

5.7 TRANSPORTATION

5.7.1 AFFECTED ENVIRONMENT

Roads and Highways

Barstow, Desert Center, Morongo Valley, Needles, Parker and Twentynine Palms are communities that have been identified as the most likely places from which construction crew/employees, materials and equipment for the Cadiz Project will originate. Larger equipment is expected to come from the Los Angeles area. This section examines the existing road network providing access to/from these places of origin to the Cadiz Project area during construction and, later, operation of the Cadiz Project. Figure 5.7-1 shows the regional location of the Cadiz Project and the highways and streets serving this area.

Regional access to the Cadiz Project area is provided by Interstate 40 (I-40) via National Trails Highway (old US 66) from the north, and I-10 via State Route (SR) 177 and SR 62 from the south. I-40 is a four-lane east-west freeway north of the Cadiz Project area, connecting to Barstow, approximately 100 miles west of the Cadiz Project area, and to Needles, approximately ninety miles east of the Cadiz Project area. I-10 is a four-lane, east-west freeway south of the Cadiz Project area providing regional access from the west (Los Angeles, Orange, San Bernardino and Riverside Counties) and the east (Phoenix). I-95 is a north-south interstate highway which provides a link between I-10 and I-40 east of the Cadiz Project area. I-95 connects to I-40 to the north at Parker Junction and to I-10 to the south at Vidal Junction. Vidal Junction is approximately 30 miles east of the Iron Mountain Pumping Plant and approximately 20 miles west of Parker.

SR 62 is a two-lane highway that connects the Iron Mountain Pumping Plant to Twentynine Palms approximately 60 miles to the west and to Parker approximately 60 miles to the east. SR 177 is a two-lane north-south highway that connects to Desert Center at I-10 approximately thirty miles south of the Iron Mountain Pumping Plant. National Trails Highway is a two-lane highway which roughly follows a semi-elliptical alignment, with the west end connecting to I-40 at Ludlow 40, miles northwest of Cadiz, and the east end connecting to I-40 at Fenner approximately 30, miles northeast of the Cadiz Project area. Amboy Road is a two-lane paved road that connects the National Trails Highway at Amboy (approximately 15 miles west of Cadiz) to Twentynine Palms. Kelbaker Road is a two-lane north-south paved road connecting National Trails Highway to I-40.

The majority of the roads in the Cadiz Project area are unimproved and serve minimal traffic volumes. Along the easternmost edge of the Cadiz Project area, unimproved Cadiz-Rice Road runs northwesterly from SR 62 at Freda to National Trails Highway at Cadiz, generally following the alignment of the ARZC rail line. Cadiz-Rice Road currently carries approximately 10 trips per day.

Due to the limited road network in the area, access roads will be constructed within the Cadiz Project area.

Railroads

Current railroad transportation in the area consists of tracks operated by the BNSF and ARZC. The BNSF rail lines closely follow the east-west alignment of National Trails Highway. In the general vicinity of the Cadiz Project, these rail lines run through the following areas: Ludlow, Amboy, Cadiz and Needles. East of Needles, the rail lines continue into Arizona. The BNSF rail lines are main line facilities used for long distance and transcontinental shipments. Activity on these rail lines is frequent and cannot be disrupted.

At a BNSF siding located at Cadiz, the BNSF rail lines connect with the ARZC track. The ARZC track extends from Cadiz to Phoenix, Arizona.

In the Cadiz Project area, the ARZC track runs northwest/southeast, closely following the alignment of Cadiz-Rice Road. The ARZC has stations and/or operations at Cadiz, Milligan, Freda and Rice as shown on Figure 5.7-1. The ARZC schedules one train into the Cadiz area daily, except Saturday, to interchange cars with the BNSF system. Extra trains move in and out of the Cadiz area on an as needed basis, usually two to four times per week. Trains may be using the ARZC track at any time of day, depending on that day's scheduling.

In general, railroad cars have considerable weight when fully loaded. The rail lines are supported by a foundation consisting of rails, ties, gravel or rock bedding, and the existing desert soil. Temporarily raising or drawing-down static water levels underlying the Cadiz Project area, if not properly monitored and managed, could potentially impact rail lines in certain locations. For additional information on this subject, refer to Section 5.5 (Water Resources).

Airports

There are two private airstrips located in the Cadiz Project area. A private airstrip at the Iron Mountain Pumping Plant is used by Metropolitan staff and others visiting the Iron Mountain Pumping Plant. There is a private airstrip located at the Cadiz Inc. agricultural operations (at the north edge of the northernmost cultivated area). There is also a private airstrip located in the community of Amboy, approximately 12 miles west and north of the airstrip located at the Cadiz Inc. agricultural operations. The nearest general aviation airport is located in Twentynine Palms.

5.7.2 CEQA THRESHOLDS OF SIGNIFICANCE

For purposes of CEQA, the Cadiz Project would be considered to result in a significant adverse impact related to transportation if it results in:

- An increase in road traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., results in a substantial increase in the number of vehicle trips, the volume-to-capacity ratio on roads used by project traffic or congestion at intersections).
- An exceedance, either individually or cumulatively, of a level of service (LOS) standard established by the County Congestion Management Plan for designated roads or highways.
- Disruption of rail service due to construction activities or differential settlement attributable to fluctuations in groundwater levels.
- A change in air traffic patterns, including either a substantial increase in air traffic levels or a change in location that results in substantial safety risks.
- A substantial increase in road hazards due to a project design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Inadequate emergency access.
- Inadequate parking capacity.
- Conflicts with adopted policies, plans or programs supporting alternative modes of transportation.

