Attachment S&W - 52
Administrative Draft

San Francisco Electric Reliability Project

Construction Storm Water Pollution Prevention Plan

Prepared for

San Francisco Public Utility Commission

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SECTION 1

Introduction

1.1 Objectives

This Storm Water Pollution Prevention Plan[1] (SWPPP) was developed to address the new construction activity associated with the San Francisco Public Utilities Commission's (SFPUC) San Francisco Electrical Reliability Project (SFERP). As required by the State Water Resources Control Board (SWRCB), this SWPPP was developed and will be amended or revised, when necessary, to meet the following objectives:

- Identify all pollutant sources including sources of sediment that may affect the quality of storm water discharges associated with construction activity (storm water discharges) from the construction site;
- Identify non-storm water discharges;
- Identify, construct, implement, and maintain Best Management Practices (BMPs) to reduce or eliminate pollutants in storm water discharges and authorized non-storm water discharges from the construction site during construction, and
- Develop a maintenance schedule for BMPs installed during construction designed to reduce or eliminate pollutants after construction is completed (post-construction BMPs).

1.2 Project Overview

The City of San Francisco (City) is proposing to construct and operate a simple-cycle power plant, the San Francisco Electric Reliability Project (SFERP), in the City and County of San Francisco (CCSF) (Figure 1.1).

The SFERP will consist of a nominal 145-megawatt (MW) simple-cycle plant, using three natural gas-fired LM 6000 gas turbines and associated infrastructure. The project site is located adjacent to the San Francisco Bay in the Potrero District of San Francisco, within the existing site for the Potrero Power Plant (Potrero PP), formerly owned by PG&E and now

[1] In 1972, the Federal Water Pollution Control Act (also referred to as the Clean Water Act [CWA]) was amended to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with a National Pollution Discharge Elimination System (NPDES) permit. The 1987 amendments to the CWA added Section 402(p), which established a framework for regulating municipal and industrial storm water discharges under the NPDES Program. On November 16, 1990, the U.S. Environmental Protection Agency (USEPA) published final regulations that establish storm water permit application requirements for specified categories of industries. The regulations provide that discharges of storm water to waters of the United States from construction projects that encompass five (5) or more acres of soil disturbance are effectively prohibited unless the discharge is in compliance with an NPDES Permit. While federal regulations allow two permitting options for storm water discharges (individual permits and General Permits), the California State Water Resources Control Board elected to adopt only one statewide General Permit that (with few exceptions) apply to all storm water discharges associated with construction activity, upon submittal of a Notice of Intent to comply, certain fees and a Stormwater Pollution Prevention Plan. The SWPPP must be kept onsite during construction and made available upon request by a representative of the Regional Water Quality Control Board or local agency.

owned and operated by Mirant Potrero, LLC. The SFERP will be located on a 4.5-acre portion of the previously proposed Mirant Unit 7 site (Figure 1.2).

The project will include the construction of a new air-insulated 115-kilovolt (kV) switchyard on the west side of the site. A pipeline tie-in will be made to an existing PG&E San Francisco natural gas load center located adjacent to the PG&E Potrero Substation. Process water for the project would be obtained via a water pump station (WPS) located on Marin Street near Cesar Chavez Avenue to a new recycled water system located on the southern portion of the project site, adjacent to 23rd Street (Figure 1.3).

Electrical generation will be at 13.8 kV, which will be stepped up with 115-kV step-up transformers. The transmission line will interconnect the facility with PG&E's existing 115-kV Potrero Substation located adjacent to the plant site on its western boundary. A new overhead transmission line will interconnect the adjacent PG&E substation to the plant switchyard (Figure 1.4).

Natural gas for the facility will be delivered through a new 250-foot-long, 12-inch-diameter (or less) pipeline that will connect to PG&E's San Francisco Load Center, which is located on the western portion of the PG&E Potrero Substation. This service will be connected to a booster compressor station that will be part of the SFERP facility.

The City will provide combined sanitary effluent from the WPS to the SFERP for onsite treatment. The WPS will be located in an existing combined sewer system structure and will include three variable frequency drive pumps (two operational and one standby). A one-mile long pipeline will connect the WPS and the SFERP's onsite treatment system. The mile-long pipeline consists of two parts. Approximately 1,300 feet of the pipeline will be installed within an existing collection box. The remaining portion will be new construction (Figure 1.2). The onsite treatment system will be designed to produce Title 22 quality recycled water.

Plant wastewater and reject water from the SFERP wastewater treatment system will be discharged into the City's combined sewer system, which routes the waste to the City of San Francisco Southeast Water Pollution Control Plant (SEWPCP).

Stormwater will be collected onsite during operations and will be directed to existing manholes in the combined sewer system.

The plant's design will incorporate air pollution emission controls designed to meet the stringent standards required by the State and the Bay Area Air Quality Management District. These controls will include water injection for the combustion turbines, a selective catalytic reduction system (SCR) to control oxides of nitrogen emissions, and an oxidation catalyst system to control carbon monoxide and precursor organic compound emissions (Figure 1.5).

Site access will be provided via existing access roads located at the southern (23rd Street) and northern (Humboldt Street) sides of the Potrero PP. The plant will be accessed from 23rd Street via Illinois Street, with vicinity access via Interstate 280 (I-280).

Property for SFERP is approximately 4.5 acres. The City is in negotiations with Mirant for an option to purchase the property. Additional information on ownership and location is presented in Section 1.3.

1.3 Project Ownership

The power plant and transmission lines will be owned and operated by CCSF. Consistent with PG&E practice and California Public Utilities Commission (CPUC) law and regulation, the natural gas pipeline will be owned by PG&E. The potable water and process water lines will be owned by CCSF. The legal description of the parcels is provided in Appendix A.

Parcel numbers and names of the landowners within 1,000 feet of the site and within 500 feet of the linear corridors are included in Appendix B.

The initial capital cost of the SFERP is estimated to be $140 million. The estimated value of materials and supplies that will be purchased locally (within San Francisco) during demolition/construction is between $2 and $3 million.

1.4 Implementation Schedule

Construction of the generating facility—from demolition (if applicable), site preparation and grading, to commercial operation—is expected to take approximately 12 to 14 months. Major milestones are listed in Table 1.4-1.

TABLE 1.4-1
Project Schedule Major Milestones

Activity	Date
Begin /Demolition	Second Quarter 2005
Startup and Test	Second Quarter 2006
Commercial Operation	Second Quarter 2006

The site will be accessed for construction via the Potrero PP access road (i.e., Humboldt Street) and 23rd Street. The workforce on the project during construction will be approximately 250 people, including construction craft persons and supervisory, support, and construction management personnel.

Normal construction will be scheduled between 7 a.m. and 8 p.m., Monday through Friday. During construction and startup of the project, some activities may continue 24 hours per day, 7 days per week.

The construction phases of the SFERP as they pertain to storm water management are expected to be as follows:

- **Preparation**—Parking areas for construction workers and lay down areas for construction materials will be prepared. Site access for construction and maintenance will be provided via existing access roads located at the southern (23rd Street) and northern (Humboldt Street) sides of the Potrero PP. A stabilized construction access road and entrance/exit will be provided to clean vehicle wheels. The construction laydown and parking areas will be covered with crushed rock. Any debris found during preparation on the project site will be removed and properly disposed.

- **Site Grading—** Prior to use as the construction laydown area, no grading will be necessary since the site is flat and currently drains to either the Port's storm water system (which drains to the Bay) or percolates into the ground. However, the site will be graveled to provide all weather use and further minimize soil erosion potential. Heavy equipment stored onsite will be placed on dunnage to protect it from ground moisture. Once construction is completed, the gravel will either be removed from the site or left in place at the discretion of the Port Authority.

  The overall site grading scheme will be designed to route surface water around and away from all equipment and buildings. Transmission line construction will consist of site clearing and preparation (removing vegetation, trenching, and minor leveling) at all locations where equipment will be installed.

- **Foundation—**All underground piping and wiring will be installed, followed by installation of the foundation for the new power plant and associated structures. During this time, storm water on paved or impervious areas of the site will be routed via storm drains and underground piping to the existing combined storm water/sewer system.

- **Plant Construction—**During plant construction, all storm water will continue to be directed to the existing combined storm water/sewer system.

- **Site Stabilization—**Permanent storm water management fixtures will replace any temporary items.

- **Demobilization—**All temporary construction facilities will be removed. Storm water controls planned in the operational SWPPP will then be in effect.

A Notice of Intent (NOI) to comply with the terms of the General Permit To Discharge Storm Water associated with Construction Activity will be prepared and submitted prior to the commencement of construction (Appendix C). Any necessary revisions to the SWPPP will be prepared in a timely manner. The SWPPP will be amended whenever there is a change in construction or operations that may affect the discharge status of pollutants. Once construction activities have been concluded, a Notice of Termination will be submitted to the Regional Board and this Construction SWPPP will no longer be in effect. Storm water for the SFERP will then be managed under the facility's Industrial SWPPP.

1.5 Plan Availability

The SWPPP will remain on the construction site while the project is under construction during working hours, commencing with the initial construction activity and ending with termination of coverage under the General Permit. A copy of the California General Permit will also be maintained on the construction site. The SWPPP will be provided to the Regional Board upon request, and be made available to the public only through the Regional Board.

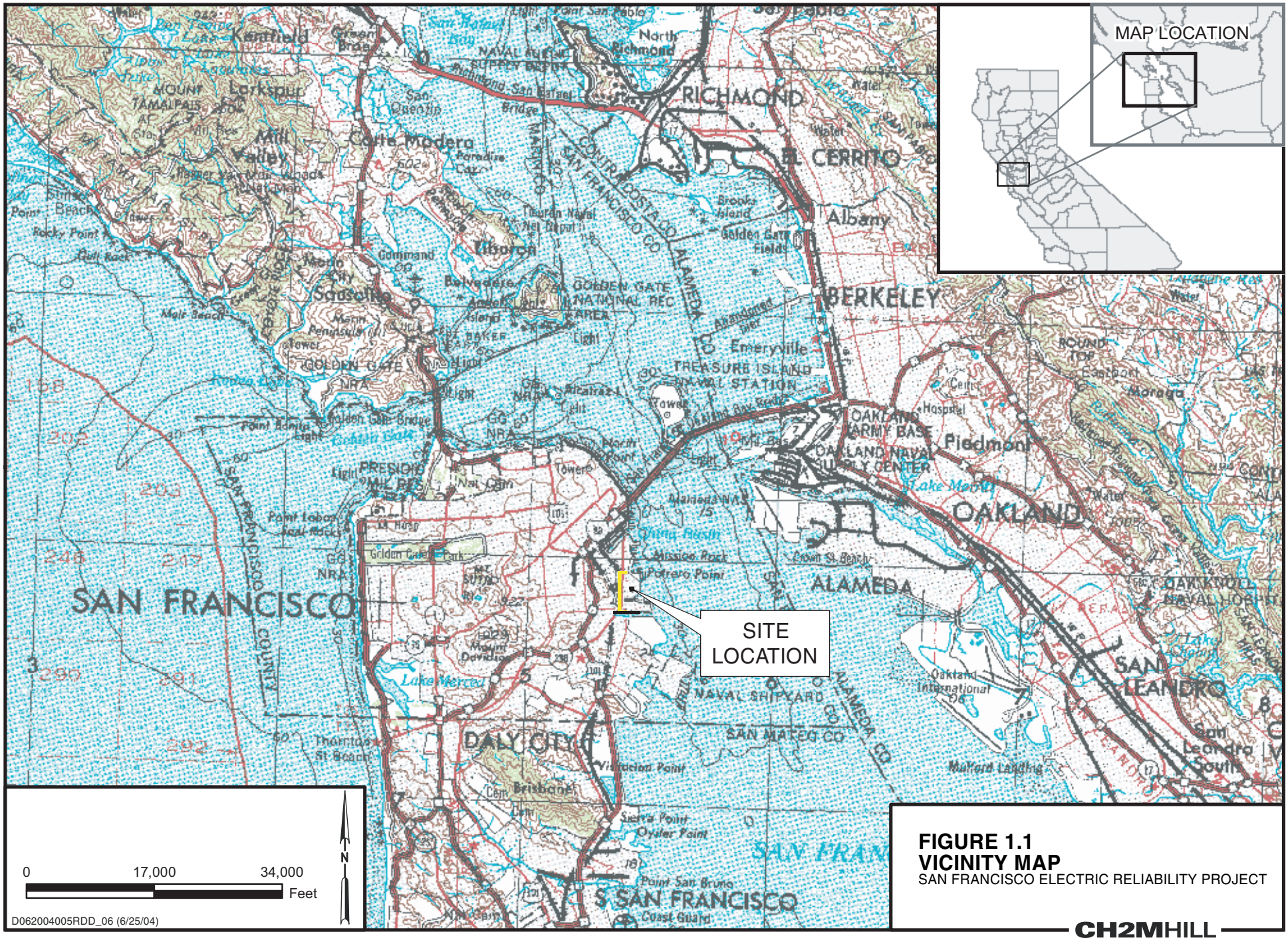

FIGURE 1.1
VICINITY MAP
SAN FRANCISCO ELECTRIC RELIABILITY PROJECT

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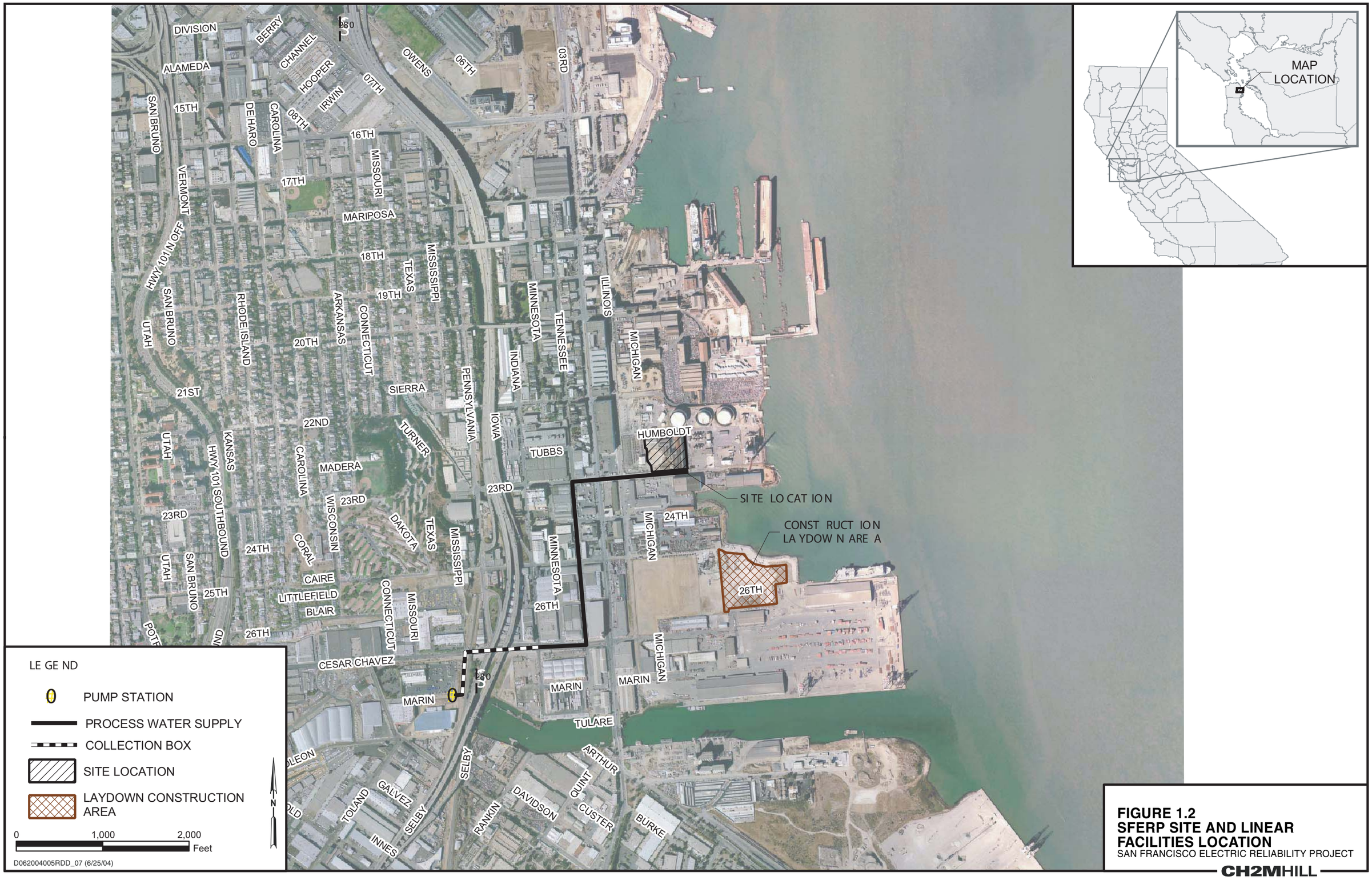

FIGURE 1.2
SFERP SITE AND LINEAR FACILITIES LOCATION
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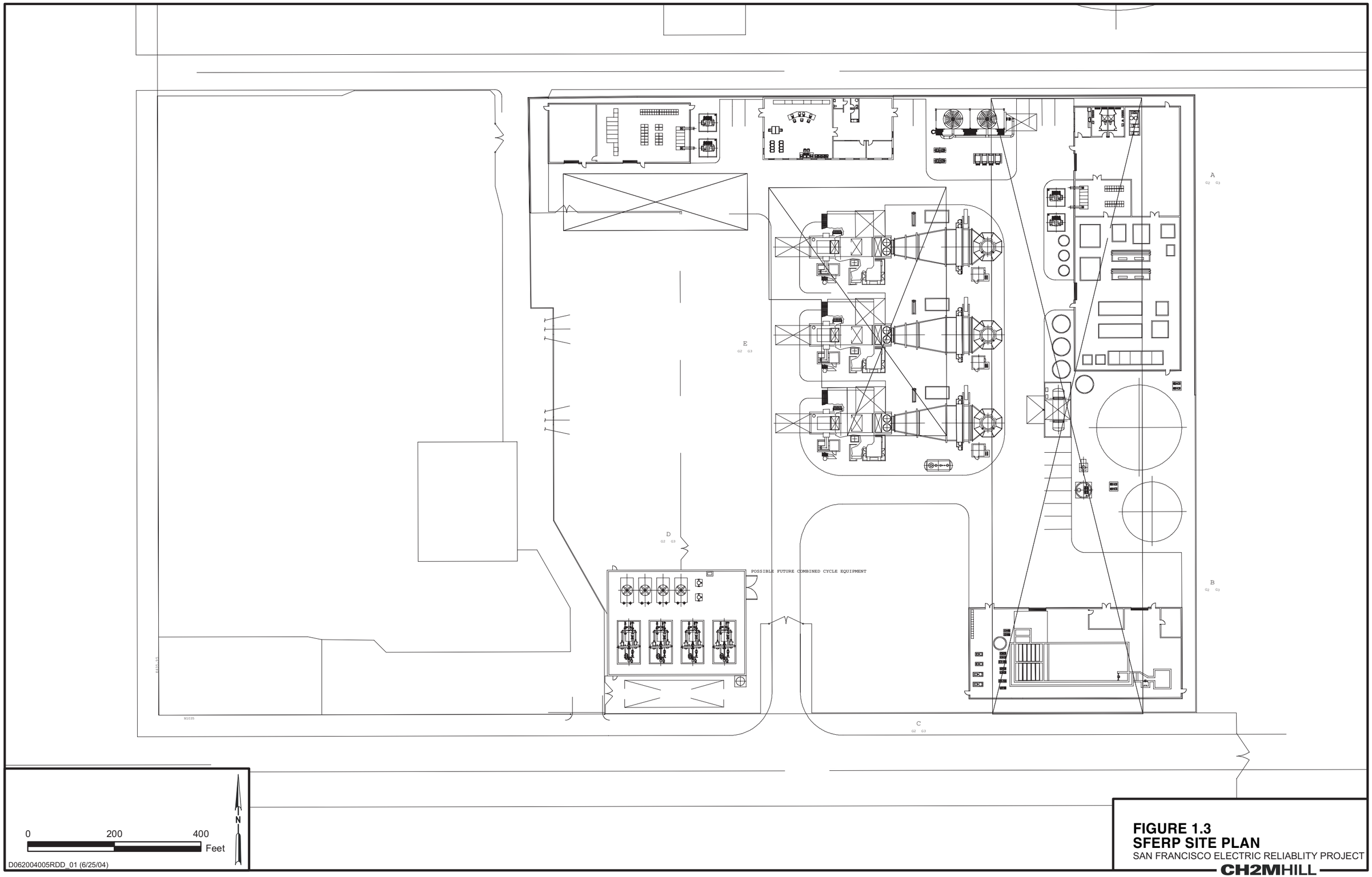

FIGURE 1.3
SFERP SITE PLAN
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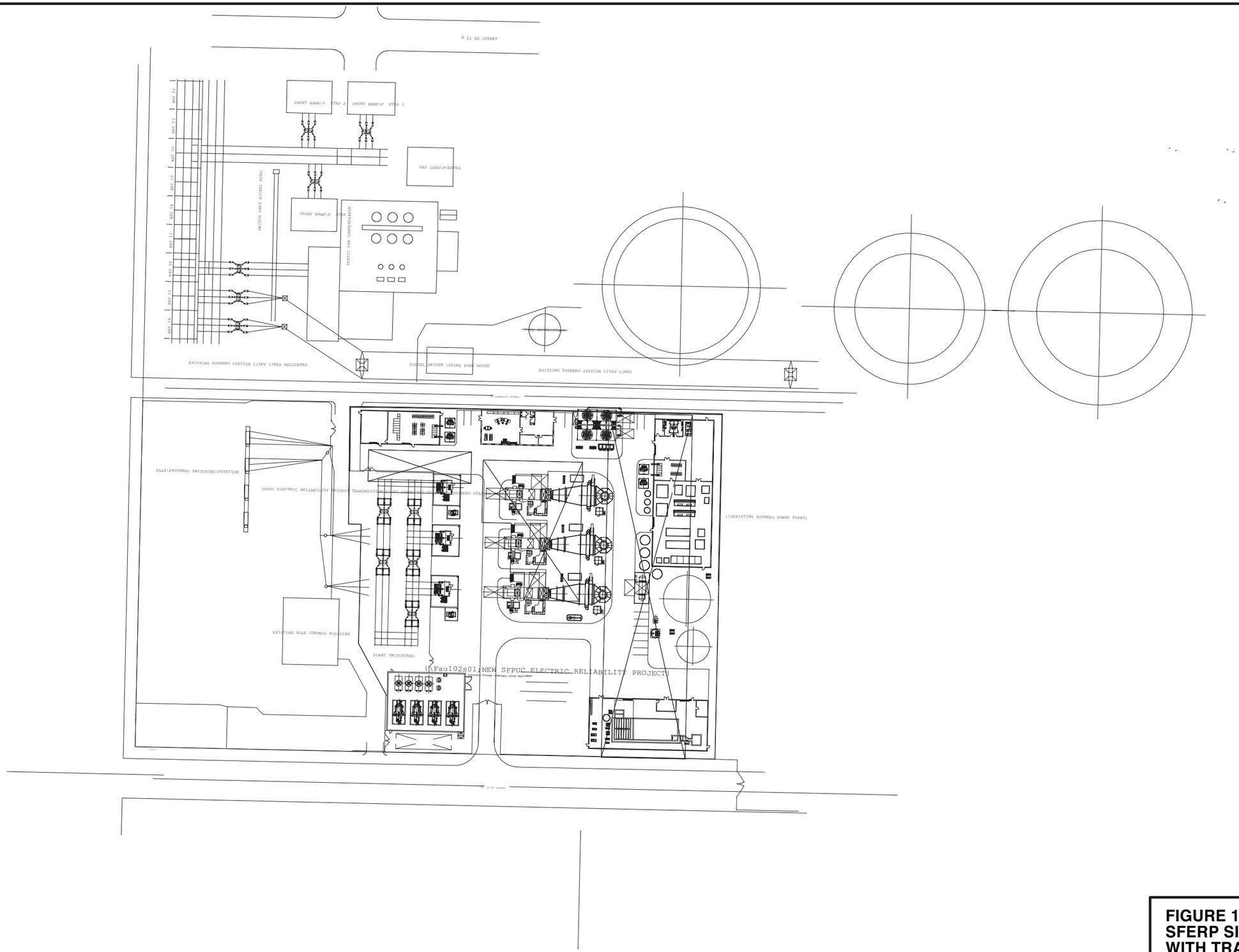

FIGURE 1.4
SFERP SITE PLAN
WITH TRANSMISSION LINES
SAN FRANCISCO ELECTRIC RELIABLITY PROJECT

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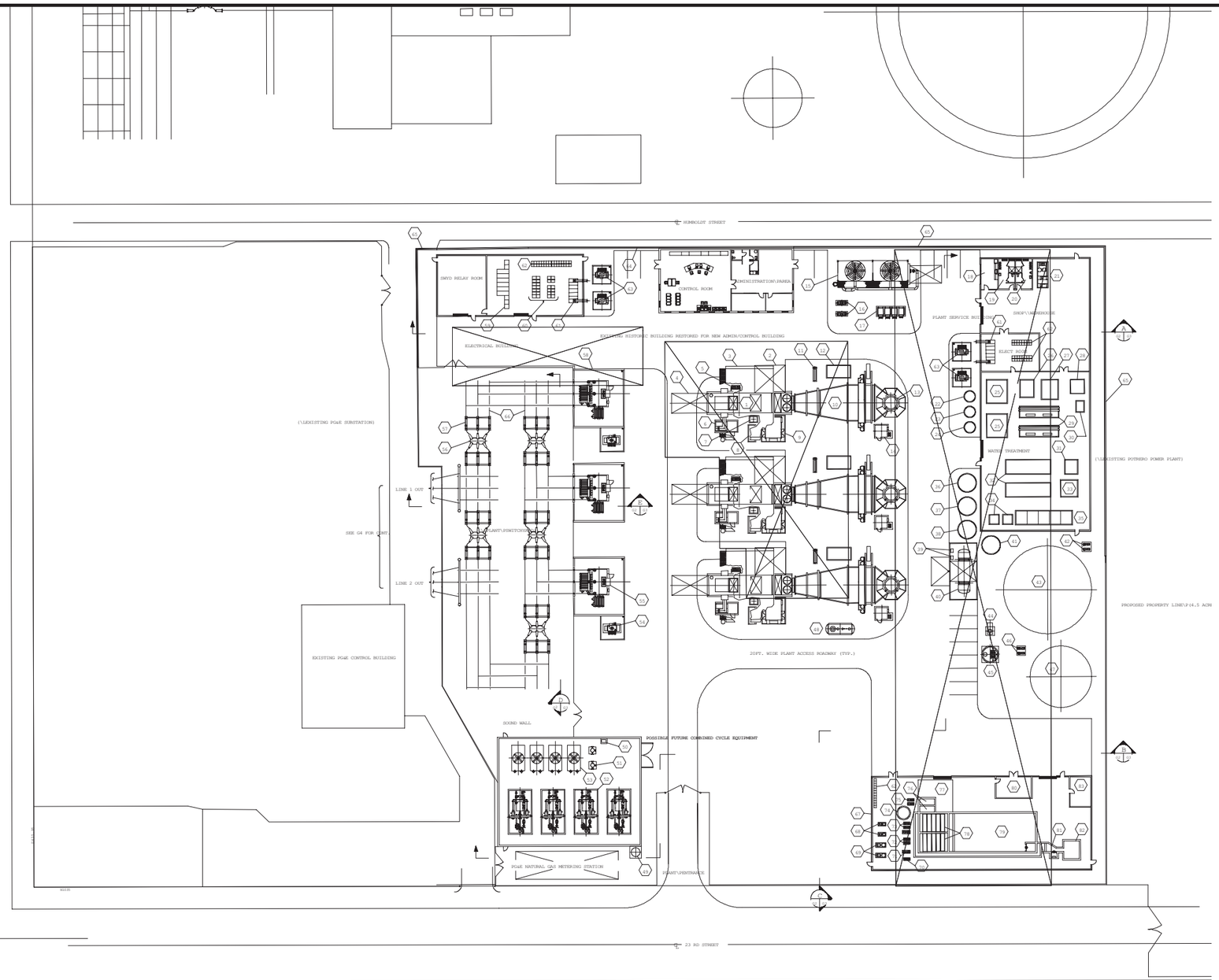

LEGEND:

1. LM6000 COMBUSTION TURBINE GENERATOR
2. TURBINE REMOVAL/MAINTENANCE AREA
3. CTG AIR INTAKE FILTER SYSTEM
4. GENERATOR ROTOR REMOVAL AREA
5. CTG FIRE PROTECTION SKID
6. GENERATOR BREAKER SWITCHGEAR
7. SPRINT SYSTEM SKID
8. NOx WATER INJECTION SKID
9. AUXILIARY SKID
10. SCR/CO CATALYST SYSTEM
11. AMMONIA FLOW BALANCE SKID
12. AMMONIA VAPORIZATION SKID
13. STACK
14. CEMS
15. DUPLEX CHILLER/COOLING TOWER PACKAGE
16. AUXILIARY COOLING PUMPS
17. COOLING TOWER CHEMICAL SYSTEM
18. LUNCH/BREAK ROOM
19. MEN'S LOCKERS/SHOWERS
20. WOMEN'S LOCKERS/SHOWERS
21. PLANT AIR COMPRESSOR PACKAGE
22. BULK CAUSTIC STORAGE (IF REQUIRED)
23. BULK ACID STORAGE (IF REQUIRED)
24. BULK SODIUM HYPOCHLORITE TANK
25. EDI TRAIN
26. EDI FEED PUMP SKID
27. RO CLEAN IN PLACE SKID
28. RO FEED PUMP SKID
29. RO TRAINS
30. RO CARTRIDGE FILTERS
31. ULTRA FILTRATION SYSTEM WASTE SKID
32. ULTRA FILTRATION SYSTEM TRAINS
33. ULTRA FILTRATION SYSTEM PUMP SKID
34. AIR BLOWERS
35. CHEMICAL METERING SYSTEMS
36. EQUALIZATION TANK
37. BIO REACTOR
38. ULTRA FILTRATION PERMEATE TANK
39. AQUEOUS AMMONIA FORWARDING PUMPS
40. AQUEOUS AMMONIA STORAGE TANK
41. RO PERMEATE TANK
42. TREATED WATER PUMPS
43. TREATED WATER STORAGE TANK
44. OIL/WATER SEPARATOR (UG)
45. WASTE WATER SUMP AND LIFT STATION
46. DI WATER PUMPS
47. DI WATER STORAGE TANK
48. TURBINE WASH WATER DRAIN TANK (UG)
49. NATURAL GAS INLET SCRUBBER
50. HYDROCARBON DRAIN TANK
51. DISCHARGE FILTER SCRUBBER (TYP. 2)
52. FUEL GAS COMPRESSOR (TYP. 4)
53. FUEL GAS COOLING RADIATOR (TYP.4)
54. 13.8kV/115KV GSU (TYP. 4)
55. 5KV AUXILIARY TRANSFORMER (TYP. 2)
56. 115 kV BREAKER (TYP.5)
57. 115kV SWITCH (TYP. 10)
58. FIRE/BLAST WALL (TYP.)
59. 5kV SWITCHGEAR
60. BATTERIES
61. 480V SWITCHGEAR
62. 480V MCC'S
63. 480V STATION SERVICE TRANSFORMERS
64. EXISTING RETAINING WALL
65. **NEW RETAINING WALL**
66. SWITCHYARD BUSWORK
67. RECLAIMED WATER TREATMENT BLDG
68. SUPLEMENTAL AERATION BLOWERS
69. MEMBRANE AIR SCOUR BLOWERS
70. DRAIN PUMP
71. PERMEATE PUMP (TYP. 2)
72. MIXED LIQUOR RECIRCULATION PUMPS
73. CIP/BACKPULSE PUMPS
74. CIP/BACKPULSE TANK
75. DIP TANK RECIRC/DRAIN PUMPS
76. DIP TANKS
77. CASSETTE LAYDOWN AREA
78. MEMBRANE TANKS
79. AEROBIC ZONE
80. CHEMICAL FEED/STORAGE ROOM
81. FEED CHANNEL
82. COMBINED INLET SYSTEM
83. OFFICE/CONTROL ROOM

0 75 150 Feet

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FIGURE 1.5
SFERP SCHEMATIC ARRANGEMENT OF PLANT
SAN FRANCISCO ELECTRIC RELIABILITY PROJECT

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SECTION 2

Site Description

2.1 Site Description and Project Activity

Approximately 4.5 fenced acres will be required to accommodate the generation facilities. The construction laydown area will be approximately 10 acres, located on land leased from the Port of San Francisco. The laydown area is located between 25th and Cesar Chavez streets, and Water Front and Georgia Streets (see Figure 1.2).

The plant site is currently part of the Potrero PP with numerous abandoned power plant buildings. The power plant equipment has been removed from the buildings and two of the three buildings located on the proposed site are no longer structurally sound. The timing and responsibility for the demolition of these structures is uncertain at this time. However, the City has included the impacts from the demolition of two of these structures and retrofitting of the other in this assessment in order to present the worst-case impacts associated with the project.

The selected contractor will prepare site maps showing the construction project in detail once a final design has been established. Site conditions, including paved areas, buildings, lots and roadways, general topography and drainage patterns for storm water collection will be shown for the following phases of construction:

- **Existing Site Topography**—Once the grading plan is finalized and site is re-graded, topography maps for the site will be provided.
- **Conceptual Rough Grading**—A plan with figures for Interim Grading and Erosion Control will be prepared. It will show the temporary on-site drainage patterns to be established by the rough grading of the project site, as well as any necessary erosion control features.
- **Stabilized Site**—A Detailed Finish Grading and Drainage Plan with figures will be prepared showing the final conditions of the site as constructed.
- **Finished Project**—A Conceptual Image of the SFERP Site (Figure 2.1) shows the completed Generating Facility.

