GWF Hanford Combined Cycle Power Plant

(01-EP-7)

Data Responses Set 1

(Responses to Data Requests 1 through 11)

Submitted to

California Energy Commission

Submitted by

GWF Energy, LLC

January 2009

With Assistance from

CH2MHILL
2485 Natomas Park Drive
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Sacramento, CA 95833

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Introduction

Attached are GWF Energy LLC's responses to the California Energy Commission (CEC) staff's Data Requests numbered 1 through 5 – Cultural Resources, 6 through 7 – Public Health, 8 and 9 – Transmission System Engineering, 10 – Visual Resources, and 11 – Waste Management for the GWF Hanford Combined Cycle Power Plant Project (GWF Hanford). The CEC staff served these data requests on December 8, 2008, as part of the discovery process for GWF Hanford's License Amendment Application (01-EP-7). The responses are presented in the same order as the CEC staff presented them and numbered (1 through 11). Please note that the response for DR-7 will be included in the response package for the Data Responses Set 2. New or revised graphics or tables are numbered in reference to the Data Request number. For example, the first table used in response to Data Request 3 would be numbered Table DR3-1. The first figure used in response to Data Request 3 would be Figure DR3-1, and so on.

Additional documents submitted in response to a data request (i.e., stand-alone documents) are found at the end of this Data Response submittal and are not sequentially page-numbered with the remainder of the document, though they may have their own internal page numbering system.

The Applicant looks forward to working cooperatively with CEC staff as GWF Hanford proceeds through the License Amendment process. We trust that these responses address the staff's questions and remain available to have any additional dialogue the staff may require.

Cultural Resources (1–5)

Background

Staff's review of the GWF Energy LLC Hanford Combined Cycle Power Plant (GWF Hanford) Petition for Amendment indicated that several pipelines running from GWF's adjacent 29.4 MW cogeneration power plant called Hanford LP (a petroleum coke-fired plant that was not permitted by the Energy Commission) would connect to the proposed GWF Hanford facility to supply water, start-up steam, and sewer and wastewater disposal. In order to consider all ground disturbances in relation to potential impacts to buried archaeological deposits, staff needs more information on these pipelines.

Data Request

1. If the pipelines for these utilities do not already exist for the Hanford Energy Park Peaker (HEPP), please provide the lengths, widths, and depths of the trenches that would have to be excavated to install them.

Response: The pipelines that will run between GWF Hanford and Hanford LP will be installed in the existing aboveground piping support structure. This structure is presently used to support interconnecting piping and cables between Hanford LP and the Hanford Energy Park Peaker (HEPP). Trenching for pipelines between the two plants is not required as part of the modifications associated with GWF Hanford.

Data Request

2. Please provide a project site plan showing the routes of these pipelines, either extant or proposed.

Response: As described in DR-1 above, new pipelines will be installed in the existing piping support structure that connects Hanford LP and HEPP. The piping support structure is highlighted in the attached Figure DR2-1.

Background

The previous construction of the HEPP probably resulted in the disturbance of the upper soil layers of the entire site. The present GWF Hanford Petition for Amendment does not provide information on the depth of that disturbance, nor do any of the other, prior information sources provided by GWF Energy LLC in support of the petition.

Staff, however, is concerned that undisturbed soils may exist at depths the previous excavations did not reach in the locations where the proposed new equipment would be installed. The GWF Hanford's project description (pp. 1-1 and 1-2) lists several equipment installations that appear to require foundations capable of considerable

weight-bearing. Staff assumes that such foundations would have to extend to some depth in the ground and additionally that over excavation of the holes for these foundations and filling with engineered fill could be required to ensure the stability of the foundations. 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 on the greatest depths to which the excavations for the previously installed equipment extended and on the greatest depths to which the proposed new equipment foundations would extend.

Data Request

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

    a) once-through steam generators (OTSGs)

    b) steam turbine-generator (STG)

    c) air-cooled condenser (ACC)

    d) modified water piping system, fire protection system, natural gas piping system, and stormwater drainage collection system

    e) stormwater retention basin expansion

Response: The estimated excavation depths for the GWF Hanford components listed above are presented in Table DR3-1 below.

TABLE DR3-1
Excavation Depths for Largest Proposed GWF Hanford Structures

Project Feature	Estimated Excavation Depth
Once-through steam generators (OTSGs)	8.5 feet below grade
Steam turbine generator (STG)	9.5 feet below grade
Air-cooled condenser (ACC)	10 feet below grade
Modified fire protection system (greatest piping depth)	6 feet below grade
Stormwater retention basin expansion	9.5 feet below grade

Note: Due to the presence of possible collapsible soils, over-excavation and backfill is required for structural support.

Data Request

4. Please provide a project site plan showing the locations of equipment for whose foundations excavation would exceed four feet below the surface. A site plan such as Petition Figure 2-1 with the appropriate equipment indicated by shading or other such convention would be acceptable.

Response: Areas of excavation for GWF Hanford that exceed four feet in depth are highlighted in Figure DR4-1.

Background

If a geotechnical study is planned, staff believes that could present an opportunity for the applicant to reduce the amount of archaeological monitoring that staff recommends in the revised conditions for certification that would accompany a decision from the Commission to allow the proposed project change. While it has not yet been established that the proposed project change would disturb previously undisturbed ground (which is the purpose of the previous two Data Requests), if the applicant were to provide factual field data on the archaeological potential of the undisturbed geological deposits that underlie the portions of the proposed project area subject to ground disturbance, staff would have a more objective basis for reducing possible archaeological monitoring requirements. If this possibility interests the applicant, staff recommends that a professional geoarchaeologist participate in any future geotechnical study and collect the data needed for an analysis of the potential for buried archaeological deposits at the proposed GWF Hanford plant site. (”Professional geoarchaeologist” means an archaeologist who is able to demonstrate the completion of graduate-level coursework in geoarchaeology, Quaternary science, or a related discipline.)

Involving a geoarchaeologist in a future geotechnical study is strictly voluntary. Staff offers two options below for this participation. The greater involvement the geoarchaeologist has in the geotechnical study, the more likely that the resulting cultural resources information would either reduce the project’s archaeological monitoring requirements or focus them more efficiently and cost effectively than would otherwise be possible.

Data Request

5. Please choose one of the following options for the participation of a geoarchaeologist in the planned geotechnical study at the GWF Hanford project site.

    a. Please provide a professional geoarchaeologist the opportunity to observe, in the field, the removal of any sediment cores by the geotechnicians, to examine the cores in the field or a laboratory for physical and chemical indices of human activity, and, where feasible, to collect chronometric dating samples from the cores. At least one of the cores should be drilled to a depth that exceeds, by approximately one meter, the deepest construction excavations planned for the project. Prior to the field work, the geoarchaeologist should conduct background research on the geology and geomorphology of the project area to be able to place the stratigraphic units observed in the cores into a meaningful local sequence. The geoarchaeologist should write a brief letter report for staff that describes the fieldwork and the stratigraphic units observed, that estimates the probable age of those units, that interprets the depositional

history of the units, and that assesses the likelihood that the units contain buried archaeological deposits.

