Drainage, Erosion, and Sediment Control Plan

San Gabriel Generating Station

Rancho Cucamonga, California
(07-AFC-2)

Submitted to the:
California Energy Commission

Submitted by:
San Gabriel Power Generation, LLC

With Assistance by:
Sargent & Lundy LLC

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1.0 Introduction

San Gabriel Power Generation, LLC (SGPG) is proposing to install a new natural gas-fired combined cycle power plant with an average annual output rating of 698 megawatts (MW) in Rancho Cucamonga, California. The proposed project site is approximately one mile east of Interstate 15 (I-15) and 1.5 miles north of Interstate 10 (I-10) as shown in the Vicinity Map provided as Drawing No. DESCP-001. Throughout this document, the proposed combined cycle project is referred to as the San Gabriel Generating Station (SGGS). Commercial operation of the plant is scheduled for July 2010.

This Preliminary Draft Drainage, Erosion, and Sediment Control Plan (DESCP) has been prepared to comply with the California Energy Commission (CEC) requirements for the proposed SGGS project (07-AFC-2). The DESCP identifies potential impacts and ensures protection of water quality and soil resources for the SGGS site and all linear facilities for both the construction and operational phases of the project. This Preliminary Draft DESCP has been prepared in response to CEC Staff Data Request #33 and includes the use of Best Management Practices (BMPs) and dewatering controls in accordance with applicable local, state and federal regulatory requirements associated with the protection of water quality and soil resources.

This Preliminary Draft DESCP has been prepared in advance of the final construction planning and engineering design, during which the specific details regarding construction, schedule and other aspects of erosion control design will be finalized. The DESCP will be updated and revised as necessary as the project moves from the preliminary to final design phases, on through to construction and operation of the facility. The level of detail in this DESCP is commensurate with the current level of planning for site grading and drainage.

1.1 Project Overview

The proposed SGGS will consist of two combustion turbine generators (CTG) and associated equipment. Except for approximately 200 feet of gas line and 1,100 feet of transmission line, the SGGS will be primarily sited within the existing Etiwanda Generating Station (EGS) property located at 8996 Etiwanda Avenue in Rancho Cucamonga, San Bernardino County, California.

The proposed SGGS will occupy approximately 16.2-acres within the 60-acre EGS property. A portion of the SGGS transmission line and an internal road will also occupy 0.8-acre of property currently owned by Inland Empire Utility Agency (IEUA).

The proposed project will be constructed in the area previously occupied by EGS Units 1 and 2 cooling towers. The existing Units 1 and 2 cooling towers will be demolished before the proposed project construction begins. The EGS site is located on Sections 8

and 17, Township 15, Range 6W, on the Fontana U.S. Geological Survey (USGS) Quadrangle Map TCA 0820.

Areas to be disturbed for this project include the combined cycle area, the parking and laydown areas west of the site, and the adjacent laydown area south of the combined cycle area. Several areas within the EGS property will be used for temporary construction laydown areas. These laydown areas within the EGS property will not be disturbed and will therefore not be discussed further in regard to erosion control features.

The proposed project site is located in the portion of City of Rancho Cucamonga designated for heavy industrial use. The site is part of the city's designated Industrial Area Specific Plan.

1.2 Watercourses and Critical Areas

The proposed project is located within the Chino Groundwater Basin (Chino Basin). The Chino Basin is bounded by the Cucamonga Basin and the San Gabriel Mountains to the north, the Temescal Basin to the south, Chino Hills and Puente Hills to the southwest, San Jose Hills, Pomona and Claremont Basins on the northwest and Rialto-Colton Basin on the east.

The proposed SGGS site is located within the Santa Ana River Watershed. Day Creek, Etiwanda Creek and San Sevaine Creek originate in the San Gabriel Mountains north of the proposed project site. The flow of all three of these creeks is generally from north to south. Day Creek and San Sevaine Creek flows are conveyed through the valley floor by way of concrete flood control channels. Etiwanda Creek currently discharges into Day Creek approximately 4 miles south of the project site at Wineville Basin. Day Creek and San Sevaine Creek flow south and discharge into the Santa Ana River upstream of the Prado Reservoir. The Etiwanda Wash and San Sevaine Channel are located approximately 0.1 mile and 0.5 mile west of the EGS eastern boundary. Surface water features in the vicinity of the proposed project site are shown on Figure 7.14-3 from the April 2007 AFC document.

An unnamed tributary to Day Creek flows through the proposed offsite construction laydown area. This creek originates north of the railroad tracks, generally flows south across the property, and eventually enters a 72-inch diameter culvert south of the laydown area property.

2.0 Drainage

The proposed SGGS site is relatively flat with minimal vegetation and current site drainage patterns consist of sheet flow to the east and southeast corner where surface water discharges in Chadwick Channel. Chadwick Channel drains south to an existing retention basin approximately 1200' south of the construction area.

Chadwick Channel originates at the properties just north of the EGS and crosses the EGS property from north to south. Stormwater runoff from the EGS Property commingles with stormwater runoff flows from offsite northern neighboring counties in Chadwick Channel. EGS does not discharge wastewater into the channel. Stormwater runoff from process areas currently flows directly into the channel. Existing site runoff patterns are shown on Drawing No. DESCP-003.

During initial site construction activities, storm water runoff will be directed through a temporary sediment trap prior to discharging to Chadwick Channel. The temporary sediment trap will be used until a permanent sedimentation/ detention basin can be installed. Once the permanent sedimentation/detention basin is installed, storm water runoff will be directed through the basin and the temporary sediment trap will be removed. Site runoff patterns during construction are shown on Drawing No. DESCP-004.

Upon completion of construction, stormwater will be collected in the site area using catch basins and a storm drain system. The storm drain system will terminate in the sedimentation/detention basin in the far southeastern corner of the plant next to Chadwick Channel. The sedimentation/ detention basin will be designed in accordance with San Bernardino County Detention Basin Design Criteria (no date). A conceptual cross section of the sedimentation/detention basin is shown on Drawing No. DESCP-011.

Stormwater runoff will flow into the basin and be detained. It will then be pumped slowly out of the basin using three 550-gpm pumps and released to Chadwick Channel via a 36-inch diameter reinforced concrete pipe (RCP). This pipe will drain from a second bay downstream of the detention basin. If the basin becomes full, it will overflow a broadcrested spillway into the second bay and flow into Chadwick Channel via the RCP pipe. Erosion protection will be provided where the 36-inch diameter pipe enters the channel. Stormwater collected in curbed areas of the plant will be collected and routed through an oil-water separator. The oil-water separator will discharge to the storm water sewer and be detained in the sedimentation/detention basin. Post development site runoff patterns are shown on Drawing No. DESCP-006.

3.0 Clearing and Grading

The SGGS site is located within an existing industrial use area, almost entirely within the existing EGS property. As such, minimal vegetation will need to be cleared. The cooling towers for Units 1 and 2 will be demolished and nearby vegetation removed before the proposed project construction begins, as part of a separate project to be undertaken by EGS. This clearing and grading work are shown on Drawing No. DESCP-008. The onsite laydown areas will have no change to the surfacing or grading. There will be grading, with some vegetation removed, in the offsite construction laydown/parking area.

3.1 Location of Disposal Areas, Fills or Other Special Areas

No incoming fill/borrow soil material is proposed for this construction project. On-site soil will be regraded to establish proposed final surface elevations. The SGGS project will require the removal and offsite disposal of "soil cement" from the existing tank berm.

3.2 Existing and Proposed Topography

The existing site is relatively flat. Upon completion of the SGGS, surface grading will direct stormwater to catch basins and a storm drain system via overland flow at a minimum slope of 0.5 percent. The main plant complex area will be graded with moderate slopes for effective drainage. Drawings No. DESCP-002 and No. DESCP-005 show existing grading and interim development grading.

3.3 Volumes of Cut and Fill

The following table summarizes the estimated quantities of materials to be excavated and filled for the proposed project site.

Table 1. Earthwork Quantities

Project Element	Process	Volume of Earthwork (Cubic Yards)
Powerblock and Water Treatment	Cut	31,000
Powerblock and Water Treatment	Fill	31,000
Tank Compound	Cut	15,000
Tank Compound	Fill	15,000
Construction Parking and Laydown Area No. 1	Cut	10,000
Construction Parking and Laydown Area No. 1	Fill	10,000

Volume of cut and fill details are provided in Drawing No. DESCP-009. The offsite construction parking and laydown area is located to the west of the EGS property. The construction parking and laydown area can be seen on Drawing No. DESCP-007.

3.4 Gas, Water, and Sewer Pipelines

The proposed SGGS project will include the construction of new pipelines to supply natural gas, water, and sewer connections. The trench excavated for the construction of these pipelines will be refilled. No surplus soil is expected as a result of pipeline connections.

4.0 Project Schedule

Site mobilization/Construction – September 2008

To minimize the potential for erosion and offsite sediment transport. The following implementation schedule will be employed for installation of control features:

- Install construction entrance-tracking control at entrance.-September 2008
- Construct temporary access road. –September 2008
- Install perimeter temporary and permanent security fencing and attach silt fencing as noted on plan.-September 2008
- Install balance of silt fencing noted on plan.-September 2008
- Install Velocity Dissipation Device at outfall into Chadwick Channel.-September 2008
- Regrade and stabilize surface of laydown/parking areas-October 2008
- First install Earth Dikes & Drainage Swales then install ditch check and dams.-October 2008
- Construct sediment/trap and direct runoff from all grading areas to the basin.-October 2008
- Install sediment-trap ditch checks silt fencing or straw bales around inlet catch basins or culverts as they are constructed.-October 2008
- Build containment areas for hazardous material equipment maintenance and fueling and waste handling areas.-October 2008
- Construct permanent sediment/detention basin and divert flow through basin.-October 2008 through December 2008
- Remove/restore sediment trap. Apply aggregate surfacing as soon as practical.-October 2008
- Site preparation: Clearing and grubbing-October 2008
- Install temporary concrete washout-October 2008
- Initial site work and underground piping-September 2008-February 2009
- Rainy season begins – October 2008

- Complete grading- March 2008
- Install heat recovery steam generators, combustion & steam turbines; air cooled condenser, and transformer foundations-November 2008 – July 2009.
- Install HRSG, CT, SS, and ACC- January 2008 – February 2010
- Rainy season ends – April 2009
- Recertify SWPPP and DESCP– July 2009
- Rainy season begins – October 2009
- Remove concrete washout and restore area to original grade. – December 2009
- Remove and regrade hazardous waste and material handling, equipment fueling and maintenance areas. – December 2009
- Complete remaining paving and surfacing – January 2010
- End of construction – February 2010
- Implement operational DESCP BMPs. Remove silt fencing and inlet protection. – March 2010
- Rainy season ends – April 2010

5.0 Best Management Practices

The proposed SGGS project has been designed to impact as small an area as possible at any given time thereby limiting the amount of exposed soils. Construction is expected to proceed in a timely manner to ensure that as little soil as possible is exposed for as short a duration as possible. The following sections present standard construction Best Management Practices (BMPs) to be used for the project. Most of these BMPs are described in the California Storm Water Best Management Practice Handbook (2003) and the Caltrans Storm Water Quality Handbook (2003). These resource handbooks provide comprehensive details on BMP implementation and will be reviewed by managers for all construction contractors that may have an impact on implementation of the DESCP. A drawing showing the location of all BMPs to be used during construction will be developed during the final project design phase.

5.1 General Erosion Control Measures

Erosion control, also referred to as soil stabilization, consists of source control measures that are designed to prevent soil particles from detaching and becoming transported in storm water runoff. Erosion control BMPs protect the soil surface by covering and/or binding soil particles. This project will incorporate erosion control measures required by the contract documents, and other measures selected by the Contractor, DESCP Manager, or Owner. This project will implement the following practices for effective temporary and final erosion control during construction:

1) Apply temporary erosion control to remaining active and non-active areas as required by the California Storm water BMPs Handbook – Construction, and the contract documents. Reapply as necessary to maintain effectiveness.

2) Implement temporary erosion control measures at regular intervals throughout the defined rainy season to achieve and maintain the contract's disturbed soil area requirements. Implement erosion control prior to the defined rainy season.

3) Stabilize non-active areas as soon as feasible after the cessation of construction activities.

4) Control erosion in concentrated flow paths by applying erosion control blankets, erosion control seeding, and lining swales as required in the contract documents.

5) Upon completion of construction, apply permanent erosion control to all remaining disturbed soil areas.

Sufficient erosion control materials will be maintained on-site to allow implementation in conformance with permit requirements. This includes implementation requirements for active areas and non-active areas that require deployment before the onset of rain.

