

CALIFORNIA ENERGY COMMISSION

1516 NINTH STREET

SACRAMENTO, CA 95814-5512



DOCKET 06-AFC-10C	
DATE	OCT 17 2008
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DATE: October 17, 2008

TO: Interested Parties

FROM: Chris Davis, Compliance Project Manager

SUBJECT: Starwood Power Plant Project (06-AFC-10C) Staff Assessment of Proposed Modifications to Drill a Well, Reposition Structures, Increase Stack Height and Add a Storm Water Retention Pond

On April 22, 2008, Starwood Power-Midway, LLC, filed a petition with the California Energy Commission to amend the Energy Commission Decision for the Starwood Power Plant Project. Staff prepared an assessment of this proposed change, and a copy is enclosed for your information and review.

The Starwood Power Plant project is a 120 MW peaking power plant located in western Fresno County. The project was certified by the Energy Commission on January 16, 2008, and is currently under construction.

The proposed modifications will allow Starwood Power-Midway, LLC, to comply with United States Environmental Protection Agency requirements, avoid potential project construction delays, and to improve site safety.

Energy Commission staff reviewed the petition and assessed the impacts of this proposal on environmental quality, public health and safety, and proposes the following revisions to existing conditions of certification for air quality, soil and water, waste, and water resources:

- AQ-SC11** Requires the well to be drilled when no other heavy construction equipment is in use at the site to avoid adding to cumulative air quality impacts.
- SOIL & WATER-5** Requires the project owner to shut down the reverse osmosis system and cease discharging wastewater into the evaporation pond if the project switches to using groundwater or the pond reaches maximum capacity.
- SOIL & WATER-6** Requires the well to produce water exclusively from the upper, semi-confined aquifer that produces very low-quality water.
- SOIL & WATER-7** Requires the well to be plugged and destroyed according to local and state standards when the power plant is permanently closed.
- SOIL & WATER-8** Requires the project owner to install metering devices to measure the volume of water supplied by the well to the project.

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WASTE-5 Requires the Waste Management Plan to include a section that details how wastewater discharged to the evaporation pond will be disposed of in the event that discharge to the pond is discontinued.

It is staff's opinion that, with the implementation of revised conditions, the project will remain in compliance with applicable laws, ordinances, regulations, and standards and that the proposed modifications will not result in a significant adverse direct or cumulative impact to the environment (Title 20, California Code of Regulations, Section 1769).

The amendment petition and staff's assessment has been posted on the Energy Commission's webpage at:

<http://www.energy.ca.gov/sitingcases/starwood/compliance/index.html>

The Energy Commission's Order (if approved) will also be posted on the same webpage. Energy Commission staff intends to recommend approval of the petition at the November 19, 2008, Business Meeting of the Energy Commission. If you have comments on this proposed modification, please submit them to me at the address below prior to November 7, 2008.

Chris Davis, Compliance Project Manager
California Energy Commission
1516 9th Street, MS-2000
Sacramento, CA 95814

Comments may be submitted by fax to (916) 654-3882, or by e-mail to CMDavis@energy.state.ca.us. If you have any questions, please contact me at (916) 654-4842.

Enclosure

Staff Assessment

**CALIFORNIA
ENERGY
COMMISSION**

STARWOOD POWER PLANT

**Amendment No.1 (06-AFC-10C)
Fresno County**



STAFF REPORT

**OCTOBER 2008
(06-AFC-10C)
CEC-700-2008-007**



Staff Assessment

CALIFORNIA
ENERGY
COMMISSION

STARWOOD POWER PLANT

Amendment No.1 (06-AFC-10C)
Fresno County



STAFF REPORT

OCTOBER 2008
(06-AFC-10C)
CIC-700-2008-007



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**STARWOOD POWER PLANT PROJECT
(06-AFC-10C)**

STAFF ASSESSMENT

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EXECUTIVE SUMMARY

Prepared by Chris Davis

INTRODUCTION

On April 22, 2008, Starwood Power-Midway, LLC, filed a petition with the California Energy Commission to amend the Commission Decision for the Starwood Power Project (SPP). The 120-megawatt peaking power plant was certified by the Energy Commission on January 16, 2008. Construction of the facility began in September 2008. The proposed simple-cycle power plant will be located in western Fresno County on Panoche Road, approximately 2 miles east of Interstate 5 (I-5).

The project owner has a power purchase agreement with Pacific Gas & Electric Company (PG&E) and is requesting a number of project changes, most of them minimal, which are intended to improve the site plan and give the project an on-site backup water source.

The purpose of the Energy Commission's review process in this Staff Assessment (SA) is to assess the direct, indirect and cumulative impacts of the amendment on the environment, public health and safety, and the electric transmission system. The SA presents the conclusions, recommendations, and the proposed changes and additions to conditions of certification that staff believes are necessary to mitigate or avoid potential significant adverse environmental impacts and to satisfy laws, ordinances, regulations and standards (LORS).

The review process included an evaluation of the consistency of the proposed changes with the Energy Commission's Decision and with current LORS. (*Title 20, California Code of Regulations, section 1769.*)

Energy Commission staff reviewed the petition to assess the impacts of this proposal on environmental quality and public health and safety, and determined that any changes to the Land Use, Traffic and Transportation, Public Health, Socioeconomics, Noise, Hazardous Materials, Worker Safety and Fire Protection, Biological Resources, Cultural Resources, Paleontological Resources, Geological Resources, Transmission Line Safety and Nuisance, Transmission System Design, Efficiency, Reliability, and Facility Design technical areas are minimal, requiring no further staff analysis.

The Air Quality staff determined that the proposal to increase stack height would decrease ground level impacts and the overall operating impacts of power plant emissions. Staff recommended one new condition of certification to reduce the temporary impacts of emissions from drilling the well. The analysis is discussed in detail in the **Air Quality** section.

The Soil and Water staff identified impacts associated with the proposed changes to the project, chiefly drilling a well for an onsite backup water source and disposing of the wastewater that would result from using the secondary water supply. The proposed changes and the expected impacts are discussed in detail in the **Soil & Water** section of this SA. To reduce the impacts to a less than significant level, staff proposes four

new conditions of certification and revisions to existing Soil and Water and Waste conditions of certification in the Starwood Final Decision.

The petition to amend the Starwood Power Plant Project is available on the Energy Commission website at:

<http://www.energy.ca.gov/sitingcases/starwood/compliance/index.html>.

The Energy Commission Order (if approved) will be posted on the same webpage.

Staff intends to make a recommendation on whether or not to approve the petition at an upcoming Business Meeting of the Energy Commission.

PROJECT LOCATION AND DESCRIPTION

The Energy Commission certified the construction and operation of the Starwood Power Plant Project on January 16, 2008. The project site is 5.6 acres in western Fresno County on Panoche Road, about two miles northeast of I-5, adjacent to the CalPeak and Wellhead peaker power plants, licensed by Fresno County, as well as the Panoche PG&E substation. The EIF Panoche Energy Center, licensed by the Energy Commission, is under construction immediately to the southwest of the PG&E substation.

The proposed Starwood facility will include two Pratt & Whitney FT8-3 SwiftPac Combustion Turbine Generator units – four turbines in all – in a simple cycle configuration. The gas turbines will be equipped with a water-injection system to reduce production of oxides of nitrogen (NOx), a selective catalytic reduction system to further reduce NOx emissions, and an oxidation catalyst to reduce carbon monoxide (CO) emissions.

A more complete description of the project, including a description of the proposed changes to the site plan, will be discussed in the **Project Description** section of this SA. (See also **Project Description Figures 1 and 2.**)

Through the petition to amend, the project owner is now proposing to:

- 1) Increase the height of the exhaust stacks;
- 2) Construct a new backup water supply well;
- 3) Add a second wastewater evaporation pond;
- 4) Eliminate one aqueous ammonia tank, and;
- 5) Reposition buildings within the site plan.

NECESSITY FOR THE PROPOSED MODIFICATIONS

The project owner requested the proposed modifications to comply with United States Environmental Protection Agency (USEPA) requirements, avoid potential project construction delays, and to improve site safety.

Specifically, the height of the exhaust stacks will be increased from 50 to 68 feet to meet USEPA requirements for test port locations.