2.2 Vegetation and Soils

The proposed 4.5-acre SFERP site is located in southeast San Francisco within an urban area along the western shore of the San Francisco Bay (the Bay). The site is bounded on the west by an industrial property along Illinois Street, on the north by Humbolt Street, on the east by the Potrero Power Plant, and on the south by 23rd Street. Surrounding land uses are composed of mixed light and heavy industrial and commercial properties (Figure 2.2-1). Businesses in the surrounding area include shipping and dry dock facilities, warehouses, manufacturing, and various small commercial businesses. Historically, the SFERP site has been used for barrel manufacture (Geomatrix Consultants, Inc., 2000) and surrounding properties have been (or are

FIGURE 2.1
CONCEPTUAL IMAGE OF SFERP SITE
SAN FRANCISCO ELECTRIC RELIABILITY PROJECT

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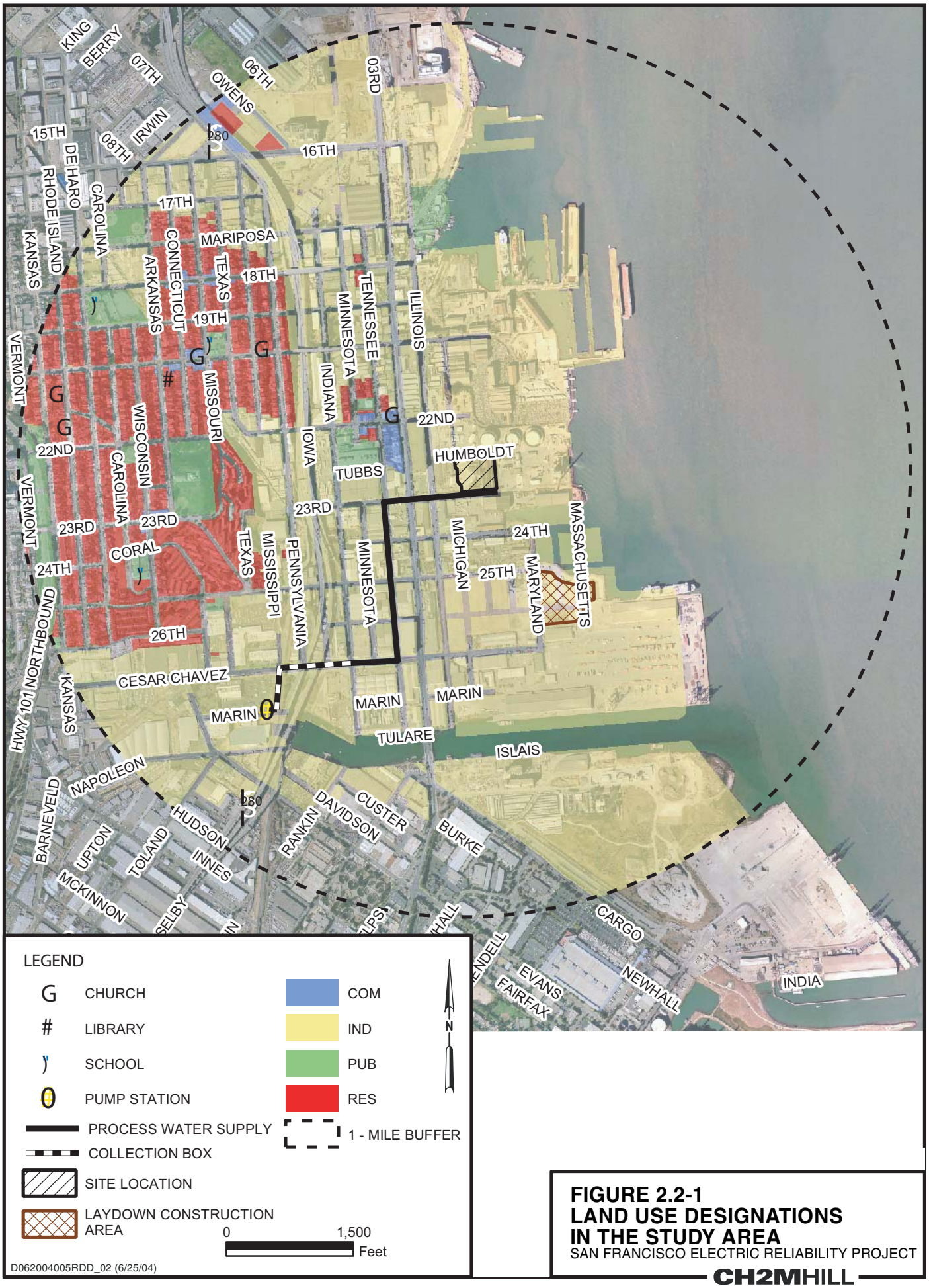

FIGURE 2.2-1
LAND USE DESIGNATIONS IN THE STUDY AREA
SAN FRANCISCO ELECTRIC RELIABILITY PROJECT

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currently) used for barrel manufacture, fuel storage tank facilities, steel and iron fabrication, manufactured gas plant facilities, railroad facilities, and a sugar refinery (Geomatrix Consultants, Inc., 2000).

There are no agricultural land uses within the proposed SFERP site or vicinity. The gas and electrical connections will be made to existing facilities adjacent to the SFERP site and the proposed process water pipeline will follow existing roadways and rights-of-way.

Soil survey mapping units characterizing the types and distribution of soils within the project area, as shown on Figure 2.2-2, are taken from *Soil Survey of San Mateo County, Eastern Part, and San Francisco County, California* (NRCS, 1991). The electronic shape files for these mapping units were downloaded from the NRCS website. Detailed soil descriptions were developed from the soil survey publication (NRCS, 1991).

Data for the affected environment are summarized and presented below:

- Soil types for the project site and along the project water supply pipeline are identified in Figure 2.2-2.
- Table 2.2-1 summarizes the characteristics of each of the individual soil mapping units identified on Figure 2.2-2 in the project vicinity, including the site boundaries and the project's linear facilities. The table summarizes depth, texture, drainage, permeability, erosion hazard rating, land capability classification, and fertility as an indicator of its revegetation potential.
- There are no soil series designated as "Prime Farmland" (or Farmland of Statewide Importance) among the soils listed in Table 2.2-1.

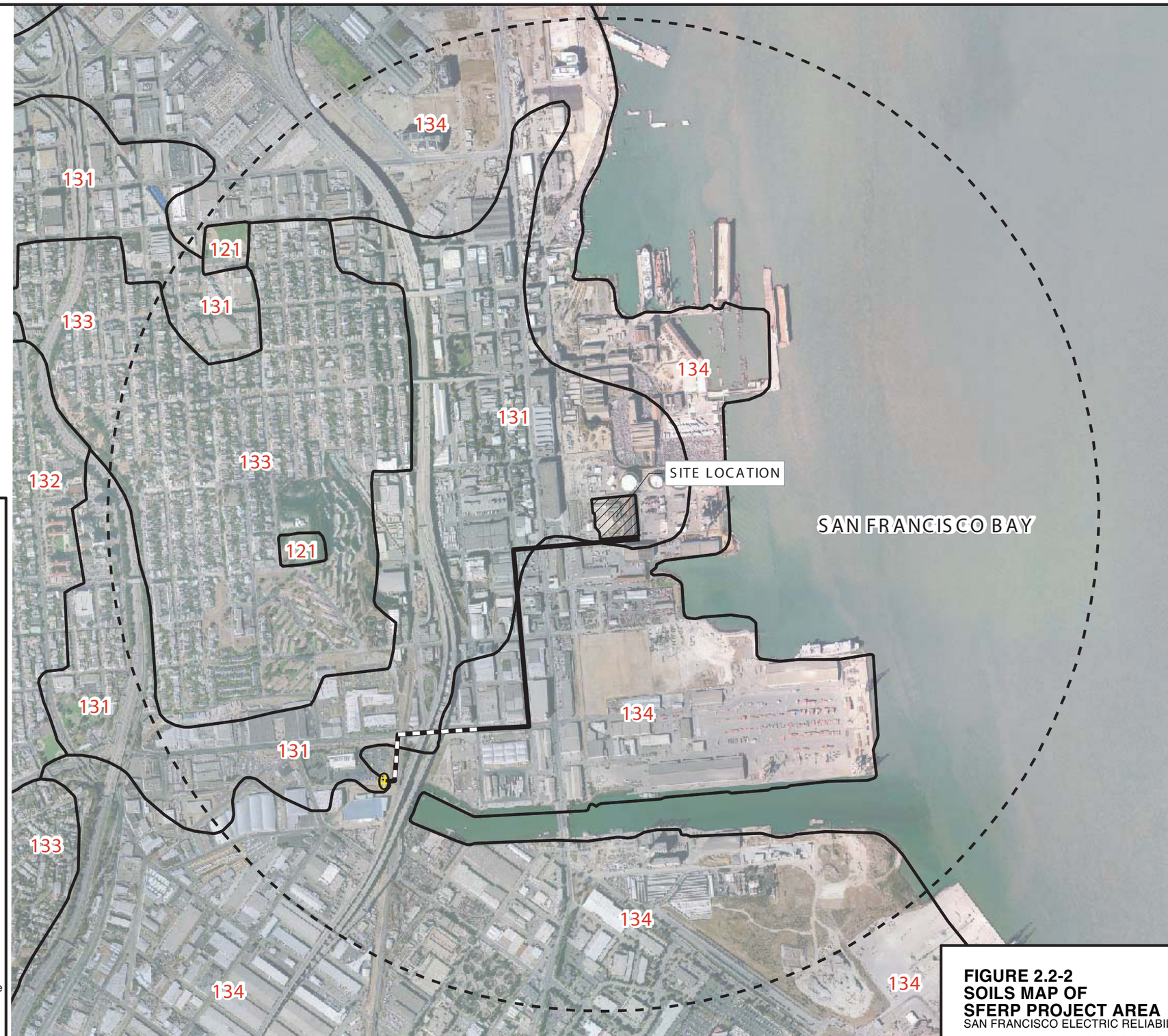
2.2.1 Agricultural Use on and around the Proposed SFERP Site

A review of the aerial photograph base map, provided in the soil survey (NRCS, 1991), confirmed that the site and surrounding areas are not used to support livestock or agricultural production. The soils mapped at the SFERP and surrounding areas are indicated to be of the soil capability subclass VIII, essentially unsuitable to commercial crop production. None of the mapped soil units in the areas are associated with prime agricultural land.

The Farmland Mapping and Monitoring Program (FMMP) of the California Department of Conservation (CDC) does not provide any statistics on conversion of farmland to non-agricultural uses for San Francisco County where the SFERP site is located (CDC, 2003). A review of the "Important Farmlands" mapping by the FMMP shows the project site and surrounding areas to be designated as "Urban and Built-Up Land."

2.2.2 Agricultural Use along the SFERP Linear Features

The proposed SFERP project will have gas and transmission line connections located adjacent to the proposed SFERP site. Similarly, potable water needs will be met with existing potable water supply lines adjacent to the site. The process water supply for the SFERP project will be pumped from a water pumping station through a conveyance pipeline that will bring the wastewater to the SFERP site where it will be treated for use in an onsite treatment plant. The process water pipeline will be constructed within the rights-of-way



LEGEND

121	Orthents, cut and fill, 0 to 15 percent slopes
131	[131] - Urban land, 0 to 30 percent slopes
132	[132] - Urban land-Orthents, cut and fill complex, 0 to 5 percent slopes
133	[133] - Urban land-Orthents, cut and fill complex, 5 to 75 percent slopes
134	[134] - Urban land-Orthents, reclaimed complex, 0 to 2 percent slopes

PUMP STATION

PROCESS WATER SUPPLY

COLLECTION BOX

SITE LOCATION

1-MILE BUFFER

0 1,100 Feet

N

Source:
1. Base map is from aerial photograph, 2002 from AIRPHOTO, USA.
2. Soil mapping units are from Natural Resource Conservation Service (NRCS), 1991.

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FIGURE 2.2-2
SOILS MAP OF
SFERP PROJECT AREA
SAN FRANCISCO ELECTRIC RELIABILITY PROJECT

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from the southern boundary of the SFERP site, west along 23rd Street, south along Tennessee Street, west along Cesar Chavez, and south along the Southern Pacific Railroad (SPRR) alignment to Marin Street. Therefore, the SFERP linear features will have no impact on agricultural land uses.

2.2.3 Soil Types within the Study Area and Prime Farmlands

Table 2.2-1 provides a description of the properties of the soil mapping units that are found in the vicinity of the proposed SFERP site and along the proposed process water route. As indicated, the soil mapping units in the project area are associated with urban land and Orthents (i.e., young soils) with wide-ranging slope classes and low capability to support commercial crop production (soil capability class VIII). The proposed SFERP project will not affect any Prime Farmlands or other important farmlands. In fact, the project will not affect any lands used for agricultural production.

TABLE 2.2-1
Soil Mapping Unit Descriptions and Characteristics

Map Unit	Description
131	Urban Land—Slope Class (0 to 5 percent typical, but may range from 0 to 30 percent)
	This map unit features areas where more than 85 percent of the surface is covered by paving, buildings, and other structures, typically at slopes of 0 to 5 percent. This map unit is classified as soil capability class VIII. This soil capability class corresponds to the lowest ranking suitability for field crops because soil limitations essentially preclude its use for commercial crop production. The soils at the SFERP and surrounding areas are not used for crop production.
	Urban soils are typically regraded, native soils with some amounts of fill. Given that the native soils likely derived from the underlying surficial geologic formations, which are mapped as serpentinized, ultramafic rock (Wagner et al., 1991), there is a potential for some of these soils to contain natural forms of asbestos.
134	Urban Land—Orthents, Reclaimed Complex—Slope Class (0 to 2 percent)
	This map unit includes areas that were once part of San Francisco Bay and adjacent tidal flats. It is about 65 percent urban land and 30 percent Orthents, reclaimed. Orthents consist of soils that have been filled and vary greatly in texture, including soil, gravel, concrete and asphalt rubble, solid wastes, and Bay Mud. They are very deep and can be poorly to somewhat poorly drained. The highly variable soil characteristics are related to the differences and amount of fill material used. Some areas have a permanent high water table at a depth of 30 to 60 inches because of fluctuating tides. Runoff is slow and the hazard of water erosion is low. The map unit is in capability class VIII and, as mentioned above, this soil capability class has limitations that essentially preclude its use for commercial crop production.
	The main limitations of these soils are a high water table, potential for subsidence and low fertility. These soil mapping units have highly variable soil properties related to the type and quality of fill used.
132	Urban Land—Orthents, Cut and Fill Complex—Slope Class (0 to 5 percent)*
133	Urban Land—Orthents, Cut and Fill Complex—Slope Class (5 to 75 percent)*

Notes:

Soil characteristics are based on soil mapping provided in the published soil survey (NRCS, 1991) and are limited to those mapped in the vicinity of the SFERP project.

* These soil units comprise the majority of the area moving westward (inland) from the SFERP area and consist primarily of urban land and Orthents (i.e., young soils) complexes, as listed below. The soils are similar to the soil mapping unit 131 in that regraded soils often derive from the in-place, native soils, which are not mapped. Because these soils are outside of the proposed SFERP area and not associated with important farmlands or wetland areas, they are not described in detail.

2.3 Hydrology

Most of the precipitation in the project area falls between November through April. Monthly average rainfall in the San Francisco area near the project site is presented in Table 2.3-1. The total annual average rainfall in San Francisco is approximately 21 inches.

TABLE 2.3-1
Average Monthly Rainfall in the Proposed Project Area (San Francisco) 1961-1990

Precipitation	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Rainfall (in.)	4.3	3.2	4.0	1.4	0.2	0.1	0.0	0.1	0.2	1.2	2.8	3.1

2.4 Estimated Total Site Area and Total Disturbed Area

The following shows the estimated areas disturbed during project construction:

Total Area	14.5 acres
Generating Facility	4.5 acres
Equipment Laydown Area and Construction Parking	10.0 acres

2.5 Existing Drainage

Nearly all freshwater flow to the Bay and stormwater runoff from the east side of San Francisco, including the project site, has been diverted to the City's combined sewer system. The 4.5-acre project site is currently 100 percent impervious surfaces, and all drainage from the site flows to the City's combined sewer system. As described earlier, the City is almost entirely served by a combined sewer system, which collects and transports both wastewater (sewage and industrial discharges) and stormwater runoff in the same set of pipes. During dry weather, wastewater flows consist mainly of municipal (also referred to as sanitary sewage) and industrial wastewater. Dry weather flows to the combined sewer system along the east side of the City are transported to the Southeast Water Pollution Control Plant (SEWPCP) on Phelps Street, about 0.75 mile southwest of the project site, for treatment and subsequent discharge to the Bay through the deep water outfall at Pier 80 (east of the project site). During wet weather, the volume of wastewater in the City's combined sewer system greatly increases when stormwater runoff mixes with the municipal and industrial wastewater. The wet weather flows are either treated at the SEWPCP or wet weather treatment facilities, or retained in storage and transport boxes for later treatment. Treated wastewater is discharged to the Bay through various outfalls and overflow structures in compliance with an NPDES permit from the California Regional Water Quality Control Board (RWQCB, 2002).

The project site is located at an elevation of approximately 26 feet above mean sea level and more than 1,000 feet from the shoreline. The 100-year tide elevation, including the effect of wind-generated wave runup at MHHW (MHHW = mean higher high water, or the average level of the higher of the two daily high tides) is 13.0 feet above mean sea level (Mirant, 2000).

Based on this, the potential for flooding at the project site is low. This is consistent with the San Francisco Community Safety Element, which indicates that there are no areas prone to surface flooding in San Francisco (San Francisco Planning Department, Community Safety Element, 1995).

2.6 Proposed Drainage

Implementation of the project will not alter existing drainage patterns. The project site is currently covered by 100 percent impervious surfaces and drains to the City's combined sewer system. Drainage will continue unchanged under the proposed SFERP. The SFERP drainage facilities would include two stormwater catch basins on the south side of the site that would be connected to an existing sewer line in 23rd Street. Ultimate drainage of stormwater will continue to be discharged to the combined sewer system, and be subsequently discharged to San Francisco Bay through an existing outfall or overflow structure pursuant to the City's NPDES permit. There will be no change in volume of stormwater originating from the project site.

During construction, the Applicant will be required to develop and submit for review to the City, Bureau of Environmental Regulation and Management, an erosion and sediment control plan to prevent the off-site migration of sediment and other pollutants and to reduce the effects of runoff from the construction site to the combined sewer system on the plant site and on the laydown site where surface water run off drains directly to the Port's storm water system which drains to the Bay. The City will conduct periodic inspections to ensure compliance with the erosion and sediment control plan. During operation of the SFERP, discharges to the combined sewer system, including stormwater runoff, will be subject to the permit requirements of the City's Class I permit for industrial waste discharge. The permit requirements will include compliance with the federal combined sewer overflow control policy minimum controls, including development and implementation of a pollution prevention program. The City's pollution prevention program would require best management practices to minimize the amount of pollutants carried by stormwater to the combined sewer system.

2.7 Construction and Maintenance Access Road

Site access for construction and maintenance will be provided via existing access roads located at the southern (23rd Street) and northern (Humboldt Street) sides of the Potrero PP. The plant will be accessed from 23rd Street via Illinois Street, with vicinity access via Interstate 280 (I-280).

2.8 Earthwork

Excavation work will consist of removal, storage, and/or disposal of earth, sand, gravel, vegetation, loose rock, and debris to the lines and grades necessary for construction. Materials suitable for backfill will be stored in stockpiles at designated locations using proper erosion protection methods. Excess materials will be incorporated into the unused portion of the site or else removed from the site and disposed of at an acceptable location.

Because of the SFERP site's historical industrial usage since the early 1900s, various environmental site investigations (E&E, 1996; CDM, 1997; FD-GTI, 1998; and Geomatrix Consultants, Inc., 2000) were conducted for the site and surrounding properties. The purpose of these environmental site investigations was to evaluate possible areas of soil and/or groundwater contamination. Construction of the project will potentially involve excavation of impacted soils, primarily by heavy metals and polynuclear aromatic hydrocarbons (PAHs), and residues from a former manufactured gas plant (MGP). Management of excavated materials at the site and along the process water pipeline will be conducted in accordance with the Site Mitigation and Implementation Plan (SMIP). The SMIP document is needed to satisfy the requirements of Article 22A of the San Francisco Public Health Code, which governs development within the filled lands adjacent to San Francisco Bay.

Where practical, topsoil will be segregated and stockpiled for reuse in areas that will be converted back to agriculture or landscaped. Excavated materials will be used for backfill to the extent possible.

Graded areas will be smooth, compacted, free from irregular surface changes, and sloped to drain. Structures will be designed to meet appropriate seismic requirements (the site is located in Seismic Risk Zone 3) and California Building Code requirements. Areas to be backfilled will be prepared by removing unsuitable materials and rocks. The bottom of an excavation will be examined for loose or soft areas. Such areas will be excavated fully and backfilled with compacted fill.

Backfilling will be done in layers of uniform, specified thickness. Soil in each layer will be properly moistened to facilitate compaction to achieve the specified density. To verify compaction, representative field density and moisture-content tests will be performed during compaction in accordance with ASTM standards.

2.9 Name of Receiving Water

Implementation of the project will not alter existing drainage patterns. The project site is currently covered by 100 percent impervious surfaces and drains to the City's combined sewer system. Drainage will continue unchanged under the proposed SFERP. The SFERP drainage facilities would include two stormwater catch basins on the south side of the site that would be connected to an existing sewer line in 23rd Street. Ultimate drainage of stormwater will continue to be discharged to the combined sewer system, and be subsequently discharged to San Francisco Bay through an existing outfall or overflow structure pursuant to the City's NPDES permit. There will be no change in volume of stormwater originating from the project site.

2.10 Potential Pollutant Sources

Construction of the project will involve handling a large variety of building materials. The primary potential pollutant source for storm water during the construction of the SFERP results from soil materials being exposed to wind and water movement. The greatest amount of soil will be exposed during the Preparation and Site Grading Phases of the project. Upon completion of the Foundation Phase, the amount of soil exposed will be

significantly reduced. Due to the controls and BMPs described in subsequent sections of this SWPPP, soils and sediments in storm water runoff from the SFERP site will be minimized.

Other chemicals that could be potentially stored and used during construction of the facility include gasoline, diesel fuel, oil, lubricants (i.e., motor oil, transmission fluid, and hydraulic fluid), solvents, adhesives, and paint materials. There are no feasible alternatives to these materials for construction or operation of construction vehicles and equipment, or for painting and caulking buildings and equipment. Material Safety Data Sheets for each chemical used will be kept on site, and construction employees will be made aware of their location and content. The contractor will be responsible for assuring that the use, storage and handling of these materials will comply with applicable federal, state, and local laws. ordinances, regulations, and standards (LORS), including licensing, personnel training, accumulation limits, reporting requirements, and record keeping.

SECTION 3

Erosion Control Plan

3.1 Best Management Practices

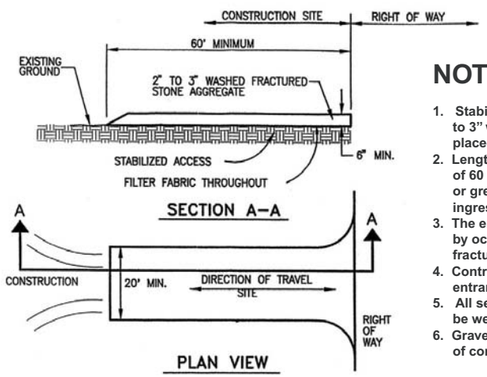
The following sections present standard construction BMPs most of which are described in the *California Storm Water Best Management Practice Handbook* (1993) and the *Caltrans Storm Water Quality Handbook* (2000). These resource handbooks provide comprehensive details on BMP implementation and will be obtained and reviewed by managers for all construction contractors that may have an impact on implementation of the SWPPP. Additional BMPs are described where appropriate. The BMPs outlined in this SWPPP are considered the minimum requirements for erosion and sediment control. Specific BMP's are described in this section, but at this time, no BMP site map has been designed. When the site is graded and topographical maps for the site have been developed, site-specific BMPs will be designed on the project site maps. Figure 3.1 illustrates installation methods for various BMPs that are further discussed in the following sections. Appendix I contains the Caltrans BMP Handbook titled Detailed Description of BMPs.

3.2 General Erosion Control Measures

The project has been designed to impact as small an area as possible at any given time, thereby limiting the amount of exposed soil. However, given the nearly level topography, soil types, and the anticipated use of construction BMPs, the overall potential for erosion and soil loss is slight. Construction is expected to proceed with all appropriate speed, as quickly as is reasonable and safe, thereby ensuring that as little soil is exposed for as short a time as possible. In general, all work areas will be surrounded by dikes, drainage swales, sand bags, or combinations of these to prevent run-on and uncontrolled run-off from the work area. General erosion and sediment controls may include installation of filter fabric fencing, fiber rolls, hay bale fencing or sand bags wherever appropriate.

All equipment will be maintained to prevent leaks and spills, and fueling will only be conducted within contained areas. Spill containment equipment will be available in the event they are needed. Any contaminated soils resulting from spills will be dug up as quickly as possible, and then removed from the site for proper disposal.

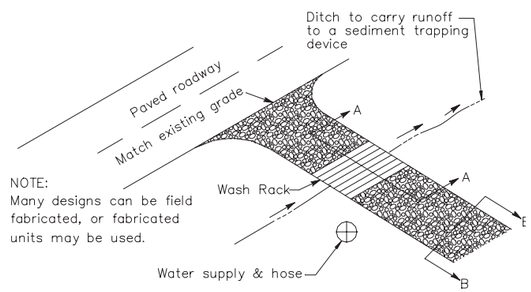
A mitigation monitoring plan will also be developed in conjunction with California Energy Commission (CEC) staff to set performance standards and monitor the effectiveness of mitigation measures. This plan will address the timing and methods such measures, as well as reporting and response requirements. Personnel will receive training to conduct their jobs properly and recognize and report aberrant situations so that they can be quickly corrected.



NOTES:

1. Stabilized construction entrance shall be 2" to 3" washed fracture stone. Material shall be placed to a minimum thickness of 6".
2. Length of entrance shall be a minimum length of 60 feet. Width must be a minimum of 20 feet, or greater if necessary to cover all vehicular ingress and egress.
3. The entrance shall be kept in good condition by occasional top dressing with additional fractured stone, similar in size.
4. Contractor shall inspect each construction entrance daily and after each rainfall.
5. All sediment deposited on paved roadway shall be wet swept at the end of each working day.
6. Gravel and filter fabric shall be removed at end of construction.

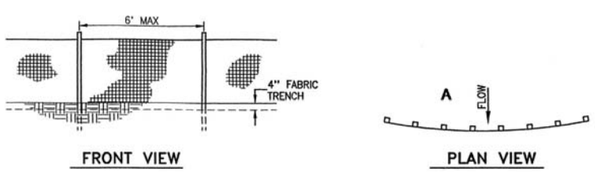
1. Stabilized Construction Site Access



NOTES:

1. Will be constructed on level ground, on a pad of coarse aggregate, greater than 3" but smaller than 6".
2. Wash rack shall be designed and constructed for anticipated traffic loads.
3. Drainage ditch will convey the runoff from the wash area to a sediment sump device. The drainage ditch shall be of sufficient grade, width, and depth to carry the wash runoff.
4. Inspect routinely for damage and repair as needed.

2. Typical Tire Wash

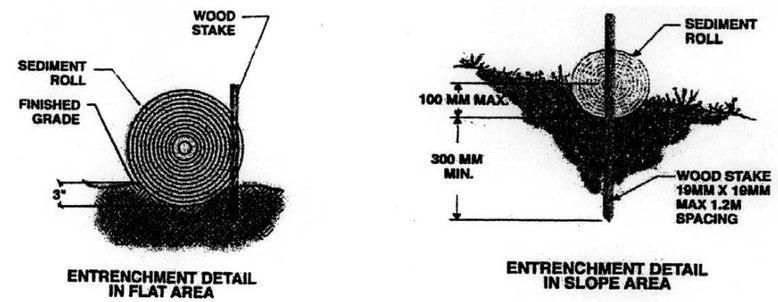


NOTES:

1. Silt fence shall be constructed along the perimeter of construction area where needed;
2. Filter fabric shall be propylene, nylon, polyester or ethylene yarn containing ultraviolet inhibitors. Filter fabric shall have a minimum efficiency of 75 percent and minimum tensile strength of 50 lbs./lineal foot at 20 percent maximum elongation;
3. Support posts shall be a minimum 3 foot length 2"x4" wood posts driven a minimum of 12" into the ground. Posts shall be spaced a maximum of 6' apart. Fabric shall be securely fastened to posts with 16 gauge wire ties spaced a maximum of 6" apart.
4. A minimum 4" trench shall be excavated along the uphill side of the posts. The bottom of the fabric shall extend to the bottom of the trench and at a minimum of 4" across the bottom of the trench. The trench shall be backfilled to 4" above ground and compacted to bury and secure the bottom of the filter fabric.
5. Contractor shall make daily inspections to determine if repairs and sediment removal is required. Sediment shall be removed before it has reached 8 inches in height upstream of the filter fabric.

3. Silt Fence Detail

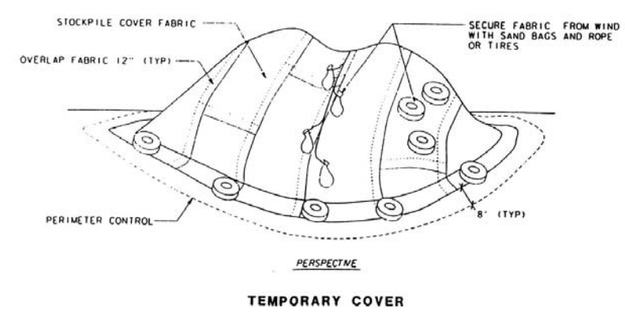
Note: Fiber rolls are not intended for use in concentrated flow situations.



4. Fiber Roll Detail

NOTES:

1. Fiber rolls are typically placed along the perimeter of the property line. If heavy sediment is a concern, then the use of silt fences is more appropriate (refer to Silt Fence Detail).
2. Follow manufacturer's recommendations for installation, as well as the following:
3. Fine grade the subgrade where necessary to remove local deviations and to remove larger stones or debris that will inhibit intimate contact of the fiber roll with the subgrade;
4. Prior to installation, contour a concave key trench 2" to 4" deep along the proposed installation route;
5. Soil excavated in trenching should be placed on the uphill side or flow side of the roll to prevent water from undercutting the roll;
6. Place fiber rolls into the key trench and stake on both sides of the roll within 6 feet of each end and along lenght of roll with a minimum of 1"x2"x18" stake;
7. Drive stakes on alternating sides of roll. When placed in a continuous row, rolls should be abutted securely to one another to provide a tight joint, not overlapped.
8. Contractor shall make daily inspections to determine if repairs are necessary. Repair or replace split, torn, unraveling or slumping fiber rolls.



NOTES:

All stockpiled excavated soils to be stabilized, as follows:

1. If appropriate, stockpile will be covered with plastic, tarpaulins or equivalent and anchored in place with sand bags and rope, tires, or equivalent, or;
2. Stockpile(s) to be treated with chemical dust control material and
3. Perimeter control will include fiber rolls around the entire base of the stockpile(s).
4. Contractor shall make daily inspections to determine sediment loss, if any. In the event of sediment loss, appropriate steps must be taken to secure the stockpile(s).

5. Stockpile Protection

FIGURE 3.1
SFERP EROSION AND SEDIMENT CONTROL PLAN EXAMPLE INSTALLATION METHODS
SAN FRANCISCO ELECTRIC RELIABILITY PROJECT

CH2MHILL

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Following are general control measures that may be used during various phases of the project and in conjunction with phase-specific BMPs:

- Proper scheduling and sequencing of activities
- Material Management
- Waste management
- Sanitary and Septic Waste Management
- Vehicle and equipment maintenance
- Vehicle and equipment fueling
- Spill prevention and control
- Employee and contractor training

3.2.1 Access Road, Entrance and Parking, Staging and Laydown Areas

The project will include the construction of a new air-insulated 115-kilovolt (kV) switchyard on the west side of the site, a new recycled water system located on the southern portion of the project site, adjacent to 23rd Street, a new overhead transmission line will interconnect the adjacent PG&E substation to the plant switchyard, a new 250-foot-long, and a 12-inch-diameter (or less) natural gas pipeline that will connect to PG&E's San Francisco Load Center. The City will provide combined sanitary effluent from the WPS to the SFERP for onsite treatment. A one-mile long pipeline will connect the WPS and the SFERP's onsite treatment system. The mile-long pipeline consists of two parts. Approximately 1,300 feet of the pipeline will be installed within an existing collection box. The remaining portion will be new construction.

The 10-acre construction laydown area would be located from about 100 feet west of Maryland Street to about 150 east of Massachusetts Street, and between 25th Street and 200 feet north of Cesar Chavez Street (see Figure 1.2). The site, under the control of the Port Authority, is a previously disturbed, relatively flat, vacant parcel of land. A concrete mixing plant, temporary offices and shipping containers once occupied the site. According to Figure 2.2-2, the laydown area soil type is 134—Urban Land-Orthents, reclaimed complex with 0 to 2 percent slopes. As described below, this soil has low erosion potential. Since the erosion characteristics of the soil type at the laydown area are minimal, very little soil erosion is expected during the construction period. This area of approximately south and east of the plant will be devoted to equipment and materials laydown, storage, construction equipment and employee parking, and office trailers. Layout of access roads and loading areas is important in the development of the laydown yard. Space is required for large turbine parts, structural steel, piping spools, electrical components, and building parts. Sufficient space should also be provided to accommodate preventive and in-storage equipment maintenance activities.

The construction of the project would require that heavy vehicles access structure sites. Because the transmission lines mostly follow existing roadways, use of existing roads to the greatest extent possible is planned to minimize potential impacts associated with new access road construction. Following construction, disturbed road sections would be restored to original contours. Specific road standards would be developed during the detailed engineering phase of this project. Culverts or other drainage structures would be installed only as necessary to allow heavy equipment to cross drainage areas. This type of temporary

facility would prevent damage to existing drainage banks by directing all traffic in a specific area.

