Responses to Data Request Set 1 (#1–54)

Application for Certification (08-AFC-03) for MARSH LANDING GENERATING STATION Contra Costa County, California

December 2008

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LIST OF ACRONYMS AND ABBREVIATIONS USED IN RESPONSES

AAQS	ambient air quality standard
AERMOD	American Meteorological Society and Environmental Protection Agency preferred atmospheric dispersion model
AFC	Application for Certification
APE	Area of Potential Effect
BAAQMD	Bay Area Air Quality Management District
BLS	Bridgehead Lift Station
CAAQS	California ambient air quality standard
CAISO	California Independent System Operator
Calpine	Calpine Corporation
CCPP	Contra Costa Power Plant
CEC	California Energy Commission
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CVRWQCB	Central Valley Regional Water Quality Control Board
DDSD	Delta Diablo Sanitation District
DEC	Delta Energy Center
DOC	Department of Conservation
ESA	Environmental Site Assessment
°F	Fahrenheit
FP10	Flex Plant 10
FSNL	full speed no load
g/gal	grams per gallon
g/hr	grams per hour
GHG	greenhouse gas
GLO	Government Land Office
HRSG	heat recovery steam generator
hrs/yr	hours per year
LAFCO	Local Agency Formation Commission
lb/hr	pounds per hour
lbs/mile	pounds per mile
lbs	pounds
LDA	light-duty automobiles
LDT	light-duty trucks
LGIA	Large Generator Interconnection Agreement
LMEC	Los Medanos Energy Center
LORS	laws, regulations, ordinances, and standards
m	meters
mgd	million gallons per day
$\mu g/m^3$	micrograms per cubic meter
$\mu g/m^3/g/s$	micrograms per cubic meter pet gram per second
MLGS	Marsh Landing Generating Station
MLLW	mean low low water
MMBtu/hr	million British thermal units per hour
MSL	mean sea level
NAAQS	national ambient air quality standard
N_2O	nitrous oxide
NO_2	nitrogen dioxide
NO_X	nitrogen oxides

OLM	ozone limiting method
PDOC	Preliminary Determination of Compliance
PG&E	Pacific Gas & Electric Company
PM	particulate matter
PM_{10}	particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$	particulate matter less than or equal to 2.5 microns in diameter
ppm	parts per million
REC	Recognized Environmental Condition
RO	reverse osmosis
RQ	reportable quantities
RWF	Recycled Water Facility
SO_2	sulfur dioxide
SPS	Special Protection Scheme
TIBL	thermal internal boundary layer
tpd	metric tons per day
tpm	metric tons per month
TPQ	Threshold Planning Quantity
tpy	metric tons per year
TQ	Threshold Quantity
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator
VOC	volatile organic compounds
WPGS	Willow Pass Generating Station

Technical Area: Air Quality
Author: Brewster Birdsall

BACKGROUND

Greenhouse Gas Emissions

Energy Commission staff plans to use AFC Appendix J3, p. 7, to quantify the emissions of greenhouse gases (GHG) caused during construction of the project. These include carbon dioxide, nitrous oxide, and methane (unburned natural gas). However, it is not clear whether activity for construction of linear facilities, worker commutes, and material deliveries using diesel trucks during construction are included in the GHG totals. AFC Section 2.7.5 shows the proposed general construction emission control measures that may also reduce GHG emissions from construction. Staff also seeks to quantify emissions from worker commutes and material deliveries during operation of the proposed project.

DATA REQUEST

1. ***Please show the total and annual GHG emissions for the construction phase of the proposed project including all activities at the construction site and any construction activities for linear facilities (gas and water pipelines and transmission lines), worker commutes, and material deliveries.***

RESPONSE

The Application for Certification (AFC) included a table of estimated emissions from the construction equipment used on site and for the linear facilities. This table is on page 7 of AFC Appendix J. This information is repeated and summarized in Table 1-1. Estimated GHG emissions from construction worker commutes and from deliveries of construction materials not included in the AFC are provided in the response to Data Request 2.

Table 1-1
Greenhouse Gas Emissions from Construction Equipment

	CO_2 Emissions	CH_4 Emissions	N_2O Emissions
Max. Monthly (tpm)	396	0.02	0.01
Max. Rolling 12 month (tpy)	3,086	0.18	0.07
Project Total (metric tons)	**6,475**	**0.37**	**0.14**

Source: AFC Appendix J, page 7.

CO_2 = carbon dioxide
CH_4 = methane
N_2O = nitrous oxide
lbs/mile = pounds per mile
tpm = metric tons per month
tpy = metric tons per year

The average number of workers for construction staff is provided in AFC Table 2.7-1a and Table 2.7-1b. The average miles commuted during a one-way trip in Contra Costa County is estimated using default values in the 2007 release of the Urban Emissions Model (URBEMIS2007). The workers are assumed to commute 22 days per month. To account for trips made by construction workers during their lunch hour, an average trip rate of 3.02 is assumed per worker per day. This trip rate value is obtained from URBEMIS2007 for General Light Industry.

The maximum number of vehicle trips for construction material delivery (not including heavy equipment) is 16 one-way trips; this is provided in AFC Figure 2.7-4. The construction material is transported from the Port of Stockton to the project site and the distance traveled is 24 miles per one-way trip.

Most of the heavy equipment and its components will be transported by rail to the existing spur at the project site. A total of six rail deliveries will occur over the course of the construction period (which averages two locomotive deliveries per year). It is assumed that only two rail cars per locomotive delivery will be used for Marsh Landing Generating Station (MLGS) equipment. GHG emissions are based on the distance traveled from the California state line to the project site along the Burlington Northern & Santa Fe railway tracks.

Vehicle emission factors based on the vehicle fleet mix for Contra Costa County are required to estimate emissions. Construction vehicle emission factors are summarized in Table 1-2. Emission factors for rail delivery are summarized in Table 1-3. The worker fleet is assumed to be 50 percent light-duty automobiles (LDA) and 50 percent light-duty trucks (LDT). The material delivery truck fleet is assumed to be only heavy-heavy duty trucks.

Average annual and total GHG emission estimates for the construction worker commute and delivery of construction materials are provided in Table 1-4. Appendix A-1 provides backup for these calculations.

Table 1-2
Vehicle Emission Factors for Greenhouse Gases

Vehicle Description	CO_2		CH_4		N_2O	
	tpd	lbs/mile	tpd	lbs/mile	tpd	lbs/mile
Light-Duty Automobile	5,880	0.89	0.56	8.44E-06	--	1.08E-04
Light-Duty Truck	4,930	1.09	0.45	9.95E-05	--	1.68E-04
Heavy-Heavy Duty Diesel Truck	870	4.04	0.04	1.86E-04	0.02	1.10E-04

CH_4 = methane
CO_2 = carbon dioxide
lbs/mile = pounds per mile
N_2O = nitrous oxide
tpd = metric tons per day

Notes:

Emission factors for CO_2 and CH_4 are based on results from EMFAC Emissions Model 2007 Version 2.3 (BURDEN output). The values are the projected values for the LDA and LDT (both Class I and II) vehicles within Costa Contra County in 2009. Emission factors in lbs/mile are calculated by dividing emission factor (tpy) by vehicle miles traveled from EMFAC2007.

N_2O factors are derived from California Climate Action Registry General Reporting Protocol Version 2.3 (March 2007), Table C.5 using the mileage accrual rates by age table from EMFAC2007 Version 2.3, November 1, 2006, California Air Resources Board, normalized accrual rates (annual odometer mileage weighted by population) for gasoline-fueled light duty automobiles and trucks.

Table 1-3
Rail Emission Factors for Greenhouse Gases

Vehicle Description	CO_2 Emissions	CH_4 Emissions	N_2O Emissions
Locomotive in Motion (g/gal)	10,084	0.3	0.1
Locomotive Idling (g/hr)	40,336	1.2	0.4

CH_4 = methane
CO_2 = carbon dioxide
g/gal = grams per gallon
g/hr = grams per hour
N_2O = nitrous oxide

Notes:

Per EPA's Emission Facts <http://www.epa.gov/otaq/climate/420f05001.pdf>, CO_2 emissions from a gallon of diesel fuel are 10,084 g/gal diesel.

CH_4 and N_2O factors are derived from California Climate Action Registry General Reporting Protocol Version 2.2 (March 2007), Table C.6 (Methane and Nitrous Oxide Emission Factors for Stationary Combustion by Sector and Fuel Type).

Fuel consumed during idling period is assumed to be 4 gallons per hour and is based on switcher idling information on the U.S. EPA web page: http://www.epa.gov/smartway/idlingimpacts.htm

Table 1-4
Greenhouse Gas Emissions from Worker Commutes and Material Deliveries during the Construction Phase

Activity	Distance Traveled per year (miles)	CO_2 Emissions (tpy)	CH_4 Emissions (tpy)	N_2O Emissions (tpy)
Worker Commute	2,896,417	1,431	0.08	0.20
Material Delivery	6,048	17	8.55 E-04	5.58 E-04
Rail Delivery	847	2	6.96 E-05	2.32 E-06
Total Annual Average (tpy)		1,452	0.08	0.20
Total (metric tons)		**3,993**	**0.22**	**0.55**

CH_4 = methane
CO_2 = carbon dioxide
N_2O = nitrous oxide
tpy = metric tons per year

Note:

Total construction period is 33 months. Total emissions conservatively used annual rate for entire period.

DATA REQUEST

2. Please quantify emissions of criteria pollutants and GHG from worker commutes and material deliveries during operation of the proposed project.

RESPONSE

Natural gas, which is used for fuel at the site, will be delivered through a pressurized pipeline. Aqueous ammonia, which will be used in the selective catalytic reduction system, will be transported to the site by 8,000-gallon-capacity California Department of Transportation-certified trucks. The chemical that will be transported to the site in the largest quantities is aqueous ammonia. Other miscellaneous materials are assumed to be transported to the site at the same frequency used for aqueous ammonia delivery.

The average number of workers is provided in AFC Table 2.8-1. The average miles commuted during a one-way trip in Contra Costa County is estimated using default values in URBEMIS2007. The plant operators are assumed to commute 30 days per month and other plant personnel are assumed to commute 22 days per month. To account for trips made by plant personnel during their lunch hours, an average trip rate of 3.02 is assumed per worker per day. This trip rate value is obtained from URBEMIS2007 for General Light Industry.

The maximum number of vehicle trips for aqueous ammonia delivery is 120 one-way trips (or 10 one-way trips per month) and is provided in AFC Section 7.12.2.2. The aqueous ammonia currently used at the site is transported to the project site from the supplier in either Dixon, California or La Mirada, California. For the purpose of the MLGS calculations, it is assumed that half of the ammonia is transported to the project site from Dixon and the other half is transported to the project site from La Mirada. The maximum number of vehicle trips for miscellaneous materials (for example lubrication oil, or hydraulic fluid deliveries) is assumed to be 10 one-way trips per month, with each one-way trip covering a distance of 50 miles.

Vehicle emission factors based on the vehicle fleet mix for Contra Costa County are required to estimate emissions. Vehicle emission factors are summarized in Table 2-1. The worker fleet is assumed to be 50 percent LDA and 50 percent LDT. The material delivery truck fleet is assumed to be only heavy-heavy duty trucks.

Vehicle emission factors from Table 1-2 were used along with the mileage estimates to estimate emissions. GHG emission estimates for the plant personnel commute and delivery of materials for operations are provided in Table 2-2. Appendix A-2 provides backup for these calculations.

Table 2-1
Vehicle Emission Factors for Greenhouse Gases and Criteria Pollutants for Contra Costa County

Vehicle Description	CO tpd	CO_2 tpd	CH_4 tpd	N_2O tpd	NO_X tpd	PM_{10} tpd	$PM_{2.5}$ tpd	SO_2 tpd	VOC tpd
Light-Duty Automobile	50.32	6,030	0.47	0.74	5.32	0.48	0.29	0.06	6.59
Light-Duty Truck	48.18	5,020	0.41	0.77	6.01	0.44	0.30	0.05	5.20
Heavy-Heavy Duty Diesel Truck	4.04	880	0.03	0.02	7.02	0.27	0.23	0.01	0.64

CH_4 = methane
CO = carbon monoxide
CO_2 = carbon dioxide
N_2O = nitrous oxide
NO_X = nitrogen oxides
PM_{10} = particulate matter less than 10 microns
$PM_{2.5}$ = particulate matter less than 2.5 microns
SO_2 = sulfur dioxide
tpd = metric tons per day
VOC = volatile organic compounds

Notes:

[1] Emission factors are based on results from EMFAC Emissions Model 2007 Version 2.3 (BURDEN output). The values are the projected values for the LDA and LDT (Both Class I and II) vehicles within Costa Contra County in 2009. Emission factors in lbs/mile are calculated by dividing emission factor (tpy) by vehicle miles traveled from EMFAC2007.

[2] N_2O factors are derived from California Climate Action Registry General Reporting Protocol Version 2.3 (March 2007), Table C.5 using the mileage accrual rates by age table from EMFAC2007 Version 2.3, November 1, 2006, California Air Resources Board, normalized accrual rates (annual odometer mileage weighted by population) for gasoline fueled light duty automobiles and trucks.

Table 2-2
Greenhouse Gas and Criteria Pollutant Emissions from Worker Commutes and Deliveries during the Operations Phase

Activity	Distance Traveled per year (miles)	CO (tpy)	CO_2 (tpy)	CH_4 (tpy)	N_2O (tpy)	NO_X (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	SO_2 (tpy)	VOC (tpy)
Plant Personnel Commute	306,851	1.37	151	0.01	0.02	0.14	0.01	0.01	1.51E-03	0.14
Aqueous Ammonia and Misc. Material Delivery	57,982	0.54	118	4.01E-03	3.20E-03	0.94	0.04	0.03	1.34E-03	0.09
Total Average Annual (tpy)		**1.91**	**269**	**0.02**	**0.02**	**1.07**	**0.05**	**0.04**	**2.84E-03**	**0.22**

CH_4 = methane
CO = carbon monoxide
CO_2 = carbon dioxide
N_2O = nitrous oxide
NO_X = nitrogen oxides
PM_{10} = particulate matter less than 10 microns
$PM_{2.5}$ = particulate matter less than 2.5 microns
SO_2 = sulfur dioxide
tpd = metric tons per day
VOC = volatile organic compounds

BACKGROUND

Fuel Gas Preheaters

The July 2008 addendum to the AFC shows that two fuel gas preheaters would need to be installed, and the addendum shows annual emissions and stack parameters in AFC Tables 7.1-17a and 7.1-17c. Emission factors for the heaters and operational assumptions (including hours of operation) are not shown in the addendum.

DATA REQUEST

3. Please quantify the short-term hourly emissions of the proposed fuel gas heaters, and show emission calculations with emission factors and any operational assumptions, such as anticipated annual hours of operation.

RESPONSE

The applicant proposes to have two fuel gas heaters: one heater for the two Flex Plant 10 (FP10) Units and one heater for the two Simple Cycle Units. The fuel gas heater for the FP10 Units is assumed to operate for the same number of hours as the FP10 Units (4,383 hours per year [hrs/yr]) and the fuel gas heater for the Simple Cycle Units is assumed to operate for the same number of hours as the Simple Cycle Units (877 hrs/yr).

Short term and annual emission rates are estimated using the equations shown below.

Short-Term Emission Calculations:

ER (lb/hr) = EF (lb/MMBtu/unit) × Capacity (MMBtu/hr)

Annual Emission Calculations:

ER (tpy) = ER (lb/hr) × Annual Operating Hours (hrs/yr) × 1 ton/2,000 lbs

Short-term emission rates are quantified in Table 3-1, and annual emission rates are shown in AFC Table 7.1-17b.

Table 3-1
Emission Factors and Fuel Gas Heater Emission Rates

Pollutant	Emission Factor		Sources	Emission Rate (same for both units lb/hr/unit
	lbs/Mscf/Unit	lbs/MMBtu/unit		
NO_X	30.6	0.03	FIRE Version 6.25 using SCC-3-10-004-04	0.15
CO	35	0.034		0.17
VOC	2.8	0.0027		0.014
PM_{10}	3	0.0029		0.015
SO_2	1.14	0.0011	Calculated. See equation below	0.006

Notes:

Net heating value for fuel is assumed to 1,020 Btu/scf. Capacity for fuel gas heaters is 5 MMBtu/hr.
The SCC number was obtained from http://www.epa.gov/ttnchie1/eiip/techreport/volume02/ii10.pdf (Table 10.7-1)
The emission factor for SO_X was calculated using the following formula:

$$SO_X\ (lbs/Mscf) = \frac{\#\,grains}{100\ scf} \times \frac{1\,lb}{7{,}000\ grains} \times \frac{MWSO_2}{MWS} \times \frac{10^6\ scf}{1\,Mscf}$$

BACKGROUND

Fire Pump or Emergency Generator

The AFC does not mention whether a fire pump or an emergency generator is proposed for the project.

DATA REQUEST

4. Please confirm whether a fire pump or an emergency generator would be needed for the project.

RESPONSE

The applicant confirms that MLGS will not include a fire pump or an emergency diesel generator.

As explained on pages 2-18 and 2-19 of the AFC, the existing Contra Costa Power Plant (CCPP) fire pumps will be used to discharge to the new MLGS dedicated extension of the existing underground firewater loop system. AFC Figure 2.5-9 shows the proposed MLGS firewater loop that connects to the existing CCPP system. The MLGS is not anticipated to result in nonemergency increase in the use of the CCPP fire pumps. [Note: AFC Table 2.7-2 incorrectly lists a fire pump skid. This was an oversight. There is no new fire pump or fire pump skid.]

DATA REQUEST

5. If either a fire pump or the emergency generator is needed, please provide their manufacturer's specifications and their respective operating schedule and estimated emissions.

RESPONSE

Not applicable; see the response to Data Request 4. No manufacturer's specifications or other data are included because no new diesel fire pumps or diesel emergency generators are proposed for this project.

BACKGROUND

Estimated Facility Emissions

In AFC Section 7.1.2.2, operational emissions are described with assumptions and explanations of calculations. Emissions for worst-case scenarios are summarized in AFC Table 7.1-16 without total emissions per period for all pollutants. This section does not reference Appendix J3 that shows assumptions for calculations for each source. However, without calculations and assumptions that lead to facility-wide emission rates, staff does not have complete information supporting the facility's emissions in AFC Table 7.1-16. Similarly, there is no vendor information supporting the proposed startup and shutdown emission rates shown in AFC Table 7.1-15.

DATA REQUEST

6. Please provide calculations, assumptions, and methods used to estimate the total facility hourly, daily, and annual emissions provided in AFC Table 7.1-16, showing all sources and pollutants.

RESPONSE

The applicant provided assumptions for the hourly, daily, and annual emission rates for pollutants and sources in the "Worst-Case Emission Scenario by Operating Equipment" column in AFC Table 7.1-16 only for the combinations of pollutants and averaging times required for modeling purposes. Further information on all emissions is provided in Tables 6-1 through 6-3 and includes emission estimates by source and the MLGS plant-wide total for the hourly, daily, and annual time periods, respectively. The operating assumptions used are shown on the tables and are consistent with those in AFC Table 7.1-16 and AFC Appendix J3 except for revised estimates of the maximum hourly emissions operating scenario. The maximum hourly emission estimates for both gas turbine types were revised to include more starts during the worst-case hour and are discussed in more detail in the response to Data Request 7 below.

Table 6-1
Hourly Emissions for All Sources

Pollutant[1,2]	FP10 Units (lb/hr/CT)	Simple Cycle Units (lb/hr/CT)	Fuel Gas Preheaters[3] (lb/hr/unit)	MLGS Total[4] (lb/hr)
NO_X	68.6	45.1	0.15	227.6
CO	677.3	544.0	0.18	2,443.0
VOC	33.6	30.1	0.01	127.5
SO_2 (1 gr/100 scf)	6.7	6.2	0.01	25.8
PM_{10}	12.1	9.0	0.01	42.3

CO = carbon monoxide
NO_X = nitrogen oxide
PM_{10} = particulate matter less than 10 micrometers in diameter
SO_2 = sulfur dioxide
VOC = volatile organic compounds

Notes:
1 Maximum hourly emissions for all pollutants for FP10 Units and for CO and NO_X for Simple Cycle Units are based on two startups, one shutdown, and the remaining time in the hour at normal operating rate. See the response to Data Request 7 for more details on startups.
2 Maximum hourly emissions for VOC, SO_2 and PM_{10} for Simple Cycle Units are based on normal operating conditions.
3 There are two Fuel Gas Preheaters – one for the FP10 Units and one for the Simple Cycle Units. Each preheater has a maximum heat input capacity of 5 MMBtu/hr
4 MLGS total emissions are based on two FP10 Units, two Simple Cycle Units, and two Fuel Gas Preheaters emissions.

Table 6-2
Daily Emissions for All Sources

Pollutant	FP10 Units[1,2] (lb/day/CT)	Simple Cycle Units [3,4] (lb/day/CT)	Fuel Gas Preheaters[5] (lb/day/unit)	MLGS Total[6] (lb/day)
NO_X	507.0	540.4	3.6	2,102.0
CO	1,574.1	1,207.8	4.1	5,571.9
VOC	196.6	177.9	0.3	749.6
SO_2 (1 gr/100 scf)	154.3	149.0	0.3	607.2
PM_{10}	243.0	214.3	0.3	915.3

CO = carbon monoxide
NO_X = nitrogen oxide
PM_{10} = particulate matter less than 10 micrometers in diameter
SO_2 = sulfur dioxide
VOC = volatile organic compounds

Notes:

1 Maximum daily emissions for all pollutants except SO_2 for FP10 Units are based on three startups, three shutdowns, and the remaining time in 24 hours at normal operating rate.

2 Maximum daily emissions for SO_2 for FP10 Units are based on normal operating conditions over 24 hours.

3 Maximum daily emissions for all pollutants except SO_2 for Simple Cycle Units are based on three startups, two shutdowns, and the remaining time in 24 hours at normal operating rate.

4 Maximum daily emissions for SO_2 for Simple Cycle Units are based on normal operating conditions over 24 hours.

5 There are two Fuel Gas Preheaters – one for the FP10 Units and one for the Simple Cycle Units. Each preheater has a maximum heat input capacity of 5 MMBtu/hr. Daily worst case scenario assumes both preheaters are operating over 24 hours.

6 MLGS total emissions are based on two FP10 Units, two Simple Cycle Units, and two Fuel Gas Preheaters emissions.

Table 6-3
Annual Average Emissions for All Sources

Pollutant	FP10 Units[1] (lb/yr/CT)	Simple Cycle Units[2] (lb/yr/CT)	FP10 Fuel Gas Preheater[3] (lb/yr)	Simple Cycle Fuel Gas Preheater[3] (lb/yr)	MLGS Total[4] (lb/yr)
NO_X	77,103	18,230	657	132	191,456
CO	142,371	46,757	752	150	373,159
VOC	28,459	6,013	60	12	69,016
SO_2 (0.4 gr/100 scf)	10,521	1,943	25	5	24,957
PM_{10}	39,400	6,989	64	13	92,857

CO = carbon monoxide
NO_X = nitrogen oxide
PM_{10} = particulate matter less than 10 micrometers in diameter
SO_2 = sulfur dioxide
VOC = volatile organic compounds

Notes:

[1] Annual average emissions for all pollutants for FP10 Units are based on 193 startups, emissions from 193 shutdowns, emissions from operations with power for 4,000 operating hours, and emissions from operations without power augmentation for 322 hours.