The groundwater well would provide an on-site, backup supply of water to meet power plant operating needs. Starwood's primary water supply would continue to be a portion of the water collected by the backwash filter collection system at Baker Farms that was approved in the Starwood Final Commission Decision (FCD). The original source of backup supply water approved in the FCD was groundwater piped from a well on the site of the nearby CalPeak Panoche power plant. By requesting permission to drill its own well, Starwood would avoid what the project owner believes could be a lengthy California Public Utility Commission (CPUC) approval process to gain access to the CalPeak water supply. The CalPeak Panoche site is leased from PG&E. Changes to the CalPeak project require the approval of PG&E, the CPUC, and the landowner. If this amendment petition is approved by the Energy Commission, the well on the Starwood site would access the same semi-confined upper aquifer that supplies water to the CalPeak Panoche plant.

The proposed second wastewater evaporation pond would retain storm water. The original evaporation pond approved in the Starwood FCD would capture reject water from the reverse osmosis (RO) filtering system. The RO pond has been resized due to the expected quality of RO reject water. Baker Farms water contains far fewer dissolved solids than well water from the aquifer. The pond configuration was modified to avoid PG&E gas line easements located on the east side of the project site.

One aqueous ammonia tank has been eliminated to improve both site safety and the turnover of ammonia inventory.

PROJECT FUNDING AND OWNERSHIP

Starwood Power-Midway, LLC, will own and operate the project.

SUMMARY OF TECHNICAL AREAS

The **Executive Summary Table** on the next page shows all of the technical areas addressed in the SA and indicates where staff has recommended changes to the existing conditions of certification. Details of the proposed changes to conditions can be found under the appropriate headings in the SA.

Executive Summary Table
Summary of Technical Sections and Conditions of Certification

Technical Area	Changes to Conditions of Certification	Technical Area	Changes to Conditions of Certification
Biological Resources	No	Worker Safety/Fire Protection	No
Hazardous Materials Management	No	Facility Design	No
Noise and Vibration	No	Geology and Paleontology	No
Socioeconomic Resources	No	Power Plant Efficiency	No
Soil and Water Resources	Yes	Power Plant Reliability	No
Transmission Line Safety and Nuisance	No	Transmission System Design	No
Cultural Resources	No	Public health	No
Air Quality	Yes	Visual Resources	No
Waste Management	Yes	Traffic and Transportation	No

STAFF RECOMMENDATIONS AND CONCLUSIONS

Staff believes that approving the proposed changes to the existing conditions of certification will reduce the potential impacts of the project changes proposed in this petition to less than significant levels. As a result, commission staff is prepared to recommend approval of the proposed amendment.

REFERENCES

URS2006a Starwood Power-Midway, LLC/URS, Starwood Power Project Application for Certification (AFC), submitted to the California Energy Commission (CEC) on November 17, 2006.

URS2008a Starwood Power-Midway, LLC/URS Amendment No. 1, submitted to the CEC on April 22, 2008.

CEC 2008a Final Decision for the Starwood Power Project AFC, published on January 16, 2008.

INTRODUCTION

Prepared by Chris Davis

PURPOSE OF THIS REPORT

The Staff Assessment (SA) presents the California Energy Commission staff's independent analysis of the Starwood Power-Midway, LLC, Amendment No. 1 for the Starwood Power Project. This SA is a staff document. It is neither a Committee document nor a draft decision.

The SA describes the following:

- the existing environmental setting;
- the proposed project changes;
- whether the facilities can be constructed and operated safely and reliably in accordance with applicable laws, ordinances, regulations and standards (LORS);
- the environmental consequences of the project including potential public health and safety impacts;
- cumulative analysis of the potential impacts of the project, along with potential impacts from other existing and known planned developments;
- mitigation measures proposed by the project owner, staff and interested agencies that may lessen or eliminate potential impacts; and
- the proposed conditions of certification under which the staff recommends the project be constructed and operated.

The technical area analyses contained in this SA are based upon information from the:

- 1) Energy Commission Decision;
- 2) petition to amend;
- 3) responses to data requests;
- 4) supplementary information from local and state agencies and interested individuals; and
- 5) independent field studies and research.

The analyses for the two affected technical areas include discussions of proposed changes and additions to the conditions of certification. Each proposed condition of certification is followed by a proposed means of "verification." The verification is not part of the proposed condition. It is the Energy Commission staff's method of ensuring post-certification compliance with adopted requirements.

The Energy Commission staff's analyses were prepared in accordance with Public Resources Code section 25500 et seq. and Title 20, California Code of Regulation section 1701 et seq. (specifically section 1769 pertaining to amendments), and the California Environmental Quality Act (CEQA) (Pub. Resources Code, §21000 et seq.).

Section 1769(a)(3) authorizes the Commission's approval of the amendment petition if it can make the following findings:

- (A) The findings specified in section 1755 (c) [whether all significant environmental impacts can be mitigated or avoided], and (d) [if all significant impacts cannot be avoided, overriding considerations justify approving the amendment] if applicable;
- (B) That the project would remain in compliance with all applicable laws, ordinances, regulations and standards, subject to the provisions of Public Resources Code section 25525.
- (C) The change will be beneficial to the public, project owner, or intervenors; and
- (D) There has been a substantial change in circumstances since the Commission certification justifying the change or that the change is based on information that was not available to the parties prior to Commission certification.

The SA contains an Executive Summary, Introduction, Project Description, and the environmental, engineering, and public health and safety analysis of the proposed amendment. The technical area analyses included in this SA are air quality, soil and water resources and waste.

Each of the technical area assessments includes a discussion of:

- LORS;
- the regional and site specific setting;
- project-specific cumulative impacts;
- mitigation measures;
- conclusions and recommendations; and
- conditions of certification for both construction and operation (if applicable).

Staff has added new conditions of certification. Implementing the modified and existing conditions, along with mitigation measures, will ensure that the proposed site changes result in no significant environmental impacts. Where conditions of certification have changed from the original Decision, staff displays the revised information in underline (new text) and ~~strikeout~~ (deleted text).

ENERGY COMMISSION AMENDMENT PROCESS

The California Energy Commission has the exclusive authority to certify the construction and operation of thermal electric power plants 50 megawatts (MW) or larger. The Energy Commission certification is in lieu of any permit required by state, regional, or local agencies, and federal agencies to the extent permitted by federal law (Pub. Resources Code, §25500). The Energy Commission must review Petitions to Amend the Decision to assess potential environmental impacts, public health and safety impacts, potential measures to mitigate those impacts (Pub. Resources Code, §25519), and compliance with applicable governmental laws and standards (Pub. Resources Code, §25523 (d)).

The Energy Commission's siting regulations require staff to independently review the Petition to Amend and assess whether the list of environmental impacts it contains is complete, and whether additional or more effective mitigation measures are necessary, feasible and available (California Code of Regulations, Title 20 §§1742 and 1742.5(a)). Staff's independent review is presented in this report (California Code of Regulations Title 20, §1742.5).

In addition, staff must assess the completeness and adequacy of the health and safety standards, and the reliability of power plant operations (California Code of Regulations Title 20 §1743(b)). Staff is required to coordinate with other agencies to ensure that applicable LORS are met (California Code of Regulations Title 20, §1744(b)).

Staff conducts its environmental analysis in accordance with the requirements of CEQA. An Environmental Impact Report is not required because the Energy Commission's site-certification and amendment program has been certified by the Resources Agency (Public Resources Code, §21180.5 and California Code of Regulations, title 14, §15251 (k)). The Energy Commission acts in the role of the CEQA lead agency and is subject to all other applicable portions of CEQA.

Staff uses the SA to resolve issues, if any, between the parties. Based on the discussions between staff and applicant and any written comments, staff will refine its analysis, correct errors and finalize conditions of certification to reflect agreement between the parties. Any revised analyses, along with responses to written comments on the SA, will be published in an addendum.

Following the publishing of the Addendum, a proposed Order will be presented to the Commissioners at a regularly scheduled Energy Commission Business Meeting. At that time, staff will present its recommendation on whether or not to approve the proposed amendment. Members of the public will be given the opportunity to ask questions and provide comments regarding the staff recommendation. The full Energy Commission will consider the matter, then take a vote on whether or not to approve staff's recommended written Order with any changes it may deem appropriate.

Energy Commission staff has made a substantial effort to notify interested parties, encourage public participation and notify property owners within 1000 feet of the

Starwood Power Plant project (SPP) and within 500 feet of the linear facilities (electrical and gas transmission and water inflow lines). The Energy Commission staff has:

- Mailed a Notice of Receipt on May 6, 2008 to interested parties, local libraries, responsible agencies and to interested individuals on the SPP Compliance Mailing List.
- Published the Staff Assessment in October 2008.

