working hours. Extending weekday hours and working weekends may be necessary to complete some projects. 2. Internal combustion engines will be equipped with adequate mufflers. 3. Excessive idling of vehicles will be prohibited. 4. All construction equipment will be equipped with manufacture's standard noise control devices. 5. The arrival and departure of trucks hauling material will be limited to the hours of construction. 6. The use of jake brakes is prohibited in residential areas.

Transportation/Traffic

TR-1	**Use Suitable Public Safety Measures**	Fences, barriers, lights, flagging, guards, and signs will be installed as determined appropriate by the public agency having jurisdiction, to give adequate warning to the public of the construction and of any dangerous condition to be encountered as a result thereof.

Utilities/Service Systems

UT-1	**Manage Sanitary/Septic Waste**	Temporary sanitary facilities will be located on jobs that last multiple days in compliance with California Division of Occupational Safety and Health (Cal/OSHA) regulation 8 CCR 1526. All temporary sanitary facilities will be placed outside of the creek channel and flood plain and removed when no longer necessary.

Bank Protection BMP Suite

AQ-1 Use Basic Dust Control Measures for All Construction Sites
AQ-2 Use Enhanced Dust Control Measures For Sites Greater Than Four Acres in Size
AQ-3 Incorporate Additional Dust Control Measures, As Appropriate
BI-1 Avoid Relocating Mitten Crabs
BI-2 Avoid and Minimize Impacts on Native Aquatic Vertebrates
BI-3 Minimize Impacts to Steelhead
BI-4 Minimize Waterway Access Impacts
BI-5 Remove Temporary Fills as Appropriate
BI-8 Avoid Impacts to Nesting Migratory Birds
BI-9 Use Exclusion Devices to Prevent Migratory Bird Nesting
CU-1 Review Projects with Native Soil
CU-2 Stop Work and Report Archaeological Finds
CU-3 Stop Work and Report Burial Finds
HM-9 Clean Vehicles and Equipment
HM-10 Assure Proper Vehicle and Equipment Fueling
HM-11 Assure Proper Vehicle and Equipment Maintenance
HM-12 Assure Proper Hazardous Materials Management
HM-13 Prevent Spills
HM-14 Know the Spill Kit Location
HM-15 Avoid Exposing Soils with High Mercury Levels
WQ-1 Conduct Work from Top of Bank
WQ-2 Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms
WQ-3 Assess Pump/Generator Set Operations and Maintenance
WQ-4 Handle Sediments so as to Minimize Water Quality Impacts
WQ-5 Avoid Runoff from Soil Stockpiles
WQ-6 Stabilize Construction Entrances and Exits
WQ-7 Prevent Erosion Downstream of Bank Protection Sites
WQ-9 Minimize Local Erosion Increase from In-channel Vegetation Removal
WQ-10 Evaluate and Select the Most Appropriate Use of Concrete Near Waterways
WQ-11 Use Coffer Dams for Tidal Work Areas
WQ-12 Divert/ Bypass Water at Non-tidal Sites
WQ-13 Minimize Hardscape in Bank Protection Design
WQ-14 Use Temporary Seeding for Erosion Control As Appropriate
WQ-15 Manage Groundwater At Work Sites
WQ-16 Avoid Erosion When Restoring Flows
WQ-17 Prevent Scour Downstream of Sediment Removal
WQ-18 Maintain Clean Conditions at Work Sites
WQ-40 Prevent Water Pollution
WQ-41 Prevent Stormwater Pollution
NO-1 Minimize Noise Pollution
NO-2 Minimize Disturbances to Residential Neighborhoods Due to Noise
TR-1 Use Suitable Public Safety Measures
UT-1 Manage Sanitary/Septic Waste