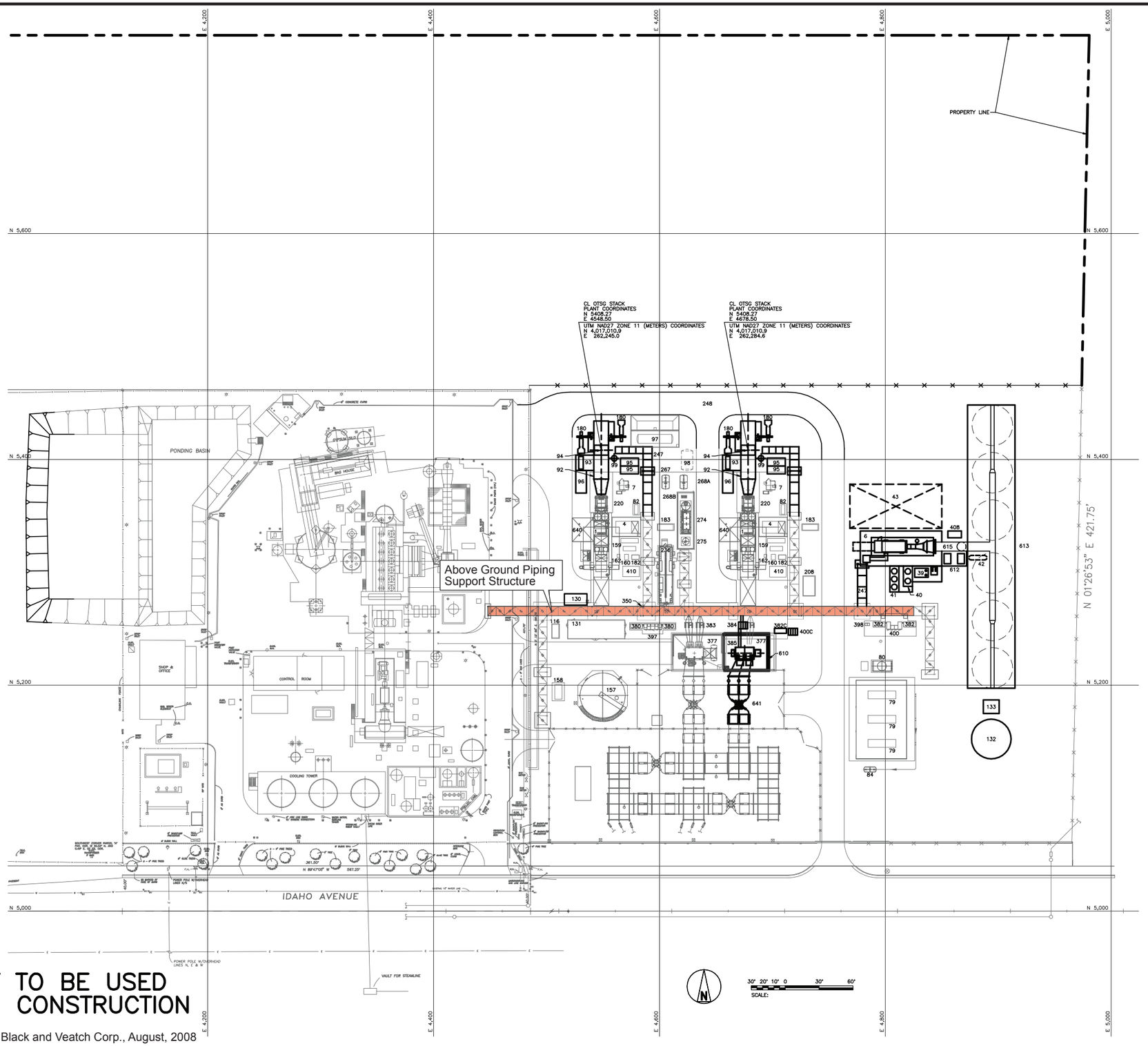
b. Or, please have a trench excavated to the specifications of a professional geoarchaeologist in the part of the proposed project site where project excavations are expected to extend to the greatest depth. Prior to the field work, the geoarchaeologist should conduct background research on the geology and geomorphology of the project area to be able to place the stratigraphic units observed in the trench into a meaningful local sequence. Have the geoarchaeologist record reasonably detailed written descriptions of the lithostratigraphic and pedostratigraphic units in one profile of the trench. The recordation of that profile should include a measured drawing of the profile, a profile photograph with a metric scale and north arrow, and the screening of a small sample (three 5-gallon buckets) of sediment from the major lithostratigraphic or pedostratigraphic units in the profile, or from two arbitrary levels in the profile, through ¼-inch hardware cloth. Soil humate samples for dating the profile's stratigraphic sequence should also be collected, as appropriate. Have the soil humate samples assayed at a professional radiocarbon laboratory, per the geoarchaeologist's instructions, and have the results provided to the geoarchaeologist. The geoarchaeologist should write a brief letter report for staff that describes the fieldwork and the stratigraphic units observed, estimates the probable age of those units, interprets the depositional history of the units, and assesses the likelihood that the units contain buried archaeological deposits.

Response: Modifications to the HEPP in 2002 included the installation of selective catalytic reduction (SCR), an ammonia storage tank, and an underground ammonia spill tank. The SCR and stack foundations required excavations 9 feet in depth, and the other major pieces of equipment required excavations 8 feet in depth. All other foundations required excavations of 5 feet in depth. Installation of the underground ammonia spill tank required an excavation with a depth of 12 feet. Due to the required over-excavation and sloping of excavations, a large portion of the site was previously excavated and backfilled during the HEPP construction with no archaeological finds of any significance.

As discussed in Section 3.3.2 of the Petition for License Amendment, no significant impacts to cultural or archaeological resources are anticipated from the construction of GWF Hanford. The presence of possible "collapsible soils" at the GWF Hanford site requires over-excavation and backfill in order to provide a stable base for foundations. The estimated excavation depths shown in Table DR3-1 are reflective of this requirement. Attachment DR5-1 shows the excavation plans of the HEPP. However, the GWF Hanford modifications to the plant do not require any excavations deeper than those previously performed on site. As a result, it is reasonable to estimate that new excavations associated with the modification will not produce buried archaeological deposits and, therefore, additional geotechnical studies should not be required to support scaling back the standard geotechnical monitoring requirements, which GWF believes is appropriate. In the unlikely event that an unidentified, buried archaeological resource is discovered during the construction of GWF Hanford, the mitigation approach discussed in Section 3.3.3 of the

Petition for License Amendment would ensure that any potential impacts to the resources would be reduced to less than significant levels.

The Applicant believes the approach proposed in Section 3.3 of the Petition for License Amendment represents the most efficient, cost-effective way to ensure the proposed project's construction activities will not significantly impact undiscovered archaeological resources, even in the very unlikely event such resources are encountered given the highly disturbed nature of the site. The Applicant would likely bear substantial costs and risks of delay to provide the information described in Data Request 4. The Applicant believes the benefit of the additional information would not warrant the additional costs and potential delays because any potential impacts are highly unlikely and can be mitigated to less than significant levels based on the approach provided in the Petition for License Amendment. As such, the Applicant respectfully declines to perform the additional geotechnical studies described in Data Request 4.



