Major Stormwater Management Plan (SWMP)

for the Construction Activities Associated with the

Energia Sierra Juarez U.S. Transmission Gen-Tie Alternative Project

(MUP 09-008, KIVA 09-0107420)

in

San Diego County, California

Prepared for:
Energia Sierra Juarez U.S. Transmission LLC

Prepared by:
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Project Number: 52573

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INTRODUCTION

1.0 INTRODUCTION

According to the County of San Diego Watershed Protection, Storm Water Management, and Discharge Control Ordinance (Ordinance No. 9926), a Stormwater Management Plan (SWMP) must be submitted with applications for San Diego County permits or approvals associated with a land disturbance activity. By definition, a land disturbance activity is any activity that moves soils, including grading, digging, cutting, scraping, substantial removal of vegetation, placement of fill materials, and stockpiling or excavating soils.

Energia Sierra Juarez (ESJ) U.S. Transmission, LLC, proposes the construction, operation and maintenance of a less than one-mile electric generator-tie line (Gen-Tie) from the Mexico border to a proposed East County Substation (ECO Substation) adjacent to the South West Power Link (SWPL) 500 kV gen-tie line in Eastern San Diego County. The ECO Substation will be permitted, constructed and operated by San Diego Gas and Electric (SDG&E). In August of 2009, SDG&E submitted a Proponents Environmental Assessment (PEA) with the proposed "ECO Substation" location. Subsequently, SDG&E proposed an "ECO Substation Alternative" that was located approximately 100 meters to the northeast. Therefore, two sets of gen-tie routes for the ESJ Gen-Tie Project are proposed. The "ESJ Gen-Tie" route consists of Routes A1 and A2. The "ESJ Gen-Tie Alternative" route consists of Routes D1 and D2. Each set consists of a single circuit 500 kV line (Route A1 or Route D1) or double-circuit 230 kV lines (Route A2 or Route D2) supported on three to five 150- to 170-foot steel monopoles or three to five 150-foot tall steel lattice towers (total line capacity would be 1,250 MW for either alternative).

A Stormwater Management Plan was previously developed and submitted to the County of San Diego for Routes A1 and A2. This Stormwater Management Plan is for the ESJ Gen-Tie Alternative Project (Routes D1 and D2) located in San Diego County, California. This SWMP has been developed for ESJ U.S. by Burns & McDonnell Engineering Company, Inc. (Burns & McDonnell) as a requirement of the application for a San Diego County Major Use Permit (MUP) and in accordance with requirements and guidelines specified in Appendix A (Part F.3) of Ordinance No. 9926.

All stormwater dischargers engaged in land disturbance activities must install, implement, and maintain Best Management Practices (BMPs) to prevent and reduce stormwater discharges. This SWMP describes the BMPs which will be utilized to manage stormwater discharges associated with this ESJ Gen-Tie Alternative Project. BMPs should be moved, added, or redesigned as necessary to control erosion and sedimentation to the maximum extent practicable.

1.1 PROJECT DESCRIPTION AND LOCATION

The proposed ESJ Gen-Tie Alternative Project consists of the construction, operation, and maintenance of a less than one-mile segment of an electric generator tie line from the Mexico border to a substation adjacent to the SWPL 500 kilovolt (kV) transmission line in Eastern San Diego County. The proposed electric generator tie line would be either a single-circuit 500 kV transmission line (Route D1) or a double-circuit 230 kV line (Route D2) supported on three to five 150-foot steel lattice towers or up to 170-foot steel monopole towers. The proposed Gen-Tie would have the capacity to interconnect up to 1250 megawatts (MW) of future renewable energy produced by generators located in Northern Baja California, Mexico.

Route D1 or D2 would connect with the proposed ECO Substation Alternative, which is to be proposed, permitted, constructed, and operated by SDG&E, which in turn would interconnect to SWPL. The ECO Substation Alternative will be permitted by the California Public Utility Commission. The ECO Substation Alternative is located approximately 0.65 mile north of the U.S./Mexico border and approximately 3.75 miles east of Jacumba in the southeast corner of San Diego County near the Imperial County Line (Figures 1, 2b and 3b in Attachment A).

The total length of the generator tie line would be approximately two miles, with approximately one mile in the United States (ESJ Gen-Tie Alternative Project) and approximately one mile from the international border to the first point of interconnection in Mexico, at the ESJ Jacume Substation in Mexico. An additional overhead static ground wire running above the conductors would have a fiber optic core for communications between the ESJ Jacume Substation in Mexico and the proposed SDG&E ECO Substation Alternative.

Route D1 (the 500 kV Gen-Tie) would be constructed within a 214-foot wide permanent right-of-way, while Route D2 (the 230 kV Gen-Tie) would be constructed within a 130-foot permanent right-of-way. A 100-foot and 70-foot wide temporary construction easement along the right-of-way was originally proposed for Route D1 and D2, respectively. The temporary easement has been eliminated to minimize disturbed areas.

In lieu of these 100-foot wide (7.72 acres) or 70-foot wide (5.64 acres) temporary easements, the wire stringing site proposed at the north end of the ESJ Gen-Tie Alternative Project site immediately adjacent to the property legal access road (discussed further below), and which was originally identified as having a disturbance of 0.69 acre, would instead be used as a wire stringing site and as a construction laydown

and parking area. Route D1 and Route D2 would share a common 1.99-acre consolidated construction laydown/parking/stringing area (staging area), which is a reduction in impacts in comparison to the 100-foot and 70-foot easements (Figure 3b).

The monopoles or lattice towers would be located no more than 1,500 feet apart. The precise locations may be adjusted based on final design and, if necessary, to avoid sensitive cultural resources. There would be no poles placed within 150 feet of the international border. Fire protection guidelines require a defensible space of 30 feet on all sides of each tower, and recommend that no revegetation occur within, or 30 feet adjacent to, the right-of-way (Hunt Research Corporation 2009). This proposed type of Gen-Tie line rarely causes interference to radio and television signals, and there are no adjacent or nearby land uses where this could possibly be an issue. In regards to Routes D1 and D2, there are differences in tower dimensions, required right-of-way width, and total ground level impacts, as specified in Table 1-1 below.

Access to the ESJ Gen-Tie Alternative Project area is provided by Old Highway 80. The property access road (Option B) from Old Highway 80 to the ESJ Gen-Tie Alternative Project site is shown on Figure 3b in Attachment A. This access road would require construction of a new 28-foot wide road and turnaround within a 40-foot wide easement, as required by the Rural Fire Protection District. It is possible that the entire 40-foot easement could be impacted during construction of the access road. Disturbed areas within the 40-foot easement, but beyond the 28-foot wide access road, would be revegetated with a native seed mix.

In addition, a new Gen-Tie tower access road would be constructed that would parallel the proposed Gen-Tie line. The Gen-Tie tower access road and foundations for the monopoles or lattice towers would be located entirely within the permanent right-of-way. The Gen-Tie tower access road would be an approximately 12-foot wide graded dirt road.

The ESJ Gen-Tie Alternative Project is scheduled to begin December 2011. The completion date is June 2012.

Table 1-1 Route D1 and Route D2 Parameters

Parameter	Route D1 (500 kV Line)	Route D2 (230 kV Line)
Maximum Capacity	1,250 MW	1,250 MW
Number of Circuits	Single Circuit	Double Circuit
Minimum Ground Clearance	39 feet	34 feet
Permanent Right-of-Way (ROW)	214 feet	130 feet
Number of Structures	3 to 5	3 to 5
Maximum Spacing between Structures	1,500 feet	1,500 feet
Permanent Impacts at each Structure	150 feet x 200 feet (0.69 acre)	120 feet x 160 feet (0.44 acre)
Maximum Height of Lattice Towers	150 feet	150 feet
Maximum Base of Lattice Towers	34 feet x 34 feet	29 feet x 29 feet
Foundation of Lattice Tower at each Corner	3 to 6 feet diameter	3 to 6 feet diameter
Maximum Height of Steel Monopoles	170 feet	150 feet
Foundation of Steel Monopoles	7 to 9 feet diameter	6 to 9 feet diameter

1.2 HYDROMODIFICATION DETERMINATION

The ESJ Gen-Tie Alternative Project will not disturb 50 or more acres of land and therefore, is not required to manage hydromodification impacts.

1.3 ESJ GEN-TIE ALTERNATIVE PROJECT OWNER AND OPERATOR

The ESJ Gen-Tie Alternative Project owner and operator, ESJ U.S., will be the responsible entity for completing the Project. Their address and telephone number is:

Energia Sierra Juarez U.S. Transmission LLC
101 Ash Street
HQ #14
San Diego, CA
(619) 696-2121

1.4 FINAL STABILIZATION AND TERMINATION OF COVERAGE

Final stabilization has been achieved when all soil disturbing activities at the site have been completed. Because the proposed ESJ Gen-Tie Alternative Project will take place in an arid area, where background native vegetation covers less than 100 percent of the surface, a uniform (e.g., evenly distributed, without large bare areas) perennial vegetative cover with a density of 70 percent of the native background

vegetative cover percentage for the area will be established at all temporarily disturbed areas, except as required for fire protection.

Section 2.0
CONSTRUCTION ACTIVITIES AND SITE DESCRIPTION

2.0 CONSTRUCTION ACTIVITIES AND SITE DESCRIPTION

2.1 DESCRIPTION OF CONSTRUCTION ACTIVITIES

The construction staging area has been proposed at the north end of the ESJ Gen-Tie Alternative Project site immediately adjacent to the property access road. Limited grading would be required for this area and the tower/pole pads. Gen-Tie towers/poles would be supported on excavated, reinforced concrete foundations. These foundations would be excavated using a backhoe or similar excavation equipment. Roads would be maintained periodically. This maintenance would include grading and minor repairs. Construction activities would consist of clearing, grading, grubbing, access road and pad construction, digging and drilling for tower foundations, pouring concrete foundations for towers, overhead electrical power system construction, and final grading and site clean-up.

Vegetation would be cleared and grubbed along the proposed access roads. Vegetation debris would be moved off-site and disposed of properly and according to applicable requirements. Topsoil removed during the grading of the tower areas and construction staging area would be stockpiled in the construction staging area, if necessary. This topsoil will be utilized during final grading of the road and tower areas. Based on preliminary engineering design, grading would require the export of soil. Disturbed areas within the 40-foot easement, but beyond the 28-foot wide property access road, would be revegetated with a native seed mix.

2.2 SOILS

According to the Natural Resources Conservation Service (NRCS) *Soil Survey of San Diego County, California* (retrieved on April 6, 2009 from: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx), the ESJ Gen-Tie Alternative Project is located on land that contains rough broken land and one soil series, Rositas loamy coarse sand. Rositas loamy coarse sands are somewhat excessively drained soils with rapid permeability. They are found on dunes and sand sheets. This soil series in the ESJ Gen-Tie Alternative Project area has 2 to 9 percent slopes. Less than one acre of acid igneous rock land is located in the southeast corner of the ESJ Gen-Tie Alternative Project site. No contaminated or hazardous soils are located within the ESJ Gen-Tie Alternative Project area.

2.3 MOST LIKELY POLLUTANTS

The primary pollutant sources on the construction site will be disturbed soils and subsequent surface water runoff. BMPs will be employed to control erosion and sedimentation, and are discussed in further detail in Section 3.0. Other potential pollutant sources include petroleum products needed for the

construction equipment, soil stockpiles, etc. BMPs for product-specific practices are discussed in Sections 4.0 and 5.0 of this document.

2.4 SITE FIGURES AND DRAWINGS

Figures of the ESJ Gen-Tie Alternative Project site are located in Attachment A of this document. The BMP Location Maps and Details are located in Attachments B and C, respectively.

2.5 SURROUNDING LAND USE

The majority of the surrounding land is rough, broken desert terrain near the Jacumba Mountains. The ESJ Gen-Tie Alternative Project area is not within an environmentally sensitive area as defined on the map in Appendix A of the *County of San Diego Standard Urban Storm Water Mitigation Plan for Land Development and Public Improvement Projects.*

2.6 LOCAL CLIMATE

The local climate is low-latitude desert, with mild winters and very hot summers. The mean annual precipitation is 0 to 8 inches with most of the precipitation occurring in the winter. The mean annual air temperature is 70 to 77 degrees F.

2.7 RECEIVING WATERS

The ESJ Gen-Tie Alternative Project area is within the Jacumba Valley hydrologic sub-area of the Anza Borrego watershed. The site has minimal relief, and stormwater will primarily sheet flow to the west. A swale located within the ESJ Gen-Tie Alternative Project area, approximately 0.3 miles north of the United States/Mexico border, is not a tributary to the intermittent stream, Carrizo Creek. Boulder Creek is located northwest of the ESJ Gen-Tie Alternative Project area, approximately 0.4 miles from the proposed 500 kV Gen-Tie line. No federally jurisdictional streams or wetlands are located within the ESJ Gen-Tie Alternative Project area. ESJ Gen-Tie Alternative Project work will not take place in stream channels, and stormwater runoff will not discharge directly into any Clean Water Act Section 303(d) water bodies.

2.8 HIGH RISK AREAS

No High Risk Areas, municipal or domestic water supply reservoirs or groundwater percolation facilities, are located within the ESJ Gen-Tie Alternative Project area.

2.9 REGIONAL BOARD REQUIREMENTS

The California Regional Water Quality Control Board (RWQCB) issues the National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000002 for discharges of stormwater runoff associated with construction activity throughout the state. The ESJ Gen-Tie Alternative Project area is

located within the San Diego Region RWQCB office, which requires no special requirements for the Project such as TMDLs, effluent limits, etc.

Section 3.0
BEST MANAGEMENT PRACTICES

3.0 BEST MANAGEMENT PRACTICES

3.1 EROSION AND SEDIMENT CONTROLS

Soil erosion and sediment controls are measures that are used to reduce the amount of soil particles that are carried from a land area and deposited in receiving waters. This section provides a general description of the most appropriate control measures proposed for the ESJ Gen-Tie Alternative Project. The permittee's construction contractor(s) and subcontractor(s) will be responsible for amending the erosion and sediment controls in the SWMP for their portion(s) of the ESJ Gen-Tie Alternative Project, if needed. Based on field conditions at the time of construction, the contractors and subcontractors may adjust the locations and types of BMPs so that erosion and sedimentation are controlled to the maximum extent practicable. However, in no case will modifications to BMPs result in any less stringent erosion and sedimentation control measures than specified herein.

Several factors need to be considered when deciding on erosion control techniques. The application of the techniques in the field will be determined by the professional judgment of the permittee's field construction personnel and will depend on site-specific conditions. Factors that may be considered in selection of erosion and sediment controls for site-specific areas may include:

- Size of the area affected
- Type of proposed construction activities
- Soil type and texture
- Amount of rock
- Steepness and length of slope
- Amount of vegetative cover
- Proximity to watercourses or wetlands, particularly downslope from construction activities
- Date and intensity of the last major rain event
- Anticipated weather conditions and frozen ground

All applicable soil erosion and sediment control measures will be implemented in accordance with this SWMP and the Ordinance prior to commencement of field construction activities. Measures will be maintained during and after the construction activity, until final stabilization of the soil is accomplished. Upon final stabilization of disturbed areas, all temporary soil erosion and sediment control measures will be removed.

3.2 STRUCTURAL CONTROL PRACTICES

Structural control practices divert flows from exposed soils, store water flow, or otherwise limit runoff from exposed areas of the site. Such practices may include earth dikes, drainage swales, sediment traps, check dams, subsurface drains, pipe slope drains, level spreaders, storm drain inlet protection, rock outlet protection (rip-rap), reinforced soil retaining systems, gabions, and temporary or permanent sediment

basins. Some of these practices may be used as both temporary and permanent control measures. Structural control practices should be placed in upland areas to the degree practicable to prevent erosion and reduce sedimentation in lower elevation areas.

3.2.1 Advanced Treatment Best Management Practices

The proposed ESJ Gen-Tie Alternative Project area is not within 200 feet of waters named on the Clean Water Act Section 303(d) list of Water Quality Limited segments as impaired for sedimentation or turbidity. Therefore, the ESJ Gen-Tie Alternative Project will not pose an exceptional threat to water quality and require the use of Advanced Treatment Best Management Practices (see checklist in Attachment G).

3.2.2 Temporary Erosion and Sediment Control Practices

Erosion and sediment control measures will be in place prior to the initiation of soil disturbing activities and will be maintained throughout construction. Prior to the first rainy season, November 11 through April 30, slope protection will occur following the clearing or grading of slopes or for those slopes that are more than three feet in height or steeper than 3:1 (rise-to-run). The contractor may need erosion control measures in other locations of the ESJ Gen-Tie Alternative Project as work progresses to keep sediment from leaving the construction site. These measures will be determined by the contractor in the field; if measures are changed in the field, the SWMP must be modified accordingly. All temporary erosion controls will be removed after the protected area is finally stabilized. The minimum temporary erosion and sediment control practices that will be used for the ESJ Gen-Tie Alternative Project are discussed in the following sections.

3.2.2.1 Stockpile Management (WM-3)

During the rainy season, soil stockpiles will be covered or protected with soil stabilization measures and a temporary sediment barrier, such as silt fence, fiber rolls, or straw bale barriers, at all times. During the non-rainy season, stockpiles will be protected prior to the onset of precipitation. Stockpiles will be located a minimum of 50 feet away from concentrated stormwater flows and drainage courses. Location and installation details can be found in Attachments B and C, respectively.

3.2.2.2 Construction Entrance/Exit (TC-1)

Construction entrances installed on the ESJ Gen-Tie Alternative Project site will be maintained throughout the duration of construction. The need for culverts is not anticipated but, if installed, they will be constructed to allow stormwater to pass under the construction entrances. The amount of sediment that is transported onto a public road surface or other paved areas by construction equipment or vehicles will be minimized. Installation details for construction entrance/exit are located in Attachment C.

3.2.2.3 Silt Fence (SE-1)

Silt fence will be used to intercept and retain sediment carried by sheet flow from disturbed areas and to prevent sediment runoff from the ESJ Gen-Tie Alternative Project area. Silt fence will be placed perpendicular to the direction of water flow and as close to the contours as possible with the ends extending upslope. The devices will be placed downslope of disturbed areas where sheet or rill erosion would occur. Location and installation details for silt fence are located in Attachments B and C, respectively.

3.2.2.4 Wind Erosion (WE-1)

During dry times when the soil is susceptible to wind erosion, preventative measures will be taken. In areas where bare soil is exposed, water or other dust palliatives will be applied to the soil to weight it down and prevent it from being eroded by the wind. An on-site well will be provided for water storage. In areas where the soil has been stockpiled for later use, the soil will be covered and bermed to prevent contact with stormwater. Precaution will need to be taken to insure areas do not get over-watered and eroded from the application of the water. Wind erosion details can be found in Attachments B and C.

3.2.2.5 Street Sweeping and Vacuuming (SE-7)

Street sweeping and vacuuming will be preformed to reduce the amount of sediment tracked onto Old Highway 80. Sweeping and vacuuming also reduces the amount of sediment that will enter storm drains and inlets. Street sweeping will be completed as needed. Details on street sweeping and vacuuming are located in Attachment C.

3.2.2.6 Sandbag Barrier (SE-8)

Sandbag barriers will be placed on level contours to intercept and slow sheet flow runoff. The ends of barriers will be turned upslope to prevent runoff from going around them, and sandbags should be stacked at least three bags high. Accumulated sediment should be removed when it reaches one-third of the barrier height. Location and installation details are located in Attachments B and C, respectively.

3.2.3 Post Construction Storm Water Management

Permanent erosion and sediment control practices will be left in place after construction is finished and the site is stabilized. Unpaved areas will be reseeded or landscaped according to recommended seeding plans after the last construction activity has been completed. The time period for soil areas to be without vegetative cover should be minimized to the extent practicable.

3.2.4 Stabilization Practices

Soil stabilization involves covering disturbed soils with grass, mulch, straw, geotextiles, trees, vines, soil binders, or shrubs. Stabilization practices for exposed disturbed soils are extremely important while

conducting construction activities. Vegetative cover serves to reduce the erosion potential by absorbing the energy of raindrops, promoting infiltration in lieu of runoff, and reducing the velocity of runoff. Temporary stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased.

Prior to the rainy season, significant accumulations of eroded soils from slopes previously disturbed by landscaping, clearing, or grading, will be removed or secured if the eroded soils could enter and impact receiving waters.

3.3 MAINTENANCE AND INSPECTIONS

All erosion and sediment control devices shall be installed pursuant to the specifications in the BMP details located in Attachment C. They will be maintained so that they remain effective at all times.

Erosion and sediment control devices will be inspected at a minimum of once a week and before and following predicted rain events, including weekends and holidays. The frequency of regular inspections should be proportional to the amount of construction activity being conducted. During each inspection, the construction inspector will complete the Inspection Form located in Attachment D. These sheets will be copied and used as necessary. Corrective actions shall be taken as soon as practical without risking the safety of the worker. The permittee will immediately install additional temporary erosion control devices in areas deemed in need of protection.

Following the completion of construction and seeding/planting activities, the construction inspector will conduct periodic site reviews to make sure that vegetation establishment is satisfactory. If vegetative cover is not adequate, special steps to correct problems will be implemented such as overseeding, mulching, sodding, or the use of erosion control blankets.

3.4 FINAL STABILIZATION AND CLEANUP

After final grading is complete, all temporarily disturbed areas that do not contain pavement, rip-rap, cobble, etc. will be revegetated, except as required for fire protection. Soil stabilization involves covering disturbed soils with grass, bark, straw, geotextiles fabric, trees, vines or shrubs. Tracking, mulch, wood chips, hydroseeding without watering, jute matting or jute netting should only be used in disturbed areas that are flat and level (less than 5 percent slope). Vegetative cover serves to reduce the erosion potential by absorbing the energy of raindrops, promoting infiltration in lieu of runoff, and reducing the velocity of runoff. Trapped sediment and other disturbed soil areas resulting from the disposition of temporary measures will also be permanently stabilized to prevent further erosion and sedimentation.