[2] Annual average emissions for all pollutants for Simple Cycle Units are based on 100 startups, 100 shutdowns, and emissions from normal operating conditions for 849 hours.

[3] There are two Fuel Gas Preheaters – one for the FP10 Units and one for the Simple Cycle Units. Each preheater has a maximum heat input capacity of 5 MMBtu/hr. The FP10 preheater operates for 4,383 hrs/yr and the Simple Cycle preheater operates for 877 hrs/yr.

[4] MLGS total emissions are based on two FP10 Units, two Simple Cycle Units, and two Fuel Gas Preheaters emissions.

DATA REQUEST

7. Please provide vendor guarantees to support the proposed startup and shutdown emissions values listed in AFC Table 7.1-15 and cited in Appendix J3.

RESPONSE

Estimated startup and shutdown times and the emissions during startup and shutdown were provided by Siemens, the gas turbine manufacturer. They are approximate values and are not guaranteed by Siemens. Copies of the information provided by Siemens for the FP10 units and the Simple Cycle Units are included in Appendix A-3 and were the source of the information provided in AFC Table 7.1-15. Originally this information was labeled as proprietary; however, Siemens has been contacted and has now authorized the release of this information. The information provided by Siemens is summarized in Tables 7-1 and 7-2. The ATC application is consistent with the information provided by Siemens (the only difference is the number of significant digits shown). The application used the 41 degree Fahrenheit (°F) case because emissions are higher in that case.

The applicant requests that the permit not include permit conditions limiting startup and shutdown times. The values summarized in the AFC and in Tables 7-1 and 7-2 were provided by Siemens in different submittals. Please use the longer times for the evaluation of the application if necessary (i.e., 12 minutes for start up and 7 minutes for shutdown).

This response provides a revision of the maximum hourly emissions for both the FP10 units and the Simple Cycle units. The revised information is provided in Table 7-3. The maximum hourly emissions are now based on one startup, one shutdown, a second startup, and the remainder of the hour at full load emissions all occurring within the same clock hour. This is considered as a more conservative but potentially realistic operating scenario, taking into account a unit trip during start and subsequent re-start.

Please note that the startup time reflects the time from ignition to 100 percent load. The shutdown time reflects the time from 100 percent load to full speed no load (FSNL) without any cool down at FSNL. Siemens has provided mass emission estimates that include all emissions during the expected 12-minute startup plus the next 10 minutes of operation. The maximum one-hour emissions for a turbine startup were represented very conservatively in the AFC and in the ATC application to the Bay Area Air Quality Management District (BAAQMD). Even though startup duration is conservatively estimated to take no longer than 22 minutes in the AFC, URS included all of those emissions as if they occur within a 12-minute period as expected by Siemens.

Therefore, because of this conservatism it is acceptable to the applicant to include the maximum mass emission rates in the permit.

New AERMOD modeling was conducted to assess maximum potential impacts from incorporating additional startups and shutdowns in a given hour. The results of this modeling are included in this response. Consistent with the MLGS AFC, stack parameters were set to a reduced stack exhaust velocity and temperature for the startup/shutdown modeling analyses. Table 6-1 presented the maximum hourly emissions for NO_X and CO, including two startups and one shutdown per turbine. The maximum 8-hour emission rate for CO, including four startups and three shutdowns, is 293.2 pounds per hour (lb/hr) per FP10 turbine, and 252.3 lb/hr per Simple Cycle turbine. The above emission rates were used in modeling maximum impacts due to turbine startup and shutdown conditions. Modeling results are provided in Table 7-4. Modeling input and output files are included on a CD provided with this response to Data Requests.

Table 7-1
Total Estimated Startup and Shutdown Emissions:
SGT6-5000F in Flex Plant 10 Combined Cycle
Operation on Natural Gas at 62 °F and 41 °F

Mode	Approximate Time (minutes)	Total Emissions per Event (lbs)				Fuel Usage (lbs)
		NO_X	CO	VOC	PM	
Startup on Natural Gas at 62 °F	12	24	259	12	3	23,029
Shutdown on Natural Gas at 62 °F	7	10	131	5	1	6,239
Startup on Natural Gas at 41 °F	12	25	267	13	3	24,173
Shutdown on Natural Gas at 41 °F	7	10	135	5	1	6,525

CO = carbon monoxide
°F = degrees Fahrenheit
lbs = pounds
NO_X = nitrogen oxides
PM = particulate matter
VOC = volatile organic compounds

General Notes

1 All data is ESTIMATED, NOT guaranteed, and is for ONE unit.
2 Gas fuel must be in compliance with Siemens fuel specifications.
3 Emissions are at the heat recovery steam generator exhaust stack outlet and exclude ambient air contributions.
4 Emissions are based on new and clean conditions.
5 Please be advised that the information contained in this transmittal has been prepared and is being transmitted per customer request specifically for information purposes only. Such information is not intended to be used for evaluation of plant design and/or performance relative to contractual commitments. Data included in any permit application or Environmental Impact Statement is strictly the customer's responsibility. Siemens is available to review permit application data upon request.

Startup Emissions Notes

1 Estimated startup (SU) data are from gas turbine (GT) ignition through 100% GT load plus 10 minutes
2 Estimated SU and shutdown (SD) data are based on the assumed times noted above and will be higher for longer times.
3 Estimated SU and SD data are based on the ambient temperatures noted above and will be higher at lower ambient temperatures.
4 NO_X emissions assume selective catalytic reduction is not in operation (no removal).
5 CO emissions assume 20% removal from ignition to 100% GT load and 90% removal from 100% GT load on.
6 SU assumes 5 minutes from turning gear to synchronization.
7 SD assumes 100% load to FSNL with no cooldown at FSNL.
8 Operator actions do not extend startup or shutdown.
9 It is assumed that there is no restriction from the interconnected utility for loading the GT from synchronization to 100% load within the SU times considered.

Table 7-2
Total Estimated Startup and Shutdown Emissions and Fuel Use:
SGT6-5000F 9 ppm Ultra Low Nitrogen in Simple Cycle Operation at 59 °F on Natural Gas

Mode	Approximate Time (minutes)	Total Emissions per Event (lbs)				Fuel Usage (lbs)
		NO_X	CO	VOC	PM	
Startup	11	12	213	11	1	6,638
Shutdown	3	10	110	5	1	5,905

CO = carbon monoxide
°F = degrees Fahrenheit
lbs = pounds
NO_X = nitrogen oxides
PM = particulate matter
ppm = parts per million
VOC = volatile organic compounds

General Notes

1 All data is ESTIMATED, NOT guaranteed, and is for ONE unit.
2 Gas fuel must be in compliance with Siemens fuel specifications.
3 Emissions are at the exhaust stack outlet and exclude ambient air contributions.
4 Emissions are based on new and clean conditions.
5 NO_X as NO_2.
6 VOC consists of total hydrocarbons excluding methane and ethane and are expressed un terms of methane (CH_4).
7 Particulates are per U.S. EPA Method 5/202 (front and back half).
8 Estimated fuel use data is based on a heating value of 22,356 Btu/lb_m (HHV) and will be different for different heating values.
9 Please be advised that the information contained in this transmittal has been prepared and is being transmitted per customer request specifically for information purposes only. Such information is not intended to be used for evaluation of plant design and/or performance relative to contractual commitments. Data included in any permit application or Environmental Impact Statement is strictly the customer's responsibility. Siemens is available to review permit application data upon request.

Startup Emissions Notes

1 Estimated startup (SU) data are from gas turbine (GT) ignition through 100% load.
2 Estimated SU and shutdown (SD) data are based on the assumed times noted above and will be higher for longer times.
3 Estimated SU and SD data are based on the ambient temperatures noted above and will be higher at lower ambient temperatures.
4 Total SU time includes 5 minutes from turning gear to synchronization.
5 SD assumed 100 percent load to FSNL with no cooldown at FSNL.
6 Continuous Emissions Monitoring System (CEMS) may calculate emission differently.
7 Operator actions do not extend startup or shutdown.
8 It is assumed that there is no restriction from the interconnected utility for loading the GT from synchronization to 100% load within the SU times considered.

Table 7-3
Criteria Pollutant Emission Rates during Startup and Shutdown

Pollutant	FP10 Units			Simple Cycle Units		
	Maximum hourly (lb/hr)	Startup (12 min) Total Emissions (lb/event)	Shutdown (7 min) Total Emissions (lb/event)	Maximum Hourly (lb/hr)	Startup (11 min) Total Emissions (lb/event)	Shutdown (6 min) Total Emissions (lb/event)
NO_X (2.0 or 2.5 ppm)	68.6	24.8	10.5	45.1	12	10
CO (3 ppm)	677.3	267.1	135.4	544.0	213	110
VOC (2 ppm)	33.6	12.7	5.2	30.1	11	5
SO_2 (0.4 gr/100 scf)	2.7	0.6	0.2	1.8	0.17	0.15
SO_2 (1 gr/100 scf)	6.7	1.6	0.4	6.2	0.42	0.37
PM_{10}	12.1	3.1	1.1	9.0	1	1

CO = carbon monoxide
NO_X = nitrogen oxide
PM_{10} = particulate matter 10 microns in diameter
ppm = parts per million
SD = shutdown
SO_2 = sulfur dioxide
SU = startup
VOC = volatile organic compounds

Notes:

Startup/shutdown duration defined as operation of CTG below 60 percent load for the FP10s or 60 percent load for the Simple Cycle units when gaseous emission rates (lb/hr basis) exceed the controlled rates defined as normal operation.

Startup and shutdown SO_2 emissions are calculated based on the total amount of fuel used for each and the emission rate of SO_2 at a winter extreme of 20°F; 100% load.

Maximum hourly emissions assume two startups, one shutdown, and the remainder of the hour at maximum normal operating rate.

Table 7-4
AERMOD Modeling Results for Pollutants with Revised Maximum Hourly Emission Rates[1]
(All Project Sources Combined)

Pollutant	Averaging Period	Maximum Predicted Impact (µg/m^3)	Background Concentration (µg/m^3)[2]	Total Concentration (µg/m^3)	NAAQS (µg/m^3)	CAAQS (µg/m^3)	Maximum UTMX NAD27 (m)	Maximum UTMY NAD27 (m)
NO_2	1 hour[3]	75.3	122.1	197	NA	339	600,925	4,202,775
CO	1 hour	773	4,715	5,488	40,000	23,000	600,925	4,202,775
	8 hour	115	2,222	2,337	10,000	10,000	601,625	4,200,550

AERMOD = American Meteorological Society and Environmental Protection Agency preferred atmospheric dispersion model
CAAQS = California ambient air quality standard
CO = carbon monoxide
m = meters
µg/m^3 = micrograms per cubic meter
NAAQS = national ambient air quality standard
NO_2 = nitrogen dioxide

Notes:

1 Pollutants having AAQS less than 24-hour only and whose maximum hourly emissions rate increased.
2 Background represents the maximum values measured at the monitoring stations
3 Results for NO_2 during operations used ozone limiting method (OLM) with ambient ozone data collected at the Bethel Island monitoring station for the years 2000 through 2002 and 2004 through 2005.

BACKGROUND

Dispersion Modeling

The applicant submitted updated dispersion modeling files to the Energy Commission in October 2008. Staff has not yet reviewed these files. Of particular concern would be adherence to Bay Area Air Quality Management District (BAAQMD) recommendations for meteorological data. Staff may develop additional data requests upon review of the new modeling files.

DATA REQUEST

8. Please provide documentation (such as a Report of Conversation or correspondence with BAAQMD staff) that confirms that the October 2008 dispersion modeling has been completed to the satisfaction of the BAAQMD.

RESPONSE

The BAAQMD staff has informed the applicant that the Preliminary Determination of Compliance (PDOC) will include this information. The BAAQMD is expected to issue the PDOC in late January 2009. On December 3, 2008, the BAAQMD sent URS an email containing comments in advance of the new modeling to be performed by the applicant relative to the increase in the maximum hourly emissions (see the response to Data Request 7). BAAQMD requested expanded modeling of fumigation impacts and those results are included in this response.

Fumigation may occur when a plume that was originally emitted into a stable layer of air is mixed rapidly to ground level and unstable air below the plume reaches plume height. Fumigation can cause relatively high ground-level concentrations for some elevated point sources during either the breakup of the nocturnal radiation inversion by solar warming of the ground surface (inversion breakup fumigation), or by the transport of pollutants from a stable marine environment to an unstable onshore environment (shoreline fumigation). The transition from stable to unstable surroundings can rapidly draw a plume down to ground level and create relatively high pollutant concentrations for a short period. In general, this phenomenon will be transient, seldom persisting for as long as an hour. Typically, a fumigation analysis is conducted using SCREEN3 when the project site is rural and the stack height is greater than 10 meters (U.S. EPA, 1995). Therefore, no fumigation calculation was made for the process heater sources.

The SCREEN3 model was used to calculate concentrations from both inversion breakup fumigation and shoreline fumigation. A unit emission rate was used (1 gram per second) in the fumigation modeling to represent the project emissions, and the model results were scaled to reflect expected plant emissions for each pollutant. Higher maximum hourly emissions were used in this fumigation remodeling analysis than in the fumigation analysis included in the AFC. For NO_X 1-hour, CO 1-hour, and CO 8-hour emissions, longer startup and shutdown times were incorporated into each emission rate. Details on longer startup and shutdown times are discussed in the responses to Data Requests 6 and 7. Because SCREEN3 only models the impacts from one source, the model was run twice, once for the FP10 combined cycle stack parameters and once for Simple Cycle stack parameters. For shoreline fumigation, thermal internal boundary layer (TIBL) factors 2, 3, 4, 5, and 6 were used to determine the highest impact. BAAQMD provided a modified version of SCREEN3 that allows the input of various TIBL factors.

For both the nocturnal inversion and shoreline inversion analyses, impacts were determined for each source, then summed over all sources using peak predicted fumigation concentrations regardless of location. Fumigation impacts can affect concentrations longer than 1 hour; therefore, the procedures described in Section 4.5.3 of "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources" were used to determine the 3-, 8-, and 24-hour average concentrations (U.S. EPA, 1992).

Peak concentrations due to nocturnal inversion fumigation are presented in Table 8-1. Maximum predicted concentrations include impacts from all four turbines. For both the FP10 combined cycle turbines and the 5000F Simple Cycle turbines, the peak shoreline fumigation impacts occurred when the TIBL factor was set to 6. This is confirmed by Table 8-2, which shows the different *Chi* over *Q* (χ/Q) ($\mu g/m^3/g/s$) values corresponding to different TIBL factors used in the SCREEN3 modeling analysis. Finally, peak concentrations due to shoreline inversion fumigation are presented in Table 8-3. Maximum predicted concentrations include impacts from all four turbines using a TIBL factor of 6.

Modeling input and output files are included on a CD provided with this response to Data Requests

Table 8-1
Peak Concentrations Due to Nocturnal Inversion Breakup Fumigation

Pollutant	Averaging Time	Maximum Predicted Impact ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)[1]	Total Concentration ($\mu g/m^3$)	Most Stringent AAQS ($\mu g/m^3$)
NO_X	1-hour	17.2	122.1	139	339
SO_2	1-hour	1.9	235.8	238	655
	3-hour	1.5	114.4	116	1300
	24-hour	0.6	26.3	27	105
CO	1-hour	180.8	4,715	4,896	23,000
	8-hour	48.2	2,222	2,270	10,000
PM_{10}[2,3]	24-hour	0.9	84	85	50
$PM_{2.5}$[2,3]	24-hour	0.9	74	75	35

AAQS = ambient air quality standard
CO = carbon monoxide
$\mu g/m^3$ = micrograms per cubic meter
NO_X = nitrogen oxides
PM_{10} = particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter
SO_2 = sulfur dioxide

Notes:

1 Background represents the maximum values measured at the monitoring stations in Marsh Landing AFC
2 PM_{10} and $PM_{2.5}$ background levels exceed ambient standards.
3 All PM_{10} emissions from project sources were also considered to be $PM_{2.5}$.

Table 8-2
Shoreline Inversion *X*/Q Values for Different Thermal Inversion Boundary Layer Factors

TIBL factor	FP-10 Combined Cycle turbine *X*/Q ($\mu g/m^3/g/s$)	5000F Simple Cycle turbine *X*/Q ($\mu g/m^3/g/s$)
2	0.512	0.310
3	1.292	0.736
4	2.353	1.308
5	3.493	1.943
6	4.553	2.561

$\mu g/m^3/g/s$ = micrograms per cubic meter pet gram per second
TIBL = thermal internal boundary layer

Table 8-3
Peak Concentrations Due to Shoreline Inversion Fumigation

Pollutant	Averaging Time	Maximum Predicted Impact ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)[1]	Total Concentration ($\mu g/m^3$)	Most Stringent AAQS ($\mu g/m^3$)
NO_X	1-hour	107.9	122.1	230	339
SO_2	1-hour	11.7	235.8	247	655
	3-hour	6.0	114.4	120	1300
	24-hour	0.9	26.3	27	105
CO	1-hour	1129.2	4,715	5,844	23,000
	8-hour	103.2	2,222	2,325	10,000
PM_{10}[2,3]	24-hour	1.3	84	85	50
$PM_{2.5}$[2,3]	24-hour	1.3	74	75	35

AAQS = ambient air quality standard
CO = carbon monoxide
$\mu g/m^3$ = micrograms per cubic meter
NO_X = nitrogen oxides
PM_{10} = particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter
SO_2 = sulfur dioxide

Notes:

1 Background represents the maximum values measured at the monitoring stations in Marsh Landing AFC
2 PM_{10} and $PM_{2.5}$ background levels exceed ambient standards.
3 All PM_{10} emissions from project sources were also considered to be $PM_{2.5}$.

BACKGROUND

Cumulative Modeling Analysis

AFC Section 7.1.3 describes a cumulative modeling impact assessment that has not yet been filed with the Energy Commission.

DATA REQUEST

9. Please provide the analysis of cumulative air quality impacts and ensure that the existing Contra Costa Power Plant Units 6 and 7, the approved Gateway Generating Station, and the proposed Willow Pass Generating Station are included.

RESPONSE

As required by California Energy Commission (CEC) policy, a dispersion modeling analysis has been conducted to evaluate the maximum cumulative air quality effects of MLGS, the Willow Pass Generating Station (WPGS), and other sources within 6 miles of either site. This data response is meant to fulfill the cumulative analysis for either the Marsh Landing or the Willow Pass Generating Station, or both plants combined. The additional sources included in the cumulative analysis have not yet begun operation and are either under construction, or currently in the permitting process.

In order to facilitate the cumulative analysis, staff at the BAAQMD were contacted to obtain a list of permitted emission sources within 6 miles of the two Mirant plant sites. The listed sources with emissions and stack parameters are presented in Table 9-1. The same emissions and screening stack parameters that were used for MLGS and WPGS in each respective revised AFC section were also used in cumulative modeling. Because ABA Energy Corporation's exempt heater has criteria pollutant emissions of less than 1 ton/year, this source was not included in the cumulative analysis. Sources that only emit volatile organic compounds were not included in cumulative modeling analysis.

Cumulative modeling with AERMOD used the same 5-year record of hourly meteorological input data from the onsite Contra Costa Power Plant meteorological station that was used in the modeling for the ATC/PTO application revision (October 3, 2008). The ozone limiting method was applied to nitrogen dioxide modeling using Bethel Island Road monitoring station data for the same years as the meteorological data. The meteorological data and the ozone data closer to MLGS are more appropriate for this dual analysis than the corresponding set of data closer to WPGS because the combined emissions of the MLGS and sources in the vicinity of MLGS, including the Contra Costa Power Plant and the Gateway Generating Station, are much larger than the emissions from WPGS and sources in the vicinity of WPGS. Receptors spaced 25 meters apart were placed along the CCPP and Pittsburg Power Plant fencelines out to 100 meters. Beyond 100 meters from either fenceline, 100-meter, 500-meter, and 1,000-meter spaced receptors were generated out to 10 kilometers. Similar to the analysis presented in the AFC, tighter grids of receptors were used for the hills to the south of WPGS and southeast of MLGS.

Maximum concentrations due to the combined emissions of the eight additional facilities and proposed MLGS and WPGS power generation facilities were calculated and the results were added to conservative background pollutant concentrations reported in the Marsh Landing Generating Station AFC. The results are presented in Table 9-2.

Maximum concentrations for all pollutants except PM-annual are caused almost entirely by emissions from internal combustion engines at the Ameresco Keller Canyon facility, which is located south of the Pittsburg Power Plant. Maximum concentrations occur several hundred meters south of the Ameresco Keller Canyon sources, in the hills south of West Leland Drive in Pittsburg, CA. The maximum concentration for PM-annual is caused almost entirely by emissions from the United Spiral Pipe LLC Manufacturing Plant, the maximum impact occurring a few hundred meters south of the United Spiral Pipe sources. A CD with modeling files is provided with this response.

As demonstrated by these results, maximum predicted concentrations for all pollutants are below applicable ambient standards, except for particulate matter less than 10 microns and particulate matter less than 2.5 microns, whose maximum background concentrations alone exceed the state and federal standards. However, the maximum contributions from the modeled facilities are small. Based on these results it is concluded that the combined effects of the Mirant MLGS, Mirant WPGS, and other cumulative sources close to the Mirant sites will be below a level of significance.