BMPs that will be implemented to control erosion on the construction site are:

- EC-1, Scheduling
- EC-9, Earth Dikes and Drainage Swales
- EC-10, Velocity Dissipation Devices
- EC-12, Stream Bank Stabilization

5.1.1 Temporary Sediment Control

Sediment controls are structural measures that are intended to complement and enhance the selected erosion control measures and reduce sediment discharges from active construction areas. Sediment controls are designed to intercept and settle out soil particles that have been detached and transported by the force of water. This project will incorporate sediment control measures required by the contract documents, and other measures selected by the Contractor, DESCP Manager, or Owner.

Sufficient quantities of temporary sediment control materials will be maintained on-site throughout the duration of the project, to allow implementation of temporary sediment controls in the event of predicted rain, and for rapid response to failures or emergencies, in conformance with other permit requirements and as described in this DESCP. This includes implementation requirements for active areas and non-active areas before the onset of rain.

BMPs that will be implemented to control sediment on the construction site are:

- SE-4, Check Dams

- SE-10, Storm Drain Inlet Protection
- SE-9, Straw Bale Barrier
- SE-1, Silt Fence
- SE-3, Sediment Trap
- EC-9, Earth Dikes & Drainage Swales
- EC-10, Velocity Dissipation Devices

Implementation of Temporary Sediment Controls

- Temporary sediment control BMPs will be deployed according to the schedule shown in Section 4.
- During the rainy season, temporary sediment controls will be implemented at the draining perimeter of disturbed soil areas, at the toe of slopes, at storm drain inlets and at outfall areas at all times.
- During the non-rainy season, temporary sediment controls will be implemented at the draining perimeter of disturbed soil areas and at storm drain downstream from disturbed areas before rain events.
- Silt fences will be deployed along the toe of exterior slopes to filter storm water runoff.
- Storm drain inlet protection will be used at all operational internal inlets to the storm drain system during the rainy season.
- During the non-rainy season, in the event of a predicted storm, the following temporary sediment control materials will be maintained on-site: silt fence materials, sandbags for linear barriers, fiber rolls.

Erosion/ sediment control details are shown on Drawing No.-012 and Drawing No.-013.

5.1.2 BMPs to Reduce Sediment Tracking

Stabilized Construction Entrance/Exit

- A stabilized construction entrance/exit will be constructed and maintained at construction site entrances and exits, equipment yard, PCC batch plants and crushing plants, water filling area for water trucks, and project office location, as shown on Drawing No. DESCP-014.

- The site entrance/exit will be stabilized to reduce tracking of sediment as a result of construction traffic. The entrance will be designated and graded to prevent runoff from leaving the site. Stabilization material will be 3 to 6-inch aggregate. The entrance will be flared where it meets the existing road to provide an adequate turning radius. During dirt-hauling activities that extend over a one-week time period, a site entrance/exit will be installed to reduce tracking of sediment.

Stabilized Construction Roadway

- The construction roadway through the site will also be designated and stabilized to prevent erosion and to control tracking of mud and soil material onto adjacent roads. The roadway will be clearly marked for limited speed to control dust. Stabilization material will be 3 to 6-inch aggregate. A regular maintenance program will be conducted to replace sediment-clogged stabilization material with new stabilization material.

Road Cleaning BMPs – Street Sweeping and Vacuuming

Road sweeping and vacuuming will occur during soil hauling and as necessary to keep street surfaces clear of soil and debris. Washing of sediment tracked onto streets into storm drains will not occur.

The following BMPs have been selected to reduce sediment tracking from the construction site onto private or public roads:

- SE-7, Street Sweeping and Vacuuming- The dirt road adjacent to the construction site's entrances and exits shall be swept as needed to keep the street clean of accumulated sediment.

- SE-1, Silt Fence- The silt fence detains sediment-laden water, promoting sedimentation behind the fence.

- SE-3, Sediment Trap- This acts as a containment area where sediment-laden runoff is temporarily detained under inactive conditions, allowing sediment to settle out or before the runoff is discharged.

- Construct and maintain temporary stone construction entrance to prevent track-out of sediments onto paved roadways.

- During construction, stabilize exposed areas with temporary ground cover (e.g. temporary seeding, mulch, chemical and fabric stabilizers), to protect the soil from erosion until permanent vegetation or other site stabilization features are installed.

- After project is completed, selected areas of the site (e.g., roadways and parking areas) will be paved with bituminous asphalt, concrete, or equivalent.

The remainder of the site (not covered with power plant structures and facilities) will be stabilized with a uniform cover of stone or gravel.

5.1.3 Wind Erosion Control

The following BMPs have been selected to control dust from the construction site:

- WE-1, Wind Erosion Control

- Water will be applied to disturbed soil areas of the project site to control dust and maintain optimum moisture levels for compaction. The water will be applied using water trucks. As shown on the project schedule, project soils will be disturbed and exposed for approximately 20 months. Water applications will be concentrated during the late summer and early fall months and especially during the grading operations.

- BMP WE-1, Wind Erosion Control, and BMP NS-1, Water Conservation Practices, will be implemented to provide dust control and prevent discharges from dust control activities and water supply equipment. Water application rates will be minimized as necessary to prevent runoff and ponding and water equipment leaks will be repaired immediately.

- During windy conditions (forecast or actual wind conditions of approximately 25 mph or greater), dust control will be applied to disturbed areas, including haul roads, to adequately control wind erosion.
- BMP WM-3, Stockpile Management, using silt fences and plastic covers will be implemented to prevent wind dispersal of sediment from stockpiles.

The following BMPs have been selected to control dust from the construction site:

- WE-1, Wind Erosion Control- if soil is observed on public streets, dirt will be cleaned up and water will be applied to the ground surface.

- BMP WE-1, Wind Erosion Control, will be implemented to provide dust control and prevent discharges from dust control activities and water supply equipment. Water application rates will be minimized as necessary to prevent runoff and ponding and water equipment leaks will be repaired immediately.

- During windy conditions (forecast or actual wind conditions of approximately 25 mph or greater), dust control will be applied to disturbed areas, including haul roads, to adequately control wind erosion.

5.1.4 Non-Storm Water Control

The following list indicates the BMPs that have been selected to control non-storm water pollution on the construction site. Non-storm water BMPs to be utilized include:

- NS-1, Water Conservation Practice
- NS-2, Dewatering Operations
- NS-3, Paving and Grinding Operations- See below
- NS-4, Temporary Stream Crossing
- NS-5, Clearwater Diversion
- NS-6, Illicit Connection/Illegal Discharge Detection and Reporting- See below
- NS-8, Vehicle and Equipment Cleaning-See below
- NS-9, Vehicle and Equipment Fueling-See below
- NS-10, Vehicle and Equipment Maintenance-See below
- NS-11, Pile Driving Operations
- NS-12, Concrete Curing
- NS-13, Concrete Finishing
- NS-16, Temporary Batch Plant

Illicit Connection/Illegal Discharge Detection and Reporting

- The Contractor will implement BMP NS-6, Illicit Connection/Illegal Discharge Detection and Reporting throughout the duration of the project.

Paving Operations

- The project will include AC pavement. Paving operations will generally be conducted in January 2010 as shown on the project schedule in Section 4. BMP NS-3, Paving and Grinding Operations, will be implemented to prevent paving materials from being discharged off-site. Covers will be placed over each inlet adjacent to paving operations. The covers will consist of scrap carpeting placed over, and tucked under, each inlet grate. Following paving operations, the area will be swept, inlet covers will be removed, and the inlets will be inspected for paving materials.

Vehicle and Equipment Operations

- Several types of vehicles and equipment will be used on-site throughout the project, including graders, scrapers, excavators, loaders, paving equipment, rollers, trucks and trailers, backhoes, forklifts, generators, compressors, and traffic control equipment. BMPs NS-9, Vehicle and Equipment Fueling, and NS-10, Vehicle and Equipment

Maintenance will be utilized to prevent discharges of fuel and other vehicle fluids. Except for concrete washout, vehicle cleaning will not be performed on-site.

- A paved temporary fueling area will be constructed in one of the onsite construction laydown areas. All self-propelled vehicles will be fueled off-site or at the temporary fueling area. Fuel trucks, each equipped with absorbent spill clean-up materials, will be used for all on-site fueling, whether at the temporary fueling area or for mobile fueling elsewhere on the site. Drip pans will be used for all mobile fueling. The fueling truck will be parked on the paved fueling area for overnight storage.

- Drip pans or absorbent pads will be used for all vehicle and equipment maintenance activities that involve grease, oil, solvents, or other vehicle fluids.

- All vehicle maintenance and mobile fueling operations will be conducted at least 50 feet away from operational inlets and drainage facilities and on a level graded area.

Concrete Saw-cutting

- Saw-cutting operations will not be conducted during or immediately prior to rainfall events.

- BMP WM-08, Concrete Waste Management, will be implemented to contain and dispose of saw-cutting slurries. The slurry will be vacuumed and discharged to the concrete washout facility described above. Dried and cured concrete wastes will be disposed off-site during concrete washout maintenance activities.

5.1.5 Waste Management and Materials Pollution Control

- Waste management consists of implementing procedural and structural BMPs for collecting, handling, storing and disposing of wastes generated by a construction project to prevent the release of waste materials into storm water discharges. Wastes are going to be generated during construction; however, the methods in which the wastes are collected, stored, and removed will determine the success of the waste management activities. Construction site wastes can range from residues collected from non-storm water discharges (i.e. paint removal) to general site litter and debris (i.e. empty marker paint cans).

- Materials pollution control (materials handling) consist of implementing procedural and structural BMPs for handling, storing and using construction materials to prevent the release of those materials into storm water discharges. The amount and type of construction materials to be utilized at the site will be dependent upon the type of construction and the length of the construction period. The materials may be used continuously, such as fuel for vehicles and equipment, or the materials may be used for a discrete period, such as fertilizer for landscaping.

- Waste management and materials pollution control BMPs shall be implemented to minimize storm water contact with construction materials, wastes and service areas, and to prevent materials and wastes from being discharged off-site. The primary mechanisms for storm water contact that shall be addressed are:
  - Direct contact with precipitation
  - Contact with storm water run-on and runoff
  - Wind dispersion of loose materials
  - Direct discharge to the storm drain system through spills or dumping
- Extended contact with some materials and wastes, such as asphalt cold mix and treated wood products can also leach pollutants into storm water.

BMPs that have been selected to handle materials and control construction site wastes. A narrative description of each BMP follows.

- WM-1, Material Delivery and Storage
- WM- 2, Material Use
- WM-3, Stockpile Management
- WM-4, Spill Prevention and Control
- WM-5, Solid Waste Management
- WM-6, Hazardous Waste Management
- WM-8, Concrete Waste Management
- WM-9, Sanitary/Septic Waste Management

- To prevent discharge of chemicals into the storm water system, all delivery, storage, and use of any such substances will be performed in temporary, bermed containment compounds.
- In general, BMPs WM-1 and WM-2 will be implemented to help prevent discharges of construction materials during delivery, storage, and use. The general material storage area will be located in one of the onsite construction laydown areas. A sandbag barrier (BMP SE-8) will be provided around the storage area to prevent run-on from adjacent areas. Two types of storage/containment facilities will be provided within the storage area to minimize storm water contact with construction materials:
  - Watertight shipping containers will be used to store hand tools, small parts, and most construction materials that can be carried by hand, such as paint cans, solvents and grease.

- A separate covered storage/containment facility will be constructed adjacent to the shipping containers to provide storage for larger items such as drums and items shipped or stored on pallets. The containment facility will consist of a raised concrete pad with 6 inch curbed sides. A wood frame and corrugated tin roof and sides will be constructed to protect the facility from sun and rain.

- Very large items, such as light standards, framing materials, and stockpiled lumber, will be stored in the open in the general storage area. Such materials will be elevated with wood blocks to minimize contact with run-on.

- Spill clean-up materials, material safety data sheets, a material inventory, and emergency contact numbers will be maintained and stored in the southern shipping container.

Stockpile Management

- BMPs WM-3, Stockpile Management, will be implemented to reduce or eliminate pollution of storm water from stockpiles of soil and paving materials such as Portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate subbase, pre-mixed aggregate, and asphalt minder (so called "cold mix" asphalt). Stockpiles will be surrounded with sediment controls (SE-5, Fiber Rolls or SE-8, Sandbag Barrier). Plastic covers (EC-7, Geotextiles & Mats), or EC-5, Soil Binders, will be used.

Spill Prevention and Control

- BMP WM-4, Spill Prevention and Control, will be implemented to contain and clean-up spills and prevent material discharges to the storm drain system. Spill prevention is also discussed above in Material Delivery, Storage, and below in the following waste management and equipment maintenance sections.

