

CHAPTER 7

Alternatives Analysis

7.1 Introduction

This Chapter describes alternatives to the project pursuant to *CEQA Guidelines* (Section 15126.6(a)) that may avoid or lessen significant environmental impacts of the proposed Project and meet most or all of the Project Objectives. The analysis below compares a range of alternatives to the proposed Project to evaluate whether impacts would be greater, lesser, or similar to those resulting with the proposed Project. The Chapter restates the Project Objectives and lists the significant and unavoidable impacts of the project as identified in Chapters 4, 5, and 6 of this EIR. Project Alternatives are then described that may avoid or lessen those significant and unavoidable impacts. The analysis in this Chapter then compares each of the Alternatives including the No Project Alternative and identifies the Environmentally Superior Alternative for both the Groundwater Conservation and Recovery Component and the Imported Water Storage Component.

As described in Chapters 4, 5, and 6, of this Draft EIR, the proposed Project's Groundwater Conservation and Recovery Component would have less than significant impacts after mitigation to aesthetics, agricultural resources; biological resources; cultural resources; geology, soils and seismicity; hydrology and water quality; land use and planning; noise; public services and utilities; and traffic. As described below in Section 7.3, significant and unavoidable impacts would occur with regard to construction air emissions and cumulative air emissions for NO_x, as well as secondary effects of growth in the water agency service areas.

With respect to the proposed Project's Imported Water Storage Component also described in detail in Chapters 4, 5, and 6, less than significant impacts after mitigation are identified for aesthetics, biological resources; cultural resources; geology and soils; green house gas emissions; hazards and hazardous materials; hydrology and water quality; public services and utilities; and traffic. As described below in Section 7.3, significant and unavoidable impacts would occur with regard to construction air emissions and cumulative air emissions for NO_x.

7.1.1 CEQA Guidance for Alternatives Analysis

According to the *CEQA Guidelines* (Section 15126.6(a)), an EIR must describe a reasonable range of alternatives to a proposed project that could feasibly attain most of the basic project objectives, and would avoid or substantially lessen any of the proposed project's significant environmental effects. Section 15126.6(b) of the *CEQA Guidelines* states that:

“...the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or could be more costly.”

Section 15126.6(f) of the *CEQA Guidelines* provides direction on the required alternatives analysis:

“The range of alternatives required in an EIR is governed by a “rule of reason” that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project. The range of feasible alternatives shall be selected and discussed in a manner to foster meaningful public participation and informed decision making.”

“Feasible” means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors. Section 15126.6(d) of the *CEQA Guidelines* provides further guidance on the extent of alternatives analysis required:

“The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed.”

The range of feasible alternatives is selected and discussed in a manner to foster meaningful public participation and informed decision-making. Among the factors that may be taken into account when addressing the feasibility of alternatives (as described in *CEQA* Section 15126.6(f)) are site suitability, economic viability, availability of infrastructure, general plan consistency, regulatory limitations, jurisdictional boundaries, and whether the proponent could reasonably acquire, control, or otherwise have access to the alternative site.

The EIR must briefly describe the rationale for selection and rejection of alternatives and the information the lead agency relied on when making the selection. It also should identify any alternatives considered, but rejected as infeasible by the lead agency during the scoping process and briefly explain the reasons for the exclusion. Alternatives may be eliminated from detailed consideration in the EIR if they fail to meet most of the basic project objectives, are infeasible, or do not avoid any significant environmental effects.

Section 15126.6(e)(1) of the *CEQA Guidelines* also requires that the No Project Alternative be addressed in this analysis. The purpose of evaluating the No Project Alternative is to allow decision-makers to compare the potential consequences of the proposed project with the consequences that would occur without implementation of the proposed project.

With respect to the alternatives analysis for programmatic components of a project, there is a broader policy-level focus. *CEQA Guidelines* section 15168(b)(4). The purpose of the broader analysis is to consider potential alternatives early in the process to guide future approvals. *In re Bay-Delta Programmatic Env't'l Impact Report Coordinated Proceedings* (2008) 43 Cal.4th 1143, 1169. Alternatives are considered based on their feasibility and their ability to eliminate or reduce the project's environmental effects while meeting most of the basic project objectives.

Finally, an EIR must identify the environmentally superior alternative. The No Project Alternative may be environmentally superior to the proposed project based on the minimization or avoidance of physical environmental impacts. *CEQA Guidelines* section 15126.6(e)(2). require that if the environmentally superior alternative is the No Project Alternative, the EIR shall identify an environmentally superior alternative from among other alternatives.

7.1.2 Chapter Organization

This chapter presents the alternatives identification and evaluation process and is organized as follows:

- Section 7.2 – Project Objectives
- Section 7.3 – Significant Impacts of the Project
- Section 7.4 – Alternatives Rejected from Further Consideration
- Section 7.5 – Alternatives to the Groundwater Conservation and Recovery Component
- Section 7.6 – Alternatives Evaluation – Groundwater Conservation and Recovery Component
- Section 7.7 – Comparison of Alternatives and Identification of the Environmental Superior Alternative – Groundwater Conservation and Recovery
- Section 7.8 – Alternatives to the Imported Water Storage Component
- Section 7.9 – Comparison of Alternatives and Identification of the Environmental Superior Alternative – Imported Water Storage

7.2 Project Objectives

Project Alternatives are evaluated against their ability to meet the Project Objectives. *CEQA Guidelines* Section 15126.6(c) identifies factors that can be used to eliminate Project Alternatives including an Alternative's inability to meet most of the basic Project Objectives. This Chapter evaluates each Alternative's ability to meet the Project Objectives. For clarity, the Project Objectives are repeated below:

- Maximize beneficial use of groundwater in the Bristol, Cadiz, and Fenner Valleys by conserving and using water that would otherwise be lost to the brine zone and evaporation;

- Improve water supply reliability for Southern California water providers by developing a long term source of water that is not significantly affected by drought;
- Reduce dependence on imported water by utilizing a source of water that is not dependent upon surface water resources from the Colorado River or the Sacramento-San Joaquin Delta;
- Enhance dry-year water supply reliability within the service areas of SMWD and other Southern California water provider Project Participants;
- Enhance water supply opportunities and delivery flexibility for SMWD and other participating water providers through the provision of carry-over and, for Phase 2, imported water storage;
- Support operational water needs of ARZC in the Project area;
- Create additional water storage capacity in Southern California to enhance water supply reliability;
- Locate, design, and operate the Project in a manner that minimizes significant environmental effects and provides for long-term sustainable operations.

7.3 Significant Impacts of the Proposed Project

The proposed Project would result in two significant and unavoidable impacts: construction air emissions would exceed thresholds of significance for NO_x directly and cumulatively, and secondary effects of growth in the water agency service areas. No other significant impacts have been identified.

7.4 Alternatives Rejected from Further Consideration

An EIR must briefly describe the rationale for selection and rejection of alternatives. The lead agency may make an initial determination as to which alternatives are potentially feasible and, therefore, merit in-depth consideration, and which are clearly infeasible. Alternatives that are remote or speculative, or the effects of which cannot be reasonably predicted, need not be considered (*CEQA Guidelines*, Section 15126.6(f)(3)). This section identifies alternatives considered by the lead agency, but rejected as infeasible, and provides a brief explanation of the reasons for their exclusion. As noted above, alternatives may be eliminated from detailed consideration in the EIR if they fail to meet most of the basic Project objectives, are infeasible, or do not avoid any significant environmental effects (*CEQA Guidelines*, Section 15126.6(c)). The following paragraphs describe those alternatives.

Five alternatives were analyzed in the 2001 Cadiz Groundwater Storage and Dry-Year Supply Program EIR/EIS: The Eastern Alternative, the Western Alternative, The Combination Alternative, The Eastern/Canal Alternative, and the No Project Alternative. Three of these alignments are considered but rejected: Western Alternative, Combination Alternative and

Eastern/Canal Alternative. All three alternatives are pipeline alignment alternatives that are outside the ARZC easement and traverse previously undisturbed open space.

7.4.1 The Western Alternative

The Western Alternative includes construction of a 33.3-mile pipeline beginning at the Cadiz Property and joining the CRA at the western portal of the Iron Mountain Tunnel. The pipeline would proceed three miles south along the ARZC easement to a point located just south of the Cadiz Dunes Wilderness area. At this point, the pipeline would turn south-southwest and would run along the western boundary of the Kilbeck Hills and Iron Mountains for approximately 20 miles to the CRA.

The Western Alternative would impact 10 linear miles of undisturbed open space area within a wildlife movement corridor between the Iron Mountains and Calumet Mountains. The alignment is considered occupied desert tortoise territory. The alignment would also require approximately 484 acres of temporary construction right-of-way and 323 acres of permanent right-of-way for construction and operation of facilities on BLM land. In addition, due to the amount of previously undisturbed open space affected, this alternative would have a high potential to impact archaeological or paleontological resources. The alignment would not eliminate any impacts associated with the proposed Project.

This alternative would meet the objectives of the proposed Project. However, due to the increased impacts to biological resources and cultural resources, and due the need for an easement from BLM, this alternative was rejected from further consideration.

7.4.2 The Combination Alternative

The Combination Alternative includes construction of a 34-mile pipeline beginning at the Cadiz Property to the CRA at the western portal of the Iron Mountain Tunnel. The pipeline would be identical to the Western Alternative except that it would continue an additional 10 miles within the ARZC easement and proceed west on the eastern side of the Kilbeck Hills. At southern end of the Kilbeck Hills, the alignment would re-join the Western Alternative alignment and proceed approximately 10 miles to the CRA.

The Combination Alternative would have impacts similar to the Western Alternative. Previously undisturbed biological and cultural resources could be affected, and the alignment would require an easement from BLM. The alignment would not eliminate any impacts associated with the proposed Project. This alternative would meet the objectives of the proposed Project. However, due to the increased impacts to biological resources and cultural resources and due the need for an easement from BLM, this alternative was rejected from further consideration.

7.4.3 The Eastern/Canal Alternative

The Eastern/Canal Alternative would construct a 34.6-mile water conveyance facility that would include a pipeline with an approximately 10-mile canal segment on the western edge of the Danby Dry Lake. The water conveyance facilities would connect with the CRA at the Iron Mountain Pumping Plant.

Similar to the other two alignments, the Eastern/Canal Alternative would traverse previously undisturbed open space that would substantially increase acres of effect to biological resources and cultural resources. In addition, the alignment would require an easement from BLM and would not eliminate any impacts associated with the proposed Project. This alternative would meet the objectives of the proposed Project. However, due to the increased impacts to biological resources and cultural resources and due the need for an easement from BLM, this alternative was rejected from further consideration.

7.4.4 Water Conservation Alternative

The Water Conservation Alternative would eliminate the need for the proposed Project through the implementation of conservation policies and Demand Management Measures (DMMs) by each Project Participant that would effectively reduce water demands to levels consistent with the Project water supplies. Under the Water Conservation Alternative, each Project Participant would reduce water demands by 5,000 AFY through implementation of DMMs. While uncertainty in supplies in general have forced water providers to pursue a variety of projects, programs, and strategies to improve water supply reliability including conservation efforts, as described in Section 6.3, this alternative assumes an actual numeric reduction requirement for agencies to reach.

Conservation in general has seen increasing priority by individual agencies since 1991¹ because both the SWP and Colorado River water supplies are experiencing reductions from historic deliveries. Thus, the overall purpose of the proposed Project is to make available a reliable water supply for Southern Californian Project Participants to supplement or replace existing supplies and enhance dry-year supply reliability.

Under the Urban Water Management Planning Act, water providers of a certain size are required to prepare Urban Water Management Plans (UWMPs) that include conservation measures ensuring the efficient use of urban water supplies. In 2010, the California Department of Water Resources (DWR) published the 10x2020 Plan that identifies strategies to reduce per capita water use in the state by 20 percent by the year 2020. DWR outlines strategies to meet this target through a combination of conservation, improved water use efficiencies, increased recycled water

¹Each of the Project Participants is already subject to water conservation policies adopted by the state to increase water use efficiency. The California Urban Water Conservation Council's (CUWCC) Memorandum of Understanding Regarding Urban Water Conservation in California (MOU) identifies Best Management Practices (BMPs) that include several "Foundational BMPs" that promote water use efficiency. These BMPs have been implemented across the state since the MOU was first established in 1991.

use, and other potable water demand reduction measures and programs, as described below. Additionally, Metropolitan in collaboration with Metropolitan Water District of Orange County (MWDOC) and other Metropolitan member agencies is in the process of developing a Long Term Conservation Plan, which seeks an aggressive water use efficiency target in order to achieve a 20 percent reduction in per capita water use by 2020 for the entire Metropolitan service area. However, to date it is uncertain whether these goals can be realized. See Section 6.2 Growth Inducement Potential.

Each of the water agency Project Participants has prepared UWMPs that outline detailed conservation measures needed to meet aggressive conservation goals. The identification of conservation measures in the UWMPs would occur with or without the proposed Project. As noted in the UWMPs, each water agency's projected water demand already includes aggressive conservation goals. Therefore, even with success in achieving these goals, there would still be the need to participate in the proposed Project which primarily offers water supply reliability and diversity for each of the participants. The water provided by the proposed Project is primarily intended to offset expected declines in existing supplies; in some cases Project water will augment Participant supplies. The Project will reduce each participant's reliance on the SWP and/or California's allotment of Colorado River water. This supply flexibility increases reliability. Availability of imported water supplies in the future in average and dry years continues to be uncertain for Southern California water agencies. Concerns for escalating costs of future water in dry years also affects supply reliability.

As described in each Project Participant's UWMP, water conservation strategies are being implemented in accordance with state laws and local ordinances. Financial incentives and low flow fixtures form the foundation of the efficiency measures. Even with implementation of the conservation goals set out by the state and local jurisdictions, water supply diversity is needed to augment reliability and dry year supply. Reducing demands does not obviate the need for diverse water sources that enhance reliability and protect against declines during dry years.