3.4.1 Removal of Temporary Controls

Temporary erosion controls will be left in place until the temporarily disturbed areas are stabilized with a uniform vegetative cover of 70 percent density of the native background vegetative cover percentage. Following revegetation, the permittee will conduct periodic site visits to make sure that vegetation establishment is satisfactory. If sufficient vegetative cover has not been achieved, additional restoration measures will be implemented. Inspection results will be documented using the Inspection and Maintenance Report Form found in Attachment D.

Temporary soil erosion and sediment control measures will be removed and disposed of after final site stabilization is achieved.

Section 4.0
GOOD HOUSEKEEPING

4.0 GOOD HOUSEKEEPING

4.1 MATERIAL HANDLING

Construction materials that pose a potential contamination threat to stormwater (e.g., petroleum products, solvents) will be managed to minimize exposure to stormwater. Materials will be kept in secure containers and be properly labeled. Copies of the Material Safety Data Sheets (MSDS) will be maintained on-site. Contaminated runoff will be contained for treatment and disposal. More details regarding material handling can be found in Attachment C (Material Delivery and Storage, WM-1).

4.2 SOLID AND LIQUID WASTE DISPOSAL

Solid and liquid waste (including sediment, concrete millings, floating debris, paper, plastic, fabric, and construction and demolition debris) will be reused or recycled to the extent practical. Materials that are not reusable or recyclable will be disposed of properly and in accordance with applicable disposal requirements. Waste or recyclable material will be collected and stored in water tight, secure containers that are covered at all times or removed from the ESJ Gen-Tie Alternative Project site. The waste containers will be kept clean and inspected regularly. No solid or liquid wastes will be disposed of on-site (e.g. buried, poured), but will be taken off-site for proper disposal.

4.3 HAZARDOUS WASTE

Small amounts of hazardous waste could be generated as a byproduct of construction. Hazardous waste material will be disposed of in the manner specified by the manufacturer and by local, state, and federal regulations. Construction site personnel must be made aware of this requirement. Hazardous materials will be stored aboveground, and secondary containment will be provided around storage areas when a significant potential exists to discharge materials or wastes to receiving waters. Hazardous waste storage areas will be inspected by the owner or operator at least once prior to the rainy season and monthly during the rainy season. Spill response procedures are located in Section 5.0.

4.4 SANITARY WASTE

Contractors and subcontractors must comply with applicable federal, state, and local sanitary sewer, portable toilet or septic system regulations. Each contractor or subcontractor will provide sanitary facilities at the ESJ Gen-Tie Alternative Project site throughout the period of construction activities. Portable toilets must be located off paved areas and 50 feet away from drain inlets. The sanitary facilities should be used by all construction personnel and be serviced regularly.

4.5 NON-STORMWATER DISCHARGES

The following non-storm water discharges are eligible for authorization under Ordinance No. 9926:

- Dust suppression
- Street cleaning

4.6 VEHICLE WASHING

Vehicle washing will not be conducted on-site or on other sites of active construction. If vehicle washing is required, a designated area will be selected where runoff can be contained and properly disposed. If concrete trucks are necessary, they will not be allowed to wash out or discharge surplus concrete or drum wash to surface waters or drainage areas.

4.7 WATER SOURCE

Water used to control dust and for other construction purposes must originate from a public water supply or private well approved by the State of California or local health department. An on-site well will be constructed for water storage and use. Potable water used must adhere to local and state water standard regulations. The contractor will supply drinking water.

4.8 TRAINING

The contractor will be responsible for implementing the SWMP. Site personnel that will be responsible for installation, inspection, maintenance, and repair of BMPs will complete a SWMP training session provided by the contractor.

Section 5.0
SPILL PREVENTION AND CONTROL PLAN

5.0 SPILL PREVENTION AND CONTROL PLAN

This section comprises the Spill Prevention and Control Plan (SPCP), which describes measures to prevent, control, and minimize impacts from a spill of a hazardous, toxic, or petroleum substance during construction of the proposed ESJ Gen-Tie Alternative Project. This plan identifies the potentially hazardous materials to be used during the ESJ Gen-Tie Alternative Project, describes the transport, storage, and disposal procedures for these substances, and outlines the procedures to be followed in the event of a spill of a contaminating or toxic substance.

As per 40 CFR 112, a Spill Prevention Control and Countermeasures Plan (SPCC) must be prepared if the construction site will have 1,320 gallons of above ground storage capacity (or 42,000 gallons in underground storage not regulated by UST rules) or more in 55-gallon-sized (or larger) containers. This would include any temporary tanks or fueling trucks used to "store" petroleum on-site. The truck would be subject to the SPCC Plan rules when parked on the construction site and used for "storage."

If, at any time, a subcontractor's cumulative above ground storage capacity on-site exceeds 1,320 gallons, the subcontractor shall maintain a certified SPCC Plan (40 CFR 112). In the state of California, a spill is 42 gallons or more.

5.1 MATERIAL MANAGEMENT PRACTICES

Properly managing materials on the construction site will greatly reduce the potential for stormwater pollution of materials. Good housekeeping, along with proper use and storage of construction materials, form the basis for proper management of potentially hazardous materials. More details regarding material management practices can be found in Attachment C (Spill Prevention and Control, WM-4).

5.1.1 Good Housekeeping

The proper use of materials and equipment along with the use of general common sense greatly reduce the potential for contaminating stormwater runoff. The following is a list of good housekeeping practices to be used during the ESJ Gen-Tie Alternative Project:

- Hazardous materials, chemicals, fuels, oils, and fueling of construction equipment shall not be stored within 100 feet of any stream bank, wetland, water supply well, spring, or other water body
- Every effort will be made to store the minimum amount of hazardous materials on-site
- Materials stored on-site will be stored in a neat, orderly manner in appropriate containers and, if possible, under a roof or other enclosure
- Products will be kept in 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 the product will be used before disposing of the container
- Manufacturer's recommendations for proper use and disposal of a product will be followed

- If surplus product must be disposed of, manufacturer's or local and state recommended methods for proper disposal will be followed

5.1.2 Non-Petroleum Products

Due to the chemical makeup of specific products, certain handling and storage procedures are required to promote the safety of handlers and prevent the possibility of pollution. Care shall be taken to follow directions and warnings for products used on-site. All pertinent information can be found on the MSDS for each product. The MSDS will be kept on-site.

5.1.3 Petroleum Products

On-site vehicles will be monitored for leaks and receive regular maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers that are clearly labeled. Preferably, the containers will be stored in a covered truck or trailer that provides secondary containment for the products.

Bulk storage tanks having a capacity of greater than 55 gallons will be provided with secondary containment. Containment can be provided by a temporary earthen berm or other means. After each rainfall event, the contractor shall inspect the contents of the secondary containment area for excess water. If no sheen is visible, the collected water can be pumped to the ground in a manner that does not cause scouring. If any sheen is present, it must be treated prior to discharging the water. Otherwise, the contaminated water must be transported and disposed off-site in accordance with local, state, and federal requirements.

Bulk fuel or lubricating oil dispensers shall not have a self-locking mechanism that allows for un-supervised fueling. Fueling operations shall be observed to immediately detect and contain spills.

No waste oil or other petroleum-based products will be disposed of on-site (e.g. buried, poured, etc.), but shall be taken off-site for proper disposal.

5.2 SPILL CONTROL AND CLEANUP

In addition to the material management practices discussed previously, the following spill control and cleanup practices will be used to prevent stormwater pollution in the event of a spill:

1. Personnel on-site will be made aware of cleanup procedures and the location of spill cleanup equipment.
2. Spills will be contained and cleaned up immediately after discovery.
3. Manufacturer methods for spill cleanup of a material will be followed as described on the material's MSDS.

4. Materials and equipment needed for cleanup procedures will be kept readily available on the site, either at an equipment storage area or on contractor's trucks; equipment to be kept on the site will include but not be limited to brooms, dust pans, shovels, granular absorbents, sand, saw dust, absorbent pads and booms, plastic and metal trash containers, gloves, and goggles.
5. Toxic, hazardous, or petroleum product spills required to be reported by regulation will be documented to the appropriate federal, state, and local agencies.
6. Spills will be documented and a record of the spills will be kept with this SWMP.

The federal reportable spill quantity for petroleum products is defined in 40 CFR 110 as any oil spill that:

1. Violates applicable water quality standards.
2. Causes a film or sheen upon or discoloration of the water surface or adjoining shoreline.
3. Causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.

The Federal reportable spill quantities for hazardous materials are listed in 40 CFR, Part 302.4, in the table entitled “List of Hazardous Substances and Reportable Quantities.” A procedure for determining a reportable spill is included in Attachment E, along with a copy of the Spill Report Form to be completed as the result of a reportable spill.

If a spill is reportable, the contractor’s superintendent will, within 15 minutes of discovering the spill, contact the 24-hour contact for the ESJ Gen-Tie Alternative Project, who is yet to be determined, and the following authorities:

Federal:

National Response Center: 1-800-424-8802
EPA, Region 9, 24-hour Emergency Response: 1-800-300-2193

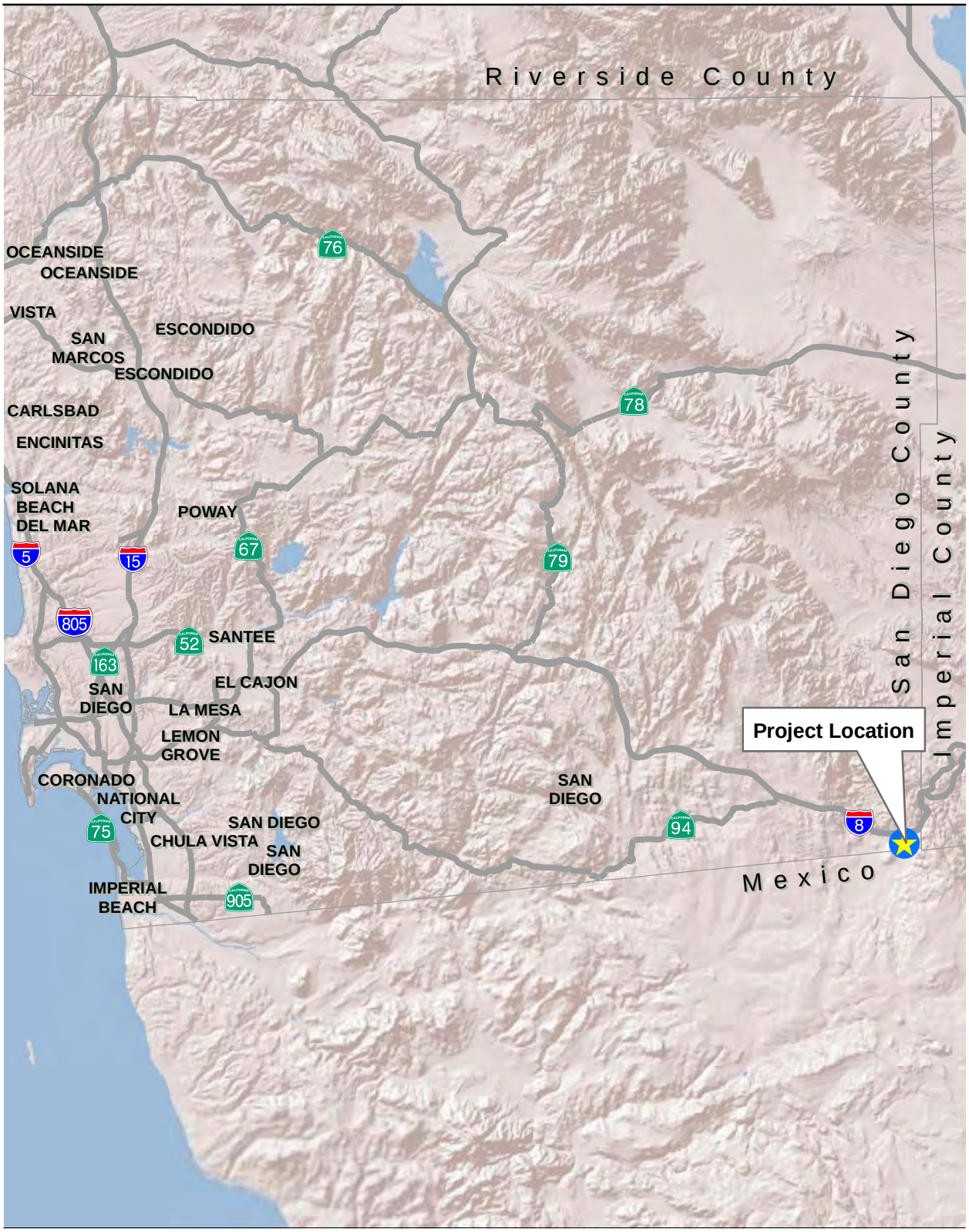
State:

Marine Oil Spill Reporting – 1-800-OILS-911 or 1-888-334-2258
California Office of Emergency Services – 1-800-852-7550

In addition, spills with the potential to endanger health, safety, or the environment must be reported to the Director or Assistant Director of the County Department of Public Works within 24 hours after discovery of the spill. Spills that have been completely contained and cleaned up on-site are not considered significant unless they pose a threat to human health or safety.

ATTACHMENTS

ATTACHMENT A
Site Figures



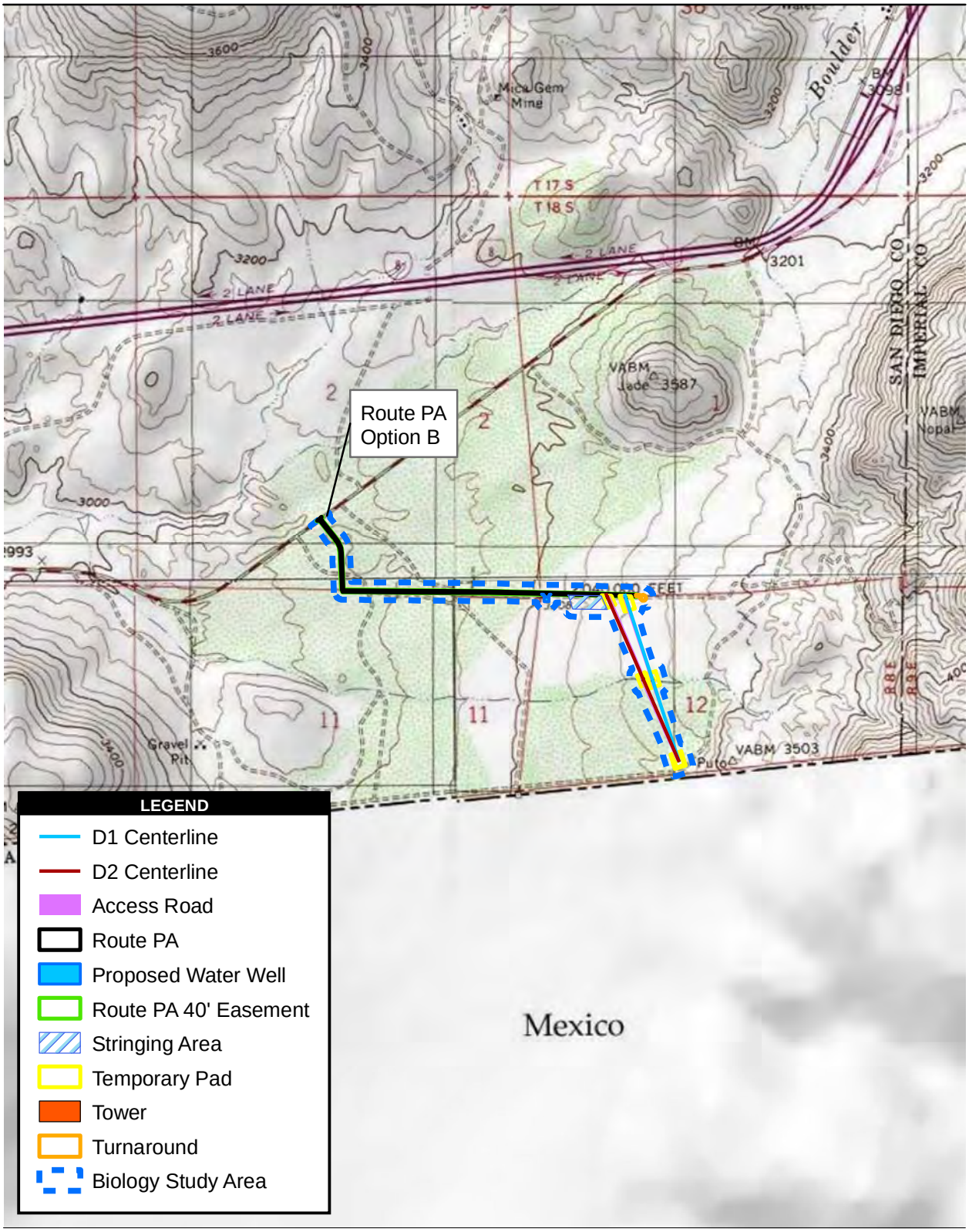
Source: SANGIS 2008, ESRI 2009

11 5.5 0 11 Miles

Scale: 1 = 696,960; 1 inch = 11 mile(s)

Figure 1
Regional Location Map

Path: P:\2009\09080001 ESJ Gen-Tie\6.0 GIS\6.3 Layout\Bio\BTR\ReRoute20100430\Figure1_Regional_Location.mxd, 04/30/10, SorensenJ



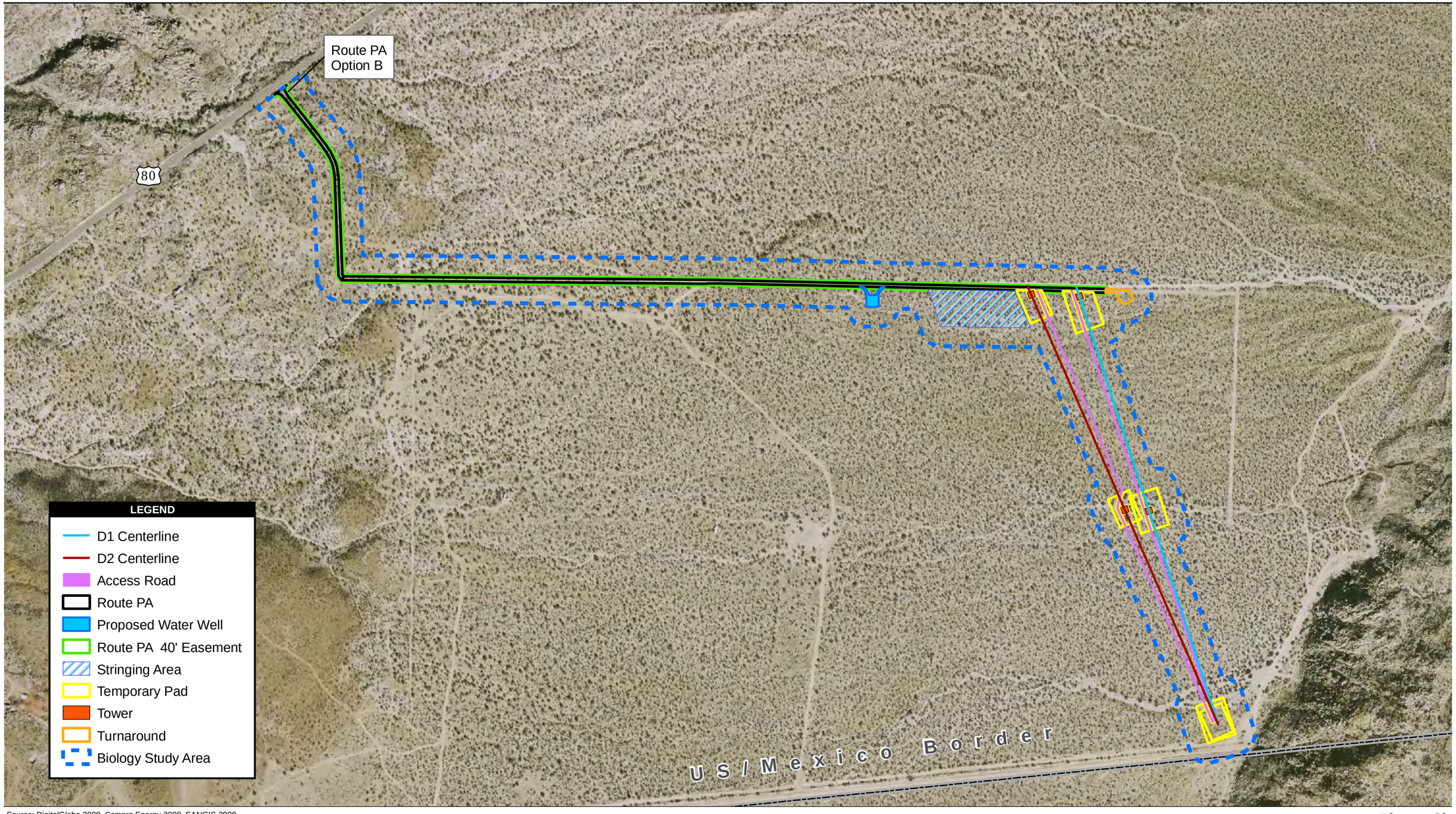
Source: ESRI 2009, USGS Topographic Quadrangle In-Ko-Pah Gorge 1975, Jacumba 1975

2,000 1,000 0 2,000 Feet

Scale: 1 = 24,000; 1 inch = 2,000 feet

Figure 2b
Project Vicinity
ESJ Gen-Tie Alternative Route D1 and D2

Path: P:\2009\09080001 ESJ Gen-Tie\6.0 GIS\6.3 Layout\Bio\BTR\ReRoute20100430\Figure2b_Project_Vicinity20100308.mxd, 04/30/10, SorensenJ



Source: DigitalGlobe 2008, Sempra Energy 2009, SANGIS 2008

500 250 0 500 Feet

Scale: 1 = 6,000; 1 inch = 500 feet

Figure 3b
Study Area and Site Plan
ESJ Gen-Tie Alternative Route D1 and D2

Path: P:\2009\09080001 ESJ Gen-Tie\6.0 GIS\6.3 Layout\Bio\BTR\ReRoute20100430\Figure3b_Survey_Area20100426.mxd, 04/30/10, SorensenJ

ATTACHMENT B
BMP Location Maps

ESJ U.S.