For a further discussion of CEQA thresholds of significance, see Section 5.20.

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5.7.3 METHODOLOGY

Short term construction traffic impacts largely depend on the schedule and intensity of construction activities. A construction schedule scenario was developed which is representative of the specific construction schedules for the Cadiz Project build alternatives. This schedule assumes construction will begin in 2002 and that construction of all Cadiz Project capital improvements will be completed in the winter of 2002/2003. The construction impacts discussed below are based on this schedule scenario.

For each Cadiz Project component, traffic volumes during construction were estimated by identifying the equipment, materials, and crew and employee requirements based on a typical construction activity schedule. Daily one-way trips and the frequency of trips were then determined from these requirements. Cadiz Project-related trips is expected to occur at different frequencies: some trips will occur daily (e.g., crew trips, unless on-site crew housing is provided), other trips will occur at regular intervals during construction (e.g., delivery of materials), while still others will occur only prior to and after construction (e.g., transport of heavy equipment to/from the site). Most of the construction equipment is expected to originate from the communities of Barstow, Desert Center, Morongo Valley, Needles, Parker and Twentynine Palms. However, large equipment will probably come from the Los Angeles area.

Based on input from potential materials suppliers and contractors, the traffic impact analysis assumes that materials and pipe for the Cadiz Project will be transported to the construction areas by truck. It is possible for all Cadiz Project build alternatives that some construction materials could be shipped to the area by rail. Any shipments would be by railcars added to existing trains on the BNSF and the ARZC rail lines. This possibility is also considered.

A typical day traffic estimate was assumed by considering only the trips that would occur daily and at regular intervals during construction. The typical day traffic estimate excludes construction equipment delivery, which occur before and after the construction period. Traffic that is expected to occur at regular intervals is assumed to be distributed over the duration of the construction. Furthermore, the typical day estimate assumes that construction activities would occur simultaneously, although they may be located at different segments and/or locations on the Cadiz Project site. Actual construction traffic will vary from these estimates depending on the adopted construction schedule; and will generally be lower than the typical day traffic if all construction activities are not conducted simultaneously.

To determine the potential construction traffic impacts under each Cadiz Project alternative, traffic estimates for all components were combined and distributed on the existing road network. This was performed using P&D's IMPAX program. P&D's proprietary IMPAX program for traffic impacts analysis was used to determine Cadiz Project-related traffic volumes on the road network based on the assumed distribution and routing of traffic.

Long term project impacts were assessed by estimating the amount of employee traffic that would be generated during operation and maintenance of the Cadiz Project. During operations, the number of employees needed to operate each project component was estimated. From the estimated number of operations employees, operations-related employee traffic was estimated. Projected maintenance traffic was added to the operations employee traffic to indicate the amount of traffic generated by the Cadiz Project over the long term.

5.7.4 IMPACTS

This section describes the potential transportation impacts under each Cadiz Project alternative. The discussion for each Cadiz Project alternative considers potential construction impacts and potential long term operations impacts to the existing road network.

Appendix B provides detailed tables of the trip generation factors and calculations used for this analysis of the potential construction and operations related traffic impacts of the Cadiz Project alternatives.

Eastern Alternative

Construction Impacts

The potential short term construction impacts of the Eastern Alternative were assessed based on the total daily traffic simultaneously generated by all construction activities. The following analyses identify the daily traffic for each Cadiz Project component and the total traffic impact of the construction of the Eastern Alternative.

Construction Access Roads and Staging Areas. Due to the limited road network in the area providing access to the Cadiz Project site, access roads would be constructed at different locations. For the project wellfield and project spreading basins construction, access would be via existing paved and unpaved roads and within designated construction easements. An unpaved access road would also parallel the water conveyance facilities and power distribution facilities alignment for all Cadiz Project build alternatives. The unpaved access road would be used during construction. After the completion of construction, a 20-foot wide, unpaved access road would remain for long-term Cadiz Project operation and maintenance activities.

In addition, there would be three temporary staging areas under the Eastern Alternative. Each staging area would be approximately five acres in size. These staging areas would be used to provide storage for construction materials and equipment and an area for crew/employee parking and construction trailers.

One staging area would be located at the north end of the Cadiz Project area near the project spreading basins. This staging area would be located on Cadiz Inc. landholdings. An intermediate staging area would be located adjacent to Cadiz-Rice Road, due north of Kilbeck Hills. This staging area would be located on federal lands bordered by Cadiz-Rice Road and the AZRC rail lines. A third staging area would be located at the Iron Mountain Pumping Plant between the existing Iron Mountain Pumping Plant electrical substation and the Cadiz Pumping Plant.

Traffic Impacts During Construction of the Project Spreading Basins. The project spreading basin would be located on Cadiz Inc. landholdings. During construction of the project spreading basin, traffic would be generated by construction vehicles, employee vehicles and transport of heavy equipment and construction materials to and from the site.

During any given work shift, approximately 60 workers and 40 pieces of heavy equipment would be required for construction of the project spreading basin. The total number of workers and pieces of heavy equipment operating at one time would vary depending on the construction schedule developed by the individual Cadiz Project contractors, but are not expected to exceed the estimates given above.

It is assumed that the spreading basin would be constructed over a period of nine months. Two work shifts per day would be utilized, working six days a week.