The Water Conservation Alternative would not meet any of the Project Objectives. The Water Conservation Alternative would avoid the significant and unavoidable impact of NOx emissions during construction. However, the secondary effects of growth would not be avoided. Elimination of the proposed Project would not change any growth patterns or reduce the growth planned for Southern California. Water supplies would be less reliable and subject to shortages in dry years. Therefore, the Water Conservation Alternative is not a feasible alternative to the proposed Project.

The following sections describe the status of the ongoing conservation efforts conducted by each water agency Project Participant as reported in the UWMPs.

Santa Margarita Water District

SMWD is actively participating in many water conservation activities and has made water use efficiency an integral part of its water use planning. As a result, SMWD's 2010 UWMP forecasts that between 2010 and 2035, the population within City limits will increase by 40 percent, while water demand will increase by 36 percent.² Future water demands are expected to increase at a lower rate than population growth for several reasons, including the water conservation practices, techniques, and technologies implemented by SMWD to improve water use efficiency in their service area.

The SMWD Board of Directors adopted the Comprehensive Water Conservation Program Ordinance No. 09-07-02 on July 10, 2009, which establishes a comprehensive water conservation program that encourages reduced water consumption within SMWD through conservation, effective water supply planning, reasonable and beneficial use of water, prevention of waste, and efficient use of water within SMWD.

In addition, SMWD has dedicated resources to implementing 13 of the 14 BMPs identified in the California Urban Water Conservation Council's (CUWCC) Memorandum of Understanding Regarding Urban Water Conservation in California (MOU), including all of the "Foundational BMPs." The bulk of the resources are dedicated to high-efficiency appliance replacements and rebate programs, water accounting and metering, incentivizing programs and measures, and public information and school education programs. Due to its water conservation efforts in the past decade, SMWD is on its way to meeting its 20 percent water use per capita goals.

Three Valleys Municipal Water District

Water conservation across all customer groups is a key component of Three Valleys' long-term water supply strategy and essential to meeting the State's goal of reducing per capita water use by 20 percent by 2020. On a regional basis, the baseline water demand is estimated to be 193 gallons per capita per day (GPCD). A 20 percent reduction would lessen this to 154 GPCD. Long term savings from conservation measures is projected to range from 19,200 AFY in 2020 to 27,300 AFY in 2035. Three Valleys is one of the charter signatories to the 1991 CUWCC MOU. A number of Three Valleys' member agencies are also signatories to the CUWCC, including the cities of Covina, Glendora, La Verne, and Pomona, Covina Irrigating Company, Rowland Water District, Golden State, and Walnut Valley Water District. Three Valleys is working with its retail member agencies to develop policies and programs to address individual water reduction targets as part of a concerted effort to meet its conservation target. Three Valleys' past resolutions have encouraged its retail member agencies to adopt ordinances encouraging conservation practices during times of drought. In 2009, the District adopted its own updated ordinance to govern mandatory conservation activities during times of drought and other water shortages and emergencies, which contributed to a decrease in water use in 2009.

² Santa Margarita Water District, *2010 Urban Water Management Plan*, June 2010, page 2-13.

Suburban Water Systems

Suburban is a CUWCC member and signatory to the 1991 CUWCC MOU. Since 2007, there has been a significant downward trend in total and per capita water use, likely due to recent recessionary economic conditions, increased emphasis on water conservation and public outreach, and lower than normal summer temperatures. Over the last several years, Suburban has shown a stable to slightly decreasing demand trend. Water use by new customers appears to be offset by the following conservation measures, as well as the effects of new California plumbing and building code requirements.³

With its 2010 use at 141 GPCD, San Jose Hills is currently in compliance with its target of 142 GPCD. The DMM goal of 137 GPCD will be achieved by continued program implementation as well as the development of a recycled water program that is expected to reduce potable demand by about 1,400 AFY or 7 GPCD by 2015. The DMM goals for Whittier/La Mirada require reductions of about seven percent by 2020. Suburban will realize these savings by building on and expanding its existing programs, including the high efficiency toilets (HET) direct-delivery and financial incentives. Suburban will work with its wholesale agencies to promote and, where possible, augment available incentive programs. Long term savings from conservation measures is projected to range from 180 AF in 2015 to 2,670 AF in 2035.

Jurupa Community Services District

JCSD has focused its conservation efforts on implementing the water conservation BMPs and DMMs from the 1991 CUWCC MOU throughout their service area. JCSD has experienced a 17 percent decrease in per capita water consumption since 2006 and a reduced water demand since 2008, which has been attributed in part to JCSD's tiered pricing structure, the economic and drought conditions that have affected the region as a whole, and the effectiveness of JCSD's water conservation program.⁴ JCSD continues to implement public information and education programs, which are effective in managing against increased demands, particularly for non-potable water users. Residential, commercial, and industrial usage can be expected to decrease as a result of the implementation of more aggressive water conservation practices. As of 2009, JCSD is meeting their target of 199 GPCD, as reported in their 2010 UWMP.⁵

Golden State Water Company

Golden State is progressing towards implementing all Foundational BMPs for each of its water systems, as required in the revised MOU and UWMP Act. Golden State's companywide approach to meeting conservation targets includes accelerating current programs and adding additional programmatic, regulatory and information-based activities. Implementation levels and specific program offerings vary by system, depending on system goals, including existing implementation levels, demographics, and hydrologic characteristics. Chapter 6.0 – Growth Inducement reviews

³ Suburban Water Systems, *2010 Urban Water Management Plan*, June 2011.

⁴ Jurupa Community Services District, *2010 Urban Water Management Plan*, May 2011.

⁵ Jurupa Community Services District, *2010 Urban Water Management Plan*, May 2011, Section 2-2.

Golden State's Urban Water Management Plans for service areas that could receive Project water and provides further discussion of conservation and supply management measures.

California Water Service Company

Cal Water is a signatory to the 1991 MOU Regarding Water Conservation in California and implements a variety of demand management measures through its own programs and through collaboration with its wholesale agencies. Cal Water is in the process of expanding current conservation programs and developing new programs for its 24 service districts, which includes a Conservation Plan for the Westlake District. Cal Water's water conservation efforts within this district include retail conservation pricing, public education regarding efficient water use, and participation in high efficiency appliance rebate programs. Long term savings from conservation measures is projected to range from 1,312 AF in 2015 to 2,670 AF in 2035, which are the levels of conservation needed to meet SBx7-7 targets by 2020 and MOU requirements.⁶

7.4.5 Other Supply Sources Alternative

The Other Supply Sources Alternative could result in Project Participants developing other water sources, thereby avoiding impacts of constructing and operating the proposed Project. The significant and unavoidable NOx emissions would be avoided by this Alternative. However, the Other Supply Source Alternative would not eliminate the secondary effects of growth since other sources would likely be developed to support planned growth that results in secondary impacts. In addition, if other water supply projects are implemented, they would likely have similar or greater impacts than the Project.

The UWMPs for each of the Project Participants as well as Metropolitan identify numerous water supply projects that make up a broad portfolio of opportunities to meet water demands and enhance supply reliability. The overall purpose of the proposed Project is to be included as one of many water supply options available to Project Participants. Eliminating one of the water supply options would limit options to enhance reliability, control costs, and reduce reliance on imported CRA and SWP water. Water supply agencies in Southern California including each of the Project Participants are pursuing numerous water supply options as imported water supplies are becoming less reliable. This pursuit of other water supplies would likely occur with or without the proposed Project.

The proposed Project is being implemented by SMWD as Lead Agency in cooperation with Cadiz Inc. which owns land in the Cadiz Valley. Cadiz Inc. would not be available as a project partner for any other water supply Project. Therefore, the Other Water Supply Sources Alternative does not meet fundamental purpose of the Project, which is to develop a local supply by saving substantial quantities of groundwater that are lost each year in the Cadiz Valley to evaporation. Nor does this Alternative meet several other objectives.

Table 7-1 lists water supply projects identified in the Project Participant's UWMPs.

⁶ Cal Water, *Westlake District 2010 Urban Water Management Plan*, Adopted June 2011, page 76.

**TABLE 7-1
PLANNED AND FUTURE WATER SUPPLY PROJECTS AND PROGRAMS**

Santa Margarita Water District	
Baker Water Treatment Plant.	The Baker Water Treatment Plant will be a new 25 MGD plant at the existing Irvine Ranch Water District's (IRWD) Baker Filtration Plant site in Lake Forest. The Baker WTP will treat untreated water from the Santiago Lateral and Irvine Lake through the Baker Pipeline; SMWD expects to receive 9,400 AFY beginning in 2015. ⁷
Upper Chiquita Reservoir Project.	SMWD is constructing the Upper Chiquita Reservoir near Oso Parkway and the 241 Toll Road; it will have a capacity of 244 MG (750 AF) and will act as a large-scale emergency potable water supply during planned or unplanned service disruptions. Construction is expected to be completed in Fall 2011.
Rancho Mission Viejo Riparian Non-Potable Water.	Rancho Mission Viejo (RMV) holds riparian water rights for its ranching, agriculture and tenants uses. RMV and SMWD are contemplating an agreement whereby RMV leases a portion of the riparian water to SMWD for use as supplemental water to provide for non-domestic irrigation water to The Ranch Plan properties in the event that recycled water is not available. A portion of the leased water could also be used during grading and construction.
Recycled Water.	Recycled water from the Oso Creek Wastewater Reclamation System is used to meet centralized irrigation requirements and community landscape areas. Recycled water from the Chiquita WRP is used for irrigation purposes. The current combined recycled water production from the Chiquita WRP, Oso Creek WRP, and Nichols Institute is about 6,600 AFA, and by 2035, recycled water use is expected to more than double.
Supplemental Dry Year Water Supplies.	SMWD has two water purchase agreements with Cucamonga Valley Water District (CVWD) and Golden State for water in the Chino Basin that will augment supply reliability under normal, dry or multiple dry year water years. The purpose of these transfer agreements is to ensure that demands on SMWD's water resources from The Ranch Plan do not reduce water supplies for existing customers or prevent other approved developments.
Other Interconnections.	SMWD is working with neighboring agencies to expand a permanent interconnection and pumping facilities between the IRWD potable water distribution systems.
Other Storage.	SMWD purchased 50 percent of the capacity in the El Toro R-6 Domestic Water Reservoir which increased emergency storage within SMWD. In addition, SMWD has a distribution system of storage reservoirs which are designed to supply fire flow and one maximum-day of storage.
Groundwater.	As a member agency of the San Juan Basin Authority, which is responsible for a brackish groundwater desalination plant in the City of San Juan Capistrano, SMWD may consider participation in expansion of the facility.
Desalination.	There are three proposed ocean desalination projects in Orange County, one of which could benefit SMWD. On June 23, 2009, SMWD signed a non-binding Letter of Interest (LOI) for 5,000 AFY of Huntington Beach Seawater Desalination Project supplies.

⁷ Irvine Ranch Water District, *Baker Water Treatment Plant*, <http://www.irwd.com/your-water/construction-projects/baker.html>, accessed October 2011.

Three Valleys Municipal Water District

- Transfer Opportunities. Three Valleys has purchased over 1,300 AF of groundwater stored in the basin, which off sets the need to purchase an equivalent quantity of imported water. In the future, Three Valleys will continue to utilize this transfer opportunity as much as practically possible.
- Conjunctive Use. Three Valleys and its member agencies have developed three conjunctive use projects in partnership with Metropolitan. The Live Oak Basin Conjunctive Use Project, with the potential to store 3,000 AFY, the City of LaVerne's WTF with the capacity to treat 2,500 AFY on average of recovered groundwater, and the Upper Claremont Heights Basin with an averaged 800 AFY with the potential to add 5,000 AFY.
- Local Groundwater Recovery. The recovery or expansion of groundwater production in Three Valleys' service area may provide 20,000-25,000 AFY of added supplies.
- Recycled Water. In the future, recycled water development by the retail agencies within the Three Valleys service area may offset another 8,000-10,000 AFY of firm potable water demand.

Jurupa Community Services District

- Recycled Water. JCSD is exploring the potential of increasing recycled water use. Recycled water is anticipated to come on line in 2015
- Groundwater. JCSD has rights to groundwater pumping in the Chino Basin. Upon conversion of agricultural lands, JCSD will receive about 5,440 AF of additional groundwater production rights in the Basin. JCSD is also developing four new groundwater wells that will provide 9 to 11 MGD of supply.
- Desalination. JCSD's contractual agreement with Chino Desalter Authority requires that they purchase 8,200 AFA, and this contractual amount will increase by 3,300 AFA upon completion of the Chino II Desalter Expansion Project. The proposed CDA expansion will increase the capacity of the Chino II Desalter by 10,600 AFY, of which JCSD will receive approximately 3,300 AFY. Water is projected to be available from this project expansion in 2014.
- Imported Water. The Riverside Corona Feeder Project would allow Western MWD to purchase water from the SWP from Metropolitan and deliver the water to JCSD's service area through future built connections. The Feeder will incrementally increase water supply from 5,000 AFY in 2020 to 10,000 AFY in 2035. JCSD has also expressed interest other imported water supply projects that could increase the reliability and robustness of JCSD's water supply:
- Interconnection Projects. JCSD is planning a second interconnection to Rubidoux Community Services District, which extracts water from the Riverside South Basin. In addition to the 500 AFY that is currently available, JCSD has opened negotiations for purchasing an additional 1,000 AFY by 2015.
- Roger D. Teagarden Ion Exchange Plant. Feasibility and planning was recently completed to evaluate the potential existing raw water sources and transmission facilities to JCSD's Roger D. Teagarden Ion Exchange Plant, which has excess blending capacity and could increase capacity by implementing process improvements and expanding the facility. The Ion Exchange Plant could produce an additional 4 MGD, or 2,800 gpm, if raw water supply is available.

Suburban**Desalination.**

Suburban could develop financial arrangements with SWP contractors in the construction of their seawater desalination facilities in exchange for SWP supplies. Suburban's 2010 UWMP lists seven existing and proposed seawater desalination facilities that would individually yield from 10,000 AFY (Long Beach) to between 56,000 and 168,000 (Camp Pendleton) of water. Together, the seven desalination facilities could yield between 102,000 and 280,000 AFY.