Energia Sierra Juaréz Gen-Tie Line Alternative Project
San Diego County, California

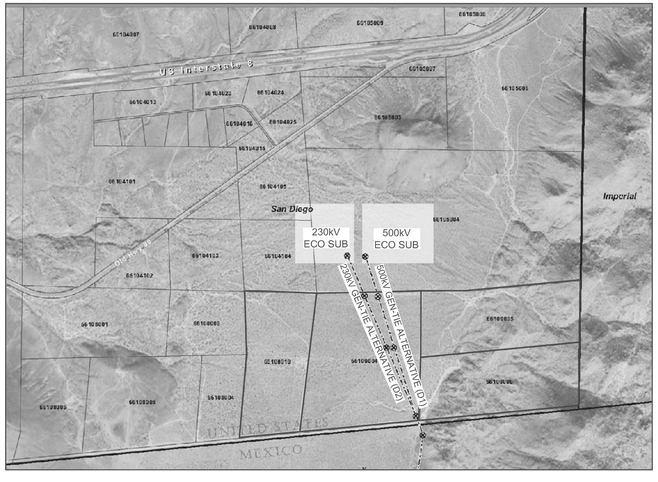
May 2010

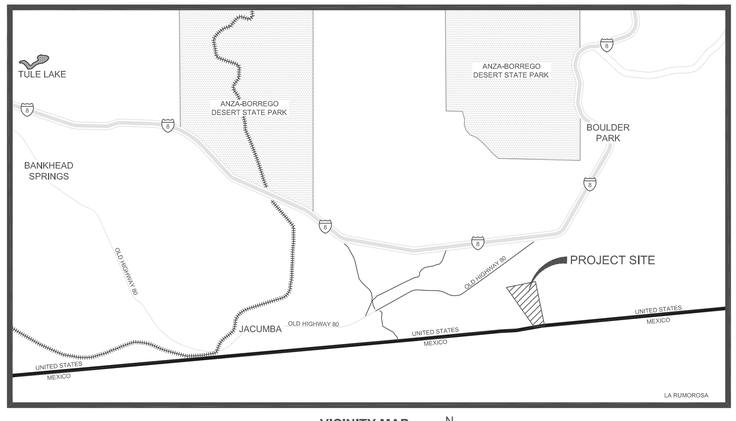
52573

Preliminary Grading Plans

DRAWING LIST

DWG. NO.	REVSION	TITLE
C09	-	COVER-INDEX
C10	-	OVERALL PRELIM. GRADING & EROSION CONTROL PLAN
C11	-	230KV ALTERNATIVE (D2) PRELIM. GRADING & EROSION CONTROL PLAN SHEET 1 OF 2
C12	-	230KV ALTERNATIVE (D2) PRELIM. GRADING & EROSION CONTROL PLAN SHEET 2 OF 2
C13	-	500KV ALTERNATIVE (D1) PRELIM. GRADING & EROSION CONTROL PLAN SHEET 1 OF 2
C14	-	500KV ALTERNATIVE (D1) PRELIM. GRADING & EROSION CONTROL PLAN SHEET 2 OF 2
C15	-	GRADING & EROSION CONTROL DETAILS
C16	-	PROJECT DRAINAGE MAP





VICINITY MAP
N.T.S.

N

OWNER: ENERGIA SIERRA JUAREZ U.S. TRANSMISSION LLC. (ESJ U.S.)
101 ASH STREET
HQ #14
SAN DIEGO, CA 92101
(619) 696-2121

ENGINEER: BURNS & MCDONNELL
9400 WARD PARKWAY
KANSAS CITY, MO 64114
(816) 333-9400

PROJECT PARCEL #'s:
APN 661-090-04
APN 661-090-05
APN 661-090-06

ECO SUBSTATION PARCEL #'s:
APN 661-050-04
APN 661-041-04
APN 661-041-05

ACCESS PARCEL #'s:
APN 661-041-03
APN 661-041-02
APN 661-080-08
APN 661-080-10

PRELIMINARY - NOT FOR CONSTRUCTION

NOTE:
DEPICTION OF SDG&E'S ECO SUBSTATION IS APPROXIMATE AND SUBJECT TO FINAL DESIGN BY SDG&E.

NOTE:
THESE REVISED PLANS ARE BASED ON THE ECO SUBSTATION ALTERNATIVE LOCATIONS. THERE ARE TWO SEPERATE GEN-TIE ALTERNATIVES SHOWN WITHIN THESE PLANS, A 230KV ALTERNATIVE AND A 500KV ALTERNATIVE. ONLY ONE OF THE TWO OPTIONS IS TO BE CONSTRUCTED UNDER THIS APPLICATION, BUT THE FINAL ALTERNATIVE IS YET TO BE DETERMINED. FUTURE PLANS WILL BE REVISED TO ONLY INCLUDE THE ALTERNATIVE THAT IS TO BE CONSTRUCTED.

REGISTERED PROFESSIONAL ENGINEER
TRANG WONG
C-69965
EXP. 3-30-10
CIVIL
STATE OF CALIFORNIA
5-30-10

no.	date	by	ckd	description

Burns & McDonnell
SINCE 1898

ESJ U.S. Gen-Tie Line Alternative Project
MUP 09-008
KIVA 09-0107420

C09

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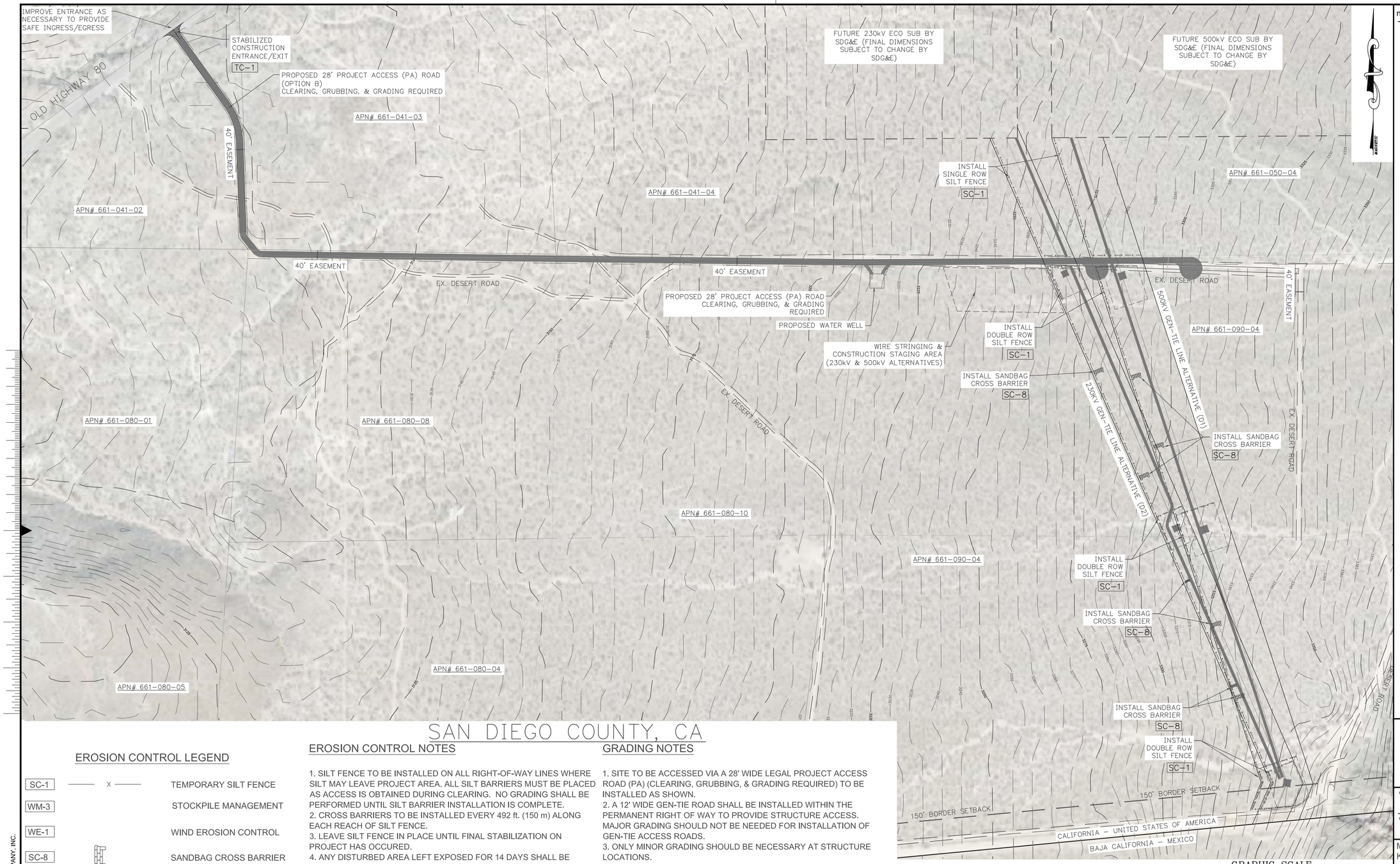

SAN DIEGO COUNTY, CA

EROSION CONTROL LEGEND

SC-1	x	TEMPORARY SILT FENCE
WM-3		STOCKPILE MANAGEMENT
WE-1		WIND EROSION CONTROL
SC-8		SANDBAG CROSS BARRIER
TC-1		STABILIZED CONSTRUCTION ENTRANCE/EXIT

*SEE SHEET C15 FOR GRADING & EROSION CONTROL DETAILS

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EROSION CONTROL NOTES

1. SILT FENCE TO BE INSTALLED ON ALL RIGHT-OF-WAY LINES WHERE SILT MAY LEAVE PROJECT AREA. ALL SILT BARRIERS MUST BE PLACED AS ACCESS IS OBTAINED DURING CLEARING. NO GRADING SHALL BE PERFORMED UNTIL SILT BARRIER INSTALLATION IS COMPLETE.
2. CROSS BARRIERS TO BE INSTALLED EVERY 492 ft. (150 m) ALONG EACH REACH OF SILT FENCE.
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3. ONLY MINOR GRADING SHOULD BE NECESSARY AT STRUCTURE LOCATIONS.
4. SEE EARTHWORK SUMMARY TABLE (THIS SHEET) FOR A SUMMARY OF THE PROJECT EARTHWORK.
5. TOPOGRAPHIC INFORMATION BASED ON U.S.G.S. NATIONAL ELEVATION DATA SET.

EARTHWORK SUMMARY

TASK	230 kV ALTERNATIVE (D2)	500 kV ALTERNATIVE (D1)
PROJECT ACCESS ROAD	13,168 CY (CUT) 1,889 CY (FILL) 11,279 CY (NET EXPORT)	17,045 CY (CUT) 2,976 CY (FILL) 14,069 CY (NET EXPORT)
GEN TIE ROADS	BALANCED (NO NET IMPORT/EXPORT)	BALANCED (NO NET IMPORT/EXPORT)
PAD GRADING	532 CY (IMPORT)	361 CY (IMPORT)
FOUNDATION EXCAVATION	180 CY (EXPORT)	360 CY (EXPORT)
NET PROJECT EARTHWORK	10,972 CY (EXPORT)	14,068 CY (EXPORT)

OWNER:
ESJ U.S. TRANSMISSION LLC.
101 ASH STREET HQ #14
SAN DIEGO, CA 92101
(619) 696-2121

24-HR CONTACT: TBD

PRELIMINARY - NOT FOR CONSTRUCTION

GRAPHIC SCALE
-200 0 100 200 400 800
(IN FEET)
1 inch = 200 ft.

REGISTERED PROFESSIONAL ENGINEER
TRANG WONG
C-69965
EXP. 9-30-10
CIVIL
STATE OF CALIFORNIA
5-20-10

no.	date	by	ckd	description

Burns & McDonnell SINCE 1898

date: MAY 14, 2010	detailed: J. KANITZ
designed: J. KANITZ	checked: J. STAHULAK

MUP 09-008
KIVA 09-0107420

ESJ U.S.
230kV & 500kV GEN-TIE LINE ALTERNATIVES
OVERALL PRELIMINARY GRADING
& EROSION CONTROL PLAN

project: 52573	contract:
drawing: C10	rev: -
sheet: 10 of 16 sheets	
file: ESJ-BASE14 ALT 3 & 4.DWG	

Scale For Microfilming
Millimeters
Inches

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EROSION CONTROL LEGEND

SC-1	x	TEMPORARY SILT FENCE
WM-3		STOCKPILE MANAGEMENT
WE-1		WIND EROSION CONTROL
SC-8		SANDBAG CROSS BARRIER
TC-1		STABILIZED CONSTRUCTION ENTRANCE/EXIT

*SEE SHEET C15 FOR GRADING & EROSION CONTROL DETAILS

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SAN DIEGO COUNTY, CA

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2. CROSS BARRIERS TO BE INSTALLED EVERY 492 ft. (150 m) ALONG EACH REACH OF SILT FENCE.
3. LEAVE SILT FENCE IN PLACE UNTIL FINAL STABILIZATION ON PROJECT HAS OCCURED.
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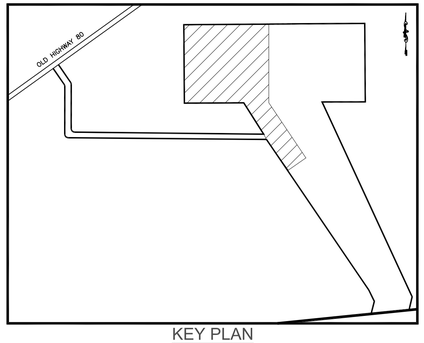
4. SEE EARTHWORK SUMMARY TABLE ON SHEET C10 FOR A SUMMARY OF THE PROJECT EARTHWORK.
5. TOPOGRAPHIC INFORMATION BASED ON U.S.G.S. NATIONAL ELEVATION DATA SET.

GRAPHIC SCALE
-100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

PRELIMINARY - NOT FOR CONSTRUCTION



KEY PLAN
NTS

OWNER:
ESJ U.S. TRANSMISSION LLC.
101 ASH STREET HQ #14
SAN DIEGO, CA 92101
(619) 696-2121

24-HR CONTACT: TBD

REGISTERED PROFESSIONAL ENGINEER
TRANG WONG
C-69965
EXP. 3-30-10
CIVIL
STATE OF CALIFORNIA
3-30-10

no.	date	by	ckd	description

Burns & McDonnell SINCE 1898

date	detailed
MAY 14, 2010	J. KANITZ
designed	checked
J. KANITZ	J. STAHULAK

MUP 09-008
KIVA 09-0107420

ESJ U.S.
230 kV GEN-TIE LINE ALTERNATIVE (D2)
PRELIMINARY GRADING & EROSION CONTROL PLAN

project 52573	contract
drawing C11	rev. -
sheet 11 of 16 sheets	
file ESJ-BASE14 ALT 3 & 4.DWG	

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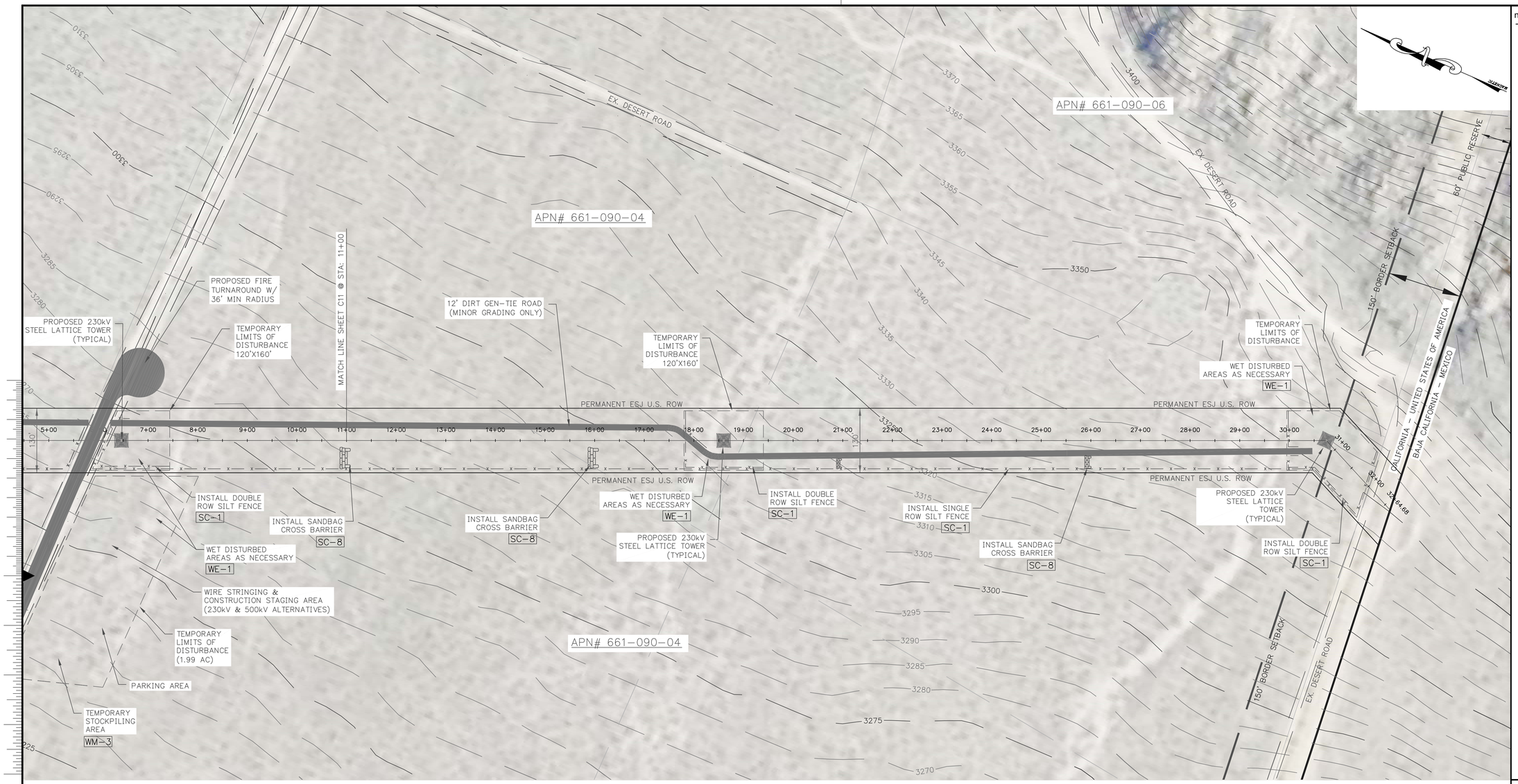

Millimeters

Inches

Scale For Microfilming

EROSION CONTROL LEGEND

SC-1	——— X ———	TEMPORARY SILT FENCE
WM-3		STOCKPILE MANAGEMENT
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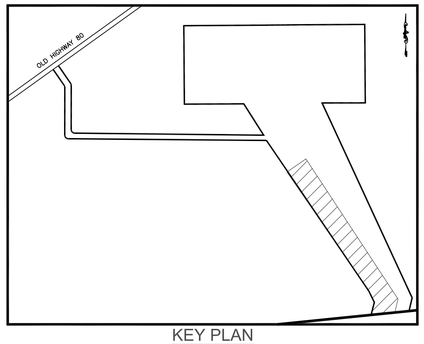

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NTS

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date MAY 14, 2010	detailed J. KANITZ
designed J. KANITZ	checked J. STAHULAK

MUP 09-008
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230 kV GEN-TIE LINE ALTERNATIVE (D2)
PRELIMINARY GRADING & EROSION CONTROL PLAN

project 52573	contract
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sheet 12 of 16 sheets	
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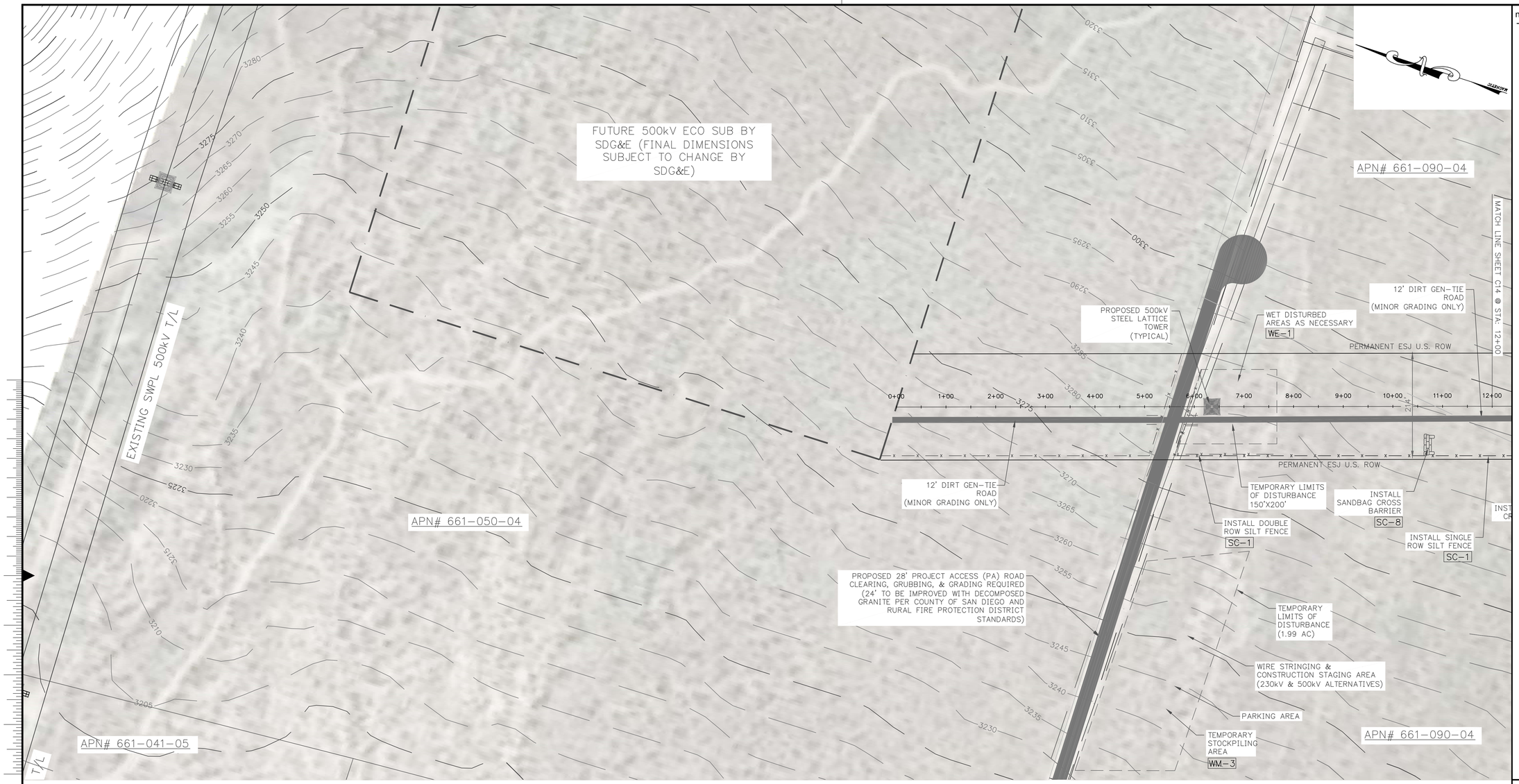

Millimeters
Scale For Microfilming
Inches

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SAN DIEGO COUNTY, CA

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(IN FEET)
1 inch = 100 ft.

