storage tank with a capacity of about 600,000 gallons, located on the proposed power plant site near the raw water tank. It then would be distributed to the various users within the proposed power plant and associated facilities.

2.2.4 Access Road

Access to the proposed power plant site, groundwater well field, and other properties in the vicinity would be principally provided by about 2.3 miles of a new Mohave County road. The road would begin at the Cholla Canyon Ranch Road intersection with US 93, cross Sycamore Creek, and end at the proposed power plant. The portion of the access road from the southwest corner of Section 5 to the proposed power plant would be a private road.

The Mohave County road would be constructed within a 150-foot-wide county road and utility easement adjacent to the section lines between Sections 1 and 12, T15N, R13W and Sections 6 and 7, T15N, R12W. The Mohave County road right-of-way would not be fenced. The private road would be posted to reduce unauthorized access to private lands.

The area needed for construction would be a 90-foot wide path for a total disturbed area of 21 acres. The width of the permanent roadbed would be 26 feet wide. The road would include a concrete box culvert at the Sycamore Creek crossing and seven pipe culverts at smaller drainages. The concrete box culvert across Sycamore Creek would be constructed of 10 individual boxes, each having a cross-section of 12 feet wide by 8 feet high and each will be 58 feet long as the creek flows. The boxes would be constructed side by side and extend 120 feet across the Sycamore Creek streambed. The culvert would provide an 8-foot clearance above the streambed and an apron with riprap would be provided at grade on the downstream side of the culvert. The box culvert and road would be designed to handle a 100-year storm event.

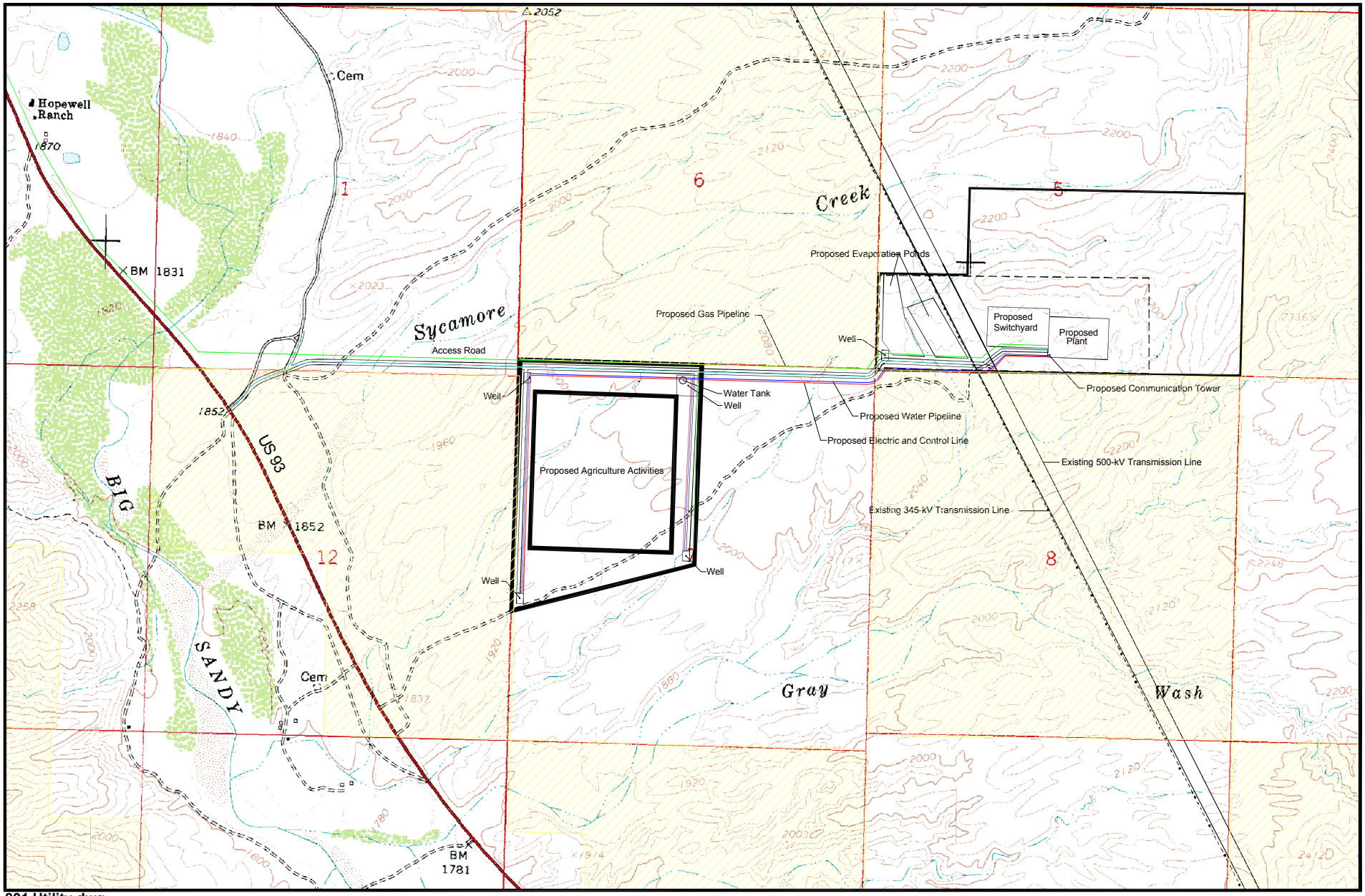
Figure 2-11 shows the proposed location of the access road and associated land jurisdiction. The road would cross about 700 feet of BLM-managed public land at the junction with US 93 and a small portion of BLM-managed land at the southwest corner of Section 5.

