United States with its products, mainly wallboard and related products. Most other west coast gypsum production plants rely on water borne rock shipments from Mexico.

The Quarry is located relatively close to major interstate and intrastate highways. Access to the Quarry is via State Highway 78 from both San Diego and Imperial counties. The site is also accessible to southern California and Arizona via State Highway 86 to Interstate 10 and Interstate 8. The Plant, located 26 miles south~~west~~east of the Quarry, is also located less than 15 miles from the US/Mexico border and the northern Baja Mexico metropolitan area accessible via highway and railroad.

Quarry activities have been ongoing at the site since the early 1920s. USG proposes to continue to operate the Quarry to recover gypsum resources to supply its Plaster City Plant, to meet current and future residential and commercial building products demand in the southwestern United States. USG would also continue to supply sized raw gypsum products to agricultural customers and cement manufacturers directly from the Quarry.

Gypsum occurs throughout the Quarry site as a contiguous bed striking northwest to southeast and dipping approximately 25°-35° to the west with gypsum deposits overlying granite. There is no overburden associated with current quarrying and no overburden is anticipated to occur in outcrops quarried. Gypsum dipping beneath the wash area of the site is overlain with aggregated material.

the east side of the mill where material is unloaded. The material is received by the mill and processed through sorting, crushing, grinding, and calcining (cooking). Mill equipment consisted of an outdoor rock storage pile, a covered rock storage shed and storage silos, rock crushing and processing equipment, gypsum mills, calcining kettles, and a packing department some of which remain at the Plant.

In 1998, the wallboard operation consisted of two separate production lines. Line No. 1, which was originally installed in 1945 and became operational in 1947 and subsequently modernized in 1995, had a theoretical capacity of 400 million square feet per year. The No. 2 line was installed in 1956 and had a theoretical capacity of 180 million square feet per year. In 1998, both Line No. 1 and Line No. 2 manufactured gypsum wallboard from stucco delivered to them from the mill. The board lines utilized material handling equipment such as dry additives feeders, elevators, and screw conveyors to produce wallboard. Wallboard, once formed, was cut to finished length and dried using natural gas-fired kilns and rotating saws. Wallboard and other products, including some for agricultural uses (soil amendments) were shipped from the Plant.

Dust collection was used throughout the mill to control gypsum particulate emissions during processing. The train unloading facility had a dust collector to control particulates while the rock was dumped from the train onto a belt where it was conveyed to rock silos or the rock storage shed. The rock storage shed covered a portion of the rock pile stored on the north side of the Plant. Dust collectors were used throughout the mill and packing departments on belt conveyors, the crushing system, screens, elevators, screw conveyors, mills, and calcining kettles to minimize emissions. Both board line kilns were permitted by the Imperial County Air Pollution Control District (ICAPCD) under Permit Nos. 2811 and 2812, respectively. Both permits were in place in August 1998.

South of the Plant were the Union Pacific (UP) Railroad and the finished product loading area. Finished product was loaded on rail cars and hauled to market from the Plant. The line ran east and west immediately south of the No. 1 board line and warehouse, and was moved to its present location as part of the Proposed Action.

Water for the Plant including production water, potable water and water for sanitary uses has been supplied by three wells located near Ocotillo, California approximately 8.5 miles west of the Plant site. An eight-inch diameter gravity-feed pipelines transported the water to the Plant. In 1998, water usage at the Plant was approximately ~~400~~333 acre-feet per year (AF/yr). Historically, water usage had been higher, however,

USG was able to reduce its water use ~~to approximately 400 AF/yr~~ by implementing water conservation measures to ensure that 1) there is no process water discharge from the operation except for some steam, and 2) water is no longer discharged for cooling production equipment. These conservation measures, instituted in the 1980s and 1990s, have reduced water usage from the recorded high of 767 acre-feet per year to the 1998 value. From 1981 through 1998, the average water usage at the Plant was approximately 420 AF/yr.

For more than 50 years, the Plaster City Plant has placed out-of-specification wallboard in a storage area (Inert Material Storage Area or "IMSA") located south of the Plant. USG currently recycles off-specification material from the IMSA. In addition, household trash was placed in the area until the late 1980's when the Plaster City Village was closed and structures removed. The quantity of material in the IMSA prior to startup of the new production line in July 2000 was estimated at about 2,200,000 cubic yards. The pile contained an estimated 2,600,000 cubic yards of material as of January 2004.

The IMSA has been and is subject to regulation by the California Regional Water Quality Control Board, Board Order 96-001 for Waste Management for Inert Wastes. That Order states the total capacity of the area is 4,694,000 cubic yards and requires that USG submit semi-annual reports to the Water Board identifying the quantity of material placed in the IMSA.

2.3.2 1998 Baseline Conditions at the Plaster City Quarry

Figure 2.0-6, Plaster City Quarry- Baseline Conditions, shows an aerial photograph of the Quarry prior to modernization/expansion. Under pre-construction or pre Proposed Action baseline conditions, the facility consisted of two quarries (1A and 1B) and a processing area. The Quarry operated under an approved mine reclamation plan. In addition, Shoveler Annex located on the west side of the site had also been disturbed by quarrying gypsum. USG also had an approved mine reclamation plan for the Shoveler Annex.

In 1998, gypsum rock was quarried by the removal of outcrops, creating a series of benches. Rock was transported from the outcrops by haul trucks to a processing area. For gypsum transported to the Plant, rock was hauled to a partially enclosed crushing and processing operation. After crushing, the rock was conveyed to an enclosed rock

Plant employees, but not to the general public due to lack of a permanent population in the vicinity.

3.1.1.2 Project Site Overview

Plant

The Plant is located on a 473-acre site at 3810 West Highway 80 (Evan Hewes Highway) in Plaster City, California approximately 18 miles west of El Centro, the County seat. Access to the Plant is via Highway 80 immediately north of I-8. Figure 2.0-2, Plaster City Plant Location, shows the location of the Plant site. The Plant is also located less than 15 miles from the US/Mexico border and the northern Baja Mexico metropolitan area accessible via highway and railroad.

Pipeline Replacement

The Pipeline connects the Plant to the Ocotillo/Coyote Wells Groundwater Basin, located south-west of the Plant. The pipeline is eight (8) inches in diameter and extends approximately eight and a half (8.5) miles in a south-westerly direction from the plant to the well field. The pipeline is old and in disrepair. The Proposed Action includes the replacement of the pipeline with a 10-inch diameter line.

Quarry

The Quarry is located in the western portion of Imperial County, adjacent to the Imperial County/San Diego County line. It is located at the northwest end of the Fish Creek Mountains, east of Split Mountain, and south and west of the Fish Creek Wash. The Quarry is located in ~~a box canyon on~~ an elongated blind valley and the lower hillsides along an unnamed wash. The Quarry is located immediately east of the Anza Borrego Desert State Park. The Quarry is also within Peninsular Bighorn Sheep critical habitat area.

3.1.2 Cumulative Projects

The Environmental Protection Agency (EPA) and the President's Council on Environmental Quality (CEQ) have responsibilities for administering, overseeing and reviewing the implementation of NEPA. According to EPA's and CEQA's guidance, a cumulative effect is the combined incremental effects of human activities that could pose a serious threat to the environment. ~~The Environmental Protection Agency (EPA) is the official federal reviewing agency for all EISs. According to EPA's guidance, a cumulative effect is the combined incremental effects of human activities that could~~

~~pose a serious threat to the environment.~~ Cumulative effects are caused by the aggregate of past, present, and reasonably foreseeable future actions and include both direct and indirect effects on resources.

The CEQA Guidelines (Section 15130) requires an analysis of the significant cumulative impacts of a proposed project. Cumulative impact refers to "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines, Section 15355). The cumulative impact from several projects is defined as follows:

> The change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time (Section 15355(b)).

The cumulative impact analysis may be less detailed than the analysis of the project's individual effects. The cumulative impact analysis must identify related projects through this "list" and "projection" approach, summarize effects of the related projects, and contain a reasonable analysis of cumulative impacts and mitigation measures (Section 15130(b)(1)(A)(B)).

Each impact evaluation in this Chapter evaluates the reasonably foreseeable potential cumulative effects of the Proposed Action, with other existing activities in the area and other planned projects.

Criteria for evaluating the significance of adverse effects are identified for each environmental issue. These criteria, which are based on resource sensitivity, quality, and quantity, are also applicable to cumulative impacts. The timing and duration of each activity is also an important consideration for evaluating the potential cumulative effects of activities which occur only for a limited period. In those cases, a cumulative effect may occur only when two or more of the activities are occurring simultaneously. These effects are then evaluated for their impact in combination with other activities in the area for cumulative impact.

3.1.2.1 Other Activities in the Area

The region of influence for the analysis of cumulative impacts varies from resource topic to resource topic. For example, cumulative noise impacts may only be associated with projects that are geographically proximal, and may only affect a small area close to the noise-generating source. In contrast, cumulative impacts to air are determined on a

conditions. The strength of the alluvium was modeled with a total density of 120 pcf, a friction angle of 40 degrees (43 seismic) and an apparent cohesion of 50 psf. The gypsum rock was modeled conservatively as soil by assuming a total density of 140 pcf, a friction angle of 43 degrees, and an apparent cohesion of 1500 psf. The resulting calculations indicate a static factor of safety of 1.61 and seismic factor of safety of 1.17 against gross failure.

Level of Significance Before Mitigation: Significant

Mitigation Measures:

Mitigation Measure 3.2-1a

Reclaimed cut slopes in the alluvial materials (map units Qya and Qoa) should be constructed no steeper than 1.75H:1V up to a maximum height of 100 feet.

Mitigation Measure 3.2-1b

Reclaimed cut slopes in the gypsum (map unit Tfc) should be no steeper than 1H:1V up to a maximum height of approximately 225 feet.

Mitigation Measure 3.2-1c

Any large, unstable, rounded boulders on reclaimed slopes steeper than approximately 2H:1V should be removed or stabilized prior to the end of reclamation.

Level of Significance After Mitigation: Less than Significant

Impact 3.2-2: Loss of Paleontological Resources

Quarrying and construction activities may result in the loss of valuable paleontological resources.

The nature and origin of the geologic formations on-site is such that no significant paleontological resources would be expected to exist. The Split Mountain Formation is made up of non-marine conglomerate and sandstone of Cenozoic age. This formation is very unlikely to contain paleontological resources. The Imperial Formation, the only dominantly marine formation known to occur in Imperial County, is known to contain paleontological resources of oyster-shell reefs. However, because this formation lies ~~below~~ above the gypsum formation being quarried, contact with paleontological resources in

3.3 HYDROLOGY AND WATER QUALITY

3.3.1 Introduction

This section is formatted in a slightly different manner than the other EIR/EIS evaluations in order to accommodate an analysis of hydrology issues that differ between the Plant and Quarry sites. Rather than one section describing the Affected Environment and one section on Standards, Impacts and Mitigation Measures there are two sections each (one set for the Plant hydrology analysis and one for the Quarry hydrology): because these facilities are in different hydrologic basins with substantially differing conditions. Sections 3.3.2 and 3.3.3 cover hydrology issues at the Plant; Sections 3.3.4 and 3.3.5 cover hydrology issues at the Quarry. Each of these sections addresses the Proposed Action and its various alternatives.

The section is organized as follows:

- 3.3.2 Plant Water Usage
- 3.3.3 Plant Water Usage: Standards of Significance, Environmental Impacts, and Mitigation Measures (starting at page 3.3-34)
- 3.3.4 Quarry Water Usage: Affected Environment (starting at page 3.3-9~~0~~4)
- 3.3-5 Quarry Water Usage: Standards of Significance, Environmental Impacts and Mitigation Measures (Starting at page 3.3-9~~5~~9)

The Proposed Action includes changes in the quantity of water to be used in both the wallboard manufacturing Plant and the Quarry. Water for the Plant is supplied by three wells located in Ocotillo. Water for the Quarry is proposed to be supplied by a new well to be drilled approximately three miles east of the Quarry along the narrow-gauge rail line right-of-way. Evaluation of the proposed increased water usage for the Plant is presented in Section 3.3.2. Evaluation of the proposed new well installation and increased water usage for the Quarry is presented in Section 3.3.4.

3.3.2 Plant Water Usage

The existing Plant operation and Proposed Action rely on three supply wells for water for potable domestic uses and processing and production of wallboard and other gypsum products. The three wells are located in the Ocotillo/Coyote Wells Groundwater Basin in the southwest part of Imperial County. Prior to implementation of the Proposed Action, USG pumped an average of 347 acre-feet per year (AF/yr) from 1994 to 1998. The Proposed Action anticipates increasing groundwater pumping from the existing wells up to a maximum of 767 AF/yr (the amount reported by USG in 1972).

TABLE 3.3-3A
SUMMARY OF WATER CHEMISTRY DATA
OCOTILLO/COYOTE WELLS GROUNDWATER BASIN

Well		Date	PH	Ca mg/L	Mg mg/L	K mg/L	Na mg/L	Bicarb mg/L	Carb mg/L	Cl mg/L	Fl mg/L	SO4 mg/L	TDS mg/L	Boron ug/L	Fe ug/L
16S/9E	24B1	03/18/97	8.7	3.8	1.4	2.4	430	186	9	390	1.9	270	1220	744	210
	24D1	03/17/97	8.3	14	4.2	3.7	140	117	1	91	1.1	140	475	406	10
	25K2	03/18/97	8	24	5.7	4.6	81	136	0	78	0.9	41	342	211	<1
	25Q1	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	26F1	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	34B1	05/06/97	8.1	8.17	1.5	3.4	93	126	0	73	1.9	21	309	314	100
	35M1	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	36C2	03/19/97	8.1	17	3.1	4.1	99	154	0	80	1.7	33	354	477	<1
	36D2	04/10/90	8.2	15	2.5	2.7	100	NM (115)	NM	82	1.9	27	347	660	100
	36D3	03/19/97	8.3	23	1.3	2.4	120	174	1	77	3.0	20	359	766	<1
	36G4	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	36H1	03/18/97	8.1	16	3.3	4	70	124	0	57	0.8	31	288	190	40
	27R1	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	29H1	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	29L1	03/17/88	8.5	7.9	3.6	3.3	240	NM (100)	NM	240	0.9	66	670	380	30
	29R2	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
16S/10E	30R1	03/19/97	7.8	42	13	5.1	140	150	0	190	0.9	60	582	447	20
	42A8	03/17/97	7.9	32	12	4.3	270	231	0	330	1.6	140	954	1210	<1
17S/10E	11B1	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	11G1	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	11G2	03/10/82	8.1	17	5	5	112	NM (135)	NM	99	0.4	67	392	20	<1
	11G4	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	11H1	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	11H2	04/04/86	8.1	20	4.5	4.4	75	NM (140)	NM	47	0.5	52	293	170	10
	11H3	03/17/97	8.1	19	4	3.9	82	137	0	53	0.6	58	309	178	<1

Notes:
NM = Not Measured

TABLE 3.3-3B
TDS DATA VERSUS TIME
OCOTILLO/COYOTE WELLS GROUNDWATER BASIN

	R16S-T9E								R16S-T10E	R17S-T10E				
Date	24B1 (mg/L)	24D1 (mg/L)	25K2 (mg/L)	34B1 (mg/L)	36C2 (mg/L)	36D2 (mg/L)	36D3 (mg/L)	36H1 (mg/L)	29L1 (mg/L)	11G2 (mg/L)	11H2 (mg/L)	11H3 (mg/L)	30R1 (mg/L)	42A8 (mg/L)
06/27/59	-	-	-	-	-		-	-	-	-	-	-	527	-
02/08/61	-	-	-	-	299		-	-	-	-	-	-	-	-
03/05/62	-	-	-	-	325		-	-	-	-	-	-	391	-
11/09/62	-	-	-	-	277		-	-	-	-	-	-	-	-
02/07/63	-	-	-	-	-	-	-	288	-	-	-	-	-	-
12/01/72	-	-	325*	-	-	-	-	-	-	335	-	-	-	-
12/03/74	-	-	320*	-	-	-	-	-	-	-	-	-	-	-
06/26/75	-	-	307	-	-	356	-	-	-	-	-	-	479	-
04/28/77	1270	495	303	-	-	350	-	312	713	363	-	-	473	-
04/27/77	1210	471	304	-	-	358	-	300	690	369	-	-	479	-
03/15/79	1220	473	301	-	-	347	-	303	662	370	-	-	546	-
05/01/80	1240	476	305	-	-	353	-	300	667	377	-	-	579	-
04/30/81	1200	478	325	-	-	356	-	296	639	377	-	-	563	-
03/10/82	1210	487	383	-	-	361	-	294	656	392	-	-	572	-
03/29/83	1230	480	306	-	-	344	-	304	660	-	300	-	545	-
04/18/84	1260	479	-	-	-	375	-	294	665	-	291	-	560	-
04/26/85	1270	475	-	-	-	363	-	305	667	-	297	-	579	-
04/02/86	1340	467	-	-	-	349	-	296	640	-	293	-	609	-
04/03/87	1290	486	-	-	-	354	-	299	651	-	-	313	654	-
03/16/88	1300	486	405	-	-	351	-	301	670	-	-	311	757	-
03/15/89	1290	506	393	-	-	352	-	305	-	-	-	319	766	-
04/10/90	1270	492	337	-	-	347	-	-	-	-	-	-	-	-
05/11/90	-	-	-	-	-	-	-	-	-	-	-	-	801	-
04/04/91	-	-	-	-	367	-	-	299	-	-	-	316	-	-
04/06/92	1230	488	326	-	-	-	372	-	-	-	-	-	-	-
04/14/93	-	-	-	-	368	-	-	295	-	-	-	307	671	-
03/22/94	1240	485	337	-	362	-	364	298	-	-	-	315	664	886
03/29/95	1180	483	335	-	354	-	360	297	-	-	-	312	657	928
03/19/96	1200	464	334	-	352	-	351	290	-	-	-	306	582	906
03/18/97	1220	475	342	-	354	-	359	288	-	-	-	309	582	954
05/06/97	-	-	-	309	-	-	-	-	-	-	-	-	-	-
03/30/98	1190	472	330	309	346	-	350	300	-	-	-	307	574	946
06/28/98	-	-	-	349	-	-	-	-	-	-	-	-	-	-
03/22/99	1180	475	325	-	355	-	360	298	-	-	-	299	572	951
03/27/00	1210	476	313	310	355	-	358	321	-	-	-	307	557	910
03/22/01	1200	470	360	303	-	-	352	295	-	-	-	280	545	926

Notes:

- TDS Corrected for Silica not measured - solids residue number used

predominantly Tertiary marine sediment outcrops east of Coyote Wells, most wells have TDS levels exceeding 1,000 mg/L, although there is at least one location with a TDS level of 544 mg/L. West of the southern projections of the Elsinore Fault, the TDS

Domestic water users include the communities of Ocotillo, Coyote Wells, Nomirage, and Yuha Estates. Water is also piped to the community of Painted Gorge. Domestic water supply is provided by a combination of private wells and community water services. Table 3.3-4, Current and Historic Groundwater Use, presents current and historic water use for various users. In the 1996-1997 time period, community domestic water use is estimated to be approximately 110 AF/yr to 115 AF/yr. Changes in water use over time are based on the rate of population growth, as described by Bookman-Edmonston (1996). Current domestic water use is anticipated to be approximately 120 AF/yr to 125 AF/yr.

TABLE 3.3-4
CURRENT AND HISTORIC GROUNDWATER USE
OCOTILLO / COYOTE WELLS GROUNDWATER BASIN

Year	US Gypsum[1]			Estimated Community Use (AF/yr)	Export to Mexico	
	Based on Production (AF/yr)	*Reported to USGS (AF/yr)*	*Measured Extraction Rates*		*Clifford Well (AF/yr)*	*McDougal Well (AF/yr)*
1925	~~153~~	153	-	-	-	-
1926	~~153~~	153	-	-	-	-
1927	~~153~~	153	-	-	-	-
1928	~~153~~	153	-	-	-	-
1929	~~153~~	153	-	-	-	-
1930	~~153~~	153	-	-	-	-
1931	~~153~~	153	-	-	-	-
1932	~~153~~	153	-	-	-	-
1933	~~153~~	153	-	-	-	-
1934	~~153~~	153	-	-	-	-
1935	~~153~~	153	-	-	-	-
1936	~~153~~	153	-	-	-	-
1937	~~153~~	153	-	-	-	-
1938	~~153~~	153	-	-	-	-
1939	~~153~~	153	-	-	-	-
1940	~~153~~	153	-	-	-	-
1941	~~153~~	153	-	-	-	-
1942	~~153~~	153	-	-	-	-
1943	~~153~~	153	-	-	-	-
1944	~~153~~	153	-	-	-	-
1945	~~153~~	153	-	-	-	-
1946	~~153~~	153	-	-	-	-
1947	~~264~~	264	-	-	-	-
1948	~~264~~	264	-	-	-	-
1949	~~264~~	264	-	-	-	-
1950	~~306~~	306	-	-	-	-
1951	~~253~~	253	-	-	-	-
1952	~~255~~	255	-	-	-	-

Table 3.3-4 (Continued)

Year	US Gypsum[1]			Estimated Community Use	Export to Mexico	
	Based on Production	*Reported to USGS*	*Measured Extraction Rates*		*Clifford Well*	*McDougal Well*
1953	~~241~~	241	-	-	-	-
1954	~~278~~	278	-	58.2	-	-
1955	~~295~~	295	-	59.4	-	-
1956	~~274~~	274	-	60.6	-	-
1957	~~272~~	272	-	61.8	-	-
1958	~~353~~	353	-	63.0	-	-
1959	~~375~~	375	-	64.2	-	-
1960	~~395~~	395	-	65.4	-	-
1961	~~348~~	348	-	66.6	-	-
1962	~~422~~	422	-	67.8	-	-
1963	~~442~~	442	-	69.0	-	-
1964	~~480~~	480	-	70.2	-	-
1965	~~415~~	415	-	71.4	-	-
1966	~~451~~	451	-	72.6	-	-
1967	~~511~~	511	-	73.8	-	-
1968	~~552~~	552	-	75.0	-	-
1969	~~560~~	560	-	76.2	-	-
1970	393	668	-	77.4	-	-
1971	338	575	-	78.6	-	-
1972	451	767	-	79.8	-	-
1973	375	638	-	81.0	-	-
1974	406	691	-	82.2	138	-
1975	361	614	-	83.4	211	-
1976	414	-	-	84.6	213	-
1977	473	-	-	85.8	222	-
1978	491	-	-	87.0	137	143
1979	496	-	-	88.2	137	143
1980	469	-	-	89.4	137	143
1981	~~261~~	-	261	90.8	137	143
1982	~~456~~	-	456	92.1	137	143
1983	~~472~~	-	472	93.5	137	-
1984	~~472~~	-	472	94.8	137	-
1985	~~489~~	-	489	96.2	-	-
1986	~~521~~	-	521	97.6	-	-
1987	~~512~~	-	512	98.9	-	-
1988	~~518~~	-	518	100.3	-	-
1989	~~492~~	-	492	101.6	-	-
1990	~~476~~	-	476	103.0	-	-
1991	~~428~~	-	428	104.5	-	-
1992	~~379~~	-	379	106.0	-	-
1993	~~362~~	-	362	107.4	-	-
1994	~~378~~	-	378	108.9	-	-
1995	~~327~~	-	327	110.4	-	-
1996	~~367~~	-	367	112.1	-	-
1997	~~332~~		332			
1998	~~333~~		333			

Notes:

- ~~No data~~ 1. The source for reported water use from 1925 to 1970 is unknown . Water use from 1970 to 1980 was estimated by USG based on wallboard production records for this period. Water since 1981 is based on measured extraction rates.
- USGS Water Resources Investigation (WRI) 77-30 by J. A. Skrivan (1977)

Due to the regional perspective of the previous water balance calculations and numerical models, there is a concern that these previous studies are not focused enough to predict the potential local impacts of future increases in pumping with sufficient detail for this evaluation. Therefore, a different set of analyses have been performed for this Project. For this evaluation, the analyses selected include analytical calculations of Basin conditions and comparative analysis of water level and groundwater chemistry data. In addition, the numerical modeling recently conducted (Bookman-Edmonston, 2004) was intended to address issues and concerns specific to the Proposed Action, and received significant input and review from the USGS and the preparers of this EIR/EIS. These evaluations are presented below.

3.3.3.2 Basin Conditions

The hydrologic conditions within the Ocotillo/Coyote Wells Groundwater Basin can be defined using standard hydrologic equations, such as Darcy's Law. Darcy's Law states that:

$$Q = K \times I \times A,$$

where Q is the rate of groundwater discharge (units of volume per time, such as AF/yr), K is the hydraulic conductivity of the aquifer (units of length per time, such as feet per day), I is the hydraulic gradient, or slope of the groundwater surface (units of length per length, such as foot per foot), and A is the cross-sectional area of the aquifer across which the groundwater discharge, Q, is perpendicularly occurring (units of area, such as square feet).

In some instances, it is easier to estimate the transmissivity of the aquifer, T, as opposed to the hydraulic conductivity, K. The transmissivity is simply the hydraulic conductivity, K, multiplied by the aquifer thickness, b. The cross sectional area of the aquifer, A, can also be defined as the aquifer thickness, b, multiplied by the length of the cross-sectional area across the ground surface, L (if the cross-section is assumed as rectangular). With these terms, Darcy's Law may also be rewritten as:

$$Q = T \times I \times L.$$

The groundwater flow rate, or velocity, q (units of distance per time, such as feet per year) is also defined as:

$$q = (K \times I)/n,$$

where n is the effective porosity of the aquifer and the other terms are as defined above.

Figures 3.3-5 and 3.3-6 present groundwater contours of the Basin as interpreted by the USGS (1977) and Bookman-Edmonston (1996) for the years 1975 and 1995, respectively. These groundwater contours reflect the simulated output of two previous models. Groundwater contours derived from observed water levels are usually used to compare changes in the basin and estimate flow velocities and volumes. However de to the lack of observed data, both over space and time, preparing estimates based solely on observed data is not possible. The analyses of water levels, velocities, and flow in this section are included as an illustrative discussion of the groundwater system and the uncertainty of the simulated water levels and hydrologic properties. Comparison of these two figures indicates that the groundwater contours have been relatively consistent in the areas of the Basin that are more than a few miles from Ocotillo, Nomirage, and Yuha Estates. Thus, the hydraulic gradients that can be calculated from these figures can be used in the evaluation of Basin conditions.

~~Three lines extending across different parts of the Basin are indicated on Figures 3.3-5 and 3.3-6. These lines are drawn parallel to the groundwater contours. The first line is located in the upgradient part of the Basin, approximately three miles northeast of Ocotillo. A small embayment exists at this location where the bedrock of the Jacumba Mountains extends northward into the Basin, causing a narrowing of the alluvial aquifer. The second line exists in the downgradient part of the Basin located to the west of the Laguna Salada fault, north of the international border with Mexico. The third line extends across the downgradient part of the Basin that is present to the east of Coyote Wells and the Laguna Salada fault zone.~~

In the upgradient area of the aquifer, as indicated on Figures 3.3-5 and 3.3-6, the hydraulic gradient is approximately 30 feet per mile. The length across the alluvial basin is approximately 3.25 miles. For the recent numerical modeling (Bookman-Edmonston, 2004), the alluvial material in the basin was determined to have an average hydraulic conductivity of 15 ft/day, resulting in a transmissivity of about 1,000 ft^2/day. The effective porosity in the alluvium is uncertain. Estimates range from 8.3 percent to 30 percent. A value of 10 percent was used in the model. For this analysis the upper range (30 percent) was used. The effective porosity can be estimated at approximately 30 percent. Using these values and the equations presented above, the groundwater discharge, or amount of groundwater flowing through the upgradient area of the Basin, is approximately 800 AF/yr. The average groundwater velocity, or flow rate, is about 100 ft/yr, meaning that it takes over 50 years for the groundwater to flow one mile. It should be noted that the estimate of velocity is inversely proportional to the estimate effective porosity. Based on the range of possible porosity values, velocity could range from 100 to 375 ft/yr, or 50 years per mile and 14 years per mile respectively.

Figure 2 of the USGS (1977) model report and Figure 7-1 of the Bookman-Edmonston (1996) report each present a map of the mean annual precipitation across the Jacumba Mountains, Coyote Mountains, and the Ocotillo/Coyote Wells Groundwater Basin.

Based on the distribution of rainfall in the mountains, and the extent of the mountain front along the edge of the Basin, it is estimated that at least two-thirds of the groundwater recharge enters the Basin in the upgradient area of the aquifer. Thus, if the groundwater discharge from the upgradient area of the aquifer is approximately 800 AF/yr, the total recharge to the Basin may be as high as 1,200 AF/yr. As discussed in Section 3.3.1, the recharge to the Basin was calibrated to be approximately 1,077 AF/yr. These two estimates of recharge to the Basin differ by only about 10 percent. Thus, the average annual recharge to the Basin can be estimated to be between about 1,100 AF/yr and 1,200 AF/yr, given that the two estimates were calculated using completely different approaches (groundwater discharge versus model calibration) but yield similar results. It should be noted, however, that it takes several decades for the recharge that occurs along the mountain front to reach the communities of Ocotillo, Nomirage, and Yuha Estates. Although these estimates were derived from different approaches some of the same data was relied upon. The hydrologic conductivity of the area was the same used in the model. While the current model relied on some of the previous work for these models, the new model simulates a different conceptual model. So the gradients derived from previous model outputs, used in this illustrative analysis, provide a reasonable check on the model's calibrated recharge results.

In the downgradient area of the aquifer near the international border with Mexico, as indicated on Figures 3.3-5 and 3.3-6, the hydraulic gradient is approximately six feet per mile. The length across the alluvial basin is approximately 5.25 miles. Using the model-calibrated hydraulic conductivity of 15 ft/day, the transmissivity of the aquifer in this area of the Basin is about 2,100 ft^2/day. The effective porosity can be estimated at approximately 30 percent. Using these values and the equations presented above, the groundwater discharge, or amount of groundwater flowing through the downgradient area of the Basin and across the international border, is approximately 550 AF/yr. The average groundwater velocity, or flow rate, is about 20 ft/yr, meaning that it will take over 250 years for the groundwater to flow one mile. Using the lower range of porosity estimates (8.3 percent), the velocity would be 75 ft/year, or traveling 1 mile in 71 years.

In the downgradient area of the aquifer east of Coyote Wells and the Laguna Salada fault zone, as indicated on Figures 3.3-5 and 3.3-6, the hydraulic gradient is approximately 40 feet per mile. The length across the alluvial basin is approximately five miles. For the recent numerical modeling (Bookman-Edmonston, 2004), the Tertiary marine sediments in this area of the Basin were determined to have an average hydraulic conductivity of one ft/day, resulting in a transmissivity of about 500 ft^2/day. The effective porosity can be estimated at approximately 30 percent. Using these values and the equations presented above, the groundwater discharge, or amount of groundwater flowing through the downgradient area of the Basin to the east of the Elsinore-Laguna Salada fault zone, is approximately 840 AF/yr. The average groundwater velocity, or flow rate, is about 10 ft/yr, meaning that it will take over 500

years for the groundwater to flow one mile. However, as discussed in the groundwater study (Appendix B2), the alluvium is thin to non existence and the lower permeability Palm Springs Formation is close to ground surface. In previous groundwater studies this area was described as a fault zone, recent work as indicated the contact to these two geologic formations is a more reasonable conceptualization. This simple approach using a single hydrologic conductivity may not accurately capture the geologic complexities.

Based on the above calculations, the total groundwater discharge from the Basin is estimated to be approximately 1,300 AF/yr. This value is less than the total groundwater underflow of 1900 AF/yr to 1999 AF/yr estimated by the USGS (1977), Huntley (1979), and Bookman-Edmonston (1996) by approximately 33 percent, but is greater than the 990 AF/yr estimated by the recent groundwater model (Bookman-Edmonston, 2004) by approximately 31 percent. The numerical model used to evaluate this project, documented in Appendix B2, simulated an outflow of 515 AFY across the U.S./Mexico border. The illustrative analysis described above estimated outflow across the border at 550 AFY. These same previous studies indicate that historic natural evapotranspiration rates from the Basin in areas of shallow groundwater may have ranged from 250 AF/yr to 400 AF/yr. Thus, the total rate of natural groundwater loss from the Basin, exclusive of groundwater pumping for domestic, commercial, industrial, or agricultural purposes could have been between 1,550 AF/yr to 1,700 AF/yr.

~~Comparing these estimates of loss with the total recharge estimate of 1,100 AF/yr to 1,200 AF/yr indicates that the rate of groundwater outflow from the Basin may have been greater than the rate of recharge prior to the initiation of pumping. Similar conditions have been observed in other basins in Imperial County (see, for example, Section 3.3.3, below) due to long-term climatic changes. Specifically, if climatic conditions were much wetter several centuries or even millennia ago, it would take thousands of years for the recharge from the prior wetter periods to drain from the basin given the very slow rates of groundwater movement cited above. The rate of natural groundwater outflow will exceed the rate of recharge until the Basin drains to the point where the hydraulic gradients decrease and the recharge and outflow are once again in equilibrium. Until this equilibrium point is reached, water level elevations throughout much of the Ocotillo/Coyote Wells Groundwater Basin will decrease, even in the absence of pumping.~~

~~In many groundwater basins, removal of groundwater, for example by pumping, can cause an increase in the rate of recharge. This can occur by increasing the hydraulic gradient in areas where inflow occurs from an adjacent groundwater basin. It can also occur by lowering the water table near surface water bodies, resulting in a greater rate of percolation. In the Ocotillo/Coyote Wells Groundwater Basin, however, the only source of recharge is seasonal rainfall runoff from the adjacent mountains. The rate of recharge will fluctuate on an annual basis based on variations in the amount of rainfall. The average rate of recharge, however, is expected to remain constant unless there are major long-term shifts in climatic conditions. The long groundwater travel times across the basin (centuries to millennia) will tend to even out short-term (e.g. annual) fluctuations in rainfall amounts.~~

~~In the Ocotillo/Coyote Wells Groundwater Basin, pumping may reduce the rate of groundwater loss to some degree. For example, a drop in the water level to the east of Coyote Wells is believed to have reduced the rate of evapotranspiration by several hundred AF/yr (USGS, 1977). Pumping has also caused the hydraulic gradient near the international border with Mexico to flatten. The flatter hydraulic gradient reduces the rate of groundwater discharge. If the rate of pumping occurring in the Basin is approximately equal to the reduction in discharge, it is possible that the additional pumping will not accelerate the natural rate of water level decline, even though an increase in extraction rates occurs. This possibility is discussed further below.~~

~~To the east of Coyote Wells and the Laguna Salada fault, the hydrogeology of the Ocotillo/Coyote Wells Groundwater Basin is dominated by the occurrence of the Tertiary marine sediments. As discussed above, these sediments have a transmissivity that is less than one tenth that of the alluvial aquifer, which is present primarily to the west of the fault zone. The hydraulic gradient to the east of the fault zone is about five times greater (or steeper) than the hydraulic gradient in the Ocotillo area. Several previous studies attribute this difference in hydraulic gradient to some sort of barrier that may exist at the location of a postulated subsurface connection between the Elsinore fault and the Laguna Salada fault.~~

~~As part of this evaluation, specific evidence that the fault zone has its own material properties, and acts as a barrier, could not be identified. The change in gradient can be attributed solely to the difference in material types, and their respective properties (e.g., transmissivity), on either side of the fault. Furthermore, the magnitude of the gradient to the east of the fault is not unprecedented within the Basin. In the upgradient area of the Basin, as discussed above, the narrowing of the Basin results in a hydraulic gradient that is almost the same as it is to the east of Coyote Wells in the Tertiary marine sediments. Thus, variations in the Basin are most likely a result of features that cause a restriction in flow. These features can be a narrowing of the Basin, acting like a bottleneck, or a change of material types to one that has a lower transmissivity. In accordance with Darcy's Law, as described above, if the length across the Basin decreases and/or the transmissivity decreases, then the hydraulic gradient must increase to maintain discharge. This issue is discussed further below.~~

Initial evaluations conducted for this EIR/EIS prompted USG's consultant, Bookman-Edmonston, to conduct additional literature research and field observations. Bookman-Edmonston (2003, p. 2) concluded that "modeling the eastern boundary (of the alluvial material) as a less permeable linear zone representing the extension of the Elsinore fault to the Laguna Salada fault is clearly inconsistent with current geologic interpretation of the basin." As a result of this additional study (Bookman-Edmonston, 2003), the revised numerical model shows the transition from alluvial material to Tertiary marine sediments east of Coyote Wells as a simple upward fold of the underlying bedrock and Tertiary sediments. This folding that has removed the alluvial material and brought the Tertiary sediments to the surface. The interpretation of conditions east of Coyote Wells in the revised numerical model is significantly different than the conditions assumed in previous modeling efforts (USGS, 1977; Bookman-Edmonston, 1996).

3.3.3.3 Water Level Data

As discussed above, the USGS has been monitoring water levels in a number of wells within the Ocotillo/Coyote Wells Groundwater Basin since the early 1970s due to concerns regarding potential overdraft conditions and degradation of water quality. The data collected by the USGS is included in Appendix B and summarized in Tables 3.3-6A-C for selected wells within the Basin. For this analysis, water level data from three separate areas of the basin have been evaluated. These areas include Ocotillo/Nomirage, Yuha Estates, and the area east of Coyote Wells.

Ocotillo/Nomirage

The majority of the groundwater pumping in the Ocotillo/Coyote Wells Groundwater Basin occurs in the Ocotillo/Nomirage area. Figure 3.3-9, Ocotillo/Nomirage Area Hydrograph, is a hydrograph of the water level data from the Ocotillo/Nomirage area. A hydrograph shows the water level data as it changes over time. The wells within the Ocotillo/Nomirage area for which adequate data exist include:

- 16S/9E-25K2 (Clifford well/McDougal Water Co.)
- 16S/9E-25Q1
- 16S/9E-35M1
- 16S/9E-36D2
- 16S/9E-36G4 (Westwind)
- 16S/9E-36H1 (U.S. Gypsum No. 5)

Information regarding well construction and sampling history are presented in Table 3.3-5.

Well 16S/9E-25K2 was pumped for export of water to Mexico from 1974 to 1984. As indicated in Table 3.3-4 and in Figure 3.3-8, Annual Water Production, water production from this well increased from 138 AF/yr in 1974 to 222 AF/yr in 1977, and then is presumed to have decreased to 137 AF/y from 1978 to 1984. Actual production data after 1978, however, is uncertain. The pumping of this well is readily apparent on the hydrograph (Figure 3.3-9). Pumping of this well caused drops in the water level of 50 feet to 60 feet between 1975 and 1981. From 1984 to 1996, water levels in this well have returned to pre-pumping levels.

Area East of Coyote Wells

There are several wells that have been monitored on a regular basis in the area east of Coyote Wells. Figure 3.3-11, Area East of Coyote Wells Hydro-Graph, is a hydrograph of the wells in the area near the transition from alluvial material to Tertiary ~~marine~~ sediment outcrops. Wells located west of this transition include:

- 16S/9E-24D1
- 16S/10E-29L1
- 16S/10E-29R2

Wells located east of this transition include:

- 16S/9E-24B1
- 16S/10E-29H1

Wells 16S/10E-24D1 and 16S/10E-24B1 are located across the transition from each other, approximately 1.5 miles north of Ocotillo. As shown in Figure 3.3-11, the water levels in these two wells are nearly identical and have steadily declined over the last 25 years. The total amount of the decline is approximately three feet. The rate of decline is about one-half of the rate of decline in water levels in the Ocotillo/Nomirage area and the Yuha Estates area. The virtually-identical hydrographs for wells 16S/10E-24D1 and 16S/10E-24B1 indicate that the transition is not a fault zone or other geologic feature with unique properties that may inhibit groundwater movement, as discussed above, and does not have any hydrologic influence in the area north of Ocotillo.

Wells 16S/10E-29L1 and 16S/10E-29H1 are located across the transition from each other, to the east of Coyote Wells. Well 16S/10E-29R2 is located approximately one-half mile south of well 16S/10E-29H1. As shown in Figure 3.3-11, data from wells 16S/10E-29L1 and 16S/10E-29R2, both located west of the transition, is only available for about 10 years, from the late 1970s to the late 1980s. Data from well 16S/10E-29H1, located east of the transition, is available from 1975 to 2001. The three wells are shown on Figure 3.3-11 to be declining at the same rate.

Water levels in wells 16S/10E-29L1 and 16S/10E-29R2, to the west of the transition, decreased by approximately eight feet from the late 1970s to the late 1980s, as shown on Figure 3.3-11. As indicated in Figure 3.3-8, this time period corresponds to the period of the greatest amount of groundwater pumping from the Basin. The water level in well 16S/10E-29H1, to the east of the transition, decreased by about five feet from 1975 to

3.3.3.5 Discussion of Water Quality Data

The water quality data discussed above indicates that pumping of wells for a period of several years at rates of 100 AF/yr to 200 AF/yr or more ~~can~~ in the Yuha area may have a measurable impact on water quality in adjacent wells ~~certain areas of the basin~~. This amount of pumping by USG in Well 36H1 in the Ocotillo area has not shown any increase in TDS. When it occurs, this impact appears rapidly and persists for many years after pumping ceases. The decrease in water quality may be due to lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediment, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.

Figure 3.3-15, Piper Diagram of Groundwater Chemistry Data, is a Piper, or Tri-linear, diagram of water quality from the wells discussed above. A Piper diagram is a standard tool for analysis of water-quality data (USGS, 1989). The Piper diagram presents the water quality in terms of cations (positively-charged ions) in the triangle in the lower left corner, anions (negatively-charged ions) in the triangle in the lower right corner, and commonly associated chemical groupings in the central quadrilateral.

Many of the wells from the Ocotillo/Nomirage and Yuha Estates areas cluster together in the Piper diagram shown in Figure 3.3-15. Well 16S/9E-24B1 (labeled number "1" on the Piper diagram) stands apart from the other wells due to its elevated TDS concentration. Several other wells, however, show some TDS impact and plot in the areas between the larger cluster of wells and well 16S/9E-24B1. These wells include 16S/10E-29L1 (labeled number "6" on the Piper diagram), 16S/9E-24D1 (labeled number "2" on the Piper diagram), and 17S/10E-11G2 (labeled number "7" on the Piper diagram).

3.3.3.6 Thresholds of Significance

The significance criteria for this analysis were developed from Appendix G of the CEQA Guidelines. The Proposed Project would have a significant impact on hydrology and water quality if it would:

- Violate any water-quality standards or waste discharge requirements;
- Deplete groundwater supplies such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table (e.g. the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which a permit has been granted); or
- Otherwise substantially degrade water quality.

TABLE 3.3-9
LAYER 1 WELL DRAWDOWNS (FT) FOR 650 AF/YR PUMPING SCENARIO
(DRAWDOWN FROM GROUNDWATER ELEVATION AT THE END OF 2002)

	Well								
Years	42A5	36H1	36D2	24D1	29L1	29R2	25K2	25Q1	36G4
	Drawdown (ft)								
10	-3.6	-5.1	-3.8	-2.5	-3.8	-3.5	-3.9	-4.0	4.9
20	-6.5	-8.2	-6.9	-5.3	-6.8	-6.5	-7.0	-7.1	8.0
30	-9.3	-11.1	-9.9	-8.1	-9.6	-9.2	-10.0	-10.2	-11.0
40	-12.0	-14.0	-12.9	-10.9	-12.3	-11.9	-13.0	-13.2	-13.9
50	-14.6	-16.9	-16.0	-13.8	-15.0	-14.5	-16.0	-16.3	-16.8
60	-17.3	-19.8	-19.2	-16.7	-17.7	-17.2	-19.2	-19.5	-19.8
70	-20.1	-22.8	-22.5	-19.7	-20.5	-19.9	-22.4	-22.7	-22.9
80	-22.9	-26.0	-25.9	-22.8	-23.4	-22.7	-25.7	-26.2	-26.1

The total potential drawdown in the alluvial aquifer, based on both the empirical data and the revised numerical groundwater model (Bookman-Edmonston, 2004), could lower the water level in some wells. Specifically, if the water level in a well drops to near the base of the screened interval, the ability to maintain current pumping rates in that well may be reduced. Wells in the Ocotillo area that are likely to experience this condition include the E. Annes and Property Construction wells and well 36D2, as shown in Figure 3.3-16, Ocotillo/Coyote Wells Groundwater Study Cross-Section of Screen Intervals.

Level of Significance Before Mitigation: Significant

Mitigation Measure: Mitigation Measure 3.3-1

If the water level in ~~a~~ an existing well in the Ocotillo area decreases at a rate faster than one foot every eight years and the average water levels in the surrounding wells also decrease for more than two years in a row due to the Proposed Action, as measured from the interpolated linear of one foot every eight years with a starting reference point being the date that pumping by USG increases above the baseline rate, and there is a documented reduction in the available water to the affected user, then USG, at its election will:

1. *Rehabilitate the well and/or install a new pump to restore the prior pumping rate; or*
2. *Provide an incremental replacement of water equivalent to the amount of the reduced rate of pumping by the affected party, of a like quantity and quality~~, and provide reimbursement for the incremental increase for the affected party to pump the remaining available groundwater~~; or*
3. *Provide a full replacement water supply to the affected party of a like kind and quality, at a cost that does not exceed the cost to the affected party at the time the impact occurred; or*
4. *Deepen the existing well or provide a new replacement well to the affected party, drilled to a depth that will not be affected by existing or future Project-related declines in the water table, and capable of providing an equivalent quantity and quality of water that existed prior to the impact~~, and provide reimbursement for incremental increase in cost for the affected party to pump the available water~~.*

The extent to which the Proposed Action will be considered ~~as contributing to~~ to be the cause of the decrease in water levels in the Ocotillo area will be determined only after a review of the water level data and a decision by the Imperial County Planning Commission ~~Groundwater Management Committee (ICGMC)~~.

~~The baseline condition in the Basin includes a declining water table, and existing data suggests that water levels recover slowly after significant drawdown occurs. Therefore, i~~If USG elects to provide replacement water or a replacement water supply, arrangements must be made to provide this mitigation until groundwater levels ~~stabilize at~~ return to a level equal to the projected baseline condition or ten years after USG reduces its pumping from the Basin to the baseline rate, whichever first occurs.

Level of Significance After Mitigation: Less than Significant

Although the Proposed Action would increase the rate of drawdown in the alluvial aquifer as compared to baseline conditions, the impact on existing individual affected wells will be mitigated to a level of insignificance through implementation of Mitigation Measure 3.3-1.

Impact 3.3-2: Water Depletion at Plant Affecting the Groundwater Basin

Increased pumping of USG wells could reduce water levels throughout broad areas of the Ocotillo/Coyote Wells Basin, reducing the total amount of water available in the basin.

Previous studies concluded that, since the total volume of water in the basin may range from over 600,000 AF to over 1.2 million AF, an annual overdraft of a few hundred AF/yr is nominal compared to the total volume of water in storage in the Basin. This view, however, may not be consistent with the conditions that occur in the Ocotillo/Coyote Wells Groundwater Basin. More recent assessments of the basin geology suggest that it is more complex, containing numerous uplifts of older sediments and large folds that bring the Tertiary ~~marine~~ sediments close to the surface. Thus, the available volume of water may be much less than previous estimates.

The hydrographs of numerous wells from different locations in the Basin demonstrate that water levels have been steadily decreasing for at least the last 30 years. Periods of increased rainfall and a decreasing rate of groundwater pumping have not halted this long-term trend. However, a decrease of pumpage in USG wells from 1994 through 1998 did show groundwater levels recovered locally.