NOT TO BE USED
FOR CONSTRUCTION

Source: Black and Veatch Corp., August, 2008

LEGEND

NO.	COMPONENT NAME
1	COMBUSTION TURBINE LM6000
2	NOT USED
4	AUXILIARY SKID
6	STEAM TURBINE GENERATOR
7	CONTINUOUS EMISSIONS MONITORING EQUIPMENT
39	LUBE OIL SKID
40	STEAM TURBINE LUBE OIL COOLER
41	STEAM TURBINE LUBE OIL WSAC UNIT
42	CONDENSATE DRAIN TANK
43	AREA FOR ACCESS DURING STEAM TURBINE MAINTENANCE
79	FUEL GAS COMPRESSOR SKID
80	FUEL GAS COOLER
82	FUEL GAS FILTER
84	FUEL GAS WASTE SUMP WITH BLOWER
92	ONCE THROUGH STEAM GENERATOR (OTSG)
93	AMMONIA INJECTION GRID HEADER SKID
94	OTSG STACK
95	BOILER FEED PUMPS
96	COMBINED CYCLE AMMONIA SKID
97	COMBINED CYCLE AMMONIA RECEIVING & STORAGE
98	AMMONIA SPILL CONTAINMENT TANK (UNDERGROUND)
99	STARTUP SILENCER
116	RAW WATER FORWARDING PUMPS
130	WATER TREATMENT
131	WATER TREATMENT MODULE
132	FIRE WATER TANK
133	FIRE PUMP BUILDING
157	DEMIN. WATER STORAGE TANK
158	DEMIN. WATER INJECTION FORWARDING PUMPS
159	WATER INJECTION BOOST PUMP SKID
160	SPRINT PERFORMANCE SKID
162	HIGH PRESSURE DEMIN. WATER FILTER SKID
180	TEMPERING AIR FANS
182	SPRAY MIST EVAPORATIVE COOLER
183	CLOSED LOOP COOLER
191	FIRE CARTS (NOT SHOWN FOR CLARITY)
208	AIR COMPRESSOR SKID
220	ANTI-ICING HEAT EXCHANGER SYSTEM
236	POWER CONTROL MODULE
247	PIPE AND CABLE WAYS
248	ROAD
267	WASTE WATER WASH TANK
268-A	OILY WATER SUMP TANK
268-B	OILY WATER FORWARDING PUMP
274	OIL/WATER SEPARATOR
275	OIL STORAGE TANK
350	LIGHTING PANEL WITH TRANSFORMER
377	MAIN SUBSTATION STEP-UP TRANSFORMER
380	AUXILIARY TRANSFORMER 480V
382	FUEL GAS COMPRESSOR TRANSFORMER 13.8/4160V
382C	TRANSFORMER 13.8KV/480V (COMBINED CYCLE)
383	13.8KV SWITCH
384	13.8KV SWITCHGEAR
385	NON-SEGREGATED BUS DUCT
397	480V DISTRIBUTION SWITCHBOARD
398	FUEL GAS COMPRESSOR 480V MCC
400	4160V DISTRIBUTION PANEL
400C	480V SUS (COMBINED CYCLE)
408	AIR COOLED CONDENSER SWITCHGEAR
410	MEDIUM VOLTAGE SWITCH GEAR
610	TRANSFORMER FIRE WALL
612	CONDENSATE PUMPS
613	AIR COOLED CONDENSER
615	STEAM DUCT
640	ENGINE REMOVAL AREA
641	HIGH VOLTAGE CIRCUIT BREAKER

FIGURE DR2-1
EXISTING PIPE SUPPORT STRUCTURE
GWF HANFORD COMBINED-CYCLE POWER PLANT
HANFORD, CALIFORNIA

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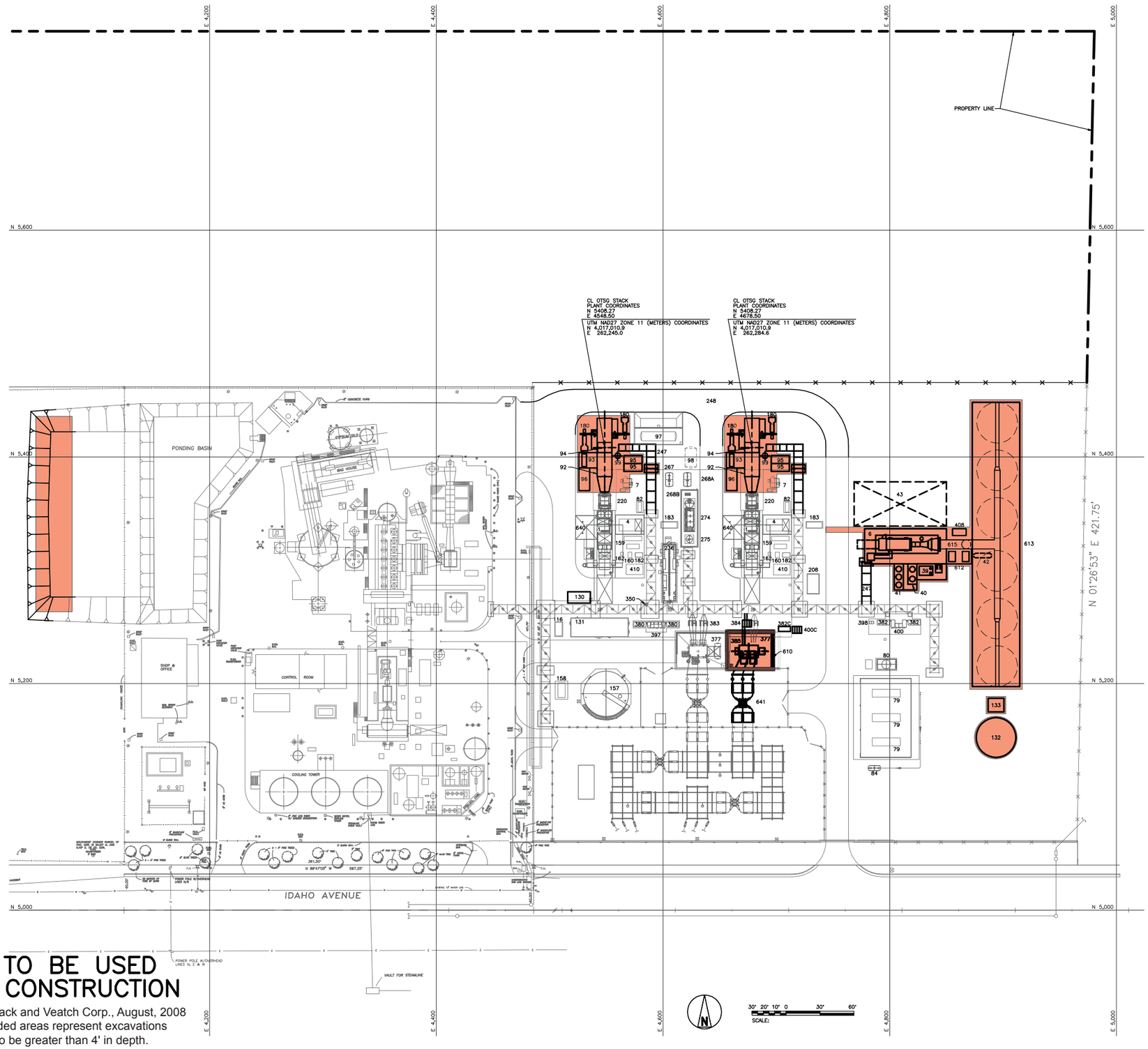

LEGEND

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2	NOT USED
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615	STEAM DUCT
640	ENGINE REMOVAL AREA
641	HIGH VOLTAGE CIRCUIT BREAKER

NOT TO BE USED FOR CONSTRUCTION

Source: Black and Veatch Corp., August, 2008
Note: Shaded areas represent excavations expected to be greater than 4' in depth.