Table 9-1
Cumulative Sources for Mirant Marsh Landing Generating Station and Mirant Willow Pass Generating Station

Source Name	Address	Type of Source	Distance to Willow Pass Generating Station (miles)	Distance to Marsh Landing Generating Station (miles)	Emissions (tons/yr)					Stack Parameters				UTM Coordinates NAD83 zone 10		Notes
					VOC	NO_X	SO_X	CO	PM_{10}	Diameter (m)	Height (m)	Exit velocity (m/s)	Temp (K)	Easting (km)	Northing (km)	
Calpine Natural Gas	South End of Nichols Road Bay Point, CA 94565	Calpine Natural Gas Ryer Island Station - 70 Barrel Water/ Condensate Storage Tank	5.13	12.20	1.39	0.162	0	0.041	0.004	0.05	3.66	1.94	295.9	588.848	4210.009	Emissions and stack parameters provided by BAAQMD
Silgan Containers Manufacturing Corporation	2200 Wilbur Avenue, Antioch, CA 94509	Silgan Containers Mfg Corp Thermal Oxidizer Modification	6.12	1.28	0	1.922	0.006	7.688	0.072	0.65	14.63	8.80	616.5	606.519	4207.724	Emissions and stack parameters provided by BAAQMD
Ameresco Keller Canyon LLC	901 Bailey Road, Pittsburg, CA 94565	Ameresco Keller Canyon LLC 2 LFG-Fired Internal Combustion Engines	3.19	9.67	9.64	31.02	8.637	95	5.17	0.51	10.67	40.68	740.4	592.879	4207.727	Emissions and stack parameters provided by BAAQMD
		Ameresco Keller Canyon LLC TSA Waste Gas Flare	3.19	9.67	0.603	2.168	1.805	20.796	1.212	1.52	9.14	4.57	1144.3	592.879	4207.727	Emissions and stack parameters provided by BAAQMD
United Spiral Pipe LLC Manufacturing Plant	900 E 3rd Street, Pittsburg, CA 94565	United Spiral Pipe LLC Manufacturing Plant welding, cleaning, misc.	1.44	5.80	4.584	0	0	0	4.781	0.26	12.19	73.89	294.3	599.200	4209.700	Emissions and stack parameters provided by BAAQMD
Freedom High School	1050 Neroly Road Oakley, CA 94561	Freedom High School Generator set	10.41	3.98	1.67	1.67	0	1.67	0.083	0.08	3.66	21.03	416.5	612.095	4203.127	Emissions and stack parameters provided by BAAQMD
Contra Costa Power Plant	3201 Wilbur Avenue, Antioch, CA 94509	CCPP Natural Gas Boiler 9 and 10 Stack Units 6 and 7	7.39	0.24	18.966	21.043	1.0863	144.83	13.104	5.70	137.16	28.70	411.0	608.825	4208.561	Emissions from 2005-2007 CEMS data
Gateway Generating Station	3223 Wilbur Avenue, Antioch, CA 94509	Gateway Natural Gas Boiler A	7.44	0.27	23.3	87.15	18.5	277.15	50.85	5.11	59.44	19.92	355.2	608.9	4208.454	From BAAQMD Engineering Evaluation For Proposed Amended Authority to Construct and Draft PSD Permit, June 2008.
Gateway Generating Station	3223 Wilbur Avenue, Antioch, CA 94509	Gateway Natural Gas Boiler B	7.45	0.27	23.3	87.15	18.5	277.15	50.85	5.11	59.44	19.92	355.2	608.9	4208.413	From BAAQMD Engineering Evaluation For Proposed Amended Authority to Construct and Draft PSD Permit, June 2008.
Pittsburg Power Plant	696 West 10th Street, Pittsburg, CA 94565	PPP Natural Gas Boiler 5	0.12	7.26	20.438	17.558	1.1705	156.07	14.121	4.18	137.16	32.64	403.0	597.003	4210.849	Emissions from 2005-2007 CEMS data
Pittsburg Power Plant	696 West 10th Street, Pittsburg, CA 94565	PPP Natural Gas Boiler 6	0.14	7.28	11.803	11.266	0.676	90.129	8.1546	4.18	137.16	32.64	403.0	596.974	4210.856	Emissions from 2005-2007 CEMS data
Pittsburg Power Plant	696 West 10th Street, Pittsburg, CA 94565	PPP Natural Gas Boiler 7	0.15	7.33	7.3935	11.292	0.4234	56.46	5.1083	6.10	137.16	25.00	398.0	596.862	4210.726	Emissions from 2005-2007 CEMS data

Table 9-2
AERMOD Cumulative Impact Modeling Result

Pollutant	Averaging Period	Maximum Modeled Impact ($\mu g/m^3$)	Background ($\mu g/m^3$)[1]	Maximum Total Predicted Concentration ($\mu g/m^3$)	Most Stringent AAQS ($\mu g/m^3$)	UTM Coordinates NAD27	
						East (m)	North (m)
CO	1 hour	403.34	4,715	5,118	23,000	593,500	4,207,000
	8 hour	259.31	2,222	2,481	10,000	593,500	4,206,800
NO_2	1 hour[2]	104.59	122.1	227	339	592,250	4,207,000
	Annual[2]	2.73	22.4	25	57	593,525	4,207,000
PM_{10}	24 hour[3,4]	6.48	84	90	50	593,500	4,206,800
	Annual[3,4]	0.70	22	23	20	599,500	4,209,500
$PM_{2.5}$	24 hour[3,4]	6.48	74	80	35	593,500	4,206,800
	Annual[3,4]	0.70	12	13	12	599,500	4,209,500
SO_2	1 hour	36.40	235.8	272	655	593,500	4,207,000
	3 hour	26.75	114.4	141	1,300	593,500	4,206,800
	24 hour	10.57	26.3	37	105	593,500	4,206,800
	Annual	0.86	5.3	1	80	593,525	4,207,000

AAQS = ambient air quality standard
AERMOD = American Meteorological Society and Environmental Protection Agency preferred atmospheric dispersion model
CO = carbon monoxide
m = meters
$\mu g/m^3$ = micrograms per cubic meter
NO_2 = nitrogen dioxide
PM_{10} = particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter. All PM emissions during operation were assumed to be $PM_{2.5}$
SO_2 = sulfur dioxide
UTM = Universal Transverse Mercator

1 Background represents the maximum values measured at the monitoring stations in Marsh Landing AFC
2 Results for NO_2 used ozone limiting method (OLM) with ambient ozone data collected at Bethel Island monitoring station for the years 2000-2002 and 2004-2005
3 PM_{10} and $PM_{2.5}$ background levels exceed ambient standards.
4 All PM_{10} emissions from project sources were also considered to be $PM_{2.5}$.

Technical Area: Cultural Resources
Author: Amanda Blosser

BACKGROUND

Section 2.0 of the AFC provides a project description and limited set of construction specifications for the Marsh Landing Generating Station (MLGS). More specifically, section 2.6.8 (Earthwork) states that 80,060 cubic yards of cut is required for the project, but provides no information on the depth of the ground disturbance for construction of the facility nor does the section specify where the disturbance will occur in the project area.

In addition to trenches for linear facilities, the project description (pp. 2-22–2-23) lists several equipment installations that appear to require excavation and construction of foundations capable of considerable weight-bearing. Thus, it is possible that excavations associated with the new installation could reach previously undisturbed soil layers where intact archaeological deposits could exist.

To assess potential project impacts to possible buried archaeological resources, staff needs information on the locations and the greatest depths to which the proposed new equipment foundations would extend.

DATA REQUEST

10. Please provide the depths of the excavations required for the following features and foundations for proposed equipment:

a. Combustion Turbine Generators

b. Heat Recovery System Generators

c. Single Turbine Generators

d. Balance of Plant Equipment

e. modified water (reclaimed and potable) piping systems, fire protection system, natural gas piping system, and stormwater drainage collection system

f. stormwater retention basin expansion

RESPONSE

After the five tanks have been demolished, the site will be graded as shown on AFC Figure 2.6-2. Grading of the site primarily involves removing soil and asphalt from the tank berms and the area under Tanks 1 and 2 and using that material as fill to level the rest of the site. The maximum cut to grade the site is estimated to be approximately 13 feet and the maximum depth of fill is approximately 6 feet. Once grading is complete, project features will be constructed. The estimated depths of excavation for foundations are summarized in Table 10-1.

Table 10-1
Approximate Depth of Excavation

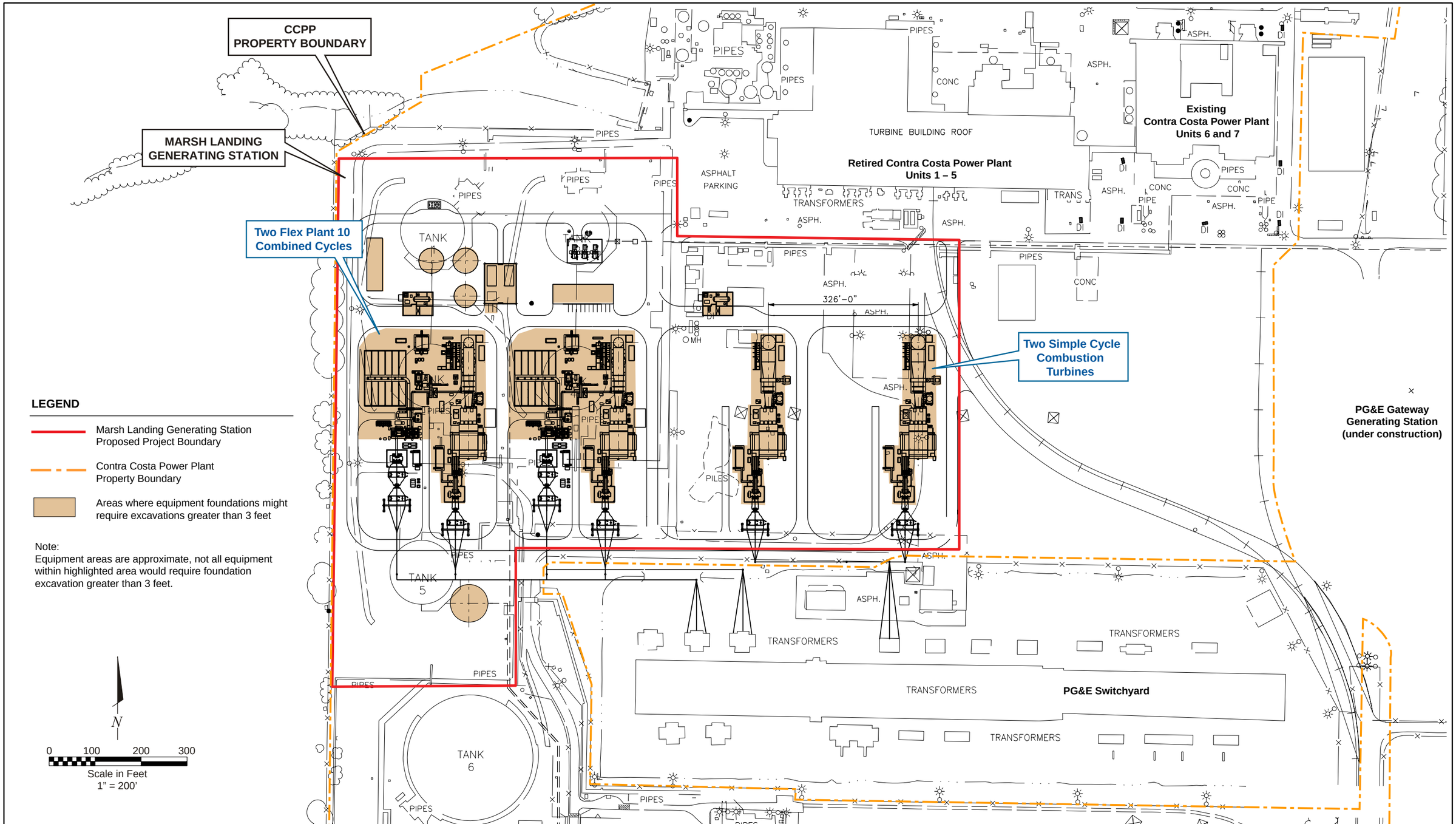
Feature	Depth of Excavation
Combustion Turbine Generators	As stated on AFC p. 7.14-10, pile driving will be used for foundation construction in lieu of deep excavations. Foundation depth will be approximately 5 feet.
Heat Recovery Steam Generators	As stated on AFC p. 7.14-10, pile driving will be used for foundation construction in lieu of deep excavations. Foundation depth will be approximately 4 feet.
Steam Turbine Generators	As stated on AFC p. 7.14-10, pile driving will be used for foundation construction in lieu of deep excavations. Foundation depth will be approximately 6 feet.
Balance of Plant Equipment	Balance of Plant equipment foundation depths are expected to range from approximately 2 to 9 feet, but could be up to 13 feet depending on final design.
Modified water (reclaimed and potable) piping systems, fire protection system, natural gas piping system, and storm water drainage collection system	As stated on AFC p. 7.9-5, piping and pipeline trenches are expected to be no greater than 4 feet deep.
Stormwater Retention Basin Expansion	There is no new or expanded stormwater retention basin associated with this project

DATA REQUEST

11. Please provide a project site plan showing the locations of equipment for whose foundations excavation would exceed three feet below the surface.

RESPONSE

The project site would be graded as shown on AFC Figure 2.6-2. Areas of the site where excavation (i.e., cut) for grading would exceed 3 feet are limited to the berms surrounding the five fuel oil tanks and the area underneath Tanks 1 and 2. Figure 11-1 shows areas where foundation excavation for new equipment would exceed 3 feet.



Source:
CH2MHill Lockwood Greene; General Arrangement Marsh Landing Generating Station,
Combined Cycle Siemens Flex 10s & Simple Cycle Layout;
Drawing No: MR-GA-ML-01-12 (Rev. D, 06/04/08)

EQUIPMENT AREAS WHERE FOUNDATION DEPTHS EXCEED THREE FEET

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FIGURE 11-1

12/08/08 vsa ..\T:\Mirant Contra Costa-Marsh Landing\Graphics\DATA REQUESTS\DR_11-1_fndn depths.ai

BACKGROUND

Based on the information obtained from the record search, the applicant identified that there are no archaeological resources within the project area. The archival research revealed that Mirant's Contra Costa Power Plant (CCPP) property had been previously surveyed for cultural resources with negative results. The survey was conducted in support of the Environmental Impact Report (EIR) for PG&E's sale of this and other power plants. It is noted in the EIR, that because of previous disturbances within the CCPP, there is moderate to low potential for buried prehistoric resources. The applicant also identified that there is no evidence supporting the presence of historical archaeological materials in the CCPP.

However, the Office of Historic Preservation Directory of Historic Properties identified the Marsh Landing Site (Primary #07-000878) within the CCPP property. Marsh Landing is the site of John Marsh's former wharf, or ship landing, established in 1838 and shown on the 1868 General Land Office plat, the 1908 USGS "Collinsville" topographic map, and the 1918 USGS "Antioch" topographic map in what is now the northeastern portion of the power plant site. Archival research also confirmed that a smokehouse, blacksmith shop, and a warehouse were located at the Marsh Landing site.

Staff needs more substantive information on the possible presence of buried historic-period archaeological deposits on the project site, especially in light of the former presence of the nearby Marsh Landing historic site.

DATA REQUEST

12. To facilitate a more substantive factual assessment of whether the proposed project may impact potentially significant buried historic-period archaeological deposits, staff requests that the applicant provide a report of the results from a more thorough identification effort for the Marsh Landing historic site, including the following:

a. The applicant should conduct additional archival research, if available, to determine the location and extent of the Marsh Landing historic site and to provide a land use history that addresses the likelihood that remains of the historic site still exist in the project impact areas, taking into consideration nineteenth- and twentieth-century shoreline filling, and land modifications associated with the twentieth-century industrial use of the area. The land use history should describe the changes in the topography of the locality of the historic site and the changes in the landform on which the historic site was located.

b. If the archival research does not support a conclusion about the likelihood of buried extant remains of the historic site, the applicant should have a qualified historical archaeologist conduct a subsurface inventory of the probable historic site location to determine the presence or absence of buried archaeological deposits. Methods could include backhoe trenching or other sampling strategies to provide data which either confirms the presence or absence of deposits associated with the Marsh Landing historic site.

RESPONSE

Additional archival research was conducted and supports the findings presented in the MLGS AFC that the proposed project would not impact the site of Marsh Landing or associated cultural resources. Additional archival research confirms that the site of John Marsh's former landing was situated in the vicinity of current CCPP facilities, to the northeast but outside the Area of Potential Effect (APE) for the MLGS. Furthermore, the likelihood that any intact cultural deposits associated with Marsh Landing exist within the MLGS APE is remote given the history of industrial development on the CCPP site, including the area proposed for MLGS development. The evidence to support these findings is detailed below.

Establish Shoreline

Marsh Landing was the site of John Marsh's wharf facility, from which he shipped cattle, produce, and other goods to San Francisco beginning in the mid-nineteenth century. Marsh's holdings included the wharf, a warehouse, a smokehouse, and a blacksmith shop. In order to determine the location of the Marsh Landing site, which was a shore-focused establishment, archival research was performed to locate the historic shoreline. If extensive shoreline filling had occurred, the argument could be made that intact remains associated with the facility could now be situated inland of the current shoreline and potentially within the boundaries of the MLGS APE.

In 1949, Dames & Moore conducted a geotechnical investigation for the then-proposed Pacific Gas & Electric Company (PG&E) Contra Costa Steam Generating Plant (today's CCPP) (Dames & Moore, 1949). The geotechnical report includes a topographic map that depicts the pre-construction topographic conditions, the locations of the geotechnical borings, and the proposed footprint of the power plant including the tank farm area within which the proposed MLGS is to be constructed (see Figure 12-1). Figure 12-1 shows geotechnical boring numbers 29, 35, 36, and 37, which are located on the northern portion of the area to be developed for the MLGS project. No evidence of fill was observed at any of these borings locations, indicating that land reclamation activities (i.e., filling) did not occur within the portion of the CCPP property where the MLGS would be constructed. The topographic map further demonstrates that the tank farm was not placed on reclaimed land. As can be seen on Figure 12-1, the footprint of the then-proposed tank farm is located along on top of an east-west trending ridgeline. This same ridgeline is seen within the series of historic U.S. Geological Survey (USGS) maps that are presented below (see Figures 12-6, 12-7, 12-8, and 12-9).

This evidence supports the conclusion that the shoreline location during the period of John Marsh's Landing is very similar to its current location. Substantial filling in of the shoreline has not occurred and therefore it is expected that remains associated with the site, to the extent that any still exist, are located along the current shoreline and outside of the MLGS APE.

Confirm Marsh Landing Location in Relation to MLGS APE

The location of the Marsh Landing site has been further confirmed with additional archival research. The earliest identified mapping of Marsh Landing is the circa 1853 *Map of the Rancho Los Meganos* provided here as Figure 12-2 (Whitcher, n.d.). Although the map is fairly crude, a wharf and one (or two) structures is depicted along the shoreline within the current CCPP property. Another contemporaneous map from the same Land Case file housed at the University of California's Bancroft Library similarly depicts the wharf, an adjacent structure with chimney, and possibly a second structure at the foot of the wharf. The facilities are labeled as "Marsh's Landing" on this map (see Figure 12-3 for an alternate view). These early maps place the original facilities near the shoreline.

The next identified map is the 1862 Government Land Office (GLO) Plat map for Township 2 North, Range 2 East (see Figure 12-4) (GLO, 1862). Along the shoreline within Section 16 is a structure identified as "Ware House at Marsh Landing." No additional structures or features are depicted or labeled in the vicinity. As this map includes section lines, it allows for the direct comparison with current maps of the site. This nineteenth century map shows that Marsh Landing falls within the CCPP property boundary, but to the northeast of where the MLGS facilities are proposed.

The 1908 official map of Contra Costa County (McMahon, 1908) depicts a wharf labeled as "MARSH LDG" paralleling the shoreline (as opposed to extending perpendicular out into the river). Similar to the 1862 GLO Plat, no other structures are identified or labeled within the CCPP vicinity (see Figure 12-5).

Figure 12-6 shows a lone structure labeled as "Marsh Landing" plotted on the 1918 USGS Collinsville topographic quadrangle (USGS, 1918). A similar configuration is also depicted on the 1906 USGS Sacramento Valley, Sheet Q topographic quadrangle (USGS, 1906), and on the 1908 USGS Antioch topographic quadrangle (USGS, 1908) (see Figures 12-7 and 12-8, respectively). For comparison purposes, the CCPP project boundary and facilities and the proposed MLGS project boundary have been drawn on the 1918 quadrangle map. Figure 12-9 shows that the location of the Marsh Landing structure is occupied by CCPP facilities. The structure depicted on the 1906 and 1918 quadrangles is situated slightly inland from the shoreline but still outside of the proposed MLGS boundary.

The final depiction of the Marsh Landing vicinity prior to the construction of the CCPP is shown on an aerial photograph taken in 1939 (Aerial Photo, 1939). This photograph is presented in two forms, one with only the CCPP property boundary plotted (Figure 12-10) and a second with current CCPP facilities as well as the APE for the MLGS included for reference. These photographs confirm that the structure labeled as "Marsh Landing" on the earlier topographic quadrangles is situated outside of the APE for the MLGS. Furthermore, the photograph does not reveal the presence of other structures within the currently proposed MLGS construction footprint. It is also worth noting how closely the topographic map presented in the 1949 geotechnical report (Figure 12-1) matches the shoreline depicted in the 1939 aerial photograph (Figure 12-10).

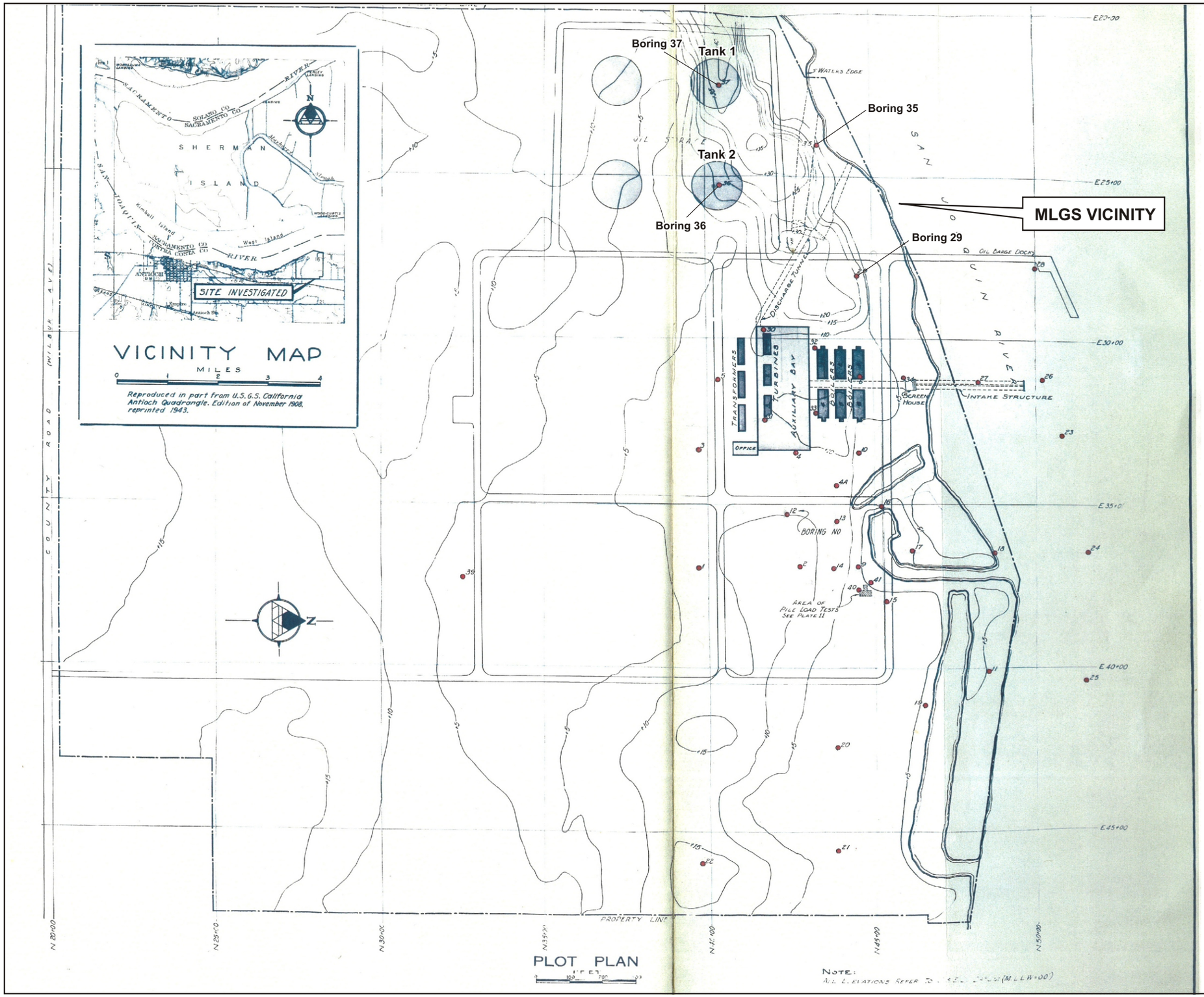
From the above identified sources it is evident that the primary Marsh Landing facilities (that have been mapped) were situated outside of the current APE for the MLGS.