AGENCY COORDINATION

As noted above, the Energy Commission approval is in lieu of any permit required by state, regional, or local agencies, and federal agencies to the extent permitted by federal law (Pub. Resources Code, §25500). However, the Commission typically seeks comments from, and works closely with, other regulatory agencies that administer LORS that may be applicable to proposed projects or would have had permitting authority except for the Energy Commission's exclusive jurisdiction to permit thermal power plants of 50 megawatts or larger. For this amendment, Energy Commission staff worked with the Central Valley Regional Water Quality Control Board and the Westlands Water District.

PROJECT DESCRIPTION

Prepared by Chris Davis

INTRODUCTION

The Starwood Power Plant project (SPP) was certified by the California Energy Commission (CEC) on January 16, 2008. On April 22, 2008, Starwood Power-Midway, LLC, filed a petition with the CEC to modify the SPP Final Commission Decision (FCD). Construction of the 120-megawatt (MW) project is expected to begin in September 2008. The facility will be located in western Fresno County.

The petition contains several modifications; among the most notable, drilling a new well to serve as a backup source of water for the project, increasing the height of the two stacks, eliminating an aqueous ammonia storage tank and adding a second evaporation pond.

PROJECT LOCATION

The Energy Commission certified the SPP to be built on a 5.6-acre parcel of land approximately 2 miles northeast of Interstate 5 (I-5) at 43627 West Panoche Road, approximately 15 miles southwest of the city of Mendota. The SPP site is leased by Starwood Power-Midway, LLC, and is adjacent to an existing five-unit residence vacated prior to the start of construction as well as the 49 megawatt (MW) CalPeak Panoche peaking power plant. Nearby is the 49 MW Wellhead peaking power plant; the PG&E Panoche Substation and the 400 MW EIF Panoche Energy Center, which is under construction. See **PROJECT DESCRIPTION Figures 1 and 2** for the local setting of the location.

PROJECT FACILITIES

The project is designed to operate as a peaking power plant with a nominal 120-megawatt output to be used approximately 400 hours a year, with a maximum use of 4,000 hours per year. Emissions from the proposed SPP would be controlled using water injection to reduce production of nitrous oxides (NO_x), a selective catalytic reduction system with 19 percent aqueous ammonia to further reduce NO_x emissions, and an oxidation catalyst to reduce the emission of carbon monoxide and volatile organic compounds.

Auxiliary equipment will include a natural gas delivery system, inlet air foggers with evaporative coolers, a step-up transformer, aqueous ammonia tank, water treatment system, water storage tanks, a wastewater system, a storm water drainage system, two lined evaporation ponds, and control enclosures.

The SPP will connect to the PG&E electrical transmission system via a tie-line that connects the existing CalPeak Panoche peaker plant to the adjacent Panoche substation.

The SPP, as amended, would include two Pratt & Whitney FT8-3 SwiftPac natural gas-fired combustion turbine generators, containing a total of four turbines in all.

PROPOSED CHANGES TO TURBINE-RELATED EQUIPMENT

1. Each SwiftPac would have a 68 foot tall exhaust stack. The increased height of the stacks would comply with United States Environmental Protection Agency (USEPA) requirements for test port locations.
2. The selective catalytic reduction exhaust system ducting flow path is wider by about four feet and shorter by about six feet to optimize exhaust flow for the FT8-3 engines.
3. One of the two aqueous ammonia tanks has been eliminated and the remaining tank has been shifted north.
4. The aqueous ammonia loading area has been reduced to accommodate one tank.

AIR QUALITY EMISSIONS

The amendment proposes no increase in air emissions, except the temporary emissions from drilling a well. The proposed increase in stack height from 50 to 68 feet will reduce ground level impacts and result in no increase in operational impacts, as discussed in the air quality section of this SA.

WATER AND WASTEWATER DISPOSAL

The most significant changes to the SPP proposed in Amendment No. 1 would be the drilling of a groundwater well to provide a backup water supply for project operations. The retention pond approved in the SPP Final Decision would be divided into two ponds. Changes would be required for the operation of the Reverse Osmosis (RO) retention pond that would be triggered by the use of the backup water supply as discussed in the Waste, Soil and Water section of this SA.

The key facility modifications from the Starwood Energy Commission Final Decision project description include:

1. A groundwater well has been added to provide an on-site backup water supply. The groundwater well will be used when the primary water-delivery system is insufficient to meet SPP operating needs. The SPP is limited to using not more than 14-acre-feet per year of the primary water supply for no more than seven years. The source of the primary water supply is a collection system for filter backwash water from the adjacent Baker Farms. The Baker Farms supply would be enough water for the SPP to operate up to 400 hours per year. However, water consumption could be as high as 136 acre-feet per year if the SPP operated at the permitted maximum of 4,000 hours per year. Any water required for plant operations beyond the 14 acre-feet per year supplied by Baker Farms would come from the groundwater well.

2. The retention pond has been separated into two ponds, one for reverse osmosis (RO) wastewater and one to hold storm water runoff. The location of the reconfigured ponds is immediately adjacent to the original pond location. The location was modified to avoid PG&E gas lines easements located on the east side of the project site. The pond sizes have been adjusted as illustrated by the following table:

POND SIZE	
Pond	Footprint Size (Sq. Ft)
Midway 2006 AFC	25,000
Reconfigured RO Pond	29,600
Reconfigured Storm water Pond	8,860

The revised storm water pond depth is six feet. Total volume is 37,000 square feet. The bottom surface area is 3,540 square feet. The top surface area is 8,860 square feet. The revised RO pond depth is 6 feet. The total volume is 133,000 square feet. The top surface area is 29,600 square feet. The bottom surface area is 14,500 square feet. The reconfigured ponds will have a combined volume of 170,000 cubic feet (3.9 acre feet).

3. A RO forwarding pump skid has been added as a separate piece of equipment. The added pump will take water from the RO tanks and supply it to the mobile water demineralizer. The concrete pad for the RO water treatment package has been increased in size to 10 feet by 48 feet, though that could be adjusted during the detailed design phase.

SITE PLAN

The site plan (**see Project Description Figure 1**) illustrates numerous minor changes to the layout of the proposed generation facility. The size and boundaries of the 5.6-acre project site have not changed in this amendment petition from those approved in the Final Commission Decision for Starwood, but many elements within the site have been reconfigured.

TURBINES AND ASSOCIATED EQUIPMENT

- Combustion turbine generator (CTG) Unit 1 has been moved approximately 19 feet west. Both CTG units have been moved 5 feet south. This will increase the space between CTG units for maintenance and allow the installation of underground electrical duct banks.
- The gas turbine drain collection sump has been shifted east and reduced in size to avoid the underground duct banks.
- To avoid the underground duct banks and a 15kV trench, the Balance of Plant (BOP) control enclosure (controls for things other than the combustion turbines

and other core equipment) has been shifted north approximately 17 feet. The air compressor skid has been rotated 90 degrees to avoid underground duct banks and improve the routing of piping to interfaces on the skid.

- The CTG Unit 1 exhaust stack has been shifted west approximately 19 feet to match the relocation of CTG Unit 1. To coincide with the relocation of the CTG units, both Unit 1 and 2 exhaust stacks have been shifted south approximately 16 feet. The exhaust silencer size has been increased to ensure proper acoustic performance. The stacks will be insulated and lined to avoid painting and safety issues.
- The continuous emission monitoring system (CEMS) enclosures were moved to remain adjacent to the exhaust stacks to limit the length of sampling tubing and ensure proper sampling rates. The CEMS for Unit 1 was moved south approximately 24 feet and west 15 feet. The Unit 2 CEMS moved south approximately 24 feet.
- The CTG holding tank has been shifted 34 feet to provide maintenance access to GT #2A, which is a designated area on the east side of the CTG Unit 1, between Unit 1 and the CTG drain holding tanks, to allow adequate space for a crane for turbine removal.
- The 480 volt Unit substation has been shifted north and reconfigured to include the auxiliary transformers and switchgears for power distribution.

WATER AND WASTEWATER FACILITIES

- To improve the piping arrangement, the order of the demineralized water storage tank and RO storage tank has been changed. The demineralized water forwarding pump skid has been shifted east and its size reduced. The gas fuel separator skid has been rotated 90 degrees and the oil/water separator has been relocated northeast of CTG Unit 2.
- The mobile water treatment trailer pad has been reduced in size and shifted west approximately 50 feet due to the routing of the access road and pond reconfiguration.