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Table 5.7-1 summarizes the estimated one-way trips for construction vehicles and crews for the construction of the project spreading basins. As shown, the spreading basin construction would generate 127 one-way trips daily, consisting of 120 employee trips and 7 truck trips for equipment and materials delivery. Most of these trips are due to employee trips. This estimate assumes that employees drive alone to the construction site. These estimates represent a conservative methodology that assumes that the contractor would undertake all construction activities simultaneously. Actual traffic during construction would vary with the contractor’s schedule, but would be lower than these traffic estimates.

**TABLE 5.7-1
SUMMARY OF TRAFFIC ESTIMATES DURING CONSTRUCTION**

Staging Area/Facility	One-Way Daily Traffic Estimate		
	Employee Auto Trips	Truck Trips	Total Trips
Cadiz Inc. Site			
Conveyance System	100	29	129
Spreading Basin	120	7	127
Wellfield	177	5	182
Power Distribution	94	8	102
Subtotal	391	49	540
Intermediate Staging Area			
Conveyance System	200	58	258
Power Distribution	188	16	204
Subtotal	388	74	462
Iron Mountain Pumping Plant Site			
Conveyance System	100	29	129
Pumping Facility	160	7	167
Power Distribution	94	8	102
Subtotal	354	44	398
Project Total	1,133	167	1,400

- [1] The traffic volume used for this analysis consists of all the daily traffic and the daily equivalent of traffic occurring at the regular intervals (e.g., materials delivery). It excludes traffic occurring before and after construction (e.g., delivery of heavy equipment).
- [2] Refer to Appendix B for detailed tables of trip generation during construction of the Eastern Alternative.

Some equipment needed for construction of the project spreading basins would originate from Desert Center, Morongo Valley and Twentynine Palms. Trucks transporting this equipment would be expected to use either Cadiz-Rice Road or make the loop around Amboy Road to reach the construction site. In addition, construction equipment would also originate from the Barstow and Needles areas. Trucks transporting this equipment would be expected to use Cadiz-Rice Road via I-40 and National Trails Highway. Large equipment would probably come from the Los Angeles area via I-40 and National Trails Highway.

Materials and crew/employees needed for project spreading basins construction would be expected to come from the same communities and travel the same routes as described above. Virtually all the construction activities for the project spreading basins would take place on-site. The only substantial off-site activities would be those associated with delivery of construction materials and process material equipment to the site. The design of the project spreading basin is balanced in terms of the cut and fill

of material. Therefore, no trips for delivery or removal of excess fill are assumed.

Traffic Impacts During Construction of the Project Wellfield. The project wellfield would be located on Cadiz Inc. landholdings. During construction of the project wellfield, traffic would be generated by construction vehicles, employee vehicles and transport of heavy equipment, primarily well drilling rigs, to and from the Cadiz Project site.

During any given work shift, approximately 59 workers and 17 pieces of heavy equipment would be required during construction of the project wellfield. The total number of workers and pieces of heavy equipment operating at one time would vary depending on the construction schedule developed by the individual Cadiz Project contractors, but are not expected to exceed the estimates given above.

It is assumed that the project wellfield would be constructed over a two-year period. Three work shifts per day would be employed, working seven days a week.

Table 5.7-1 summarizes the estimated one-way trips of construction vehicles and crew needed for the construction of the project wellfield. Wellfield construction would generate approximately 182 daily vehicle trips one-way consisting of 177 employee trips and 5 truck trips for equipment and materials delivery.

Most construction equipment, materials and crew/employees for the project wellfield would be expected to originate from the same communities and travel via the same routes as described in the sub-section titled “Traffic Impacts During Construction of the Project Spreading Basins,” above.

Traffic Impacts During Construction of the Water Conveyance Facilities. During construction of the water conveyance facilities and parallel power lines, traffic would be generated by construction vehicles, employee vehicles and transport of heavy equipment to and from the construction staging areas.

During any given work shift, approximately 97 workers and 59 pieces of heavy equipment would be required for each of the four assumed construction teams. Many of the construction activities could be performed concurrently at multiple locations. Consequently, multiple crews may perform the same task at the same time, but at different locations along the alignment, or may perform different activities at the same place along the alignment at the same time. The total number of workers and pieces of heavy equipment operating at one time would vary depending on the construction schedule developed by the individual Cadiz Project contractors, but are not expected to exceed the estimates given above.

It is assumed that the conveyance facilities and parallel power lines would be constructed over a period of nine months. The conveyance facility construction team would consist of four crews per shift, each crew having 50 employees. Two shifts per day, and six work days per week would be utilized. The construction team for the power distribution would have the same arrangement, except that each crew would consist of 47 employees.

As previously noted, most of the construction equipment would be expected to originate from the communities of Barstow, Desert Center, Morongo Valley, Needles, Parker and Twentynine Palms, while large equipment would probably come from the Los Angeles area. Equipment bound for the Cadiz area and the intermediate staging area would most probably be trucked to these areas from Cadiz-Rice Road and National Trails Highway via SR 62, I-95 and I-40 and Amboy Road. Construction equipment destined for the Iron Mountain Pumping Plant staging area would use SR 62/SR 177 and the Iron Mountain Pumping Plant Road to reach that staging area.

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The conveyance facility construction would generate approximately 129 one-way daily vehicle trips per crew, consisting of 100 employee auto trips, and 29 truck trips for equipment and materials. Each power distribution crew would generate approximately 102 one-way daily vehicle trips consisting of 94 employees auto trips and eight truck trips for equipment and materials.