FIGURE DR4-1
EXCAVATIONS EXPECTED TO BE GREATER THAN FOUR FEET IN DEPTH
GWF HANFORD COMBINED-CYCLE POWER PLANT
HANFORD, CALIFORNIA

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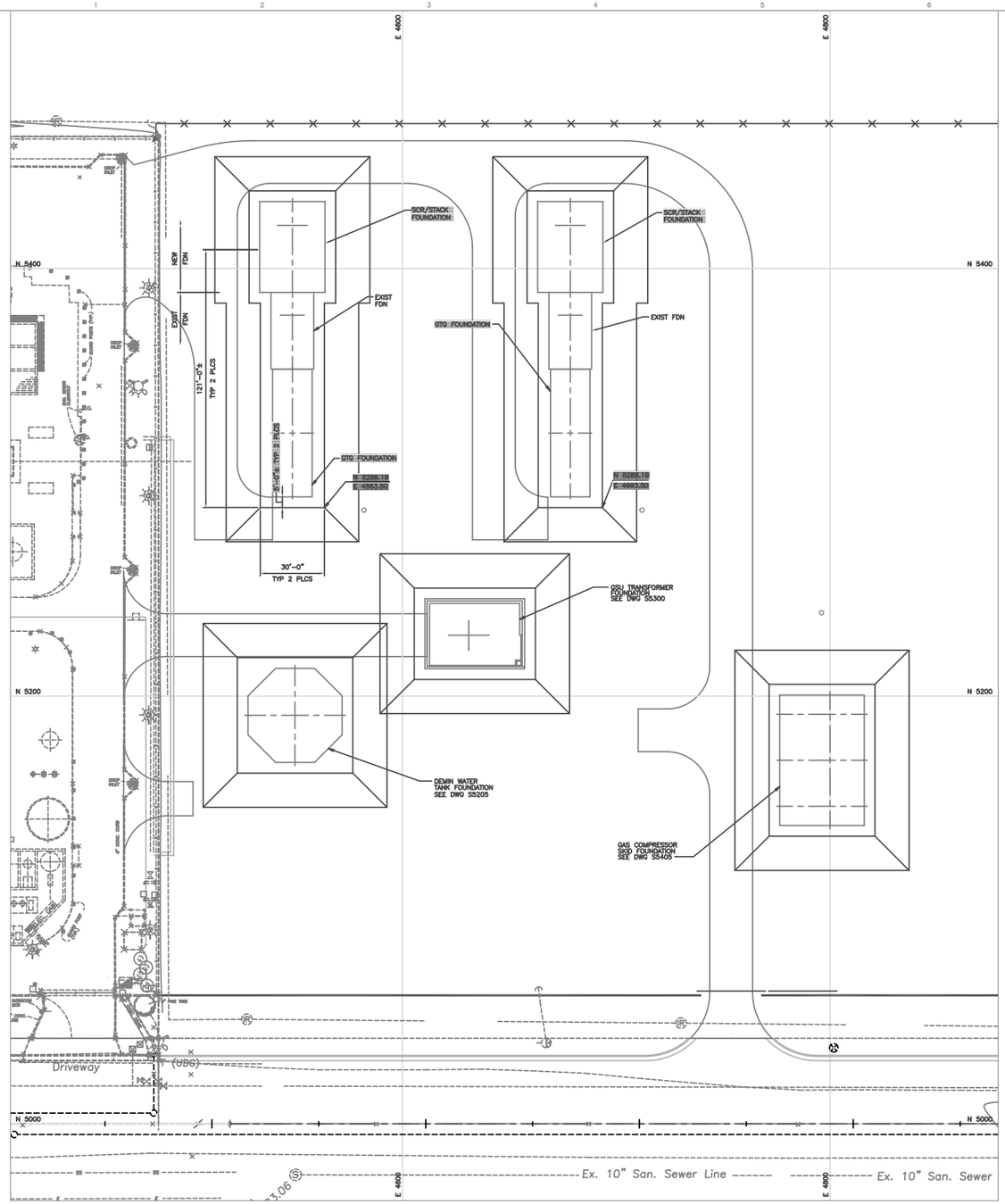
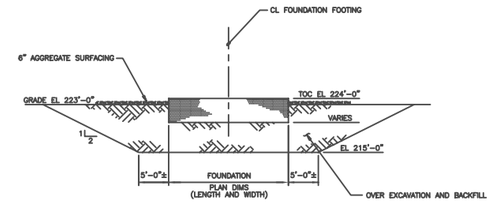
ATTACHMENT DR5-1

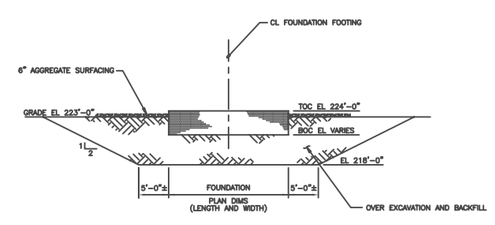
Excavation Plans of the HEPP





SECTION 1
NO SCALE

SECTION 2
NO SCALE



DETAIL 3
NO SCALE

NOTES

1. SEE DRAWING CSTF-S3000 FOR GENERAL NOTES, LEGEND AND KEY PLAN.
2. THE SOIL SHALL BE EXCAVATED TO THE DEPTH AND WIDTH INDICATED ON THIS DRAWING AND REUSED FOR BACKFILL. AS AN ALTERNATE CLASS 2 AGGREGATE BASE MATERIAL MEETING THE FOLLOWING REQUIREMENTS MAY BE USED FOR BACKFILL:

PERCENT PASSING 2-INCH SIEVE	100
PERCENT PASSING 1 1/2-INCH SIEVE	90 – 100
PERCENT PASSING 3/4-INCH SIEVE	50 – 85
PERCENT PASSING NO. 4 SIEVE	25 – 45
PERCENT PASSING NO. 30 SIEVE	10 – 25
PERCENT PASSING NO. 200 SIEVE	2 – 9
R-VALUE	78 MINIMUM
DURABILITY INDEX	35 MINIMUM
SAND EQUIVALENT	22 MINIMUM

3. THE EXPOSED SUBGRADE MATERIALS SHALL BE SCARIFIED TO A DEPTH OF 6 INCHES, MOISTURE CONDITIONED AND COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D1557-91 METHODS.
4. BACKFILL SOIL SHALL BE PLACED IN LOOSE LIFTS APPROXIMATELY 8 INCHES THICK, MOISTURE – CONDITIONED AS NECESSARY, AND COMPACTED AT OR NEAR OPTIMUM MOISTURE TO ACHIEVE A DRY DENSITY OF AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D1557-91.
6. EXCAVATION DETAIL 3 APPLIES TO FOUNDATIONS NOT SHOWN ON THIS DRAWING.