The revised numerical groundwater model (Bookman-Edmonston, 2004) indicates that over the next 80 years, water levels may decline by up to 10 feet under baseline conditions, without any increase in pumping rates (Table 3.3-7). Thus, the baseline rate of water-level decline is approximately one foot every eight years.

For the Proposed Action, USG plans to increase groundwater extraction rates by as much as 420 AF/yr over the average 1994 through 1998 baseline pumping rate of 347 AF/yr. This water demand is anticipated to continue for up to 80 years. The only empirical point of comparison to this magnitude of pumping over a long duration is the pumping that occurred in Ocotillo and Yuha Estates in the 1970s and 1980s for export to Mexico. In Ocotillo, groundwater was pumped at a rate of 137 AF/yr to 222 AF/yr for 11 years. Drawdowns of up to 60 feet occurred at or near the pumping well, and water levels did recover after pumping was suspended. At Yuha Estates, groundwater was pumped at an estimated rate of 143 AF/yr for five years. Drawdowns of nearly 70 feet occurred and nearby wells experienced drawdowns of several tens of feet. In addition, once the pumping

ceased, water levels at Yuha Estates recovered very slowly and have not yet reached their pre-pumping levels. A review of the Basin's geology, however, suggests that the Ocotillo area consists of younger permeable alluvial material, whereas the Yuha Estates area is predominantly older less permeable formations.

The revised numerical groundwater model (Bookman-Edmonston, 2004) evaluated the potential drawdown in the Ocotillo area from the Proposed Action, with pumping occurring at 767 AF/yr for 80 years. (See Appendix B-2). The total drawdown in the alluvial aquifer after 80 years is predicted to be approximately 30 feet, which averages about 20 feet, but in two wells may be up to 23 feet, greater than the drawdown predicted to occur over the same time period under the baseline conditions (Table 3.3-8, Layer 1 Well Drawdowns (ft) for 767 AF/yr Pumping Scenario).

The revised numerical groundwater model (Bookman-Edmonston, 2004) also considered an intermediate project condition, where pumping rates are increased to only 650 AF/yr for 80 years, as opposed to the full 767 AF/yr for the Proposed Action. Under this intermediate condition, the total drawdown in the alluvial aquifer after 80 years is predicted to be up to 26 feet, which is up to 16 feet greater than the drawdown predicted to occur over the same time period under the baseline conditions (Table 3.3-9, Layer 1 Well Drawdowns (ft) for 650 AF/yr Pumping Scenario).

Because the depth to groundwater in the Ocotillo area currently ranges from about 100 ft bgs to 160 ft bgs, an additional 20-23 foot lowering of groundwater level over an 80 year period will not have an adverse effect on any rare, threatened, endangered, or sensitive species of plant or animal life or habitat.

The pumping from the alluvial aquifer for the Proposed Project, based on both the empirical data and the revised numerical groundwater model (Bookman-Edmonston, 2004), will lower the water level over a broad area of the Basin. As discussed above, this lowering of water level~~s~~ will be in addition to the existing condition in the basin where the water table is already declining. Periods of increased rainfall and decreased pumping have not resulted in a Basin-wide recovery of water levels. Thus, the additional decline in water levels caused by the additional pumping of up to 420 AF/yr for the Proposed Project can not be readily offset by decreases in pumping elsewhere in the Basin, enhancing recharge, or importing water.

Level of Significance Before Mitigation: This is a significant and unavoidable impact on the Basin-wide groundwater. This impact is also unmitigatable.

Mitigation Measures: None available

Impact 3.3-3: Water Quality Degradation at Plant Affecting Individual Well Owners

Increased pumping from USG wells could degrade water quality in individual wells due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.

Increases in TDS were observed in wells in the Ocotillo area and the Yuha Estates area as a result of groundwater pumping for export to Mexico. In the Ocotillo area, TDS concentrations ~~have not~~ mostly recovered to their pre-pumping levels in the well that was pumped for export. At Ocotillo, groundwater was pumped at a rate of 137 AF/yr to 222 AF/yr for 11 years. At Yuha Estates, groundwater was pumped at an estimated rate of 143 AF/yr for only five years.

USG is proposing to increase groundwater extraction rates by as much as 420 AF/yr over the average baseline pumping rate of 347 AF/yr for the five-year period from 1994 through 1998. This water demand, under the Proposed Action, is anticipated to continue for 80 years. Based on a comparison with past impacts in the Basin, the proposed increased groundwater extraction rates for the Project could have an impact on water quality.

As discussed, water levels are decreasing throughout most of the Basin and are expected to decrease further from the Proposed Project. As the depth to groundwater decreases, the saline water that is present at the water table may eventually reach the screened interval of some wells. Several wells have relatively short screened intervals, so that the saline water present at the water table could appreciably affect the quality of the water in certain wells.

Groundwater flow directions during the Project duration were evaluated as part of the revised numerical groundwater model (Bookman-Edmonston, 2004). The numerical model indicates that groundwater will continue to flow from west to east across the transition from alluvial material to Tertiary marine sediments east of Ocotillo. Thus, there is not likely to be a significant potential for saline water

to migrate laterally from the area east of Coyote Wells into the Ocotillo area. The model did indicate that there is a small potential for upward migration of saline water from Tertiary marine sediments underlying the alluvial aquifer in the Ocotillo area. Due to geologic complexities related to fault blocks and elevated areas of Tertiary marine sediments, however, the model was not able to accurately reproduce the change in water quality caused in both Ocotillo and Yuha Estates by the pumping for export to Mexico.

Level of Significance Before Mitigation: Significant

Mitigation Measure: Mitigation Measure 3.3-2

USG will provide an alternative or replacement source of water if the water quality significantly deteriorates in any existing well in the Ocotillo area and such deterioration is caused by the Proposed Action. As discussed above, the secondary drinking water standard for TDS is 500 mg/L and water with a TDS level in excess of 1,000 mg/L is considered non-potable. Therefore, if the Proposed Action causes the TDS level in any existing well to exceed~~s~~ 500 mg/L, or causes the concentration of ~~any other measured parameter~~ sulfate, chloride or boron, as described in the ~~Mitigation~~ Groundwater Monitoring Program ~~below,~~ to exceed~~s~~ its drinking-water standard that is in force at the time ~~of the measurement,~~ the Proposed Action is approved, then USG will provide the affected party or parties with an alternative supply of water for drinking and cooking, at no cost to the affected party or parties. This alternative supply could be bottled water or a hookup to a replacement water source. If the TDS level in any well exceeds 1,000 mg/L and is caused by the Proposed Action, then the water quality will be such that use of the water for any domestic purpose will be significantly affected due to scale buildup, damage to plumbing, corrosion, and other similar impacts. If the TDS level exceeds 1,000 mg/L and is caused by the Proposed Action, USG will provide the affected party or parties with a hookup to a replacement supply of water. This replacement supply may be a hookup to an existing municipal district or other appropriate drinking water supply system. USG will bear the full cost of the hookup. The affected party or parties, however, would only be responsible for the annual cost of the replacement water equivalent to their costs to pump water prior to the occurrence of the impact. If the annual cost of water for the replacement supply exceeds the affected party or parties costs to pump water prior to the occurrence of the impact, USG will pay the incremental difference.

The extent to which the Proposed Action will be considered ~~as contributing~~ to be the cause of the decrease in water quality in the Ocotillo area, will be determined

only after a review of the water quality data and a decision by the Imperial County Planning Commission ~~Groundwater Management Committee (ICGMC)~~.

~~The existing data from Ocotillo and Yuha Estates indicates that, once the water quality decreases, it may take many decades for the water quality to recover once the pumping causing the impact has ceased. Therefore,~~ If USG ~~will need~~ is required to provide ~~the~~ alternative and/or replacement water supply pursuant to the terms of this mitigation measure, it must continue to do so until (1) concentrations of the above-listed constituents in excess of applicable water-quality standards return to levels below such standards or until the water quality parameters, for which there is data that currently exists, return to pre-Proposed Action levels, or (2) ten years after USG reduces its pumping from the Ocotillo/Coyote Wells Groundwater Basin to the baseline rate, whichever first occurs.

Level of Significance After Mitigation: Less than Significant

With implementation of Mitigation Measure 3.3-2, the potential impacts on individual wells will be mitigated, and the Proposed Action will not violate any water quality standard For these reasons, the impact of the Proposed Action on individual wells, after mitigation, will be less than significant.

The long-term affect to the Basin-wide groundwater resource, however, is still potentially significant and there are no feasible mitigation measures that would reduce the impact to less than significant.

Impact 3.3-4: Water Quality Degradation at Plant Affecting the Groundwater Basin

Increased pumping from USG wells could degrade water quality in the groundwater Basin due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.

~~Relatively rapid i~~Increases in TDS were observed in wells in the Ocotillo area and the Yuha Estates area as a result of groundwater pumping for export to Mexico. In the Ocotillo area, TDS concentrations in affected wells ~~have not~~ mostly recovered to their pre-pumping levels in the well that was pumped for export. At Ocotillo, groundwater was pumped at a rate of 137 AF/yr to 222 AF/yr for 11 years. At Yuha Estates, groundwater was pumped at an estimated rate of 143 AF/yr for only five years.

USG is proposing to increase groundwater extraction rates by as much as 420 AF/yr over the average baseline pumping rate of 347 AF/yr for the five-year period from 1994 through 1998. This water demand, under the Proposed Action, is anticipated to continue for 80 years. The past water-quality impacts in the Basin were the result of much lower pumping rates and much shorter durations than the proposed increased groundwater extraction rates for the Project. Thus, the Proposed Project could have an impact on water quality.

Groundwater flow directions during the Project duration were evaluated as part of the revised numerical groundwater model (Bookman-Edmonston, 2004). The numerical model indicates that groundwater will continue to flow from west to east across the transition from alluvial material to Tertiary marine sediments east of Ocotillo. Thus, there is not likely to be a significant potential for saline water to migrate laterally from the area east of Coyote Wells into the Ocotillo area. The model did indicate that there is a small potential for upward migration of saline water from Tertiary marine sediments underlying the alluvial aquifer in the Ocotillo area. Due to geologic complexities related to fault blocks and elevated areas of Tertiary marine sediments, however, the model was not able to accurately reproduce the change in water quality caused in both Ocotillo and Yuha Estates by the pumping for export to Mexico.

The declining water levels in the Basin indicate that the amount of recharge is less than the amount of water being removed from the Basin. Therefore, if the water quality in areas of the Basin decreases to the point where the water is not suitable for its current use, then it is unlikely that there will be sufficient influx of non-saline water to improve the water quality.

Level of Significance Before Mitigation: Significant

Mitigation Measure: None available

> As part of the Proposed Project, USG will implement the Groundwater Monitoring Program described below. The data from the groundwater monitoring program will provide ~~an indication of a trend of progressively decreasing~~ information concerning water quality in individual wells and throughout the basin~~, if such a trend occurs and is a result of the increased pumping for the Proposed Project~~. If ~~such a trend is identified~~ the data indicates a trend of progressively decreasing water quality in only a few wells in close proximity to the USG pumping wells, and an impact subsequently occurs in any or all of those few wells, then USG can

mitigate the impacts in the individual wells as discussed above for Impact 3.3-2A: Water Quality Degradation at Plant Affecting Individual Well Owners. If, however, such a trend is identified in a larger number of wells, and these wells are located over a broader area of the basin and not just in the area of the USG pumping wells, it would not be possible to restore the Basin-wide water quality once it is degraded to concentrations at which the groundwater is no longer suitable for its current uses. There is insufficient recharge to restore the Basin and dilute the salts in the saline water. Therefore, it is not possible to mitigate the Basin-wide degradation of water quality. If such trends are detected by the Groundwater Monitoring Program, the only way to halt or reverse these trends would be to curtail pumping by reducing production at the Plant, or by implementing one or more Alternatives that reduce or eliminate withdrawals from the basin, prior to the groundwater quality being degraded to the point where it was no longer suitable for its current uses.

Level of Significance After Mitigation: Significant

Groundwater Monitoring Program

The Proposed Action includes a Monitoring Program to provide consistent, long-term data regarding the Ocotillo/Coyote Wells Groundwater Basin. The Monitoring Program will involve the measurement of water levels and the collection of groundwater samples for chemical analysis. As discussed above, the Proposed Action is predicted to accelerate the decline of the groundwater level in the Ocotillo/Coyote Wells Groundwater Basin, and may potentially cause the migration of saline water. As such, the primary objectives of the Monitoring Program are to:

1. Identify any increases in the rate of water-level decline greater than the baseline rate; and
2. Provide an early warning of potential degradation of groundwater quality from the Proposed Action.

The primary cause of the potential degradation of groundwater quality would be lateral migration of saline water from Tertiary marine sediments that crop out in the Ocotillo and Nomirage area and to the east of Coyote Wells, or vertical migration of saline water from the Tertiary marine sediments that are present at depth below the alluvial aquifer.

The USGS currently monitors water levels and water quality in a number of wells in the Ocotillo/Coyote Wells Groundwater Basin, as listed in Table 3.3-10, List of Current and Proposed Monitoring Wells in the Ocotillo/Coyote Wells Groundwater Basin. For the

3.3.3.9 Partial Use of Water from Imperial Irrigation District: Impacts and Mitigation Measures

Impact 3.3-1: Water Depletion at Plant Affecting Individual Well Owners

Increased pumping of USG wells could reduce water levels, increasing the cost of pumping groundwater, causing some wells to go dry.~~, and reducing the amount of available water in the Basin.~~

This alternative would supply the Plant with a portion of the water needed for operations from USG's existing wells in Ocotillo. The balance of the water needed for operations would be supplied by the IID. Under this alternative, water from IID would be blended with water from the Ocotillo/Coyote Wells Groundwater Basin as needed to achieve the level of water quality and consistency necessary for use in manufacturing wallboard without the need for further treatment of the process water. The quality of IID water, which comes from the Colorado River, varies over time. Thus, the amount of water that would need to be extracted from USG's wells in Ocotillo would vary over time. However, this alternative assumes that over the life of the Project, the amount of water extracted from the existing wells at Ocotillo would not increase above pre-Proposed Action levels. Water in excess of the pre-Proposed Action amount would be provided by IID under a water service agreement with USG. Payment of the required user fees and water rates to IID would contribute to any mitigation that IID conducts for use of Colorado River water, maintenance of the distribution system, and disposal of any waste or tail water.

The rate of pumping from the three USG wells in the Ocotillo/Coyote Wells Groundwater Basin would remain at the baseline rate. The baseline rate, as discussed above, is an average of 347 AF/yr over a five-year period. As discussed above, the modeled water levels in the Basin are declining at the rate of approximately one foot every eight years under baseline conditions. This rate of water-level decline would continue under this alternative, but there would not be any additional increment of water-level decline since there would not be any additional increment of pumping above the baseline level. Therefore, this alternative would maintain the baseline conditions in the Ocotillo/Coyote Wells Groundwater Basin.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: None required

Impact 3.3-4: Water Quality Degradation at Plant Affecting the Groundwater Basin

Increased pumping from USG wells could degrade water quality in the groundwater Basin due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.

Under the Partial IID Water Supply Alternative, USG's consumption of water from the basin would be reduced to pre-project levels. The potential for the Project to exacerbate drawdown that could influence migration of higher-TDS would be avoided.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.3.3.10 Full Use of IID Water Alternative: Impacts and Mitigation Measures

Impact 3.3-1: Water Depletion at Plant Affecting Individual Well Owners

Increased pumping of USG wells could reduce water levels, increasing the cost of pumping groundwater, causing some wells to go dry~~, and reducing the amount of available water in the Basin~~.

This alternative would provide essentially the full water supply for the Plant from the IID. Under this alternative, water from IID would be piped to the Plant for use in wallboard processing. This alternative assumes that over the life of the Project, groundwater would not be extracted from the existing USG wells at Ocotillo. Therefore, the total pumping in the Ocotillo/Coyote Wells Groundwater Basin would be reduced by the baseline amount. Payment of the required user fees and water rates to IID would contribute to any mitigation that IID conducts for use of Colorado River water, maintenance of the distribution system, and disposal of any waste or tail water.

As discussed above, the water levels in the Basin are declining at the rate of approximately one foot every eight years under baseline conditions. Under the

3.3 HYDROLOGY AND WATER QUALITY

3.3.1 Introduction

This section is formatted in a slightly different manner than the other EIR/EIS evaluations in order to accommodate an analysis of hydrology issues that differ between the Plant and Quarry sites. Rather than one section describing the Affected Environment and one section on Standards, Impacts and Mitigation Measures there are two sections each (one set for the Plant hydrology analysis and one for the Quarry hydrology): because these facilities are in different hydrologic basins with substantially differing conditions. Sections 3.3.2 and 3.3.3 cover hydrology issues at the Plant; Sections 3.3.4 and 3.3.5 cover hydrology issues at the Quarry. Each of these sections addresses the Proposed Action and its various alternatives.

The section is organized as follows:

- 3.3.2 Plant Water Usage
- 3.3.3 Plant Water Usage: Standards of Significance, Environmental Impacts, and Mitigation Measures (starting at page 3.3-34)
- 3.3.4 Quarry Water Usage: Affected Environment (starting at page 3.3-9~~0~~4)
- 3.3-5 Quarry Water Usage: Standards of Significance, Environmental Impacts and Mitigation Measures (Starting at page 3.3-9~~5~~9)

The Proposed Action includes changes in the quantity of water to be used in both the wallboard manufacturing Plant and the Quarry. Water for the Plant is supplied by three wells located in Ocotillo. Water for the Quarry is proposed to be supplied by a new well to be drilled approximately three miles east of the Quarry along the narrow-gauge rail line right-of-way. Evaluation of the proposed increased water usage for the Plant is presented in Section 3.3.2. Evaluation of the proposed new well installation and increased water usage for the Quarry is presented in Section 3.3.4.

3.3.2 Plant Water Usage

The existing Plant operation and Proposed Action rely on three supply wells for water for potable domestic uses and processing and production of wallboard and other gypsum products. The three wells are located in the Ocotillo/Coyote Wells Groundwater Basin in the southwest part of Imperial County. Prior to implementation of the Proposed Action, USG pumped an average of 347 acre-feet per year (AF/yr) from 1994 to 1998. The Proposed Action anticipates increasing groundwater pumping from the existing wells up to a maximum of 767 AF/yr (the amount reported by USG in 1972).

The extracted groundwater is transported by 8 inch diameter pipeline to Plaster City. The location of the Ocotillo/Coyote Wells Groundwater Basin is shown in Figure 3.3-1, Groundwater Basin Location Map.

There are several communities in the Ocotillo/Coyote Wells Groundwater Basin, including Ocotillo, Coyote Wells, Nomirage, and Yuha Estates. These communities, USG and several other commercial/industrial and agricultural users, depend on the Ocotillo/Coyote Wells Groundwater Basin as their source of potable water. Surface water is not present in the Basin and there are no water imports into the Basin. The Ocotillo/Coyote Wells Groundwater Basin was designated as a "sole-source aquifer" by the Environmental Protection Agency (EPA) in 1996 (61 FR 47752, September 10, 1996) and is, thus, part of the Sole Source Aquifer Protection Program, authorized by Section 14245(e) of the Safe Drinking Water Act. The sole-source aquifer designation requires U.S. EPA review of proposed federally-assisted projects. The Proposed Action by USG is not a federally assisted project, and the designation only encourages coordination of federal, state, and local efforts for protection of groundwater resources under the Comprehensive State Ground Water Protection Program (CSGWPP).

Several studies involving the Ocotillo/Coyote Wells Groundwater Basin have been conducted. A partial list of these studies include:

- *Digital Model Evaluation of the Ground-Water Resources of the Ocotillo-Coyote Wells Basin, Imperial County, California*, U.S. Geological Survey Water-Resources Investigation 77-30, November 1977 (prepared by James A. Skrivan).
- *The Magnitude and Potential Effects of Declining Ground Water Elevations in the Ocotillo-Coyote Wells Basin*, prepared by David Huntley, October 1979.
- *Imperial County Groundwater Study – Final Report*, Montgomery Watson, December 1995.
- *Ocotillo/Coyote Wells Basin Hydrology and Groundwater Modeling Study*, Bookman-Edmonston Engineering, Inc., March 1996.
- *Geologic Review of the Ocotillo-Coyote Wells Basin, Imperial County California with Recommendations for Changes to the Proposed Groundwater Model*, Bookman-Edmonston memorandum from Ron Schnabel to Dick Rhone, March 13, 2003.
- *Ocotillo/Coyote Wells Hydrology and Groundwater Modeling Study*, Bookman-Edmonston, January 16, 2004.

Insert Figure 3.3-1

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These studies were reviewed in detail for this analysis, and are incorporated by reference. Copies of these studies can be reviewed at the office of the County Planning Department, Imperial County, California. In addition, rainfall data from the National Oceanic and Atmospheric Administration (NOAA) rain gauge in Ocotillo (the Ocotillo 2 gauge), pumping data from USG, and water level and water chemistry data from the U.S. Geological Survey (USGS) were obtained and reviewed. The USGS has been measuring water levels on a semi-annual basis and water chemistry on an annual basis in several wells throughout the basin since the 1970s. These data were obtained from the USGS WATSTOR database and are presented in Appendix B-1, USGS Hydrologic Data.

The 1996 and 2004 Bookman-Edmonston reports also include discussions of several additional studies conducted in the Ocotillo/Coyote Wells Groundwater Basin. These studies include several consultant reports and several unpublished Masters Theses from San Diego State University.

Section 3.3.2.1 presents a summary of the setting of the Ocotillo/Coyote Wells Groundwater Basin, a description of the baseline conditions developed for the Proposed Action, and an evaluation of the existing data. Section 3.3.2.2 presents the analysis of potential environmental impacts related to the extraction of groundwater from the Ocotillo/Coyote Wells Groundwater Basin for the Proposed Action, and the potential alternatives to the proposed increase in pumping from the existing wells within the Ocotillo/Coyote Wells Groundwater Basin.

3.3.2.1 Affected Environment

Climate

The Ocotillo/Coyote Wells Groundwater Basin is located in the southwestern part of Imperial County, approximately 25 miles from the city of El Centro (Figure 3.3-1), in a desert environment, marked by relatively high temperatures and relatively low precipitation. Average daytime high temperatures range from 70 degrees Fahrenheit (F) in January to in excess of 110 degrees F in July and August. Average low temperatures range from 40 degrees F to 80 degrees F. In the vicinity of the communities of Ocotillo, Coyote Wells, Nomirage, and Yuha Estates, the surface elevation varies from approximately 250 feet above mean sea level (ft amsl) to 600 ft amsl. The Basin is bounded on the west by the Jacumba Mountains and on the north by the Coyote Mountains. The Basin extends approximately 12 miles to 15 miles to the east of Ocotillo to the Westside Main Canal, across the southern projection of the Elsinore

Fault and the Laguna Salada Fault, and another unnamed fault zone. To the south, the basin continues across the international border into Mexico.

Table 3.3-1, Monthly Rainfall Data, 1971-2002, presents monthly rainfall data from 1971 through 2002, as measured at the NOAA Ocotillo 2 rainfall gauge, located in Ocotillo, CA. The raw data provided by NOAA are presented in Appendix B-1. Rainfall in the vicinity of the Ocotillo/Coyote Wells Groundwater Basin occurs from both Pacific storm fronts, which occur during the winter months, and from tropical monsoons, which occur during the summer months. To appropriately present the variation in rainfall over time, the annual precipitation is typically presented in terms of a water year. For the Project area, a water year extends from October of one year through September of the subsequent year. Table 3.3-2, Annual Water-Year Precipitation, presents the annual water-year precipitation for the Ocotillo area from 1948 through 2000. The data from 1948 through 1982 is taken from Table 7-3 of the 1996 Bookman-Edmonston report. The data from 1983 through 2000 are taken from the NOAA data presented in Table 3.3-1. Figure 3.3-2, Annual Water-Year Rainfall, presents the annual water-year precipitation for the Ocotillo area.

The average annual water-year precipitation for the time period represented in Table 3.3-2 is approximately 3.5 inches. The average annual precipitation is shown as a dashed line on Figure 3.3-2. The graph on Figure 3.3-2 indicates that rainfall was typically below average from 1949 through 1965. From 1975 through 1993, rainfall was typically above average, with 12 of 18 water years having above-average precipitation and only two water years having annual average precipitation that was less than 3.0 inches (i.e. one-half inch or more below the mean). Since 1993, rainfall has been average to below average.

The relatively high temperatures also result in a relatively high evaporation rate for the region. The California Department of Water Resources (Bulletin #113-3) reports a total evaporative demand for the area of approximately 100 inches per year, with a potential evapotranspiration rate of over 82 inches per year. The total evaporative demand is equivalent to the rate of evaporation from a Class A pan. The potential evapotranspiration is the rate of water lost to the atmosphere by irrigated agriculture.

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TABLE 3.3-1
MONTHLY RAINFALL DATA, 1971-2002
OCOTILLO 2 RAINFALL GAUGE

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
1971	-	-	-	-	-	0	0	77	14	3	0	3	-
1972	0	0	0	0	0	37	0	2	0	149	32	10	-
1973	13	49	23	0	0	0	0	42	0	0	0	0	-
1974	149	0	3	0	0	0	14	0	4	6	0	8	-
1975	0	0	2	70	0	0	80	0	82	3	25	10	-
1976	0	152	20	25	7	0	10	0	293	0	42	10	-
1977	24	0	2	0	0	0	0	379	0	60	0	129	-
1978	139	57	29	14	0	0	0	0	10	6	110	143	-
1979	235	26	4	0	35	0	55	30	0	0	0	12	-
1980	378	202	88	10	100	0	0	0	0	0	0	0	-
1981	79	58	129	0	14	0	6	14	0	0	80	0	-
1982	95	0	-	-	-	-	1	31	169	0	19	584	-
1983	29	258	194	0	0	0	13	100	45	5	1	42	687
1984	17	0	0	1	0	0	216	39	24	0	40	186	523
1985	6	27	9	0	0	0	0	10	28	54	122	129	385
1986	21	115	33	4	0	0	41	0	0	127	15	24	380
1987	25	62	8	0	0	0	0	36	21	138	23	60	373
1988	53	122	2	0	0	60	0	117	0	7	0	0	361
1989	47	0	2	0	0	0	39	19	0	3	0	0	110
1990	11	0	1	22	0	108	93	0	0	15	0	0	250
1991	42	62	140	0	0	0	310	211	17	0	15	205	1002
1992	12	123	124	11	8	0	0	27	0	115	0	155	575
1993	503	86	0	0	9	0	0	71	0	0	94	0	763
1994	41	29	57	0	23	0	0	6	0	0	46	52	254
1995	154	22	5	0	0	0	0	56	0	0	0	11	248
1996	0	70	0	0	0	0	0	0	0	4	0	2	76
1997	30	2	0	4	0	9	86	0	210	0	11	146	498
1998	39	121	19	0	0	0	0	16	15	0	0	39	249
1999	0	26	0	15	0	0	13	0	28	0	0	0	82
2000	0	42	12	0	0	15	0	116	1	57	2	0	245
2001	12	186	43	0	-	0	0	0	0	0	0	0	-
2002	11	-	-	-	-	-	-	-	-	-	-	-	-

Note: Units are measured in 1/100th of an inch.

TABLE 3.3-2
ANNUAL WATER-YEAR PRECIPITATION
1948 THROUGH 2000

Water Year	Total (Inches)	Water Year	Total (Inches)
1948-49	5.64	1974-75	2.48
1949-50	0.75	1975-76	5.45
1950-51	2.73	1976-77	4.57
1951-52	3.3	1977-78	4.38
1952-53	1.85	1978-79	6.44
1953-54	-	1979-80	7.9
1954-55	-	1980-81	3
1955-56	0.5	1981-82	3.77
1956-57	1.93	1982-83	12.42
1957-58	2.74	1983-84	3.45
1958-59	0.73	1984-85	3.06
1959-60	2.4	1985-86	5.19
1960-61	0.9	1986-87	3.18
1961-62	2.75	1987-88	5.75
1962-63	2.76	1988-89	1.14
1963-64	0.98	1989-90	2.38
1964-65	1.71	1990-91	7.97
1965-66	4.09	1991-92	5.25
1966-67	3.28	1992-93	9.39
1967-68	8.61	1993-94	2.5
1968-69	0.69	1994-95	3.35
1969-70	-	1995-96	0.81
1970-71	-	1996-97	3.47
1971-72	0.45	1997-98	3.67
1972-73	3.18	1998-99	1.21
1973-74	1.7	1999-00	1.86

Geology

The Ocotillo/Coyote Wells Groundwater Basin is an alluvial basin that contains silts, sands, and gravels that have been eroded from the surrounding mountains and were deposited on Tertiary marine (i.e., ocean or shallow sea) sediments. These Quaternary alluvial deposits are highly permeable and contain groundwater of relatively good quality, as discussed below. Along the western and northern edges of the Basin, the Quaternary gravels overlie and abut the bedrock that forms the Jacumba and Coyote Mountains. In the central and eastern parts of the Basin, the gravels overly the Tertiary marine sediments. Based on the total depth of wells installed in the Basin, the thickness

of the gravels varies from zero along the mountain fronts to at least 600 feet in the Ocotillo area.

There are several prominent fault zones within the Basin. The Elsinore Fault forms the boundary between the alluvial sediments of the Basin and the bedrock of the Coyote Mountains (see Figure 3.3-3, Generalized Geology). South of Yuha Springs, the Laguna Salada Fault separates the alluvial basin sediments on the west from an area of primarily Tertiary marine sediments to the east.

The Tertiary marine sediments are believed to be present beneath the alluvial gravels throughout most of the Ocotillo/Coyote Wells Groundwater Basin. East of Coyote Wells and the Laguna Salada Fault, there are numerous areas where the Tertiary marine sediments crop out and are exposed on the surface of the basin, as shown in Figure 3.3-3. In general, the geology east of Coyote Wells and the Laguna Salada Fault zone is dominated by the marine sediments, although the alluvial gravels are present in many areas.

The Tertiary marine sediments also crop out in several areas west of Coyote Wells and the Laguna Salada fault zone. Exposures of the marine sediments occur over a large area east of Yuha Estates, and in smaller areas to the west and south of Nomirage and several miles to the northwest of Ocotillo.

Several previous studies have assumed that the Elsinore Fault and the Laguna Salada Fault are connected in the subsurface to the east of Coyote Wells (USGS, 1977; Bookman-Edmonston, 1996). These studies also assume that the subsurface fault zone acts as a hydraulic barrier to groundwater flow and assigned low-permeability properties to the fault zone in numerical groundwater models. The basis for this assumption is a change in the hydraulic gradient (i.e. the slope of the groundwater surface) and a change in the water chemistry across the assumed fault zone. As discussed in more detail below, however, little evidence exists that the fault zone in this case, if present, has properties that differ from the adjacent geologic deposits and that the fault zone acts as a barrier to groundwater flow. More recent field evaluations (Bookman-Edmonston, 2003) indicate that the Elsinore Fault and Laguna Salada faults are not connected as a continuous fault zone through the area east of Coyote Wells.

Hydrology

As discussed above, the Ocotillo/Coyote Wells Groundwater Basin contains appreciable quantities of potable water and, in fact, is the sole source of domestic and

commercial/industrial water supply for the area. Groundwater well locations are shown in Figure 3.3-4, Location of Wells. According to Bookman-Edmonston (1996), the watershed for the Basin consists of approximately 87 square miles of upland area within the Jacumba and Coyote Mountains and approximately 80 square miles of alluvial valley floor. Due to the relatively low precipitation and high evapotranspiration that occurs in the area, virtually all of the groundwater recharge that occurs in the Basin comes from runoff from the mountains.

The depth to groundwater varies depending on the ground surface elevation and the slope of the groundwater surface. In the Yuha Springs area, to the east of Yuha Estates, the water table is only a few feet below ground surface (ft bgs). Just east of Coyote Wells, the depth to groundwater ranges from 10 ft bgs to 25 ft bgs. However, the groundwater in these two areas could be perched. In the Ocotillo area, the depth to groundwater ranges from under 100 ft bgs to over 160 ft bgs. At some locations in Yuha Estates, the depth to groundwater may exceed 200 ft bgs.

A study conducted by the USGS (1964) suggests that recharge to the groundwater basin may consist of 0.5 inches per year of runoff from the mountains and 0.02 inches per year of direct recharge from precipitation that falls on the valley floor. As discussed below, however, the upper few feet of groundwater throughout the Ocotillo/Coyote Wells Groundwater Basin tends to be saline and have an elevated total dissolved solids (TDS) content. The presence of saline water at the water table indicates that there is no appreciable recharge of fresh, meteoric water from rainfall across the valley floor. Thus, the only significant source of recharge occurs at the base of the mountain front, where surface runoff reaches the alluvium.

Prior estimates of Basin recharge have ranged from 536 AF/yr to 7,200 AF/yr. The most recent groundwater modeling effort for the basin (Bookman-Edmonston, 2004), which is based on extensive review and input from the USGS and the preparers of this EIR/EIS, yields a calibrated recharge to the basin of approximately 1,077 AF/yr. The model estimated recharge of 1,077 AF/yr was used to calibrate the groundwater model and is a conservative recharge estimate. The recharge rate of 1,077 AF/yr is lower than most analytical estimates for the Basin. Mark (1987) estimates recharge using four methods and obtained results of 536, 1044, 1650, and 1820 AF/yr. Mark (1987) concluded that 536 AF/yr was unrealistic and used 1650 AF/yr for his work. Skrivan (1977) estimated the recharge at 2600 AF/yr. Huntley (1979) states that recharge is between 870 and 1672 AF/yr. Zipp (1982) suggests that the recharge rate may be as high as 4600 to 7200 AF/yr.

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Bookman-Edmonston (1996) estimates the recharge at 2400 AF/yr. The recharge to the Groundwater Basin may consist of 0.5 inches per year of runoff from the mountains (USGS), which suggests a total recharge of about 2,300 AF/yr. Nonetheless, as stated above, for the modeling efforts undertaken for this Project, a conservative recharge rate of 1,077 AF/yr was used.

The groundwater flow direction trends from the northwest toward the southeast. Figure 3.3-5, Simulated Water-Level Contours, and Figure 3.3-6, Simulated 1995 Contours, are contour maps of the groundwater surface developed by the USGS (1977) and Bookman-Edmonston (1996). In the upper part of the Basin, approximately four to five miles northwest of Ocotillo, the hydraulic gradient is approximately 30 feet per mile or greater, or about 0.006 ft/ft (i.e. $6x10^{-3}$ ft/ft). In the southern part of the Basin, near the international border with Mexico, the hydraulic gradient is only approximately six feet per mile, or about 0.001 ft/ft (i.e. $1x10^{-3}$ ft/ft). To the east of Coyote Wells, in the area of primarily Tertiary marine sediment outcrops, the hydraulic gradient is approximately 40 feet per mile, or about 0.0075 ft/ft (i.e. $7.5x10^{-3}$ ft/ft).

Groundwater Quality

The groundwater quality within the Ocotillo/Coyote Wells Groundwater Basin is variable at different locations. Some areas of the Basin produce waters of relatively good quality and other areas produce highly saline waters. Table 3.3-3A, Summary of Water Chemistry Data, presents a summary of water chemistry data for selected wells throughout the Basin, as reported in the USGS WATSTOR database. The general water quality of the Basin can be evaluated primarily based on the TDS content of the water (Table 3.3-3B, TDS Data Versus Time). The TDS is a measurement of the total amount of salts and other naturally-occurring minerals in the groundwater. The EPA secondary TDS standard for drinking water is 500 milligrams per liter (mg/L), which is equivalent to 500 parts per million (ppm). Thus, groundwater with TDS levels below 500 mg/L is considered high-quality, potable water. In general, water with a TDS level exceeding 1,000 mg/L is not considered potable, although it is not uncommon for local drinking water supplies to exceed this level in some areas of the country.

Figure 3.3-7, Groundwater Quality (TDS Concentrations in mg/L), taken from Bookman-Edmonston (1996), shows the distribution of TDS in the Ocotillo/Coyote Wells Groundwater Basin. The TDS levels range from about 300 mg/L to over 54,000 mg/L. By comparison, sea water has a TDS level of about 30,000 mg/L. In the area of

TABLE 3.3-3A
SUMMARY OF WATER CHEMISTRY DATA
OCOTILLO/COYOTE WELLS GROUNDWATER BASIN

Well		Date	PH	Ca mg/L	Mg mg/L	K mg/L	Na mg/L	Bicarb mg/L	Carb mg/L	Cl mg/L	Fl mg/L	SO4 mg/L	TDS mg/L	Boron ug/L	Fe ug/L
16S/9E	24B1	03/18/97	8.7	3.8	1.4	2.4	430	186	9	390	1.9	270	1220	744	210
	24D1	03/17/97	8.3	14	4.2	3.7	140	117	1	91	1.1	140	475	406	10
	25K2	03/18/97	8	24	5.7	4.6	81	136	0	78	0.9	41	342	211	<1
	25Q1	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	26F1	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	34B1	05/06/97	8.1	8.17	1.5	3.4	93	126	0	73	1.9	21	309	314	100
	35M1	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	36C2	03/19/97	8.1	17	3.1	4.1	99	154	0	80	1.7	33	354	477	<1
	36D2	04/10/90	8.2	15	2.5	2.7	100	NM (115)	NM	82	1.9	27	347	660	100
	36D3	03/19/97	8.3	23	1.3	2.4	120	174	1	77	3.0	20	359	766	<1
	36G4	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	36H1	03/18/97	8.1	16	3.3	4	70	124	0	57	0.8	31	288	190	40
	27R1	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	29H1	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	29L1	03/17/88	8.5	7.9	3.6	3.3	240	NM (100)	NM	240	0.9	66	670	380	30
	29R2	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
16S/10E	30R1	03/19/97	7.8	42	13	5.1	140	150	0	190	0.9	60	582	447	20
	42A8	03/17/97	7.9	32	12	4.3	270	231	0	330	1.6	140	954	1210	<1
17S/10E	11B1	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	11G1	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	11G2	03/10/82	8.1	17	5	5	112	NM (135)	NM	99	0.4	67	392	20	<1
	11G4	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	11H1	No data	-	-	-	-	-	-	-	-	-	-	-	-	-
	11H2	04/04/86	8.1	20	4.5	4.4	75	NM (140)	NM	47	0.5	52	293	170	10
	11H3	03/17/97	8.1	19	4	3.9	82	137	0	53	0.6	58	309	178	<1

Notes:
NM = Not Measured

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TABLE 3.3-3B
TDS DATA VERSUS TIME
OCOTILLO/COYOTE WELLS GROUNDWATER BASIN

	R16S-T9E								R16S-T10E	R17S-T10E				
Date	24B1 (mg/L)	24D1 (mg/L)	25K2 (mg/L)	34B1 (mg/L)	36C2 (mg/L)	36D2 (mg/L)	36D3 (mg/L)	36H1 (mg/L)	29L1 (mg/L)	11G2 (mg/L)	11H2 (mg/L)	11H3 (mg/L)	30R1 (mg/L)	42A8 (mg/L)
06/27/59	-	-	-	-	-		-	-	-	-	-	-	527	-
02/08/61	-	-	-	-	299		-	-	-	-	-	-	-	-
03/05/62	-	-	-	-	325		-	-	-	-	-	-	391	-
11/09/62	-	-	-	-	277		-	-	-	-	-	-	-	-
02/07/63	-	-	-	-	-	-	-	288	-	-	-	-	-	-
12/01/72	-	-	325*	-	-	-	-	-	-	335	-	-	-	-
12/03/74	-	-	320*	-	-	-	-	-	-	-	-	-	-	-
06/26/75	-	-	307	-	-	356	-	-	-	-	-	-	479	-
04/28/77	1270	495	303	-	-	350	-	312	713	363	-	-	473	-
04/27/77	1210	471	304	-	-	358	-	300	690	369	-	-	479	-
03/15/79	1220	473	301	-	-	347	-	303	662	370	-	-	546	-
05/01/80	1240	476	305	-	-	353	-	300	667	377	-	-	579	-
04/30/81	1200	478	325	-	-	356	-	296	639	377	-	-	563	-
03/10/82	1210	487	383	-	-	361	-	294	656	392	-	-	572	-
03/29/83	1230	480	306	-	-	344	-	304	660	-	300	-	545	-
04/18/84	1260	479	-	-	-	375	-	294	665	-	291	-	560	-
04/26/85	1270	475	-	-	-	363	-	305	667	-	297	-	579	-
04/02/86	1340	467	-	-	-	349	-	296	640	-	293	-	609	-
04/03/87	1290	486	-	-	-	354	-	299	651	-	-	313	654	-
03/16/88	1300	486	405	-	-	351	-	301	670	-	-	311	757	-
03/15/89	1290	506	393	-	-	352	-	305	-	-	-	319	766	-
04/10/90	1270	492	337	-	-	347	-	-	-	-	-	-	-	-
05/11/90	-	-	-	-	-	-	-	-	-	-	-	-	801	-
04/04/91	-	-	-	-	367	-	-	299	-	-	-	316	-	-
04/06/92	1230	488	326	-	-	-	372	-	-	-	-	-	-	-
04/14/93	-	-	-	-	368	-	-	295	-	-	-	307	671	-
03/22/94	1240	485	337	-	362	-	364	298	-	-	-	315	664	886
03/29/95	1180	483	335	-	354	-	360	297	-	-	-	312	657	928
03/19/96	1200	464	334	-	352	-	351	290	-	-	-	306	582	906
03/18/97	1220	475	342	-	354	-	359	288	-	-	-	309	582	954
05/06/97	-	-	-	309	-	-	-	-	-	-	-	-	-	-
03/30/98	1190	472	330	309	346	-	350	300	-	-	-	307	574	946
06/28/98	-	-	-	349	-	-	-	-	-	-	-	-	-	-
03/22/99	1180	475	325	-	355	-	360	298	-	-	-	299	572	951
03/27/00	1210	476	313	310	355	-	358	321	-	-	-	307	557	910
03/22/01	1200	470	360	303	-	-	352	295	-	-	-	280	545	926

Notes:

- TDS Corrected for Silica not measured - solids residue number used

predominantly Tertiary marine sediment outcrops east of Coyote Wells, most wells have TDS levels exceeding 1,000 mg/L, although there is at least one location with a TDS level of 544 mg/L. West of the southern projections of the Elsinore Fault, the TDS

levels are generally below 500 mg/L, but there are several wells with TDS concentrations as high as 6,900 mg/L. The distribution of TDS appears to be controlled by two factors:

1. *Well depth*. The uppermost few feet of groundwater tend to have an elevated TDS level. This may be due to the concentration of salts near the water table due to evapotranspiration of groundwater in the past, when the water table was closer to the ground surface; and

2. *Proximity to the Tertiary marine sediments*. The Tertiary sediments were deposited in a marine environment. Thus, the connate water in the pores of the sediments, at the time of deposition, was saline.

The relatively high TDS levels east of Coyote Wells are most likely a result of the greater occurrence of the Tertiary marine sediments. Some of the wells with elevated TDS levels on the west side of the southern projections of the Elsinore Fault are near mapped outcrops of the marine sediments. A 1983 unpublished Masters Thesis from San Diego State University (Jansen, 1983) indicates that a transition in water quality occurs just east of Nomirage and that the available data do not support the theory of a distinct and singular groundwater boundary along a hypothetical connection of the Elsinore and Laguna Salada fault zones. The analysis conducted for this EIR/EIS is consistent with the findings of Jansen (1983).

Where high TDS levels are found, there are also several trace elements that could be of concern in the Ocotillo/Coyote Wells Groundwater Basin. These elements include fluoride, boron, and iron. The state drinking-water standard for fluoride is 1.4 mg/L, based on the local air temperatures. The California Department of Health Services drinking water action level for boron is 1.0 mg/L. Action Levels are advisory levels and not enforceable actions. Levels greater than the action level require a drinking water system to notify the governing body of the local agency in which users of the drinking water reside. The EPA drinking-water standard for iron is 0.05 mg/L. As shown in Table 3.3-3A, there are several wells in the Basin that have fluoride, boron, and/or iron levels that approach or exceed these standards.

Groundwater Use

Groundwater from the Ocotillo/Coyote Wells Groundwater Basin is used for domestic, commercial, industrial, and agricultural purposes for users in the Basin and outside of the Basin. Surface water is not present within the Basin and water is not imported into the Basin.

Domestic water users include the communities of Ocotillo, Coyote Wells, Nomirage, and Yuha Estates. Water is also piped to the community of Painted Gorge. Domestic water supply is provided by a combination of private wells and community water services. Table 3.3-4, Current and Historic Groundwater Use, presents current and historic water use for various users. In the 1996-1997 time period, community domestic water use is estimated to be approximately 110 AF/yr to 115 AF/yr. Changes in water use over time are based on the rate of population growth, as described by Bookman-Edmonston (1996). Current domestic water use is anticipated to be approximately 120 AF/yr to 125 AF/yr.

TABLE 3.3-4
CURRENT AND HISTORIC GROUNDWATER USE
OCOTILLO / COYOTE WELLS GROUNDWATER BASIN

Year	US Gypsum[1]			Estimated Community Use (AF/yr)	Export to Mexico	
	Based on Production (AF/yr)	*Reported to USGS (AF/yr)*	*Measured Extraction Rates*		*Clifford Well (AF/yr)*	*McDougal Well (AF/yr)*
1925	~~153~~	153	-	-	-	-
1926	~~153~~	153	-	-	-	-
1927	~~153~~	153	-	-	-	-
1928	~~153~~	153	-	-	-	-
1929	~~153~~	153	-	-	-	-
1930	~~153~~	153	-	-	-	-
1931	~~153~~	153	-	-	-	-
1932	~~153~~	153	-	-	-	-
1933	~~153~~	153	-	-	-	-
1934	~~153~~	153	-	-	-	-
1935	~~153~~	153	-	-	-	-
1936	~~153~~	153	-	-	-	-
1937	~~153~~	153	-	-	-	-
1938	~~153~~	153	-	-	-	-
1939	~~153~~	153	-	-	-	-
1940	~~153~~	153	-	-	-	-
1941	~~153~~	153	-	-	-	-
1942	~~153~~	153	-	-	-	-
1943	~~153~~	153	-	-	-	-
1944	~~153~~	153	-	-	-	-
1945	~~153~~	153	-	-	-	-
1946	~~153~~	153	-	-	-	-
1947	~~264~~	264	-	-	-	-
1948	~~264~~	264	-	-	-	-
1949	~~264~~	264	-	-	-	-
1950	~~306~~	306	-	-	-	-
1951	~~253~~	253	-	-	-	-
1952	~~255~~	255	-	-	-	-

Table 3.3-4 (Continued)

Year	US Gypsum[1]			Estimated Community Use	Export to Mexico	
	Based on Production	*Reported to USGS*	*Measured Extraction Rates*		*Clifford Well*	*McDougal Well*
1953	~~241~~	241	-	-	-	-
1954	~~278~~	278	-	58.2	-	-
1955	~~295~~	295	-	59.4	-	-
1956	~~274~~	274	-	60.6	-	-
1957	~~272~~	272	-	61.8	-	-
1958	~~353~~	353	-	63.0	-	-
1959	~~375~~	375	-	64.2	-	-
1960	~~395~~	395	-	65.4	-	-
1961	~~348~~	348	-	66.6	-	-
1962	~~422~~	422	-	67.8	-	-
1963	~~442~~	442	-	69.0	-	-
1964	~~480~~	480	-	70.2	-	-
1965	~~415~~	415	-	71.4	-	-
1966	~~451~~	451	-	72.6	-	-
1967	~~511~~	511	-	73.8	-	-
1968	~~552~~	552	-	75.0	-	-
1969	~~560~~	560	-	76.2	-	-
1970	393	668	-	77.4	-	-
1971	338	575	-	78.6	-	-
1972	451	767	-	79.8	-	-
1973	375	638	-	81.0	-	-
1974	406	691	-	82.2	138	-
1975	361	614	-	83.4	211	-
1976	414	-	-	84.6	213	-
1977	473	-	-	85.8	222	-
1978	491	-	-	87.0	137	143
1979	496	-	-	88.2	137	143
1980	469	-	-	89.4	137	143
1981	~~261~~	-	261	90.8	137	143
1982	~~456~~	-	456	92.1	137	143
1983	~~472~~	-	472	93.5	137	-
1984	~~472~~	-	472	94.8	137	-
1985	~~489~~	-	489	96.2	-	-
1986	~~521~~	-	521	97.6	-	-
1987	~~512~~	-	512	98.9	-	-
1988	~~518~~	-	518	100.3	-	-
1989	~~492~~	-	492	101.6	-	-
1990	~~476~~	-	476	103.0	-	-
1991	~~428~~	-	428	104.5	-	-
1992	~~379~~	-	379	106.0	-	-
1993	~~362~~	-	362	107.4	-	-
1994	~~378~~	-	378	108.9	-	-
1995	~~327~~	-	327	110.4	-	-
1996	~~367~~	-	367	112.1	-	-
1997	~~332~~		332			
1998	~~333~~		333			

Notes:

- ~~No data~~ 1. The source for reported water use from 1925 to 1970 is unknown . Water use from 1970 to 1980 was estimated by USG based on wallboard production records for this period. Water since 1981 is based on measured extraction rates.
- USGS Water Resources Investigation (WRI) 77-30 by J. A. Skrivan (1977)

The primary current commercial and industrial use of water is by USG at its wallboard Plant and Quarry. Groundwater is extracted from three wells in the Ocotillo area and piped approximately eight miles to Plaster City. There are several sources of information on the rate of water used by USG. These include a January 5, 1975 letter to the USGS, a January 9, 1997, letter to the Imperial County Public Works Department, a discussion by Bookman-Edmonston (1996), and annual groundwater reports made to the Imperial County Public Works Department by USG. The information from these sources is summarized in Table 3.3-4. The average pumping rate for the five-year period from 1994 through 1998 is 347 AF/yr.

