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Garret Shean  
Hearing Officer  
California Energy Commission  
1516 Ninth Street  
Sacramento, CA 95814

Subject: Starwood-Midway Alternative Water Supply Analysis (06-AFC-10)  
URS Project No. 27656131.00400

Dear Mr. Shean:

On behalf of Starwood Power-Midway, LLC, URS Corporation Americas (URS) hereby submits the Alternative Water Supply Analysis for the Starwood-Midway Project.

I certify under penalty of perjury that the foregoing is true, correct, and complete to the best of my knowledge. I also certify that I am authorized to submit the Alternative Water Supply Analysis for the Starwood-Midway Project on the behalf of Starwood Power-Midway, LLC.

Sincerely,

URS CORPORATION



Angela Leiba  
Project Manager

AL:ml

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**SECTION 1 INTRODUCTION**

The November 2006 Starwood Power-Midway, LLC Peaking Project (Midway) Application for Certification (06-AFC-10), identified the Irrigation Return Flow – Agricultural Backwash Pond as an alternative water supply source for the proposed Midway Project. An analysis of potential environmental impacts associated with this alternative water supply is presented in this document.

**1.1 BACKGROUND**

The Baker Farming Company, LLC which farms approximately 7,000 acres of land in the area produces sufficient quantities of filter backwash water from their irrigation practices to supply the Midway site with water required for operation. The Bakers purchase or obtain water from numerous sources for their farming operations. These include groundwater (wells) and surface water, although surface water is predominately used. Surface water, irrespective of the source, is delivered to the Baker water delivery system via the California Aqueduct. Because most of the water is initially delivered to the Bakers via an open canal, before water can be used for agricultural purposes, it must be filtered to remove entrained suspended solids (algae, garbage, dirt, etc.). Filtration occurs through a series of sand filters, placed strategically within the water delivery system. The filtered water is then distributed to the agricultural fields.

Approximately 24,000 acre-feet of water is utilized in the Baker Farms operations annually. Due to the large volumes of water pumped, it is necessary to clean the sand filters every 3 to 6 hours, depending on the season. This is accomplished by backwashing the sand filters. Each backwash flush cycle takes 2 minutes with a water flow rate of 300 gallons per minute per filter. There are approximately 162 filters in the land surrounding the Midway site, which generate 97,000 gallons of wastewater each filter cleaning cycle. The filter wastewater contains suspended solids removed from the irrigation water. The Baker Farms operations produce 160 acre-feet of wastewater on an annual basis. The peak season for this water flow is during the irrigation period, April to September.

The wastewater is sent to a number of local settling ponds where the suspended solids precipitate out of solution. Historically, the wastewater was disposed of through evaporation and percolation. To efficiently dispose of wastewater, Baker Farming Company, LLC is in the process of connecting a number of small wastewater settling ponds to a large, centrally located evaporation pond. The network of pipes that Baker Farms is installing to tie the small ponds to the large pond are, at the closest distance, 1.5 miles southeast from the Midway site running along an existing dirt road used and maintained by Baker Farms (see Figure 1.1-1 for agricultural backwash pond location). The existing pond is approximately 8.0-acre and can store approximately 80 acre-feet of water.

Presently, the system tying the small ponds to the large pond is not yet complete; however work is in progress to complete pond connection. Once the small ponds are tied to the large pond the water supply would be considered a reliable water supply source. Therefore, the Irrigation Return Flow – Agricultural Backwash Pond alternative is considered a feasible water source for Midway.

## **1.2 ALTERNATIVE WATER SUPPLY DESCRIPTION**

Use of the Irrigation Return Flow – Agricultural Backwash Pond alternative as the water supply source for the Project would require the following components:

- A 25 kilowatt (kW) electric pump station
- Approximately 2.0-mile, 3-inch diameter water pipeline
- Connection to electric transmission line
- Sand filter at the Midway site

The site location, as previously described in the Midway AFC, would be modified to include the alternative water supply pipeline (water pipeline) and agricultural backwash pond that will be used for water supply for the Project (extended Project Site). As shown in Figure 1.1-1, the water pipeline will extend east from the Midway site, transverse Sections 5 and 4, and terminate at the backwash pond. The agricultural backwash pond is located in the northeast quarter of Section 9 of the Chaney Ranch 7.5 quadrangle map (approximately 5,000 feet east of Fairfax Avenue). The existing backwash pond and water pipeline alignment and pump station are located on private property owned by Baker Farming Company, LLC.

The water pipeline route extends along existing private agricultural dirt roads (unnamed). While the backwash pond is located approximately 1.5 miles southeast from the Midway site, due to the zigzag of the agricultural roads approximately 2.0 miles of water pipeline will need to be constructed. The agricultural roads are graded and are currently utilized by Baker Farms for agricultural production activities. The water pipeline will be laid 3-feet below grade. Construction of the water pipeline will involve excavation of a trench (approximately 2 feet wide and 3 feet deep), placement of the 3-inch diameter water pipe, and subsequent burial with compacted fill soil using the excavated soils from the trench for backfill. The construction method of the water pipeline will be the same as described in Section 3.7.2.2 of the Midway AFC.

The pump station will be placed at the eastern terminus of the water pipeline immediately adjacent to the existing agricultural backwash pond. The pump station will have a footprint of approximately 25 square feet, and will be set on a concrete slab. The pump is expected to operate at approximately 150% of the total operating hours of the Midway facility (e.g. estimated at 600 hours a year for the 400 hours of Midway operation) concentrated in the summer months of June, July, August, and September. The prefabricated 25 kW electric pump will be powered via connection to an existing overhead electrical transmission line system located along W Lincoln Avenue (see Figure 1.1-1). Connection to the electrical transmission system will be achieved by utilizing one of the two options listed below. Determination of which electrical connection option will be used is at the discretion of PG&E after an application for service is made.

- Option 1 includes installation of a transformer on an existing transmission pole located just north of the pump station across W Lincoln Avenue. The pump station would be provided power via an underground line routed between the transmission pole and the pump station.
- Option 2 includes connection to an existing transformer currently on an alternate pole located west of the pump station and extend a supply line to connect with the transmission pole identified

in Option 1. As in Option 1, the pump station would be provided power via an underground line routed between the transmission pole and the pump station.

As stated, the backwash pond is currently 8.0 acres in size and has the capacity to store approximately 80-acre feet of water. However, the backwash pond is relatively shallow which allows for faster percolation and/or evaporation due to high surface area exposure. In order to ensure that a reliable source of water is available, an earthen (weir) berm will be constructed in the pond (approximately 200 feet from the west end of the pond) utilizing earth from the pond to the west of the weir. This process will deepen the west end of the pond, reduce the pond's size to approximately 3.0 acres, and allow for the pond to store approximately 40-acre feet of water for a longer period of time (due to reduced surface area exposure); thus providing for a reliable water supply source.

When the water pumped to Midway from the backwash pond reaches the Midway site it will be sent through a sand filter to remove any solid debris or other particulate materials in the water. The water will then be routed from the sand filter to the reverse osmosis (RO) unit. The Midway facility would utilize the same RO and demineralization water treatment processes as described in the Midway AFC. The on-site unlined evaporation pond will collect discharge wastewater from the RO unit as well as periodic sand filter backwash. The proposed on-site evaporation pond will provide stormwater retention for the Project.

