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February 14, 2007

DOCKET
06-AFC-3
DATE FEB 14 2007
RECD. FEB 14 2007

Mr. Bill Pfanner
Project Manager
Systems Assessment and Facility Siting Division
California Energy Commission
1516 9th Street, MS 15
Sacramento, CA 95814-5512

Subject: LSP South Bay, LLC – South Bay Replacement Project AFC (06-AFC-3): Docketing of Data Response Set 1B

Dear Mr. Pfanner:

On behalf of LSP South Bay, LLC, please find attached 12 copies and one original of the Data Responses, Set 1B that provides additional responses related to Air Quality, Public Health and Cultural Resources to Staff's Data Requests Dated October 31, 2006. For docketing purpose, also find attached the Proof of Service Declaration. We have also filed copies of Data Response Set 1B electronically. In addition, 5 copies of the CD that contains the modeling input and output electronic files have been provided. We will coordinate this submittal with the Commission's Docket Unit.

Regarding Air Quality and Public Health, Data Response Set 1B provides the results of air dispersion modeling requested in Staff's Air Quality Data Requests 21-27 and 33, and Public Health Data Request 77, dated October 31, 2006. The Staff's Data Requests related to air dispersion modeling were divided into four modeling scenarios as follows:

- Data Requests 21-24: New Modeling of Combined SBRP Commissioning plus SBPP Normal Operation
- Data Requests 25-27: New Modeling of Combined SBRP Operation plus Demolition of SBPP
- Data Request 33: Cumulative Air Quality Impact Analysis Modeling for SBRP AFC
- Data Request 77: New Modeling of Public Health Risk Assessment

LSP South Bay, LLC appreciates the continued opportunity to work with CEC staff on this important project.

Sincerely,
CH2M HILL

for Robert C. Mason
Project Director

Attachments

cc: Docket Unit – California Energy Commission
Kevin Johnson, LSP South Bay, LLC

Data Response, Set 1B

South Bay Replacement Project (06-AFC-3) Response to Data Requests: 21-24, 25-27, 33, 49 and 77

Prepared for

LSP South Bay, LLC

February 2007

CH2MHILL
2485 Natomas Park Drive, Suite 600
Sacramento, CA95833

SOUTH BAY REPLACEMENT PROJECT (06-AFC-3)
DATA RESPONSES, SET 1B

Technical Area: Air Quality
CEC Authors: Tuan Ngo

DATA REQUESTS

BACKGROUND: AIR QUALITY IMPACT ANALYSIS

The AFC Section 1.9 states that the services of the existing "...SBPP will continue indefinitely until there are changes to the regional power plant and transmission system and CAISO removes the RMR status for SBPP." Thus, for a number of weeks, months or years, it is likely that both the proposed project and the SBPP will simultaneously be operating. Therefore, regardless of whether the proposed project and the SBPP could be exempt from the PSD review, it is necessary to determine the combined air quality impacts of both projects in operation through air dispersion modeling analyses.

DATA REQUEST

21. Please describe the modeling inputs (stack height, stack diameter, volumetric flow rate, and emission rates of NOx, CO, PM10 and SO2 for the existing boilers and combustion turbine) that would be used in an air dispersion modeling analysis of the existing SBPP.

Response: See General Data Response 18 in November 28, 2006 Data Response, Set 1A. Control and related aspects of simultaneous operation of the existing SBPP and proposed SBRP are discussed in the February 13, 2007 letter from LSP South Bay, LLC to the Commission and District (see Attachment AIR-21A). As detailed in attached letter, the simultaneous commercial operation of SBRP and SBPP cannot occur, therefore, the maximum-impact potential case would occur when SBPP operates during commissioning of the SBRP. The characteristics of SBPP operation during such a case would be the following:

a. SBPP at maximum output plus the SBRP during one hour of its earliest commissioning mode with no load

b. Followed by 23 hours of SBPP at 65% capacity[1] (474 MW) plus the SBRP commissioning at the equivalent of balance of grid-limited power.

The modeling inputs for the four boilers and one combustion turbine at the SBPP are provided in the following Attachment AIR-21B tables:

- Screening Modeling Input Data for SBPP Unit 1
- Screening Modeling Input Data for SBPP Unit 2
- Screening Modeling Input Data for SBPP Unit 3

[1] The 65% capacity limitation during 24 hours is set by the maximum allowable temperature in the cooling water discharge channel into South Bay.

- Screening Modeling Input Data for SBPP Unit 4
- Screening Modeling Input Data for SBPP Combustion Turbine (on JP5 fuel)
- Emission Rates and Stack Parameters for Refined Modeling of SBPP Normal Operations
- Emission Rates and Stack Parameters for Refined Modeling of SBRP Commissioning

22. Using the input parameters from the data request above, provide an air dispersion modeling analysis (using the same modeling approach provided in the AFC), of the simultaneous operation of both the SBPP under "normal" operation and the SBRP under the worst case initial commissioning scenario. Provide all input and output files in CD form.

Response: See General Data Response 18 in November 28, 2006 Data Response, Set 1A and Data Response 21 above. Because the requested combination of normal operation of the proposed SBRP and operation of the existing SBPP cannot occur, based on the discussion in the February 13, 2007 letter from LSP South Bay, LLC to the CEC and SDAPCD (see Attachment AIR-21A), the requested modeling is not provided. The input and output files for the commissioning of SBRP and normal operations of SBPP are transmitted separately on a CD.

23. Please execute the modeling analysis in data request 22 for the SBRP operating under the worst case normal operations with all input and output files in CD form.

Response: See General Data Response 18 in November 28, 2006 Data Response, Set 1A. The combination of normal operation of the proposed SBRP and operation of the existing SBPP cannot occur, as explained in the February 13, 2007 letter from LSP South Bay, LLC to the CEC and SDAPCD (see Attachment AIR-21A). Accordingly, there is no need to modeling such a hypothetical scenario..

24. Provide summary tables of the results of the modeling analysis performed for the data requests above in a format similar to AFC Table 8.1-30.

Response: See General Data Response 18 in November 28, 2006 Data Response, Set 1A and Data Responses 21, 22, and 23 above. The results of the requested modeling are presented below in Table 8.1-30-CEC DR 24.

TABLE 8.1-30-CEC DR 24

Modeled Maximum Impacts of SBRP commissioning plus SBPP normal operation

Pollutant	Averaging Time	Maximum Facility Impact (µg/m³)	Background (µg/m³)	Total Impact (µg/m³)	State Standard (µg/m³)	Federal Standard (µg/m³)
NO_2	1-hour	206.6	192.0	398.6	470	-
	Annual	NR	33.9	NR	-	100
SO_2	1-hour	11.2	110.0	121.2	650	-
	3-hour	6.3	55.0	61.3	-	1300
	24-hour	2.4	41.9	44.3	109	365
	Annual	NR	10.5	NR	-	80
CO	1-hour	2,714	8,625	11,339	23,000	40,000
	8-hour	1,290	3,778	5,068	10,000	10,000
PM_{10}	24-hour	10.5	78	88.5	50	150
	Annual	NR	27.6	NR	20	50
$PM_{2.5}$	24-hour	10.5	39.2	49.7	--	65
	Annual	NR	14	NR	12	15

NR = Not relevant to short-term commissioning duration

BACKGROUND: IMPACTS DURING FACILITY OPERATING AND DEMOLITION OF SBPP

The AFC sections 1.9 and 8.1.5.5 appear to be in conflict regarding whether and when the existing SBPP would be shut down and be demolished until the SBRP is fully operational (p. 8.1-51). Section 8.1.5.5 also states that a detailed analysis of the emissions and ambient impacts is included in Appendix 8.1F. Staff found that Appendix 8.1F has analysis of emissions and impacts for construction activities for the proposed project, but has not been able to find substantive material on the emissions and impact due to demolition of the existing SBPP.

DATA REQUEST

25. Please describe the modeling inputs for NOx, CO, and PM10 that would be used in an air dispersion modeling analysis of the demolition of the existing SBPP.

Response: See General Data Response 18 in November 28, 2006 Data Response, Set 1A. The modeling inputs for demolition of the SBPP are provided in Attachment AIR-25.

26. Please provide an air dispersion modeling analysis (using the same modeling approach provided in the AFC), of the simultaneous commissioning or operation of both the proposed project and the demolition of the existing SBPP. Provide all input and output files in CD form.

Response: See General Data Response 18 in November 28, 2006 Data Response, Set 1A. The input and output files are transmitted separately on a CD. As part of the proposed SBRP the demolition of the existing SBPP cannot occur until the SBRP is commercially operational, and hence, the simultaneous commissioning of SBRP and demolition of the existing SBPP has not been modeled.

27. Provide summary tables of the results of the modeling analysis performed in the data request above in a format similar to AFC Table 8.1-30.

Response: See General Data Response 18 in November 28, 2006 Data Response, Set 1A and Data Response 26 above. The results of the requested modeling are presented below in Table 8.1-30-CEC DR 27.

TABLE 8.1-30-CEC DR 27

Modeled Maximum Impacts of SBRP Operation plus SBPP Demolition

Pollutant	Averaging Time	Maximum Facility Impact (µg/m³)	Background (µg/m³)	Total Impact (µg/m³)	State Standard (µg/m³)	Federal Standard (µg/m³)
NO_2	1-hour	248	192.0	440	470	-
	Annual	0.9	33.9	35	-	100
SO_2	1-hour	11.5	110.0	122	650	-
	3-hour	5.7	55.0	61	-	1300
		2.1	41.9	44	109	
	24-hour	0.1	10.5	11	-	365
	Annual					80
CO	1-hour	2,714	8,625	11,339	23,000	40,000
	8-hour	858	3,778	4,636	10,000	10,000
PM_{10}	24-hour	9.3	78	88	50	150
	Annual	0.67	27.6	28.3	20	50
$PM_{2.5}$	24-hour	9.3	39.2	49	--	65
	Annual	0.66	14	14.7	12	15

NR = Not relevant to short-term commissioning duration

BACKGROUND: CUMULATIVE IMPACTS ANALYSIS

Section 8.1.7 states that an approved protocol for conducting a cumulative impacts analysis is included in Appendix 8.1H of the AFC.

DATA REQUEST

33. Please provide the cumulative impacts analysis or identify the timeline for completion and submittal of the cumulative impacts analysis.

Response: Information on candidate facilities to be potentially included in a cumulative air quality impact analysis was received from the SDAPCD and evaluated against the following criteria for inclusion:

- Distance less than 10 km (6 miles) from the proposed project

- Net emission rate increase greater than 5 tons per year after 2005, the last of the three years used to capture the air quality impact of other sources through background air quality monitoring in the San Diego Air Basin

None of the sources identified by the SDAPCD as potential cumulative facilities satisfied these criteria, other than the SBPP. Accordingly, the information already provided regarding the potential cumulative air quality impacts associated with the SBRP and the SBPP satisfies the District's requirements for a cumulative impacts analysis.

ATTACHMENT AIR-21A

LS POWER GENERATION, LLC
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February 13, 2007

Tom Weeks
Chief, Energy Division
Air Pollution Control Dristict
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10124 Old Grove Road
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Bill Pfanner
Project Manager
California Energy Commission
Systems Assessment and Facilty Siting Division
California Energy Commission 1516 9th Street, MS 15
Sacramento, CA 95814

Subject: LSP South Bay, LLC South Bay Replacmeent Project

Gentlemen:

This letter responds to concerns expressed by California Energy Commission ("CEC") air quality staff in their October 31, 2006 data requests as well in the San Diego County Air Pollution Control District ("SDAPCD" or "District") staff's letter of November 22, 2006, regarding the possibility of simultaneous commercial operation of the existing South Bay Power Plant ("SBPP") and the proposed South Bay Replacement Project ("SBRP"). The CEC staff raised concerns that the California Independent System Operator ("CAISO") reliability must run ("RMR") status of the South Bay Power Plant ("SBPP") does not permit LSP South Bay, LLC ("LS Power") to control whether the SBPP and the new SBRP operate simultaneously or not. As described below, there are multiple independent reasons to conclude that simultaneous commercial operation of the SBPP and the SBRP cannot and will not occur.[1]

To begin with, the SBRP will request and accept a permit condition from the CEC and the SDAPCD prohibiting simultaneous commercial operation with the SBPP following achievement of commercial operation of the SBRP. With such permit conditions in place, the CAISO cannot enforce the RMR contract to operate the SBPP or the SBRP in violation of the

[1] As used in this letter, "simultaneous commercial operation" means the operation of both the SBRP and SBPP at the same time more than 30 days following the commercial operation date of the SBRP. As documented below, such simultaneous commercial operation will not occur.

permit condition. Moreover, even without the permit condition, simultaneous commercial operation of the SBPP and the SBRP is not possible for several reasons, including the following:

- The expected air quality offset limitation for the SBRP will not allow simultaneous commercial operation of the SBPP and the SBRP;
- The electrical interconnection agreement for the SBRP would not permit simultaneous commercial operation;
- The gas interconnection is insufficient to allow simultaneous commercial operation of the SBPP and the SBRP;
- The existing Cooperation Agreement and the proposed Option to Lease between the Unified Port District of San Diego ("Port") and LS Power provide that the SBRP will replace operation of the SBPP as soon as possible; and finally,
- The SBRP must comply with the California Coastal Act, which requires cessation of the once-through cooling used at the SBPP and demolition of the SBPP.