The plant access road and, entrance/exit will be stabilized using coarse aggregate. The aggregate cover will be maintained so as to limit sediment tracking and creation of dust. Based on the soil mapping results, there is potential for wind erosion, due to soil type. Therefore, surfaces will be regularly watered to reduce generation of dust, but will not be excessively watered so as to generate runoff. Filter fabric fencing may be used at edges of these areas, as necessary to minimize sediment discharging into swales or ditches. Figure 1.2 illustrates the general location of the construction laydown area. The following BMPs will be used for construction access areas:

- Silt fencing
- Stabilizing surfaces with coarse aggregate
- Compacting access road surfaces
- Proper scheduling and sequencing of activities
- Preservation of existing vegetation
- Placement of geotextile
- Dust control
- Temporary drains and swales
- Hay bale barriers
- Vehicle and equipment cleaning

3.2.2 Site Grading and Drainage Swales

Prior to use as the construction laydown area, no grading will be necessary since the site is flat and currently drains to either the Port's storm water system (which drains to the Bay) or percolates into the ground. However, the site will be graveled to provide all weather use and further minimize soil erosion potential. Heavy equipment stored onsite will be placed on dunnage to protect it from ground moisture. Once construction is completed, the gravel will either be removed from the site or left in place at the discretion of the Port Authority.

The overall plant site grading scheme is designed to route surface water around and away from all equipment and buildings. Transmission line construction will consist of site clearing and preparation (removing vegetation, trenching, and minor leveling) at all locations where equipment will be installed.

The site will be constructed on relatively level ground; therefore, it is not considered necessary to place barriers around the property boundary. However, some barriers would be placed in locations where offsite drainage could occur to prevent sediment from leaving the site. Barriers and other sedimentation control measures would be used to prevent runoff into irrigation ditches located near the site. If used, straw bales would be properly installed (staked and keyed), then removed or used as mulch after construction. Runoff detention basins, drainage diversions, and other large-scale sediment traps are not considered necessary due to the level topography and surrounding paved roads. Any stockpiles would be stabilized and covered if left onsite for long periods of time, including placement of sediment barriers around the base of the stockpile. These methods can be employed during trenching operations for the water line and the natural gas line.

3.2.3 Foundations

As the foundation for the project structures are developed, drainage swales may be replaced with surface collectors and underground drainpipes. Sediments and hydrocarbons will be minimized or prevented from entering the surface collectors with storm drain inlet protection devices and rings of hydrocarbon-absorbing fabric.

A concrete washout site has been designated. Dumping of excess concrete and washing out of delivery vehicles will be prohibited at other locations on site. Notices will be posted to inform all drivers.

The following BMPs will be used around foundations:

- Storm drain inlet protection
- Concrete waste management

3.2.4 Site Stabilization and Demobilization

As construction nears completion, areas used for parking, storage and laydown will be stabilized. Areas that will continue to be used (for parking or storage) will have permanent storm water collection and conveyance structures provided.

3.3 Other Controls

3.3.1 Hazardous Materials

There will be a variety of chemicals stored and used during construction and operation of the SFERP. The storage, handling, and use of all chemicals will be conducted in accordance with applicable laws, ordinances, regulations, and standards. Chemicals will be stored in appropriate chemical storage facilities. Bulk chemicals will be stored in storage tanks, and most other chemicals will be stored in returnable delivery containers. Chemical storage areas will be designed to contain leaks and spills. Berm and drain piping design will allow a full-tank capacity spill without overflowing the berms. For multiple tanks located within the same bermed area, the capacity of the largest single tank will determine the volume of the bermed area and drain piping. Drain piping for volatile chemicals will be trapped and isolated from other drains to eliminate noxious or toxic vapors. During the construction and operations phases, storm water collected from the chemical storage areas will be directed to the combined sewage/storm water system.

A maximum of approximately 38,815 gallons and 100 pounds of hazardous materials and regulated substances will be stored for the project. Most of the hazardous substances that will be used by the project are required for treatment and laboratory analysis of the cooling water, facility maintenance, and lubrication of equipment, or would be contained within transformers and electrical switches. The only regulated substance that will be used for the project is aqueous ammonia. The SFERP facility will store the 29-percent aqueous ammonia solution in a single stationary aboveground storage tank. The capacity of the tank will be approximately 12,000 gallons and the maximum quantity onsite will not exceed approximately 10,000 gallons. The tank will be surrounded by a secondary containment structure capable of holding the full contents of the tank, approximately 665 square feet (38 feet by 17.5 feet). The floor of the secondary containment structure will drain to a

24-inch-diameter drain line that will lead to an underground spill containment vault (14 feet by 18 feet by 6 feet).

Aqueous ammonia will be delivered to the plant by truck transport. The truck loading area will be located within a bermed area adjacent to the storage tank. The floor of the loading area will be sloped to drain into the spill containment vault through an underground 4-inch drain line. The use of 29 percent aqueous ammonia will require approximately 14 deliveries of ammonia per year. The ammonia storage area, specifically, will have spill containment and ammonia vapor detection equipment. Hose connections will be provided near the chemical storage and feed areas to flush spills and leaks to the plant wastewater collection system. Adequate supplies of absorbent material will be stored onsite for spill cleanup. Plant personnel will use approved personal protective equipment during chemical spill containment and cleanup activities. Personnel will be properly trained in the handling of these chemicals and instructed in the procedures to follow in case of a chemical spill or accidental release.

3.3.2 Solid and Hazardous Wastes

The construction of the facility will generate various types of non-hazardous solid wastes, including debris and other materials requiring removal during site grading and excavation, excess concrete, lumber, scrap metal, and empty non-hazardous chemical containers. Management of these wastes will be the responsibility of the construction contractor(s). The generation of waste materials will be minimized through efficient and careful use of materials, and recycling when possible. Non-hazardous materials will be used where acceptable to meet construction requirements. Drummed and bagged wastes will not be stored directly on the ground, and will be covered or stored indoors where feasible. Incompatible materials will be separated, and secondary containment will be provided for liquids. Sufficient spill cleanup materials will be kept in proximity to areas where materials are stored and used.

Small quantities of hazardous wastes will be generated over the course of construction. These may include waste paint, spent solvents, and spent welding materials. All hazardous wastes generated during facility construction will be handled and disposed of in accordance with applicable laws, ordinances, regulations, and standards. Hazardous wastes generated during construction will be collected in hazardous waste accumulation containers near the point of generation and moved daily to the contractor's 90-day hazardous waste storage area located on site. The accumulated waste will subsequently be delivered to an authorized waste management facility.

Contractor waste materials will be collected and stored in metal dumpsters provided by a licensed solid waste management company. The dumpster will meet local and state solid waste management regulations, and be provided with solid lids or removable flexible covers. Trash and construction debris will be deposited in the dumpsters, the dumpsters will be covered, and then hauled offsite weekly to an approved local Class III landfill. No construction waste will be buried onsite. Personnel will be instructed as to proper disposal procedures, notices will be posted, and individuals will be designated to assure that the procedures are followed. A licensed contractor will regularly collect all sanitary wastes from portable units.

The following BMPs will be used at the designated storage locations:

- Cover or store hazardous materials indoors, if possible
- Material delivery and storage
- Material use
- Spill Prevention and Control
- Solid Waste Management
- Hazardous Waste Management
- Use of covered dumpsters and containers for waste

3.3.3 Potential Contaminated Soil

Based on prior studies of the Potrero Power Plant (PPP) site, and sampling recently performed by the City, contaminated soils exist at the site. Soil sampling was performed at eight locations at the project site in February 2004. Samples were taken both at surface level, [approximately 0.5 foot below ground surface (ft bgs)] and subsurface (3 feet bgs). Sample results indicated the presence of petroleum hydrocarbons, metals (including nickel, arsenic, and chromium), and polynuclear aromatic hydrocarbon (PAHs) compounds.

Based on the soil analysis report that was generated from the soil sampling, the City will prepare a site mitigation plan that: 1) assesses potential environmental and health and safety risks; 2) recommends mitigation measures, if any are necessary, that would be protective of workers and visitors to the SFERP facility; 3) recommends measures to mitigate the risks identified; 4) identifies appropriate waste disposal and handling requirements; and 5) presents criteria for on-site reuse of soil. The recommended measures will be completed during construction and upon completion, the City will prepare a certification report stating that all mitigation measures recommended in the site mitigation report have been completed and that completion of the mitigation measures has been verified through follow-up soil sampling and analysis, if required.

3.3.4 Groundwater Controls

Groundwater at the project site is currently not used for potable water, and the project will have no effect on groundwater. The minor excavation and foundation structures required for SFERP would not result in any substantial change from the existing groundwater flow and conditions at the site. During construction, temporary dewatering may be required, and any dewatering activity would require a permit from the City for discharge to the combined sewer system. During construction, the Project would be subject to LORS requiring standards for isolating and controlling offsite runoff and contaminants that could enter groundwater. During construction, the Project would isolate all work areas using fiber, rolls, mats or similar devices to keep contaminated runoff from leaving the site.

3.3.5 Offsite Vehicle Tracking

Because sediment reaching public roads generally has a clear path to wetlands and water bodies, controls will be in place to minimize or eliminate soils from being tracked off the project site from vehicles. The site will have access road and entrance/exit made of coarse aggregate to limit the amount of material adhering to tires. Paved roads located at the

entrance of the construction site will be inspected daily and cleaned as necessary using manual or mechanical street sweepers.

3.3.6 Dust Suppression and Control

Wind erosion controls shall be evaluated and implemented as needed throughout the duration of the project on all disturbed soils on the project site that are subject to wind erosion, and when significant wind and dry conditions are anticipated during project construction. Wind controls will be used to prevent the transport of soil from soil disturbed areas of the project site by offsite wind. The following control methods will be used for dust suppression, as necessary:

- Water aggregate roadways, parking areas and construction areas as needed.
- Cover all trucks hauling soil, sand and other loose materials off site or require all trucks to maintain at least eighteen inches of freeboard.
- Sweep adjacent streets and on-site paved roadways.
- Hydroseed or apply non-toxic soil stabilizers to inactive or completed construction areas as soon as is practical.
- Enclose, cover, water or apply non-toxic soil stabilizers to exposed stockpiles of sand, dirt, etc.
- Limit traffic speed onsite to 15 mph or less.
- Suspend excavation and grading during periods of high winds.

SECTION 4

Training

Prior to project startup, all designated onsite representatives will participate in a pre-project storm water training workshop. The workshop will cover basic storm water information, the requirements of the general permit, and the SWPPP. Specifically, the workshop will focus on implementation, inspection, and maintenance of storm water controls. All new employees will be trained by staff familiar with these topics.

As required by the SWRCB, individuals responsible for SWPPP preparation, implementation, and permit compliance will be appropriately trained, and the training will be documented. This includes those personnel responsible for installation, inspection, maintenance, and repair of BMPs. Those responsible for overseeing, revising, and amending the SWPPP shall also document their training.

All contractors are responsible for familiarizing their personnel with the information contained in the SWPPP. Contractors will be informed of this obligation and will be expected to have one or more employee training or briefing sessions conducted. The purpose of the meetings will be to review the proper installation methods and maintenance of all erosion control BMPs to be used on the project. Monitoring and inspection activities will only be conducted by individuals who have had additional training specific for this purpose. Records will be maintained of training.

Each contractor will be required to certify that they understand the requirements of the SWPPP, and will perform their duties in accordance with its requirements. An example Certification Form is included as Appendix D. These signed Certifications will be collected by the Project Manager (or designee) to identify authorized contractors in the SWPPP (see Appendix E).

SECTION 5

Maintenance, Inspection, and Repair

5.1 Maintenance

Erosion and sediment control structures must be maintained to remain effective. Features that are washed out or damaged will be repaired as soon as possible, depending on worker safety. Structures designed to accumulate sediment will have sediment removed in advance of the rainy season, and before major storm events. The following criteria will be used to determine whether erosion and sediment control features should be cleaned, repaired, or replaced:

- Sediment or other debris has accumulated to greater than one-third the height of sediment fabric fences or hay bale barriers
- Sediment or debris has reduced the storage capacity of sediment traps by 50 percent or more
- More than one-third of the cross-section of conveyance structures, such as drainage swales or ditches are plugged or blocked

In addition, the following maintenance activities will be performed:

- Paved roads immediately surrounding the construction site will be cleaned as necessary using manual or mechanical street sweepers.
- Coarse aggregate on plant access road and entrance/exit will be maintained so as to limit sediment tracking and creation of dust.
- Surfaces that are not paved or provided with gravel surfacing will be watered to limit the generation of dust (but will not be excessively watered so as to generate runoff).
- All equipment will be maintained according to manufacturers' specifications so as to prevent leaks and spills.
- Any contaminated soils resulting from spills will be dug up as quickly as possible, and then removed from the site for proper disposal.

5.2 Inspections and Record Keeping

Inspections of the construction site will be conducted prior to anticipated storm events and after actual storm events. This will be accomplished by conducting weekly inspections. In addition, inspections will be made during each 24-hour period during extended storm events. SWPPP inspections may be conducted in conjunction with other facility inspections. For instance, if a regulated amount of petroleum materials is on site and there is a Spill Prevention, Control and Countermeasures Plan (SPCC), the SWPPP inspections may be conducted in conjunction with SPCC inspections.

The goals of these inspections are: (1) to identify areas contributing to a storm water discharge; (2) to evaluate whether measures to reduce pollutant loadings identified in the SWPPP are adequate, properly installed and functioning in accordance with the terms of the General Permit; and (3) whether additional control practices or corrective maintenance activities are needed.

Personnel responsible for inspections before, during and after storm events will receive additional training specific for this purpose. This can take the form of formal classroom training and/or "walk-around" with an experienced individual, who discusses the appropriate conditions and those conditions requiring action. The Project Manager (or designee) will maintain a list of authorized inspection individuals for the SWPPP (Appendix F).

All required inspections will be recorded on an inspection form (Appendix G). Records of SWPPP inspections will be maintained onsite for at least three years. An example checklist will contain, at a minimum, the following information required by the Regional Water Quality Control Board:

- Inspection date
- Weather information: best estimate of beginning of storm event, duration of event, time elapsed since last storm, and approximate amount of rainfall (inches)
- Description of any inadequate BMPs
- If possible to safely access during inclement weather, observations of all BMPs: erosion controls, sediment controls, chemical and waste controls, and non-storm water controls; otherwise, result of visual inspection at relevant outfall, discharge point, or downstream location and projected required maintenance activities.
- Corrective actions required, including any changes to SWPPP necessary and implementation dates
- Inspectors name, title, and signature

Records of all monitoring information, copies of all reports required by the general storm water permit, and records of all data used to complete the Notice of Intent for the construction activity shall be held, retained, and kept in possession by the facility operator and/or contractor for at least 3 years.

The facility operator and/or contractor will annually certify that its construction activity is in compliance with the requirements of this general permit and its SWPPP. Noncompliance notifications will be submitted within 30 days of identification of noncompliance.

Equipment, materials, and workers will be available for rapid response to failures and emergencies. All corrective maintenance to BMPs will be performed as soon as possible, depending upon worker safety.

Prior to plan commencement, names of responsible personnel will be added to this plan.

SECTION 6

Sampling and Analysis Program

The General Permit requires permittees to implement specific sampling and analytical procedures to determine whether BMPs implemented on the construction site are:

- Preventing current sediment impaired waters from further impairment by direct discharge of sediments in storm waters to listed waters
- Preventing other pollutants (not visually detectable) from causing or contributing to exceedances of water quality objectives

Based on the proposed design for storm water management, storm water on the plant site would be channeled into onsite drains that discharge to the SFERP combined storm water/sewer system for appropriate treatment. Therefore, this project is not required to prepare sampling and analysis procedures on the plant site.

In the laydown area, surface water runoff either percolates into the ground or drains in the Port's storm water system which drains into the bay. This area may be subject to a sampling and analysis program, to be determined at a later date.

SECTION 7

Non-Storm Water Management

7.1 General

Non-storm water management at the construction site mainly involves prevention of contamination in runoff. Non-storm water discharges from the project site are not anticipated due to effective implementation of control practices.

7.2 Inventory for Pollution Prevention Plan

The following substances are expected to be present on site during construction:

- Concrete
- Paints
- Detergents
- Fertilizers
- Fuels
- Lubricants
- Lumber
- Solvents

As required by state and federal law, contractors will be required to have inventories of hazardous materials. If the use of other types of hazardous materials at the site becomes necessary, the SWPPP will be amended to include them.

7.3 Hazardous Materials Management Plan

A variety of chemicals will be stored and used during construction of the facility. Hazardous materials to be used during construction include unleaded gasoline, diesel fuel, oil, lubricants (i.e., motor oil, transmission fluid, and hydraulic fluid), solvents, adhesives, paint materials, and building materials such as asphalt, sealants, and concrete. There are no feasible alternatives to these materials for construction or operation of construction vehicles and equipment, or for painting and caulking buildings and equipment.

In general, construction contractors will use lubricating oils, solvents, and other hazardous materials during construction of SFERP. The contractor will be responsible for assuring that the use, storage and handling of these materials will comply with applicable federal, state, and local LORS, including licensing, personnel training, accumulation limits, reporting requirements, and recordkeeping.

7.4 Prevention of Non-Stormwater Discharges

There will be specific designated temporary waste storage areas on site. These areas will be contained within earthen berms or an equivalent barrier measure. Non-hazardous construction wastes (trash and construction debris) will be collected and placed into commercial disposal containers as soon as possible.

BMPs that will be implemented to prevent non-storm water discharges include:

- Monitor of all vehicle and equipment fueling and maintenance activities; fuel offsite wherever possible
- Use secondary containment for hazardous material delivery and storage areas to prevent spills or leakage of liquid material from contaminating soil or soaking into the ground
- Train employees on the proper use of materials such as fuel, oil, asphalt and concrete compounds, paints, solvents, etc.
- Regularly remove construction wastes
- Store all liquid wastes in covered containers
- Use portable toilet facilities managed and regularly serviced by a licensed contractor
- Restrict vehicle and equipment washing to designated areas

7.4.1 Good Housekeeping

The following good housekeeping practices will be followed on site during the construction project:

- An effort will be made to store only enough product required to do the job.
- All materials stored on site will be stored in a neat, orderly manner in their appropriate containers, and, if possible, under a roof or other enclosure.
- Products will be kept in their original containers with the original manufacturer's label.
- Substances will not be mixed with one another unless recommended by the manufacturer.
- Whenever possible, all of a product will be used before disposing of the container.
- Manufacturer and/or State and local recommendations for proper use and disposal will be followed.
- Storage areas including equipment storage will be inspected for visible signs of oil or other spillages.

7.4.2 Product Specific Practices

The following product specific practices will be followed onsite:

- **Petroleum Products:** All onsite vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the potential for leakage. Petroleum products will be stored in tightly sealed containers that are clearly labeled. Asphalt substances used on site will be applied according to the manufacturers' recommendations.
- **Fertilizers:** In the event fertilizers are required during revegetation, they will be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer will be worked in the soil to limit exposure to storm water. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.
- **Paints:** Containers will be tightly sealed and stored when not required for use. Excess paint will not be discharged to the storm sewer system but will be properly disposed of according to manufacturers' instructions and State and local regulations.
- **Concrete:** Equipment used for concrete mixing and transport will not be allowed to wash out or discharge surplus concrete or drum wash water on the site except in designated areas specifically designated for rinse out as indicated in Section 3.2.3. Wash water will be contained in a temporary pit where waste concrete can harden for later removal. Fresh concrete washing will be avoided unless runoff can be drained to a bermed or level area, away from waterways and storm drain inlets.

7.4.3 Spill Prevention Practices

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and cleanup:

- Manufacturers' recommended methods for spill cleanup will be clearly posted and personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area onsite, and will include, but not limited to brooms, dustpans, mops, rags, gloves, goggles, absorbents (e.g., kitty litter, sand, sawdust), and plastic and metal trash containers specifically for this purpose.
- Spills will be cleaned up immediately after discovery.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from and contact with a hazardous substance.
- The Project Manager (or designee) will be the spill prevention and cleanup coordinator. The names of additional responsible spill personnel and authorized contractors will be posted in various areas.
- Spills of toxic or hazardous materials will be reported to the Project Supervisor (or designee) regardless of the size.

- Spills of hazardous materials that exceed their reportable quantities will be reported to all appropriate local, state and federal government agencies.

Contaminated soil or debris that cannot be recycled, reused or salvaged, will be collected and stored in securely lidded dumpsters rented from a licensed solid waste management company. The dumpsters will meet all local and State of California solid waste management regulations. Potentially hazardous wastes will be separated from known non-hazardous wastes. This includes the segregation of storage areas and proper labeling of containers. All waste will be removed from the site by licensed contractors in accordance with applicable regulatory requirements and disposed of at either local or regional approved facilities. No waste materials will be buried on site. All personnel will be instructed regarding the correct procedures for waste disposal. Notices stating these procedures will be posted in various areas.

The Project Manager (or designee) will be responsible for investigating spills and determining whether the reportable quantity has been exceeded. Regulations defining the reportable quantity levels for oil and hazardous substances are found in 40 CFR Part 110, Part 117 or Part 302. Should a release occur during construction activities which exceeds the reportable quantity, the following steps should be taken:

- Notify Local Emergency Response Agency at 911
- Notify the National Response Center immediately at 800-424-8802
- Notify Governor's office of Emergency Services Warning Center at 805-852-7550

A written description of the release should be submitted to the EPA Regional Office providing the date, circumstances of the release, and the preventative measures taken to prevent further releases.

7.4.4 Isolation of Potentially Hazardous Materials

A supply of drums will be available in the event of spills of known materials or if potentially hazardous materials are found during project construction. The contaminated material will be placed in the drums, sealed and placed in a storage area to await proper characterization and disposal. The sealed drums should be further placed in a lined roll-off container with a tarpaulin cover. In this case, the potentially hazardous materials are stored in a marked covered area that has secondary containment. In the event that a larger amount of material needs to be isolated, it will be placed directly into a lined roll-off container from a licensed hazardous waste transporter. The roll-off container will be placed out of the flow of construction traffic and equipment, in a bermed area to contain and isolate possible leaks and rainwater. In the unlikely event that even larger volumes of potentially hazardous material must be temporarily held awaiting disposition, a containment area will be constructed. Plastic sheeting will be laid on the ground prior to placement of the contaminated material and the material itself will be covered. A berm will surround the covered material to keep any rainwater from leaving the site.

SECTION 8

Waste Management and Disposal

All wastes (including waste oil and other equipment maintenance waste) from the SFERP construction shall be disposed of in compliance with federal, state, and local laws, regulations, and ordinances. Specific waste management and disposal procedures have been addressed in previous sections of this plan (see Section 3.3.2).

SECTION 9

Annual Review and Certification

Annually, the Project Manager (or designee) will review performance under the SWPPP and certify that construction activities are in compliance with the requirements of the Storm Water General Permit and the SWPPP. This Certification shall be based upon knowledge of construction activities and the site inspections conducted in accordance with the General Permit. The certification must be completed by July 1 of each year, and maintained for at least three years. If necessary, amendments to the SWPPP will be prepared and submitted at this time.

SECTION 10

SWPPP Administration

The Project Manager (or designee) will be identified in this SWPPP as the qualified person(s) assigned responsibility to ensure full compliance with the permit and implementation of all elements of the SWPPP, including the preparation of the annual compliance evaluation and the elimination of all unauthorized discharges.

The following lists required as part of the SWPPP will be maintained by the Project Manager:

- List of authorized contractors who have signed certifications that they understand and will comply with the SWPPP will be maintained in Appendix D. Additional information including current and emergency telephone numbers, address, contractor's responsibilities, and the specific names of individuals responsible for implementation of the SWPPP will also be maintained.
- List the name and telephone number of the qualified person(s) who have been assigned responsibility for pre-storm, post-storm, and storm event inspections (Appendix F).
- List of amendments will be maintained from the date of the first amendment prepared to the date of the most recent amendment (Appendix H). The SWPPP and each amendment will be certified by the Project Manager (or designee).

SECTION 11

Contractors/Subcontractors

The prime construction contractor will be included in this SWPPP upon award of the construction contract. Portions of the work are likely to be subcontracted to various specialty contractors. All subcontractors will be required to comply with the requirements of this permit. A list of authorized contractors/subcontractors will be maintained in Appendix E.

SECTION 12

SWPPP Certification

The contractor who is authorized to implement and amend this SWPPP will be required to sign and certify that the SWPPP is in conformance with the General Permit. The Contractor is designated as the responsible party for the overall storm water management at the site. By signing the Certification (see Appendix D), the Contractor agrees to the following:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel prepared the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for preparing the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

SECTION 13

SWPPP Approval

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel prepared the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for preparing the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____ _____

Signed ***Position***

_____

Date

SECTION 14

Notice of Intent

A copy of a blank Notice of Intent (NOI) Form to obtain coverage under the State General Construction Activity Storm Water Permit is included in Appendix A. The Notice of Intent will be filed prior to initiation of project construction as required.

SECTION 15

References

Natural Resources Conservation Service (NRCS formerly Soil Conservation Service). 1992. *Soil Survey of San Joaquin County.*

State of California Department of Transportation (Caltrans). 2001. *Caltrans Storm Water Quality Handbooks.*

Storm Water Quality Task Force. 1993. *California Storm Water Best Management Practices Handbooks.* Volume 2: Commercial/Industrial Handbook.

APPENDIX A

Notice of Intent

State Water Resources Control Board

NOTICE OF INTENT

TO COMPLY WITH THE TERMS OF THE
GENERAL PERMIT TO DISCHARGE STORM WATER
ASSOCIATED WITH CONSTRUCTION ACTIVITY (WQ ORDER No. 99-08-DWQ)

I. NOI STATUS (SEE INSTRUCTIONS)

MARK ONLY ONE ITEM 1. ☐ New Construction 2. ☐ Change of Information for WDID# _____

II. PROPERTY OWNER

Name	Contact Person		
Mailing Address	Title		
City	State	Zip	Phone ( ) --

III. DEVELOPER/CONTRACTOR INFORMATION

Developer/Contractor	Contact Person		
Mailing Address	Title		
City	State	Zip	Phone ( ) --

IV. CONSTRUCTION PROJECT INFORMATION

Site/Project Name	Site Contact Person		
Physical Address/Location	Latitude ____°	Longitude ____°	County
City (or nearest City)	Zip	Site Phone Number ( ) --	Emergency Phone Number ( ) --

A. Total size of construction site area: _____ Acres

B. Total area to be disturbed: _____ Acres (% of total _____)

C. Percent of site imperviousness (including rooftops):

Before Construction: _____%

After Construction: _____%

D. Tract Number(s): _____, _____

E. Mile Post Marker: _____

F. Is the construction site part of a larger common plan of development or sale?

☐ YES ☐ NO

G. Name of plan or development:

H. Construction commencement date: ____/____/____

I. % of site to be mass graded: _____

J. Projected construction dates:

Complete grading: ____/____/____ Complete project: ____/____/____

K. Type of Construction (Check all that apply):

1. ☐ Residential 2. ☐ Commercial 3. ☐ Industrial 4. ☐ Reconstruction 5. ☐ Transportation

6. ☐ Utility Description: _____ 7. ☐ Other (Please List): _____

V. BILLING INFORMATION

SEND BILL TO: ☐ OWNER (as in II. above)	Name	Contact Person	
☐ DEVELOPER (as in III. above)	Mailing Address	Phone/Fax	
☐ OTHER (enter information at right)	City	State	Zip

VI. REGULATORY STATUS

A. Has a local agency approved a required erosion/sediment control plan? ☐ YES ☐ NO

Does the erosion/sediment control plan address construction activities such as infrastructure and structures? ☐ YES ☐ NO

Name of local agency: _____ Phone: ( ) --

B. Is this project or any part thereof, subject to conditions imposed under a CWA Section 404 permit of 401 Water Quality Certification? ☐ YES ☐ NO

If yes, provide details: _____

VII. RECEIVING WATER INFORMATION

A. Does the storm water runoff from the construction site discharge to (Check all that apply):

1. ☐ **Indirectly to waters of the U.S.**
2. ☐ **Storm drain system - Enter owner's name:** _____
3. ☐ **Directly to waters of U.S. (e.g. , river, lake, creek, stream, bay, ocean, etc.)**

B. Name of receiving water: (river, lake, creek, stream, bay, ocean): _____

VIII. IMPLEMENTATION OF NPDES PERMIT REQUIREMENTS

A. STORM WATER POLLUTION PREVENTION PLAN (SWPPP) (check one)

☐ A SWPPP has been prepared for this facility and is available for review: Date Prepared: ____/____/____ Date Amended: ____/____/____

☐ A SWPPP will be prepared and ready for review by (enter date): ____/____/____

☐ A tentative schedule has been included in the SWPPP for activities such as grading, street construction, home construction, etc.

B. MONITORING PROGRAM

☐ A monitoring and maintenance schedule has been developed that includes inspection of the construction BMPs before anticipated storm events and after actual storm events and is available for review.

If checked above: A qualified person has been assigned responsibility for pre-storm and post-storm BMP inspections to identify effectiveness and necessary repairs or design changes. ☐ YES ☐ NO

Name: _____ Phone: ( ) --

C. PERMIT COMPLIANCE RESPONSIBILITY

A qualified person has been assigned responsibility to ensure full compliance with the Permit, and to implement all elements of the Storm Water Pollution Prevention Plan including:

1. Preparing an annual compliance evaluation. ☐ YES ☐ NO

Name _____ Phone: ( ) --

2. Eliminating all unauthorized discharges. ☐ YES ☐ NO

IX. VICINITY MAP AND FEE (must show site location in relation to nearest named streets, intersections, etc.)

Have you included a vicinity map with this submittal? ☐ YES ☐ NO

Have you included payment of the annual fee with this submittal? ☐ YES ☐ NO

X. CERTIFICATIONS

"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment. In addition, I certify that the provisions of the permit, including the development and implementation of a Storm Water Pollution Prevention Plan and a Monitoring Program Plan will be complied with."

Printed Name: _____

Signature: _____ **Date:** _____

Title: _____

APPENDIX B

Legal Description of Parcels

The Legal Description of Parcels for the SFERP is forthcoming.