Stormwater Management BMP Suite

AQ-1 Use Basic Dust Control Measures for All Construction Sites
AQ-2 Use Enhanced Dust Control Measures For Sites Greater Than Four Acres in Size
AQ-3 Incorporate Additional Dust Control Measures, As Appropriate
BI-4 Minimize Waterway Access Impacts
BI-5 Remove Temporary Fills as Appropriate
HM-9 Clean Vehicles and Equipment
HM-10 Assure Proper Vehicle and Equipment Fueling
HM-11 Assure Proper Vehicle and Equipment Maintenance
HM-12 Assure Proper Hazardous Materials Management
HM-13 Prevent Spills
HM-14 Know the Spill Kit Location
WQ-1 Conduct Work from Top of Bank
WQ-2 Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms
WQ-3 Assess Pump/Generator Set Operations and Maintenance
WQ-4 Handle Sediments so as to Minimize Water Quality Impacts
WQ-5 Avoid Runoff from Soil Stockpiles
WQ-6 Stabilize Construction Entrances and Exits
WQ-7 Prevent Erosion Downstream of Bank Protection Sites
WQ-8 Minimize Sediment Transport Downstream from In-channel Herbicide Sites
WQ-10 Evaluate and Select the Most Appropriate Use of Concrete Near Waterways
WQ-11 Use Coffer Dams for Tidal Work Areas
WQ-12 Divert/ Bypass Water at Non-tidal Sites
WQ-14 Use Temporary Seeding for Erosion Control As Appropriate
WQ-15 Manage Groundwater At Work Sites
WQ-16 Avoid Erosion When Restoring Flows
WQ-18 Maintain Clean Conditions at Work Sites
WQ-19 Control Emergency Discharges
WQ-20 Control Unplanned Discharges
WQ-21 Control Sediment/ Turbidity for Discharges Less than 50 NTU
WQ-22 Control Sediment/ Turbidity for Discharge Greater than 50 NTU
WQ-23 Evaluate Use of Flow Path – Vegetation Filtration
WQ-24 Evaluate Use of Flow Path – Check Filters
WQ-25 Evaluate Use of On-Line Filter Systems
WQ-26 Evaluate Use of Silt Fence Culvert Entrance Protection
WQ-27 Evaluate Use of Surface Protection - Armoring
WQ-28 Evaluate Use of Surface Protection – Flow Diversion
WQ-29 Evaluate Use of Storm Drain Curb & Drop Inlet Protection
WQ-30 Evaluate Use of Discharging to Sanitary Sewer System
WQ-31 Control Small-Volume Chlorinated Discharges (less than or equal 50,000 gallons)
WQ-32 Control Medium-Volume Chlorinated Discharges (50,000 to 100,000 gallons)
WQ-33 Control Large-Volume Chlorinated Discharges (greater than 100,000 gallons)
WQ-34 Control Super-chlorinated Discharge (Chlorine Concentration greater than 1.5 mg/l [ppm])
WQ-35 Control Chemical Additives in Discharges of Less Than 1,000 Gallons
WQ-36 Control Chemical Additives in Discharges of More Than 1,000 Gallons
WQ-40 Prevent Water Pollution
WQ-41 Prevent Stormwater Pollution
UT-1 Manage Sanitary/Septic Waste

Discharge Activities BMP Suite

BI-3 Minimize Impacts to Steelhead
BI-4 Minimize Waterway Access Impacts
BI-8 Avoid Impacts to Nesting Migratory Birds
HM-10 Assure Proper Vehicle and Equipment Fueling
HM-11 Assure Proper Vehicle and Equipment Maintenance
HM-13 Prevent Spills
HM-14 Know the Spill Kit Location
WQ-3 Assess Pump/Generator Set Operations and Maintenance
WQ-4 Handle Sediments so as to Minimize Water Quality Impacts
WQ-6 Stabilize Construction Entrances and Exits
WQ-7 Prevent Erosion Downstream of Bank Protection Sites
WQ-8 Minimize Sediment Transport Downstream from In-channel Herbicide Sites
WQ-11 Use Coffer Dams for Tidal Work Areas
WQ-12 Divert/ Bypass Water at Non-tidal Sites
WQ-15 Manage Groundwater At Work Sites
WQ-18 Maintain Clean Conditions at Work Sites
WQ-19 Control Emergency Discharges
WQ-20 Control Unplanned Discharges
WQ-21 Control Sediment/ Turbidity for Discharges Less than 50 NTU
WQ-22 Control Sediment/ Turbidity for Discharge Greater than 50 NTU
WQ-23 Evaluate Use of Flow Path – Vegetation Filtration
WQ-24 Evaluate Use of Flow Path – Check Filters
WQ-25 Evaluate Use of On-Line Filter Systems
WQ-26 Evaluate Use of Silt Fence Culvert Entrance Protection
WQ-27 Evaluate Use of Surface Protection - Armoring
WQ-28 Evaluate Use of Surface Protection – Flow Diversion
WQ-29 Evaluate Use of Storm Drain Curb & Drop Inlet Protection
WQ-30 Evaluate Use of Discharging to Sanitary Sewer System
WQ-31 Control Small-Volume Chlorinated Discharges (less than or equal 50,000 gallons)
WQ-32 Control Medium-Volume Chlorinated Discharges (50,000 to 100,000 gallons)
WQ-33 Control Large-Volume Chlorinated Discharges (greater than 100,000 gallons)
WQ-34 Control Super-chlorinated Discharge (Chlorine Concentration greater than 1.5 mg/l [ppm])
WQ-35 Control Chemical Additives in Discharges of Less Than 1,000 Gallons
WQ-36 Control Chemical Additives in Discharges of More Than 1,000 Gallons
WQ-40 Prevent Water Pollution
WQ-41 Prevent Stormwater Pollution
NO-1 Minimize Noise Pollution
NO-2 Minimize Disturbances to Residential Neighborhoods Due to Noise
TR-1 Use Suitable Public Safety Measures