2.2.5 Natural Gas Supply Pipeline

A new 16- to 20-inch diameter high-pressure underground natural gas supply pipeline would bring natural gas to the proposed power plant from one or more of three interstate natural gas transmission pipelines located about 39 miles north of the proposed power plant site, immediately north and south of I-40. The proposed natural gas supply pipeline would have a nominal 50-foot-wide right-of-way and request authorization for construction disturbance within a nominal 100-foot-wide area. The pipeline would be constructed, owned, and operated by either the Project proponent (Caithness) or another entity. Figure 2-12 depicts the location of the proposed and alternative pipeline corridors evaluated in this Draft EIS.

This Draft EIS uses a corridor concept to locate and analyze alternative pipeline routes. Rather than identifying a specific alignment for the pipeline right-of-way, the routes follow broader corridors that allow adjustments to be made in the final engineered alignment of the pipeline, so that constraints identified during pre-construction surveys and right-of-way negotiations can be accommodated. Use of corridors rather than a specific alignment in this EIS provides the flexibility to make adjustments for these circumstances.

To the extent feasible, the pipeline would be located within a corridor such that permanent displacement of an existing use, such as a residence or business, is avoided. Compensation for use of lands would be determined through mutually agreeable business negotiations or, to the extent applicable, a court of law under a condemnation action. If the pipeline owner does not have the power of eminent domain, it would not be able to initiate a condemnation action and no use of the land would occur unless the proponent obtained the consent of the landowner.