For the period from 1925 through 1975, USG reported water use to the USGS for use in the USGS groundwater modeling study (USGS, 1977). The basis for the pumping rates reported over this time period are uncertain. For the period from 1970 through 1980, USG also provided Bookman-Edmonston estimates of water use based on wallboard production rates (Bookman-Edmonston, 1996, page 6-2). Bookman-Edmonston reports "Estimates of water use provided to USGS are 70 percent greater than estimates of water use based upon production records during 1970 to 1975 (the only years where these records overlap). This difference could not be reconciled." Table 3.3-4 shows the water use reported to the USGS and the values based on production rates for the period from 1970 to 1975. The rates reported to the USGS range from 575 AF/yr to 767 AF/yr. The rates based on production range from 338 AF/yr to 451 AF/yr. The difference between these two data sets is referred to as the "U.S. Gypsum Variance" on Figure 3.3-8, Annual Water Production.

Since 1981, the groundwater extraction rate has reportedly been measured at each well by USG. Thus, these data are considered the most reliable.

Other current commercial and industrial users include several gravel quarries located within the Basin, near Interstate Highway 8 and northwest of Ocotillo. According to the Ocotillo/Nomirage Community Area Plan (ONCAP), the Val Rock and Farmers Land Leveling quarries each use between six to eight AF/yr of water. Bookman-Edmonston (1996, page 6-3) also reports at least three other gravel quarries in the area. Based on these values, annual water use for gravel quarry operations could be as high as 35 AF/yr, or more.

As early as 1958, a well in Ocotillo was used in part to export water to Mexico. Estimates of early water export are not available. In 1979, the Imperial County Planning Department had a study prepared (Copley, 1979) to estimate the amount of water exported to Mexico from the well in Ocotillo (referred to as the Clifford well, or well

16S/9E-25K2), based on the rate of electricity used to pump the well. From 1974 through 1978, the estimated export reportedly ranged from 137 AF/yr to 222 AF/yr. Exports from this well reportedly continued until about 1984.

Water exports also occurred from a well in Yuha Estates (the McDougal well, or well 17S/10E-11G4). Export reportedly began in September 1977 and continued until September 1982. It is estimated that approximately 143 AF/yr were being pumped from the Clifford Well. Table 3.3-4 shows the presumed rate of water export from 1974 through 1984. The information presented in the table assumes that production from the Clifford well continued from 1979 through 1984 at the same rate as that which occurred in 1978 (137 AF/yr). Imperial County attempted to halt or limit the export of water from the basin as early as 1979 due to concerns regarding overdraft and degradation of water quality (Mitchell, 1979; Huntley, 1980). McDougal Water Company ceased groundwater extraction for export in 1984.

1998 Baseline Conditions

Partial implementation of the Proposed Action has resulted in variable but presumably increasing water consumption since approximately 2000, based on the annual groundwater reports provided to the County by USG.

Water level measurements have been made by the USGS at wells in the Basin since at least the 1970s. The USGS has also conducted water-quality sampling at some of these wells over the same time period. The USGS monitoring was established in the 1970s to evaluate suspected overdraft conditions and the threat of water quality degradation in the basin (Montgomery-Watson, 1995, page 2-1). Table 3.3-5, Summary of Well Data, lists the wells with available water level data and water quality data, the dates of the available data, and the well construction information. Well locations are shown on Figure 3.3-4. For some wells, water-quality sampling only occurred in the 1980s or 1990. For other wells, a complete analysis of all significant water-quality parameters (most notably the alkalinity) did not begin until 1997.

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TABLE 3.3-5
SUMMARY OF WELL DATA
OCOTILLO / COYOTE WELLS GROUNDWATER BASIN

Well	Surface Elev (ft amsl)	Total Depth (ft bgs)	Perforated Interval (ft bgs)	Diameter (inches)	Use	Available Water-Level Data	Available Water Chemistry Data	Notes	Lat	Long
Yuha Estates Area										
17S/10E-11B1	376	301		7	Domestic	1975-76, 1978-01		McDougal	324138	1155529
17S/10E-11G1	380	300	160-300	8	Domestic/ Commercial	1976, 1971-72, 75-76, 78-01			324123	1155529
17S/10E-11G2	375	335	235-315	6.6	Domestic	1971, 1975-82, 1984	1972, 1977-82		324123	1155531
17S/10E-11G4	382	199/500		10.75	Unused	1978, 81-01			324119	1155532
17S/10E-11H1	380	329.9		8	Domestic	1968, 1978-91			324114	1155523
17S/10E-11H2	376	344		4		1973, 1978-87	1983-86		324118	1155521
17S/10E-11H3	380	348	202-333	5	Domestic	1987-2001	1987-89, 1991, 1993-2001		324117	1155520
Elsinore-Laguna Salada Fault Area										
16S/9E-24B1	385	129	125-128.5	2	Observation	1976-2001	1977-1990, 1992, 1994-01	USGS	324608	1155935
16S/9E-24D1	385	149	145.5-149	2	Observation	1976-2001	1977-1990, 1992, 1994-01	USGS	324558	1155952
16S/10E-27R1	300	104	102-104	2	Observation	1975-2001		USGS	324430	1155555
16S/10E-29H1	251	39	37-39	2	Observation	1975-2001		USGS	324458	1155703
16S/10E-29L1	280	48	44.5-48	2	Observation	1976-1988	1977-88	USGS	324440	1155743
16S/10E-29R2	258	30	28-30	2	Unused	1975-1989			324428	1155707
Ocotillo-Nomirage Area										
16S/9E-25K2	364	372	132-192, 242-372	10	Commercial	1972, 1975-01	1972-83, 1988-90, 1992, 1994-01	McDougal	324439	1155934
16S/9E-25Q1	372	128		8	Unused	1974, 1976, 1981-92			324426	1155936
16S/9E-35M1	616	535	415-495	8	Domestic	1962, 1975-89			324345	1160100
16S/9E-36D2	433	200	150-200	8	Domestic	1975-2001	1975-90		324422	1160003
16S/9E-36G4	382	560	340-560	10.75	Commercial	1975-2001		Westwind	324401	1155932
16S/9E-36H1 USGS	338	410	157-372	10.75	Industrial	1954, 60, 66, 74, 76-2001	1963, 1977-89, 1991, 1993-01	US Gypsum #5	324407	1155909

The variations in the time period of available and reliable data regarding water production, water levels, and water quality complicate the process of identifying the baseline conditions for the Project. For the pumping by USG, the baseline is considered the average water production for the period form 1994 through 1998, which is 347 AF/yr. Based on the available information, the appropriate baseline for water levels and water quality parameters is defined by the conditions that existed in 1996-1997, since that was the latest pre-Proposed Action data available. Thus, the data from this time period will be used as the point of comparison to evaluate potential future impacts from the proposed increase in groundwater extraction rates for the Project. The baseline data are summarized in Tables 3.3-6A, B and C, Depth to Groundwater and Groundwater Surface Elevation. It is important to note, however, that due to the limited information available for definition of the baseline, the evaluation of potential impacts must rely heavily on all of the available historical data for the Ocotillo/Coyote Wells Groundwater Basin, as reported in these table references.

3.3.3 Plant Water Usage: Thresholds of Significance, Environmental Consequences, and Mitigation Measures

3.3.3.1 Approach

The County and local water users have expressed concerns regarding the conditions and possible degradation of water quality in the Ocotillo/Coyote Wells Groundwater Basin. These concerns were the basis for initiating the USGS water-level measurement and water-quality sampling program, and the reason the 1977 USGS modeling study was conducted. Previous studies of the Ocotillo/Coyote Wells Groundwater Basin have relied primarily on water-balance calculations and numerical modeling to evaluate potential impacts to water quantity and water quality from existing or projected rates of groundwater pumping (e.g. USGS, 1977; Huntley, 1979; Montgomery-Watson, 1995; Bookman-Edmonston, 1996). Based on detailed review of these previous studies, the available data appreciably limits the usefulness of these methods for evaluating impacts to the Basin.

The water-balance calculations and numerical modeling conducted previously were regional in approach. In general, they address the entire Ocotillo/Coyote Wells Groundwater Basin. This regional, basin-wide perspective provides valuable information and insight into the hydrologic conditions and behavior of the groundwater basin on a large-scale basis. This perspective, however, limits the ability of the previous studies to address local impacts or the performance of individual wells or groups of wells. These limitations are acknowledged by Montgomery-Watson (1995) and Bookman-Edmonston (1996).

Table 3.3-6A
Depth to Groundwater and Groundwater Surface Elevation
Ocotillo-Nomirage Area

WELL	16S/9E-25K2			16S/9E-25Q1			16S/9E-36D2			16S/9E-36G4			16S/9E-36H1			16S/9E-35M1		
	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf
DATE	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)
03/21/54													68.5	338	269.5			
05/15/60													85		253			
03/15/62																321	616	295
06/15/64																		
08/15/66													81		257			
04/26/67																		
09/30/71																		
07/25/72																		
08/25/72	83	364	281															
03/15/73																		
12/01/74				104.24	372	267.76							80.07		257.93			
12/30/74				104.3		267.7												
05/12/75																		
05/14/75																		
06/01/75																		
06/28/75	129.5		234.5				157.9	433	275.1	136.47	382	245.53				323.16		292.84
07/27/75																		
12/09/75																		
01/08/76	99.7		264.3	104.38		267.62	158.16		274.84	126.36		255.64	80.21		257.79			
10/14/76	111.57		252.43				158.46		274.54	128.39		253.61				323.08		292.92
11/10/76																		
11/17/76																		
12/10/76																		
04/27/77	104.1		259.9				158.57		274.43	129.43		252.57	81.66		256.34	327.04		288.96
10/04/77	145.62		218.38				158.87		274.13	126.14		255.86	82.65		255.35	325.38		290.62
04/26/78	98.05		265.95				158.79		274.21	124.7		257.3	80.89		257.11			
05/24/78																324.01		291.99
06/19/78																		
06/24/78																		
06/25/78																		
07/05/78																		
07/06/78																		
08/02/78																		
10/04/78	144.07		219.93				159.15		273.85	128.15		253.85	83.21		254.79	323.66		292.34
03/15/79	101.47		262.53															
03/16/79																		
03/22/79							159.1		273.9	126.68		255.32	91.82		256.18	325.26		290.74
09/13/79	105.8		258.2				159.35		273.65	126.05		255.95	83.26		254.74	323.8		292.2
03/12/80	93.22		270.78										82.01		255.99			
03/20/80	144.85		219.15															
04/18/80	147.3		216.7															
05/02/80	93.93		270.07				159.3		273.7	124.1		257.9				323.84		292.16
09/25/80	145.3		218.7				159.58		273.42	126.53		255.47	82.67		255.33	323.89		292.11
04/29/81	95.04		268.96				159.73		273.27	125.23		256.77	81.25		256.75	324.11		291.89
11/06/81	95.56		268.44	106.89		265.11	160.1		272.9	124.24		257.76	82.72		255.28	323.98		292.02

03/13/82	95.11		268.89	106.41		265.59	160.1		272.9	123.66		258.34	81.65		256.35	324.17		291.83
10/06/82										134.95		247.05	82.89		255.11			
10/07/82	96.84		267.16	107.2		264.8	160.36		272.64	125.77		256.23				324.41		291.59
04/01/83	95.1		268.9	105.85		266.15	160.04		272.96	124.66		257.34	81.02		256.98	324.43		291.57
09/22/83																		
10/26/83	95.9		268.1	107.18		264.82	160.49		272.51	123.3		258.7				324.69		291.31
10/27/83	96.22		267.78										82.51		255.49			
04/11/84										124.95		257.05	82.32		255.68			
04/12/84	94.04		269.96	106.24		265.76	160.32		272.68	123.71		258.29				324.48		291.52
10/24/84	93.48		270.52	106.08		265.92	160.31		272.69	126.35		255.65	82.78		255.22	324.56		291.44
04/25/85	93.73		270.27	106.14		265.86	160.23		272.77	124.86		257.14	82.62		255.38	325.77		290.23
10/31/85	93.86		270.14	106.56		265.44	160.56		272.44	122.63		259.37	84.08		253.92	324.87		291.13
03/27/86	93.63		270.37	105.92		266.08	160.37		272.63	122.14		259.86	83.29		254.71			
04/03/86	93.54		270.46													325.81		290.19
10/23/86	94.24		269.76	106.72		265.28	160.68		272.32	122.61		259.39	84.19		253.81	329.06		286.94
10/24/86	94.03		269.97															
04/01/87	93.78		270.22	106.04		265.96	160.5		272.5	122.4		259.6	83.42		254.58	325.27		290.73
10/23/87	94.06		269.94	106.73		265.27	160.78		272.22	123.39		258.61	84.06		253.94	325.13		290.87
03/15/88	93.94		270.06	106.25		265.75	160.7		272.3	122.65		259.35	83.84		254.16	326.21		289.79
10/19/88	94.4		269.6	107.17		264.83	160.92		272.08				84.65		253.35	325.16		290.84
03/17/89	94.23		269.77	106.71		265.29	160.94		272.06	123.1		258.9	83.67		254.33	326.01		289.99
10/31/89	94.47		269.53	107.33		264.67	161.15		271.85	125.9		256.1	84.2		253.8			
03/20/90	94.46		269.54	107.18		264.82	161.19		271.81	126.93		255.07	84.04		253.96			
10/24/90	94.59		269.41	107.51		264.49	161.3		271.7	129.04		252.96	84.07		253.93			
04/02/91	94.47		269.53	107.11		264.89	161.29		271.71	128.39		253.61	83.45		254.55			
10/07/91	94.57		269.43	107.27		264.73	161.36		271.64	131.26		250.74	83.75		254.25			
04/07/92	94.46		269.54				161.35		271.65	127.85		254.15	83.96		254.04			
10/28/92	95.07		268.93				161.57		271.43	127.62		254.38	84.9		253.1			
04/14/93							161.56		271.44	126.52		255.48	84.32		253.68			
10/21/93	95.08		268.92				161.74		271.26	126.05		255.95						
03/14/94							161.71		271.29	125.11		256.89						
03/24/94	94.85		269.15										83.67		254.33			
10/27/94							161.84		271.16	126.11		255.89	84.69		253.31			
03/30/95	94.32		269.68										82.02		255.98			
05/24/95							162.02		270.98	138.36		243.64						
07/31/95																		
10/17/95							161.85		271.15	123.97		258.03	82.6		255.4			
03/20/96	94.61		269.39				161.75		271.25	128.5		254.5	82.11		255.89			
10/16/96							162.02		270.98	129.87		252.13						
03/24/97	96.59		267.41				161.9		271.1	125.38		256.62	82.39		255.61			
10/20/97							162.05		270.95	125.96		256.04	82.81		255.19			
03/23/98							162.06		270.94	125.2		256.8						
03/30/98																		
10/13/98							162.09		270.91	126.97		255.03	83.36		254.64			
03/23/99							162.24		270.76	128.16		253.84	83.04		254.96			
10/25/99							162.33		270.67	127.93		254.07	83.67		254.33			
03/29/00							162.54		270.46	132.6		249.4	84.24		253.76			
10/23/00							162.57		270.43	128.7		253.3	85.13		252.87			
03/26/01							162.87		270.13				85.54		252.46			

DTW = Depth to water
Surf El = Surface elevation to well casing
GW Surf = Groundwater surface elevation

ft bgs = feet below ground surface
ft amsl = feet above mean sea level

Table 3.3.6B
Depth to Groundwater and Groundwater Surface Elevation
Yuha Estates Area
Ocotillo/Coyote Wells Groundwater Basin

WELL	17S/10E-11H1			17S/10E-11H2			17S/10E-11H3			17S/10E-11G1			17S/10E-11G2			17S/10E-11G4			17S/10E-11B1		
	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf
DATE	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)
06/15/64	158.27	380	221.73																		
04/26/67										170	380	210									
09/30/71										150		230	158	375	217						
07/25/72										164		216									
03/15/73				165	376	211															
06/01/75													164		211						
06/28/75													164.25		210.75				156.8	376	219.2
07/27/75										164.94		215.06									
01/08/76										165.11		214.89							154.8		221.2
10/14/76													164.04		210.96						
04/27/77													163.68		211.32						
10/04/77													164.45		210.55						
05/24/78				179.02		196.98							164.91		210.09						
06/19/78	226.46		153.54										164.98		210.02						
06/24/78	195.36		184.64	182.7		193.3													157.9		218.1
06/25/78	164.2		215.8	169.4		206.6							164.8		210.2						
07/05/78										195.56		184.44	165.09		209.91	193.18	382	188.82			
07/06/78										195.58		184.42	165.09		209.91	193.12		188.88			
08/02/78																193.35		188.65			
10/04/78													165.58		209.42						
03/15/79	164.29		215.71	171.16		204.84				204.38		175.62	165.58		209.42				158.27		217.73
03/16/79	164.27		215.73																		
03/22/79	164.24		215.76	170.52		205.48							165.6		209.4				158.25		217.75
09/13/79	166.05		213.95	176.29		199.71				216.86		163.14	166.84		208.16				159.53		216.47
03/12/80	166.55		213.45							222.82		157.18									
03/20/80	166.59		213.41							218.29		161.71									
04/18/80	166.81		213.19							213.7		166.3									
05/02/80	167.65		212.35	176.6		199.4				216.6		163.4	167.64		207.36				159.96		216.04
09/25/80	170.46		209.54	180.36		195.64				225.64		154.36	168.93		206.07				161.06		214.94
04/29/81	170.69		209.31	182.35		193.65				226.73		153.27	170.25		204.75	199.37		182.63	161.47		214.53
11/06/81	173.35		206.65	184.43		191.57				232.8		147.2	172.38		202.62				162.47		213.53
03/13/82	177		203	185.44		190.56				228.15		151.85	172.92		202.08				162.47		213.53
10/07/82	180.83		199.17	189.87		186.13				221.2		158.8	178.03		196.97	206.21		175.79	163.03		212.97
04/01/83	174.12		205.88	185.95		190.05				205.99		174.01				203.14		178.86	163.03		212.97
10/26/83	174.33		205.67	187.34		188.66				195.86		184.14				199.31		182.69	163.37		212.63
04/12/84	172.39		207.61	186.39		189.61				191.17		188.83				196.28		185.72	163.34		212.66
10/24/84	171.79		208.21	186.75		189.25				187.63		192.37				193.25		188.75	163.49		212.51
04/25/85	171.87		208.13	186.77		189.23										191.9		190.1	163.1		212.9
10/31/85	171.69		208.31	190.27		185.73				185.31		194.69				189.71		192.29	163.29		212.71
04/03/86	171.37		208.63	185.06		190.94				182.92		197.08				188.26		193.74	162.99		213.01
10/23/86	171.33		208.67	187.41		188.59				182.68		197.32				187.22		194.78	163.3		212.7

Table 3.3.6B (Continued)

WELL	17S/10E-11H1			17S/10E-11H2			17S/10E-11H3			17S/10E-11G1			17S/10E-11G2			17S/10E-11G4			17S/10E-11B1		
	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf	DTW	Surf El	GW Surf
DATE	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)	(ft bgs)	(ft amsl)	(ft amsl)
04/01/87	171.01		208.99							182.73		197.27				186.69		195.31	163.14		212.86
10/23/87	173.39		206.61				179.29	380	200.71	182.48		197.52				185.92		196.08	163.82		212.18
03/15/88	172.18		207.82				178.81		201.19	181.34		198.66				185.21		196.79	163.29		212.71
10/19/88	171.02		208.98				180.11		199.89	180.5		199.5				184.26		197.74	164.05		211.95
03/17/89	170.45		209.55				177.99		202.01	180.95		199.05				183.91		198.09	163.79		212.21
10/31/89	169.84		210.16				179.08		200.92	181.22		198.78				183.47		198.53	163.84		212.16
03/20/90	169.55		210.45				177.73		202.27	179.61		200.39				182.79		199.21	163.36		212.64
10/24/90							178.57		201.43	179.45		200.55				182.14		199.86	163.72		212.28
04/02/91	172.44		207.56				176.64		203.36	178.21		201.79				181.45		200.55	163.29		212.71
10/07/91	170.39		209.61							177.59		202.41				180.7		201.3	163.72		212.28
04/07/92							175.57		204.43	176.73		203.27				179.76		202.24	163.13		212.87
10/28/92							176.84		203.16	178.03		201.97				180.08		201.92	163.65		212.35
04/14/93							175.47		204.53	176.97		203.03				179.46		202.54	163.21		212.79
10/21/93							176.35		203.65	178.89		201.11				180.1		201.9	163.87		212.13
03/24/94										178.02		201.98				179.56		202.44	163.34		212.66
10/27/94							176.36		203.64							179.58		202.42	163.56		212.44
03/30/95							175.64		204.36							178.97		203.03	163.18		212.82
07/31/95										177.16		202.84									
10/17/95							178.32		201.68	177.15		202.85				178.46		203.54			
03/20/96										176.94		203.06				178.12		203.88	163.2		212.8
10/16/96							178.53		201.47	177.52		202.48				178		204	163.62		212.38
03/24/97							175.69		204.31	176.78		203.22				177.74		204.26	163		213
10/20/97							176.69		203.31	176.35		203.65				177.34		204.66	163.05		212.95
03/23/98							175.29		204.71	175.42		204.58				176.82		205.18			
10/13/98							175.43		204.57	175.5		204.5				176.3		205.7			
03.23/99							176		204	174.97		205.03				176.06		205.94	162.51		213.49
10/25/99							176.39		203.61	174.59		205.41				175.66		206.34	162.53		213.47
03/29/00							175.89		204.11	174.14		205.86				175.34		206.66	163.33		213.67
10/23/00							176.53		203.47	174.03		205.97				174.94		207.06	162.47		213.53
03/26/01							174.26		205.74	173.38		206.62				174.48		207.52	162.02		213.98

DTW = Depth to water ft bgs = feet below ground surface
Surf El = Surface elevation to well casing ft amsl = feet above mean sea level
GW Surf = Groundwater surface elevation

Table 3.3.6C
Depth to Groundwater and Groundwater Surface Elevation
Area East of Coyote Wells
Ocotillo/Coyote Wells Groundwater Basin

WELL	16S/9E-24B1			16S/9E-24D1			16S/10E-29H1			16S/10E-29L1			16S/10E-29R2		
DATE	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)
03/15/62															
06/15/64															
04/26/67															
09/30/71															
07/25/72															
03/15/73															
05/12/75							22.2	251	228.8				9.74	258	248.26
05/14/75															
06/01/75															
06/28/75							22.03		228.97				9.95		248.05
07/27/75															
12/09/75							22.02		228.98						
01/08/76													9.95		248.05
10/14/76							22.04		228.96				9.94		248.06
11/10/76	105.35	385	279.65							23.32	280	256.68			
11/17/76	105.34		279.66							23.34		256.66			
12/10/76				131	385	254									
04/27/77	105.4		279.6	103.86			21.9		229.1	23.64		256.36	10.32		247.68
10/04/77	105.44		279.56	103.93			21.76		229.24	23.98		256.02	10.95		247.05
05/24/78	105.49		279.51	104.07			21.53		229.47	24.08		255.92	10.47		247.53
06/19/78															
06/24/78															
06/25/78															
07/05/78															
07/06/78															
08/02/78															
10/04/78	105.59		279.41	104.16		280.84	21.66		229.34	24.59		255.41	11.75		246.25
03/15/79	105.62		279.38	104.2		280.8	21.55		229.45	24.37		255.63			
03/16/79															
03/22/79													11.07		246.93
09/13/79	105.4		279.6	104.28		280.72	21.96		229.04	25.07		254.93	12.61		245.39
03/12/80															
03/20/80															
04/18/80															
05/02/80	105.74		279.26	104.4		280.6	22		229	25.27		254.73	12.49		245.51

Table 3.3.6C (Continued)

WELL	16S/9E-24B1			16S/9E-24D1			16S/10E-29H1			16S/10E-29L1			16S/10E-29R2		
DATE	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)	DTW (ft bgs)	Surf El (ft amsl)	GW Surf (ft amsl)
09/25/80	105.78		279.22	104.48		280.52	22.24		228.76	25.8		254.2	13.49		244.51
04/29/81	105.84		279.16	104.58		280.42	22.34		228.66	26.03		253.97	13.67		244.33
11/06/81	105.9		279.1	104.71		280.29	22.53		228.47	26.63		253.37	14.43		243.57
03/13/82	105.95		279.05	104.77		280.23	22.55		228.45	26.5		253.5	14.13		243.87
10/07/82	106.03		278.97	104.89		280.11	22.74		228.26	27.05		252.95	14.92		243.08
04/01/83	106.1		278.9	104.97		280.03				26.29		253.71	13.89		244.11
09/22/83										27.25		252.75			
10/26/83	106.16		278.84	105.1		279.9				27.33		252.67	15.65		242.35
04/12/84	106.22		278.78	105.2		279.8				27.49		252.51	15.66		242.34
10/24/84	106.29		278.71	105.27		279.73	22.99		228.01	27.94		252.06	16.24		241.76

Due to the regional perspective of the previous water balance calculations and numerical models, there is a concern that these previous studies are not focused enough to predict the potential local impacts of future increases in pumping with sufficient detail for this evaluation. Therefore, a different set of analyses have been performed for this Project. For this evaluation, the analyses selected include analytical calculations of Basin conditions and comparative analysis of water level and groundwater chemistry data. In addition, the numerical modeling recently conducted (Bookman-Edmonston, 2004) was intended to address issues and concerns specific to the Proposed Action, and received significant input and review from the USGS and the preparers of this EIR/EIS. These evaluations are presented below.

3.3.3.2 Basin Conditions

The hydrologic conditions within the Ocotillo/Coyote Wells Groundwater Basin can be defined using standard hydrologic equations, such as Darcy's Law. Darcy's Law states that:

$$Q = K \times I \times A,$$

where Q is the rate of groundwater discharge (units of volume per time, such as AF/yr), K is the hydraulic conductivity of the aquifer (units of length per time, such as feet per day), I is the hydraulic gradient, or slope of the groundwater surface (units of length per length, such as foot per foot), and A is the cross-sectional area of the aquifer across which the groundwater discharge, Q, is perpendicularly occurring (units of area, such as square feet).

In some instances, it is easier to estimate the transmissivity of the aquifer, T, as opposed to the hydraulic conductivity, K. The transmissivity is simply the hydraulic conductivity, K, multiplied by the aquifer thickness, b. The cross sectional area of the aquifer, A, can also be defined as the aquifer thickness, b, multiplied by the length of the cross-sectional area across the ground surface, L (if the cross-section is assumed as rectangular). With these terms, Darcy's Law may also be rewritten as:

$$Q = T \times I \times L.$$

The groundwater flow rate, or velocity, q (units of distance per time, such as feet per year) is also defined as:

$$q = (K \times I)/n,$$

where n is the effective porosity of the aquifer and the other terms are as defined above.

Figures 3.3-5 and 3.3-6 present groundwater contours of the Basin as interpreted by the USGS (1977) and Bookman-Edmonston (1996) for the years 1975 and 1995, respectively. These groundwater contours reflect the simulated output of two previous models. Groundwater contours derived from observed water levels are usually used to compare changes in the basin and estimate flow velocities and volumes. However de to the lack of observed data, both over space and time, preparing estimates based solely on observed data is not possible. The analyses of water levels, velocities, and flow in this section are included as an illustrative discussion of the groundwater system and the uncertainty of the simulated water levels and hydrologic properties. Comparison of these two figures indicates that the groundwater contours have been relatively consistent in the areas of the Basin that are more than a few miles from Ocotillo, Nomirage, and Yuha Estates. Thus, the hydraulic gradients that can be calculated from these figures can be used in the evaluation of Basin conditions.

~~Three lines extending across different parts of the Basin are indicated on Figures 3.3-5 and 3.3-6. These lines are drawn parallel to the groundwater contours. The first line is located in the upgradient part of the Basin, approximately three miles northeast of Ocotillo. A small embayment exists at this location where the bedrock of the Jacumba Mountains extends northward into the Basin, causing a narrowing of the alluvial aquifer. The second line exists in the downgradient part of the Basin located to the west of the Laguna Salada fault, north of the international border with Mexico. The third line extends across the downgradient part of the Basin that is present to the east of Coyote Wells and the Laguna Salada fault zone.~~

In the upgradient area of the aquifer, as indicated on Figures 3.3-5 and 3.3-6, the hydraulic gradient is approximately 30 feet per mile. The length across the alluvial basin is approximately 3.25 miles. For the recent numerical modeling (Bookman-Edmonston, 2004), the alluvial material in the basin was determined to have an average hydraulic conductivity of 15 ft/day, resulting in a transmissivity of about 1,000 ft^2/day. The effective porosity in the alluvium is uncertain. Estimates range from 8.3 percent to 30 percent. A value of 10 percent was used in the model. For this analysis the upper range (30 percent) was used. The effective porosity can be estimated at approximately 30 percent. Using these values and the equations presented above, the groundwater discharge, or amount of groundwater flowing through the upgradient area of the Basin, is approximately 800 AF/yr. The average groundwater velocity, or flow rate, is about 100 ft/yr, meaning that it takes over 50 years for the groundwater to flow one mile. It should be noted that the estimate of velocity is inversely proportional to the estimate effective porosity. Based on the range of possible porosity values, velocity could range from 100 to 375 ft/yr, or 50 years per mile and 14 years per mile respectively.

Figure 2 of the USGS (1977) model report and Figure 7-1 of the Bookman-Edmonston (1996) report each present a map of the mean annual precipitation across the Jacumba Mountains, Coyote Mountains, and the Ocotillo/Coyote Wells Groundwater Basin.

Based on the distribution of rainfall in the mountains, and the extent of the mountain front along the edge of the Basin, it is estimated that at least two-thirds of the groundwater recharge enters the Basin in the upgradient area of the aquifer. Thus, if the groundwater discharge from the upgradient area of the aquifer is approximately 800 AF/yr, the total recharge to the Basin may be as high as 1,200 AF/yr. As discussed in Section 3.3.1, the recharge to the Basin was calibrated to be approximately 1,077 AF/yr. These two estimates of recharge to the Basin differ by only about 10 percent. Thus, the average annual recharge to the Basin can be estimated to be between about 1,100 AF/yr and 1,200 AF/yr, given that the two estimates were calculated using completely different approaches (groundwater discharge versus model calibration) but yield similar results. It should be noted, however, that it takes several decades for the recharge that occurs along the mountain front to reach the communities of Ocotillo, Nomirage, and Yuha Estates. Although these estimates were derived from different approaches some of the same data was relied upon. The hydrologic conductivity of the area was the same used in the model. While the current model relied on some of the previous work for these models, the new model simulates a different conceptual model. So the gradients derived from previous model outputs, used in this illustrative analysis, provide a reasonable check on the model's calibrated recharge results.

In the downgradient area of the aquifer near the international border with Mexico, as indicated on Figures 3.3-5 and 3.3-6, the hydraulic gradient is approximately six feet per mile. The length across the alluvial basin is approximately 5.25 miles. Using the model-calibrated hydraulic conductivity of 15 ft/day, the transmissivity of the aquifer in this area of the Basin is about 2,100 ft^2/day. The effective porosity can be estimated at approximately 30 percent. Using these values and the equations presented above, the groundwater discharge, or amount of groundwater flowing through the downgradient area of the Basin and across the international border, is approximately 550 AF/yr. The average groundwater velocity, or flow rate, is about 20 ft/yr, meaning that it will take over 250 years for the groundwater to flow one mile. Using the lower range of porosity estimates (8.3 percent), the velocity would be 75 ft/year, or traveling 1 mile in 71 years.

In the downgradient area of the aquifer east of Coyote Wells and the Laguna Salada fault zone, as indicated on Figures 3.3-5 and 3.3-6, the hydraulic gradient is approximately 40 feet per mile. The length across the alluvial basin is approximately five miles. For the recent numerical modeling (Bookman-Edmonston, 2004), the Tertiary marine sediments in this area of the Basin were determined to have an average hydraulic conductivity of one ft/day, resulting in a transmissivity of about 500 ft^2/day. The effective porosity can be estimated at approximately 30 percent. Using these values and the equations presented above, the groundwater discharge, or amount of groundwater flowing through the downgradient area of the Basin to the east of the Elsinore-Laguna Salada fault zone, is approximately 840 AF/yr. The average groundwater velocity, or flow rate, is about 10 ft/yr, meaning that it will take over 500

years for the groundwater to flow one mile. However, as discussed in the groundwater study (Appendix B2), the alluvium is thin to non existence and the lower permeability Palm Springs Formation is close to ground surface. In previous groundwater studies this area was described as a fault zone, recent work as indicated the contact to these two geologic formations is a more reasonable conceptualization. This simple approach using a single hydrologic conductivity may not accurately capture the geologic complexities.

Based on the above calculations, the total groundwater discharge from the Basin is estimated to be approximately 1,300 AF/yr. This value is less than the total groundwater underflow of 1900 AF/yr to 1999 AF/yr estimated by the USGS (1977), Huntley (1979), and Bookman-Edmonston (1996) by approximately 33 percent, but is greater than the 990 AF/yr estimated by the recent groundwater model (Bookman-Edmonston, 2004) by approximately 31 percent. The numerical model used to evaluate this project, documented in Appendix B2, simulated an outflow of 515 AFY across the U.S./Mexico border. The illustrative analysis described above estimated outflow across the border at 550 AFY. These same previous studies indicate that historic natural evapotranspiration rates from the Basin in areas of shallow groundwater may have ranged from 250 AF/yr to 400 AF/yr. Thus, the total rate of natural groundwater loss from the Basin, exclusive of groundwater pumping for domestic, commercial, industrial, or agricultural purposes could have been between 1,550 AF/yr to 1,700 AF/yr.

~~Comparing these estimates of loss with the total recharge estimate of 1,100 AF/yr to 1,200 AF/yr indicates that the rate of groundwater outflow from the Basin may have been greater than the rate of recharge prior to the initiation of pumping. Similar conditions have been observed in other basins in Imperial County (see, for example, Section 3.3.3, below) due to long-term climatic changes. Specifically, if climatic conditions were much wetter several centuries or even millennia ago, it would take thousands of years for the recharge from the prior wetter periods to drain from the basin given the very slow rates of groundwater movement cited above. The rate of natural groundwater outflow will exceed the rate of recharge until the Basin drains to the point where the hydraulic gradients decrease and the recharge and outflow are once again in equilibrium. Until this equilibrium point is reached, water level elevations throughout much of the Ocotillo/Coyote Wells Groundwater Basin will decrease, even in the absence of pumping.~~

~~In many groundwater basins, removal of groundwater, for example by pumping, can cause an increase in the rate of recharge. This can occur by increasing the hydraulic gradient in areas where inflow occurs from an adjacent groundwater basin. It can also occur by lowering the water table near surface water bodies, resulting in a greater rate of percolation. In the Ocotillo/Coyote Wells Groundwater Basin, however, the only source of recharge is seasonal rainfall runoff from the adjacent mountains. The rate of recharge will fluctuate on an annual basis based on variations in the amount of rainfall. The average rate of recharge, however, is expected to remain constant unless there are major long-term shifts in climatic conditions. The long groundwater travel times across the basin (centuries to millennia) will tend to even out short-term (e.g. annual) fluctuations in rainfall amounts.~~

~~In the Ocotillo/Coyote Wells Groundwater Basin, pumping may reduce the rate of groundwater loss to some degree. For example, a drop in the water level to the east of Coyote Wells is believed to have reduced the rate of evapotranspiration by several hundred AF/yr (USGS, 1977). Pumping has also caused the hydraulic gradient near the international border with Mexico to flatten. The flatter hydraulic gradient reduces the rate of groundwater discharge. If the rate of pumping occurring in the Basin is approximately equal to the reduction in discharge, it is possible that the additional pumping will not accelerate the natural rate of water level decline, even though an increase in extraction rates occurs. This possibility is discussed further below.~~

~~To the east of Coyote Wells and the Laguna Salada fault, the hydrogeology of the Ocotillo/Coyote Wells Groundwater Basin is dominated by the occurrence of the Tertiary marine sediments. As discussed above, these sediments have a transmissivity that is less than one tenth that of the alluvial aquifer, which is present primarily to the west of the fault zone. The hydraulic gradient to the east of the fault zone is about five times greater (or steeper) than the hydraulic gradient in the Ocotillo area. Several previous studies attribute this difference in hydraulic gradient to some sort of barrier that may exist at the location of a postulated subsurface connection between the Elsinore fault and the Laguna Salada fault.~~

~~As part of this evaluation, specific evidence that the fault zone has its own material properties, and acts as a barrier, could not be identified. The change in gradient can be attributed solely to the difference in material types, and their respective properties (e.g., transmissivity), on either side of the fault. Furthermore, the magnitude of the gradient to the east of the fault is not unprecedented within the Basin. In the upgradient area of the Basin, as discussed above, the narrowing of the Basin results in a hydraulic gradient that is almost the same as it is to the east of Coyote Wells in the Tertiary marine sediments. Thus, variations in the Basin are most likely a result of features that cause a restriction in flow. These features can be a narrowing of the Basin, acting like a bottleneck, or a change of material types to one that has a lower transmissivity. In accordance with Darcy's Law, as described above, if the length across the Basin decreases and/or the transmissivity decreases, then the hydraulic gradient must increase to maintain discharge. This issue is discussed further below.~~

Initial evaluations conducted for this EIR/EIS prompted USG's consultant, Bookman-Edmonston, to conduct additional literature research and field observations. Bookman-Edmonston (2003, p. 2) concluded that "modeling the eastern boundary (of the alluvial material) as a less permeable linear zone representing the extension of the Elsinore fault to the Laguna Salada fault is clearly inconsistent with current geologic interpretation of the basin." As a result of this additional study (Bookman-Edmonston, 2003), the revised numerical model shows the transition from alluvial material to Tertiary marine sediments east of Coyote Wells as a simple upward fold of the underlying bedrock and Tertiary sediments. This folding that has removed the alluvial material and brought the Tertiary sediments to the surface. The interpretation of conditions east of Coyote Wells in the revised numerical model is significantly different than the conditions assumed in previous modeling efforts (USGS, 1977; Bookman-Edmonston, 1996).

3.3.3.3 Water Level Data

As discussed above, the USGS has been monitoring water levels in a number of wells within the Ocotillo/Coyote Wells Groundwater Basin since the early 1970s due to concerns regarding potential overdraft conditions and degradation of water quality. The data collected by the USGS is included in Appendix B and summarized in Tables 3.3-6A-C for selected wells within the Basin. For this analysis, water level data from three separate areas of the basin have been evaluated. These areas include Ocotillo/Nomirage, Yuha Estates, and the area east of Coyote Wells.

Ocotillo/Nomirage

The majority of the groundwater pumping in the Ocotillo/Coyote Wells Groundwater Basin occurs in the Ocotillo/Nomirage area. Figure 3.3-9, Ocotillo/Nomirage Area Hydrograph, is a hydrograph of the water level data from the Ocotillo/Nomirage area. A hydrograph shows the water level data as it changes over time. The wells within the Ocotillo/Nomirage area for which adequate data exist include:

- 16S/9E-25K2 (Clifford well/McDougal Water Co.)
- 16S/9E-25Q1
- 16S/9E-35M1
- 16S/9E-36D2
- 16S/9E-36G4 (Westwind)
- 16S/9E-36H1 (U.S. Gypsum No. 5)

Information regarding well construction and sampling history are presented in Table 3.3-5.

Well 16S/9E-25K2 was pumped for export of water to Mexico from 1974 to 1984. As indicated in Table 3.3-4 and in Figure 3.3-8, Annual Water Production, water production from this well increased from 138 AF/yr in 1974 to 222 AF/yr in 1977, and then is presumed to have decreased to 137 AF/y from 1978 to 1984. Actual production data after 1978, however, is uncertain. The pumping of this well is readily apparent on the hydrograph (Figure 3.3-9). Pumping of this well caused drops in the water level of 50 feet to 60 feet between 1975 and 1981. From 1984 to 1996, water levels in this well have returned to pre-pumping levels.

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Wells 16S/9E-35M1 and 16S/9E-36G4 serve one or more domestic users. The exact pumping rate for each of these wells is unknown. The hydrograph in Figure 3.3-9, however, shows occasional short-term drops in the water level in both of these wells that are most likely indicative of the effects of pumping these wells. The short-term drops in water level are on the order of 10 feet in both wells.

The hydrograph for USG well No. 5 (16S/9E-36H1) shows only minor long-term fluctuations of only a few feet from 1976 through 2001. The total pumping from all three USG wells during this time period varied from about 260 AF/yr to over 500 AF/yr, as shown in Table 3.3-4 and on Figure 3.3-8. The slight fluctuations shown on the hydrograph for USG well No. 5 generally correlate with changes in annual production rate. It is not known how the total water production is distributed among the three USG wells, and it is not possible to evaluate the overall impact of pumping by USG based on the hydrograph for well No. 5.

The hydrographs for all of the wells shown in Figure 3.3-9 indicates that the static (non-pumping) water levels in the Ocotillo/Nomirage area have steadily declined over the last 30 years. The total decline is about five to six feet, for an average rate of water level decline of one foot every five years. The hydrographs for several of the wells, but most notably 16S/9E-36D2, indicate that the decline has been very consistent over this time period. This is somewhat surprising because the rate of rainfall in the basin from 1976 to 1993 was generally above average (see Figure 3.3-2) and the rate of water production from the basin from 1979 to 1996 decreased by almost 45 percent (see Figure 3.3-8).

Yuha Estates

Yuha Estates is located approximately three to four miles southeast and downgradient of the Ocotillo/Nomirage area. The recent literature research and field observations conducted by Bookman-Edmonston (2003) indicate that the geologic conditions in the Yuha Estates area are markedly different than those in the Ocotillo/Nomirage area. The Yuha Estates area sits on both a topographic and structural ridge trending northeast-southwest across the Ocotillo/Coyote Wells Groundwater Basin. The structural ridge is formed by a concave-down curvature of the sedimentary beds referred to as an anticline. The combination of the topographic and structural ridges means that the Tertiary sediments occur at a much higher elevation in the Yuha Estates area than in the Ocotillo/Nomirage area. Bookman-Edmonston (2003) indicates that water from some of the deeper wells in the Yuha Estates area comes, at least partially, from the Tertiary sediments underlying the alluvial material.

Most of the pumping in Yuha Estates is for local domestic use. From 1978 to 1982, water was pumped from one well (17S/10E-11G1) for export to Mexico at a reported rate of approximately 143 AF/yr. Figure 3.3-10, Yuha Estates Area Hydrograph, is a hydrograph of the water level data from the Yuha Estates area. A hydrograph shows the water level data as it changes over time. The wells within the Yuha Estates area for which adequate data exists include:

- 17S/10E-11H1
- 17S/10E-11H2
- 17S/10E-11H3
- 17S/10E-11G1 (McDougal Water Co.)
- 17S/10E-11G2
- 17S/10E-11G4
- 17S/10E-11B1

Information regarding well construction and sampling history are presented in Table 3.3-5.

The hydrograph (Figure 3.3-10) for the Yuha Estates area is dominated by the pumping of well 17S/10E-11G1. Pumping of this well at 143 AF/yr from 1978 to 1982 resulted in a drawdown, or decline in water levels, of almost 70 feet. Drawdown was also observed in all of the other wells in the Yuha Estates area. The magnitude of drawdown in other wells ranged from approximately 8 feet to over 60 feet.

Pumping of well 17S/10E-11G1 ceased 20 years ago. Water levels, however, have still not recovered to their pre-pumping levels. The water levels in the Yuha Estates area are approximately five to 10 feet below the levels recorded in the early 1970s. As shown in Figure 3.3-10, the rate of recharge has been very slow. The water levels in several of the wells appear to have stabilized and suggest that Yuha Estates is experiencing the same long-term decline in water levels as that observed in the Ocotillo/Nomirage area. As discussed above, this decline has occurred despite periods of above-average precipitation and a significant reduction in the rate of pumping over the same time period.

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Area East of Coyote Wells

There are several wells that have been monitored on a regular basis in the area east of Coyote Wells. Figure 3.3-11, Area East of Coyote Wells Hydro-Graph, is a hydrograph of the wells in the area near the transition from alluvial material to Tertiary ~~marine~~ sediment outcrops. Wells located west of this transition include:

- 16S/9E-24D1
- 16S/10E-29L1
- 16S/10E-29R2

Wells located east of this transition include:

- 16S/9E-24B1
- 16S/10E-29H1

Wells 16S/10E-24D1 and 16S/10E-24B1 are located across the transition from each other, approximately 1.5 miles north of Ocotillo. As shown in Figure 3.3-11, the water levels in these two wells are nearly identical and have steadily declined over the last 25 years. The total amount of the decline is approximately three feet. The rate of decline is about one-half of the rate of decline in water levels in the Ocotillo/Nomirage area and the Yuha Estates area. The virtually-identical hydrographs for wells 16S/10E-24D1 and 16S/10E-24B1 indicate that the transition is not a fault zone or other geologic feature with unique properties that may inhibit groundwater movement, as discussed above, and does not have any hydrologic influence in the area north of Ocotillo.

Wells 16S/10E-29L1 and 16S/10E-29H1 are located across the transition from each other, to the east of Coyote Wells. Well 16S/10E-29R2 is located approximately one-half mile south of well 16S/10E-29H1. As shown in Figure 3.3-11, data from wells 16S/10E-29L1 and 16S/10E-29R2, both located west of the transition, is only available for about 10 years, from the late 1970s to the late 1980s. Data from well 16S/10E-29H1, located east of the transition, is available from 1975 to 2001. The three wells are shown on Figure 3.3-11 to be declining at the same rate.