Previous Earth-Moving Activities

It should also be noted that substantial land modifications were made in the early 1950s to develop the tank farm. As discussed previously, the topographic map provided in the 1949 Dames & Moore geotechnical report reveals that the tank farm was to be constructed within an area that at the time exhibited a topography dominated by an east-west trending ridgeline (Figure 12-1). Perhaps more importantly, however, the topographic map makes it possible to determine approximately how much grading occurred to construct the tank farm. The top of the historic ridge reached a height of approximately 40 feet above mean low low water (MLLW) in the vicinity of the northwesternmost tank (i.e., Tank No. 1). Today, the elevation within the containment berm surrounding Tank No. 1 exhibits a minimum height of 10 feet above mean sea level (MSL). This represents a cut of approximately 28 feet at this location[1]. The cut was slightly less around Tank No. 2 (the tank closest to the mapped location of the Marsh Landing

[1] MLLW is 2 to 3 feet below MSL, as it represents the annual mean of only the lower of the daily low tides as opposed to all annual tides.

site), where the pre-tank elevation reached 20 feet above MLLW and currently exhibits a minimum height of 9 feet above MSL, a cut of approximately 9 feet. Given the extent of grading in this location to construct the tanks and tank berms that currently exist on the CCPP site, it is unlikely that intact remains associated with Marsh Landing, if ever present, currently occur within the MLGS construction footprint. This grading for the construction of the tank farm would have altered cultural deposits associated with other prehistoric and/or historic period activities that may have been present within the MLGS APE, and therefore no deposits would be expected to be encountered by construction activities associated with MLGS.



Source:
Dames & Moore, *Report of Foundation Investigation, Proposed Contra Costa Steam Plant, Antioch, California for the Pacific Gas and Electric Company* (1949).

0 100 200 300
Scale in Feet

DAMES & MOORE
1949 GEOTECHNICAL INVESTIGATION

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FIGURE 12-1

12/05/08 vsa ..T:\Mirant Contra Costa-Marsh Landing\Graphics\DATA REQUESTS\Cultural\DR_12-1_1949 D&M 1949 geotech.cdr

Source:
Detail from Map of the Rancho Los Meganos, n.d., Land Case No. 107, by J. E. Whitcher, ca. 1853, U.S. District Court, Northern District California, Bancroft Library, University of California, Berkeley.

Approximate North;
No Scale

RANCHO LOS MEGANOS MAP CIRCA 1853

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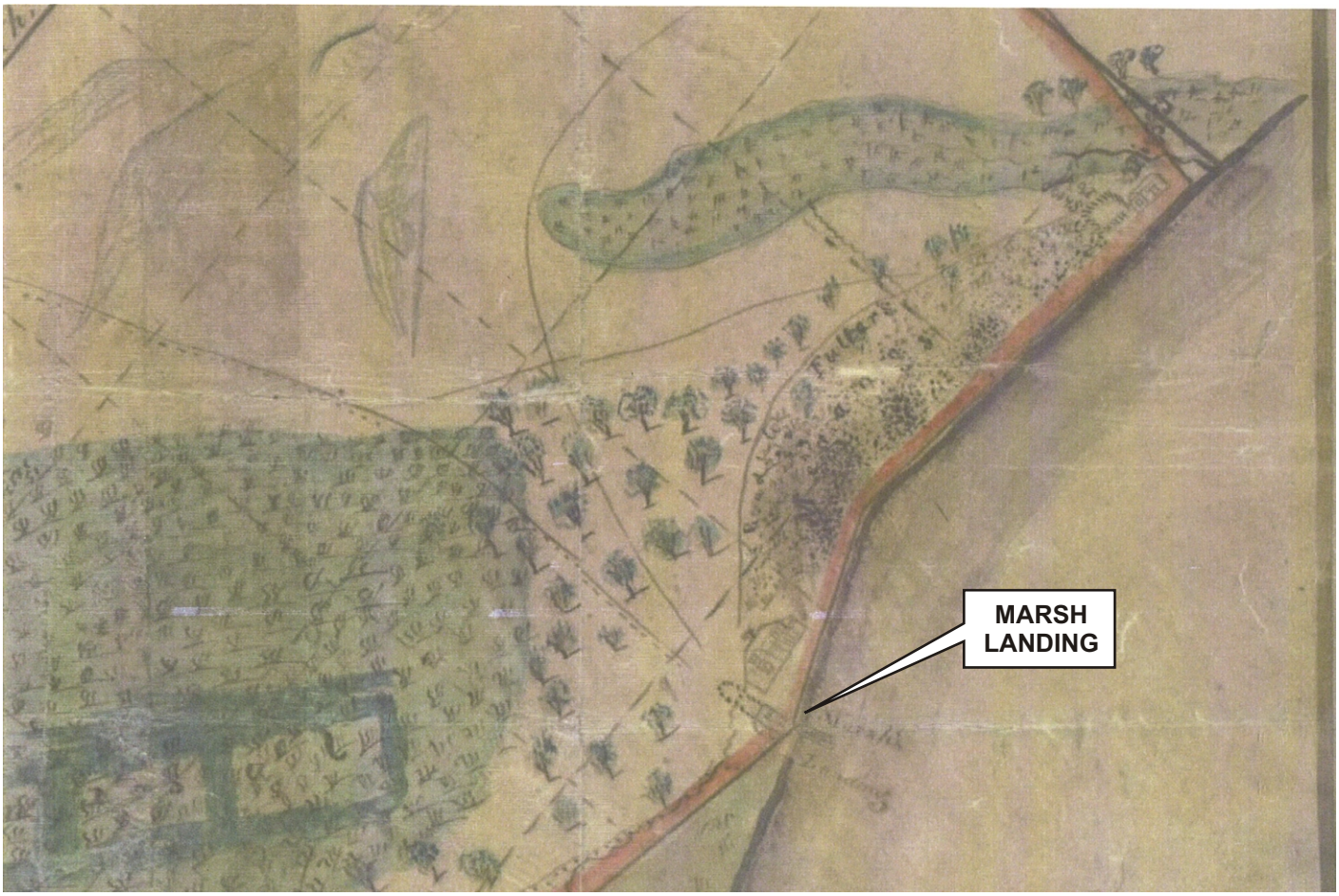
FIGURE 12-2



Source:
Detail from Map of the Rancho Los Meganos, n.d., Land Case No. 107, by J. E. Whitcher, ca. 1853, U.S. District Court, Northern District California, Bancroft Library, University of California, Berkeley.

Approximate North;
No Scale

RANCHO LOS MEGANOS MAP CIRCA 1853 (ALTERNATE VERSION)

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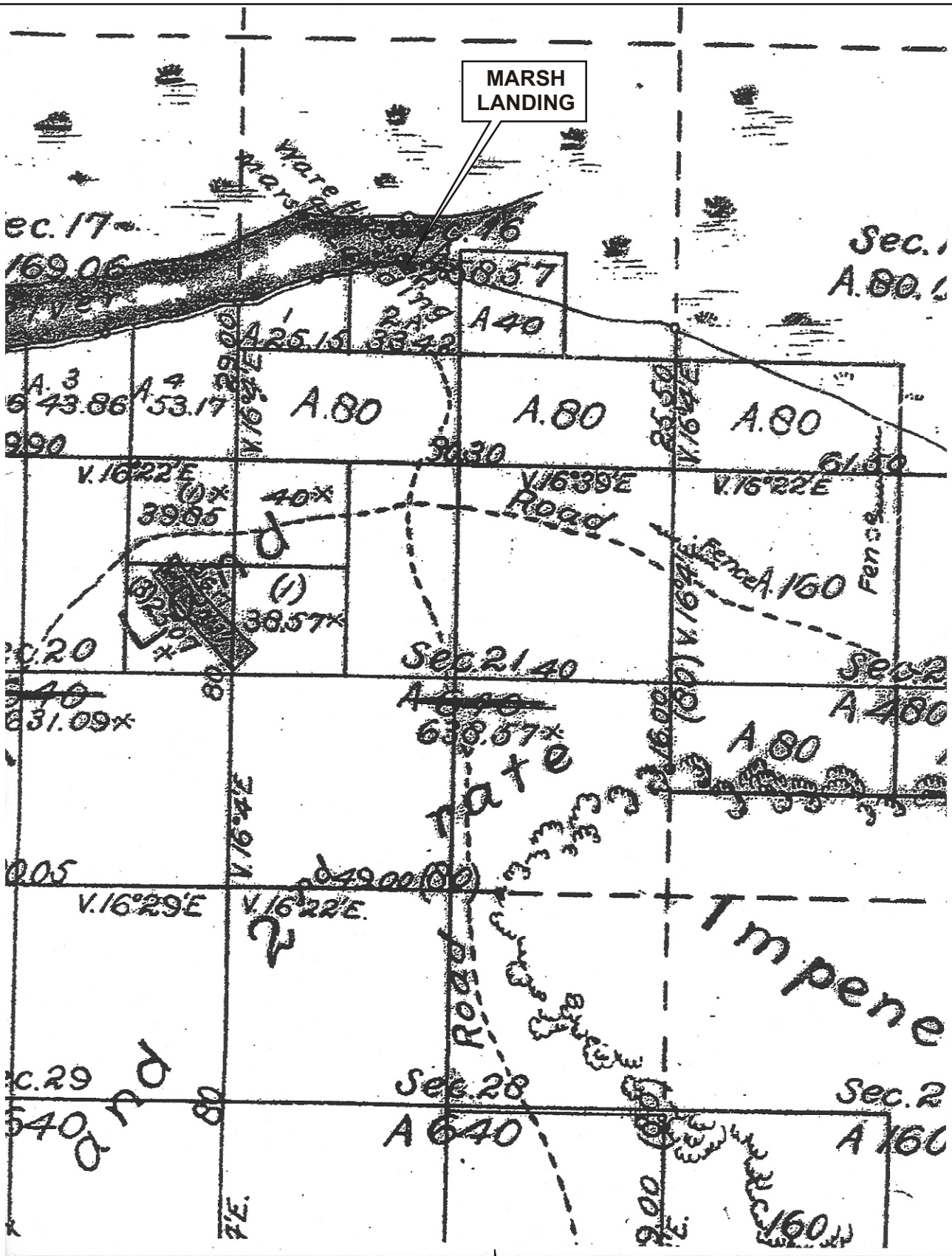
FIGURE 12-3

12/05/08 vsa ..T:\Mirant Contra Costa-Marsh Landing\Graphics\DATA REQUESTS\Cultural\DR_12-3_1853 marsh landing_Alt vers.cdr



Source:
Government Land Office (GLO), 1862

N

No Scale

1862 GLO PLAT T2N R2E

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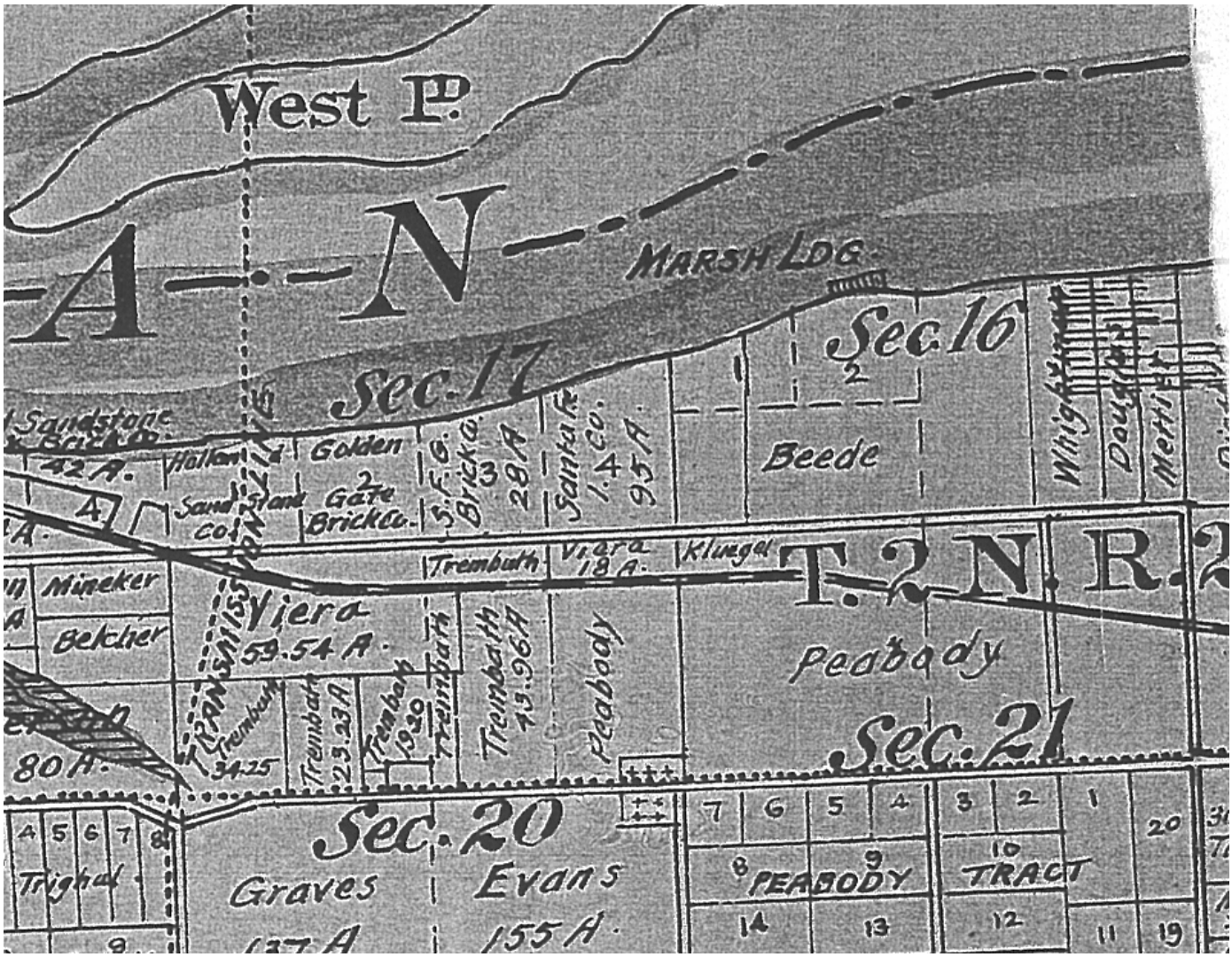
FIGURE 12-4

11/20/08 vsa ..T:\Mirant Contra Costa-Marsh Landing\Graphics\DATA REQUEASTS\Cultural\DR_12-4_GLO Plat.cdr



Source:
Detail from T. A. McMahon, 1908,
Official Map of Contra Costa County.

N

No Scale

1908 MARSH LANDING

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FIGURE 12-5

12/05/08 vsa ..T:\Mirant Contra Costa-Marsh Landing\Graphics\DATA REQUESTS\Cultural\DR_12-5_1908 marsh landing.cdr

Source:
USGS, 1918, Collinsville, California Quadrangle (Antioch, CA).

N

0 0.5 1

Approximate Scale in Miles

1918 USGS COLLINSVILLE TOPOGRAPHIC QUADRANGLE

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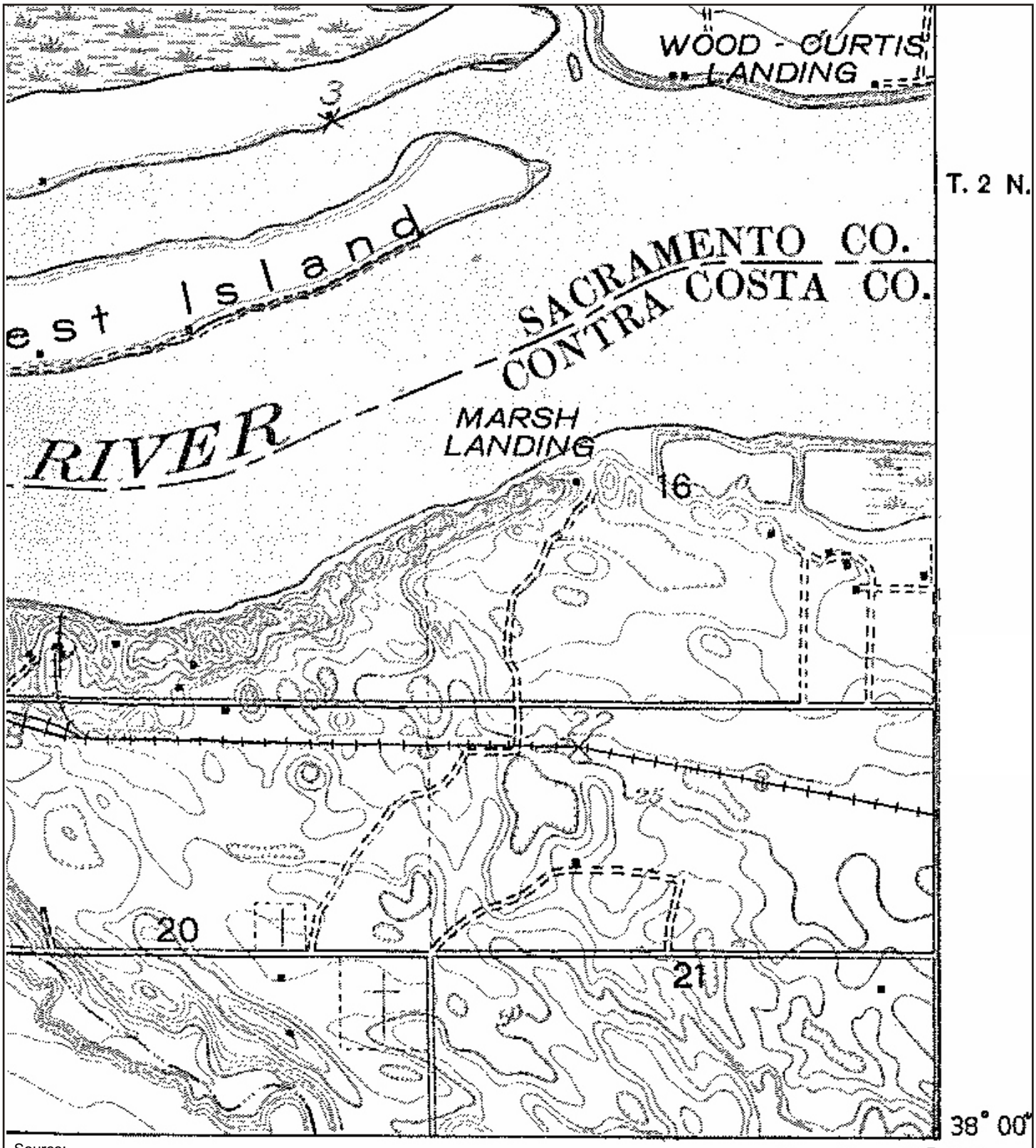
FIGURE 12-6

12/05/08 vsa ..T:\Mirant Contra Costa-Marsh Landing\Graphics\DATA REQUESTS\Cultural\DR_12-6_1918-USGS collinsville quad.cdr



Source:
Detail from U.S. Geological Survey, 1906,
California Sacramento Valley. Sheet Q.

0 0.5 1
Approximate Scale in Miles

N

1906 USGS MAP OF MARSH LANDING

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FIGURE 12-7

12/05/08 vsa ..T:\Mirant Contra Costa-Marsh Landing\Graphics\DATA REQUESTS\CulturalI\DR_12-7_1906 marsh landing.cdr

Source:
USGS, 1908, Antioch, California Quadrangle.