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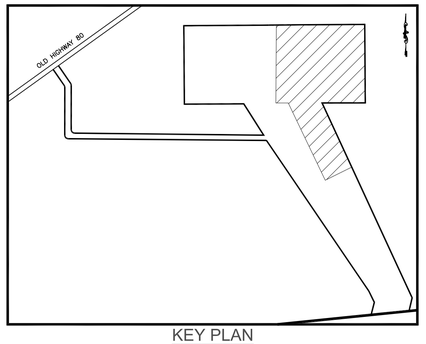

KEY PLAN
NTS

OWNER:
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(619) 696-2121

24-HR CONTACT: TBD

REGISTERED PROFESSIONAL ENGINEER
TRANG WONG
C-69965
EXP. 3-30-10
CIVIL
STATE OF CALIFORNIA
5-30-10

no.	date	by	ckd	description

Burns & McDonnell
SINCE 1898

date	detailed
MAY 14, 2010	J. KANITZ
designed	checked
J. KANITZ	J. STAHULAK

MUP 09-008
KIVA 09-0107420

ESJ U.S.
500 kV GEN-TIE LINE ALTERNATIVE (D1)
PRELIMINARY GRADING & EROSION CONTROL PLAN

project	contract
52573	

drawing C13 – rev. -

sheet 13 of 16 sheets
file ESJ-BASE14 ALT 3 & 4.DWG

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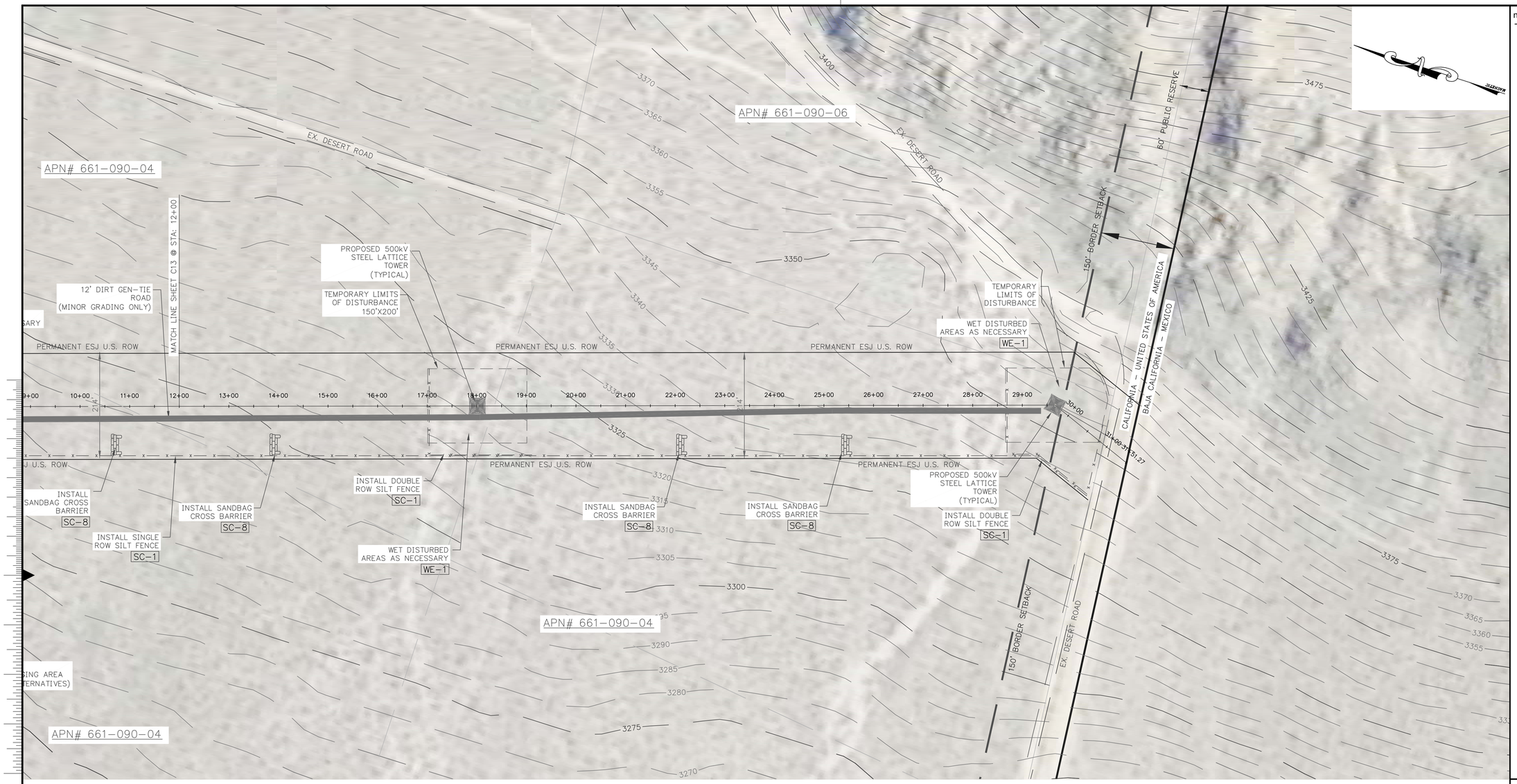


SAN DIEGO COUNTY, CA

EROSION CONTROL LEGEND

SC-1	x	TEMPORARY SILT FENCE
WM-3		STOCKPILE MANAGEMENT
WE-1		WIND EROSION CONTROL
SC-8		SANDBAG CROSS BARRIER
TC-1		STABILIZED CONSTRUCTION ENTRANCE/EXIT

*SEE SHEET C15 FOR GRADING & EROSION CONTROL DETAILS

NOTE:
THIS PLAN IS PROVIDED TO ALLOW FOR FULL AND ADEQUATE DISCRETIONARY REVIEW OF A PROPOSED DEVELOPMENT PROJECT. THE PROPERTY OWNER ACKNOWLEDGES THAT ACCEPTANCE OR APPROVAL OF THIS PLAN DOES NOT CONSTITUTE AN APPROVAL TO PERFORM ANY GRADING SHOWN HEREON, AND AGREES TO OBTAIN VALID GRADING PERMISSIONS BEFORE COMMENCING SUCH ACTIVITY.

EROSION CONTROL NOTES

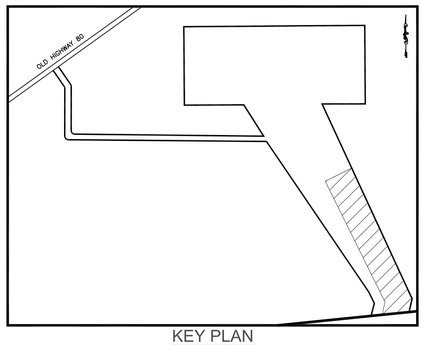
1. SILT FENCE TO BE INSTALLED ON ALL RIGHT-OF-WAY LINES WHERE SILT MAY LEAVE PROJECT AREA. ALL SILT BARRIERS MUST BE PLACED AS ACCESS IS OBTAINED DURING CLEARING. NO GRADING SHALL BE PERFORMED UNTIL SILT BARRIER INSTALLATION IS COMPLETE.
2. CROSS BARRIERS TO BE INSTALLED EVERY 492 ft. (150 m) ALONG EACH REACH OF SILT FENCE.
3. LEAVE SILT FENCE IN PLACE UNTIL FINAL STABILIZATION ON PROJECT HAS OCCURED.
4. ANY DISTURBED AREA LEFT EXPOSED FOR 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.
5. EROSION CONTROL MEASURES TO BE MAINTAINED AT ALL TIMES.
6. ALL SLOPES STEEPER THAN 3:1 SHALL BE COVERED WITH EROSION CONTROL BLANKET.
7. TO REDUCE WIND EROSION, ALL TEMPORARY DISTURBED AREAS SHALL BE WETTED AS NECESSARY.
8. ALL TEMPORARILY DISTURBED AREAS SHALL BE RE-VEGETATED AFTER CONSTRUCTION IN ACCORDANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN, OR AS REQUIRED BY SAN DIEGO COUNTY. A 30' BUFFER WILL REMAIN UNVEGETATED AROUND EACH TOWER FOR FIRE PROTECTION.
9. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED AS SPECIFIED BY THE CALIFORNIA DEPARTMENT OF TRANSPORTATION CONSTRUCTION SITE BMP MANUAL.

GRADING NOTES

1. SITE TO BE ACCESSED VIA A 28' WIDE LEGAL PROJECT ACCESS ROAD (PA) (CLEARING, GRUBBING, & GRADING REQUIRED) TO BE INSTALLED AS SHOWN.
2. A 12' WIDE GEN-TIE ROAD SHALL BE INSTALLED WITHIN THE PERMANENT RIGHT OF WAY TO PROVIDE STRUCTURE ACCESS. MAJOR GRADING SHOULD NOT BE NEEDED FOR INSTALLATION OF GEN-TIE ACCESS ROADS.
3. ONLY MINOR GRADING SHOULD BE NECESSARY AT STRUCTURE LOCATIONS. INSTALL SILT BARRIER ON THE DOWNHILL SIDE OF DISTURBED AREAS.
4. SEE EARTHWORK SUMMARY TABLE ON SHEET C10 FOR A SUMMARY OF THE PROJECT EARTHWORK.
5. TOPOGRAPHIC INFORMATION BASED ON U.S.G.S. NATIONAL ELEVATION DATA SET.

GRAPHIC SCALE
-100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

PRELIMINARY - NOT FOR CONSTRUCTION



KEY PLAN
NTS

OWNER:
ESJ U.S. TRANSMISSION LLC.
101 ASH STREET HQ #14
SAN DIEGO, CA 92101
(619) 696-2121

24-HR CONTACT: TBD

REGISTERED PROFESSIONAL ENGINEER
TRANG WONG
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EXP. 9-30-10
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STATE OF CALIFORNIA
5-20-10

no.	date	by	ckd	description

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project 52573	contract
drawing **C14**	rev. -
sheet 14 of 16 sheets	
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Millimeters
Inches
Scale For Microfilming

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ATTACHMENT C
BMP Details

Stockpile Management WM-3

Objectives

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

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

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

Potential Alternatives

None

Description and Purpose

Stockpile Management procedures and practices are designed to reduce or eliminate air and stormwater pollution from stockpiles of soil, paving materials such as portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate sub base or pre-mixed aggregate, asphalt minder (so called "cold mix" asphalt), and pressure treated wood.

Suitable Applications

Implement in all projects that stockpile soil and other materials.

Limitations

None identified.

Implementation

Protection of stockpiles is a year-round requirement. To properly manage stockpiles:

- Locate stockpiles a minimum of 50 ft away from concentrated flows of stormwater, drainage courses, and inlets.
- Protect all stockpiles from stormwater runon using a temporary perimeter sediment barrier such as berms, dikes, fiber rolls, silt fences, sandbag, gravel bags, or straw bale barriers.

CASQA
CALIFORNIA STORMWATER

- Implement wind erosion control practices as appropriate on all stockpiled material. For specific information, see WE-1, Wind Erosion Control.
- Manage stockpiles of contaminated soil in accordance with WM-7, Contaminated Soil Management.
- Place bagged materials on pallets and under cover.

Protection of Non-Active Stockpiles

Non-active stockpiles of the identified materials should be protected further as follows:

Soil stockpiles

- During the rainy season, soil stockpiles should be covered or protected with soil stabilization measures and a temporary perimeter sediment barrier at all times.
- During the non-rainy season, soil stockpiles should be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.

Stockpiles of Portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate sub base

- During the rainy season, the stockpiles should be covered or protected with a temporary perimeter sediment barrier at all times.
- During the non-rainy season, the stockpiles should be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.

Stockpiles of "cold mix"

- During the rainy season, cold mix stockpiles should be placed on and covered with plastic or comparable material at all times.
- During the non-rainy season, cold mix stockpiles should be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Stockpiles/Storage of pressure treated wood with copper, chromium, and arsenic or ammonical, copper, zinc, and arsenate

- During the rainy season, treated wood should be covered with plastic or comparable material at all times.
- During the non-rainy season, treated wood should be covered with plastic or comparable material at all times and cold mix stockpiles should be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Protection of Active Stockpiles

Active stockpiles of the identified materials should be protected further as follows:

- All stockpiles should be protected with a temporary linear sediment barrier prior to the onset of precipitation.
- Stockpiles of "cold mix" should be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Costs

All of the above are low cost measures.

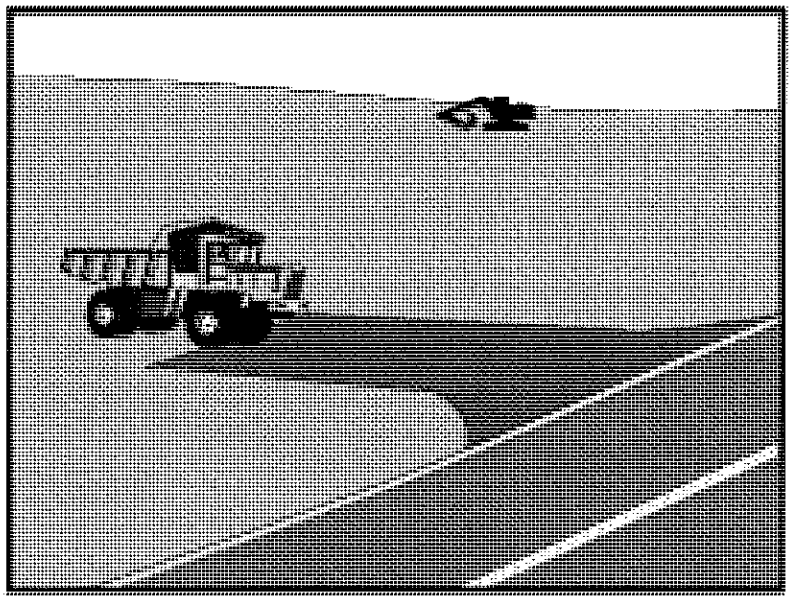
Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation
- Repair and/or replace perimeter controls and covers as needed to keep them functioning properly.

References

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

Stabilized Construction Entrance/Exit TC-1



Objectives

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

Legend:

☑ Primary Objective

☒ Secondary Objective

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

A stabilized construction access is defined by a 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.

Suitable Applications

Use at construction sites:

- Where dirt or mud can be tracked onto public roads.
- Adjacent to water bodies.
- Where poor soils are encountered.
- Where dust is a problem during dry weather conditions.

Limitations

- Entrances and exits require periodic top dressing with additional stones.
- This BMP should be used in conjunction with street sweeping on adjacent public right of way.
- Entrances and exits should be constructed on level ground only.
- Stabilized construction entrances are rather expensive to construct and when a wash rack is included, a sediment trap of some kind must also be provided to collect wash water runoff.

Stabilized Construction Entrance/Exit TC-1

Implementation

General

A stabilized construction entrance is a pad of aggregate underlain with filter cloth located at any point where traffic will be entering or leaving a construction site to or from a public right of way, street, alley, sidewalk, or parking area. The purpose of a stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public rights of way or streets. Reducing tracking of sediments and other pollutants onto paved roads helps prevent deposition of sediments into local storm drains and production of airborne dust.

Where traffic will be entering or leaving the construction site, a stabilized construction entrance should be used. NPDES permits require that appropriate measures be implemented to prevent tracking of sediments onto paved roadways, where a significant source of sediments is derived from mud and dirt carried out from unpaved roads and construction sites.

Stabilized construction entrances are moderately effective in removing sediment from equipment leaving a construction site. The entrance should be built on level ground. Advantages of the Stabilized Construction Entrance/Exit is that it does remove some sediment from equipment and serves to channel construction traffic in and out of the site at specified locations. Efficiency is greatly increased when a washing rack is included as part of a stabilized construction entrance/exit.

Design and Layout

- Construct on level ground where possible.
- Select 3 to 6 in. diameter stones.
- Use minimum depth of stones of 12 in. or as recommended by soils engineer.
- Construct length of 50 ft minimum, and 30 ft minimum width.
- Rumble racks constructed of steel panels with ridges and installed in the stabilized entrance/exit will help remove additional sediment and to keep adjacent streets clean.
- Provide ample turning radii as part of the entrance.
- 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. Do not use asphalt concrete (AC) grindings for stabilized construction access/roadway.

- If aggregate is selected, place crushed aggregate over geotextile fabric to at least 12 in. depth, or place aggregate to a depth recommended by a geotechnical engineer. A crushed aggregate greater than 3 in. but smaller than 6 in. should be used.
- Designate combination or single purpose entrances and exits to the construction site.
- Require that all employees, subcontractors, and suppliers utilize the stabilized construction access.
- Implement SE-7, Street Sweeping and Vacuuming, as needed.
- All exit locations intended to be used for more than a two-week period should have stabilized construction entrance/exit BMPs.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMPs are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect local roads adjacent to the site daily. Sweep or vacuum to remove visible accumulated sediment.
- Remove aggregate, separate and dispose of sediment if construction entrance/exit is clogged with sediment.
- Keep all temporary roadway ditches clear.
- Check for damage and repair as needed.
- Replace gravel material when surface voids are visible.
- Remove all sediment deposited on paved roadways within 24 hours.
- Remove gravel and filter fabric at completion of construction

Costs

Average annual cost for installation and maintenance may vary from $1,200 to $4,800 each, averaging $2,400 per entrance. Costs will increase with addition of washing rack, and sediment trap. With wash rack, costs range from $1,200 - $6,000 each, averaging $3,600 per entrance.

References

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

National Management Measures to Control Nonpoint Source Pollution from Urban Areas, USEPA Agency, 2002.

Proposed Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, Work Group Working Paper, USEPA, April 1992.

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

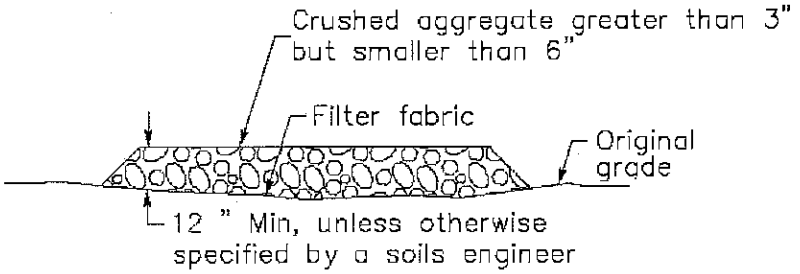
Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Virginia Erosion and Sedimentation Control Handbook, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation, 1991.

Guidance Specifying Management Measures for Nonpoint Pollution in Coastal Waters, EPA 840-B-9-002, USEPA, Office of Water, Washington, DC, 1993.

Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

Stabilized Construction Entrance/Exit TC-1



SECTION B–B
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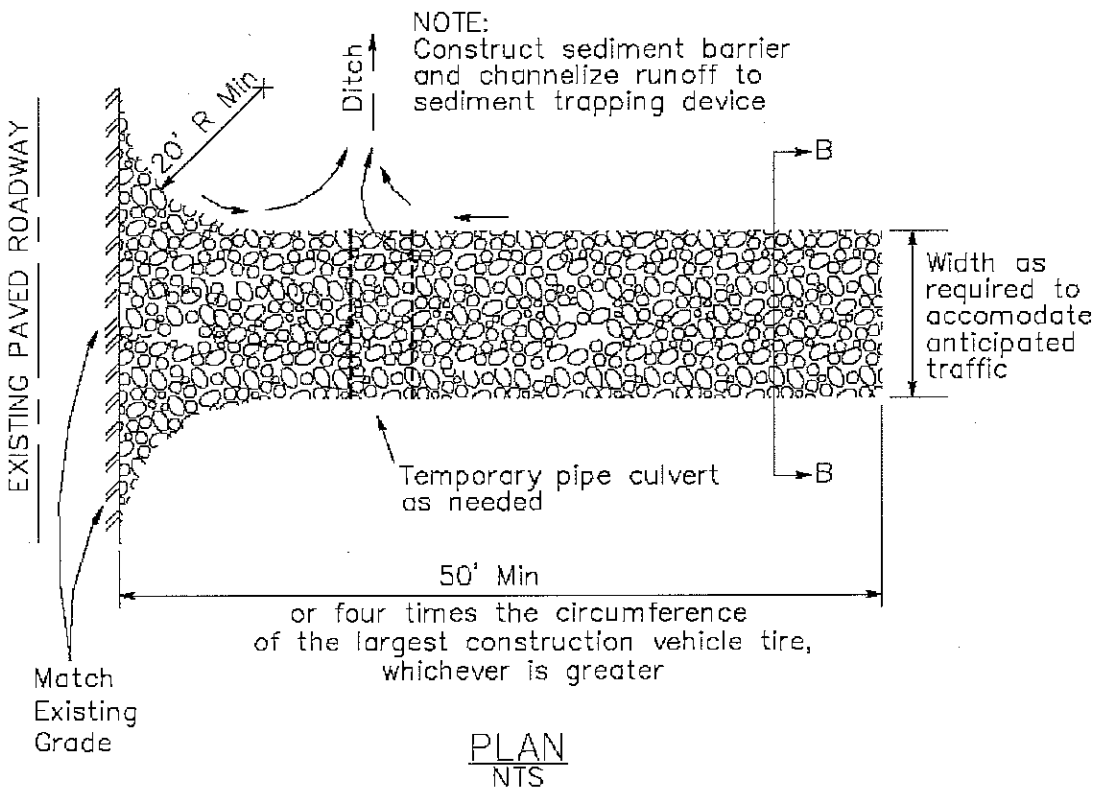
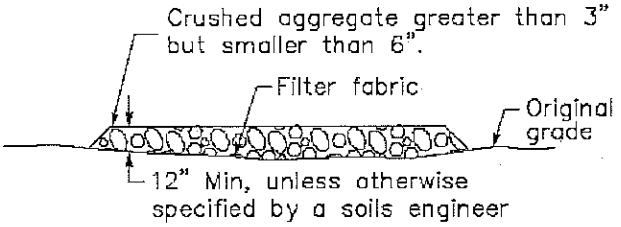


PLAN
NTS

Stabilized Construction Entrance/Exit TC-1



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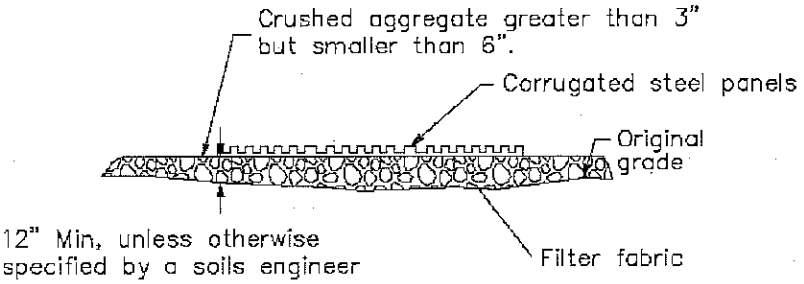
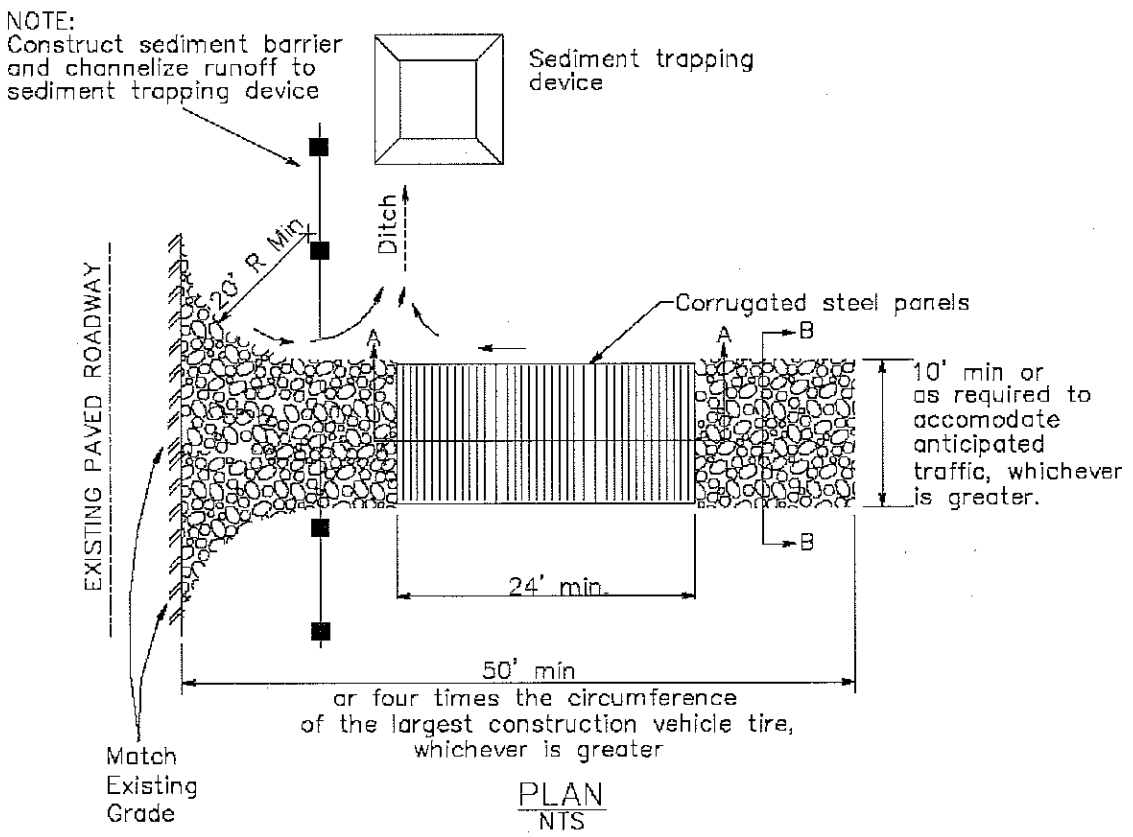


SECTION A–A
NOT TO SCALE



PLAN
NTS

Silt Fence SE-1

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

Legend:
☑ Primary Objective
☒ Secondary Objective

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-5 Fiber Rolls
SE-6 Gravel Bag Berm
SE-8 Sandbag Barrier
SE-9 Straw Bale Barrier

Description and Purpose

A silt fence is made of a filter fabric that has been entrenched, attached to supporting poles, and sometimes backed by a plastic or wire mesh for support. The silt fence detains sediment-laden water, promoting sedimentation behind the fence.

Suitable Applications

Silt fences are suitable for perimeter control, placed below areas where sheet flows discharge from the site. They should also be used as interior controls below disturbed areas where runoff may occur in the form of sheet and rill erosion. Silt fences are generally ineffective in locations where the flow is concentrated and are only applicable for sheet or overland flows. Silt fences are most effective when used in combination with erosion controls. Suitable applications include:

- Along the perimeter of a project.
- Below the toe or down slope of exposed and erodible slopes.
- Along streams and channels.
- Around temporary spoil areas and stockpiles.
- Below other small cleared areas.

Limitations

- Do not use in streams, channels, drain inlets, or anywhere flow is concentrated.

- Do not use in locations where ponded water may cause flooding.
- Do not place fence on a slope, or across any contour line. If not installed at the same elevation throughout, silt fences will create erosion.
- Filter fences will create a temporary sedimentation pond on the upstream side of the fence and may cause temporary flooding. Fences not constructed on a level contour will be overtopped by concentrated flow resulting in failure of the filter fence.
- Improperly installed fences are subject to failure from undercutting, overlapping, or collapsing.
  - Not effective unless trenched and keyed in.
  - Not intended for use as mid-slope protection on slopes greater than 4:1 (H:V).
  - Do not allow water depth to exceed 1.5 ft at any point.

Implementation

General

A silt fence is a temporary sediment barrier consisting of filter fabric stretched across and attached to supporting posts, entrenched, and, depending upon the strength of fabric used, supported with plastic or wire mesh fence. Silt fences trap sediment by intercepting and detaining small amounts of sediment-laden runoff from disturbed areas in order to promote sedimentation behind the fence.

Silt fences are preferable to straw bale barriers in many cases. Laboratory work at the Virginia Highway and Transportation Research Council has shown that silt fences can trap a much higher percentage of suspended sediments than can straw bales. While the failure rate of silt fences is lower than that of straw bale barriers, there are many instances where silt fences have been improperly installed. The following layout and installation guidance can improve performance and should be followed:

- Use principally in areas where sheet flow occurs.
- Don't use in streams, channels, or anywhere flow is concentrated. Don't use silt fences to divert flow.
- Don't use below slopes subject to creep, slumping, or landslides.
- Select filter fabric that retains 85% of soil by weight, based on sieve analysis, but that is not finer than an equivalent opening size of 70.
- Install along a level contour, so water does not pond more than 1.5 ft at any point along the silt fence.
- The maximum length of slope draining to any point along the silt fence should be 200 ft or less.
- The maximum slope perpendicular to the fence line should be 1:1.

- Provide sufficient room for runoff to pond behind the fence and to allow sediment removal equipment to pass between the silt fence and toes of slopes or other obstructions. About 1200 ft² of ponding area should be provided for every acre draining to the fence.
- Turn the ends of the filter fence uphill to prevent stormwater from flowing around the fence.
- Leave an undisturbed or stabilized area immediately down slope from the fence where feasible.
- Silt fences should remain in place until the disturbed area is permanently stabilized.

Design and Layout

Selection of a filter fabric is based on soil conditions at the construction site (which affect the equivalent opening size (EOS) fabric specification) and characteristics of the support fence (which affect the choice of tensile strength). The designer should specify a filter fabric that retains the soil found on the construction site yet that it has openings large enough to permit drainage and prevent clogging. The following criteria is recommended for selection of the equivalent opening size:

1. If 50 percent or less of the soil, by weight, will pass the U.S. Standard Sieve No. 200, select the EOS to retain 85 % of the soil. The EOS should not be finer than EOS 70.
2. For all other soil types, the EOS should be no larger than the openings in the U.S. Standard Sieve No. 70 except where direct discharge to a stream, lake, or wetland will occur, then the EOS should be no larger than Standard Sieve No. 100.

To reduce the chance of clogging, it is preferable to specify a fabric with openings as large as allowed by the criteria. No fabric should be specified with an EOS smaller than U.S. Standard Sieve No. 100. If 85% or more of a soil, by weight, passes through the openings in a No. 200 sieve, filter fabric should not be used. Most of the particles in such a soil would not be retained if the EOS was too large and they would clog the fabric quickly if the EOS were small enough to capture the soil.

The fence should be supported by a plastic or wire mesh if the fabric selected does not have sufficient strength and bursting strength characteristics for the planned application (as recommended by the fabric manufacturer). Filter fabric material should contain ultraviolet inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0 °F to 120 °F.

- Layout in accordance with attached figures.
- For slopes steeper than 2:1 (H:V) 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 sensitive receiving waters or Environmentally Sensitive Areas (ESAs), silt fence should be used in conjunction with erosion control BMPs.

Materials

- Silt fence fabric should be woven polypropylene with a minimum width of 36 in. and a minimum tensile strength of 100 lb force. The fabric should conform to the requirements in ASTM designation D4632 and should have an integral reinforcement layer. The reinforcement layer should be a polypropylene, or equivalent, net provided by the manufacturer. The permittivity of the fabric should be between 0.1 sec^{-1} and 0.15 sec^{-1} in conformance with the requirements in ASTM designation D4491.

- Wood stakes should be commercial quality lumber of the size and shape shown on the plans. Each stake should 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 should be not less than 1.75 in. long and should be fabricated from 15 gauge or heavier wire. The wire used to fasten the tops of the stakes together when joining two sections of fence should be 9 gauge or heavier wire. Galvanizing of the fastening wire will not be required.

- There are new products that may use prefabricated plastic holders for the silt fence and use bar reinforcement instead of wood stakes. If bar reinforcement is used in lieu of wood stakes, use number four or greater bar. Provide end protection for any exposed bar reinforcement.

Installation Guidelines

Silt fences are to be constructed on a level contour. Sufficient area should exist behind the fence for ponding to occur without flooding or overtopping the fence.

- A trench should be excavated approximately 6 in. wide and 6 in. deep along the line the proposed silt fence.

- Bottom of the silt fence should be keyed-in a minimum of 12 in.

- Posts should be spaced a maximum of 6 ft apart and driven securely into the ground a minimum of 18 in. or 12 in. below the bottom of the trench.

- When standard strength filter fabric is used, a plastic or wire mesh support fence should be fastened securely to the upslope side of posts using heavy–duty wire staples at least 1 in. long. The mesh should extend into the trench. When extra-strength filter fabric and closer post spacing are used, the mesh support fence may be eliminated. Filter fabric should be purchased in a long roll, then cut to the length of the barrier. When joints are necessary, filter cloth should be spliced together only at a support post, with a minimum 6 in. overlap and both ends securely fastened to the post.

- The trench should be backfilled with compacted native material.

- Construct silt fences with a setback of at least 3 ft 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 should be constructed as far from the toe of the slope as practicable. Silt fences close to the toe of the slope will be less effective and difficult to maintain.

- 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 should the reach exceed 500 ft.

Costs

- Average annual cost for installation and maintenance (assumes 6 month useful life): $7 per lineal foot ($850 per drainage acre). Range of cost is $3.50 - $9.10 per lineal foot.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Repair undercut silt fences.
- Repair or replace split, torn, slumping, or weathered fabric. The lifespan of silt fence fabric is generally 5 to 8 months.
- Silt fences that are damaged and become unsuitable for the intended purpose should be removed from the site of work, disposed of, and replaced with new silt fence barriers.
- Sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height. Sediment removed during maintenance may be incorporated into earthwork on the site or disposed at an appropriate location.
- Silt fences should be left in place until the upstream area is permanently stabilized. Until then, the silt fence must be inspected and maintained.
- Holes, depressions, or other ground disturbance caused by the removal of the silt fences should be backfilled and repaired.

References

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

National Management Measures to Control Nonpoint Source Pollution from Urban Areas, United States Environmental Protection Agency, 2002.

Proposed Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, Work Group-Working Paper, USEPA, April 1992.

Sedimentation and Erosion Control Practices, and Inventory of Current Practices (Draft), UESPA, 1990.

Southeastern Wisconsin Regional Planning Commission (SWRPC). Costs of Urban Nonpoint Source Water Pollution Control Measures. Technical Report No. 31. Southeastern Wisconsin Regional Planning Commission, Waukesha, WI. 1991

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

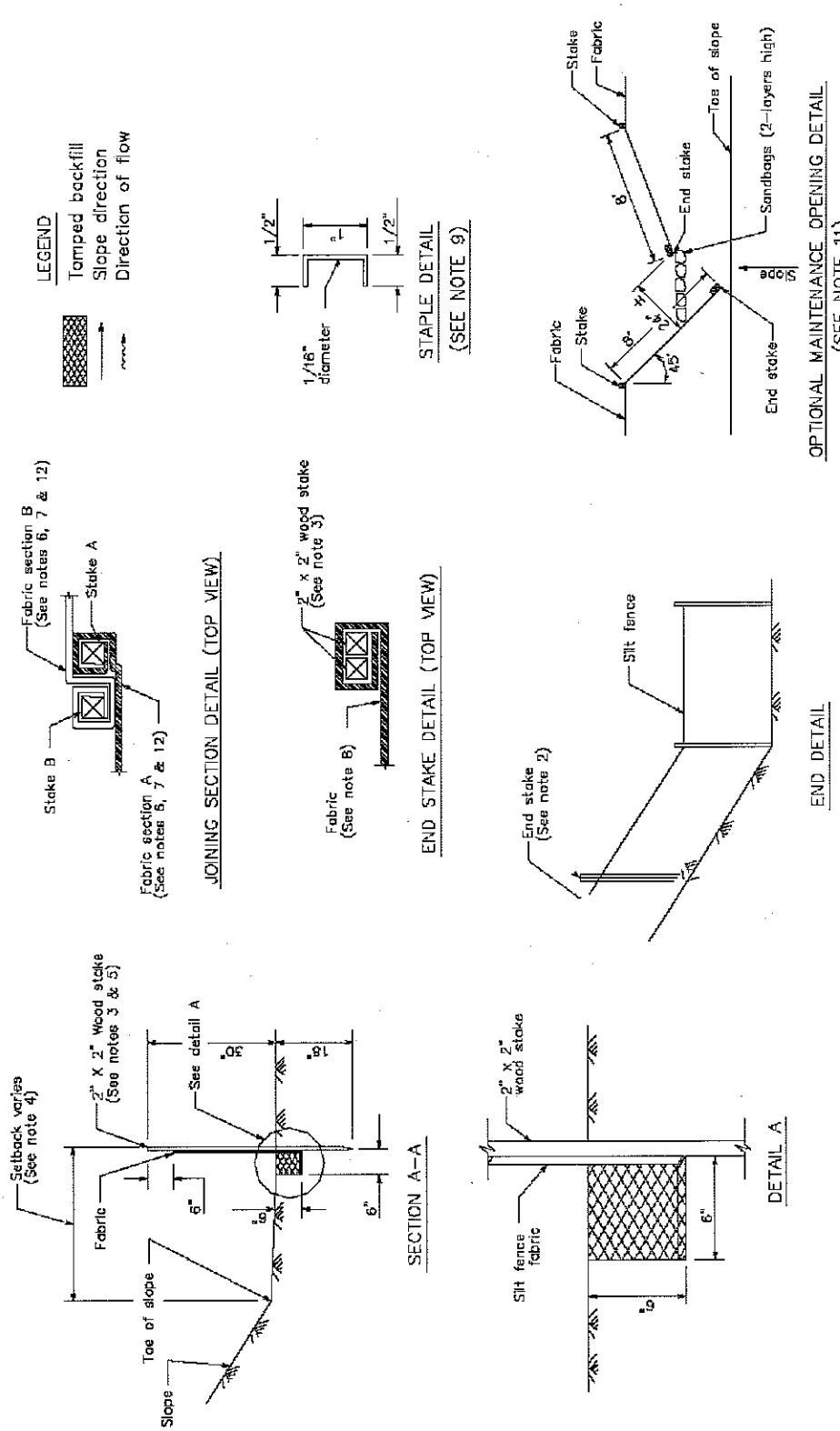
Stormwater Management Manual for The Puget Sound Basin, Washington State Department of Ecology, Public Review Draft, 1991.

U.S. Environmental Protection Agency (USEPA). Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices. U.S. Environmental Protection Agency, Office of Water, Washington, DC, 1992.

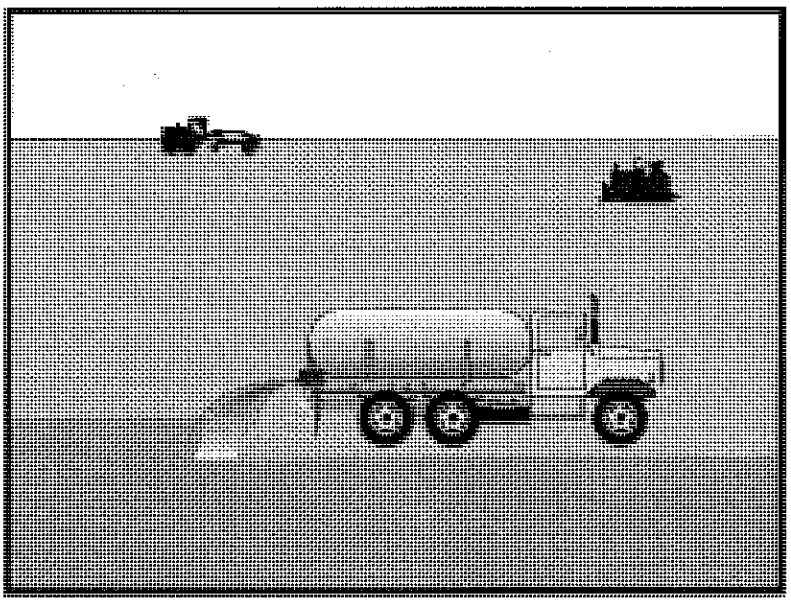
Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

NOTES

1. 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 linear barrier, in no case shall the reach length exceed 500'.
2. The last 8'-0" of fence shall be turned up slope.
3. Stake dimensions are nominal.
4. Dimension may vary to fit field condition.
5. Stakes shall be spaced at 8'-0" maximum and shall be positioned on downstream side of fence.
6. Stakes to overlap and fence fabric to fold around each stake one full turn. Secure fabric to stake with 4 staples.
7. Stakes shall be driven tightly together to prevent potential flow-through of sediment at joint. The tops of the stakes shall be secured with wire.
8. For end stake, fence fabric shall be folded around two stakes one full turn and secured with 4 staples.
9. Minimum 4 staples per stake. Dimensions shown are typical.
10. Cross barriers shall be a minimum of 1/3 and a maximum of 1/2 the height of the linear barrier.
11. Maintenance openings shall be constructed in a manner to ensure sediment remains behind silt fence.
12. Joining sections shall not be placed at sump locations.
13. Sandbag rows and layers shall be offset to eliminate gaps.


LEGEND
Tamped backfill
Slope direction
Direction of flow
1/2"
1/16" diameter
1/2"
STAPLE DETAIL
(SEE NOTE 9)
Stake
Fabric
8'
End stake
Toe of slope
Sandbags (2-layers high)
Fabric
Stake
8'
4'
2'
45°
End stake
OPTIONAL MAINTENANCE OPENING DETAIL
(SEE NOTE 11)
Fabric section B
(See notes 6, 7 & 12)
Stake A
Stake B
Fabric section A
(See notes 6, 7 & 12)
JOINING SECTION DETAIL (TOP VIEW)
2" x 2" wood stake
(See note 3)
Fabric
(See note 8)
END STAKE DETAIL (TOP VIEW)
Silt fence
End stake
(See note 2)
END DETAIL
Setback varies
(See note 4)
2" X 2" Wood stake
(See notes 3 & 5)
See detail A
30"
18"
Fabric
6"
6"
Toe of slope
Slope
SECTION A-A
2" X 2"
wood stake
Silt fence
fabric
6"
DETAIL A

Wind Erosion Control WE-1



Objectives

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

Legend:
☑ Primary Objective
☒ Secondary Objective

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Wind erosion or dust control consists of applying water or other dust palliatives as necessary to prevent or alleviate dust nuisance generated by construction activities. Covering small stockpiles or areas is an alternative to applying water or other dust palliatives.

Suitable Applications

Wind erosion control BMPs are suitable during the following construction activities:

- Construction vehicle traffic on unpaved roads
- Drilling and blasting activities
- Sediment tracking onto paved roads
- Soils and debris storage piles
- Batch drop from front-end loaders
- Areas with unstabilized soil
- Final grading/site stabilization

Limitations

- Watering prevents dust only for a short period and should be applied daily (or more often) to be effective.
- Over watering may cause erosion.