Access to the agricultural dirt road (and the backwash pond) will be taken from the Midway site. In addition, all construction laydown/staging will be wholly within the Midway site perimeter. Construction of the water pipeline, pump station, and all other associated activities are expected to take place over a one month period during the same 10 month construction period identified in the Midway AFC.

**SECTION 2 ENVIRONMENTAL ANALYSIS****2.1 AIR QUALITY**

The water supply alternative will cause construction emissions to change from the levels presented in the Midway AFC in one respect only. Specifically, agricultural dirt roads (approximately 2.0 miles in length) would be utilized east of the site for installation of the water pipeline. Emissions would result from excavation/trenching and construction equipment/vehicle exhaust and travel along the agricultural dirt road during construction activities. The previous construction emissions inventory and dispersion modeling provided in the Midway AFC incorporated a shorter water pipeline (approximately 1,200 feet) from the well located on the CalPeak site adjacent to Midway.

Construction emissions were recalculated to include the water supply alternative (in place of the water pipeline that was previously assumed). In addition, since the water pipeline route would traverse an area where no Project emission sources were previously expected to be present, the impacts of the revised emissions were evaluated by supplemental air dispersion modeling to ensure that the Midway AFC finding of below-significant air quality impacts during Project construction would be upheld. Note that the water supply alternative would introduce no new operational sources of emissions, and would thus have no effect on the Project's operational impacts to air quality.

Emissions associated with construction of the water supply alternative would include both fugitive dust and exhaust from the fueled equipment that would be involved in trench excavation and reburial of the installed line. The water pipeline installation will occur over a period of not more than one month. For conservatism, it was assumed that this activity would overlap with the first month of building activity at the Midway site (Month 3 of the overall construction schedule), the same month that was modeled previously for the Midway AFC. In all other respects, the model inputs, including meteorological data, receptor locations and emissions from other concurrent construction activities were identical to those used in the Midway AFC modeling analyses, as supplemented by responses to CEC data requests.

The maximum predicted air pollutant impacts for the construction phase of the Midway Project, including the water supply alternative, are summarized in Table 2.1-1. Because of the small equipment requirements and the physical separation of most of the water supply alternative construction emissions from those occurring within the Project site, the estimated peak impacts to air quality are less than or equal to those predicted in the modeling for the water supply design discussed in the Midway AFC. Thus the construction of the water supply alternative will not cause an impact above a level of significance.

**Table 2.1-1  
ISCST3 Modeling Results**

Pollutant	Averaging Period	Maximum Modeled Impact ( $\mu\text{g}/\text{m}^3$ )	Background <sup>1</sup> ( $\mu\text{g}/\text{m}^3$ )	Maximum Total Predicted Concentration ( $\mu\text{g}/\text{m}^3$ )	PSD Significant Impact Level <sup>2</sup> ( $\mu\text{g}/\text{m}^3$ )	Most Stringent	UTM Coordinates	
						AAQS	East (m)	North (m)
CO	1 hour	342	7,705	8,047	NA	23,000	716,275	4,059,125
	8 hour	132	5,156	5,288	NA	10,000	716,350	4,059,200
NO <sub>2</sub>	1 hour <sup>3</sup>	95.9	118.44	233.5	NA	338	716,275	4,059,125
	Annual <sup>3</sup>	2.5	24.53	27.0	NA	56	716,600	4,058,900
PM <sub>10</sub>	24 hour	24.4	193.0 <sup>4</sup>	217.4	NA	50	716,500	4,059,000
	Annual	1.0	43.0 <sup>4</sup>	44.0	NA	20	716,509	4,059,015
PM <sub>2.5</sub>	24 hour	7.5	110.0 <sup>4</sup>	117.5	NA	35	716,650	4,058,925
	Annual	0.2	21.6 <sup>4</sup>	21.8	NA	12	716,509	4,059,015
SO <sub>2</sub>	1 hour	1.1	23.6	24.7	NA	655	716,275	4,059,125
	3 hour	0.7	15.6	16.3	NA	1,300	716,300	4,059,150
	24 hour	0.1	10.5	10.6	NA	105	716,650	4,058,925
	Annual	0.002	5.3	5.3	NA	80	716,600	4,059,000

\*Note: Table includes maximum predicted air pollutant impacts during construction phase of the full Midway Project, including the water supply alternative.

## 2.2 GEOLOGY/HAZARDS

Construction of the water supply alternative will involve excavations into the alluvial fan deposits that underlie the Midway site, the water pipeline route and backwash pond. See Section 2.3, Agriculture and Soils, for further discussion related to soils.

Ground shaking is the most significant geological hazard in the extended Project area. The geotechnical investigation (Kleinfelder, 2006) for the Midway Project locates the area within a Seismic Zone 3 as defined in the 1998 Edition of the California Building Code. No faults were identified within 2.0 miles of the extended Project area. Potential seismic ground motion, based on a review of the California Geological Survey's regional probabilistic hazard mapping, estimates that the extended Project area is subject to ground motions approaching 0.4g for the 10% in 50 year hazard level. This is not an increase over what was identified in the Midway AFC, thus less than significant impacts are anticipated. Due to the distance from fault zones, potential ground rupture hazards within the extended Project area are not considered to be significant.

Existing topography within the extended Project area does not provide sufficient relief that would cause concern due to potential landslides. There are no topographic features of significant relief that could present a landslide hazard within 2.0 miles of the extended Project area. The risk of subsidence and settlement from the withdrawal of significant levels of groundwater is eliminated because the water supply will be acquired from surface water.

No increased geological hazards over what is discussed in the Midway AFC are expected from construction or operation of the water supply alternative.

### **2.3 AGRICULTURE AND SOILS**

The areas impacted by the water supply alternative are highly disturbed and have undergone significant alterations to support large-scale orchard (almond, grape, and pomegranate) operations. The surrounding area is a virtually flat alluvial plain that has been converted for the purposes of industrialized agriculture.

Construction of the water supply alternative will involve excavations into the alluvial fan deposits that underlie the extended Project area. The Quaternary age alluvial deposits in the area represent distal fan deposits of the Panoche Creek alluvial fan. These deposits are relatively fine grained and are the parent material for surficial soils that generally classify as clay loams. There are two soil units as mapped in the extended Project area (see Figure 2.3-1); Panoche clay loam, 0 to 2 percent slopes and Cerini clay loam, subsided, 0 to 5 percent slopes. Panoche clay loam underlies the Midway site and the western portion of the water pipeline alignment. Cerini clay loam underlies the eastern portion of the water pipeline alignment as well as the backwash pond area. Both of these soils have generally low to moderate susceptibility to erosion.

Construction activities would create the potential for erosion of soils during trenching, excavation and other construction activities. However, potential impacts will be minimized through implementation of erosion control measures as described in Sections 3.5, Civil/Structural Features and 5.4 Agriculture and Soils of the Midway AFC. Therefore, impacts from soil erosion are expected to be less than significant after mitigation.

In addition, the water supply alternative would not change or require the removal of any existing agricultural activities. The pump station and the water pipeline will be constructed entirely on privately owned land and will not disrupt or alter current agricultural activities. The water supply alternative will not cause adverse impacts to the agricultural productivity of the Baker Farmlands and will not result in the conversion of any Williamson Act lands to non-agricultural use. Therefore, no significant impacts are expected to result from the water supply alternative.