NO	DATE	REVISIONS AND RECORD OF ISSUE	DRN	DES	CHK	DE	APP
3	11-30-2001	CONFORMED TO CONSTRUCTION RECORDS	SHC	JJB	RGH	JJB	JCS
2	10-09-2001	REVISED PER NEW SCR FOUNDATION	RGH	PNC	JHL	JJB	JCS
1	06-15-2001	GENERAL REVISIONS	BG	JJB	JHL	JJB	JCS
0	06-01-2001	ISSUED FOR CONSTRUCTION	BG	JJB	JHL	JJB	JCS

20' 10' 0 20' 40'
1"=20'

I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF CALIFORNIA.
SIGNED PERMEZ DAUD SHAIKH
DATE 06/15/01 REG NO. 33542

BLACK & VEATCH CORPORATION
ENGINEER JJB DRAWN BG
CHECKED JHL DATE 06-01-2001

GWF ENERGY LLC
HANFORD ENERGY PARK PEAKER PROJECT

SITE – GRADING AND DRAINAGE
EXCAVATION PLAN AND SECTIONS

PROJECT 066890 DRAWING NUMBER CSTF-S3005 REV 3
CODE
AREA

ACAD 15.05
DWG
ORIGIN
E1
11/30/01 10:59:00

Public Health (6–7)

Background

The Petition to Amend states that the cumulative impacts of GWF Hanford are not expected to exceed those analyzed in the 21-day Emergency Power Plant License application process conducted in 2001 and that the facility will not contribute to any significant cumulative public health impacts. However, the cumulative impacts of emissions from this proposed modification combined with emissions from the adjacent GWF Hanford LP power plant was not quantitatively assessed.

Staff has consistently found that cumulative impacts on public health from power plants and other sources of toxic air contaminant emissions are not significant unless the sources are either very close to each other – within a block or two - or the incremental risk of one of the sources is almost at the level of significance. However, in this case, the two emission sources are indeed very close to each other, most likely within a few hundred feet. Staff therefore needs this information to fully assess the cumulative health impacts potentially posed to the off-site public.

Also, the Petition to Amend did not provide a health risk assessment for the diesel emissions from construction activities nor did it provide diesel particulate matter (DPM) emission factors for the equipment that will be used. While staff understands that project construction emissions are short-term and may indeed pose an insignificant risk to public health as the Petition states, staff needs to verify this by reviewing the DPM emission factors for construction activities.

Data Request

6. Please provide a cumulative health risk assessment for the combined emissions from the project modification and the existing Hanford LP power plant.

Response: Based on discussions with CEC, the cumulative HRA will be submitted as part of the second round of data request responses.

Data Request

7. Please provide DPM emission factors for construction activities in pounds per day and tons per year. This value can be submitted as a single number estimate of total emissions from all sources.

Response: The estimated daily and annual diesel particulate matter (DPM) emissions for the GWF Hanford construction activities are include in Table DR7-1.

TABLE DR7-1
Diesel Particulate Matter Emissions for Construction Activities

	Maximum Daily DPM (lb/day)	Maximum Annual DPM (ton/year)
Onsite Construction Equipment (including onsite truck travel)	7.3	0.79
Offsite Delivery Trucks	0.13	0.01

Notes: Data extracted from the detailed construction emission calculations included in Attachment C1 of the "Petition for Amendment to Hanford Energy Park Peaker Project (01-EP-07)"

Transmission System Engineering (8–9)

Background

Staff needs to determine the system reliability impacts of the project interconnection and to identify the interconnection facilities including downstream facilities needed to support the reliable interconnection of the proposed Hanford Combined-Cycle Power Plant (Hanford Plant). The interconnection must comply with the Utility Reliability and Planning Criteria, North American Electric Reliability Council (NERC) Planning Standards, NERC/Western Electricity Coordinating Council (WECC) Planning Standards, and California Independent System Operator (California ISO) Planning Standards. In addition the California Environmental Quality Act (CEQA) requires the identification and description of the "Direct and indirect significant effects of the project on the environment."

For the compliance with planning and reliability standards and the identification of indirect or downstream transmission impacts, staff relies on the System Impact Study (SIS) and Facilities Study (FS) as well as review of these studies by the agencies responsible for insuring the adjacent interconnecting grid meets reliability standards, in this case, Pacific Gas and Electric (PG&E) and/or California ISO. 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 the transmission to violate reliability requirements the potential mitigation or upgrades required to bring the system into compliance are identified. The mitigation measures often include modification and construction of downstream transmission facilities. The CEQA requires environmental analysis of any downstream facilities for potential indirect impacts of the proposed project.

Staff requires the SIS, (and or FS),and one line diagrams to identify potential downstream transmission facilities that may require due to interconnection of the Hanford Plant to the California ISO grid and to determine the interconnection would comply with the NERC/WSCC and /or Utility planning standards and reliability criteria.

Data Request

8. Please provide a System Impact Study for the proposed Hanford Combined Cycle Power Plant. The Study should analyze the system impact with and without the project during peak and off-peak system conditions, which will demonstrate conformance or non-conformance with the utility reliability and planning criteria with the following provisions:

    a. Identify major assumptions in the base cases including imports to the system, major generation and load changes in the system and queue generation.

b. Analyze system for N-0, important N-1 and critical N-2 contingency conditions and provide a list of criteria violations in a table showing the loadings before and after adding the new generation.

c. Analyze the PG&E system for Short Circuit currents with and without the Hanford Plant at strategic buses for three-phase and single line to ground faults. Submit the following along with a summary of the results.

d. Analyze system for Transient Stability and Post-transient voltage conditions under critical N-1 and N-2 contingencies, and provide related plots, switching data and a list for voltage violations in the studies. Provide a list of contingencies evaluated for each study.

e. List mitigation measures considered (required) and those selected for all criteria violations.

f. Provide electronic copies of *.sav and *.drw PSLF files.

g. Provide power flow diagrams (MW, % loading & P. U. voltage) for base cases with and without the project. Power flow diagrams must also be provided for all N-0, N-1 and N-2 studies where overloads or voltage violations appear.

Response: The GWF Hanford System Impact Study (SIS) prepared by Navigant is included as Attachment DR8-1. Two hardcopies and five electronic copies (including PSLF files) of the SIS, are being included as part of this submittal.

Data Request

9. Provide a one-line diagram for the existing PG&E 115 kV Hanford Substation after interconnection of the modified project. Show the existing bay arrangement of the equipments with ratings such as breakers, disconnect switches and relays, etc. which are required to interconnect the project.

Response: Please refer to Figure DR9-1.