APPENDIX C

Owners adjacent to the Project Site and Linear Corridors

BLOCK	LOT	OWNER	OADDR	CITY	STATE	ZIP
0001	001	RADIUS SERVICES NO. 41750000	1201 ILLINOIS ST	CH2M	04	0219
0001	002	. . . . .	. . . . .	. . . . .	.	. .
0001	003	R A D I U S S E R V I C E S	4 4 5 G R A N T A V # 4 0 0	SAN FRANCISCO	CA	94108
0001	004	C H 2 M	2485 NATOMAS PARK DR #600	SACRAMENTO	CA	94833
0001	005	. . . . .	. . . . .	. . . . .	.	. .
4052	001	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4108	003D	BRUNO A DAVIS TRS	1308 LASUEN DR	MILLBRAE	CA	94030-2846
4108	003J	HANLEY TRUST	3765 GRASS VALLEY HWY #2	AUBURN	CA	95602-2025
4108	003L	SUREND SHARMA	27824 ORMOND AV	HAYWARD	CA	94544-5020
4108	003N	WALTER PARKS	5583 OCCIDENTAL RD	SANTA ROSA	CA	95401-5584
4108	004	DOUGLAS E GOWER ETAL	2496 3RD ST	SAN FRANCISCO	CA	94107-3111
4108	005	MARVIN LAU ETAL	432 GATEWAY DR #1	PACIFICA	CA	94044-1617
4108	006	ROBERT NOELKE	1074 TENNESSEE ST	SAN FRANCISCO	CA	94107-3016
4108	008	ROBIN HIRSH	1079 TENNESSEE ST	SAN FRANCISCO	CA	94107-3015
4108	009	WALTER PARKS	5583 OCCIDENTAL RD	SANTA ROSA	CA	95401-5584
4108	010	EMIL M MERCURI ETAL	232 CLIPPER ST	SAN FRANCISCO	CA	94114-3819
4108	011	JOHN A & BARBARA D KNOX TRUST	1483 BACON ST	SAN FRANCISCO	CA	94134-1640
4108	020	LINDA CATRON	PO BOX 10216	SAN JOSE	CA	95157-1216
4108	021	TENNESSEE ST PTNRS	1089 TENNESSEE ST	SAN FRANCISCO	CA	94107-3015
4109	001	ANGELO MARKOULIS	2345 3RD ST	SAN FRANCISCO	CA	94107-3108
4110	001	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4110	008A	PAC GAS & ELECTRIC CO	245 MARKET ST	SAN FRANCISCO	CA	94105
4111	004	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4120	002	PAC GAS & ELECTRIC CO	245 MARKET ST	SAN FRANCISCO	CA	94105
4170	009	HOWARD PROPERTIES	501 2ND ST #720	SAN FRANCISCO	CA	94107-4134
4170	010	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4171	001	EDWARD ELHAUGE ETAL	1100 TENNESSEE ST	SAN FRANCISCO	CA	94107-3417
4171	002	EOI TAKAGI	1102 TENNESSEE ST	SAN FRANCISCO	CA	94107-3417
4171	003	MICHAEL L EKLUND ETAL	4740 MONTGOMERY LN	SANTA ROSA	CA	95409-4218
4171	004	JEFFREY W RADER	1455 SHOTWELL ST	SAN FRANCISCO	CA	94110-5201
4171	005	DENNIS J HERRERA ETAL	1116 TENNESSEE ST	SAN FRANCISCO	CA	94107-3417
4171	011	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4171	020	HOWARD PROPERTIES	501 2ND ST #720	SAN FRANCISCO	CA	94107-4134
4171	021	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4171	025	OSA ASSOC III LLC	4248 23RD ST	SAN FRANCISCO	CA	94114-3139
4171	026	OSA ASSOC III LLC	4248 23RD ST	SAN FRANCISCO	CA	94114-3139
4171	027	OSA ASSOC III LLC	4248 23RD ST	SAN FRANCISCO	CA	94114-3139
4171	028	RAUL & DENISE ARRIAZA	4248 23RD ST	SAN FRANCISCO	CA	94114-3139
4171	029	RAUL & DENISE ARRIAZA	4248 23RD ST	SAN FRANCISCO	CA	94114-3139
4171	030	RAUL & DENISE ARRIAZA	4248 23RD ST	SAN FRANCISCO	CA	94114-3139
4172	001	BALDINI TRUST	4977 MISSION ST	SAN FRANCISCO	CA	94112-3415
4172	002	MARKY LYNN QUAYLE	2380 BROADWAY ST	SAN FRANCISCO	CA	94115-1234
4172	003	CHARLES A CANEPA ETAL	PO BOX 170218	SAN FRANCISCO	CA	94117-0218
4172	004	INEZ HUNTER TRUST	2524 3RD ST	SAN FRANCISCO	CA	94107-3113
4172	005	JAMES T AMOS ETAL	2530 3RD ST	SAN FRANCISCO	CA	94107-3113
4172	006	SCOT & MARIA JENERIK	2538 3RD ST	SAN FRANCISCO	CA	94107-3113
4172	007	GARY KREMEN	2542 3RD ST	SAN FRANCISCO	CA	94107-3113
4172	010	PHILIP MAKANNA ETAL	665 ARKANSAS ST	SAN FRANCISCO	CA	94107-2830
4172	014	LEO TRUST	159 SHOOTING STAR ISLE	FOSTER CITY	CA	94404-1805
4172	015	ROBERT C MACPHEE	PO BOX 411567	SAN FRANCISCO	CA	94141-1567
4172	016	THOMAS LUNDBERG ETAL	237 ROSE AV	MILL VALLEY	CA	94941-5033

THE INFORMATION CONTAINED HEREIN WHILE NOT GUARANTEED HAS BEEN SECURED FROM SOURCES DEEMED RELIABLE

BLOCK	LOT	OWNER	OADDR	CITY	STATE	ZIP
4172	018	RAUL VILLASENOR	2624 3RD ST	SAN FRANCISCO	CA	94107-3115
4172	018A	TERRYL TAGG ETAL	1195 TENNESSEE ST	SAN FRANCISCO	CA	94107-3416
4172	019	ROBERT NOELKE	1074 TENNESSEE ST	SAN FRANCISCO	CA	94107-3016
4172	020	MERCEDES S GARDNER TRUST	2638 3RD ST	SAN FRANCISCO	CA	94107-3115
4172	021	ANNE K MILLER TRS	735 HILLCREST WAY	REDWOOD CITY	CA	94062-3453
4172	022	FLYERS LLC	2349 RICKENBACKER WAY	AUBURN	CA	95602-9537
4172	025	THOMAS LUNDBERG ETAL	237 ROSE AV	MILL VALLEY	CA	94941-5033
4172	027	JESUS J NEVAREZ ETAL	1175 ALEMANY BL	SAN FRANCISCO	CA	94112-1401
4172	028	VIRGIE L WINCHESTER	1133 TENNESSEE ST	SAN FRANCISCO	CA	94107-3416
4172	029	CHRISTOPHER H IRION ETAL	1129 TENNESSEE ST	SAN FRANCISCO	CA	94107-3416
4172	032	HENRY BARGERT	1117 TENNESSEE ST	SAN FRANCISCO	CA	94107-3416
4172	034	STEVE WELCH ETAL	19031 CARLTON AV	CASTRO VALLEY	CA	94546-2911
4172	034A	BALDINI TRUST	4977 MISSION ST	SAN FRANCISCO	CA	94112-3415
4172	034B	DOUGLAS E GOWER ETAL	1125 DE HARO ST	SAN FRANCISCO	CA	94107-3210
4172	035	RUDOLPH CHURKA ETAL	686 PARIS ST	SAN FRANCISCO	CA	94112-3512
4172	036	JASON G W FONG ETAL	1109 TENNESSEE ST	SAN FRANCISCO	CA	94107-3416
4172	038	2572-80 THIRD ST LLC	742 4TH AV	SAN FRANCISCO	CA	94118-3913
4172	039	2572-80 THIRD ST LLC	742 4TH AV	SAN FRANCISCO	CA	94118-3913
4172	041	REDLAND GROUP INC	1155 TENNESSEE ST	SAN FRANCISCO	CA	94107-3416
4172	044	REDLAND GROUP INC	1155 TENNESSEE ST	SAN FRANCISCO	CA	94107-3416
4172	045	REDLAND GROUP INC	1155 TENNESSEE ST	SAN FRANCISCO	CA	94107-3416
4172	046	REDLAND GROUP INC	1155 TENNESSEE ST	SAN FRANCISCO	CA	94107-3416
4172	047	PETER A FURST ETAL	1121 TENNESSEE ST #1	SAN FRANCISCO	CA	94107-3454
4172	048	FRANCISCO R GUERRA	1121 TENNESSEE ST #2	SAN FRANCISCO	CA	94107-3454
4172	049	DANIEL E KAHLER TRUST	1121 TENNESSEE ST #3	SAN FRANCISCO	CA	94107-3454
4172	050	KEVIN M MCLEOD	1121 TENNESSEE ST #4	SAN FRANCISCO	CA	94107-3454
4172	051	HANS PETER & TRIBOULEY GERBER	1121 TENNESSEE ST #5	SAN FRANCISCO	CA	94107-3454
4172	052	JATEEN PAREKH	1121 TENNESSEE ST #6	SAN FRANCISCO	CA	94107-3454
4172	053	CARROLL REGAN	1155 TENNESSEE ST	SAN FRANCISCO	CA	94107-3416
4172	054	2572-80 THIRD ST LLC	742 4TH AV	SAN FRANCISCO	CA	94118-3913
4172	055	2546 THIRD ST LLC	1254 41ST AV	SAN FRANCISCO	CA	94122-1205
4172	056	RAYMOND MILLER TRS	593 TEXAS ST	SAN FRANCISCO	CA	94107-2938
4172	057	2546 THIRD ST LLC	1254 41ST AV	SAN FRANCISCO	CA	94122-1205
4172	058	2546 THIRD ST LLC	1254 41ST AV	SAN FRANCISCO	CA	94122-1205
4172	059	2546 THIRD ST LLC	1254 41ST AV	SAN FRANCISCO	CA	94122-1205
4172	060	VINCENT TOSCANO	2546 3RD ST #5	SAN FRANCISCO	CA	94107-3185
4172	061	2546 THIRD ST LLC	1254 41ST AV	SAN FRANCISCO	CA	94122-1205
4173	001	AMERICAN CAN CO	2586 3RD ST	SAN FRANCISCO	CA	94107-3113
4174	001	MIRANT POTRERO LLC	1201A ILLINOIS ST	SAN FRANCISCO	CA	94107
4175	002	MIRANT POTRERO LLC	1201A ILLINOIS ST	SAN FRANCISCO	CA	94107
4175	006	MIRANT POTRERO LLC	1201A ILLINOIS ST	SAN FRANCISCO	CA	94107
4175	007	PAC GAS & ELECTRIC CO	245 MARKET ST	SAN FRANCISCO	CA	94105
4228	010	POTRERO WAREHOUSE PRPTS LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	015	1240 MINNESOTA ST ASSOC LLC	550 TOWNSEND ST #B	SAN FRANCISCO	CA	94103-4918
4228	017	TRINITY INVESTMENTS LLC	1150 25TH ST	SAN FRANCISCO	CA	94107-3510
4228	018	LYLE SWEENEY	1099 23RD ST #1	SAN FRANCISCO	CA	94107-3470
4228	019	LONDON V EUBINAG	1099 23RD ST #2	SAN FRANCISCO	CA	94107-3470
4228	020	LEONARD T GUZMAN	203 E TAYLOR ST #1	SAN JOSE	CA	95112-5038
4228	021	NESTOR D MATTHEWS	1099 23RD ST #4	SAN FRANCISCO	CA	94107-3470
4228	022	SOSS TRUST	1099 23TH ST #5	SAN FRANCISCO	CA	94107
4228	023	PAUL A MARTSON ETAL	1099 23RD ST #6	SAN FRANCISCO	CA	94107-3470

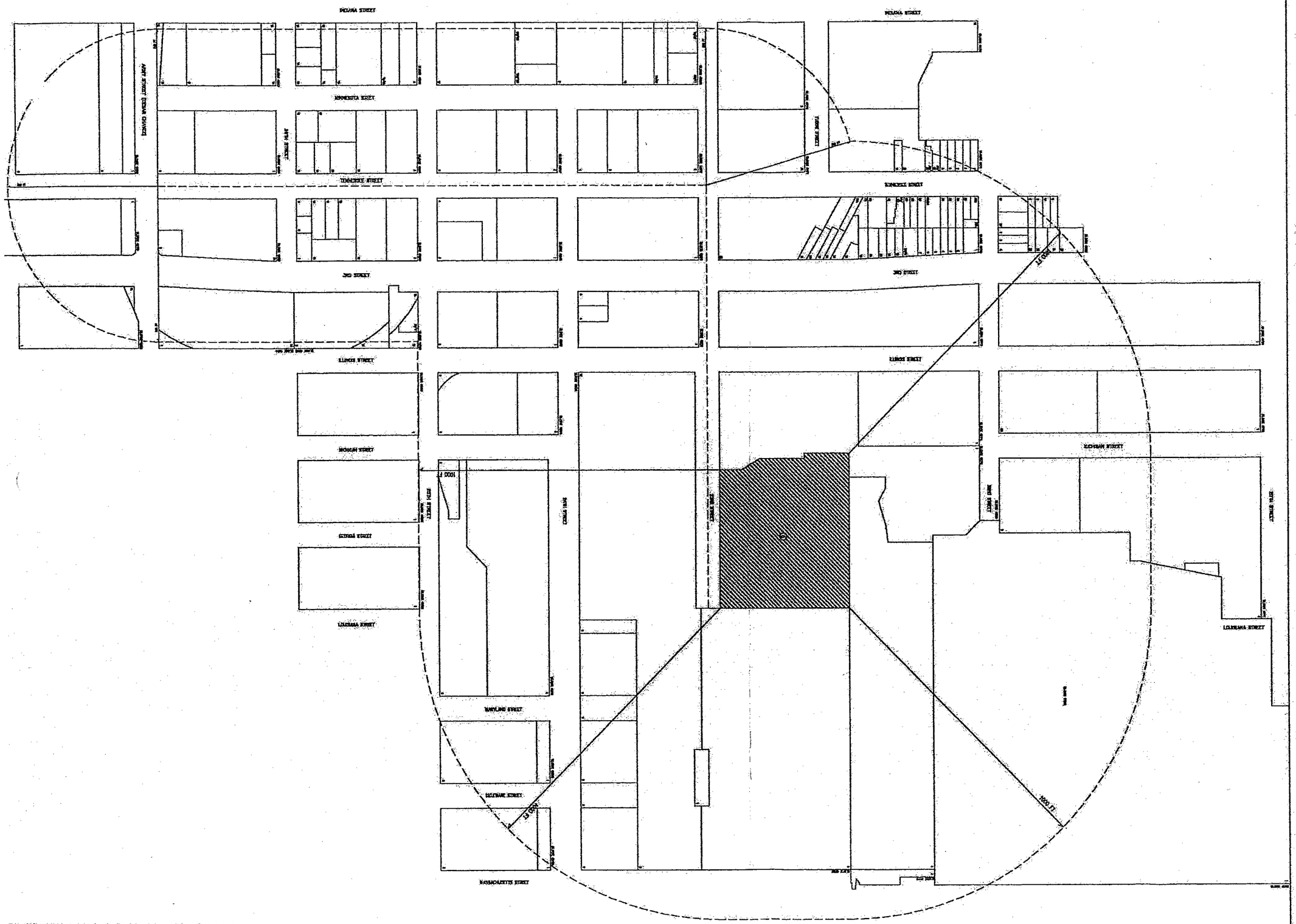
BLOCK	LOT	OWNER	OADDR	CITY	STATE	ZIP
4228	024	DAVID W REGAN	1099 23RD ST #7	SAN FRANCISCO	CA	94107-3470
4228	025	LISA A NOVAK	1099 23RD ST #18	SAN FRANCISCO	CA	94107-3471
4228	026	MAYNARD CHEN	1099 23RD ST #9	SAN FRANCISCO	CA	94107-3470
4228	027	DYANA M KING	1099 23RD ST #10	SAN FRANCISCO	CA	94107-3470
4228	028	JONATHAN & MICHELLE LARNER	1099 23RD ST #11	SAN FRANCISCO	CA	94107-3470
4228	029	BRUCE K HUIE	1099 23RD ST #12	SAN FRANCISCO	CA	94107-3471
4228	030	RONALD A BAKER	4331 26TH ST	SAN FRANCISCO	CA	94131-1809
4228	031	RANDY L SPARKS ETAL	1099 23RD ST #15	SAN FRANCISCO	CA	94107-3469
4228	032	CYRIL MEURILLON	1099 23RD ST #16	SAN FRANCISCO	CA	94107-3471
4228	033	DAVID C ZILKA	1099 23RD ST #17	SAN FRANCISCO	CA	94107-3471
4228	034	BENTON T GIAP	1099 23RD ST #18	SAN FRANCISCO	CA	94107-3471
4228	035	CRAIG S FORREST	1640 20TH ST	SAN FRANCISCO	CA	94107-2811
4228	036	HELEN J SIMON	1099 23RD ST	SAN FRANCISCO	CA	94107-3469
4228	037	SUE L WONG TRUST	23 VIOLA ST	S SAN FRANCISCO	CA	94080-7321
4228	038	1207 INDIANA ST ASSOC LLC	1443 16TH AV	SAN FRANCISCO	CA	94122-3509
4228	039	1207 INDIANA ST ASSOC LLC	1443 16TH AV	SAN FRANCISCO	CA	94122-3509
4228	040	1207 INDIANA ST ASSOC LLC	1443 16TH AV	SAN FRANCISCO	CA	94122-3509
4228	041	1207 INDIANA ST ASSOC LLC	1443 16TH AV	SAN FRANCISCO	CA	94122-3509
4228	042	1207 INDIANA ST ASSOC LLC	1443 16TH AV	SAN FRANCISCO	CA	94122-3509
4228	043	1207 INDIANA ST ASSOC LLC	1443 16TH AV	SAN FRANCISCO	CA	94122-3509
4228	044	1207 INDIANA ST ASSOC LLC	1443 16TH AV	SAN FRANCISCO	CA	94122-3509
4228	045	1207 INDIANA ST ASSOC LLC	1443 16TH AV	SAN FRANCISCO	CA	94122-3509
4228	046	1207 INDIANA ST ASSOC LLC	1443 16TH AV	SAN FRANCISCO	CA	94122-3509
4228	047	1207 INDIANA ST ASSOC LLC	1443 16TH AV	SAN FRANCISCO	CA	94122-3509
4228	048	1207 INDIANA ST ASSOC LLC	1443 16TH AV	SAN FRANCISCO	CA	94122-3509
4228	049	1207 INDIANA ST ASSOC LLC	1443 16TH AV	SAN FRANCISCO	CA	94122-3509
4228	050	1207 INDIANA ST ASSOC LLC	1443 16TH AV	SAN FRANCISCO	CA	94122-3509
4228	051	1207 INDIANA ST ASSOC LLC	1443 16TH AV	SAN FRANCISCO	CA	94122-3509
4228	052	1207 INDIANA ST ASSOC LLC	1443 16TH AV	SAN FRANCISCO	CA	94122-3509
4228	053	1207 INDIANA ST ASSOC LLC	1443 16TH AV	SAN FRANCISCO	CA	94122-3509
4228	054	1207 INDIANA ST ASSOC LLC	1443 16TH AV	SAN FRANCISCO	CA	94122-3509
4228	055	1207 INDIANA ST ASSOC LLC	1443 16TH AV	SAN FRANCISCO	CA	94122-3509
4228	056	1207 INDIANA ST ASSOC LLC	1443 16TH AV	SAN FRANCISCO	CA	94122-3509
4228	057	1207 INDIANA ST ASSOC LLC	1443 16TH AV	SAN FRANCISCO	CA	94122-3509
4228	058	TZU LUN LIN ETAL	1011 23RD ST #1	SAN FRANCISCO	CA	94107-3472
4228	059	WILLY SIU LON NG ETAL	378 BAY RIDGE DR	DALY CITY	CA	94014-1556
4228	060	GREG ANGILLY	1011 23RD ST #3	SAN FRANCISCO	CA	94107-3472
4228	061	RONALD A BAKER	4331 26TH ST	SAN FRANCISCO	CA	94131-1809
4228	062	KIMBERLY RUTH DALE	1011 23RD ST #5	SAN FRANCISCO	CA	94107-3472
4228	063	LARRY WOLLERT	1011 23RD ST #6	SAN FRANCISCO	CA	94107-3496
4228	064	JAMES B HURLEY	1011 23RD ST #7	SAN FRANCISCO	CA	94107-3496
4228	065	MINNA LAI	1011 23RD ST	SAN FRANCISCO	CA	94107-3472
4228	066	DAVID & CHRIS STAMATION	345 GRANADA AV	SAN FRANCISCO	CA	94112-1229
4228	067	ANGUS W BARNETT	1945 WASHINGTON ST #502	SAN FRANCISCO	CA	94109-2969
4228	068	STEPHANIE BRADSHAW	1011 23RD ST #11	SAN FRANCISCO	CA	94107-3496
4228	069	DEREN J BAKER	1011 23RD ST #12	SAN FRANCISCO	CA	94107-3473
4228	070	PHILIP YAU	1011 23RD ST #21	SAN FRANCISCO	CA	94107-3475
4228	071	JOHN P TALTY	1443 16TH AV	SAN FRANCISCO	CA	94122-3509
4228	072	LARRY WARNOCK	1011 23RD ST #15	SAN FRANCISCO	CA	94107-3473
4228	073	RICK BOSTIAN	1011 23RD ST #16	SAN FRANCISCO	CA	94107-3474
4228	074	ACHIM VOERMANEK	1011 23RD ST #17	SAN FRANCISCO	CA	94107-3474

BLOCK	LOT	OWNER	OADDR	CITY	STATE	ZIP
4228	075	RANDY BOBST-MCKAY	PO BOX 372	SAN FRANCISCO	CA	94104-0372
4228	076	GENE E BURT	1011 23RD ST #19	SAN FRANCISCO	CA	94107-3474
4228	077	CHAD BURNS ETAL	1011 23RD ST #20	SAN FRANCISCO	CA	94107-3474
4228	080	INDIANA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	081	INDIANA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	082	KIM E BABCOCK	1325 INDIANA ST #103	SAN FRANCISCO	CA	94107-3487
4228	083	LISA K ERSKINE	1325 INDIANA ST #104	SAN FRANCISCO	CA	94107-3487
4228	084	INDIANA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	085	SALVATORE BONDI	1325 INDIANA ST #106	SAN FRANCISCO	CA	94107-3487
4228	086	CHAD A COOK	1325 INDIANA ST #107	SAN FRANCISCO	CA	94107-3487
4228	087	MATTHEW W MORRIS	1325 INDIANA ST #108	SAN FRANCISCO	CA	94107-3487
4228	088	INDIANA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	089	INDIANA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	090	JULIO C PEIX	1325 INDIANA ST #111	SAN FRANCISCO	CA	94107-3487
4228	091	THOMAS J SHEFFLER	1325 INDIANA ST #112	SAN FRANCISCO	CA	94107-3487
4228	092	MICHAEL BURCHARDT	1325 INDIANA ST #113	SAN FRANCISCO	CA	94107-3487
4228	093	ADAM LEE	1325 INDIANA ST #114	SAN FRANCISCO	CA	94107-3491
4228	094	FIF GHOBADIAN TRUST	240 DOUGLASS ST	SAN FRANCISCO	CA	94114-2425
4228	095	HOWARD HERSH	1325 INDIANA ST #116	SAN FRANCISCO	CA	94107-3491
4228	096	ROHAN NADARAJAH	1325 INDIANA ST #201	SAN FRANCISCO	CA	94107-3488
4228	097	DON L SADLER ETAL	1325 INDIANA ST #202	SAN FRANCISCO	CA	94107-3488
4228	098	RYAN W KAUTZMAN	1325 INDIANA ST #203	SAN FRANCISCO	CA	94107-3488
4228	099	CHRISTIAN E BOHM	1325 INDIANA ST #204	SAN FRANCISCO	CA	94107-3488
4228	100	NANCY LEE	1325 INDIANA ST #205	SAN FRANCISCO	CA	94107-3488
4228	101	INDIANA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	102	AIMEE H WILLIAMS	1325 INDIANA ST #207	SAN FRANCISCO	CA	94107-3488
4228	103	INDIANA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	104	KEITH M SPEERS	1325 INDIANA ST #209	SAN FRANCISCO	CA	94107-3488
4228	105	INDIANA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	106	SHANNON KEATON	1325 INDIANA ST #211	SAN FRANCISCO	CA	94107-3492
4228	107	INDIANA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	108	MARGARET HEALY	1325 INDIANA ST #213	SAN FRANCISCO	CA	94107-3492
4228	109	INDIANA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	110	DARYL EIFLER	1325 INDIANA ST #101	SAN FRANCISCO	CA	94107-3487
4228	111	REZA GHOBADIAN	1325 INDIANA ST #216	SAN FRANCISCO	CA	94107-3492
4228	112	VISNU T PITIYANUVATH	1325 INDIANA ST #301	SAN FRANCISCO	CA	94107-3493
4228	113	INDIANA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	114	JULIE M HAND	1325 INDIANA ST #303	SAN FRANCISCO	CA	94107-3493
4228	115	ANGELA C SILVY	1325 INDIANA ST #304	SAN FRANCISCO	CA	94107-3493
4228	116	LAURA MACKENZIE	1325 INDIANA ST #305	SAN FRANCISCO	CA	94107-3493
4228	117	INDIANA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	118	KENNETH G FRENCH ETAL	1325 INDIANA ST #307	SAN FRANCISCO	CA	94107-3493
4228	119	WILLIAM SLATKIN	1325 INDIANA ST #308	SAN FRANCISCO	CA	94107-3494
4228	120	NATALIE C MEDVED	1325 INDIANA ST #309	SAN FRANCISCO	CA	94107-3494
4228	121	EDWARD W NYQUIST	1325 INDIANA ST #310	SAN FRANCISCO	CA	94107
4228	122	INDIANA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	123	PATRICIA B ALLEN TRUST	1325 INDIANA ST #312	SAN FRANCISCO	CA	94107-3494
4228	124	MURAT M ALPER	1325 INDIANA ST #313	SAN FRANCISCO	CA	94107-3494
4228	125	MARYAM EBRAHIMI	1325 INDIANA ST #314	SAN FRANCISCO	CA	94107-3494
4228	126	SEAN SMITH	1325 INDIANA ST #101	SAN FRANCISCO	CA	94107-3487
4228	127	LORIE LOE	1325 INDIANA ST #316	SAN FRANCISCO	CA	94107-3494

BLOCK	LOT	OWNER	OADDR	CITY	STATE	ZIP
4228	128	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	129	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	130	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	131	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	132	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	133	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	134	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	135	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	136	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	137	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	138	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	139	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	140	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	141	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	142	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	143	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	144	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	145	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	146	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	147	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	148	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	149	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	150	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	151	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	152	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	153	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	154	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	155	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	156	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4228	157	MINNESOTA LIVE & WORK ASSOC LLC	600 18TH ST	SAN FRANCISCO	CA	94107-3037
4229	002	FULLER PROPERTIES LLC	10610 WIMBLEDON ST	RANCHO MIRAGE	CA	92270-1471
4229	003	MARGARET ROCCHIA TRUST	1237 MINNESOTA ST	SAN FRANCISCO	CA	94107-3407
4229	004	FULLER PROPERTIES LLC	10610 WIMBLEDON ST	RANCHO MIRAGE	CA	92270-1471
4230	001	RYDER TRUCK RENTAL INC	PO BOX 25719	MIAMI	FL	33102-5719
4231	002	ROBERT & CARMEN A DELANO TRS	35 EVERGREEN CT	MILLBRAE	CA	94030-1520
4231	004	PARK TRUST	1820 SWEETWOOD DR	DALY CITY	CA	94015-2013
4231	005	LIDO MARTOCCHIO	3759 MISSION ST	SAN FRANCISCO	CA	94110-5844
4232	001	MIRANT POTRERO LLC	1201A ILLINOIS ST	SAN FRANCISCO	CA	94107
4232	003	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4232	004	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4232	005	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4232	006	MIRANT POTRERO LLC	1201A ILLINOIS ST	SAN FRANCISCO	CA	94107
4232	007	MIRANT POTRERO LLC	1201A ILLINOIS ST	SAN FRANCISCO	CA	94107
4232	008	MIRANT POTRERO LLC	1201A ILLINOIS ST	SAN FRANCISCO	CA	94107
4232	009	MIRANT POTRERO LLC	1201A ILLINOIS ST	SAN FRANCISCO	CA	94107
4232	010	HARRIGAN WEIDENMULLER CO	300 MONTGOMERY ST #800	SAN FRANCISCO	CA	94104-1910
4239	001	MIRANT POTRERO LLC	1201A ILLINOIS ST	SAN FRANCISCO	CA	94107
4239	002	CITY & COUNTY OF S F	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102-6051
4240	001	MIRANT POTRERO LLC	1201A ILLINOIS ST	SAN FRANCISCO	CA	94107
4240	002	CITY & COUNTY OF S F	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102-6051
4241	002	MARY BATTAINI	PO BOX 77004	SAN FRANCISCO	CA	94107-0004

BLOCK	LOT	OWNER	OADDR	CITY	STATE	ZIP
4241	003	MARY BATTAINI	PO BOX 77004	SAN FRANCISCO	CA	94107-0004
4241	004	SHEEDY INC	PO BOX 77004	SAN FRANCISCO	CA	94107-0004
4244	002	MARY BATTAINI	1401 GRIFFITH ST	SAN FRANCISCO	CA	94124-3400
4244	003	SHEEDY INC	PO BOX 77004	SAN FRANCISCO	CA	94107-0004
4244	004	SHEEDY INC	PO BOX 77004	SAN FRANCISCO	CA	94107-0004
4245	001	2833 THIRD ST LLC	2833 3RD ST	SAN FRANCISCO	CA	94107-3501
4245	002	JOYCE M FOLEY ETAL	26079 TABLE MEADOW RD	AUBURN	CA	95602-8958
4246	001	JOHN ANTHONY TEDESCO	2800 3RD ST	SAN FRANCISCO	CA	94107-3502
4246	003	EQUILON ENTERPRISES LLC	PO BOX 4369	HOUSTON	TX	77210-4369
4246	004	MARY H LAWSON	1495 TENNESSEE ST	SAN FRANCISCO	CA	94107-3420
4247	002	RICHARD P GENTSCHEL ETAL	115 LOCHINVAR RD	SAN RAFAEL	CA	94901-2423
4247	003	GLENN MCNULTY ETAL	1400 TENNESSEE ST	SAN FRANCISCO	CA	94107-3421
4247	004	SATORU HOSODA ETAL	1444 TENNESSEE ST	SAN FRANCISCO	CA	94107-3421
4293	006	HERMCO INC	1850 RALSTON AV	HILLSBOROUGH	CA	94010-6455
4293	012	HELEN BERLINER	2190 WASHINGTON ST	SAN FRANCISCO	CA	94109-2869
4293	013	HELEN BERLINER	2190 WASHINGTON ST	SAN FRANCISCO	CA	94109-2869
4293	014	HELEN BERLINER	2190 WASHINGTON ST	SAN FRANCISCO	CA	94109-2869
4293	015	HELEN BERLINER	2190 WASHINGTON ST	SAN FRANCISCO	CA	94109-2869
4293	016	HELEN BERLINER	2190 WASHINGTON ST	SAN FRANCISCO	CA	94109-2869
4293	018	HELEN BERLINER	2190 WASHINGTON ST	SAN FRANCISCO	CA	94109-2869
4293	019	TEDESCO TRUST	1450 PURISSIMA CREEK RD	HALF MOON BAY	CA	94019-2589
4293	020	LUTHER L KNOX	1415 INDIANA ST #102	SAN FRANCISCO	CA	94107-3536
4293	021	TEDESCO TRUST	1450 PURISSIMA CREEK RD	HALF MOON BAY	CA	94019-2589
4293	022	JAMES B HURLEY	1193 CHURCH ST	SAN FRANCISCO	CA	94114-3403
4293	023	TEDESCO TRUST	1450 PURISSIMA CREEK RD	HALF MOON BAY	CA	94019-2589
4293	024	CATHERINE T DOYLE	1415 INDIANA ST #106	SAN FRANCISCO	CA	94107-3536
4293	025	DRAWDY TRUST	16 FARM RD	SAN RAFAEL	CA	94903-3824
4293	026	LISA M FAZENDIN	1415 INDIANA ST #202	SAN FRANCISCO	CA	94107-3536
4293	027	DIANNE LEE WITHELDER TRUST	227 ROMAIN ST	SAN FRANCISCO	CA	94131-1341
4293	028	BRIAN J RODRIGUES	1220 EDGEWOOD RD	REDWOOD CITY	CA	94062-2729
4293	029	TEDESCO TRUST	1450 PURISSIMA CREEK RD	HALF MOON BAY	CA	94019-2589
4293	030	NATHAN ZAIDENWEBER	1415 INDIANA ST #206	SAN FRANCISCO	CA	94107-3537
4293	031	CHARLES GEBHARD	1415 INDIANA ST #301	SAN FRANCISCO	CA	94107-3537
4293	032	GEORGE F DEMAREST	PO BOX 536	BELMONT	CA	94002-0536
4293	033	BRIAN J RODRIGUES	1220 EDGEWOOD RD	REDWOOD CITY	CA	94062-2729
4293	034	ROBERT ROY GARCIA	411 VERMONT ST	SAN FRANCISCO	CA	94107-2325
4293	035	NOAH BERLAND	1816 5TH ST	BERKELEY	CA	94710-1915
4293	036	PHILIP M FREDERICO	1415 INDIANA ST #306	SAN FRANCISCO	CA	94106-0001
4294	003	IVY JERRY TRS	450 FERGUSON DR	MOUNTAIN VIEW	CA	94043-5214
4294	012	MICHAEL D GRENIER	1500 TENNESSEE ST	SAN FRANCISCO	CA	94107-3524
4294	013	TAN TRS	1331 31ST AV	SAN FRANCISCO	CA	94122-1419
4294	014	TAN TRS	1331 31ST AV	SAN FRANCISCO	CA	94122-1419
4294	015	TAN TRS	1331 31ST AV	SAN FRANCISCO	CA	94122-1419
4294	016	FRED S & NANCY PANG	1425 MINNESOTA ST	SAN FRANCISCO	CA	94107-3519
4294	017	IVY JERRY TRS	450 FERGUSON DR	MOUNTAIN VIEW	CA	94043-5214
4295	003	IVY JERRY TRS	450 FERGUSON DR	MOUNTAIN VIEW	CA	94043-5214
4295	007	BIC 3RD ST INC	2990 3RD ST	SAN FRANCISCO	CA	94107-3504
4295	008	BIC 3RD ST INC	2990 3RD ST	SAN FRANCISCO	CA	94107-3504
4295	009	BIC 3RD ST INC	2990 3RD ST	SAN FRANCISCO	CA	94107-3504
4295	010	BIC 3RD ST INC	2990 3RD ST	SAN FRANCISCO	CA	94107-3504
4295	011	BIC 3RD ST INC	2990 3RD ST	SAN FRANCISCO	CA	94107-3504

BLOCK	LOT	OWNER	OADDR	CITY	STATE	ZIP
4295	013	BIC 3RD ST INC	2990 3RD ST	SAN FRANCISCO	CA	94107-3504
4295	014	BIC 3RD ST INC	2990 3RD ST	SAN FRANCISCO	CA	94107-3504
4295	015	BIC 3RD ST INC	2990 3RD ST	SAN FRANCISCO	CA	94107-3504
4296	005	JOSEPHINE DENTONI INC	2820 SUMMIT DR	BURLINGAME	CA	94010-6239
4296	010	JOSEPHINE DENTONI INC	2820 SUMMIT DR	BURLINGAME	CA	94010-6239
4296	013	BRENT K ZERULL TRUST	222 SEA VIEW DR	SAN RAFAEL	CA	94901-2352
4296	015	JERRY R BARRISH	315 SHORESIDE DR	PACIFICA	CA	94044-3900
4296	016	ECKSTROM BOWLES ETAL	2290 S 10TH ST	SAN JOSE	CA	95112-4114
4296	017	JERRY BARRISH	315 SHORESIDE DR	PACIFICA	CA	94044-3900
4297	001	CITY & COUNTY OF S F	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102-6051
4298	001	CITY & COUNTY OF S F	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102-6051
4299	001	CITY & COUNTY OF S F	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102-6051
4314	001	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4314	001A	SIXTEEN FIRST ST INC	572 RUGER ST #A	SAN FRANCISCO	CA	94129
4315	008	WILLIAM D SPENCER ETAL	99 S HILL DR	BRISBANE	CA	94005-1215
4315	013	WILLIAM D SPENCER ETAL	99 S HILL DR	BRISBANE	CA	94005-1215
4316	001	TENNESSEE PROPERTIES LLC	3320 JACKSON ST	SAN FRANCISCO	CA	94118-2019
4316	002	WOCO INC	157 7TH AV	SAN FRANCISCO	CA	94118-1206
4317	012	PAOLO & ERIN COSTA	18 APOLLO RD	BEL TIBURON	CA	94920-1302
4317	014	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4317	015	MITCHELL & MICHAEL PROPERTIES	1580 INDIANA ST	SAN FRANCISCO	CA	94107-3517
4317	017	STEINER CORP	505 E S TEMPLE	SALT LAKE CITY	UT	84102-1004
4317	018	STEINER CORP	505 E S TEMPLE	SALT LAKE CITY	UT	84102-1004
4353	001	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4353	008	YANGS PROPERTIED LLC	619 35TH AV	SAN FRANCISCO	CA	94121-2709
4353	009	JIM J H LUO ETAL	2379 FUNSTON AV	SAN FRANCISCO	CA	94116-1948
4355	001	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4355	006	GAEHWILER TRUST	1550 MICHIGAN ST	SAN FRANCISCO	CA	94124-1233
4356	001	WILLIAM D SPENCER ETAL	99 S HILL DR	BRISBANE	CA	94005-1215
4356	001A	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
9999	999	. . . . .	. . . . .	. . . . .	.	. . .