### **2.4 WATER RESOURCES**

Section 4.6 of the Midway AFC identified the alternative water supply source, Irrigation Return Flow - Agricultural Backwash Pond, as a feasible water supply source for the Project (i.e. meets California Water Policy, sufficient quality, safe, and reliable). The primary reasons for conducting this Alternative Water Supply Analysis for the agricultural backwash pond water alternative relative to the CalPeak Panoche well water option include: decreased cost of water treatment; and cleaner water treatment residue (RO residue) generated and discharged to on-site evaporation pond due to the lower TDS concentration (170 mg/L) in the backwash pond.

The following section describes the changes in the Project area, water supply source, source water quality, and effluent water quality, potential effects of the alternative water supply source on water resources and identification of mitigation measures that would reduce potential significant water resource related impacts (if any) to a level of insignificance.



**2.4.1 Existing Conditions**

The backwash pond is located within the same surface water and groundwater basins as the Midway site. The backwash pond is located at an approximate elevation of 385 feet mean sea level (msl) versus the Midway site at 405 feet msl. Due to the relative proximity in terms of surface and groundwater basins of the backwash pond to the Midway site the physiographic setting, climate, hydrogeology, and groundwater sub-basins, aquifer characteristics, groundwater occurrence and flow, basin water balance, groundwater storage and quality are the same as those described for the Midway site in the Midway AFC.

**2.4.2 Environmental Analysis****2.4.2.1 Water Quality**

Tables 5.5-5 and 5.5-9 of the Midway AFC provide water quality data for the existing CalPeak Panoche Well (upper aquifer) and the backwash pond, respectively. As shown, the upper aquifer has a total dissolved solids (TDS) of 3,400 mg/L and the backwash pond water has a TDS of 170 mg/L. Therefore, the backwash pond has better quality water than water from the upper aquifer associated with the groundwater well at CalPeak Panoche.

**2.4.2.2 Water Availability**

As discussed in Section 1.2 above, in order to ensure that a reliable source of water is available, this water supply alternative includes deepening the west end of the backwash pond (reducing the pond's size to approximately 3.0 acres) to allow for the pond to store approximately 40-acre feet of water for a longer period of time. Allowing for normal evaporation and the seasonal flow into the pond, the estimated profile of available water from the agricultural backwash pond and the annual water requirements from the Midway Project are provided in Table 2.4-1 below. As shown, adequate water supply is available to support operations at Midway.

**Table 2.4-1**  
**Water Requirement/Availability**

	1 <sup>st</sup> Quarter	2 <sup>nd</sup> Quarter	3 <sup>rd</sup> Quarter	4 <sup>th</sup> Quarter
Expected Operating Hours (400 annual)	47	101	176	76
Midway Water Consumption (acre-feet)	1.6	3.4	6.0	2.6
Backwash Pond Water Availability (acre-feet)	12.9	59.3	71.6	15.7

\*The data is based upon operating at maximum water flow conditions at 114 degrees

**2.4.2.3 Wastewater Disposal**

As discussed in the Midway AFC, Midway's operation will generate wastewater discharge from the RO unit. The estimated quality of wastewater (RO reject water) that results from use of upper aquifer groundwater has a TDS of 13,600 mg/L. The estimated quality of RO reject water that results from use of the backwash pond as a water supply alternative has an estimated TDS of 340 to 510 mg/L.

Section 3.0, Facility Description, of the Midway AFC currently includes an on-site double-lined surface impoundment (evaporation pond) for disposal of wastewater via atmospheric drying. This is due to the high TDS of the RO reject water that results from use of upper aquifer as the facilities water supply (approximately 10,200 mg/L TDS higher than the TDS of the underlying aquifer). However, as the RO reject water resulting from use of the backwash pond would have a much lower TDS than the underlying aquifer (approximately 2,890 mg/L lower TDS) a lined surface impoundment would not be required. Thus, the water supply alternative would eliminate the requirement for a double-lined evaporation pond with associated monitoring wells on the Midway site. As discussed in the Midway AFC and supplemental responses to CEC data requests, the proposed on-site evaporation pond will also provide adequate stormwater retention for the Project.

**Table 2.4-2**  
**Wastewater Quality Comparison**

<b>Water Supply Source</b>	<b>TDS of Water Source (mg/L)</b>	<b>TDS of Wastewater Generated (mg/L)</b>	<b>Difference in TDS from Upper Aquifer (mg/L)</b>
CalPeak Panoche Well (upper aquifer)	3,400	13,600	(+) 10,200
Agricultural Backwash Pond Alternative	170	340 to 510	(-) 2,890

Design of the on-site evaporation pond is based upon stringent water quality, design, and monitoring requirements due to the water quality nature of the RO reject water. The Project will comply with the regulations of the Central Valley Regional Water Quality Control Board including preparation/submittal of a Report of Waste Discharge and any waste discharge requirements issued regarding the on-site unlined evaporation pond.

Implementation of the water supply alternative will not have significant impacts to water resources with the implementation of the mitigation measures identified in the Midway AFC. Below is a summary of the water resource components evaluated:

- Groundwater Occurrence and Flow - No additional impact to groundwater occurrence and flow
- Basin Water Balance - No additional impact to basin water balance because supply water would have previously been evaporated
- Groundwater In Storage - Reduction or no additional impact because less groundwater would likely be used for supply versus use of the existing CalPeak groundwater well supply
- Groundwater Quality - Reduction or no additional impact to groundwater quality due to a reduction in the amount of RO wastewater generated.
- Wastewater Disposal - Reduction or no additional impact in potential wastewater disposal impacts because the water supply from the backwash pond is much lower in TDS and would require less treatment and associated increased amount of wastewater.
- Service Water Supply Facilities - There are no potential significant impacts to public water supply facilities associated with the water supply alternative. Additional water supply facilities will be required for this alternative including an addition of a water pipeline, pump, and

excavation of the existing backwash pond. However, these will be private systems designed and constructed to minimize potential impacts to water resources including implementation of a construction phase Stormwater Pollution Prevention Plan (SWPPP).

- Midway Wastewater Management Plan - Utilization of this option will result in a reduction in the amount of wastewater generated from the Project. No increased impacts would occur.
- Domestic/Sanitary Wastewater - No increase in impacts to domestic/sanitary wastewater systems associated with the water supply alternative.
- Stormwater Runoff and Water Quality - There is the potential for increased impacts to stormwater runoff during construction due to the increased amount of disturbed area associated with construction at the existing backwash pond and water pipeline installation. However, these potential impacts to surface runoff and surface water quality will be minimized through implementation of a construction phase SWPPP.

### **2.4.3 Avoidance and Minimization Measures**

The analysis of the effect of the water supply alternative on water resources indicates that no significant impact on the water resources would occur. No change in the amount of water required for facility operation or the amount of wastewater discharged to the unlined evaporation pond would occur with the water supply alternative. The evaluation of water resources impacts for the water supply alternative considered both the occurrence and the quality of water in the area. For the occurrence of groundwater in the area, the water supply alternative will have no significant impact on the depth to water in the aquifer, or water resources in the area as a result of the drawdown caused by pumping. Furthermore, the water supply alternative will not have any effect on water quality in the area. Thus no mitigation is required for water resources for the water supply alternative. However, in order to avoid and minimize impacts the stipulations provided in Section 5.5.7 of the Midway AFC will be implemented.