Grading and Excavation BMP Suite

AQ-1 Use Basic Dust Control Measures for All Construction Sites
AQ-2 Use Enhanced Dust Control Measures For Sites Greater Than Four Acres in Size
AQ-3 Incorporate Additional Dust Control Measures, As Appropriate
AQ-4 Avoid Stockpiling Potentially Odorous Materials
BI-2 Avoid and Minimize Impacts on Native Aquatic Vertebrates
BI-3 Minimize Impacts to Steelhead
BI-4 Minimize Waterway Access Impacts
BI-5 Remove Temporary Fills as Appropriate
BI-8 Avoid Impacts to Nesting Migratory Birds
BI-9 Use Exclusion Devices to Prevent Migratory Bird Nesting
CU-1 Review Projects with Native Soil
CU-2 Stop Work and Report Archaeological Finds
CU-3 Stop Work and Report Burial Finds
HM-9 Clean Vehicles and Equipment
HM-10 Assure Proper Vehicle and Equipment Fueling
HM-11 Assure Proper Vehicle and Equipment Maintenance
HM-12 Assure Proper Hazardous Materials Management
HM-13 Prevent Spills
HM-14 Know the Spill Kit Location
HM-15 Avoid Exposing Soils with High Mercury Levels
WQ-1 Conduct Work from Top of Bank
WQ-2 Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms
WQ-4 Handle Sediments so as to Minimize Water Quality Impacts
WQ-5 Avoid Runoff from Soil Stockpiles
WQ-6 Stabilize Construction Entrances and Exits
WQ-11 Use Coffer Dams for Tidal Work Areas
WQ-12 Divert/ Bypass Water at Non-tidal Sites
WQ-14 Use Temporary Seeding for Erosion Control As Appropriate
WQ-15 Manage Groundwater At Work Sites
WQ-18 Maintain Clean Conditions at Work Sites
WQ-26 Evaluate Use of Silt Fence Culvert Entrance Protection
WQ-29 Evaluate Use of Storm Drain Curb & Drop Inlet Protection
WQ-40 Prevent Water Pollution
WQ-41 Prevent Stormwater Pollution
NO-1 Minimize Noise Pollution
NO-2 Minimize Disturbances to Residential Neighborhoods Due to Noise
TR-1 Use Suitable Public Safety Measures
UT-1 Manage Sanitary/Septic Waste