RADIUS Services

445 Grant Avenue Suite 400
San Francisco, CA 94108-3208
(415) 391-4775

BLOCK 4175
LOT 6

San Francisco, CA

SCALE: 1"=140'-0"

JOB NO: 41750000	DATE: 040219
	DRAWN: DC
	CHECKED: DC

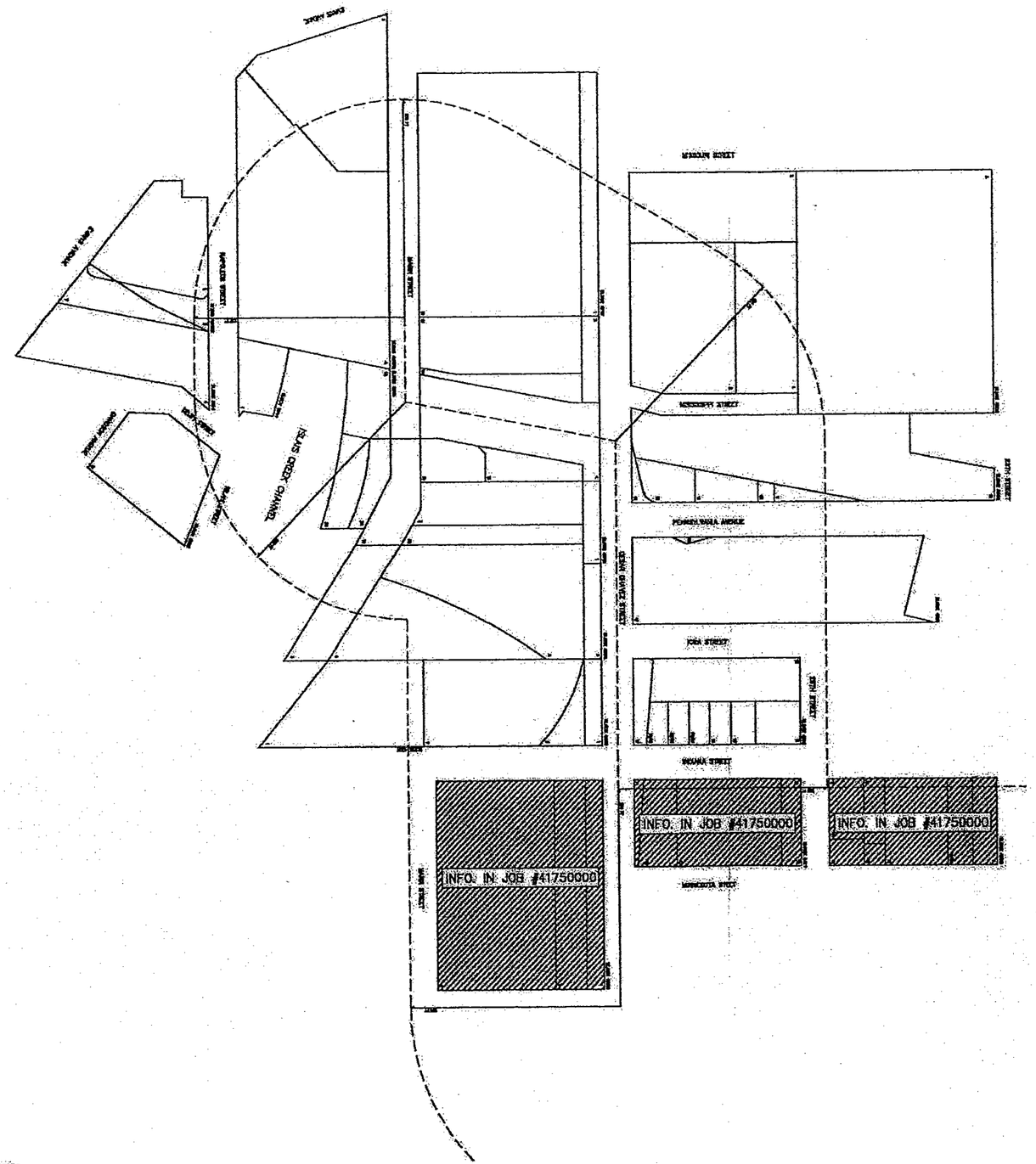
AREA RADIUS MAP

The information contained herein has been obtained from sources that we deemed reliable and current at the time of preparation. We have no reason to doubt its accuracy but we do not guarantee it.

BLOCK	LOT	OWNER	OADDR	CITY	STATE	ZIP
0001	001	RADIUS SERVICES NO. 4175000A	1201 ILLINOIS ST	CH2M	04	0225
0001	002	. . . . .	. . . . .	. . . . .	.	. .
0001	003	R A D I U S S E R V I C E S	4 4 5 G R A N T A V # 4 0 0	SAN FRANCISCO	CA	94108
0001	004	C H 2 M	2485 NATOMAS PARK DR #600	SACRAMENTO	CA	94833
0001	005	. . . . .	. . . . .	. . . . .	.	. .
4288	003	YELLOW CAB COOPERATIVE INC	1200 MISSISSIPPI ST	SAN FRANCISCO	CA	94107-3436
4288	004	BAY WEST FALASCHI-COX #1	2 HENRY ADAMS ST #450	SAN FRANCISCO	CA	94103-5000
4288	005	BAY WEST FALASCHI-COX #1	2 HENRY ADAMS ST #450	SAN FRANCISCO	CA	94103-5000
4288	006	BAY WEST FALASCHI-COX #1	2 HENRY ADAMS ST #450	SAN FRANCISCO	CA	94103-5000
4290	008	JAFFE TRUST	1500 OAK RIM DR	HILLSBOROUGH	CA	94010-7365
4290	010	DENNIS C MAGRI	148 MARIETTA DR	SAN FRANCISCO	CA	94127-1842
4290	011	PATRICK & WENDY MCCANN	3125 CANYON RD	BURLINGAME	CA	94010-6020
4290	012	DENNIS C MAGRI	148 MARIETTA DR	SAN FRANCISCO	CA	94127-1842
4290	014	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4290	018	PENINSULA CORRIDOR JOINT POWER	1110 PENNSYLVANIA AV	SAN FRANCISCO	CA	94107
4291	017	CALTRANS	111 GRAND AV	OAKLAND	CA	94612
4291	018	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4318	011	MITCHELL & MICHAEL PROPERTIES	1580 INDIANA ST	SAN FRANCISCO	CA	94107-3517
4318	012	MITCHELL & MICHAEL PROPERTIES	1580 INDIANA ST	SAN FRANCISCO	CA	94107-3517
4318	015	MITCHELL & MICHAEL PROPERTIES	1580 INDIANA ST	SAN FRANCISCO	CA	94107-3517
4318	017	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4318	018	CALTRANS	111 GRAND AV	OAKLAND	CA	94612
4318	022	ANJANETTE Y PONG	1568 INDIANA ST #1	SAN FRANCISCO	CA	94107-3534
4318	023	PAUL WILKENS	1568 INDIANA ST #2	SAN FRANCISCO	CA	94107-3534
4318	024	CHI KIM YOUNG	1568 INDIANA ST #3	SAN FRANCISCO	CA	94107-3534
4318	025	RANDY CORDEIRO	1568 INDIANA ST #4	SAN FRANCISCO	CA	94107-3534
4318	026	JANSEN CHIU	1568 INDIANA ST #5	SAN FRANCISCO	CA	94107-3534
4318	027	DEBORAH A DEVITA	1568 INDIANA ST #6	SAN FRANCISCO	CA	94107-3534
4318	028	JAMES COHILL	1568 INDIANA ST #7	SAN FRANCISCO	CA	94107-3534
4318	029	GORDON C LYON	1568 INDIANA ST #8	SAN FRANCISCO	CA	94107-3534
4318	030	1588 INDIANA CORP	133 FLYING MIST ISLE	FOSTER CITY	CA	94404-1401
4318	031	1588 INDIANA CORP	133 FLYING MIST ISLE	FOSTER CITY	CA	94404-1401
4318	032	1588 INDIANA CORP	133 FLYING MIST ISLE	FOSTER CITY	CA	94404-1401
4318	033	1588 INDIANA CORP	133 FLYING MIST ISLE	FOSTER CITY	CA	94404-1401
4318	034	1588 INDIANA CORP	133 FLYING MIST ISLE	FOSTER CITY	CA	94404-1401
4318	035	1588 INDIANA CORP	133 FLYING MIST ISLE	FOSTER CITY	CA	94404-1401
4318	036	1588 INDIANA CORP	133 FLYING MIST ISLE	FOSTER CITY	CA	94404-1401
4318	037	1588 INDIANA CORP	133 FLYING MIST ISLE	FOSTER CITY	CA	94404-1401
4318	038	1588 INDIANA CORP	133 FLYING MIST ISLE	FOSTER CITY	CA	94404-1401
4318	039	1588 INDIANA CORP	133 FLYING MIST ISLE	FOSTER CITY	CA	94404-1401
4318	040	1588 INDIANA CORP	133 FLYING MIST ISLE	FOSTER CITY	CA	94404-1401
4318	041	1588 INDIANA CORP	133 FLYING MIST ISLE	FOSTER CITY	CA	94404-1401
4318	042	1578 INDIANA CORP	133 FLYING MIST ISLE	FOSTER CITY	CA	94404-1401
4318	043	1578 INDIANA CORP	133 FLYING MIST ISLE	FOSTER CITY	CA	94404-1401
4318	044	1578 INDIANA CORP	133 FLYING MIST ISLE	FOSTER CITY	CA	94404-1401
4318	045	1578 INDIANA CORP	133 FLYING MIST ISLE	FOSTER CITY	CA	94404-1401
4318	046	1578 INDIANA CORP	133 FLYING MIST ISLE	FOSTER CITY	CA	94404-1401
4318	047	DANIEL NORMANDIN	1578 INDIANA ST #6	SAN FRANCISCO	CA	94107-3543
4318	048	FARBOD BARSUM	1578 INDIANA ST #7	SAN FRANCISCO	CA	94107-3543
4318	049	1578 INDIANA CORP	133 FLYING MIST ISLE	FOSTER CITY	CA	94404-1401
4318	050	1578 INDIANA CORP	133 FLYING MIST ISLE	FOSTER CITY	CA	94404-1401

THE INFORMATION CONTAINED HEREIN WHILE NOT GUARANTEED HAS BEEN SECURED FROM SOURCES DEEMED RELIABLE

BLOCK	LOT	OWNER	OADDR	CITY	STATE	ZIP
4318	051	1578 INDIANA CORP	133 FLYING MIST ISLE	FOSTER CITY	CA	94404-1401
4318	052	MICHAEL J GRACE	1578 INDIANA ST #11	SAN FRANCISCO	CA	94107-3544
4318	053	JUSTIN A LEWIS ETAL	1578 INDIANA ST #12	SAN FRANCISCO	CA	94107-3544
4347	001	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4347	010	HEARST CORP	1901 CESAR CHAVEZ	SAN FRANCISCO	CA	94124-1133
4347A	003	SHURARGD STORAGE CENTERS INC	1155 VALLEY ST #400	SEATTLE	WA	98109-4426
4347A	004	M-O SAN FRANCISCO LP	380 STEVENS AV #313	SOLANA BEACH	CA	92075-2069
4347B	004	CALTRANS	111 GRAND AV	OAKLAND	CA	94612
4347B	006	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4347B	007	CALTRANS	111 GRAND AV	OAKLAND	CA	94612
4349	001	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4349	002	CALTRANS	111 GRAND AV	OAKLAND	CA	94612
4349	002A	CALTRANS	111 GRAND AV	OAKLAND	CA	94612
4349	003A	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4349	003B	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4349	004	SOUTHERN PAC TRANSPORTATION CO	1475 CESAR CHAVEZ	SAN FRANCISCO	CA	94124-1100
4349	004A	SOUTHERN PAC TRANSPORTATION CO	1475 CESAR CHAVEZ	SAN FRANCISCO	CA	94124-1100
4349	011	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4349	012	CALTRANS	111 GRAND AV	OAKLAND	CA	94612
4349	013	CALTRANS	111 GRAND AV	OAKLAND	CA	94612
4349	014	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4349	015	FEDERATED METALS CORP	1160 STATE ST	PERTH AMBOY	NJ	08861-2048
4349	016	HEARST CORP	227 W TRADE ST	CHARLOTTE	NC	28202-1675
4352	001	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4352	006	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4352	007	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4381	001	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4382	003	CALTRANS	111 GRAND AV	OAKLAND	CA	94612
4382	004	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4382	005	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
4382	006	SF REAL ESTATE DEPT	25 VAN NESS AV #400	SAN FRANCISCO	CA	94102
5214	001	SOUTHERN PAC TRANSPORTATION CO	1475 CESAR CHAVEZ	SAN FRANCISCO	CA	94124-1100
5214	004	SOUTHERN PAC TRANSPORTATION CO	1475 CESAR CHAVEZ	SAN FRANCISCO	CA	94124-1100
5215	021	MURRAY G COLE	1650 DAVIDSON AV	SAN FRANCISCO	CA	94124-1143
9999	999	* * * * * * * * * *	* * * * * * * * * *	* * * * *	*	* *



R A D I U S Services

445 Grant Avenue, Suite 400
San Francisco, CA 94108-3208
(415) 391-4775

CONTINUATION...
BLOCK 4175
LOT 6

San Francisco, CA

SCALE: 1"=140'-0"

JOB NO.	DATE: 040225
4175000A	DRAWN: DC
	CHECKED: DC

AREA RADIUS MAP

The information contained herein has been obtained from sources that we deemed reliable and current at the time of preparation. We have no reason to doubt its accuracy but we do not guarantee it.

APPENDIX D

Contractor Certification

Contractor Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel prepared the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for preparing the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____ *Signed*

_____ *Position*

_____ *Date*

APPENDIX E

Authorized Contractors

List of Authorized Contractors

Contractor	Designated Responsible Person	Address	Telephone Number (current & emergency)	Responsibilities

APPENDIX F

Authorized Inspectors

List of Authorized Inspectors

Contractor	Designated Responsible Person	Telephone Number	Responsibilities

APPENDIX G

SWPPP Inspection Form

Storm Water Quality Construction Site Inspection Checklist

INSTRUCTIONS

- Use this form for inspecting BMPs as described in SWPPP Section 500.5.
- This inspection form shall be completed and signed by the Contractor's Water Pollution Control Manager (WPCM).
- The Conceptual SWPPP (CSWPPP) or the Special Provisions may require the Contractor to use a different inspection form
- The weather information shall be the best estimate of beginning of the storm event, duration of the event, time elapsed since the last storm, and approximate amount of rainfall.
- List observations of all BMPs: temporary soil stabilization (erosion control), temporary sediment controls, wind erosion controls, tracking controls, non-storm water controls and waste management and materials pollution controls.
- Evaluate BMPs for adequacy and proper implementation and whether additional BMPs are required in accordance with the terms of the Permits.
- Verify implementation of non-storm water discharge BMPs and evaluate their effectiveness.
- One time discharges of non-storm water shall be inspected when such discharges occur.
- Describe any inadequate BMPs.
- Note the corrective actions required, including any changes to the SWPPP, and implementation dates.
- If you answer "No" to any of the questions, describe the corrective action(s) to be taken and when the corrective action(s) are to be completed. Should you need more space to describe corrective actions, identify your response numerically and use additional sheets as necessary.

GENERAL INFORMATION				
Project Name				
Caltrans Contract N°				
Contractor				
Inspector's Name				
Inspector's Title				
Signature				
Date of Inspection				
Inspection Type (Check Applicable)	❒ Prior to forecast rain ❒ 24-hr intervals during extended rain		❒ After a rain event ❒ Other _____	
Season (Check Applicable)	❒ Rainy		❒ Non-Rainy	
Storm Data	Storm Start Date & Time:		Storm Duration (hrs):	
	Time elapsed since last storm (Circle Applicable Units)	Min. Hr. Days	Approximate Rainfall Amount (mm)	

PROJECT AREA SUMMARY AND DISTURBED SOIL AREA (DSA) SIZE LIMITS FROM SPECIAL PROVISIONS				
Total Project Area	_____	Hectares	_____	Acres
Rainy Season DSA Limit	_____	Hectares	_____	Acres
Field Estimate of Active DSAs	_____	Hectares	_____	Acres

OTHER REQUIREMENTS				
Requirement	**Yes**	**No**	**N/A**	**Corrective Action**
Preservation of Existing Vegetation				
Is temporary fencing provided to preserve vegetation in areas where no construction activity is planned?				
Location:				
Location:				
Location:				

OTHER REQUIREMENTS				
Requirement	**Yes**	**No**	**N/A**	**Corrective Action**
Location:				
Temporary Soil Stabilization				
Does the applied temporary soil stabilization provide 100% coverage for the required areas?				
Are any non-vegetated areas that may require temporary soil stabilization?				
Is the area where temporary soil stabilization required free from visible erosion?				
Location:				
Location:				
Location:				
Location:				
Temporary Linear Sediment Barriers				
Are temporary linear sediment barriers properly installed in accordance with the details, functional and maintained?				
Are temporary linear sediment barriers free of accumulated litter?				
Is the built-up sediment less than 1/3 the height of the barrier?				
Are cross barriers installed where necessary and properly spaced?				
Location:				
Location:				
Location:				
Location:				
Location:				
Storm Drain Inlet Protection				
Are storm drain inlets internal to the project properly protected with either Type 1, 2 or 3 inlet protection?				
Are storm drain inlet protection devices in working order and being properly maintained?				
Location:				
Location:				
Location:				
Location:				
Location:				
Desilting Basins				
Are basins maintained to provide the required retention/detention?				
Are basin controls (inlets, outlets, diversions, weirs, spillways, and racks) in working order?				
Location:				
Location:				
Location:				

OTHER REQUIREMENTS				
Requirement	Yes	No	N/A	Corrective Action
Location:				
Stockpiles				
Are all locations of temporary stockpiles, including soil, hazardous waste, and construction materials in approved areas?				
Are stockpiles protected from run-on, run-off from adjacent areas and from winds?				
Are stockpiles located at least 15 m from concentrated flows, downstream drainage courses and storm drain inlets?				
Are required covers and/or perimeter controls in place?				
Location:				
Location:				
Location:				
Location:				
Concentrated Flows				
Are concentrated flow paths free of visible erosion?				
Location:				
Location:				
Location:				
Location:				
Tracking Control				
Are points of ingress/egress to public/private roads inspected and swept and vacuumed daily?				
Are all paved areas free of visible sediment tracking or other particulate matter?				
Location:				
Location:				
Location:				
Location:				
Wind Erosion Control				
Is dust control implemented in conformance with Section 10 of the Standard Specifications?				
Location:				
Location:				
Location:				
Location:				
Dewatering Operations				
Is dewatering handled in conformance with the dewatering permit issued by the RWQCB?				
Is required treatment provided for dewatering effluent?				
Location:				

OTHER REQUIREMENTS				
Requirement	**Yes**	**No**	**N/A**	**Corrective Action**
Location:				
Location:				
Location:				
Vehicle & Equipment Fueling, Cleaning, and Maintenance				
Are vehicle and equipment fueling, cleaning and maintenance areas reasonably clean and free of spills, leaks, or any other deleterious material?				
Are vehicle and equipment fueling, cleaning and maintenance activities performed on an impermeable surface in dedicated areas?				
If no, are drip pans used?				
Are dedicated fueling, cleaning, and maintenance areas located at least 15 m away from downstream drainage facilities and water courses and protected from run-on and runoff?				
Is wash water contained for infiltration/ evaporation and disposed of outside the highway right of way?				
Is on-site cleaning limited to washing with water (no soap, soaps substitutes, solvents, or steam)?				
On each day of use, are vehicles and equipment inspected for leaks and if necessary, repaired?				
Location:				
Location:				
Location:				
Location:				
Waste Management & Materials Pollution Control				
Are material storage areas and washout areas protected from run-on and runoff, and located at least 15 m from concentrated flows and downstream drainage facilities?				
Are all material handling and storage areas clean; organized; free of spills, leaks, or any other deleterious material; and stocked with appropriate clean-up supplies?				
Are liquid materials, hazardous materials, and hazardous wastes stored in temporary containment facilities?				
Are bagged and boxed materials stored on pallets?				
Are hazardous materials and wastes stored in appropriate, labeled containers?				
Are proper storage, clean-up, and spill-reporting procedures for hazardous materials and wastes posted in open, conspicuous and accessible locations adjacent to storage areas?				
Are temporary containment facilities free of spills and rainwater?				
Are temporary containment facilities and bagged/boxed materials covered?				
Are temporary concrete washout facilities designated and being used?				
Are temporary concrete washout facilities functional for receiving and containing concrete waste and are concrete residues prevented from entering the drainage system?				
Do temporary concrete washout facilities provide sufficient volume and freeboard for planned concrete operations?				

OTHER REQUIREMENTS				
Requirement	**Yes**	**No**	**N/A**	**Corrective Action**
Are concrete wastes, including residues from cutting and grinding, contained and disposed of off-site or in concrete washout facilities?				
Are spills from mobile equipment fueling and maintenance properly contained and cleaned up?				
Is the site free of litter?				
Are trash receptacles provided in the Contractor's yard, field trailer areas, and at locations where workers congregate for lunch and break periods?				
Is litter from work areas within the construction limits of the project site collected and placed in watertight dumpsters?				
Are waste management receptacles free of leaks?				
Are the contents of waste management receptacles properly protected from contact with storm water or from being dislodged by winds?				
Are waste management receptacles filled at or beyond capacity?				
Location:				
Location:				
Location:				
Location:				
Temporary Water Body Crossing or Encroachment				
Are temporary water body crossings and encroachments constructed as shown on the plans or as approved by the engineer?				
Does the project conform to the requirements of the 404 permit and/or 1601agreement?				
Location:				
Location:				
Location:				
Location:				
Illicit Connection/Illegal Discharge Detection and Reporting				
Is there any evidence of illicit discharges or illegal dumping on the project site?				
If yes, has the Engineer been notified?				
Location:				
Location:				
Location:				
Location:				
Discharge Points				
Are discharge points and discharge flows free from noticeable pollutants?				
Are discharge points free of any significant erosion or sediment transport?				
Location:				

OTHER REQUIREMENTS				
Requirement	**Yes**	**No**	**N/A**	**Corrective Action**
Location:				
Location:				
Location:				
WPCP/SWPPP Update				
Does the WPCP/SWPPP, Project Schedule/Water Pollution Control Schedule and WPCDs adequately reflect the current site conditions and contractor operations?				
Are all BMPs shown on the WPCDs installed in the proper location(s) and according to the details for the plan?				
Location:				
Location:				
Location:				
Location:				
General				
Are there any other potential water pollution control concerns at the site?				
Location:				
Location:				
Location:				
Location:				

APPENDIX H

SWPPP Amendments

SWPPP Amendments

Project Name: Turlock Irrigation District – Walnut Energy Center

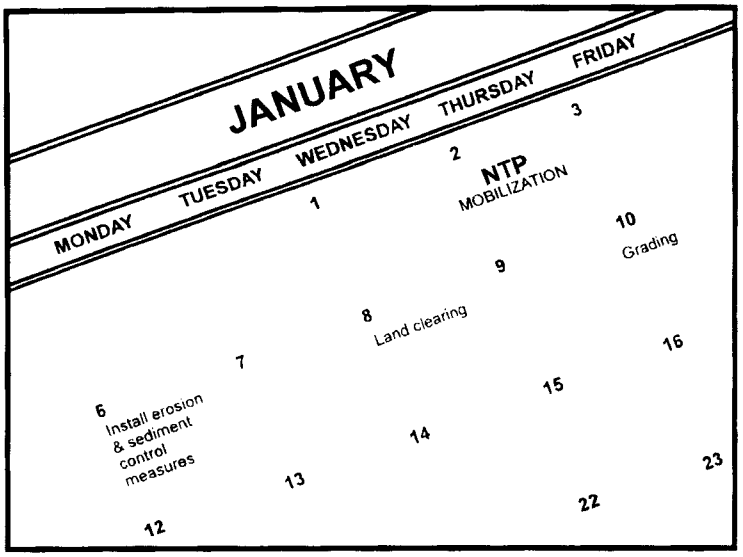
Amendment No.	Date	Brief Description of Amendment	Prepared By

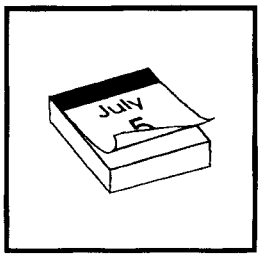
APPENDIX I

Detailed Description of BMPs

Scheduling

SS-1





BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose

This best management practice (BMP) involves developing, for every project, a schedule that includes sequencing of construction activities with the implementation of construction site BMPs such as temporary soil stabilization (erosion control) and temporary sediment controls measures. The purpose is to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff and vehicle tracking, and to perform the construction activities and control practices in accordance with the planned schedule.

Appropriate Applications

Construction sequencing shall be scheduled to minimize land disturbance for all projects during the rainy season.

Limitations

None identified.

Standards and Specifications

- Plan the project and develop a schedule or to layout the construction plan. The schedule shall clearly show how the rainy season relates to soil-disturbing and re-stabilization activities. The construction schedule shall be incorporated into the SWPPP or WPCP.

- The schedule shall include detail on the rainy season implementation and deployment of:

  - temporary soil stabilization BMPs,
  - temporary sediment control BMPs,
  - tracking control BMPs,
  - wind erosion control BMPs,
  - non-storm water BMPs, and

- waste management and materials pollution control BMPs.

- Schedule shall also include dates for significant long-term operations or activities that may have planned non-storm water discharges such as dewatering, sawcutting, grinding, drilling, boring, crushing, blasting, painting, hydro-demolition, mortar mixing, bridge cleaning, etc.

- Schedule work to minimize soil disturbing activities during the rainy season.

- Work out the sequencing and timetable for the start and completion of each item such as site clearing and grubbing, grading, excavation, paving, pouring foundations, installing utilities, etc., to minimize the active construction area during the rainy season.

- Schedule major grading operations for the non-rainy season when practical.

- Stabilize non-active areas as soon as practical.

- Monitor the weather forecast for rainfall.

- When rainfall is predicted, adjust the construction schedule to allow the implementation of soil stabilization and sediment controls and sediment treatment controls on all disturbed areas prior to the onset of rain.

- Be prepared year-round to deploy soil stabilization and sediment control and sediment treatment control practices as required by Section 2 of this Manual. Erosion may be caused during dry seasons by unseasonal rainfall, wind and vehicle tracking. Keep the site stabilized year-round, and retain and maintain rainy season sediment trapping devices in operational condition.

- Sequence trenching activities so that most open portions are closed before new trenching begins.

- Incorporate staged seeding and re-vegetation of graded slopes as work progresses.

- Consider scheduling when establishing permanent vegetation (appropriate planting time for specified vegetation).

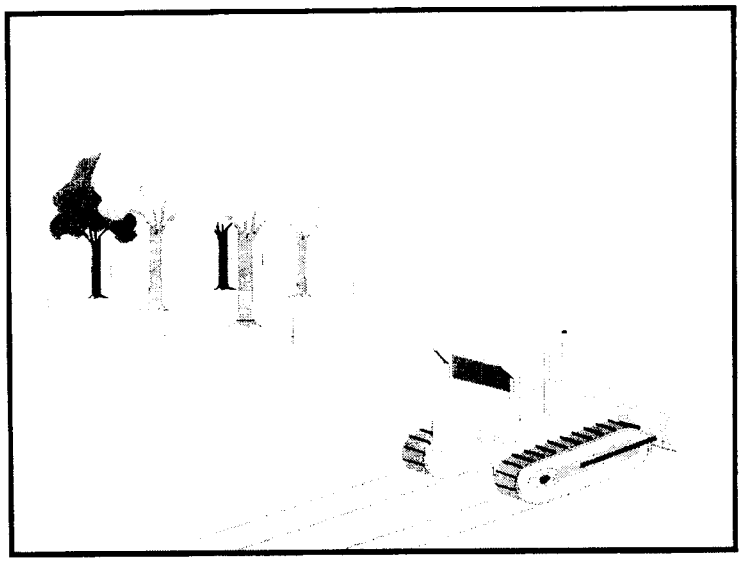
- Apply permanent erosion control to areas deemed substantially complete during the project's defined seeding window.

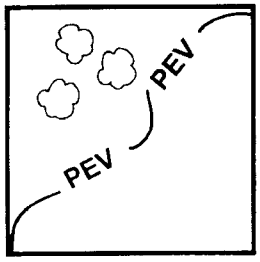
Maintenance and Inspection

- Verify that work is progressing in accordance with the schedule. If progress deviates, take corrective actions.
- Amend the schedule when changes are warranted or when directed by the Resident Engineer (RE).
- The Special Provisions require annual submittal of rainy season implementation schedule. Amend the schedule prior to the rainy season to show updated information on the deployment and implementation of construction site BMPs.

Preservation of Existing Vegetation

SS-2





BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose

Preservation of existing vegetation is the identification and protection of desirable vegetation that provides erosion and sediment control benefits.

Appropriate Applications

- Preserve existing vegetation at areas on a site where no construction activity is planned or will occur at a later date.
- On a year-round basis, temporary fencing shall be provided prior to clearing and grubbing operations or other soil-disturbing activities in areas where no construction activity is planned or will occur at a later date.
- No grading or disturbances shall occur in areas identified on the plans to be preserved, especially on areas designated as Environmentally Sensitive Areas (ESAs).

Limitations

Protection of existing vegetation requires planning, and may limit the area available for construction activities.

Standards and Specifications

Timing

- Preservation of existing vegetation shall be provided prior to the commencement of clearing and grubbing operations or other soil-disturbing activities in areas where no construction activity is planned or will occur at a later date.
- Preservation of existing vegetation shall conform to scheduling requirements set forth in the special provisions.

Design and Layout

- Mark areas to be preserved with temporary fencing made of orange polypropylene that is stabilized against ultraviolet light. The temporary fencing shall be at least one meter wide and shall have openings not larger than 50mm by 50mm.
- Fence posts shall be either wood or metal, at the Contractor's discretion, as appropriate for the intended purpose. The post spacing and depth shall be adequate to completely support the fence in an upright position.
- Minimize the disturbed areas by locating temporary roadways to avoid stands of trees and shrubs and to follow existing contours to reduce cutting and filling.
- Consider the impact of grade changes to existing vegetation and the root zone.

Installation

- Construction materials, equipment storage, and parking areas shall be located where they will not cause root compaction.
- Keep equipment away from trees to prevent trunk and root damage.
- Maintain existing irrigation systems.
- Employees and subcontractors shall be instructed to honor protective devices. No heavy equipment, vehicular traffic, or storage piles of any construction materials shall be permitted within the drip line of any tree to be retained. Removed trees shall not be felled, pushed, or pulled into any retained trees. Fires shall not be permitted within 30 m (100 ft) of the drip line of any retained trees. Any fires shall be of limited size, and shall be kept under continual surveillance. No toxic or construction materials - including paint, acid, nails, gypsum board, chemicals, fuels, and lubricants - shall be stored within 15 m (50 ft) of the drip line of any retained trees, nor disposed of in any way which would injure vegetation.

Trenching and Tunneling

- Trenching shall be as far away from tree trunks as possible, usually outside of the tree drip line or canopy. Curve trenches around trees to avoid large roots or root concentrations. If roots are encountered, consider tunneling under them. When trenching and/or tunneling near or under trees to be retained, tunnels shall be at least 450 mm (18 in) below the ground surface, and not below the tree center to minimize impact on the roots.

- Tree roots shall not be left exposed to air; they shall be covered with soil as soon as possible, protected, and kept moistened with wet burlap or peat moss until the tunnel and/or trench can be completed.
- The ends of damaged or cut roots shall be cut off smoothly.
- Trenches and tunnels shall be filled as soon as possible. Careful filling and tamping will eliminate air spaces in the soil which can damage roots.
- Remove any trees intended for retention if those trees are damaged seriously enough to affect their survival. If replacement is desired or required, the new tree shall be of similar species, and of at least 50 mm (2 in) caliper, unless otherwise required by the contract documents.
- After all other work is complete, fences and barriers shall be removed last. This is because protected trees may be destroyed by carelessness during the final cleanup and landscaping.

Maintenance and Inspection

During construction, the limits of disturbance shall remain clearly marked at all times. Irrigation or maintenance of existing vegetation shall conform to the requirements in the landscaping plan. If damage to protected trees still occurs, maintenance guidelines described below shall be followed:

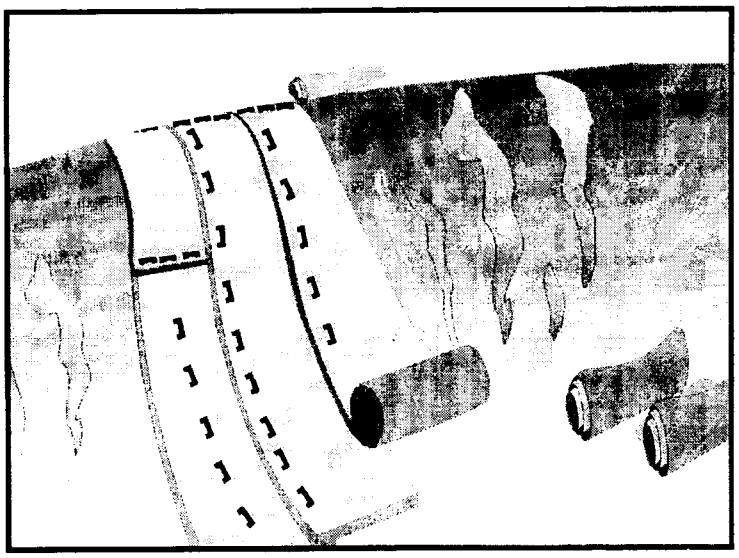
- Serious tree injuries shall be attended to by an arborist.
- Any damage to the crown, trunk, or root system of a retained tree shall be repaired immediately.
- Damaged roots shall be immediately cut clean.
- If bark damage occurs, all loosened bark shall be cut back into the undamaged area, with the cut tapered at the top and bottom, and drainage provided at the base of the wood. Cutting of the undamaged area shall be as limited as possible.
- Soil which has been compacted over a tree's root zone shall be aerated by punching holes 300 mm (12 in) deep with an iron bar, and moving the bar back and forth until the soil is loosened. Holes shall be placed 450 mm (18 in) apart throughout the area of compacted soil under the tree crown.
- Stressed or damaged broadleaf trees shall be fertilized to aid recovery.
- Trees shall be fertilized in the late fall or early spring.
- Fertilizer shall be applied to the soil over the feeder roots and in accordance with label instructions, but never closer than 1 m (3 ft) to the trunk. The

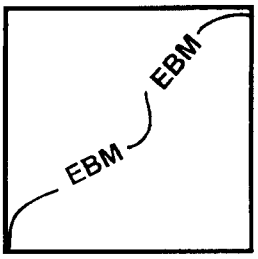
fertilized area shall be increased by one-fourth of the crown area for conifers that have extended root systems.