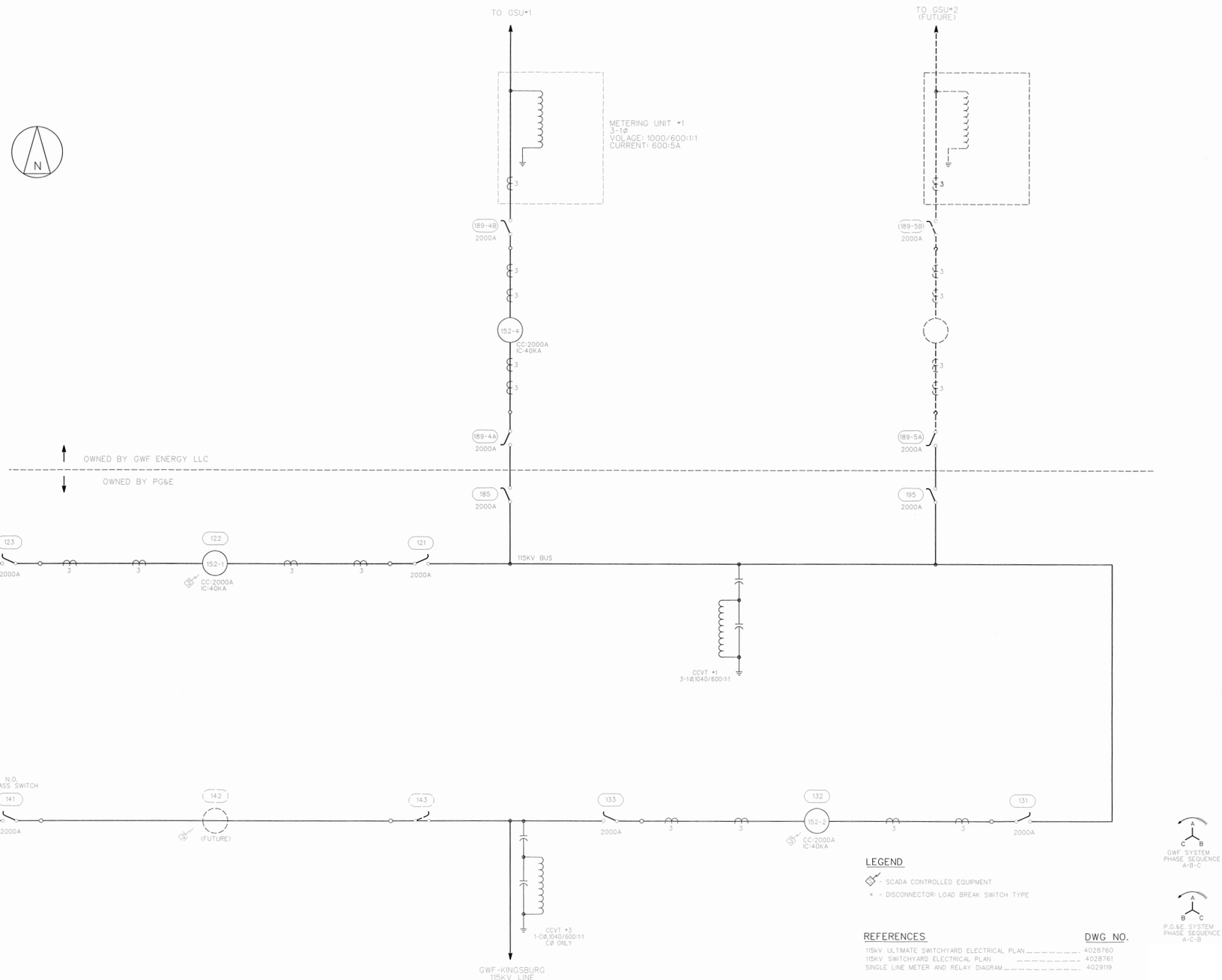
ATTACHMENT DR8-1

GWF Hanford System Impact Study

ATTACHMENT DR8-1

GWF Hanford System Impact Study

Two hard copies and five CDs of the System Impact Study have been provided under separate cover to the CEC.



NOT TO BE USED
FOR CONSTRUCTION

Source: Pacific Gas and Electric., January, 2009

FIGURE DR9-1
ONE-LINE DIAGRAM FOR THE PG&E 115-KV HANFORD SUBSTATION AFTER INTERCONNECTION OF THE MODIFIED PROJECT
GWF HANFORD COMBINED-CYCLE POWER PLANT
HANFORD, CALIFORNIA

CH2MHILL

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Visual Resources (10)

Background

To comply with Appendix B (g) (6) (F) of the Energy Commission's siting regulations as well as to ensure a comprehensive visual review of the existing site, applicants are required to provide full-page color photographic reproductions of the existing site.

According to Section 3.12.1, Environmental Baseline Information, in the Petition for License Amendment, the exiting site will be expanded within the existing site fence line.