891 Utility.dwg

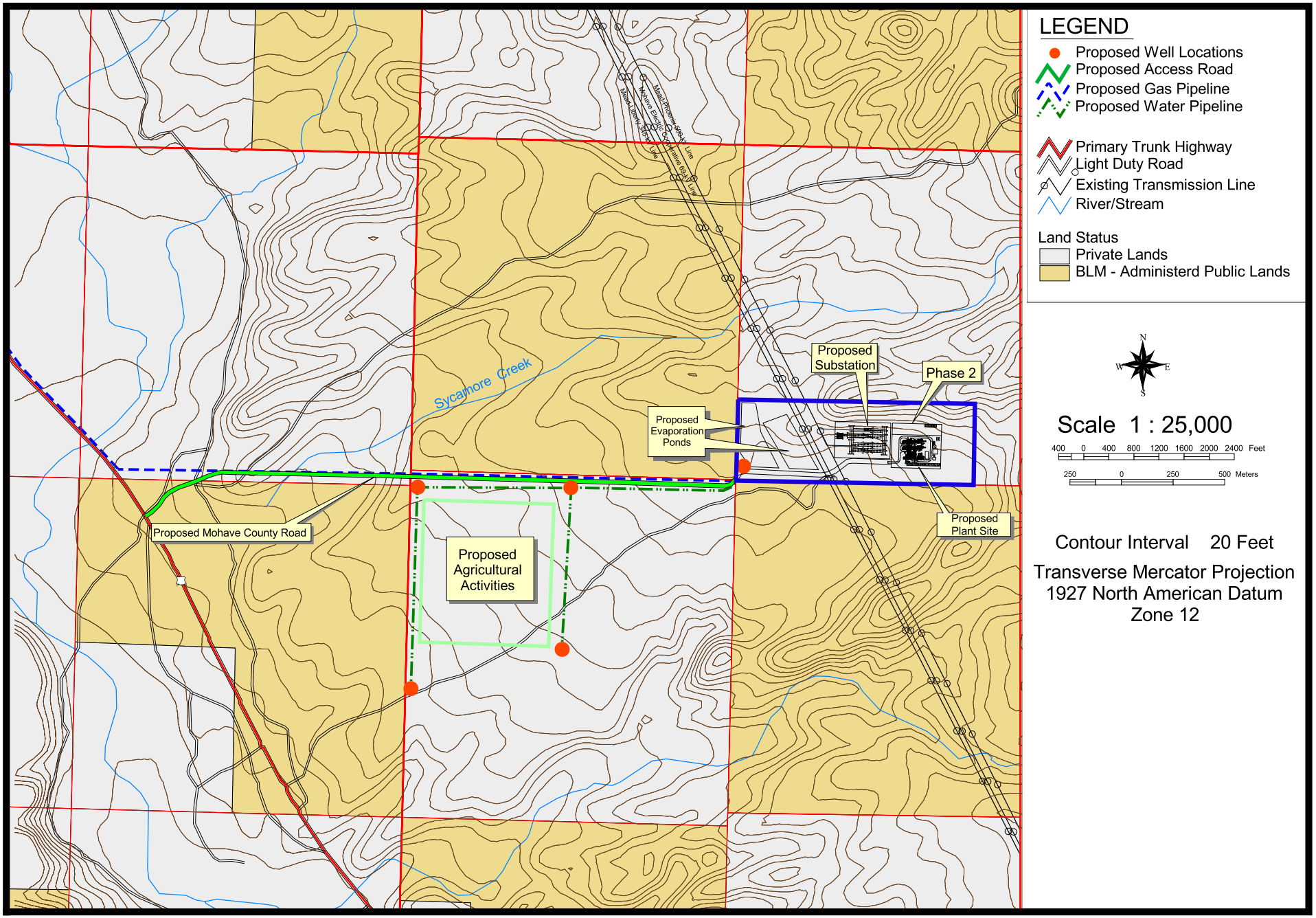
N

0 2000 4000
(ft)