- During construction, District Environmental shall be contacted to ensure that ESAs are protected.

Geotextiles, Plastic Covers and Erosion Control Blankets/Mats

SS-7





BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose

This Best Management Practice (BMP) involves the placement of geotextiles, plastic covers, or erosion control blankets/mats to stabilize disturbed soil areas and protect soils from erosion by wind or water. This is one of five temporary soil stabilization alternatives to consider.

Appropriate Applications

These measures are used when disturbed soils may be particularly difficult to stabilize, including the following situations:

- Steep slopes, generally steeper than 1:3 (V:H).
- Slopes where the erosion hazard is high.
- Slopes and disturbed soils where mulch must be anchored
- Disturbed areas where plants are slow to develop adequate protective cover.
- Channels with flows exceeding 1.0 m/s (3.3 ft/s).
- Channels intended to be vegetated.
- Stockpiles
- Slopes adjacent to water bodies of Environmentally Sensitive Areas (ESAs).

Limitations

- Blankets and mats are more expensive than other erosion control measures, due to labor and material costs. This usually limits their application to areas inaccessible to hydraulic equipment, or where other measures are not applicable, such as channels.

- Blankets and mats are generally not suitable for excessively rocky sites, or areas where the final vegetation will be mowed (since staples and netting can catch in mowers).
- Blankets and mats must be removed and disposed of prior to application of permanent soil stabilization measures.
- Plastic sheeting is easily vandalized, easily torn, photodegradable, and must be disposed of at a landfill.
- Plastic results in 100 percent runoff, which may cause serious erosion problems in the areas receiving the increased flow.
- The use of plastic shall be limited to covering stockpiles, or very small graded areas for short periods of time (such as through one imminent storm event), until alternative measures, such as seeding and mulching, may be installed.

Standards and Specifications

Material Selection

There are many types of erosion control blankets and mats, and selection of the appropriate type should be based on the specific type of application and site conditions. Selection(s) made by the Contractor must be approved by the Resident Engineer (RE). The following criteria shall be considered in selection of the appropriate material:

- Cost
  - Material cost
  - Preparation cost
  - Installation cost
  - Add-ons
- Effectiveness
  - Reduction of erosion
  - Reduction of flow velocity
  - Reduction of runoff
- Acceptability
  - Environmental compatibility
  - Institutional/regulatory acceptability
  - Visual impact

- Vegetation Enhancement
  - Native plant compatibility
  - Moisture retention
  - Temperature modification
  - Open space/coverage

- Installation
  - Durability
  - Longevity
  - Ease of installation
  - Safety

- Operation and Maintenance
  - Maintenance frequency

Geotextiles

- Material shall be a woven polypropylene fabric with minimum thickness of 15 mm, minimum width of 3.7 m and shall have minimum tensile strength of 0.67 kN (warp) 0.36 kN (fill) in conformance with the requirements in ASTM Designation: D 4632. The permittivity of the fabric shall be approximately 0.07 sec^{-1} in conformance with the requirements in ASTM Designation: D4491. The fabric shall have an ultraviolet (UV) stability of 70 percent in conformance with the requirements in ASTM designation: D4355. Geotextile blankets shall be secured in place with wire staples or sandbags and by keying into tops of slopes to prevent infiltration of surface waters under Geotextile.

- Geotextiles may be reused if, in the opinion of the RE, they are suitable for the use intended.

Plastic Covers

- Temporary soil stabilization (Type plastic cover) material shall be polyethylene sheeting and shall have a minimum thickness of 6 mils. Plastic covers shall be anchored by sandbags placed no more than 3 m (10 ft) apart and by keying into the tops of slopes to prevent infiltration of surface waters under the plastic. All seams shall be taped or weighted down their entire length, and there shall be at least a 300 mm (12 in) to 600 mm (24 in) overlap of all seams.

- Plastic covers may be reused if, in the opinion of the RE, they are suitable for the use intended.

Erosion Control Blankets/Mats

- Erosion control blankets/mats shall be either straw, coconut, straw/coconut or Excelsior blanket, in accordance with the project Special Provisions, SSP 07-390.

Site Preparation

- Proper site preparation is essential to ensure complete contact of the blanket or matting with the soil.
- Grade and shape the area of installation.
- Remove all rocks, clods, vegetation or other obstructions so that the installed blankets or mats will have complete, direct contact with the soil.
- Prepare seedbed by loosening 50 mm (2 in) to 75 mm (3 in) of topsoil.

Seeding

Seed the area before blanket installation for erosion control and revegetation. Seeding after mat installation is often specified for turf reinforcement application. When seeding prior to blanket installation, all check slots and other areas disturbed during installation must be re-seeded. Where soil filling is specified, seed the matting and the entire disturbed area after installation and prior to filling the mat with soil.

Anchoring

- U-shaped wire staples, metal geotextile stake pins or triangular wooden stakes can be used to anchor mats and blankets to the ground surface.
- Staples shall be made of 3.05 mm steel wire and shall be U-shaped with 200-mm legs and 50-mm crown. Wire staples shall be minimum of 11 gauge.
- Metal stake pins shall be 5 mm (0.188 in) diameter steel with a 40 mm (1.5 in) steel washer at the head of the pin.
- Wire staples and metal stakes shall be driven flush to the soil surface.
- All anchors shall be 150 mm (6 in) to 450 mm (18 in) long and have sufficient ground penetration to resist pullout. Longer anchors may be required for loose soils.

Installation on Slopes

Always consult the manufacturer's recommendations for installation. In general, these will be as follows:

- Begin at the top of the slope and anchor the blanket in a 150 mm (6 in) deep by 150 mm (6 in) wide trench. Backfill trench and tamp earth firmly.
- Unroll blanket downslope in the direction of water flow.
- Overlap the edges of adjacent parallel rolls 50 mm (2 in) to 75 mm (3 in) and staple every 1 m (3 ft).
- When blankets must be spliced, place blankets end over end (shingle style) with 150 mm (6 in) overlap. Staple through overlapped area, approximately 300 mm (12 in) apart.
- Lay blankets loosely and maintain direct contact with the soil. Do not stretch.
- Staple blankets sufficiently to anchor blanket and maintain contact with the soil. Staples shall be placed down the center and staggered with the staples placed along the edges. Steep slopes, 1:1 (V:H) to 1:2 (V:H), require a minimum of 2 staples/m^2 (2 staples/yd^2). Moderate slopes, 1:2 (V:H) to 1:3 (V:H), require a minimum of 1½ staples/m^2 (1 ½ staples/yd^2), placing 1 staple/m (1 staple/yd) on centers. Gentle slopes require a minimum of 1 staple/m^2 (1 staple/yd^2).

Installation in Channels

Always consult the manufacturer's recommendations for installation. In general, these will be as follows:

- Dig initial anchor trench 300 mm (12 in) deep and 150 mm (6 in) wide across the channel at the lower end of the project area.
- Excavate intermittent check slots, 150 mm (6 in) deep and 150 mm (6 in) wide across the channel at 8 m to 10 m (25 ft to 30 ft) intervals along the channels.
- Cut longitudinal channel anchor slots 100 mm (4 in) deep and 100 mm (4 in) wide along each side of the installation to bury edges of matting, whenever possible extend matting 50 mm (2 in) to 75 mm (3 in) above the crest of the channel side slopes.

- Beginning at the downstream end and in the center of the channel, place the initial end of the first roll in the anchor trench and secure with fastening devices at 300 mm (12 in) intervals. Note: matting will initially be upside down in anchor trench.
- In the same manner, position adjacent rolls in anchor trench, overlapping the preceding roll a minimum of 75 mm (3 in).
- Secure these initial ends of mats with anchors at 300 mm (12 in) intervals, backfill and compact soil.
- Unroll center strip of matting upstream. Stop at next check slot or terminal anchor trench. Unroll adjacent mats upstream in similar fashion, maintaining a 75 mm (3 in) overlap.
- Fold and secure all rolls of matting snugly into all transverse check slots. Lay mat in the bottom of the slot then fold back against itself. Anchor through both layers of mat at 300 mm (12 in) intervals, then backfill and compact soil. Continue rolling all mat widths upstream to the next check slot or terminal anchor trench.
- Alternate method for non-critical installations: Place two rows of anchors on 150 mm (6 in) centers at 8 m (25 ft) to 10 m (30 ft) intervals in lieu of excavated check slots.
- Shingle-lap spliced ends by a minimum of 300 mm (12 in) apart on 300 mm (12 in) intervals.
- Place edges of outside mats in previously excavated longitudinal slots, anchor using prescribed staple pattern, backfill and compact soil.
- Anchor, fill and compact upstream end of mat in a 300 mm (12 in) by 150 mm (6 in) terminal trench.
- Secure mat to ground surface using U-shaped wire staples, geotextile pins, or wooden stakes.
- Seed and fill turf reinforcement matting with soil, if specified.

Soil Filling (if specified for turf reinforcement)

- Always consult the manufacturer's recommendations for installation.
- Do not drive tracked or heavy equipment over mat.

- Avoid any traffic over matting if loose or wet soil conditions exist.
- Use shovels, rakes or brooms for fine grading and touch up.
- Smooth out soil filling; just exposing top netting of mat.

Temporary Soil Stabilization Removal

- When no longer required for the work, temporary soil stabilization shall become the property of the Contractor. Temporary soil stabilization removed from the site of the work shall be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13 of the Standard Specifications.

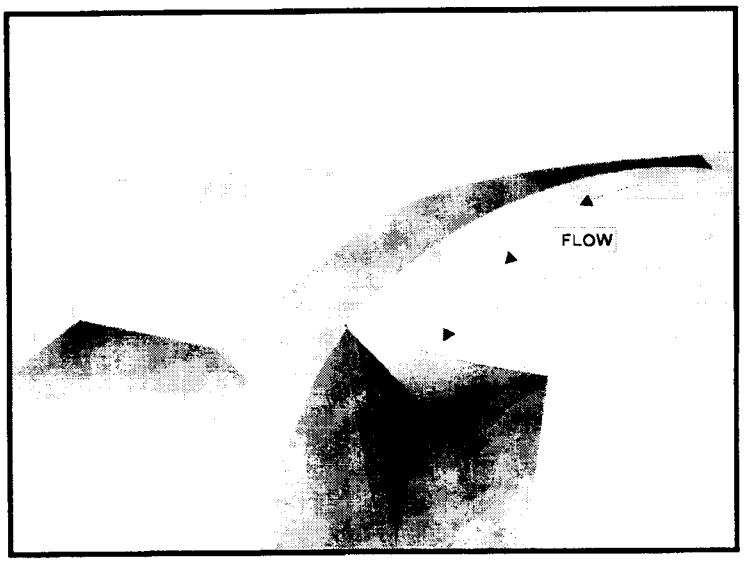
Maintenance and Inspection

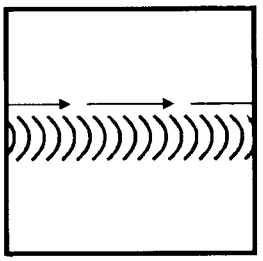
Areas treated with temporary soil stabilization shall be inspected as specified in the special provisions. Areas treated with temporary soil stabilization shall be maintained to provide adequate erosion control. Temporary soil stabilization shall be reapplied or replaced on exposed soils when greater than 10 percent of the previously treated area becomes exposed or exhibits visible erosion.

- All blankets and mats shall be inspected periodically after installation.
- Installation shall be inspected after significant rain storms to check for erosion and undermining. Any failures shall be repaired immediately.
- If washout or breakage occurs, re-install the material after repairing the damage to the slope or channel.

Earth Dikes/Drainage Swales and Lined Ditches

SS-9





BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose

These are structures that intercept, divert and convey surface run-on, generally sheet flow, to prevent erosion.

Appropriate Applications

- Earth dikes/drainage swales and lined ditches may be used to:
  - Convey surface runoff down sloping land
  - Intercept and divert runoff to avoid sheet flow over sloped surfaces
  - Divert and direct runoff towards a stabilized watercourse, drainage pipe or channel.
  - To intercept runoff from paved surfaces.
- Earth dikes/drainage swales and lined ditches also may be used:
  - Below steep grades where runoff begins to concentrate
  - Along roadways and facility improvements subject to flood drainage.
  - At the top of slopes to divert run-on from adjacent or undisturbed slopes.
  - At bottom and mid-slope locations to intercept sheet flow and convey concentrated flows.
- This BMP may be implemented on a project-by-project basis with other BMPs when determined necessary and feasible by the Resident Engineer (RE).

Earth Dikes/Drainage Swales and Lined Ditches

SS-9

Limitations

- Earth dikes/drainage swales and lined ditches are not suitable as sediment trapping devices.
- May be necessary to use other soil stabilization and sediment controls, such as check dams, plastics, and blankets, to prevent scour and erosion in newly graded dikes, swales and ditches.

Standards and Specifications

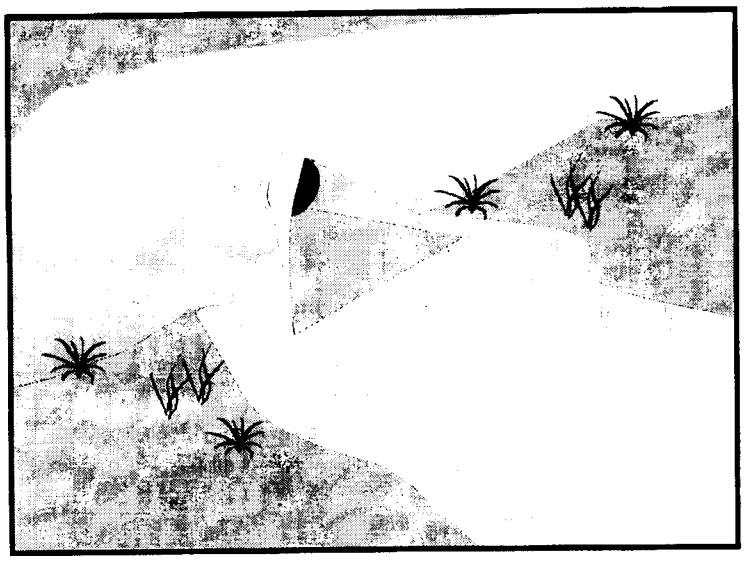
- Care must be applied to correctly size and locate earth dikes, drainage swales and lined ditches. Excessively steep, unlined dikes and swales are subject to erosion and gully formation.
- Conveyances shall be stabilized.
- Use a lined ditch for high flow velocities.
- Select flow velocity based on careful evaluation of the risks due to erosion of the measure, soil types, over topping, flow backups, washout, and drainage flow patterns for each project site.
- Compact any fills to prevent unequal settlement.
- Do not divert runoff from the Highway right-of-way onto other property.
- When possible, install and utilize permanent dikes, swales and ditches early in the construction process.
- Provide stabilized outlets.

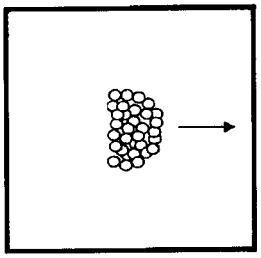
Maintenance and Inspections

- Inspect temporary measures prior to the rainy season, after rainfall events, and regularly (approximately once per week) during the rainy season.
- Inspect ditches and berms for washouts. Replace lost riprap, damaged linings or soil stabilizers as needed.
- Inspect channel linings, embankments, and beds of ditches and berms for erosion and accumulation of debris and sediment. Remove debris and sediment, and repair linings and embankments as needed or as directed by the Engineer.
- Temporary conveyances shall be completely removed as soon as the surrounding drainage area has been stabilized, or at the completion of construction.

Outlet Protection/Velocity Dissipation Devices

SS-10





BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose

These devices are placed at pipe outlets to prevent scour and reduce the velocity and/or energy of exiting storm water flows.

Appropriate Applications

- 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.
- This BMP may be implemented on a project-by-project basis with other BMPs when determined necessary and feasible by the Resident Engineer (RE).

Limitations

- Loose rock may have stones washed away during high flows.
- 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.

Outlet Protection/Velocity Dissipation Devices

SS-10

Standards and Specifications

- There are many types of energy dissipater's, with rock being the one that is represented in the attached figure. Please note that this is only one example and the Resident Engineer (RE) may approve any other type of device proposed by the contractor.
- Install riprap, grouted riprap, or concrete apron at selected outlet. Riprap aprons are best suited for temporary use during construction.
- Carefully place riprap to avoid damaging the filter fabric.
- 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.
  - If size of apron riprap is large, protect underlying filter fabric with a gravel blanket
- Outlets on slopes steeper than 10 percent shall have additional protection.

Maintenance and Inspection

- Inspect temporary measures prior to the rainy season, after rainfall events, and regularly (approximately once per week) during the rainy season.
- Inspect apron for displacement of the riprap and/or damage to the underlying fabric. Repair fabric and replace riprap which has washed away.
- Inspect for scour beneath the riprap and around the outlet. Repair damage to slopes or underlying filter fabric immediately.
- Temporary devices shall be completely removed as soon as the surrounding drainage area has been stabilized, or at the completion of construction.

Outlet Protection/Velocity Dissipation Devices

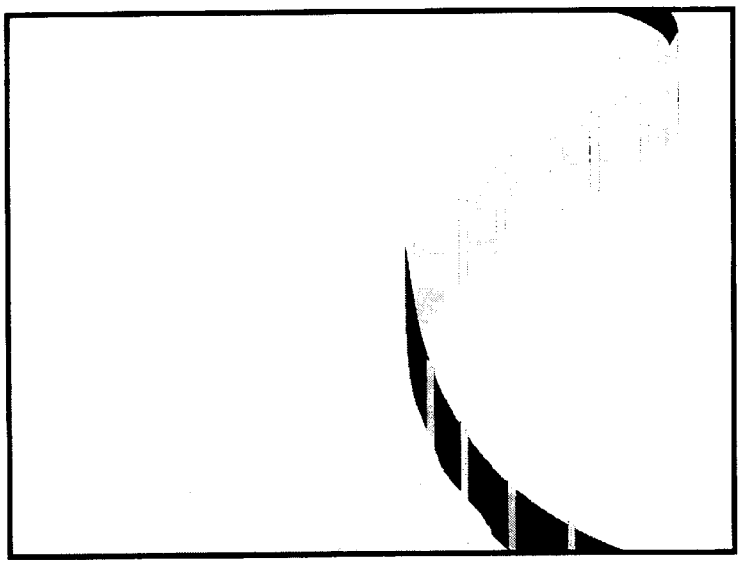
SS-10

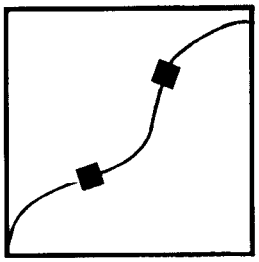
Pipe Diameter mm	Discharge m^3/s	Apron Length, La m	Rip Rap D_{50} Diameter Min mm
300	0.14	3	100
	0.28	4	150
450	0.28	3	150
	0.57	5	200
	0.85	7	300
	1.13	8	400
600	0.85	5	200
	1.13	8	200
	1.42	8	300
	1.70	9	400
For larger or higher flows, consult a Registered Civil Engineer			

Source: USDA – SCS

Silt Fence

SC-1





BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose

A silt fence is a temporary linear sediment barrier of permeable fabric designed to intercept and slow the flow of sediment-laden sheet flow runoff. Silt fences allow sediment to settle from runoff before water leaves the construction site.

Appropriate Applications

Silt fences are placed:

- Below the toe of exposed and erodible slopes.
- Down-slope of exposed soil areas.
- Around temporary stockpiles.
- Along streams and channels.

Limitations

- Not effective unless trenched and keyed in.
- Not intended for use as mid-slope protection on slopes greater than 1:4 (V:H)
- Must be maintained.
- Must be removed and disposed of.

Standards and Specifications

General

- Don't use below slopes subject to creep, slumping, or landslides.
- Don't use in streams, channels, or anywhere flow is concentrated.
- Don't use silt fences to divert flow.

Design and Layout

- The maximum length of slope draining to any point along the silt fence shall be 61 m (200 ft) or less.
- Slope of area draining to fence shall be less than 1:1 (V:H).
- Limit to locations suitable for temporary ponding or deposition of sediment.
- Fabric life span generally limited to between five and eight months. Longer periods may require fabric replacement.
- Silt fences shall not be used in concentrated flow areas.
- Lay out in accordance with Page 5 of this BMP.
- For slopes steeper than 1:2 (V:H) and that contain a high number of rocks or large dirt clods that tend to dislodge, it may be necessary to install additional protection immediately adjacent to the bottom of the slope, prior to installing silt fence. Additional protection may be a chain link fence or a cable fence.
- For slopes adjacent to water bodies or Environmentally Sensitive Areas (ESAs), additional temporary soil stabilization BMPs shall be used.

Materials

- Silt fence fabric shall be woven polypropylene with a minimum width of 900 mm and a minimum tensile strength of 0.45-kN. The fabric shall conform to the requirements in ASTM designation D4632 and shall have an integral reinforcement layer. The reinforcement layer shall be a polypropylene, or equivalent, net provided by the manufacturer. The permittivity of the fabric shall be between 0.1 sec^{-1} and 0.15 sec^{-1} in conformance with the requirements in ASTM designation D4491.
- Wood stakes shall be commercial quality lumber of the size and shape shown on the plans. Each stake shall be free from decay, splits or cracks longer than the thickness of the stake or other defects that would weaken the stakes and cause the stakes to be structurally unsuitable.
- Staples used to fasten the fence fabric to the stakes shall be not less than 45 mm long and shall be fabricated from 1.57 mm or heavier wire. The wire used to fasten the tops of the stakes together when joining 2 sections of fence shall be 3.05 mm or heavier wire. Galvanizing of the fastening wire will not be required.

Installation

- Generally, silt fences shall be used in conjunction with soil stabilization source controls up slope to provide effective control.
- Trenches shall not be excavated wider and deeper than necessary for proper installation of the temporary linear sediment barriers.
- Excavation of the trenches shall be performed immediately before installation of the temporary linear sediment barriers.
- Construct silt fences with a set-back of at least 1m from the toe of a slope. Where a silt fence is determined to be not practicable due to specific site conditions, the silt fence may be constructed at the toe of the slope, but shall be constructed as far from the toe of the slope as practicable.
- Construct the length of each reach so that the change in base elevation along the reach does not exceed 1/3 the height of the barrier; in no case shall the reach exceed 150 meters.
- Cross barriers shall be a minimum of 1/3 and a maximum of 1/2 the height of the linear barrier.
- Bottom of the silt fence shall be keyed-in.
- Install in accordance with Page 5 of this BMP.

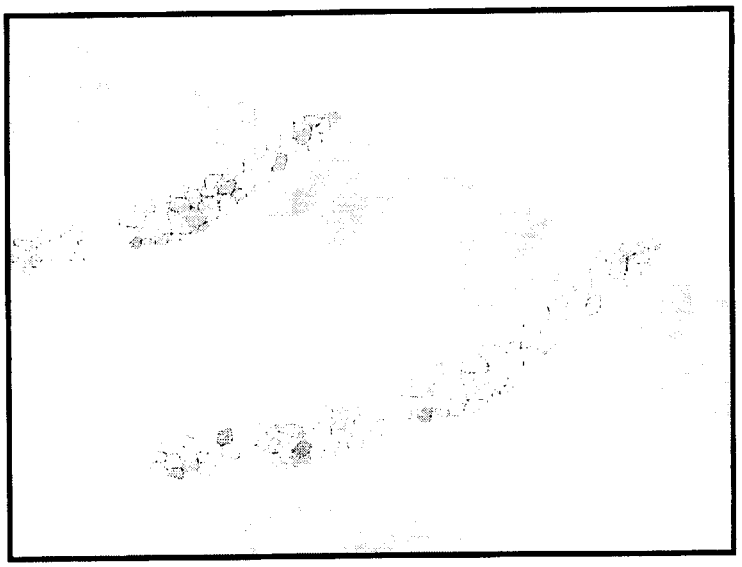
Maintenance and Inspection

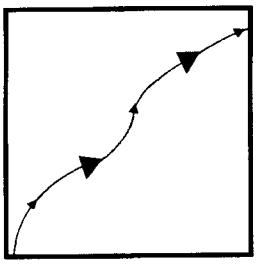
- Repair undercut silt fences.
- Repair or replace split, torn, slumping, or weathered fabric.
- Inspect silt fence when rain is forecast. Perform necessary maintenance, or maintenance required by the Resident Engineer (RE).
- Inspect silt fence following rainfall events. Perform maintenance as necessary, or as required by the RE.
- Maintain silt fences to provide an adequate sediment holding capacity. Sediment shall be removed when the sediment accumulation reaches one-third (1/3) of the barrier height. Removed sediment shall be incorporated in the project at locations designated by the RE or disposed of outside the highway right-of-way in conformance with the Standard Specifications.
- Silt fences that are damaged and become unsuitable for the intended purpose, as determined by the RE, shall be removed from the site of work, disposed of outside the highway right-of-way in conformance with the Standard Specifications, and replaced with new silt fence barriers.

- Holes, depressions or other ground disturbance caused by the removal of the temporary silt fences shall be backfilled and repaired in conformance with the Standard Specifications.
- Remove silt fence when no longer needed or as required by the RE. Fill and compact post holes and anchorage trench, remove sediment accumulation, and grade fence alignment to blend with adjacent ground.

Check Dams

SC-4





BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose

A check dam is a small device constructed of rock, sandbags, or fiber rolls, placed across a natural or man-made channel or drainage ditch. Check dams reduce scour and channel erosion by reducing flow velocity and encouraging sediment dropout.

Appropriate Applications

- Check dams may be installed in the following:
  - In small open channels which drain 4 ha (10 ac) or less.
  - In steep channels where storm water runoff velocities exceed 1.5 meters per second (m/s).
  - During the establishment of grass linings in drainage ditches or channels.
  - In temporary ditches where a short length of service does not warrant establishment of erosion-resistant linings.
- This BMP may be implemented on a project-by-project basis with other BMPs when determined necessary and feasible by the Resident Engineer (RE).

Limitations

- Not to be used in live streams.
- Not appropriate in channels which drain areas greater than 4 ha (10 ac).
- Not to be placed in channels which are already grass lined unless erosion is expected, as installation may damage vegetation.
- Require extensive maintenance following high velocity flows.

- Promotes sediment trapping which can be re-suspended during subsequent storms or removal of the check dam.
- Not to be constructed from straw bales or a silt fence.

Standards and Specifications

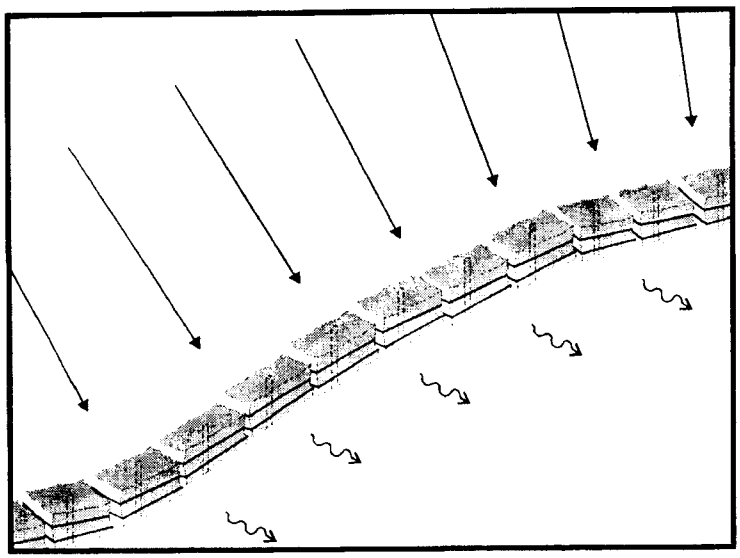
- Check dams shall be placed at a distance and height to allow small pools to form behind them.
- Install the first check dam approximately five meters (5 m) from the outfall device and at regular intervals based on slope gradient and soil type.
- For multiple check dam installation, backwater from downstream check dam shall reach the toe of the upstream dam.
- High flows (typically a 2-year storm or larger) shall safely flow over the check dam without an increase in upstream flooding or damage to the check dam.
- Where grass is used to line ditches, check dams shall be removed when grass has matured sufficiently to protect the ditch or swale.
- Rock shall be placed individually by hand or by mechanical methods (no dumping of rock) to achieve complete ditch or swale coverage.

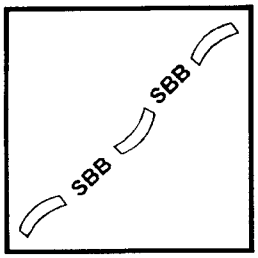
Maintenance and Inspection

- Inspect check dams after each significant rainfall event. Repair damage as needed or as required by the RE.
- Remove sediments when depth reaches one-third of the check dam height.
- Remove accumulated sediment prior to permanent seeding or soil stabilization.
- Remove check dam and accumulated sediment when check dams are no longer needed or when required by the RE.
- Removed sediment shall be incorporated in the project at locations designated by the RE or disposed of outside the highway right-of-way in conformance with the Standard Specifications.

Straw Bale Barrier

SC-9





BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose

A straw bale barrier is a temporary linear sediment barrier consisting of straw bales, designed to intercept and slow sediment-laden sheet flow runoff. Straw bale barriers allow sediment to settle from runoff before water leaves the construction site.

Appropriate Applications

- Along the perimeter of a site.
- Along streams and channels.
- Below the toe of exposed and erodible slopes.
- Down slope of exposed soil areas.
- Around stockpiles.
- Across minor swales or ditches with small catchments.
- Around above grade type temporary concrete washouts (See BMP WM-8, "Concrete Waste Management").
- Parallel to a roadway to keep sediment off paved areas.
- This BMP may be implemented on a project-by-project basis in addition to other BMPs when determined necessary and feasible by the Resident Engineer (RE).

Limitations

- Don't use in areas subjected to highly concentrated flows, such as channels or live streams.
- Installation can be labor intensive.
- Straw bale barriers are maintenance intensive.
- Degraded straw bales may fall apart when removed or left in place for extended periods.
- Can't be used on paved surfaces.
- Not to be used for drain inlet protection.
- Shall not be used on lined ditches.

Standards and Specifications

Materials

- ***Straw Bale Material:*** Straw bale materials shall conform to the provisions in Section 20-2.06, "Straw," of the Standard Specifications.
- ***Straw Bale Size:*** Each straw bale shall be a minimum of 360 mm (14 in) wide, 450 mm (18 in) in height, 900 mm (36 in) in length and shall have a minimum mass of 23 kg (51 lb.) The straw bale shall be composed entirely of vegetative matter, except for the binding material.
- ***Bale Bindings:*** Bales shall be bound by either steel wire, nylon or polypropylene string placed horizontally. Jute and cotton binding shall not be used. Baling wire shall be a minimum diameter of 1.57 mm. Nylon or polypropylene string shall be approximately 2 mm in diameter with a breaking strength of 360 N.
- ***Stakes:*** Wood stakes shall be commercial quality lumber of the size and shape shown on the plans. Each stake shall be free from decay, splits or cracks longer than the thickness of the stake, or other defects that would weaken the stakes and cause the stakes to be structurally unsuitable.

Installation

- Limit the drainage area upstream of the barrier to 0.3 ha/100 m (0.25ac/100ft) or barrier.
- Limit the slope length draining to the straw bale barrier to 30 m (100 ft.)
- Slopes of 2:100 (V:H)(2%) or flatter are preferred. If the slope exceeds 1:10 (V:H) (10%), the length of slope upstream of the barrier must be less than 15 m (50 ft).

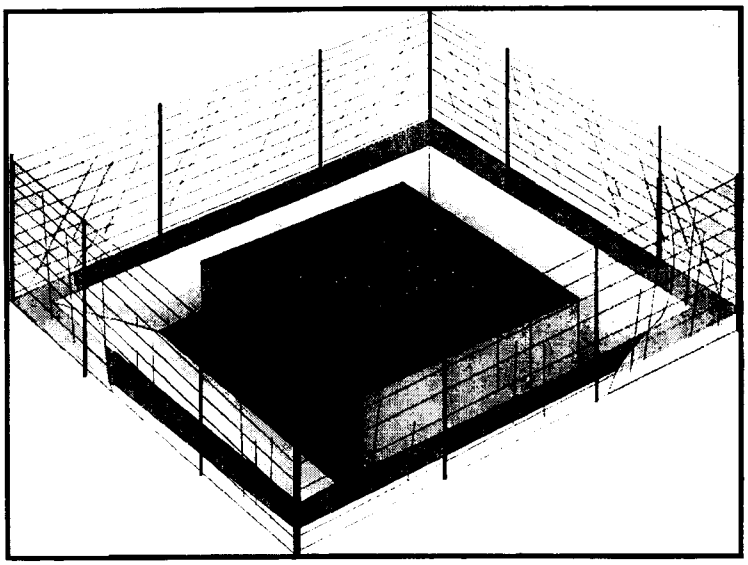
- Install straw bale barriers along a level contour, with the last straw bale turned up slope.
- Straw bales must be installed in a trench and tightly abut adjacent bales.
- Construct straw bale barriers with a set-back of at least 1m from the toe of a slope. Where it is determined to be not practicable due to specific site conditions, the straw bale barrier may be constructed at the toe of the slope, but shall be constructed as far from the toe of the slope as practicable.
- See page 4 of this BMP for installation detail.

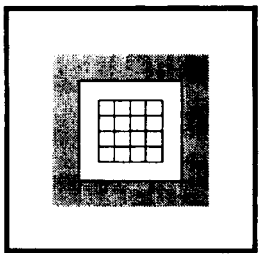
Maintenance and Inspection

- Inspect straw bale barriers before and after each rainfall event, and weekly throughout the rainy season.
- Inspect straw bale barriers for sediment accumulations and remove sediments when depth reaches one-third the barrier height. Removed sediment shall be incorporated in the project at locations designated by the RE or disposed of outside the highway right-of-way in conformance with the Standard Specifications.
- Replace or repair damage bales as needed or as directed by the RE.
- Repair washouts or other damages as needed or as directed by the RE.
- Remove straw bales when no longer needed. Remove sediment accumulation, and clean, re-grade, and stabilized the area. Removed sediment shall be incorporated in the project at locations designated by the RE or disposed of outside the highway right-of-way in conformance with the Standard Specifications.