During construction of the conveyance facility, traffic on existing roads that cross or are adjacent to construction access roads may be disrupted by construction vehicle crossings. However, these disruptions would be temporary. Mitigation measures provided later in this section would substantially reduce this impact. These measures include providing road safety personnel (flagmen) to control traffic through the construction area or providing detour routes.

In the vicinity of Chubbuck Station, the water conveyance facilities would be constructed within the existing disturbed area of Cadiz-Rice Road to avoid direct impacts on cultural resources in this area. As a result, one approximately 1,200-foot long segment of Cadiz-Rice Road would have a relatively narrow construction easement allowing for one-way traffic only on Cadiz-Rice Road during the construction of this segment of the water conveyance facility.

Vehicles would travel parallel to the pipeline trench through an area approximately 20 feet wide designated for both construction-related and local traffic. Construction vehicles would stop only to unload materials or equipment. Road safety personnel (flagmen) would control traffic through the construction zone. The maximum delay to local traffic is anticipated to be approximately 10 minutes.

Equipment would be brought to the Cadiz Project over existing paved roads and unmaintained dirt roads. Once on the Cadiz Project site, all construction traffic would travel on construction access roads to the staging and construction areas.

The length of pipe sections transported to the Cadiz Project area by truck would be determined by the existing weight and height limits on roads and highways but would not exceed 48 feet. Transportation of the pipe sections is an important factor since most public roads and highways have load restrictions of approximately 45 tons. Caltrans indicated that under a repetitive hauling permit, the absolute maximum width permitted is 14 feet. In any event, all required permits to haul pipe on public roads would be obtained. The pipe for the water conveyance facility would not require a special permit since each load would be less than 14 feet wide. Discussions with pipe suppliers have confirmed that all loads would be kept to allowable highway load standards. Therefore, the shipment of pipe by truck under the Eastern Alternative would not result in adverse impacts related to restrictions on public roads. No mitigation is necessary.

Traffic Impacts During Construction of the Cadiz Pumping Plant. The Cadiz Pumping Plant would be located at the Iron Mountain Pumping Plant. During construction of the Cadiz Pumping Plant, traffic would be generated by construction vehicles, employee vehicles and transport of heavy equipment and materials to and from the site.

During any given work shift, a maximum of 80 workers and 37 pieces of heavy equipment would be required on a daily basis during construction of the Cadiz Pumping Plant. The total number of workers and pieces of heavy equipment operating at one time would vary depending on the construction schedule developed by the individual Cadiz Project contractors, but are not expected to exceed the estimates given above.

It is assumed that the Cadiz Pumping Plant would be constructed over a 12-month period. A crew of 80 employees would work six days a week. There would be two work shifts per day.

The construction of the Cadiz Pumping Plant is expected to generate 167 one-way daily vehicle trips, consisting of 160 employee auto trips and 7 truck trips. This estimate assumes that each employee drive alone to the work site.

Most construction equipment materials and crew/employees for the Cadiz Pumping Plant would be expected to originate from the same communities and travel via the same routes as described earlier in the sub-section titled “Traffic Impacts During Construction of the Project Spreading Basins.”

Overall Traffic Impacts During Construction. Table 5.7-1 summarizes the traffic generation impacts during construction of the different components of the Eastern Alternative in detail. As shown, the combined Cadiz Project components, if constructed simultaneously, would generate approximately 1,400 one-way vehicle trips on a typical day.

To determine the overall traffic impacts during construction, of the Eastern Alternative traffic generated by the construction of the different Cadiz Project components was distributed to the existing road network using P&D’s IMPAX program.

Figure 5.7-2 shows the additional traffic on existing roads due to construction activities taking place simultaneously at different sites under the Eastern Alternative. The road segment most heavily impacted by construction traffic would be the Iron Mountain Pumping Plant Road. It is anticipated that this road segment would carry approximately 800 additional vehicles per day (two-way) as a result of construction of the Eastern Alternative. Approximately 700 of these trips would consist of crew traffic which would be expected to occur during the peak hour. Based on an ideal hourly capacity of approximately 1,500 vehicles per hour for a two-lane service road, construction traffic would use less than half of the existing road capacity on Iron Mountain Pumping Plant Road. This low level of capacity utilization would not be considered significant or adverse.

Cadiz-Rice Road between the Cadiz Project and Chubbuck Station would be expected to carry approximately 520 vehicles trips per day (two-way) during construction of the Eastern Alternative. Since Cadiz-Rice Road is currently unimproved with an existing traffic volume of approximately 10 trips per day, this would represent a substantial increase in traffic volumes on the road. However, construction traffic would use less than half of the existing road capacity. This low level of capacity utilization would not be considered significant or adverse. As previously noted, for a 1,200-foot long segment at the abandoned Chubbuck Station, through traffic would be limited to one-way traffic controlled by road safety personnel (flagman) during the period of time that segment of the conveyance facilities would be under construction.

To mitigate the impact of additional traffic on Cadiz-Rice Road, improvements would be made to better accommodate the estimated volume of construction traffic. Improvements would be limited to grading only, and would not include widening or paving of Cadiz-Rice Road. Mitigation measure T-4, described later in this section, provides for sufficient capacity to accommodate construction-related traffic impacts without resulting in significant adverse impacts on Cadiz-Rice Road.