Waste Management

- BMP WM-5, Solid Waste Management, and BMP WM-6, Hazardous Waste Management will be implemented to minimize storm water contact with waste materials and prevent waste discharges. Solid wastes will be loaded directly into trucks for off-site disposal. When on-site storage is necessary, solid wastes will be stored in watertight dumpsters in the general storage area of one of the onsite construction laydown areas. AC and PCC rubble will be stockpiled in the general storage area and will be surrounded with sediment controls (SE-8, Sandbag Barrier) and covered when necessary. Solid waste, including rubble stockpiles, will be removed and disposed off-site at least weekly. Hazardous wastes will be stored in the shipping containers or covered containment area discussed above for materials storage. Hazardous wastes will be appropriate and clearly marked containers and segregated from other non-waste materials.

Contaminated Soil Management

- If contaminated soils are encountered, the contaminated soils will be contained, covered if stockpiled, and disposed of per WM-7, Contaminated Soil Management, and the contract documents. Employees will be instructed to recognize evidence of contaminated soil, such as buried debris, discolored soil, and unusual odors.

Concrete Residuals and Washout Wastes

- Discharges will consist of rinse water and residual concrete (Portland cement, aggregates, admixture, and water). Estimated pour dates are shown on the project schedule in Section 4. Concrete pours will not be conducted during or immediately prior to rainfall events.

- BMP WM-8, Concrete Waste Management, will be implemented and a below grade concrete washout facility will be constructed and maintained at one of the onsite construction laydown areas. All excess concrete and concrete washout slurries will be discharged to the washout facility for drying. BMP maintenance, waste disposal, and BMP removal will be conducted as described in WM-8. Dried-off concrete will be used as fill material if permitted by the Owner.

- Concrete waste solids/liquids will be removed and disposed of as required by WM-8.

Sanitary and Septic Wastes

- The Contractor will implement BMP WM-9, Sanitary and Septic Waste Management, and portable toilets will be located and maintained at one of the onsite construction laydown areas for the duration of the project. Specific locations will be shown on construction drawings. Weekly maintenance will be provided and wastes will be disposed off-site. The toilets will be located away from concentrated flow paths and traffic flow.

Draft Appendix A

Computational Sheet for Determining Run-on Discharges

Note general drainage is from north to south across the site. A railroad embankment fill and (proposed) retaining wall prevents any site run-on. Therefore, this attachment does not apply to the subject site.

Preliminary Detention Basin Sizing

Pre-Construction Conditions – Time of Concentration

$T_c = T_{c\ overland\ flow} + T_{c\ shallow\ concentrated\ flow}$

$T_{c\ overland\ flow} = 0.007(nL)^{.8} / (P_2)^{.5} (S)^{.4}$ Ref. 1 Eq. 3-3

Where n = 0.011 Manning's Friction Coefficient for bare soil Ref. 1 Table 3-1
L = 300'
P_2 = 2.93"
S = 2%
T_c = hours
T_c = 3.05 minutes

T_c shallow concentrated flow = L/3600*V

Where L = 1,500 ft from post sheet flow max length to site departure
Slope = 1%
V = 1.6 fps Ref. 1 Figure 3-1
T_c = 15.6 minutes

T_c pre-construction = 18.7 minutes

Post-Construction Conditions - Time of Concentration

$T_c = T_c$ overland flow + T_c pipe flow

T_c overland flow = $.007*(nL)^{.8} / (P_2)^{.5} (5)^{.4}$ Ref. 1 Eq. 3-3

Where n = Manning's friction coefficient aggregate surface (Ref. 1, Table 3-1) = 0.011
L = 150 length sheet flow
P_2 = 2.93", 2-year, 24-hour storm (Ref. 5)
S = 0.5% slope of designed grades
T_c = hours
T_c = 3.05 minutes

T_c pipe flow

2000' of pipe flow @ design 2 fps = 16.6 min.

T_c post construction = 19.65 min.

Based on the calculated time of concentrations and associated intensities, it appears that because the existing conditions of uncontrolled flows and the post-construction controlled flows, the intensity values are slightly lower for post-construction.

Applying these intensity values to the rational formula using the calculated 'C' values yields the following:

Peak Q in cfs = CiA where
i = hour intensity
A = acres and
C = runoff coefficient (previously calculated)

A = 18.8 acres
C-pre-construction = 0.3
C-post-construction = 0.6

Using pre-construction T_c of 18.7 min. The following intensities
Can be found from the IDF curves, for selected events:

Year	I (inches/hr)
1	1.05
2	1.35
5	1.68
10	2.1
25	2.65
50	3.15
100	3.65

Using post-construction T_c of 19.65 min the following intensities can be found from the IDF curves for selected events:

Year	I (inches/hr)
1	1.0
2	1.3
5	1.7
10	2.05
25	2.6
50	3.03
100	3.55

Combining these values provides the following results:

Event Frequency Year	Intensities Pre-construction, i	Pre-construction, C	Area	'Q' Peak Discharge(cfs)
1	1.05	.3	18.8	5.92
2	1.35	.3	18.8	7.61
5	1.68	.3	18.8	9.48
10	2.1	.3	18.8	11.84
25	2.65	.3	18.8	14.95
50	3.15	.3	18.8	17.77
100	3.65	.3	18.8	20.58

Event Frequency Year	Intensities Post-construction, i	Post-construction, C	Area	'Q' Peak Discharge(cfs)
1	1.0	.6	16.71	10.03
2	1.3	.6	16.71	13.03
5	1.7	.6	16.71	17.04
10	2.05	.6	16.71	25.07
25	2.6	.6	16.71	26.07
50	3.03	.6	16.71	33.09
100	3.55	.6	16.71	35.59

Based on the guidance documents (Ref. 3) the post-construction 100-year, 24-hour event discharge peak flow rate of 35.59 cfs must be restricted to the 25-year, 24-hour event discharge peak flow rate of 14.946 cfs.

Similarly the 25 year event and 10 year post-construction peak flows of 26.07 cfs and 25.07 cfs must be restricted to the 10 and 5 year pre-construction rates of 11.84 cfs and 9.48 cfs, respectively.

In addition, the 2-year, 24-hour frequency event post-drainage flow rate of 13.03 cfs must be restricted to 90% of the 2-year, 24-hour frequency event of 0.9 * 7.61 = 6.85 cfs.

6.853 cfs = 3075 gpm = maximum discharge for the 2 year event.

Because the proposed pumps (two operating simultaneously) have a maximum discharge of 1,100 gpm, the required maximum discharge will not be exceeded during any events of the regulated.

Therefore the only event that needs to be routed to verify adequacy of the detention pond site is the maximum 100-year, 24-hour storm.

In addition, the 2-year, 2-hr frequency event post-discharge flow rate of 13.03 cfs must be restricted to 90% of the 2-year, 24-hour frequency event of 0.9 x 7.614 = 6.853 cfs.

6.853 cfs = 3075 gpm = maximum discharge for the 2-year event.

Emergency overflow spillway design is required to pass the 1000 year event = $1.35(Q)_{100}$.

35.59 cfs x 1.35 = 48.05 cfs = Q

Using 1' weir height, $L = Q/3(h)^{1.5} = 16'$

The following spreadsheet presents routing the 100-year, 24-hour storm event through the detention basin. Nominal dimension of the basin are 175' x 100' x 13' depth. As required the drawdown time is less than 24 hours after the event ends.

References

1. Urban Hydrology For Small Watersheds, Technical Release Number 55, U.S. Soil Conservation Service, Department of Agriculture, June 1986.

2. Point Precipitation Frequency Estimates From NOAA Atlas 14, Volume 1, Version 4.

3. Detention Basin Design Criteria For San Bernardino County, Amendment Letter, September 4, 1987.

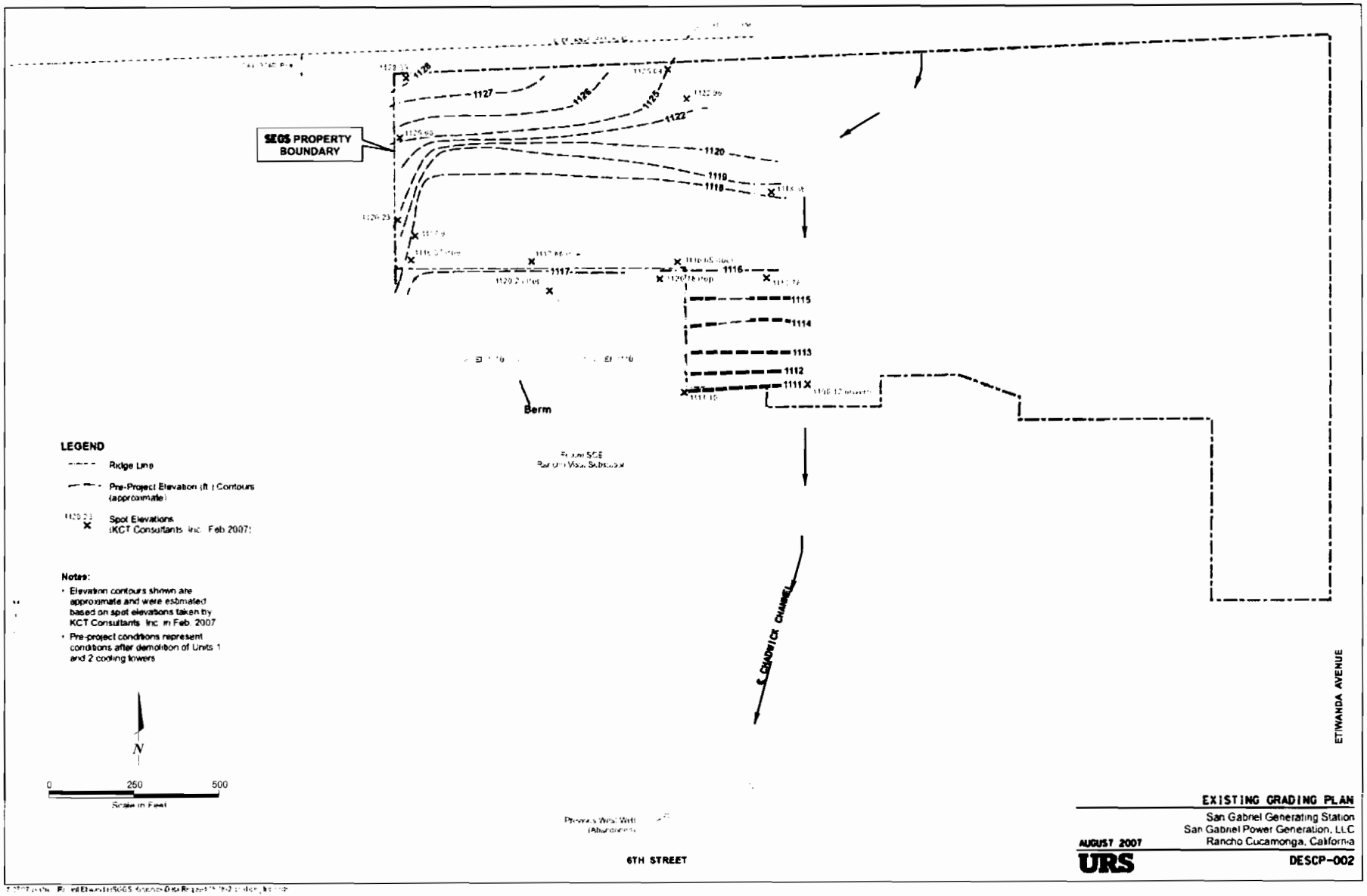
Draft Appendix B

Program for Maintenance, Inspection, and Repair of Construction Site BMPs

The contractor shall use the following guidelines for maintenance, inspection, and repair of BMPs identified in the SWPPP		
BEST MANAGEMENT PRACTICES (BMPs)	**INSPECTION FREQUENCY (all controls)**	**MAINTENANCE/REPAIR PROGRAM**
TEMPORARY EROSION CONTROL BMPs		
Velocity Dissipation Device	Weekly and after storm event > 0.5"	
Earth Dike and Drainage Swales	Weekly and after storm events > 0.5"	■ Repair as needed
TEMPORARY SEDIMENT CONTROL BMPs		
Silt Fencing	Weekly and after storm events > 0.5"	■ Reinstall if collapsed ■ Remove accumulated sediment
Ditch Checks/Dams (Rock, straw or silt fence)	Weekly and after storm events > 0.5"	■ Remove accumulated sediment
Sediment Traps	Weekly	■ Remove accumulated sediment
WIND EROSION CONTROL BMPs		
Water Application	Daily as needed	■ As needed
TRACKING CONTROL BMPs		
Construction Entrance	Weekly	■ Remove accumulated sediment
Public Street Sweeping	Daily	■ Sweep as required
Construction Road	Weekly	■ Remove accumulated sediment