OTHER CHANGES TO THE PROJECT SITE

- The access road was modified to account for the pond reconfigurations and to avoid a high voltage transmission pole located in the middle of the site. A gravel road was also added to the south side of the units for a secondary path of egress from the site to address permit requirements.
- The Construction lay down area has been increased from 11,050 square feet to 20,000 square feet within the revised site plan.
- The parking area length has been reduced to 70 feet from 110 feet. The parking area has also been repositioned. It is now located south of the construction laydown area and north of the 480 volt unit substation.

CONSTRUCTION AND OPERATION

Starwood Power-Midway, LLC, began construction of the project on September 23, 2008. Construction is expected to take approximately eight months. Commercial operation of the SPP is expected to begin May 1, 2009.

REFERENCES

URS 2006a Starwood Power-Midway, LLC/URS, Starwood Power Project Application for Certification (AFC), submitted to the California Energy Commission November 17, 2006.

California Energy Commission (CEC) 2008a Final Decision for the Starwood Power Project AFC, published January 16, 2008.

URS 2007a Starwood Power Project Final Staff Assessment (FSA) published October 10, 2007.

URS 2008a Starwood Power-Midway, LLC, Peaking Project Amendment No. 1, submitted to the California Energy Commission on April 22, 2008.

CEC 2008b Report of Conversation with Shelton Gray, Central Valley Water Quality Control Board, by Chris Davis, Energy Commission. July 14, 2008.

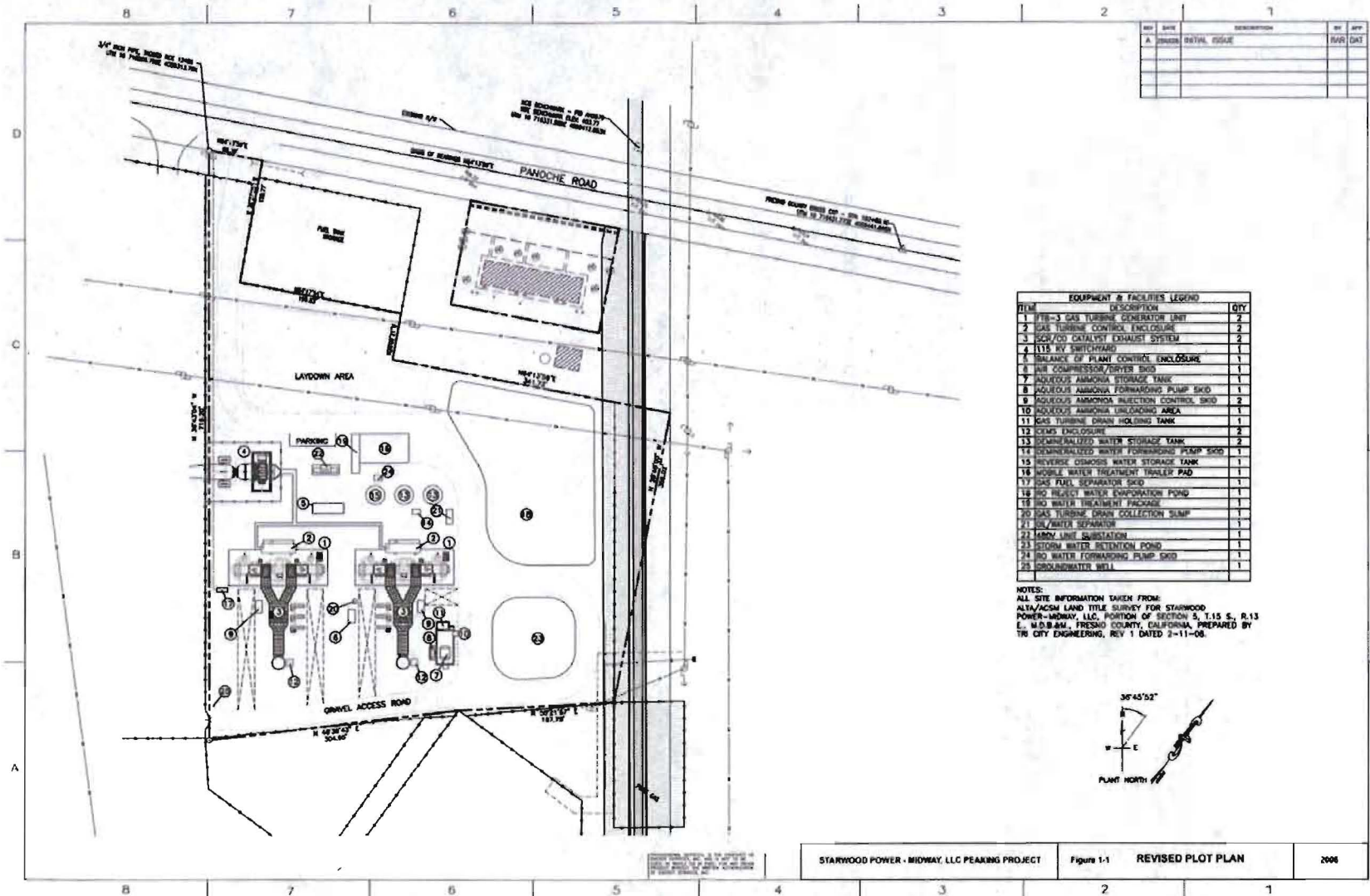
CEC 2008c Report of Conversation with Russ Freeman, Supervisor of Resources, Westlands Water District, by Chris Davis, Energy Commission. August 21, 2008.

PROJECT DESCRIPTION – FIGURE 1 Starwood Power Project Amendment 1

PROJECT DESCRIPTION

3-6

October 2008



California Energy Commission, Energy Facilities Siting Division, September 2008
Source: SPP Amendment # 1

PROJECT DESCRIPTION – FIGURE 2
Starwood Power Project Amendment 1



Source: SPP Amendment 1

AIR QUALITY

Testimony of William Walters, P.E.

INTRODUCTION

The proposed project amendment has the potential to affect both construction and operation impacts. The construction impacts could be affected due to the proposed new well drilling construction activities. The operation impacts would be affected by the proposed change in facility configuration and stack height.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS) COMPLIANCE

Since the project was certified in December 2007, there have been no changes to applicable LORS except changes to the federal and state ambient air quality standards. **AIR QUALITY Table 1** describes these changes and the projects compliance with these revised LORS.

AIR QUALITY Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

<u>Applicable Law</u>	<u>Description</u>
Federal	
40 CFR Part 50	The Federal 8-hour ozone standard was reduced from 0.08 parts per million (ppm) to 0.075 ppm. The requirements related to this new standard will take several years to implement. The project complies with current SJVAPCD New Source Review regulations and will mitigate its operating NOx and VOC emissions using Emission Reduction Credits (ERCs) at a minimum ratio of 1:1. Therefore, this project will not impact compliance with this new standard.
State	
17 CCR § 70200	The state 1-hour nitrogen dioxide (NO2) standard was revised from 0.25 ppm to 0.18 ppm, and a new annual standard of 0.03 ppm was approved. The amended project's construction activities will not cause an increase to any of the previously analyzed project construction impacts nor cause any new exceedances of these revised standards. The amended project layout and stack height would decrease the previously analyzed project operation impacts.
Local	
SJVAPCD Rules	There have been no changes to applicable SJVAPCD rules and regulations since the project was originally certified.

There have been no changes to LORS that would impact the original BACT or offset mitigation findings of the project. The proposed increase in stack height is necessary for compliance with Federal stack sampling regulations (40 CFR Part 60).

ANALYSIS

Staff has reviewed the petition for potential environmental effects and consistency with applicable LORS. Based on this review, staff determined that most of the revisions and changes to the project elements as outlined in the amendment request (URS 2008a) will not significantly impact air quality. The following revision/changes/additions/subtractions are not expected to impact air quality impacts:

- The minor equipment additions and subtractions which do not substantially alter construction requirements and do not alter the operating emissions.
- The storm water and RO pond reconfigurations or other associated site reconfigurations needed based on the change in size for these ponds. This revision would not significantly alter the construction requirements and associated construction emissions for the project.
- The increase in the construction lay down area size. This revision would not significantly alter the construction emissions for the project.

Those revisions that would have the potential to impact air quality impacts are as follows:

- The additional well drilling activities during construction.
- The change in the equipment locations and stack height that would impact operating emissions dispersion.