Rail Transportation. It is possible that for all the Cadiz Project build alternatives that some construction materials could be shipped to the Cadiz Project area by rail line. Shipments would be anticipated to be added to existing trains on the BNSF and the ARZC rail lines. The magnitude of such shipments would not be anticipated to substantially increase the overall number of trains on the BNSF or ARZC rail lines. Therefore, impacts to rail traffic would be less than significant and no mitigation is necessary.

The project spreading basins are located a sufficient distance from the BNSF and ARZC rail lines that these rail lines would not be impacted by the construction or operation of these Cadiz Project facilities.

The construction of the water conveyance facilities would require coordination with the ARZC and the BNSF. The water conveyance facilities head due south from the project spreading basins and cross underneath the ARZC rail line. After crossing underneath the rail line, the conveyance facilities parallel the ARZC rail line in a southeasterly direction. The crossing of the water conveyance facilities beneath the rail line would need to be coordinated with the ARZC. Protection of the rail line and the rail operation needs to be considered for both the crossing and the construction of the parallel alignment.

Part of the project wellfield manifold crosses under the BNSF rail lines and similar arrangements would have to be made with this entity. Construction at rail line crossings would be either by bore and jack or conventional tunnel with ribs and lagging or lineal plate. Under either method, normal railroad operations would not be disrupted. All construction operations at rail line crossings would be coordinated with the affected railroad companies.

Air Transportation. During construction of the Eastern Alternative, there would probably be a slight increase in air traffic at the two private airstrips adjacent to the Cadiz Project site due to travel by Cadiz Inc. and Metropolitan staff. This increase is estimated to be less than two flights per week into each private airstrip. This slight, temporary increase will not result in any increased safety risks. No mitigation is necessary. The Amboy airstrip will not be affected since the Cadiz Inc. and Metropolitan airstrips could meet all the Cadiz Project needs for air access.

Operations Impacts

Vehicular Access and Emergency Traffic. Once completed, the long term operation and maintenance of the Eastern Alternative would not be expected to generate substantial vehicle trips. Traffic would consist of employee commuter, operations and maintenance trips.

Existing Metropolitan personnel and additional personnel to be based at the Iron Mountain Pumping Plant would perform Cadiz Project operations and maintenance activities under the Eastern Alternative. Personnel would perform regular inspections and periodic maintenance on the water conveyance facilities, project spreading basins and the project wellfield. Fewer than 10 new employees would be needed for operations.

Weekly to monthly inspection trips of the water conveyance facilities, power distribution facilities, project wellfield and project spreading basins would be conducted during Cadiz Project operations. Special inspection trips would also be conducted after major storm events and earthquakes. These infrequent inspection trips would not affect traffic operations on the study area roads.

Operation and maintenance traffic would follow the access roads maintained for this purpose. No long term adverse traffic impacts as a direct result of the Cadiz Project would occur.

The Cadiz Project may have a beneficial impact on emergency access routes by improving the existing road link between SR 62 and National Trails Highway; improving and maintaining segments of existing roads and constructing a new, permanent, limited access maintenance road within the water conveyance and power distribution facilities right-of-way. Although public access will be prohibited on this access road, it could be used by emergency vehicles to access remote areas near the pipeline or in event of a blockage on other north-south routes.

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Operation of the Cadiz Project would entail either spreading, storage or withdrawal of water. During spreading operations, employees would operate and maintain the project spreading basins. During withdrawal operations, the same employees would operate and maintain the project wellfield. Appendix B provides detailed tables summarizing the personnel/crew needed to operate and maintain the Cadiz Project facilities in the spreading and withdrawal modes. During the storage mode, routine maintenance of Cadiz Project facilities would occur.

During spreading operations, a total of nine employees, consisting of one supervisor, five operators and three maintenance crew members, would be required to maintain Cadiz Project operations.

During the withdrawal mode, a total of nine employees would be required. A supervisor, one operator and two maintenance workers would be staffed at the Cadiz Pumping Plant. Two operators would work full-time in the project wellfield, and one maintenance worker would be required for the water conveyance facilities. The project spreading basins would be out of service in the withdrawal mode. Two workers would staff this facility for maintenance during storage and withdrawal modes.

Depending on the Cadiz Project operation (spreading, storage or withdrawal), the employees at the different Cadiz Project locations would vary. For both the storage and withdrawal operations, personnel would be stationed at the Iron Mountain Pumping Plant. For the storage operation, the remaining employees would be mainly stationed at the spreading basins. In the withdrawal operation, staff would be shifted to operation and maintenance of the project wellfield. Maintenance and operation activities would require staff to travel to the appropriate site locations.

There would be two maintenance trucks on site under all the project alternatives. The routes for these vehicles would be along the permanent access road along the water conveyance facility alignment, making an assumed one trip per day to a specific destination on the Cadiz Project site. Although operation and maintenance trips would not occur on a daily basis, for purposes of this traffic analysis it was assumed that with nine employees working at the active facility (project spreading basins or project wellfield), two employees at the inactive facility and two maintenance vehicle trips, daily maintenance and operation traffic would be approximately 13 one-way vehicle trips for the Eastern Alternative. This volume is considered to be negligible and would not cause significant adverse traffic impacts on regional roads and local access roads. No mitigation is necessary.

Rail Transportation. The operation of the Eastern Alternative may result in fluctuations in groundwater levels. To ensure that disruption of rail service due to differential settlement or liquefaction attributable to fluctuations in groundwater levels does not occur, a Groundwater Monitoring and Management Program will be established as part of the project. The Groundwater Monitoring and Management Program incorporates monitoring practices and other measures necessary to ensure that risks to rail operations or other facilities do not occur, due to fluctuations in groundwater levels. Refer to Section 5.5 (Water Resources) for a more detailed discussion.