Recycled Water.

To date, Suburban has not used recycled water within its service area, but it is participating in the City of Industry Regional Recycled Water Project that will be coming online in late 2011. Phase I is currently under construction and will contribute 1,406 AFA of recycled water supplies to Suburban's service area to offset potable water use for irrigation and aid in meeting Suburban's conservation requirements. Recycled water use is expected to remain steady through 2035.

Golden State**Delta Wetlands Place of Use Project.**

The Delta Wetlands Place of Use Project would deliver water to 33 Water Systems⁸ within the Southern California service area, including Barstow, which currently forecasts a supply shortfall in 2035.⁹ As a designated participant, Golden State would receive a maximum annual delivery of 20,000 AFY that would be used for municipal, industrial and domestic purposes, which would provide additional dry year water supply reliability.

California Water Service Company**Recycled Water**

Recycled water is currently used within Westlake District's service area. Cal Water has signed an agreement for the purchase of water from two recycled water distribution systems operated by CMWD: North Ranch and South Ranch systems, and plans to purchase water as it become available.

SOURCE: Suburban Water Systems, *2010 Urban Water Management Plan*, June 2011; Jurupa Community Services District, *2010 Urban Water Management Plan*, May 2011; Santa Margarita Water District, *2010 Urban Water Management Plan*, July 2011; California Water Service Company, *Westlake District 2010 Urban Water Management Plan*, June 2011.

⁸ Places of use for Delta Wetlands Place of Use Project include all Golden State Water Systems for which proposed Project water could be used, listed in the Growth Inducement Chapter 6, Table 6-7.

⁹ Semitropic Water Storage District, *Delta Wetlands Project Place of Use Draft EIR*, April 2010, page 6-3.

7.5 Alternatives to the Groundwater Conservation and Recovery Component

Alternatives to be considered in the EIR analysis are those that can avoid or substantially lessen one or more of the significant environmental effects of the proposed Project. An analysis of project alternatives also assists in evaluating options of a project that may reduce or avoid impacts that may not be significant. This Chapter identifies and compares several facilities alternatives that examine Project design modifications or facility locations to evaluate whether different variations of the Project would result in greater, similar, or lesser impacts. This Chapter evaluates two No Project Alternatives, one that compares against the existing baseline condition (Existing Agricultural Operations), and one that assesses the potential future condition based on existing land use development approvals (Expanded Agricultural Operations). This Chapter also evaluates alternative ways to operate the Project (Project Facilities and Project Operations, respectively).

No Project Alternatives

Two No Project scenarios are evaluated. The first assumes that the Project will not be constructed and that Cadiz agricultural operations will continue as they are today. The second scenario assumes that the Project will not be constructed but that Cadiz Inc. will expand its agricultural operations over time in accordance with existing plans and approvals.

1. **No Project Alternative – Existing Agriculture Operations.** The No Project Alternatives analyzed in this Draft EIR includes no construction of any new facilities and no change to existing agricultural operations within the Cadiz Property.
2. **No Project Alternative – Expanded Agriculture Operations.** This alternative assumes that agricultural operations on the Cadiz Property would increase as allowed under existing County approvals and zoning.

Project Facilities Alternatives

1. **Alternative Pipeline Route. West of Danby Pipeline.** This alternative includes a variation of the pipeline alignment from the wellfield to the CRA. The alignment is similar to the pipeline alignment evaluated in the 2001 Draft EIR/EIS by lead agencies Metropolitan and BLM.
2. **Existing Natural Gas Pipeline Alternative Route.** This alternative involves use of an existing, unused natural gas pipeline that runs past the Cadiz Property to Barstow (and on to Wheeler Ridge). This pipeline has capacity for approximately 30,000 AFY of water. The pipeline extends approximately 100 miles between the Project site and Barstow. The pipeline would require rehabilitation and upgrades including construction of up to 5 pump stations between the Cadiz Property and Barstow, installation of air valves at approximately half mile intervals along the pipeline route, and eventual pipeline lining.

3. **Wellfield Location.** This alternative involves a wellfield option located north of the proposed wellfield to evaluate the potential to reduce drawdown effects on brine migration and salt mining operations.

Project Operations Alternatives

1. **Project with Agriculture.** This alternative assumes that the existing or slightly expanded agricultural operations within the Cadiz Property would continue to operate in conjunction with the proposed Project.
2. **Phased Project Alternative.** This alternative assumes that the conveyance pipeline would be constructed similar to the proposed Project, but that the wellfield would be installed in a phased manner, over five (5) years rather than eighteen (18) months, expanding as monitoring data reveals drawdown effects are within expected levels.
3. **Reduced Project Alternative.** Under the Reduced Project Alternative, the duration of the Project would be reduced to 25 years and the total volume of water extracted over the term of the Project would be reduced by 25 percent. To maintain the benefits of conserving water that would otherwise flow to the brine zone and evaporate, the Reduced Project Alternative would pump up to 75,000 AFY of groundwater for a period of 25 years for delivery to Project Participants.

Table 7-2 provides a brief description of these alternatives, highlights how they differ from the Project, and identifies the Project impacts the alternative is intended to address.

7.6 Alternatives Evaluation – Groundwater Conservation and Recovery Component

This section provides a general description of each alternative, followed by its ability to meet the Project objectives and finishes with a qualitative discussion of its comparative environmental impacts. As provided in Section 15126.6(d) of the *CEQA Guidelines*, the significant effects of each alternative are identified in less detail than the proposed Project. **Table 7-3** compares the ability for each alternative to meet the Project objectives. **Table 7-4** compares the environmental impacts for each alternative to the proposed Project.

**TABLE 7-2
SELECTED ALTERNATIVES FOR CEQA ANALYSIS –
GROUNDWATER CONSERVATION AND RECOVERY**

Alternative / Description	How Does the Alternative Differ from the Proposed Project?	What Project Impact is the Alternative Intended to Avoid or Minimize?
No Project Alternatives		
1: No Project – Existing Agriculture	<ul style="list-style-type: none"> No facilities would be constructed and no Project implementation. Existing agricultural activity would continue. 	<ul style="list-style-type: none"> Included as required by CEQA
2: No Project – Expanded Agriculture	<ul style="list-style-type: none"> No facilities would be constructed and no Project implementation. Existing agricultural operations would expand as currently allowed by County. 	<ul style="list-style-type: none"> Included as required by CEQA assuming approved land uses are implemented
Project Facility Alternatives		
1. Pipeline route alternative – West of Danby Pipeline	<ul style="list-style-type: none"> Full Project implementation with alternative alignment for conveyance pipeline, which is shorter, crossing the Danby Dry Lake through previously undisturbed desert to Iron Mountain Pump Station 	<ul style="list-style-type: none"> Reduces impacts of construction of longer pipeline alignment
2. Pipeline route alternative – Existing Natural Gas Pipeline	<ul style="list-style-type: none"> Implementation of the Project with use of existing pipeline, avoids construction of new conveyance pipeline. Reduced operation of 30,000 AFY groundwater extracted versus Project proposed 50,000 AFY due to pipeline capacity restriction. 	<ul style="list-style-type: none"> Avoids impacts of constructing new conveyance pipeline and CRA tie-in. Conveyance capacity limitations would reduce groundwater pumping thereby reducing groundwater drawdown effects and associated effects on third party wells and salt mining operations.
3: Wellfield location alternative	<ul style="list-style-type: none"> Wellfield would be north of proposed Project wellfield configurations 	<ul style="list-style-type: none"> Reduces migration of saline-freshwater interface and resulting intrusion of lower quality groundwater
Project Operation Alternatives		
1. Project with Agriculture	<ul style="list-style-type: none"> Full Project implementation and continued agricultural activity. Would allow agriculture to remain in operation on Cadiz Property along with the Project. 	<ul style="list-style-type: none"> Avoids loss of agricultural activities
2. Phased Project Operation	<ul style="list-style-type: none"> Full Project implementation but over a longer implementation schedule. Would allow for monitoring feedback as Project is implemented 	<ul style="list-style-type: none"> Ensures drawdown is as expected
3. Reduced Project	<ul style="list-style-type: none"> Reduces total groundwater pumping by 25 percent over shorter term. Allows pumping of 75,000 AFY on average over 25 years. 	<ul style="list-style-type: none"> Reduces total groundwater withdrawal and allows for groundwater levels to recover sooner

SOURCE: ESA, 2011.

**TABLE 7-3
ABILITY OF PROJECT ALTERNATIVES TO MEET PROJECT OBJECTIVES**

Project Objectives	Project Facility Alternatives					Operational Alternatives		
	No Project Alternative	No Project Alternative with Expanded Agriculture	West of Danby Pipeline	Existing Natural Gas Pipeline Alternative Route	Wellfield Location	Project plus Existing Agriculture	Phased Project Alternative	Reduced Project Alternative
Maximize beneficial use of groundwater in the Bristol, Cadiz, and Fenner Valleys by conserving and using water that would otherwise be lost to evaporation;	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Improve water supply reliability for Southern California water providers by developing a long term source of water that is not significantly affected by drought;	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Reduce dependence on imported water by utilizing a source of water that is not dependent upon surface water resources from the Colorado River or the Sacramento-San Joaquin Delta;	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Enhance dry-year water supply reliability within the service areas of SMWD and other Southern California water provider Project Participants;	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Enhance water supply opportunities and delivery flexibility for SMWD and other participating water providers through the provision of storage;	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Support operational water needs of ARZC's railroad operations in the Project area;	No	No	No	No	Yes	Yes	Yes	Yes
Create additional water storage capacity in Southern California to enhance water supply reliability;	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Locate, design, and operate the Project in a manner that minimizes significant environmental effects and provides for long-term sustainable operations.	No	No	Yes	Yes	Yes	Yes	Yes	Yes

SOURCE: ESA, 2011

**TABLE 7-4
SUMMARY COMPARISON OF PROJECT ALTERNATIVES TO PROPOSED PROJECT**

Impact	Project Facility Alternatives					Operational Alternatives		
	No Project Alternative	No Project Alternative with Expanded Agriculture	West of Danby Pipeline	Existing Natural Gas Pipeline Alternative Route	Wellfield Location	Project plus Existing Agriculture	Phased Project Alternative	Reduced Project Alternative
Aesthetics	Lesser	Lesser	Lesser	Lesser	Similar	Similar	Similar	Similar
Agriculture and Forestry Resources	Lesser	Similar	Similar	Lesser	Similar	Lesser	Similar	Similar
Air Quality	Lesser	Greater	Similar	Lesser	Greater	Greater	Greater	Lesser
Biological Resources	Lesser	Greater	Greater	Greater	Greater	Similar	Greater	Similar
Cultural Resources	Lesser	Greater	Greater	Lesser	Greater	Similar	Similar	Similar
Geology and Soils	Lesser	Similar	Greater	Similar	Lesser	Similar	Similar	Similar
Greenhouse Gas Emissions	Lesser	Greater	Lesser	Lesser	Similar	Greater	Similar	Lesser
Hazards and Hazardous Materials	Lesser	Greater	Similar	Similar	Similar	Similar	Similar	Similar
Hydrology and Water Quality	Lesser	Lesser	Similar	Lesser	Greater	Greater	Similar	Lesser
Land Use and Planning	Lesser	Similar	Greater	Similar	Similar	Similar	Similar	Similar
Mineral Resources	Lesser	Lesser	Greater	Lesser	Lesser	Greater	Similar	Lesser
Noise	Lesser	Greater	Similar	Lesser	Similar	Greater	Greater	Similar
Population and Housing/Growth/Socioeconomics	Similar	Similar	Similar	Similar	Similar	Similar	Similar	Similar
Public Services and Utilities	Lesser	Similar	Similar	Similar	Similar	Similar	Similar	Similar
Recreation	Similar	Greater	Greater	Similar	Similar	Similar	Similar	Similar
Transportation and Traffic	Similar	Greater	Similar	Lesser	Similar	Greater	Greater	Similar

SOURCE: ESA, 2011

7.6.1 No Project Alternatives

No Project Alternative – Current Agriculture Operations

Pursuant to Section 15126.6(e)(2) of the *State CEQA Guidelines*, the No Project Alternative shall:

...discuss the existing conditions at the time the notice of preparation is published, or if no notice of preparation is published, at the time the environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services.

For the No Project Alternative, construction of facilities identified under the proposed Project would not be implemented. The existing agricultural operations at the Cadiz Property would continue and no new permanent structures would be constructed. There would be no augmentation to the Participating Provider' water supply.

Ability to Meet Project Objectives

The No Project Alternative would not meet any of the Project objectives. Under the No Project Alternative, current agricultural operations would continue, with the potential for increased agricultural production on the 1,140 acres currently fallow and not irrigated. Domestic water supply reliability and storage would not be developed.

Comparison of Environmental Impacts

Aesthetics

The No Project Alternative with Existing Agriculture would not impact scenic vistas and visual character. Since the Project site is already used for agriculture, open views for motorists traveling along National Trails Highway, SR 62, and other local roadways would be preserved. In addition, identifiable increases in light and glare would not occur under this alternative. Thus, the No Project Alternative with Existing Agriculture would result in fewer aesthetic impacts compared to the proposed Project.

Agricultural and Forestry Resources

Implementation of the No Project Alternative with Existing Agriculture would continue agricultural operations at the site. Since the proposed Project would curtail agricultural operations once the program is fully subscribed, the No Project Alternative with Existing Agriculture would result in fewer impacts to agricultural resources than the proposed Project.

Air Quality

The No Project Alternative with Existing Agriculture would not increase air impacts from existing conditions. Therefore, the No Project Alternative with Existing Agriculture would result in fewer impacts to air quality than the proposed Project.

Biological Resources

The No Project Alternative with Existing Agriculture would not alter the existing condition and therefore have fewer biological resource impacts than the proposed Project.