For these and other reasons, as elaborated upon below, the SBRP and the SBPP cannot operate simultaneously once the SBRP achieves commercial operation.

I. The RMR Contract cannot Compel the SBPP and/or the SBRP to Operate in Violation of Permit Conditions

Although the CAISO can generally determine when RMR generation facilities operate, the RMR contract does <u>not</u> permit the CAISO to require operations in violation of contractual or permit conditions. Section 4.6 of the *pro forma* RMR contract explicitly and unambiguously prevents the CAISO from doing so:

> 4.6 Limitations on ISO's Right to Dispatch
>
> ISO's Dispatch Notice may not request Owner to, and Owner shall not be obligated to:
>
> (i) Provide service from a Unit at less than the Minimum Load for the Unit;
> (ii) Provide service from a Unit for less than the Minimum Run Time;
> (iii) Start-up a Unit after less than the Minimum Off Time;
> (iv) Start-up a Unit unless the time between the delivery of the Dispatch Notice requesting such Start-up and the commencement of the applicable Requested Operation Period equals at least the Start-up Lead Time for the Unit and the Dispatch Notice provides sufficient time to satisfy the Ramping Constraint of the Unit;
> (v) Provide service from a Unit in excess of its Unit Availability Limit;
> *(vi) Provide service from a Unit when to do so would violate environmental limitations applicable to the Unit as set forth in Section 3 of Schedule A;*
> *(vii) Start-up or provide service from a Unit in violation of any applicable law, regulation, license or permit; or*
> *(viii) Start-up or provide service from a Unit to the extent that doing so would cause a breach of an Existing Contractual Limitation*; or
> (ix) Deliver Energy or Ancillary Services to the extent such Delivery would cause a breach of a contract for capacity made available through an

> Upgrade or a Capital Item or Repair for which ISO is not obligated to make a Surcharge Payment or pay ISO's Repair Share. (Emphasis added).

Accordingly, the CEC staff concern regarding the CAISO RMR authority is misplaced. Any restriction in the permits for the SBRP regarding simultaneous commercial operation or total emissions from the existing and new facilities after commercial operation of SBRP would be fully enforceable notwithstanding the RMR status of either facility.

II. LS Power Will Request and Accept a Permit Condition from the CEC and SDAPCD Prohibiting Simultaneous Commercial Operation of the SBPP and SBRP.

The SBRP requests and will accept a permit condition from the CEC and SDAPCD to ensure that simultaneous commercial operation of the existing SBPP and the new SBRP will not occur. The SBRP proposes the following language, to be included in the CEC conditions of certification and the SDAPCD permit:

> Prior to the Commercial Operation Date (COD) for the South Bay Replacement Project (SBRP), the operator[2] will operate the SBRP equipment simultaneously with the existing South Bay Power Plant (SBPP) boilers only to the extent necessary to carry out required commissioning activities, including acceptance and performance testing. During the commissioning period, the operator will operate the SBRP equipment such that the combined net electrical generation by both SBRP and SBPP units does not exceed 706 MW.
>
> Not later than 30 days after the COD for the SBRP, the operator will not operate the SBRP equipment at the same time that any of the SBPP boilers are operating. Prior to that time, and commencing with the first firing of the first SBRP unit for commissioning purposes, SBRP will operate the SBRP units in such as way so as to ensure that the combined emissions from the SBRP and SBPP units do not exceed the annual emission limits specified in Condition XX (reference to SBRP annual emission limits).

This condition prohibits outright <u>any</u> simultaneous operation 30 days following the commercial operation date of the SBRP. Moreover, the condition further prohibits the SBPP and SBRP from simultaneously operating prior to that time in a manner where the combined emissions of the two plants would surpass the emissions limits of the SBRP alone. Therefore, even if the SBPP and SBRP temporarily operate at the same time during testing and commissioning, combined annual emissions would be less than or equal to those of the SBRP alone.

III. Simultaneous Commercial Operation of the SBRP and SBPP is Impossible even without a Permit Condition

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[2] References herein to "the operator" or "the applicant" refer to LS Power its successor (if any) in either role.

In addition, even without a permit condition like the one proposed above, simultaneous commercial operation of the SBPP and the SBRP is not possible for a number of reasons.

First, the expected air quality offset limitations for the SBRP contemplated by the applicant would not allow simultaneous commercial operation. As discussed above, SBRP has proposed, and will accept, a permit condition restricting operation of the SBRP units to ensure that the maximum combined emissions from the SBPP and the SBRP during commissioning of SBRP will not exceed the annual emission levels shown in Table 8.1-34 of the applicant's Application for Certification ("AFC") for the SBRP alone. This condition is enforceable for the following reasons:

- Emissions of oxides of nitrogen and carbon monoxide are measured through District-required continuous emissions monitors at the SBPP, and will be similarly monitored at the SBRP.
- Emissions of volatile organic compounds, sulfur oxides, and particulate matter are determined through measured fuel consumption and District-approved emission factors at the SBPP, and will be similarly determined at the SBRP.
- The proposed permit condition restricts operation of the SBRP, rather than restricting operation of the SBPP, thus addressing any theoretical concerns that the SBPP might be dispatched by CAISO without regard to these limitations. (As discussed above, the RMR agreement for the SBPP explicitly prohibits the CAISO from dispatching the SBPP in violation of environmental permit conditions.)

Therefore, the SBPP and the SBRP can only operate simultaneously during the commissioning of SBRP and then only to the extent that the combined annual emission levels would be less than or equal to the emission levels of the SBRP only.

Second, LS Power has proposed to interconnect the SBRP with the SDG&E grid as a replacement project only and none of the interconnection studies and agreements contemplate the delivery of energy from both SBRP or SBPP post commercial operation of SBRP LS Power has not sought any right to simultaneous commercial operation of SBPP and SBRP and such condition has not been studied.

Third, because LS Power has always intended that the SBRP truly replace the existing SBPP, it has not requested natural gas interconnection rights that would allow simultaneous commercial operation of both units and does not intend to do so. Moreover, LS Power understands that the existing natural gas infrastructure would not allow deliveries in sufficient quantities to allow such operations.

Fourth, the proposed Option to Lease between LS Power and the Port is for a Project that is licensed by the California Energy Commission that includes "as a condition thereof, the demolition of the Existing South Bay Power Plant." Such condition ensures the SBPP and the SBRP will not engage in simultaneous commercial operations. The Option to Lease plainly contemplates that the SBRP will replace operation of the SBPP as soon as possible. This is also consistent with the Bay Front Master Plan and related local land use plans.

Finally, the project's compliance with the Coastal Act is predicated upon prompt cessation of once-through cooling at the SBPP and demolition of the project. Simultaneous commercial operations would not achieve this important objective.

For all of the above reasons, the project proposed in the AFC is plainly and explicitly intended to promptly replace the SBPP. Simply put, the concern regarding simultaneous commercial operation of the SBRP and the SBPP does not reflect the project proposed by LS Power in the AFC. As such, it is also inconsistent with virtually every aspect of LS Power. related development activity.

IV. Temporary Operation During Commissioning

As requested by CEC staff, the LS Power is analyzing the potential worst-case combined air quality impacts of the SBPP and the SBRP during the SBRP commissioning period. This worst case analysis was based on the following two operating cases for the two plants, even though such operation is both unlikely and physically constrained by both gas supply and transmission constraints: (1) operation of both the SBPP and the SBRP at maximum output for one hour; and (2) operation of the SBRP at maximum output and the SBPP at 65% capacity[3] for twenty-four hours.

In addition to such worst case operation cases being unlikely and physically restrained, such operation would be prohibited by the proposed SBRP permit condition above, which would restrict the combined output from both the existing and new plants to the rated capacity of the existing plant during the commissioning of SBRP. The results of these analyses will be submitted to the District and CEC staff later this month.

V. Conclusion

For many independent reasons, the concern regarding simultaneous commercial operation of the two plants is unwarranted. Fundamentally, the concern reflects a misperception that the authority of the CAISO under the RMR contracts can compel violation of permit conditions, environmental restrictions or contracts. As shown above, the RMR contract contains clear provisions ensuring that the CAISO cannot do so. Moreover, to put this issue to rest once and for all, LS Power is prepared to accept the permit condition prohibiting simultaneous commercial operation set forth above. As just discussed, this condition would be fully enforceable through the RMR contract.

Even without this proposed permit condition, there is ample reason to dismiss the possibility of simultaneous commercial operation. Such operation is inconsistent with the project proposed by LS Power in the AFC. Simultaneous commercial operation is similarly inconsistent with expected air quality restrictions as well as local land use policies and the Coastal Act. Furthermore, simultaneous commercial operation is inconsistent with virtually all of the agreements LS Power has entered into regarding the project, including its gas supply agreements and its Cooperation Agreement with the Port.

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[3] The 65% capacity limitation during 24 hours is set by the maximum allowable temperature in the cooling water discharge channel into South Bay.

Accordingly, LS Power would readily accept a permit condition confirming that the two projects will not operate simultaneously once commissioning of SBRP is complete. Moreover, LS Power will not agree that it is reasonable to assume for any purpose that simultaneous commercial operation will occur as described in the CEC data requests or in the SDAPCD letter. While LS Power will provide an analysis of temporary "worst-case" simultaneous operations during commissioning as described above, for the reasons set forth herein it does not intend to model impacts from a post-commissioning simultaneous commercial operation scenario that cannot legally or practically occur.

I trust this explanation fully addresses this concern. We would be pleased to discuss this matter with you at your convenience should you have any further questions.

Very truly yours,

LSP South Bay, LLC

Kevin R Johnson

Table 8.1D-2A
Screening Modeling Inputs
Data For Boiler 1

Case	Amb Temp deg F	Stack height feet	Stack Height meters	Stack Diam feet	Stack Diam meters	Stack flow wacfm	Stack flow m^3/sec	Stack Vel ft/sec	Stack Vel m/sec	Stack Temp deg F	Stack Temp deg K
	62	187.0	57.00	10.0	3.05		0.00	0.00	0.00		255.37
	27	187.0	57.00	10.0	3.05		0.00	0.00	0.00		255.37
	108	187.0	57.00	10.0	3.05		0.00	0.00	0.00		255.37
4. Annual Avg 100% Load	62	187.0	57.00	10.0	3.05	434,058	204.88	92.11	28.08	260.6	400.15
	27	187.0	57.00	10.0	3.05		0.00	0.00	0.00		255.37
	108	187.0	57.00	10.0	3.05		0.00	0.00	0.00		255.37
7. Annual Avg 73% Load	62	187.0	57.00	10.0	3.05	306,539	144.69	65.05	19.83	260.6	400.15
	27	187.0	57.00	10.0	3.05		0.00	0.00	0.00		255.37

	NOx lb/hr	CO lb/hr	PM10 lb/hr	SOx lb/hr	VOC lb/hr	NOx g/sec	CO g/sec	PM10 g/sec	SOx g/sec	VOC g/sec
						0.000	0.000	0.000	0.000	0.000
						0.000	0.000	0.000	0.000	0.000
						0.000	0.000	0.000	0.000	0.000
4. Annual Avg 100% Load	26.95	18.13	11.57	3.24	1.30	3.396	2.285	1.458	0.409	0.164
						0.000	0.000	0.000	0.000	0.000
						0.000	0.000	0.000	0.000	0.000
7. Annual Avg 73% Load	19.04	12.81	8.17	2.29	0.92	2.399	1.614	1.030	0.289	0.116
						0.000	0.000	0.000	0.000	0.000

Table 8.1D-3A
Screening Level Modeling Impacts for Boiler 1

	Conc. (ug/m^3)									
Operating Mode	NO_2 1-hr	CO 1-hr	SO_2 1-hr	SO_2 3-hr	CO 8-hr	PM10 24-hr	SO_2 24-hr	NO_2 Annual	PM10 Annual	SO_2 Annual
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4. Annual Avg 100% Load	17.466	11.751	2.101	1.167	5.051	1.394	0.391	0.748	0.321	0.090
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
7. Annual Avg 73% Load	14.705	9.893	1.769	1.000	4.093	1.133	0.318	0.646	0.278	0.078
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 8.1D-2B
Screening Modeling Inputs
Data For Boiler 2