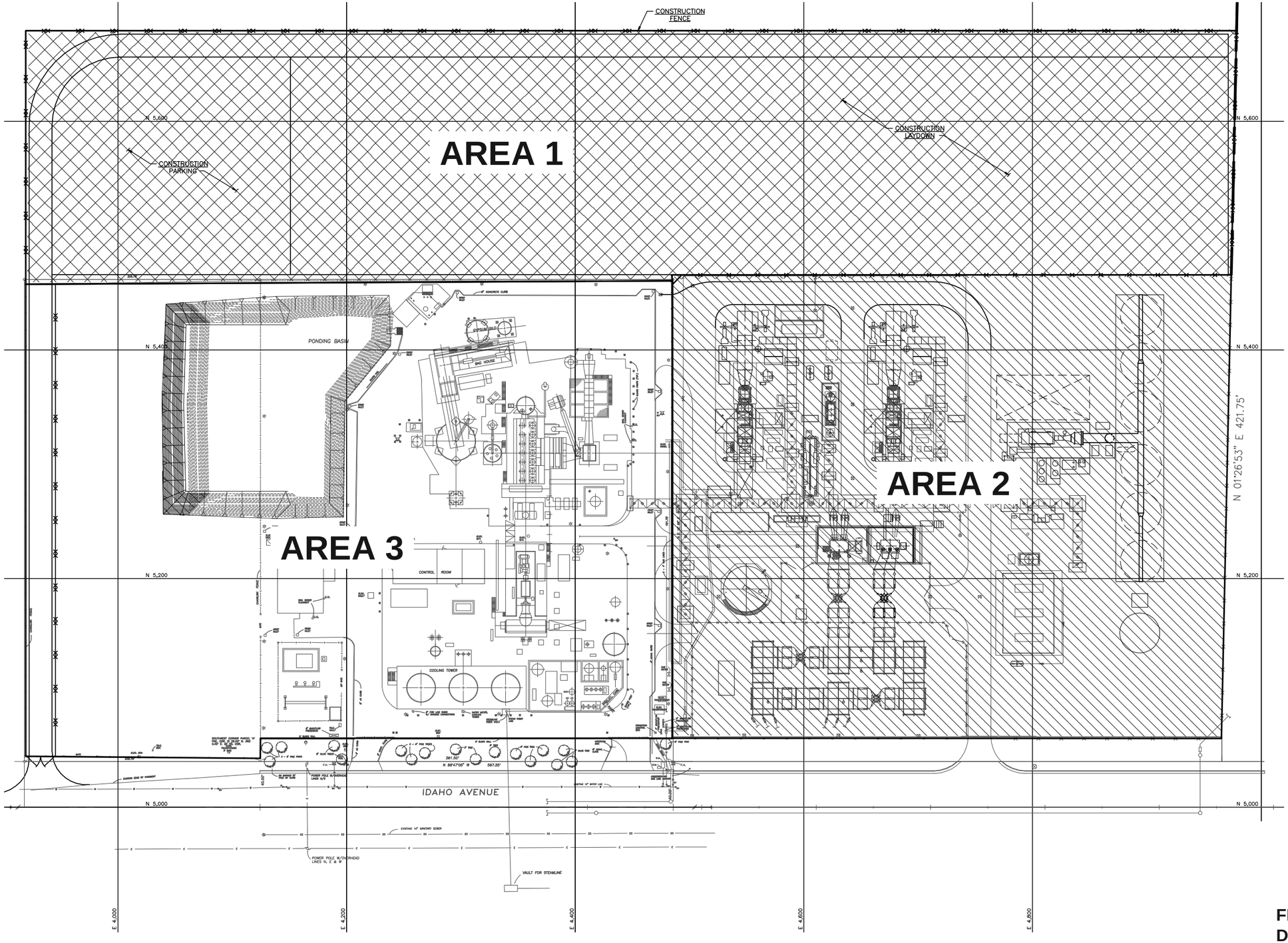
Data Request

10. Please provide full-page color photographic reproductions of the existing site, including expansions. Please clearly identify all expansion areas as to their use; for example, construction, laydown, and parking.

Response: Consistent with Data Request 10 and following coordination with CEC staff, this response addresses CEC staff concerns related to the visibility of temporary construction and laydown areas for GWF Hanford. Figure DR10-1 shows the disturbed areas associated with GWF Hanford and specifically identifies the construction laydown and parking areas. Figure DR10-2 shows the locations of the key observation points (KOP) presented in the Visual Resources Section of the GWF Hanford License Amendment that are used to respond to this request. Figure DR10-3 shows the view from KOP-1 and is annotated to show the extent and location of the construction laydown and parking areas. Figure DR10-4 also shows the extent of the construction laydown and parking areas, as viewed from KOP-3, zoomed in at 200%.

During construction activities, the parking areas will accommodate construction worker parking and the laydown areas will provide temporary storage for construction equipment, project components, trailer offices, and construction materials.

Once construction activities are completed, the construction laydown and parking areas will be cleared of all debris and returned to pre-construction conditions.



LEGEND	
	TEMPORARY DISTURBANCE AREA 1 = 5.32 ACRES
	PERMANENT DISTURBANCE AREA 2 = 4.65 ACRES

Areas 1 & 2 : Hanford LLC
Area 3: Hanford LP

30' 20' 10' 0 30' 60'
APPROXIMATE SCALE IN FEET

SOURCE: BLACK & VEATCH, AUGUST 2008.

FIGURE DR10-1
DISTURBED AREAS
GWF HANFORD COMBINED-CYCLE POWER PLANT
HANFORD, CALIFORNIA

CH2MHILL

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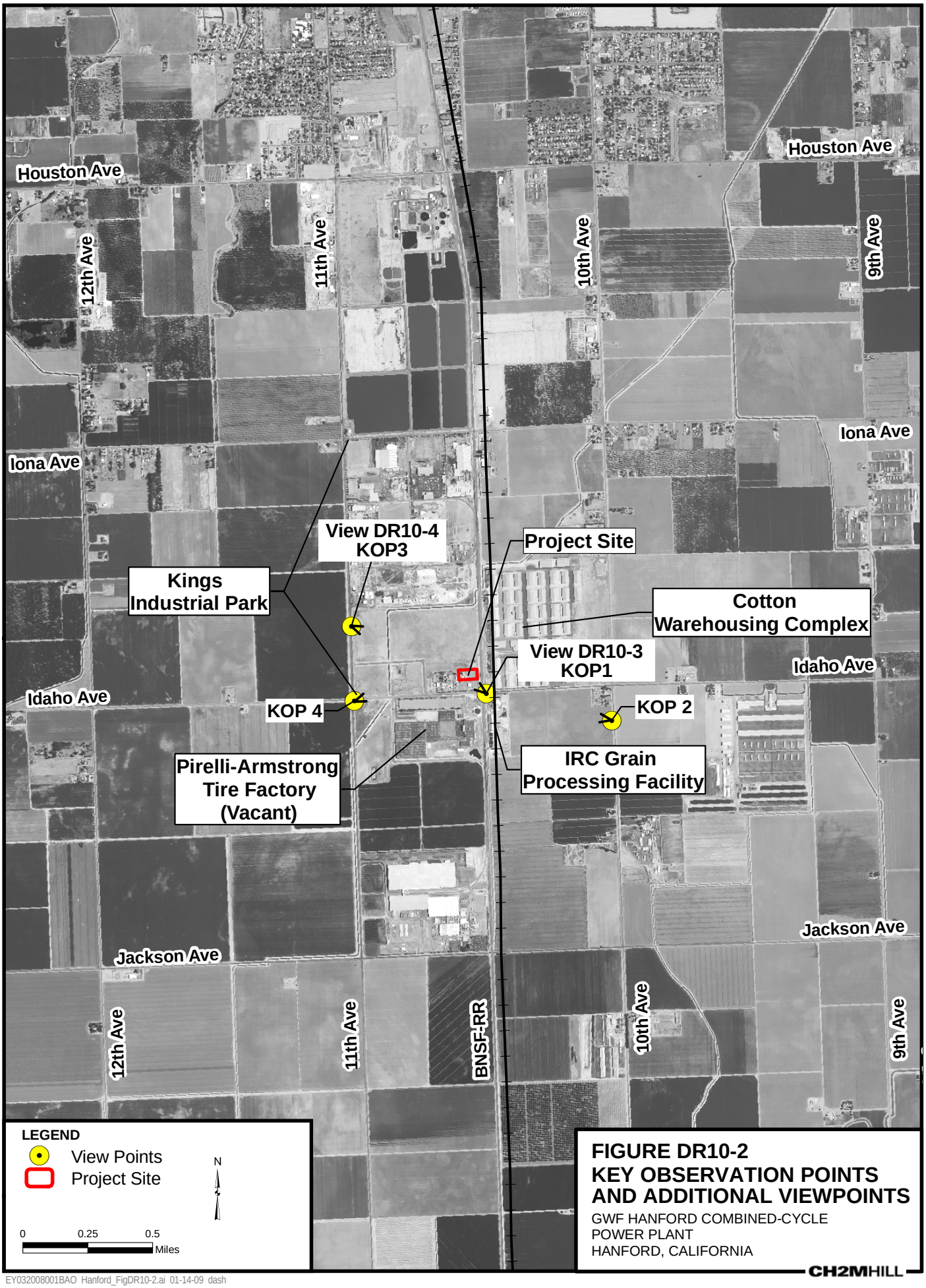

FIGURE DR10-2
KEY OBSERVATION POINTS AND ADDITIONAL VIEWPOINTS

GWF HANFORD COMBINED-CYCLE
POWER PLANT
HANFORD, CALIFORNIA

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EY032008001BAO Hanford_FigDR10-2.ai 01-14-09 dash

View of project site from KOP-1 (along Idaho Avenue, east of the project site). The existing HEPP is visible in the left side of this view. Tanks associated with nearby industrial facilities are visible beyond the HEPP, and the southwest corner of the cotton warehousing complex is visible in the right side of the view, adjacent to the BNSF rail tracks. Portions of the area to be temporarily disturbed by construction and laydown activities would be visible to the north of the existing HRSG stacks, as shown in Figure DR10-1 and estimated in the photograph above. The construction laydown area would extend to a point approximately 250 feet north (to the right in this view) of the closest HRSG stack. As a reference point, the domed tank in the right portion of this view is approximately 1,600 feet from the closest HRSG stack.