Cultural Resources

The No Project Alternative with Existing Agriculture would not alter the existing conditions and would therefore have fewer impacts than the proposed Project which contemplates new construction.

Geology and Soils

The No Project Alternative with Existing Agriculture would not involve the development of any on-site structures. The potential for subsidence would be reduced under this Alternative. The No Project Alternative with Existing Agriculture would not alter the existing condition and would therefore have fewer impacts than the proposed Project.

Greenhouse Gas Emissions

The No Project Alternative with Existing Agriculture would not increase emissions from existing conditions. Therefore, the No Project Alternative with Existing Agriculture would result in fewer GHG impacts than the proposed Project.

Hazards and Hazardous Materials

The No Project Alternative with Existing Agriculture would not involve the use of more hazardous materials than are used under existing conditions. Therefore, the No Project Alternative with Existing Agriculture would not alter the existing condition and, since some mitigation would be required in the proposed Project, would have fewer impacts than the proposed Project.

Hydrology and Water Quality

The No Project Alternative with Existing Agriculture would not result in increased groundwater extraction, and therefore water levels within the Cadiz aquifer would not be lowered more than they are now. Groundwater quality would not be affected by the change in groundwater gradients. Existing operations would be subject to the existing Groundwater Management Plan. No new monitoring features would be installed to monitor the groundwater basin. For the proposed Project, impacts to the hydrology and water quality were found to be less than significant with mitigation. Since some mitigation would be required with the proposed Project, the No Project Alternative with Existing Agriculture would result in fewer impacts on hydrology and water quality.

Land Use and Planning

The No Project Alternative with Existing Agriculture would not alter existing land uses. Therefore, the No Project Alternative with Existing Agriculture would have fewer impacts than the proposed Project.

Mineral Resources

The No Project Alternative with Existing Agriculture would extract less water than would the proposed Project. Since some mitigation would be required, the No Project Alternative with Existing Agriculture would therefore result in fewer impacts to mineral resources than the proposed Project.

Noise

The No Project Alternative with Existing Agriculture would not require additional construction that would generate noise. For the proposed Project, potential impacts from construction noise were found to be less than significant with mitigation. Therefore, since some mitigation would be required, the No Project Alternative with Existing Agriculture would not alter the existing condition and would have fewer impacts than the proposed Project.

Population and Housing

The No Project Alternative with Existing Agriculture would not increase population in the area. Nor would the Alternative include the addition of any new structures. No urban water demands would be met with a new reliable water supply. However, urban demands would be met by other means. Therefore, the No Project Alternative with Existing Agriculture would result in similar impacts to the proposed Project.

Public Services and Utilities

The No Project Alternative with Existing Agriculture would not increase population in the area. Nor would the Alternative include the addition of any new structures. No urban water demands would be met with a new reliable water supply. Therefore, the No Project Alternative with Existing Agriculture would result in similar impacts to the proposed Project.

Recreation

Implementation of the No Project Alternative with Existing Agriculture would not result in any new development and would not impact any recreational resources. Therefore, implementation of the No Project Alternative with Existing Agriculture would have similar effects to recreation-related impacts as the proposed Project.

Traffic and Transportation

Implementation of the No Project Alternative with Existing Agriculture would not alter existing conditions or increase traffic. Therefore, since some mitigation would be required, implementation of the No Project Alternative with Existing Agriculture would have fewer impacts than the proposed Project.

No Project Alternative – Expanded Agriculture Operations

Under the No Project Alternative with Expanded Agriculture, impacts associated with the construction and operation of the 43-mile pipeline and wellfield would be avoided. The existing agricultural operations would be expanded at the Cadiz Property. Some or all of the seven square

miles of agricultural lands that are currently open space could be converted to agricultural uses. To accommodate agricultural water demands, six new extraction wells would be installed with the capacity to extract up to 30,000 AFY to meet agricultural crop demands.

Ability to Meet Project Objectives

The No Project Alternative with Expanded Agriculture would not meet any of the Project objectives.

Comparison of Environmental Impacts

Aesthetics

The No Project Alternative with Expanded Agriculture would increase agriculture on the Cadiz Properties. Six new extraction wells would be drilled. Since the Cadiz land is already being used for agriculture, the No Project Alternative with Expanded Agriculture would not conflict with the existing character of the Project site. The alternative would avoid impacts to vistas and visual character of constructing the wellfield and installing pipeline under the proposed Project. For the proposed Project, potential impacts associated with night lighting were found to be less than significant with mitigation. Therefore, the No Project Alternative with Expanded Agriculture would result in fewer aesthetic impacts compared to the proposed Project.

Agricultural and Forestry Resources

Implementation of the No Project Alternative with Expanded Agriculture would result in the development of up to seven square miles of agricultural land. The site would remain in an agricultural use. The No Project Alternative with Expanded Agriculture would not adversely affect farmland or result in conversion of agriculture to non-agricultural uses. The Alternative would be similar to the proposed Project.

Air Quality

The No Project with Expanded Agriculture would have similar operational emissions associated with pumping 30,000 AFY of water from the ground although approximately forty percent less pumping would be required. The existing wells would be powered with diesel engines as opposed to the cleaner natural gas engines of the proposed Project. The No Project with Expanded Agriculture would result in air emissions from water pumping similar to the proposed Project, but to a lesser degree due to reduced operations. However, the expanded use of farm equipment would substantially increase operational combustion emissions and fugitive dust emissions in the valley. Overall, the No Project Alternative with Expanded Agriculture would result in greater air quality impacts compared to the proposed Project.

Biological Resources

The No Project Alternative with Expanded Agriculture would result in grading up to seven square miles of open desert. The proposed Project would only convert approximately 250 acres of open space desert, or 0.39 square miles. As a result, the No Project with Expanded Agriculture would result in substantially more impacts to biological resources than the proposed Project.

Cultural Resources

The No Project Alternative with Expanded Agriculture would affect a different area that has not been thoroughly surveyed. Because no surveys would be required for the agriculture expansion, potential impacts to cultural resources could be greater under the No Project with Expanded Agriculture.

Geology and Soils

The No Project Alternative with Expanded Agriculture would include significantly fewer structures. Overall, due to the decreased number of structures, the No Project Alternative with Expanded Agriculture would have fewer geological impacts compared to the proposed Project. However, extraction of up to 30,000 AFY could result in subsidence effects similar to the proposed Project, and although the No Project Alternative with Expanded Agriculture would be subject to the existing Groundwater Management Plan, no new monitoring features would be installed to measure its effects. Impacts associated with the No Project Alternative with Expanded Agriculture would be similar but slightly less than the proposed Project.

Greenhouse Gas Emissions

The No Project with Expanded Agriculture would have similar operational emissions associated with pumping 30,000 AFY of water from the ground although less than the 50,000AFY of water for the proposed Project. The existing wells would be powered with diesel engines as opposed to the cleaner natural gas engines of the proposed Project. The expanded use of farm equipment would substantially increase operational combustion emissions in the valley. Overall, the No Project Alternative with Expanded Agriculture would result greater GHG impacts compared to the proposed Project.

Hazards and Hazardous Materials

The No Project Alternative with Expanded Agriculture would not require construction related equipment that would require fuel storage. However, the expanded use of farm equipment would mean a greater use of fuels than would the proposed Project. Impacts would be greater than the proposed Project.

No schools are located within one-quarter mile of the Project area and no airport land use plan or public or public-use airport is located in proximity to the Project area. In addition, the Alternative would not interfere with any roadways or roads listed with an adopted emergency response plan or evacuation route. Thus, no impacts would occur and impacts would be similar to the proposed Project.

Hydrology and Water Quality

The No Project Alternative with Expanded Agriculture would include the construction of six production wells that would be used to irrigate seven square miles of additional agricultural uses. Up to 30,000 AFY of water may be extracted to irrigate this amount of acreage. This is less than the 50,000 AFY associated with the proposed Project. As a result, drawdown impacts to third party wells and brine resources resulting from the No Project with Expanded Agriculture

Alternative would be similar but slightly less than those of the proposed Project. However, no new monitoring features would be installed to measure the effects of extraction and to adaptively manage the groundwater basin under the existing MOU with the County. Therefore, impacts associated with the No Project Alternative with Expanded Agriculture would be similar but slightly less than the proposed Project.

Land Use and Planning

Implementation of the No Project Alternative with Expanded Agriculture would be consistent with existing zoning. Thus, the No Project Alternative with Expanded Agriculture would result in similar impacts to land use compared to the proposed Project.

Mineral Resources

The No Project Alternative with Expanded Agriculture would not affect access to mineral resources. Since the drawdown would be slightly less than the proposed Project, potential impacts on the salt mining operation would be slightly fewer. However no new monitoring features would be installed to assess and actively manage the groundwater basin. Impacts associated with the No Project Alternative with Expanded Agriculture would be similar but slightly less than the proposed Project.

Noise

The No Project Alternative with Expanded Agriculture would avoid construction noise impacts associated with the proposed Project. However, for the duration of the agricultural operations, daily noise generation from farm equipment would be greater than with the proposed Project. Therefore, impacts associated with the No Project Alternative with Expanded Agriculture would be greater than the proposed Project.

Population and Housing

The No Project Alternative with Expanded Agriculture does not include new residential or commercial development, nor would it displace existing housing or substantial number of people. In addition, the No Project Alternative with Expanded Agriculture would not convey water to meet urban demands. However, urban demands would be met by other means. Impacts associated with the No Project Alternative with Expanded Agriculture would be similar to the proposed Project.

Public Services and Utilities

The No Project Alternative with Expanded Agriculture would require new full-time employees during operation; this would generate a permanent population. Therefore, this Alternative would increase demand for fire services, police services, and emergency services in the Cadiz Valley. Impacts associated with the No Project Alternative with Expanded Agriculture would be greater than the proposed Project.

Recreation

The No Project Alternative with Expanded Agriculture would not encroach onto BLM lands. However, it would create additional jobs that could require an increase demand for existing recreational services and facilities. Impacts associated with the No Project Alternative with Expanded Agriculture would be greater than the proposed Project.

Traffic and Transportation

The No Project Alternative with Expanded Agriculture would create additional jobs that could require an increase to existing traffic in the area. Impacts associated with the No Project Alternative with Expanded Agriculture would be greater than the proposed Project.

7.6.2 Project Facility Alternatives

The following sections evaluate Project facility Alternatives including the following:

- West of Danby Pipeline Alignment
- Existing Natural Gas Pipeline
- Northern Wellfield Location

Table 7-4 provides a comparison of environmental effects of each Alternative compared to the proposed Project.

West of Danby Pipeline Alignment Alternative

The West of Danby Pipeline includes a variation of the pipeline alignment from the wellfield to the CRA that is more direct than that of the proposed Project pipeline. This pipeline alignment was evaluated in the 2001 EIR/EIS for the Cadiz Groundwater Storage and Dry-Year Supply Program, referred to as the "Eastern Alternative." This alignment was the preferred alternative in the 2001 EIR/EIS.

The West of Danby Pipeline begins at the Project wellfield, approximately three miles north of the unimproved Cadiz-Rice Road. The water conveyance facilities route proceeds due south for three miles, then parallels Cadiz Rice Road and the ARZC rail lines in a southeasterly direction toward abandoned Chubbuck Station. Southeast of abandoned Chubbuck Station, the water conveyance facilities turn south, generally following the 820-foot contour for approximately three miles around the west side of Danby Dry Lake. The water conveyance facilities then turn southeast, still generally following the 820-foot contour, between the south side of Danby Dry Lake and along the Iron Mountains for approximately ten miles until crossing Metropolitan's existing power transmission right-of-way. The water conveyance facilities continue around the east side of the Iron Mountains where they connect to an unimproved road. The water conveyance facilities parallel the unimproved road, enter the Iron Mountain Pumping Plant site, and discharge into the existing Iron Mountain Pumping Plant forebay. The total length of the West of Danby Pipeline is approximately 34.6 miles.

Ability to Meet Project Objectives

The West of Danby Pipeline would meet each of the Project objectives. It would provide a similar new pipeline from the wellfield to the CRA, only following a slightly different route.

Comparison of Environmental Impacts

Aesthetics

The West of Danby Pipeline would result in limited short-term impacts resulting from construction activities. The topography of the pipeline route would allow unobstructed views of equipment and construction activities. Portions of the route are already disturbed with existing facilities. Similar to those of the proposed Project, the West of Danby Pipeline would require the construction of air relief valves approximately every 1/2 mile. These relief valves would consist of a five-foot tall “goose-neck” pipe on a concrete pad that would be visible at the surface. Impacts of this pipeline would be similar to the proposed Project, although somewhat reduced due to the shorter length of the pipeline.

Agricultural and Forestry Resources

As with the proposed Project, the potential impact on agricultural resources from the West of Danby Pipeline would be minimal. The soils of the proposed pipeline area are not designated as agricultural soils, nor has it been designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. The pipeline areas are not zoned for agricultural use, and no existing Williamson Act contract lands would be affected by the construction activities. Impacts of the West of Danby Pipeline would be similar to the proposed Project.

Air Quality

Construction emissions from the West of Danby Pipeline are anticipated to result in significant adverse air quality impacts that cannot be mitigated to below CEQA threshold levels of significance. Construction methods required to implement the West Danby Pipeline Alternative would be similar to the proposed Project. Similar to the proposed Project, emissions of NO_x during short-term construction impacts would exceed thresholds of significance and would be significant and unavoidable.

Biological Resources

According to the 2001 EIR/EIS, direct impacts on plant communities and wildlife habitat resulting from the implementation of the West of Danby Pipeline would include the removal of approximately 585.3 acres of Mojave creosote bush scrub (30.1 acres permanent impact), 10 acres of Mojave wash scrub (1 acre of permanent impact), and 148.7 acres of stabilized or partially stabilized desert dunes or desert sand fields (16.5 acres permanent impact). See Table 5.8-3 of the 2001 EIR/S [Eastern Alternative Conveyance Pipeline.] Direct impacts on sensitive communities of Mojave wash scrub and stabilized or partially stabilized desert dunes or desert sand fields resulting from the implementation of the West of Danby Pipeline are expected to be potentially significant. However, with implementation of mitigation measures the impacts would potentially be reduced to a less than significant level. Although potentially mitigable, impacts of

the West of Danby Pipeline on biological resources would be greater than those of the proposed Project.