CONSTRUCTION IMPACTS

The construction emissions for the new well drilling activities and the original onsite construction emissions are provided below in **AIR QUALITY Table 2**.

AIR QUALITY Table 2
Maximum Mitigated Daily and Annual Onsite Construction Emissions

Activity	NOx	CO	VOC	SOx	PM10	PM2.5
Original Project Emissions						
Onsite Maximum Daily Emissions (lbs/day)	128.4	46.2	15.6	0.1	11.2	6.7
Total Project Emissions (tons)	12.79	13.41	2.35	0.02	5.65	1.42
Well Drilling Emissions						
Maximum Daily Emissions (lbs/day)	40.69	10.90	3.41	0.05	2.73	1.52
Total Well Drilling Emissions (tons)	0.10	0.03	0.01	0.00	0.01	0.00

Source: CEC 2007 and URS 2008b.

Well drilling is proposed to be completed in a five day period. As can be seen in Table 2, the total project and well drilling total emissions would not create a substantial increase in emissions over the long-term (less than one percent increase for all pollutants). However, over the short-term these emissions, if added to other project construction activities, could increase the maximum hourly and daily emissions of NOx and PM10/PM2.5 substantially (more than a 30 percent increase for NOx and more than a 20 percent increase for PM10/PM2.5). In order to mitigate this potential increase in impacts the project owner has agreed to complete the well drilling operations separately

from other major construction activities (CEC 2008). A new condition of certification (**AQ-SC11**) has been recommended to formalize this agreement and ensure that the project's construction impacts will not significantly increase from those originally analyzed and approved.

OPERATIONS IMPACTS

There are no proposed revisions to the project equipment or operation that would impact the operating emissions. The proposed minor movement of stacks and other project equipment could cause changes in the stack downwash that could cause a minor increase in maximum ground level impacts. However, the proposed increase in stack height from 50 feet to 68 feet will mitigate that potential and would cause a reduction in the maximum ground level impacts. Additionally, the revised stack height is being proposed to comply with the requirements of 40 CFR Part 60 stack sampling requirements. Therefore, staff has determined that these revisions will not increase operating impacts and are necessary for the project to comply with LORS.

CUMULATIVE IMPACTS

The requested additional construction well drilling construction activity would not significantly increase overall project construction emissions, would create lower daily emissions than other Starwood construction activities, and based on recommended Condition of Certification AQ-SC11 would not overlap other Starwood project construction activities. Therefore, the well drilling construction would not change the finding of no significant cumulative impacts previously determined for this project.

The requested change in the site layout, in particular the increase in the stack height for the gas turbines, would result in a reduction in operating air quality impacts; therefore, the changes in operation resulting from this amendment would not change the finding of no significant cumulative impacts previously determined for this project.

CONCLUSIONS AND RECOMMENDATIONS

The addition of the well drilling construction activities would have the potential to increase localized short-term impacts. To mitigate this potential impact, the project owner has agreed to a condition of certification that requires the well drilling construction activities to be performed only on days when other major construction activities are not occurring. This condition, recommended by staff below as **AQ-SC11**, will ensure that the project's construction impacts will not increase from those originally evaluated.

The revised site layout including the minor lateral movement of the stacks and increase in stack height would decrease the project's maximum operating impacts and is required for LORS compliance. No additional mitigation for this requested change is necessary.

PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION

Staff has proposed modifications to the Air Quality conditions of certification as shown below.

AQ-SC11 The project owner shall not conduct the well drilling construction activities on the same days as other onsite construction activities that use any large off-road equipment (100 hp or larger).

Verification: The project owner shall include in the applicable MCR the actual schedule for the well drilling activities to confirm that the well drilling construction was not performed on the same days as other onsite construction activities.

REFERENCES

California Energy Commission (CEC) 2007. Final Staff Assessment Starwood Power Plant (06-AFC-10). October 2007.

CEC 2008. Report of Conversation of Meeting with Project Owner and Energy Commission Staff by Chris Davis Energy Commission. May 29, 2008.

URS 2008a. Starwood Power-Midway, LLC Peaking Project (06-AFC-10C) Amendment No. 1. Submitted April 2008.

URS 2008b. Well Drilling Emissions Spreadsheet. Received May 29, 2008.

SOIL AND WATER RESOURCES AND WASTE MANAGEMENT

Testimony of Cheryl Closson, P.G.

INTRODUCTION

The proposed amendments to the existing Starwood Power Project (SPP) would not result in any significant adverse environmental impacts, and would comply with applicable laws, ordinances, regulations, and standards (LORS), if the project complies with existing conditions of certification and staff's proposed changes and additions to the existing conditions of certification are implemented.

LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS) COMPLIANCE

The LORS cited in the original project's Final Staff Assessment (FSA) (CEC 2007a) apply to the activities to be undertaken under the proposed amendment and are therefore incorporated here by reference. Staff also adds the following regulation to the applicable LORS.

Waste, Soil and Water Amendment Table 1
Laws, Ordinances, Regulations, and Standards (LORS)

<u>Applicable Regulation</u>	<u>Description</u>
State	
Title 23, California Code of Regulations (CCR), Division 3, section 640 et seq. — State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCBs)	These regulations implement provisions of the California Water Code and the Porter-Cologne Water Quality Control Act. Among other things, the regulations address implementation of the federal Clean Water Act, discharges to land, and waste discharge requirements/NPDES permits.

ANALYSIS

In assessing the impacts of the proposed amendment elements, staff consulted the project's original Application for Certification (AFC), FSA (CEC 2007a) and the Final Commission Decision (CEC 2008a), as well as information provided by the project owner in support of the proposed amendments. Staff also considered the following information that was submitted by the project owner after project approval for compliance with specific conditions of certification.

- A letter from Westlands Water District regarding use of the backwash water from Baker Farms (WWD 2008a).

This letter was submitted to the Commission as part of the original project review and was also submitted by URS on behalf of the project for compliance with the requirements of Condition of Certification **WATER RESOURCES-2**. This letter specifically identifies six (6) conditions (listed below) under which Westlands Water District will allow Baker Farms to provide backwash water to the SPP for industrial use.

1. The District makes no commitment to provide water to the project if no water is derived from the proposed filter backwash collection system.
2. The project's use of backwash water will be capped at 14 acre-feet per year for no more than 7 years, regardless of any mitigating circumstance.
3. The collection of backwash water must be done in a manner that minimizes percolation, evaporation, or any other loss.
4. The water will be metered at the point of collection and each point of use; the District anticipates one point of collection (pond) and two points of use (project and Baker Farms). Starwood will submit monthly meter readings of all three meters to the District.
5. The balance of the backwash water remaining after the project's use will be used by Baker Farms for agricultural purposes only.
6. The District is not setting a precedent that filter backwash water may be used for future power plants or other municipal and industrial purposes.

The letter further states that if the above conditions cannot be met, then the District requests that the Commission require Starwood Energy to use water from the semi-confined aquifer for plant operations.

- A copy of the Report of Waste Discharge (ROWD), and associated correspondence, to the RWQCB for the RO wastewater evaporation/percolation pond (URS 2008b). This document was submitted by URS on behalf of the project in compliance with the requirements of Condition of Certification **SOIL & WATER-4**.

Page 1 of the ROWD provides the following statement about use of the evaporation pond if the project uses groundwater from the upper semi-confined aquifer for plant operation:

"It should be noted that the CEC Final Commission Decision states that the RO wastewater pond will be an evaporation pond lined with a polyethylene liner. This statement appears because the project originally intended to use local groundwater from the upper, semiconfined hydrogeologic zone as the primary water supply. In that case, the RO wastewater would have been of much worse quality than the underlying groundwater, necessitating discharge to a lined evaporation pond. If for some reason the project needs to use local groundwater from the semiconfined zone for water supply (as allowed by the CEC Final

Commission Decision), either the RO system will not be used (i.e., the water will proceed directly to demineralizers without being first treated in the RO system), or the RO wastewater will be disposed of elsewhere than the on-site evaporation/percolation pond (e.g., conveyed to an off-site disposal or recycling facility) – in neither case would RO wastewater be discharged to the evaporation/percolation pond.”

In addition to the ROWD, a June 5, 2008 letter from URS to the RWQCB (URS 2008c) provides additional information on the sources of the wastewater to be discharged into the pond. These wastewaters will come from the following five sources: RO concentrate; RO multimedia-filter backwash/rinse water; demineralizer unit rinse water; drainage from the aboveground storage tanks (ASTs) that contain water that has already been treated by the demineralizer unit and/or RO system; and overflow water from the treated-water ASTs (not expected to be a routine discharge).