Conceptual Utility Layout/Water Supply Wells

Big Sandy Energy Project EIS

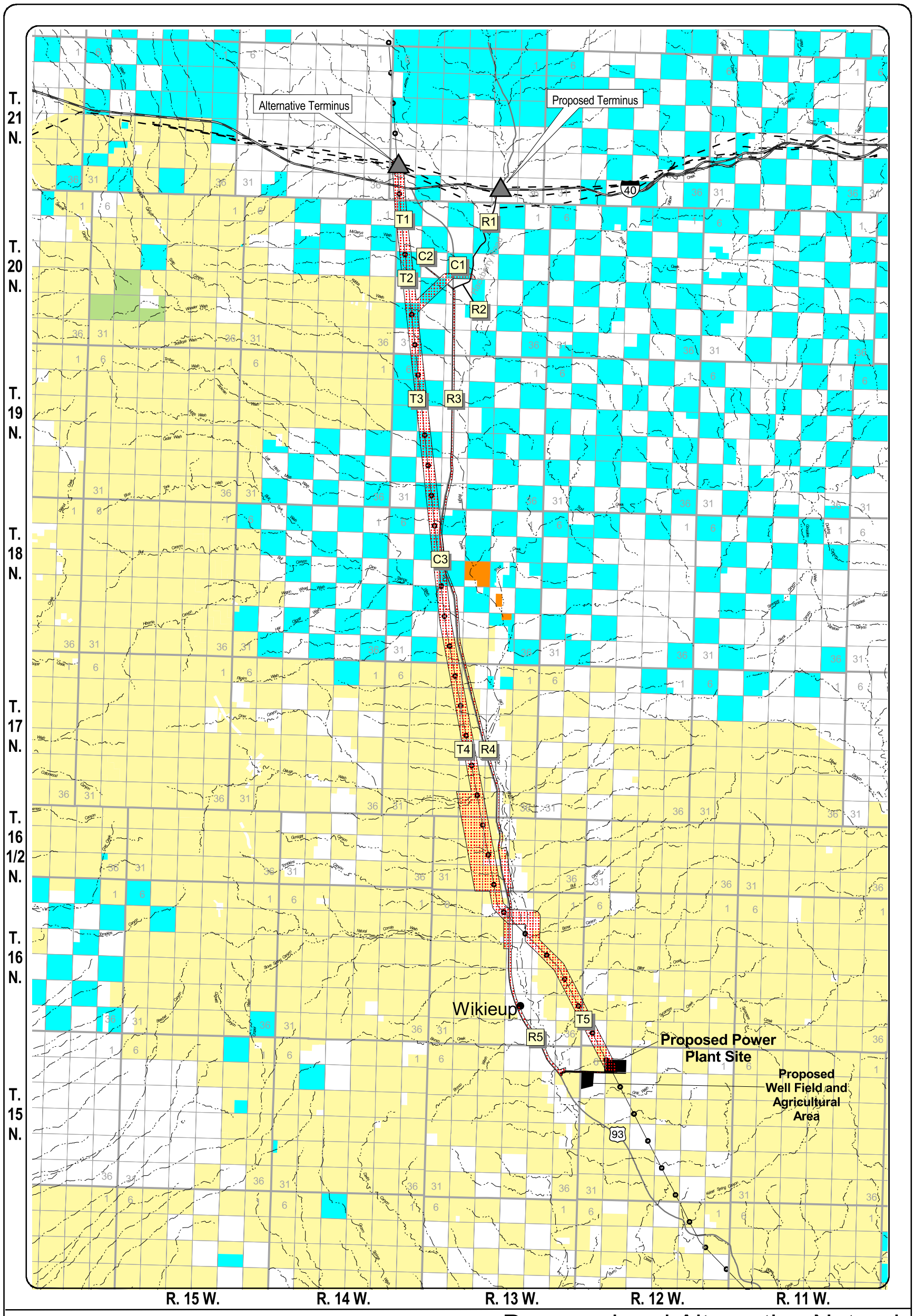
Figure 2-10



Proposed Access Road

Big Sandy Energy Project EIS

Figure 2-11



Legend

Project Components

- Pipeline Corridor Segments
  - Proposed Pipeline Corridor - R1,C1,T3,C3,T4,R5
  - Alternative R Corridor - R1,R2,R3,C3,R4,R5
  - Alternative T Corridor - T1,T2,T3,C3,T4,T5
- R1 Road Corridor Segment
- T1 Transmission Line Corridor Segment
- C1 Crossover Corridor Segment
- Proposed Plant Facilities

Land Ownership and General Reference

- Private
- State
- BLM
- Hualapai Reservation
- Parks
- Existing Pipelines
- Mead-Liberty/Mead-PhoenixTransmission Lines
- Stream/River
- Interstate
- U.S. Route

Proposed and Alternative Natural Gas Pipeline Corridors

Big Sandy Energy Project EIS

0 5

Scale in Miles

Universal Transverse Mercator Projection
1927 North American Datum
Zone 12

N

Figure 2-12

x:/bigsandy/projects/jurisdiction.apr

Natural Gas Pipeline Terminology

Proposed and alternative corridors were developed by delineating areas within which the pipeline could be sited. The corridors were broken down into links or corridor segments, based on where the corridors interconnected, to facilitate the analysis. The final pipeline alignment could fall anywhere within the corridors. The following terminology will be used in the description of the pipeline alternatives:

- **Route** – the full length of either a pipeline alignment or pipeline corridor segments that allow the pipeline to be built from the start point to the end point (from near existing gas pipelines near I-40 to proposed power plant)
- **Alignment** – the specific location for the pipeline (that is, it will be built "here")
- **Corridor** – the more general area within which the pipeline would be built
- **Corridor Segments** – sections of pipeline corridor which, when pieced together, could define a pipeline route; sometimes referred to as "links." Segments are described in detail in Table 2-2.

This EIS analyzes the effects of construction and operation of the natural gas pipeline, including required construction staging areas and a nominal 90-foot-wide area of disturbance along the route, within each corridor segment. However, once detailed pre-construction surveys are complete and any site-specific issues are resolved, the final alignment of the pipeline within the corridor segments will be selected and approved by the agencies.

As can be seen on Figure 2-12, both the proposed and alternative pipeline corridors consist of various combinations of 13 individual corridor segments, ranging in width from 100 feet (within road rights-of-way) to nearly 1 mile (to provide additional room to avoid sensitive resources and topographic obstacles). These segments have been assigned alphanumeric designations. The five corridor segments following existing or proposed roads (Hackberry Road, US 93, and the new Mohave County access road) have been labeled R1 through R5 ("R" for "road"). The five corridor segments following the Mead-Liberty 345-kV and Mead-Phoenix Project 500-kV transmission lines have been labeled T1 through T5 ("T" for "transmission"). Three corridor segments that provide for potential crossover between the road and transmission line corridors have been labeled C1 through C3 ("C" for "crossover"). Detailed descriptions of the 13 segments are provided in Table 2-2, and Table 2-3 summarizes the length (in miles) associated with each segment.

The Proposed Action (proposed route) for the gas pipeline follows the following sequence of corridor segments:

R1 - C1 - T3 - C3 - T4 - R5

The following describes the general path of the proposed route; refer to Table 2-3 for additional detail on the location and width of each corridor segment.

The proposed pipeline would begin at the points of connection with one or more of the three potential gas transmission pipelines, in Section 3, T20N, R13W and/or Section 35, T21N, R13W. From this connection, the pipeline would proceed along corridor segment R1, heading south in the 100 to 150-foot-wide right-of-way of Hackberry Road, a Mohave County road. There is an existing underpass where Hackberry Road goes under I-40 that the pipeline would follow. This corridor segment is about 3.9 miles long and passes through relatively undeveloped private and state-owned lands.

The proposed pipeline would then follow corridor segment C1, which begins at the intersection of Hackberry Road and the southeast corner of Section 16, T21N, R13W. The corridor segment heads to the west, crossing US 93 on a path that avoids the planned traffic interchange at the junction of Hackberry Road and US 93. It then turns southwest and increases in width to 2,000 feet until intersecting the transmission line corridor at the junction of segments T2 and T3. This corridor segment