Cultural Resources

Ten sites of cultural significance could be impacted by the West of Danby Pipeline. In addition, the existing historic Iron Mountain Pumping Plant is at the southern terminus of the West of Danby Pipeline Route and Mining-related features at the town. The West of Danby Pipeline would entail construction of the Pumping Plant at the Iron Mountain Pumping Plant, which is a CRA complex containing structures and a cultural landscape characteristic of the 1930s. The impacts of the West of Danby Pipeline would be greater than those of the proposed Project.

Geology and Soils

The West of Danby Pipeline would have no significant adverse effects related to topography, geology and soils, or faults and seismicity. Local areas of shallow groundwater may exist where the alignment of the water conveyance facilities pass in close proximity to Danby Dry Lake. This is the only segment of the water conveyance facilities alignment that has a significant risk of liquefaction. Mitigation would reduce this risk to a level of insignificance. As compared to the proposed Project, impacts of the West of Danby Pipeline would be greater.

Greenhouse Gas Emissions

Construction and operational emissions from the West of Danby Pipeline would be expected to be less than those of the proposed Project due to the shorter length of the pipeline and therefore generation of fewer Greenhouse Gas Emissions.

Hazards and Hazardous Materials

Similar to the proposed Project, construction of the West of Danby Pipeline would require that equipment fuel lubricants and other potentially hazardous materials be transported to and stored in the pipeline construction staging areas. These activities would be conducted consistent with existing hazardous waste and pollution regulations. Therefore, the potential impacts related to uncontrolled releases of hazardous substances into the environment would be below the level of significance, similar to the proposed Project. There is the possibility that unexploded military ordinance could be located within the West of Danby Pipeline route from prior military operations. However, as with the proposed Project, the impact could be reduced to a less than significant level with mitigation. The West of Danby Pipeline would have potential impacts similar to those of the proposed Project conveyance facility.

Hydrology and Water Quality

Grading for the water conveyance facilities would not create new drainages. However, there is potential for erosion at locations where the water conveyance facility crosses ephemeral arroyos. Based on the depth of pipeline burial erosion protection along existing arroyos may be required for the West of Danby Pipeline. Extraction of groundwater is not part of the water conveyance facility construction and no risk of subsidence or other hydrological effects would occur. The impacts from the West of Danby Pipeline would be similar to those of the proposed Project.

Land Use and Planning

Construction of the West of Danby Pipeline would be constructed on undeveloped land including federal lands administered by the BLM, State owned lands and privately owned lands. The water conveyance and power distribution facilities would cross the railroad lines and oil and natural gas pipelines. These crossings would be coordinated with the railroad and pipeline operators. The pipe would be jacked or tunneled under the rail line. In order to secure temporary and permanent right-of-way easements from BLM, the West of Danby Pipeline would require an amendment of the CDCA Plan. Considering the additional planning approvals needed and the use of BLM land, the West of Danby Pipeline would have impacts greater than those of the proposed Project.

Mineral Resources

None of the existing mineral extraction operations in the vicinity would be directly impacted by construction of the West of Danby Pipeline, although the pipeline passes through or near areas with potential mineral resources. Construction of the pipeline would result in temporary access delays to areas along the water conveyance facilities, including areas identified for potential mineral resources. However, these temporary access delays would only occur if these areas were developed for mineral extraction and would not result in long term access limitations or delays to areas identified for potential mineral resources. The West of Danby Pipeline would have slightly greater impacts than those of the proposed Project.

Noise

Construction for the West of Danby Pipeline would take up to 12 months with additional time for the pump stations. During these construction periods, short term noise would be generated by construction equipment, vehicles, and worker vehicles, as with the proposed Project. The Cadiz Dunes Wilderness Area is closest to the pipeline and would be adjacent to the south side of the pipeline for a distance of approximately five miles. The Old Woman Mountains Wilderness Area would be located north of the water conveyance facilities. Blasting may be necessary during construction at up to three locations along the water conveyance facility alignment. This blasting could occur over a total of eight days during the excavation of the water conveyance facility trench and may result in short-term intermittent noise levels which may be heard in the Cadiz Dunes wilderness area and potentially in parts of the Old Woman Mountains wilderness area. These potential impacts would be similar to those of the proposed Project, as the proposed Project may also require blasting but likely to a lesser extent.

Population/Housing/Socioeconomics

The West of Danby Pipeline would generate short-term employment related to construction of the water conveyance facilities (estimated to be approximately 400 workers) and would generate negligible long-term employment opportunities (1 worker) related to the operations of the pipeline. Neither the long-term nor short-term employment generated by the West of Danby Pipeline would be considered a significant adverse impact under the criteria of inducing substantial growth or concentration of population (in this case, employee population). The West of Danby Pipeline is not expected to result in significant adverse impacts related to population and housing and the level of direct population or employment growth it would generate would be

insignificant relative to the overall level of growth projected for the surrounding area. The impacts would be similar to those of the proposed Project.

Public Services and Utilities

Like the proposed Project, construction of the West of Danby Pipeline would not require additional police and law enforcement services in the Cadiz Project area. Like the proposed Project, it is not anticipated that a significant increase in demand for fire protection or medical services would be needed in the long term, and any short term increase would be met by temporary provision of emergency medical services. There could be a minor short term increase in the demand for emergency medical services during construction, but the existing fire station at Wonder Valley would be adequate to meet the demand for fire and emergency services. Like the proposed Project, there are no construction-related impacts on school facilities and services, or libraries, because there are no schools or libraries on or in the immediate vicinity of the Project. Overall, impacts on public services and utilities caused by the West Danby Pipeline would be similar to those of the proposed Project.

Recreation

The West of Danby Pipeline conveyance facilities and power distribution facilities would be within several hundred feet of the west boundary of the Old Woman Mountains Wilderness Area for approximately 1.25 miles. The alignment is also within 100 feet of the eastern boundary of the Cadiz Dunes Wilderness Area for approximately five miles, which is closer than the proposed Project. The West of Danby Pipeline would require construction within 500 feet of the Johnson Valley to Parker Race Route. Overall, impacts from the West of Danby Pipeline would be greater than the proposed Project.

Traffic and Transportation

Five hundred and sixteen daily one way traffic trips are estimated to be generated from construction of the West of Danby Pipeline, conservatively assuming construction at the Project site, intermediate staging area, and Iron Mountain pumping plant site occur simultaneously and each employee drives alone. Operational trips would be negligible considering it is estimated that only one employee would be needed for these trips. Similar to the proposed Project, short and long-term traffic trips generated by the West of Danby Pipeline would be less than significant.

Existing Natural Gas Pipeline Alternative

The Existing Natural Gas Pipeline Alternative involves the conversion and use of a portion of an existing 30-inch diameter unused natural gas pipeline that extends through the Cadiz Inc. Property north through Barstow and to Wheeler Ridge near Bakersfield, California. The proposed pipeline in its entirety encompasses approximately 304 miles extending from Ehrenberg, Arizona (near the California/Arizona border) to Wheeler Ridge, California. The pipeline was originally built to convey oil and was recently converted for use to convey natural gas.

Phase 1 of the Alternative includes the upgrading of the 100-mile pipeline segment that extends from the Cadiz Property to Barstow. This pipeline segment would have a capacity of

approximately 30,000 AFY of water and would allow for water deliveries to the City of Barstow. These deliveries would replace water delivered to Barstow via the State Water Project, allowing that water to be delivered to the Project Participants in the Metropolitan service area. The pipeline could also potentially provide more than 5,000 AFY of water to the Golden State Water Company, which provides water service to Barstow.

Under Phase 1 of this Alternative, the pipeline would undergo rehabilitation and upgrades to prepare the natural gas pipeline for water conveyance, including the construction of two pump stations along the pipeline and air valves installed in approximately half-mile segments. With milepost markers located along the pipeline and beginning at “0” at the Cadiz Inc. Property, construction of the proposed pump stations would be located at the 32 and 40 milepost markers at a ridge crossing. The pump station sites would encompass a maximum of two acres but would be located within the pipeline right-of-way. Construction of the air valves would occur along the pipeline in half-mile intervals, totaling approximately 200 air valves along the 100-mile segment. The air valve facilities consist of the installation of a vault marked at the surface by a five foot-by five foot square concrete pad with a “goose neck” air vent protruding up to five feet high. If necessary, the air valve placement can also be moved to avoid potential environmental constraints.

Phase 2 of this Alternative could potentially upgrade and rehabilitate the pipeline from Barstow to Wheeler Ridge, near the City of Bakersfield. In order to prepare the pipeline for water conveyance to Wheeler Ridge, additional pump stations and air valves along the pipeline segment would be required. The entire 220-mile pipeline segment from Cadiz Inc. Property to Wheeler Ridge would require approximately three to five additional pump stations, in addition to the two pump stations proposed under Phase 1 for the Cadiz Property to Barstow pipeline segment. The pump stations would also encompass a maximum of two acres but would be located within the pipeline right-of-way. Additional air valves would be required in half-mile intervals along the pipeline segment, totaling approximately 440 air valves. At Wheeler Ridge, the pipeline could intertie with the State Water Project. This would require construction of a pump station within a two-acre parcel.

Ability to Meet Project Objectives

The Existing Natural Gas Pipeline Alternative would meet most of the Project Objectives, but would not provide the capacity needed to meet the goals of the Project as “fully subscribed.” The alternative pipeline would only convey 30,000 AFY. Under this Alternative, objectives to maximize the beneficial use of groundwater through conservation, create new water storage capacity in Southern California, and enhance water supply reliability would be met, but to a lesser extent than the proposed Project. In addition, since water would only be delivered to Barstow, conveyance of water directly to the Project Participants would be more difficult to achieve, requiring agreements with the Mojave Water Agency to accept Project water in lieu of SWP water.

Comparison of Environmental Impacts

For this Alternative analysis, only Phase 1 of the Existing Natural Gas Pipeline Alternative will be analyzed.

Aesthetics

The Existing Natural Gas Pipeline Alternative would result in limited short-term impacts resulting from construction activities. The proposed pipeline traverses arid desert terrain and is currently disturbed with existing right-of-ways along the pipeline route. The topography of the pipeline route would allow unobstructed views of equipment and construction activities. The pipeline is currently equipped with metering facilities, mainline valves, and pressure control valves located along intervals of the pipeline. The proposed Alternative would update the pipeline with two pump stations and approximately 50 air valves with a maximum height of five feet each located every half mile. As the pipeline area are currently equipped with existing facilities, the upgrading and construction of new pump stations and air valves would be less than significant.

If construction activities occur in the night, light and glare would be directed to the Project site. In addition, impacts related to light and glare would be negligible as no sensitive receptors are located in proximity to the pipeline site. Furthermore, there are no designated State Scenic Highways, County-designated scenic routes, or scenic resources such as trees or rock outcroppings in the proposed vicinity that would be negatively impacted by the construction activities. As the proposed site is already disturbed with existing facilities and impacts would be limited and short-term, impacts related to aesthetic and visual resources would be less than significant. For the proposed Project, potential impacts to aesthetics were found to be less than significant with mitigation. Since some mitigation would be required, impacts would be reduced compared to the proposed Project.

Agricultural and Forestry Resources

Under the Existing Natural Gas Pipeline Alternative, no agricultural land or forest resource land would be affected. No areas designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance would be affected. The project would convert an existing pipeline. No areas designated as Williamson Act contract lands would be affected. Impacts would be reduced to those compared to the proposed Project.

Air Quality

Air emissions from construction would be fewer than the proposed Project since the pipeline already exists. Operational air emissions would most likely be less than the proposed Project because fewer wells would be operated to convey the 30,000 AFY.

Biological Resources

Construction activities would be located within the 100-foot right-of-way along the pipeline. However, the construction of the pump stations would require up to a two-acre site of disturbance and a five foot-by-five foot square concrete pad for the air valves. The area is generally undeveloped desert land that consists of numerous vegetation communities and wildlife habitats.

The existing pipeline traverses an area that may have more value for desert tortoise or other sensitive species than the terrain through which the proposed Project pipeline runs. The construction and upgrading activities could encroach on biologically sensitive habitats and resources. The Alternative would have both short-term construction impacts and also small amounts of permanently impacted habitat. Biological surveys would be required to quantify the value of the properties affected. Impacts to desert areas would be fewer than the proposed Project since the construction area would be more limited. However, direct effects to sensitive species could be greater.

Cultural Resources

Cultural and archeological resources along the natural gas pipeline route may be affected. However, with implementation of mitigation measures similar to those of the proposed Project, the Existing Natural Gas Pipeline Alternative impacts to cultural and paleontological resources could be minimized and limited. Since the construction areas would be smaller than those of the proposed Project, impacts would be reduced compared to those of the proposed Project.

Geology and Soils

Major seismic activity along the nearby and active San Andreas or Garlock fault systems, or other associated faults, could affect the proposed site and pipelines through strong seismic ground shaking. In response to this, the existing pipeline was constructed with an increased wall thickness to provide additional protection to the pipeline in the event of seismic activity. The proposed new pipeline components would be designed to withstand strong ground shaking as required by the California Building Code to minimize the potential effects of liquefaction, ground shaking, landslides, and other effects of seismic activity. Trenching and grading would occur that could cause soil erosion or loss of topsoil; however implementation of mitigation measures similar to the proposed Project would ensure impacts are less than significant. As the pipeline and proposed pipeline facilities would be reinforced to withstand seismic activity, impacts related to geology, soils, and seismicity would be less than significant and similar to the proposed Project.

A smaller amount of groundwater would be extracted under this Alternative since the conveyance capacity would be less. This would reduce the potential for adverse effects of subsidence.