Case	Amb Temp deg F	Stack height feet	Stack Height meters	Stack Diam feet	Stack Diam meters	Stack flow wacfm	Stack flow m^3/sec	Stack Vel ft/sec	Stack Vel m/sec	Stack Temp deg F	Stack Temp deg K
	62	187.0	57.00	10.0	3.05		0.00	0.00	0.00		255.37
	27	187.0	57.00	10.0	3.05		0.00	0.00	0.00		255.37
	108	187.0	57.00	10.0	3.05		0.00	0.00	0.00		255.37
4. Annual Avg 100% Load	62	187.0	57.00	10.0	3.05	434,946	205.30	92.30	28.13	229.0	382.59
	27	187.0	57.00	10.0	3.05		0.00	0.00	0.00		255.37
	108	187.0	57.00	10.0	3.05		0.00	0.00	0.00		255.37
7. Annual Avg 69% Load	62	187.0	57.00	10.0	3.05	298,884	141.08	63.43	19.33	229.0	382.59
	27	187.0	57.00	10.0	3.05		0.00	0.00	0.00		255.37

	NOx lb/hr	CO lb/hr	PM10 lb/hr	SOx lb/hr	VOC lb/hr	NOx g/sec	CO g/sec	PM10 g/sec	SOx g/sec	VOC g/sec
						0.000	0.000	0.000	0.000	0.000
						0.000	0.000	0.000	0.000	0.000
						0.000	0.000	0.000	0.000	0.000
4. Annual Avg 100% Load	22.12	152.37	11.27	2.90	1.26	2.788	19.199	1.420	0.365	0.159
						0.000	0.000	0.000	0.000	0.000
						0.000	0.000	0.000	0.000	0.000
7. Annual Avg 69% Load	15.20	104.70	7.75	1.99	0.87	1.916	13.193	0.976	0.251	0.110
						0.000	0.000	0.000	0.000	0.000

Table 8.1D-3B
Screening Level Modeling Impacts for Boiler 2

	Conc. (ug/m^3)									
Operating Mode	NO_2 1-hr	CO 1-hr	SO_2 1-hr	SO_2 3-hr	CO 8-hr	PM10 24-hr	SO_2 24-hr	NO_2 Annual	PM10 Annual	SO_2 Annual
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4. Annual Avg 100% Load	15.857	109.208	2.076	1.101	47.615	1.555	0.399	0.878	0.346	0.089
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
7. Annual Avg 69% Load	13.245	91.219	1.734	0.933	37.159	1.252	0.322	0.578	0.295	0.076
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 8.1D-2C
Screening Modeling Inputs
Data For Boiler 3

Case	Amb Temp deg F	Stack height feet	Stack Height meters	Stack Diam feet	Stack Diam meters	Stack flow wacfm	Stack flow m^3/sec	Stack Vel ft/sec	Stack Vel m/sec	Stack Temp deg F	Stack Temp deg K
	62	187.0	57.00	11.0	3.35		0.00	0.00	0.00		255.37
	27	187.0	57.00	11.0	3.35		0.00	0.00	0.00		255.37
	108	187.0	57.00	11.0	3.35		0.00	0.00	0.00		255.37
4. Annual Avg 100% Load	62	187.0	57.00	11.0	3.35	604,091	285.14	105.94	32.29	263.0	401.48
	27	187.0	57.00	11.0	3.35		0.00	0.00	0.00		255.37
	108	187.0	57.00	11.0	3.35		0.00	0.00	0.00		255.37
7. Annual Avg 74% Load	62	187.0	57.00	11.0	3.35	387,785	183.04	68.01	20.73	263.0	401.48
	27	187.0	57.00	11.0	3.35		0.00	0.00	0.00		255.37

	NOx lb/hr	CO lb/hr	PM10 lb/hr	SOx lb/hr	VOC lb/hr	NOx g/sec	CO g/sec	PM10 g/sec	SOx g/sec	VOC g/sec
						0.000	0.000	0.000	0.000	0.000
						0.000	0.000	0.000	0.000	0.000
						0.000	0.000	0.000	0.000	0.000
4. Annual Avg 100% Load	29.21	373.29	16.01	4.47	1.80	3.681	47.034	2.018	0.564	0.226
						0.000	0.000	0.000	0.000	0.000
						0.000	0.000	0.000	0.000	0.000
7. Annual Avg 74% Load	18.75	239.62	10.28	2.87	1.15	2.363	30.193	1.295	0.362	0.145
						0.000	0.000	0.000	0.000	0.000

Table 8.1D-3C
Screening Level Modeling Impacts for Boiler 3

	Conc. (ug/m^3)									
Operating Mode	NO_2 1-hr	CO 1-hr	SO_2 1-hr	SO_2 3-hr	CO 8-hr	PM10 24-hr	SO_2 24-hr	NO_2 Annual	PM10 Annual	SO_2 Annual
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4. Annual Avg 100% Load	16.489	210.701	2.525	1.349	101.806	1.775	0.496	0.687	0.377	0.105
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
7. Annual Avg 74% Load	13.773	176.001	2.110	1.077	80.775	1.503	0.420	0.600	0.329	0.092
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 8.1D-2D
Screening Modeling Inputs
Data For Boiler 4

Case	Amb Temp deg F	Stack height feet	Stack Height meters	Stack Diam feet	Stack Diam meters	Stack flow wacfm	Stack flow m^3/sec	Stack Vel ft/sec	Stack Vel m/sec	Stack Temp deg F	Stack Temp deg K
	62	187.0	57.00	18.3	5.57		0.00	0.00	0.00		255.37
	27	187.0	57.00	18.3	5.57		0.00	0.00	0.00		255.37
	108	187.0	57.00	18.3	5.57		0.00	0.00	0.00		255.37
4. Annual Avg 100% Load	62	187.0	57.00	18.3	5.57	1,180,950	557.42	75.13	22.90	263.0	401.48
	27	187.0	57.00	18.3	5.57		0.00	0.00	0.00		255.37
	108	187.0	57.00	18.3	5.57		0.00	0.00	0.00		255.37
7. Annual Avg 70% Load	62	187.0	57.00	18.3	5.57	547,995	258.66	34.86	10.63	263.0	401.48
	27	187.0	57.00	18.3	5.57		0.00	0.00	0.00		255.37

	NOx lb/hr	CO lb/hr	PM10 lb/hr	SOx lb/hr	VOC lb/hr	NOx g/sec	CO g/sec	PM10 g/sec	SOx g/sec	VOC g/sec
						0.000	0.000	0.000	0.000	0.000
						0.000	0.000	0.000	0.000	0.000
						0.000	0.000	0.000	0.000	0.000
4. Annual Avg 100% Load	29.21	373.29	16.01	4.47	1.80	3.681	47.034	2.018	0.564	0.226
						0.000	0.000	0.000	0.000	0.000
						0.000	0.000	0.000	0.000	0.000
7. Annual Avg 70% Load	18.75	239.62	10.28	2.87	1.15	2.363	30.193	1.295	0.362	0.145
						0.000	0.000	0.000	0.000	0.000

Table 8.1D-3D
Screening Level Modeling Impacts for Boiler 4

	Conc. (ug/m^3)									
Operating Mode	NO_2 1-hr	CO 1-hr	SO_2 1-hr	SO_2 3-hr	CO 8-hr	PM10 24-hr	SO_2 24-hr	NO_2 Annual	PM10 Annual	SO_2 Annual
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4. Annual Avg 100% Load	9.349	119.459	1.432	1.044	69.485	1.171	0.327	0.402	0.220	0.062
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
7. Annual Avg 70% Load	10.616	135.651	1.626	1.030	77.929	1.388	0.388	0.507	0.278	0.078
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 8.1D-2E
Screening Modeling Inputs
Data For Combustion Turbine (on JP5 fuel)

Case	Amb Temp deg F	Stack height feet	Stack Height meters	Stack Diam feet	Stack Diam meters	Stack flow wacfm	Stack flow m^3/sec	Stack Vel ft/sec	Stack Vel m/sec	Stack Temp deg F	Stack Temp deg K
	62	19.5	5.94	9.6	2.92		0.00	0.00	0.00		255.37
	27	19.5	5.94	9.6	2.92		0.00	0.00	0.00		255.37
	108	19.5	5.94	9.6	2.92		0.00	0.00	0.00		255.37
4. Annual Avg 100% Load	62	19.5	5.94	9.6	2.92	2,729,775	1,288.48	631.89	192.60	973.0	795.93
	27	19.5	5.94	9.6	2.92		0.00	0.00	0.00		255.37
	108	19.5	5.94	9.6	2.92		0.00	0.00	0.00		255.37
	62	19.5	5.94	9.6	2.92		0.00	0.00	0.00		255.37
	27	19.5	5.94	9.6	2.92		0.00	0.00	0.00		255.37

	NOx lb/hr	CO lb/hr	PM10 lb/hr	SOx lb/hr	VOC lb/hr	NOx g/sec	CO g/sec	PM10 g/sec	SOx g/sec	VOC g/sec	
						0.000	0.000	0.000	0.000	0.000	
						0.000	0.000	0.000	0.000	0.000	
						0.000	0.000	0.000	0.000	0.000	
4. Annual Avg 100% Load	29.21	373.29	18.01	4.47	1.80	3.681	47.034	2.018	0.564	0.226	
						0.000	0.000	0.000	0.000	0.000	
						0.000	0.000	0.000	0.000	0.000	
						0.000	0.000	0.000	0.000	0.000	
						0.000	0.000	0.000	0.000	0.000	

Table 8.1D-3D
Screening Level Modeling Impacts for Combustion Turbine on JP5

	Conc. (ug/m^3)									
Operating Mode	NO_2 1-hr	CO 1-hr	SO_2 1-hr	SO_2 3-hr	CO 8-hr	PM10 24-hr	SO_2 24-hr	NO_2 Annual	PM10 Annual	SO_2 Annual
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
4. Annual Avg 100% Load	4.703	80.100	0.720	0.262	16.188	0.269	0.075	0.056	0.031	0.009
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 8.1D-4
Emission Rates and Stack Parameters for Refined Modeling of SBPP Normal Operations