Air Transportation. The operation of the Eastern Alternative would not be expected to generate any regular air traffic into the private airstrips adjacent to the project site. Some flights to the Metropolitan and/or Cadiz Inc. airstrips may be expected after major storm events and earthquakes. Air trips during these types of events are not expected to be substantial. No trips to the Amboy airstrip are expected. Therefore, the Eastern Alternative will not result in long term adverse impacts related to air transportation. No mitigation is necessary.

Western Alternative

Transportation impacts during construction and operation under the Western Alternative are expected to be similar in magnitude to those projected for the Eastern Alternative as shown earlier in Table 5.7-1. The difference is in the geographic pattern of vehicular traffic as a result of having the new pumping facility and pipeline alignment at the West Portal instead of the Iron Mountain Pumping Plant. These differences are discussed below.

Construction Impacts

Construction Access Roads and Staging Areas. As with the Eastern Alternative, a construction access road would be constructed for the Western Alternative within the designated construction easement from the project spreading basins, the ARZC right-of-way and to unimproved Cadiz-Rice Road. The northern half of the water conveyance facility would be constructed adjacent to unimproved Cadiz-Rice Road.

Following the main transmission water conveyance facility alignment for the Western Alternative, an access road would also be constructed within the designated construction easement from Cadiz-Rice Road, just north of and along the west side of the Kilbeck Hills and along the west side of the Iron Mountains to the West Portal.

Similar to the Eastern Alternative, a staging area would be provided for the Western Alternative on the Cadiz Inc. landholding near the site of the project spreading basins and project wellfield, as well as at an intermediate location along Cadiz-Rice Road near the north edge of the Kilbeck Hills. A staging area for construction of the West Portal Pumping Plant and the southern segment of the main transmission pipeline alignment would be within the 200-foot wide construction right-of-way north of the Colorado River Aqueduct. An alternative staging area may be available at the tunnel tailings spoil area south of the Iron Mountain Tunnel which has approximately 7.5 acres of storage area. Access to either area would be provided via five miles of existing unimproved road from SR 62.

Traffic Impacts during Construction of the Project Spreading Basins and Project Wellfield. The magnitude and pattern of traffic during the construction of the project spreading basins and project wellfield for the Western Alternative would be the same as described earlier for the Eastern Alternative.

Traffic Impacts During Construction of the Water Conveyance Facilities. The magnitude of traffic impacts during construction of the water conveyance facilities for the Western Alternative is expected to be the same as for the Eastern Alternative. However, unlike the Eastern Alternative, traffic bound for the West Portal staging area would be expected to use the new access road from the SR 62/SR 177 junction, instead of the Iron Mountain Pumping Plant Road.

Traffic Impacts During Construction of the West Portal Pumping Plant. The magnitude of traffic impacts during the construction of the West Portal Pumping Plant for the Western Alternative is expected to be the same as for the Eastern Alternative. However, unlike the Eastern Alternative, traffic bound for the West Portal staging area would be expected to use the access road from the SR 62/SR 177 junction, instead of the Iron Mountain Pumping Plant Road.

Overall Traffic Impacts During Construction. The level of construction traffic for the Western Alternative would be the same as for the Eastern Alternative. Therefore, the traffic impacts associated with the Western Alternative are considered to be similar to the impacts under Eastern Alternative, although the Western Alternative would not cause delays to traffic on Cadiz-Rice Road since it would not require construction through the Chubbuck area.

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Rail Transportation. The construction impacts to rail transportation for the Western Alternative would be the same as for the Eastern Alternative and would, therefore, be less than significant. No mitigation is necessary.

Air Transportation. The construction impacts related to air transportation for the Western Alternative would be the same as for the Eastern Alternative and would, therefore, be less than significant. No mitigation is necessary.

Operations Impacts

The magnitude of long term traffic impacts during project operations with the Western Alternative is expected to be the same as for the Eastern Alternative, except that the pumping plant at the West Portal would require slightly more staffing due to its remote location. However, the overall long term traffic impacts would be negligible, similar to the Eastern Alternative, because of the overall small number of employee and maintenance trips generated during project operations.

Vehicular Traffic and Emergency Access. As with the Eastern Alternative, the Western Alternative would have a beneficial impact on emergency access routes by improving and maintaining segments of existing roads and providing an alternate road link between SR 62 and National Trails Highway via the permanent maintenance road within the water conveyance facility right-of-way. Although the maintenance road would be closed to public use, it could be used by emergency vehicles to access remote areas near the pipeline or in the event of blockage of other north-south routes.

Rail Transportation. The operation of the Western Alternative may result in fluctuations in groundwater levels. To ensure that disruption of rail service due to differential settlement or liquefaction attributable to fluctuations in groundwater levels does not occur, a Groundwater Monitoring and Management Program will be established as part of the project. The Groundwater Monitoring and Management Program incorporates monitoring practices and other measures necessary to ensure that risks to rail operations or other facilities do not occur due to fluctuations in groundwater levels. Refer to Section 5.5 (Water Resources) for a more detailed discussion.

Air Transportation. The operation of the Western Alternative would not be expected to generate any regular air traffic into the private airstrips adjacent to the project site. Some flights to the Metropolitan and/or Cadiz Inc. airstrips may be expected after major storm events and earthquakes. Air trips during these types of events are not expected to be substantial. No trips to the Amboy airstrip are expected. Therefore, the Western Alternative would not result in long-term adverse impacts related to air transportation. No mitigation is necessary.