Greenhouse Gas Emissions

The Existing Natural Gas Pipeline Alternative would provide the ability to increase water supplies to urban uses in Southern California. Construction and upgrading activities would be limited and short-term and is not anticipated to result in significant GHG emissions. However, pumping water through the alternative pipeline alignment would require additional energy that would emit greenhouse gases. Due to the limited capacity of the Existing Gas Pipeline, impacts related to GHG emissions would be less than those of the proposed Project.

Hazards and Hazardous Materials

Construction-related activities would require the use, storage, and transportation of fuels, oils, lubricants, and other potentially hazardous materials that could pose a hazard to people and the

environment, due to the potential for accidental release. Similar to the proposed Project, the Alternative would be required to comply with applicable rules and regulations in the handling, storage, and transportation of the hazardous materials to reduce the risks and hazards to workers, the public, and the environment. Therefore, impacts would be less than significant with implementation of mitigation measures similar to the proposed Project.

The pipeline would be cleaned and retrofitted to accommodate water. Water quality would be monitored and would be required to meet drinking water standards in order for the Project to be feasible.

No schools are located within one-quarter mile of the Project area, no airport land use plan or public or public-use airport is located in proximity to the Project area. In addition, the Alternative would not interfere with any roadways or roads listed with an adopted emergency response plan or evacuation route.

Hydrology and Water Quality

The Alternative would convert the pipeline from natural gas to water conveyance. The pipeline would have a capacity of 30,000 AFY as opposed to the 75,000 AFY of the proposed Project. As a result, the alternative would not fully achieve delivery objectives. Extraction of groundwater would be less under this Alternative since the conveyance capacity would be less. This would reduce the potential for adverse effects on third party users and salt mining operations.

The Alternative does not include the development of housing nor is it located within a 100-year flood zone. The Alternative would not expose workers or structures to seiches, tsunamis, or mudflows. Impacts would be less than significant with the implementation of mitigation measures similar to the proposed Project. Thus, impacts would be less than those of the proposed Project due to the reduced project capacity.

Land Use and Planning

The existing pipeline traverses different land uses including utility lands, rangelands, and BLM lands. Construction and upgrading activities on the pipeline would not divide communities and is not expected to conflict with existing planning goals and policies as the activities would primarily be conducted within the pipeline right-of-way. Improvements along the pipeline route would be within the Western Mojave Planning area and subject to the Western Mojave Plan HCP. Thus, impacts would be less than significant and similar to those of the proposed Project.

Mineral Resources

The Alternative would construct pipeline appurtenances along the existing pipeline route. These appurtenances would not block access to mineral resources in the area. Furthermore, since the Alternative pipeline would extract less water, impacts to salt mining operations on Bristol and Cadiz Dry Lakes would be less than those of the proposed Project.

Noise

Construction of the pipeline appurtenances would generate short-term construction noise. The noise levels would fluctuate depending on the type, number, and duration of uses of various pieces of construction equipment. The pump stations would be insulated to minimize noise. Ground-borne vibrations would also be limited. Noise impacts from the Alternative project would be lesser than those of the proposed Project since the construction efforts would be less.

Population and Housing

The Alternative pipeline would have a lesser capacity to deliver water to Project Participants. Nonetheless, it would provide a reliable water supply that could indirectly support some level of new growth. In this way it would be similar to the proposed Project.

Public Services and Utilities

The Existing Natural Gas Pipeline Alternative would not construct permanent residential development, nor require new full-time employees during operation that would generate a permanent population. Therefore, the proposed Alternative would require a minor short-term demand for fire services, police services, and emergency services during the construction phase as with similar to the proposed Project.

Upgrading and rehabilitation activities on the existing natural gas pipeline would require energy use including electricity and natural gas. Similar to the proposed Project, this Alternative would not substantially increase energy use compared to existing energy demands for importing water to Southern California.

Recreation

The use of the existing natural gas pipeline would not affect recreational facilities. Therefore, no impacts would occur and impacts would be similar to the proposed Project.

Traffic and Transportation

Construction-related traffic would be limited and short-term. Since construction on the Alternative project would be limited, impacts to traffic would be less than the proposed Project.

Northern Wellfield Location Alternative

Under the Northern Wellfield Location Alternative, the wellfield would be located north of the proposed Project wellfield within the Cadiz Property. A condensed wellfield similar to Wellfield Configuration A would be installed with a few “high capacity” wells in the center of the wellfield. The wells would be placed within Cadiz Property only and would not maximize the water conservation potential. The Alternative would be designed to reduce the movement of the saline interface around Bristol Dry Lake.

Ability to Meet Project Objectives

The Northern Wellfield Location Alternative would meet most of the Project objectives, but would not maximize the water conservation potential provided by the other wellfield alternatives.

Comparison of Environmental Impacts

Aesthetics

The location of the northern wellfield may be slightly more visible from Route 66. However, it would result in similar affects to visual resources as the proposed Project since it would use a similar configuration.

Air Quality

The Northern Wellfield Location Alternative would result in air emissions similar to the proposed Project because a similar number of wells would be operated although the water would be pumped a slightly greater distance.

Agriculture and Forestry Resources

The Northern Wellfield Location Alternative would have impacts to agricultural resources similar to the proposed Project.

Biological Resources

The Northern Wellfield Location Alternative would be located within desert tortoise critical habitat and would have a greater effect on desert tortoise as a result. All other biological impacts would be similar to the proposed Project.

Cultural Resources

The Northern Wellfield Location Alternative while not surveyed would have a similar potential to encounter previously unknown cultural resources as the proposed Project.

Geology and Soils

The Northern Wellfield Location Alternative would be similar to the proposed Project, but may result in lesser potential for subsidence due to the location of the wells further from the Dry Lake.

Greenhouse Gas Emissions

The Northern Wellfield Location Alternative would result in GHG emissions similar to the proposed Project because the same number and types of wells would be operated.

Hazards and Hazardous Materials

The Northern Wellfield Location Alternative would result in use of hazardous materials similar to the proposed Project.

Hydrology and Water Quality

The Northern Wellfield Location Alternative would move the deepest part of the wellfield drawdown north of the Fenner gap. This would result in somewhat less saline intrusion toward the wellfield than under the proposed Project. However, the wellfield would not be able to access water supplied by the Orange Blossom Wash. Furthermore, water already through the gap flowing toward the brine sink would not be pulled back into the wellfield and conserved from evaporation. Therefore, the northern wellfield location would not maximize the conservation potential offered by the proposed Project.

Land Use and Planning

The Northern Wellfield Location Alternative would occur on Cadiz Property. Similar to the proposed Project, no impacts to land uses would occur.

Mineral Resources

The Northern Wellfield Location Alternative would result in less drawdown under the Dry Lakes since the wellfield would be situated further away from the Dry Lakes and would therefore draw more from upgradient of the Fenner Gap. As a result, somewhat less impacts to salt mining operations would result.

Noise

Construction and operational noise would be similar to the proposed Project. Essentially, it would vary during construction depending on how many wells were drilled and duration, and operationally the power generators and pump stations would generate noise. However, given remote location, these impacts are less than significant.

Population and Housing

Effects on population and housing would be similar to the proposed Project.

Public Services and Utilities

Effects on public services and utilities would be similar to the proposed Project which because of the minimal infrastructure, it will not generate the need for fire protection, police or emergency services or dispute local and regional utilities. However, during construction, some need for emergency service may arise during the contemplated two year construction period but current service levels would be adequate to meet any anticipated demand.

Recreation

Effects on recreational facilities would be similar to the proposed Project. The Project has been designed to avoid all BLM lands, including Wilderness Areas. Therefore, neither construction nor operation would disrupt recreational opportunities or uses.

Traffic and Transportation

Effects on traffic would be similar to the proposed Project due to similar construction and operational requirements.

7.6.3 Project Operational Alternatives

Proposed Project with Agriculture

The Proposed Project with Agriculture Alternative would provide for the implementation of the proposed Project in addition to the existing or slightly expanded agricultural operations. Under this Alternative, the total amount of water extracted from the groundwater basin is assumed at approximately 55,000 AFY. The additional 5,000 AFY above the proposed Project would supply the agricultural operations.

Ability to Meet Project Objectives

The Proposed Project with Agriculture Alternative would meet all the Project objectives.

Comparison of Environmental Impacts

Because this alternative would involve construction and operation of the full proposed Project in addition to the continuation of the existing agricultural activity on the Cadiz Property, facility construction impacts associated with this alternative would be the same as those for the Project. Similarly, operational impacts for this alternative would largely be the same as for the Project with a few exceptions as described below. Impacts associated with construction of the conveyance pipeline and wellfield would be identical to the proposed Project. The proposed Project as analyzed assumes that the existing agricultural operations would continue initially in addition to the Project operations, but would be eliminated if and when the Project is fully subscribed, in order to limit total groundwater pumping to the 50,000 AFY average annual amount established for the proposed Project operations. Therefore, under the proposed Project, the combined impacts of on-going agriculture in addition to the operation of the wellfield and conveyance facility have been evaluated in terms of overlapping activities.

As shown in Table 7-4, above, impacts in the following environmental areas would be the same or similar under this alternative as those described for the Project due to the fact that the construction footprint would be the same and therefore result in similar effects on these resources:

- Aesthetics
- Cultural Resources
- Hazardous Materials
- Population, Housing, Growth, and
- Recreation
- Biological Resources
- Geology and Soils
- Land Use and Planning
- Public Services and Utilities
- Socioeconomics

Implementation of this alternative would result in less impact to Agricultural Resources and slightly greater impacts in six environmental issue areas described below in comparison to the Project because existing agricultural operations, including groundwater pumping for irrigation up to 5,000 AFY average annual, would occur in addition to construction and operation of the full Project as proposed. This would result in slightly more total groundwater pumping per year on an average annual basis, with associated increases in energy use and air emissions related to this increased pumping, and increases in groundwater extraction and associated effects. Continuing agricultural activities in addition to the Project would also result in slight increases in traffic on the Project site to support operations and maintenance of the agricultural operations (planting, harvesting, and maintenance) in addition to the Project operations.

Agriculture and Forestry Resources

Implementation of Proposed Project with Agriculture alternative would result in less impact to agricultural resources than the Project because the existing agricultural operation would remain active along with the Project rather than phased out over time. Maintaining the existing agricultural operation would avoid the loss of existing agricultural activity that would result as part of the proposed Project.

Air Quality

Allowing for continued agriculture would result in slightly greater air emissions including combustion emissions and dust as a result of increases in groundwater pumping, and the ongoing activities required for agricultural operations, including truck and farm equipment operations and dust-generating field management activities (i.e., plowing, planting). Air Quality impacts from the Proposed Project with Agriculture alternative would be greater than the proposed Project.

Greenhouse Gas Emissions

Allowing for continued agriculture would result in somewhat greater GHG emissions as a result of increases in groundwater pumping, and the ongoing activities required for agricultural operations, including truck and equipment operations. GHG impacts from the Proposed Project with Agriculture alternative would be greater than the proposed Project.

Hydrology and Water Quality

The Proposed Project with Agriculture alternative would allow for increased groundwater extractions of 5,000 AFY on average over 50 years, in addition to the 50,000 AFY average annual pumping proposed under the Project. This ten percent increase in average annual pumping would result in the potential to lower groundwater levels beyond those evaluated in Chapter 4, Section 4.9 of this Draft EIR. It would also result in a slightly increased potential to induce subsidence and to cause the migration of saline water eastward toward the wellfield because 5,000 AFY more would be withdrawn on average each year. The groundwater impact analysis provided in Chapter 4 describes three natural recharge scenarios that have been modeled to predict the effect of extracting 50,000 AFY on average under the Project over 50 years of operation. One scenario assumes that only 5,000 AFY of natural recharge occurs in the valley. The other two scenarios assume greater natural recharge. In each case, the addition of 5,000 AFY

of extraction could increase drawdown slightly. The Draft EIR describes that drawdown effects on salinity, and subsidence would be a less than significant impact with the implementation of mitigation measures. Under the Proposed Project with Agriculture alternative, these impacts would remain less than significant with mitigation since the additional drawdown would be only slightly greater; no new impacts that would not be mitigated with the already identified mitigation measures would occur. The GMMMP would apply to this alternative similar to the proposed Project and would be implemented to ensure that significant impacts were avoided. The Proposed Project with Agriculture alternative would result in similar but slightly greater hydrology and water quality impacts than the proposed Project.

Mineral Resources

As described in the paragraph above for Hydrology and Water Quality, because under this alternative groundwater pumping would increase by 5,000 AFY on average, or up to a 10 percent increase over the proposed Project, groundwater drawdown would be somewhat greater than that described for the proposed Project. Consequently, effects on the existing salt mining operations described in Chapter 4 associated with groundwater drawdown could be slightly greater under this alternative. Mitigation measures identified for the Project (incorporated into the GMMMP) could also be applied to this alternative and reduce this impact to less than significant.

Noise

There would be no change in construction period noise under this alternative as no additional facilities specifically for agriculture beyond the Project facilities would be constructed. However, noise associated with operations for this alternative would be slightly greater than for the proposed Project alone because this alternative includes maintaining active agricultural operations on the site in addition to full Project operations. Additional groundwater pumping would occur and additional vehicle trips would occur to support the agricultural operation, which would result in some additional noise. As with the Project, noise effects would be less than significant.

Transportation and Traffic

There would be no change in construction period traffic under this alternative as no additional facilities specifically for agriculture beyond the Project facilities would be constructed. However, traffic associated with operations for this alternative would be slightly greater than for the proposed Project alone because this alternative includes maintaining active agricultural operations on the site in addition to full Project operations. Additional vehicle trips on the project site and local roadways would occur to support the agricultural operation. As with the Project, these traffic effects would be less than significant.

Phased Implementation Alternative

The Phased Implementation Alternative would include the construction of the pipeline similar to the proposed Project. However, the wellfield would be installed on a phased schedule, allowing for the monitoring features to confirm predicted groundwater reaction to the increased extraction.

The construction and operation of the extraction wells would occur over a five to ten year period rather than over 18 months as proposed by the proposed Project.