The contractor shall use the following guidelines for maintenance, inspection, and repair of BMPs identified in the SWPPP		
BEST MANAGEMENT PRACTICES (BMPs)	**INSPECTION FREQUENCY (all controls)**	**MAINTENANCE/REPAIR PROGRAM**
NON-STORM WATER MANAGEMENT BMPs		
Water Conservation Practices	On-going	■ Reduce & control water use.
Dewatering Operations	Daily during dewatering	■ Obtain permit if necessary, direct water to sediment basin, remove sediment as needed.
Paving & Grinding	On-going during paving	■ During paving & grinding, directs potential surface runoff to sediment basins. ■ Inspect for erosion, repair as needed.
Temporary Stream Crossings	Weekly & before/after storm events > 0.5"	■ Inspect for erosion, repair as needed.
Clearwater Diversion	Weekly & before/after storm events > 0.5"	■ Terminate any inappropriate observed discharges
Illicit Discharge	On-going	■ Perform activities is contained areas
Vehicle & Equipment Cleaning/Fueling	On-going and weekly & before/after storm events > 0.5"	■ Repair containment berms as needed clean spill as observed.
Vehicle & Equipment Maintenance	On-going and weekly & before/after storm events > 0.5"	■ Contain and remediate any observed spills/leaks
Pile Driving Operations	Ongoing & daily	■ Contain any runoff if rain event occurs during/after curing operation.
Concrete Curing	During and at conclusion of each concrete pour	■ Maintain containment of solids & liquids associated with concrete finishing
Concrete Finishing	During and after each concrete finishing activity	
Material Delivery & Storage	At each delivery weekly & before/after storm events > 0.5"	■ Store in contained area maintain berm
Material Use	During each use weekly before/after storm events > 0.5"	■ Use materials in contained areas maintain them
Stockpile Management	During placement weekly & before/after storm event > 0.5"	■ Repair silt fence & cover contain runoff
Spill Prevention & Control	On-going	■ Implement SPCC plan

The contractor shall use the following guidelines for maintenance, inspection, and repair of BMPs identified in the SWPPP		
BEST MANAGEMENT PRACTICES (BMPs)	**INSPECTION FREQUENCY (all controls)**	**MAINTENANCE/REPAIR PROGRAM**
WASTE MANAGEMENT AND MATERIALS POLLUTION CONTROL BMPs		
Solid Waste Management	On-going & weekly & before/after storm events > 0.5"	■ Place observed trash in appropriate containers, repair containment berm as needed.
Hazardous Waste Management	On-going & weekly & before/after storm events > 0.5"	■ Place hazardous waste in contained area, visual observation, and repair/remediate as needed.
Contaminated Soil Management	On-going & weekly & before/after storm events > 0.5"	■ Contain soil per remediation plan, repair containment as needed.
Concrete Waste Management	On-going & weekly during concrete pours	■ Direct run off to bermed area, repair berm as needed.
Sanitary Waste Management	As needed	■ Periodically observe level in portable waste reservoirs. Call for pump out as needed to prevent overflows.



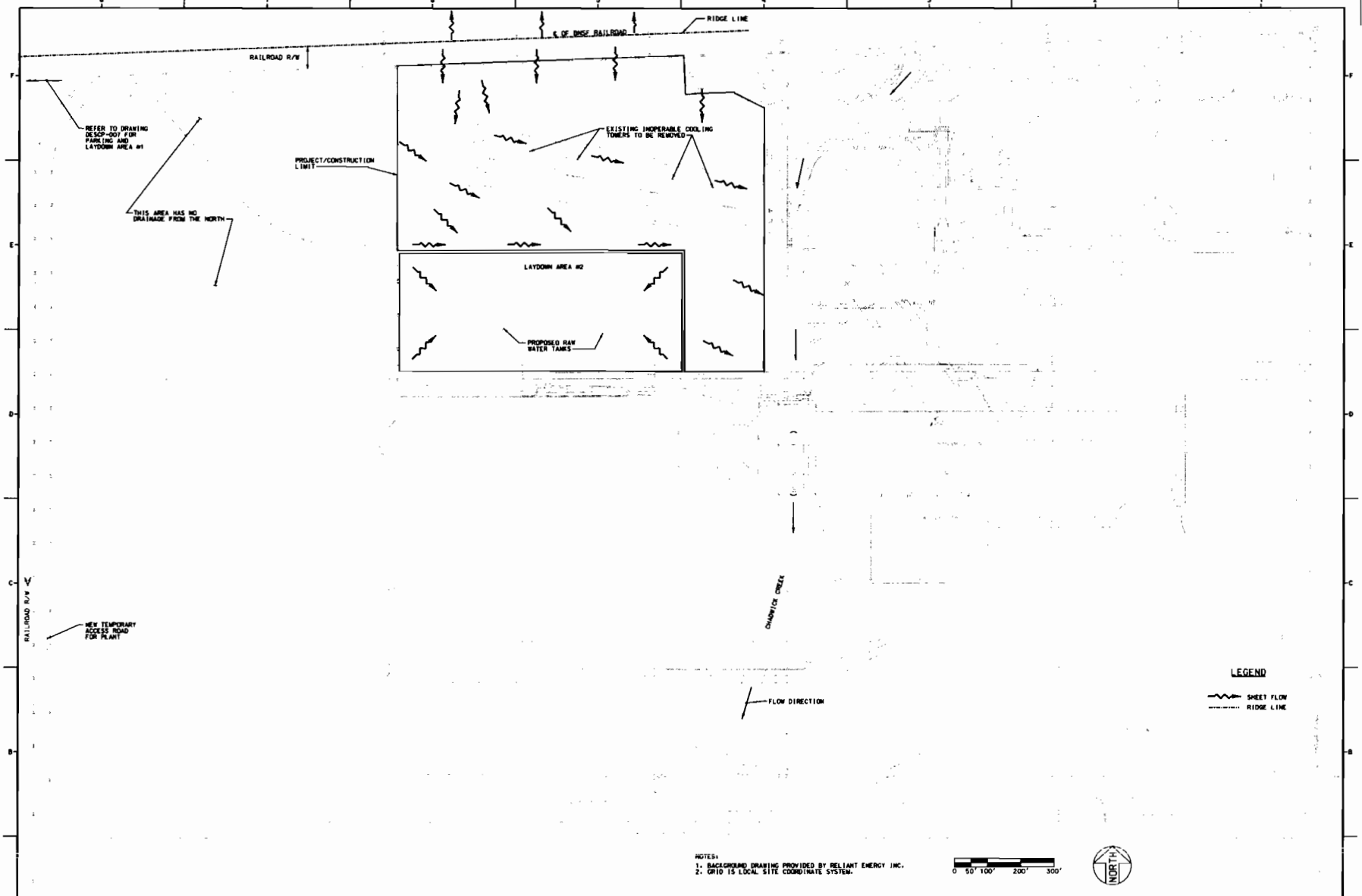
EXISTING GRADING PLAN

San Gabriel Generating Station
San Gabriel Power Generation, LLC
Rancho Cucamonga, California

AUGUST 2007

URS

DESCP-002



DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
0	08-16-2007	A. SLACH	R. COOK		CLIENT REVIEW

SCALE: 1"=100'

PROJECT NUMBER: 11962-003

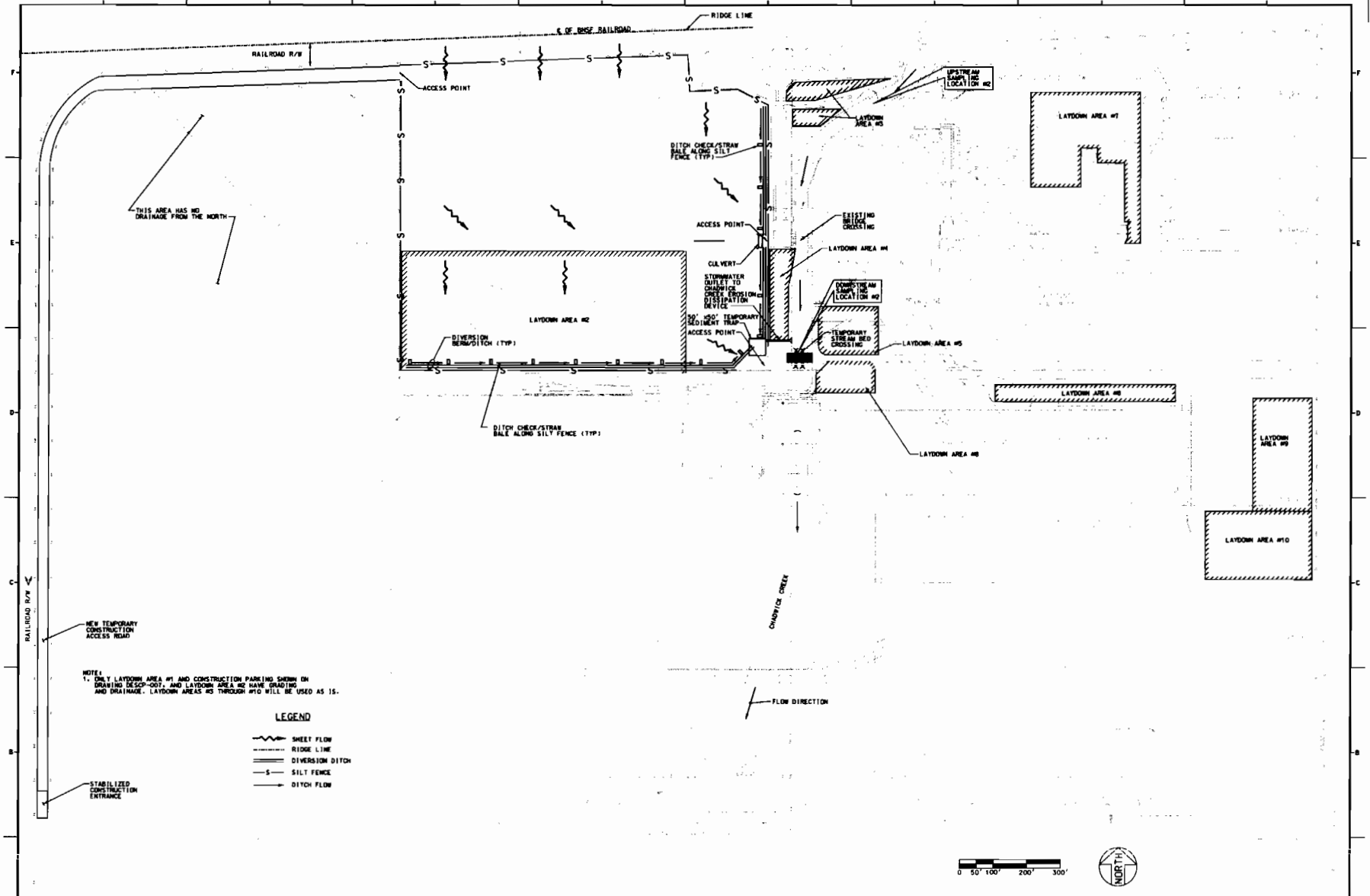
SITE RUNOFF PATTERNS

EXISTING CONDITIONS
COMBINED CYCLE PLANT
SAN GABRIEL GENERATING STATION
SAN GABRIEL POWER GENERATION, LLC
RANCHO CUCAMONGA, CALIFORNIA

Sargent & Lundy

DRAWING NO. DESCP-003 REV. 0

SHEET OF



DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
0	08-16-2007	ALS	RON COOK		CLIENT REVIEW

SCALE: 1"=100'