Water levels in wells 16S/10E-29L1 and 16S/10E-29R2, to the west of the transition, decreased by approximately eight feet from the late 1970s to the late 1980s, as shown on Figure 3.3-11. As indicated in Figure 3.3-8, this time period corresponds to the period of the greatest amount of groundwater pumping from the Basin. The water level in well 16S/10E-29H1, to the east of the transition, decreased by about five feet from 1975 to

2001. This corresponds to an average rate of decline of one foot every five years, which is identical to the rate of decline for the Ocotillo/Nomirage area over the same time period, as discussed above. Thus, the trend in water levels appears to be similar on both sides of the transition in the Coyote Wells area.

3.3.3.4 Groundwater Chemistry Data

In addition to monitoring water levels, the USGS has also been collecting water quality samples from several wells within the Ocotillo/Coyote Wells Groundwater Basin since the early 1970s due to concerns regarding potential overdraft conditions and degradation of water quality. The water quality data collected by the USGS is included in Appendix B and summarized in Tables 3.3-3a and b for selected wells within the Basin. The number of wells for which water quality data are available is less than the number of wells for which water level measurements are available. As with the analysis of the water level data, above, the water quality data are evaluated for three separate areas of the basin, including Ocotillo/Nomirage, Yuha Estates, and the area east of Coyote Wells.

As discussed in Section 3.3.1, the general water quality of the Basin can be evaluated primarily based on the total dissolved solids (TDS) content of the water. The TDS is a measurement of the total amount of salts and other naturally-occurring minerals in the groundwater. EPA secondary standard for TDS in drinking water is 500 mg/L, which is equivalent to 500 ppm. Thus, groundwater with TDS levels below 500 mg/L is considered potable water. In general, water with a TDS level exceeding 1,000 mg/L is not considered potable, although it is not uncommon for local drinking water supplies to exceed this level in some areas of the country.

Ocotillo/Nomirage Area

Long-term water chemistry data is available from three wells in the Ocotillo/Nomirage area. These wells are:

- 16S/9E-25K2 (Clifford well/McDougal Water Co.)
- 16S/9E-36D2
- 16S/9E-36H1 (U.S. Gypsum No. 5)

The TDS concentrations measured over time in these three wells are shown in Figure 3.3-12, TDS Trends – Ocotillo/Nomirage Area.

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As discussed above, well 16S/9E-25K2 was pumped for export of water to Mexico from 1974 to 1984. As indicated in Table 3.3-4 and in Figure 3.3-8, water production from this well increased from 138 AF/yr in 1974 to 222 AF/yr in 1977, and then is presumed to have decreased to 137 AF/y for 1978 to 1984. Actual production data after 1978, however, is uncertain. Prior to pumping of this well, TDS levels were approximately 250 mg/L to 310 mg/L. Within a few years after pumping began, the TDS concentration increased to as high as 400 mg/L, which is a 60 percent increase from pre-pumping levels. TDS levels have subsequently decreased to between 320 mg/L to 360 mg/L. As shown in Figure 3.3-12, TDS Trends Ocotillo/Nomirage Area, the TDS concentration has not returned to the levels measured prior to pumping.

There are only 15 years of data for well 16S/9E-36D2, from 1975 to 1990. During this time period, there was no distinct trend in TDS concentrations.

The TDS data for USG well No. 5 (16S/9E-36H1) show only minor long-term fluctuations of less than 25 mg/L from 1976 through 2001 (Figure 3.3-12). During the same time, the total pumping from all three USG wells varied from about 260 AF/yr to over 500 AF/yr, as shown in Table 3.3-4 and in Figure 3.3-8. The slight fluctuations in TDS shown in Figure 3.3-12 for USG well No. 5 may correlate with changes in annual production rate.

Yuha Estates

Long-term water chemistry data is available from three wells in the Yuha Estates area. These wells are:

- 17S/10E-11H2
- 17S/10E-11H3
- 17S/10E-11G2

The TDS concentrations measured over time in these three wells are shown in Figure 3.3-13, TDS Trends – Yuha Estates Area.

The data set from the Yuha estates area is, unfortunately, limited, as indicated in Table 3.3-3 and Figure 3.3-13. Despite the limited amount of data, however, the impacts of pumping of well 17S/10E-11G1 (McDougal Water Co.) for export to Mexico is readily apparent. As discussed above and shown in Table 3.3-4, pumping of this well occurred from 1978 to 1982 at 143 AF/yr.

Water quality data are not available for well 17S/10E-11G1. Well 17S/10E-11G2, however, is located a few hundred feet from well 17S/10E-11G1. Prior to pumping for export to Mexico, the TDS level in well 17S/10E-11G2 was approximately 330 mg/L. From 1977 to 1982, however, the TDS level in this well increased steadily to almost 400 mg/L, as shown in Figure 3.3-13.

In addition, from 1987 to 2001, the TDS level in well 17S/10E-11H3 has shown a steady decrease, as indicated in Figure 3.3-13.

Area East of Coyote Wells

Long-term water chemistry data is available from three wells in the area east of Coyote Wells. These wells are:

- 16S/9E-24B1
- 16S/9E-24D1
- 16S/10E-29L1

Well 16S/9E-24B1 is located east of the transition from alluvial material to Tertiary marine sediments. Wells 16S/9E-24D1 and 16S/10E-29L1 are located west of the transition from alluvial material to Tertiary marine sediments. The TDS concentrations measured over time in these three wells are shown on Figure 3.3-14, TDS Trends – Area East of Coyote Wells.

As discussed above, wells 16S/9E-24B1 and 16S/9E-24D1 are located adjacent to each other, but on opposite sides of the transition from alluvial material to Tertiary marine sediments. As shown on Figure 3.3-11, the water levels in these two wells are nearly identical. The TDS levels, however, are very different, as shown on Figure 3.3-14. The TDS concentration in well 16S/9E-24B1 ranges from approximately 1200 mg/L to 1300 mg/L, indicative of the influence of the Tertiary marine sediments. The TDS concentration in well 16S/9E-24D1 ranges from approximately 450 mg/L to 500 mg/L, indicative of the water quality in the alluvial aquifer.

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3.3.3.5 Discussion of Water Quality Data

The water quality data discussed above indicates that pumping of wells for a period of several years at rates of 100 AF/yr to 200 AF/yr or more ~~can~~ in the Yuha area may have a measurable impact on water quality in adjacent wells ~~certain areas of the basin~~. This amount of pumping by USG in Well 36H1 in the Ocotillo area has not shown any increase in TDS. When it occurs, this impact appears rapidly and persists for many years after pumping ceases. The decrease in water quality may be due to lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediment, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.

Figure 3.3-15, Piper Diagram of Groundwater Chemistry Data, is a Piper, or Tri-linear, diagram of water quality from the wells discussed above. A Piper diagram is a standard tool for analysis of water-quality data (USGS, 1989). The Piper diagram presents the water quality in terms of cations (positively-charged ions) in the triangle in the lower left corner, anions (negatively-charged ions) in the triangle in the lower right corner, and commonly associated chemical groupings in the central quadrilateral.

Many of the wells from the Ocotillo/Nomirage and Yuha Estates areas cluster together in the Piper diagram shown in Figure 3.3-15. Well 16S/9E-24B1 (labeled number "1" on the Piper diagram) stands apart from the other wells due to its elevated TDS concentration. Several other wells, however, show some TDS impact and plot in the areas between the larger cluster of wells and well 16S/9E-24B1. These wells include 16S/10E-29L1 (labeled number "6" on the Piper diagram), 16S/9E-24D1 (labeled number "2" on the Piper diagram), and 17S/10E-11G2 (labeled number "7" on the Piper diagram).

3.3.3.6 Thresholds of Significance

The significance criteria for this analysis were developed from Appendix G of the CEQA Guidelines. The Proposed Project would have a significant impact on hydrology and water quality if it would:

- Violate any water-quality standards or waste discharge requirements;
- Deplete groundwater supplies such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table (e.g. the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which a permit has been granted); or
- Otherwise substantially degrade water quality.

The impact analysis presented below is based upon the CEQA standards of significance. For the analysis of impacts caused by pumping from the USG wells in the Ocotillo area for the Proposed Project, a separate discussion is provided for impacts that may occur only to individual well owners as opposed to the Ocotillo/Coyote Wells Groundwater Basin resource.

3.3.3.7 Proposed Action: Impacts and Mitigation Measures

Impact 3.3-1: Water Depletion at Plant Affecting Individual Well Owners

Increased pumping of USG wells could reduce water levels, increasing the cost of pumping groundwater and, causing some wells to go dry.

Previous studies concluded that, since the total volume of water in the basin may range from over 600,000 AF to over 1.2 million AF, an annual overdraft of a few hundred AF/yr is nominal compared to the total volume of water in storage in the Basin. This view, however, may not be consistent with the conditions that occur in the Ocotillo/Coyote Wells Groundwater Basin.

The hydrographs of numerous wells from different locations in the Basin demonstrate that water levels have been steadily decreasing for at least the last 30 years. Periods of increased rainfall and a decreasing rate of groundwater pumping have not halted this long-term trend. However, a decrease of pumpage in USG wells from 1994 through 1998 did show groundwater levels recovered locally.

If water levels continue to drop, the maximum production rate of some shallower wells may be reduced due to the reduced available drawdown. The energy, and thus cost, necessary to pump groundwater, will increase in wells affected. These impacts are expected to occur without implementation of the increased pumping rates associated with the Proposed Action. The revised numerical groundwater model (Bookman-Edmonston, 2004) indicates that over the next 80 years, water levels may decline by up to 10 feet under baseline conditions, without any increase in pumping rates (Table 3.3-7). Thus, the baseline rate of water-level decline is approximately one foot every eight years.

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TABLE 3.3-7
LAYER 1 WELL DRAWDOWNS (FT) FOR BASELINE SCENARIO
(DRAWDOWN FROM GROUNDWATER ELEVATION AT THE END OF 2002)

	Well								
Years	42A5	36H1	36D2	24D1	29L1	29R2	25K2	25Q1	36 G4
	Drawdown (ft)								
10	-1.2	0.1	-1.4	-1.6	-1.3	-1.4	-1.3	-1.2	-0.2
20	-2.4	-1.2	-2.7	-3.1	-2.6	-2.6	-2.6	-2.6	-1.5
30	-3.6	-2.5	-4.0	-4.4	-3.8	-3.7	-3.9	-3.9	-2.8
40	-4.7	-3.7	-5.3	-5.7	-4.9	-4.8	-5.1	-5.1	-4.0
50	-5.8	-4.8	-6.5	-6.9	-6.0	-5.9	-6.3	-6.3	_5.1
60	-6.8	-5.8	-7.6	-8.1	-7.0	-6.9	-7.4	-7.4	-6.2
70	-7.7	-6.9	-8.6	-9.2	-8.0	-7.9	-8.5	-8.4	-7.2
80	-8.7	-7.8	-9.6	-10.2	-8.9	-8.8	-9.5	-9.4	-8.2

For the Proposed Action, USG plans to increase groundwater extraction rates by as much as 420 AF/yr over the average 1994 through 1998 baseline pumping rate of 347 AF/yr. This water demand is anticipated to continue for up to 80 years. The only empirical point of comparison to this magnitude of pumping over a long duration is the pumping that occurred in Ocotillo and Yuha Estates in the 1970s and 1980s for export to Mexico. In Ocotillo, groundwater was pumped at a rate of 137 AF/yr to 222 AF/yr for 11 years. Drawdowns of up to 60 feet occurred at or near the pumping well, and water levels did recover after pumping was suspended. At Yuha Estates, groundwater was pumped at an estimated rate of 143 AF/yr for five years. Drawdowns of nearly 70 feet occurred and nearby wells experienced drawdowns of several tens of feet. In addition, once the pumping ceased, water levels at Yuha Estates recovered very slowly and have not yet reached their pre-pumping levels. A review of the Basin's geology, however, suggests that the Ocotillo area consists of younger permeable alluvial material, whereas the Yuha Estates area is predominantly less permeable Tertiary sediments.

The revised numerical groundwater model (Bookman-Edmonston, 2004) evaluated the potential drawdown in the Ocotillo area from the Proposed Action, with pumping occurring at 767 AF/yr for 80 years. (See Appendix B-2). The total

drawdown in the alluvial aquifer after 80 years is predicted to be approximately 30 feet, which averages about 20 feet, but in two wells may be up to 23 feet, greater than the drawdown predicted to occur over the same time period under the baseline condition (Table 3.3-8, Layer 1 Well Drawdowns (ft) for 767 AF/yr Pumping Scenario).

TABLE 3.3-8
LAYER 1 WELL DRAWDOWNS (FT) FOR 767 AF/YR PUMPING SCENARIO
(DRAWDOWN FROM GROUNDWATER ELEVATION AT THE END OF 2002)

	Well								
Years	42A5	36H1	36D2	24D1	29L1	29R2	25K2	25Q1	36G4
	Drawdown (ft)								
10	-4.5	-7.0	-4.6	-2.9	-4.7	-4.3	-4.9	-5.0	-6.6
20	-8.0	-10.8	-8.3	-6.1	-8.3	-7.9	-8.5	-8.7	-10.4
30	-11.3	-14.2	-11.8	-9.4	-11.7	-11.2	-12.0	-12.3	-13.9
40	-14.5	-17.6	-15.3	-12.6	. -14.8	-14.3	-15.5	-15.8	-17.3
50	-17.6	-21.0	-18.9	-15.9	-18.0	-17.4	-19.0	-19.3	-20.7
60	-20.7	-24.4	-22.5	-19.3	-21.2	-20.5	-22.6	-22.9	-24.2
70	-23.8	-27.8	-26.2	-22.7	-24.3	-23.6	-26.2	-26.7	-27.7
80	-27.1	-31.4	-30.0	-26.2	-27.6	-26.8	-30.0	-30.5	-31.3

The revised numerical groundwater model (Bookman-Edmonston, 2004) also considered an intermediate project condition, where pumping rates are increased to only 650 AF/yr for 80 years, as opposed to the full 767 AF/yr for the Proposed Action. Under this intermediate condition, the total drawdown in the alluvial aquifer after 80 years is predicted to be up to 26 feet, which is up to 16 feet greater than the drawdown predicted to occur over the same time period under the baseline condition (Table 3.3-9, Layer 1 Well Drawdowns (ft) for 650 AF/yr Pumping Scenario).[1]

[1] The Applicant has provided estimates that indicate a typical residence using about one AF/yr would experience an increase in electrical energy of about 40 kilowatt hours (KWH) to pump water up this additional 20 feet to the surface. The current cost of electric energy in the area is about ten cents per KWH. This indicates an increase cost to a typical residence of approximately $4 per year in the 80th year. In the 40th year, assuming an increase pumping height of approximately 10 feet, the extra cost in the 40th year would be about $2 per year. The average increase cost over the life of the Proposed Action would be about $2 per year. The potential environmental impact from having to generate extra electricity needed to pump water from a greater depth over the life of the Project is speculative, but are not expected to be significant. The increased use of energy in Ocotillo by the increased pump lift is insignificant with respect to the total energy generation by IID. As an example the total increase energy use in 80 years by all affected wells, represents less than the amount of energy used by a single residence in a year. Assuming these estimates are accurate, then the *economic* impact of additional pumping would be insignificant.

TABLE 3.3-9
LAYER 1 WELL DRAWDOWNS (FT) FOR 650 AF/YR PUMPING SCENARIO
(DRAWDOWN FROM GROUNDWATER ELEVATION AT THE END OF 2002)

	Well								
Years	42A5	36H1	36D2	24D1	29L1	29R2	25K2	25Q1	36G4
	Drawdown (ft)								
10	-3.6	-5.1	-3.8	-2.5	-3.8	-3.5	-3.9	-4.0	4.9
20	-6.5	-8.2	-6.9	-5.3	-6.8	-6.5	-7.0	-7.1	8.0
30	-9.3	-11.1	-9.9	-8.1	-9.6	-9.2	-10.0	-10.2	-11.0
40	-12.0	-14.0	-12.9	-10.9	-12.3	-11.9	-13.0	-13.2	-13.9
50	-14.6	-16.9	-16.0	-13.8	-15.0	-14.5	-16.0	-16.3	-16.8
60	-17.3	-19.8	-19.2	-16.7	-17.7	-17.2	-19.2	-19.5	-19.8
70	-20.1	-22.8	-22.5	-19.7	-20.5	-19.9	-22.4	-22.7	-22.9
80	-22.9	-26.0	-25.9	-22.8	-23.4	-22.7	-25.7	-26.2	-26.1

The total potential drawdown in the alluvial aquifer, based on both the empirical data and the revised numerical groundwater model (Bookman-Edmonston, 2004), could lower the water level in some wells. Specifically, if the water level in a well drops to near the base of the screened interval, the ability to maintain current pumping rates in that well may be reduced. Wells in the Ocotillo area that are likely to experience this condition include the E. Annes and Property Construction wells and well 36D2, as shown in Figure 3.3-16, Ocotillo/Coyote Wells Groundwater Study Cross-Section of Screen Intervals.

Level of Significance Before Mitigation: Significant

Mitigation Measure: Mitigation Measure 3.3-1

If the water level in ~~a~~ an existing well in the Ocotillo area decreases at a rate faster than one foot every eight years and the average water levels in the surrounding wells also decrease for more than two years in a row due to the Proposed Action, as measured from the interpolated linear of one foot every eight years with a starting reference point being the date that pumping by USG increases above the baseline rate, and there is a documented reduction in the available water to the affected user, then USG, at its election will:

1. *Rehabilitate the well and/or install a new pump to restore the prior pumping rate; or*
2. *Provide an incremental replacement of water equivalent to the amount of the reduced rate of pumping by the affected party, of a like quantity and quality~~, and provide reimbursement for the incremental increase for the affected party to pump the remaining available groundwater~~; or*
3. *Provide a full replacement water supply to the affected party of a like kind and quality, at a cost that does not exceed the cost to the affected party at the time the impact occurred; or*
4. *Deepen the existing well or provide a new replacement well to the affected party, drilled to a depth that will not be affected by existing or future Project-related declines in the water table, and capable of providing an equivalent quantity and quality of water that existed prior to the impact~~, and provide reimbursement for incremental increase in cost for the affected party to pump the available water~~.*

The extent to which the Proposed Action will be considered ~~as contributing to~~ to be the cause of the decrease in water levels in the Ocotillo area will be determined only after a review of the water level data and a decision by the Imperial County Planning Commission ~~Groundwater Management Committee (ICGMC)~~.

~~The baseline condition in the Basin includes a declining water table, and existing data suggests that water levels recover slowly after significant drawdown occurs. Therefore, i~~If USG elects to provide replacement water or a replacement water supply, arrangements must be made to provide this mitigation until groundwater levels ~~stabilize at~~ return to a level equal to the projected baseline condition or ten years after USG reduces its pumping from the Basin to the baseline rate, whichever first occurs.

Level of Significance After Mitigation: Less than Significant

Although the Proposed Action would increase the rate of drawdown in the alluvial aquifer as compared to baseline conditions, the impact on existing individual affected wells will be mitigated to a level of insignificance through implementation of Mitigation Measure 3.3-1.

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Impact 3.3-2: Water Depletion at Plant Affecting the Groundwater Basin

Increased pumping of USG wells could reduce water levels throughout broad areas of the Ocotillo/Coyote Wells Basin, reducing the total amount of water available in the basin.

Previous studies concluded that, since the total volume of water in the basin may range from over 600,000 AF to over 1.2 million AF, an annual overdraft of a few hundred AF/yr is nominal compared to the total volume of water in storage in the Basin. This view, however, may not be consistent with the conditions that occur in the Ocotillo/Coyote Wells Groundwater Basin. More recent assessments of the basin geology suggest that it is more complex, containing numerous uplifts of older sediments and large folds that bring the Tertiary ~~marine~~ sediments close to the surface. Thus, the available volume of water may be much less than previous estimates.

The hydrographs of numerous wells from different locations in the Basin demonstrate that water levels have been steadily decreasing for at least the last 30 years. Periods of increased rainfall and a decreasing rate of groundwater pumping have not halted this long-term trend. However, a decrease of pumpage in USG wells from 1994 through 1998 did show groundwater levels recovered locally.

The revised numerical groundwater model (Bookman-Edmonston, 2004) indicates that over the next 80 years, water levels may decline by up to 10 feet under baseline conditions, without any increase in pumping rates (Table 3.3-7). Thus, the baseline rate of water-level decline is approximately one foot every eight years.

For the Proposed Action, USG plans to increase groundwater extraction rates by as much as 420 AF/yr over the average 1994 through 1998 baseline pumping rate of 347 AF/yr. This water demand is anticipated to continue for up to 80 years. The only empirical point of comparison to this magnitude of pumping over a long duration is the pumping that occurred in Ocotillo and Yuha Estates in the 1970s and 1980s for export to Mexico. In Ocotillo, groundwater was pumped at a rate of 137 AF/yr to 222 AF/yr for 11 years. Drawdowns of up to 60 feet occurred at or near the pumping well, and water levels did recover after pumping was suspended. At Yuha Estates, groundwater was pumped at an estimated rate of 143 AF/yr for five years. Drawdowns of nearly 70 feet occurred and nearby wells experienced drawdowns of several tens of feet. In addition, once the pumping

ceased, water levels at Yuha Estates recovered very slowly and have not yet reached their pre-pumping levels. A review of the Basin's geology, however, suggests that the Ocotillo area consists of younger permeable alluvial material, whereas the Yuha Estates area is predominantly older less permeable formations.

The revised numerical groundwater model (Bookman-Edmonston, 2004) evaluated the potential drawdown in the Ocotillo area from the Proposed Action, with pumping occurring at 767 AF/yr for 80 years. (See Appendix B-2). The total drawdown in the alluvial aquifer after 80 years is predicted to be approximately 30 feet, which averages about 20 feet, but in two wells may be up to 23 feet, greater than the drawdown predicted to occur over the same time period under the baseline conditions (Table 3.3-8, Layer 1 Well Drawdowns (ft) for 767 AF/yr Pumping Scenario).

The revised numerical groundwater model (Bookman-Edmonston, 2004) also considered an intermediate project condition, where pumping rates are increased to only 650 AF/yr for 80 years, as opposed to the full 767 AF/yr for the Proposed Action. Under this intermediate condition, the total drawdown in the alluvial aquifer after 80 years is predicted to be up to 26 feet, which is up to 16 feet greater than the drawdown predicted to occur over the same time period under the baseline conditions (Table 3.3-9, Layer 1 Well Drawdowns (ft) for 650 AF/yr Pumping Scenario).

Because the depth to groundwater in the Ocotillo area currently ranges from about 100 ft bgs to 160 ft bgs, an additional 20-23 foot lowering of groundwater level over an 80 year period will not have an adverse effect on any rare, threatened, endangered, or sensitive species of plant or animal life or habitat.

The pumping from the alluvial aquifer for the Proposed Project, based on both the empirical data and the revised numerical groundwater model (Bookman-Edmonston, 2004), will lower the water level over a broad area of the Basin. As discussed above, this lowering of water level~~s~~ will be in addition to the existing condition in the basin where the water table is already declining. Periods of increased rainfall and decreased pumping have not resulted in a Basin-wide recovery of water levels. Thus, the additional decline in water levels caused by the additional pumping of up to 420 AF/yr for the Proposed Project can not be readily offset by decreases in pumping elsewhere in the Basin, enhancing recharge, or importing water.

Level of Significance Before Mitigation: This is a significant and unavoidable impact on the Basin-wide groundwater. This impact is also unmitigatable.

Mitigation Measures: None available

Impact 3.3-3: Water Quality Degradation at Plant Affecting Individual Well Owners

Increased pumping from USG wells could degrade water quality in individual wells due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.

Increases in TDS were observed in wells in the Ocotillo area and the Yuha Estates area as a result of groundwater pumping for export to Mexico. In the Ocotillo area, TDS concentrations ~~have not~~ mostly recovered to their pre-pumping levels in the well that was pumped for export. At Ocotillo, groundwater was pumped at a rate of 137 AF/yr to 222 AF/yr for 11 years. At Yuha Estates, groundwater was pumped at an estimated rate of 143 AF/yr for only five years.

USG is proposing to increase groundwater extraction rates by as much as 420 AF/yr over the average baseline pumping rate of 347 AF/yr for the five-year period from 1994 through 1998. This water demand, under the Proposed Action, is anticipated to continue for 80 years. Based on a comparison with past impacts in the Basin, the proposed increased groundwater extraction rates for the Project could have an impact on water quality.

As discussed, water levels are decreasing throughout most of the Basin and are expected to decrease further from the Proposed Project. As the depth to groundwater decreases, the saline water that is present at the water table may eventually reach the screened interval of some wells. Several wells have relatively short screened intervals, so that the saline water present at the water table could appreciably affect the quality of the water in certain wells.

Groundwater flow directions during the Project duration were evaluated as part of the revised numerical groundwater model (Bookman-Edmonston, 2004). The numerical model indicates that groundwater will continue to flow from west to east across the transition from alluvial material to Tertiary marine sediments east of Ocotillo. Thus, there is not likely to be a significant potential for saline water

to migrate laterally from the area east of Coyote Wells into the Ocotillo area. The model did indicate that there is a small potential for upward migration of saline water from Tertiary marine sediments underlying the alluvial aquifer in the Ocotillo area. Due to geologic complexities related to fault blocks and elevated areas of Tertiary marine sediments, however, the model was not able to accurately reproduce the change in water quality caused in both Ocotillo and Yuha Estates by the pumping for export to Mexico.

Level of Significance Before Mitigation: Significant

Mitigation Measure: Mitigation Measure 3.3-2

USG will provide an alternative or replacement source of water if the water quality significantly deteriorates in any existing well in the Ocotillo area and such deterioration is caused by the Proposed Action. As discussed above, the secondary drinking water standard for TDS is 500 mg/L and water with a TDS level in excess of 1,000 mg/L is considered non-potable. Therefore, if the Proposed Action causes the TDS level in any existing well to exceed~~s~~ 500 mg/L, or causes the concentration of ~~any other measured parameter~~ sulfate, chloride or boron, as described in the ~~Mitigation~~ Groundwater Monitoring Program ~~below,~~ to exceed~~s~~ its drinking-water standard that is in force at the time ~~of the measurement,~~ the Proposed Action is approved, then USG will provide the affected party or parties with an alternative supply of water for drinking and cooking, at no cost to the affected party or parties. This alternative supply could be bottled water or a hookup to a replacement water source. If the TDS level in any well exceeds 1,000 mg/L and is caused by the Proposed Action, then the water quality will be such that use of the water for any domestic purpose will be significantly affected due to scale buildup, damage to plumbing, corrosion, and other similar impacts. If the TDS level exceeds 1,000 mg/L and is caused by the Proposed Action, USG will provide the affected party or parties with a hookup to a replacement supply of water. This replacement supply may be a hookup to an existing municipal district or other appropriate drinking water supply system. USG will bear the full cost of the hookup. The affected party or parties, however, would only be responsible for the annual cost of the replacement water equivalent to their costs to pump water prior to the occurrence of the impact. If the annual cost of water for the replacement supply exceeds the affected party or parties costs to pump water prior to the occurrence of the impact, USG will pay the incremental difference.

The extent to which the Proposed Action will be considered ~~as contributing~~ to be the cause of the decrease in water quality in the Ocotillo area, will be determined

only after a review of the water quality data and a decision by the Imperial County Planning Commission ~~Groundwater Management Committee (ICGMC)~~.

~~The existing data from Ocotillo and Yuha Estates indicates that, once the water quality decreases, it may take many decades for the water quality to recover once the pumping causing the impact has ceased. Therefore,~~ If USG ~~will need~~ is required to provide ~~the~~ alternative and/or replacement water supply pursuant to the terms of this mitigation measure, it must continue to do so until (1) concentrations of the above-listed constituents in excess of applicable water-quality standards return to levels below such standards or until the water quality parameters, for which there is data that currently exists, return to pre-Proposed Action levels, or (2) ten years after USG reduces its pumping from the Ocotillo/Coyote Wells Groundwater Basin to the baseline rate, whichever first occurs.

Level of Significance After Mitigation: Less than Significant

With implementation of Mitigation Measure 3.3-2, the potential impacts on individual wells will be mitigated, and the Proposed Action will not violate any water quality standard For these reasons, the impact of the Proposed Action on individual wells, after mitigation, will be less than significant.

The long-term affect to the Basin-wide groundwater resource, however, is still potentially significant and there are no feasible mitigation measures that would reduce the impact to less than significant.

Impact 3.3-4: Water Quality Degradation at Plant Affecting the Groundwater Basin

Increased pumping from USG wells could degrade water quality in the groundwater Basin due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.

~~Relatively rapid i~~Increases in TDS were observed in wells in the Ocotillo area and the Yuha Estates area as a result of groundwater pumping for export to Mexico. In the Ocotillo area, TDS concentrations in affected wells ~~have not~~ mostly recovered to their pre-pumping levels in the well that was pumped for export. At Ocotillo, groundwater was pumped at a rate of 137 AF/yr to 222 AF/yr for 11 years. At Yuha Estates, groundwater was pumped at an estimated rate of 143 AF/yr for only five years.

USG is proposing to increase groundwater extraction rates by as much as 420 AF/yr over the average baseline pumping rate of 347 AF/yr for the five-year period from 1994 through 1998. This water demand, under the Proposed Action, is anticipated to continue for 80 years. The past water-quality impacts in the Basin were the result of much lower pumping rates and much shorter durations than the proposed increased groundwater extraction rates for the Project. Thus, the Proposed Project could have an impact on water quality.

Groundwater flow directions during the Project duration were evaluated as part of the revised numerical groundwater model (Bookman-Edmonston, 2004). The numerical model indicates that groundwater will continue to flow from west to east across the transition from alluvial material to Tertiary marine sediments east of Ocotillo. Thus, there is not likely to be a significant potential for saline water to migrate laterally from the area east of Coyote Wells into the Ocotillo area. The model did indicate that there is a small potential for upward migration of saline water from Tertiary marine sediments underlying the alluvial aquifer in the Ocotillo area. Due to geologic complexities related to fault blocks and elevated areas of Tertiary marine sediments, however, the model was not able to accurately reproduce the change in water quality caused in both Ocotillo and Yuha Estates by the pumping for export to Mexico.

The declining water levels in the Basin indicate that the amount of recharge is less than the amount of water being removed from the Basin. Therefore, if the water quality in areas of the Basin decreases to the point where the water is not suitable for its current use, then it is unlikely that there will be sufficient influx of non-saline water to improve the water quality.

Level of Significance Before Mitigation: Significant

Mitigation Measure: None available

> As part of the Proposed Project, USG will implement the Groundwater Monitoring Program described below. The data from the groundwater monitoring program will provide ~~an indication of a trend of progressively decreasing~~ information concerning water quality in individual wells and throughout the basin~~, if such a trend occurs and is a result of the increased pumping for the Proposed Project~~. If ~~such a trend is identified~~ the data indicates a trend of progressively decreasing water quality in only a few wells in close proximity to the USG pumping wells, and an impact subsequently occurs in any or all of those few wells, then USG can

mitigate the impacts in the individual wells as discussed above for Impact 3.3-2A: Water Quality Degradation at Plant Affecting Individual Well Owners. If, however, such a trend is identified in a larger number of wells, and these wells are located over a broader area of the basin and not just in the area of the USG pumping wells, it would not be possible to restore the Basin-wide water quality once it is degraded to concentrations at which the groundwater is no longer suitable for its current uses. There is insufficient recharge to restore the Basin and dilute the salts in the saline water. Therefore, it is not possible to mitigate the Basin-wide degradation of water quality. If such trends are detected by the Groundwater Monitoring Program, the only way to halt or reverse these trends would be to curtail pumping by reducing production at the Plant, or by implementing one or more Alternatives that reduce or eliminate withdrawals from the basin, prior to the groundwater quality being degraded to the point where it was no longer suitable for its current uses.

Level of Significance After Mitigation: Significant

Groundwater Monitoring Program

The Proposed Action includes a Monitoring Program to provide consistent, long-term data regarding the Ocotillo/Coyote Wells Groundwater Basin. The Monitoring Program will involve the measurement of water levels and the collection of groundwater samples for chemical analysis. As discussed above, the Proposed Action is predicted to accelerate the decline of the groundwater level in the Ocotillo/Coyote Wells Groundwater Basin, and may potentially cause the migration of saline water. As such, the primary objectives of the Monitoring Program are to:

1. Identify any increases in the rate of water-level decline greater than the baseline rate; and
2. Provide an early warning of potential degradation of groundwater quality from the Proposed Action.

The primary cause of the potential degradation of groundwater quality would be lateral migration of saline water from Tertiary marine sediments that crop out in the Ocotillo and Nomirage area and to the east of Coyote Wells, or vertical migration of saline water from the Tertiary marine sediments that are present at depth below the alluvial aquifer.

The USGS currently monitors water levels and water quality in a number of wells in the Ocotillo/Coyote Wells Groundwater Basin, as listed in Table 3.3-10, List of Current and Proposed Monitoring Wells in the Ocotillo/Coyote Wells Groundwater Basin. For the

Mitigation Monitoring Program, water chemistry and/or water levels will be monitored in the wells currently monitored by the USGS and in 10 additional wells, as shown in Table 3.3-10. Eight of the additional well locations are existing wells and the other two are new nested wells that will be installed by USG. Note that several of the additional wells listed in Table 3.3-10 are already monitored for water levels by the USGS but will also be sampled for water quality as part of this Monitoring Program. The additional monitoring locations were selected based on location, variation in depth and screened interval, and historic trends in water levels and TDS concentrations. In addition, any private currently operating well owner in the Ocotillo, Coyote Wells, and Nomirage areas that would like to include their well in the Monitoring Program may do so by notifying the County within one year after this document is certified. If the groundwater levels, or quality, in any of the monitoring wells included in this Monitoring Program show a declining trend greater than that specified in the Monitoring Program, then the private well owner(s) in the Ocotillo area indicating such a trend that has requested that their groundwater level and water quality be determined, will have their well tested until such time as the groundwater or water quality declines return to below levels of concern as specified in this Monitoring Program.

One new nested monitoring well (MW-1A and MW-1B) will be constructed approximately three-quarters of a mile east of USG Well No. 6 (see Figure 3.3-17, Current and Proposed Monitoring Wells in the Ocotillo Area). This monitoring well location, along with 29L1, 31B1, and 30R1, would show changes in the TDS levels as a result of the potential migration of saline water from the area east of Coyote Wells, and potential upward vertical migration. The deeper interval in this nested well will be screened just above the base of the alluvial aquifer, which is anticipated to be up to 400 ft bgs. The shallower interval will be screened in the same depth range as other wells in the area, which is typically 100 ft bgs to 200 ft bgs. The nested monitoring well will be drilled and constructed in accordance with applicable state and county requirements, including but not limited to those described in California Department of Water Resources Bulletins 74-81 and 74-90.

The second new nested monitoring well (MW-2A and MW-2B) will be constructed in the area between existing USG wells Nos. 4, 5, and 6. The approximate area is shown on Figure 3.3-17. This monitoring well location will provide information regarding the potential vertical migration of saline water from underlying Tertiary marine sediments. The deeper interval in this nested well should be screened just above the base of the alluvial aquifer, which is anticipated to be up to 700 ft bgs. The shallower interval

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TABLE 3.3-10
LIST OF CURRENT AND PROPOSED MONITORING WELLS IN THE OCOTILLO/COYOTE WELLS GROUNDWATER BASIN

Well Number	Owner	Water Level	Water Quality	Well Number	Owner	Water Level	Water Quality
Current Program				16S/11E-27F1	US Government	X	
15S/11E-32R1		X		16S/11E-42L1	US Government	X	
16S/9E-24B1		X	X	16S/10E-42A8	Alan Heinrich		X
16S/9E-24D1	US BLM	X	X	17S/10E-11B1	Samual Gallaghe	X	
16S/9E-25K2	Clifford Water Company		X	17S/10E-11G1	W.E. Simpson	X	
16S/9E-25M2	Ocotillo Mutual Water Co.	X		17S/10E-11G4		X	
16S/9E-26F1	Neil Emory	X	X*	17S/10E-11H3	James Harmon	X	X
16S/9E-34B1	Rick Hamilton	X	X	17S/11E-16J1	Frank Souza	X	
16S/9E-35N2		X		17S/11E-22E2		X	
16S/9E-36C2	Coyote Valley Mutual Water Co.		X	Proposed Additional Monitoring Wells - Existing Wells			
16S/9E-36C3	Coyote Valley Mutual Water Co.	X		16S/9E-24N1	US Government	X	X
16S/9E-36D2		X		16S/9E-24R1	US BLM	X	X
16S/9E-36D3			X	16S/10E-29L1		X	X
16S/9E-36G4	Westwind	X		16S/10E-31B1			X
16S/9E-36H1	USG #5	X	X	16S/9E-36B1	USG #6		X
16S/10E-27R1		X		16S/9E-36G3	USG #4		X
16S/10E-29H1		X		16S/9E-36R1			X
16S/10E-30R1			X	16S/10E-41M1	C. Smith		X
16S/10E-31B1		X		Proposed New Monitoring Wells			
16S/10E-32P1		X		USG MW 1A, 1B	USG	X	X
16S/11E-23B1		X		USG MW 2A, 2B	USG	X	X

* Alternate well; to be sampled in place of a primary well when necessary.

should be screened in the same depth range as other wells in the area, which is typically up to 500 ft bgs to 600 ft bgs. The nested monitoring well will be drilled and constructed in accordance with applicable state and county requirements, including but not limited to those described in California Department of Water Resources Bulletins 74-81 and 74-90.

Water levels will be measured semi-annually in each well listed in Table 3.3-10, so long as allowed by the well owner, with the exception of the two new nested wells. The two screened intervals in each of the two nested wells will each be monitored using a dedicated pressure transducer-data logger combination (e.g. *In-Situ* MiniTROLL; *Global Water* WL15; etc) that will allow the daily measurement and recording of water levels.

The measurement of water levels in the two screened intervals in each of the two nested wells using dedicated pressure transducer-data logger combinations will continue for 10 years, after which water levels will be measured by hand on the same schedule as the other wells listed in Table 3.3-10.

The water-level data will be posted on a map and groundwater contours will be plotted to evaluate potential changes in groundwater flow direction. As discussed under Impact 3.3-1, the Proposed Action, based on modeling, will result in an acceleration of the baseline rate of water-level decline, which was predicted by the revised numerical groundwater model to be 10 feet over the 80-year life of the Proposed Action, or one foot every 8 years. The water-level data will be evaluated to determine if the rate of decline at a specific location is less than or greater than the model-predicted baseline rate of decline. The water-level decline at a specific well will be considered significant, and subject to mitigation as described in the Mitigation Measure for Impact 3.3-1, if four consecutive semi-annual groundwater levels from that well show a declining trend that is at least 50 percent greater than the baseline trend identified in the revised numeric groundwater model (i.e. 15 feet over the 80-year life of the Proposed Action, or one foot every five years and four months), and all monitoring wells located between the affected well and USG wells Nos. 4, 5, and 6, if any, also show a declining trend that is greater than the baseline trend.

Water-quality samples will be collected from each well listed in Table 3.3-10 on a semi-annual basis. The water samples will be collected following accepted well-sampling protocols and standards of practice, and analyzed by a laboratory certified by the California Department of Health Services for the analyses being conducted. At a minimum, the analyses will include pH, electrical conductivity, TDS, alkalinity, sodium, potassium, calcium, magnesium, chloride, sulfate, bicarbonate, carbonate, fluoride, bromide, boron, and iron.

A sufficient number of samples will be collected so that an adequate number of samples are present from each well listed in Table 3.3-10 to calculate the 95-percent upper confidence limit or other statistical estimate of the upper bound of the mean, such as those described in California Code of Regulations, Title 27, Section 20415(b). Subsequent groundwater monitoring data will be compared with the statistical estimate of the upper bound of the mean to determine if a significant change in concentration may be occurring at a specific well location, or area of the aquifer. A significant increasing trend in concentration will be determined to be present if a chemical constituent is detected at a concentration that exceeds its 95 percent one-sided tolerance limit as defined by Gibbons (Statistical Methods for Detection Monitoring, in

Groundwater Contamination and Analysis at Hazardous Waste Sites edited by Suzanne Lesage and Richard E. Jackson, Marcel Dekker, Inc., 1992, pp. 199-243) for four consecutive monitoring periods. If a significant increasing trend is determined to exist, the monitoring frequency for that well will be increased to quarterly, and any of the private well owner(s) adjacent to any well indicating such a trend that has requested that their groundwater level and water quality be determined at the time the Mitigation Monitoring Program is implemented, will have their well tested until such time as the water quality decline returns to below levels of concern as specified in this Mitigation Monitoring Program. No other specific mitigation action will be required other than an increase in monitoring frequency until the TDS level reaches 500 mg/L, or the concentration of any other monitored constituent exceeds their secondary drinking-water standard in force at the time of the measurement as described in the mitigation measure for Impact 3.3-2 for the Proposed Action, in Section 3.3.2.7 above.

The water-level data, water-quality data, and statistical analysis of trends will be submitted to the County and the USGS within 60 days after the end of each calendar monitoring period. The monitoring will be conducted at the expense of USG. The actual party conducting the monitoring and the financial arrangements will be approved by the County. If no impacts have been identified, the Monitoring Program will continue until the sooner of either the end of the Proposed Action (80 years), or such time as USG implements a Project Alternative that results in USG wells Nos. 4, 5, and 6 being pumped at rates no greater than pre-Proposed Action rates. If significant impacts to groundwater have been identified, then this Monitoring Program will continue until those impacts have been fully mitigated and water levels and/or water quality returns to baseline levels, but no longer than 10 years after the Plant ceases operation.

3.3.3.8 No Action Alternative: Impacts and Mitigation Measures

Impact 3.3-1: Water Depletion at Plant Affecting Individual Well Owners

Increased pumping of USG wells could reduce water levels, increasing the cost of pumping groundwater and, causing some wells to go dry.

The No Action Alternative assumes the rate of water usage at the Plaster City Plant would not increase above pre-Proposed Action levels. As discussed above in Section 3.3.3, the water levels in the Basin are declining at the rate of approximately one foot every eight years under baseline conditions. This rate of water-level decline would continue under the No Action Alternative, but there

would not be any additional increment of water-level decline associated with the Proposed Action since there would not be any additional increment of pumping above the historic level, and therefore no increased impact to individual well owners. Therefore, the No Action Alternative would maintain the pre-Project conditions in the Basin.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.3-2: Water Depletion at Plant Affecting the Groundwater Basin

Increased pumping of USG wells could reduce water levels throughout broad areas of the Ocotillo/Coyote Wells Basin, reducing the total amount of water available in the basin.

The No Action Alternative assumes, the rate of water usage at the Plaster City Plant would not increase above pre-Proposed Action levels. As discussed above in Section 3.3.3, the water levels in the Basin are declining at the rate of approximately one foot every eight years under baseline conditions. This rate of water-level decline would continue under the No Action Alternative, but there would not be any additional increment of water-level decline associated with the Proposed Action since there would not be any additional increment of pumping above the historic level. Therefore, the No Action Alternative would maintain the pre-Project conditions in the Basin.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.3-3: Water Quality Degradation at Plant Affecting Individual Well Owners

Increased pumping from USG wells could degrade water quality in individual wells due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.

The No Action Alternative assumes, the rate of water usage at the Plant would not increase above pre-Proposed Action levels. As discussed above, the

pumping that has occurred in the Basin since the mid-1920s has not caused any measurable decrease in groundwater quality. There would not be any potential for the No Action Alternative to change groundwater quality beyond the baseline level since there would not be any additional increment of pumping above the baseline level, and therefore no increased impact to individual well owners. Therefore, the No Action Alternative would maintain the baseline conditions in the basin.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.3-4: Water Quality Degradation at Plant Affecting the Groundwater Basin

Increased pumping from USG wells could degrade water quality in the groundwater Basin due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.

The No Action Alternative assumes, the rate of water usage at the Plant would not increase above pre-Proposed Action levels. As discussed above, the pumping that has occurred in the Basin since the mid-1920s has not caused any measurable decrease in groundwater quality. There would not be any potential for the No Action Alternative to change groundwater quality beyond the baseline level since there would not be any additional increment of pumping above the baseline level. Therefore, the No Action Alternative would maintain the baseline conditions in the basin.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.3.3.9 Partial Use of Water from Imperial Irrigation District: Impacts and Mitigation Measures

Impact 3.3-1: Water Depletion at Plant Affecting Individual Well Owners

Increased pumping of USG wells could reduce water levels, increasing the cost of pumping groundwater, causing some wells to go dry.~~, and reducing the amount of available water in the Basin.~~

This alternative would supply the Plant with a portion of the water needed for operations from USG's existing wells in Ocotillo. The balance of the water needed for operations would be supplied by the IID. Under this alternative, water from IID would be blended with water from the Ocotillo/Coyote Wells Groundwater Basin as needed to achieve the level of water quality and consistency necessary for use in manufacturing wallboard without the need for further treatment of the process water. The quality of IID water, which comes from the Colorado River, varies over time. Thus, the amount of water that would need to be extracted from USG's wells in Ocotillo would vary over time. However, this alternative assumes that over the life of the Project, the amount of water extracted from the existing wells at Ocotillo would not increase above pre-Proposed Action levels. Water in excess of the pre-Proposed Action amount would be provided by IID under a water service agreement with USG. Payment of the required user fees and water rates to IID would contribute to any mitigation that IID conducts for use of Colorado River water, maintenance of the distribution system, and disposal of any waste or tail water.

The rate of pumping from the three USG wells in the Ocotillo/Coyote Wells Groundwater Basin would remain at the baseline rate. The baseline rate, as discussed above, is an average of 347 AF/yr over a five-year period. As discussed above, the modeled water levels in the Basin are declining at the rate of approximately one foot every eight years under baseline conditions. This rate of water-level decline would continue under this alternative, but there would not be any additional increment of water-level decline since there would not be any additional increment of pumping above the baseline level. Therefore, this alternative would maintain the baseline conditions in the Ocotillo/Coyote Wells Groundwater Basin.

Level of Significance Before Mitigation: Potentially Significant

Implementation of this partial use of IID water alternative will reduce USG's consumption of water from the Ocotillo/Coyote Wells Groundwater Basin to pre-Project levels. However, as discussed above, implementation of this alternative is not expected to occur until about 2008, or later. Thus, usage of groundwater above the pre-Project levels from 2000 until this alternative is implemented has the potential to adversely affect other wells in the Basin.

Mitigation Measures: Same as Proposed Action (See Mitigation Measure 3.3-1)

Level of Significance After Mitigation: Less than Significant

Impact 3.3-2: Water Depletion at Plant Affecting the Groundwater Basin

Increased pumping of USG wells could reduce water levels throughout broad areas of the Ocotillo/Coyote Wells Basin, reducing the total amount of water available in the basin.

Under the Partial IID Water Supply Alternative, USG's consumption of water from the basin would be reduced to pre-project levels. Increased long-term affects to the basin groundwater table would be avoided.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.3-3: Water Quality Degradation at Plant Affecting Individual Well Owners

Increased pumping from USG wells could degrade water quality in individual wells due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.

Under the Partial IID Water Supply Alternative, USG's consumption of water from the basin would be reduced to pre-project levels. The potential for the Project to exacerbate drawdown that could influence migration of higher-TDS water would be avoided.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.3-4: Water Quality Degradation at Plant Affecting the Groundwater Basin

Increased pumping from USG wells could degrade water quality in the groundwater Basin due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.