Ability to Meet Project Objectives

This alternative would meet each of the Project objectives except that the full implementation of the Project would be delayed.

Comparison of Environmental Impacts

Impacts of installing the wellfield would be similar to the proposed Project but prolong construction impacts to air quality, biological resources, noise and traffic. Prolonging the wellfield construction could convert short-term impacts to these resources to long-term effects over the five to ten years of construction. With respect to groundwater effects, the Phased Implementation Alternative would allow for potential impacts (such as effects on third party wells, salinity migration, and subsidence) to be monitored and confirmed as extractions increased to the full capacity. No new impacts would result, nor would any significant impacts of the proposed Project be avoided or lessened.

Reduced Project Alternative: 25 Percent Reduction in Proposed Groundwater Withdrawal

Under the Reduced Project Alternative, the total volume of water extracted over the term of the Project would be reduced by 25 percent. The term of proposed Project operation would be shortened from 50 years to 25 years. To maintain the benefits of conserving water that would otherwise flow to the brine zone and evaporate, the Reduced Project Alternative would pump up to 75,000 AFY of groundwater for a period of 25 years for delivery to Project Participants. The reduced term of the Project under this Alternative would result in a total maximum withdrawal of 1,875,000 AF over the life of the Project, which represents an approximate 25 percent reduction (625,000 AF) from total pumping compared with the proposed Project. Just as with the proposed Project, the wellfield and manifold (piping) system would be constructed on Cadiz Property to carry pumped groundwater to the conveyance pipeline, which would tie into the CRA and convey water to Project Participants.

Under the Reduced Project Alternative, the Imported Water Storage Component would be available for the full 50-year period. Extractions after the first 25 years would be limited to the amount previously recharged.

Ability to Meet Project Objectives

This alternative would meet each of the Project Objectives including the objective to maximize the beneficial uses of the groundwater basin since the higher initial extractions would allow recovery of groundwater that would otherwise flow to the brine zone but over a shorter period of time.

Comparison of Environmental Impacts

The Reduced Project Alternative would not eliminate any of the significant effects resulting from construction of the proposed Project since the wellfield and 43-mile pipeline would be constructed just as under the proposed Project. As shown in the list below, for most environmental issue areas, the effects of this alternative would be similar to the Project because the Project infrastructure would be the same.

- Aesthetics
- Agriculture and Forestry Resources
- Biological Resources
- Cultural Resources
- Geology and Soils
- Hazardous Materials
- Land Use and Planning
- Noise
- Population, Housing, Growth, and Socioeconomics
- Public Services and Utilities
- Recreation
- Transportation and Traffic

The Reduced Project Alternative would not avoid any impacts of operating the proposed Project but it would lessen some of the impacts associated with the Project.

Air Quality

Reducing the total groundwater withdrawal under the Groundwater Conservation and Recovery Component of the Project would reduce the overall pumping and therefore would reduce total energy use and associated air emissions. In addition, shortening the operational term of this component from 50 to 25 years would reduce operations and maintenance activities, which would, in turn, make a slight reduction in operational vehicle and equipment use and associated air emissions. Therefore, the Reduced Project Alternative would reduce air quality emissions effects of operation (but not of construction, which would be the same as the Project).

Greenhouse Gas Emissions

As described for Air Quality Emissions in the paragraph above, reduced total groundwater pumping under this alternative would reduce energy use and, in turn, reduce the associated GHG emissions. In addition, the shortened operational period would reduce operational activities including vehicle and equipment use, which would also reduce greenhouse gas emissions slightly as compared to the proposed Project.

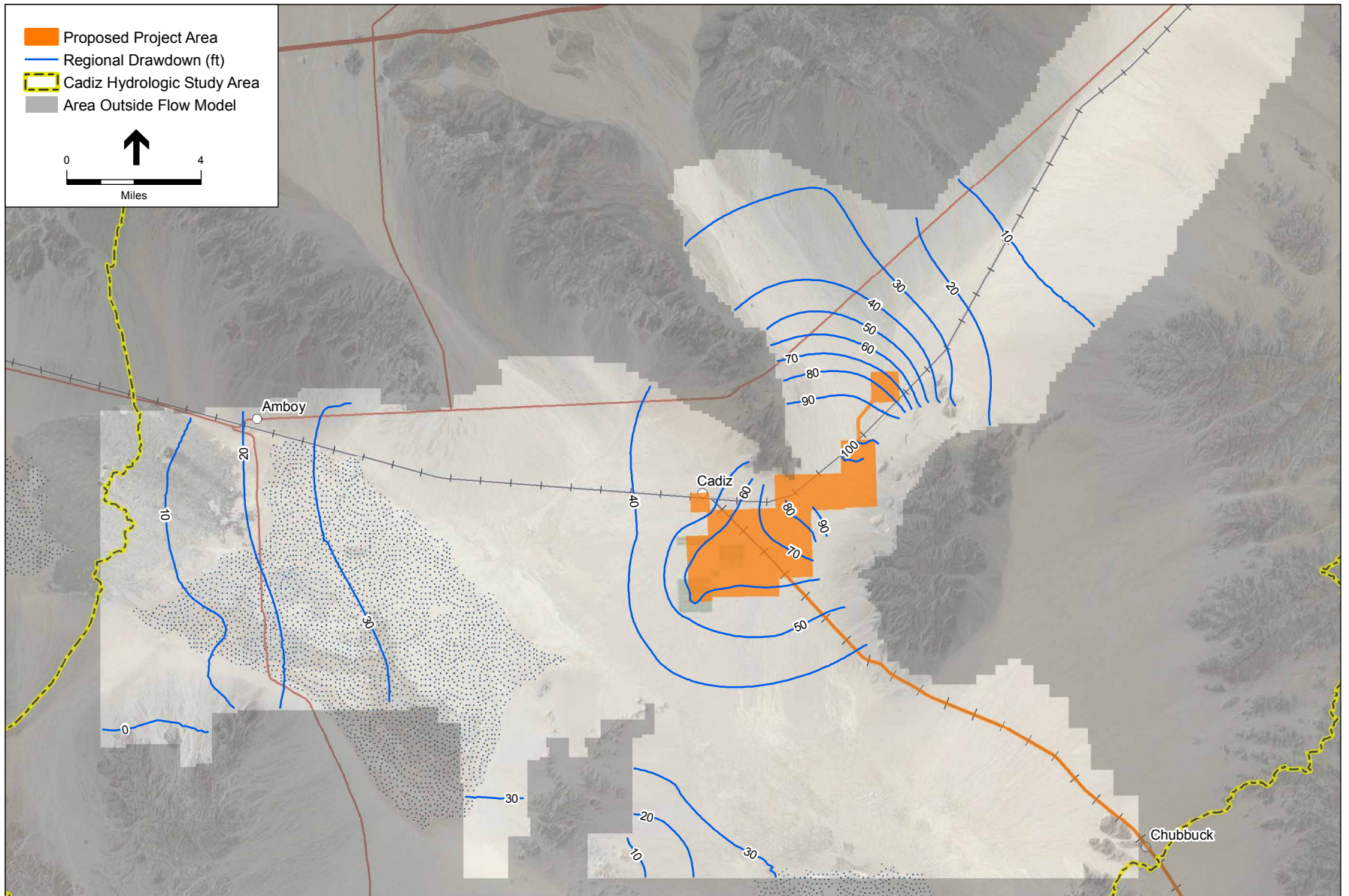
Hydrology and Water Quality and Mineral Resources

With respect to the groundwater basin, because the total groundwater withdrawn under this alternative would be less than under the proposed Project, the effects associated with groundwater withdrawal and associated drawdown, including effects on third party wells or salt mining operations, migration of the saline-freshwater interface, and subsidence, would be similar but somewhat less than for the Project. The effects of pumping groundwater at the higher average

annual rate of 75,000 AFY rather than 50,000 AFY were evaluated as part of the Project analysis.¹⁰ **Figures 7-1** and **7-2** depict projected groundwater level drawdown after 50 years under the 32,000 AFY scenario and 16,000 AFY scenario respectively. The model runs do show that by pumping at 75,000 AFY for 25 years, the maximum groundwater drawdown expected for the Project of approximately 120 feet occurs sooner, as would be expected with a higher pumping rate, and subsequently groundwater levels recover sooner once pumping is stopped. Under the 32,000 AFY scenario (Figure 7-1) groundwater levels under the Bristol Dry Lake could decline by 30 feet. Under the 16,000 AFY scenario (Figure 7-2) groundwater levels under Bristol Dry Lake could decline by 40 feet. These are similar to the proposed Project (see Figures 4.9-12, 13, and 14). Thus, the effects on groundwater levels and associated impacts would be similar but somewhat less under this alternative than the Project because less total water would be withdrawn from the basin and the groundwater levels would fully recover sooner than compared to the Project.

Operation of the proposed Project was found to have less than significant impacts after mitigation for groundwater drawdown, groundwater quality, and subsidence and similarly, effects on hydrology, water quality and mineral resources under this alternative would be reduced to less than significant levels with implementation of applicable mitigation measures identified in Chapter 4.0.

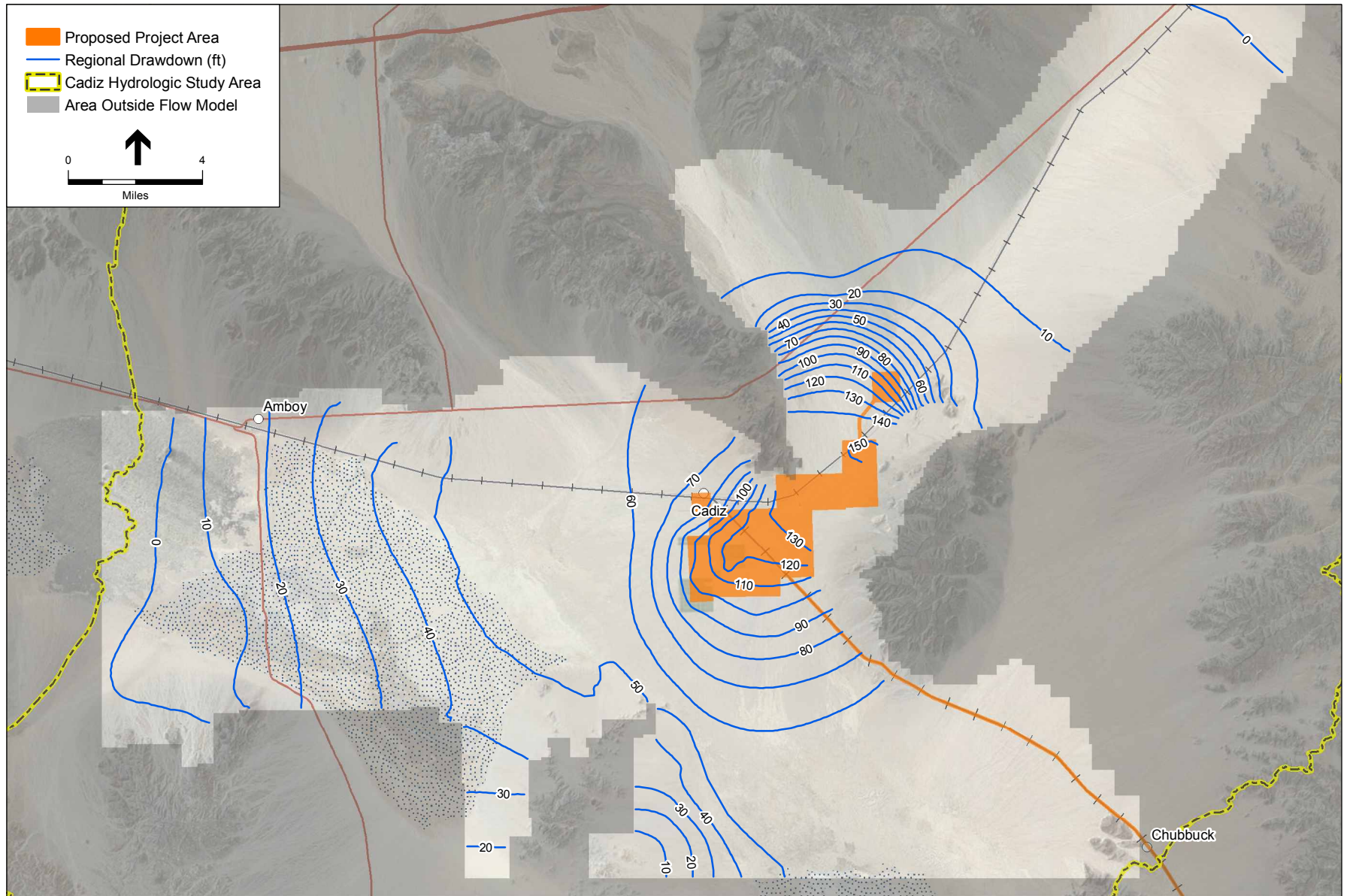
¹⁰ Geoscience, *Supplemental Assessment of Pumping Required for the Cadiz Groundwater Conservation and Recovery Project*, September 20, 2011.



SOURCE: Bing Maps, 2011; ESRI, 2010; Cadiz Inc., 2011; GSSI, 2011; Tetra Tech, 1999; CH2MHill, 2010; and ESA, 2011

Cadiz Valley Water Conservation, Recovery, and Storage Project

Figure 7-1
 Model-Predicted Regional Drawdown - Reduced Alternative Scenario after 25 Years
 (Assumes 32,000 AFY Recharge)
 Well Configuration B



SOURCE: Bing Maps, 2011; ESRI, 2010; Cadiz Inc., 2011; GSSI, 2011; Tetra Tech, 1999; CH2MHill, 2010; and ESA, 2011

Cadiz Valley Water Conservation, Recovery, and Storage Project

Figure 7-2
 Model-Predicted Regional Drawdown - Reduced Alternative Scenario after 25 Years
 (Assumes 16,000 AFY Recharge)
 Well Configuration B

7.7 Comparison of Alternatives and Identification of the Environmentally Superior Alternative – Groundwater Conservation and Recovery Component

7.7.1 Comparison of Alternatives

Table 7-2 summarizes whether the alternatives meet the Project Objectives. Table 7-3 summarizes the comparison of Project Alternatives with the proposed Project. Neither of the No Project Alternatives would meet any of the Project Objectives. The No Project Alternative Existing Agriculture would result in fewer impacts than the proposed Project. However, the No Project with Expanded Agriculture would result in greater impacts for several resource areas including air quality and noise due to the increase in operational activities in the area.