Equipment	Stack Diam, m	Stack Height m	Temp, deg K	Exhaust Flow, m^3/s	Exhaust Velocity, m/s	Emission Rates, g/s NOx	SOx	CO	PM10	Stack Diam, ft	Stack Height ft	Exh Temp, Deg F	Exh Flow Rate, ft^3/min	Exhaust Velocity, ft/s	Emission Rates, lb/hr NOx	SOx	CO	PM10
Averaging Period: 1-hour NOx Normal Operation (100% Capacity)																		
Boiler 1	3.05	57.00	382.59	204.85	28.08	3.396	n/a	n/a	n/a	10	187	229.0	434,058	92.11	26.95	n/a	n/a	n/a
Boiler 2	3.05	57.00	382.59	205.27	28.13	2.788	n/a	n/a	n/a	10	187	229.0	434,948	92.30	22.12	n/a	n/a	n/a
Boiler 3	3.35	57.00	401.48	285.10	32.29	3.681	n/a	n/a	n/a	11.0	187	263	604,091	105.94	29.21	n/a	n/a	n/a
Boiler 4 (50% Load)	5.57	57.00	630.37	258.63	10.63	1.377	n/a	n/a	n/a	18.3	187	675	547,995	34.86	10.92	n/a	n/a	n/a
Combustion turbine	2.92	5.94	795.93	1,288.3	192.60	16.950	n/a	n/a	n/a	9.6	19.5	973.0	2,729,775	631.89	134.521	n/a	n/a	n/a
Averaging Period: 1-hour CO and SO_2 Normal Operation (100% Capacity)																		
Boiler 1	3.05	57.00	382.59	204.85	28.08	n/a	0.409	2.285	n/a	10	187	229.0	434,058	92.11	n/a	3.24	18.13	n/a
Boiler 2	3.05	57.00	382.59	205.27	28.13	n/a	0.365	19.199	n/a	10	187	229.0	434,948	92.30	n/a	2.90	152.37	n/a
Boiler 3	3.35	57.00	401.48	285.10	32.29	n/a	0.564	47.034	n/a	11.0	187	263	604,091	105.94	n/a	4.47	373.29	n/a
Boiler 4 (50% Load)	5.57	57.00	630.37	258.63	10.63	n/a	0.390	13.886	n/a	18.3	187	675	547,995	34.86	n/a	3.10	110.21	n/a
Combustion turbine	2.92	5.94	795.93	1,288.3	192.60	n/a	0.840	4.128	n/a	9.6	19.5	973.0	2,729,775	631.89	n/a	6.66	32.76	n/a
Averaging Period: 3-hour SO_2 Normal Operation (65% Capacity)																		
Boiler 1	3.05	57.00	382.59	204.85	28.08	n/a	0.2685	n/a	n/a	10	187	229.0	434,058	92.11	n/a	2.29	n/a	n/a
Boiler 2	3.05	57.00	382.59	205.27	28.13	n/a	0.2508	n/a	n/a	10	187	229.0	434,946	92.30	n/a	1.99	n/a	n/a
Boiler 3	3.35	57.00	401.48	285.10	32.29	n/a	0.3619	n/a	n/a	11.0	187	263	604,091	105.94	n/a	2.87	n/a	n/a
Boiler 4 (100% Load)	5.57	57.00	630.37	557.35	22.90	n/a	0.8415	n/a	n/a	18.3	187	675	1,180,950	75.13	n/a	6.68	n/a	n/a
Combustion turbine	2.92	5.94	795.93	1,288.3	192.60	n/a	0.8398	n/a	n/a	9.6	19.5	973.0	2,729,775	631.89	n/a	6.66	n/a	n/a
Averaging Period: 8-hour CO Normal Operation (65% Capacity)																		
Boiler 1	3.05	57.00	382.59	204.85	28.08	n/a	n/a	1.814	n/a	10	187	229.0	434,058	92.11	n/a	n/a	12.81	n/a
Boiler 2	3.05	57.00	382.59	205.27	28.13	n/a	n/a	13.193	n/a	10	187	229.0	434,946	92.30	n/a	n/a	104.70	n/a
Boiler 3	3.35	57.00	401.48	285.10	32.29	n/a	n/a	30.193	n/a	11.0	187	263	604,091	105.94	n/a	n/a	239.62	n/a
Boiler 4 (50% Load)	5.57	57.00	630.37	258.63	10.63	n/a	n/a	13.886	n/a	18.3	187	675	547,995	34.86	n/a	n/a	110.21	n/a
Combustion turbine	2.92	5.94	795.93	1,288.3	192.60	n/a	n/a	4.128	n/a	9.6	19.5	973.0	2,729,775	631.89	n/a	n/a	32.76	n/a
Averaging Period: 24-hour SO_2																		
Boiler 1	3.05	57.00	382.59	204.85	28.08	n/a	0.289	n/a	n/a	10	187	229.0	434,058	92.11	n/a	2.29	n/a	n/a
Boiler 2	3.05	57.00	382.59	205.27	28.13	n/a	0.251	n/a	n/a	10	187	229.0	434,946	92.30	n/a	1.99	n/a	n/a
Boiler 3	3.35	57.00	401.48	285.10	32.29	n/a	0.362	n/a	n/a	11.0	187	263	604,091	105.94	n/a	2.87	n/a	n/a
Boiler 4 (50% Load)	5.57	57.00	630.37	258.63	10.63	n/a	0.390	n/a	n/a	18.3	187	675	547,995	34.86	n/a	3.10	n/a	n/a
Combustion turbine			795.93	1288.31			0.840	n/a	n/a	9.6	19.5	973.0	2,729,775	631.89	n/a	6.66	n/a	n/a
Averaging Period: 24-hour PM10																		
Boiler 1	3.05	57.00	382.59	204.85	28.08	n/a	n/a	n/a	1.030	10	187	229.0	434,058	92.11	n/a	n/a	n/a	8.17
Boiler 2	3.05	57.00	382.59	205.27	28.13	n/a	n/a	n/a	0.976	10	187	229.0	434,946	92.30	n/a	n/a	n/a	7.75
Boiler 3	3.35	57.00	401.48	285.10	32.29	n/a	n/a	n/a	1.295	11.0	187	263	604,091	105.94	n/a	n/a	n/a	10.28
Boiler 4 (50% Load)	5.57	57.00	630.37	258.63	10.63	n/a	n/a	n/a	1.266	18.3	187	675	547,995	34.86	n/a	n/a	n/a	10.05
Combustion turbine	2.92		795.93	1288.31	192.60		n/a	n/a	0.421	9.6	19.5	973.0	2,729,775	631.89	n/a	n/a	n/a	3.34

Table 8.1D-8
Emission Rates and Stack Parameters for Refined Modeling of SBRP Commissioning

Equipment	Stack Diam, m	Stack Height m	Temp, deg K	Exhaust Flow, m^3/s	Exhaust Velocity, m/s	Emission Rates, g/s NOx	SOx	CO	PM10	Stack Diam, ft	Stack Height ft	Exh Temp, Deg F	Exh Flow Rate, ft^3/min	Exhaust Velocity, ft/s	Emission Rates, lb/hr NOx	SOx	CO	PM10
Averaging Period: 1-hour NOx Startup																		
Gas Turbine 1	5.79	38.1	350	321.7	12.2	20.16	n/a	n/a	n/a	19	125	170	681,729	40.07	160	n/a	n/a	n/a
Gas Turbine 2	5.79	38.1	350	321.7	12.2	20.16	n/a	n/a	n/a	19	125	170	681,729	40.07	160	n/a	n/a	n/a
Auxiliary Boiler	0.76	38.1	579	7.7	16.9	0.052	n/a	n/a	n/a	2.5	125	563	16,303	55.36	0.41	n/a	n/a	n/a
Firewater Pump Engine	0.15	6.7	750	0.58	31.7	0	n/a	n/a	n/a	0.5	22	891	1,227	104.15	0	n/a	n/a	n/a
Averaging Period: 1-hour CO Startup																		
Gas Turbine 1	5.79	38.1	350	321.7	12.2	n/a	n/a	126.0	n/a	19	125	170	681,729	40	n/a	n/a	1000	n/a
Gas Turbine 2	5.79	38.1	350	321.7	12.2	n/a	n/a	126.0	n/a	19	125	170	681,729	40	n/a	n/a	1000	n/a
Auxiliary Boiler	0.76	38.1	579	7.7	16.9	n/a	n/a	0.175	n/a	2.5	125	563	16,303	55	n/a	n/a	1.39	n/a
Firewater Pump Engine	0.15	6.7	750	0.58	31.7	n/a	n/a	0	n/a	0.5	22	891	1,227	104	n/a	n/a	0	n/a
Averaging Period: 1-hour NOx, CO and SOx Commissioning																		
Gas Turbine 1	**5.5**	**38.1**	**350**	**321.7**	**12.2**	**54.94**	**0.499**	**126.0**	**n/a**	**19**	**125**	**170**	**681,729**	**40**	**436**	**3.96**	**1000**	**n/a**
Gas Turbine 2	**5.5**	**38.1**	**350**	**321.7**	**12.2**	**54.94**	**0.499**	**126.0**	**n/a**	**19**	**125**	**170**	**681,729**	**40**	**436**	**3.96**	**1000**	**n/a**
Auxiliary Boiler	**0.76**	**38.1**	**579**	**7.7**	**16.9**	**0.0518**	**0.0101**	**0.175**	**n/a**	**2.5**	**125**	**563**	**16,303**	**55**	**0.41**	**9.0801**	**1.39**	**n/a**
Firewater Pump Engine	**0.15**	**6.7**	**750**	**0.58**	**31.7**	**0**	**0**	**0**	**n/a**	**0.5**	**22**	**891**	**1,227**	**104**	**0**	**0**	**0**	**n/a**
Averaging Period: 8-hour CO Commissioning																		
Gas Turbine 1	**5.79**	**38.1**	**350**	**321.7**	**12.2**	**n/a**	**n/a**	**126.0**	**n/a**	**19**	**125**	**170**	**681,729**	**40**	**n/a**	**n/a**	**1000**	**n/a**
Gas Turbine 2	**5.79**	**38.1**	**350**	**321.7**	**12.2**	**n/a**	**n/a**	**126.0**	**n/a**	**19**	**125**	**170**	**681,729**	**40**	**n/a**	**n/a**	**1000**	**n/a**
Auxiliary Boiler	**0.76**	**38.1**	**579**	**7.7**	**16.9**	**n/a**	**n/a**	**0.175**	**n/a**	**2.5**	**125**	**563**	**16,303**	**55**	**n/a**	**n/a**	**1.39**	**n/a**
Firewater Pump Engine	**0.15**	**6.7**	**750**	**0.58**	**31.7**	**n/a**	**n/a**	**0**	**n/a**	**0.5**	**22**	**891**	**1,227**	**104**	**n/a**	**n/a**	**0**	**n/a**
Averaging Period: 3-hour SO_2 Commissioning																		
Gas Turbine 1	**5.79**	**38.1**	**350**	**321.7**	**12.2**	**n/a**	**0.499**	**n/a**	**n/a**	**19**	**125**	**170**	**681,729**	**40**	**n/a**	**3.96**	**n/a**	**n/a**
Gas Turbine 2	**5.79**	**38.1**	**350**	**321.7**	**12.2**	**n/a**	**0.499**	**n/a**	**n/a**	**19**	**125**	**170**	**681,729**	**40**	**n/a**	**3.96**	**n/a**	**n/a**
Auxiliary Boiler	**0.76**	**38.1**	**579**	**7.7**	**16.9**	**n/a**	**0.0101**	**n/a**	**n/a**	**2.5**	**125**	**563**	**16,303**	**55**	**n/a**	**0.0801**	**n/a**	**n/a**
Firewater Pump Engine	**0.15**	**6.7**	**750**	**0.58**	**31.7**	**n/a**	**0**	**n/a**	**n/a**	**0.5**	**22**	**891**	**1,227**	**104**	**n/a**	**0**	**n/a**	**n/a**
Averaging Period: 8-hour CO Startup																		
Gas Turbine 1	5.79	38.1	350	321.7	12.2	n/a	n/a	85.3909	n/a	19	125	170	681,729	40	n/a	n/a	677.71	n/a
Gas Turbine 2	5.79	38.1	350	321.7	12.2	n/a	n/a	85.3909	n/a	19	125	170	681,729	40	n/a	n/a	677.71	n/a
Auxiliary Boiler	0.76	38.1	579	7.7	18.9	n/a	n/a	0.1751	n/a	2.5	125	563	16,303	55	n/a	n/a	1.39	n/a
Firewater Pump Engine	0.15	6.7	750	0.58	31.7	n/a	n/a	0	n/a	0.5	22	891	1,227	104	n/a	n/a	0	n/a
Averaging Period: 24-hour SO_2 Commissioning																		
Gas Turbine 1	**5.79**	**38.1**	**350**	**321.7**	**12.2**	**n/a**	**0.4987**	**n/a**	**n/a**	**19**	**125**	**170**	**681,729**	**40**	**n/a**	**3.958**	**n/a**	**n/a**
Gas Turbine 2	**5.79**	**38.1**	**350**	**321.7**	**12.2**	**n/a**	**0.4987**	**n/a**	**n/a**	**19**	**125**	**170**	**681,729**	**40**	**n/a**	**3.958**	**n/a**	**n/a**
Auxiliary Boiler	**0.76**	**38.1**	**579**	**7.7**	**16.9**	**n/a**	**0.0101**	**n/a**	**n/a**	**2.5**	**125**	**563**	**16,303**	**55**	**n/a**	**0.0801**	**n/a**	**n/a**
Firewater Pump Engine	**0.15**	**6.7**	**750**	**0.58**	**31.7**	**n/a**	**0**	**n/a**	**n/a**	**0.5**	**22**	**891**	**1,227**	**104**	**n/a**	**0**	**n/a**	**n/a**
Averaging Period: 24-hour PM-10 Commissioning																		
Gas Turbine 1	**5.79**	**38.1**	**354**	**299.7**	**11.4**	**n/a**	**n/a**	**n/a**	**2.27**	**19**	**125**	**178**	**635,107**	**37**	**n/a**	**n/a**	**n/a**	**18.00**
Gas Turbine 2	**5.79**	**38.1**	**354**	**299.7**	**11.4**	**n/a**	**n/a**	**n/a**	**2.27**	**19**	**125**	**178**	**635,107**	**37**	**n/a**	**n/a**	**n/a**	**18.00**
Auxiliary Boiler	**0.76**	**38.1**	**579**	**7.7**	**16.9**	**n/a**	**n/a**	**n/a**	**0.0239**	**2.5**	**125**	**563**	**16,303**	**55**	**n/a**	**n/a**	**n/a**	**0.19**
Firewater Pump Engine	**0.15**	**6.7**	**750**	**0.58**	**31.7**	**n/a**	**n/a**	**n/a**	**0**	**0.5**	**22**	**891**	**1,227**	**104**	**n/a**	**n/a**	**n/a**	**0**

Table AIR-25-1 Daily and Annual SBPP Demolition Emissions

Maximum Daily Demolition Emissions (peak month) (lbs/day)						
	NOx	CO	VOC	SOx	PM2.5	PM10
Onsite						
Demolition Equipment	30.91	23.17	3.28	0.040	1.21	1.21
Fugitive Dust					2.75	10.83
Subtotal =	30.91	23.17	3.28	0.040	3.96	12.04

Peak Annual Demolition Emissions (12-month period) (tons/yr)						
	NOx	CO	VOC	SOx	PM2.5	PM10
Onsite						
Demolition Equipment	2.96	2.48	0.33	0.0038	0.085	0.085
Fugitive Dust					0.18	0.71
Subtotal =	2.96	2.48	0.33	0.00	0.27	0.80