## **2.5 BIOLOGICAL RESOURCES**

### **2.5.1 Survey Methods**

Biological field surveys were conducted by a URS biologist on September 20, 2007 for the Alternative Water Supply Analysis. Surveys were conducted according to CEC regulations (CEC, 2000). The "extended Project area" is defined as the area that could potentially be directly or indirectly disturbed during Project construction, and includes the water pipeline route, agricultural dirt roads along the water pipeline route, pump station, backwash pond, and a 500 foot buffer where field surveys were conducted for botanical and wildlife resources.

The reconnaissance field survey included walking along the water pipeline route and visually scanning areas within the 500 foot buffer (see Figure 2.5-1). All botanical and wildlife species observed were documented, and all plant communities and habitat that could support potentially occurring special-status species were described.

### **2.5.2 Plant Communities**

No native plant communities were present within the water pipeline route survey area. Because the water pipeline is located along existing dirt roads, the area currently does not support any vegetation. Vegetation within the buffer area consisted of recently graded disturbed lots, grapevines, and almond and pomegranate trees.

### **2.5.3 Wetlands**

No wetlands are present within the survey area. There is an east west trending drainage ditch along the water pipeline route that was dry during the field survey. Only ruderal vegetation was present along the drainage. Three small agricultural ponds with standing water were present directly adjacent to the water pipeline route (Figure 2.5-1). These ponds did not contain any native vegetation in or around them. The agricultural backwash pond, identified as the water supply alternative, did not contain a substantial amount of water at the time of the field survey. Only sparse, non-native vegetation occurred within it. These drainages and ponds were created for agricultural use and are not jurisdictional waters of the U.S./State according to Army Corp of Engineers (ACOE) or California Department of Fish and Game (CDFG).

### **2.5.4 Wildlife**

The water pipeline route and buffer areas provide limited habitat for few wildlife species due to high agricultural use in the area and a lack of native plant communities. Four species of birds were observed during the field survey including common raven (*Corvus corax*), marsh wren (*Cistothorus palustris*), white-crowned sparrow (*Zonotrichia leucophrys*), and American kestrel (*Falco sparverius*). None of the birds detected are sensitive at a state or federal level, however, raptors including the American kestrel are protected by CDFG. In addition to the birds directly observed onsite, tracks of raccoon (*Procyon lotor*), bobcat (*Lynx rufus*), and coyote (*Canis latrans*) and several small rodent burrows were observed adjacent to the agricultural ponds.

### **2.5.5 Special Status Species**

No special-status plant or wildlife species were observed during the field survey and there are no records in the CNDDB within the water supply alternative survey area. Due to the lack of native habitat and vegetation in the survey area, no special status species are expected to occur.

## **2.6 CULTURAL RESOURCES**

This section documents the findings of a cultural resources survey and analysis for the water supply alternative for the Midway Project, and includes a discussion of the area of potential effects (APE), current setting, previously conducted cultural resource record searches and investigations, previous Native American consultation, survey methodologies and results, and recommendations and conclusions.

In summary, no prehistoric- or historic-period cultural resources were identified or recorded during the Phase I pedestrian survey. Based on previous studies completed in the area combined with the current survey, there is a low probability that the water supply alternative will have an impact to prehistoric- or

historic-period cultural resources. However, in order to avoid and minimize potential impacts the stipulations provided in Section 5.7.3 of the Midway AFC will be implemented.

### **2.6.1 Area of Potential Effects**

The APE for the water supply alternative includes a 50-foot buffer on either side of the water pipeline and graded dirt road (which will serve as the access road), and a 200-foot buffer around the pump station and backwash pond. The construction laydown/staging area was not included in the APE, as it was previously surveyed for cultural materials as part of the Midway AFC. Figure 2.6-1 is a topographical map which details the APE boundaries.

### **2.6.2 Current Setting**

The entire APE has undergone significant alterations to support large-scale agricultural/orchard operations. As a result, native topography or vegetation is not evident throughout the APE. The surrounding area is an extremely flat alluvial plain that has been converted for the purposes of industrialized agriculture. The water pipeline alignment follows an existing graded dirt road presently used by large trucks and fruit-picking equipment to travel between orchard parcels. Surface visibility was good (90 – 100 percent) along the water pipeline corridor.

The backwash pond and pump station are located within an 11-acre, rectangular-shaped empty parcel that has experienced substantial soil grading and removal. A six-foot high berm surrounds the parcel and it appears that the area has been bulldozed and disked over the past 30 years. Surface visibility was fair within the parcel (30 – 70 percent) due to some heavy vegetation cover in a quarter of the parcel. Figures 2.6-2 and 2.6-3 are photographs of the APE's environs.

### **2.6.3 Record Search Review and previous investigations**

In May and September 2006, as part of the Midway and Panoche AFCs, records searches at the Southern San Joaquin Valley Information Center were conducted to identify previously conducted cultural resources investigations and previously recorded cultural resources. The record searches identified three previously conducted cultural resources investigations within a one-mile radius of the water supply alternative. The investigations identified that no previously recorded cultural resources were found within the one-mile radius of the water supply alternative.

As part of the Midway and Panoche AFCs, cultural resource surveys were conducted for unrecorded cultural resources. The surveys failed to identify prehistoric-period or historic-period archaeological resources within the Midway and Panoche APEs. An intensive historic architecture field survey did identify and record 11 unrecorded historic-period built environment resources near the proposed Panoche site. None of the recorded historic-period built environment resources were determined eligible for the California Register of Historic Resources or considered historic resources for purposes of CEQA.

### **2.6.4 Native American Consultation**

In October 2006, URS contacted the Native American Heritage Commission (NAHC) to identify known sacred lands near the Midway Project vicinity and to request contact information for Native American

individuals and groups who may have knowledge of cultural resources within the Project vicinity. The NAHC did not identify sacred lands within the Project vicinity, and identified four Native American individuals who may have knowledge of cultural resources within the Project vicinity (i.e., western Fresno County). In February 2007 and October 2006, URS contacted by mail and telephone those individuals to seek information regarding cultural resources near the Midway Project vicinity, and to identify concerns they may have with the proposed Project. None of the Native American individuals had concerns regarding the proposed Project or its potential effects to cultural resources within the western Fresno area.

### **2.6.5 Survey Methodology and Results**

A Phase I pedestrian survey of the archaeological APE was conducted by URS archaeologist, Dean Martorana, RPA, on September 24, 2007. The survey consisted of zigzagging transects throughout a 50-foot buffer on either side of the water pipeline alignment and graded dirt road, and 40-foot transects throughout the 200-foot buffer around the backwash pond and pump station locations. Minor trowel exposures were periodically used to inspect the soil content. The sidewalls of the berms which surround the backwash pond and pump station parcel were more closely inspected for evidence of cultural activity.

The Phase I pedestrian survey did not identify prehistoric- or historic-period cultural resources within the APE. Thus, the Phase I pedestrian survey was negative for cultural resources.

### **2.6.6 Conclusions and Recommendations**

The records search identified no previously recorded cultural resources within the APE. The Phase I pedestrian survey did not identify prehistoric- or historic-period cultural resources within the APE. Therefore, it is anticipated that the undertaking will not impact cultural resources. As stated, in order to avoid and minimize potential impacts the stipulations provided in Section 5.7.3 of the Midway AFC will be implemented.