N

No Scale

1908 MARSH LANDING

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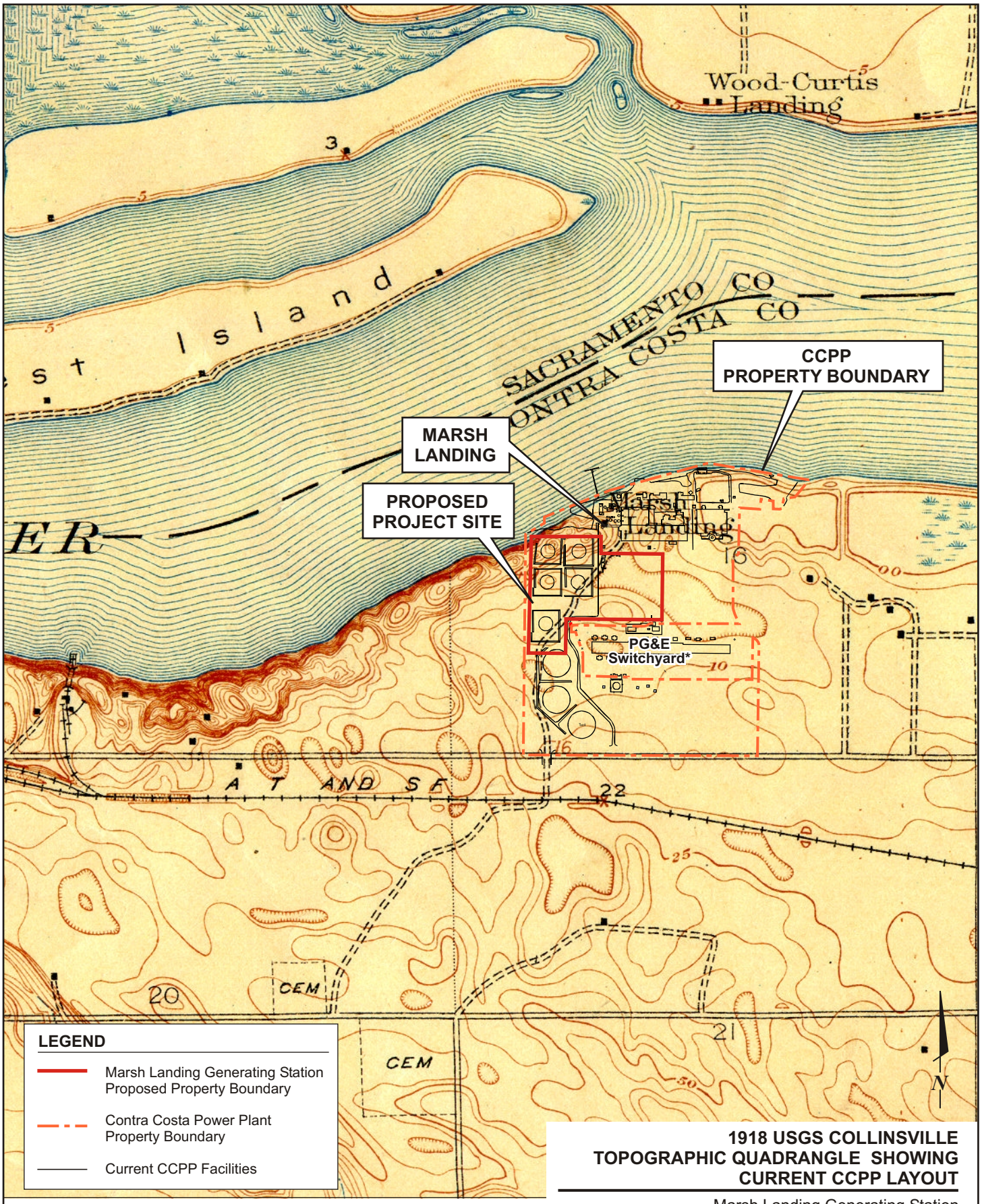
FIGURE 12-8

12/05/08 vsa ..T:\Mirant Contra Costa-Marsh Landing\Graphics\DATA REQUEASTS\Cultural\DR_12-8_1908 marsh landing.cdr



Source:
USGS, 1918, Collinsville, California Quadrangle (Antioch, CA).

0 1400 2800
Approximate Scale in Feet

1918 USGS COLLINSVILLE TOPOGRAPHIC QUADRANGLE SHOWING CURRENT CCPP LAYOUT

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FIGURE 12-9

12/08/08 vsa ..T:\Mirant Contra Costa-Marsh Landing\Graphics\DATA REQUESTS\Cultural\DR_12-9_1918-USGS collinsville_site.cdr

Source: Aerial Photo BUU 268-23 (1939)

1939 AERIAL PHOTOGRAPH

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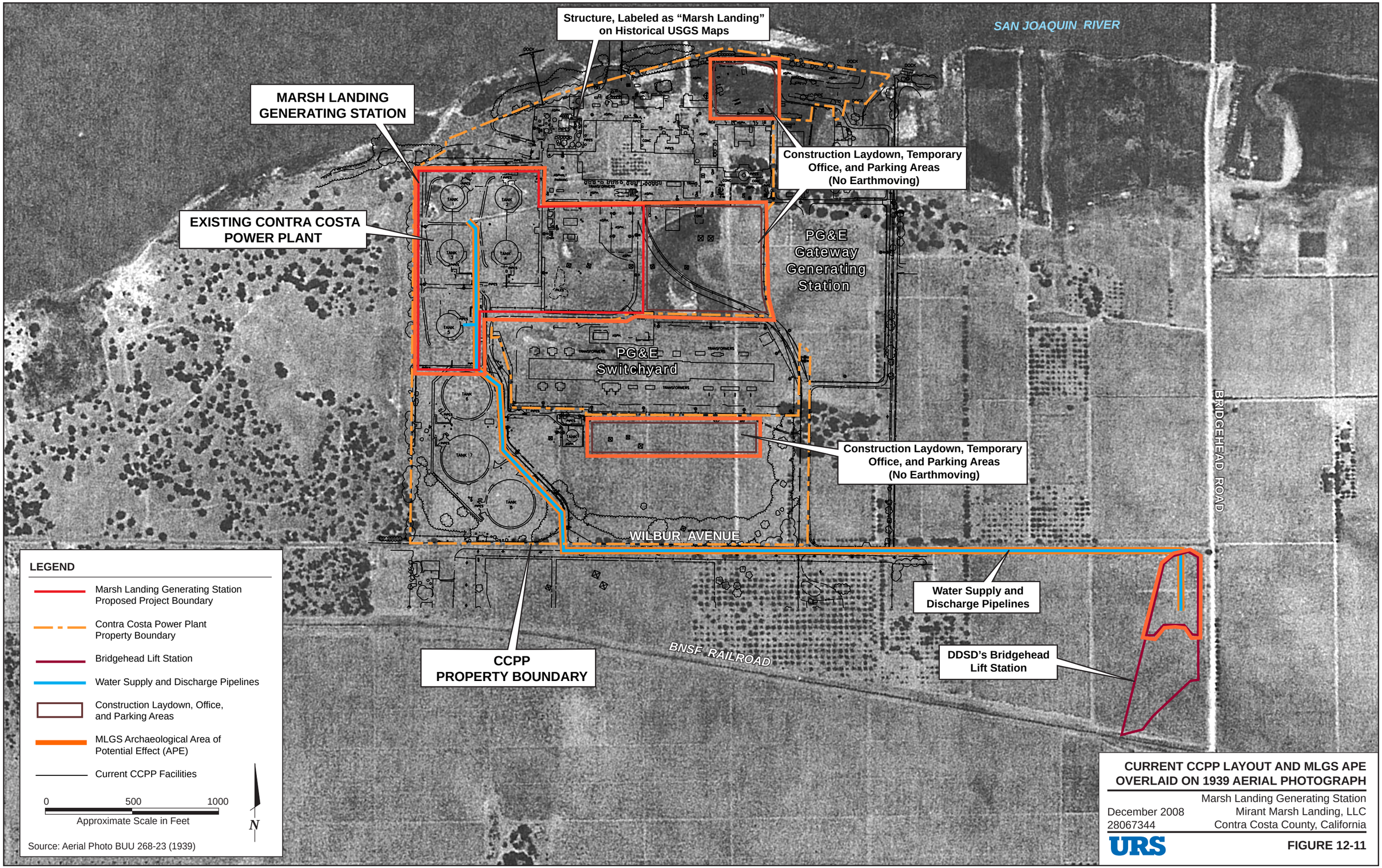
FIGURE 12-10

11/20/08 vsa ..T:\Mirant Contra Costa-Marsh Landing\Graphics\DATA REQUESTS\Cultural\DR_12-10_1939 Aerial photo.ai



CURRENT CCPP LAYOUT AND MLGS APE OVERLAID ON 1939 AERIAL PHOTOGRAPH

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FIGURE 12-11

11/20/08 vsa ..T:\Mirant Contra Costa-Marsh Landing\Graphics\DATA REQUESTS\Cultural\DR_12-11_1939 Aerial_site+APE.ai

BACKGROUND

The MLGS AFC indicates that approximately 8,000 cubic yards of soil will be re-used on site or recycled to the extent possible. In case the project must dispose of soils off-site, staff seeks assurance that a disposal site is available to the applicant that is either a commercial disposal site or a site that has been previously surveyed and found to contain no significant cultural resources.

DATA REQUEST

13. Please identify a soil disposal site, available to the project if needed, which is either a commercial disposal site or a site that has been previously surveyed and found to contain no significant cultural resources.

RESPONSE

Keller Canyon Landfill of Pittsburg, California, is expected to be the commercial disposal site for soil (see page 7.9-4 of the AFC). As shown on AFC Table 7.13-1, Keller Canyon has adequate capacity (63 million cubic yards).

Technical Area: Hazardous Materials Management
Author: Alvin Greenberg

BACKGROUND

Section 7.12.2.2 states that Table 7.12-4, hazardous materials to be added to the site and used or stored on-site during operations of MLGS, includes the CAS number, nature of associated hazard, state/federal threshold quantities, and storage location of hazardous materials. However, much of this information is not included in the referenced table. In addition, the Estimated Storage Quantity column apparently has an absent footnote. Staff needs complete information on what will be added to the site for operations of the MLGS so that potential impacts of hazardous materials use and storage can be assessed. Also, the project owner will be limited to using and storing those hazardous materials identified in this table and in the amounts and concentrations identified.

Also, Chapter 5 of the AFC does not indicate the class of service the gas pipeline would be designed for, who will construct it, who will own it, and who will maintain it. It appears that the pipeline would be approximately 2,100 feet long and would be installed in areas covered by three different entities. Therefore, staff would like confirmation that the MLGS owner will build and own the gas pipeline and be responsible for its maintenance.

DATA REQUEST

14. Please update Table 7.12-4 to include all of the above-indicated information and the appropriate footnote.

RESPONSE

Table 14-1 replaces AFC Table 7.12-4 and provides the CAS number, nature of associated hazard, state/federal threshold quantities, and storage location of hazardous materials expected to be used during the operation of MLGS. Figure 14-1 shows the storage locations of the hazardous materials provided in Table 14-1.

Table 14-1
Hazardous Materials to be Added at MLGS during the Operational Phase

Hazardous Material	CAS Number	Hazardous Characteristics	Regulatory Thresholds (lbs)				Primary Application	Estimated 30-Day Usage	Estimated Storage Quantity[1]	Storage Type	Storage Location (refer to Figure 7.12-1)
			Cal-ARP	Federal RQ	Federal TPQ	Federal TQ					
Aqueous ammonia (19%)	7664-41-7	Corrosive	500	100	500	20,000 (if >20%) 10,000 anhydrous	NO_X reduction in SCR	40,000 gallons	40,000 gallons	Two above-ground tanks	See Figure 7.12-1, Ammonia Unloading Storage Area
Power Cycle Water Treatment Chemicals for Two Siemens Flex Plant 10 Units											
26° Be Aqueous ammonia (NH_4OH – 29.4% weight)	1336-21-6	Corrosive	500	1,000	–	20,000	CO_2 neutralization within steam power cycle.	34 gallons	400 gallons	Stackable tote bins inside containment	See Figure 7.12-1, Hazardous Chemical Storage Area
Microfiltration and Reverse Osmosis Treatment Chemicals											
Dibromo-nitrolo-propionamide	10222-01-2	Corrosive	–	–	–	–	Primary non-oxidizing biocide for RO system	30 gallons	100 gallons	Manufacturer standard bucket/drum/ tote inside secondary containment	See Figure 7.12-1, Hazardous Chemical Storage Area
Isothiazolone			–	–	–	–	Secondary non-oxidizing biocide	30 gallons	100 gallons	Manufacturer standard bucket/drum/ tote inside secondary containment	See Figure 7.12-1, Hazardous Chemical Storage Area
Acrylic acid-based polymer	9003-04-7	Corrosive Irritant	–	–	–	–	Tricalcium phosphate and calcite dispersant	60 gallons	180 gallons	Manufacturer standard bucket/drum/ tote inside secondary containment	See Figure 7.12-1, Hazardous Chemical Storage Area
Sodium hydroxide (50% wt)	1310-73-2	Corrosive	–	1,000	–	–	Conversion of CO_2 in second-pass of RO to HCO_3	16 gallons	500 gallons	Bulk tank inside containment	See Figure 7.12-1, Hazardous Chemical Storage Area

Table 14-1
Hazardous Materials to be Added at MLGS During Operational Phase (Continued)

Hazardous Material	CAS Number	Hazardous Characteristics	Regulatory Thresholds (lbs)				Primary Application	Estimated 30-Day Usage	Estimated Storage Quantity[1]	Storage Type	Storage Location (refer to Figure 7.12-1)
			Cal-ARP	Federal RQ	Federal TPQ	Federal TQ					
Microfiltration and RO Clean-In-Place Chemicals											
Citric acid (2% wt)	77-92-9 5949-29-1	Irritant	–	–	–	–	Cleaning of RO membranes	10 gallons	30 gallons	Drum inside containment	See Figure 7.12-1, Hazardous Chemical Storage Area
Sodium hypochlorite (12.5% weight, Trade)	7681-52-7	Corrosive	–	100	–	–	Cleaning of RO membranes	0.3 gallon	Included in source water chemical storage	Included in source water chemical storage	See Figure 7.12-1, Hazardous Chemical Storage Area
Sodium Hydroxide (50% wt)	1310-73-2	Corrosive	–	1,000	–	–	Cleaning of RO membranes	2 gallons	500 gallons	Aboveground tank	See Figure 7.12-1, Hazardous Chemical Storage Area
Sodium hypochlorite (12.5% weight, Trade)	7681-52-7	Corrosive	–	100	–	–	Biocide/biofilm control for service water system and raw water tank	240 gallons	240 gallons	Aboveground tank inside secondary containment	See Figure 7.12-1, Hazardous Chemical Storage Area
Service Water Treatment											
Polysilicate			–	–	–	–	Corrosion inhibitor for service water system	60 gallons	400 gallons	Manufacturer standard bucket/drum/ tole inside secondary containment	See Figure 7.12-1, Hazardous Chemical Storage Area
Other Materials											
Acetylene	74-86-2	Toxic Flammable	–	–	–	10,000	Welding	400 cu. ft.	1,000 cu. ft.	Cylinder	See Figure 7.12-1, Hazardous Chemical Storage Area

Table 14-1
Hazardous Materials to be Added at MLGS During Operational Phase (Continued)

Hazardous Material	CAS Number	Hazardous Characteristics	Regulatory Thresholds (lbs)				Primary Application	Estimated 30-Day Usage	Estimated Storage Quantity[1]	Storage Type	Storage Location (refer to Figure 7.12-1)
			Cal-ARP	Federal RQ	Federal TPQ	Federal TQ					
Paint (Ethylene glycol)	107-21-1 (13463-67-7)	Toxic Flammable	–	5,000	–	–	Painting	5 gallons	300 gallons	Can	See Figure 7.12-1, Hazardous Chemical Storage Area
Natural gas		Flammable	–	–	–	–	Fuel for power plant	As needed	As needed	Pipeline	Not stored onsite
Mineral oil	8020-83-5	Irritant	–	–	–	–	Transformers	80,000 gallons, initial fill	80,000 gallons	Steel drum	See Figure 7.12-1, Hazardous Chemical Storage Area
Nitrogen	7727-37-9	Toxic	–	–	–	–	Turbine blanket	5,400 gallons	6,000 gallons	Aboveground tank	Figure 7.12-1, Liquid Nitrogen Storage Area
Sulfur hexafluoride	2551-62.4	Asphyxiant	–	–	–	–	Switchyard breakers	600 pounds	600 pounds	Within equipment	See Figure 7.12-1, Equipment Areas
Turbine and Generator Lube Oil (HB-1170 Turbine Oil)	8002-05-9	Toxic Flammable Irritant	–	–	–	–	Rotating equipment	50,000 gallons	50,000 gallons	Steel drum	See Figure 7.12-1, Equipment Areas
Hydraulic Oil (HB-1150 HYGuard)	8002-05-9	Toxic Flammable Irritant	–	–	–	–	Rotating equipment	1,000 gallons	1,000 gallons	Steel drum	See Figure 7.12-1, Equipment Areas
Hydraulic Fluid	Mixture	Toxic Flammable Irritant	–	–	–	–	Construction vehicles and equipment	10 gallons per week	250 gallons	Drums inside secondary containment	See Figure 7.12-1, Equipment Areas
Transmission Fluid	Mixture	Toxic Flammable Irritant	–	–	–	–	Construction vehicles and equipment	5 gallons per week	250 gallons	Drums within secondary containment	See Figure 7.12-1, Equipment Areas

Table 14-1
Hazardous Materials to be Added at MLGS During Operational Phase (Continued)

Hazardous Material	CAS Number	Hazardous Characteristics	Regulatory Thresholds (lbs)				Primary Application	Estimated 30-Day Usage	Estimated Storage Quantity[1]	Storage Type	Storage Location (refer to Figure 7.12-1)
			Cal-ARP	Federal RQ	Federal TPQ	Federal TQ					
Unleaded Gasoline	8006-61-9	Flammable Toxic Irritant Target Organ (CNS)	–	–	–	–	Construction vehicles	300 gallons per week	500 gallons	Tank with secondary containments	See Figure 7.12-1, Equipment Areas
Motor Oil (CITGO SuperGard® SAE 30)	Proprietary Mixture	Flammable	–	–	–	–	Construction vehicles and equipment	5 gallons per week	250 gallons	Drums inside secondary containment	See Figure 7.12-1, Equipment Areas
Propane	74-98-6	Flammable	–	–	–	10,000		300 pounds per month	500 pounds	Cylinder	See Figure 7.12-1, Equipment Areas
Dryer Desiccant (Silica Gel, SiO_2 99% wt)	112926-00-8		–	–	–	–	Instrument air	1,000 pounds over 3 to 5 years	1,000 pounds	Instrument air dryer	See Figure 7.12-1, Hazardous Chemical Storage Area
Various Detergents	various		–	–	–	–	Combustion turbine cleaning	1,000 pounds, before startup; Periodic short-term storage 500 pounds	1,000 pounds	Manufacturer container	See Figure 7.12-1, Hazardous Chemical Storage Area
Hydrochloric acid (38%)	7647-01-0	Toxic Corrosive	–	5,000	500 (anhydrous)	15,000	Microfiltration membrane cleaning	300 gallons	400 gallons	Tank	See Figure 7.12-1, Hazardous Chemical Storage Area
Antiscalant (Nalco Permatreat® PC-191)	Proprietary Mixture	Corrosive Irritant	–	–	–	–	RO system	60 gallons	180 gallons	Manufacturer standard bucket/drum/ tote inside secondary containment	See Figure 7.12-1, Hazardous Chemical Storage Area

Table 14-1
Hazardous Materials to be Added at MLGS During Operational Phase (Continued)

Hazardous Material	CAS Number	Hazardous Characteristics	Regulatory Thresholds (lbs)				Primary Application	Estimated 30-Day Usage	Estimated Storage Quantity[1]	Storage Type	Storage Location (refer to Figure 7.12-1)
			Cal-ARP	Federal RQ	Federal TPQ	Federal TQ					
Sodium bisulfite (38%)	7631-90-5	Toxic	–	5,000	–	–	Dechlorination (RO system)	760 gallons	4,000 gallons	4,000-gallon tank inside secondary containment	See Figure 7.12-1, Hazardous Chemical Storage Area
RO membrane cleaners (Alkali detergent; Acid detergent)	Proprietary Mixture	Toxic Corrosive Irritant	–	–	–	–	Detergent for RO system	2 gallons	5 gallons	Manufacturer standard bucket/drum/ tote inside secondary containment	See Figure 7.12-1, Hazardous Chemical Storage Area
Boiler Water Internal Treatment Chemicals											
Tri-sodium phosphate	10101-89-0	Corrosive	–	5,000	–	–	HRSG	30 gallons	200 gallons	Two 200-gallon totes inside secondary containment	See Figure 7.12-1, Hazardous Chemical Storage Area
Neutralizing Amine (Nalco® 356: Cyclohexylamine 30% wt; Morpholine 10% wt)	108-91-8 110-91-8	Toxic Flammable Corrosive	15,000	–	10,000	15,000	HRSG	150 gallons	800 gallons	Two 400-gallon totes inside secondary containment	See Figure 7.12-1, Hazardous Chemical Storage Area
Oxygen Scavenger (Nalco ELIMIN-OX®)	497-18-7	Irritant	–	–	–	–	HRSG	120 gallons	800 gallons	Two 400-gallon totes inside secondary containment	See Figure 7.12-1, Hazardous Chemical Storage Area

Table 14-1
Hazardous Materials to be Added at MLGS During Operational Phase (Continued)

Hazardous Material	CAS Number	Hazardous Characteristics	Regulatory Thresholds (lbs)				Primary Application	Estimated 30-Day Usage	Estimated Storage Quantity[1]	Storage Type	Storage Location (refer to Figure 7.12-1)
			Cal-ARP	Federal RQ	Federal TPQ	Federal TQ					
Closed Cooling System Treatment Chemicals											
Sodium Nitrate-Borax formulation	Borax 1330-43-4 (Anhydrous)	Irritant	–	–	–	–	Closed cooling water corrosion inhibitor	<5 gallons	30 gallons	Manufacturer standard bucket/drum/ tote inside secondary containment	See Figure 7.12-1, Hazardous Chemical Storage Area
Propylene-glycol	57-55-6	Irritant	–	–	–	–	Auxiliary cooling closed cooling water system	As needed	60,000 gallons, initial fill	Closed cooling water system	See Figure 7.12-1, Hazardous Chemical Storage Area
Industrial Gases											
Carbon dioxide	124-38-9	Toxic Asphyxiant	–	–	–	–	Instrument air	500 lbs	2,000 lbs	Aboveground CO_2 Tank	See Figure 7.12-1, Hazardous Chemical Storage Area
Nitrogen	7727-37-9	Toxic Asphyxiant	–	–	–	–	Instrument air	5,000 cu. ft.	17,130 cu. ft.	Cylinder	See Figure 7.12-1, Nitrogen System
Oxygen	7782-44-7	Toxic	–	–	–	–	Instrument air, welding	500 cu. ft.	2,000 cu. ft.	Cylinder	See Figure 7.12-1, Hazardous Chemical Storage Area
Nitric oxide	10102-43-9	Toxic	100	10	100	10,000	Instrument air	50 cu. ft.	120 cu. ft.	Cylinder	See Figure 7.12-1, Hazardous Chemical Storage Area
Helium and nitrogen mix	7440-59-7 7727-37-9	Toxic	–	–	–	–	Instrument air	0	0	Cylinder	See Figure 7.12-1, Hazardous Chemical Storage Area