Table AIR-25-2 Daily and Annual SBPP Demolition Emissions

SBPP Demolition in 2010
Demolition Modeling

Emission Rates for Modeling Short-Term Impacts (24 hours and less)					
	NOx	CO	SOx	PM2.5	PM10
Source	lbs/day				
Equip. Combustion	30.9	23.2	0.040	1.21	1.21
Demolition Dust				2.56	10.33
Windblown Dust				0.20	0.50

Emission Rates for Modeling Long-Term Impacts (annual)					
	NOx	CO	SOx	PM2.5	PM10
Source	tons/year				
Equip. Combustion	2.96	2.48	0.0038	0.085	0.085
Demolition Dust				0.144	0.620
Windblown Dust				0.036	0.091

SBRP
Conversion to Demolition Modeling Input Units

Short Term Impacts (24 hours and less)					
Source	NOx	CO	SOx lbs/day	PM2.5	PM10
Combustion	**30.91**	**23.17**	**0.04**	**1.21**	**1.21**
Construction Dust				**2.56**	**10.33**
Windblown Dust				**0.20**	**0.50**
Combustion (hrs/day)	8	8	8	8	8
Combustion (lbs/hr)	3.86404	2.89682	0.00499	0.15108	0.15108
Combustion (g/sec)	4.87E-01	3.65E-01	6.29E-04	1.91E-02	1.91E-02
Combustion (g/m^2/sec)	7.32E-06	5.49E-06	9.45E-09	2.86E-07	2.86E-07
Construction Dust (hrs/day)				8	8
Construction Dust (lbs/hr)				0.3195	1.2916
Construction Dust (g/sec)				4.03E-02	1.63E-01
Construction Dust (g/m^2/sec)				6.05E-07	2.45E-06
Windblown Dust (hrs/day)				24	24
Windblown Dust (lbs/hr)				0.00828	0.02071
Windblown Dust (g/sec)				1.04E-03	2.61E-03
Windblown Dust (g/m^2/sec)				1.57E-08	3.92E-08

Conversion to Demolition Modeling Input Units

Long Term Impacts (annual)					
Source	NOx	CO	SOx	PM2.5	PM10
			tons/year		
Combustion	**2.958**	**2.484**	**0.004**	**0.085**	**0.085**
Construction Dust				**0.144**	**0.620**
Windblown Dust				**0.036**	**0.091**
Combustion (days/yr)	260	260	260	260	260
Combustion (hrs/day)	8	8	8	8	8
Combustion (lbs/hr)	2.84451	2.38841	0.00367	0.08142	0.08142
Combustion (g/sec)	3.59E-01	3.01E-01	4.63E-04	1.03E-02	1.03E-02
Combustion (g/m^2/sec)				1.54E-07	1.54E-07
Construction Dust (days/yr)				260	260
Construction Dust (hrs/day)				8	8
Construction Dust (lbs/hr)				0.13888	0.59622
Construction Dust (g/sec)				1.75E-02	7.52E-02
Construction Dust (g/m^2/sec)				2.63E-07	1.13E-06
Windblown Dust (days/yr)				365	365
Windblown Dust (hrs/day)				24	24
Windblown Dust (lbs/hr)				0.00828	0.02071
Windblown Dust (g/sec)				1.045E-03	2.611E-03
Windblown Dust (g/m^2/sec)				1.569E-08	3.922E-08

Demolition Source			
Type and ID	Dimensions		Area
	X (m)	Y(m)	square meters
Area 1	130	210	27,300
Area 2	130	80	10,400
Area 3	241	80	19,280
Area 4	120	80	9,600
			66,580
Volume1	169.35		28,679
Volume2	117.24		13,745
Volume3	97.7		9,545
Volume4	97.7		9,545
Volume5	97.7		9,545

volume (combustion)	short term Combustion (g/sec)	NOx 4.87298E-01	CO 3.65321E-01	SOx 6.29342E-04	PM2.5 1.90529E-02	PM10 1.90529E-02
	Long term Combustion (g/sec)	NOx 3.58724E-01	CO 3.01205E-01	SOx 4.63357E-04	PM2.5 1.02680E-02	PM10 1.02680E-02

Area 1	27300
Area 2	10400
Area 3	19280
Area 4	9600

volume (Construction)	Short term	PM2.5 4.02917E-02	PM10 1.62884E-01
	Long term	PM2.5 1.75144E-02	PM10 7.51896E-02

Area (Fugitive dust)	Short term	PM2.5 1.56890E-08	PM10 3.92224E-08
	Long term	PM2.5 1.56890E-08	PM10 3.92224E-08

Volume combustion (short term)

	Area	Percentage	NOx	CO	SOx	PM2.5	PM10
Volume1	28,679	0.403591565	1.96669E-01	1.47440E-01	2.53997E-04	7.68957E-03	7.68957E-03
Volume2	13,745	0.193429763	9.42579E-02	7.06639E-02	1.21733E-04	3.68539E-03	3.68539E-03
Volume3	9,545	0.134326224	6.54569E-02	4.90722E-02	8.45371E-05	2.55930E-03	2.55930E-03
Volume4	9,545	0.134326224	6.54569E-02	4.90722E-02	8.45371E-05	2.55930E-03	2.55930E-03
Volume5	9,545	0.134326224	6.54569E-02	4.90722E-02	8.45371E-05	2.55930E-03	2.55930E-03
	71,061		0.487297759	0.365320817	0.000629342	0.019052852	0.019052852

Volume combustion (Long term)

	Area	Percentage	NOx	CO	SOx	PM2.5	PM10
Volume1	28,679	0.403591565	1.44778E-01	1.21564E-01	1.87007E-04	4.14409E-03	4.14409E-03
Volume2	13,745	0.193429763	6.93879E-02	5.82621E-02	8.96271E-05	1.98614E-03	1.98614E-03
Volume3	9,545	0.134326224	4.81860E-02	4.04598E-02	6.22410E-05	1.37927E-03	1.37927E-03
Volume4	9,545	0.134326224	4.81860E-02	4.04598E-02	6.22410E-05	1.37927E-03	1.37927E-03
Volume5	9,545	0.134326224	4.81860E-02	4.04598E-02	6.22410E-05	1.37927E-03	1.37927E-03
	71,061		0.358723848	0.301205454	0.000463357	0.010268031	0.010268031

Volume construction (Short term)				
	Area	Percentage	PM2.5	PM10
Volume1	28,679	0.403591565	1.62614E-02	6.57387E-02
Volume2	13,745	0.193429763	7.79361E-03	3.15066E-02
Volume3	9,545	0.134326224	5.41223E-03	2.18796E-02
Volume4	9,545	0.134326224	5.41223E-03	2.18796E-02
Volume5	9,545	0.134326224	5.41223E-03	2.18796E-02
	71,061		0.040291695	0.162884104

Volume construction (Long term)				
	Area	Percentage	PM2.5	PM10
Volume1	28,679	0.403591565	7.06866E-03	3.03459E-02
Volume2	13,745	0.193429763	3.38781E-03	1.45439E-02
Volume3	9,545	0.134326224	2.35264E-03	1.00999E-02
Volume4	9,545	0.134326224	2.35264E-03	1.00999E-02
Volume5	9,545	0.134326224	2.35264E-03	1.00999E-02
	71,061		0.017514397	0.075189585

Area Dust construction (short term)				
	Area	Percentage	PM2.5	PM10
Area 1	27,300	0.410033043	6.43300E-09	1.60825E-08
Area 2	10,400	0.156203064	2.45067E-09	6.12667E-09
Area 3	19,280	0.289576449	4.54316E-09	1.13579E-08
Area 4	9,600	0.144187444	2.26215E-09	5.65538E-09
	66,580		1.5689E-08	3.92224E-08

Area Dust construction (Long term)				
	Area	Percentage	PM2.5	PM10
Area 1	27300	0.410033043	6.43300E-09	1.60825E-08
Area 2	10400	0.156203064	2.45067E-09	6.12667E-09
Area 3	19280	0.289576449	4.54316E-09	1.13579E-08
Area 4	9600	0.144187444	2.26215E-09	5.65538E-09
	66580		1.5689E-08	3.92224E-08

Volume combustion (short term)					
	NOx	CO	SOx	PM2.5	PM10
Volume1	1.96669E-01	1.47440E-01	2.53997E-04	7.68957E-03	7.68957E-03
Volume2	9.42579E-02	7.06639E-02	1.21733E-04	3.68539E-03	3.68539E-03
Volume3	6.54569E-02	4.90722E-02	8.45371E-05	2.55930E-03	2.55930E-03
Volume4	6.54569E-02	4.90722E-02	8.45371E-05	2.55930E-03	2.55930E-03
Volume5	6.54569E-02	4.90722E-02	8.45371E-05	2.55930E-03	2.55930E-03
	0.487297759	0.365320817	0.000629342	0.019052852	0.019052852

Volume combustion (Long term)					
	NOx	CO	SOx	PM2.5	PM10
Volume1	1.44778E-01	1.21564E-01	1.87007E-04	4.14409E-03	4.14409E-03
Volume2	6.93879E-02	5.82621E-02	8.96271E-05	1.98614E-03	1.98614E-03
Volume3	4.81860E-02	4.04598E-02	6.22410E-05	1.37927E-03	1.37927E-03
Volume4	4.81860E-02	4.04598E-02	6.22410E-05	1.37927E-03	1.37927E-03
Volume5	4.81860E-02	4.04598E-02	6.22410E-05	1.37927E-03	1.37927E-03
	0.358723848	0.301205454	0.000463357	0.010268031	0.010268031

Volume construction (Short term)		
	PM2.5	PM10
Volume1	1.62614E-02	6.57387E-02
Volume2	7.79361E-03	3.15066E-02
Volume3	5.41223E-03	2.18796E-02
Volume4	5.41223E-03	2.18796E-02
Volume5	5.41223E-03	2.18796E-02
	0.040291695	0.162884104

Volume construction (Long term)		
	PM2.5	PM10
Volume1	7.06866E-03	3.03459E-02
Volume2	3.38781E-03	1.45439E-02
Volume3	2.35264E-03	1.00999E-02
Volume4	2.35264E-03	1.00999E-02
Volume5	2.35264E-03	1.00999E-02
	0.017514397	0.075189585

Area Dust construction (short term)		
	PM2.5	PM10
Area 1	6.43300E-09	1.60825E-08
Area 2	2.45067E-09	6.12667E-09
Area 3	4.54316E-09	1.13579E-08
Area 4	2.26215E-09	5.65538E-09
	1.5689E-08	3.92224E-08

Area Dust construction (Long term)		
	PM2.5	PM10
Area 1	6.43300E-09	1.60825E-08
Area 2	2.45067E-09	6.12667E-09
Area 3	4.54316E-09	1.13579E-08
Area 4	2.26215E-09	5.65538E-09
	1.5689E-08	3.92224E-08

Volume combustion (short term)					
	NOx	CO	SOx	PM2.5	PM10
Volume1	1.96669E-01	1.47440E-01	2.53997E-04	7.68957E-03	7.68957E-03
Volume2	9.42579E-02	7.06639E-02	1.21733E-04	3.68539E-03	3.68539E-03
Volume3	6.54569E-02	4.90722E-02	8.45371E-05	2.55930E-03	2.55930E-03
Volume4	6.54569E-02	4.90722E-02	8.45371E-05	2.55930E-03	2.55930E-03
Volume5	6.54569E-02	4.90722E-02	8.45371E-05	2.55930E-03	2.55930E-03
	0.487297759	0.365320817	0.000629342	0.019052852	0.019052852

Volume combustion (Long term)					
	NOx	CO	SOx	PM2.5	PM10
Volume1	1.44778E-01	1.21564E-01	1.87007E-04	4.14409E-03	4.14409E-03
Volume2	6.93879E-02	5.82621E-02	8.96271E-05	1.98614E-03	1.98614E-03
Volume3	4.81860E-02	4.04598E-02	6.22410E-05	1.37927E-03	1.37927E-03
Volume4	4.81860E-02	4.04598E-02	6.22410E-05	1.37927E-03	1.37927E-03
Volume5	4.81860E-02	4.04598E-02	6.22410E-05	1.37927E-03	1.37927E-03
	0.358723848	0.301205454	0.000463357	0.010268031	0.010268031

Volume construction (Short term)		
	PM2.5	PM10
Volume1	1.62614E-02	6.57387E-02
Volume2	7.79361E-03	3.15066E-02
Volume3	5.41223E-03	2.18796E-02
Volume4	5.41223E-03	2.18796E-02
Volume5	5.41223E-03	2.18796E-02
	0.040291695	0.162884104

Volume construction (Long term)		
	PM2.5	PM10
Volume1	7.06866E-03	3.03459E-02
Volume2	3.38781E-03	1.45439E-02
Volume3	2.35264E-03	1.00999E-02
Volume4	2.35264E-03	1.00999E-02
Volume5	2.35264E-03	1.00999E-02
	0.017514397	0.075189585

Area Dust construction (short term)		
	PM2.5	PM10
Area 1	6.43300E-09	1.60825E-08
Area 2	2.45067E-09	6.12667E-09
Area 3	4.54316E-09	1.13579E-08
Area 4	2.26215E-09	5.65538E-09
	1.5689E-08	3.92224E-08

Area Dust construction (Long term)		
	PM2.5	PM10
Area 1	6.43300E-09	1.60825E-08
Area 2	2.45067E-09	6.12667E-09
Area 3	4.54316E-09	1.13579E-08
Area 4	2.26215E-09	5.65538E-09
	1.5689E-08	3.92224E-08

SOUTH BAY REPLACEMENT PROJECT (06-AFC-3)
DATA RESPONSES, SET 1B

Technical Area: Cultural Resources
Author: **Beverly E. Bastian**

BACKGROUND

The Herbert and Walters historical architectural study of the extant SBPP briefly discusses the former SDG&E LNG storage facility to the south, on the site where the applicant proposes to build the new SBRP. The study indicates that the LNG facility was completed in 1965, was the only such facility in the west, and was one of only five in the world at the time (AFC Appendix 8.3C, pp. 9, 13). The age and the distinction of the LNG facility indicate that it must be considered a cultural resource potentially eligible for the California Register of Historical Resources (CRHR) under Criterion A and possibly under Criterion C, as well. To ensure that staff has a complete inventory of significant cultural resources which could be significantly impacted by the proposed SBRP, the remains of the LNG facility must be recorded and evaluated.