## **2.7 PALEONTOLOGICAL RESOURCES**

The Paleontological Resources Technical Report, from which the Paleontological Resources Section (Section 5.8) of the Midway AFC was based, was written by Lanny Fisk (2006). As part of that report, Fisk commissioned a paleontological records archival search through the University of California Museum of Paleontology (UCMP). That search specified a one-mile radius around the immediate footprint of the Midway site near the center of section 5, T. 15 S., R. 13 E. The site location, as previously described in the Midway AFC, would be modified to include the water pipeline and agricultural backwash pond. The water pipeline route extends beyond the area covered by the paleontological record search. Therefore, a second archival search from UCMP was conducted specifying a one-mile radius around the extended Project area. The record search found no fossil localities within a one-mile radius.

The water pipeline will be placed in a trench dug to 3-feet below grade. Both the Midway AFC and the Paleontological Resources Technical Report (Fisk 2006) state that "excavations deeper than about four feet" at the Midway site have the potential to result in adverse impacts to significant paleontological resources. In addition, the proposed Conditions of Certification (PAL-02) in the Preliminary Staff

Assessment imply required monitoring for paleontological resources of all sediment disturbance “greater than 5 feet depth.”

The conclusions drawn from the stratigraphic observations made by Fisk (2006) at the Midway site can be expanded to the extended Project area. Therefore, excavation/trenching activities to a depth of 3-feet are not anticipated to have the potential to result in adverse impacts to significant paleontological resources. In order to avoid and minimize potential impacts the stipulations provided in Section 5.8.5 of the Midway AFC will be implemented.

## **2.8 LAND USE**

Land use patterns in the extended Project area will not be affected by the water supply alternative. All surrounding areas are zoned for agricultural use and will remain in agricultural production. Grading permits from Fresno County will be required for the installation of the water pipeline and pump station. However, the water supply alternative will not alter any key characteristics of the land uses within the extended Project area that would result in significant impacts to current or allowed land uses.

## **2.9 SOCIOECONOMICS**

The construction and operation of the water supply alternative will not create significant impacts to employment, housing, or the County of Fresno’s economy at large. The water pipeline, pump station and backwash pond are located on private property owned by Baker Farming Company, LLC. Construction of the water supply alternative will be performed by construction personnel currently anticipated at the Midway site and would not require additional supply of workforce. As stated in the Midway AFC, construction is not expected to cause a significant impact to the local employment, population or housing in Fresno County. Thus, the findings of this Alternative Water Supply Analysis are consistent with the findings in the Midway AFC and less than significant impacts to employment, population, housing or the socioeconomics of the local community would occur.

## **2.10 TRAFFIC AND TRANSPORTATION**

As stated, the water pipeline route extends along an existing private agricultural dirt road. The existing agricultural road is presently used by agriculture/farming vehicles and equipment only. Construction access to the agricultural dirt road (and the backwash pond) will be taken from the Midway site. No additional public roadways/intersections in the extended Project area other than those described in Section 5.11, Traffic and Transportation, of the Midway AFC will be utilized by construction vehicles. Construction of the water pipeline, pump station, and all other associated activities would take place over a one month period during the same 10 month construction period identified in the Midway AFC.

Thus, construction activities for the water supply alternative would be concurrent with construction at the Midway site.

The water pipeline installation includes excavation/trenching activities along the existing private agricultural roads. However, construction activities would not impact the use of or impede travel along the private roads by agricultural vehicles. In addition, as no additional workers or construction equipment are required for construction of the water supply alternative, no additional vehicle trips traveling to and

from the site are anticipated. As stated in the Midway AFC, Project construction traffic analysis showed that no study roadway segment or intersection would be significantly impacted by the proposed Project. Thus, no increased traffic and transportation impacts over what was discussed in the Midway AFC would occur. The findings of this Alternative Water Supply Analysis are consistent with the findings in the Midway AFC and less than significant impacts would occur. Thus no mitigation is required, however, in order to avoid and minimize impacts the stipulations provided in Section 5.11.3 of the Midway AFC will be implemented.

## **2.11 NOISE**

### **2.11.1 Construction Noise**

Construction of the water supply alternative would potentially result in a short-term temporary increase in the ambient noise level at residences 1 - 9 (see Figure 2.11-1). Residences 10 - 12 will not experience increases due to construction/operation of the water supply alternative as they are located on the opposite side of the Midway site. The magnitude of the increase would depend on the type of construction activity, the noise levels generated by various pieces of construction equipment, the duration of the construction phase, equipment usage or duty cycle, and the distance between the noise sources and receiver. Table 2.11-1 shows average noise levels generated by individual pieces of construction equipment (U.S. EPA, 1972).

**Table 2.11-1  
Typical Construction Noise levels at 50 feet**

<b>Construction Equipment</b>	<b>dBA</b>
Backhoe	80
Grader	85
Truck	88

Since a detailed construction plan identifying construction sequences, phases, and specific equipment has not been developed, specific projection of sound levels cannot be made. However, construction noise calculations could be based on the use of a backhoe, grader and two (2) trucks, which are considered typical equipment required for such construction activities. Sound levels for construction activities associated with the water supply alternative would, therefore, typically range from 80 to 92 dBA at 50 feet from the work area, dependent on the equipment usage and their corresponding duty cycle. Construction would occur during the daytime hours (7:00 a.m. to 7:00 p.m. [5:00 p.m. on Saturday or Sunday]). According to Section 8.40.060, Noise Source Exemptions, of the Fresno County Noise Ordinance noise sources associated with construction are exempt, provided such activities do not occur before 6:00 a.m. or after 9:00 p.m. on any day except Saturday or Sunday or before 7:00 a.m. or after 5:00 p.m. on Saturday or Sunday. Construction activities will comply with Fresno County Ordinance Code requirements; thus, no significant construction noise-related impacts would occur.



**Table 2.11-2  
Calculated Sound Levels from Conventional Construction Activity**

Location	Distance	Levels	Noise Impact?
Residence 1	53	91	No
Residence 2	1320	64	No
Residence 3	2429	58	No
Residence 4	5280	51	No
Residence 5	6019	50	No
Residence 6	6336	50	No
Residence 7	8237	48	No
Residence 8	8765	47	No
Residence 9	14045	43	No

\*Sound level impact was derived from model in Handbook of Acoustical Measurements and Noise Control (Harris1998)

Based upon construction noise data, noise levels on the construction site could exceed federal Occupational Safety and Health Administration (OSHA) and California OSHA (Cal/OSHA) guidelines for worker noise exposure. Compliance with Cal/OSHA regulations will ensure that construction personnel are adequately protected from potential noise hazards. The noise exposure level to protect hearing of workers is regulated at 90 dBA over an 8-hour work shift. The construction contractors will comply with all Cal/OSHA regulations.

### **2.11.2 Operational Noise**

Operation of the water supply alternative would involve the introduction of noise-generating equipment (pump station). The overall noise level depends on the physical layout and noise generation of the pump, and the noise control measures incorporated (if any) into the design of the pump.

Sound level data for the pump was not available at the time of preparation of this analysis; therefore, sound levels at the indicated sensitive receivers are based on typical sound power levels for similar equipment (25 HP, 3600 RPM). As shown in Tables 2.11-3 and 2.11-4 provided below, the operational noise levels produced by the pump will not increase the ambient outdoor sound levels at any of the residences (receiver locations) and thus would result in less than significant noise impacts.