Note: The ROWD only addresses the RO system and associated wastewater generated by the facility. Storm water will be managed separately from wastewater during construction and operation of the facility and will not be discharged to the evaporation pond.

CONSTRUCTION IMPACTS

Staff has reviewed the proposed project amendments for potential environmental impacts and consistency with applicable LORS. Based on this review, staff has determined that the 16 minor equipment changes and relocations identified on pages 2-3 and 2-4 of the amendment request (URS 2008a) would not significantly impact soil and water resources or project waste management because they would not substantially alter construction requirements, do not alter water use or waste discharge aspects of the project, and are sufficiently mitigated through existing conditions of certification.

The remaining revisions have the potential to impact soil, water, or waste management and they are discussed more fully below.

Onsite Water Supply Well

As noted previously, the SPP was originally approved to use groundwater from the semi-confined aquifer to be supplied by an existing well at the adjacent CalPeak facility. However, SPP use of water from the CalPeak well would require modification of the existing PG&E and California Public Utilities Commission (CPUC) approval of the permit for the CalPeak facility. Consequently, in order to avoid potential project delays that could result from a lengthy CPUC modification process and to also provide an SPP-controlled onsite backup water supply, the project owner proposes to instead construct and operate on a contingency basis a new groundwater supply well on the project site, which would draw from the semi-confined aquifer. At this time, there are eight monitoring wells and only one water supply well producing water from the semi-confined aquifer within one-half mile of the SPP site (URS 2008d).

The impacts associated with project use of water from the upper semi-confined aquifer were considered in the FSA and the Energy Commission's final decision. Both documents found that "in the area of the proposed project, the semi-confined aquifer is generally not used because the water quality is too poor for most agricultural and domestic uses. The existing CalPeak Power Peaking Power Plant (occasional use) is the only other potential user of the semi-confined aquifer near the SPP...Given the limited use of the semi-confined aquifer and the distance between the project site and the nearby towns, project use of the semi-confined aquifer would have a negligible effect on municipal wells." (CEC 2008b, page 215.) In addition, both the FSA and final decision found that groundwater pumping and potential well interference impacts [on nearby wells] from the SPP's water demands (approximately 138 gpm) would not be significant. (CEC 2008b)

Given the prior staff assessments, and the Energy Commission decision allowing project use of water from the semi-confined aquifer, staff finds that revising the source of well water from the CalPeak well to a new onsite water well to be used as a back-up supply would not have a significant impact on water resources. Therefore staff concurs with the project owner's request to amend Condition of Certification **WATER RESOURCES-1** to change the source of groundwater from the CalPeak well to an onsite groundwater supply well.

Well Construction

The new well proposed under the project amendment would be an 8" diameter well drilled to approximately 400' within the upper semi-confined aquifer. The well would be located in the southwest corner of the project site and would be fitted with a 200 gallon per minute (gpm) capacity pump. [The project is currently approved to use groundwater from the semi-confined aquifer. However, project use of the higher quality groundwater from the confined aquifer below the semi-confined aquifer is not allowed.]

Construction of the proposed onsite well could potentially impact surface and groundwater resources in the area. However, well drilling, testing, and production would be subject to the Fresno County Ordinance Code, Chapter 14.08 requirements for water well construction as well as the well construction standards set forth in the California Well Standards, Bulletins 74-81 and 74-90. Fresno County implements both the state and local requirements, and also issues permits for the construction of new water wells within the unincorporated areas of the county. These state and local laws and standards provide well construction, sealing, screening, and testing/disinfecting requirements to prevent contamination of underground sources of drinking water, and also provide for testing, treatment, and use criteria for well supplied water. In addition, well drilling activities would also be subject to state regulations for discharges of hazardous wastes to land (23 CCR 2510 et seq.) to prevent surface and groundwater contamination from drilling wastes.

The above well construction and waste discharge LORS represent a comprehensive regulatory system designed to protect human health and the environment from impacts associated with the construction and completion of water supply wells. Absent any unusual circumstances, staff finds that project compliance with the state and local water

well standards would be sufficient to ensure that no significant impacts would occur as a result of construction of the proposed well. To help ensure that the project complies with state and local well construction requirements and produces water only from the semi-confined aquifer (per the existing project approvals), staff recommends adoption of Conditions of Certification **SOIL & WATER-6** and **SOIL & WATER-7**. These conditions would require the project owner to comply with all applicable water well construction LORS; comply with well construction and operation standards and requirements established for the County of Fresno water well permit program; demonstrate that the well has been completed in, and produces water only from, the semi-confined aquifer; and comply with Title 23, CCR requirements for discharges of hazardous wastes to land.

In addition, both Chapter 14.08 of the Fresno County Ordinance Code and the California Well Standards (Bulletins 74-81 and 74-90) also have specific requirements for the proper destruction of water wells to further protect water resources from contamination associated with abandoned or improperly plugged water wells. To help ensure project compliance with these well destruction LORS, staff recommends adoption of Condition of Certification **SOIL & WATER-8** requiring the project owner to properly plug and destroy the proposed onsite well when the facility is permanently closed.

Finally, to help ensure project compliance with the water use limitations and monitoring requirements established in Condition of Certification **WATER RESOURCES-1**, staff proposes Condition of Certification **SOIL & WATER-9**. This condition of certification would require the project owner to install and maintain metering devices as part of the onsite groundwater well supply and distribution system, provide documentation of the operation and maintenance of the system, and report on water use in accordance with Condition of Certification **WATER RESOURCES-1**.

Reconfiguration of Road, Ponds, and Construction Laydown and Parking Areas

The proposed changes to the location and sizing of the access road, storm water and RO wastewater evaporation ponds, and the construction laydown and parking areas have the potential to cause impacts during project construction by increasing the area disturbed by equipment and exposed to erosion, or by impacting drainage patterns and storm water management at the site. However, staff notes that federal, State, and local LORS and conditions of certification addressing erosion control and storm water management are already in place for the SPP. The LORS are designed to protect human health and the environment from impacts associated with project construction and grading activities. Conditions of Certification **SOIL & WATER-1 and 2** further reinforce the LORS by requiring project compliance with the general National Pollutant Discharge Elimination System (NPDES) construction storm water permit, as well as requiring development of a site-specific drainage, erosion, and sediment control plan (DESCP) that complies with local grading requirements. In addition, Condition of Certification **SOIL & WATER-4** requires in part that the RO wastewater evaporation pond be constructed in accordance with RWQCB waste discharge requirements. Staff believes that the proposed reconfigurations and changes in location and sizing of the

project features would be adequately addressed in the erosion control, storm water management, and waste discharge requirements already in place for the project. Therefore, staff finds that any construction impacts associated with the proposed changes would be sufficiently mitigated to a level of insignificance by application of the existing LORS and conditions of certification.

OPERATION IMPACTS

Well Production

As noted in the Construction Impacts section, production from the proposed onsite water supply well is not expected to have any significant adverse impacts on groundwater supplies or cause significant interference with other water wells in the area.

Wastewater and Use of the Onsite Evaporation Pond

The SPP was certified to use either groundwater from the semi-confined aquifer and/or Baker Farms backwash water for plant industrial uses. The semi-confined aquifer is the lowest quality water reasonably available to the project, with a total dissolved solids (TDS) level of 3,400 milligrams per liter (mg/L). RO wastewater generated from use of this groundwater would have a TDS of 13,600 mg/L and would also have very high concentrations of other constituents (including nitrate, selenium, arsenic, magnesium, chloride, and sodium). Consequently, onsite disposal of RO wastewater generated from project use of groundwater would likely require a lined evaporation pond and offsite disposal of evaporate material (CEC 2007a), if the RWQCB allowed the onsite discharge. If the RWQCB did not allow onsite discharge of the high TDS wastewater, then the wastewater would have to be trucked offsite for disposal. Alternatively, the Baker Farms backwash water has a TDS concentration of around 170-310 mg/L. RO wastewater generated from this source would have a TDS of approximately 1,242 mg/L (assuming raw water TDS is 381mg/L) (CEC 2007a and URS 2008b). Because the TDS of this wastewater would be significantly lower than the groundwater underlying the site, the RWQCB could potentially allow onsite disposal of this wastewater to an unlined evaporation pond.