DATA REQUEST

49. Please record the remains of the LNG facility (foundations, roads and all other paved areas, tanks pads, and berms) as a historical archaeological site on DPR 523 forms, and provide a copy to both staff and the California Historical Resources Information System (CHRIS). Also, please have the former facility researched and evaluated for eligibility for the CRHR by a historian knowledgeable in the field of energy technology development and incorporate his or her report of the facility's historical context and significance into the DPR 523 forms.

Response: Mr. Rand Herbert of JRP Historical Consulting conducted a separate field reconnaissance of the visible remains of the LNG facility components on November 16, 2006. A DPR 523 form was prepared for the LNG facility and is provided as Attachment CUL-49. This site is recommended as not eligible for the CRHR or NRHP. Mr. Herbert has inventoried and evaluated a wide range of energy production facilities, including hydroelectric powerhouses, gas/oil steam turbine stations, substations, and transmission lines. He has also studied dams, canals, control equipment, and other appurtenant structures. In these studies he has placed the resources in question in the context of energy development in California.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code 6Z
Other Listings _____
Review Code _____ Reviewer _____ Date _____

***Resource Name or #** (Assigned by recorder) SDG&E South Bay LNG Facility

P1. Other Identifier: SDG&E South Bay LNG Facility

***P2. Location:** ☐ Not for Publication ☒ Unrestricted

***a. County** San Diego County

***b. USGS 7.5' Quad** Imperial Beach **Date** (1977) **T** 18 S ; **R** 2 W ; NE ¼ **of** NW ¼ **of Sec** 16 ; _____ **B.M.**

c. Address 990 Bay Blvd; City Chula Vista, CA Zip 91991

d. UTM: (Give more than one for large and/or linear resources) Zone 11 , 386965 mE/ 3608435 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

From I-5 exit "L" Street, south "L" Street on Bay Blvd, to the existing South Bay Power Plant entrance road/gate that is several hundred feet south of "L" street. Immediately south of gate is fenced entrance to former LNG facility.

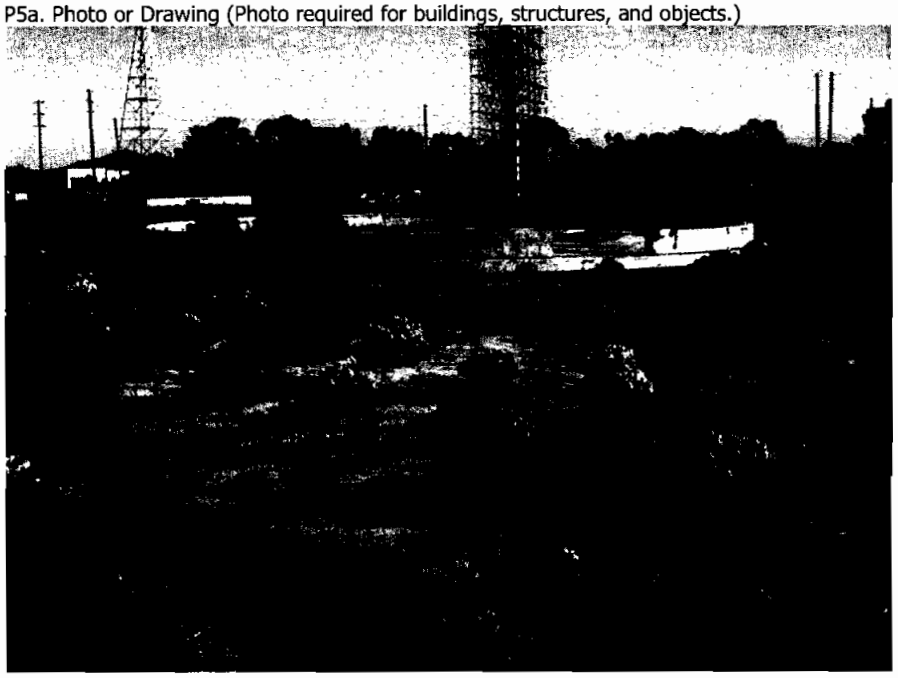
***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The site of the former San Diego Gas & Electric (SDG&E) liquefied natural gas (LNG) plant consists of concrete foundations for two LNG tanks (tasks removed in the late 1980s and concrete foundations for support machinery/equipment. (See Continuation Sheet for additional description).

***P3b. Resource Attributes:** (List attributes and codes) HP9 Public Utility Building

***P4. Resources Present:** ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo: **Photograph 1.** Eastern concrete pad from grade, camera facing east.

***P6. Date Constructed/Age and Sources:**
☒ Historic ☐ Prehistoric ☐ Both
1965

***P7. Owner and Address:**
San Diego Unified Port District 3165 Pacific Highway San Diego, CA 92101-1128

***P8. Recorded by:** (Name, affiliation, address)
Clint Helton, CH2M HILL 3 Hutton Center Drive, Santa Ana, CA 92707 and Rand Herbert, JRP Historical Consulting, LLC 1490 Drew Avenue, Suite 110 Davis, CA 95618

***P9. Date Recorded:** November 16, 2006

***P10. Survey Type:** (Describe)
Single Site

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Application for Certification (AFC) for the South Bay Replacement Project (SBRP). Prepared by CH2M HILL for LSP South Bay, LLC (2006).

***Attachments:** ☐ None ☒ Location Map ☐ Sketch Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record
☐ Other (list) _____

*NRHP Status Code 6Z
*Resource Name or # (Assigned by recorder) SDG&E South Bay LNG Facility

B1. Historic Name:
B2. Common Name: SDG&E South Bay LNG Facility
B3. Original Use: Site of a former liquefied natural gas (LNG) plant. The purpose of the plant was to convert natural gas (taken from the SDG&E natural gas high pressure gas pipeline system) to liquid form so that it could be stored.
B4. Present Use: Demolished/Only the concrete foundations for the two LNG takes and the concrete foundatings/footings for support machinery and equipment remain.
***B5. Architectural Style:** n/a
***B6. Construction History:** (Construction date, alteration, and date of alterations) The South Bay LNG plant was initially constructed in 1965. At that time, the plant consisted of one LNG tank and its support equipment. In 1968, the LNG plant was expanded with the construction of second larger LNG tank and its support equipment. See attached Continuation Sheet for complete history.
***B7. Moved?** ☒ No ☐ Yes ☐ Unknown **Date:** _____ **Original Location:** _____
***B8. Related Features:** Constructed to serve the nearby South Bay Power Plant

B9. Architect: b. Builder: unknown
***B10. Significance: Theme** n/a **Area** n/a
Period of Significance n/a **Property Type** n/a **Applicable Criteria** n/a
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

The historic record indicates that the South Bay LNG plant was the first LNG plant to use the expansion of gas to create liquid gas. The South Bay LNG plant was one of five plants in existence by the mid 1960s. However, to be eligible for the National Register, a site not only has to meet one of the criteria for evaluation (Criteria A and C in this case), but also must have historic integrity. Historic integrity has seven aspects: location, design, setting, materials, workmanship, feeling, and association. The South Bay LNG plant retains only integrity of location and, to a lesser degree, integrity of setting. All other aspects were severely affected when the plant was demolished in the late 1980s. The design, materials, workmanship are not apparent from the remains. Finally, the site does not convey feeling or association. As a result, the remaining features do not convey significance and, therefore, the site is not found to be eligible for the National Register.

(See Continuation Sheet)

B11. Additional Resource Attributes: (List attributes and codes)
***B12. References:** Application for Certification (AFC) for the South Bay Replacement Project (SBRP). Prepared by CH2M HILL for LSP South Bay, LLC (2006).

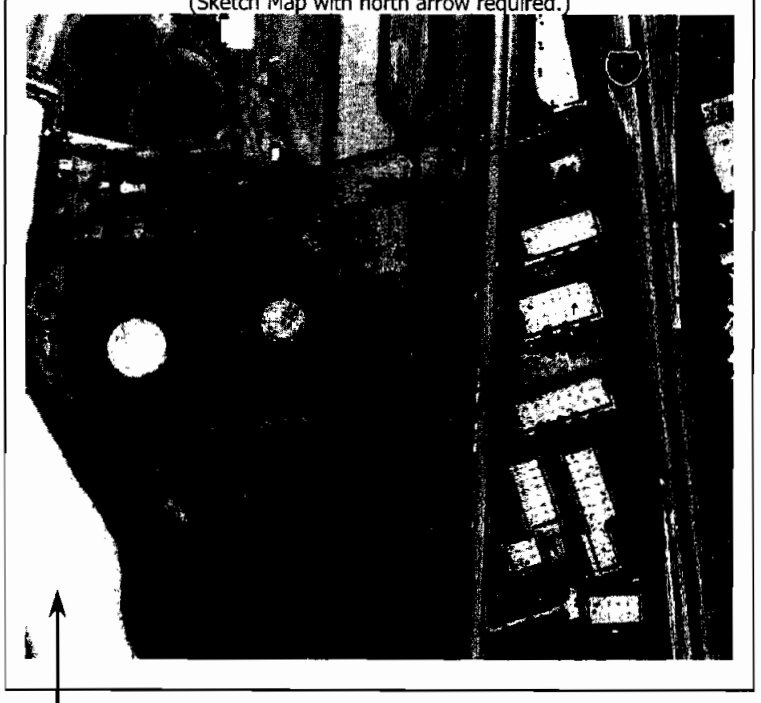
B13. Remarks:

***B14. Evaluator:** Clint Helton, CH2M HILL 3 Hutton Center Drive, Santa Ana, CA 92707 and Rand Herbert, JRP Historical Consulting, LLC 1490 Drew Avenue, Suite 110 Davis, CA 95618

***Date of Evaluation:** November 16, 2006

(This space reserved for official comments.)

(Sketch Map with north arrow required.)



P3A. Site Description (continued):

The existing site of the former SDG&E South Bay LNG plant consists of concrete foundations for the two LNG tanks and concrete footings and foundations for support machinery/equipment.. The north end has a complicated pattern of concrete foundations/footing for the support machinery/equipment. These supported pipelines, or formed sub-grade tanks and machinery footings. (Photographs 1-12, taken November 16, 2006)

The south end of the site is enclosed by a berm approximately ten feet high and eight feet wide. The berm was constructed of bay fill as evidenced by the large number of sea shells. The entire berm appears to have been coated with a thin layer of asphalt, with only deteriorating patches of asphalt remaining on portions of the berm in 2006. The berm creates two distinct areas. The eastern section has a circular pad on concrete and iron piers that sits about four feet above grade. The pad is 117 feet in diameter and provided the foundation for the first LNG tank constructed at the site in 1965 (this tank was removed in the late 1980s when the site was demolished. A small square pad sits to the northwest. A rectangular pipe-way at grade crosses under the berm. The western section has a similar but larger concrete pad about four feet above grade that provided the foundation for the second larger LNG tank (this tank was also removed in the late 1980s when the site was demolished. It is approximately 164 feet in diameter and supported on concrete and iron piers.