Under the Partial IID Water Supply Alternative, USG's consumption of water from the basin would be reduced to pre-project levels. The potential for the Project to exacerbate drawdown that could influence migration of higher-TDS would be avoided.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.3.3.10 Full Use of IID Water Alternative: Impacts and Mitigation Measures

Impact 3.3-1: Water Depletion at Plant Affecting Individual Well Owners

Increased pumping of USG wells could reduce water levels, increasing the cost of pumping groundwater, causing some wells to go dry~~, and reducing the amount of available water in the Basin~~.

This alternative would provide essentially the full water supply for the Plant from the IID. Under this alternative, water from IID would be piped to the Plant for use in wallboard processing. This alternative assumes that over the life of the Project, groundwater would not be extracted from the existing USG wells at Ocotillo. Therefore, the total pumping in the Ocotillo/Coyote Wells Groundwater Basin would be reduced by the baseline amount. Payment of the required user fees and water rates to IID would contribute to any mitigation that IID conducts for use of Colorado River water, maintenance of the distribution system, and disposal of any waste or tail water.

As discussed above, the water levels in the Basin are declining at the rate of approximately one foot every eight years under baseline conditions. Under the

Full IID Alternative, this rate of water-level decline would be reduced or even reversed, possibly resulting in restoration of water-levels in the Ocotillo area.

Level of Significance Before Mitigation: Potentially Significant

Implementation of this full use of IID Water Alternative will reduce USG's consumption of water from the Ocotillo/Coyote Wells Groundwater Basin to zero. However, as discussed above, implementation of this alternative is not expected to occur until about 2008, or later. Thus, usage of groundwater above pre-Project levels from 2000 until this alternative is implemented has the potential to adversely affect other wells in the Basin.

Mitigation Measures: Same as Proposed Action (see Mitigation Measure 3.3-1)

Level of Significance After Mitigation: Less than Significant

Impact 3.3-2: Water Depletion at Plant Affecting the Groundwater Basin

Increased pumping of USG wells could reduce water levels throughout broad areas of the Ocotillo/Coyote Wells Basin, reducing the total amount of water available in the basin.

Under the Full IID Water Supply Alternative, USG's consumption of water from the basin would be reduced below baseline consumption levels. Long term effects to the basin groundwater table would therefore be avoided.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.3-3: Water Quality Degradation at Plant Affecting Individual Well Owners

Increased pumping from USG wells could degrade water quality in individual wells due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.

Under the Full IID Water Supply Alternative, USG's consumption of water from the basin would be reduced below baseline consumption levels. The potential

for the Project to exacerbate drawdown that could influence migration of higher-TDS water would be avoided.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.3-4: Water Quality Degradation at Plant Affecting the Groundwater Basin

Increased pumping from USG wells could degrade water quality in the groundwater Basin due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the basin.

Under the Full IID Water Supply Alternative, USG's consumption of water from the basin would be reduced below baseline levels. The potential for the Project to exacerbate drawdown that could influence migration of higher-TDS water would be avoided.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.3.4 Quarry Water Usage

As part of the Proposed Action, USG is proposing to drill a new water supply well, known as Quarry Water Well No. 3, near the Quarry. (See Figure 3.3-18, Proposed Location of Quarry Water Well Number 3). Approximately 26 AF/yr are needed from this new well for dust control in the quarrying, crushing, and screening operations. Quarry Water Well No. 1, located near the main entrance to the Quarry, was installed in 1983 under an Imperial County Conditional-Use Permit (CUP) limiting maximum withdrawal to 7,000 gallons per day.

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For comparison purposes, the current permit limit of 7,000 gallons per day is approximately equivalent to 7.8 AF/yr, or 4.9 GPM assuming that the pump is operated continuously. The needed 26 AF/yr is approximately equivalent to 23,000 gallons per day, or 16.1 GPM assuming that the pump is operated continuously. Thus, the Proposed Action will result in an increase in the rate of groundwater extraction of approximately 18.2 AF/yr.

The existing and proposed Quarry water wells are located along the southwestern boundary of the Ocotillo Valley Groundwater Basin. This basin is distinctly different from the Ocotillo/Coyote Wells Groundwater Basin in which the USG production wells for the Plant are located.

Quarry Water Well No. 1 could not achieve the original permitted extraction rate due to the limited presence of groundwater in the penetrated aquifer and severe scale buildup in the well casing due to high TDS levels. In 1993, Quarry Water Well No. 2 was installed. Quarry Water Well No. 2 is not capable of producing the current permit limit of 7,000 gallons per day.

In 2001, USG drilled a test hole approximately three miles east-northeast of the Quarry on company-owned land along the USG railroad right-of-way. Pumping tests indicate that a production rate of 25 gpm to 50 gpm may be sustainable at the test-hole location. The TDS level of the water sampled from the test hole was 1,066 ppm. USG is proposing to install Quarry Water Well No. 3 within one-half mile of the successful test hole.

The following studies and reports were reviewed for this analysis of the proposed installation of Quarry Water Well No. 3 and the increase in annual pumping from 7.8 AF/yr to 26 AF/yr:

- *Imperial County Groundwater Study – Final Report*, Montgomery Watson, December 1995;
- *California's Ground Water*, California Department of Water Resources Bulletin 118-75, September 1975, reprinted January 1994;
- *Hydrogeologic Investigation for Allegretti Farms, Western Imperial County, California*, Krieger & Stewart, Incorporated, February 7, 1997; and
- *Potential Impacts of Pumping the Proposed Quarry Water Well No. 3*, Bookman Edmonston memorandum from John Rotert to Richard Rhone, March 28, 2003.

The information presented in the following section was obtained from these references, and copies of these studies can be reviewed at the office of the County Planning Department, Imperial County, California.

3.3.4.1 Affected Environment

The Ocotillo Valley Groundwater Basin is located to the west of the southwestern corner of the Salton Sea. This area is also commonly referred to as the Borrego Valley. It is bounded on the southwest by the Vallecito and Fish Creek Mountains, on the west by the Peninsular Ranges, on the north by the Borrego badlands, and on the east by the Salton Sea. The climate is comparable to that of the Ocotillo/Coyote Wells Groundwater Basin described above.

The Ocotillo Valley consists of sedimentary deposits derived from the surrounding mountain ranges, similar to the sedimentary deposits of the Ocotillo/Coyote Wells Groundwater Basin. The Coyote Creek fault trends northwest near the southwestern margin of the basin. The proposed location of Quarry Water Well No. 3 is approximately 4 miles southwest of the Coyote Creek fault. The surface deposits in the lower part of the Ocotillo Valley are reported to consist of the remnant shoreline of ancient Lake Cahuilla, which likely filled on several occasions in the Pliestocene due to meandering of the Colorado River. As the ancient lake dried out, saline evaporite deposits were left behind in the sediments.

The primary drainage in the Ocotillo Valley is San Felipe Creek. San Felipe Creek extends from the Peninsular Ranges to the Salton Sea. In the area of proposed Quarry Water Well No. 3, the primary surface drainage is the Fish Creek Wash. San Felipe Creek and Fish Creek Wash only flow seasonally, when runoff occurs from the upper reaches of their respective watersheds. In Section 32, T12S, R10E, approximately 10 miles northeast of the proposed location for Quarry Water Well No. 3, groundwater discharges from two springs near the confluence of San Felipe Creek and Fish Creek Wash. Prior to 1984, flow from these springs only occurred intermittently. Since 1984, however, flow from these two springs has occurred year round. These two springs, the San Felipe Creek Spring and the Fish Creek Spring, support the habitat for a population of Desert Pupfish (Cyprinodon mascularius, see Section 3.5, Wildlife), an endangered species.

Groundwater is reported to occur in two aquifers. The shallow aquifer is present at depths above approximately 100 ft bgs in the center of the basin and contains water with TDS levels reported in the range of 8,000 ppm. The elevated TDS levels are most

likely due to leaching of the saline evaporite deposits in the surficial sediments. An aquitard that may be 100 to 200 feet thick separates the shallow aquifer from the lower aquifer. The lower aquifer extends to at least 650 ft bgs at some locations and contains water with TDS levels reported in the range of 1,400 ppm. Groundwater from the lower aquifer is used for agricultural purposes. According to DWR (Bulletin 118-75), the Ocotillo Valley groundwater basin covers an area of about 410 square miles, with a storage capacity of 5,800,000 AF and a usable groundwater capacity of 1,900,000 AF.

Groundwater is reported to be discharging to the Salton Sea at rates of 2,200 AF/yr to 4,500 AF/yr. The rate of outflow from the Ocotillo Valley Groundwater Basin is greater than the rate of inflow, as evidenced by declining water levels in the lower aquifer. Water levels are decreasing at the rate of three feet per year. Approximately one-third to one-half of this decline is due to agricultural pumping and the balance is due to natural outflow. The naturally-occurring groundwater deficit is most likely due to long-term climatic changes and/or drainage of the lower aquifer due to the lowering of the hydrologic base level caused by the disappearance of ancient Lake Cahuilla.

Water-quality data and the timing of the change in flow from intermittent to year-round indicate that the discharges at San Felipe Creek Spring and Fish Creek Spring are due to increased rates of irrigation to the west. Excess irrigation water percolates to the shallow aquifer and raises the water table. The elevated water table intersects the surface at the location of the springs. From 1983 through 1996, irrigation rates have ranged from approximately 9,250 AF/yr to over 12,000 AF/yr, based on reported groundwater production.

Stream gauge data along San Felipe Creek show that, beginning in 1984, the base flow averaged several cubic feet per second (cfs). Seasonal peak flow generally occurs in late summer or early fall and may reach 50 cfs. If it is assumed that the base flow averages two cfs, then the minimum annual discharge of San Felipe Creek Spring is approximately 1,500 AF/yr. The actual discharge is likely to be appreciably greater due to seasonal peak flows.

3.3.5 Quarry Water Usage: Thresholds of Significance, Environmental Consequences, and Mitigation Measures

3.3.5.1 Thresholds of Significance

The significance criteria for analysis of proposed Quarry Water Well No. 3 were developed from Appendix G of the CEQA Guidelines. The Proposed Action would have a significant impact on hydrology and water quality if it would:

- Violate any water-quality standards or waste discharge requirements;
- Deplete groundwater supplies such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which a permit has been granted, or the rate of discharge at San Felipe Creek Spring or Fish Creek Spring would decrease to the point that it would degrade the Desert Pupfish habitat); or
- Otherwise substantially degrade water quality.

3.3.5.2 Proposed Action: Impacts and Mitigation Measures

Impact 3.3-5: Water Depletion at Quarry

The increased pumping rate in the Quarry vicinity from 7.8 AF/yr to 26 AF/yr could reduce water levels in other areas of the Basin, increasing the cost to pump groundwater, reducing the amount of available water in the Basin, or decreasing flow at springs that support Desert Pupfish habitat.

The nearest supply wells are located several miles to the north of the proposed Quarry Water Well No. 3 location. In addition, these wells typically pump at the rate of several hundred to over 1,000 gpm. The average pumping rate for the proposed well will be 16 gpm. The natural discharge from the Basin is 2,200 AF/yr to 4,500 AF/yr and the agricultural pumping ranges from 9,250 AF/yr to over 12,000 AF/yr. The maximum annual production from the proposed well will increase from 7.8 AF/yr to 26 AF/yr. The pumping rate and annual production for the proposed Quarry Water Well No. 3 are miniscule in comparison to agricultural pumping rates, and the rate of natural discharge of both groundwater and surface water. Therefore, the proposed well will not have any perceptible affect on the existing water levels or on the current rate of decline of the water table.

The proposed increase in pumping is also small compared to the minimum base flow from San Felipe Creek Spring of 1,500 AF/yr. Water quality data from the USG test hole also demonstrate that the new well would tap groundwater that is part of the lower aquifer. Discharge at San Felipe Creek Spring and Fish Creek Spring is from the shallow aquifer. Therefore, the proposed increase in pumping from 7.8 AF/yr to 26 AF/yr will not affect the flow at springs that support Desert pupfish habitat.

Level of Significance Before Mitigation: Less Than Significant

Mitigation Measures: None required

Impact 3.3-6: Water Quality Degradation at Quarry

The increased pumping rate in the Quarry vicinity from 7.8 AF/yr to 26 AF/yr could degrade water quality due to vertical migration of saline water from the shallow aquifer.

Based on the test hole drilling results, the shallow aquifer is not present in the area of proposed Quarry Water Well No. 3. In addition, the incremental increase in pumping from 7.8 AF/yr to 26 AF/yr is miniscule compared to the agricultural pumping rates from the lower aquifer in the central part of the basin.

Level of Significance Before Mitigation: Less Than Significant

Mitigation Measures: None required

Impact 3.3-7: Surface Water Flow at Quarry

Under normal flow conditions, there could be a negative impact on, or disruption of, existing flows of surface water at the Quarry site, as a result of expanded mining.

According to hydrology reports (Joseph E. Bonadiman & Associates 2004), a study was made of approximately 6,856 acres of the drainage area tributary to Fish Creek Wash natural channel. It was estimated that a maximum peak flow-rate for the area is approximately 5,204 cubic feet/second (cfs) for the 3-hrs-100-year storm frequency. It was concluded that the proposed Quarry expansion will not produce a significant reduction of runoff tributaries to Fish Creek because: 1) the Quarry expansion is adjacent to a mountain range that provides the smallest contribution of rainfall in the entire drainage area due to topographic and geologic conditions; and 2) rainfall east of the Quarry or within the Quarry will percolate into the ground, recharging the water table. The proposed Quarry expansion will have no effect on the natural groundwater process, therefore groundwater will transmigrate towards Fish Creek along the standard pattern. However, the main drainage patterns from the western mountain range of the drainage area produces the largest flow rate tributary to Fish Creek, potentially causing a disruption of periodic flows at the Quarry site.

Level of Significance Before Mitigation: Significant

Mitigation Measures: Mitigation Measure 3.3-7

An earthen berm will be constructed along the west side of the Quarry in order to preserve the natural drainage pathway. The berm would work as a natural earth channel, to preserve existing flow characteristics in the drainage area and protect the Quarry from flood waters by diverting water away from the Quarry and towards the Fish Creek Wash. This channel requires a minimum 50-foot bottom width for the floodway and 2:1 channel side slopes. The graded channel only requires an earthen berm of approximately 5 feet high, assuming 2 feet of freeboard. The berm would be 5 feet high by 20 feet wide, and would provide an adequate solution to contain and divert run-off.

Level of Significance After Mitigation: Less than Significant

3.3.5.3 No Action Alternative: Impacts and Mitigation Measures

Impact 3.3-5: Water Depletion at Quarry

The increased pumping rate in the Quarry vicinity of 7.8 AF/yr to 26 AF/yr could reduce water levels in other areas of the Basin, increasing the cost to pump groundwater, reducing the amount of available water in the Basin, or decreasing flow at springs that support Desert Pupfish habitat.

The nearest supply wells are located several miles to the north of the proposed Quarry Water Well No. 3 location. In addition, these wells typically pump at the rate of several hundred to over 1,000 gpm. The average pumping rate for the No Action Alternative is 4.9 gpm. The natural discharge from the Basin is 2,200 AF/yr to 4,500 AF/yr and the agricultural pumping ranges from 9,250 AF/yr to over 12,000 AF/yr. The maximum annual production from the No Action Alternative is 7.8 AF/yr. The pumping rate and annual production for the No Action Alternative are equivalent to the existing baseline conditions and are miniscule in comparison to agricultural pumping rates, and the rate of natural discharge of both groundwater and surface water. Therefore, the proposed well will not have any perceptible affect on the existing water levels or on the current rate of decline of the water table.

The No Action Alternative pumping rate is also small compared to the minimum base flow from San Felipe Creek Spring of 1,500 AF/yr. Water quality data from the USG test hole also demonstrate that the existing well taps groundwater that

is part of the lower aquifer. Discharge at San Felipe Creek Spring and Fish Creek Spring is from the shallow aquifer. Therefore, the No Action Alternative will not affect the flow at springs that support Desert Pupfish habitat.

Level of Significance Before Mitigation: Less Than Significant

Mitigation Measures: None required

Impact 3.3-6: Water Quality Degradation at Quarry

The increased pumping rate in the Quarry vicinity of 7.8 AF/yr to 26 AF/yr could degrade water quality due to vertical migration of saline water from the shallow aquifer.

Based on the test hole drilling results, the shallow aquifer is not present in the area of the existing Quarry Water Well No. 2. In addition, the pumping of 7.8 AF/yr is miniscule compared to the agricultural pumping rates from the lower aquifer in the central part of the basin.

Level of Significance Before Mitigation: Less Than Significant

Mitigation Measures: None required

Impact 3.3-7: Surface Water Flow at Quarry

Under normal flow conditions, there could be a negative impact on, or disruption of, existing flows of surface water at the Quarry site, as a result of expanded mining.

Under the No Action Alternative, existing mining would not expand as outlined in the Proposed Action. Therefore, baseline conditions of surface flows would be maintained.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

3.3.5.4 Partial IID Water Supply Alternative

Impact 3.3-5: Water Depletion at Quarry

The increased pumping rate in the Quarry vicinity of 7.8 AF/yr to 26 AF/yr could reduce water levels in other areas of the Basin, increasing the cost to pump groundwater, reducing the amount of available water in the Basin, or decreasing flow at springs that support Desert Pupfish habitat.

This alternative does not affect water pumping or usage at the Quarry, therefore the partial IID alternative does not change impacts or mitigation measures, as compared to the Proposed Action.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.3-6: Water Quality Degradation at Quarry

Increasing the pumping rate in the Quarry vicinity of 7.8 AF/yr to 26 AF/yr could degrade water quality due to vertical migration of saline water from the shallow aquifer.

Partial use of IID water affects the water usage from the three USG wells in the Ocotillo/Coyote Wells Groundwater Basin. This alternative does not affect water pumping or usage at the Quarry, therefore the partial IID alternative does not change impacts or mitigation measures, as compared to the Proposed Action.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.3-7: Surface Water Flow at Quarry

Under normal flow conditions, there could be a negative impact on, or disruption of, existing flows of surface water at the Quarry site, as a result of expanded mining.

Under this alternative, mining would expand at the Quarry as outlined in the Proposed Action, therefore there is the possibility that natural drainage patterns from the western mountain range of the drainage area could be disrupted at the Quarry site.

Level of Significance Before Mitigation: Significant

Mitigation Measures: Same as Proposed Action (See Mitigation Measure 3.3-3)

Level of Significance After Mitigation: Less than Significant

3.3.5.5 Full IID Water Supply Alternative

Impact 3.3-5: Water Depletion at Quarry

The increased pumping rate in the Quarry vicinity of 7.8 AF/yr to 26 AF/yr could reduce water levels in other areas of the Basin, increasing the cost to pump groundwater, reducing the amount of available water in the Basin, or decreasing flow at springs that support Desert Pupfish habitat.

Full use of IID water affects the water usage from the three USG wells in the Ocotillo/Coyote wells Groundwater Basin. This alternative does not affect water pumping or usage at the Quarry, therefore the full IID alternative does not change impacts or mitigation measures, as compared to the Proposed Action.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.3-6: Water Quality Degradation at Quarry

Increasing the pumping rate in the Quarry vicinity of 7.8 AF/yr to 26 AF/yr could degrade water quality due to vertical migration of saline water from the shallow aquifer.

Full use of IID water affects the water usage from the three USG wells in the Ocotillo/Coyote Wells Groundwater Basin. This alternative does not affect water pumping or usage at the Quarry, therefore the full IID alternative does not change impacts or mitigation measures, as compared to the Proposed Action.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.3-7: Surface Water Flow at Quarry

Under normal flow conditions, there could be a negative impact on, or disruption of, existing flows of surface water at the Quarry site, as a result of expanded mining.

Under this alternative, mining would expand at the Quarry as outlined in the Proposed Action, therefore there is the possibility that natural drainage patterns from the western mountain range of the drainage area could be disrupted at the Quarry site.

Level of Significance Before Mitigation: Significant

Mitigation Measures: Same as Proposed Action (See Mitigation Measure 3.3-3)

Level of Significance After Mitigation: Less than Significant

3.3.6 Cumulative Impacts and Mitigation Measures

The revised groundwater model (Bookman-Edmonston, 2004) assumed a 1.4 percent constant annual population increase in the Ocotillo area based on U.S. Census data and information contained in the Ocotillo-Nomirage Community Area Plan and therefore considered potential cumulative impacts resulting from regional growth.

The County Board of Supervisors recently upheld the County Planning Commission's determination of historical water usage and water well registration terms for a commercial well (State Well #16S/9E-36G4, Westwind Water Company) in the vicinity of the USG wells, and limited future pumping from this well to 40 AF/yr. This maximum rate of pumping is higher than the rate assumed in the modeling conducted for the Proposed Action (Bookman-Edmonston, 2004). The combined effects of the Proposed Action and the proposed additional pumping from the Westwind well have the potential to cause cumulative impacts on water levels and water quality in the Groundwater Basin.

The Proposed Action itself is comprised of three separate components (Quarry, Plant, and Pipeline) that are somewhat separated geographically, reducing the potential for cumulative effects. For example, the existing and proposed Quarry water wells are located along the southwestern boundary of the Ocotillo Valley Groundwater Basin. This Basin is distinctly different from the Ocotillo/Coyote Wells Groundwater Basin in which the USG production wells for the Plant are located.

Impact 3.3-8: Cumulative Reduced Water Levels

Increased pumping of USG wells and the additional commercial pumping from the Westwind well could reduce water levels, increasing the cost of pumping groundwater, causing some wells to go dry, and reducing the amount of available water in the Groundwater Basin.

As discussed for Impact 3.3-1, the Proposed Action could result in a significant impact on water levels and water quantity in the Groundwater Basin. The cumulative impact of the additional commercial pumping has the potential to further exacerbate this impact.

Level of Significance Before Mitigation: Significant

Mitigation Measure: Same as Mitigation Measure 3.3-1. The Monitoring Program for this Mitigation Measure is the same as for Mitigation Measure 3.3-1, as described in Section 3.3.3.

Level of Significance After Mitigation: Less Than Significant as to individual wells; Significant as to Basin-wide impacts

Impact 3.3-9: Cumulative Water Quality Degradation

Increased pumping of USG wells and the additional commercial pumping from the Westwind well could degrade water quality due to lateral migration of higher-TDS water located to the east of Coyote Wells, lateral migration of higher-TDS water from areas near outcrops of Tertiary marine sediments, or vertical migration of water from or near Tertiary marine sediments underlying the alluvial aquifer throughout most areas of the Groundwater Basin.

As discussed for Impact 3.3-2, the Proposed Action could result in a significant impact on water quality in the Groundwater Basin. The cumulative impact of the additional commercial pumping has the potential to further exacerbate this impact.

Level of Significance Before Mitigation: Significant

Mitigation Measure: Same as Mitigation Measure 3.3-2. The Monitoring Program for this Mitigation Measure is the same as for Mitigation Measure 3.3-2, as described in Section 3.3.3.

Level of Significance After Mitigation: Less Than Significant as to individual wells; Significant as to Basin-wide impacts

both gypsum and metamorphic substrates. During field surveys, any plant and wildlife species were recorded in field notes. Plants of uncertain identity were collected and identified later using keys, descriptions, and illustrations from standard field guides.

Four transects of approximately 1,000 feet were established in four different habitat types on the Project site. These were set up to survey for animals, but also characterized habitat types and plant species at the Quarry site. ~~In Section 3.5, Wildlife, of this document,~~ Figure 3.4-1, 2002 Transect Locations ~~3.5-3, Flat-Tailed Horned Lizard Occurrences,~~ shows the locations of these transects. Transect 1 was among outcrops of granite boulders along the base of the Fish Creek Mountains, Transect 2 crossed the broad alluvial valley, Transect 3 was within a sandy wash, and Transect 4 was along one of the many cobble-covered mesas between deeply incised washes. The transects crossed most of the site's width with Transect 1 located near the southeast end and Transect 4 located near the northwest end.

The dominant landforms are a broad alluvial wash and adjacent toeslopes and mountainsides. The wash slopes gently (about two percent), generally toward the northwest. It drains slopes of the Fish Creek Mountains (on the northeast) and Split Mountain (on the southwest) via unnamed washes and small washlets, and by sheet flow. In some areas, the washes are deeply incised, reaching bedrock. Alluvial soils throughout the wash are poorly developed and consist of sands with high rock content (primarily cobbles in the three to ten inch range, but also larger rocks and boulders). Eroded channel banks show similar high rock content in the subsurface layers. These soils present a poor substrate for vegetation.

Mountainsides are very steep (slopes are about 20 percent) and rocky with frequent areas of exposed bedrock and actively eroding talus (rock debris). Exposed ridgetops have thin soil overlying bedrock.

Undisturbed uplands on the site support desert shrubland of the creosote bush series, creosote bush-white bursage series, and (on metamorphic bedrock) ocotillo series. Dominant plants include creosote bush (*Larrea tridentata*), white bursage (*Ambrosia dumosa*), brittlebush (*Encelia farinosa*), and pygmy cedar (*Peucephyllum schottii*). Gypsum outcrops are almost devoid of vegetation, and pygmy cedar was the only plant seen regularly on these soils during the 2002 surveys.

construction would be similar to that of the Proposed Action water supply pipeline.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: Same as Proposed Action (See Mitigation Measure~~s~~ 3.4-1~~a~~)

Level of Significance After Mitigation: Less than Significant

3.4.3.5 Full IID Water Supply Alternative

Impact 3.4-1: Loss of Vegetation at Quarry

Increased Quarry activities at the Quarry may contribute to cumulative loss of additional desert shrublands throughout the region.

The Full IID Water Supply Alternative would not change current activities at the Quarry, but because no special status plants were observed on the site, no significant impact to vegetation would occur.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.4-2: Loss of Vegetation at Well Site and Pipeline

Disturbance at the proposed Quarry well site and the pipeline alignment may have a negative impact on threatened or endangered plant species in the area.

The Full IID Water Supply Alternative would not change activities associated with the Quarry pipeline development as compared to the Proposed Action, therefore there would not be any negative impacts on plant species.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.4-3: Loss of Vegetation at Plant

Disturbance of additional acreage at the Plant may have a negative impact on threatened or endangered plant species in the area.

The Full IID Water Supply Alternative would not change activities associated with the expansion and upgrade of the Plant, therefore there would not be any negative impacts on threatened or endangered plant species.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required

Impact 3.4-4: Loss of Vegetation at 10" Replacement Pipeline

Disturbance at the proposed site of the replacement 10" water line alignment to replace the existing Plant water pipeline may have a negative impact on threatened or endangered plant species in the area.

The Full IID Water Supply Alternative would still require the construction of a new waterline alignment (canal). Impacts from this construction would be similar to those outlined in the Proposed Action.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: Same as Proposed Action (See Mitigation Measure~~s~~ 3.4-1~~a~~)

Level of Significance After Mitigation: Less than Significant

3.4.4 Cumulative Impacts and Mitigation Measures

No substantive new projects or other activities are proposed on private or public lands within the areas affected by the Project that could result in a significant cumulative effect. The Project itself is comprised of three components (Quarry, Plant, and pipeline) that are somewhat separated geographically, reducing potential cumulative effects.

Mitigation Measure 3.5-1c

Migratory birds: In order to avoid potentially fatal impacts on birds protected under the Migratory Bird Treaty Act and the California Fish and Game Code, USG shall survey the area prior to grading and brush removal of previously undisturbed habitat.

Mitigation Measure 3.5-1d

Peninsular bighorn sheep: USG, in coordination with the BLM, shall initiate formal consultation with the US Fish and Wildlife Service under Section 7 of the Federal Endangered Species Act and implement the terms and conditions of the incidental take statement authorizing the project. The consultation process will result in the development of a Biological Opinion by the USFWS that will: (1) provide a statement about whether the proposed project is "likely or not likely to jeopardize" the continued existence of the species, or result in the adverse modification of critical habitat; (2) provide an incidental take statement that authorizes the project; and (3) identifies mandatory reasonable and prudent measures to minimize incidental take, along with terms and conditions that implement them.

Mining shall be conducted only as approved in the Plan of Operation and the Mine Reclamation Plan. Reclamation shall be conducted concurrently with mining and it shall be initiated within each phase as soon as is feasible. Reclamation shall include slope contouring and revegetation with native plant species as specified in the Reclamation Plan.

USG shall instruct its employees and other visitors to the mine to avoid Peninsular bighorn sheep. Access to undisturbed lands by humans on foot shall be restricted, and usually would include only biologists and mining personnel. USG shall establish a training program, including new-employee orientation and annual refresher, to educate employees regarding bighorn sheep and the importance of avoidance.

USG shall not allow domestic animals (cattle, sheep, donkeys, dogs, etc.) onto the mine site or any lands under USG control. Training for mine employees shall include instructions to report observations of domestic animals to the quarry's environmental manager. Upon receiving any such reports, the environmental manager shall contact the appropriate authorities for removal of domestic animals.

In the modeled impact analysis, the maximum off-property, ground level concentrations of NO_2 and CO were calculated for comparison to the corresponding NAAQS and CAAQS levels. Maximum concentrations were calculated to cover a region from the fence line or site property line extending 10 kilometers or over 6 miles in all directions. Figure 3.6-5 shows the results of the modeling. All project related maximum concentrations for NO_2 and CO with background levels are below the NAAQS and CAAQS. Concentration plots showing the maximum one-hour average concentration of NO_2, the maximum annual average of NO_2, the maximum one-hour average concentration of CO, and the maximum 8-hour average of CO are included as Figures 3.6-6, 7, 8, and 9, respectively.

Based on the air quality modeling results, NO_x and CO will not cause or contribute to a violation of any applicable NAAQS or CAAQS. In addition, the NO_x emissions were offset by the purchase of ERCs in the amount required by Permit #2834C. Therefore, impacts from NO_x and CO are determined to be less than significant.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: None required. The Plant combustion emissions are determined to be less than significant. However, the following measures are recommended to verify continued compliance:

> *USG must maintain and annually renew existing air quality permits to operate from the ICAPCD and be in compliance with such permits. This will apply to all construction activities at both the plant and pipeline utilizing diesel equipment used in applicable activities at the plant and pipeline.*
>
> *If a cogeneration unit is installed it shall be permitted through the ICAPCD and shall be in compliance with all applicable ICAPCD rules and regulations.*

Impact 3.6-5: Increased PM_{10} and/or Dust Emissions at Plant

Increased production of wallboard at the Plant would result in increased PM_{10} or dust emissions from combustion, point, and fugitive sources, which could exceed standards of significance.

Data presented in Table 3.6-10 indicates that PM_{10} emissions decreased by over 34 TPY despite the increase in production. The principle decrease is related to the construction of the rock storage building, which enclosed the previously open

and the BLM. Since old County Route S80 is located beyond the Project site, its eligibility for inclusion in either the NRHP or CRHR will not be addressed in this report. Regardless, the alignment and features of the highway would not likely be affected by any Project related activities.

San Diego and Arizona Eastern Railroad

The San Diego and Arizona Eastern Railroad was constructed across San Diego and Imperial County from 1907-1919. The alignment of the San Diego and Arizona Eastern Railroad tracks parallels the alignment of County Route S80 and the water pipeline replacement Project. In the vicinity of the Plant, a small portion of the interstate (San Diego and Arizona Eastern) rail line was relocated to the south.

Site Recording

The historic sites identified during current archaeological investigations were recorded using appropriate State Department of Recreation site record forms. The Quarry, site USG-01, USG's narrow gauge railroad, and remnants of County Route S80 were recorded as part of the currently Proposed Action. The records for these sites are included in Appendix E of this report.

Level of Significance Before Mitigation: Less than Significant

Mitigation Measures: If any archaeological resources are encountered during implementation of the Proposed Action, construction or any other activity that may disturb or damage such resources shall be halted, and the services of a qualified archaeologist shall be secured to assess the resources and evaluate the potential impact. Such construction or other activity may resume only after the archaeological resources have been assessed and evaluated and a plan to avoid or mitigate any potential impacts to a level of insignificance has been prepared and implemented.~~None required~~

Impact 3.8-2: Ethnic Cultural Resources

The Proposed Action may affect unique ethnic cultural values or sacred lands in the potential impact area.

regional or local history, does not reflect various historic mining practices, and does not seem to have the potential to yield significant historical information regarding mining in or development of Imperial Valley. Therefore, the extant remnants of site USG-01 do not seem to meet any of the eligibility criteria for inclusion in either the NRHP or the CRHR, and does not require any additional research or mitigation prior to or during Project implementation. Although this impact is considered to be less than significant, excavation in previously undisturbed areas could uncover unknown resources. As such, USG should implement a plan for such an event as outlined below. CEQA Guidelines Section 15064(f) states that "a lead agency should make provisions for historical or unique archaeological resources accidentally discovered during construction. These provisions should include an immediate evaluation of the find by a qualified archaeologist."

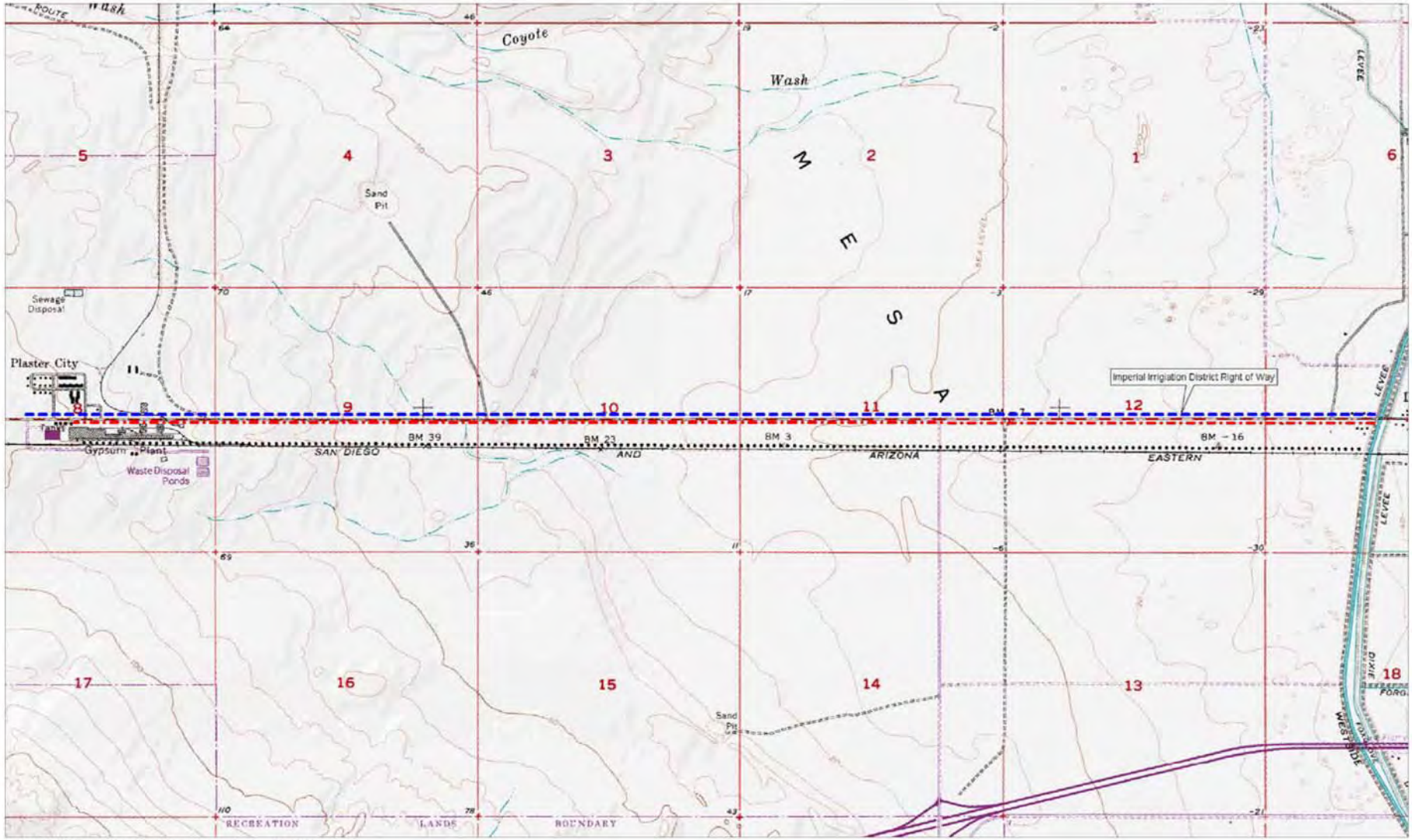
An inadvertent discovery plan could address the unanticipated discovery of cultural resources (e.g., prehistoric, historic sites, and/or artifacts) and facilitate their protection. Such plan would also provide USG staff with information regarding the nature and identification of historic resources and a set of protocols regarding unanticipated discoveries of cultural resources.

Level of Significance Before Mitigation: Potentially Significant

Mitigation Measures: Mitigation Measure 3.8-3

> *If any archaeological resources are encountered during implementation of the Proposed Action, construction or any other activity that may disturb or damage such resources shall be halted, and the services of a qualified archaeologist shall be secured to assess the resources and evaluate the potential impact. Such construction or other activity may resume only after the archaeological resources have been assessed and evaluated and a plan to avoid or mitigate any potential impacts to a level of insignificance has been prepared and implemented. ~~An archaeologist qualified by the Society of Professional Archaeologists (SOPA) shall be deemed "qualified" for purposes of this mitigation measure. The services of a qualified archaeologist may be secured by contacting the Center for Public Archaeology – California State University, Fullerton or a member of SOPA.~~*

Level of Significance After Mitigation: Less than Significant



SOURCE: Lilburn Corporation, 2004

Note: South side alignment is now a potential route.

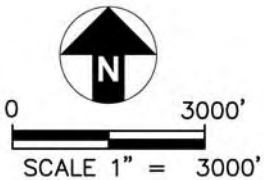


Figure 2.0-19
Potential West Side Main Pipeline Routes
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

RESOURCE DESIGN
TECHNOLOGY, INC.

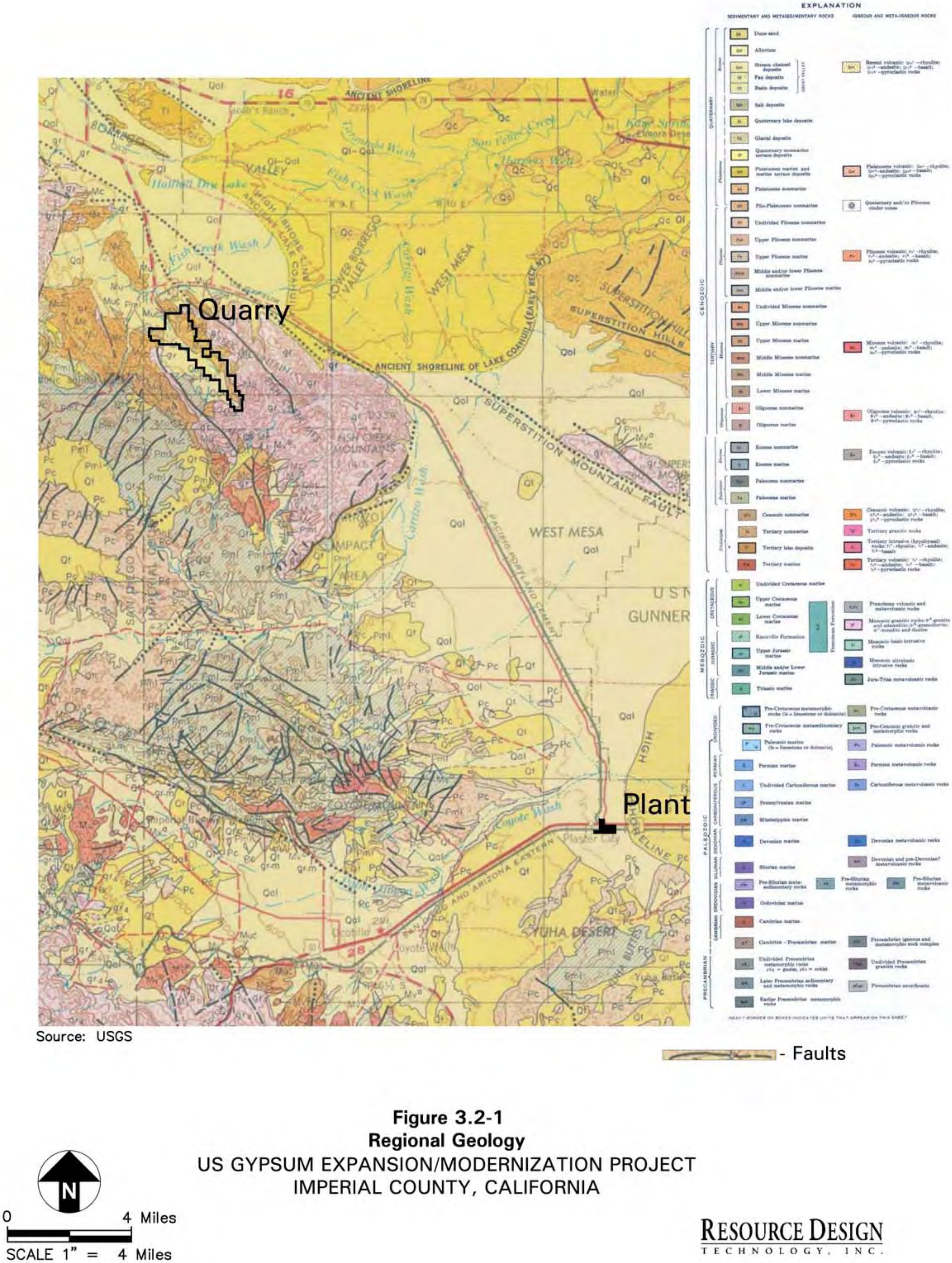
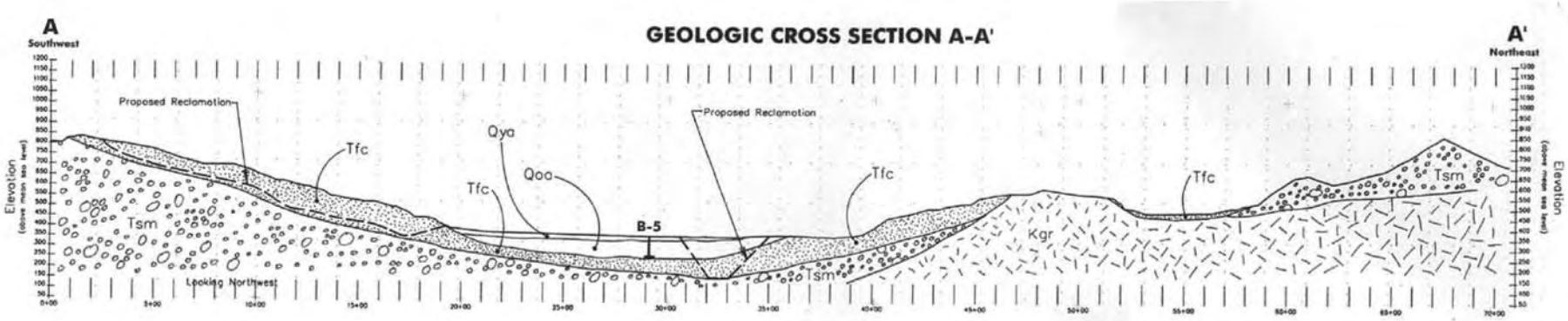
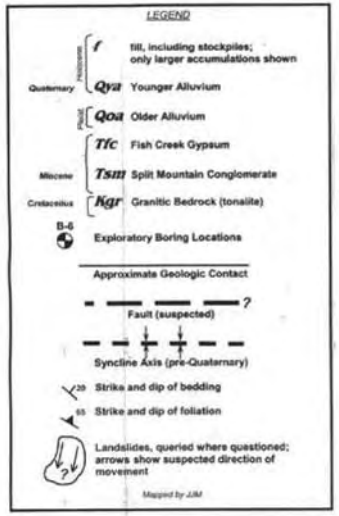


Figure 3.2-1
Regional Geology
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

RESOURCE DESIGN
TECHNOLOGY, INC.