**Table 2.11-3  
Typical Water Pump Sound Power Levels**

Octave Band Center Frequencies (Hz)									
<u>31.5</u>	<u>63</u>	<u>125</u>	<u>250</u>	<u>500</u>	<u>1000</u>	<u>2000</u>	<u>4000</u>	<u>8000</u>	<u>dBA</u>
84	86	88	88	88	88	88	85	78	94

**Table 2.11-4**  
**Calculated Sound Levels from Pump Operation**

<b>Location</b>	<b>Distance</b>	<b>Levels</b>	<b>Noise Impact?</b>
Residence 1	5069	29	No
Residence 2	7498	26	No
Residence 3	6442	27	No
Residence 4	7445	26	No
Residence 5	9293	24	No
Residence 6	9293	24	No
Residence 7	11722	22	No
Residence 8	12250	22	No
Residence 9	17318	19	No

## **2.12 VISUAL RESOURCES**

The extended Project area has the same regional setting, visual sphere of influence, and scenic attractiveness and scenic integrity levels as discussed in Section 5.13, Visual Resources, in the Midway AFC. The water supply alternative area is virtually surrounded by active agricultural activities. There are no sensitive viewing areas within or adjacent to the extended Project area.

Associated construction will include installation of a below grade water pipeline and a pump station, connection to an overhead electrical transmission line, as well as deepening/berming of an existing backwash pond. All ground-disturbing activities would occur in areas previously disturbed or with degraded landscapes and within areas classified as retaining low distinctive or diverse natural amenities or lacking substantial positive cultural modifications.

At the completion of construction, the water pipeline will not be visible (as it will be buried 3-feet below grade). The pump station will be constructed at the eastern terminus of the water pipeline, will have a maximum footprint of 25 square feet, and will be set on a concrete slab. However, the land is currently used for industrial scale agriculture and various facilities and equipment associated with these activities are scattered throughout the area. Therefore, the pump station is not expected contrast with the existing setting or be in the viewshed of surrounding homes or farms. As stated, the backwash pond will be modified to include a new earthen berm intended to deepen the west end of the pond. This action may slightly modify the backwash pond's existing footprint; however it will not affect the aesthetics of the backwash pond or the surrounding area.

The water supply alternative would need to connect to the existing overhead transmission line that runs along W Lincoln Avenue. While there are two options for electrical connection to power the pump (Options 1 and 2 as discussed in Section 1.2 above) the power line is not expected to create visual impacts to the surrounding area. If Option 1 is selected, the line will be undergrounded and thus, not visible. If Option 2 is selected, the connection would be along existing power poles, approximately 5,000-feet west

of the pump, and is not anticipated to create significant visual impacts. No adverse visual impacts resulting from construction or operation of the water supply alternative are anticipated.

Construction laydown/storage related to the construction of the water supply alternative would occur within the Midway site and no increased visual impacts are anticipated. Thus, the findings of this Alternative Water Supply Analysis are consistent with the findings in Section 5.13, Visual Resources, of the Midway AFC and less than significant impacts to visual resources would occur.

## **2.13 WASTE MANAGEMENT**

Existing non-hazardous solid waste disposal facilities in the general area of the Midway site are listed in the Midway AFC. Several available Class III landfills are available to accept non-hazardous and inert solid wastes, including construction/demolition wastes. Soil treatment and/or recycling facilities in the vicinity are also listed in the Midway AFC.

Solid wastes generated from construction activities may include: paper, wood, glass, plastics from packing material, waste lumber, and empty non-hazardous containers. Small quantities of hazardous wastes will likely be generated over the course of construction. These wastes may include spent lubrication waste, waste oil, and oily rags. All hazardous and non-hazardous solid waste disposal/management as well as hazardous and non-hazardous wastewater disposal/management will be conducted in the same manner as discussed in the Midway AFC. Hazardous wastes generated during facility construction and operation will be handled and disposed of in accordance with applicable Laws, Ordinances, Regulations and Standards (LORS). With employee training and best management practices (BMPs) specified in the Midway AFC, these wastes are not expected to cause significant environmental or health and safety impacts. Most of the hazardous waste generated during construction can be recycled. The small quantities of hazardous waste that cannot be recycled are not expected to significantly impact the capacity of the Class I landfills in California.

Wastewater generated during construction of the water supply alternative will include stormwater runoff. As discussed in Section 2.4, Water Resources, a Stormwater Pollution Prevention Plan (SWPPP) will be prepared prior to construction of Midway. This plan will be implemented to control and minimize contamination of stormwater during construction activities in accordance with all applicable LORS.

The same demineralizer and RO process systems as originally described in the Midway AFC will be used in the water supply alternative. Any wastewater generated by the RO process will be conveyed by gravity to the proposed evaporation pond on the east side of the Midway site. See Section 2.4 for further discussion related to wastewater disposal. The stipulations provided in Section 5.14.3 of the Midway AFC will be implemented in order to avoid and minimize potential impacts associated with waste management. Therefore, less than significant impacts are anticipated.

## **2.14 HAZARDOUS MATERIALS**

Hazardous materials that will be used during construction of the water supply alternative include gasoline, diesel fuel, oil, lubricants, solvents, and adhesives. In general, construction contractors will be considered the generators of hazardous construction wastes during construction activities. The contractors will be responsible for assuring that the use, storage and handling of these materials will be in compliance with

all applicable federal, state, and local LORS, including licensing, personnel training, accumulation limits, reporting requirements and recordkeeping.

The only chemicals that would be used during operation of the water supply alternative are small amounts of lubricants and cleaning supplies related to maintenance of the pump station. No change in the quantity or type of hazardous materials at the Midway site would occur with implementation of the water supply alternative. As identified in the Midway AFC, a Hazardous Materials Business Plan (HMBP) which outlines hazardous materials handling, storage spill response, and reporting procedures will be prepared for the Project and submitted to responsible agencies prior to the commencement of Project operations. Features have been incorporated into Midway's design regarding the use of hazardous materials, specifically chemical storage facilities and procedures that will keep potential impacts below defined thresholds of significance. All hazardous materials management will be conducted in the same manner as discussed in Section 5.15, Hazardous Materials, of the Midway AFC. Therefore, less than significant impacts associated with hazardous materials are anticipated.

## **2.15 PUBLIC HEALTH**

Toxic air pollutants associated with construction and operation of the Midway Project that are included in the public health risk analysis are non-criteria pollutants (pollutants for which there are no established air quality standards). The water supply alternative does not include the use of any non-criteria pollutants, or a change in the amount or use of non-criteria pollutants at the Midway site as discussed Section 5.16, Public Health, of the Midway AFC. The potential for significant impacts from emission of the other group of pollutants for which there are specific air quality standards (criteria pollutants) during construction and operation of the water supply alternative is discussed in Section 2.1, Air Quality, above. No significant impacts to public health would result from construction or operation of the water supply alternative.

## **2.16 WORKER SAFETY**

Construction of the water supply alternative facilities will be completed using systems and procedures that will be implemented to provide occupational safety and health protection for the Midway workers in accordance with all applicable worker health and safety LORS. All applicable elements of the Title 8 California Code of Regulations (CCR), General Industry Safety Orders (GISO), Construction Safety Orders (CSO), and Electrical Safety Orders (ESO), with special attention paid to Section 3203, Injury and Illness Prevention Program, will be addressed.