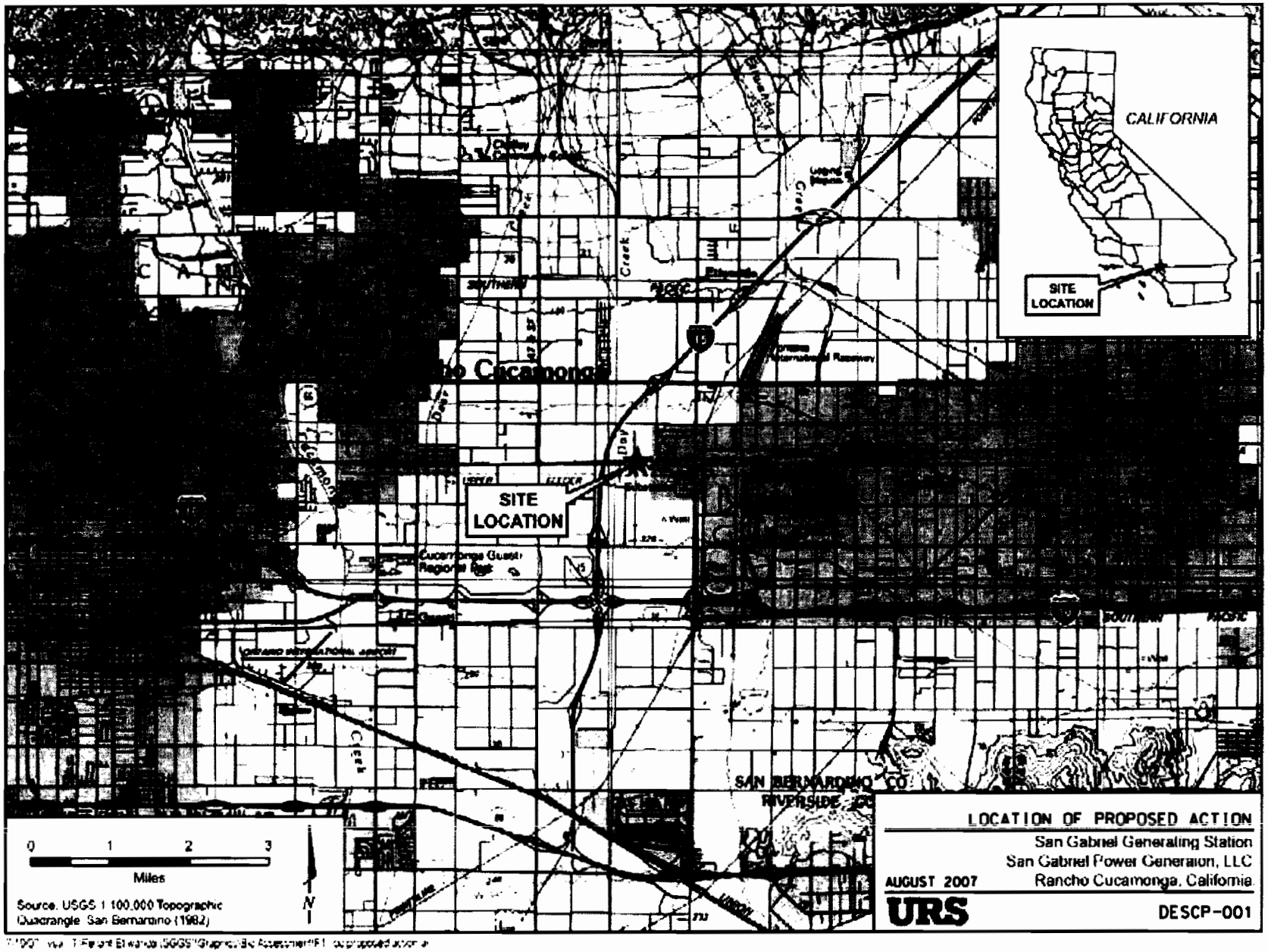
PROJECT NUMBER: 11962-003

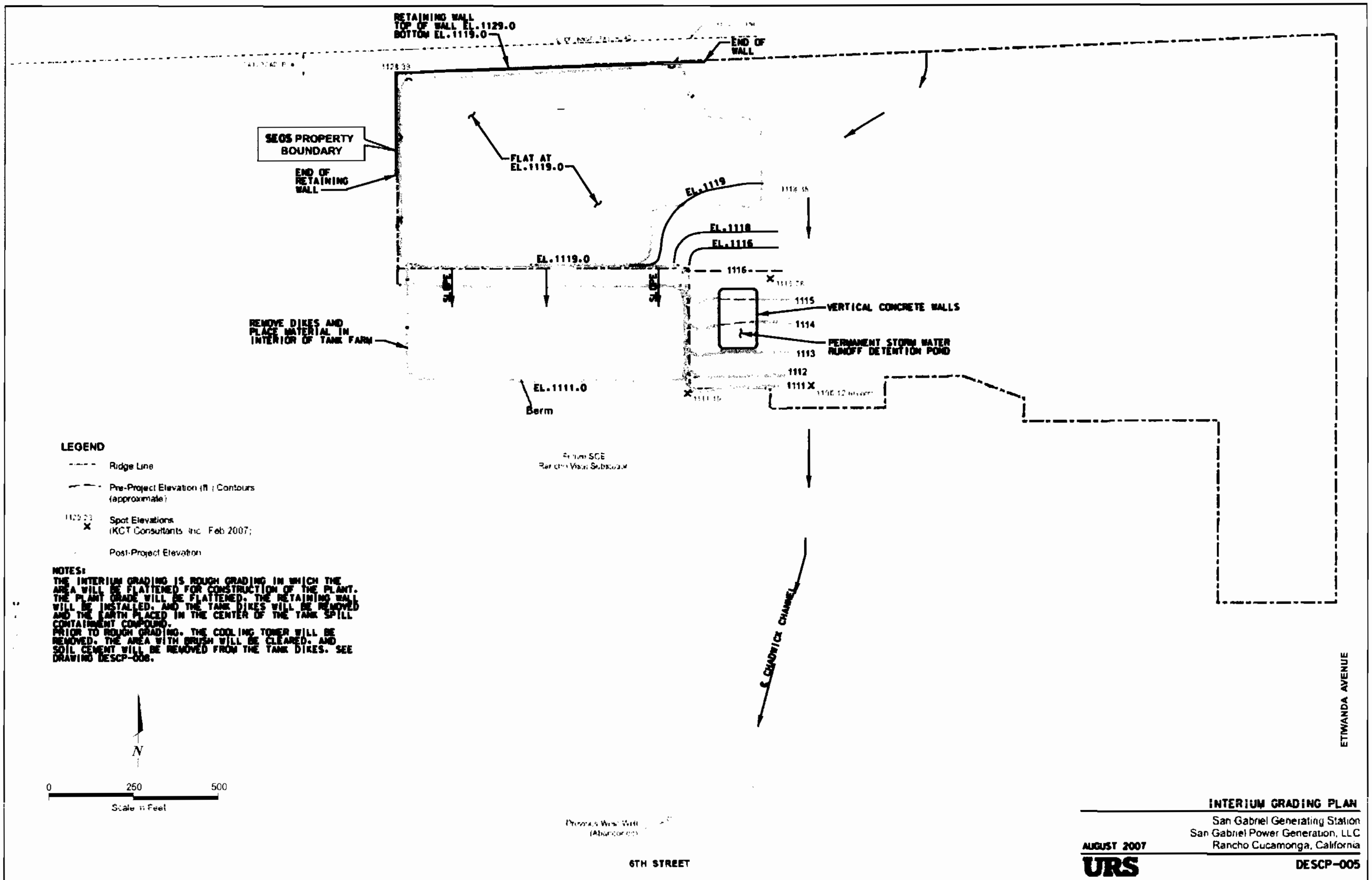
SITE RUNOFF PATTERNS
DURING CONSTRUCTION
COMBINED CYCLE PLANT
SAN GABRIEL GENERATING STATION
SAN GABRIEL POWER GENERATION, LLC
RANCHO CUCAMONGA, CALIFORNIA

Bergelt & Landy

DRAWING NO. DESCP-004 REV. 0

SHEET OF


CALIFORNIA
SITE LOCATION
SITE LOCATION
0 1 2 3
Miles
N
Source: USGS 1:100,000 Topographic Quadrangle San Bernardino (1982)
LOCATION OF PROPOSED ACTION
San Gabriel Generating Station
San Gabriel Power Generation, LLC
AUGUST 2007
Rancho Cucamonga, California
URS
DESCP-001



LEGEND

- Ridge Line
- Pre-Project Elevation (ft) Contours (approximate)
- 1129.23 × Spot Elevations (KCT Consultants Inc. Feb 2007)
- Post-Project Elevation

NOTES:

THE INTERIUM GRADING IS ROUGH GRADING IN WHICH THE AREA WILL BE FLATTENED FOR CONSTRUCTION OF THE PLANT. THE PLANT GRADE WILL BE FLATTENED. THE RETAINING WALL WILL BE INSTALLED, AND THE TANK DIKES WILL BE REMOVED AND THE EARTH PLACED IN THE CENTER OF THE TANK SPILL CONTAINMENT COMPOUND.

PRIOR TO ROUGH GRADING, THE COOLING TOWER WILL BE REMOVED. THE AREA WITH BRUSH WILL BE CLEARED, AND SOIL CEMENT WILL BE REMOVED FROM THE TANK DIKES. SEE DRAWING DESCP-006.

N

0 250 500

Scale in Feet

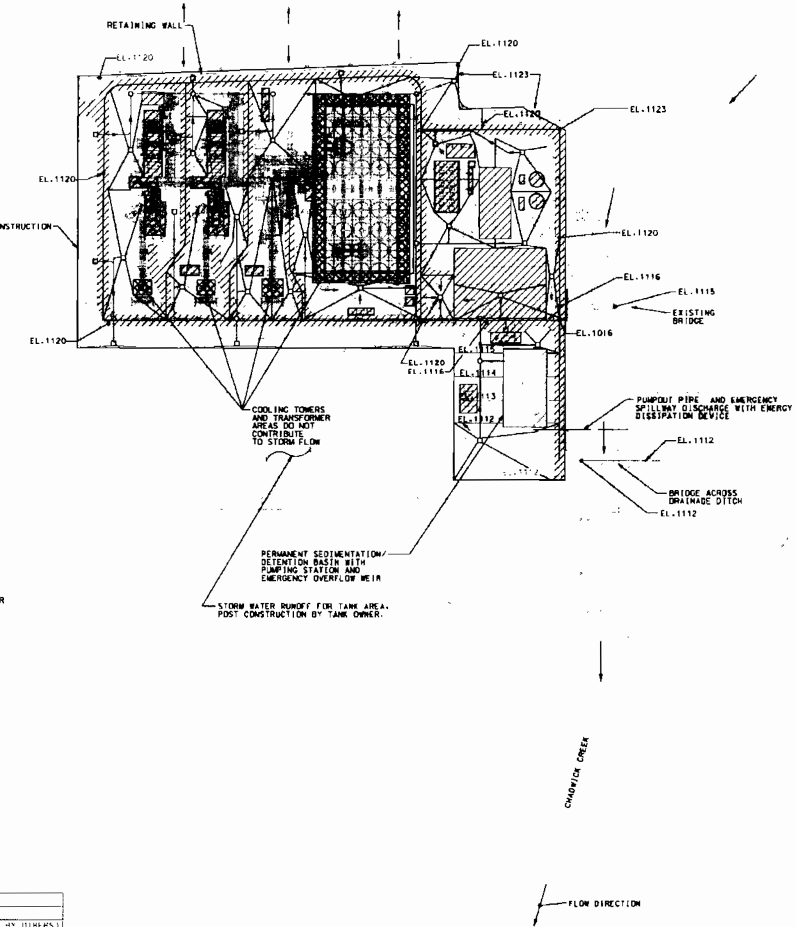
INTERIUM GRADING PLAN

San Gabriel Generating Station
San Gabriel Power Generation, LLC
Rancho Cucamonga, California

AUGUST 2007

URS

DESCP-005

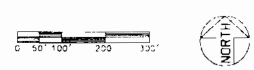


NOTE:
1. THE STORM WATER SEWER SYSTEM DRAINS THE ENTIRE PLANT AREA INTO THE RUNOFF DETENTION POND. SEE DRAWING DESCP-011 FOR THE DESIGN OF THE POND. THE POND IS DESIGNED TO CAPTURE THE 100-YEAR, 24-HOUR RUNOFF. PUMPS IN THE POND WILL PUMP WATER OUT AT A CONTROLLED RATE AND DISCHARGE IT TO CHADWICK CHANNEL.