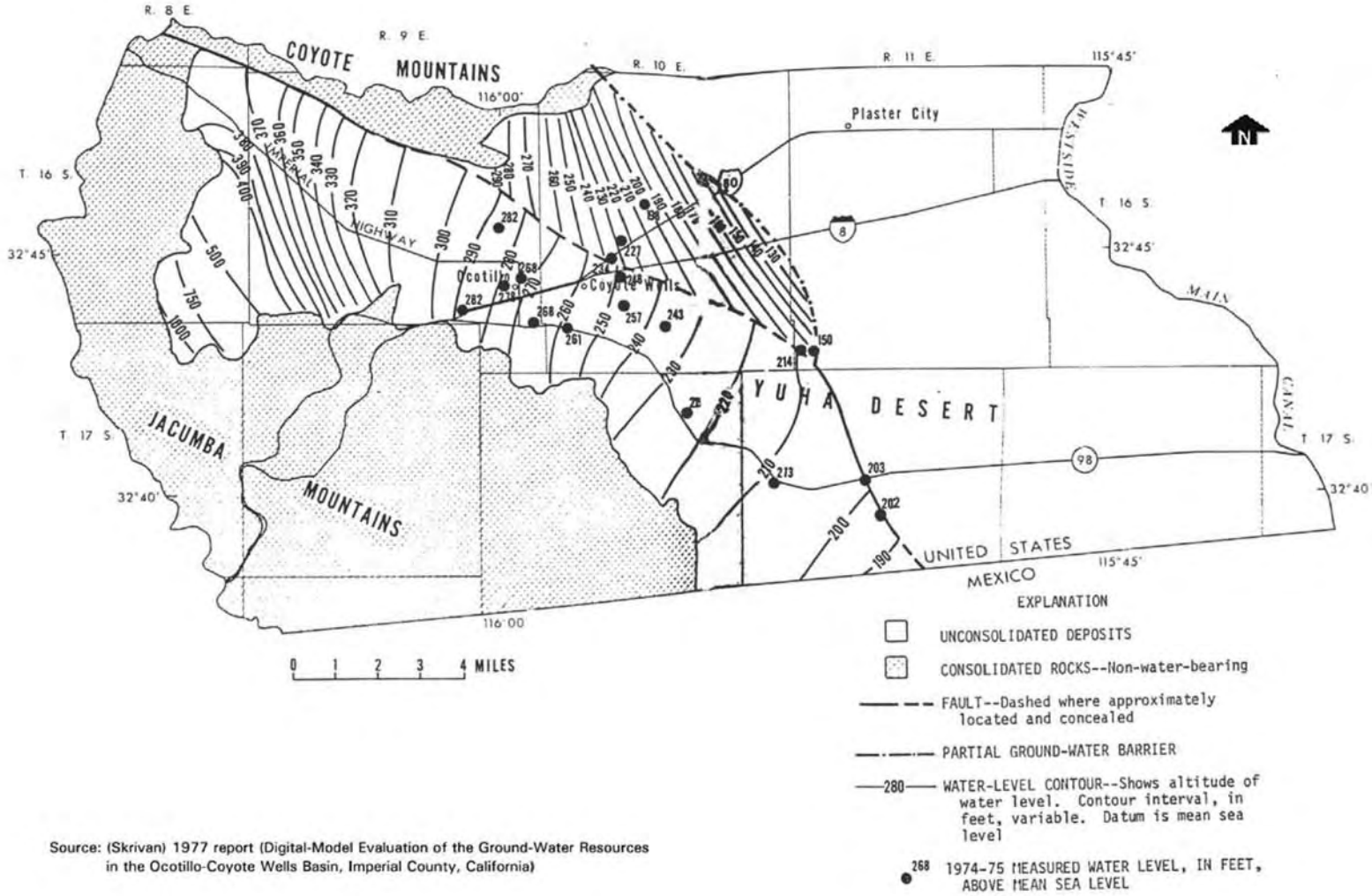


Source: Lilburn Corporation

Figure 3.2-4
Geologic Cross-Section A

US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

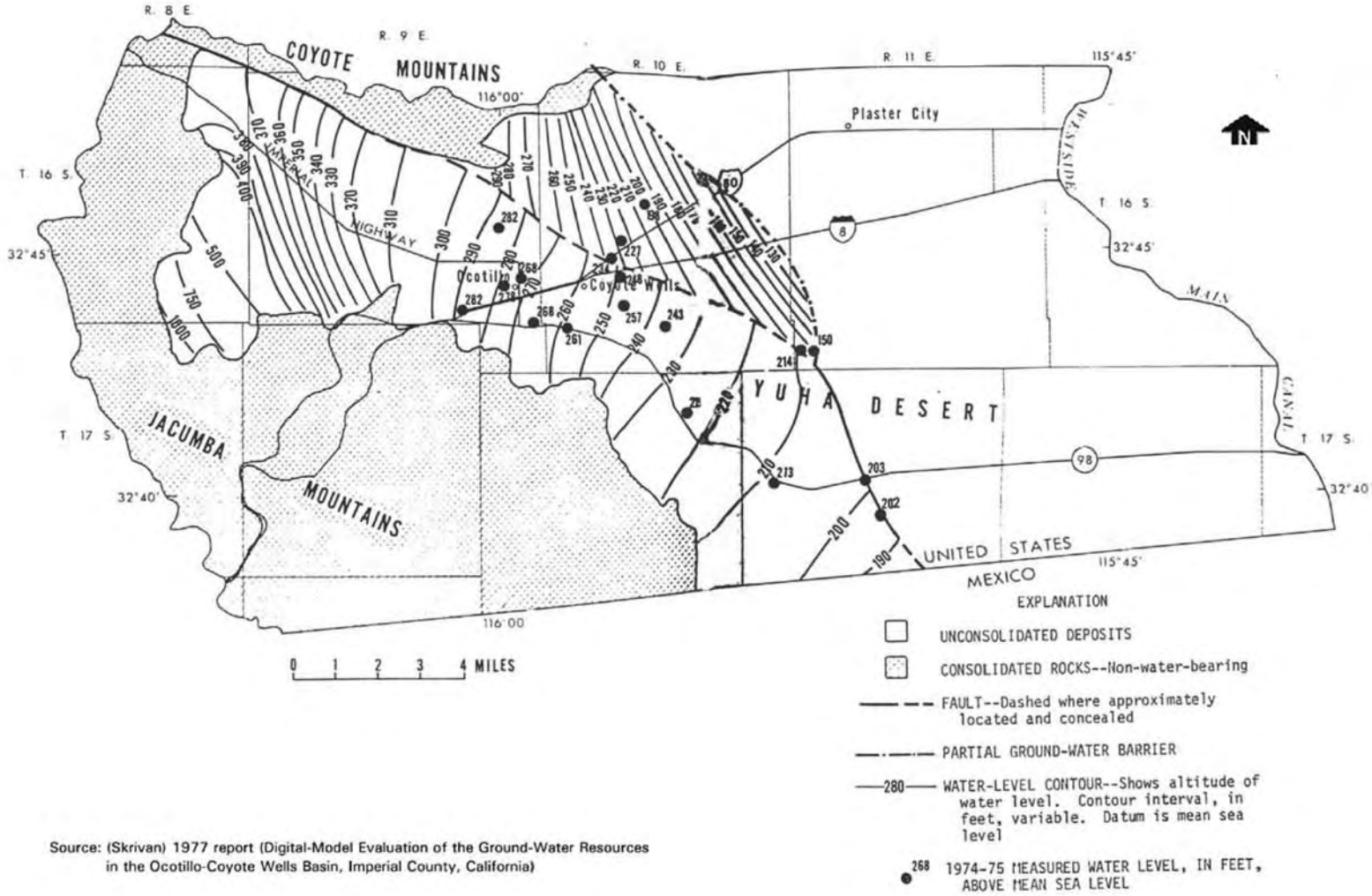
RESOURCE DESIGN
TECHNOLOGY, INC.



Source: (Skrivan) 1977 report (Digital-Model Evaluation of the Ground-Water Resources in the Ocotillo-Coyote Wells Basin, Imperial County, California)

Figure 3.3-5
Simulated Water-Level Contours
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

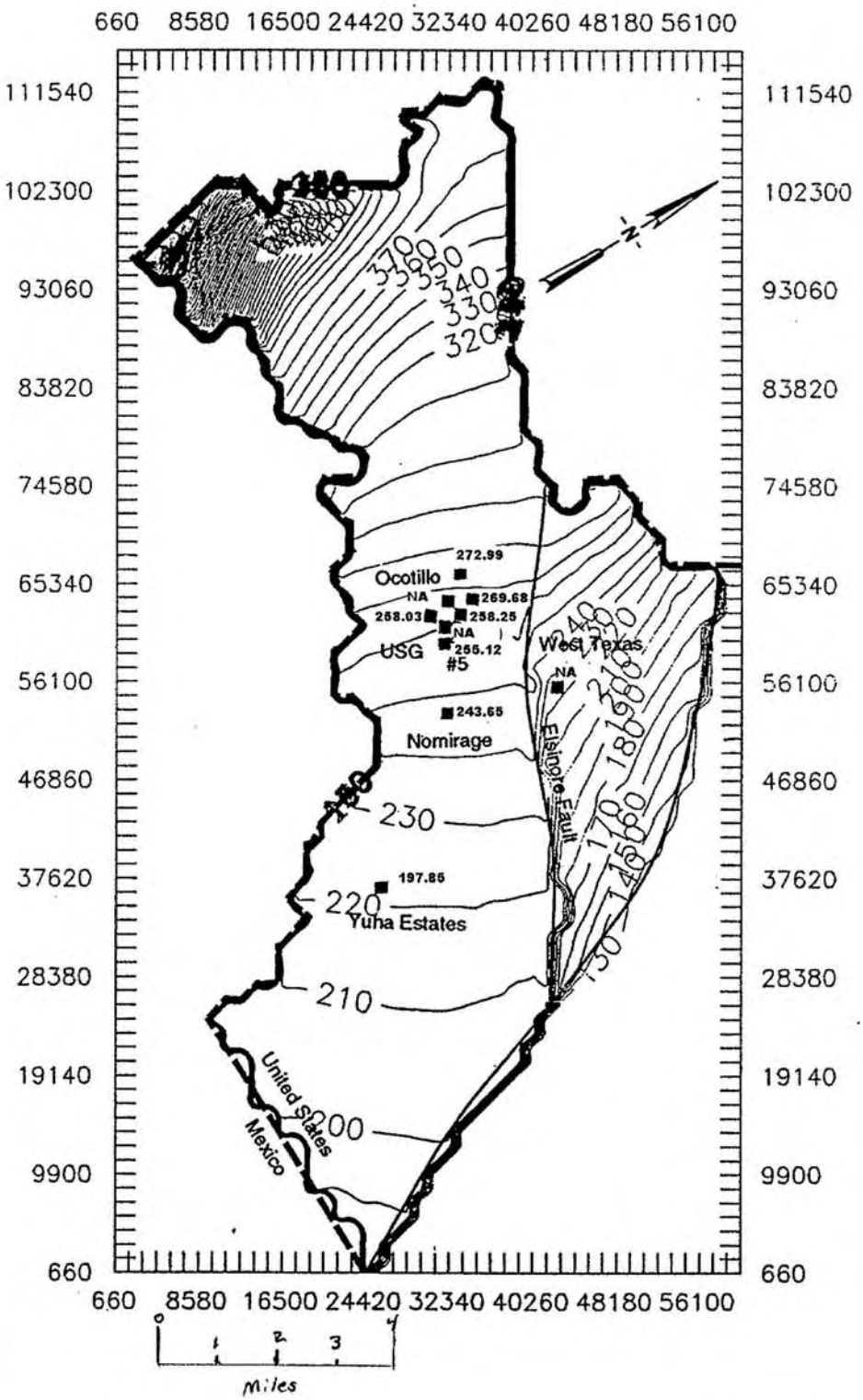
RESOURCE DESIGN TECHNOLOGY, INC.



Source: (Skrivan) 1977 report (Digital-Model Evaluation of the Ground-Water Resources in the Ocotillo-Coyote Wells Basin, Imperial County, California)

Figure 3.3-5
Simulated Water-Level Contours
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

RESOURCE DESIGN TECHNOLOGY, INC.



BOOKMAN-EDMONSTON ENGINEERING, INC. MARCH 1996

Figure 3.3-6
Simulated 1995 Contours
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

RESOURCE DESIGN
TECHNOLOGY, INC.

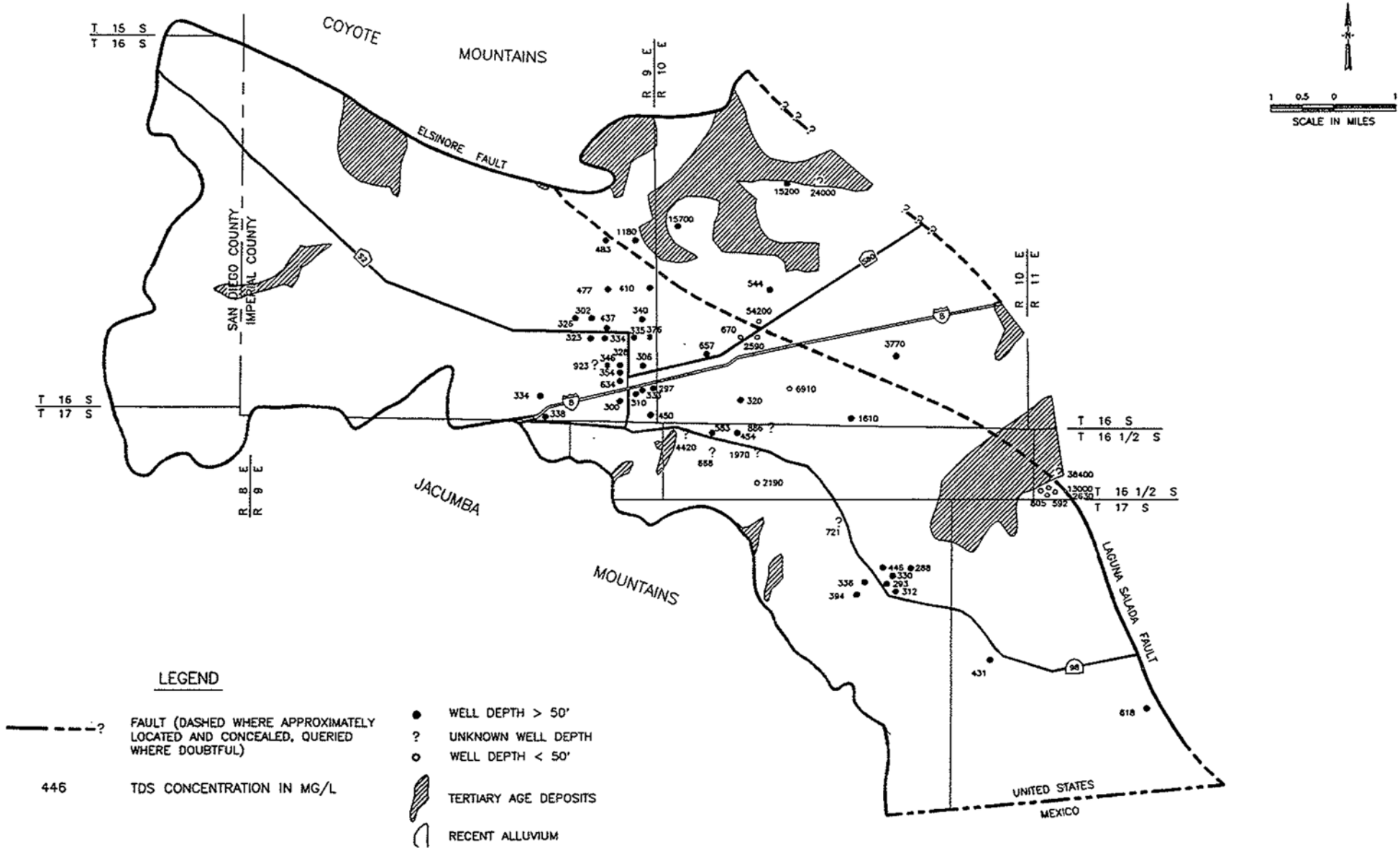


Figure 3.3-7
Groundwater Quality (TDS Concentrations in mg/l)
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

RESOURCE DESIGN
TECHNOLOGY, INC.

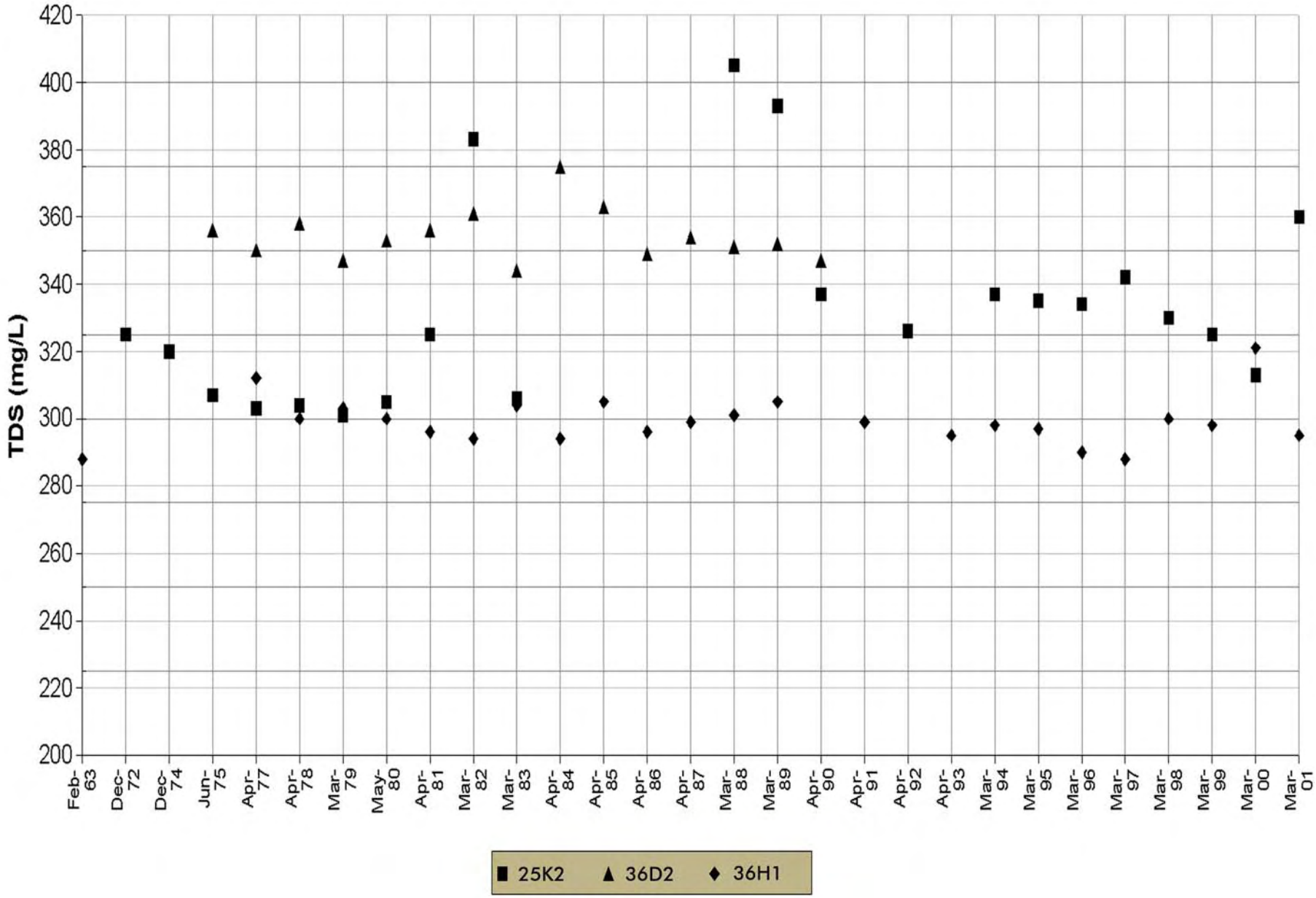
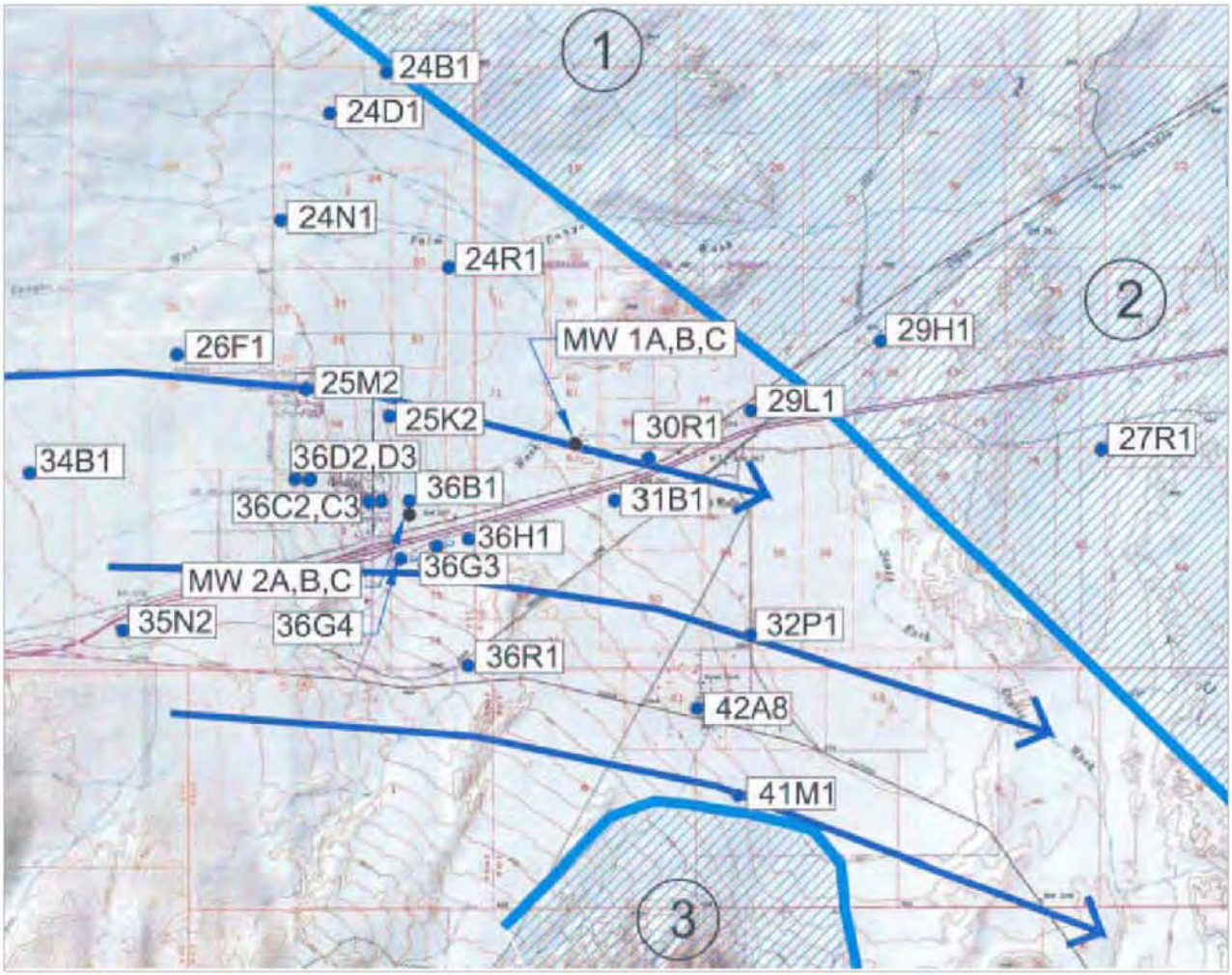


Figure 3.3-12
TDS Trends - Ocotillo/Nomirage Area
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

RESOURCE DESIGN
TECHNOLOGY, INC.

Source: DRAFT GROUNDWATER MONITORING PROGRAM FOR USG's PROJECT to Jurg Heuberger, Dave Brown, Peter Martin and Andy Kopania, April 23, 2004



LEGEND

Groundwater Flow Direction

27R1 Location of wells listed in Table 3.3-10

N

0 0.25 0.50 1

Miles

Figure 3.3-17
Current and Proposed Monitoring Wells in the Ocotillo Area

US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

RESOURCE DESIGN
TECHNOLOGY, INC.

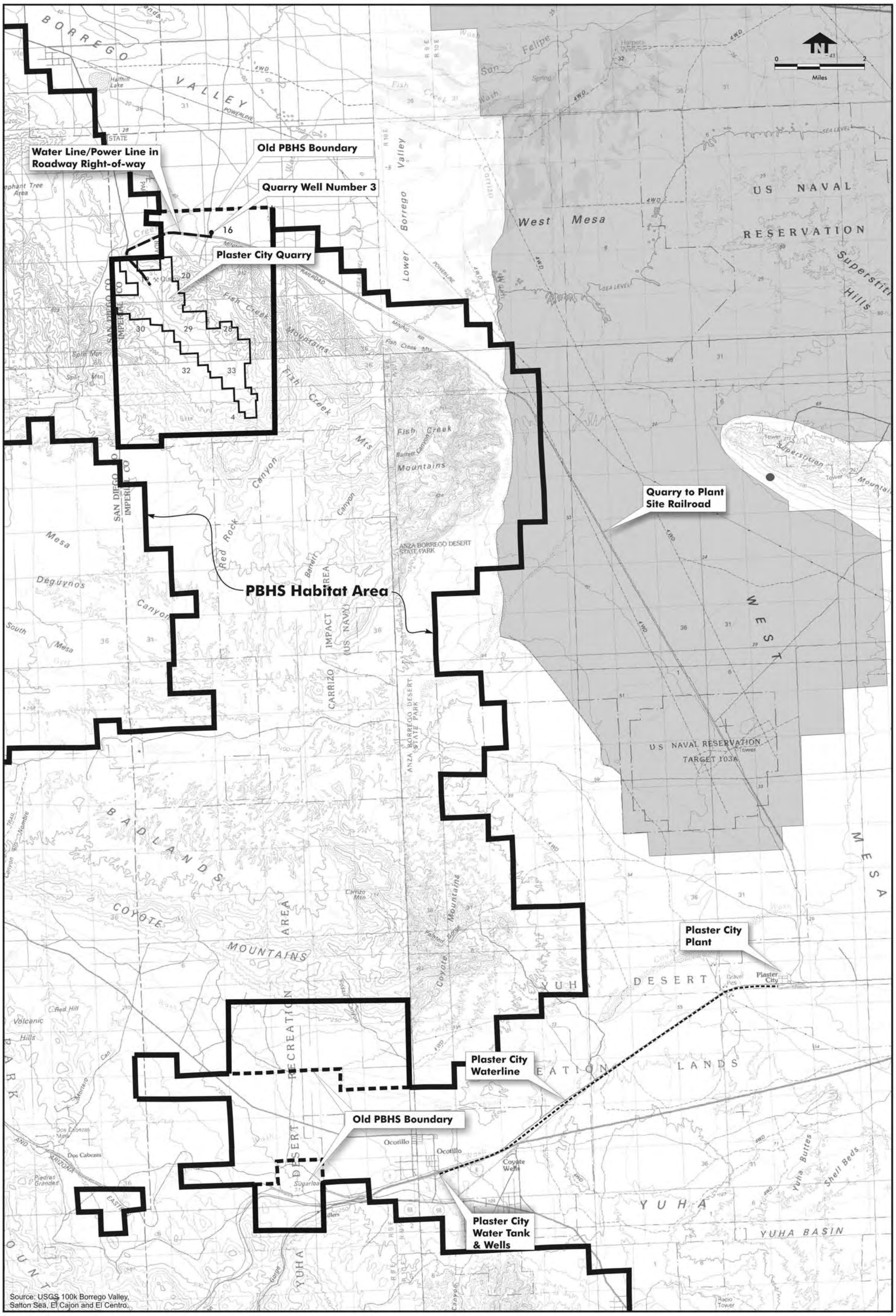
Photograph 5: Typical view of alluvial fan.

Photograph 6: Typical view of wash vegetation.

SOURCE: Lilburn Corporation, 2003

Figure 3.4-4
Existing Photographs
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

RESOURCE DESIGN
TECHNOLOGY, INC.



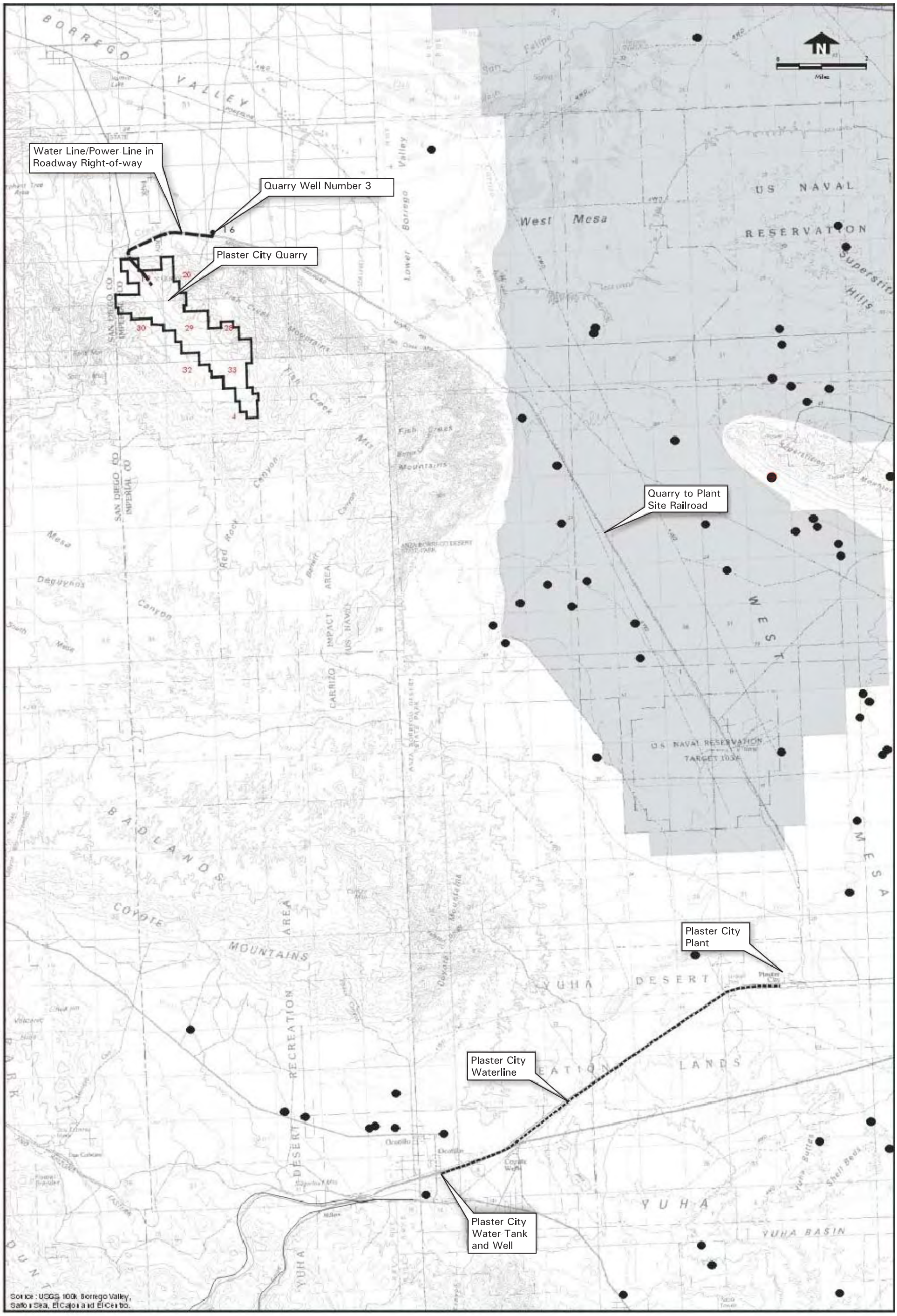
Legend

- FTHL West Mesa Management Area
- PBHS Habitat Area

Figure 3.5-2
Penisular Bighorn Sheep Critical Habitat and Flat Tailed Horned Lizard Management Area
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

Source: Lilburn Corporation

RESOURCE DESIGN TECHNOLOGY, INC.



Source: Lilburn Corporation

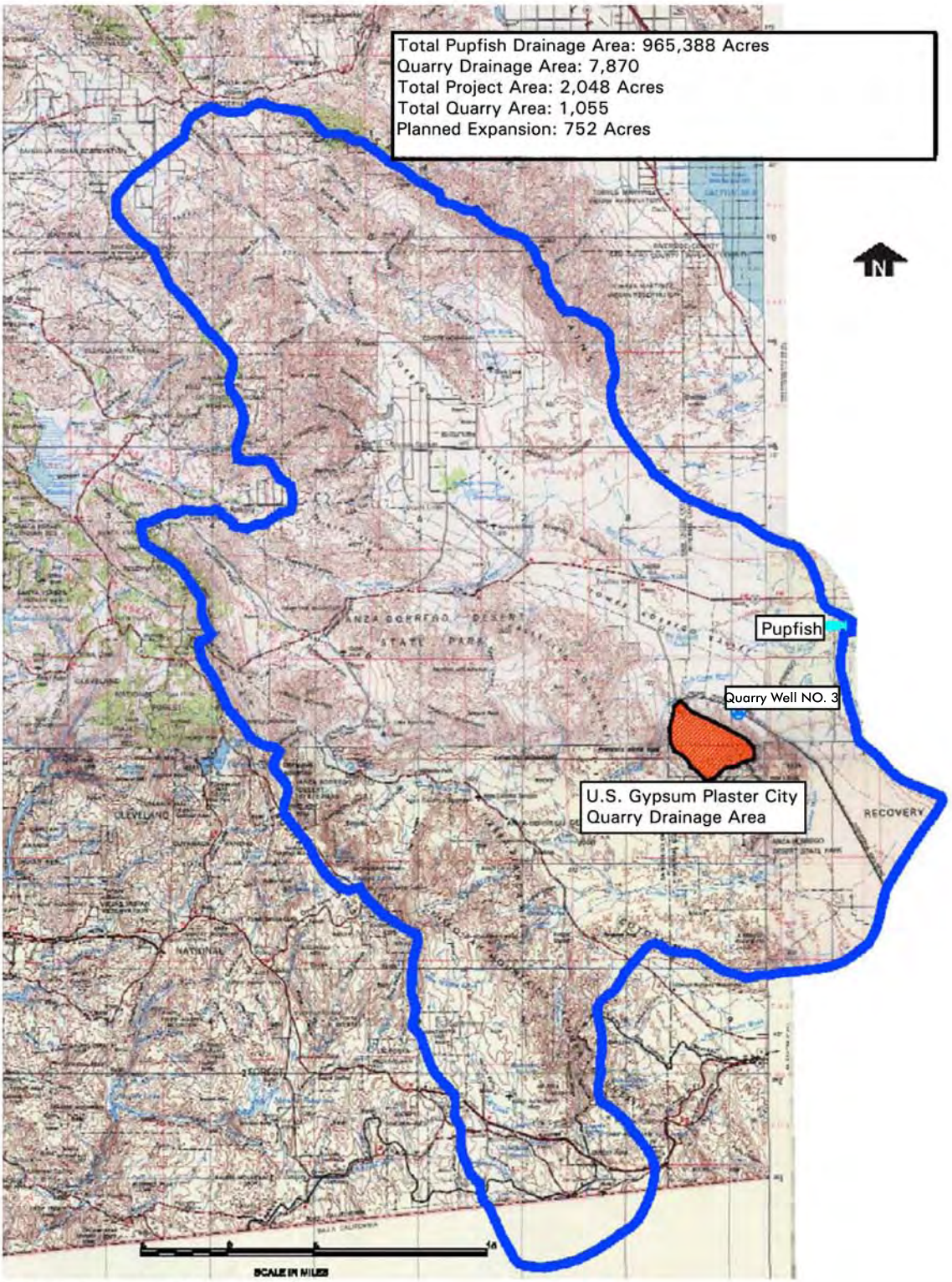
Legend: ● - FTHL Recent Occurences

▭ - Boundary of FTHL West Mesa Management Area

Figure 3.5-3
Flat Tailed Horned Lizard Occurrences

US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

RESOURCE DESIGN TECHNOLOGY, INC.



Source: Bookman–Edmonston

Figure 3.5-4
Total Drainage Area for the Desert Pupfish
US GYPSUM EXPANSION/MODERNIZATION PROJECT
IMPERIAL COUNTY, CALIFORNIA

RESOURCE DESIGN
TECHNOLOGY, INC.

APPENDIX B
AGUA CALIENTE BANDS OF CAHUILLA INDIANS, ET AL. V. NORTON ET AL., CASE NO. EDCV 05-187-VAP (OPX)

JMBM | Jeffer Mangels Butler & Marmaro LLP

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Ref: 66064-0002

August 11, 2006

VIA FEDEX

Vicki Wood
Field Manager
Bureau of Land Management
El Centro Field Office
1661 S. 4th Street
El Centro, CA 92243

Re: Bighorn Sheep Critical Habitat Litigation – Court Order Entering Consent Decree with (1) Remand of Critical Habitat, and (2) Partial Vacatur

Dear Ms. Wood:

As attorneys for and on behalf of Granite Construction Company, Val-Rock, Inc., Pyramid Construction, and United States Gypsum Company ("Mining Operators"), we want to notify you of an important recent U.S. District Court decision that has changed the boundaries of land included within critical habitat for the Peninsular Bighorn sheep. Effective immediately, this decision removes from critical habitat those lands in Imperial County within which these Mining Operators currently operate.

Enclosed herewith are the following:

1. Amended Order Granting Motion for Approval of Consent Decree and Dismissal with Prejudice in *Agua Caliente Bands of Cahuilla Indians, et al. v. Norton et al.*, Case NO. EDCV 05-187-AP (Opx), entered by U.S. District Judge Virginia A. Phillips, U.S. District Court, Eastern District of California, on August 3, 2006. ***(The Order is attached hereto as Exhibit A.)***

2. Consent Decree, entered by the U.S. District Court, on August 2, 2006 ***(The Consent Decree is attached hereto as Exhibit B.)***

3. Detailed maps showing the precise location of the mining lands now excluded from critical habitat. These were not entered by the Court, but were prepared by the Mining Operators and track the property descriptions in Exhibits 1, 2, and 3 of the Consent Decree. ***(The Maps are attached hereto as Exhibit C.)***

By this Order, Judge Phillips affirmed a consent decree entered into by plaintiff, plaintiff-intervenors (including the Mining Operators), and the federal defendants, which provides for the following:

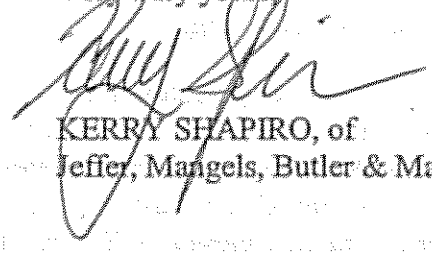
- The Service shall remand the February 1, 2001 final rule designating critical habitat for the Peninsular Bighorn sheep (66 Fed. Reg. 8650) based on errors in the Service's assessment of economic impacts associated with the final rule. Specifically, the consent decree and order require the U.S. Fish and Wildlife Service ("Service") to reconsider critical habitat for the species, and prepare a new rule within two years.

- In reconsidering the final rule, the Service shall address, *inter alia*, the economic impacts of designating critical habitat pursuant to Section 4 of the Endangered Species Act, 16 U.S.C. 1533(b)(2).

- During the remand period when the Service is promulgating a new critical habitat rule, the old rule will largely remain in place and be effective, except for specific lands omitted from the rule, including specific lands where the Mining Operators have existing or planned mining operations, as well as certain lands adjacent to these areas, which shall be immediately removed from critical habitat. Thus, as of the date of the Order, these lands are no longer within designated critical habitat boundaries, and thus are no longer subject to any legal requirements relating to designated critical habitat. Property descriptions of these lands are contained in the Consent Decree. (*See* Exhibit B, Consent Decree, at Exh. 2).

Please call me at the above number if you have any questions or comments regarding these court documents.

Very truly yours,



KERRY SHAPIRO, of
Jeffer, Mangels, Butler & Marmaro LLP

KS:sb
Enclosures

cc: Mike Pool, BLM State Director
Steve Kupferman, BLM-State Office
Rob Waiwood, BLM-Desert District
Larry LaPre, BLM-Desert District
Linda Self, BLM-El Centro
Daniel Steward, BLM El Centro
Kendra Nitta, U.S. Department of the Interior
Jurg Heuberger, County of Imperial

bcc: Jeff Mercer, Granite Construction
Richard Watts, Esq., Granite Construction
Larry Eskildsen, Val-Rock, Inc.
Daryl Dickerson, Pyramid Construction
Charles Johnson, Esq., Ewing, Johnson & Macklin
Martin Robinson, U.S. Gypsum Company
Matt Huss, U.S. Gypsum Company
Roger Sharpe, U.S. Gypsum Company
Chris McElroy, Esq., U.S. Gypsum Company
Scott Castro, Esq., JMBM
Malcolm Weiss, Esq., JMBM

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FILED
CLERK, U.S. DISTRICT COURT
AUG - 2 2006
CENTRAL DISTRICT OF CALIFORNIA
EASTERN DIVISION BY DEPUTY

ENTERED
AUG - 3 2006
CLERK, U.S. DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA
EASTERN DIVISION
DEPUTY

UNITED STATES DISTRICT COURT

CENTRAL DISTRICT OF CALIFORNIA

AGUA CALIENTE BAND OF CAHUILLA INDIANS, Plaintiff, v. GALE A. NORTON, SECRETARY OF THE INTERIOR; STEVEN A. WILLIAMS, DIRECTOR OF THE U.S.FISH AND WILDLIFE SERVICE; U.S. DEPARTMENT OF THE INTERIOR; U.S. FISH AND WILDLIFE SERVICE, Defendants.	Case No. EDCV 05-187-VAP(OPx) [Motion filed on May 8, 2006] **AMENDED ORDER GRANTING MOTION FOR APPROVAL OF CONSENT DECREE AND DISMISSAL WITH PREJUDICE**

DOCKETED ON CM
AUG 3 2006
BY 045

The Motion for Approval of Consent Decree and Dismissal with Prejudice came before the Court for hearing on July 17, 2006. After reviewing and considering all papers filed in support of, and in opposition to, the Motion, as well as the arguments advanced by counsel at the hearing, the Court grants the Motion.

THIS CONSTITUTES NOTICE OF ENTRY AS REQUIRED BY FRCP, RULE 77(D).

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I. BACKGROUND

Plaintiff Agua Caliente Band of Cahuilla Indians ("Agua Caliente Band") filed this Complaint on March 7, 2005. Plaintiff Agua Caliente Band challenges the critical habitat designation for the bighorn sheep, issued in a final rule by the Secretary of the Interior on February 1, 2001, alleging that it was promulgated in violation of the Endangered Species Act ("ESA"), 16 U.S.C. §§ 1351, et seq.; the Administrative Procedure Act ("APA"), 5 U.S.C. §§ 551, et seq.; federal trust obligations under 25 U.S.C. § 1629; Executive Order 13175; Secretarial Order 3206; and other Federal laws and regulations. Specifically, Plaintiff Agua Caliente Band avers that Defendants P. Lynn Scarlett, H. Dale Hall, United States Department of the Interior, and United States Fish and Wildlife Service ("Service") (collectively, "Federal Defendants") used a methodology in designating a critical habitat designation that failed to: (1) identify the physical or biological features essential to the conservation of the species; (2) identify the specific areas where the essential physical or biological features are found; (3) identify the specific areas that may require special management considerations or protections; (4) identify the geographic areas occupied by the species; (5) consider the best scientific and commercial data available; (6) conduct a mandatory exclusion analysis; (7) provide

public notice; (8) adequately respond to public comments; (9) conduct a sufficient economic analysis; and (10) describe specifically the actual areas of critical habitat in violation of 16 U.S.C. § 1532(5)(A). [Joint Motion for Approval of Consent Decree and Dismissal with Prejudice ("Mot.") at 1-2.]

On June 7, 2005, the Court permitted the Building Industry Legal Defense Foundation, California Building Industry Association, California State Grange, and Desert Riders (collectively, "BILDF Plaintiffs") to intervene as Plaintiffs. [June 7, 2005, Order Granting Applicants' Motions to Intervene at 11.] On the same date, the Court permitted Granite Construction Company, Pyramid Construction, United States Gypsum Company, and Val-Rock, Inc. (collectively, "GCC Plaintiffs") to intervene as Plaintiffs as well. [Id.]

The Court permitted Sierra Club and Center for Biological Diversity (collectively, "CBD Defendants") to intervene as Defendants on June 7, 2005; however, the Court restricted their involvement to the remedial phase of this action. [Id.]

On May 8, 2006, Plaintiff Agua Caliente Band, the BILDF Plaintiffs, the GCC Plaintiffs, and the Federal Defendants filed a Joint Motion for Approval of Consent

Decree and Dismissal with Prejudice. The Proposed Consent Decree ("Decree") states, inter alia, that the critical habitat designation rule will be remanded to the Service to be considered in light of the Plaintiffs' allegations. [Decree at 2.] The Decree also states that equity demands the retention of the critical habitat designation pending promulgation of a new rule except in the following areas:

> (1) all lands within the exterior boundaries of the Agua Caliente Indian Reservation, including (a) lands title to which is held by the United States in trust for the Agua Caliente Band of Cahuilla Indians, (b) lands title to which is held in trust by the United States for a member of the Agua Caliente Band of Cahuilla Indians or any other Indian, and (c) lands title to which was formerly held in trust by the United States for a member of the Agua Caliente Band of Cahuilla Indians (collectively, "Tribal Lands") . . .; (2) certain lands adjacent to and within mining operations within the Coyote and Jacumba Mountains and within the Fish Canyon area (collectively, "Mining Lands") . . .; and (3)

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> certain private lands used by the Desert Riders (collectively, "Desert Riders Lands") . . . .

[Decree at 4.]

On May 26, 2006, the CBD Defendants filed an Opposition to Joint Motion for Approval of Consent Decree and Dismissal with Prejudice ("Opp'n"). On June 9, 2006, Plaintiff Agua Caliente Band filed a Reply In Support of Joint Motion ("Agua Caliente Band's Reply"); the BILDF Plaintiffs filed a Reply in Support of Joint Motion ("BILDF's Reply"); the GCC Plaintiffs filed a Reply in Support of Joint Motion ("GCC's Reply"); and the Federal Defendants filed a Reply in Support of Joint Motion ("Federal Defendants' Reply"). On account of new evidence in the Reply papers, the CBD Defendants filed a Sur-Reply ("CBD Defendants' Sur-Reply") on July 10, 2006.

II. LEGAL STANDARD

The purpose behind a consent decree is as follows:

> Consent decrees are entered into by parties to a case after careful negotiation has produced agreement on their precise terms. The parties waive their right to litigate the issues involved in the case and thus save themselves the time, expense, and inevitable risk of

> litigation. Naturally, the agreement reached normally embodies a compromise; in exchange for the saving of cost and elimination of risk, the parties each give up something they might have won had they proceeded with the litigation. Thus the decree itself cannot be said to have a purpose; rather the parties have purposes, generally opposed to each other, and the resultant decree embodies as much of those opposing purposes as the respective parties have the bargaining power and skill to achieve.

United States v. Armour & Co., 402 U.S. 673, 681-682 (1971).

A proper consent decree must "spring from, and serve to resolve, a dispute within the court's subject-matter jurisdiction; must come within the general scope of the case made by the pleadings; and must further the objectives of the law upon which the complaint was based." Frew ex rel. Frew v. Hawkins, 540 U.S. 431, 437 (2004) (citing Firefighters v. Cleveland, 478 U.S. 501, 519 (1986)).

Courts should approve proposed consent decrees when they determine that it is "fair, reasonable and equitable and does not violate the law or public policy." Sierra

Club, Inc. v. Elec. Controls Design, Inc., 909 F.2d 1350, 1355 (9th Cir. 1990); United States v. State of Or., 913 F.2d 576, 580 (9th Cir. 1990) ("Before approving a consent decree, a district court must be satisfied that it is at least fundamentally fair, adequate and reasonable. . . . In addition, because it is a form of judgment, a consent decree must conform to applicable laws."). "[T]he court's intrusion upon what is otherwise a private consensual agreement negotiated between the parties to a lawsuit must be limited to the extent necessary to reach a reasoned judgment that the agreement is not the product of fraud or overreaching by, or collusion between, the negotiating parties, and that the settlement, taken as a whole, is fair, reasonable and adequate to all concerned." Officers for Justice v. Civil Serv. Comm'n of City and County of San Francisco, 688 F.2d 615, 625 (9th Cir. 1982); Hanlon v. Chrysler Corp., 150 F.3d 1011, 1027 (9th Cir. 1998) ("Settlement is the offspring of compromise; the question we address is not whether the final product could be prettier, smarter or snazzier, but whether it is fair, adequate and free from collusion.").

A court is to be mindful that a motion to approve a consent decree is not a dispositive motion on the merits; a court should not "reach any ultimate conclusions on the contested issues of fact and law which underlie the

merits of the dispute, for it is the very uncertainty of outcome in litigation and avoidance of wasteful and expensive litigation that induce consensual settlements." Officers for Justice, 688 F.2d at 625. Also, while a court must conduct a heightened scrutiny of a consent decree affecting public interest, "the court need not require that the decree be 'in the public's best interest' if it is otherwise reasonable." Oregon, 913 F.2d at 581 (citing SEC v. Randolph, 736 F.2d 525, 528 (9th Cir. 1984)).[1]

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[1] The CBD Defendants contend that "the focus of the court's attention in assessing the agreement should be the purposes which the statute is intended to serve, rather than the interests of each party to the settlement." [Opp'n at 6-7 (citing Citizens for a Better Env't v. Gorsuch, 718 F.2d 1117, 1125 (D.C. Cir. 1983).] Their reliance on this authority is unfounded, however. In Gorsuch, the complaint alleged that the Environmental Protection Agency ("EPA") did not properly implement certain provisions of the Clean Water Act ("CWA"). [Id. at 1120.] A consent decree was executed and approved by the district court and the issue on appeal was whether the consent decree could impose requirements on the EPA that were not specifically enumerated in the CWA. [Id. at 1122.] The court held that the provisions were proper as long as the court determined that the provisions were consistent with the purposes of the CWA. [Id. at 1125.]

Here, the Complaint alleges violations of several federal procedural requirements before enacting the critical habitat designation rule. The consent decree simply requires the Service to reconsider the critical habitat designation in light of the existing procedural requirements; it does not impose any "non-statutory" duties on the Service as did the consent decree in Gorsuch. Thus, the standard announced in Gorsuch does not apply here.

III. DISCUSSION

A. Reasonableness of the Decree

1. General Reasonableness

The Moving Parties contend that the Decree is reasonable because Plaintiffs receive some relief, i.e., a partial vacatur of the critical habitat designation, but not the complete relief requested in the Complaints.[2] [Mot. at 5-6.] The Moving Parties assert that while the Service will reconsider the critical habitat designation rule and issue a revised rule complying with the procedures set forth in the ESA, the Decree does not restrict the Service's discretion in issuing a new rule and does not contemplate any particular substantive result. [Id. at 6.]