The project owner currently proposes to discharge wastewater from the RO system to an unlined evaporation pond based on the assumption that only Baker Farms backwash water will be used for project operation. Staff notes that the project owner has submitted a ROWD to the RWQCB stating that the unlined evaporation pond would not be used if the project uses groundwater. While use of an unlined evaporation pond would be consistent with Condition of Certification **SOIL & WATER-4**, if the project receives approved WDRs and complies with any requirements established by the RWQCB for such use, staff is concerned about management of RO wastewaters in the event that groundwater is used by the project.

The project is currently approved to operate up to a maximum of 4,000 hours per year, which would require approximately 136 acre-feet of water for project operation. The existing WWD conditions for supply of Baker Farms backwash water limit annual water supply to the project to 14 acre-feet per year for a limit of seven (7) years (WWD

2008a). While the potential 14 acre-feet of water from Baker Farms would likely be sufficient if the project only operates at the 400 hours expected average annual operation, it would not be enough if project operation exceeds 400 hours, and will not be available at all after the seven year backwash water allowance expires. Given the WWD limits on the backwash water supply and the potential for plant operation in excess of the average 400 hours, staff believes that the project will likely need to use groundwater at some point during plant operation.

Because of staff's concern about the project's potential use of groundwater, staff asked the project owner for more information on how wastewater would be managed if groundwater is used. The project owner provided the following information:

"Upon such time that use of the secondary water supply¹ is needed, the RO unit would be shut down and raw groundwater would be sent directly to demineralization units, and no wastewater would be generated.

If use of secondary water supply is required, and discharge to the on-site pond is considered at some future date, the Project would re-submit a revised Report of Waste Discharge to the Central Valley Regional Water Quality Control Board (RWQCB), upon which time revised waste discharge requirements would be issued. Although this operating profile is not being considered or anticipated the Project will comply with all RWQCB discharge requirements should there be a reason to reconsider the stated operating plan." (URS 2008e)

Given the project owner's response above and the ROWD submitted to the RWQCB (stating that RO wastewater from project use of groundwater would not be discharged to the evaporation pond) (URS 2008b), staff proposes to amend Condition of Certification **SOIL & WATER-5** to prohibit use of the evaporation pond if the project uses groundwater and require the project owner to submit a new or revised ROWD and comply with the new WDRs before discharge is allowed.

In addition, because the wastewater proposed for discharge into the unlined evaporation pond would include RO wastewater as well as wastewater from the demineralizer unit rinse water and drainage/overflow water from the treated water ASTs (URS 2008b), staff also proposes to amend Condition of Certification **WASTE-5** to require the Operation Waste Management Plan to include specific information on how the project will manage operation wastewaters in the event that discharge to the proposed unlined evaporation pond is prohibited.

CUMULATIVE IMPACTS

A project may result in a significant adverse cumulative impact when the incremental effects are deemed "cumulatively considerable" when viewed in connection with the effects of closely related past, present, and reasonably foreseeable future projects.

¹ Note: Groundwater from the semi-confined aquifer is considered by the project owner to be the project's secondary water supply.

Cumulative impacts can result from actions taking place over time in the same area that are minor when taken individually, but are collectively significant. As noted in the project description, other closely related projects in the area include the existing Wellhead Peaker and CalPeak powerplants, the existing PG&E Panoche Substation, and the Panoche Energy Center powerplant currently under construction.

The proposed well construction and reconfiguration of roads, ponds, construction laydown and parking areas would result in both temporary and permanent changes at the project site. However, potential project-related soil or storm water cumulative impacts would be reduced to a level of insignificance through implementation of the project DESCP; implementation of the Storm Water Pollution Prevention Plans (SWPPPs) required by the NPDES storm water permits for construction and industrial activities; and compliance with all applicable erosion and storm water management LORS. Furthermore, potential cumulative impacts to groundwater quality from construction and operation of the onsite water well and proposed operation of the wastewater evaporation pond would be reduced to a less than significant level through implementation of proposed Conditions of Certification **SOIL & WATER-6, 7, and 8**, requiring that the onsite well be constructed, operated, and plugged upon facility closure, in accordance with all applicable County of Fresno and state water well LORS, and that all well drilling activities comply with Title 22, Chapter 15 requirements for discharges of hazardous wastes to land; and implementation of amended Condition of Certification **SOIL & WATER-5**, requiring compliance with RWQCB WDRs and prohibiting discharge into the wastewater evaporation pond if groundwater is used for plant industrial needs until revised WDRs are issued to allow such a discharge. In addition, as discussed in the Construction Impacts section, potential cumulative impacts to water resources from construction and operation of the proposed onsite water well would be less than significant given the limited use of groundwater from the semi-confined aquifer and limited production from the CalPeak facility well (the only nearby well that also draws groundwater from the semi-confined aquifer).

CONCLUSIONS AND RECOMMENDATIONS

Staff finds that the proposed minor revisions to the site layout, equipment changes, and reconfiguration of the access road, ponds, construction laydown and parking areas would not substantially alter construction requirements and are sufficiently mitigated through existing LORS and conditions of certification. Therefore, no additional mitigation is proposed for those elements.

Regarding the proposed onsite water well, staff finds that construction of and production from the proposed onsite water well could impact water resources in the area. However, staff also finds that project compliance with state and local LORS addressing well construction and production would sufficiently mitigate any potential adverse impacts. To help ensure compliance with LORS and the existing project conditions of certification, staff proposes Conditions of Certification **SOIL & WATER-6, 7, 8 and 9** to require the project owner to comply with applicable well construction and waste management LORS, comply with standards established for the County of Fresno water

well permit program, install meters and monitor well water use, and properly abandon the water well upon permanent closure of the facility.

Staff is concerned about use of the unlined RO wastewater evaporation pond and management of project wastewaters if and when the project needs to use groundwater for plant operation. While the project owner considers the low quality groundwater from the semi-confined aquifer to be a secondary water supply and is not anticipating the need to use groundwater for facility operation, staff believes that the project will need to use groundwater as a primary water supply whenever operation exceeds 400 hours per year and/or when the seven year contract for Baker Farms backwash water expires. RO wastewater generated from the groundwater supply would have a very high TDS and would not be acceptable for discharge to an unlined evaporation pond. Therefore, staff proposes to amend Conditions of Certification **SOIL & WATER-5** and **WASTE-5** to prohibit wastewater discharge into the unlined evaporation pond if and when the project uses groundwater, and to provide a plan for management of wastewater when discharge into the pond is prohibited.

In conclusion, staff finds that the proposed amendments to the existing Starwood Power Project would not result in any significant adverse environmental impacts, and would comply with applicable LORS, if the project complies with the existing conditions of certification and staff's proposed changes and additions to the existing conditions of certification are implemented.

PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION

Staff proposes modifications to the project conditions of certification as shown below.

SOIL&WATER-5: The project owner shall shut down the reverse osmosis system and cease discharge into the wastewater evaporation pond if: 1) the evaporation pond reaches maximum capacity (to avoid any evaporation pond overflow); or 2) the pond cannot be used due to project use of groundwater or other pond use restrictions established by Waste Discharge Requirements (WDRs) issued by the Central Valley Regional Water Quality Control Board (RWQCB) in accordance with Condition of Certification **SOIL & WATER-4**. In the event that the project uses groundwater in any amount or volume of the total water volume necessary for plant industrial use, discharge into the evaporation pond shall be prohibited unless and until the project owner (a) submits a new or revised Report of Waste Discharge (ROWD) to the Central Valley RWQCB; (b) receives new or revised WDRs for use of the evaporation pond; and (c) retrofits or reconstructs the evaporation pond to meet any conditions or pond design parameters established in the new or revised WDRs.

Verification: The project owner, in the annual compliance report, shall provide a wastewater-accounting summary that states the amount of wastewater in acre-feet discharged into the evaporation pond and, as appropriate, the quantity of residue in pounds or tons removed from the pond and/or the volume of wastewater disposed of offsite for each year. In addition, ~~the~~ the project owner shall provide a written description

within 30 days of any incident where the evaporation pond reached maximum capacity, or discharge to the pond was prohibited, and the reverse osmosis system had to be shut down.

In the event that the project uses groundwater in any amount or volume, the project owner will immediately cease all discharges into the evaporation pond and notify the CPM. Prior to reinstating wastewater discharge to the onsite evaporation pond, the project owner shall provide to the CPM documentation that the proposed discharge and pond operation complies with all provisions of Condition of Certification **SOIL & WATER-4**.