- Oil or oil-treated subgrade should not be used for dust control because the oil may migrate into drainageways and/or seep into the soil.
- Effectiveness depends on soil, temperature, humidity, and wind velocity.
- Chemically treated sub grades may make the soil water repellant, interfering with long-term infiltration and the vegetation/re-vegetation of the site. Some chemical dust suppressants may be subject to freezing and may contain solvents and should be handled properly.
- Asphalt, as a mulch tack or chemical mulch, requires a 24-hour curing time to avoid adherence to equipment, worker shoes, etc. Application should be limited because asphalt surfacing may eventually migrate into the drainage system.
- In compacted areas, watering and other liquid dust control measures may wash sediment or other constituents into the drainage system.

Implementation

General

California's Mediterranean climate, with short wet seasons and long hot dry seasons, allows the soils to thoroughly dry out. During these dry seasons, construction activities are at their peak, and disturbed and exposed areas are increasingly subject to wind erosion, sediment tracking and dust generated by construction equipment.

Dust control, as a BMP, is a practice that is already in place for many construction activities. Los Angeles, the North Coast, and Sacramento, among others, have enacted dust control ordinances for construction activities that cause dust to be transported beyond the construction project property line.

Recently, the State Air Resources Control Board has, under the authority of the Clean Air Act, started to address air quality in relation to inhalable particulate matter less than 10 microns (PM-10). Approximately 90 percent of these small particles are considered to be dust. Existing dust control regulations by local agencies, municipal departments, public works department, and public health departments are in place in some regions within California.

Many local agencies require dust control in order to comply with local nuisance laws, opacity laws (visibility impairment) and the requirements of the Clean Air Act. The following are measures that local agencies may have already implemented as requirements for dust control from contractors:

- Construction and Grading Permits: Require provisions for dust control plans.
- Opacity Emission Limits: Enforce compliance with California air pollution control laws.
- Increase Overall Enforcement Activities: Priority given to cases involving citizen complaints.
- Maintain Field Application Records: Require records of dust control measures from contractor;
- Stormwater Pollution Prevention Plan: (SWPPP): Integrate dust control measures into SWPPP.

Dust Control Practices

Dust control BMPs generally stabilize exposed surfaces and minimize activities that suspend or track dust particles. The following table shows dust control practices that can be applied to site conditions that cause dust. For heavily traveled and disturbed areas, wet suppression (watering), chemical dust suppression, gravel asphalt surfacing, temporary gravel construction entrances, equipment wash-out areas, and haul truck covers can be employed as dust control applications. Permanent or temporary vegetation and mulching can be employed for areas of occasional or no construction traffic. Preventive measures would include minimizing surface areas to be disturbed, limiting onsite vehicle traffic to 15 mph, and controlling the number and activity of vehicles on a site at any given time.

SITE CONDITION	DUST CONTROLPRACTICES								
	Permanent Vegetation	Mulching	Wet Suppression (Watering)	Chemical Dust Suppression	Gravel or Asphalt	Silt Fences	Temporary Gravel Construction Entrances/Equipment Wash Down	Haul Truck Covers	Minimize Extent of Disturbed Area
Disturbed Areas not Subject to Traffic	X	X	X	X	X				X
Disturbed Areas Subject to Traffic			X	X	X		X		X
Material Stock Pile Stabilization			X	X		X			X
Demolition			X				X	X	
Clearing/ Excavation			X	X		X			X
Truck Traffic on Unpaved Roads			X	X	X		X	X	
Mud/Dirt Carry Out					X		X		

Additional preventive measures include:

- Schedule construction activities to minimize exposed area (EC-1, Scheduling).
- Quickly stabilize exposed soils using vegetation, mulching, spray-on adhesives, calcium chloride, sprinkling, and stone/gravel layering.
- Identify and stabilize key access points prior to commencement of construction.
- Minimize the impact of dust by anticipating the direction of prevailing winds.
- Direct most construction traffic to stabilized roadways within the project site.
- Water should 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 should be equipped with a positive means of shutoff.
- Unless water is applied by means of pipelines, at least one mobile unit should 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 should not be conveyed in tanks or drain pipes that will be used to convey potable water and there should be no connection between potable and non-potable supplies. Non-potable tanks, pipes, and other conveyances should be marked, "NON-POTABLE WATER - DO NOT DRINK."
- Materials applied as temporary soil stabilizers and soil binders also generally provide wind erosion control benefits.
- Pave or chemically stabilize access points where unpaved traffic surfaces adjoin paved roads.
- Provide covers for haul trucks transporting materials that contribute to dust.
- Provide for wet suppression or chemical stabilization of exposed soils.
- Provide for rapid clean up of sediments deposited on paved roads. Furnish stabilized construction road entrances and vehicle wash down areas.
- Stabilize inactive construction sites using vegetation or chemical stabilization methods.
- Limit the amount of areas disturbed by clearing and earth moving operations by scheduling these activities in phases.

For chemical stabilization, there are many products available for chemically stabilizing gravel roadways and stockpiles. If chemical stabilization is used, the chemicals should not create any adverse effects on stormwater, plant life, or groundwater.

Costs

Installation costs for water and chemical dust suppression are low, but annual costs may be quite high since these measures are effective for only a few hours to a few days.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Check areas protected to ensure coverage.
- Most dust control measures require frequent, often daily, or multiple times per day attention.

References

Best Management Practices and Erosion Control Manual for Construction Sites, Flood Control District of Maricopa County, Arizona, September 1992.

California Air Pollution Control Laws, California Air Resources Board, 1992.

Caltrans, Standard Specifications, Sections 10, "Dust Control"; Section 17, "Watering"; and Section 18, "Dust Palliative".

Prospects for Attaining the State Ambient Air Quality Standards for Suspended Particulate Matter (PM10), Visibility Reducing Particles, Sulfates, Lead, and Hydrogen Sulfide, California Air Resources Board, April 1991.

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

Street Sweeping and Vacuuming SE-7

Objectives

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

Legend:
☑ Primary Objective
☒ Secondary Objective

Targeted Constituents

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

Potential Alternatives

None

Description and Purpose

Street sweeping and vacuuming includes use of self-propelled and walk-behind equipment to remove sediment from streets and roadways, and to clean paved surfaces in preparation for final paving. Sweeping and vacuuming prevents sediment from the project site from entering storm drains or receiving waters.

Suitable Applications

Sweeping and vacuuming are suitable anywhere sediment is tracked from the project site onto public or private paved streets and roads, typically at points of egress. Sweeping and vacuuming are also applicable during preparation of paved surfaces for final paving.

Limitations

Sweeping and vacuuming may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose).

Implementation

- Controlling the number of points where vehicles can leave the site will allow sweeping and vacuuming efforts to be focused, and perhaps save money.
- Inspect potential sediment tracking locations daily.
- Visible sediment tracking should be swept or vacuumed on a daily basis.

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- Do not use kick brooms or sweeper attachments. These tend to spread the dirt rather than remove it.
- If not mixed with debris or trash, consider incorporating the removed sediment back into the project

Costs

Rental rates for self-propelled sweepers vary depending on hopper size and duration of rental. Expect rental rates from $58/hour (3 yd^3 hopper) to $88/hour (9 yd^3 hopper), plus operator costs. Hourly production rates vary with the amount of area to be swept and amount of sediment. Match the hopper size to the area and expect sediment load to minimize time spent dumping.

Inspection and Maintenance

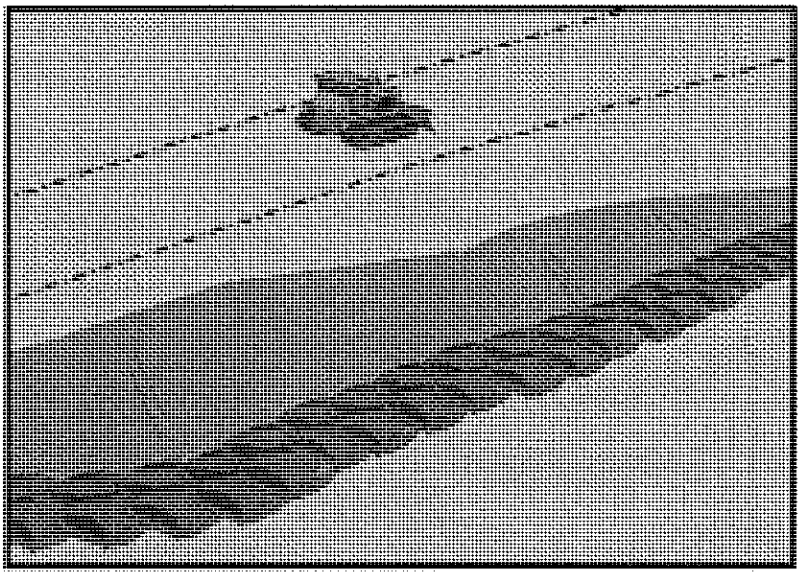
- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- When actively in use, points of ingress and egress must be inspected daily.
- When tracked or spilled sediment is observed outside the construction limits, it must be removed at least daily. More frequent removal, even continuous removal, may be required in some jurisdictions.
- Be careful not to sweep up any unknown substance or any object that may be potentially hazardous.
- Adjust brooms frequently; maximize efficiency of sweeping operations.
- After sweeping is finished, properly dispose of sweeper wastes at an approved dumpsite.

References

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

Labor Surcharge and Equipment Rental Rates, State of California Department of Transportation (Caltrans), April 1, 2002 – March 31, 2003.

Sandbag Barrier SE-8



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

Legend:
☑ Primary Objective
☒ Secondary Objective

Description and Purpose

A sandbag barrier is a series of sand-filled bags placed on a level contour to intercept sheet flows. Sandbag barriers pond sheet flow runoff, allowing sediment to settle out.

Suitable Applications

Sandbag barriers may be suitable:

- As a linear sediment control measure:
  - Below the toe of slopes and erodible slopes
  - As sediment traps at culvert/pipe outlets
  - Below other small cleared areas
  - Along the perimeter of a site
  - Down slope of exposed soil areas
  - Around temporary stockpiles and spoil areas
  - Parallel to a roadway to keep sediment off paved areas
  - Along streams and channels
- As linear erosion control measure:
  - Along the face and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-5 Fiber Rolls

SE-6 Gravel Bag Berm

SE-9 Straw Bale Barrier

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- At the top of slopes to divert runoff away from disturbed slopes
- As check dams across mildly sloped construction roads

Limitations

- It is necessary to limit the drainage area upstream of the barrier to 5 acres.
- Degraded sandbags may rupture when removed, spilling sand.
- Installation can be labor intensive.
- Barriers may have limited durability for long-term projects.
- When used to detain concentrated flows, maintenance requirements increase.
- Burlap should not be used for sandbags.

Implementation

General

A sandbag barrier consists of a row of sand-filled bags placed on a level contour. When appropriately placed, a sandbag barrier intercepts and slows sheet flow runoff, causing temporary ponding. The temporary ponding provides quiescent conditions allowing sediment to settle. While the sand-filled bags are porous, the fine sand tends to quickly plug with sediment, limiting the rate of flow through the barrier. If a porous barrier is desired, consider SE-1, Silt Fence, SE-5, Fiber Rolls, SE-6, Gravel Bag Berms, or SE-9, Straw Bale Barriers. Sandbag barriers also interrupt the slope length and thereby reduce erosion by reducing the tendency of sheet flows to concentrate into rivulets which erode rills, and ultimately gullies, into disturbed, sloped soils. Sandbag barriers are similar to ground bag berms, but less porous.

Design and Layout

- Locate sandbag barriers on a level contour.
  - Slopes between 20:1 and 2:1 (H:V): Sandbags should be placed at a maximum interval of 50 ft (a closer spacing is more effective), with the first row near the slope toe.
  - Slopes 2:1 (H:V) or steeper: Sandbags should be placed at a maximum interval of 25 ft (a closer spacing is more effective), with the first row placed near the slope toe.
- Turn the ends of the sandbag barrier up slope to prevent runoff from going around the barrier.
- Allow sufficient space up slope from the barrier to allow ponding, and to provide room for sediment storage.
- For installation near the toe of the slope, consider moving the barrier away from the slope toe to facilitate cleaning. To prevent flow behind the barrier, sandbags can be placed perpendicular to the barrier to serve as cross barriers.
- Drainage area should not exceed 5 acres.

- Stack sandbags at least three bags high.
- Butt ends of bags tightly.
- Overlapp butt joints of row beneath with each successive row.
- Use a pyramid approach when stacking bags.
- In non-traffic areas
  - Height = 18 in. maximum
  - Top width = 24 in. minimum for three or more layer construction
  - Side slope = 2:1 or flatter
- In construction traffic areas
  - Height = 12 in. maximum
  - Top width = 24 in. minimum for three or more layer construction.
  - Side slopes = 2:1 or flatter.

Materials

- ***Sandbag Material:*** Sandbag should be woven polypropylene, polyethylene or polyamide fabric, minimum unit weight of 4 ounces/yd^2, Mullen burst strength exceeding 300 lb/in^2 in conformance with the requirements in ASTM designation D3786, and ultraviolet stability exceeding 70% in conformance with the requirements in ASTM designation D4355. Use of burlap may not acceptable in some jurisdictions.
- ***Sandbag Size:*** Each sand-filled bag should have a length of 18 in., width of 12 in., thickness of 3 in., and mass of approximately 33 lbs. Bag dimensions are nominal, and may vary based on locally available materials.
- ***Fill Material:*** All sandbag fill material should be non-cohesive, Class 1 or Class 2 permeable material free from clay and deleterious material.

Costs

Sandbag barriers are more costly, but typically have a longer useful life than other barriers. Empty sandbags cost $0.25 - $0.75. Average cost of fill material is $8 per yd^3. Pre-filled sandbags are more expensive at $1.50 - $2.00 per bag.

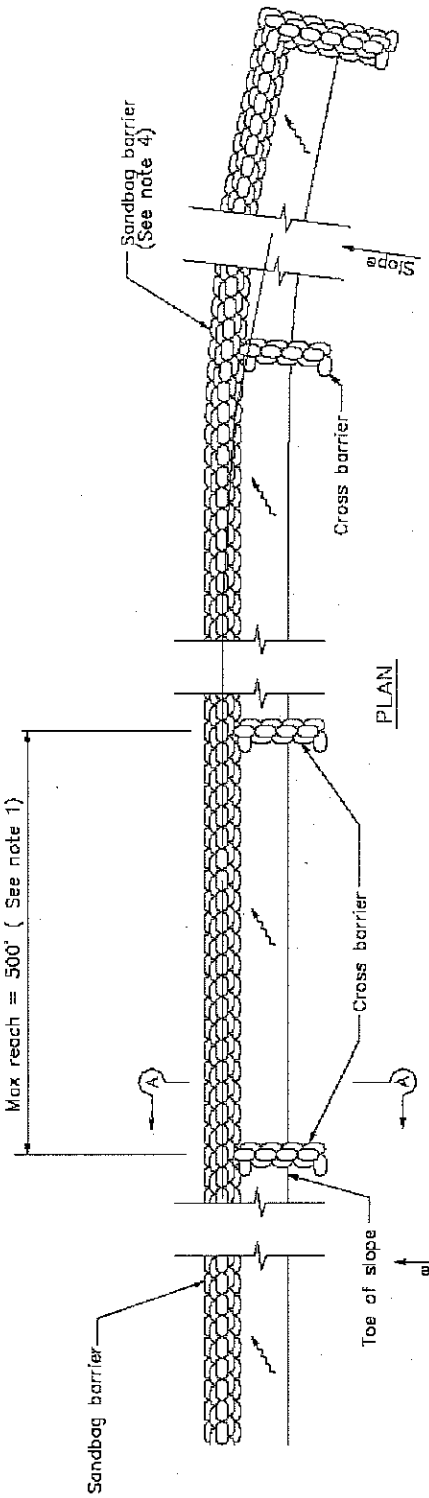
Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Sandbags exposed to sunlight will need to be replaced every two to three months due to degradation of the bags.
- Reshape or replace sandbags as needed.

- Repair washouts or other damage as needed.
- Sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height. Sediment removed during maintenance may be incorporated into earthwork on the site or disposed at an appropriate location.
- Remove sandbags when no longer needed. Remove sediment accumulation, and clean, re-grade, and stabilize the area.

References

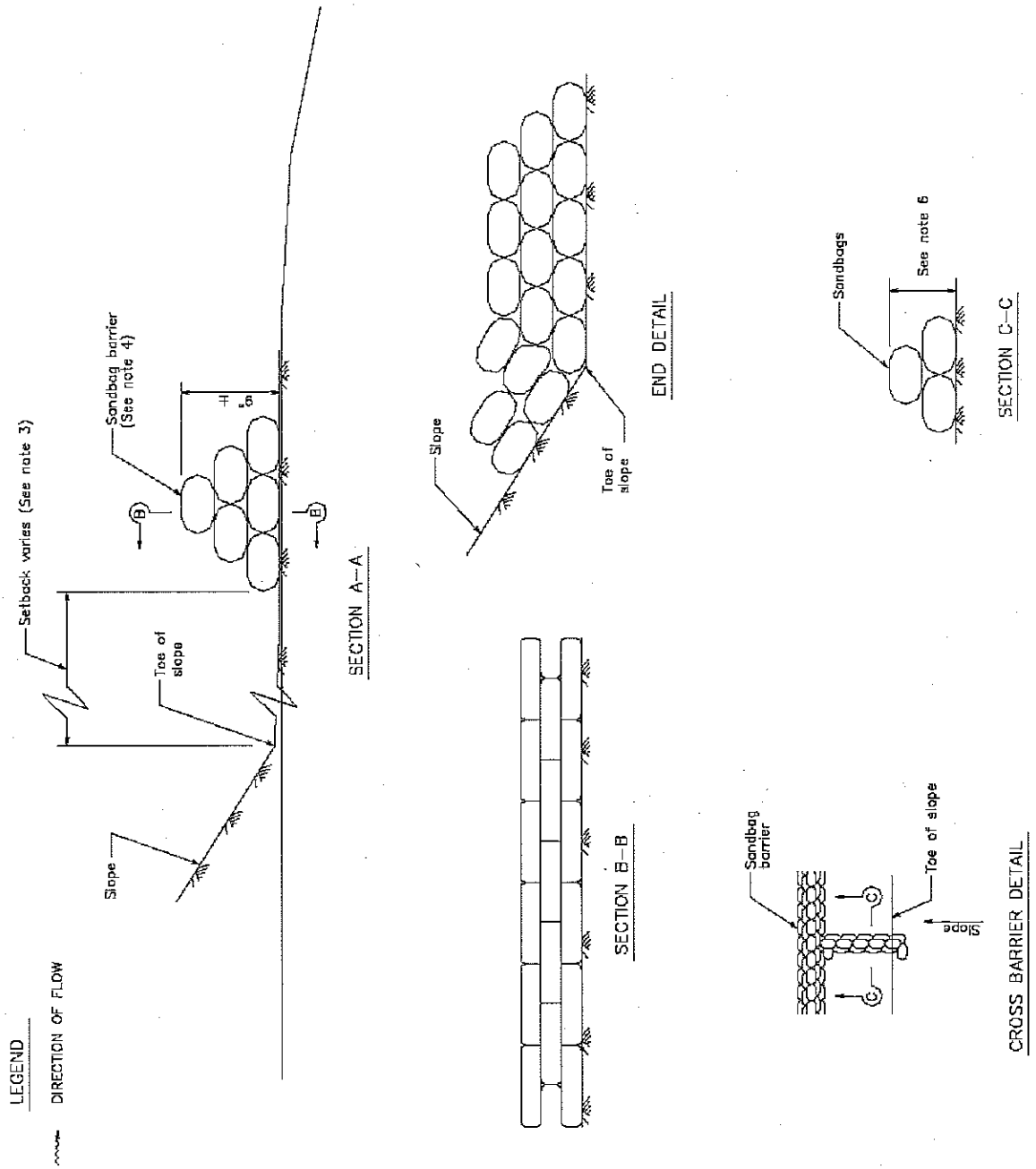
Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.



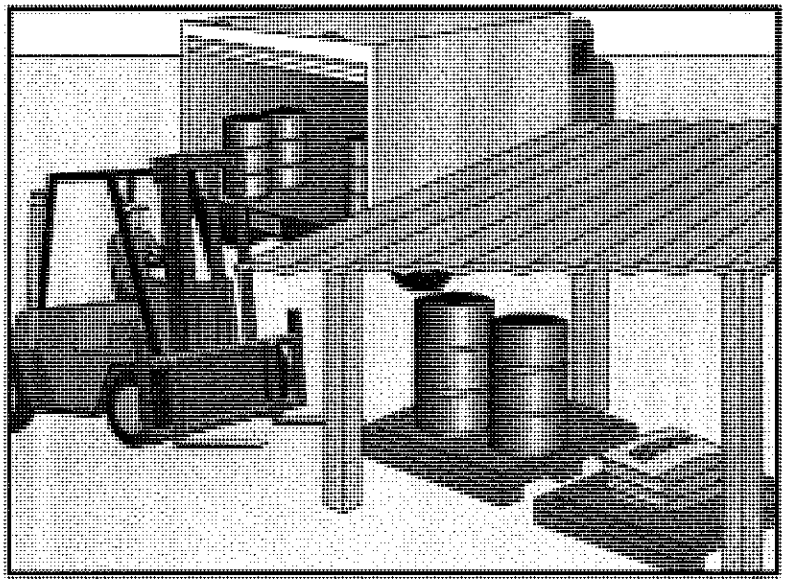
SANDBAG BARRIER

NOTES

1. Construct the length of each reach so that the change in base elevation along the reach does not exceed 1/2 the height of the linear barrier. In no case shall the reach length exceed 500'.
2. Place sandbags tightly.
3. Dimension may vary to fit field condition.
4. Sandbag barrier shall be a minimum of 3 bags high.
5. The end of the barrier shall be turned up slope.
6. Cross barriers shall be a min of 1/2 and a max of 2/3 the height of the linear barrier.
7. Sandbag rows and layers shall be staggered to eliminate gaps.


LEGEND
DIRECTION OF FLOW
Setback varies (See note 3)
Sandbag barrier (See note 4)
H
B
Toe of slope
Slope
SECTION A–A
Slope
Toe of slope
END DETAIL
SECTION B–B
Sandbags
See note 6
SECTION C–C
Sandbag barrier
Toe of slope
Slope
CROSS BARRIER DETAIL

Material Delivery and Storage WM-1



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

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Prevent, reduce, or eliminate the discharge of pollutants from material delivery and storage to the stormwater system or watercourses by minimizing the storage of hazardous materials onsite, storing materials in a designated area, installing secondary containment, conducting regular inspections, and training employees and subcontractors.