The West of Danby Pipeline Alternative would meet all of the Project Objectives, but result in greater impacts to biology, cultural resources, and geology since the alignment would traverse open space BLM lands in desert tortoise habitat.

The Existing Natural Gas Pipeline Alternative would meet all of the Project Objectives but to a lesser degree since the capacity of the pipeline is less than the proposed Project requires and the water would not be delivered to an area accessible by the Project Participants. The Existing Natural Gas Pipeline Alternative would result in fewer environmental impacts in nearly every resource area.

The Project with Agriculture Alternative would meet all of the Project Objectives and would result in slightly greater impacts to air quality, hydrology, noise and transportation. The Phased Implementation Alternative would meet all the Project Objectives but would result in slightly greater impacts since the construction of the wellfield would be prolonged by five to ten years. The Reduced Project Alternative would meet all the Project Objectives but for a shorter duration and to a somewhat lesser extent.

7.7.2 Environmentally Superior Alternative

CEQA requires that an EIR identify the environmentally superior alternative of a project other than the No Project Alternative (*CEQA Guidelines* Section 15126.6(e)(2)). The No Project Alternative would avoid all construction and operational impacts associated with the proposed Project, but the No Project Alternative would not meet any of the Project objectives.

Of the Project Facility Alternatives, the Existing Natural Gas Pipeline Alternative would be the environmentally superior alternative since it would eliminate the need to construct the 43-mile pipeline to the CRA. However, the alternative would not meet the basic objectives of providing water to the Project Participants, but rather would provide water to Barstow and would need to rely on implementing agreements with the Mojave Water Agency to exchange the water for SWP

water deliveries. In addition, the alternative would not have the capacity needed to fully implement the proposed Project.

Of the Operational Alternatives, the Reduced Project Alternative would be the environmentally superior alternative since groundwater levels would recover more quickly than under the proposed Project, Phased Alternative, or Project with Agriculture Alternative. Overall the Reduced Project Alternative would extract less water than the proposed Project resulting in fewer overall air and GHG emissions. The Reduced Project Alternative would construct all the facilities within 18 months and would not prolong construction impacts to aesthetic, biological, and noise impacts, as would be the case under the Phased Implementation Alternative. The Project with Agriculture Alternative would result in impacts similar to the proposed Project, but with greater impacts to energy use and air emissions resulting from the increased extractions.

7.8 Alternatives to the Imported Water Storage Component

Similar to the Groundwater Conservation and Recovery Component analysis, the selection of policy-level alternatives for the Imported Water Storage Component is determined by their potential to avoid or substantially lessen potentially significant environmental effects of the proposed Project, while meeting most of the basic Project objectives. The first step in identifying what policy-level alternatives should be considered in comparison to the proposed Project is to review the potentially significant environmental impacts associated with the Imported Water Storage Component to determine what strategies or policies should be applied that might avoid or lessen such impacts while accomplishing most of the basic Project objectives, i.e., to create additional water storage capacity in Southern California to enhance water supply reliability and delivery flexibility in a manner that minimizes significant environmental effects and provides for long-term sustainable operations.

Table 7-5 summarizes the significant environmental effects associated with the Phase 2 Imported Water Storage Component and frames the alternative strategies to address each impact area. On a policy-level, the Imported Water Storage Component alternatives would focus on reducing or relocating spreading basins and various Project facilities and on modifying wellfield pumping scenarios. Listed below are the policy-level alternatives that may be examined in more detail during future review of Phase 2 implementation:

A. No Project Alternative

The No Project Alternative considers the effects of not proceeding with the Imported Water Storage Component.

B. Spreading Basins Alternatives

The Spreading Basins Alternatives includes relocating or reducing the size of spreading basins.

C. Wellfield Alternatives

The Project Facilities Alternatives include modifying or relocating wellfield configurations.

D. Project Operations Alternative

Project Operations Alternative includes a phased approach to pumping.

E. Conservation/Alternate Storage Alternatives

Conservation/Alternate Storage Alternatives include adopting conservation strategies and alternate storage projects.

**TABLE 7-5
STRATEGIES TO AVOID OR LESSEN SIGNIFICANT
ENVIRONMENTAL EFFECTS OF THE IMPORTED WATER STORAGE PROJECT**

Phase 1 Project Element	Impact Summary	Potential Strategies that Might Avoid or Lessen Impact
Spreading Basins	Potential impacts to desert tortoise habitat; potential impacts from construction dust, erosion, runoff	<ul style="list-style-type: none"> • Are alternate sites available for locating spreading grounds to avoid or lessen potential biological effects? • Can the spreading grounds be reduced?
Wellfield	Potential impacts from construction dust, erosion, stormwater runoff, potential impacts to habitat, cultural resources and land use	<ul style="list-style-type: none"> • Can the extent of the additional wellfield facilities be relocated or reduced? Smaller footprint or fewer facilities?
Project Operations	Potential draw down and recharge effects including subsidence, migration of saline water into freshwater zones and water quality impacts; increased energy use	<ul style="list-style-type: none"> • Can the proposed groundwater pumping/recharge scenario be modified to reduce potential drawdown/recharge effects?

SOURCE: ESA, 2011.

Each of the alternatives selected for review has the potential to address significant effects of the Imported Water Storage Component of the Project. At this stage in the review process, the Project participants have not been identified and elements of design are still under conceptual development (including the potential quantity and schedule for surface water import and spreading, storage and extraction). Therefore, future implementation of Phase 2 may require additional environmental review.

With the exception of the No Project Alternative, each of the Alternatives selected has the potential to be feasible, to avoid or lessen impacts and meet most of the basis objectives of the Project.

7.8.1 No Project Alternative

For the No Project Alternative, construction of facilities identified under the proposed Project would not be implemented. The existing agricultural operations at the Cadiz Property would continue and no new permanent structures would be constructed. There would be no augmentation to the water supply. Any significant effects caused the Imported Water Storage Component would not occur under the No Project Alternative.

The No Project Alternative would not meet any of the Project objectives. Under the No Project Alternative, current agricultural operations would continue, with the potential for increased agricultural production on the 1,140 acres currently fallow and not irrigated. Domestic water supply reliability and storage would not be developed. Should agricultural production be expanded, additional agricultural water supply would be required.

7.8.2 Spreading Basins Alternatives

As currently conceptualized, the Imported Water Storage Component spreading basins are located in Fenner Gap on Cadiz Property north of the BNSF Railroad (see Figure 3-14). The spreading basins would encompass approximately 400 acres with each individual basin ranging from 10 to 15 acres surrounded by chain link fences. The basins would be designed to allow water to flow by gravity from upstream basins to downstream basins. This location has the potential to impact critical habitat of the desert tortoise. The Spreading Basins Alternatives would relocate to the south or reduce the development footprint of the spreading basins by 20 percent.

Ability to Meet Project Objectives

The alternatives would potentially meet most of the basic objectives of the Imported Water Storage Component including the creation of additional storage capacity but potentially to a lesser extent than the proposed Project.

Comparison of Environmental Impacts

Relocate Spreading Basins to South of BNSF Railroad Alternative

This alternative would relocate the spreading basins to south of the BNSF Railroad within the general area of the Project wellfield. The alternative location would avoid or substantially lessen impacts on the desert tortoise habitat. The basins would be located closer to the Dry Lakes but designed to reduce lateral movement of water toward the Dry Lakes, optimize percolation rates and maintain water quality in the storage and extraction areas. The alternative would continue to site the spreading basins entirely on privately owned land, therefore, the impacts on land use would be similar to the proposed Project.

By placing the spreading basins within the wellfield development area, construction impacts would be reduced and a smaller overall development footprint would be needed. Spreading basins

and the pipeline to the basins would not be developed north of the Railroad tracks. Potential construction impacts and maintenance impacts to aesthetics, air quality, cultural resources, climate change, hazardous materials, runoff, noise and traffic would be less than the proposed Project. Locating the basins within the general area of the wellfield south of BNSF location would reduce or avoid the potential loss of up to 437 acres of critical habitat for the desert tortoise. While the proposed Project would mitigate the impacts through a habitat conservation plan (and other measures) to a less than significant level, this alternative would result in fewer impacts to biological resources.

20 Percent Reduction in Spreading Basin Alternative

This alternative would utilize the conceptual site north of the BNSF Railroad similar to the proposed Project but would reduce the overall size of the spreading basins area by a minimum of twenty percent and design the basin cells to reduce impacts to desert tortoise habitat as well as impacts from construction dust, erosion and runoff. Approximately 80 acres of critical desert tortoise habitat would be avoided under this alternative. Impacts would remain less than significant with mitigation. Construction impacts to aesthetics, air quality, cultural resources, climate change, hazardous materials, noise and traffic would be similar to the proposed Project but somewhat less based on the reduced development footprint of the basins.

7.8.3 Wellfield Alternatives

As currently conceptualized, the Project facilities for the Imported Water Storage Component would involve the expansion of the wellfield, roads and utilities developed for the Groundwater Conservation and Recovery Component, and the potential use of existing natural gas pipelines for water conveyance to the State Water Project. Potential impacts of these facilities include construction dust and other air quality impacts, erosion, stormwater runoff and potential impacts to habitat, cultural resources and traffic. The Wellfield Alternatives consider reducing the footprint of the expanded wellfield and relocating the wellfield, to reduce or avoid construction impacts.

Ability to Meet Project Objectives

The Wellfield Alternatives would potentially meet most of the basic objectives of the Imported Water Storage Component including the creation of additional storage capacity but potentially to a lesser extent than the proposed Project.

Comparison of Environmental Impacts

Similar to the Groundwater Conservation and Recovery Component, the Wellfield Alternatives seek to reduce the overall development footprint of the proposed Project and to avoid or lessen potentially significant impacts. While most of the objectives of the proposed Project could be achieved, the overall capacity for recharge and withdrawal may be reduced. The Wellfield Alternatives include consideration of the Northern Wellfield Location alternative previously analyzed (see 7.6.2) as well as a reduction in the number of new wells. The Northern Wellfield Location alternative could reduce effects of salinity, but would have greater impacts on habitat

for the desert tortoise and would reduce the amount of recharge that could be conserved. Other impacts would be similar to the proposed Project. By reducing the number of additional wells or replacing existing wells with high capacity wells, under a reduced wells alternative impacts resulting from construction activities would be reduced including potential impacts to habitat.

7.8.4 Project Operations Alternative

As currently conceptualized, the Imported Water Storage Component would store up to 1 MAF and withdrawals and recharge would be limited to a maximum of 75,000 to 105,000 AFY of water. Potential impacts of the withdrawal and recharge could include subsidence and migration of saline water into freshwater zones. Similar to the Groundwater Conservation and Recovery Component, the Project Operations Alternative considers a Phased Implementation Alternative. New wells would be added to the wellfield gradually to confirm the results of future predictive modeling for the recharge operations.

Ability to Meet Project Objectives

This alternative would meet most of the basic objectives of the proposed Project. However, under the Phased Implementation Alternative, achieving the objectives would be delayed.

Comparison of Environmental Impacts

The Project Operations (Phased Implementation) Alternative would result in the same level of impacts of the proposed Project but spread out over a longer period of time.

7.8.5 Conservation/Alternate Storage Alternatives

Under the Conservation/Alternate Storage Alternatives, conservation strategies and alternate storage projects that might substantially reduce or avoid any potentially significant effects of the Imported Water Storage Component are considered. The feasibility of these potential alternatives vary according to the Project Participants conservation efforts and alternate water storage projects.

Ability to Meet Project Objectives

This alternative would not meet any of the objectives of the proposed Project because it depends on identifying other programs to satisfy storage needs.

Comparison of Environmental Impacts

Potential effects of the Conservation/Alternate Storage Alternatives include construction of alternative storage facilities and water conveyance facilities by individual Project Participants to increase the reliability of their water supplies to meet existing planned growth in their respective service areas. Because each participant would participate in other programs or facilities, the combined impacts may be greater than the effects of the Imported Water Storage Component. Because the other programs would be implemented in different geographic areas and involve

different facilities and equipment, there would be the potential for greater impacts to aesthetics, agricultural resources, air quality, biological resources, cultural resources, geology, hazardous materials, hydrology, land use, mineral resources, noise, recreation and traffic.

7.9 Comparison of Alternatives and Identification of the Environmentally Superior Alternative: Imported Water Storage Component

7.9.1 Comparison of Alternatives

Conceptually, the alternatives identified for the Imported Water Storage Component are evaluated to determine whether they will satisfy the Project Objectives. The No Project Alternative would avoid all construction and operational impacts associated with the proposed Project, but the No Project Alternative would not meet any of the Project objectives.

In comparison, Relocating the Spreading Basins to South of BNSF Railroad Alternative would be the environmentally superior alternative since it would move spreading basins out of critical habitat for desert tortoise. The Wellfield Alternative would result in the fewest new wells and result in fewer impacts to biological resources and resources affected by construction activities such as air, noise and traffic, but the critical habitat area would not be avoided.

7.9.2 Environmentally Superior Alternative

CEQA requires that an EIR identify the environmentally superior alternative of a project other than the No Project Alternative (*State CEQA Guidelines* Section 15126.6(e)(2)). The Relocate Spreading Basins to South of BNSF Railroad Alternative would be the environmentally superior alternative since it would move spreading basins out of critical habitat for desert tortoise.

However, it would potentially meet the Project Objectives to a lesser extent than the Proposed Project because relocation and reduction of the spreading basin infrastructure could reduce the recharge capacity for the Project. Also by relocating the wellfields, some impacts may increase with respect to limited placement options for the wells to remain outside tortoise habitat.