TABLE 2-2 CORRIDOR SEGMENT DESCRIPTIONS	
Segment	Description
Road Segments	
R1	This corridor segment begins at the northernmost potential supply pipeline (Questar) located in T21N, R13W and heads south along Hackberry Road, crossing under I-40. This segment encompasses the Mohave County Hackberry Road right-of-way, which varies between 100 and 150 feet wide. The corridor segment is approximately 3.9 miles long and passes through relatively undeveloped, privately owned and State Trust land. This corridor segment ends at the intersection of Hackberry Road and the southeast corner of Section 16, T21N, R13W, where it intersects with corridor segment C1.
R2	This corridor segment begins at the southern end of corridor segment R1, and encompasses the Hackberry Road right-of-way to its junction with US 93. The corridor segment, which is approximately 0.8 mile long, passes through privately owned lands.
R3	This corridor segment begins at the southern end of corridor segment R2, and follows along the eastern edge of the US 93 right-of-way south until US 93 and the transmission line corridors overlap near the boundary of Sections 4 and 5, T18N, R13W. This corridor is 400 feet wide, immediately adjacent to the eastern edge of the US 93 right-of-way. The corridor segment is about 9.3 miles long, and crosses primarily privately owned land, although there is a small amount of State Trust land near the southern end of the corridor segment.
R4	This corridor segment begins in Section 16, T18N, R13W, just south of corridor segment C3, which is the crossover segment that encompasses the overlap between the road and transmission line corridors in T18N, R13W. Segment R4 continues south along US 93 just east of the US 93 right-of-way to the intersection with the transmission line corridor in T16N, R13W, a distance of about 13.7 miles. The corridor primarily crosses public land managed by the BLM and privately owned land, but also a small area of State Trust land. This corridor segment generally is 400 feet wide, although there are the following two areas of variation: Within the public land designated as the Carrow-Stephens Area of Critical Environmental Concern (ACEC) (in Sections 21 and 28, T16.5N, R13W), the corridor also includes the 200-foot-wide US 93 right-of-way. This variation allows the pipeline to be installed within the highway right-of-way to minimize impacts to historic features within the ACEC. [The Arizona Department of Transportation (ADOT) eventually plans to relocate US 93 approximately 2 miles to the west in conjunction with upgrading the highway to a four-lane roadway.] For a distance of 1.5 miles south of Gunsight Canyon (in Section 28, T16.5N, R13W), the corridor width increases to 1,500 feet immediately along the eastern edge of the US 93 right-of-way to accommodate the planned realignment of US 93 to the east of the existing roadway in this area.
R5	This corridor segment begins at the southern end of corridor segment R4 and follows along US 93 south to the proposed Mohave County access road where it turns east to follow the access road to the plant site. The length of this corridor is about 8.5 miles. The corridor segment crosses privately owned and BLM-managed lands. The corridor segment varies from 150 feet wide to 1,800 feet wide, as described below. From the beginning of the corridor segment, extending about 1.25 miles to the south, the corridor is expanded to 1,000 feet west and 600 feet east of the US 93 right-of-way, and includes the 200-foot US 93 wide right-of-way itself. This corridor expansion is intended to avoid conflicts with the proposed expansion of US 93 and adjacent topographic features. From the point that the 1,800-foot wide corridor ends, south through Wikieup to the plant access road, the corridor is 600 feet wide, immediately adjacent to the eastern edge of the US 93 right-of-way, and also includes the 200-foot-wide US 93 right-of-way, providing an opportunity to avoid existing features east of the ADOT right-of-way and the proposed expansion of US 93. The access road corridor encompasses the proposed Mohave County 150-foot-wide road right-of-way. In addition, the westernmost 1,500 feet of the corridor is expanded to 750 feet north of the access road right-of-way to accommodate the transition of the pipeline from US 93 to the access road.