Combination Alternative

Traffic impacts during construction and operation of the Combination Alternative are expected to be similar in magnitude to those projected for the Eastern Alternative, as shown earlier in Table 5.7-1. The difference is in the geographic pattern of traffic as a result of having the new pumping facility at the West Portal instead of the Iron Mountain Pumping Plant. These differences are discussed below.

Construction Impacts

Construction Access Roads and Staging Areas. Like the Eastern Alternative, an access road would be constructed for the Combination Alternative from the project spreading basins to the ARZC right-of-way and unimproved Cadiz-Rice Road. The pipeline would be constructed adjacent to unimproved Cadiz-Rice

Road. South of Chubbuck Station, the construction access route would follow the pipeline alignment across the saddle between the Kilbeck Hills and along the west side of the Iron Mountains to the West Portal within the construction easement.

Similar to the Eastern Alternative, construction staging areas would be provided on the Cadiz Inc. landholdings near the project spreading basins and project wellfield, as well as at an intermediate area located at the most easterly corner of the Cadiz Dunes Wilderness Area. Similar to the Western Alternative, a five-acre staging area near the West Portal would be provided under the Combination Alternative. Access to the West Portal staging area would be provided by the existing unpaved access road from SR 62.

Project Spreading Basin, Project Wellfield, Water Conveyance Facilities and West Portal Pumping Facilities. The magnitude and pattern of traffic impacts during construction of the project spreading basin, project wellfield, water conveyance facilities and pumping facilities under the Combination Alternative would be the same as for the Western Alternative.

Overall Traffic Impacts During Construction. The level of construction-related traffic impacts for the Combination Alternative would be the same as shown earlier in Table 5.7-1 for the Eastern and Western alternatives. Therefore, the traffic impacts associated with the Combination Alternative are considered to be similar to the impacts for the Western Alternative.

Rail Transportation. The construction impacts to rail transportation for the Combination Alternative would be the same as for the Eastern and Western Alternatives. These impacts would be less than significant. No mitigation is necessary.

Air Transportation. The construction impacts related to air transportation for the Combination Alternative would be the same for the Eastern and Western Alternatives and would, therefore, be less than significant. No mitigation is necessary.

Operations Impacts

The magnitude and pattern of long term traffic impacts during project operations and maintenance for the Combination Alternative are expected to be the same as for the Eastern and Western alternatives.

Vehicular Traffic and Emergency Access. As with the Eastern and Western alternatives, the Combination Alternative would have a beneficial impact on emergency access routes by improving and maintaining segments of existing roads and providing an alternate road link between SR 62 and National Trails Highway via the permanent maintenance road within the water conveyance facility right-of-way. Although this route would be closed to public use, it could be used by emergency vehicles to access remote areas near the pipeline or in the event of blockage of other north-south routes.

Rail Transportation. The operation impacts to rail transportation for the Combination Alternative would be the same as for the Eastern and Western alternatives.

Air Transportation. The operation of the Combination Alternative is not expected to generate any regular air traffic into the private airstrips adjacent to the project site. Some flights to the Metropolitan and/or Cadiz Inc. airstrips may be expected after major storm events and earthquakes. Air trips during these types of events are not expected to be substantial. No trips to Amboy airstrip are expected. Therefore, the Combination Alternative would not result in long term adverse impacts related to air transportation. No mitigation is necessary.

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Eastern/Canal Alternative

Traffic impacts during construction and operation of the Eastern/Canal Alternative would be greater in magnitude than under any of the other build alternatives. This is because construction of an additional pump station is required and because canal construction involves more intensive construction work than pipeline construction. Operational impacts under the Eastern/Canal Alternative related to traffic would be nearly identical to the Eastern Alternative.

Construction Impacts

Construction Access Roads and Staging Areas. Like the Eastern Alternative, an access road would be constructed for the Eastern/Canal Alternative within the construction easement from the project spreading basin to the ARZC tracks and unimproved Cadiz-Rice Road. The construction access road would then run within the construction easement paralleling Cadiz-Rice Road to Chubbuck Station, where the same narrow construction zone as for the Eastern and Combination alternatives would be employed. From Chubbuck Station, similar to the Eastern Alternative, construction access would be provided within the construction easement, all the way south to the Iron Mountain Pumping Plant. The Eastern/Canal Alternative would use the same construction staging areas as the Eastern and Combination alternatives.

Overall Traffic Impacts During Construction. Traffic volumes generated by construction of the Eastern/Canal Alternative would be approximately 30 to 35 percent higher than for the Eastern Alternative. Up to 180 additional construction workers could be added to simultaneous construction activities for the Intermediate Pumping Plant and canal under this Alternative. The number and types of equipment needed for construction of the canal are also higher than that needed for construction of a similar segment of pipeline. Canal construction will require frequent delivery of concrete. Concrete for the Cadiz Project is expected to be produced at a temporary batch plant in a nearby construction zone, such as the staging area at Iron Mountain Pumping Plant. Materials would have to be brought to the batch plant to manufacture the concrete.

This Alternative would also result in one-way traffic operations at Chubbuck Station during construction, with delays to through traffic of up to 10 minutes. Traffic would be controlled by road safety personnel (flagmen) during the period of time that segment is under construction.