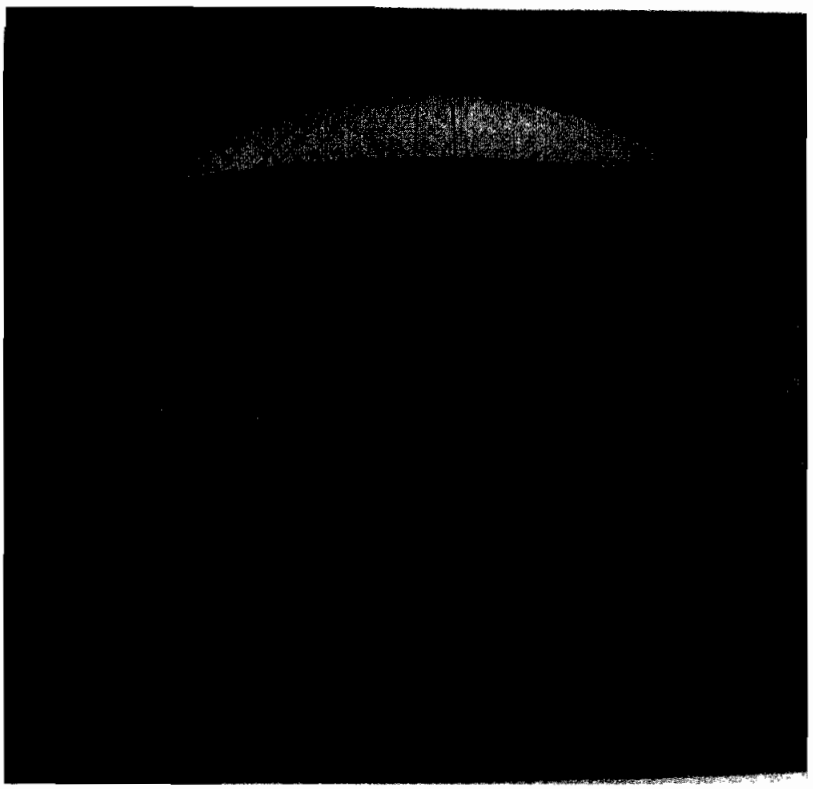
B6. History (continued):

Historical Context

In May 1965, SDG&E announced its plans to construct the South Bay LNG plant.. This plant was the first of its kind in the west, and one of only five worldwide based on cryogenic technology. The purpose of the plant was to take natural gas from the SDG&E natural gas pipeline system and convert the gas to liquid form so that it could be stored for peak season use, thus avoiding paying "demand charges" for gas during the peak winter months from its gas supplier, Southern Counties Gas Company. This process is referred to as "peak shaving." The plant was the first to cool the gas through expansion. An electric turbine was used to expand the gas, causing it to cool. About ten per cent of the gas turned into liquid and was stored in the specially insulated tanks. The refrigerated gas was the available on an-needed based to fuel the South Bay Power Plant during the winter months. The plant was built in 1965 at an approximate cost of $2.8 million. As designed, plant was projected to save the SDG&E $10 million over ten years, andcould liquefy 25 million cubic feet of "feed gas" daily, which it would, liquefy, store, and re-gasify as needed. The primary facility built in 1965 included the 127 foot tall, 117 foot in diameter "thermos jug" (storage tank) that could store 175,000 barrels of liquefied gas. The plant was designed to be essentially unattended and had a small control building on site. Safety features included a berm that could contain one and a half times the amount of LNG stored in the tanks, fire suppression systems and an isolated location separated from other structures.

American Messer Corporation from New York carried out the construction of the plant while Chicago Bridge and Iron Company constructed the tank.[1]

In the mid-1960s, there were four other such plants in the world. Russia had a LNG tank built in 1947 as a part of the lend-lease program.[2] Azew, Algeria produced liquid methane that was shipped to England and France. In the mid-1960s two more plants were nearing completion in Hackensack Meadows, New Jersey and Birmingham, Alabama. The SDG&E plant was unique in that it used expansion cooling. The South Bay LNG plant received the "Four Flame" award from GAS magazine recognizing the outstanding contribution SDG&E made to the gas industry.[3]



Photograph 2. Historic photograph of LNG tank. ***(Reflections: A History of the San Diego Gas & Electric Company)***

[1] "Summer Gas May Yield Winter Heat" *San Diego Union* (January 24, 1965); "S.D. Gas & Electric Builds Area's Biggest Thermos Jug" *San Diego Union* (January 24, 1965); Iris Engstrand and Kathleen Crawford, *Reflections: A History of the San Diego Gas & Electric Company 1881-1991* (San Diego: San Diego Historical Society and San Diego Gas and Electric Co., 1991) 189.

[2] The lend-lease program began in World War II to supply materials to American allies before the U.S. entered the war. In 1943 the program was taken over by the Foreign Economic Administration and records continue through 1947.

[3] "S.D. Gas & Electric Builds Area's Biggest Thermos Jug" *The San Diego Union* (January 24, 1965) Engstrand and Crawford, *Reflections: A History of the San Diego Gas & Electric Company,* 202.

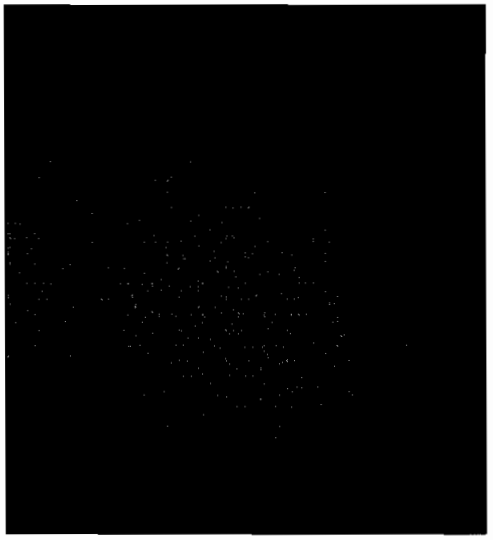
Three years later inNovember1968, SDG&E announced plans to expand the plant by constructing an additional LNG tank and supporting equipment. The expansion, just west of the original plant, could store an additional 1.2 billion cubic feet of LNG. The second tank was the largest above-ground metal LNG storage tank in the world at the time, and provided twice the capacity of the facility's first tank. The expansion also allowed the plant to produce more LNG per day. The earlier unit produced 2.5 million cubic feet per day, while the expanded plant provided the capacity to produce up to 7 million cubic feet of LGN per day. Chicago Bridge and Iron Company again constructed the tank, with Airco BOC Cryogenic Plants of Murray Hill, New Jersey building the plant.[4]

A large number of LNG peak shaving facilities were built in the 1970s. In 1977 there were 60 such plants in the United States alone.[5] As of 2006, there are 99 facilities in the United States according to the Center for Liquefied Natural Gas.[6]

By the mid-1980s, SDG&E no longer needed the South Bay LNG plant, and in 1984 SDG&E requested permission from the California Public Utilities Commission to close the South Bay LNG plant. The company cited mandated improvements, falling natural gas prices and the ability to store gas in the company's gas lines as the reasons for the closure.[7]

The historic record indicates that the South Bay LNG plant was the first LNG plant to use the expansion of gas to create liquid gas. The South Bay LNG plant was one of five plants in existence by the mid 1960s. However, to be eligible for the National Register a site not only has to meet one of the criteria for evaluation (Criteria A and C in this case), but must have integrity. Integrity has seven aspects: location, design, setting, materials, workmanship, feeling, and association. The South Bay LNG facility retains only integrity of location and, to a lesser degree, integrity of setting. All other aspects wereseverely effected when the plant was demolished in the late 1980s.The design, materials, workmanship are not apparent from the remains. Finally, the site does not convey feeling or association. As a result, the remaining features do not convey significance and, therefore, the site is not found to be eligible for the National Register. Plans for the South Bay LNG plant are not in the files of South Bay Power Plant or at the offices of SDG&E, but other materials exist to document LNG technology. Mapping provides information on the relation of the plant to other features in the area

[4] "2nd Liquefied Natural Gas Plant Slated," *The San Diego Union,* (November 17, 1968).
[5] Resource Planning Associates, Inc. *The LNG Decision in California: Reliability, Cost, Safety, and Siting* (1977) 0.2
[6] Center for Liquefied Natural Gas http://www.lngfacts.org/About-LNG/History.asp accessed November 28, 2006.
[7] "Utility Asks $11.66 per Month More SDG&E Reveals Intention to Close South Bay Plant," *The San Diego Union* (September 13, 1984).



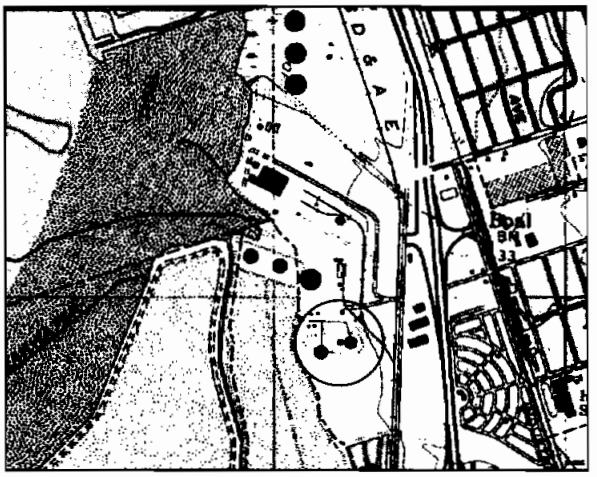


Figure 1 (top left). 1967 Imperial Beach Quadrangle showing first half of LNG facility.

Figure 2 (top right). 1977 Imperial Beach Quadrangle showing complete LNG facility.

Engineering journals provide information on the technology. A majority of current industry and engineering discussion centers on policy and economics of LNG shipping, safety, siting of terminals, and shipping technology. Earlier sources and general discussions provide information on the peak-shaving plants. For example, in Alexander Adorjan's *Heat Transfer in LNG Engineering,* the discussion of the expansion cycle process is illustrated by a flow chart of the San Diego Gas & Electric plant. (See Figure 3).

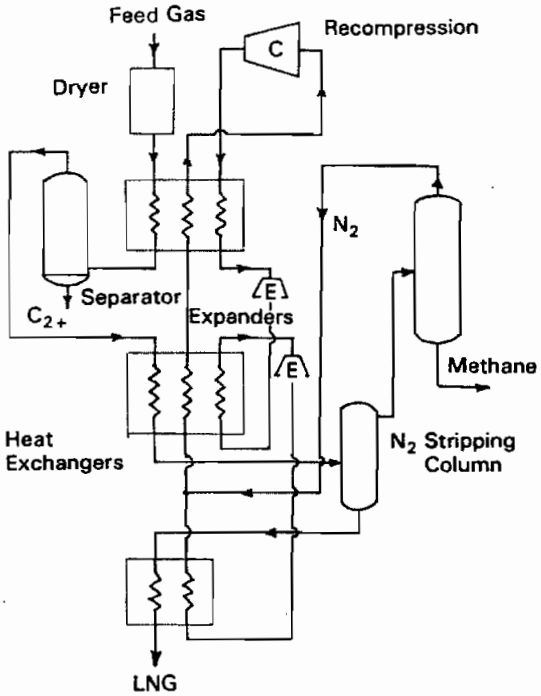


Figure 3. Diagram of SDG&E gas liquefaction process. Alexander S. Adorjan, *Heat Transfer in LNG Engineering.*

Engineering and industry journals also provide discussions of the processes.[8] For example, "Cryogenic Techniques Find New Roles in Natural-Gas Processing" published in the *Oil and Gas Journal* provides a discussion of the Birmingham, Alabama and Hackensack Meadows, New Jersey plants built at the same time as the San Diego facility.[9] As noted above, there are 99 peak-shaving facilities throughout the country in operation in 2006. (See Figure 4 for locations of storage with liquefaction (peak shaving) plants in 2002) While these plants are not the first to

[8] The engineering index Compendex lists 127 English language articles on LNG. At least nine address the issues of liquefaction, necessary technology and techniques.
[9] "Cryogenic Techniques Find New Roles in Natural-gas Processing," *Oil and Gas Journal* (July 6, 1964) 121-122.

operate, they provide far more information than the remaining features at the demolished former South Bay LNG plant site. Thus, the technology of the LNG process can be best understood from these sources rather than from what remains at the site.