The Moving Parties also argue that the CBD Defendants will not be prejudiced because (1) they were only permitted to intervene as to the remedies phase, (2) their interest in the critical habitat designation will not be harmed by the Decree because only about five percent of the designated area is being vacated and these vacated areas have other independent protections for the bighorn sheep, and (3) any harm suffered by the CBD Defendants does not rise to the level of prejudice and is outweighed by the benefit of avoiding protracted

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[2] Plaintiff will not receive declaratory relief or a full vacatur of the critical habitat designation rule.

litigation and the possibility of complete vacatur of the critical habitat designation. [Id. at 7.]

The CBD Defendants respond that the critical habitat designation rule provides significant protections for the bighorn sheep and that the Court should be concerned with "preventing 'undesirable consequences which we cannot now predict' when invalidating regulations during remand." [Opp'n at 14 (citing Western Oil & Gas v. EPA, 633 F.2d 803, 813 (9th Cir. 1980)).] The CBD Defendants argue that the burden of any alleged procedural defects in the critical habitat designation rule should fall on the Service, not the bighorn sheep. [Id. at 15.]

Plaintiff Agua Caliente Band counters that the Decree furthers the ESA's purpose of conserving the ecosystems of endangered species. [Agua Caliente Band's Reply at 3.] It argues that this Decree is reasonable in light of the possibility of the entire critical habitat designation rule being vacated. [Id.] Plaintiff Agua Caliente Band asserts that (1) the Federal Defendants are not contradicting their prior statements; (2) there is no evidence of collusion or overreaching; and (3) deference should be given to the Service's decision that the partial vacatur of the critical habitat designation rule is appropriate here. [Id. at 3-5.]

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Plaintiff Agua Caliente Band further contends that (1) the CBD Defendants have no definitive evidence that the partial vacatur of the critical habitat designation rule will damage the recovery of the bighorn sheep, (2) the CBD Defendants simply argue that the partial vacatur *may* harm the bighorn sheep, and (3) there are other protections for the bighorn sheep that will remain in effect despite the partial vacatur. [Id. at 6-8.]

The GCC Plaintiffs also assert that the CBD Defendants' position of opposing any settlement with a partial vacatur would make any potential settlement of this action untenable and obviate the purposes of having a consent decree. [GCC's Reply at 4.]

There is no allegation, or evidence, that this Decree was a product of fraud or collusion among the Moving Parties. Hence, the Decree should be approved if it is fair, reasonable, and equitable.

Moreover, while a court should examine the specific terms of a consent decree to ensure they are reasonable, a federal agency's decision to enter into a consent decree should be afforded deference. Randolph, 736 F.2d at 529 ("[C]ourts should pay deference to the judgment of the government agency which has negotiated and submitted the proposed judgment."), United States v. Montrose Chem.

Corp. of Cal., 50 F.3d 741, 746 (9th Cir. 1995) (". . . district court reviewing a proposed consent decree must refrain from second-guessing the Executive Branch.") "Such deference is appropriate given [t]hat so many affected parties, themselves knowledgeable and represented by experienced lawyers, have hammered out an agreement at arm's length and advocate its embodiment in a judicial decree." Montrose, 50 F.3d at 746 (quotation marks and citations omitted). Moreover, there is a presumption that government agencies are performing their duties adequately. See United States v. Gregory, 534 U.S. 1, 10 (2001) (citing United States v. Chem. Found., Inc., 272 U.S. 1, 14-15 (1926)).

While the Court will address the specific provisions of the Decree below, the Decree generally appears to be a fair, reasonable, and equitable resolution of the case. Plaintiff Agua Caliente Band's Complaint alleged various improprieties in the enactment of the critical habitat designation final rule, and, as a remedy, sought the complete vacatur of the rule. After considering the allegations, and the possible defenses to those allegations, the Federal Defendants informed the Court before the filing of this Motion that they did not intend on contesting liability.

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If a consent decree had not been entered into, and the Federal Defendants conceded liability, the only remaining issue before the Court would be the appropriate remedy. The presumptive remedy would be to remand the critical habitat designation rule to the Service for reconsideration in light of the applicable laws and to vacate the final rule pending this reconsideration. 5 U.S.C. § 706(2)(A) (stating that a court should "hold unlawful and set aside agency action, findings, and conclusions found to be . . . arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law . . . ."); Chrysler Corp. v. Brown, 441 U.S. 281, 313 (1979) ("Certainly regulations subject to the APA cannot be afforded the 'force and effect of law' if not promulgated pursuant to the statutory procedural minimum found in that Act."). The Court, however, can order that the improper remedy remain in force if equity demands. Idaho Farm Bureau Fed'n v. Babbitt, 58 F.3d 1392, 1405 (9th Cir. 1995) ("[W]hen equity demands, the regulation can be left in place while the agency follows the necessary procedures.").

Without a consent decree, the parties would be faced with an all-or-nothing result and would have to expend significant resources, including the hiring of experts, to litigate this issue fully before the Court. Moreover, the Federal Defendants would have faced the heavy burden

of persuading the Court that the presumptive remedy should not be applied because the equities support the exception made in Babbitt. Faced with these challenges and the possible adverse results, a consent decree with a partial vacatur of the critical habitat designation rule is generally fair, reasonable, and equitable.

The CBD Defendants' arguments in opposition are unfounded, as they are not directed to the question before the Court here, i.e., whether the consent decree is fair, reasonable, and equitable. In other words, that the Federal Defendants may have plausible arguments for why the critical habitat designation should be upheld during remand is immaterial because the purpose of a consent decree or settlement is the elimination of the risk in testing the validity of these arguments in court. The CBD Defendants overlook the critical presumption that the entire critical habitat designation rule could be vacated in the absence of this consent decree.

Accordingly, the Decree is generally reasonable, fair, and equitable. The Court will now analyze whether the specific terms of the Decree are fair reasonable, and equitable.

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1. **Specific Terms of the Consent Decree**

a. **Applicable Law on Remand**

The CBD Defendants assert that the Decree "improperly directs the Service to revise the critical habitat designation in light of case law that is inconsistent with current Ninth Circuit precedent" by directing the Service to consider the decisions in New Mexico Cattle Growers v. United States, 248 F.3d 1277 (10th Cir. 2001) and Home Builders Association v. United States, 268 F. Supp. 2d 1197 (E.D. Cal. 2003) when revising the critical habitat designation rule. [Opp'n at 7-8.] The CBD Defendants argue that these decisions were called into question by the Ninth Circuit decision in Gifford Pinchot Task Force v. United States, 378 F.3d 1059 (9th Cir. 2004).[3] [Id. at 7-11.] The CBD Defendants also argue that plain language of the ESA and Gifford Pinchot support the use of a baseline approach to economic analysis. [Id. at 8-11.]

Plaintiff Agua Caliente Band contends that the decision in Gifford Pinchot does not overrule the decisions in New Mexico and Home Builders because neither decision relied solely on the regulatory definition of

[3] Specifically, the CBD Defendants argue that the decisions in New Mexico and Home Builders relied on a regulatory definition of "destruction or adverse modification," found in 50 C.F.R. § 402.02, which was found to be invalid in the Ninth Circuit's decision in Gifford Pinchot. [Opp'n at 7-8.]

"destruction or adverse modification." [Agua Caliente Band's Reply at 10-11.] Plaintiff Agua Caliente Band asserts that the Decree requires the Service (1) to consider the text of section 4(b)(2) of the ESA when considering the impact of a critical habitat designation, (2) to analyze the economic impact consistent with New Mexico and other applicable law, and (3) to reevaluate the critical habitat designation in light of Home Builders. [Id. at 12.] Plaintiff Agua Caliente Band also asserts that while the Decree provides guidance to the service on what law to apply, it is up to the Service to promulgate a rule consistent with the law. [Id., Federal Defendants' Reply at 4.]

The Replies by the other Moving Parties contend that (1) any discussion of the validity of New Mexico and Home Builders is an improper discussion on the merits, and (2) CBD Defendants are arguing the merits of the case, which they are not permitted to do under the June 7 Order limiting their participation to only the remedy phase. [BILDF's Reply at 1-2, Federal Defendants' Reply at 2-5, GCC's Reply at 5-7.]

While the CBD Defendants question the Federal Defendants' decision to enter into this Decree by arguing in vain that Ninth Circuit authority supports the Service's methodology, these arguments improperly exceed

the narrow scope of the CBD Defendants' permitted intervention in this action. It is also well established that in approving a consent decree, the Court does not delve into the merits of the case, but rather limits its review to determine if the settlement is fair, reasonable, and equitable. Officers of Justice, 688 F.2d at 625. Most critically, absent an allegation of collusion, it is not within the province of the Court to question the Federal Defendants' decision not to contest liability. Randolph, 736 F.2d at 529; Montrose, 50 F.3d at 746.

b. Vacatur of the Rule as to Certain Lands

The Moving Parties assert that the critical habitat designation is not the only protection for the bighorn sheep; there are various other federal and state laws that protect this species. [Mot. at 10.] For instance, the Moving Parties posit that Section 7(a)(2) of the ESA requires that "[e]ach Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the

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destruction or adverse modification of [a critical] habitat."[4] [Id. (citing 16 U.S.C. § 1536(a)(2)).]

i. Tribal Lands

The Moving Parties argue that the vacatur is appropriate on the Tribal Lands because:

> (1) the Tribal Lands comprise a small percentage (less than 1.6 percent) of the total acreage of bighorn sheep critical habitat;
>
> (2) Plaintiff [Agua Caliente Band] adopted a Tribal Habitat Conservation Plan [("Tribal HCP")] on or about November 11, 2002, . . . that includes a Conservation Strategy for the bighorn sheep; and
>
> (3) Plaintiff [Agua Caliente Band] continues to work with the Service toward the development of a habitat conservation plan under ESA Section 10(a)(1)(B) . . . .

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[4] The other statutes mentioned by the Moving Parties are Section 9 of the ESA, prohibiting unauthorized "take" of endangered fish and wildlife species; and California Fish and Game Code § 4700(b)(2), prohibiting an endangered species from being taken or possessed. [Mot. at 11.] The Moving Parties also contend that the bighorn sheep will be protected by federal and state efforts to protect certain lands that happen to occupy the bighorn sheep, i.e., the Santa Rosa and San Jacinto Mountains National Monument Act of 2000, the Wilderness Act, and the California Desert Protection Act. [Id. at 11-12.]

[Id. at 9.] Concerning the Tribal HCP, the Moving Parties assert that it requires "conservation of at least 85% of bighorn sheep habitat identified by the Tribe on the Tribal Lands and 100% of bighorn sheep use areas and habitat linkages identified by the Tribe on Tribal Lands." [Id.]

The CBD Defendants respond that it is premature to vacate the critical habitat designation on Tribal Lands because the Tribal HCP has not been approved by the Service and an "incidental take" permit has not been granted. [Opp'n at 16.] The CBD Defendants contend that the Federal Defendants' statements that the Tribal HCP will provide adequate protection during the remand period are contrary to statements made by the Federal Defendants during the comment period of the critical habitat designation rule.[5] [Id. at 17.] The CBD Defendants argue that the Moving Parties state with no support that no harm will result to the bighorn sheep. [See id. at 18.] The CBD Defendants further argue that while the

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[5] The CBD Defendants contend that during the comment period the Federal Defendants found that the Tribal HCP needed "'to better avoid direct and indirect effects, and offset adverse effects with better definition/certainty.'" [Opp'n at 17 (citing Declaration of Lisa T. Belenky ("Belenky Decl.") at Ex. 1).] The CBD Defendants also assert that the Tribal HCP's "proposed Mountains and Canyons Conservation Area Strategy 'likely would result in levels of habitat fragmentation that would compromise the ecological suitability of remaining areas, such as those needed to support a secure bighorn population.'" [Id. (quoting Belenky Decl. at Ex. 1.]

Tribal Lands represent 1.6% of the total critical habitat, the actual critical habitat designation on the Tribal Lands covers nearly double the acreage, in a checkerboard pattern, and it includes several lambing areas and migration corridors.[6] [Id. at 18-19.]

Plaintiff Agua Caliente Band counters that there is no evidence to support the CBD Defendants' statements that the bighorn sheep will suffer harm if the critical habitat designation is vacated on Tribal Lands; indeed, Plaintiff Agua Caliente Band cites a peer-reviewed empirical research article for the proposition that 66% of the area in the Santa Rosa Mountains, where the Tribal Lands are located and that is covered by the critical habitat designation, will not be used by the bighorn sheep.[7] [Agua Caliente Band's Reply at 7, 7 n.3.] Plaintiff Agua Caliente Band asserts that the CBD Defendants do not address the other protections that remain in effect during the remand period, such as the take prohibition in the ESA, the designation of portions of the bighorn habitat as a national monument, and that part of the habitat is in a federal wilderness area and a state park. [Id. at 8.] Plaintiff Agua Caliente Band

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[6] The CBD Defendants argue that the Service found several defects in the Tribal HCP concerning the migration corridor and lambing areas. [Opp'n at 19.]

[7] The CBD Defendants' arguments that the Court should not give weight to this article lack merit.

also asserts that the Tribal HCP is sufficient protection for the bighorn sheep; that the plan has not been approved by the Service does not mean that its protections are insufficient from a biological perspective. [Id. at 8-10.]

The Federal Defendants contend that vacating the critical habitat designation rule on the Tribal Lands is appropriate because the Tribal HCP is sufficient protection for the bighorn sheep, the other protections for the bighorn sheep under federal and state law, and the Tribal Lands represent less than 1.6% of the critical habitat designation. [Federal Defendants' Reply at 8-9, Declaration of Renne Lohoefener ("Lohoefener Decl.") at ¶¶ 5-6.] The Federal Defendants argue the Service's comments concerning the Tribal HCP when it was reviewing the plan under Section 10 of the ESA are immaterial to the determination that the plan is sufficient for interim protection. [Federal Defendants' Reply at 9.]

The CBD Defendants counter that the assertion in Renne Lohoefener's ("Lohoefener") declaration that the Tribal Lands are surrounded by federally owned property is a misstatement because the Tribal Lands are interspersed with private property. [CBD Defendants' Sur-Reply at 2 (citing Declaration of Curtis Bradley at Ex. 13, Second Declaration of Lisa Belenky at Ex. 2.]

The CBD Defendants argue that Lohoefener's declaration makes several conclusions based on this incorrect statement -- i.e., that section 7 consultations will protect the bighorn sheep -- which the Court should not consider. [Id. at 3.]

The CBD Defendants contend that (1) the National Monument Act will not protect the bighorn sheep on private lands, (2) while the Tribal Lands are small relative to the critical habitat as a whole, the Tribal Lands consist of 20 square miles, and (3) the contract between Plaintiff Agua Caliente Tribe and the City of Palm Springs concerning project approvals on certain Tribal Lands does not trigger section 7 of the ESA and violates the Tribal HCP. [Id. at 4-9.]

As set forth above, the legal standard here is whether the Decree is fair, reasonable, and equitable; the Court need not determine whether the Decree could provide more protection than it does to the bighorn sheep. Hanlon, 150 F.3d at 1027. The Moving Parties have satisfied their burden that vacating the critical habitat designation on Tribal Lands is fair, reasonable, and equitable. While the other existing protections for the bighorn sheep might not be ideal, they are not so deficient that it would make the consent decree unfair, unreasonable, or inequitable. Additionally, the Court

must defer to the Federal Defendants' decision to enter into this Decree because there is no evidence that the Federal Defendants colluded with Plaintiffs or have any other improper motive for entering into this Decree. Randolph, 736 F.2d at 529.

Moreover, the CBD Defendants focus their arguments on how the bighorn sheep might be harmed by the Decree. Keeping in mind that the Court's review of a consent decree is extremely limited, evidence that the Decree could offer more protection to the bighorn sheep, or that some harm might result from a partial vacatur, does not transform the Decree into an unreasonable or inequitable one. Indeed, the CBD Defendants argue in vain that harm may or likely will result from the vacating of the critical habitat on Tribal Lands; however, they never state it would be unfair, unreasonable or inequitable to vacate the critical habitat designation on Tribal Lands. The CBD Defendants have not persuaded the Court that any threatened harm will be of a magnitude that would make the Decree unfair, unreasonable, or inequitable.

b. Mining Lands

The Moving Parties contend that a partial vacatur of the critical habitat designation on Mining Lands is appropriate and reasonable because:

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(1) the Mining Lands comprise only two percent of the total acreage of bighorn sheep critical habitat; and

(2) a large portion of the designated areas are on actively mined lands which do not support physical and biological features essential for the conservation of the bighorn sheep.

[Mot. at 9.] The Moving Parties further assert that a significant portion of the designated areas are on lands for which either:

(1) biological opinions are in place that conclude the mining operations will not result in jeopardy to the bighorn sheep, and identify reasonable and prudent measures, and terms and conditions, designed to minimize impacts to the species; or

(2) a draft EIS/EIR has been circulated that addresses impacts to bighorn sheep habitat and identifies appropriate mitigation measures.

[Id. (citing Declaration of Kerry Shapiro at Ex. 2).]

The CBD Defendants counter that while the Mining Lands constitute only 2% of the total acreage of the critical habitat, the loss of these areas would "increase

habitat fragmentation, disrupt movement corridors, and reduce the ability of bighorn [sheep] to adjust their distributions in response to the changing environment." [Opp'n at 20.] The CBD Defendants assert that the Moving Parties did not provide evidentiary support for their proposition that some of the lands do not support physical and biological features. [Id.] The CBD Defendants further assert that the biological opinions concerning the Mining Lands fail to support vacatur because the opinions identify "reasonable and prudent measures and terms and conditions to minimize the impacts to bighorn while allowing mining to go forward." [Id. (citing Ex. A at 31-34).]

The CBD Defendants further posit that the Moving Parties' reliance on the draft EIS/EIR is inappropriate because (1) the EIS/EIR only require that the mining companies consult with the service; the reports do not require the companies to actually adopt the conservation recommendations of the service, (2) it is unclear whether the Service will consider the conservation and recovery of the bighorn sheep in future consultations to the same extent as it would if the critical habitat rule remained in effect, and (3) there has not been sufficient public review and comment on the draft EIS/EIR. [Id. at 21.]

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The Federal Defendants respond that a partial vacatur of the critical habitat designation rule as to the Mining Lands is reasonable because (1) there is a small amount of acreage at issue, and (2) the lands consist of or are adjacent to active mines, and "do not provide features such as water sources, habitat for forage, remote sites for breeding, and linkages between ewe groups." [Federal Defendants' Reply at 9, Lohoefener Decl. at ¶ 8.]

The GCC Plaintiffs assert that there has been no evidence presented that the bighorn sheep have been located on any of the Mining Lands or how any actively mined lands would support the conservation and recovery of the bighorn sheep. [GCC's Reply at 7-8.] Further, the GCC Plaintiffs contend that there is no evidence that vacating the critical habitat designation on lands that are not actively mined would hurt the recovery and conservation of the bighorn sheep. [Id.] The GCC Plaintiffs argue that the Biological Opinions and draft EIS/EIR provide sufficient protections for the bighorn sheep during the remand period. [Id. at 8-9.]

The CBD Defendants contest Lohoefener's assertions regarding the proportion of Mining Lands in the entire critical habitat designation and active mining locations. [CBD Defendants' Sur-Reply at 10.] The CBD Defendants contend that while the lands that are being actively

mined do not support a habitat for the bighorn sheep, there is no evidence to support Lohoefener's declaration that the remainder of the Mining Lands likewise do not support a habitat. In fact, there is data to support a finding that bighorn sheep do use some of the Mining Lands. [Id. at 10-11 (citing Ex. 16)[8].]

The CBD Defendants also assert that Lohoefener's statement that the "anticipated activities on Mining . . . Lands during the remand period are likely to be small and incremental" [Lohoefener Decl. at ¶ 5] is unsupported. [CBD Defendants' Sur-Reply at 11.] The CBD Defendants argue that the U.S. Gypsum mine expansion is contrary to Lohoefener's statement. [Id. at 11-12.]

While some of the statements in Lohoefener's declaration are conclusory, the Moving Parties have satisfied their burden that the vacatur of the critical habitat designation on the Mining Lands is fair, reasonable, and equitable. They have presented evidence that the likely effect of vacating the critical habitat designation will be minimal and that there are other protections in place. Additionally, deference must be given to the Federal Defendants determination that it is appropriate to vacate the critical habitat designation on

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[8] While there was a tab for Exhibit 16, no materials were contained behind it.

these lands because there is no allegation that they are neglecting their duties. Randolph, 736 F.2d at 529.

Again, the CBD Defendants argue that vacating the critical habitat designation on the Mining Lands might cause harm to the bighorn sheep, but have not persuaded the Court that it would be unreasonable or inequitable to vacate the critical habitat designation. Moreover, the CBD Defendants have not persuaded the Court that the degree of harm which may be suffered by the bighorn sheep will make the Decree unfair, unreasonable, or inequitable. Accordingly, the Court finds that vacating the critical habitat designation rule on the Mining Lands is fair, reasonable, and equitable under the circumstances here.

c. Desert Riders Lands

The Moving parties assert that it is reasonable to vacate the critical habitat designation as to the Desert Riders Lands because "the area: (1) comprises an extremely small portion of the designated critical habitat (approximately 20 acres); and (2) is private land upon which the anticipated activities do not have an identifiable federal nexus under the ESA Section 7." [Mot. at 10.]

The CBD Defendants respond that (1) the Moving Parties did not state what the anticipated activities on the Desert Riders Lands is going to be, (2) human activities in this area such as noise and lighting, pets, hiking, biking, horseback riding, camping, hunting, and vehicles off-roading can disrupt the bighorn sheep behavior, (3) increased use of a small parcel may impact the recovery of the bighorn sheep, (4) the landowners have a responsibility to ensure their conduct does not result in the modification or destruction of the bighorn sheep habitat whether or not the land is part of a critical habitat or has a federal nexus, and (5) there is a risk to the bighorn sheep because water courses or stream beds might be altered for development and the Desert Riders Lands are near migration corridors. [Opp'n at 22.]

The Federal Defendants counter that the partial vacatur of the critical habitat designation rule on the Desert Riders Lands is appropriate because (1) the parcel at issue is small, (2) the expected use of the land is for equestrian activities, and (3) the equestrian activities will not interfere with the migration patterns of the bighorn sheep. [Lohoefener Decl. at ¶ 9.]

The Moving Parties have satisfied their burden that vacating the critical habitat designation rule on the

Desert Riders Lands is fair, reasonable, and equitable. The area comprising the Desert Riders Lands is an extremely small portion of the entire critical habitat designation and the equestrian use on the property likely will not harm the bighorn sheep. As discussed above, the Court must defer to the Federal Defendant's decision to enter into this consent decree. Randolph, 736 F.2d at 529.

While the CBD Defendants argue that there might be some harm to the bighorn sheep, they do not assert that the magnitude of the harm is sufficient to make the Decree unfair, unreasonable, or inequitable. Therefore, the Court finds that the vacating the critical habitat designation rule on the Desert Riders Lands is fair, reasonable, and equitable.

B. Mandatory Rulemaking Procedures

The CBD Defendants posit that the Decree should not be approved because the service cannot vacate any part of the critical habitat designation without complying with the proper rulemaking procedures. [Opp'n at 11.] The CBD Defendants assert that (1) "the critical habitat designation is a binding final decision under the APA," (2) "[p]usuant to the ESA and the APA, the Service must comply with mandatory statutory procedures before a duly promulgated critical habitat designation can be revised,"

(3) the Decree does not comply with the rulemaking procedures set forth in the ESA and APA. [Id. at 11-12.] The CBD Defendants argue (1) that it is improper for the Court to permit the Service to revise the critical habitat designation without following the rulemaking procedures. [Id. at 12.]

The Moving Parties counter that the CBD's argument that the Service must comply with the APA and ESA procedural requirements in vacating the rule is "novel" and "unsupported." [Agua Caliente Band's Reply at 5, Federal Defendants' Reply at 4-5, GCC's Reply at 10, BILDF's Reply at 2.] They argues that (1) the APA's requirement that a court find unlawful any agency action that is not in accordance with the law is unambiguous, [Agua Caliente Band's Reply at 5 (citing 5 U.S.C. § 706(2)(A))] and (2) that authority from other circuits have rejected such an argument. [Id. (citing New York v. EPA, 443 F.3d 880 (D.C. Cir. 2006); Nat'l Mining Ass'n v. U.S. Army Corps of Eng'rs, 145 F.3d 1399 (D.C. Cir. 1998); Home Builders Ass'ns of N. Cal. v. Norton, 293 F. Supp. 2d 1, 5 (D.D.C. 2002)).] The Moving Parties contend that the approval of a consent decree and the remand of a final rule is a judicial act and not agency rulemaking. [Federal Defendants' Reply at 5, GCC's Reply at 10-11, BILDF's Reply at 3.]

The CBD Defendants' argument is unfounded. There is no authority to support the position that the Service must comply with the rulemaking procedures in vacating a rule it concedes was enacted in violation of federal law. Indeed, such an assertion is contrary to Supreme Court precedent that a regulation in violation of the APA cannot be afforded the "force and effect of law." Brown, 441 U.S. 281, 313 (1979) ("Certainly regulations subject to the APA cannot be afforded the 'force and effect of law' if not promulgated pursuant to the statutory procedural minimum found in that Act."). Moreover, approval of the Decree is an judicial act, not an agency act; thus it is not subject to the requirements of 5 U.S.C. § 553. Home Builders Ass'ns of N. Cal., 293 F. Supp. 2d at 5 (D.D.C. 2002) (citing Gorsuch, 718 F.2d at 1125 (D.C. Cir. 1983). Therefore, the Service does not have to comply with the rulemaking procedures before remanding the critical habitat designation.

C. Time for Reconsideration of the Rule

The CBD Defendants assert that the Decree allows the Service more than two years to reconsider the critical habitat designation rule. [Opp'n at 23.] They argue that if the Court permits a partial vacatur of the critical habitat designation rule, the harm suffered by the bighorn sheep would make this time period unreasonable. [Id.] The CBD Defendants also argue that

under the ESA, the Service has a maximum of two years to revise a critical habitat designation, and in light of the amount of work already completed here, two years is not necessary. [Id.] The CBD Defendants request that the Court permit the Service no more than four months to revise the critical habitat designation rule.

The Federal Defendants respond that the timetable for a new rule is appropriate because of the "substantial effort that will be required to revisit the critical habitat designation and prepare a legally adequate and biologically sustainable critical habitat designation." [Federal Defendants' Reply at 10, Lohoefener Decl. at ¶¶ 10-19.] The Federal Defendants contend that while the prior critical habitat designation will provide some information, the Service will be required to obtain a significant amount of new information to create a critical habitat designation that complies with federal law. [Id. at 10-11.] Specifically, the four-month time period does not permit the Service enough time to: "(1) prepare a proposed rule; (2) provide a public comment period of at least 60 days on the proposed rule; (3) analyze and respond to public comments; (4) prepare a draft economic impacts analysis; (5) provide a 30-day comment period on the economic analysis; (6) finalize the economic analysis; and (7) prepare a final rule

designating critical habitat." [Id. (citing Lohoefener Decl. at ¶¶ 11-18.]

The time period in the Decree to issue a new rule is fair, reasonable, and equitable. Providing a four-month remand period likely will not permit the Service to comply with the required procedural rules, i.e., the public notice rules. Lohoefener's declaration sets forth the tasks that the Service will need to complete before issuing a revised rule and the proposed two year period is fair, reasonable, and equitable. [Lohoefener's Decl. at ¶¶ 10-19.]

IV. CONCLUSION

For the foregoing reasons, the Court approves the Decree and dismisses this action with prejudice.

Dated: August 2, 2006

Virginia A. Phillips
VIRGINIA A. PHILLIPS
United States District Judge

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UNITED STATES DISTRICT COURT

CENTRAL DISTRICT OF CALIFORNIA

AGUA CALIENTE BAND OF CAHUILLA INDIANS, Plaintiff, and BUILDING INDUSTRY LEGAL DEFENSE FOUNDATION; CALIFORNIA BUILDING INDUSTRY ASSOCIATION; CALIFORNIA STATE GRANGE; DESERT RIDERS, Plaintiff-Intervenors, and GRANITE CONSTRUCTION COMPANY; PYRAMID CONSTRUCTION; UNITED GYPSUM COMPANY; VAL-ROCK, INC., Plaintiff-Intervenors, vs. P. LYNN SCARLETT, in her official, capacity as Acting Secretary of the Interior;[1] H. DALE HALL, in his official capacity as Director of the U.S. FISH AND WILDLIFE SERVICE;[2] U.S. DEPARTMENT OF THE INTERIOR; U.S. FISH AND WILDLIFE SERVICE, Defendants, and CENTER FOR BIOLOGICAL DIVERSITY; SIERRA CLUB, Defendant-Intervenors.	Case No: EDCV 05-187 VAP (OPx) CONSENT DECREE Date: June 19, 2006 Time: 10:00 a.m. Courtroom: 2

[1] Ms. Scarlett is substituted for Gale Norton pursuant to Fed. R. Civ. P. 25(d)(1).

[2] Mr. Hall is substituted for Steven A. Williams pursuant to Fed. R. Civ. P. 25(d)(1).

WHEREAS, the Agua Caliente Band of Cahuilla Indians, as Plaintiff, commenced this action on or about March 7, 2005, against Gale Norton, then Secretary of the Interior, Steven A. Williams, then Director of the Fish and Wildlife Service, the U.S. Department of the Interior, and the U.S. Fish and Wildlife Service ("Service") (collectively, "Federal Defendants");

WHEREAS, by Order dated June 7, 2005, this Court granted the joint motion of Granite Construction Company, Pyramid Construction, United States Gypsum Company, and Val-Rock, Inc. to intervene as plaintiffs in this action, and granted the joint motion of Building Industry Legal Defense Fund, California Building Industry Association, California State Grange, and Desert Riders to intervene as plaintiffs in this action (collectively, "Plaintiff-Intervenors");

WHEREAS, by Order dated June 7, 2005, this Court granted the joint motion of Sierra Club and Center for Biological Diversity to intervene as defendants in this action but restricted their participation to the remedial phase of the action;

WHEREAS, Plaintiff and Plaintiff-Intervenors allege that the Federal Defendants unlawfully promulgated a final rule ("Rule") designating critical habitat for the Peninsular bighorn sheep ("bighorn sheep") in violation of the Endangered Species Act ("ESA"), 16 U.S.C. § 1531 et seq., the Administrative Procedure Act ("APA"), 5 U.S.C. § 551 et seq., and other laws, regulations, and policies by failing to identify the physical or biological features essential to the conservation of the species, failing to identify the specific areas where the essential physical or biological features are found, failing to identify the specific areas that may require special management considerations or protections, failing to identify the geographic areas occupied by the species, failing to consider the best scientific and commercial data available, failing to conduct a mandatory exclusion analysis, failing to provide adequate public notice, failing to adequately respond to public comments, failing to conduct a sufficient economic analysis, and failing to describe specifically the actual areas of critical habitat in violation of 16 U.S.C.

§ 1532(5)(A), and violating its Trust obligations under 25 U.S.C. § 1629, E.O. 13175, and Secretarial Order 3206;

WHEREAS, the United States Court of Appeals for the Tenth Circuit has issued a decision in New Mexico Cattle Growers Ass'n v. U.S. Fish & Wildlife Service, 248 F.3d 1277 (10th Cir. 2001), that addresses the proper scope of the analysis of economic impacts under ESA Section 4(b)(2) in designating critical habitat;

WHEREAS, the U.S. District Court for the Central District of California in Natural Resources Defense Council v. Department of the Interior, 275 F. Supp. 2d 1136 (C.D. Cal. 2002), agreed with the reasoning in New Mexico Cattle Growers Ass'n, granting defendants' motion for voluntary remand to allow the Service to reconsider the critical habitat designations for the coastal California gnatcatcher and San Diego fairy shrimp;

WHEREAS, the U.S. District Court for the Eastern District of California in Home Builders Ass'n of Northern California v. Fish and Wildlife Service, 268 F. Supp. 2d 1197 (E.D. Cal. 2003), followed the reasoning in New Mexico Cattle Growers Ass'n in holding that the evaluation of economic impacts undertaken by the Service for the final rule designating critical habitat for the Alameda whipsnake was unlawful, and remanding the final rule to the Service;

WHEREAS, the Service's analysis of the potential economic impacts of designating bighorn sheep critical habitat is similar to the methodology ruled to be insufficient by the court in New Mexico Cattle Growers Ass'n;

WHEREAS, Federal Defendants have previously informed the Court that they do not intend to contest liability in this matter and will request that the Court remand the Rule to the Service;

WHEREAS, the Service agrees that, on remand, it will reconsider the critical habitat designation for the species in light of Plaintiff's and Plaintiff-Intervenors' allegations and conduct a revised economic impacts analysis pursuant to ESA Section 4(b)(2), consistent with New Mexico Cattle Growers Ass'n and other applicable law;

WHEREAS, the Plaintiff and Plaintiff-Intervenors have requested that the Service take into consideration in its revised consideration of economic and any other relevant impacts of designating a particular area as critical habitat in accordance with ESA Section 4(b)(2), all economic and other relevant impacts, which include, among other things: impacts to Federal Defendant's trust responsibilities; impacts to Plaintiff's use and governance of the Tribal Lands and other governmental interests; impacts to planned and on-going housing and infrastructure development within existing urban limit lines, boundaries, or similar demarcations; the specific area's housing and infrastructure needs; impacts to mining activities, building, and other industries dependent on mining; and the impact of reinitiation of consultation for those projects that have completed an ESA Section 7 consultation;

WHEREAS, Plaintiff's and Plaintiff-Intervenors' Complaints seek vacatur of the Rule;

WHEREAS, Section 706 of the APA states that "[t]he reviewing court shall … hold unlawful and set aside agency action, findings, and conclusions found to be … arbitrary, capricious, an abuse of discretion, or not otherwise in accordance with law," 5 U.S.C. § 706(2)(A);

WHEREAS, the Supreme Court has held that an agency action that cannot be sustained based on the administrative record "must be vacated," Camp v. Pitts, 411 U.S. 138, 143 (1973);

WHEREAS, the Supreme Court has held that "regulations subject to the APA cannot be afforded the 'force and effect of law' if not promulgated pursuant to the statutory procedural minimum found in that Act," Chrysler Corp. v. Brown, 441 U.S. 281, 313 (1979);

WHEREAS, Plaintiff's and Plaintiff-Intervenors' positions are that the bighorn sheep Rule should be vacated because the plain language of the APA and Supreme Court precedent requires federal courts to vacate an agency action in violation thereof;

WHEREAS, the Ninth Circuit has held that, when equity demands, a regulation that violates the APA "can be left in place while the agency follows the necessary procedures," Idaho Farm Bureau Federation v. Babbitt, 58 F.3d 1392, 1405 (9th Cir. 1995);

WHEREAS, Federal Defendants' position is that equity demands that the Rule be retained in part pending promulgation of a new critical habitat designation;

WHEREAS, Federal Defendants have determined that the Rule should remain in place until a revised rule is issued, except as to certain portions of the designation identified by the Plaintiff and Plaintiff-Intervenors, and agreed to by Federal Defendants, which would be vacated pending the completion of a new critical habitat designation;

WHEREAS, the portions of the existing critical habitat designation that would be vacated consist of: (1) all lands within the exterior boundaries of the Agua Caliente Indian Reservation, including (a) lands title to which is held by the United States in trust for the Agua Caliente Band of Cahuilla Indians, (b) lands title to which is held in trust by the United States for a member of the Agua Caliente Band of Cahuilla Indians or any other Indian, and (c) lands title to which was formerly held in trust by the United States for a member of the Agua Caliente Band of Cahuilla Indians (collectively, "Tribal Lands") (described in Exhibit 1a and shown on Exhibit 1b); (2) certain lands adjacent to and within mining operations within the Coyote and Jacumba Mountains and within the Fish Canyon area ("Mining Lands") (described in Exhibit 2); and (3) certain private lands used by the Desert Riders ("Desert Riders Lands") (described in Exhibit 3), collectively set forth in Exhibit 4;

WHEREAS, Federal Defendants have determined that vacatur is appropriate with respect to the Tribal Lands because: (1) the Tribal Lands comprise less than 1.6 percent of the total acreage of bighorn sheep critical habitat; (2) Plaintiff has adopted a Conservation Strategy (as set forth in the Tribal Habitat Conservation Plan adopted by the Tribe on or about November 11, 2002) for the bighorn sheep to protect and manage bighorn sheep habitat on Tribal Lands; and (3) Plaintiff continues to work with the

Service toward the development of a habitat conservation plan under ESA Section 10(a)(1)(B), demonstrating Plaintiff's commitment to manage its lands in a manner consistent with the species' conservation and in cooperation with the Service;

WHEREAS, the Conservation Strategy requires conservation of at least 85 percent of bighorn sheep habitat identified by the Tribe on the Tribal lands and 100 percent of bighorn sheep use areas and habitat linkages identified by the Tribe on the Tribal Lands;

WHEREAS, Federal Defendants have determined that vacatur is appropriate with respect to the Mining Lands because (1) the Mining Lands comprise only two percent of the total acreage of bighorn sheep critical habitat; and (2) a large portion of the designated areas are on actively mined lands which do not support physical and biological features essential for the conservation of the bighorn sheep, see 16 U.S.C. § 1532(5)(A)(i) (defining "critical habitat");

WHEREAS, Federal Defendants have determined that vacatur is appropriate with respect to the Desert Riders Lands because the area: (1) comprises an extremely small portion of the designated critical habitat (approximately 20 acres); and (2) is private land upon which the anticipated activities do not have an identifiable federal nexus under ESA Section 7;

WHEREAS, Plaintiff, Plaintiff-Intervenors, and Federal Defendants note that there are a number of other sources providing substantial protection for the bighorn sheep, in addition to the critical habitat provisions of the ESA, including but not limited to:

- protections afforded by 16 U.S.C. § 1536 (ESA consultation provisions);
- protections afforded by 16 U.S.C. § 1538 (ESA take prohibition provisions);
- protections afforded by Cal. Fish & Game Code § 4700(b)(2) (California fully protected species statute, which prohibits take or possession of species by all persons subject to State authority except for necessary scientific research); and

- protections afforded by Cal. Fish & Game Code § 2050 et seq. and Cal. Code Regs. tit. 14, § 670.5(b)(6)(I) (listing bighorn sheep as a threatened species under California Endangered Species Act) with regard to activity by persons subject to State authority;

WHEREAS, it is in the interest of the public and the Parties, and judicial economy, to resolve the claims in this lawsuit without protracted litigation;

NOW THEREFORE, the Parties agree AND IT IS HEREBY ORDERED as follows:

1. Limited Partial Vacatur. The critical habitat rule adopted by the Service on February 1, 2001, 66 Fed. Reg. 8650, is vacated with respect to the Tribal Lands, Mining Lands, and Desert Riders Lands, as set forth on Exhibit 4, and remanded to the Service for a new rulemaking consistent with all applicable federal laws ("Revised Rule"). The critical habitat designation will remain in place with respect to all other areas pending completion of the Revised Rule.

2. Promulgation of the Revised Rule. The Revised Rule shall be based upon a revised consideration of economic impacts and any other relevant impacts of designating a particular area as critical habitat in accordance with ESA Section 4(b)(2) ("Revised Analysis of Economic Impacts"). 16 U.S.C. §§ 1532(5)(A), 1533(b)(2). The Service will conduct the Revised Analysis of Economic Impacts consistent with New Mexico Cattle Growers Ass'n and other applicable law. In addition, the Service will reevaluate the critical habitat designation in light of Home Builders Ass'n of Northern California v. Fish and Wildlife Service, 268 F. Supp. 2d 1197 (E.D. Cal. 2003).

3. Schedule for the Revised Rulemaking. The Service shall submit to the Federal Register a proposed Revised Rule by September 30, 2007, and a final Revised Rule by September 30, 2008.

In the promulgation of the Revised Rule, the Service shall provide a public comment period for any draft Revised Analysis of Economic Impacts on the proposed critical habitat for the bighorn sheep of no less than 30 days from publication of the

notice of availability of the draft Revised Analysis of Economic Impacts in the Federal Register, which shall run concurrently with the initial public comment period for the proposed Revised Rule or with a subsequent reopening of the comment period.

4. Conservation of Bighorn Sheep Habitat on Tribal Lands. Plaintiff agrees to continue to implement its Conservation Strategy for the bighorn sheep on Tribal Lands pending issuance of the Revised Rule, in accordance with the ESA and all applicable laws.

5. Voluntary Dismissal. Based on the representations and commitments herein, and remand to the Service, Plaintiff and Plaintiff-Intervenors hereby dismiss with prejudice, pursuant to Fed. R. Civ. P. 41(a)(2), all claims and causes of action raised in this challenge to the Rule.

6. Schedule Modifications. Any party may seek to modify the deadline for any actions specified in Paragraph 3 for good cause shown. In that event, or in the event that any party believes that another party has failed to comply with any term or condition of this Consent Decree, the parties shall use the dispute resolution procedures specified in Paragraph 7.

7. Dispute Resolution. The Order entering this Consent Decree may be modified by the Court upon good cause shown by written stipulation between the parties, filed with and approved by the Court, or upon written motion filed by one of the parties and granted by the Court. In the event that any party seeks to modify the terms of this Consent Decree, including the deadline for the actions specified in Paragraph 3, or in the event of a dispute arising out of or relating to this Consent Decree, or in the event that any party believes that another party has failed to comply with any term or condition of this Consent Decree, the party seeking the modification, raising the dispute, or seeking enforcement shall provide the other parties with written notice of the proposed modification. If a party seeks to modify a deadline, it shall provide written notice at least 45 days prior thereto, to the maximum extent practicable. The parties agree that they will meet and confer (in-person not required) at the earliest possible time after receipt of the

written notice in a good-faith effort to resolve the claim before bringing any matter to the Court.

8. No Precedence. No party shall use this Consent Decree or the terms herein as evidence of what does or does not constitute a reasonable timeline for reconsidering a critical habitat designation under 16 U.S.C. § 1533 in any other proceeding regarding the Service's implementation of the ESA.

9. Anti-Deficiency Act. Nothing in this Consent Decree shall be interpreted as or constitute a commitment or requirement that the Service obligate or pay funds in contravention of the Anti-Deficiency Act, 31 U.S.C. § 1341.

10. Statutory Obligations. No provision of this Consent Decree shall be interpreted as or constitute a commitment or requirement that Federal Defendants take action in contravention of the ESA, the APA, or any other law or regulation, either substantive or procedural. Nothing in this Consent Decree shall be construed to limit or modify the discretion accorded to the Secretary by the ESA, the APA, or general principles of administrative law with respect to the procedures to be followed in making any determination required herein, or as to the substance of any final determinations.

11. No Waiver of Rights. Plaintiff and Plaintiff-Intervenors do not waive any right they may have to bring suit against Federal Defendants for any violations of law which have arisen or may arise including, but not limited to, violations of the ESA, National Environmental Policy Act ("NEPA"), the APA, or the Federal Defendants' tribal trust responsibilities stemming from any future designation of critical habitat for the bighorn sheep or any other species, or any modification or reissuance of the existing bighorn sheep critical habitat designation. Further, by entering into this Consent Decree, Federal Defendants do not waive any claim or defense.

12. Attorneys' Fees. Plaintiff and Plaintiff-Intervenors intend to seek from Federal Defendants reimbursement of attorneys' fees and costs incurred in this litigation. Federal Defendants agree that Plaintiff and Plaintiff-Intervenors are entitled to an award of costs of litigation pursuant to ESA Section 11, which provides: "The court, in issuing

any final order in any suit brought pursuant to paragraph (1) of this subsection, may award costs of litigation (including reasonable attorney and expert witness fees) to any party, whenever the court determines such award is appropriate." 16 U.S.C. § 1540(g)(4). The parties agree to attempt to resolve Plaintiff's and Plaintiff-Intervenors' claims for fees and costs expeditiously and without the need for Court intervention. The Court shall retain jurisdiction over the case for the purpose of resolving any dispute between the parties regarding Plaintiff's and Plaintiff-Intervenors' claims for an award of fees and costs. By this Consent Decree, Federal Defendants do not waive any right to contest fees claimed by Plaintiff or Plaintiff-Intervenors, including the hourly rate, in any continuation of the present action or any future litigation.

13. Severability; Court Acceptance. Wherever possible, each provision of this Consent Decree shall be interpreted in such a manner as to be effective and valid. If any provision of this Consent Decree is prohibited by or invalid under applicable law, such provision shall be ineffective to the extent of such prohibition or invalidity, without invalidating the remainder of such provision or the remaining provisions hereof. However, in the event the Court does not accept any part of this Consent Decree, each party reserves the right to withdraw from the Consent Decree and proceed with the existing litigation.

14. Entire Agreement. The terms of this Consent Decree constitute the entire agreement of the parties, and no statement, agreement or understanding, oral or written, which is not contained herein shall be recognized or enforced.

15. Authorization. Each undersigned representative of the parties hereto certifies that he or she is fully authorized to enter into and execute the terms and conditions of this Consent Decree, and to legally bind such party to this Consent Decree.

16. Continuing Jurisdiction. Notwithstanding the dismissal of this action, the parties hereby stipulate and respectfully request that the Court retain jurisdiction to oversee compliance with the terms of this Consent Decree and to resolve any motions to modify such terms. See Kokkonen v. Guardian Life Ins. Co. of America, 511 U.S. 375

(1994). The remedy for any challenge to a Revised Rule that is completed in accordance with the Consent Decree shall be the filing of a new lawsuit after providing a 60-day notice of intent to sue, as may be required by 16 U.S.C. § 1540(g).