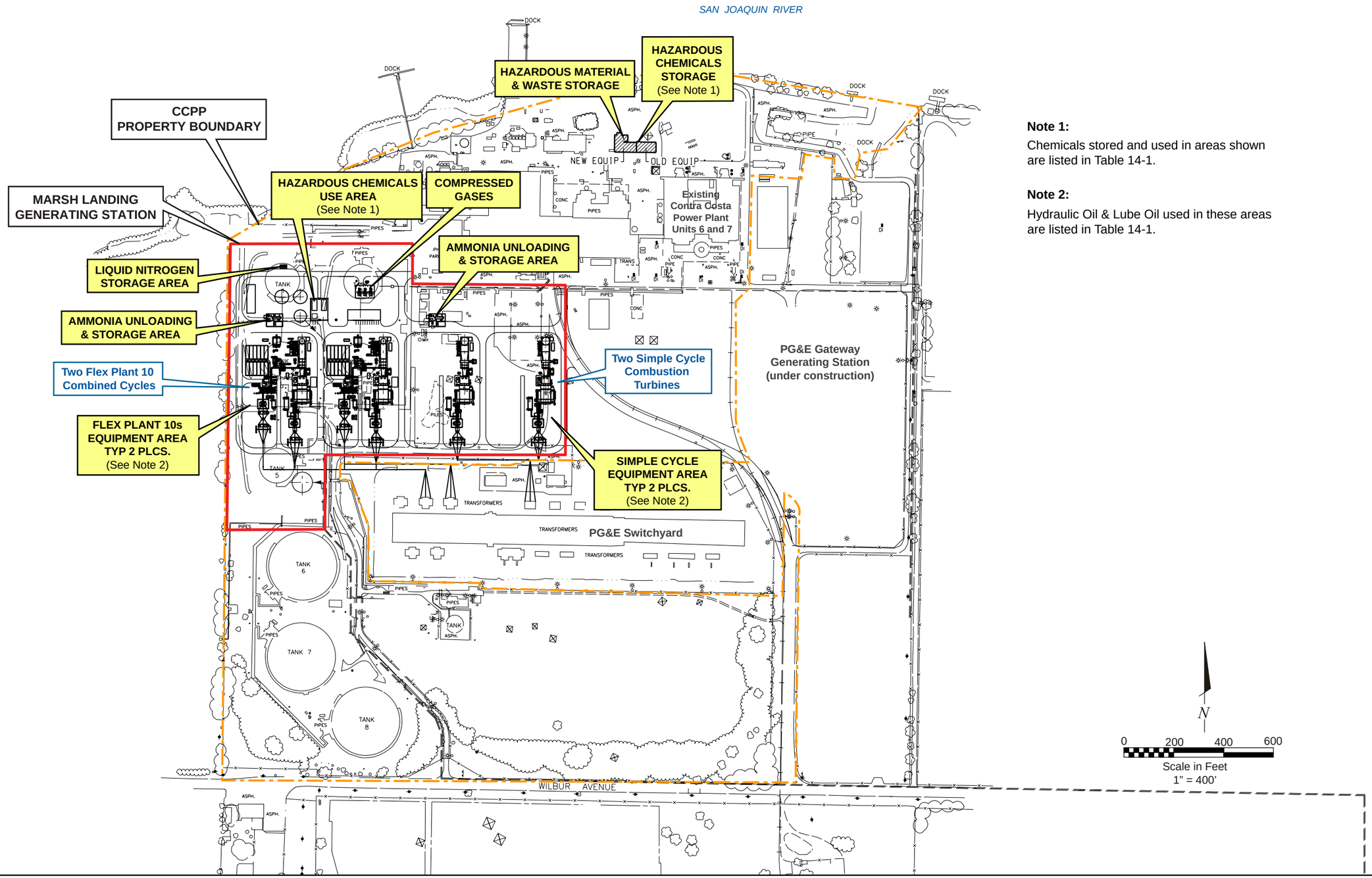
Table 14-1
Hazardous Materials to be Added at MLGS During Operational Phase (Continued)

Hazardous Material	CAS Number	Hazardous Characteristics	Regulatory Thresholds (lbs)				Primary Application	Estimated 30-Day Usage	Estimated Storage Quantity[1]	Storage Type	Storage Location (refer to Figure 7.12-1)
			Cal-ARP	Federal RQ	Federal TPQ	Federal TQ					
Carbon monoxide	630-08-0	Toxic	–	–	–	–	Instrument air	10 cu. ft.	255 cu. ft.	Cylinder	See Figure 7.12-1, Hazardous Chemical Storage Area
Argon	7440-37-1	Toxic	–	–	–	–	Instrument air	150 cu. ft.	500 cu. ft.	Cylinder	See Figure 7.12-1, Hazardous Chemical Storage Area

CAS = Chemical Abstracts Service
CNS = central nervous system
CO_2 = carbon dioxide
cu. ft. = cubic feet
HCO_3 = bicarbonate
HRSG = heat recovery steam generator
lbs = pounds
RO = reverse osmosis
RQ = reportable quantities
SiO_2 = silicon dioxide
TBD = To be determined
TPQ = Threshold Planning Quantity
TQ = Threshold Quantity

Note:

[1] Expected based on 107°F operation condition. Usage and storage will be optimized during final design



Note 1:

Chemicals stored and used in areas shown are listed in Table 14-1.

Note 2:

Hydraulic Oil & Lube Oil used in these areas are listed in Table 14-1.

Source:
CH2MHill Lockwood Greene; General Arrangement Marsh Landing Generating Station, Location of Stored & Used Areas of Hazardous Materials; Drawing No: MR-GA-ML-01-22 (Rev. A, 05/09/08)

LOCATIONS OF HAZARDOUS MATERIALS

Marsh Landing Generating Station
Mirant Marsh Landing, LLC
Contra Costa County, California

December 2008
28067344

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FIGURE 14-1

12/03/08 vsa ..\T:\Mirant Contra Costa-Marsh Landing\Graphics\DATA REQUESTS\DR_14-1_locs hazmat.ai

DATA REQUEST

15. Please confirm that the MLGS project owner will build and own the approximately 2100-foot long gas pipeline that will provide fuel to the power plant.

RESPONSE

The applicant confirms that Mirant Marsh Landing, LLC will build (by contracting with a third party contractor) the gas transmission line between the connection to interstate TL-400 and the project. Mirant Marsh Landing, LLC will own this gas transmission line.

Technical Area: Land Use
Author: Negar Vahidi

BACKGROUND

According to AFC Section 7.4.1.3, the Contra Costa County Local Agency Formation Commission has considered the annexation proposal, the City of Antioch and Contra Costa County are actively negotiating the terms of annexation, and the City of Antioch expects to complete annexation of the area in early 2009.

DATA REQUEST

16. Given that the information provided in the AFC is from the May 2008 filing date, and that early 2009 is approaching, please provide information regarding the current status of the City of Antioch's annexation of the MLGS project site and the negotiation process taking place between the City of Antioch and Contra Costa County.

RESPONSE

Based on discussions with the City of Antioch's Planning Department on November 13, 2008, it is the applicant's understanding that the City of Antioch's annexation of the MLGS project site (and surrounding area) is pending the completion of a fiscal study and tax transfer agreement. The City of Antioch and Contra Costa County expect to complete their reviews of the fiscal study and to finalize an agreement in February 2009 (City Council approval) and March 2009 (Board of Supervisors approval). The Local Agency Formation Commission (LAFCO) approval of annexation would follow and is expected no later than July 2009.

DATA REQUEST

17. Please provide the date by which the annexation process for the unincorporated county area including the MLGS project site is expected to be completed.

RESPONSE

As stated in the response to Data Request 16 and based on discussions with the City of Antioch, it is the applicant's understanding that annexation of the unincorporated portion of the county that contains the MLGS project parcel is expected to be complete by July 2009.

BACKGROUND

The MLGS site is currently zoned as Heavy Industrial by Contra Costa County. The county's General Plan designates the majority of the site as Heavy Industrial and a narrow strip of land along the river as Open Space (OS). The City of Antioch has not pre-zoned the MLGS project site but has indicated that zoning will be compatible with the MLGS project. The City of Antioch's General Plan designates the MLGS site as General Industrial within the Eastern Waterfront Employment Focus Area.

DATA REQUEST

18. Although the City of Antioch has not pre-zoned the MLGS project site, given the upcoming expected annexation of the site to the City, please provide the specific zoning designation the City expects to attach to the MLGS site. This information is needed for staff to determine the applicable zoning standards and conduct LORS consistency analysis of the project site.

RESPONSE

The City of Antioch has indicated in discussions with the applicant that the zoning of the site will be consistent with the MLGS development plans. As indicated by the City of Antioch and documented in LAFCO's Delta Diablo Sanitation District (DDSD) Sphere of Influence Expansion Staff Report dated August 13, 2008, the zoning of the site would be M-2, Heavy Industrial. The standards for Heavy Industrial include:

> *M-2 Heavy Industrial District.* This district allows heavy industrial uses which may generate adverse impacts on health or safety. This zone applies primarily to existing heavy industrial uses. The district is consistent with the General and Rail-Served Industrial General Plan Designations. Uses include production of and extraction of metals or chemical products from raw materials, steel works and finishing mills, chemical or fertilizer plants, petroleum and gas refiners, paper mills, lumber mills, asphalt, concrete and hot mix batch plants, power generation plants, glassworks, textile mills, concrete products manufacturing and similar uses. (Article 3 § 9-5.301, Antioch Zoning Code)

BACKGROUND

AFC Table 7.4-7 (Permits Required) provides information on Lot Subdivision procedures for Contra Costa County. However, AFC Section 7.4.1.4 (Project Parcel Legal Status), on page 7.4-6, states, *"The subdivision of the parcel will be initiated with Contra Costa County or the City of Antioch, depending on the status of annexation. The process could take approximately 6 months to complete. Either agency would require approval of a tentative subdivision map through the minor subdivision process."* The Lot Subdivision procedures required by the City of Antioch are not provided in the AFC. In addition, as stated in Section 7.4.7 (Permits Required and Permit Schedule) on AFC page 7.4-15, *"[l]ocal approval will be necessary to create the new 27-acre parcel that will be the MLGS site. Mirant Delta will seek local approval to subdivide the existing CCPP site in order to sell the portion constituting the MLGS site to Mirant Marsh Landing. A lot subdivision is a discretionary approval that is subject to CEQA, but in this case, the CEQA review of the subdivision will be subsumed by the CEC's process."* In order for staff to conduct CEQA analysis of the lot subdivision, the following information is needed:

DATA REQUEST

19. Please provide detailed information regarding the City of Antioch's Lot Subdivision procedures as they would apply to the MLGS project site given that City annexation of the site is expected.

RESPONSE

The City of Antioch requires applicants seeking a subdivision that affects four or fewer parcels to file a tentative minor subdivision map and, upon approval of the tentative minor subdivision map by the City's Planning Commission, a parcel map. Within 30 days following receipt of an application, the City of Antioch must determine whether the application is complete. The Planning Commission must then hold a Public Hearing within 50 days after an application is deemed complete, and render its decision within 30 days after the Public Hearing. The minor subdivision application contains a tentative minor subdivision map, a completed environmental assessment form, a current title report, a list of property owners and addresses within 300 feet of the property (along with stamped enveloped to each), a storm water control plan and a financial deposit. These requirements are specified in detail in the following documents, which are included in Appendix B-1: (1) excerpts from the Municipal Code of the City of Antioch; (2) the City's Development Application form; (3) Procedures for Tentative Minor Subdivision Map, published by the City's Community Development Department; (4) the City's Tentative Map Submittal Checklist; (5) the City's Environmental Assessment form; and (6) the City's Storm Water Control Plan Checklist.

DATA REQUEST

20. Given the potential 6-month duration of lot subdivision, please provide detailed information on when the applicant expects to initiate the parcel subdivision process for the MLGS project site.

RESPONSE

The MLGS project site, excluding linear facilities but including construction laydown areas, is already located on the single legal parcel that is identified in the AFC. The project thus meets the requirements in Appendix B(g)(3)(iv)(C) of the CEC's siting regulations. The applicant is contemplating subdivision to facilitate its purchase of the site, but has not ruled out a lease arrangement, which could make subdivision unnecessary. If the applicant elects to proceed with a subdivision, the process will be initiated with the City according to a schedule that is linked to the commencement of construction and will be completed prior to commercial operation.

As discussed in responses to Data Requests 16 and 17, the City now predicts that annexation of the project site will be complete by July 2009. This schedule indicates that the earliest that an application for a subdivision could be filed with the City (assuming that the applicant elects to pursue subdivision) would be after July 2009. However, all of the information that the City would review as part of its environmental assessment in the subdivision process will have been reviewed and analyzed by the CEC in this proceeding. The City therefore should be in a position to rely on the CEC's assessment of the project's environmental impacts and compliance with all applicable laws, regulations, ordinances, and standards (LORS), as part of its review of the subdivision application. Also, as explained in the response to Data Request 19, the City's subdivision process should take approximately 110 days. This is less than the 6-month time frame that was included as a conservative estimate in the AFC.

In this respect, the subdivision should be able to proceed efficiently and relatively quickly once the City completes the annexation process. At the same time, given that subdivision is not necessary to comply with the CEC's regulations or other applicable LORS, the timing of filing the subdivision application should not delay the CEC's review or approval of the project. To this end, the applicant is willing to work with CEC staff and the City to ensure that all applicable requirements in the City's subdivision process are included in the scope of the CEC's review.

DATA REQUEST

21. In addition, please indicate the local agency (i.e., City of Antioch or Contra Costa County) with which the applicant expects to initiate the lot subdivision.

RESPONSE

As discussed in the response to Data Request 20, the City is proceeding with annexation of the project site and expects to complete the process by July 2009. Because the project site will be under the City's jurisdiction in the near future, the applicant expects to initiate subdivision (assuming that is the chosen path) with the City.

BACKGROUND

AFC Figure 7.4.6 (Important Farmlands) shows the MLGS project site to be within an area designated as Urban and Built-up Land by the California Department of Conservation (DOC). However, there is no discussion of the MLGS project site's specific DOC land designation in the applicable text narrative of the AFC Land Use section within the Important Farmland discussion on page 7.4-5 and Section 7.4.2.4, Impacts to Agricultural Lands.

DATA REQUEST

22. Please confirm that the specific DOC land designation for the MLGS project site is "Urban and Built-up Land."

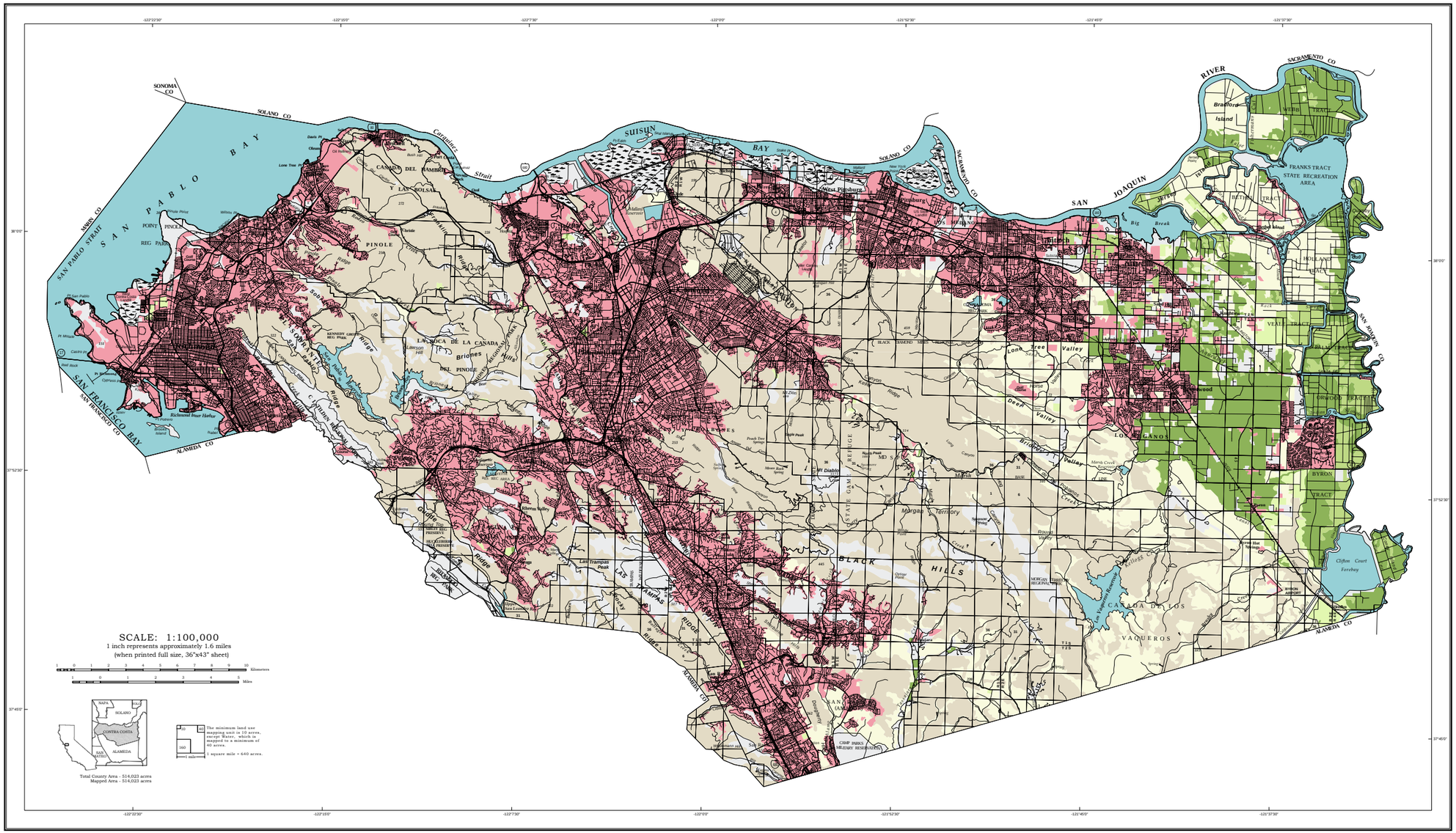
RESPONSE

The designation is correct. As shown on AFC Figure 7.4-6, the Department of Conservation (DOC) designates the site as "Urban and Built-up Land" with respect to Important Farmland (i.e., the site is not farmland of prime, unique, statewide, or local importance). Therefore, the project would not have any impacts on important farmlands. Figure 22-1 is the 2006 DOC map that was used to create AFC Figure 7.4-6 (DOC, 2006).

STATE OF CALIFORNIA
Arnold Schwarzenegger, *Governor*
THE RESOURCES AGENCY
Mike Chrisman, *Secretary*
DEPARTMENT OF CONSERVATION
Bridgett Luther, *Director*

CONTRA COSTA COUNTY IMPORTANT FARMLAND 2006

CALIFORNIA DEPARTMENT OF CONSERVATION
DIVISION OF LAND RESOURCE PROTECTION
FARMLAND MAPPING AND MONITORING PROGRAM



PRIME FARMLAND - 29,938 acres

PRIME FARMLAND HAS THE BEST COMBINATION OF PHYSICAL AND CHEMICAL FEATURES ABLE TO SUSTAIN LONG-TERM AGRICULTURAL PRODUCTION. THIS LAND HAS THE SOIL QUALITY, GROWING SEASON, AND MOISTURE SUPPLY NEEDED TO PRODUCE SUSTAINED HIGH YIELDS. LAND MUST HAVE BEEN USED FOR IRRIGATED AGRICULTURAL PRODUCTION AT SOME TIME DURING THE FOUR YEARS PRIOR TO THE MAPPING DATE.

FARMLAND OF STATEWIDE IMPORTANCE - 8,092 acres

FARMLAND OF STATEWIDE IMPORTANCE IS SIMILAR TO PRIME FARMLAND BUT WITH MINOR SHORTCOMINGS, SUCH AS GREATER SLOPES OR LESS ABILITY TO STORE SOIL MOISTURE. LAND MUST HAVE BEEN USED FOR IRRIGATED AGRICULTURAL PRODUCTION AT SOME TIME DURING THE FOUR YEARS PRIOR TO THE MAPPING DATE.

UNIQUE FARMLAND - 3,589 acres

UNIQUE FARMLAND CONSISTS OF LESSER QUALITY SOILS USED FOR THE PRODUCTION OF THE STATE'S LEADING AGRICULTURAL CROPS. THIS LAND IS USUALLY IRRIGATED, BUT MAY INCLUDE NONIRRIGATED ORCHARDS OR VINEYARDS AS FOUND IN SOME CLIMATIC ZONES IN CALIFORNIA. LAND MUST HAVE BEEN CROPPED AT SOME TIME DURING THE FOUR YEARS PRIOR TO THE MAPPING DATE.

FARMLAND OF LOCAL IMPORTANCE - 52,071 acres

THE LANDS WITHIN THE TASSAJARA AREA, EXTENDING EASTWARD TO THE COUNTY BOUNDARY AND BORDERED ON THE NORTH BY THE BLACK HILLS, THE DEER, LONE TREE AND BRIONES VALLEYS, THE ANTIOCH AREA, AND THE DELTA. THESE LANDS ARE TYPICALLY USED FOR LIVESTOCK GRAZING. THEY ARE CAPABLE OF PRODUCING DRYLAND GRAIN ON A TWO YEAR SUMMER FALLOW OR LONGER ROTATION WITH VOLUNTEER HAY AND PASTURE. THE FARMLANDS IN THIS CATEGORY ARE INCLUDED IN THE U.S. NATURAL RESOURCES CONSERVATION SERVICE'S LAND CAPABILITY CLASSES I, II, III, AND IV, AND LACK SOME IRRIGATION WATER.

GRAZING LAND - 168,662 acres

GRAZING LAND IS LAND ON WHICH THE EXISTING VEGETATION IS SUITED TO THE GRAZING OF LIVESTOCK.

URBAN AND BUILT-UP LAND - 148,966 acres

URBAN AND BUILT-UP LAND IS OCCUPIED BY STRUCTURES WITH A BUILDING DENSITY OF AT LEAST 1 UNIT TO 1.5 ACRES, OR APPROXIMATELY 6 STRUCTURES TO A 10-ACRE PARCEL. COMMON EXAMPLES INCLUDE RESIDENTIAL, INDUSTRIAL, COMMERCIAL, INSTITUTIONAL FACILITIES, CEMETERIES, AIRPORTS, GOLF COURSES, SANITARY LANDFILLS, SEWAGE TREATMENT, AND WATER CONTROL STRUCTURES.

OTHER LAND - 49,465 acres

OTHER LAND IS LAND NOT INCLUDED IN ANY OTHER MAPPING CATEGORY. COMMON EXAMPLES INCLUDE LOW DENSITY RURAL DEVELOPMENTS, BRUSH, TIMBER, WETLAND, AND RIPARIAN AREAS NOT SUITABLE FOR LIVESTOCK GRAZING, CONFINED LIVESTOCK, POULTRY, OR AQUACULTURE FACILITIES, STRIP MINES, BORROW PITS, AND WATER BODIES SMALLER THAN 40 ACRES. VACANT AND NONAGRICULTURAL LAND SURROUNDED ON ALL SIDES BY URBAN DEVELOPMENT AND GREATER THAN 40 ACRES IS MAPPED AS OTHER LAND.

WATER - 53,240 acres

PERENNIAL WATER BODIES WITH AN EXTENT OF AT LEAST 40 ACRES.

Important Farmland Maps are compiled by the Farmland Mapping and Monitoring Program (FMMP) pursuant to Section 65570 of the California Government Code. To create the maps, FMMP combines current land use information with U.S. Department of Agriculture-Natural Resources Conservation Service (NRCS) soil survey data. Soil units qualifying for Prime Farmland and Farmland of Statewide Importance are determined by the NRCS. Changes to soil profiles subsequent to publication of NRCS soil surveys are not reflected on this map. This map was developed using NRCS digital soil data (SSURGO) and may contain individual soil units as small as one acre.