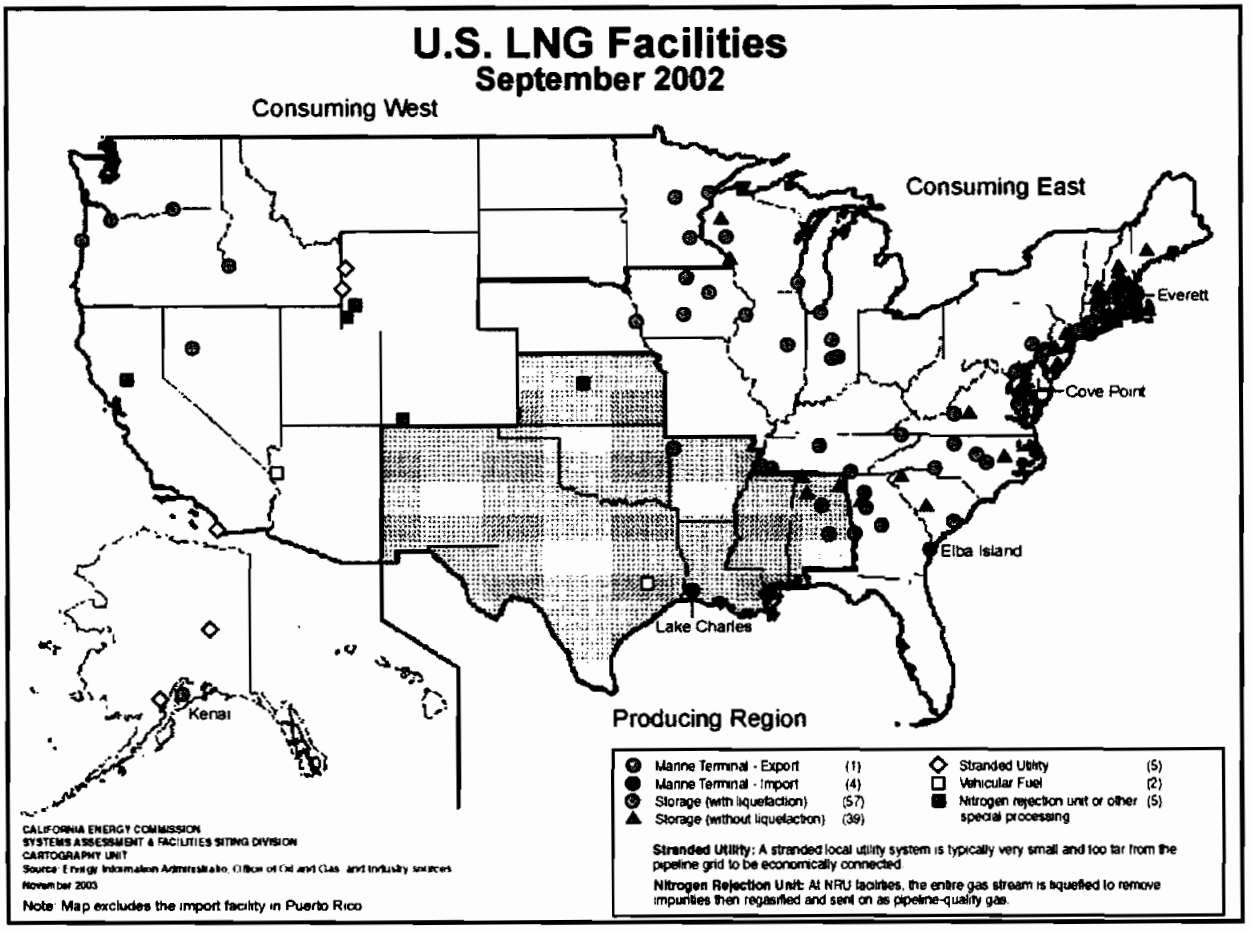
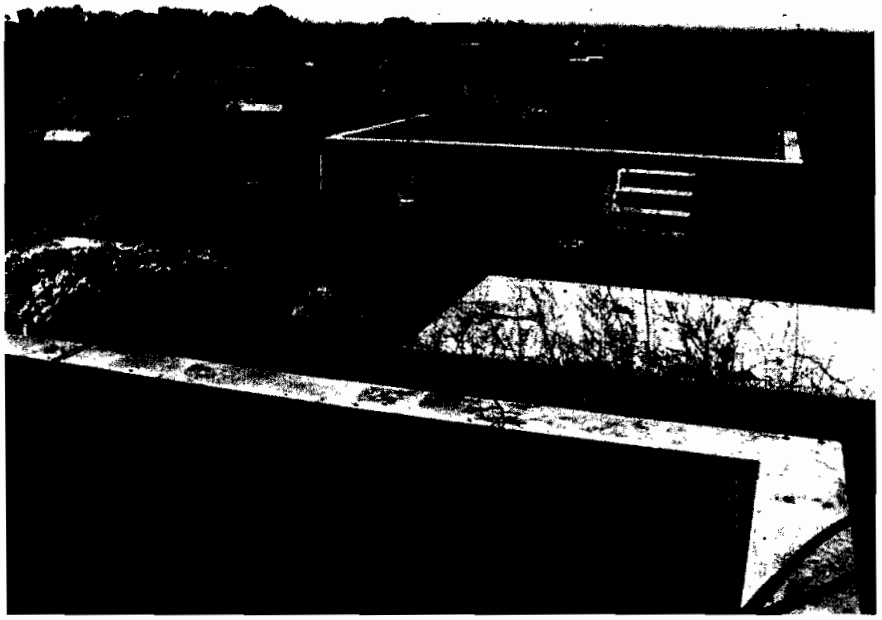


Figure 4. Modern LNG Facilities

Photographs (cont):

Photograph 3. Concrete piers in a line possibly former pipeline supports, camera facing west.



Photograph 4. Sub-grade tanks, camera facing west.

Photographs (cont):

Photograph 5. Berm on west side of site, camera facing southwest.

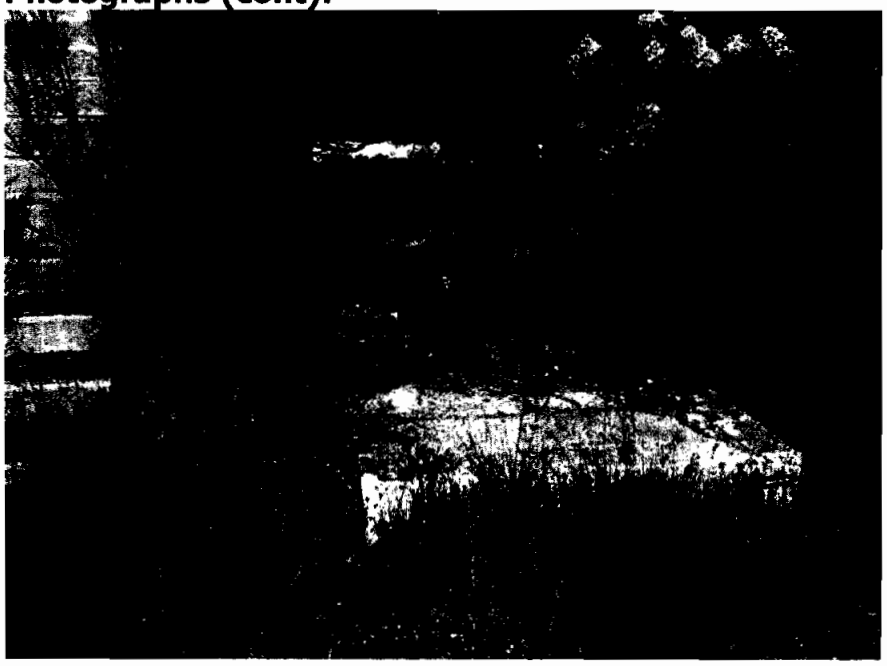
Photograph 6. Western concrete pad as seen from berm, camera facing south.

Photographs (cont):

Photograph 7. Typical footing remnants at site, camera facing west.

Photograph 8. Eastern concrete pad, camera facing north.

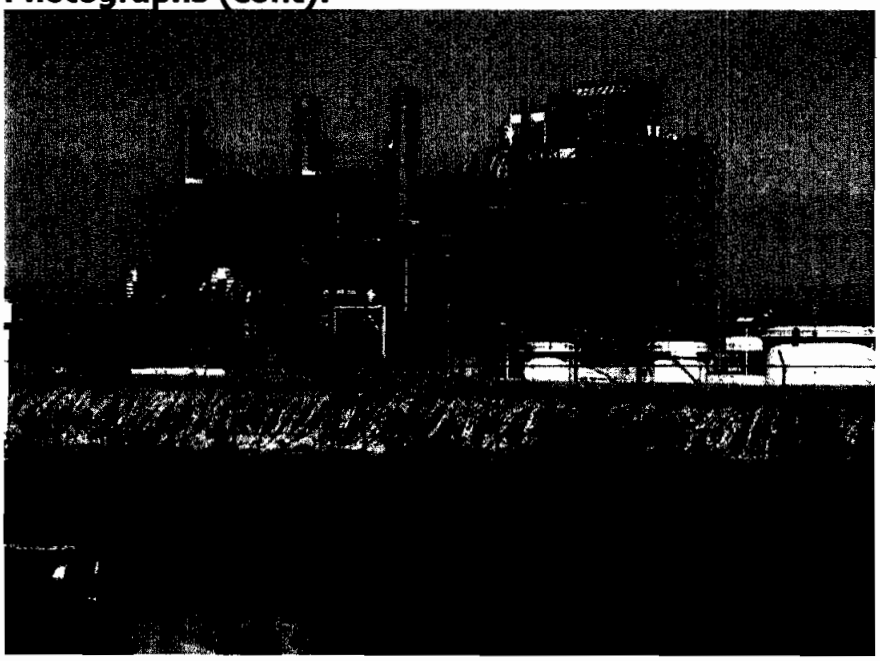
Photographs (cont):



Photograph 9. Pipe-way under berm, camera facing north.

Photograph 10. Edge of eastern concrete pad, camera facing east.

Photographs (cont):



Photograph 2. Looking across site to South Bay power plant.

Photograph 3. Site looking east from berm.

SOUTH BAY REPLACEMENT PROJECT (06-AFC-3)
DATA RESPONSES, SET 1B

Technical Area: Public Health
Author: Alvin Greenberg

BACKGROUND

A map of the Maximum Exposed Individuals (MEIs) is provided, with Universal Transverse Mercator (UTM) coordinates, but the distances from the project site are not given. Staff needs these distances to complete its analysis of impacts.

DATA REQUESTS

77. Provide a table showing distances from the combustion turbine stacks to various receptors including the fence line, the cancer risk MEI, the acute hazard MEI, the chronic hazard MEI, the Points of Maximum Impact for cancer risk and acute & chronic hazards, and a few representative nearest sensitive receptors.

Response: The requested distances are in Revised Table AIR-77-1, based on the remodeled air dispersion and health risk assessment with Chula Vista meteorological data, and for additional scenarios of simultaneous activities for both the proposed SBRP and the existing SBPP.

REVISED TABLE AIR-77-1
Distances from Each Stack to Specified Receptors (meters)

Receptor	West Stack	East Stack
Nearest fence line	32.3	32.2
Cancer Risk MEI (1)	460.2	419.4
Cancer Risk MEIW (2)	287.7	246.9
Cancer Risk PMI (3)	161.4	120.6
Chronic Health Hazard MEI	460.2	419.4
Chronic Health Hazard MEIW	287.7	246.9
Chronic Health Hazard PMI	161.4	120.6
Acute Health Hazard MEI	7,844.8	7,837.5
Acute Health Hazard PMI	7,844.8	7,837.5
Durbin Family Day Care	1,663.9	1,623.2
Bay View Hospital	2,157.4	2,120.7
Carmen Daycare	1,099.6	1,064.6
Covenant Christian School	5,484.2	5,445.5

Notes:

1) MEI - Maximum Exposed Individual, Resident

2) MEIW – Maximum Exposed Individual, Worker

3) PMI - Point of Maximum Impact

UTM coordinates are in the Zone 11 NAD27 datum

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA

APPLICATION FOR CERTIFICATION FOR THE SOUTH BAY REPLACEMENT PROJECT	**Docket No. 06-AFC-3** **PROOF OF SERVICE** (*Revised 2/8/07*)

INSTRUCTIONS: All parties shall 1) send an original signed document plus 12 copies OR 2) mail one original signed copy AND e-mail the document to the web address below, AND 3) all parties shall also send a printed OR electronic copy of the documents that shall include a proof of service declaration to each of the individuals on the proof of service:

DOCKET UNIT

Send the original signed document plus the required 12 copies to the address below:

CALIFORNIA ENERGY COMMISSION
DOCKET UNIT, MS-4
Attn: Docket No. 06-AFC-3
1516 Ninth Street
Sacramento, CA 95814-5512

* * * *

In addition to the documents sent to the Commission Docket Unit, also send individual copies of any documents to:

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DECLARATION OF SERVICE

I, Jeannette Harris, declare that on February 14, 2007, I deposited copies of the attached Data Response Set 1B, in the United States mail at Sacramento, CA with first-class postage thereon fully prepaid and addressed to those identified on the Proof of Service list above.

OR

Transmission via electronic mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5, and 1210. All electronic copies were sent to all those identified on the Proof of Service list above.

I declare under penalty of perjury that the foregoing is true and correct.

Jeannette Harris
[signature]