Exposure to hazards can be minimized through adherence to appropriate engineering design criteria and administrative controls, use of applicable personal protective equipment (PPE), and compliance with all applicable health and safety LORS. The programs, regulations, and preventative measures intended to control potential worker health and safety impacts associated with these hazards are described in Section 5.17, Worker Safety of the Midway AFC. This encompasses a comprehensive health, safety, and fire prevention program and an accident/injury prevention program intended to ensure healthful and safe operations at the facility. No change to the programs/systems described in the Midway AFC will occur with water supply alternative. The following programs and systems are included in the Midway AFC:

- Construction Injury and Illness Prevention Program
- Construction Written Health & Safety Programs
- Construction Personal Protective Equipment Program
- Fire Protection and Prevention Plan
- Plant Operational Safety Program
- Operations Injury Illness Prevention Program
- Operational Written Safety Programs
- Operations Safety Training Programs
- Operations Personal Protective Equipment Program
- Hazardous Materials Handling and Storage Plan
- Operations Emergency Action Plan/Emergency Response Plan
- Fire Prevention/Fire Suppression Systems

**SECTION 3 CONCLUSIONS**

No significant impacts were identified in the Alternative Water Supply Analysis for any of the environmental disciplines. As demonstrated in the preceding sections, the use of the Irrigation Return Flow – Agricultural Backwash Pond alternative as the water supply source for the Project is not expected to create any increased adverse impacts over what was described in the Midway AFC (including all subsequent Project submittals). Related mitigation measures in the Midway AFC identified to reduce potential impacts to less than significant levels will be implemented. In addition, no significant cumulative impacts would arise with implementation of the water supply alternative and any other projects or aspects of the development of the Midway site. Use of the Irrigation Return Flow – Agricultural Backwash Pond alternative as the water supply source for the Midway Project would be consistent with all applicable local, state and federal LORS.







STARWOOD POWER - MIDWAY, LLC PEAKING PROJECT

Figure 1.1-1

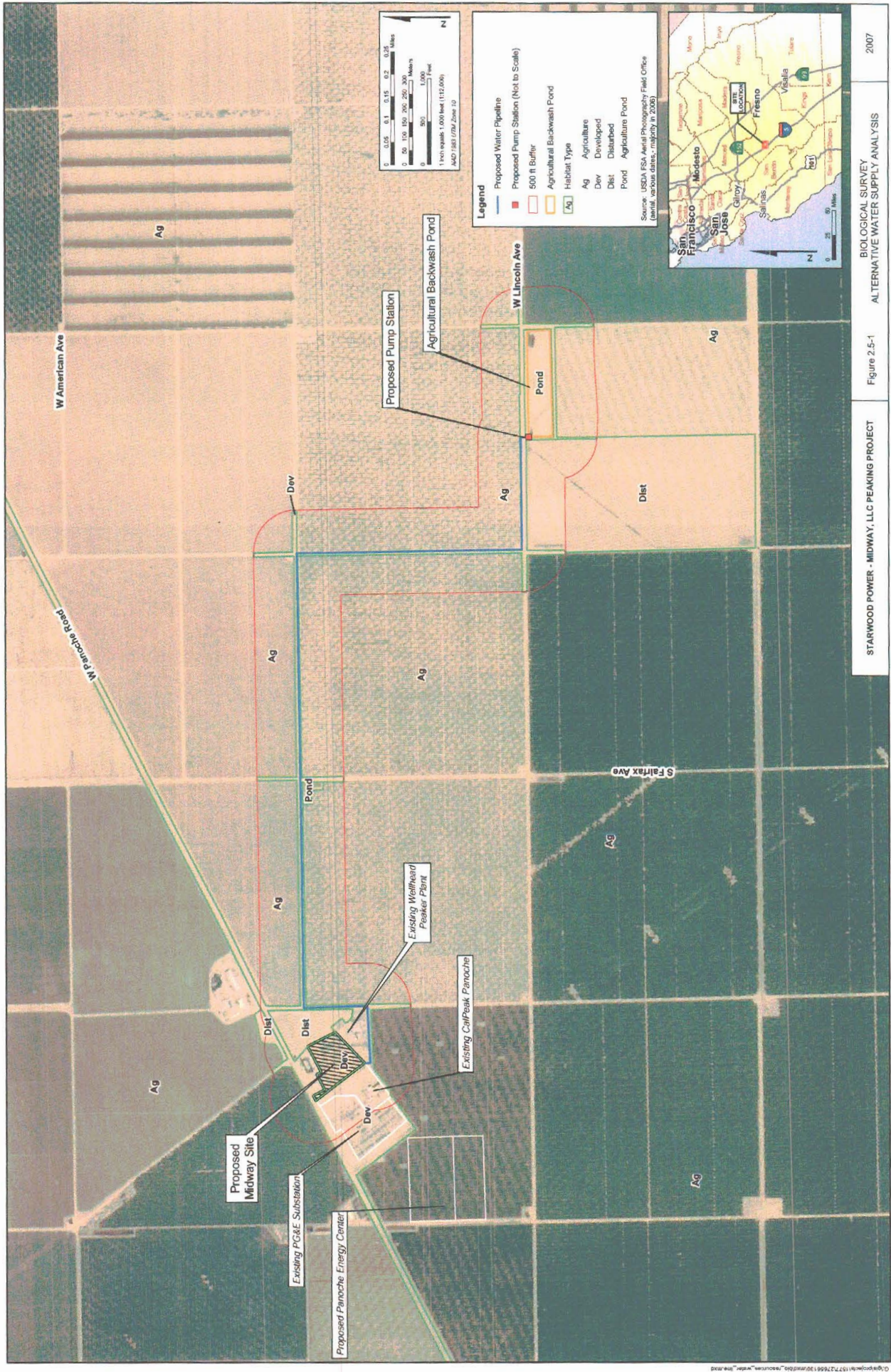
IRRIGATION RETURN FLOW -  
AGRICULTURAL BACKWASH POND  
ALTERNATIVE WATER SUPPLY ANALYSIS