Land use status is determined using current and historic aerial imagery and field verification. Principal imagery sources include the U.S. Department of Agriculture National Agricultural Imagery Program, AirPhotoUSA, the High Altitude Missions Branch of NASA, EROS Data Center and SIOT Data Corporation. Additional data on land management and land use conversion activity was made available from the U.S. Fish and Wildlife Service, U.S. Forest Service, California Department of Fish and Game, California Integrated Waste Management Board, and various local government agencies. Map reviewers at the local level contribute valuable information with their comments and suggestions.

Cultural base information for the Important Farmland Maps was compiled from the U.S. Geological Survey, the California Spatial Information Library (http://gis.ca.gov/), Geographical Data Technology, Inc., and current imagery.

This map should be used within the limits of its purpose - as a current inventory of agricultural land resources. This map does not necessarily reflect general plan or zoning designations, city limit lines, changing economic or market conditions, or other factors which may be taken into consideration when land use policies are determined. This map is not designed for parcel-specific planning purposes due to its scale and the ten-acre minimum land use mapping unit. Classification of important farmland and urban areas on this map is based on best available data. The information has been delineated as accurately as possible at 1:24,000-scale, but no claim to meet 1:24,000 National Map Accuracy Standards is made due to variations in the quality of source data.

The Department of Conservation makes no warranties as to the suitability of this product for any particular purpose.

Additional data is available at www.conservation.ca.gov/dlrp/fmmp, including detail on the program, map categories, statistics, field summaries, and GIS data for download. Contact the:

Farmland Mapping and Monitoring Program
801 K Street, MS 18-01
Sacramento, CA 95814
Phone: (916) 324-0859
e-mail: fmmp@conservation.ca.gov

© California Department of Conservation, Division of Land Resource Protection, 2007.

Map published June 2007.

Reference:
State of California, Department of Conservation, Division of Land Resource Protection, 2006. Farmland Mapping and Monitoring Program. Contra Costa County Important Farmland 2006.
http://www.conservation.ca.gov/dlrp/fmmp/Pages/Index.aspx

CONTRA COSTA COUNTY IMPORTANT FARMLAND 2006

Marsh Landing Generating Station
Mirant Marsh Landing, LLC
Contra Costa County, California

December 2008
28067344

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FIGURE 22-1

11/24/08 vsa ..\T:\Mirant Contra Costa-Marsh Landing\Graphics\DATA REQUESTS\DR_22-1_ccc imp farmland.ai

Technical Area: Socioeconomics

Author: Joseph Diamond, Ph.D.

BACKGROUND

Staff needs to know the year that corresponds to all dollar estimates. The time value of money should be reflected for all economic estimates.

DATA REQUEST

23. Please verify the year for all economic estimates (e.g., construction costs, construction and operation payroll, property taxes, school impact fees, etc.) and IMPLAN construction and operation economic impacts which include secondary impacts. Some dollar estimates in AFC Section 1.1, Project Overview, page 1-2, and Section 7.8.2, Environmental Consequences, pages 7.8-9 to 11, are in 2008 dollars (i.e., project construction costs and construction employment expenditures, operations and maintenance materials for the Five-County Study Area [Contra Costa, Sacramento, San Joaquin, Alameda, and Solano Counties], and IMPLAN operation estimates).

RESPONSE

All of the economic analyses completed for the MLGS AFC are in 2008 dollars.

BACKGROUND

Gross economic benefits including secondary impacts (indirect and induced) are an important part of the MLGS project.

DATA REQUEST

24. Please show your calculations for the construction and operation employment, income, and output Type II multipliers.

RESPONSE

The calculations are described in footnote 3 on page 7.8-10 of the Supplemented AFC.

Output includes spending for materials and supplies (nonlabor costs), plus value added, which is comprised of employee compensation, proprietary income, other property income, and indirect business taxes. The IMPLAN Social Accounting Matrix multipliers were used for this analysis. These multipliers are the direct, indirect, and induced effects, where the induced effect is based on information in the social account matrix. This relationship accounts for social security and income tax leakage, institution savings, and commuting. It also accounts for inter-institutional transfers. IMPLAN does not directly calculate multipliers; however, multipliers have been calculated based upon the IMPLAN model results. The approximate output multiplier for project construction is 2.66 and the approximate output multiplier for project operation is 1.79.

DATA REQUEST

25. Socioeconomic Table 7.8-12, Construction Staff By Trade, page 7.8-33 of the AFC appears to reflect generation, demolition of five fuel oil tanks, and linear facilities such as the natural gas pipeline. Staff is unclear if the electric transmission line between the PG&E switchyard and the MLGS is included in Table 7.8-12. If complete workforce estimates were not used, please revise the tables including the construction and operation economic benefits associated with this, such as payroll, local materials and supplies, sales tax, and secondary impacts, etc. Then, if necessary please recalculate the construction and operation secondary impacts and related multipliers.

RESPONSE

The construction staffing tables (AFC Table 2.7-1a, Table 2.7-1b, Table 7.8-12a, and Table 7.8-12b) include staff for the demolition of the tanks, linear facilities, and electrical transmission line connection construction. As such, no recalculations are necessary.

DATA REQUEST

26. If you find that Data Request 25 requesting more complete linear facilities in your construction and operation estimates is not needed because the secondary impacts are likely to be small and may not coincide with peak construction, please elaborate using numeric information and other rationale, if appropriate, to bound the economic impacts.

RESPONSE

As explained in the response to Data Request 25, the AFC included the workforce staff for all components of the project. No additional analyses are needed.

Technical Area: Soil and Water Resources

Author: Richard Latteri

BACKGROUND

In Delta Diablo Sanitation District's (DDSD) "Will Serve Letter" dated June 25, 2008, DDSD states:

> *… staff has analyzed DDSD's current and expected plant flows for the years 2011 and beyond. Based on this analysis, DDSD has sufficient uncommitted quantities of recycled water to support Mirant's anticipated peak usage of 1.5 million gallons per day at peak flow of 1,400 gallons per minute of recycled water.*

DATA REQUEST

27. Please provide a list of recycled water customers that would receive tertiary treated recycled water from DDSD's proposed Bridgehead Lift Station (BLS) recycled water facility, their contractual delivery amounts, and a discussion of the long-term (30-35 years) recycled water supply reliability based on current and future supply and demand projections for tertiary treated recycled water from this facility.

RESPONSE

The DDSD's Bridgehead Lift Station (BLS) is a lift station for raw sewage. Currently no recycled water is produced at this location and all raw sewage collected at BLS is conveyed to DDSD's water treatment facility.

The proposed satellite treatment plant at the BLS would produce recycled water from raw sewage. The plant would be funded by Mirant Marsh Landing, LLC, and constructed by DDSD on a schedule compatible with the MLGS project. The plant would be dedicated to MLGS. There would be no other customers that would receive recycled water from this facility.

The reliability of the long-term recycled water supply is dependent on system wastewater influent flows. While DDSD system wastewater flows are expected to increase an average of 2 percent per year over the long term, influent flows at BLS are expected to remain level in the short term due to current economic conditions in the area. According to DDSD, the current and expected influent flows to the BLS are sufficient to meet the anticipated MLGS demand.

While construction of the BLS could affect recycled water operations at DDSD's Recycled Water Facility (RWF), the wastewater influent flows available to the RWF exceed the recycled water demands of DDSD's current customers at this facility. DDSD currently provides tertiary recycled water produced from its RWF to Calpine Corporation (Calpine) for the Los Medanos Energy Center (LMEC) and the Delta Energy Center (DEC), as well as to the City of Pittsburg for landscape irrigation. The current capacity of the RWF is 12.8 million gallons per day (mgd). DDSD has a contractual obligation to Calpine to fulfill the recycled water demands of both LMEC and DEC, which average 7.0 mgd. The peak day demand for the City's landscape irrigation sites is 1.2 mgd. During the summer 2006, the demand for recycled water (LMEC and DEC, but not City of Pittsburg irrigation use) was only approximately 56 percent of the DDSD system wastewater influent flow. In addition, industrial recycled water demands are considered higher priority over other demands to ensure an acceptable level of delivery reliability over the long term. Based on anticipated wastewater influent flows, there would be sufficient recycled water supplies for DDSD's current customers and the proposed project.

DATA REQUEST

28. Please provide the source (potable, recycled, or groundwater) and quality of the water that would be used during construction of the Marsh Landing Generating Station (MLGS).

RESPONSE

Similar to the Gateway Generating Station, the source of construction water would be City of Antioch potable water. AFC Table 7.14-1 summarizes the water quality of the City of Antioch water supply.

DATA REQUEST

29. Please provide in tabular format the specific uses and volume of construction water in gallons per day and total annual consumption in acre-feet for construction of the MLGS.

RESPONSE

AFC Table 2.7-4 tabulates the construction water requirements per month for the duration of project construction. Table 29-1 provides additional detail with respect to specific construction water uses and shows water consumption in average gallons per day and total annual consumption in acre-feet.

Table 29-1
Estimated Construction Water Uses

Construction Water Use	Average Daily Water Usage (gallons per day)	Total Annual Water Usage (acre-feet)
Consumption[1]	2,300	3
Dust Control[1]	4,400	3
Concrete Washout[2]	250	0.1
Hydrostatic Testing[3]	4,500	2
Steam Blow[4]	50,000	6

Notes:

[1] Use would occur over a 33-month period. Total annual amount reflects maximum 12-month usage.
[2] Use would occur over a 7-month period. Total annual amount assumes that all usage would occur in same year.
[3] Use would occur over 5 months. Total annual amount assumes that all usage would occur in same year.
[4] Use would occur over two 1-month periods. Total annual amount assumes that all usage would occur in same year.

BACKGROUND

In their 'Will Serve Letter" dated June 25, 2008, DDSD also states:

> *Annexation to the District's service area would also be required if the pending application at the Local Agency Formation Commission (LAFCO) is not approved, and a formal notification process with the Contra Costa Water District is required. Subject to DDSD Board approval of a definitive agreement between DDSD and Mirant, DDSD is willing to make such water available to Mirant for its proposed generation facility.*

DATA REQUEST

30. Please provide a discussion of the approval process and timeframe for the LAFCO decision for annexation of the MLGS into the DDSD's service area.

RESPONSE

The DDSD service area amendment will occur with the City of Antioch annexation, because the proposed LAFCO action addresses both. For timeframe, see the response to Data Request 17.

DATA REQUEST

31. Please provide a DDSD Board approved agreement for the long-term delivery (30-35 years) of tertiary treated recycled water at a peak delivery rate of 1,400 gallons per minute and up to 1.5 million gallons per day.

RESPONSE

As stated in the applicant's December 2, 2008 letter to the CEC Staff and Committee, Mirant Marsh Landing is not able to provide the requested agreement as this time. Mirant Marsh Landing and DDSD are in discussions regarding the terms of a long-term recycled water supply agreement for the MLGS, but an agreement has not yet been negotiated. Mirant Marsh Landing expects to have an executed DDSD Board-approved agreement in place before construction of the MLGS begins. Note that DDSD has provided a "will serve" letter for the MLGS, which was submitted with the AFC.

BACKGROUND

Mirant Marsh Landing, LLC (applicant) proposes to use recycled water provided by DDSD from a new satellite treatment facility that would be designed, constructed, and operated by DDSD at the existing BLS, which would be within the jurisdictional area of the Central Valley Regional Water Quality Control Board (CVRWQCB).

DATA REQUEST

32. Please define the level of Title 22 treatment (disinfected tertiary, disinfected secondary-2.2, or disinfected secondary-23) of all recycled water sources proposed for use at the MLGS.

RESPONSE

All recycled water produced by DDSD for use at the MLGS will meet or exceed the Title 22 requirements for disinfected tertiary recycled water for unrestricted use. However, as it relates to the MLGS, this water is not required to comply with California's Code of Regulations Title 22, given that the water will not be used for cooling tower makeup water.

DATA REQUEST

33. Please provide a discussion of the permits and over-sight requirements of the CVRWQCB, Department of Public Health (DPH), and the City of Antioch for the supply and use of recycled water at the MLGS and whether water recycling requirements would be prescribed by CVRWQCB prior to the delivery of recycled water to the MLGS.

RESPONSE

DDSD is currently permitted to produce and distribute recycled water by the San Francisco Bay Regional Water Quality Control Board. DDSD has initiated discussions with the Central Valley Regional Water Quality Control Board (CVRWQCB) regarding a satellite treatment facility at BLS to determine what, if any, oversight requirements would be imposed by the CVRWQCB. If the CVRWQCB determines they have jurisdiction over this facility, DDSD will comply with all prescribed requirements prior to the delivery of recycled water to the MLGS.

DATA REQUEST

34. Please provide the schedule for completion of the BLS recycled water treatment facility and a description of the process and on-site equipment required to produce recycled water that includes the redundant and standby equipment necessary for the reliable supply of recycled water to the MLGS.

RESPONSE

The construction schedule for the satellite treatment facility at BLS will correspond with construction of the MLGS to ensure that recycled water is available to meet the MLGS demand. The agreement between Mirant Marsh Landing and DDSD, which is referred to in the response to Data Request 31, will spell out the deadlines and commitments for the construction and operation of the satellite treatment facility. According to DDSD, it typically takes approximately 15 to 18 months for the design and construction of a satellite treatment facility of the size proposed for MLGS, which would be well within the MLGS 33-month construction period.

AFC Figure 6-1 provides a preliminary layout of the equipment required to provide tertiary treatment to raw wastewater at the satellite treatment facility. The facility would be a membrane bioreactor/ultraviolet disinfection system that would include screening and grit removal, aeration tanks, membrane tanks, and ultraviolet disinfection. The specific types and sizes of these features will be determined by DDSD during design.

To ensure a high level of reliability, the following redundancy features have been incorporated into the recycled water supply system design:

- The BLS already has redundant and standby equipment to handle the sewage influent. These features include a 24-inch force main along Wilbur Avenue, an emergency storage tank and a 900-kilovolt diesel generator to provide backup power supply to the pumps. As such, any power outages and interruptions to flows would be very brief (i.e., on the order of minutes).

- A 1.8-million-gallon raw water storage tank will be provided on the MLGS site. This tank has been sized to provide one day of water usage under peak operating conditions in the event of a water supply interruption.

- The MLGS generating units use technology which allows a high level of operation flexibility. The units can be started up or shut down within a few minutes (less than 12 minutes). In the event of a water supply system interruption, MLGS has the flexibility to curtail operations of the FP10 Units or turn off the power augmentation to reduce water consumption.

DATA REQUEST

35. Please provide the names and telephone numbers of the regional board and DPH personnel who are responsible for recycled water permitting and use.

RESPONSE

The regional board and Department of Public Health personnel who will be responsible for permitting of the satellite recycled water facility have not yet been determined. This determination will be made as part of DDSD's ongoing discussions with the CVRWQCB (see the response to Data Request 34).

General contact information is as follows:

- California Department of Health
  Jeff Stone, Recycled Water Specialist
  (805) 566-9797

- Central Valley Regional Water Quality Control Board
  Lonnie Wass, Non-Chapter 15 Permits
  (559) 445-6051

BACKGROUND

The San Francisco Bay Regional Water Quality Control Board reissued waste discharge requirements under the National Pollutant Discharge Elimination System permit (No. CAS0029912) for the Contra Costa Clean Water Program (Program). The City of Antioch, under Provision C.3 of the Program, requires significant redevelopment projects to design and implement storm water treatment measures to reduce the discharge of storm water pollutants to the maximum extent practicable.

DATA REQUEST

36. Please provide a draft Storm Water Control Plan per the Provision C.3 requirements of the Contra Costa Clean Water Program NPDES permit No. CAS0029912 that meets the City of Antioch's municipal standards for the discharge of storm water pollutants.

RESPONSE

A draft Storm Water Control Plan is provided in Appendix C.

Technical Area: Transmission System Engineering

Authors: Laiping Ng and Mark Hesters

BACKGROUND

The California Environmental Quality Act (CEQA) requires the identification and description of the "Direct and indirect significant effects of the project on the environment." The Application for Certification requires discussion of the "energy resource impacts which may result from the construction or operation of the power plant." For the identification of impacts on the transmission system resources and the indirect or downstream transmission impacts, staff relies on the System Impact and Facilities Studies for insuring the interconnecting grid meets the California Independent System Operator (California ISO) reliability standards. The studies analyze the effect of the proposed project on the ability of the transmission network to meet reliability standards. When the studies determine that the project will cause a violation of reliability standards, the potential mitigation or upgrades required to bring the system into compliance are identified. The mitigation measures often include the construction of downstream transmission facilities. CEQA requires the analysis of any downstream facilities for potential indirect impacts of the proposed project. Without a complete System Impact Study (SIS) or Facilities Study Report (FSR), staff is not able to fulfill the CEQA requirement to identify the indirect effects of the proposed project.

The SIS indicated several options to mitigate the normal and contingency overloads caused by the addition of the Marsh Landing Generation Station project (MLGS). Staff needs additional documentation and information to support the proposed mitigation measures in order to prepare the Staff Assessment for the MLGS Project.

DATA REQUEST

The SIS, using the 2013 Summer Peak Full-loop base case, indicates that under normal and contingency conditions, some 230 kV transmission lines in the study area will be loaded above their line ratings. The proposed mitigations for the overloads will be: transmission line re-rates, reconductoring, and reducing the proposed MLGS generation. The overloaded lines are:

- Contra Costa – Brentwood 230 kV lines,
- Contra Costa – Wind Master 230 kV lines,
- Delta Pump – Wind Master 230 kV lines,
- Las Positas – Newark D 230 kV lines,
- Cayetano – USWP – JRW – Lonetree 230 kV lines.

37. Please select the mitigation alternative and provide evidence showing the selected mitigation measure is feasible and effective.

RESPONSE

With regard to the above-mentioned transmission lines and any other N-1 transmission line overloads, the applicant's overload mitigation preference is to:

1. Request a transmission line re-rate from PG&E.

2. In the event that a transmission line re-rate is not feasible, then the applicant will formally request a Special Protection Scheme (SPS) in accordance with the

current California Independent System Operator (CAISO) Grid Planning Standards.

3. If the SPS is not granted, then transmission line reconductoring would be selected.

As stated in the applicant's December 2, 2008 letter to the CEC Staff and Committee, Mirant Marsh Landing is not able to select a mitigation alternative or confirm its feasibility at this time. As noted above, the CAISO had suspended the processing of applications for Large Generator Interconnection Agreements (LGIAs) while it devised a new system for reviewing and approving LGIA applications. Mirant Marsh Landing filed its LGIA application and submitted its deposit in time for the MLGS to be included in the CAISO's transition cluster group. Prior to November 25, 2008 (the deadline set by the CAISO), Mirant Marsh Landing submitted the required forms and additional payments to the CAISO for inclusion as part of the transition cluster study, which resumes the CAISO's LGIA process. Commencing this month, Mirant Marsh Landing expects to be able to re-initiate discussions with the CAISO and PG&E regarding appropriate and feasible mitigation measures, although some of these analyses will be part of the CAISO's LGIA process. Mirant Marsh Landing will follow up with Staff in the response to Data Requests 37 through 40 as soon as it receives the requisite feedback from the CAISO and PG&E.

BACKGROUND

As required by the California ISO planning standards, the SIS performed with the 2013 summer peak case does not include power flow analysis for Category B contingencies of possible simultaneous combinations of a transmission line /transformer and a generator (L-1 & G-1), and for Category C contingencies of multiple transmission elements (more than N-2) in the SIS. The SIS also does not include analyses for transient stability, short circuit, post-transient voltage and reactive power deficiency.

DATA REQUEST

38. If re-rate is selected, please provide the following:

a. Provide the current line ratings and the current wind speeds that are used for all the proposed re-rate lines listed above.

b. Provide the future line ratings and wind speeds that would be used for all the proposed re-rate lines listed above.

c. Provide evidence showing re-rate of these transmission lines is feasible and effective (letter from the California ISO).

RESPONSE

Re-rating of the lines is the preferred mitigation option. Given that PG&E is the current owner of the transmission lines that would require re-rates, they would be responsible for obtaining the information regarding re-rates and the overall feasibility of the request. The applicant is unable to provide the requested information at this time, as stated in the applicant's December 2, 2008 letter to CEC Staff and Committee.

DATA REQUEST

39. If reconductoring is selected, please provide the following:

a. Detailed information on each of the reconductored transmission lines. Information should include the number of poles required (new or existing), pole configurations, conductor types, sizes, and lengths.

b. Provide a general environmental analysis and any recommended mitigation measures sufficient to meet CEQA requirements for indirect project impacts.

RESPONSE

As stated in the response to Data Request 38, re-rating is the preferred option. The applicant is unable to provide PG&E's or CAISO's approval for re-rating at this time. Therefore, reconductoring of the identified lines is assumed to be a worst-case scenario with regard to potential indirect environmental impacts.

PG&E is the owner of the transmission studies. Until PG&E completes its own studies and engineering design, detailed information for each of the reconductored transmission lines, such as the number of poles required (new or modified), pole configurations, conductor types, sizes, and lengths cannot be provided.

To comply with the CEC's need to evaluate indirect project impacts, the applicant has prepared a general environmental analysis based on typical reconductoring construction activities. This analysis is provided in Appendix D.

DATA REQUEST

40. If de-generation is selected, please provide the following:

a. Provide the amount of MLGS generation reduction required to mitigate the transmission line overloads under normal and contingency conditions.

b. Provide evidence showing the de-generation is feasible and effective (letter from California ISO).

RESPONSE

The applicant does not consider this option to be feasible.

BACKGROUND

The CAISO Controlled Grid Planning Criteria require that multiple element contingencies (Category "C") be studied in the SIS report. Staff needs a complete study on Category "C" contingencies, a short circuit study and dynamic stability analysis using the 2013 Summer Peak Full-loop base case.

DATA REQUEST

41. Please provide Category "C" study on:

a. Selected bus outages within the study area,

b. Selected outages caused by selected breaker failures (excluding bus tie and sectionalizing breakers) at bus section,

c. Selected combination of any two-generator/transmission line/transformer outages (except ones included in the Category "B") within the study area.

RESPONSE

As stated in the applicant's December 2, 2008 letter to the CEC Staff and Committee, Mirant Marsh Landing requires additional time to respond to Data Request 41. Mirant Marsh Landing has engaged its third party transmission consultant to prepare the requested study and the work is in progress. Mirant Marsh Landing will submit responses to Staff on a rolling basis as they become available from the consultant. Mirant Marsh Landing understands that its consultant will be able to finish all of the items requested in Data Request 41 by early February 2009.

DATA REQUEST

42. Please provide a Short Circuit Duty Analyses.

RESPONSE

As stated in the applicant's December 2, 2008 letter to the CEC Staff and Committee, Mirant Marsh Landing is unable to perform or provide the requested Short Circuit Duty Analyses. PG&E owns the existing transmission system and is the only entity that can perform these Short Circuit Duty Analyses. Neither Mirant Marsh Landing nor its consultant have access to the impedance models and equipment rating limitation of every serial element in the PG&E Bay Area system, which are needed to perform the Short Circuit Duty Analyses accurately. Additionally, Short Circuit Duty Analyses will be performed by PG&E at the request of the CAISO in later studies. It is expected that the equipment upgrades associated with Short Circuit Duty Analyses would be limited to inside the existing footprints of existing substations.