Storm Drain Inlet Protection

SC-10





BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose

Devices used at storm drain inlets that are subject to runoff from construction activities to detain and/or to filter sediment-laden runoff to allow sediment to settle and/or to filter sediment prior to discharge of storm water into storm water drainage systems or watercourses.

Appropriate Applications

- Where ponding will not encroach into highway traffic.
- Where sediment laden surface runoff may enter an inlet.
- Where disturbed drainage areas have not yet been permanently stabilized.
- Where the drainage area is 0.4 ha (1 ac) or less.
- Appropriate during wet and snow-melt seasons.

Limitations

- Use only when ponding will not encroach into highway traffic or onto erodible surfaces and slopes. If safety is a concern, use other methods of temporary protection to prevent sediment-laden storm water and non-storm water discharges to enter the storm drain system.
- Sediment removal may be difficult in high flow conditions or if runoff is heavily sediment laden. If high flow conditions are expected, use other on-site sediment trapping techniques in conjunction with inlet protection.
- Frequent maintenance is required.
- For drainage areas larger than 0.4 ha (1ac), runoff shall be routed to a sediment trapping device designed for larger flows. See BMPs SC-2, "Desilting Basin", and SC-3 "Sediment Traps".

- Filter fabric fence inlet protection appropriate in open areas is subject to sheet flow and for flows not exceeding 0.014 m^3/s (0.5 cfs).
- Sandbag barriers for inlet protection are applicable when sheet flows or concentrated flows exceed 0.014 m^3/s (0.5 cfs), and it is necessary to allow for overtopping to prevent flooding.
- Excavated drop inlet sediment traps are appropriate where relatively heavy flows are expected and overflow capability is needed.

Standards and Specifications

Identify existing and/or planned storm drain inlets that have the potential to receive sediment-laden surface runoff. Determine if storm drain inlet protection is needed, and which method to use.

Methods and Installation

- ***DI Protection Type 1 - Filter Fabric Fence*** - The filter fabric fence (Type 1) protection is illustrated in Page 4. Similar to constructing a silt fence. See BMP SC-1, "Silt Fence". Do not place filter fabric underneath the inlet grate since the collected sediment may fall into the drain inlet when the fabric is removed or replaced.
- ***DI Protection Type 2 - Excavated Drop Inlet Sediment Trap*** - The excavated drop inlet sediment trap (Type 2) is illustrated in Page 5. Similar to constructing a temporary silt fence, See BMP SC-1, "Silt Fence". Size excavated trap to provide a minimum storage capacity calculated at the rate of 130 m^3/ha (67 yd^3/ac) of drainage area.
- ***DI Protection Type 3 - Sandbag Barrier*** - The sandbag barrier (Type 3) is illustrated in Page 6. Flow from a severe storm shall not overtop the curb. In areas of high clay and silts, use filter fabric and gravel as additional filter media. Construct sandbags in accordance with BMP SC-8, "Sandbag Barrier".

Maintenance and Inspection

General

- Inspect all inlet protection devices before and after every rainfall event, and weekly during the rest of the rainy season. During extended rainfall events, inspect inlet protection devices at least once every 24 hours.
- Inspect the storm drain inlet after severe storms in the rainy season to check for bypassed material.
- Remove all inlet protection devices within thirty days after the site is stabilized, or when the inlet protection is no longer needed.

- Bring the disturbed area to final grade and smooth and compact it. Appropriately stabilize all bare areas around the inlet.
- Clean and re-grade area around the inlet and clean the inside of the storm drain inlet as it must be free of sediment and debris at the time of final inspection.

Requirements by Method

• • ***Type 1 - Filter Fabric Fence***

- Make sure the stakes are securely driven in the ground and are in good shape (i.e., not bent, cracked, or splintered, and are reasonably perpendicular to the ground). Replace damaged stakes.
- Replace or clean the fabric when the fabric becomes clogged with sediment. Make sure the fabric does not have any holes or tears. Repair or replace fabric as needed or as directed by the Resident Engineer (RE).
- At a minimum, remove the sediment behind the fabric fence when accumulation reaches one-third the height of the fence or barrier height. Removed sediment shall be incorporated in the project at locations designated by the RE or disposed of outside the highway right-of-way in conformance with the Standard Specifications.

• • ***Type 2 - Excavated Drop Inlet Sediment Trap***

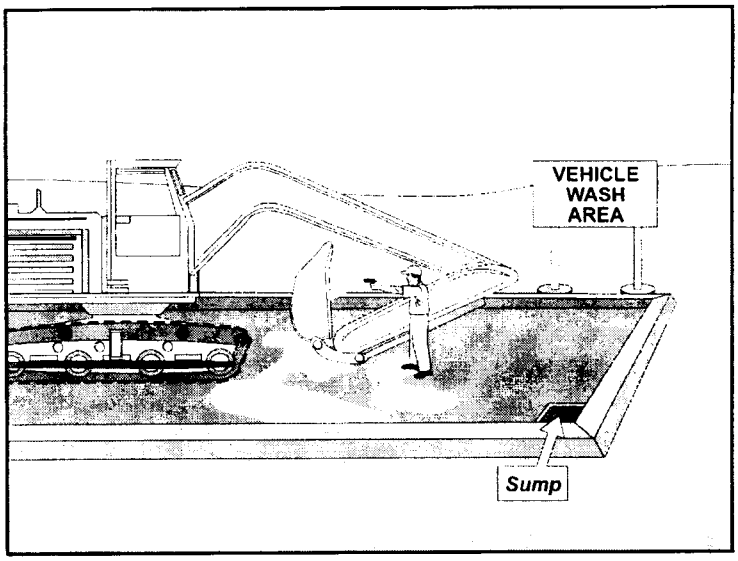
- Remove sediment from basin when the volume of the basin has been reduced by one-half.

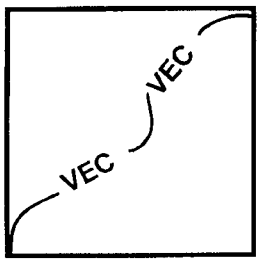
• • ***Type 3 - Sandbag Barrier***

- Inspect bags for holes, gashes, and snags.
- Check sandbags for proper arrangement and displacement. Remove the sediment behind the barrier when it reaches one-third the height of the barrier. Removed sediment shall be incorporated in the project at locations designated by the RE or disposed of outside the highway right-of-way in conformance with the Standard Specifications.

Vehicle and Equipment Cleaning

NS-8





BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose

Procedures and practices used to minimize or eliminate the discharge of pollutants from vehicle and equipment cleaning operations to storm drain system or to watercourses.

Appropriate Applications

These procedures are applied on all construction sites where vehicle and equipment cleaning is performed.

Limitations

None.

Standards and Specifications

- On-site vehicle and equipment washing is discouraged.
- Cleaning of vehicles and equipment with soap, solvents or steam shall not occur on the project site unless the Resident Engineer (RE) has been notified in advance and the resulting wastes are fully contained and disposed of outside the highway right-of-way in conformance with the provisions in Section 7-1.13 of the Standard Specifications. Resulting wastes shall not be discharged or buried within the highway right-of-way.
- Vehicle and equipment wash water shall be contained for percolation or evaporative drying away from storm drain inlets or watercourses and shall not be discharged within the highway right-of-way.
- All vehicles/equipment that regularly enter and leave the construction site must be cleaned off-site.
- When vehicle/equipment washing/cleaning must occur on-site, and the operation cannot be located within a structure or building equipped with appropriate disposal facilities, the outside cleaning area shall have the

following characteristics, and shall be arranged with the construction storm water coordinator:

- Located away from storm drain inlets, drainage facilities, or watercourses
- Paved with concrete or asphalt and bermed to contain wash waters and to prevent run-on and runoff
- Configured with a sump to allow collection and disposal of wash water
- Wash waters shall not be discharged to storm drains or watercourses
- Used only when necessary

• • When cleaning vehicles/equipment with water:

- Use as little water as possible. High pressure sprayers may use less water than a hose, and shall be considered.
- Use positive shutoff valve to minimize water usage.

Maintenance and Inspection

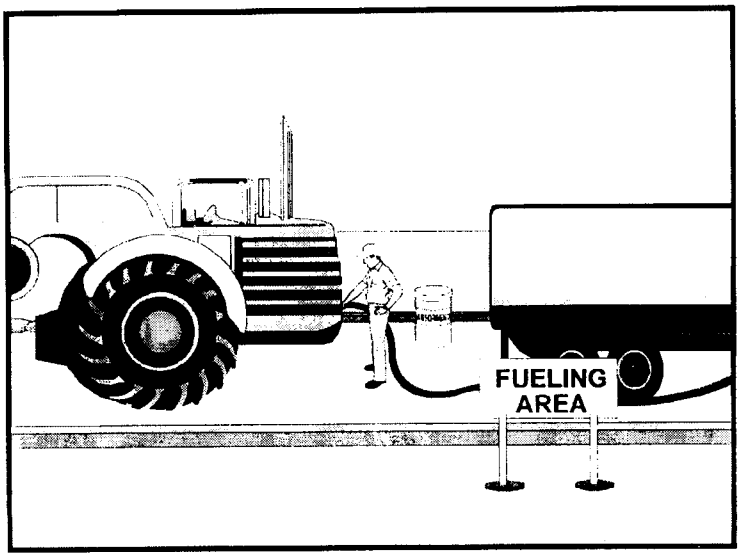
• • The control measure shall be inspected at a minimum of once a week.

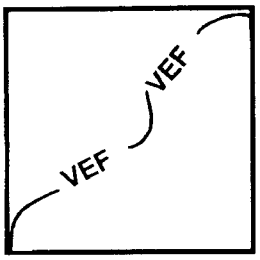
• • Monitor employees and subcontractors throughout the duration of the construction project to ensure appropriate practices are being implemented.

• • Inspect sump regularly and remove liquids and sediment as needed or as directed by the RE.

Vehicle and Equipment Fueling

NS-9





BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose

Procedures and practices to minimize or eliminate the discharge of fuel spills and leaks into the storm drain system or to watercourses.

Appropriate Applications

These procedures are applied on all construction sites where vehicle and equipment fueling takes place.

Limitations

- On-site vehicle and equipment fueling shall only be used where it's impractical to send vehicles and equipment off-site for fueling.

Standards and Specifications

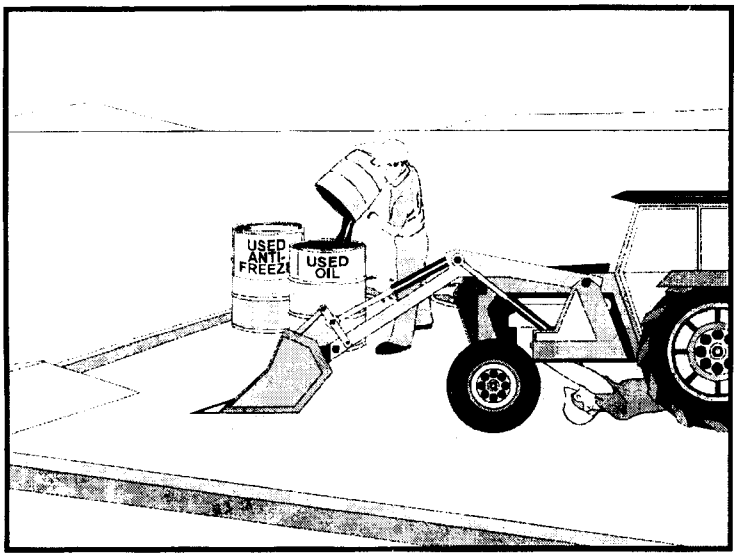
- When fueling must occur on-site, the contractor shall select and designate an area to be used, subject to approval of the Resident Engineer (RE).
- Absorbent spill clean-up materials and spill kits shall be available in fueling areas and on fueling trucks and shall be disposed of properly after use.
- Drip pans or absorbent pads shall be used during vehicle and equipment fueling, unless the fueling is performed over an impermeable surface in a dedicated fueling area.
- Dedicated fueling areas shall be protected from storm water run-on and runoff, and shall be located at least 15 m from downstream drainage facilities and watercourses. Fueling must be performed on level-grade areas.
- Nozzles used in vehicle and equipment fueling shall be equipped with an automatic shut-off to control drips. Fueling operations shall not be left unattended.

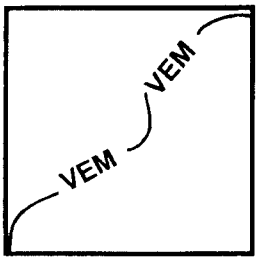
- Protect fueling areas with berms and/or dikes to prevent run-on, runoff, and to contain spills.
- Use vapor recovery nozzles to help control drips as well as air pollution where required by Air Quality Management Districts (AQMD).
- Fuel tanks shall not be "topped-off."
- Vehicles and equipment shall be inspected on each day of use for leaks. Leaks shall be repaired immediately or problem vehicles or equipment shall be removed from the project site.
- Absorbent materials shall be used on small spills instead of hosing down or burying techniques. The spent absorbent material shall be removed promptly and disposed of properly.
- Federal, state, and local requirements shall be observed for any stationary above ground storage tanks.
- Mobile fueling of construction equipment throughout the site shall be minimized. Whenever practical, equipment shall be transported to the designated fueling area.

Maintenance and Inspection

- Fueling areas and storage tanks shall be inspected on a regular basis.
- Keep an ample supply of spill cleanup material on the site.
- Immediately cleanup spills and properly dispose of contaminated soil and cleanup materials.

Vehicle and Equipment Maintenance NS-10





BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose

Procedures and practices to minimize or eliminate the discharge of pollutants to the storm drain system or to watercourses from vehicle and equipment maintenance procedures.

Appropriate Applications

These procedures are applied on all construction projects where an on-site yard area is necessary for storage and maintenance of heavy equipment and vehicles.

Limitations

None identified.

Standards and Specifications

- Drip pans or absorbent pads shall be used during vehicle and equipment maintenance work that involves fluids, unless the maintenance work is performed over an impermeable surface in a dedicated maintenance area.
- All fueling trucks and fueling areas are required to have spill kits and/or use other spill protection devices.
- Dedicated maintenance areas shall be protected from storm water run-on and runoff, and shall be located at least 15 m from downstream drainage facilities and watercourses.
- Drip Pans or plastic sheeting shall be placed under all vehicles and equipment placed on docks, barges, or other structures over water bodies when the vehicle or equipment is planned to be idle for more than one hour.
- Absorbent spill clean-up materials shall be available in maintenance areas and shall be disposed of properly after use.Substances used to coat asphalt transport trucks and asphalt spreading equipment shall be non-toxic. Drainage inlet structures and manholes shall be covered with filter fabric

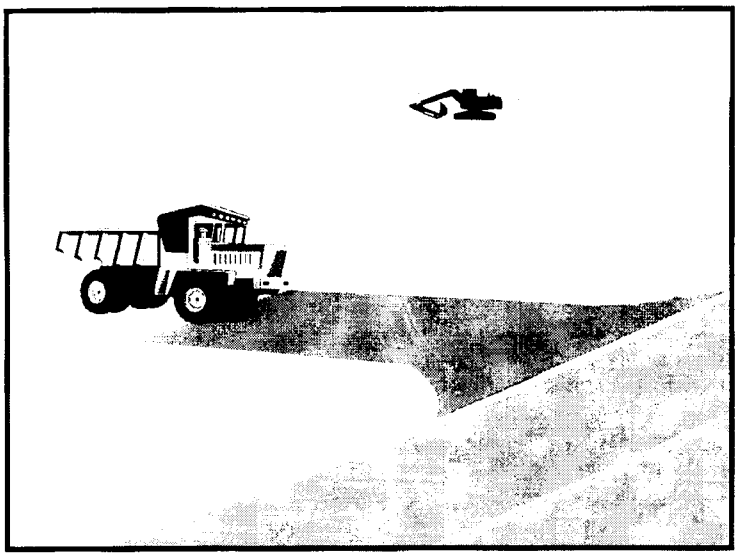
when seal coat, tack coat , slurry seal, or fog seal is applied to adjacent surfaces. Seal coat, tack coat, slurry seal, or fog seal shall not be applied if rainfall or thunderstorms are predicted to occur during the application or curing period.

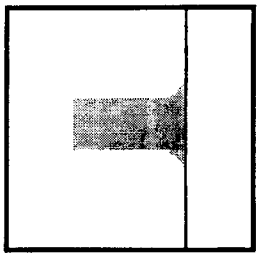
- Use off-site maintenance facilities whenever practical.
- For long-term projects, consider using portable tents or covers over maintenance areas.
- Properly dispose of used oils, fluids, lubricants and spill cleanup materials.
- Do not dump fuels and lubricants onto the ground.
- Do not place used oil in a dumpster or pour into a storm drain or watercourse.
- Properly dispose of or recycle used batteries.
- Do not bury used tires.
- Repair leaks of fluids and oil immediately.
- Provide spill containment dikes or secondary containment around stored oil and chemical drums.

Maintenance and Inspection

- Maintain waste fluid containers in leak proof condition.
- Vehicle and equipment maintenance areas shall be inspected regularly.
- Vehicles and equipment shall be inspected on each day of use. Leaks shall be repaired immediately or the problem vehicle(s) or equipment shall be removed from the project site.
- Inspect equipment for damaged hoses and leaky gaskets routinely. Repair or replace as needed.

Stabilized Construction Entrance/Exit TC-1





BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose

A stabilized construction access is a defined point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.

Appropriate Applications

- Use at construction sites:
  - where dirt or mud is tracked onto public roads
  - adjacent to water bodies
  - where poor soils are encountered
  - where dust is a problem during dry weather conditions.
- This BMP may be implemented on a project-by-project basis in addition to other BMPs when determined necessary and feasible by the Resident Engineer (RE).

Limitations

- Site conditions will dictate design and need.

Standards and Specifications

- Limit the points of entrance/exit to the construction site.
- Limit speed of vehicles to control dust.
- Properly grade each construction entrance/exit to prevent runoff from leaving the construction site.
- Route runoff from stabilized entrances/exits through a sediment-trapping device before discharge.

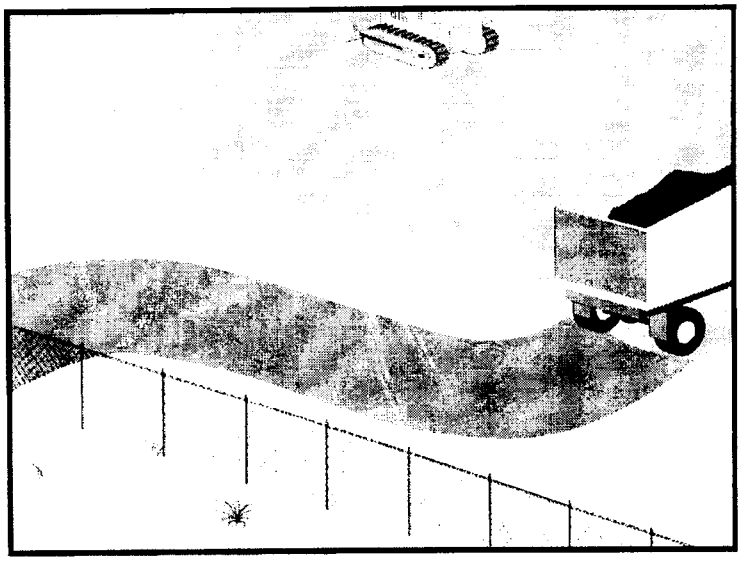
- Design stabilized entrance/exit to support heaviest vehicles and equipment that will use it.
- Select construction access stabilization (aggregate, asphaltic concrete, concrete) based on longevity, required performance, and site conditions. The use of asphalt concrete (AC) grindings for stabilized construction access/roadway is not allowed.
- Use of constructed or constructed/manufactured steel plates with ribs for entrance/exit access is allowed with written approval of the RE.
- If aggregate is selected, place crushed aggregate over geotextile fabric to at least 300 mm (12 in) depth, or place aggregate to a depth recommended by a geotechnical engineer. A crushed aggregate greater than 75 mm (3 inches) but smaller than 150 mm (6 inches) shall be used.
- Designate combination or single purpose entrances and exits to the construction site. Require all employees, subcontractors and others to use them.
- Require that all employees, subcontractors, and suppliers utilize the stabilized construction access.

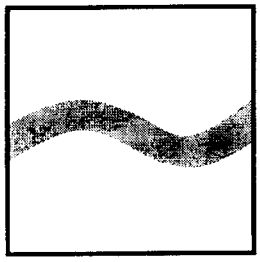
Maintenance and Inspection

- Inspect routinely for damage and assess effectiveness of the BMP. Repair if access is clogged with sediment or as directed by the RE.
- Keep all temporary roadway ditches clear.

Stabilized Construction Roadway

TC-2





BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose

A stabilized construction roadway is a temporary access road connecting existing public roads to a remote construction area. It is designed for the control of dust and erosion created by vehicular tracking.

Appropriate Applications

- Construction roadways and short-term detour roads:
  - Where mud tracking is a problem during wet weather
  - Where dust is a problem during dry weather
  - Adjacent to water bodies
  - Where poor soils are encountered
- This BMP may be implemented on a project-by-project basis with other BMPs when determined necessary and feasible by the Resident Engineer (RE).

Limitations

- Materials will likely need to be removed prior to final project grading and stabilization.
- Site conditions will dictate design and need.
- May not be applicable to very short duration projects.
- Limit speed of vehicles to control dust.

Standards and Specifications

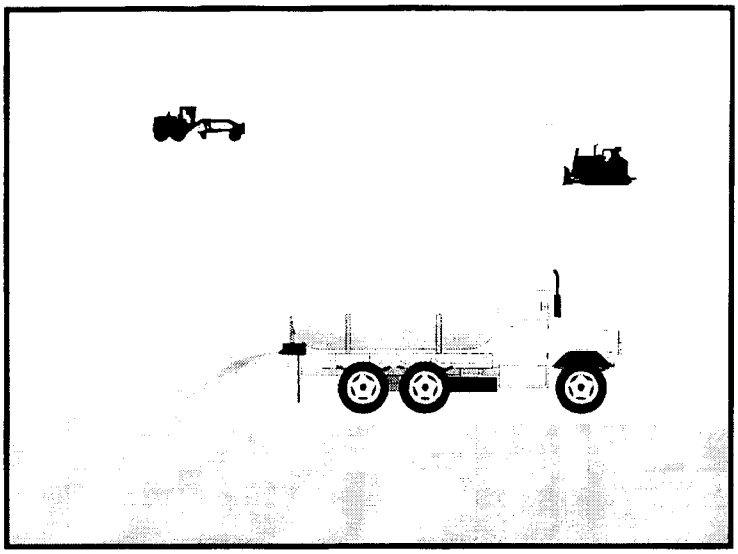
- Properly grade roadway to prevent runoff from leaving the construction site.
- Design stabilized access to support heaviest vehicles and equipment that will use it.
- Stabilize roadway using aggregate, asphalt concrete, or concrete based on longevity, required performance, and site conditions. The use of cold mix asphalt or asphalt concrete (AC) grindings for stabilized construction roadway is not allowed.
- Coordinate materials with those used for stabilized construction entrance/exit points.
- If aggregate is selected, place crushed aggregate over geotextile fabric to at least 300 mm (12 in) depth, or place aggregate to a depth recommended by a geotechnical engineer. A crushed aggregate greater than 75 mm (3 inches) but smaller than 150 mm (6 inches) shall be used.

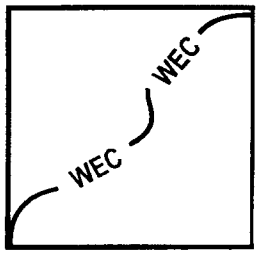
Maintenance and Inspection

- Inspect routinely for damage and repair as needed, or as directed by the Resident Engineer (RE).
- Keep all temporary roadway ditches clear.
- When no longer required, remove stabilized construction roadway and re-grade and repair slopes.

Wind Erosion Control

WE-1





BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose

Wind erosion control consists of applying water or other dust palliatives as necessary to prevent or alleviate dust nuisance. Dust control shall be applied in accordance with Caltrans standard practices. Covering of small stockpiles or areas is an alternative to applying water or other dust palliatives.

Appropriate Applications

This practice is implemented on all exposed soils subject to wind erosion.

Limitations

Effectiveness depends on soil, temperature, humidity and wind velocity.

Standards and Specifications

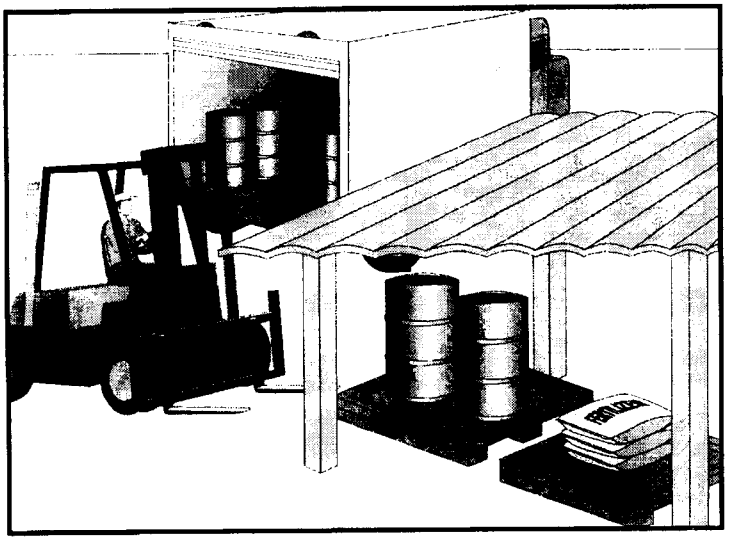
- Water shall be applied by means of pressure-type distributors or pipelines equipped with a spray system or hoses and nozzles that will ensure even distribution.
- All distribution equipment shall be equipped with a positive means of shutoff.
- Unless water is applied by means of pipelines, at least one mobile unit shall be available at all times to apply water or dust palliative to the project.
- If reclaimed waste water is used, the sources and discharge must meet California Department of Health Services water reclamation criteria and the Regional Water Quality Control Board requirements. Non-potable water shall not be conveyed in tanks or drain pipes that will be used to convey potable water and there shall be no connection between potable and non-potable supplies. Non-potable tanks, pipes and other conveyances shall be marked "NON-POTABLE WATER - DO NOT DRINK."
- Materials applied as temporary soil stabilizers and soil binders will also provide wind erosion control benefits.

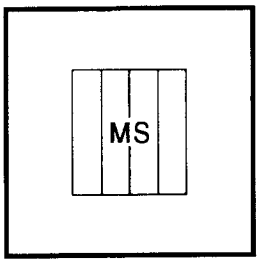
Maintenance and Inspection

- Check areas protected to ensure coverage.
- Implement requirements of Section 10 of the Caltrans Standard Specifications as appropriate.

Material Delivery and Storage

WM-1





BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose

Procedures and practices for the proper handling and storage of materials in a manner that minimizes or eliminates the discharge of these materials to the storm drain system or to watercourses.

Appropriate Applications

These procedures are implemented at all construction sites with delivery and storage of the following:

- Soil
- Pesticides and herbicides
- Fertilizers
- Detergents
- Plaster
- Petroleum products such as fuel, oil, and grease
- Asphalt and concrete components
- Hazardous chemicals such as acids, lime, glues, adhesives, paints, solvents, and curing compounds
- Concrete compounds
- Other materials that may be detrimental if released to the environment

Limitations

- Space limitation may preclude indoor storage.
- Storage sheds must meet building & fire code requirements.

Standards and Specifications

General

- Train employees and subcontractors on the proper material delivery and storage practices.
- Temporary storage area shall be located away from vehicular traffic.
- Material Safety Data Sheets (MSDS) shall be supplied to the Resident Engineer (RE) for all materials stored.

Material Storage Areas and Practices

Liquids, petroleum products, and substances listed in 40 CFR Parts 110, 117, or 302 shall be handled in conformance with the following provisions:

- Storage, preparation, and mixing shall be accomplished in temporary containment facilities. Each temporary containment facility shall provide a spill containment volume equal to 1.5 times the volume of all containers therein and shall be impervious to the materials contained therein for a minimum contact time of 72 hours.
- Sufficient separation shall be provided between stored containers to allow for spill cleanup and emergency response access.
- Incompatible materials, such as chlorine and ammonia, shall not be stored in the same temporary containment facility.
- To provide protection from wind and rain, throughout the rainy season, temporary containment facilities shall be covered during non-working days and prior to rain events.
- Temporary containment facilities shall be maintained free of accumulated rainwater and spills.
- Materials shall be stored in their original containers and the original product labels shall be maintained in place in a legible condition. Damaged or otherwise illegible labels shall be replaced immediately.
- Liquid materials, petroleum products, and substances listed in 40 CFR Parts 110, 117 or 302 shall be stored in approved containers and drums shall not be overfilled. Containers shall be placed in temporary containment facilities for storage.
- Bagged and boxed materials shall be stored on pallets and shall not be allowed to accumulate on the ground. To provide protection from wind and rain, throughout the rainy season, bagged and boxed materials shall be covered during non-working days and prior to rain events.

- Stockpiles shall be protected in accordance with BMP WM-3, "Stockpile Management".
- Minimize the material inventory stored on-site (e.g., only a few days supply).
- Store materials indoors within existing structures or sheds when available.
- Have proper storage instructions posted at all times in an open and conspicuous location.
- Do not store hazardous chemicals, drums, or bagged materials directly on the ground. Place these items on a pallet and when possible, under cover in secondary containment.
- Keep hazardous chemicals well labeled and in their original containers.
- Keep ample supply of appropriate spill clean up material near storage areas.
- Also see BMP WM-6, "Hazardous Waste Management", for storing of hazardous materials.

Material Delivery Practices

- Keep an accurate, up-to-date inventory of material delivered and stored on-site.
- Employees trained in emergency spill clean-up procedures shall be present when dangerous materials or liquid chemicals are unloaded.

Spill Clean-up

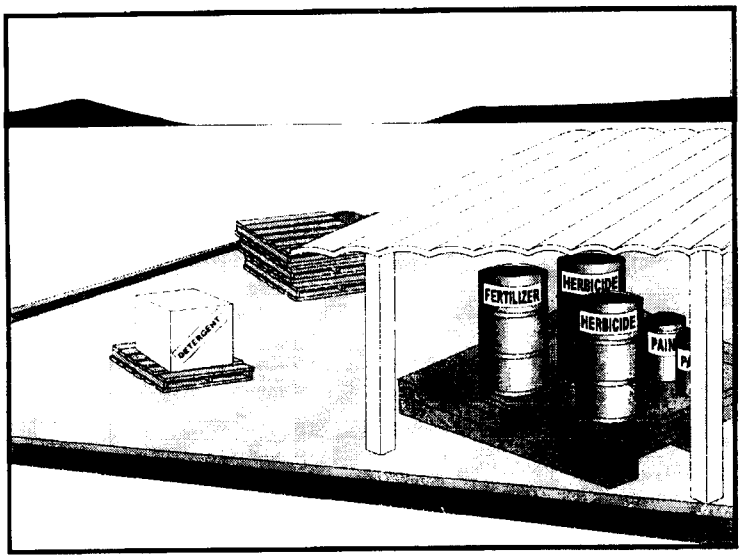
- Contain and clean up any spill immediately.
- If significant residual materials remain on the ground after construction is complete, properly remove and dispose any hazardous materials or contaminated soil.
- See BMP WM-4, "Spill Prevention and Control", for spills of chemicals and/or hazardous materials.

Maintenance and Inspection

- Storage areas shall be kept clean, well organized, and equipped with ample clean-up supplies as appropriate for the materials being stored.
- Perimeter controls, containment structures, covers, and liners shall be repaired or replaced as needed to maintain proper function.
- Inspect storage areas before and after rainfall events, and at least weekly during other times.

Material Use

WM-2



MU

BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose

These are procedures and practices for use of construction material in a manner that minimizes or eliminates the discharge of these materials to the storm drain system or to watercourses.

Appropriate Applications

This BMP applies to all construction projects. These procedures apply when the following materials are used or prepared on site:

- Pesticides and herbicides
- Fertilizers
- Detergents
- Plaster
- Petroleum products such as fuel, oil, and grease
- Asphalt and other concrete components
- Hazardous chemicals such as acids, lime, glues, adhesives, paints, solvents, and curing compounds
- Concrete compounds
- Other materials that may be detrimental if released to the environment

Limitations

- Safer alternative building and construction products may not be available or suitable in every instance.

Standards and Specifications

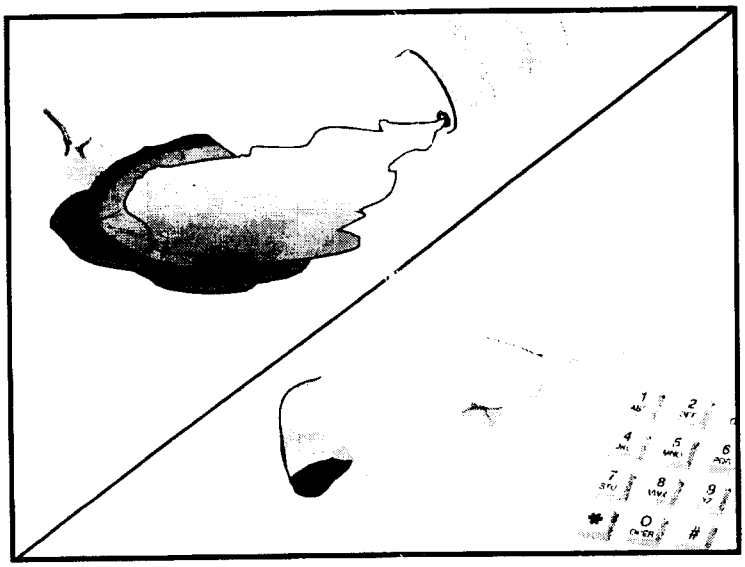
- Material Safety Data Sheets (MSDS) shall be supplied to the Resident Engineer (RE) for all materials.
- Latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths, when thoroughly dry and are no longer hazardous, may be disposed of with other construction debris.
- Do not remove the original product label, it contains important safety and disposal information. Use the entire product before disposing of the container.
- Mix paint indoors, or in a containment area. Never clean paintbrushes or rinse paint containers into a street, gutter, storm drain or watercourse. Dispose of any paint thinners, residue and sludge(s), that cannot be recycled, as hazardous waste.
- For water-based paint, clean brushes to the extent practical, and rinse to a drain leading to a sanitary sewer where permitted, or into a concrete washout pit or temporary sediment trap. For oil-based paints, clean brushes to the extent practical and filter and reuse thinners and solvents.
- Use recycled and less hazardous products when practical. Recycle residual paints, solvents, non-treated lumber, and other materials.
- Use materials only where and when needed to complete the construction activity. Use safer alternative materials as much as possible. Reduce or eliminate use of hazardous materials on-site when practical.
- Do not over-apply fertilizers and pesticides. Prepare only the amount needed. Strictly follow the recommended usage instructions. Apply surface dressings in smaller applications, as opposed to large applications, to allow time for it to work in and to avoid excess materials being carried off-site by runoff.
- Application of herbicides and pesticides shall be performed by a licensed applicator.
- Contractors are required to complete the "Report of Chemical Spray Forms" when spraying herbicides and pesticides.
- Keep an ample supply of spill clean up material near use areas. Train employees in spill clean up procedures.
- Avoid exposing applied materials to rainfall and runoff unless sufficient time has been allowed for them to dry.