2007

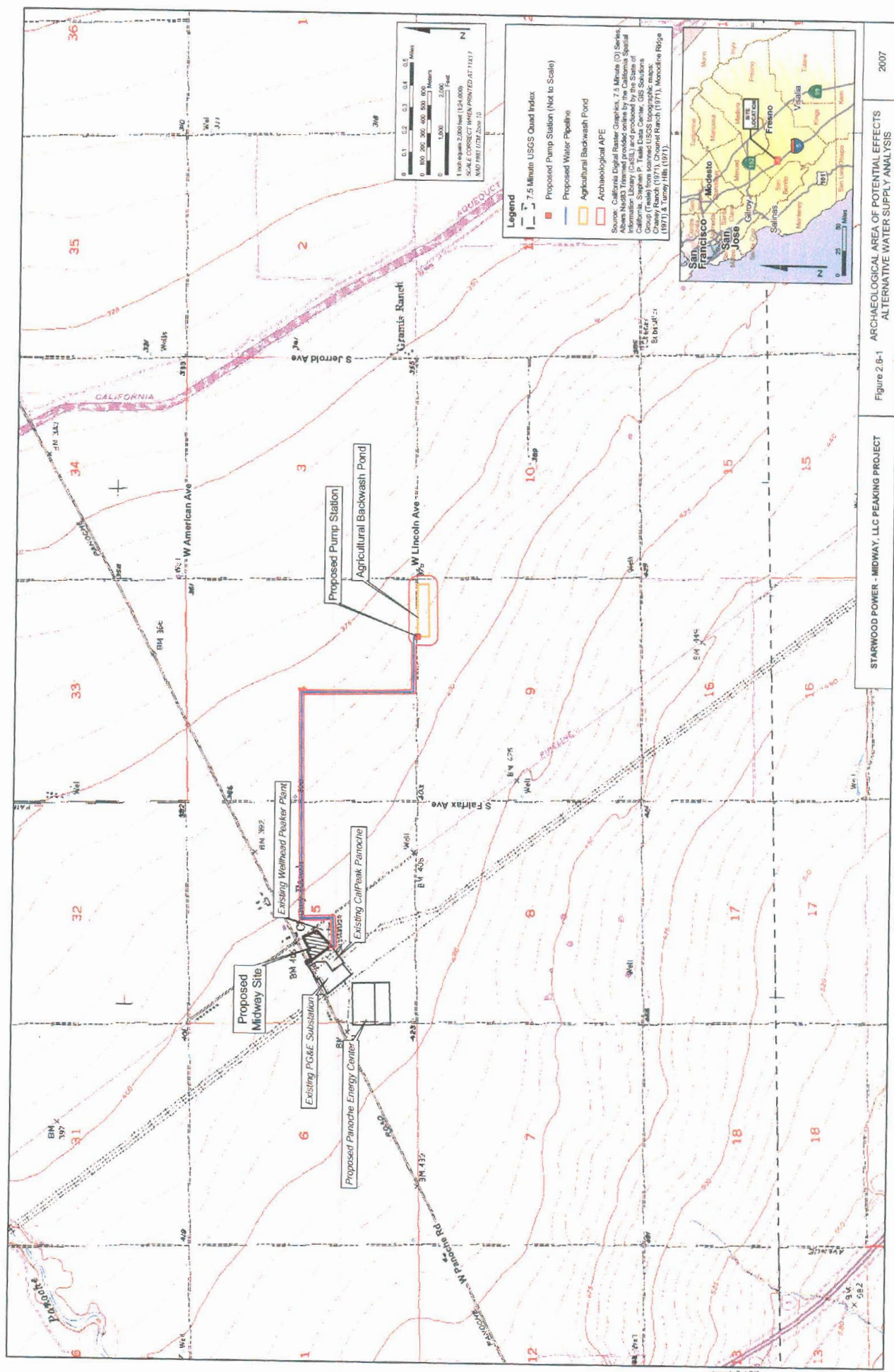
















View East of Water Pipeline Alignment



View South of Water Pipeline Alignment



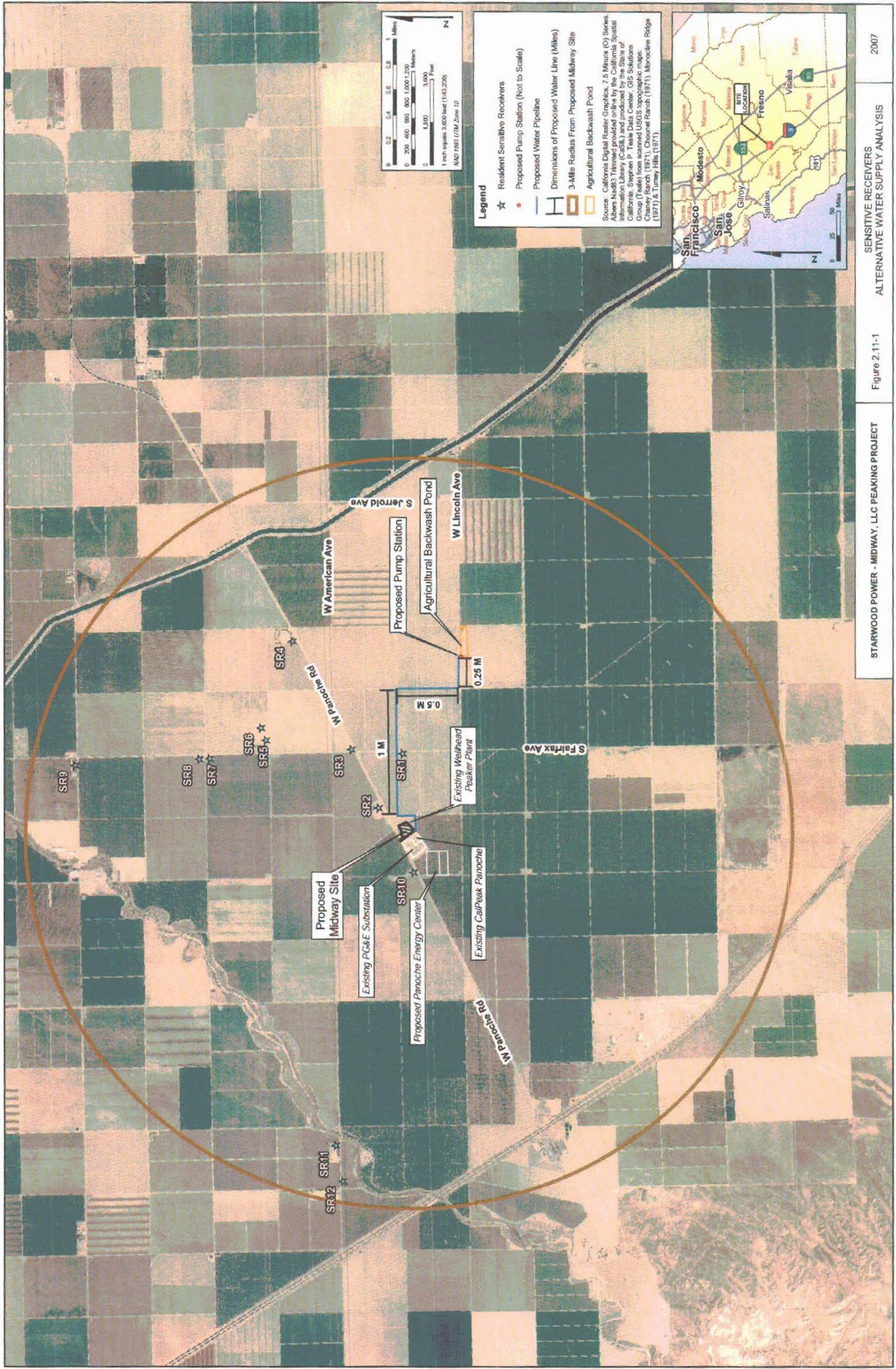


View East of Agricultural Backwash Pond



View Northeast of Agricultural Backwash Pond







**From:** <Angela\_Leiba@URSCorp.com>  
**To:** <docket@energy.state.ca.us>  
**Date:** 10/15/2007 9:18 AM  
**Subject:** Starwood-Midway Alternative Water Supply Analysis (06-AFC-10)  
**Attachments:** Alternative Water Supply Analysis\_(Full).pdf

**CC:** <rweiss@houston.rr.com>, <Cmcfarli@energy.state.ca.us>, <Amy\_Gramlich@UR...  
Attached is the Starwood-Midway Alternative Water Supply Analysis  
(06-AFC-10).  
Please feel free to contact me if you have any problems/questions.

Angela Leiba, GISP  
Senior Project Manager  
GIS Manager/Visual Resource Specialist  
URS Corporation  
1615 Murray Canyon Road  
Suite 1000  
San Diego, CA 92108  
www.urscorp.com  
cell: 619.888.5542  
tel: 619.294.9400  
fax: 619.293.7920  
angela\_leiba@urscorp.com

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