LEGEND

- ○MH MANHOLE
- □CB CATCH BASIN
- EL. 1112 PROPOSED SPOT ELEVATION
- → SURFACE WATER FLOW DIRECTION
- —— STORM SEWER PIPE
- IMPERVIOUS AREAS
- EXCLUDED AREAS

No.	DESCRIPTION	No.	DESCRIPTION
1	HEAT RECOVERY STEAM GENERATOR (HRSG)	20	HRSG EXHAUST STACK
2	(NOT USED)	21	EXIST. STORAGE TANKS (OWNED BY OTHERS)
3	COMBUSTION TURBINE GENERATOR (CTG)	22	OILY WATER SEPARATOR
4	UNIT AUX TRANSFORMER	23	EVAPORATIVE COOLER STORAGE TANK
5	PIPE RACK	24	DEMINERALIZED WATER STORAGE TANK
6	SERVICE CRANE	25	CONTROL BUILDING & WAREHOUSE
7	AUXILIARY BOILER	26	EVAPORATION COOLER SUPPLY PUMPS
8	CEMS BUILDING	27	COMPRESSED GAS STORAGE AREA
9	SAMPLE BUILDING	28	DEMINERALIZED WATER FORWARDING PUMPS
10	GENERATOR CIRCUIT BREAKER	29	WATER TREATMENT BUILDING
11	MAIN POWER TRANSFORMER	30	CCW HEAT EXCHANGER
12	HRSG FEED PUMPS	31	DETENTION BASIN
13	GAS COMPRESSORS	32	AMMONIA STORAGE TANK
14	4.16KV SWITCHGEAR BUILDING	33	CCW PUMPS
15	STEAM TURBINE GENERATOR (STG)	34	CCW HEAD TANK
16	BULK STORAGE BUILDING	35	MAKE UP WATER PUMPS
17	CONDENSATE PUMPS	36	WASTE WATER SUMP PUMPS
18	MCC ENCLOSURE	37	65' A-FRAME TRANSMISSION TOWER
19	AIR COOLED CONDENSER	38	110' A FRAME TRANSMISSION TOWER
		39	TRANSMISSION DEAD END POLE



DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
0	08/16/2007	A. SLACK	R. COOK		CLIENT REVIEW

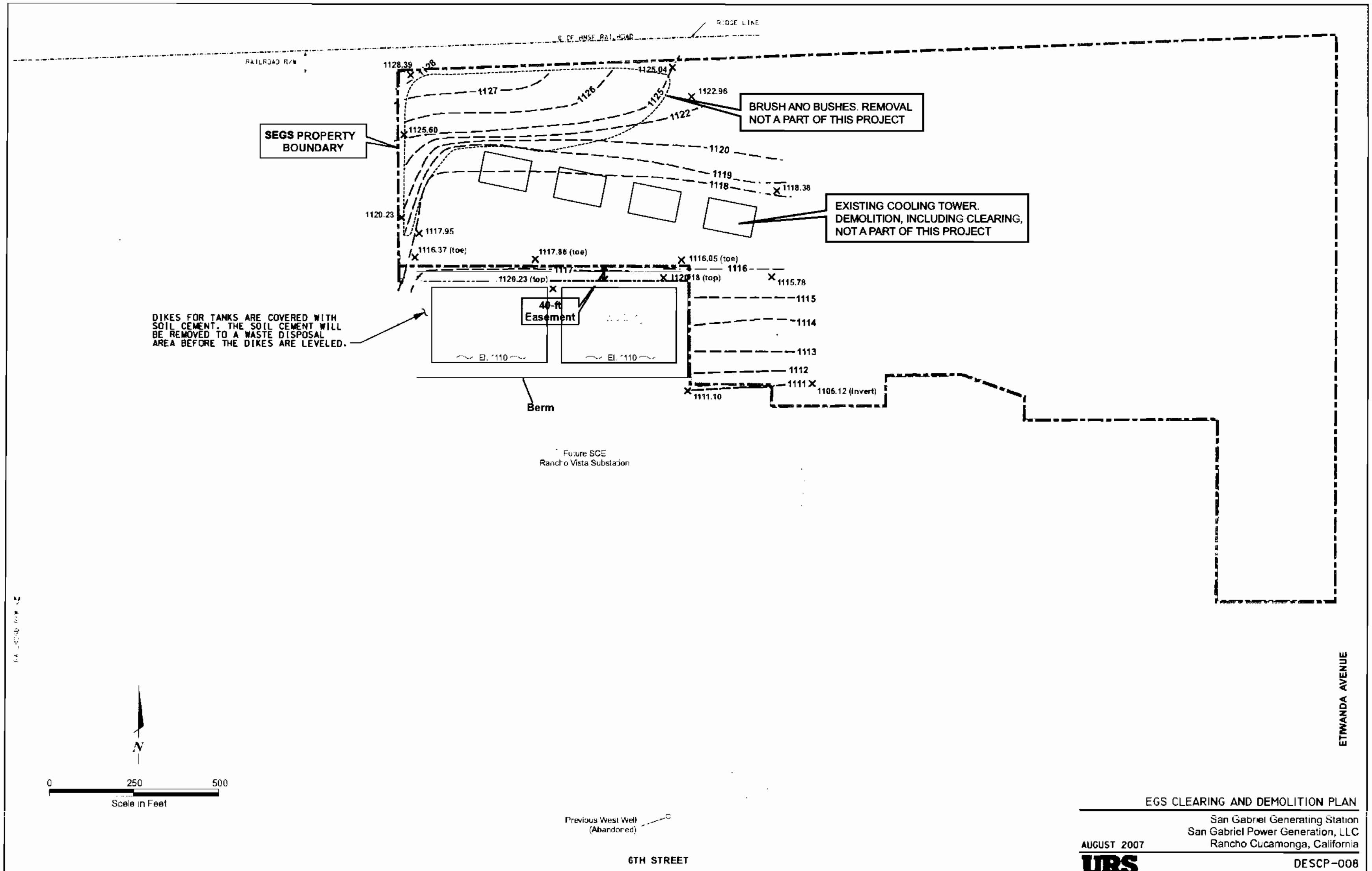
SCALE 1"=100'
PROJECT NUMBER 11967-003

SITE RUNOFF PATTERNS

POST DEVELOPMENT
COMBINED CYCLE PLANT
SAN GABRIEL GENERATING STATION
SAN GABRIEL POWER GENERATION, LLC
RANCH CUCAMONGA, CALIFORNIA

Sargent & Lundy

DRAWING NO. DESCP-006 REV. 0
SHEET OF


RIDGE LINE
RAILROAD R/W
SEGS PROPERTY BOUNDARY
BRUSH AND BUSHES. REMOVAL NOT A PART OF THIS PROJECT
EXISTING COOLING TOWER. DEMOLITION, INCLUDING CLEARING, NOT A PART OF THIS PROJECT
DIKES FOR TANKS ARE COVERED WITH SOIL CEMENT. THE SOIL CEMENT WILL BE REMOVED TO A WASTE DISPOSAL AREA BEFORE THE DIKES ARE LEVELED.
1128.39
1125.04
1122.96
1127
1126
1125
1122
1125.60
1120
1119
1118
1118.38
1120.23
1117.95
1116.37 (toe)
1117.86 (toe)
1116.05 (toe)
1116
1120.23 (top)
1115.78
1115
1114
1113
1112
1111
1106.12 (invert)
1111.10
40-ft Easement
El. 1110
Berm
Future SCE
Rancho Vista Substation
ETIWANDA AVENUE
N
0
250
500
Scale in Feet
Previous West Well (Abandoned)
6TH STREET

EGS CLEARING AND DEMOLITION PLAN

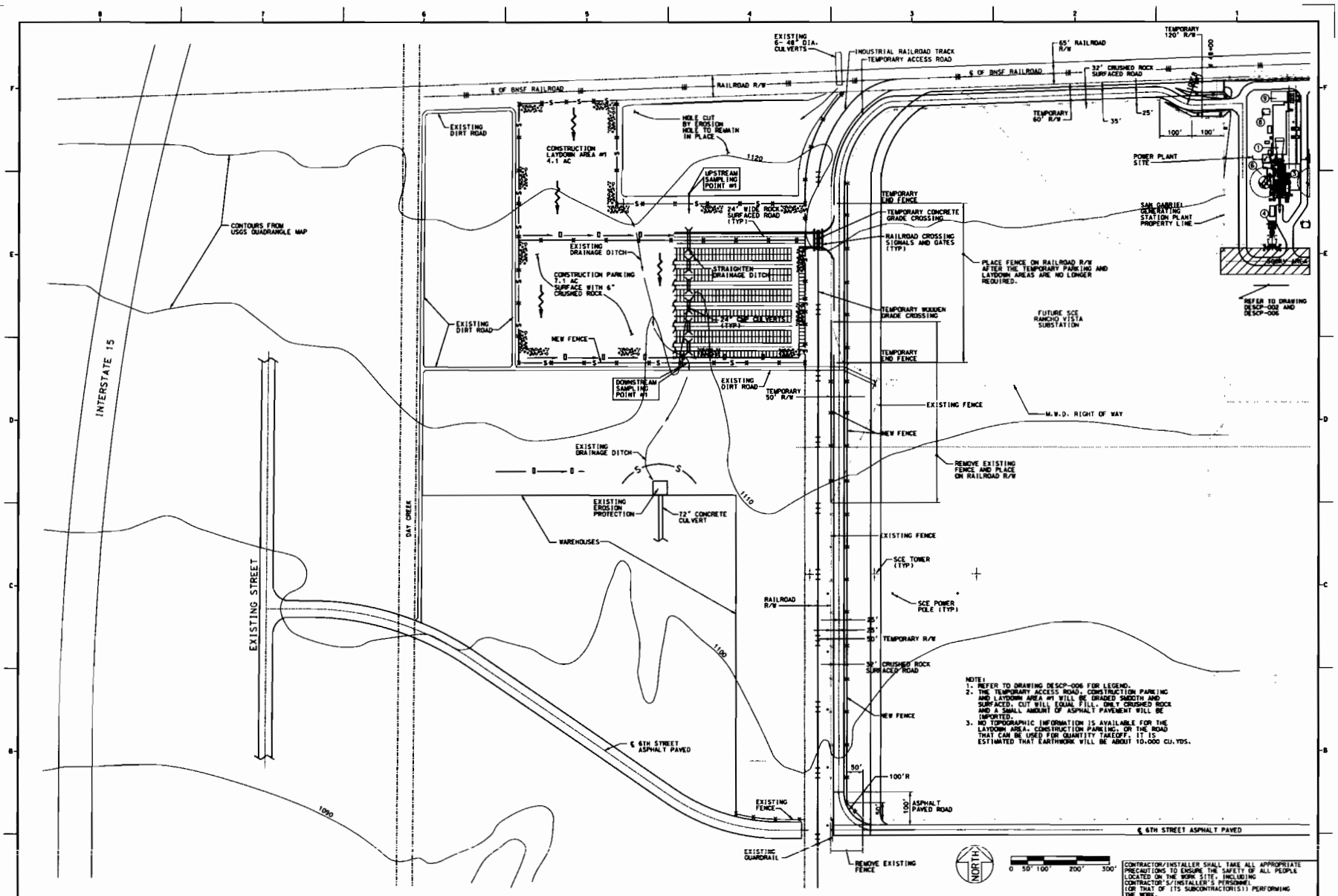
San Gabriel Generating Station
San Gabriel Power Generation, LLC
Rancho Cucamonga, California

AUGUST 2007

URS

DESCP-008

8/30/07 vsa...\T\Reliant Etiwanda (SGGS)\Graphics\DESCP\descp-008_REV.ai



DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
0	08-16-2007	A. SLACH	R. COOK		CLIENT REVIEW

SCALE 1"=100'

PROJECT NUMBER 11962-003

CONSTRUCTION ACCESS ROAD PARKING AND LAYDOWN AREA

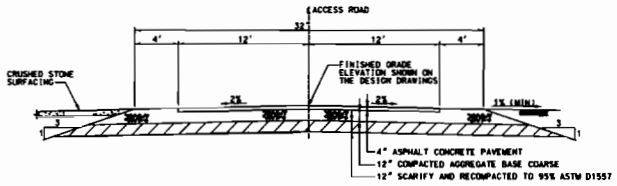
COMBINED CYCLE PLANT

SAN GABRIEL GENERATING STATION
SAN GABRIEL POWER GENERATION, LLC
RANCHO CUCAMONGA, CALIFORNIA

Sargent & Lundy

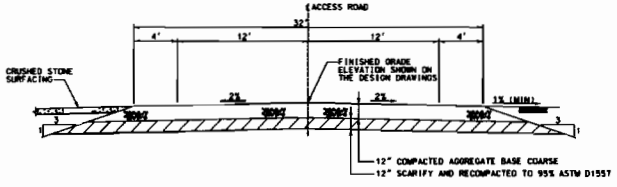
DRAWING NO. DESCP-007 REV. 0

SHEET OF



ASPHALT PAVED
PLANT ACCESS ROAD

DETAIL 010-001
NTS



CRUSHED ROCK SURFACED
PLANT ACCESS ROAD

DETAIL 010-002
NTS

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
0	08-16-2007	A. SLACH	R. COOK		CLIENT REVIEW

SCALE: NONE

PROJECT NUMBER: 11962-003

CONCEPTUAL DESIGN
PLANT ACCESS ROAD

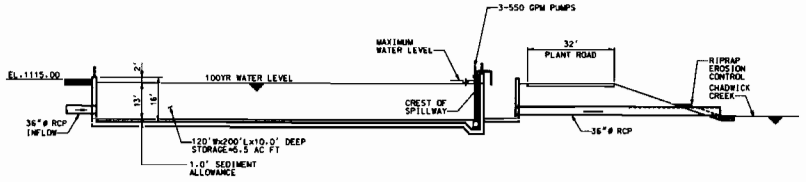
COMBINED CYCLE PLANT
SAN GABRIEL GENERATING STATION
SAN GABRIEL POWER GENERATION, LLC
RANCHO CUCAMONGA, CALIFORNIA

Sargent & Lundy

DRAWING NO.: DESCP-010

REV.: 0

SHEET OF



NOTE: INLET PIPE IS TURNED FOR CLARITY.
OUTLET PIPE AND PLANT ROAD ARE TURNED FOR CLARITY.