Maintenance and Inspections

- Spot check employees and subcontractors monthly throughout the job to ensure appropriate practices are being employed.

Spill Prevention and Control

WM-4



BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose

These are procedures and practices implemented to prevent and control spills in a manner that minimizes or prevents the discharge of spilled material to the drainage system or watercourses.

Appropriate Application

This best management practice (BMP) applies to all construction projects. Spill control procedures are implemented anytime chemicals and/or hazardous substances are stored. Substances may include, but are not limited to:

- Soil stabilizers/binders
- Dust Palliatives
- Herbicides
- Growth inhibitors
- Fertilizers
- Deicing/anti-icing chemicals
- Fuels
- Lubricants
- Other petroleum distillates

To the extent that the work can be accomplished safely, spills of oil, petroleum products, substances listed under 40 CFR parts 110, 117, and 302, and sanitary and septic wastes shall be contained and cleaned up immediately.

Limitations

- This BMP only applies to spills caused by the contractor.
- Procedures and practices presented in this BMP are general. Contractor shall identify appropriate practices for the specific materials used or stored on-site.

Standards and Specifications

- To the extent that it doesn't compromise clean up activities, spills shall be covered and protected from storm water run-on during rainfall.
- Spills shall not be buried or washed with water.
- Used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose shall be stored and disposed of in conformance with the provisions in these special provisions.
- Water used for cleaning and decontamination shall not be allowed to enter storm drains or watercourses and shall be collected and disposed of in accordance with BMP WM-10, "Liquid Waste Management".
- Water overflow or minor water spillage shall be contained and shall not be allowed to discharge into drainage facilities or watercourses.
- Proper storage, clean-up and spill reporting instruction for hazardous materials stored or used on the project site shall be posted at all times in an open, conspicuous and accessible location.
- Waste storage areas shall be kept clean, well organized and equipped with ample clean-up supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers and liners shall be repaired or replaced as needed to maintain proper function.

Education

- Educate employees and subcontractors on what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills.
- Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.
- Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees.

- The Contractor's Water Pollution Control Manager (WPCM) shall oversee and enforce proper spill prevention and control measures.

Clean up and Storage Procedures

- Minor Spills
  - Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.
  - Use absorbent materials on small spills rather than hosing down or burying the spill.
  - Remove the absorbent materials promptly and dispose of properly.
  - The practice commonly followed for a minor spill is:
    1. Contain the spread of the spill.
    2. Recover spilled materials.
    3. Clean the contaminated area and/or properly dispose of contaminated materials

- Semi-Significant Spills
  - Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.
  - Clean up spills immediately:
    1. Notify the project foreman immediately. The foreman shall notify the Resident Engineer (RE).
    2. Contain spread of the spill.
    3. If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.
    4. If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
    5. If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

- Significant/Hazardous Spills

  For significant or hazardous spills that cannot be controlled by personnel in the immediate vicinity, the following steps shall be taken:

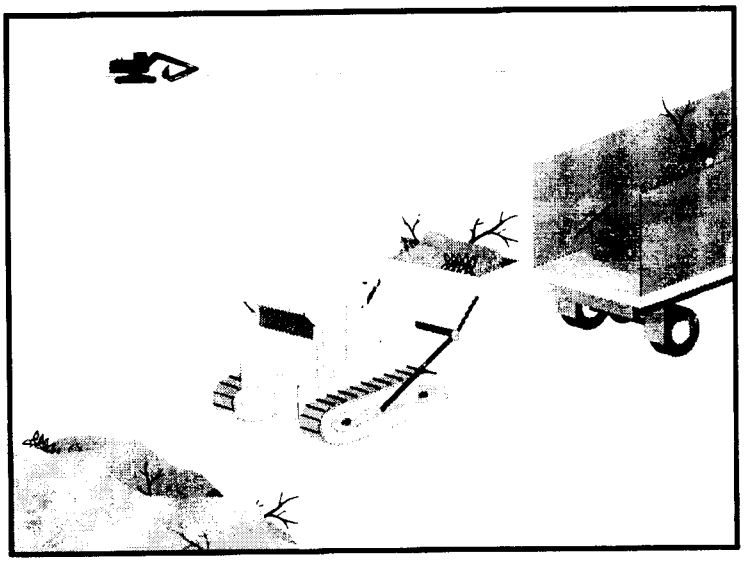
  1. Notify the RE immediately and follow up with a written report.
  2. Notify the local emergency response by dialing 911. In addition to 911, the contractor will notify the proper county officials. It is the contractor's responsibility to have all emergency phone numbers at the construction site.
  3. Notify the Governor's Office of Emergency Services Warning Center, (805) 852-7550.
  4. For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor shall notify the National Response Center at (800) 424-8802.
  5. Notification shall first be made by telephone and followed up with a written report.
  6. The services of a spills contractor or a Haz-Mat team shall be obtained immediately. Construction personnel shall not attempt to clean up until the appropriate and qualified staff have arrived at the job site.
  7. Other agencies which may need to be consulted include, but are not limited to, the Fire Department, the Public Works Department, the Coast Guard, the Highway Patrol, the City/County Police Department, Department of Toxic Substances, California Division of Oil and Gas, Cal/OSHA, etc.

Maintenance and Inspection

- Verify weekly that spill control clean up materials are located near material storage, unloading, and use areas.
- Update spill prevention and control plans and stock appropriate clean-up materials whenever changes occur in the types of chemicals on site.

Solid Waste Management

WM-5



SWM

BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose

These are procedures and practices to minimize or eliminate the discharge of pollutants to the drainage system or to watercourses as a result of the creation, stockpiling, and removal of construction site wastes.

Appropriate Applications

Solid waste management practices are implemented on all construction projects that generate solid wastes.

Solid wastes include but are not limited to:

- Construction wastes including brick, mortar, timber, steel and metal scraps, pipe and electrical cuttings, non-hazardous equipment parts, styrofoam and other materials used to transport and package construction materials.
- Highway planting wastes, including vegetative material, plant containers, and packaging materials.
- Litter, including food containers, beverage cans, coffee cups, paper bags, plastic wrappers, and smoking materials, including litter generated by the public.

Limitations

Temporary stockpiling of certain construction wastes may not necessitate stringent drainage related controls during the non-rainy season or in desert areas with low rainfall.

Standards and Specifications

Education

- The Contractor's Water Pollution Control Manager (WPCM) shall oversee and enforce proper solid waste procedures and practices.

- Instruct employees and subcontractors on identification of solid waste and hazardous waste.
- Educate employees and subcontractors on solid waste storage and disposal procedures.
- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).
- Require that employees and subcontractors follow solid waste handling and storage procedures.
- Prohibit littering by employees, subcontractors, and visitors.
- Wherever possible, minimize production of solid waste materials.

Collection, Storage, and Disposal

- Littering on the project site shall be prohibited.
- To prevent clogging of the storm drainage system litter and debris removal from drainage grates, trash racks, and ditch lines shall be a priority.
- Trash receptacles shall be provided in the Contractor's yard, field trailer areas, and at locations where workers congregate for lunch and break periods.
- Litter from work areas within the construction limits of the project site shall be collected and placed in water tight dumpsters at least weekly regardless of whether the litter was generated by the Contractor, the public, or others. Collected litter and debris shall not be placed in or next to drain inlets, storm water drainage systems or watercourses.
- Dumpsters of sufficient size and number shall be provided to contain the solid waste generated by the project.
- Full dumpsters shall be removed from the project site and the contents shall be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13 of the Standard Specifications.
- Litter stored in collection areas and containers shall be handled and disposed of by trash hauling contractors.
- Materials that are disposed of or temporarily stockpiled outside the highway right-of-way but are visible from the Highway, shall be in a neat and orderly fashion to the satisfaction of the Resident Engineer (RE).
- Storm water run-on shall be prevented from contacting stored solid waste through the use of berms, dikes, or other temporary diversion structures or

through the use of measures to elevate waste form site surfaces.

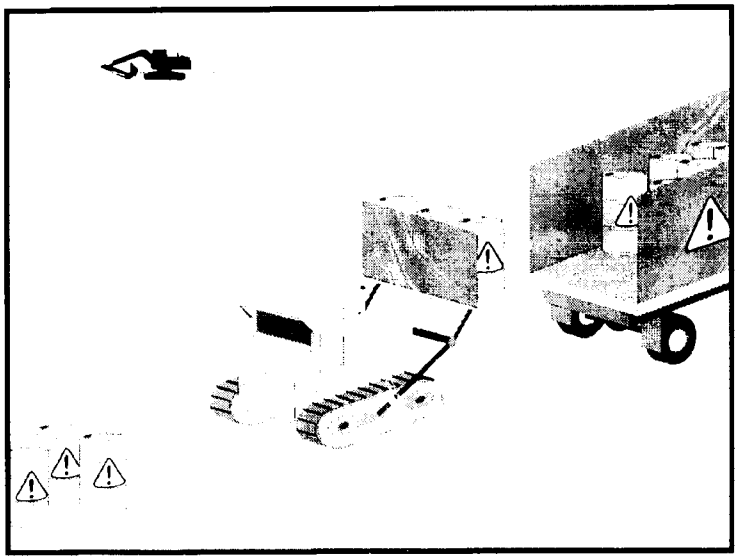
- Solid waste storage areas shall be located at least 15m from drainage facilities and watercourses and shall not be located in areas prone to flooding or ponding.
- Except during fair weather, construction and highway planting waste not stored in watertight dumpsters shall be protected from wind and rain by securely covering the waste with tarps or plastic sheeting or protected in conformance with the applicable Disturbed Soil Area protection.
- Dumpster washout on the project site is not allowed.
- Notify trash hauling contractors that only watertight dumpsters are acceptable for use on-site.
- Plan for additional containers during the demolition phase of construction.
- Plan for more frequent pickup during the demolition phase of construction.
- Designate on-site waste storage areas and obtain approval of the RE.
- Segregate potentially hazardous waste from non-hazardous construction site waste.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
- Dispose of non-hazardous waste in accordance with Standard Specification 7-1.13, Disposal of Material Outside the Highway right-of-way.
- For disposal of hazardous waste, see BMP WM-6, "Hazardous Waste Management". Have hazardous waste hauled to an appropriate disposal and/or recycling facility.
- Salvage or recycle useful vegetation debris, packaging and/or surplus building materials when practical. For example, trees and shrubs from land clearing can be used as a brush barrier, or converted into wood chips, then used as mulch on graded areas. Wood pallets, cardboard boxes, and construction scraps can also be recycled.

Maintenance and Inspection

- The WPCM shall monitor on-site solid waste storage and disposal procedures.
- Police site for litter and debris.

Hazardous Waste Management

WM-6



BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose

These are procedures and practices to minimize or eliminate the discharge of pollutants from construction site hazardous waste to the storm drain system or to watercourses.

Appropriate Applications

- This best management practice (BMP) applies to all construction projects.
- Hazardous waste management practices are implemented on construction projects that generate waste from the use of:
  - Petroleum Products,
  - Concrete Curing Compounds,
  - Palliatives,
  - Septic Wastes,
  - Stains,
  - Wood Preservatives,
  - Asphalt Products,
  - Pesticides,
  - Acids,
  - Paints,
  - Solvents,
  - Roofing Tar, or
  - Any materials deemed a hazardous waste in California, Title 22 Division 4.5, or listed in 40 CFR Parts 110, 117, 261, or 302.

Limitations

- Nothing in this BMP relieves the Contractor from responsibility for compliance with federal, state, and local laws regarding storage, handling, transportation, and disposal of hazardous wastes.
- This BMP does not cover aerially deposited lead (ADL) soils. For ADL soils refer to BMP WM-7, Contaminated Soil Management, and the project Special Provisions.

Standards and Specifications

Education

- Educate employees and subcontractors on hazardous waste storage and disposal procedures.
- Educate employees and subcontractors on potential dangers to humans and the environment from hazardous wastes.
- Instruct employees and subcontractors on safety procedures for common construction site hazardous wastes.
- Instruct employees and subcontractors in identification of hazardous and solid waste.
- Hold regular meetings to discuss and reinforce hazardous waste management procedures (incorporate into regular safety meetings).
- The Contractor's Water Pollution Control Manager (WPCM) shall oversee and enforce proper hazardous waste management procedures and practices.
- Make sure that hazardous waste is collected, removed, and disposed of only at authorized disposal areas.

Storage Procedures

- Wastes shall be stored in sealed containers constructed of a suitable material and shall be labeled as required by Title 22 CCR, Division 4.5 and 49 CFR Parts 172,173, 178, and 179.
- All hazardous waste shall be stored, transported, and disposed as required in Title 22 CCR, Division 4.5 and 49 CFR 261-263.
- Waste containers shall be stored in temporary containment facilities that shall comply with the following requirements:
  - Temporary containment facility shall provide a spill containment volume equal to 1.5 times the volume of all containers.
  - Temporary containment facility shall be impervious to the materials contained for a minimum contact time of 72 hours.
  - Temporary containment facilities shall be maintained free of accumulated rainwater and spills.
  - Sufficient separation shall be provided between stored containers to allow for spill cleanup and emergency response access.
  - Incompatible materials, such as chlorine and ammonia, shall not be stored in the same temporary containment facility.

- Throughout the rainy season, temporary containment facilities shall be covered during non-working days, prior to rain events.

- Drums shall not be overfilled and wastes shall not be mixed.

- Paint brushes and equipment for water and oil based paints shall be cleaned within a contained area and shall not be allowed to contaminate site soils, watercourses or drainage systems. Waste paints, thinners, solvents, residues, and sludges that cannot be recycled or reused shall be disposed of as hazardous waste. When thoroughly dry, latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths shall be disposed of as solid waste.

- Ensure that adequate hazardous waste storage volume is available.

- Ensure that hazardous waste collection containers are conveniently located.

- Designate hazardous waste storage areas on site away from storm drains or watercourses and away from moving vehicles and equipment to prevent accidental spills.

- Minimize production or generation of hazardous materials and hazardous waste on the job site.

- Use containment berms in fueling and maintenance areas and where the potential for spills is high.

- Segregate potentially hazardous waste from non-hazardous construction site debris.

- Keep liquid or semi-liquid hazardous waste in appropriate containers (closed drums or similar) and under cover.

- Clearly label all hazardous waste containers with the waste being stored and the date of accumulation.

- Place hazardous waste containers in secondary containment.

- Do not allow potentially hazardous waste materials to accumulate on the ground.

- Unless watertight, containers of dry waste shall be stored on pallets.

- Do not mix wastes.

Disposal Procedures

- Waste shall be disposed of outside the highway right-of-way within 90 days of being generated, or as directed by the Resident Engineer (RE).
- To minimize on-site storage, full containers of waste shall be disposed of outside the highway right-of-way at least weekly. In no case shall hazardous waste storage exceed requirements in Title 22 CCR, section 66262.34.
- Waste shall be disposed of by a licensed hazardous waste transporter at an authorized and licensed disposal facility or recycling facility utilizing properly completed Uniform Waste Manifest forms. In no case shall hazardous waste storage exceed requirements in Title 22 CCR, section 66262.34.
- A Caltrans certified laboratory shall sample waste to determine the appropriate disposal facility.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for solid waste construction debris.
- Properly dispose of rainwater in secondary containment that may have mixed with hazardous waste.
- Recycle any useful material such as used oil or water-based paint when practical.
- Attention is directed to "Hazardous Material", "Contaminated Material", and "Aerially Deposited Lead" of the contract documents regarding the handling and disposal of hazardous materials.

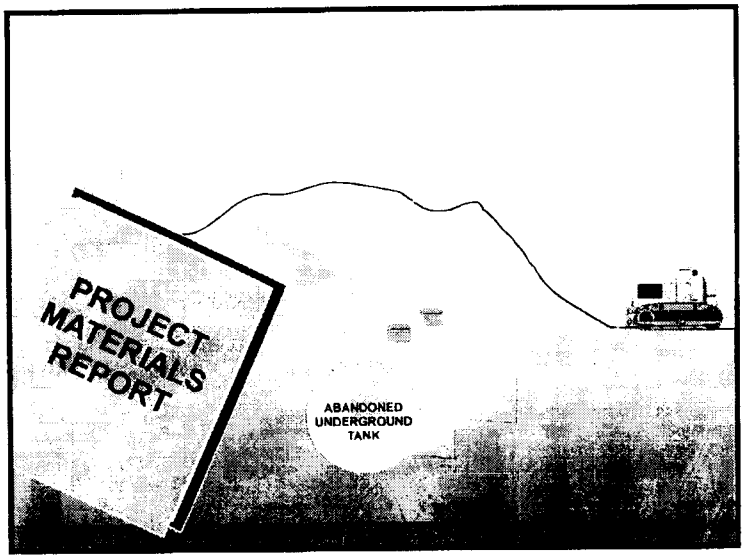
Maintenance and Inspection

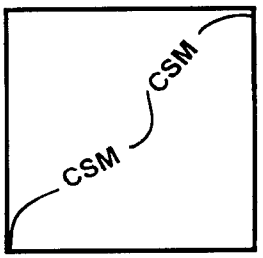
- The WPCM shall monitor on-site hazardous waste storage and disposal procedures.
- Waste storage areas shall be kept clean, well organized, and equipped with ample clean-up supplies as appropriate for the materials being stored.
- Storage areas shall be inspected in conformance with the provisions in the contract documents.
- Perimeter controls, containment structures, covers, and liners shall be repaired or replaced as needed to maintain proper function.
- Hazardous spills shall be cleaned up and reported in conformance with the applicable Material Safety Data Sheet (MSDS) and the instructions posted at the project site.

- The National Response Center, at (800) 424-8802, shall be notified of spills of Federal reportable quantities in conformance with the requirements in 40 CFR parts 110, 117, and 302.
- Copy of Bill of Laden and disposal receipts shall be provided to the RE.

Contaminated Soil Management

WM-7





BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose

These are procedures and practices to minimize or eliminate the discharges of pollutants to the drainage system or to watercourses from contaminated soil.

Appropriate Applications

- Contaminated soil management is implemented on construction projects in highly urbanized or industrial areas where soil contamination may have occurred due to spills, illicit discharges, and leaks from underground storage tanks.
- It may also apply to highway widening projects in older areas where median and shoulder soils may have been contaminated by aerially deposited lead (ADL).

Limitations

- The procedures and practices presented in this best management practice (BMP) are general. The contractor shall identify appropriate practices and procedures for the specific contaminants known to exist or discovered on site.

Standards and Specifications

Identifying Contaminated Areas

- Contaminated soils are often identified during project planning and development with known locations identified in the plans and specifications. The contractor shall review applicable reports and investigate appropriate call-outs in the plans and specifications.
- The contractor may further identify contaminated soils by investigating:
  - Past site uses and activities.
  - Detected or undetected spills and leaks.

- Acid or alkaline solutions from exposed soil or rock formations high in acid or alkaline forming elements.
- Look for contaminated soil as evidenced by discoloration, odors, differences in soil properties, abandoned underground tanks or pipes, or buried debris. Test suspected soils at a certified laboratory.

Education

- Prior to performing any excavation work at the locations containing material classified as hazardous, employees and subcontractors shall complete a safety training program which meets 29 CFR 1910.120 and 8 CCR 5192 covering the potential hazards as identified.
- Educate employees and subcontractors in identification of contaminated soil and on contaminated soil handling and disposal procedures.
- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).

Handling Procedures for Material with Aerially Deposited Lead (ADL)

- Materials from areas designated as containing (ADL) may, if allowed by the contract special provisions, be excavated, transported, and used in the construction of embankments and/or backfill.
- Excavation, transportation, and placement operations shall result in no visible dust.
- Use caution to prevent spillage of lead containing material during transport.
- Monitor the air quality during excavation of soils contaminated with lead.

Handling Procedures for Contaminated Soils

- Test suspected soils at a Caltrans approved certified laboratory.
- If the soil is contaminated, work with the local regulatory agencies to develop options for treatment and/or disposal.
- Avoid temporary stockpiling of contaminated soils or hazardous material.
- If temporary stockpiling is necessary:
  (1) Cover the stockpile with plastic sheeting or tarps.
  (2) Install a berm around the stockpile to prevent runoff from leaving the area.

(3) Do not stockpile in or near storm drains or watercourses.

- Contaminated material and hazardous material on exteriors of transport vehicles shall be removed and placed either into the current transport vehicle or the excavation prior to the vehicle leaving the exclusion zone.
- Monitor the air quality continuously during excavation operations at all locations containing hazardous material.
- Procure all permits and licenses, pay all charges and fees, and give all notices necessary and incident to the due and lawful prosecution of the work, including registration for transporting vehicles carrying the contaminated material and the hazardous material.
- Collect water from decontamination procedures and treat and/or dispose of it at an appropriate disposal site.
- Collect non-reusable protective equipment, once used by any personnel, and dispose of at an appropriate disposal site.
- Install temporary security fence to surround and secure the exclusion zone. Remove fencing when no longer needed.
- Excavation, transport, and disposal of contaminated material and hazardous material shall be in accordance with the rules and regulations of the following agencies (the specifications of these agencies supersede the procedures outlined in this BMP):
  - United States Department of Transportation (USDOT);
  - United States Environmental Protection Agency (USEPA);
  - California Environmental Protection Agency (CAL-EPA);
  - California Division of Occupation Safety and Health Administration (CAL-OSHA); and
  - Local regulatory agencies.

Procedures for Underground Storage Tank Removals

- Prior to commencing tank removal operations, obtain the required underground storage tank removal permits and approval from the federal, state, and local agencies which have jurisdiction over such work.
- Arrange to have tested, as directed by the Resident Engineer (RE), any liquid or sludge found in the underground tank prior to its removal to determine if it contains hazardous substances.

- Following the tank removal, take soil samples beneath the excavated tank and perform analysis as required by the local agency representative(s).
- The underground storage tank, any liquid and/or sludge found within the tank, and all contaminated substances and hazardous substances removed during the tank removal shall be transported to disposal facilities permitted to accept such waste.

Water Control

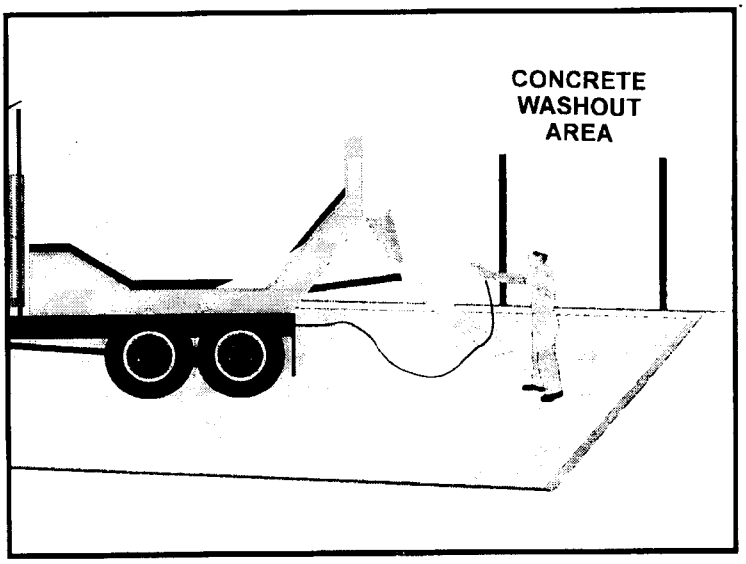
- Take all necessary precautions and preventive measures to prevent the flow of water, including ground water, from mixing with hazardous substances or underground storage tank excavations. Such preventative measures may consist of, but are not limited to: berms, cofferdams, grout curtains, freeze walls, and seal course concrete or any combination thereof.
- If water does enter an excavation and becomes contaminated, such water, when necessary to proceed with the work, shall be discharged to clean, closed top, watertight holding tanks, treated, and disposed of in accordance with federal, state, and local laws.

Maintenance and Inspection

- The Contractor's Water Pollution Control Manager and/or construction supervisor shall monitor on-site contaminated soil storage and disposal procedures.
- Monitor air quality continuously during excavation operations at all locations containing hazardous material.
- Coordinate contaminated soils and hazardous substances/waste management with the appropriate federal, state, and local agencies.
- Inspect hazardous waste receptacles and areas regularly.

Concrete Waste Management

WM-8



CWM

CWM

BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose

These are procedures and practices that are implemented to minimize or eliminate the discharge of concrete waste materials to the storm drain system or to watercourses.

Appropriate Applications

- Concrete waste management practices are implemented on construction projects where concrete is used as a construction material or where concrete dust and debris result form demolition activities.
- Where slurries containing portland cement concrete (PCC) or asphalt concrete (AC) are generated, such as from sawcutting, coring, grinding, grooving, and hydro-concrete demolition.
- Where concrete trucks and other concrete-coated equipment are washed on site, when approved by the Resident Engineer (RE). See also NS-8, Vehicle and Equipment Cleaning.
- Where mortar-mixing stations exist.

Limitations

None identified.

Standards and Specifications

Education

- Educate employees, subcontractors, and suppliers on the concrete waste management techniques described herein.
- The Contractor's Water Pollution Control Manager (WPCM) shall oversee and enforce concrete waste management procedures.

Concrete Slurry Wastes

- PCC and AC waste shall not be allowed to enter storm drains or watercourses.
- PCC and AC waste shall be collected and disposed of outside the highway right-of-way in conformance with section 7-1.13 of Standard Specifications or placed in a temporary concrete washout facility.
- Disposal of hardened PCC and AC waste shall be in conformance with Section 15-3.02 of the Standard Specifications.
- A sign shall be installed adjacent to each temporary concrete washout facility to inform concrete equipment operators to utilize the proper facilities.
- Below grade concrete washout facilities are typical. Above grade facilities are used if excavation is not practical.
- Do not allow slurry residue from wet coring or saw-cutting AC or PCC to enter storm drains or receiving waters by:
  - Placing temporary berms or sandbags around coring or saw-cutting locations to capture and contain slurry runoff.
  - Placing straw bales, sandbags, or gravel dams around inlets to prevent slurry from entering storm drains.
- Vacuum slurry residue and dispose in a temporary pit (as described in *On-Site Temporary Concrete Washout Facility, Concrete Transit Truck Washout Procedures*, below) and allow slurry to dry. Dispose of dry slurry residue in accordance with BMP WM-5, "Solid Waste Management", or, for on-site disposal, in accordance with Standard Specification 15-3.02, Removal Methods.
- Collect residue from grooving and grinding operations in accordance with Standard Specifications Section 42-1.02 and 42-2.02, "Construction."

On-site Temporary Concrete Washout Facility, Transit Truck Washout Procedures

- Temporary concrete washout facilities shall be located a minimum of 15 m (50 ft) from storm drain inlets, open drainage facilities, and watercourses, unless determined unfeasible by the RE. Each facility shall be located away from construction traffic or access areas to prevent disturbance or tracking.
- A sign shall be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities. The sign shall be

installed as shown on the plans and in conformance with the provisions in Section 56-2, "Roadside Signs", of the Standard Specifications.

- Temporary concrete washout facilities shall be constructed above grade or below grade at the option of the Contractor. Temporary concrete washout facilities shall be constructed and maintained in sufficient quantity and size to contain all liquid and concrete waste generated by washout operations.

- Temporary washout facilities shall have a temporary pit or bermed areas of sufficient volume to completely contain all liquid and waste concrete materials generated during washout procedures.

- Perform washout of concrete trucks in designated areas only.

- Once concrete wastes are washed into the designated area and allowed to harden, the concrete shall be broken up, removed, and disposed of per BMP WM-5, "Solid Waste Management", and in conformance with the provisions in Section 15-3.02, "Removal Methods", of the Standard Specifications. Dispose of hardened concrete on a regular basis.

- ***Temporary Concrete Washout Facility (Type Above Grade)***
  - Temporary concrete washout facility (type above grade) shall be constructed as shown on the plans, with a recommended minimum length and minimum width of 3m, but with sufficient quantity and volume to contain all liquid and concrete waste generated by washout operations. The length and width of a facility may be increased, at the Contractor's expense, upon approval of the RE.
  - Straw bales, wood stakes, and sandbag materials shall conform to the provisions in BMP SC-9, "Straw Bale Barrier".
  - Plastic lining material shall be a minimum of 60 mil polyethylene sheeting and shall be freeof holes, tears or other defects that compromise the impermeability of the material.
  - Portable delineators shall conform to the provisions in Section 12-3.04, "Portable Delineators", of the Standard Specifications. The delineator bases shall be cemented to the pavement in the same manner as provided for cementing pavement markers to pavement in Section 85-1.06, "Placement", of the Standard Specifications. Portable delineators shall be applied only to a clean, dry surface.

- ***Temporary Concrete Washout Facility (Type Below Grade)***
  - Temporary concrete washout facility (type below grade) shall be constructed as shown on the plans, with a recommended minimum

length and minimum width of 3m (10 ft). The quantity and volume shall be sufficient to contain all liquid and concrete waste generated by washout operations. The length and width of a facility may be increased, at the Contractor's expense, upon approval of the RE. Lath and flagging shall be commercial type.

Removal of Temporary Concrete Washout Facilities

- When temporary concrete washout facilities are no longer required for the work, as determined by the RE, the hardened concrete shall be removed and disposed of in conformance with the provisions in Section 15-3.02 of the Standard Specifications. Materials used to construct temporary concrete washout facilities shall become the property of the Contractor, shall be removed from the site of the work, and shall be disposed of outside the highway right-of-way in conformance with the provisions in Section 7-1.13 of the Standard Specifications.

- Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities shall be backfilled and repaired in conformance with the provisions in Section 15-1.02, "Preservation of Property," of the Standard Specifications.

Maintenance and Inspection

- The Contractor's Water Pollution Control Manager (WPCM) shall monitor on site concrete waste storage and disposal procedures at least weekly.

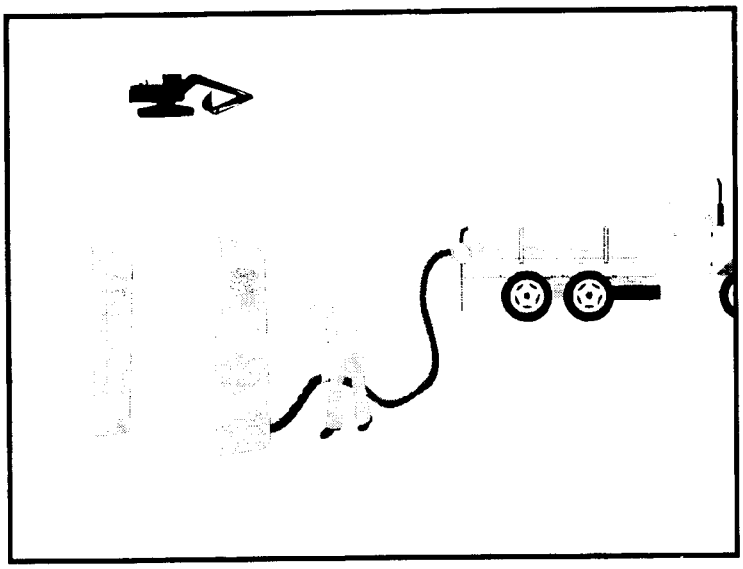
- The WPCM shall monitor concrete working tasks, such as saw cutting, coring, grinding and grooving at least weekly to ensure proper methods are employed.

- Temporary concrete washout facilities shall be maintained to provide adequate holding capacity with a minimum freeboard of 100mm for above grade facilities and 300mm for below grade facilities. Maintaining temporary concrete washout facilities shall include removing and disposing of hardened concrete and returning the facilities to a functional condition. Hardened concrete materials shall be removed and disposed of in conformance with the provisions in Section 15-3.02, "Removal Methods," of the Standard Specifications.

- Existing facilities must be cleaned, or new facilities must be constructed and ready for use once the washout is 75% full.

Sanitary/Septic Waste Management

WM-9



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BMP Objectives

- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

Definition and Purpose

Procedures and practices to minimize or eliminate the discharge of construction site sanitary/septic waste materials to the storm drain system or to watercourses.

Appropriate Applications

Sanitary/septic waste management practices are implemented on all construction sites that use temporary or portable sanitary/septic waste systems.

Limitations

Not applicable.

Standards and Specifications

Education

- Educate employees, subcontractors, and suppliers on sanitary/septic waste storage and disposal procedures.
- Educate employees, subcontractors, and suppliers of potential dangers to humans and the environment from sanitary/septic wastes.
- Instruct employees, subcontractors, and suppliers in identification of sanitary/septic waste.
- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees.

Storage and Disposal Procedures

- Temporary sanitary facilities shall be located away from drainage facilities, watercourses, and from traffic circulation. When subjected to high winds or risk of high winds, as determined by the Resident Engineer (RE), temporary

sanitary facilities shall be secured to prevent overturning.

- Wastewater shall not be discharged or buried within the highway right-of-way.
- Sanitary and septic systems that discharge directly into sanitary sewer systems, where permissible, shall comply with the local health agency, city, county, and sewer district requirements.
- If using an on site disposal system, such as a septic system, comply with local health agency requirements.
- Properly connect temporary sanitary facilities that discharge to the sanitary sewer system to avoid illicit discharges.
- Ensure that sanitary/septic facilities are maintained in good working order by a licensed service.
- Use only reputable, licensed sanitary/septic waste haulers.

Maintenance and Inspection

- The Contractor's Water Pollution Control Manager (WPCM) shall monitor on site sanitary/septic waste storage and disposal procedures at least weekly.