Sediment Removal and Storage BMP Suite

AQ-1 Use Basic Dust Control Measures for All Construction Sites
AQ-2 Use Enhanced Dust Control Measures For Sites Greater Than Four Acres in Size
AQ-3 Incorporate Additional Dust Control Measures, As Appropriate
AQ-4 Avoid Stockpiling Potentially Odorous Materials
BI-1 Avoid Relocating Mitten Crabs
BI-2 Avoid and Minimize Impacts on Native Aquatic Vertebrates
BI-3 Minimize Impacts to Steelhead
BI-4 Minimize Waterway Access Impacts
BI-5 Remove Temporary Fills as Appropriate
BI-8 Avoid Impacts to Nesting Migratory Birds
BI-9 Use Exclusion Devices to Prevent Migratory Bird Nesting
HM-9 Clean Vehicles and Equipment
HM-10 Assure Proper Vehicle and Equipment Fueling
HM-11 Assure Proper Vehicle and Equipment Maintenance
HM-12 Assure Proper Hazardous Materials Management
HM-13 Prevent Spills
HM-14 Know the Spill Kit Location
HM-15 Avoid Exposing Soils with High Mercury Levels
WQ-1 Conduct Work from Top of Bank
WQ-2 Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms
WQ-3 Assess Pump/Generator Set Operations and Maintenance
WQ-4 Handle Sediments so as to Minimize Water Quality Impacts
WQ-5 Avoid Runoff from Soil Stockpiles
WQ-6 Stabilize Construction Entrances and Exits
WQ-11 Use Coffer Dams for Tidal Work Areas
WQ-12 Divert/ Bypass Water at Non-tidal Sites
WQ-14 Use Temporary Seeding for Erosion Control As Appropriate
WQ-15 Manage Groundwater At Work Sites
WQ-16 Avoid Erosion When Restoring Flows
WQ-17 Prevent Scour Downstream of Sediment Removal
WQ-18 Maintain Clean Conditions at Work Sites
WQ-26 Evaluate Use of Silt Fence Culvert Entrance Protection
WQ-29 Evaluate Use of Storm Drain Curb & Drop Inlet Protection
WQ-40 Prevent Water Pollution
WQ-41 Prevent Stormwater Pollution
NO-1 Minimize Noise Pollution
NO-2 Minimize Disturbances to Residential Neighborhoods Due to Noise
TR-1 Use Suitable Public Safety Measures
UT-1 Manage Sanitary/Septic Waste

Vegetation Management and Removal BMP Suite

BI-3 Minimize Impacts to Steelhead
BI-4 Minimize Waterway Access Impacts
BI-6 Minimize Adverse Effects of Pesticides on Non-target Species
BI-7 Avoid Secondary Poisoning from Rodenticide Use
BI-8 Avoid Impacts to Nesting Migratory Birds
BI-9 Use Exclusion Devices to Prevent Migratory Bird Nesting
BI-10 Minimize Impacts to Vegetation Whenever Clearing (or Trimming) is Necessary
HM-9 Clean Vehicles and Equipment
HM-10 Assure Proper Vehicle and Equipment Fueling
HM-11 Assure Proper Vehicle and Equipment Maintenance
HM-12 Assure Proper Hazardous Materials Management
HM-13 Prevent Spills
HM-14 Know the Spill Kit Location
WQ-1 Conduct Work from Top of Bank
WQ-2 Evaluate Use of Wheel and Track Mounted Vehicles in Stream Bottoms
WQ-6 Stabilize Construction Entrances and Exits
WQ-7 Prevent Erosion Downstream of Bank Protection Sites
WQ-9 Minimize Local Erosion Increase from In-channel Vegetation Removal
WQ-13 Minimize Hardscape in Bank Protection Design
WQ-14 Use Temporary Seeding for Erosion Control As Appropriate
WQ-18 Maintain Clean Conditions at Work Sites
NO-1 Minimize Noise Pollution
NO-2 Minimize Disturbances to Residential Neighborhoods Due to Noise
TR-1 Use Suitable Public Safety Measures
UT-1 Manage Sanitary/Septic Waste

Well and Exploratory Boring Construction, Modification, or Destruction BMP Suite

AQ-1 Use Basic Dust Control Measures for All Construction Sites
AQ-2 Use Enhanced Dust Control Measures For Sites Greater Than Four Acres in Size
AQ-3 Incorporate Additional Dust Control Measures, As Appropriate
BI-8 Avoid Impacts to Nesting Migratory Birds
HM-9 Clean Vehicles and Equipment
HM-10 Assure Proper Vehicle and Equipment Fueling
HM-11 Assure Proper Vehicle and Equipment Maintenance
HM-12 Assure Proper Hazardous Materials Management
HM-13 Prevent Spills
HM-14 Know the Spill Kit Location
WQ-5 Avoid Runoff from Soil Stockpiles
WQ-15 Manage Groundwater At Work Sites
WQ-18 Maintain Clean Conditions at Work Sites
WQ-37 Manage Well or Exploratory Boring Materials
WQ-38 Protect Well or Exploratory Borings from Contaminants
WQ-39 Backfill or Otherwise Destroy Exploratory Borings
WQ-40 Prevent Water Pollution
WQ-41 Prevent Stormwater Pollution
NO-1 Minimize Noise Pollution
NO-2 Minimize Disturbances to Residential Neighborhoods Due to Noise
TR-1 Use Suitable Public Safety Measures
UT-1 Manage Sanitary/Septic Waste

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