TYPICAL SECTION
DETAIL 011-001
N.T.S.

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
0	08-16-2007	A. SLACH	R. COOK		CLIENT REVIEW

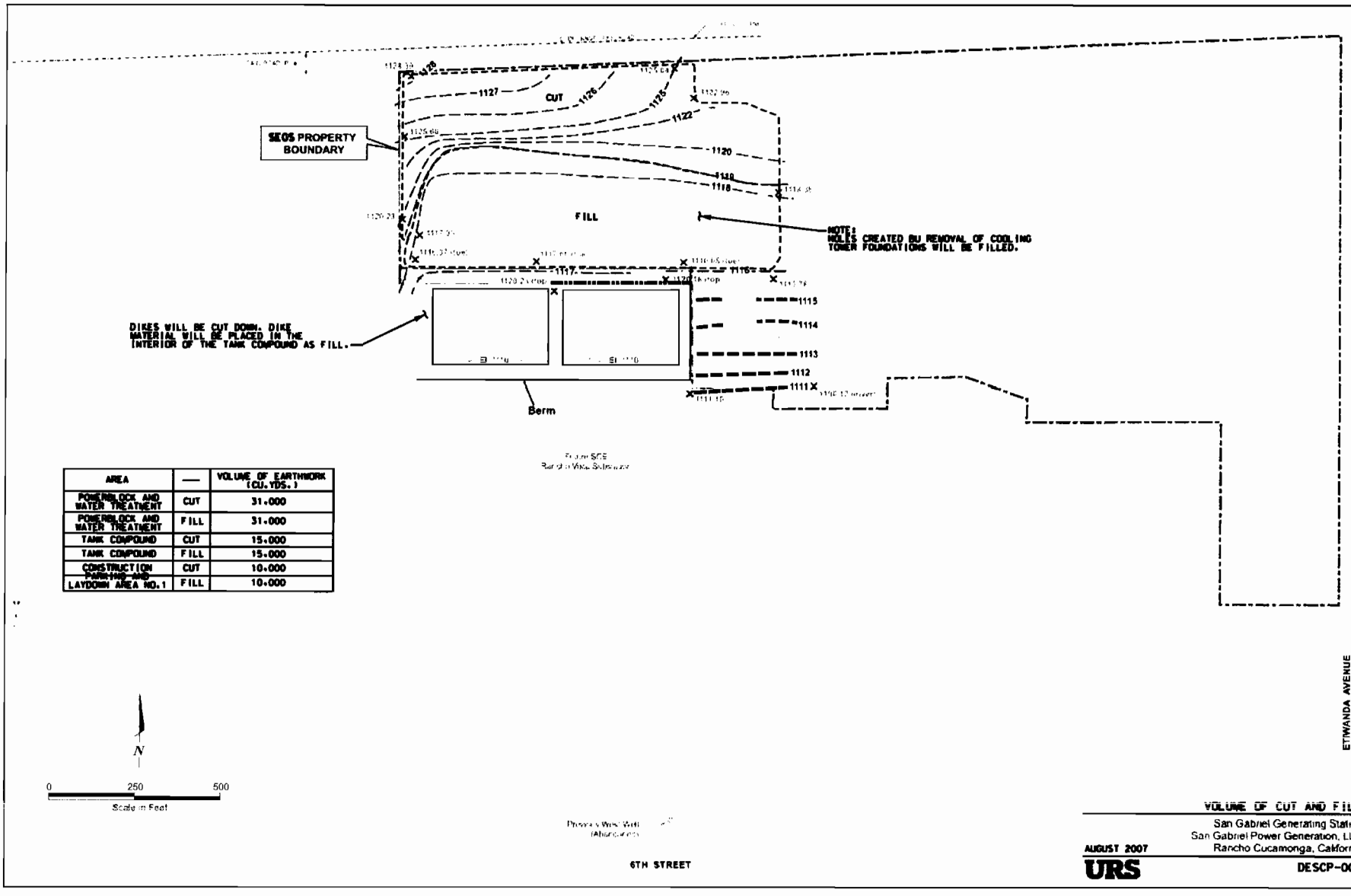
SCALE: NONE
PROJECT NUMBER: 11962-003

CONCEPTUAL DESIGN
SEDIMENTATION/DETENTION BASIN

COMBINED CYCLE PLANT
SAN GABRIEL GENERATING STATION
SAN GABRIEL POWER GENERATION, LLC
RANCH CUCAMONGA, CALIFORNIA

Sargent & Lundy

DRAWING NO.: DESCP-011
REV.: 0
SHEET OF



AREA	—	VOLUME OF EARTHWORK (CU. YDS.)
POWERBLOCK AND WATER TREATMENT	CUT	31,000
POWERBLOCK AND WATER TREATMENT	FILL	31,000
TANK COMPOUND	CUT	15,000
TANK COMPOUND	FILL	15,000
CONSTRUCTION PARKING AND LAYDOWN AREA NO. 1	CUT	10,000
	FILL	10,000

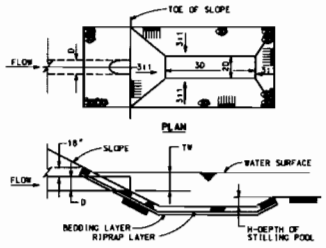
VOLUME OF CUT AND FILL

San Gabriel Generating Station
San Gabriel Power Generation, LLC
Rancho Cucamonga, California

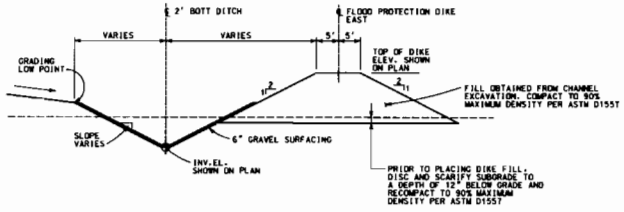
AUGUST 2007

URS

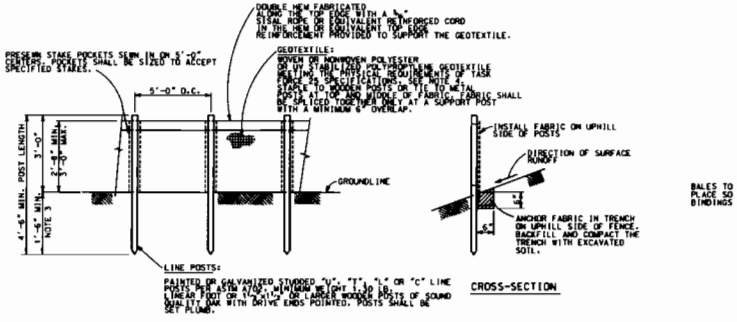
DESCP-009



LONGITUDINAL ELEVATION
PROTECTION AT CULVERT IN AN UNDEFINED CHANNEL
STILLING POOL
DETAIL 012-001
N.T.S.



DETAIL 012-03
SCALE: 1"=10'-0"

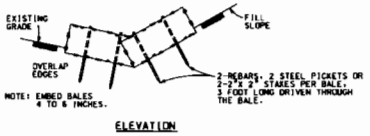


FRONT ELEVATION

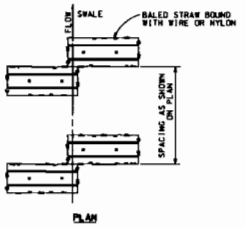
CROSS-SECTION

NOTES:
1. AFTER INSTALLATION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR SATISFACTORILY MAINTAINING THE FENCE. THE CONTRACTOR SHALL INSPECT FENCES AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND REPLACING OF ANY FENCING NOT FUNCTIONING DUE TO CLOGGING, DAMAGE OR DETERIORATION.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND DISPOSAL OF FENCING WHEN, IS DETERMINED BY THE PURCHASER, THE FENCING IS NO LONGER NEEDED.
3. WHERE 18" DEPTH IS IMPOSSIBLE TO ACHIEVE THE POSTS SHALL BE SECURED TO PREVENT OVERTURNING OF THE FENCE DUE TO SEDIMENT LOAD.
4. THE FOLLOWING SELF SUPPORTING GEOTEXTILE FENCES MEET THE PHYSICAL REQUIREMENTS OF TASK FORCE 25 AND ACCEPTABLE:
   a. AMOCO 1380 (WOVEN SLIT-FILM POLYPROPYLENE)
   b. MIRAFI 100X SILT FENCE (WOVEN SLIT-FILM POLYPROPYLENE)
   c. CARTHAGE MILLS FX-11 SILT FENCE (WOVEN SLIT-FILM POLYPROPYLENE)

TYPICAL DETAIL
SELF-SUPPORTING SILT FENCE
DETAIL 012-003
N.T.S.



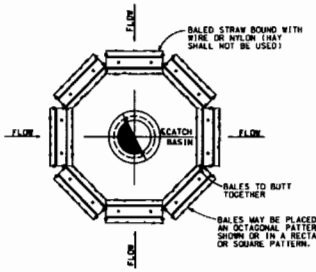
ELEVATION



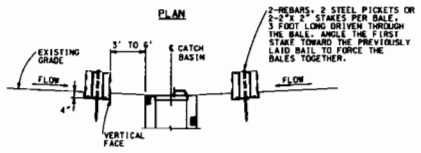
PLAN

USE: TO BE USED AS A SEDIMENT TRAP IN A SWALE.

TYPICAL DETAIL
STRAW BALE EROSION CHECK FOR SWALE
DETAIL 012-004
N.T.S.

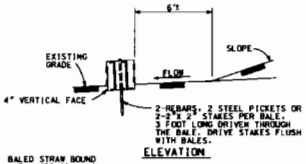


PLAN

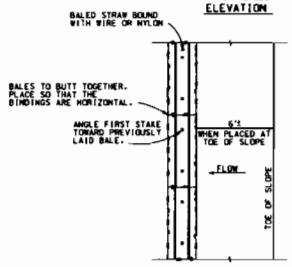


ELEVATION

TYPICAL DETAIL
SINGLE ROW STRAW BALE EROSION CHECK
FOR CATCH BASINS ON SOIL, GRAVEL OR GRASS SURFACE
DETAIL 012-006
N.T.S.



ELEVATION



PLAN

USE: TO BE USED TO INTERCEPT SHEET FLOW ACROSS AN OPEN AREA OF FLOW OFF OF A SLOPE WHERE THE EXISTING GROUND SLOPES AWAY FROM THE TOE OF THE SLOPE.

TYPICAL DETAIL
STRAW BALE DIKE
DETAIL 012-005
N.T.S.

DRAWING RELEASE RECORD					
REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE

DRAWING RELEASE RECORD					
REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
0	08-16-2007	A.SLACH	R.COOK		CLIENT REVIEW

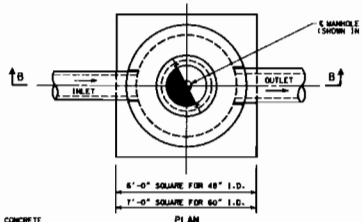
SCALE: NONE
PROJECT NUMBER: 11962-003

EROSION/SEDIMENT CONTROL DETAILS

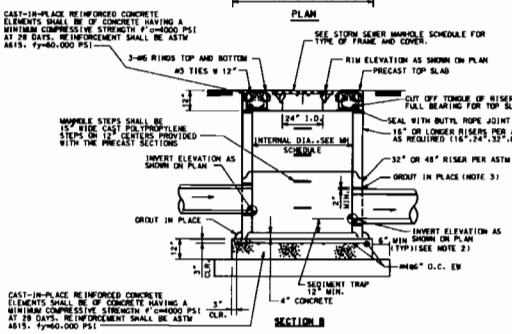
COMBINED CYCLE PLANT
SAN GABRIEL GENERATING STATION
SAN GABRIEL POWER GENERATION, LLC
RANCHO CUCAMONGA, CALIFORNIA

Sargent & Lundy

DRAWING NO. DESCP-012
REV. 0
SHEET 1 OF 2



PLAN



SECTION B

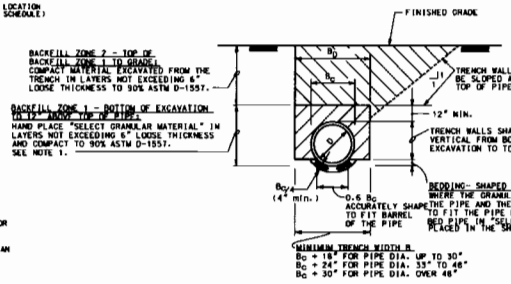
COVER TYPES	
PLANT AREA AND ROADWAY COVERS	
NEEMAH CATALOG NO.	DESCRIPTION
R-6050, TYPE C LID	310 LB HEAVY DUTY ROUND CAST IRON FRAME AND SOLID COVER FOR SLAB CONST.
R-6315, TYPE T GRATE	445 LBS ROUND HEAVY DUTY CAST IRON FRAME GRATE FOR SLAB CONST.