Similar to the Eastern Alternative, options exist to mitigate traffic impacts on Cadiz-Rice Road during construction. Mitigation measure T-4, described later in this section, provides for sufficient capacity to accommodate construction-related traffic impacts under the Eastern/Canal Alternative without resulting in significant adverse impacts.

Rail Transportation. The construction impacts to rail transportation for the Eastern/Canal Alternative would be the same as for the other build alternatives.

Air Transportation. During construction of the Eastern/Canal Alternative, there would probably be a slight increase in air traffic to the two private airstrips adjacent to the project site due to travel by Cadiz Inc. and Metropolitan staff. This increase is estimated to be less than two flights per week into each private airstrip. This slight temporary increase would not result in any increased safety impacts. The Amboy airstrip would not be affected since the Cadiz Inc. and Metropolitan airstrips could meet all Cadiz Project needs for air access under the Eastern/Canal Alternative.

Operations Impacts

The magnitude of the long term traffic impacts during project operations for the Eastern/Canal Alternative would be the same as for the Eastern Alternative, except that the canal segment may require the assignment of up to one more staff person. However, the overall long term traffic impacts are expected to be negligible, similar to the Eastern Alternative, because of the small number of employee and maintenance trips generated during Cadiz Project operations.

Vehicular Traffic and Emergency Access. As with the Eastern Alternative, the Eastern/Canal Alternative would have a beneficial impact on emergency access routes by improving and maintaining segments of existing roads and providing an alternate road link between SR 62 and National Trails Highway via the permanent maintenance road within the water conveyance pipeline right-of-way. Although this route would be closed to the public, it could be used by emergency vehicles to access remote areas near the pipeline or in the event of blockage of other north-south routes.

Operating the Intermediate Pumping Plant would not require additional staff, since it can be run remotely from the Cadiz Pumping Plant and Iron Mountain Pumping Plant. Maintenance of the canal may require up to one additional staff person. The same people who would otherwise be involved in pipeline and pumping plant maintenance/ operations would be capable of maintaining the canal and operating the booster station. Therefore, the operations impacts due to traffic associated with the Eastern/Canal Alternative would be similar to the Eastern Alternative. No mitigation is necessary.

Rail Transportation. The operations impacts to rail transportation of the Eastern/Canal Alternative would be the same as for the Eastern, Western and Combination alternatives. The Ground-water Monitoring and Management Program incorporates monitoring practices and other measures necessary to ensure that risks to rail operations do not occur due to fluctuations in groundwater levels.

Air Transportation. The operation of the Eastern/Canal Alternative is not expected to generate any regular air traffic into the two private airstrips adjacent to the project site. Some flights to the Metropolitan and/or Cadiz Inc. airstrips may be expected after major storm events or earthquakes. Air trips during these types of events are not expected to be substantial. No trips to the Amboy airstrip are expected. Therefore, the Eastern/Canal Alternative would not result in long term adverse impacts related to air transportation. No mitigation is necessary.

No Project Alternative

Under the No Project Alternative, traffic on existing roads is expected to remain the same as it is currently and would continue to grow at the normal rate experienced in the area. Therefore, the No Project Alternative would have no significant adverse traffic impacts.

The No Project Alternative would not result in any changes in existing rail services or facilities in the Cadiz Project area because it will not result in any project-related construction or operations.

The No Project Alternative would not result in any changes in the existing agricultural and Metropolitan activities in this area. Therefore, it would not result in any changes in the use of local private airfields by either Metropolitan or Cadiz Inc. personnel.

5.7.5 MITIGATION MEASURES

Although the Cadiz Project will not result in significant short- or long-term adverse traffic impacts,

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measures to reduce the potential for adverse temporary impacts associated with construction have been identified. These mitigation measures are intended to avoid or reduce short term temporary traffic impacts resulting from construction of the any of the build alternatives.

- T-1 During construction, Metropolitan will coordinate with the local jurisdictions where construction of water conveyance facilities crossings will impact existing public roads.
- T-2 During construction, Metropolitan will coordinate with all emergency services providers, both public and private, in the development of construction scheduling and detour plans to ensure adequate access and travel routes for emergency vehicles in and around all construction areas.
- T-3 During all site preparation, grading and construction, Metropolitan will require the contractor to provide traffic assistance at all locations where construction access routes cross existing public roads. This assistance may include providing flagmen to control and direct traffic through and/or around construction areas; signing, flagging and/or placing cones at crossing areas; and/or the provision of detour routes, as needed, to ensure the safe flow of through traffic in and around construction areas.
- T-4 Prior to any construction on Cadiz-Rice Road between SR 62 and Chubbuck, Metropolitan will require the project contractor to provide increased surface transportation capacity in this area of active construction.
- T-5 Prior to construction on Cadiz-Rice Road between SR 62 and Chubbock, Metropolitan will enter into a Memorandum of Understanding with the County of San Bernardino to address the County's requirements regarding Metropolitan's obligations for mitigation of the temporary impacts of the Cadiz Project construction traffic. To mitigate these impacts, Metropolitan will agree to pay a specific amount to be negotiated with the County.

5.7.6 LEVEL OF SIGNIFICANCE AFTER MITIGATION

Although the short- and long-term transportation impacts of the Cadiz Project are below a level of significance, mitigation measures have been identified to further reduce the potential for adverse temporary impacts during construction. Road levels of service will not be exceeded, rail service disruptions will be avoided, flagmen will be stationed along Cadiz-Rice Road to prevent safety hazards, existing access will be preserved and augmented, and adequate parking will be provided for workers in construction staging areas and/or easements. No significant impacts will occur.