FIGURE DR10-3
KEY OBSERVATION POINT 1
GWF HANFORD COMBINED-CYCLE POWER PLANT
HANFORD, CALIFORNIA

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View of project site from KOP-3 (along 11th Avenue, northwest of the project site) zoomed in at 200% in order to clearly see the extent of the temporary construction laydown and parking area. The area to be temporarily disturbed by construction and laydown activities would be visible in the area indicated above. As shown on Figure DR10-1, the temporary construction laydown and parking area will run along the entire length of the existing project site (1,080 feet long) and it will extend 220 feet from the existing fenceline. The west side (right side of area in photograph, as viewed from this location) of this area will be used for temporary construction parking and the east side (left side of area in photograph, as viewed from this location) will be used for temporary construction laydown. Upon completion of construction, all equipment and materials will be removed from this area and it will be re-graded to the pre-construction condition.

FIGURE DR10-4
ADDITIONAL VIEW TOWARD PROJECT SITE AND LAYDOWN AREA
GWF HANFORD COMBINED-CYCLE POWER PLANT
HANFORD, CALIFORNIA

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Waste Management (11)

Background

Staff reviews the capacity available at off-site treatment and disposal sites and determines whether or not the proposed power plant's waste would have a significant impact on the volume of waste a facility is permitted to accept. Staff uses a waste volume threshold equal to 10 percent of a disposal facility's remaining permitted capacity to determine if the impact from disposal of project wastes at a particular facility would be significant. The California Integrated Waste Management Board provides guidance in their "Construction and Demolition and Inert Debris Tools and Resources Kit" which provides information on waste materials, densities, and methods for calculating waste volumes. This guidance can be found at http://www.ciwmb.ca.gov/leatraining/Resources/CDI/Tools/Calculations.htm.

Landfill capacities, in cubic yards, are identified in Amendment Section 3.13.1.2. Although Tables 3.13-1, 3.13-2, and Table 3.13-3 of Section 3.13 from the Amendment provide information on the estimated quantities of wastes generated during construction and operation, they do not provide a total volume of waste that would be generated during construction and operation. Therefore, staff cannot compare the volume of waste associated with the proposed GWF Hanford Combined-Cycle Power Plant with the remaining volumetric capacity at potential landfill disposal sites.

Data Request

11. Please provide information on the total volume of waste, in cubic yards, that will be generated during construction and operation.

Response: GWF Hanford will generate nonhazardous solid waste that will add to the total waste generated in Kings County and in California. Based on data collected during preparation of the License Amendment and confirmed in January 2009 and described in Section 3.13 Waste Management of the License Amendment, it was determined that there is adequate recycling and landfill capacity in California to recycle and dispose of the waste generated by the construction and operation of GWF Hanford. It is estimated that GWF Hanford will generate approximately 583.5 tons (398 cubic yards) of non-hazardous solid waste during construction and approximately 101.2 tons (67.5 cubic yards) of solid hazardous waste for a total of approximately 684.7 tons (456.5 cubic yards) of solid construction waste. The proposed project will also generate approximately 5.1 tons (3.4 cubic yards) a year of nonhazardous solid waste from operations and approximately 0.4 tons (0.26 cubic yards) of solid hazardous waste, for a total of approximately 5.5 tons (3.7 cubic yards) per year from operations. Detailed calculations are provided in Attachment DR11-1.

Considering that 653,963 tons (435,975.3 cubic yards) of solid wastes were landfilled in Kings County in 2007, GWF Hanford's contribution will represent less than one percent of

the county's total waste generation. As discussed in Section 3.13.2 of the Petition for License Amendment, the GWF Hanford project will not result in any significant impacts related to waste management.

Hazardous waste generated will consist of waste oil, filters and oily debris, and chemical cleaning wastes. Hazardous liquid waste streams such waste oil and turbine wash water waste will be recycled. Approximately every 3 to 5 years, spent SCR and oxidation catalysts will become part of the hazardous waste stream at approximately 20 to 30 tons (13.3 to 20 cubic yards) per event. It is expected that waste oil and spent catalysts will be recycled. Based on contacts with landfill operators made during preparation of the License Amendment and confirmed in January 2009, hazardous waste treatment and disposal capacity in California is more than adequate. Therefore, GWF Hanford's contribution to hazardous waste recycling, treatment, and disposal capability within California will be less than significant.

ATTACHMENT DR11-1

Waste Generation Calculations

Table DR11-1
Cumulative Solid Waste to be Generated by GWF Hanford

	Construction (Solid) (tons)	Operation (Solid) (tons per year)	Comments
Non-Hazardous Waste			**From Table 3.13-1 Non-Hazardous Wastes Generated During Construction**
Scrap wood, glass, plastic, paper, calcium silicate insulation, and mineral wool insulation	42.0	1.0	Construction:5,600lbs/mo*15mo=84000lbs=42tons
Scrap Metals	500.0	3.0	Construction period of 15 months used though start up and commissioning will likely generate less than peak construction
Concrete	40.0	0.0	
Empty Containers	1.0	1.0	
Waste Oil Filters	0.5	0.1	70lbs/mo*15=1050lbs=0.525 tons; 20lbs/mo*12=240=0.12 tons
Subtotal - Non-Hazardous (tons)	**583.5**	**5.1**	
Hazardous Waste			**From Table 3.13-2 Hazardous Wastes Generated During Construction and Table 3.13-3 Hazardous Wastes Generated During Operations**
SCR and CO catalysts	100.0	see note	20- 30 tons every 3-5 yrs
Spent Welding Materials	0.5	0.0	70 lbs/mo*15mo=1050lbs=0.525 tons
Oil Sorbent (Excluding Lube Oil Flushes)	0.5	0.2	Construction estimate includes rags and sorbent. 450 lb/yr=0.225 tons
Oily Rags	see above	0.1	195 lb/yr = 0.0975
Spent Lead Acid Batteries	0.1	0.1	25 lbs per battery standard used to determine total tonage. 4 batteries per year=100lbs=0.05tons
Spent Alkaline Batteries	0.1	0.0	8 per month*15mo=120lbs=0.06tons 40lbs/y=0.02
Flourescent, Mercury Vapor Lamps	0.0	0.0	65 lbs=0.0325 tons 40lbs/y=0.02
Subtotal - Hazardous Waste (tons)	**101.2**	**0.4**	
TOTAL - ALL WASTE (tons)	**684.7**	**5.5**	
TOTAL - ALL WASTE (cu yds)	**456.5**	**3.7**	**1.5 tons/ cubic yard conversion factor**