TABLE 2-2 CORRIDOR SEGMENT DESCRIPTIONS	
Segment	Description
Transmission Line Segments	
T1	This corridor segment begins north of I-40 at the northernmost potential supply pipeline in Section 30, T21N, R13W, and extends south about 3.7 miles to Old Highway 93 in Section 18, T20N, R13W. This corridor segment extends 1,000 feet west and east of the 150-foot-wide right-of-way for the Mead-Liberty 345-kV transmission line and 1,000 feet west of the adjacent 175-foot-wide right-of-way for the Mead-Phoenix 500-kV transmission line and includes both rights-of-way, for a total corridor width of 2,325 feet. This corridor segments crosses private and State Trust land.
T2	This corridor segment begins at the southern end of corridor segment T1 and follows along the same transmission line rights-of-way for a length of about 2.1 miles into Section 30, T20N, R13W. This corridor segment, which is the same width as Segment T1, crosses private and State Trust land.
T3	This corridor begins at the southern end of corridor segment T2 and follows the same transmission line rights-of-way south for about 8.5 miles to Section 5, T18N, R13W where corridor segment C3 begins. This corridor segment has the same width as corridor segments T1 and T2, and crosses private and State Trust land.
T4	This corridor segment begins in Section 16, T18N, R13W, just south of corridor segment C3. This corridor segment is about 13.8 miles long, terminating at the intersection of the transmission line rights-of-way and US 93. Like corridor segments T1, T2, and T3, this corridor segment is 2,325 feet wide except that this corridor segment increases to a width of 4,000 feet west of the transmission line rights-of-way for a distance of approximately 4.0 miles from the northern boundary of Section 34, T17N, R13W, south to the boundary between T16.5N and T16N. This expansion allows for complete avoidance of the Carrow-Stephens Ranches ACEC and rugged topography. This corridor segment crosses privately owned, BLM-managed public, and State Trust lands.
T5	This corridor segment begins at the southern end of corridor segment T4 and extends southeast about 7.8 miles to the plant site. This corridor segment is also 2,325 feet wide and follows the transmission line rights-of-way except to accommodate a perpendicular crossing of the Big Sandy River, where the corridor segment leaves the transmission lines rights-of-way to become a 3,000-foot wide corridor centered on the northern and eastern boundary of Section 10, T16N, R13W.
Crossover Segments	
C1	This crossover corridor segment begins at the intersection of Hackberry Road and the southeast corner of Section 16, T21N, R13W. This corridor segment extends to the west, encompassing 1000 feet across the southern end of this section and crossing US 93 on a route that avoids the planned traffic interchange at the junction of US 93 and Hackberry Road. From the southwest corner of Section 16 the corridor increases to 2000 feet in width and turns southwest, crossing straight through the southwest corner of Section 20 until intersecting the transmission line corridor at the junction of corridor segments T2 and T3. This corridor segment, which is about 2.8 miles long, crosses private and State Trust land.
C2	This corridor segment encompasses Mohave County's 100-foot-wide right-of-way for Old Highway 93 between the transmission line and US 93 corridors. This segment, which is about 2.3 miles long, crosses private and State Trust land.
C3	This corridor segment is located where the transmission line and US 93 corridors overlap in T18N, R13W. The eastern boundary of this corridor segment is 400 feet east of the existing US 93 right-of-way and the western boundary is 1,000 feet west of the Mead-Liberty 345-kV transmission line right-of-way. This crossover corridor segment is about 1.9 miles long and crosses private and State Trust land.

TABLE 2-3 LENGTH OF LINKS FOR BIG SANDY ENERGY PROJECT	
Corridor Segment	**Miles**
C1	2.8
C2	2.3
C3	1.3
R1	3.9
R2	0.8
R3	9.3
R4	13.7
R5	8.5
T1	3.7
T2	2.1
T3	8.5
T4	13.8
T5	7.8
Totals	78.9
Road Corridor	
R1	3.9
R2	0.8
R3	9.3
C3	1.9
R4	13.7
R5	8.5
Totals	38.1
Transmission Line Corridor	
T1	3.7
T2	2.1
T3	8.5
C3	1.9
T4	13.8
T5	7.8
Totals	37.6
Proposed Corridor	
R1	3.9
C1	2.8
T3	8.5
C3	1.9
T4	13.8
R5	8.5
Totals	39.3

crosses both private and state-owned lands and is about 2.8 miles long.

The proposed route then follows corridor segment T3, which parallels the existing transmission lines south for about 8.5 miles to the beginning of segment C3 in Section 5, T18N, R13W. This corridor segment is 2,325 feet wide, encompassing both transmission line rights-of-way and 1,000-foot-wide buffers on either side. It crosses both private and state-owned lands.

Corridor segment C3 is a crossover segment located where the transmission line and US 93 corridors overlap in Section 5, T18N, R13W. The corridor segment is about 1.9 miles long and crosses private and state-owned lands. The corridor here extends from 1,000 feet west of the Mead-Liberty 345-kV transmission line to 400 feet east of the US 93 right-of-way.

The proposed route then follows corridor segment T4, continuing southeast along the transmission line route. This corridor segment is about 13.8 miles long, terminating at the intersection of the transmission line rights-of-way and US 93. This segment is 2,325 feet wide except in one location, where it extends to a width of 4,000 feet along the western boundary of the Carrow-Stephens Ranches Area of Critical Environmental Concern (ACEC). This corridor segment crosses private, BLM-managed public, and state-owned lands.