DATA REQUEST

43. Please provide a Dynamic Stability Analyses.

RESPONSE

As stated in the applicant's December 2, 2008 letter to the CEC Staff and Committee, Mirant Marsh Landing requires additional time to respond to Data Request 43. Mirant Marsh Landing has engaged its consultant to prepare the requested analysis and the work is in progress. Mirant Marsh Landing will submit the analysis when it becomes available from the consultant, which is expected no later than early February 2009.

DATA REQUEST

44. Please provide a Reactive Power Deficiency Analysis

RESPONSE

As stated in the applicant's December 2, 2008 letter to the CEC Staff and Committee, Mirant Marsh Landing requires additional time to respond to Data Request 44. Mirant Marsh Landing has engaged its consultant to prepare the requested analysis and the work is in progress. Mirant Marsh Landing will submit the analysis when it becomes available from the consultant, which is expected no later than early February 2009.

DATA REQUEST

45. Please provide system protection and substation evaluation.

RESPONSE

As stated in the applicant's December 2, 2008 letter to the CEC Staff and Committee, Mirant Marsh Landing is unable to perform or provide the requested system protection and substation evaluation. PG&E owns the existing transmission system and is the only entity that can perform this evaluation. Also, a thorough Short Circuit Duty Analysis is required to complete this request, and PG&E is best positioned to complete that, as explained in the response to Data Request 42. As explained in that response, neither Mirant Marsh Landing nor its consultant have access to the impedance models and equipment rating limitation of every serial element in the PG&E Bay Area system, which are needed to perform the Short Circuit Duty Analyses accurately. Additionally, Short Circuit Duty Analyses will be performed by PG&E at the request of the CAISO in later studies. It is expected that the equipment upgrades associated with Short Circuit Duty Analyses would be limited to inside the existing footprints of existing substations.

Technical Area: Waste Management

Author: Cheryl Closson

BACKGROUND

The Phase I Environmental Site Assessment (Phase I ESA) prepared by URS Corporation for the proposed Marsh Landing Generating Station (MLGS) project (Appendix R, Volume II of the project AFC) provides information on the main project site but does not address the areas associated with the gas and water supply linear features and the water treatment facility to be constructed as part of the project. A Phase I ESA, or equivalent information, is needed for the properties along the gas and water pipeline routes and for the water treatment facility site to determine if past or present uses of the property have caused, or threaten to cause, contamination that might impact, or be impacted by, construction and operation of the proposed project.

DATA REQUEST

46. Please provide a Phase I ESA, or equivalent information, addressing the past and present uses of property along and adjacent to the project's gas and water supply pipelines and at the water treatment facility site. The requested information should include an evaluation addressing whether or not past or present site conditions may have resulted in contamination, or potential contamination, that could impact construction and/or operation of the proposed project.

RESPONSE

The gas transmission line will be constructed within the property of the original Contra Costa Power Plant, which is addressed in the 1997 Phase I Environmental Site Assessment (ESA) and the 1998 Phase II ESA (see the response to Data Request 47).

Most of the water supply and wastewater pipeline route is also covered by the 1997 Phase I ESA and the 1998 Phase II ESA. In addition, the water supply and wastewater pipeline route is within the area covered by the record search for the 2008 Contra Costa Power Plant and MLGS Phase I ESA (provided as Appendix R of the AFC). The record search was performed to identify areas of potential hazardous substances, wastes or petroleum products that could impact the project site.

The water treatment facility site (i.e., BLS) is owned by DDSD. The applicant has requested a Phase I ESA or equivalent information from DDSD and will forward it to the CEC when it has been received.

BACKGROUND

The Phase I ESA prepared by URS for the proposed MLGS project cites and summarizes certain findings and recommendations contained in other environmental assessments, studies, and reports previously conducted to evaluate conditions in the area of the project site. The information provided in these assessments was used in part to support the conclusions and recommendations provided in the URS Phase I ESA. Review of these reports will assist Energy Commission staff's assessment of site conditions and potential impacts associated with the proposed MLGS project.

DATA REQUEST

47. Please provide copies of the following reports and publications identified in the Phase I ESA prepared by URS for the MLGS project.

- Phase I Environmental Site Assessment, Contra Costa Power Plant, Antioch, California. Prepared by Camp Dresser and McKee, October 1997.
- Phase II Environmental Site Assessment, Pacific Gas and Electric Company (PG&E), Contra Costa Power Plant, Antioch, California. Prepared by Fluor Daniel GTI, 1998.
- Hazardous Materials Business Plan, Contra Costa Switchyard, Antioch, California. Prepared by PG&E, March 2007.

RESPONSE

The Phase I ESA prepared by Camp, Dresser, and McKee was provided in the MLGS AFC, Appendix R – Phase I Environmental Site Assessment, as Appendix E – Previous Reports. It is therefore not resubmitted here.

The reference to the Contra Costa Switchyard Hazardous Materials Business Plan (HMBP) was incorrect. The reference should have been to the Hazardous Materials Business Plan, Contra Costa Power Plant, Contra Costa County, February 2007.

One set of the CCPP HMBP and the Phase II ESA is provided to the CEC along with these responses to Data Requests.

BACKGROUND

Portions of the MLGS facility would be constructed in an area of the existing Contra Costa Power Plant (CCPP) that is currently occupied by above-ground fuel oil storage tanks (Tanks 1 though 5). The project AFC states that Mirant Delta (the CCPP owner) plans to drain, clean, and demolish all of the existing storage tanks (Tanks 1 through 8) in 2008. However, should this not occur, the AFC states that demolition of Tanks 1 through 5 would be done as part of the proposed MLGS project. The Phase I ESA conducted for the proposed project identified the fuel tank area as a Recognized Environmental Condition (REC) and recommended sampling under and around the tanks to assess potential impacts from releases of fuel oil or other contaminants.

While the AFC states that demolition of the tanks may be done as part of the proposed project, there is limited information in the AFC addressing any sampling and remediation that may be needed in the area. As noted above, the tank area is identified as an REC. Any environmental investigation of the site after demolition and completion of any necessary remedial actions should be done well in advance of any project construction to ensure that possible contamination is identified and mitigated to a level of insignificance. Investigation and remediation of hazardous waste during the construction phase of a project should only be done as a contingency measure, when previously unknown contamination is encountered during the normal construction activities.

DATA REQUEST

48. Please provide an estimated date for the demolition of the fuel oil tanks on the proposed project site, along with a schedule and workplan for investigation and possible remediation of soils in the vicinity of the tanks. The schedule and workplan should also be reviewed and approved by the Department of Toxic Substances Control (DTSC) prior to submittal to the Energy Commission, unless other arrangements are made with staff to address or accommodate DTSC review.

RESPONSE

As stated in the applicant's December 2, 2008 letter to the CEC Staff and Committee, Mirant Marsh Landing requires additional time to respond to Data Request 48. Mirant Marsh Landing is not yet in a position to propose a work plan for investigation of soils and groundwater at the tank site. First, as stated in the AFC, demolition of the existing fuel oil tanks may not occur as part of the project proposed in the AFC. Instead, Mirant Delta, LLC (owner of the tanks and an affiliate of Mirant Marsh Landing) (Mirant Delta) may opt to conduct such demolition prior to certification of the MLGS project as part of Mirant Delta's ongoing operations of the site. Mirant Delta is still evaluating possible courses of action. Demolition of the tanks could begin as early as first quarter 2009 as part of Mirant Delta's operations. On the other hand, as stated in Table 2.7-3 of the AFC, demolition of the five tanks would occur during the first six months of construction if included as part of the MLGS project.

Second, Mirant Delta is contractually obligated to allow the former owner of the site to review work plans relating to certain instances of remediation at the site. This obligation arises from contractual arrangements in which the former owner retained responsibility for certain remediation activities at the site. Once Mirant Delta has finalized its plans relating to demolition of the existing fuel tanks and satisfied its contractual obligations with respect to the former owner of the site, Mirant Marsh Landing will follow up with Staff in response to Data Request 48.

Finally, the soils beneath the five fuel oil tanks are currently not accessible. Therefore, it is not feasible (or necessary) to undertake investigation activities in these areas until demolition and/or removal of these structures has been completed. Mirant Marsh Landing will address the need to further investigate any identified Recognized Environmental Conditions (RECs) in sufficient time to allow construction to proceed. As is typical for construction activities at heavy industrial sites such as a power plant, potential exposure to subsurface contaminants by construction workers or the public during construction activities would be managed through the development of a Site Safety Plan for activities during construction. This would provide proper monitoring, personnel protection equipment, and engineering controls during construction in order to minimize potential exposures.

BACKGROUND

The project's Phase I ESA also noted that there are several areas with "remedial issues" within the proposed project site. These areas were identified as RECs because they have petroleum hydrocarbons or arsenic in soil or groundwater at concentrations that exceed regulatory thresholds. The Phase I ESA also identified the CCPP septic system and leach field, the former construction debris piles, and the former paint storage shed area as RECs and an area of concern (AOC), respectively, due to potential soil and groundwater contamination. However, there is limited information in the AFC addressing any sampling and remediation that may be needed in these areas. As with the fuel oil tank areas, environmental investigation of these areas of the project site and completion of any necessary remedial action should be done well in advance of any project construction to ensure that any possible contamination is identified and mitigated to a level of insignificance.

DATA REQUEST

49. Please provide a schedule and workplan for investigation and possible remediation of soils and groundwater in all of the following areas of the proposed project site:

a. areas identified as having "remedial issues";
b. areas potentially impacted by the CCPP septic system discharges;
c. areas around the former construction debris piles; and
d. areas around the former paint storage shed.

The schedule and workplan should also be reviewed and approved by the Department of Toxic Substances Control (DTSC) prior to submittal to the Energy Commission, unless other arrangements are made with staff to address or accommodate DTSC review.

RESPONSE

As stated in the applicant's December 2, 2008 letter to the CEC Staff and Committee, Mirant Marsh Landing requires additional time to respond to Data Request 49. Mirant Marsh Landing is not yet in a position to propose a work plan for investigation of soils and groundwater at the identified areas.

There is no need to undertake investigation activities in these areas until the project has been approved for construction. Mirant Marsh Landing will address the need to further investigate any identified RECs in sufficient time to allow construction to proceed. As is typical for construction activities at heavy industrial sites such as a power plant, potential exposure to subsurface contaminants by construction workers or the public during construction activities would be managed through the development of a Site Safety Plan for activities during construction. This would provide proper monitoring, personnel protection equipment, and engineering controls during construction in order to minimize potential exposures.

Finally, Mirant Delta is contractually obligated to allow the former owner of the site to review work plans relating to certain instances of remediation at the site. This obligation arises from contractual arrangements in which the former owner retained responsibility for certain remediation activities at the site. Once Mirant Delta has satisfied its contractual obligations with respect to the former owner of the site, Mirant Marsh Landing will follow up with staff in response to Data Request 49.

Technical Area: Worker Safety and Fire Protection
Author: Alvin Greenberg

Background

Section 2.6 states that Figures 2.6-1 and 2.6-2 depict (amongst other things) the "access roads" to the MLGS site. However, the location of access points is not clear from these figures and therefore staff cannot determine if there are at least two access points. This is not discussed anywhere else in the AFC. Staff needs this information in order to assess fire and hazardous materials spill response.

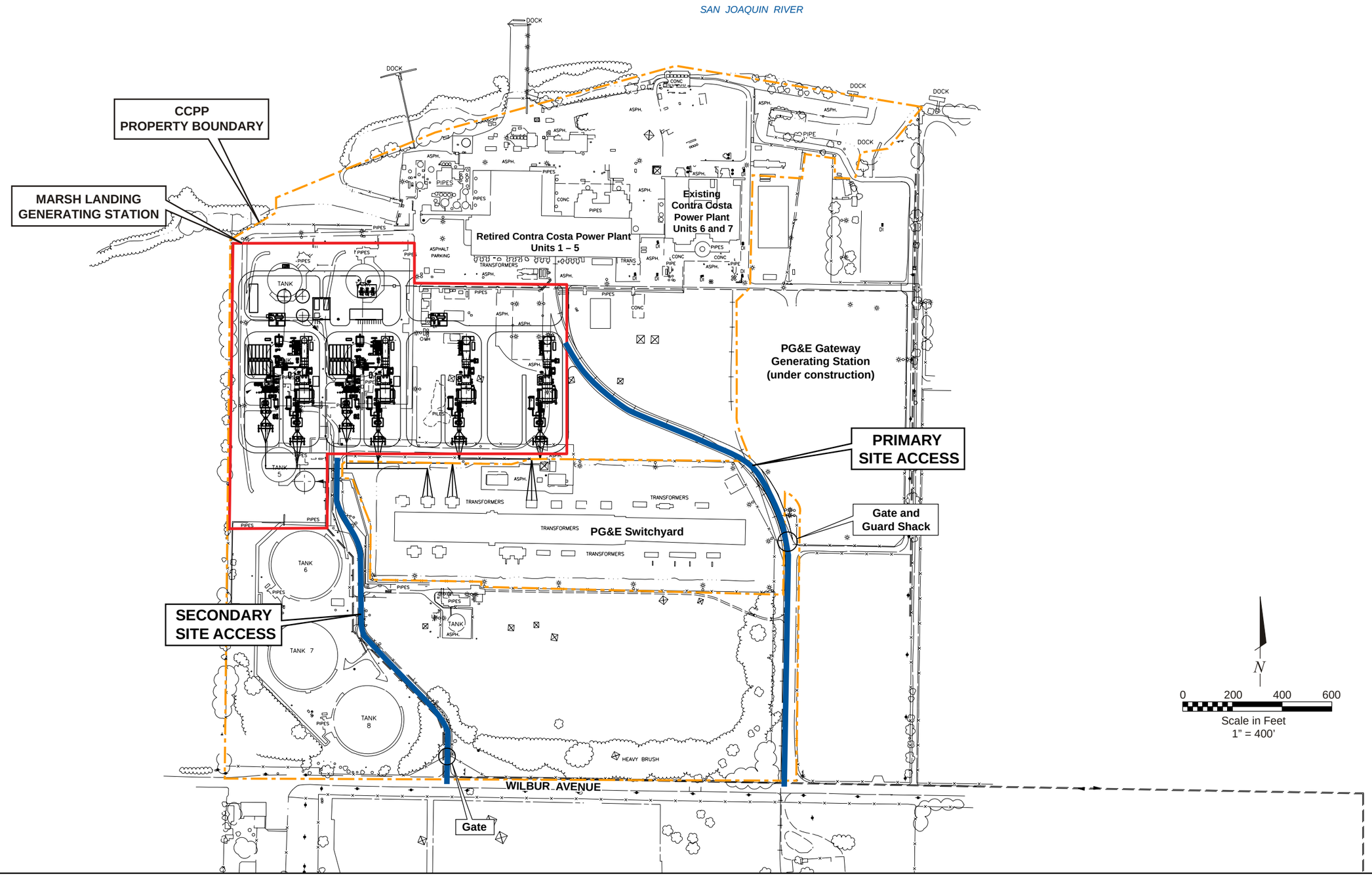
DATA REQUEST

50. Please provide a narrative description and a map showing primary and secondary access points and gates to the project site. The secondary access point can be one restricted to the use of emergency response personnel.

RESPONSE

The proposed power plant site will be accessed by the existing CCPP entrance on Wilbur Avenue. This entrance has a gate and guard. A secondary entrance is provided on Wilbur Avenue approximately 1,500 feet west of the primary entrance. This entrance is also gated.

Figure 50-1 shows the primary and secondary access points to the MLGS site.



Source:
CH2M Hill Lockwood Greene; General Arrangement Marsh Landing Generating Station,
Combined Cycle Siemens Flex 10s & Simple Cycle Layout;
Drawing No: MR-GA-ML-01-10 (Rev. C, 04/18/08)

SITE ACCESS PLAN

Marsh Landing Generating Station
Mirant Marsh Landing, LLC
Contra Costa County, California

December 2008
28067344

URS

FIGURE 50-1

12/08/08 vsa ..\T:\Mirant Contra Costa-Marsh Landing\Graphics\DATA REQUESTS\DR_50-1_site access plan.ai

BACKGROUND

Technical Area: Biological Resources

Author: Laurel Cordonnier

BACKGROUND

The Marsh Landing Generating Station (MLGS) Application for Certification (AFC) did not state the hours in which construction would occur during the day. Due to the proximity to sensitive biological resources that could be affected by noise and night time lighting during construction, Energy Commission staff needs more information regarding the times construction would occur and any proposed measures to minimize impacts to nearby sensitive species.

DATA REQUEST

51. Please provide the daily work schedule when construction would likely occur.

RESPONSE

As stated on page 2-27 of the AFC, the construction schedule typically will be 10-hour days and 50-hour weeks. The majority of construction operations are expected to take place between 6:00 a.m. and 6:00 p.m., Monday through Friday.

DATA REQUEST

52. If construction would occur at night, please provide noise and lighting minimization measures which would be implemented to avoid noise and light impacts to offsite areas.

RESPONSE

In general, night construction is not anticipated. However, longer work days or work weeks may be necessary to make up schedule delays or complete critical construction activities. During the startup and testing phase of the project, some activities may continue 24 hours per day, 7 days per week.

As described in AFC Section 7.11, Visual Resources, the following design features were incorporated into the project to reduce the potential visual impacts related to lighting:

- Lighting on the project site will be limited to areas required for safety, will be directed on site to avoid backscatter, and will be shielded from public view to the extent practical.
- All lighting that is not required to be on during nighttime hours will be controlled with sensors or switches operated so that the lighting will be on only when needed.
- High-pressure sodium vapor fixtures will be used. These lights typically produce low-intensity amber light, which will reduce visual contrast with the night sky.

As discussed in AFC Section 7.5, Noise, predicted noise levels during construction of the facility are not predicted to exceed recommended noise compatibility guidelines at any sensitive receptors. Where nighttime or weekend construction must occur, shifts are usually smaller and noise levels correspondingly lower. In addition, two noise ordinances in the City of Antioch Code of Ordinances are applicable to construction and operation of the project. These are Ordinances § 5-17.04 and § 5-17.05, which regulate heavy construction equipment noise and construction activity noise. The project will comply with these ordinances. As such, even if certain construction activities are required beyond the normal daytime working hours, noise impacts are expected to be less than significant.

BACKGROUND

During an informal site visit to the proposed MLGS project site on September 29, 2008, Energy Commission staff observed a vegetated wetland area created by the Contra Costa Power Plant detention basin. This wetland area is adjacent to the proposed southern construction laydown, office, and parking area. This laydown area is located south of the PG&E switchyard and contains ruderal vegetation. The AFC stated that this construction laydown, office, and parking area would occupy 3.5 acres and is devoid of vegetation. Due to the presence of vegetation and trees, the area has the potential to be limited habitat for sensitive species such as the tricolored blackbird (*Agelaius tricolor*), burrowing owl (*Athene cunicularia*), Swainson's hawk (*Buteo swainsoni*), and Suisun song sparrow (*Melospiza melodia maxillaris*). Staff needs information regarding proposed impact minimization measures to protect this wetland area.

DATA REQUEST

53. Please provide a Phase I ESA, or equivalent information, addressing the past and present uses of property along and adjacent to the project's gas and water supply pipelines and at the water treatment facility site. The requested information should include an evaluation addressing whether or not past or present site conditions may have resulted in contamination, or potential contamination, that could impact construction and/or operation of the proposed project.

RESPONSE

No work will be conducted within the wetland area of the detention basin, south of the PG&E switchyard. The portion of the CCPP just to the south of the PG&E switchyard and north of the detention basin that will be used for construction laydown is elevated and outside of the detention basin. No ground-disturbing activities will be performed in this laydown area. All of this 3.5-acre area has previously been disturbed and is devoid of vegetation. The following avoidance and minimization measures are proposed to avoid indirect impacts to the vegetated areas of the detention basin and the species that these areas could support.

- Project Area: The project work area will be clearly marked and limited to the minimum area necessary. All construction activities will be limited to the approved construction work area. No vegetation removal is anticipated. Construction within wetlands and other sensitive areas within the detention basin will be avoided. Environmentally Sensitive Areas (ESAs) will be clearly marked on project plans. The work limits and all ESA limits will be clearly marked by fencing or signs to protect biological resources adjacent to the construction corridor by preventing inadvertent encroachment of construction activities into these areas.

- Construction Monitoring: A qualified biologist monitor will inspect ESA fencing and ensure adherence to avoidance and minimization requirements. While not anticipated, should vegetation need to be removed during construction activities, a qualified biologist will first inspect the area for sensitive species. The monitor will have authority to stop work should it threaten sensitive resources and will contact resource agencies where appropriate.

- Construction Discharges: No concrete, concrete washings, or water from concrete trucks will be allowed to flow into the wetland; all water and concrete washed out of concrete trucks will be contained until cured. Discharges from the job site of excessively turbid water will be prohibited. No discharges from

equipment will enter the detention basins. All equipment used on site will be well-maintained and free of leaks. However, as a preventive measure, equipment may be placed on pads underlain with plastic that would absorb any spillage and act as a barrier for any spillage. Appropriate spill containment equipment and supplies (e.g., absorbent pads) will be kept onsite for use in containing and cleaning up accidental spills or leaks.

- Staging/Storage Areas: Staging areas, storage areas and equipment parking will not occur within wetland or other sensitive areas. Equipment will be maintained at facilities more than 100 feet from any aquatic habitat. Staging and storage areas will be restricted to the minimum area necessary for completion of the project.

- Erosion control: Ground-disturbing construction activities will be avoided during periods of heavy rain. Temporary erosion control and slope stabilization best management practices (BMPs) shall be implemented during construction if heavy rainfall (0.5 inch or more per day) is anticipated and permanent erosion control measures shall be implemented upon completion of the project. Erosion control measures may include silt fencing, straw wattles, straw bales, coir blankets, sediment traps, and other protective measures to minimize the potential for erosion of sediment beyond the work area or degradation of water quality in adjacent aquatic habitats. Erosion control materials will be placed between project construction areas and detention basins, and will be specified on the project plans.

- Disposal: There will be no disposal of soil and plant materials from areas that support invasive species to areas that support stands dominated by native vegetation.

- Imported Material: Gravel and/or fill material to be placed in relatively weed-free areas will come from weed-free sources. Certified weed-free imported materials will be used.

In addition, the draft Storm Water Pollution Prevention Plan, which is included as Appendix G in the AFC, provides additional best management practices to be used during construction of the proposed project.

DATA REQUEST

54. Please provide a discussion of impact avoidance and minimization measures to be implemented to protect the wetland area, the surrounding trees, and sensitive species that could use this area during construction.

RESPONSE

There will be no construction activities in the detention basin. There will be no changes to the detention basin due to the project construction or operation.

REFERENCES

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