SOIL&WATER-6: The project owner shall construct and operate an onsite groundwater well that produces water exclusively from the upper semi-confined aquifer. The project owner shall ensure that the well is properly completed in the semi-confined aquifer in accordance with all applicable state and local water well construction permits and requirements.

Prior to initiation of well construction activities, the project owner shall submit a well construction packet to the County of Fresno containing all documentation, plans, and fees normally required to satisfy the county's well permit program requirements for County review and comment, and submit the same packet to the CPM for review and approval. The project owner shall not construct the well or extract and use any groundwater until the County of Fresno issues written concurrence that the proposed well construction and operation activities comply with all county well requirements and meet the requirements established by the county's water well permit program, and the CPM provides approval to construct the well. The project owner shall provide documentation to the CPM that the well has been properly completed in and producing groundwater exclusively from the semi-confined aquifer. The project owner shall ensure compliance with all county water well standards and requirements for the life of the well and shall provide the CPM with two (2) copies of all monitoring or other reports required for compliance with the County of Fresno water well standards and operation requirements, as well as any changes made to the operation of the well.

Verification:

- a. No later than sixty (60) days prior to the start of construction of the onsite water supply well, the project owner shall submit one copy of the water well construction packet to the County of Fresno for review and comment, and two (2) copies of the packet to the CPM for review and approval.
- b. No later than fifteen (15) days prior to the construction of the onsite water supply well, the project owner shall submit two (2) copies of the written concurrence document from the County of Fresno indicating that the proposed well construction activities comply with all county well requirements and meet the requirements established by the county's water well permit program.

- c. Prior to water production from the onsite well for plant operational use, the project owner shall provide to the CPM documentation (in the form of well drilling logs, water quality analyses, and any inspection reports that may be available) that the well is properly completed in and producing groundwater exclusively from the semi-confined aquifer.
- d. During well construction and for the operational life of the well, the project owner shall:
 - i) Submit copies to the CPM and the County of Fresno of any proposed well construction or operation changes.
 - ii) Submit copies of any water well monitoring reports required by the County of Fresno well standards to the CPM in the annual compliance report.

SOIL&WATER-7: The project owner shall ensure that all onsite water well drilling activities are conducted in compliance with applicable Title 23, California Code of Regulations, Chapter 15, Discharges of Hazardous Wastes to Land, (23 CCR, sections 2510 et seq.) requirements.

Verification: No later than fifteen (30) days after completion of the onsite water supply well, the project owner shall submit documentation to the CPM and the Central Valley Regional Water Quality Control Board (RWQCB) that well drilling activities were conducted in compliance with Title 23, California Code of Regulations, Chapter 15, Discharges of Hazardous Wastes to Land, (23 CCR, sections 2510 et seq.) requirements and that any onsite drilling sumps used for project drilling activities were removed in compliance with 23 CCR section 2511(c).

SOIL&WATER-8: Upon permanent closure of the facility, the project owner shall ensure that the onsite water supply well is properly plugged and destroyed according to all applicable County of Fresno and state requirements.

Verification: No later than sixty (60) days after permanent closure of the facility, the project owner shall provide documentation to the CPM that the water supply well was properly plugged and destroyed according to all applicable County of Fresno and state requirements (including County of Fresno well destruction permit requirements).

SOIL&WATER-9: Prior to use of groundwater from the onsite well, the project owner shall install and maintain metering devices as part of the groundwater supply and distribution system to monitor and record in gallons per day the total volume of water supplied to the project from the onsite well. The metering devices shall be operational for the life of the project. In accordance with Condition of Certification **WATER RESOURCES-1**, the project's annual groundwater use shall not exceed 136 acre-feet per year without prior approval by the CPM. The project owner shall include in the project's annual water use summary required by **WATER RESOURCES-1** the monthly range and monthly average of daily groundwater use in gallons per day, and total

volume of groundwater used by the project on a monthly and annual basis in acre-feet.

Verification: At least sixty (60) days prior to use of onsite well water for commercial operation, the project owner shall submit to the CPM evidence that metering devices have been installed and are operational on the groundwater supply and distribution system. The project owner shall also provide documentation in the annual compliance report of the continued operation of the groundwater metering devices, including documentation of any servicing, testing, or calibration of the metering devices necessary to maintain operation.

In addition, as part of the annual water use summary required by **WATER RESOURCES-1**, the project owner shall provide to the CPM the monthly range and monthly average of daily groundwater use in gallons per day, as well as the total volume of groundwater used by the project on a monthly and annual basis in acre-feet.

WASTE-5: The project owner shall prepare a Construction Waste Management Plan and an Operation Waste Management Plan for all wastes generated during construction and operation of the facility, respectively, and shall submit both plans to the CPM for review and approval. The plans shall contain, at a minimum, the following:

A description of all waste streams, including projections of frequency, amounts generated and hazard classification; and

Methods of managing each waste, including temporary onsite storage, treatment methods and companies contracted with for treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/reduction plans.

In addition, the Operation Waste Management Plan shall include a separate section detailing how wastewaters proposed for discharge into the onsite evaporation pond will be managed and disposed of in the event that discharge to the pond is prohibited or otherwise interrupted. The Operation Waste Management Plan shall be revised as necessary to reflect any changes to plant operations and/or waste management procedures. A copy of the approved Operation Waste Management Plan shall be made available for inspection at the project site.

Verification: No less than 30 days prior to the start of the site mobilization, the project owner shall submit the Construction Waste Management Plan to the CPM for approval. The project owner shall submit any required revisions within 20 days of notification by the CPM.

No less than 30 days prior to the start of project operation, the project owner shall submit the Operation Waste Management Plan to the CPM for approval. The project owner shall submit any required revisions within 20 days of notification by the CPM and as necessary to reflect changes in plant operations and/or waste management

procedures. The project owner shall maintain an up-to-date copy of the approved Operation Waste Management Plan at the project site for use by staff and for inspection by appropriate federal, state, or local waste management personnel.

In the Annual Compliance Reports, the project owner shall document the actual waste management methods used during the year and provide a comparison of the actual methods used to those management methods proposed in the original Operation Waste Management Plan.

WATER RESOURCES-1: Water used for project operation for process, sanitary and landscape irrigation purposes shall be groundwater from the upper semi-confined aquifer obtained from the ~~adjacent CalPeak~~ onsite water well and/or Baker Farms irrigation water filter backwash (backwash water). Water use shall not exceed the annual water-use limit of 136 acre-feet without prior approval by the CPM. The project owner shall monitor and record the total water used on a monthly basis. If the amount of water to be used will exceed 136 acre-feet per year during any annual reporting period, the project owner shall provide a written request and explanation for the anticipated water-use increase to the CPM sixty (60) days prior to the date when the water-use limit is expected to be exceeded. If the project owner can demonstrate that the requested increase is necessary and is not caused by wasteful practices or malfunctions in the water processing systems, the CPM shall approve an up to one-year increase in the water-use limit for the period requested.

Verification: The project owner, in the annual compliance report, shall provide a water-accounting summary that states the source and quantity of water used on a monthly basis in units of gallons and on an annual basis in units of acre-feet.

REFERENCES

California Energy Commission (CEC) 2007a. Final Staff Assessment, Starwood Power Project (06-AFC-10). October 2007.

CEC 2008a. Final Commission Decision, Starwood Power Project (06-AFC-10). June 2008.

URS 2008a. Starwood Power-Midway, LLC Peaking Project (06-AFC-10) Amendment No. 1. Submitted April 2008.

URS 2008b. Report of Waste Discharge, Reverse-Osmosis System Wastewater Evaporation/Percolation Pond, Starwood Power-Midway, LLC, Peaking Project, Fresno County. Submitted to the California Regional Water Quality Control Board (Fresno office) on May 6, 2008.

URS 2008c. Letter to Douglas L. Wachtell, California Regional Water Quality Control Board, with additional information for Report of Waste Discharge, Reverse-Osmosis Wastewater Evaporation/Percolation Pond, Starwood Power-Midway, LLC, Peaking Project. Dated June 5, 2008.

URS 2008d. Responses to Data Requests (#1-5), Starwood Power-Midway, LLC, Peaking Project, Amendment No. 1. June 2008.

URS 2008e. Responses to Air Quality Data Requests, Starwood Power-Midway, LLC, Peaking Project, Amendment No. 1. July 22, 2008.

Westlands Water District (WWD) 2008a. Letter from Westlands Water District to the California Energy Commission regarding Starwood Power Plant (06-AFC-10) Use of Backwash Water from Baker Farms. January 14, 2008. Docket Log #44339.