COVER TYPES	
PARKWAY / ROADSIDE DITCH	
NEEMAH CATALOG NO.	DESCRIPTION
R-4353	210 LB MEDIUM DUTY ROUND CAST IRON FRAME AND BEEHIVE GRATE FOR SLAB CONST.

NOTES:

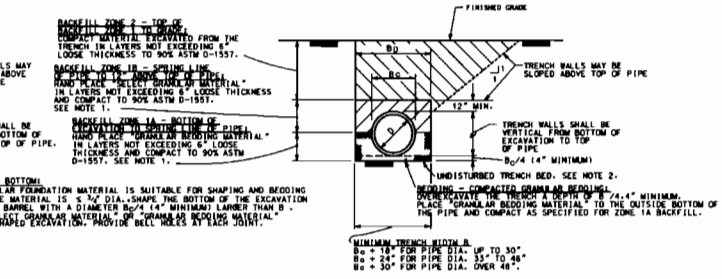
1. A STANDARD PRECAST CONCRETE MANHOLE BASE DESIGNED FROM H-20 TRUCK LOAD MAY BE SUBSTITUTED FOR THE BASE SHOWN.
2. WHERE PRECAST BASES ARE USED A 6 INCH THICK GRAVEL OR CRUSHED ROCK SHALL BE PROVIDED BENEATH THE BASE. THE BEDDING COARSE SHALL COVER THE ENTIRE BOTTOM OF THE EXCAVATION.
3. GROUT FOR SEALING THE BASE AND PIPES SHALL BE 1 PART PORTLAND CEMENT TO 3 PARTS SAND.
4. ALL LIFT HOLES SHALL BE FILLED WITH A CONCRETE PLUG AND SEALED WITH BITUMEN MATERIAL.
5. ALL PRECAST MANHOLE RISERS, GRADE RINGS AND MANHOLE COVERS SHALL BE SET IN BUTYL ROPE PREFORMED JOINT SEALANT. PRESS-SEAL EZ-STIK, OR EQUAL.

TYPE 2 MANHOLE
DETAIL 013-001
N.T.S.



OPTION NO. 1

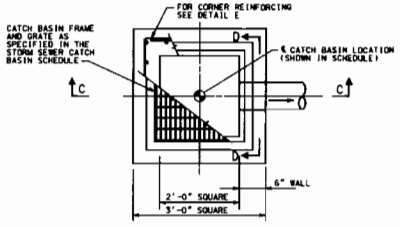
USE ONLY FOR PIPE INSTALLED IN NATURAL FOUNDATION SOILS WHICH ARE GRANULAR AND SUITABLE FOR SHAPING A PIPE BEDDING



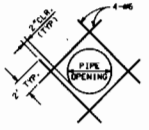
OPTION NO. 2

FOR PIPE INSTALLED IN COHESIVE, SILTY OR ROCKY FOUNDATION SOILS ALSO MAY BE USED FOR GRANULAR FOUNDATION SOILS

BEDDING AND BACKFILL REQUIREMENTS
SINGLE SEWER OR CULVERT INSTALLATION IN A TRENCH IN SOIL
CLASS "B" BEDDING
DETAIL 013-003
N.T.S.

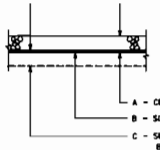


PLAN



TYPICAL REINFORCING AT PIPE OPENINGS

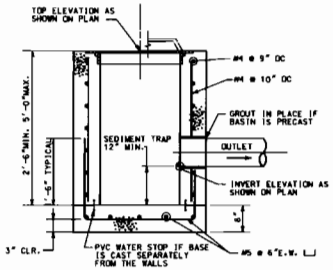
SECTION D
N.T.S.



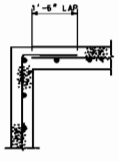
BLADE AND ROLL FIRM. PROVIDE EXCAVATION WHERE NECESSARY TO FEATHER SURFACING TO ROAD SHOULDERS AND TO MAINTAIN EXISTING DRAINAGE PATTERNS.

SURFACING OVER INSITU GRANULAR SOILS IN AREAS SUBJECT TO LOW VEHICULAR TRAFFIC

FINISH SURFACING - CRUSHED ROCK SURFACING
DETAIL 013-004
N.T.S.



SECTION C



TYPICAL CORNER

DETAIL E
N.T.S.

COVER TYPES	
NEEMAH CATALOG NO.	DESCRIPTION
R-6672-E, FRAME W	SQUARE GRATED COVER AND FRAME - HEAVY DUTY

TYPE 1 CATCH BASIN
DETAIL 013-002
N.T.S.

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
0	08-16-2007	A. SLACH	R. COOK		CLIENT REVIEW

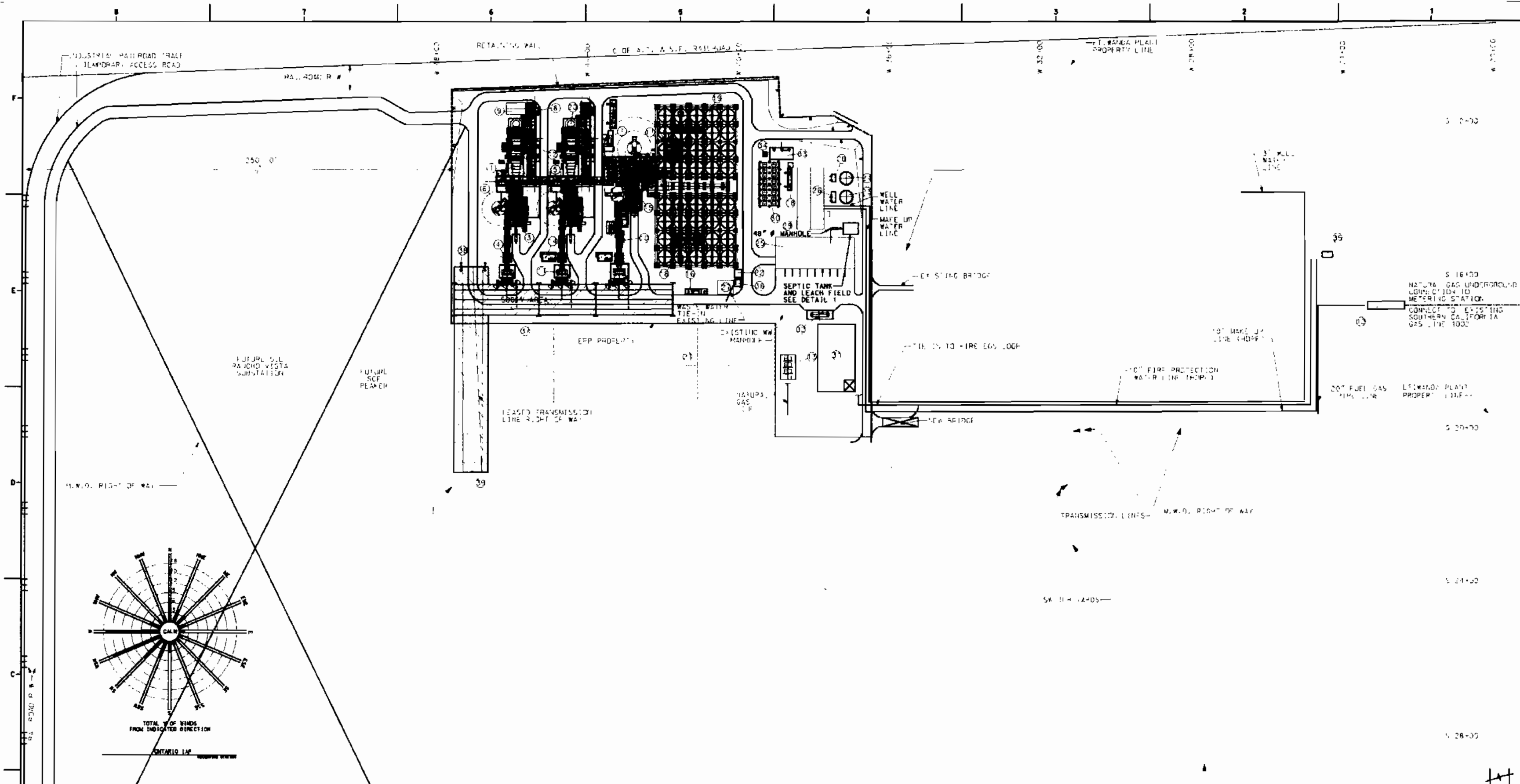
SCALE: NONE
PROJECT NUMBER: 11962-003

EROSION/SEDIMENT CONTROL DETAILS

COMBINED CYCLE PLANT
SAN GABRIEL GENERATING STATION
SAN GABRIEL POWER GENERATION, LLC
RANCHO CUCAMONGA, CALIFORNIA

Sargent & Lundy

DRAWING NO. DESCP-013
REV. 0
SHEET 2 OF 2



INDUSTRIAL RAILROAD TRACT (TEMPORARY ACCESS ROAD)
RETAINING WALL
RAILROAD R/W
FUTURE SCE RANCHO VISTA SUBSTATION
FUTURE SCE PEAKER
M.W.D. RIGHT OF WAY
TOTAL % OF WINDS FROM INDICATED DIRECTION
ONTARIO IAP
CALM
SEPTIC TANK AND LEACH FIELD SEE DETAIL 1
MANHOLE
WELL WATER LINE
MAKE UP WATER LINE
EXISTING BRIDGE
NEW BRIDGE
EPP PROPERTY
LEASED TRANSMISSION LINE RIGHT OF WAY
EXISTING WW MANHOLE
NATURAL GAS
TRANSMISSION LINES
M.W.D. RIGHT OF WAY
EXISTING WATER WELL
6TH STREET (ASPHALT PAVED)
6TH ST
ETIWANDA PLANT PROPERTY LINE
NATURAL GAS UNDERGROUND CONNECTION TO METERING STATION
CONNECT TO EXISTING SOUTHERN CALIFORNIA GAS LINE 1032
NORTH
0 50 100 200 300

No.	DESCRIPTION	No.	DESCRIPTION
1	HEAT RECOVERY STEAM GENERATOR (HRSG)	20	HRSG EXHAUST STACK
2	(NOT USED)	21	EXT. STORAGE TANKS (OWNED BY OTHERS)
3	COMBUSTION TURBINE GENERATOR (CTG)	22	OIL WATER SEPERATOR
4	UNIT AUX TRANSFORMER	23	EVAPORATIVE COOLER STORAGE TANK
5	PIPE RACK	24	DEMINERALIZED WATER STORAGE TANK
6	SERVICE CRANE	25	CONTROL BUILDING & WAREHOUSE
7	AUXILIARY BOILER	26	EVAPORATION COOLER SUPPLY PUMPS
8	CEMS BUILDING	27	COMPRESSED GAS STORAGE AREA
9	SAMPLE BUILDING	28	DEMINERALIZED WATER FORWARDING PUMPS
10	GENERATOR CIRCUIT BREAKER	29	WATER TREATMENT BUILDING
11	MAIN POWER TRANSFORMER	30	CCW HEAT EXCHANGER
12	HRSG FEED PUMPS	31	DETENTION BASIN
13	GAS COMPRESSORS	32	AMMONIA STORAGE TANK
14	4.16KV SWITCHGEAR BUILDING	33	CCW PUMPS
15	STEAM TURBINE GENERATOR (STG)	34	CCW HEAD TANK
16	BULK STORAGE BUILDING	35	MAKE UP WATER PUMPS
17	CONDENSATE PUMPS	36	WASTE WATER SUMP PUMPS
18	MCC ENCLOSURE	37	65' A-FRAME TRANSMISSION TOWER
19	AIR COOLED CONDENSER	38	110 A-FRAME TRANSMISSION TOWER
		39	TRANSMISSION DEAD END POLE

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUBCONTRACTOR(S)) PERFORMING THE WORK.

DRAWING RELEASE RECORD

REV.	DATE REL'D.	PREPARED	REVIEWED	APPROVED	PURPOSE
0	09-01-2007	A. SLACH	R. CODY		FOR COMMENTS

FILENAME: descp_014.dgn

SCALE: 1"=100'

PROJECT NUMBER: 11962-003

GENERAL ARRANGEMENT
PROPERTY DEVELOPMENT PLAN
SIEMENS 501F
2X2X1 COMBINED CYCLE PLANT
SAN GABRIEL GENERATING STATION
SAN GABRIEL POWER GENERATION, LLC
RANCH CUCAMONGA, CALIFORNIA

Sargent & Lundy

DRAWING NO. DESCP-014 REV. 0

SHEET OF