This best management practice covers only material delivery and storage. For other information on materials, see WM-2, Material Use, or WM-4, Spill Prevention and Control. For information on wastes, see the waste management BMPs in this section.

Suitable Applications

These procedures are suitable for use at all construction sites with delivery and storage of the following materials:

- Soil stabilizers and binders
- Pesticides and herbicides
- Fertilizers
- Detergents
- Plaster
- Petroleum products such as fuel, oil, and grease
- Asphalt and concrete components

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- 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 often must meet building and fire code requirements.

Implementation

The following steps should be taken to minimize risk:

- Temporary storage area should be located away from vehicular traffic.
- Material Safety Data Sheets (MSDS) should be supplied for all materials stored.
- Construction site areas should be designated for material delivery and storage.
- Material delivery and storage areas should be located near the construction entrances, away from waterways, if possible.
  - Avoid transport near drainage paths or waterways.
  - Surround with earth berms. See EC-9, Earth Dikes and Drainage Swales.
  - Place in an area which will be paved.
- Storage of reactive, ignitable, or flammable liquids must comply with the fire codes of your area. Contact the local Fire Marshal to review site materials, quantities, and proposed storage area to determine specific requirements. See the Flammable and Combustible Liquid Code, NFPA30.
- An up to date inventory of materials delivered and stored onsite should be kept.
- Hazardous materials storage onsite should be minimized.
- Hazardous materials should be handled as infrequently as possible.
- During the rainy season, consider storing materials in a covered area. Store materials in secondary containments such as earthen dike, horse trough, or even a children's wading pool for non-reactive materials such as detergents, oil, grease, and paints. Small amounts of material may be secondarily contained in "bus boy" trays or concrete mixing trays.
- Do not store chemicals, drums, or bagged materials directly on the ground. Place these items on a pallet and, when possible, in secondary containment.

- If drums must be kept uncovered, store them at a slight angle to reduce ponding of rainwater on the lids to reduce corrosion. Domed plastic covers are inexpensive and snap to the top of drums, preventing water from collecting.
- Chemicals should be kept in their original labeled containers.
- Employees and subcontractors should be trained on the proper material delivery and storage practices.
- Employees trained in emergency spill cleanup procedures must be present when dangerous materials or liquid chemicals are unloaded.
- If significant residual materials remain on the ground after construction is complete, properly remove materials and any contaminated soil. See WM-7, Contaminated Soil Management. If the area is to be paved, pave as soon as materials are removed to stabilize the soil.

Material Storage Areas and Practices

- Liquids, petroleum products, and substances listed in 40 CFR Parts 110, 117, or 302 should be stored in approved containers and drums and should not be overfilled. Containers and drums should be placed in temporary containment facilities for storage.
- A temporary containment facility should provide for a spill containment volume able to contain precipitation from a 25 year storm event, plus the greater of 10% of the aggregate volume of all containers or 100% of the capacity of the largest container within its boundary, whichever is greater.
- A temporary containment facility should be impervious to the materials stored therein for a minimum contact time of 72 hours.
- A temporary containment facility should be maintained free of accumulated rainwater and spills. In the event of spills or leaks, accumulated rainwater and spills should be collected and placed into drums. These liquids should be handled as a hazardous waste unless testing determines them to be non-hazardous. All collected liquids or non-hazardous liquids should be sent to an approved disposal site.
- Sufficient separation should be provided between stored containers to allow for spill cleanup and emergency response access.
- Incompatible materials, such as chlorine and ammonia, should not be stored in the same temporary containment facility.
- Throughout the rainy season, each temporary containment facility should be covered during non-working days, prior to, and during rain events.
- Materials should be stored in their original containers and the original product labels should be maintained in place in a legible condition. Damaged or otherwise illegible labels should be replaced immediately.

- Bagged and boxed materials should be stored on pallets and should not be allowed to accumulate on the ground. To provide protection from wind and rain throughout the rainy season, bagged and boxed materials should be covered during non-working days and prior to and during rain events.
- Stockpiles should be protected in accordance with WM-3, Stockpile Management.
- Materials should be stored indoors within existing structures or sheds when available.
- Proper storage instructions should be posted at all times in an open and conspicuous location.
- An ample supply of appropriate spill clean up material should be kept near storage areas.
- Also see 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 onsite.
- Arrange for employees trained in emergency spill cleanup procedures to be present when dangerous materials or liquid chemicals are unloaded.

Spill Cleanup

- Contain and clean up any spill immediately.
- Properly remove and dispose of any hazardous materials or contaminated soil if significant residual materials remain on the ground after construction is complete. See WM-7, Contaminated Soil Management.
- See WM-4, Spill Prevention and Control, for spills of chemicals and/or hazardous materials.

Cost

- The largest cost of implementation may be in the construction of a materials storage area that is covered and provides secondary containment.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Keep an ample supply of spill cleanup materials near the storage area.
- Keep storage areas clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored.
- Repair or replace perimeter controls, containment structures, covers, and liners as needed to maintain proper function.

References

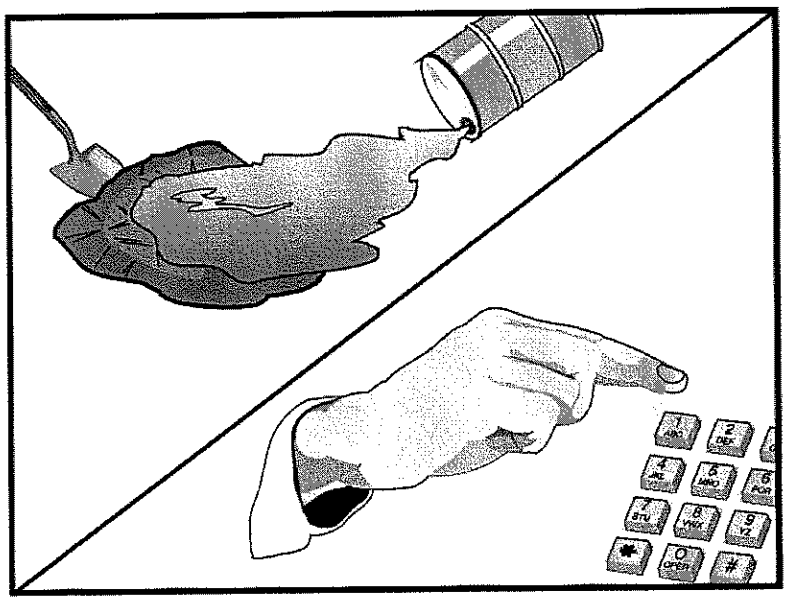
Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper; USEPA, April 1992.

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

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Spill Prevention and Control WM-4



Objectives

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

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

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

Potential Alternatives

None

Description and Purpose

Prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

This best management practice covers only spill prevention and control. However, WM-1, Materials Delivery and Storage, and WM-2, Material Use, also contain useful information, particularly on spill prevention. For information on wastes, see the waste management BMPs in this section.

Suitable Applications

This BMP is suitable for all construction projects. Spill control procedures are implemented anytime chemicals or hazardous substances are stored on the construction site, including the following materials:

- Soil stabilizers/binders
- Dust palliatives
- Herbicides
- Growth inhibitors
- Fertilizers
- Deicing/anti-icing chemicals

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

- Fuels
- Lubricants
- Other petroleum distillates

Limitations

- In some cases it may be necessary to use a private spill cleanup company.
- This BMP applies to spills caused by the contractor and subcontractors.
- Procedures and practices presented in this BMP are general. Contractor should identify appropriate practices for the specific materials used or stored onsite

Implementation

The following steps will help reduce the stormwater impacts of leaks and spills:

Education

- Be aware that different materials pollute in different amounts. Make sure that each employee knows 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.
- Have contractor's superintendent or representative oversee and enforce proper spill prevention and control measures.

General Measures

- 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 should be contained and cleaned up immediately.
- Store hazardous materials and wastes in covered containers and protect from vandalism.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- Train employees in spill prevention and cleanup.
- Designate responsible individuals to oversee and enforce control measures.
- Spills should be covered and protected from stormwater runon during rainfall to the extent that it doesn't compromise clean up activities.
- Do not bury or wash spills with water.

- Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMPs.
- Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with WM-10, Liquid Waste Management.
- Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.
- Place proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.
- Keep waste storage areas clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.

Cleanup

- Clean up leaks and spills immediately.
- Use a rag for small spills on paved surfaces, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to either a certified laundry (rags) or disposed of as hazardous waste.
- Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly. See the waste management BMPs in this section for specific information.

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.
- Absorbent materials should be promptly removed and disposed of properly.
- Follow the practice below for a minor spill:
  - Contain the spread of the spill.
  - Recover spilled materials.
  - Clean the contaminated area and 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.

- Spills should be cleaned up immediately:
  - Contain spread of the spill.
  - Notify the project foreman immediately.
  - 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.
  - If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
  - 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 should be taken:
  - 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.
  - Notify the Governor's Office of Emergency Services Warning Center, (916) 845-8911.
  - For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor should notify the National Response Center at (800) 424-8802.
  - Notification should first be made by telephone and followed up with a written report.
  - The services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.
  - 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.

Reporting

- Report significant spills to local agencies, such as the Fire Department; they can assist in cleanup.
- Federal regulations require that any significant oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24 hours).

Use the following measures related to specific activities:

Vehicle and Equipment Maintenance

- If maintenance must occur onsite, use a designated area and a secondary containment, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.
- Regularly inspect onsite vehicles and equipment for leaks and repair immediately
- Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.
- Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
- Place drip pans or absorbent materials under paving equipment when not in use.
- Use absorbent materials on small spills rather than hosing down or burying the spill. Remove the absorbent materials promptly and dispose of properly.
- Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around
- Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. Place the oil filter in a funnel over a waste oil-recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask the oil supplier or recycler about recycling oil filters.
- Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Vehicle and Equipment Fueling

- If fueling must occur onsite, use designate areas, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.
- Discourage "topping off" of fuel tanks.
- Always use secondary containment, such as a drain pan, when fueling to catch spills/ leaks.

Costs

Prevention of leaks and spills is inexpensive. Treatment and/ or disposal of contaminated soil or water can be quite expensive.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharge daily while non-stormwater discharges occur.

- Keep ample supplies of spill control and cleanup materials onsite, near storage, unloading, and maintenance areas.
- Update your spill prevention and control plan and stock cleanup materials as changes occur in the types of chemicals onsite.

References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

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

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

ATTACHMENT D
Inspections

Energia Sierra Juarez (ESJ) U.S. Transmission Gen-Tie Alternative Project
Major Stormwater Management Plan

INSPECTION AND MAINTENANCE REPORT FORM

Name of Permittee: ESJ U.S. Transmission LLC

Construction Site Name: ESJ U.S. Transmission Gen-Tie Alternative Project

Inspector: _____ Date: _____ Time: _____

Present Phase of Construction: _____

Site Conditions: _____

Inspection Event:

☐ ROUTINE WEEKLY
☐ RAIN EVENT RAINFALL (record all events > 0.5 inches): inches
☐ OTHER EXPLANATION: _____

Measures & Controls	Location	In Conformance with Typical Standard	Effective Pollutant Control Practice
Stockpile Management		☐ YES ☐ NO	☐ YES ☐ NO
Construction Site Entrances/Exits		☐ YES ☐ NO	☐ YES ☐ NO
Silt Fence		☐ YES ☐ NO	☐ YES ☐ NO
Street Sweeping/Vacuuming		☐ YES ☐ NO	☐ YES ☐ NO
Sandbag Barrier		☐ YES ☐ NO	☐ YES ☐ NO
Wind Erosion		☐ YES ☐ NO	☐ YES ☐ NO
Stabilization Measures		☐ YES ☐ NO	☐ YES ☐ NO

NON-CONFORMANCE/INEFFECTIVE POLLUTANT CONTROL PRACTICES NOTED DURING INSPECTION: (Explain each "NO" circled above)

RECOMMENDED REMEDIAL ACTIONS AND SCHEDULE OF THOSE EVENTS:

ADDITIONAL COMMENTS:

Signature: _____ Printed Name: _____

ATTACHMENT E
Spill Reporting

Procedures for Determining if a Hazardous Material Spill is a Reportable Quantity

1) First determine the type and quantity of material that has been spilled.

2) Obtain a material safety data sheet (MSDS) for the spilled material and determine whether any of the constituents are listed in Table 302.4 in 40 CFR 302.

3) If none of the constituents in the spilled material are listed in the table (excluding ethylene glycol), the spill is not reportable.

4) If the constituents in the spilled material are listed in the table, use the following equation to determine the pounds of material spilled:

$$\text{Pounds Spilled} = (V)\,(Wt\%)\,(Sg)\,(0.0834)$$

Where:

V = Volume of the material spilled, in gallons

Wt% = The weight percent of the constituents in the spilled material (see the MSDS)

Sg = Specific gravity of spilled material (see MSDS)

For Example:

V = 7 gallons

Wt% = 3.5

Sg = 1.04

Pounds Spilled = (7) (3.5) (1.04) (0.0834) = 2.13 pounds

5) If, based on the calculation, the pounds spilled are greater than the Final RQ (reportable quantity) value listed in Table 302.4 of 40 CFR 302 or the State's reportable quantity minimum amount, the spill must be reported to the appropriate federal, state, and local agencies.

Energia Sierra Juarez U.S. Transmission Gen-Tie Alternative Project

Major Stormwater Management Plan

SPILL REPORT FORM

Spill Reported By: _____ _____
Name Phone Number

Date Reported: _____ Time: _____

Date of Spill: _____ Time: _____

Name of Facility: _____

Legal Description: ____ 1/4 ____ 1/4 ____ 1/4 SEC ____, TWP ____, Range ____,

County _____

Describe Spill Location and Events Leading to Spill: _____

_____

_____

_____

Material Spilled: _____

Source of Spill: _____

Amount Spilled (Gallons or Pounds): _____

Amount Spilled to Waterway (Gallons or Pounds): _____

Nearest Municipality: _____

Containment or Cleanup Action: _____

_____

List Environmental Damage (fish kill, etc.): _____

_____

List Injuries or Personal Contamination: _____

_____

Date and Time Cleanup Completed or Terminated: _____

If Cleanup Delayed, Nature and Duration of Delay: _____

_____

Description of Materials Contaminated: _____

_____

Approximate Depth of Soil Excavation: _____

Action To Be Taken to Prevent Future Spills: _____

_____

_____

Agencies Notified:

Local: _____ Date: _____

State: _____ Date: _____

Federal: _____ Date: _____

Signed: _____
Contractor Superintendent or
Environmental Inspector

ATTACHMENT F
Certification Sheet

CERTIFICATION SHEET

This Stormwater Management Plan has been prepared under the direction of the following Registered Civil Engineer. The Registered Civil Engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.

Trang Wong, R.C.E. 69965
Exp. 9/30/10

10/30/09
Date

ATTACHMENT G
Major SWMP Form

Storm Water Management Plan
For Priority Projects
(Major SWMP)

The Major Stormwater Management Plan (Major SWMP) must be completed in its entirety and accompany applications to the County for a permit or approval associated with certain types of development projects. To determine whether your project is required to submit a Major or Minor SWMP, please reference the County's Stormwater Intake Form for Development Projects.

Project Name:	ESJ U.S. Transmission Gen-Tie Alternative Project
Permit Number (Land Development Projects):	MUP 09-008
Work Authorization Number (**CIP only**):	
Applicant:	ESJ U.S. Transmission LLC
Applicant's Address:	101 Ash St. HQ #14, San Diego, CA 92101
Plan Prepare By (*Leave blank if same as applicant*):	Burns and McDonnell
Date:	May 2010
Revision Date (If applicable):	

The County of San Diego Watershed Protection, Storm Water Management, and Discharge Control Ordinance (WPO) (Ordinance No. 9926) requires all applications for a permit or approval associated with a Land Disturbance Activity to be accompanied by a Storm Water Management Plan (SWMP) (section 67.806.b). The purpose of the SWMP is to describe how the project will minimize the short and long-term impacts on receiving water quality. Projects that meet the criteria for a priority development project are required to prepare a Major SWMP.

Since the SWMP is a living document, revisions may be necessary during various stages of approval by the County. Please provide the approval information requested below.

Project Stages	Does the SWMP need revisions?		If YES, Provide Revision Date
	YES	NO	

Instructions for a Major SWMP can be downloaded at
http://www.sdcounty.ca.gov/dpw/watersheds/susmp/susmp.html

Completion of the following checklists and attachments will fulfill the requirements of a Major SWMP for the project listed above.

PROJECT DESCRIPTION

Please provide a brief description of the project in the following box. Please include:

- Project Location
- Project Description
- Physical Features (Topography)
- Surrounding Land Use
- Proposed Project Land Use
- Location of dry weather flows (year-round flows in streams, or creeks) within project limits, if applicable.

See Sections 1 and 2 in Major Stormwater Management Plan.

PRIORITY DEVELOPMENT PROJECT DETERMINATION

Please check the box that best describes the project. Does the project meet one of the following criteria?

Table 1

PRIORITY DEVELOPMENT PROJECT	YES	NO
Redevelopment that creates, adds or replaces at least 5,000 square feet of impervious surface area and falls under one of the criteria listed below.	x	
Residential development of more than 10 units.		x
Commercial developments with a land area for development of greater than 1 acre.		x
Heavy industrial development with a land area for development of greater than 1 acre.		x
Automotive repair shop(s).		x
Restaurants, where the land area for development is greater than 5,000 square feet.		x
Hillside development, in an area with known erosive soil conditions, where there will be grading on any natural slope that is twenty-five percent or greater, if the development creates 5,000 square feet or more of impervious surface.		x
Environmentally Sensitive Areas (ESA): All development located within or directly adjacent to or discharging directly to an ESA (where discharges from the development or redevelopment will enter receiving waters within the ESA), which either creates 2,500 square feet of impervious surface on a proposed project site or increases the area of imperviousness of a proposed project site to 10% or more of its naturally occurring condition. "Directly adjacent" means situated within 200 feet of the ESA. "Discharging directly to" means outflow from a drainage conveyance system that is composed entirely of flows from the subject development or redevelopment site, and not commingled with flows from adjacent lands.	x	
Parking Lots 5,000 square feet or more or with 15 parking spaces or more and potentially exposed to urban runoff.		x
Streets, roads, highways, and freeways which would create a new paved surface that is 5,000 square feet or greater.		x
Retail Gasoline Outlets (RGO) that meet the following criteria: (a) 5,000 square feet or more or (b) a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.		x

Limited Exclusion: Trenching and resurfacing work associated with utility projects are not considered Priority Development Projects. Parking lots, buildings and other structures associated with utility projects are subject to the WPO requirements if one or more of the criteria above are met.

If you answered **NO** to all the questions, then **STOP**. Please complete a Minor SWMP for your project.
If you answered **YES** to any of the questions, please continue.

HYDROMODIFICATION DETERMINATION

The following questions provide a guide to collecting information relevant to hydromodification management issues.

Table 2

	QUESTIONS	YES	NO	Information
1.	Will the proposed project disturb 50 or more acres of land? (Including all phases of development)		x	If YES, continue to 2. If NO, go to 6.
2.	Would the project site discharge directly into channels that are concrete-lined or significantly hardened such as with rip-rap, sackcrete, etc, downstream to their outfall into bays or the ocean?			If NO, continue to 3. If YES, go to 6.
3.	Would the project site discharge directly into underground storm drains discharging directly to bays or the ocean?			If NO, continue to 4. If YES, go to 6.
4.	Would the project site discharge directly to a channel (lined or un-lined) and the combined impervious surfaces downstream from the project site to discharge at the ocean or bay are 70% or greater?			If NO, continue to 5. If YES, go to 6.
5.	Project is required to manage hydromodification impacts.			Hydromodification Management Required as described in Section 67.812 b(4) of the WPO.
6.	Project is not required to manage hydromodification impacts.			Hydromodification Exempt. Keep on file.

An exemption is potentially available for projects that are required (No. 5. in Table 2 above) to manage hydromodification impacts: The project proponent may conduct an independent geomorphic study to determine the project's full hydromodification impact. The study must incorporate sediment transport modeling across the range of geomorphically-significant flows and demonstrate to the County's satisfaction that the project flows and sediment reductions will not detrimentally affect the receiving water to qualify for the exemption.

STORMWATER QUALITY DETERMINATION

The following questions provide a guide to collecting information relevant to project stormwater quality issues. Please provide the following information in a printed report accompanying this form.

Table 3

	QUESTIONS	COMPLETED	NA
1.	Describe the topography of the project area.	x	
2.	Describe the local land use within the project area and adjacent areas.	x	
3.	Evaluate the presence of dry weather flow.	x	
4.	Determine the receiving waters that may be affected by the project throughout all phases of development through completion (i.e., construction, long-term maintenance and operation).	x	
5.	For the project limits, list the 303(d) impaired receiving water bodies and their constituents of concern.		x
6.	Determine if there are any High Risk Areas (which is defined by the presence of municipal or domestic water supply reservoirs or groundwater percolation facilities) within the project limits.	x	
7.	Determine the Regional Board special requirements, including TMDLs, effluent limits, etc.	x	
8.	Determine the general climate of the project area. Identify annual rainfall and rainfall intensity curves.	x	
9.	Determine the soil classification, permeability, erodibility, and depth to groundwater for Treatment BMP consideration.	x	
10.	Determine contaminated or hazardous soils within the project area.	x	
11.	Determine if this project is within the environmentally sensitive areas as defined on the maps in Appendix A of the *County of San Diego Standard Urban Storm Water Mitigation Plan for Land Development and Public Improvement Projects.*	x	
12.	Determine if this is an emergency project.		x

WATERSHED

Please check the watershed(s) for the project.