From this point, the proposed route follows corridor segment R5, which follows along US 93 south to the proposed access road leading to the proposed power plant site. The county's right-of-way would cross Sections 1, 5, and 7, T15N,R12W, and enter the proposed power plant site over the section corners of Sections 5, 6, 7, and 8, T15N, R12W. This corridor segment is about 8.5 miles long and varies in width from 150 feet wide along the proposed access road, to 1,800 feet wide along certain portions of US 93.

Gas metering interconnect facilities would be installed at the northern terminus of the pipeline, at its tie into the Questar Southern Trails located north of I-40, and/or to the El Paso Natural Gas and/or Transwestern gas transmission pipelines located south of I-40. These facilities would consist of isolation valves, control valves, metering equipment, and filter separators. This equipment would be located within new 100- by 100-foot fenced and graveled sites, adjacent to Hackberry Road. Construction disturbance may be as large as 150 by 150 feet. Each metering

facility would be enclosed within a small building on each site. In addition, a small communication tower (about 15 feet high) would be included within each fenced site. Electric power service would be provided to each metering site from existing electric distribution lines available within 100 feet of the site. Access to each pipeline meter interconnect facility would be from Hackberry Road.

At the southern terminus of the pipeline, a gas metering facility would be installed at the proposed power plant. This facility would consist of isolation valves, metering equipment, a filter separator, and pressure reduction and control valves used to feed gas to the turbines. The metering facility would be installed within the proposed power plant site.

At full capacity, the proposed power plant would use, and the gas pipeline would deliver, about 106.4 million cubic feet (MMCF) of gas per day, which is equivalent to 3,246 MMCF per month, or 38,960 MMCF per year. The potential exists to tap this pipeline and thereby supply gas to the Wikieup area (refer to Section 2.4.6, Wikieup Gas Tap).

Inspection of the pipeline would be accomplished by the pipeline owner and operator in accordance with U. S. Department of Transportation regulations, Parts 192.105, 106, and 107. The pipeline would be patrolled by air every six months. Routine inspection also would be conducted annually using vehicles that can drive directly over the pipeline (two-track access, resulting in, at worst, a 10-foot-wide pathway over the pipeline that would remain permanently disturbed). Areas not accessible by the vehicles (steep terrain, Big Sandy River, within the ACEC) would be inspected by foot. If leaks are encountered, they would be isolated, exposed, and repaired in accordance with industry practices. If excavation is needed to replace a section of pipe, the landowner or land manager would be notified and reclamation procedures would be followed as outlined in Appendix B.

2.2.6 Agricultural Development

In addition to the activities directly related to the electrical generation process, the Proposed Action would involve supplying selected lands and water to the Mohave County Economic Development Authority (MCEDA) for agricultural use. Agricultural development would occur on about 107 acres, located about 1 mile southwest of the proposed power plant site in the northwest quarter of Section 7, T15N, R12W. Water for agricultural use would be well water (i.e., non-process water provided from the same water wells that would supply water for the proposed power plant). A maximum of 400 gpm (650 acre-feet per year) of water would be made available for agricultural use in this area. This amount of water would be provided if the crops produced required this much water and would be subtracted from the proposed water budget of 4,850 acre-feet per year for all Proposed Action (power plant and agricultural) uses. This proposed agricultural use of both land and water would continue even after plant closure.

Agricultural activities are proposed to include mainly forage crops or fruit/nut orchards. The following are potential crops that are being considered for the area, with their respective irrigation requirements:

Crop	**Water Requirement (per acre)**
Bermuda grass	5 to 6 acre-feet per year
Alfalfa	6 acre-feet per year
Small Grains	2 to 3 acre-feet per year
Vegetables (High Value)	2 to 3 acre-feet per year
Pecan Nuts	4 to 5 acre-feet per year
Olives	4 to 5 acre-feet per year

Source: Grumbles 2001

Areas within this 107 acres with significant gullying, rilling, or lack of topsoil due to slope or other factors would not be used for crop production. Soils also would be tested to