☐ San Juan 901	☐ Santa Margarita 902	☐ San Luis Rey 903	☐ Carlsbad 904
☐ San Dieguito 905	☐ Penasquitos 906	☐ San Diego 907	☐ Sweetwater 909
☐ Otay 910	☐ Tijuana 911	☐ Whitewater 719	☐ Clark 720
☐ West Salton 721	☒ Anza Borrego 722	☐ Imperial 723	

Please provide the hydrologic sub-area and number(s)

Number	Name
22.72	Jacumba Valley

Please provide the beneficial uses for Inland Surface Waters and Ground Waters. Beneficial Uses can be obtained from the Water Quality Control Plan for the San Diego Basin, which is available at the Regional Board office or at http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/index.shtml

SURFACE WATERS	Hydrologic Unit Basin Number	MUN	AGR	IND	PROC	GWR	FRESH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Inland Surface Waters																
Carrizo Creek			x			x			x	x		x		x	x	
Ground Waters																
Anza-Borrego hydrologic unit	722.00	x	x	x												

*** Excepted from Municipal**

X Existing Beneficial Use
0 Potential Beneficial Use

POLLUTANTS OF CONCERN

Using Table 4, identify pollutants that are anticipated to be generated from the proposed priority project categories. Pollutants associated with any hazardous material sites that have been remediated or are not threatened by the proposed project are not considered a pollutant of concern.

Table 4. Anticipated and Potential Pollutants Generated by Land Use Type

	General Pollutant Categories								
PDP Categories	Sediments	Nutrients	Heavy Metals	Organic Compounds	Trash & Debris	Oxygen Demanding Substances	Oil & Grease	Bacteria & Viruses	Pesticides
Detached Residential Development	X	X			X	X	X	X	X
Attached Residential Development	X	X			X	P(1)	P(2)	P	X
Commercial Development 1 acre or greater	P(1)	P(1)		P(2)	X	P(5)	X	P(3)	P(5)
Heavy industry /industrial development	X		X	X	X	X	X		
Automotive Repair Shops			X	X(4)(5)	X		X		
Restaurants					X	X	X	X	
Hillside Development >5,000 ft^2	X	X			X	X	X		X
Parking Lots	P(1)	P(1)	X		X	P(1)	X		P(1)
Retail Gasoline Outlets			X	X	X	X	X		
Streets, Highways & Freeways	X	P(1)	X	X(4)	X	P(5)	X		

X = anticipated
P = potential
(1) A potential pollutant if landscaping exists on-site.
(2) A potential pollutant if the project includes uncovered parking areas.
(3) A potential pollutant if land use involves food or animal waste products.
(4) Including petroleum hydrocarbons.
(5) Including solvents.

Note: If other monitoring data that is relevant to the project is available. Please include as Attachment C.

CONSTRUCTION BMPs

Please check the construction BMPs that may be implemented during construction of the project. The applicant will be responsible for the placement and maintenance of the BMPs incorporated into the final project design.

- [x] Silt Fence
- [ ] Fiber Rolls
- [x] Street Sweeping and Vacuuming
- [ ] Storm Drain Inlet Protection
- [x] Stockpile Management
- [ ] Solid Waste Management
- [x] Stabilized Construction Entrance/Exit
- [ ] Dewatering Operations
- [ ] Vehicle and Equipment Maintenance
- [ ] Desilting Basin
- [ ] Gravel Bag Berm
- [x] Sandbag Barrier
- [x] Material Delivery and Storage
- [x] Spill Prevention and Control
- [ ] Concrete Waste Management
- [ ] Water Conservation Practices
- [ ] Paving and Grinding Operations
- [ ] Any minor slopes created incidental to construction and not subject to a major or minor grading permit shall be protected by covering with plastic or tarp prior to a rain event, and shall have vegetative cover reestablished within 180 days of completion of the slope and prior to final building approval.

EXCEPTIONAL THREAT TO WATER QUALITY DETERMINATION

Complete the checklist below to determine if a proposed project will pose an "exceptional threat to water quality," and therefore require Advanced Treatment Best Management Practices.

Table 5

No.	CRITERIA	YES	NO	INFORMATION
1.	Is all or part of the proposed project site within 200 feet of waters named on the Clean Water Act (CWA) Section 303(d) list of Water Quality Limited Segments as impaired for sedimentation and/or turbidity? Current 303d list may be obtained from the following site: http://www.swrcb.ca.gov/tmdl/docs/303dlists2006/approved/r9_06_303d_reqtmdls.pdf		x	If YES, continue to 2. If NO, go to 5.
2.	Will the project disturb more than 5 acres, including all phases of the development?			If YES, continue to 3. If NO, go to 5.
3.	Will the project disturb slopes that are steeper than 4:1 (horizontal: vertical) with at least 10 feet of relief, and that drain toward the 303(d) listed receiving water for sedimentation and/or turbidity?			If YES, continue to 4. If NO, go to 5.
4.	Will the project disturb soils with a predominance of USDA-NRCS Erosion factors k_f greater than or equal to 0.4?			If YES, continue to 6. If NO, go to 5.
5.	Project is not required to use Advanced Treatment BMPs.		x	Document for Project Files by referencing this checklist.
6.	Project poses an "exceptional threat to water quality" and is required to use Advanced Treatment BMPs.		x	Advanced Treatment BMPs must be consistent with WPO section 67.811(b)(20)(D) performance criteria

Exemption potentially available for projects that require advanced treatment:
Project proponent may perform a Revised Universal Soil Loss Equation, Version 2 (RUSLE 2), Modified Universal Soil Loss Equation (MUSLE), or similar analysis that shows to the County official's satisfaction that advanced treatment is not required

Now that the need for treatment BMPs has been determined, other information is needed to complete the SWMP.

SITE DESIGN

To minimize stormwater impacts, site design measures must be addressed. The following checklist provides options for avoiding or reducing potential impacts during project planning. If YES is checked, it is assumed that the measure was used for this project.

Table 6

	OPTIONS		YES	NO	N/A
1.	Has the project been located and road improvements aligned to avoid or minimize impacts to receiving waters or to increase the preservation of critical (or problematic) areas such as floodplains, steep slopes, wetlands, and areas with erosive or unstable soil conditions?		x		
2.	Is the project designed to minimize impervious footprint?		x		
3.	Is the project conserving natural areas where feasible?		x		
4.	Where landscape is proposed, are rooftops, impervious sidewalks, walkways, trails and patios be drained into adjacent landscaping?				x
5.	For roadway projects, are structures and bridges be designed or located to reduce work in live streams and minimize construction impacts?				x
6.	Can any of the following methods be utilized to minimize erosion from slopes:				
	6.a.	Disturbing existing slopes only when necessary?	x		
	6.b.	Minimize cut and fill areas to reduce slope lengths?	x		
	6.c.	Incorporating retaining walls to reduce steepness of slopes or to shorten slopes?		x	
	6.d.	Providing benches or terraces on high cut and fill slopes to reduce concentration of flows?		x	
	6.e.	Rounding and shaping slopes to reduce concentrated flow?		x	
	6.f.	Collecting concentrated flows in stabilized drains and channels?		x	

LOW IMPACT DEVELOPMENT (LID)

Each numbered item below is a LID requirement of the WPO. Please check the box(s) under each number that best describes the Low Impact Development BMP(s) selected for this project.

Table 7

1. Conserve natural Areas, Soils, and Vegetation-County LID Handbook 2.2.1
☒ Preserve well draining soils (Type A or B)
☐ Preserve Significant Trees
☐ Other. Description:
☐ 1. Not feasible. State Reason:
2. Minimize Disturbance to Natural Drainages-County LID Handbook 2.2.2
☐ Set-back development envelope from drainages
Restrict heavy construction equipment access to planned green/open space areas
☒ Other. Description: Transmission line poles will not be placed in any natural drainages.
☐ 2. Not feasible. State Reason:
3. Minimize and Disconnect Impervious Surfaces (see 5) -County LID Handbook 2.2.3
☐ Clustered Lot Design
☐ Items checked in 5?
☒ Other. Description: Impervious surfaces at tower locations will not be connected.
☐ 3. Not feasible. State Reason:
4. Minimize Soil Compaction-County LID Handbook 2.2.4
Restrict heavy construction equipment access to planned green/open space areas
☐ Re-till soils compacted by construction vehicles/equipment
Collect & re-use upper soil layers of development site containing organic materials
☒ Other. Description: Heavy construction equipment will only be used when necessary within the proposed right-of-way.
4. Not feasible. State Reason:
5. Drain Runoff from Impervious Surfaces to Pervious Areas-County LID Handbook 2.2.5

LID Street & Road Design
☐ Curb-cuts to landscaping
☒ Rural Swales
☐ Concave Median
☐ Cul-de-sac Landscaping Design
☐ Other. Description:
LID Parking Lot Design
☐ Permeable Pavements
☐ Curb-cuts to landscaping
☐ Other. Description:
LID Driveway, Sidewalk, Bike-path Design
☐ Permeable Pavements
☐ Pitch pavements toward landscaping
☐ Other. Description:
LID Building Design
☐ Cisterns & Rain Barrels
☐ Downspout to swale
☐ Vegetated Roofs
☐ Other. Description:
LID Landscaping Design
☐ Soil Amendments
☐ Reuse of Native Soils
☐ Smart Irrigation Systems
☐ Street Trees
☐ Other. Description:
☐ 5. Not feasible. State Reason:

CHANNELS & DRAINAGES

Complete the following checklist to determine if the project includes work in channels.

Table 8

No.	CRITERIA	YES	NO	N/A	COMMENTS
1.	Will the project include work in channels?		x		If YES go to 2 If NO go to 13.
2.	Will the project increase velocity or volume of downstream flow?				If YES go to 6.
3.	Will the project discharge to unlined channels?				If YES go to. 6.
4.	Will the project increase potential sediment load of downstream flow?				If YES go to 6.
5.	Will the project encroach, cross, realign, or cause other hydraulic changes to a stream that may affect downstream channel stability?				If YES go to 8.
6.	Review channel lining materials and design for stream bank erosion.				Continue to 7.
7.	Consider channel erosion control measures within the project limits as well as downstream. Consider scour velocity.				Continue to 8.
8.	Include, where appropriate, energy dissipation devices at culverts.				Continue to 9.
9.	Ensure all transitions between culvert outlets/headwalls/wingwalls and channels are smooth to reduce turbulence and scour.				Continue to 10.
10.	Include, if appropriate, detention facilities to reduce peak discharges.				Continue to 11.
11.	"Hardening" natural downstream areas to prevent erosion is not an acceptable technique for protecting channel slopes, unless pre-development conditions are determined to be so erosive that hardening would be required even in the absence of the proposed development.				Continue to 12.
12.	Provide other design principles that are comparable and equally effective.				Continue to 13.
13.	End				

SOURCE CONTROL

Please complete the following checklist for Source Control BMPs. If the BMP is not applicable for this project, then check N/A only at the main category.

Table 9

BMP			YES	NO	N/A
1.	**Provide Storm Drain System Stenciling and Signage**				X
	1.a.	All storm drain inlets and catch basins within the project area shall have a stencil or tile placed with prohibitive language (such as: "NO DUMPING – DRAINS TO _____") and/or graphical icons to discourage illegal dumping.			
	1.b.	Signs and prohibitive language and/or graphical icons, which prohibit illegal dumping, must be posted at public access points along channels and creeks within the project area.			
2.	**Design Outdoors Material Storage Areas to Reduce Pollution Introduction**				
	2.a.	This is a detached single-family residential project. Therefore, personal storage areas are exempt from this requirement.		X	
	2.b.	Hazardous materials with the potential to contaminate urban runoff shall either be: (1) placed in an enclosure such as, but not limited to, a cabinet, shed, or similar structure that prevents contact with runoff or spillage to the storm water conveyance system; or (2) protected by secondary containment structures such as berms, dikes, or curbs.		X	
	2.c.	The storage area shall be paved and sufficiently impervious to contain leaks and spills.		X	
	2.d.	The storage area shall have a roof or awning to minimize direct precipitation within the secondary containment area.	X		
3.	**Design Trash Storage Areas to Reduce Pollution Introduction**				
	3.a.	Paved with an impervious surface, designed not to allow run-on from adjoining areas, screened or walled to prevent off-site transport of trash; or,		X	
	3.b.	Provide attached lids on all trash containers that exclude rain, or roof or awning to minimize direct precipitation.	X		
4.	**Use Efficient Irrigation Systems & Landscape Design**				
	The following methods to reduce excessive irrigation runoff shall be considered, and incorporated and implemented where determined applicable and feasible.				X
	4.a.	Employing rain shutoff devices to prevent irrigation after precipitation.			
	4.b.	Designing irrigation systems to each landscape area's specific water requirements.			
	4.c.	Using flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.			
	4.d.	Employing other comparable, equally effective, methods to reduce irrigation water runoff.			
5.	**Private Roads**				

	BMP		YES	NO	N/A
	The design of private roadway drainage shall use at least one of the following				
	5.a.	Rural swale system: street sheet flows to vegetated swale or gravel shoulder, curbs at street corners, culverts under driveways and street crossings.	X		
	5.b.	Urban curb/swale system: street slopes to curb, periodic swale inlets drain to vegetated swale/biofilter.		X	
	5.c.	Dual drainage system: First flush captured in street catch basins and discharged to adjacent vegetated swale or gravel shoulder, high flows connect directly to storm water conveyance system.		X	
	5.d.	Other methods that are comparable and equally effective within the project.	X		
6.	**Residential Driveways & Guest Parking**				
	The design of driveways and private residential parking areas shall use one at least of the following features.				X
	6.a.	Design driveways with shared access, flared (single lane at street) or wheelstrips (paving only under tires); or, drain into landscaping prior to discharging to the storm water conveyance system.			
	6.b.	Uncovered temporary or guest parking on private residential lots may be: paved with a permeable surface; or, designed to drain into landscaping prior to discharging to the storm water conveyance system.			
	6.c.	Other features which are comparable and equally effective.			
7.	**Dock Areas**				
	Loading/unloading dock areas shall include the following.				X
	7.a.	Cover loading dock areas, or design drainage to preclude urban run-on and runoff.			
	7.b.	Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.			
	7.c.	Other features which are comparable and equally effective.			
8.	**Maintenance Bays**				
	Maintenance bays shall include the following.				X
	8.a.	Repair/maintenance bays shall be indoors; or, designed to preclude urban run-on and runoff.			
	8.b.	Design a repair/maintenance bay drainage system to capture all wash water, leaks and spills. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm drain system is prohibited. If required by local jurisdiction, obtain an Industrial Waste Discharge Permit.			
	8.c.	Other features which are comparable and equally effective.			
9.	**Vehicle Wash Areas**				
	Priority projects that include areas for washing/steam cleaning of vehicles shall use the following.				X
	9.a.	Self-contained; or covered with a roof or overhang.			
	9.b.	Equipped with a clarifier or other pretreatment facility.			
	9.c.	Properly connected to a sanitary sewer.			
	9.d.	Other features which are comparable and equally effective.			

BMP			YES	NO	N/A
10.	**Outdoor Processing Areas**				
	Outdoor process equipment operations, such as rock grinding or crushing, painting or coating, grinding or sanding, degreasing or parts cleaning, waste piles, and wastewater and solid waste treatment and disposal, and other operations determined to be a potential threat to water quality by the County shall adhere to the following requirements.				X
	10.a.	Cover or enclose areas that would be the most significant source of pollutants; or, slope the area toward a dead-end sump; or, discharge to the sanitary sewer system following appropriate treatment in accordance with conditions established by the applicable sewer agency.			
	10.b.	Grade or berm area to prevent run-on from surrounding areas.			
	10.c.	Installation of storm drains in areas of equipment repair is prohibited.			
	10.d.	Other features which are comparable or equally effective.			
11.	**Equipment Wash Areas**				
	Outdoor equipment/accessory washing and steam cleaning activities shall be.				X
	11.a.	Be self-contained; or covered with a roof or overhang.			
	11.b.	Be equipped with a clarifier, grease trap or other pretreatment facility, as appropriate			
	11.c.	Be properly connected to a sanitary sewer.			
	11.d.	Other features which are comparable or equally effective.			
12.	**Parking Areas**				
	The following design concepts shall be considered, and incorporated and implemented where determined applicable and feasible by the County.				X
	12.a.	Where landscaping is proposed in parking areas, incorporate landscape areas into the drainage design.			
	12.b.	Overflow parking (parking stalls provided in excess of the County's minimum parking requirements) may be constructed with permeable paving.			
	12.c.	Other design concepts that are comparable and equally effective.			
13.	**Fueling Area**				
	Non-retail fuel dispensing areas shall contain the following.				X
	13.a.	Overhanging roof structure or canopy. The cover's minimum dimensions must be equal to or greater than the area within the grade break. The cover must not drain onto the fuel dispensing area and the downspouts must be routed to prevent drainage across the fueling area. The fueling area shall drain to the project's treatment control BMP(s) prior to discharging to the storm water conveyance system.			
	13.b.	Paved with Portland cement concrete (or equivalent smooth impervious surface). The use of asphalt concrete shall be prohibited.			
	13.c.	Have an appropriate slope to prevent ponding, and must be separated from the rest of the site by a grade break that prevents run-on of urban runoff.			

BMP			YES	NO	N/A
	13.d.	At a minimum, the concrete fuel dispensing area must extend 6.5 feet (2.0 meters) from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus 1 foot (0.3 meter), whichever is less.			

Please list other project specific Source Control BMPs in the following box. Write **N/A** if there are none.

N/A

TREATMENT CONTROL

To select a structural treatment BMP using Treatment Control BMP Selection Matrix (Table 10), each priority project shall compare the list of pollutants for which the downstream receiving waters are impaired (if any), with the pollutants anticipated to be generated by the project (as identified in Table 4). Any pollutants identified by Table 4, which are also causing a Clean Water Act section 303(d) impairment of the receiving waters of the project, shall be considered primary pollutants of concern. Priority projects that are anticipated to generate a primary pollutant of concern shall select a single or combination of stormwater BMPs from Table 10, which **maximizes pollutant removal** for the particular primary pollutant(s) of concern.

Priority development projects that are **not** anticipated to generate a pollutant for which the receiving water is CWA 303(d) impaired shall select a single or combination of stormwater BMPs from Table 10, which are effective for pollutant removal of the identified secondary pollutants of concern, consistent with the "maximum extent practicable" standard.

Table 10. Treatment Control BMP Selection Matrix

Pollutants of Concern	Bioretention Facilities (LID)*	Settling Basins (Dry Ponds)	Wet Ponds and Wetlands	Infiltration Facilities or Practices (LID)*	Media Filters	High-rate biofilters	High-rate media filters	Trash Racks & Hydro -dynamic Devices
Coarse Sediment and Trash	High	High	High	High	High	High	High	High
Pollutants that tend to associate with fine particles during treatment	High	High	High	High	High	Medium	Medium	Low
Pollutants that tend to be dissolved following treatment	Medium	Low	Medium	High	Low	Low	Low	Low

*Additional information is available in the County of San Diego LID Handbook.

NOTES ON POLLUTANTS OF CONCERN:
In Table 11, Pollutants of Concern are grouped as gross pollutants, pollutants that tend to associate with fine particles, and pollutants that remain dissolved.

Table 11

Pollutant	Coarse Sediment and Trash	Pollutants that tend to associate with fine particles during treatment	Pollutants that tend to be dissolved following treatment
Sediment	X	X	
Nutrients		X	X
Heavy Metals		X	
Organic Compounds		X	
Trash & Debris	X		
Oxygen Demanding		X	
Bacteria		X	
Oil & Grease		X	
Pesticides		X	

A Treatment BMP must address runoff from developed areas. Please provide the post-construction water quality treatment volume or flow values for the selected project Treatment BMP(s). Guidelines for design calculations are located in Chapter 5, Section 4.3, Principle 8 of the County SUSMP. Label outfalls on the BMP map. The Water Quality peak rate of discharge flow (Q_{WQ}) and the Water Quality storage volume (V_{WQ}) is dependent on the type of treatment BMP selected for the project.

Outfall	Tributary Area (acres)	Q_{WQ} (cfs)	V_{WQ} (ft^3)

Please check the box(s) that best describes the Treatment BMP(s) selected for this project.

Biofilters
□ Bioretention swale
□ Vegetated filter strip
□ Stormwater Planter Box (open-bottomed)
□ Stormwater Flow-Through Planter (sealed bottom)
□ Bioretention Area
□ Vegetated Roofs/Modules/Walls
Detention Basins
□ Extended/dry detention basin with grass/vegetated lining
□ Extended/dry detention basin with impervious lining
Infiltration Basins
□ Infiltration basin
□ Infiltration trench
□ Dry well
□ Permeable Paving
□ Gravel
□ Permeable asphalt
□ Pervious concrete
□ Unit pavers, ungrouted, set on sand or gravel
□ Subsurface reservoir bed
Wet Ponds or Wetlands
□ Wet pond/basin (permanent pool)
□ Constructed wetland
Filtration
□ Media filtration
□ Sand filtration
Hydrodynamic Separator Systems
□ Swirl Concentrator
□ Cyclone Separator
Trash Racks and Screens

Include Treatment Datasheet as Attachment E. The datasheet should include the following:	**COMPLETED**	**NO**
1. Description of how treatment BMP was designed. Provide a description for each type of treatment BMP.		
2. Engineering calculations for the BMP(s)		

Please describe why the selected treatment BMP(s) was selected for this project. For projects utilizing a low performing BMP, please provide a detailed explanation.

No treatment BMPs were selected for this Project.

MAINTENANCE

Please check the box that best describes the maintenance mechanism(s) for this project. Guidelines for each category are located in Chapter 5, Section 5.2 of the County SUSMP.

CATEGORY	SELECTED	
	YES	NO
First	X	
Second[1]		X
Third[1]		X
Fourth		X

Note:
1. Projects in Category 2 or 3 may choose to establish or be included in a Stormwater Maintenance Assessment District for the long-term maintenance of treatment BMPs.

ATTACHMENTS

Please include the following attachments.

ATTACHMENT		COMPLETED	N/A
A	Project Location Map	X	
B	Site Map	X	
C	Relevant Monitoring Data		X
D	LID and Treatment BMP Location Map		X
E	Treatment BMP Datasheets		X
F	Operation and Maintenance Program for Treatment BMPs		X
G	Fiscal Resources		X
H	Certification Sheet	X	
I	Addendum		X

Note: Attachments A and B may be combined.