Respectfully submitted,

Dated: May 4, 2006

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Dated: May ___, 2006

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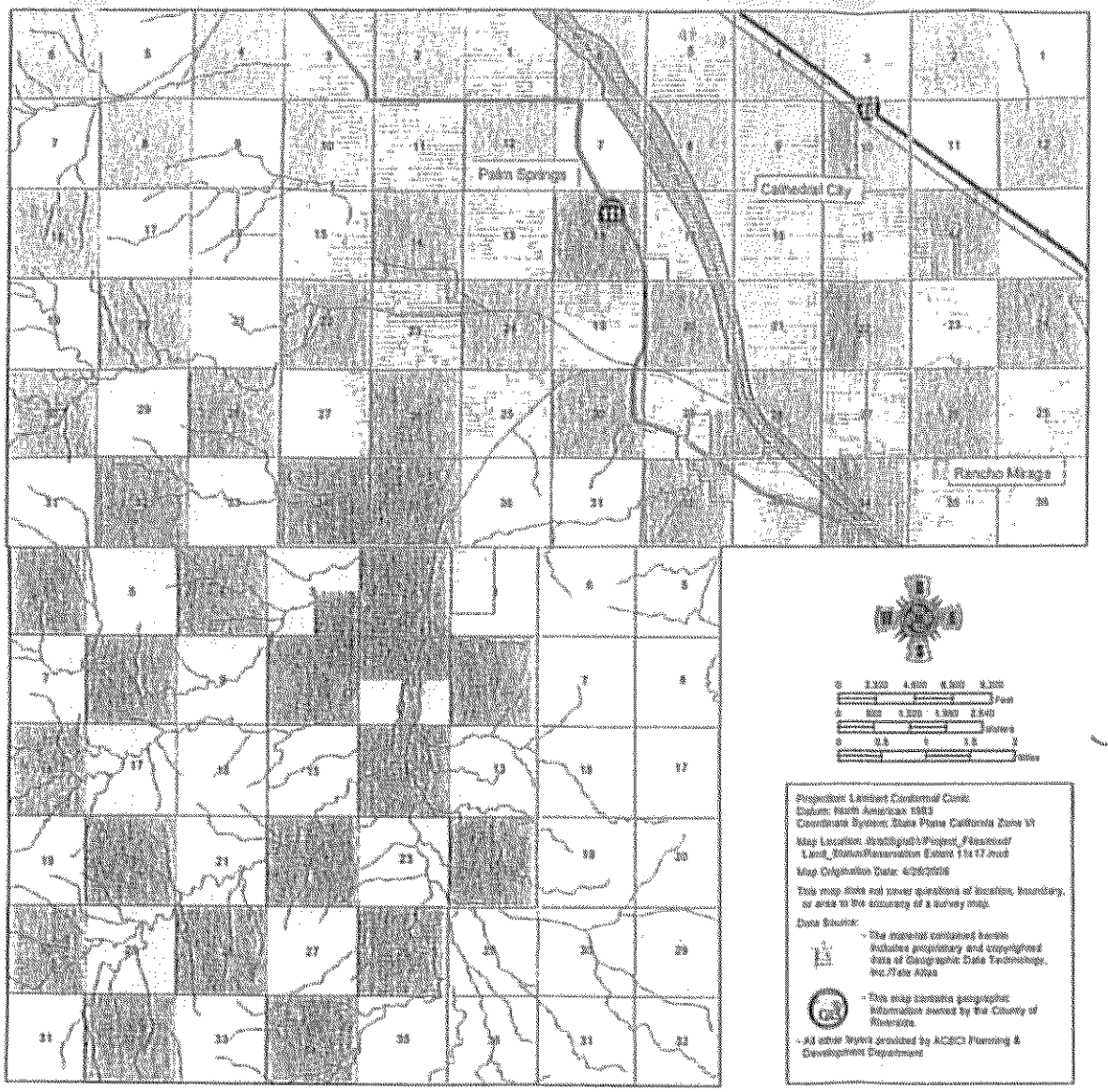
Attorneys for Federal Defendants

Exhibit 1a

Agua Caliente Band of Cahuilla Indians
Reservation Lands

Township 4 South., Range 4 East., SBM	Sections 2, 4, 6, 8, west half of 10, 12, 14, 18, 20, 22, 24, 26, 28, 30, 32, 34, and 35
Township 4 South., Rang 5 East., SBM	Sections 2, 4, 6, 8, 10, 12, 14, 18, 20, 22, 24, 26, 28, 30, 32, and 34
Township 5 South, Range 4 East, SBM	Sections 2, southeast quarter of 3, 4, 6, 8, 10, north half and middle third of south half of 11, 12, 14, 18, 20, 22, 24, 26, 28, 30, 32, and 34



AGUA CALIENTE INDIAN RESERVATION

- Political Jurisdictions
- Intermittent Streams
- Township Sections
- Road Centerline
- State Highway 111
- Interstate 10
- Railroad
- White Water River Channel
- Reservation Extent

Projection: Lambert Conformal Conic
Datum: North American 1983
Coordinate System: State Plane California Zone VI

Map Location: [illegible]

Map Origination Date: [illegible]

This map does not cover questions of location, boundary, or area to the accuracy of a survey map.

Data Source:

- The material contained herein includes proprietary and copyrighted data of Geographic Data Technology, Inc./Tele Atlas
- This map contains geographic information owned by the County of Riverside.
- All other layers provided by ACBCI Planning & Development Department

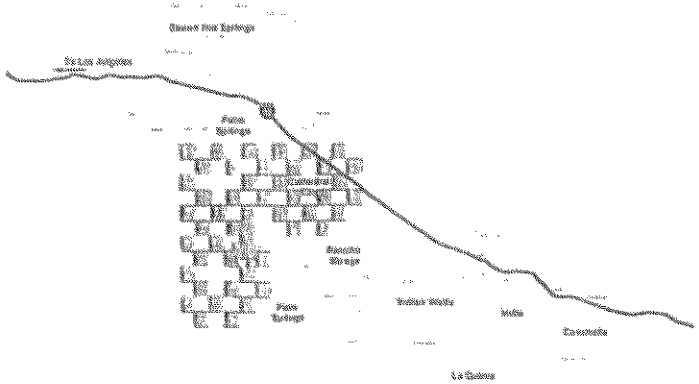


Exhibit 1b

Exhibit 2

Mining Lands

Fish Canyon

Township 13 South, Range 9 East	West Half of Sections 15, 22,27, and 34
Township 13 South, Range 9 East	Sections 16, 17, 19, 20, 21,28, 29, 30, 31, 32, 33
Township 13 South, Range 9 East	NE ¼ of NE ¼ of Section 18
Township 14 South, Range 9 East	Sections 4, 5, 6, West Half of Section 3, and North ¼ of Section 7

Ocotillo Sites

South Site:

Township 16 South, Range 9 East	Section 33, South Half of Section 28, East Half of Section 32

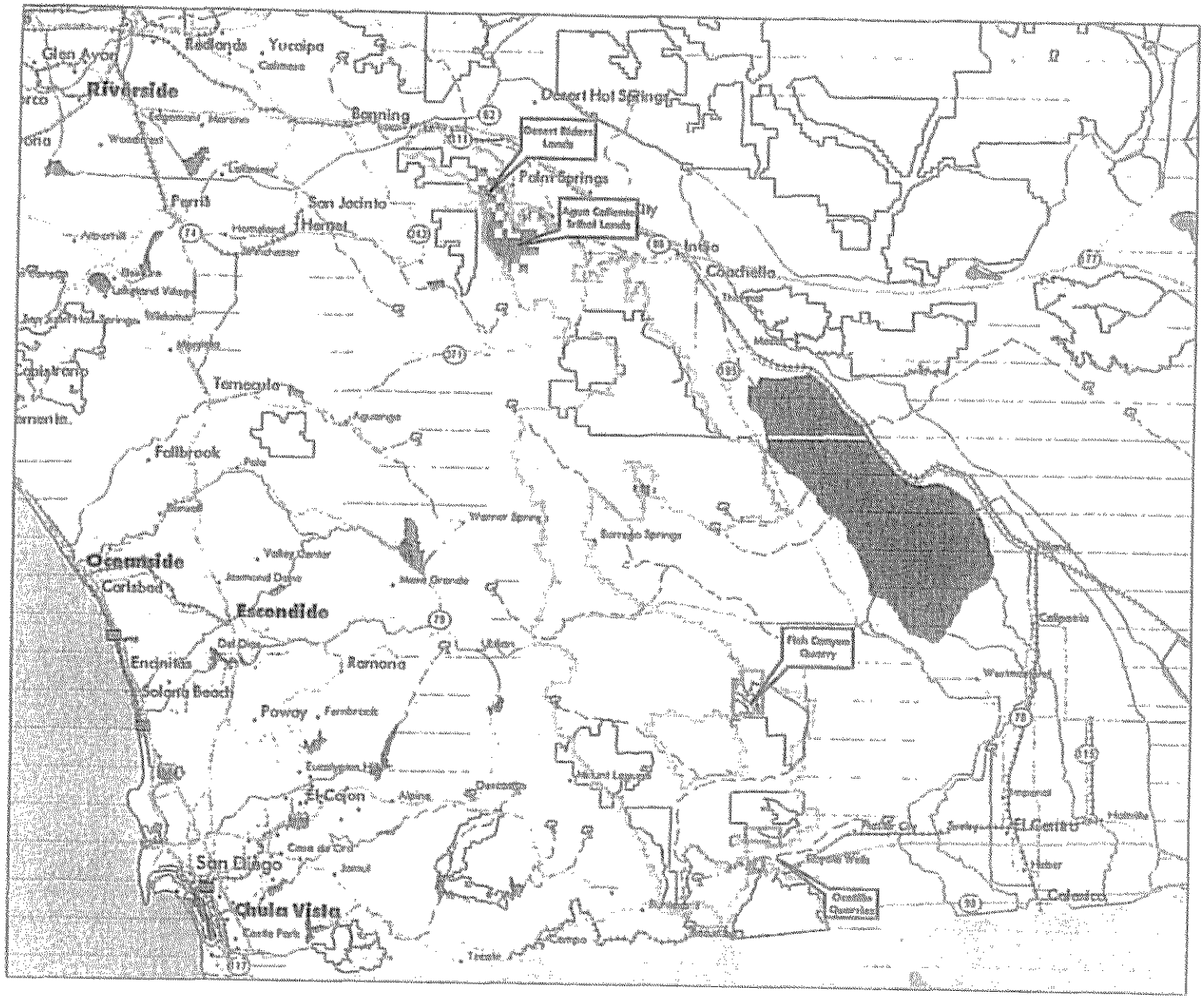
North Site:

Township 16 South, Range 9 East	Sections 8, 9, 10, 11 and 14; East Half and NW 1/4 of section 15, and the North Half of Sections 16 and 17.

Exhibit 3

Desert Rider Lands

Township 5 South, Range 4 East, SBM	West half of southwest quarter of northwest quarter of Section 25



Lands Excluded from PBS Critical Habitat During Promulgation of New Critical Habitat Rule

Agua Caliente Band of Cahuilla Indians v. Horton, EDCV 05-00167-VAP (SGLx) – Consent Decree

Legend

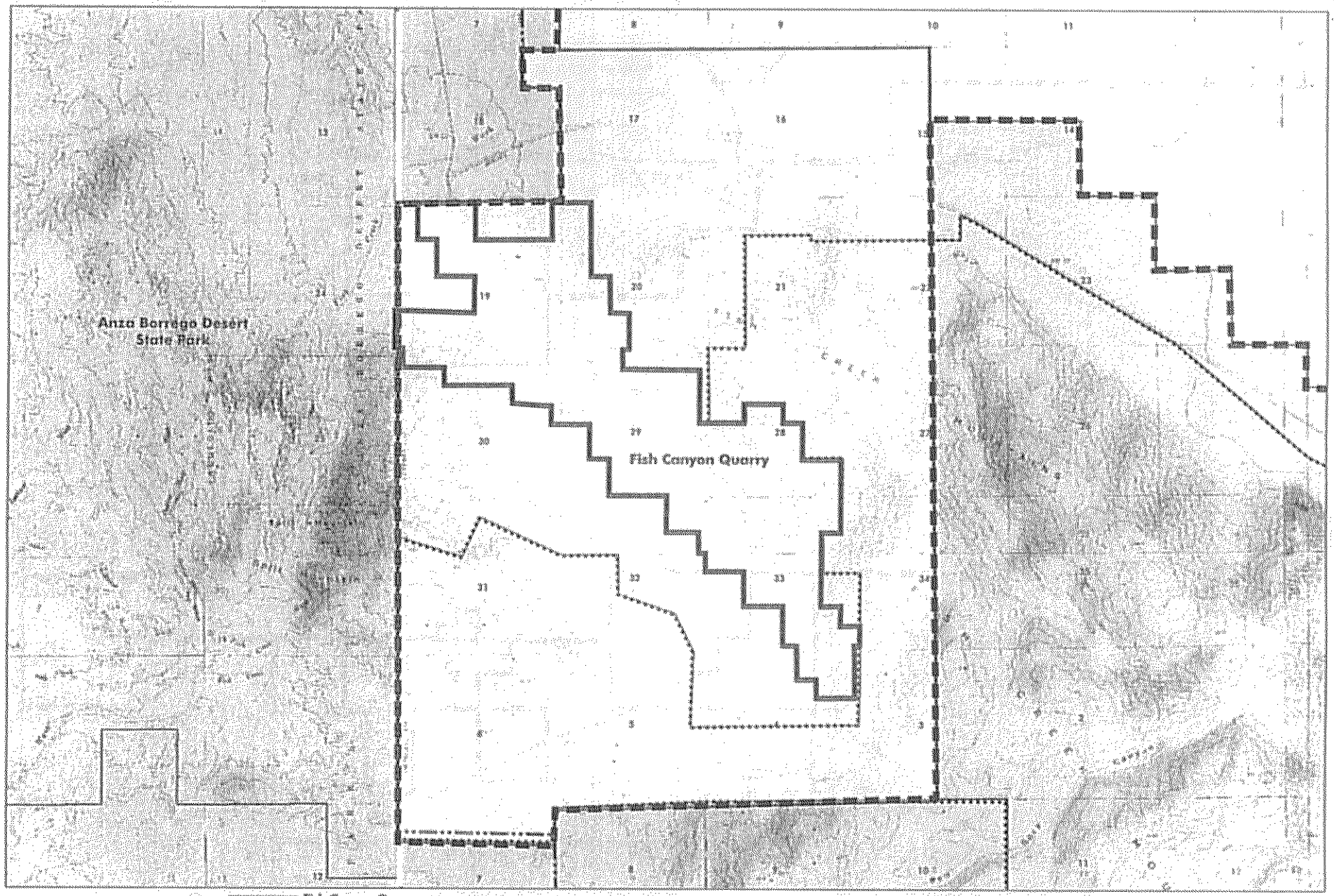
- Final critical habitat for Peninsular Bighorn Sheep
- Mining Operators' Lands excluded from Critical Habitat (approximate*)
- Agua Caliente Tribal Lands excluded from Critical Habitat (approximate*)
- Desert Riders' Lands excluded from Critical Habitat (not to scale) (approximate*)

* Note: Precise descriptions of the lands to be excluded are provided in Exhibits 1, 2 and 3 to the Consent Decree.

Prepared By: Lilburn Corp., 04/08.
Base: 1986 USGS Topo Maps and Landsat 7. Utm-nad 27

LILBURN CORPORATION

Exhibit A



N

0 5000
Feet
Source: USGS 7.5 min

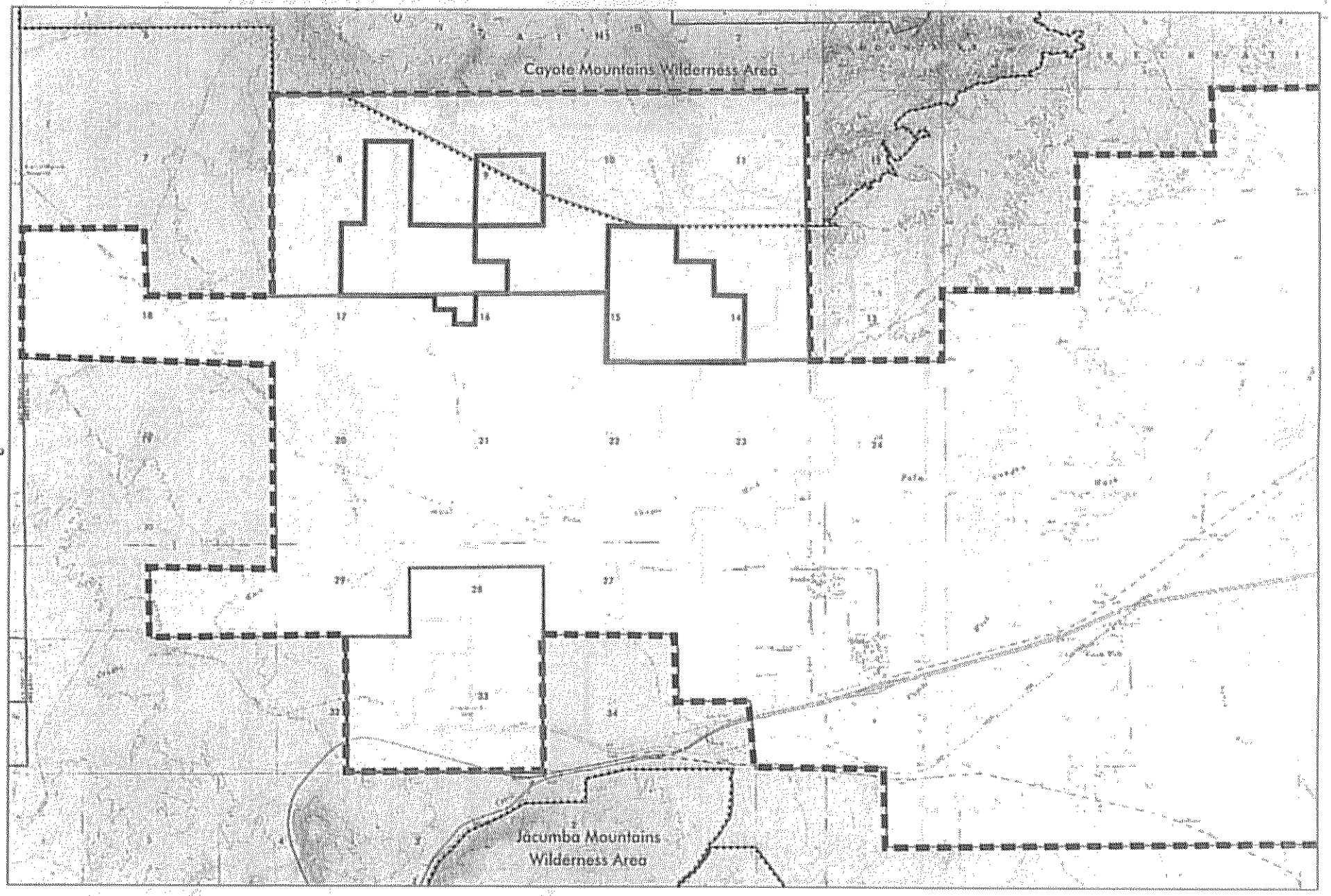
LILBURN CORPORATION

Fish Canyon Quarry
Sheep Critical Habitat
Modified Sheep Critical Habitat
Anza Borrego Desert State Park
Fish Creek Mountains Wilderness Area
Lands Excluded from Critical Habitat

Fish Canyon Quarry

Imperial County, California

Figure 1



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0 5000

Scale 1:7.5 min

LILBURN CORPORATION

Ocotillo Mineral Material Sites
Sheep Critical Habitat
Modified Sheep Critical Habitat
Coyote Mountains Wilderness Area
Lands Excluded from Critical Habitat

Ocotillo Mineral Material Sites

Imperial County, California

Figure 2

APPENDIX C-1
TODD ENGINEERS REVIEW OF GROUNDWATER ISSUES

TODD ENGINEERS

2200 Powell Street, Suite 225
Emeryville, CA 94608
(510) 595-2120

July 30, 2007

MEMORANDUM

Transmitted via Email

To: Stephen Lilburn, Lilburn Corporation

From: Iris Priestaf, PhD and Maureen Reilly, PE, Todd Engineers
Michael Maley, RG, CHg, PE, Kennedy/Jenks Consultants

Re: Review of Groundwater Issues,
Draft EIR/EIS for US Gypsum Expansion/Modernization Project

This memorandum presents an independent review of groundwater issues regarding the Draft EIR/EIS for US Gypsum Expansion/Modernization Project. The independent review focused on the hydrogeologic setting of the Ocotillo/Coyote Wells Groundwater Basin, including the water balance and the influence of faults and other geologic structures on groundwater flow and quality. The independent review also addressed the numerical groundwater flow model developed to assess potential impacts on groundwater of the proposed US Gypsum project. Documents reviewed included the Draft EIR/EIS, public comment letters, and relevant references (see reference list at the end of this memorandum). Public comment letters were reviewed to identify key groundwater issues.

Hydrogeology and Groundwater

Several public comments request clarification of the influence of faults and other geologic structures on the flow of groundwater and the distribution of water quality in the Ocotillo/Coyote Wells Groundwater Basin, especially with regard to evaluation of the potential impacts of US Gypsum (USG) pumping on basin water quality.

Background. The current understanding of the interactions of the groundwater flow, aquifer properties and water quality make up the *hydrogeological conceptual model*. A summary is provided here of the current hydrogeological conceptual model for the Ocotillo/Coyote Wells Groundwater Basin[1]. This conceptual model is represented in the numerical groundwater model

[1] The local groundwater basin has been defined and designated differently by different agencies and researchers for different purposes. The Ocotillo/Coyote Wells Groundwater Basin described in the Draft EIR/EIS (Section 3.3.2.1), represented in the numerical model, and discussed here corresponds to the current definition of the Coyote Wells Valley Groundwater Basin by the California Department of Water Resources in Bulletin 118.

that was applied to relevant issues in the Draft EIR/EIS. Much of the conceptual model is based on the geologic interpretation of the distribution of the geologic units and locations of geologic structures such as faults and folds.

Geologic units in the Ocotillo/Coyote Wells Groundwater Basin can be grouped as follows:

- Recent and Older Alluvium, composed of poorly consolidated older alluvial fan deposits and sand, underlies much of the basin floor and extends locally into large canyons of the surrounding mountains. Most wells drilled in the Ocotillo area are completed within the alluvium. The alluvial wells are noted for high yields and relatively good water quality.
- The Palm Springs Formation is composed of fluvial and deltaic sand, silt, and clay deposits deposited by the ancestral Colorado River during the early Pleistocene. Thicknesses can range up to several thousand feet. No pumping test data were found for the Palm Springs Formation, but the aquifer properties (e.g., transmissivity and specific yield) are believed to be similar to that of the Imperial Formation.
- The Late Miocene to Pliocene Imperial Formation is generally described as a series of interbedded claystone and sandstone of dominantly marine origin. The Imperial Formation has an exposed thickness of over 1,500 feet in Yuha Basin. Wells drilled into the Imperial Formation typically have low yields and produce poor quality water.

Significant differences have been noted in the hydrogeologic properties, water levels, and water quality between the area near the community of Ocotillo and the area to the east. Near Ocotillo, transmissivities (aquifer properties describing the ease with which groundwater flows through the aquifer) have been noted as significantly higher than those to the east. Transmissivities have been measured in the range of 5,800 to 6,700 ft^2/day near Ocotillo, whereas transmissivities of 34 to 957 ft^2/day have been noted in the eastern region.

These variations are reflected in groundwater gradients: shallower (flatter) hydraulic gradients have been mapped in the Ocotillo area and steeper hydrologic gradients have been mapped in the area east of Ocotillo. Similarly, total dissolved solids (TDS) concentrations vary from east to west. Near Ocotillo, TDS concentrations typically range from 300 to 600 milligrams per liter (mg/l). East of Ocotillo, TDS concentrations are significantly higher and range from 600 to 4,000 mg/l.

<u>Early Geologic Interpretation.</u> The geologic interpretation developed by Skrivan (1977) for the development of a numerical groundwater model of the basin is shown in **Figure 1**. This relatively simple interpretation assumes that the basin is composed of a relatively uniform thickness of alluvium (shown as valley fill) over the entire groundwater basin. The Palm Springs and Imperial formations were considered to underlie the water-bearing alluvial deposits (shown as consolidated rocks). Wells penetrating the aquifer are all considered to be completed within the alluvium and not within the Palm Springs or Imperial formations.

To account for variations in measured transmissivities (based on aquifer tests) and water quality data, Skrivan (1977) theorized that the Elsinore and Laguna Salada fault extends into the Ocotillo/Coyote Wells Groundwater Basin and represents a hydraulic barrier with distinct water levels and water quality on either side of the fault. In this interpretation, the alluvial deposits on the west side of the fault (near Ocotillo) had significantly higher transmissivities and lower TDS concentrations than those on the east side.

The primary weakness of this geologic interpretation is that it does not explain why the alluvial sediments vary so significantly on either side of the fault. A fault can cause a hydraulic barrier that can potentially restrict the flow of groundwater; however, other geologic differences are neeed to explain both the variations of transmissivity and water quality.

Current Geologic Interpretation. The geologic interpretation used in the 2004 Bookman-Edmonston study consists of a two-layer aquifer system in the basin rather than the single alluvial layer used in the previous interpretation. The upper layer (Layer 1) consists of the alluvial deposits and the lower layer (Layer 2) is composed of the Palm Springs and Imperial formations. **Figure 2** shows the locations of two cross sections (**Figure 3A** and **Figure 3B**) illustrating the current geologic interpretation.

The revised geological interpretation is based on work by Dr. Thomas Rockwell, Ph.D. of San Diego State University. Through a series of master's theses and other work, the conclusion of this body of work is that the Elsinore and Laguna Salada faults are not continuous beneath the basin. Instead, the Elsinore and Laguna Salada faults are offset by zones of northeast-trending left-lateral faults. As a result of the complex interactions of these faults, the Palm Springs and Imperial formations have been uplifted in the area east of Ocotillo.

Accordingly, the Palm Springs and Imperial formations are relatively near the ground surface in the areas east of Ocotillo (**Figure 3A**). Therefore, the lower transmissivities obtained from aquifer tests from wells located east of Ocotillo are the result of these wells actually being completed in the lower-permeability Palm Springs and Imperial formations. The steeper hydraulic gradients are the result of groundwater flow through the relatively low-permeability Palm Springs and Imperial formations. The presence of the Palm Springs and Imperial formations also explains the higher TDS concentrations as these formations are noted for higher TDS concentrations. Additional discussion of water quality is provided below in the section "Water Quality."

Based on this interpretation, the observed variations in groundwater can be more readily explained by variable thicknesses and depths to the Palm Springs and Imperial formations. In addition, it is recognized that a portion of the groundwater production is from the Palm Springs and Imperial formations rather than solely the alluvium.

Using the revised geologic interpretation, the water-bearing alluvial deposits (Layer 1) are primarily restricted to the center of the basin. The alluvial thickness can be 550 feet or greater in the Ocotillo area. The alluvial deposits thin toward the margins of the basin where they become unsaturated. Along the basin margins, the saturated zones occur in the Palm Springs and Imperial formations.

Groundwater flow through the alluvium is generally towards the south. An anticline (a geologic fold in the form of an arch) has been mapped south of Ocotillo near Yuha Estates. This anticline causes the Palm Springs and Imperial formations to occur closer to the ground surface near the center of the anticline, as shown in **Figure 3B**. As a result, the alluvial aquifer is relatively narrow to the southwest of Yuha Estates and there is a restriction in the groundwater flow through the alluvium from north to south.

The wells in the Yuha Estates area are interpreted as being completed in the less permeable Palm Springs and Imperial formations. This provides an explanation for the more significant drawdown from pumping in these wells than those in the Ocotillo area.

Water Quality. Several comments request recent water quality data. The USGS continues to monitor five wells in the Ocotillo-Coyote Wells Groundwater Basin for water quality in addition to 20 wells for water levels. Four of the five wells are located near Ocotillo and are screened in the alluvium; the other well is located near Yuha Estates. These wells are monitored on an annual basis for physical properties (pH, specific conductance, and temperature), general minerals (chloride, sodium, sulfate, etc.), iron, and manganese. In the USGS National Water Information System (NWIS), a total of 46 wells have available water quality data in the Ocotillo/Coyote Wells Groundwater Basin. **Table 1** summarizes the period of record for these wells and **Figure 4** shows the locations of the wells. Wells that continue to be monitored are shaded purple.

Figure 5 shows the specific conductance for the wells currently monitored by the USGS. Specific conductance is a general indicator of the total dissolved solids in a water quality sample. TDS can be estimated as 75 percent of the specific conductance value. Aside from wells 25K2 and 30R1, specific conductance in the area appears to be fairly steady with a possible decrease in conductance over recent years (indicating improving water quality).

Well 25K2 is a pumping well and the variable water quality in the well may be affected by the amount of pumping. The increase in specific conductance in 25K2 in the early 1980's is linked to the increased pumping of Well 25K2 from 1974 to 1981 for export to Mexico. Well 30R1 shows an increase in specific conductance peaking in the late 1980s and subsequent decrease. The cause of this change in water quality in Well 30R1 is not known, but the available water quality data do not correlate to pumping of 25K2. In addition, no correlation is apparent to USG pumping. Bookman-Edmonston (1996) indicates that the well is relatively shallow (100 feet deep). The shallow depth of the well and short-term groundwater quality changes suggest a short-term surface or near-surface source of water quality degradation near to Well 30R1.

A few of the comments referred to the differences in water quality between the areas near Ocotillo and the area to the east. To supplement the discussion of groundwater quality in the Draft EIR/EIS (starting on page 3.3-17), a brief independent analysis was performed using readily available data from the NWIS. **Table 2** shows the concentration of various general mineral constituents for wells in the east, wells near Ocotillo, and wells located in between these areas (herein termed the transition zone). **Figure 6** shows the concentrations of boron, chloride, sodium, and sulfate for these wells. Wells located on the east have significantly higher concentrations than wells near Ocotillo. The difference is most likely due to the different geologic formations, as discussed previously and consistent with the hydrogeologic conceptual model. The high concentrations of chloride, sodium, and boron are indicative of the low-permeability Layer 2 (Palm Springs and Imperial) formations.

Water Levels. A number of comments on the Draft EIR/EIS refer to the limited discussion of observed long term water level trends and the lack of recent water level data. Water levels are discussed in Section 3.3.3.3 of the Draft EIR/EIS. Comments highlight the differences in water levels trends between various wells in the basin and note the continuing water level declines at some wells. Comments concerning the lack of recent data inquire into what data are available and if additional data could verify the model's predictions. The groundwater numerical model used available data through 2002 and predicted impacts to 2082.

The USGS currently monitors 20 wells in the Ocotillo/Coyote Wells Groundwater Basin. The wells are summarized in **Table 3** and the locations of these wells are shown on **Figure 7**. A

useful distinction for monitored wells is the hydrogeologic unit that is represented in the well. As discussed previously, the hydrogeology of the groundwater basin can be represented by two geologic units: the alluvium and the Palm Springs/Imperial formations. The Palm Springs/Imperial formations underlie the alluvium in the area around the USG wells and extend to the ground surface in the north and east portions of the basin.

In the numerical model used for the Draft EIR/EIS, the alluvium was represented as Layer 1 and the Palm Springs/Imperial formations were represented as Layer 2. Because these two units have different hydrologic properties, the current USGS monitoring wells are distinguished according to Layer 1 and Layer 2. In **Figure 7**, wells screened in Layer 1 are shown in light orange and Layer 2 wells are shown in dark red. Hydrographs for wells in Layer 1 and Layer 2 are shown on **Figures 8** and **9**, respectively.

Water Level Trends. As shown on **Figures 8** and **9**, water levels in the both Layer 1 and Layer 2 are generally characterized by little or no fluctuation over time, even though rainfall in the region is flashy both seasonally and annually. **Figure 10** illustrates the highly variable annual precipitation, as measured at the California Irrigation Management Information Systems (CIMIS) station in Seeley east of the study area. The lack of water level response to precipitation may reflect a significant lag time between rainfall events and recharge to the water table resulting from the distance from the washes to the monitored wells and in some areas, the significant thickness of the unsaturated (vadose) zone. The result is a fairly constant inflow from precipitation. This was simulated in the numerical model by using a constant annual rate for recharge into the model.

Some comments refer to the rate of water level decline in the basin. In the Draft EIR/EIS text two general estimates are given, one foot every five years and one foot every eight years. To clarify the range of water level declines in the alluvium (Layer 1), the water level data were examined from wells currently monitored by the USGS. For these, the average rate of decline from 1975 to 2007 was calculated at 0.266 feet per year (or one foot every four years). However, using a single value to describe the water table over the entire basin oversimplifies the issue, because declines are not uniform. The water levels in Layer 1 are chiefly controlled by pumping. Specifically, monitored wells located closer to the pumping wells experience larger and less constant drawdown, for example well 36H1 shown on **Figure 8**. This drawdown is most likely the local effect of the pumping well rather than a regional response. The average rate of decline ranges from 0.4 feet per year or 1 foot every 2.5 years (well 36H1) to 0.13 feet per year or 1 foot every 7.7 years (well 34B1, not shown). By way of comparison, over the same time period, the numerical model predicts a range of declines from 1 foot every 4.4 years to 1 foot every 8 years.

Additional comments highlight differences between water levels in individual wells used in the numerical model calibration process. These wells are shown in **Figure 11**; wells in Layer 1 are shown in white and wells in Layer 2 are shown in dark gray. Specific comments address the difference in water levels between wells 29H1 and 29L1, which are shown on **Figure 11** as bracketing the boundary between Layer 1 and Layer 2. This boundary was conceptualized as a fault zone in previous studies, but currently is considered as the contact between the different formations. The different aquifer properties of these hydrogeologic formations (layers) have a significant influence on groundwater levels. As shown in **Figure 12**, wells in Layer 1 (e.g., 29 L1) generally show a greater decline in water levels (due to pumping in Layer 1) while wells in Layer 2 (e.g., 29H1) show a slower decline (**Figure 12**; see also **Figures 8** and **9**).

Figure 12 also illustrates the relatively higher groundwater levels in Layer 1 relative to Layer 2 in the Ocotillo area. This indicates a potential downward vertical gradient, with leakage from Layer 1 to Layer 2. However, continuation of the Layer 1 declines theoretically presents the potential for groundwater levels in Layer 1 to decline below groundwater levels in Layer 2. If a reversal in relative groundwater levels were to occur at some point in the future, this would change the direction of vertical groundwater flow from downward to upward. In such a case, relatively poor Layer 2 water could potentially migrate upward into Layer 1.

Groundwater Level Responses to Pumping. The differences in hydrologic properties of the two layers, specifically between the Ocotillo and Yuha Estates areas, can also be demonstrated by the two wells pumped for export to Mexico. One well was located in Ocotillo, 25K2 (Layer 1) and the other well was in Yuha Estates 11G 4 (Layer 2). Pumping in these wells was increased sharply by 85 acre-feet per year (AFY) and 143 AFY for 25K2 and 11G4 respectively. Water levels in both wells responded quickly with a drawdown of more than 50 feet over five years.

In Ocotillo, water levels in nearby wells like 25Q1 decreased slightly: 2 feet over the period of pumping. The steep drawdown in well 25K2 and muted response in nearby wells indicate that the water levels in 25K2 reflect the pumping water level and not the static level of the aquifer. In contrast, wells located near the Yuha Estates well (11G4) also show a steep drawdown presumably also from localized pumping of wells 11G1 and 11H4.

In addition, the recovery of water levels in these two areas highlights the hydrogeologic differences. Water levels in the Ocotillo well, 25K2, recovered quickly after pumping was suspended; specifically, water levels recovered over 50 feet in less than two years. However, water levels in 11G4 near Yuha Estates have recovered much more slowly and still (30 years later) have not reached pre-pumping levels.

In summary, the alluvial aquifer near Ocotillo is considerably more permeable than the older Palm Springs/Imperial formations in Yuha Estates. Accordingly, drawdown impacts due to pumping in the alluvial aquifer (e.g., near Ocotillo) are more localized and recover much faster than comparable drawdown impacts in the older formations near Yuha Estates.

Recent Water Level Data. In general, groundwater levels from 2002-2006 maintained the same trends observed in previous years. Wells screened in Layer 1 continue to decrease at the same rate as 1975-2002. Well 36H1, located close to USG pumping, exhibited a steep decline of approximately 10 feet from 1995-2005, but has recently begun to recover. The past decline may be the result of localized pumping rather than a regional occurrence, as the trend is not shown in any other nearby wells. Wells screened in Layer 2 in general show steady to increasing groundwater levels. Wells located in the Yuha Estates area (e.g., 11G1) continue to recover from the intense groundwater pumping in the early 1980's for export to Mexico.

The water levels predicted by the model generally track with the long term trends of regional water levels. The difference between the recent observed data and the model predicted water levels is similar to the differences shown during calibration. Although the additional data is valuable to confirm the continuation of regional trends, it provides no new information to adjust the conceptual model of the basin.

Summary. The current hydrogeologic conceptual model of the Ocotillo/Coyote Valley Groundwater Basin provides an improved explanation of the significant differences in hydrogeologic properties, water levels, and water quality between the area near Ocotillo and the area to the east, and

between Ocotillo and Yuha Estates. In brief, the alluvial Layer 1 aquifer near Ocotillo is generally characterized by greater permeability, better water quality, and more rapid recovery from pumping. The less permeable Layer 2 (Palm Springs/Imperial formations) east of Ocotillo and in the Yuha Estates area is characterized by relatively poor water quality and greater, more persistent impacts from pumping. In the Ocotillo area, groundwater levels in Layer 1 are higher than those in Layer 2. However, continued groundwater level declines in Layer 1—at more rapid rates than those in Layer 2—present the potential for reversal of that vertical gradient. In that case, relatively poor groundwater from Layer 2 could migrate into Layer 1, resulting in water quality deterioration in Layer 1. The current hydrogeologic conceptual model supports the Draft EIR/EIS finding regarding the potential significant effects of the proposed project.

Water Balance

Many comments refer to the water balance of the Ocotillo/Coyote Wells Groundwater Basin and how it was applied in the revised numerical groundwater model of the basin (Bookman-Edmonston, 2004). Specific concerns have been raised regarding the amount and distribution of recharge, the flow across the US/Mexico border, and historical pumping in the basin.

The water balance for a groundwater basin examines the inflows and outflows of the groundwater system and change in groundwater storage (inflow - outflow = change in storage). Developing a water balance is fundamental to the conceptual model and helps quantify the understanding of the basin systems. Comments address the need to compare the current model's water balance to previous studies. These studies can provide a range of reasonable estimates and illustrate the level of uncertainty in the water balance.

Table 4 shows the estimated water balances for four previous studies as well as the numerical model used to predict impacts in the Draft EIR/EIS. The previous studies include USGS Water Resources Investigation (WRI) 77-30 by J. A. Skrivan (1977), a master's thesis by David Mark (1987), an unpublished report prepared by D. Huntley (1979), and the previous numerical model prepared by Bookman-Edmonston (1996). The water balance presented in the Draft EIR/EIS reflects the calibrated results of the 2004 Bookman-Edmonston model.

The main inflow into the Ocotillo/Coyote Wells basin is recharge of runoff from precipitation in the surrounding watersheds. The main outflows include pumping (USG and others), subsurface outflows (across the US/Mexico border, across faults, and to the east), and losses from evapotranspiration (ET). Although the water balance estimates represent a range of values for recharge and outflow, all studies show a declining change in storage over the past 30 years. While the inflow (recharge) and subsurface outflow values in the 2004 revised numerical model are lower than previous estimates, the 2004 revised numerical model reflects a similar change in storage as the previous estimates, a decline of approximately 500 AFY. The water balance components are discussed below.

<u>Inflow</u>. As shown in **Table 4**, estimates of inflow into the basin range from 1,077 to 2,631 AFY. In the Skrivan 1977 study, the total recharge to the basin was estimated using the methodology based on USGS Professional Paper 486-B. This methodology results in an estimate of annual runoff from the mountains in the area ranging from 0.02 inches to 0.50 inches per year. Skrivan estimated the total recharge to the basin as equal to 0.22 inches per year over the drainage area of 225 square miles. The total estimated recharge was 2,600 AFY. This represents less than 5

percent of precipitation. The 1996 Bookman-Edmonston report used the same method with the same result.

However, Huntley (1979) and Mark (1988) both concluded this methodology was too simplistic and used different estimates. Mark estimated recharge from precipitation using three different methods: rainfall-runoff curve, runoff-area correlation, and the Maxey-Eakin method. Using these methods, his estimates ranged from 536 AFY (rainfall-runoff) to 1,650 AFY (Maxey-Eakin). Mark concluded that the Maxey-Eakin method was the most reliable to predict areal recharge based on available data. An additional 10 percent of recharge (170 AFY) was added to the water balance as groundwater inflow, but no explanation was included in the report.

The watershed areas defined by Mark (1988) and Huntley (1977) were a fraction of the size (40 square miles as compared to 225 square miles) as that used by Skrivan. The isohyetal map used in Mark's recharge analysis was not presented in his thesis. However, a table was included that equated an elevation with an isohyetal contour. Based on this table and others included in the report, the percent of precipitation percolating the groundwater aquifer was approximately six percent, slightly higher than Skrivan's estimate of five percent. However, comparison of the documented isohyets/elevations with the isohyetal map produced by PRISM[2] indicates the total precipitation may have been overestimated and the percentage of precipitation recharging the basin may be higher than six percent.

Huntley (1979) did not prepare an independent estimate for recharge; instead he calculated the total inflow as the unknown the water balance equation (outflow – change in storage = inflow). The resulting estimate, 2,631 AFY, was similar to Skrivan's estimate 2,600 AFY. This similarity is mostly likely due to the fact that the other elements of the water balance (outflow and change in storage) were estimated with the same methodology and the same data used in the Skrivan report.

The current Bookman-Edmonston numerical model's estimate of average annual recharge, 1,077 AFY is lower than previous estimates. For the 2004 study, the contributing watershed for the washes in the area was estimated to be 76 square miles, within the range of previous estimates. The specific drainage areas and the average precipitation are not described in the report. However, based on the locations of the washes, the amount of contributing area documented in the report, and an isohyetal map from PRISM, the average rainfall for the tributary areas is approximately 5 inches per year (20,266 AFY over the watershed). Accordingly the estimated recharge (1,077 AFY) is about five percent of total recharge, the same relationship Skrivan used in the WRI 77-30.

In the current numerical model, recharge remains constant over the study period, reflecting an annual average. An average was used rather than annual data as the lag time between precipitation and recharge is unknown.

With regard to areal distribution of recharge, the recharge was applied to the model as infiltration along local washes. The locations and rate of recharge determined by the model calibration is shown on **Figure 13**. Recharge was applied over 163 cells (1,630 acres) or approximately two percent of the active model area. Approximately 65 of these recharge cells become dry over the

[2] PRISM (Parameter-elevation Regressions on Independent Slopes Model) isohyetal maps produced by the University of Oregon (Daly and Taylor, 1998).

study period and no longer contribute to the total inflow of the model. As shown in **Figure 13**, recharge was set up to apply to both Layers 1 and 2 as Layer 2 extends to the ground surface in some locations. However, the MODFLOW model was configured to apply recharge only to Layer 1 rather than to the highest active layer. Therefore, no direct recharge was applied to Layer 2. This is a reason why the model underestimates total recharge to the groundwater basin.

Subsurface Outflow. The subsurface outflow from the basin is highly uncertain because of lack of data. Although the US/Mexico border has been used as a basin boundary in all previous studies, it is a political not a hydrologic boundary. Limited water level data in the area make estimates of the flow across the boundary difficult.

Skrivan estimated underflow to Mexico and flow eastward from the calibrated model results, finding a total outflow of 1,900 AFY. A decrease in underflow across the US/Mexico border was simulated between the 1925 and 1975 scenarios due to a decrease in water levels. Mark estimated a total subsurface outflow of 825 AFY but provided no discussion on how this value was determined. The estimate may have been the result of model calibration. Huntley estimated total subsurface outflow using the hydrologic properties presented by Skrivan for the upper sediments and Loeltz (1975) for the lower sedimentary rocks. The exact methodology is not detailed in the report but it is assumed that the calculation used Darcy's equation for groundwater flow. The resulting estimate was 1,999 AFY, similar to Skrivan's model calibrated estimate. The 1996 Bookman-Edmonston report reviewed both Skrivan's and Huntley's outflow estimates and concluded the results were reasonable. For the 1996 Bookman-Edmonston water balance, Skrivan's estimate was used.

The 2004 Bookman-Edmonston model used in the Draft EIR/EIS used the model calibrated results to determine total outflow. The result was a smaller outflow, 990 AFY, than all previous estimates. However, the total inflow from recharge was also lower than previous estimates. The net result is a similar change in storage.

To simulate the subsurface outflow along the northern and southeastern boundaries of the model, constant head cells were used. Constant heads cells assume that the groundwater level just outside the model area is known and remains at a constant elevation. The model calculates the amount of flow into or out of the model based on the difference between this fixed water level and the calculated water level just inside the model. The value of the constant heads were based on available pre-development water levels (1925) and adjusted during calibration. These values ranged from 135 feet msl to 191 feet msl and are shown on **Figure 14**.

Pumping. Another major concern addressed by the comments is the estimation of basin pumping. Pumping in the model occurs in ten locations (cells), with eight in Layer 1 and two in Layer 2. These wells are shown on **Figure 14**. The wells in Layer 1 include Ocotillo, Ocotillo Mutual, Westwind, Nomirage, Coyote, and USG wells 4, 5, and 6. The wells in Layer 2 include Yuha Estates and West Texas. Total basin pumping in the model is shown in **Figure 15** for the baseline condition.

Several comments addressed the difficulties in estimating historical pumping and impact that this uncertainty would have on the model. In the WRI 77-30 report, Skrivan estimated pumping as of 1925 and 1975. Prior to 1925, pumping was assumed to be negligible. Pumping from 1925 through 1975 was determined through review of various reports that described wells in the Coyote Wells area and their uses which included a railroad, store and post office, Ocotillo Mutual Water Company, private domestic users and the Portland Cement Company (which was

purchased by US Gypsum in 1946). Data received from USG were also reviewed. The total pumping in 1975 was estimated at 880 AFY. The larger producers included USG (600 AFY), Clifford Well, Coyote Valley Mutual Water Company, and Ocotillo Mutual Water Company. USG estimated pumping for 1970 – 1980 based on wallboard production at about 400 AFY or two-thirds the USGS estimate. USG and its consultants could not reconcile the difference between USGS and USG estimates. This may be due to the changing water use in wallboard production; the amount of water needed in production has changed over the years as USG improves its water use efficiency.

For the water balance described in the Draft EIR/EIS, it is recognized that pumping rates before 1981 are estimates and that these historical pumping estimates were used to assist in calibration of the model. Specifically, in the 2004 model, Skrivan's estimates were used for 1925-1975, USG estimates were used for 1976-1980, and measured pumping data for USG wells were used for 1981- 2002. The numerical model then predicts water levels for 2002-2082. While the model was simulated from 1925 through 2082, the main objective of the model is to simulate the impact of the proposed project on groundwater levels from the present into the future. From this perspective, it is important that actual USG pumping data are available from 1981 to the present.

Summary. As documented in **Table 4**, water balances have been prepared for four previous studies as well as the numerical model used to predict impacts in the Draft EIR/EIS. While all the studies are not necessarily independent, they represent a variety of methodologies, data sets, study periods and study areas. The resulting inflow (recharge) values range from 1,077 to 2,631 AFY, with the numerical model and Draft EIR/EIS using the lowest recharge value. While outflow values are the subject of discussion and some uncertainty, the outflows range from 1,546 to 3,173 AFY, with the lowest value representing recent conditions and including measured pumping data for the major pumper (USG).

Referring to the bottom line in **Table 4**, all of the water balances representing conditions over the past 30 years indicate a negative change in storage. This finding is consistent with the sustained groundwater level declines documented in the groundwater basin. This finding also raises the issue of groundwater overdraft.

The Draft EIR/EIS acknowledges that the USGS has been collecting groundwater data from the basin since the 1970s in response to concerns regarding potential overdraft. Overdraft is defined below by the California Department of Water Resources (DWR) Bulletin 118, *California's Groundwater*:

> Groundwater overdraft is defined as the condition of a groundwater basin or subbasin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years, during which the water supply conditions approximate average conditions. Overdraft can be characterized by groundwater levels that decline over a period of years and never fully recover, even in wet years.

Application of the above definition to the Ocotillo/Coyote Wells Groundwater Basin indicates that the amount of pumping withdrawal (e.g., 2002 value of 556 AFY from **Table 4**) is *less* than the amount of recharge (e.g., 1,077 AFY). However, the sustained declines show that the existing wells do not effectively capture the available recharge and instead, depend in part upon groundwater storage. Subsurface discharge (underflow) also occurs, primarily across the southern boundary into Mexico and along the eastern boundary. The condition of overdraft is

characterized in the basin by sustained groundwater level declines over the past 30 years and by the water balance studies, all of which indicate a decline in storage.

The decline in storage is gradual and small relative to the overall storage in the basin; nonetheless, the decline in storage itself is an adverse impact, representing depletion of a shared resource. This groundwater resource is used beneficially for both industrial supply (USG) and as the sole source of municipal and domestic supply. A condition of overdraft undercuts the long-term reliability of that supply. For Impact 3.3-2, Water Depletion at Plant Affecting the Groundwater Basin, the finding of a significant and unavoidable impact on the basin acknowledges the condition of overdraft and the fact that the proposed project's increased pumping would increase the overdraft over the next 80 years.

Application of the Numerical Model

Introduction. Several comments refer to the capability of the numerical groundwater model to adequately simulate groundwater flow in the Ocotillo/Coyote Wells Groundwater Basin. This section provides a summary of the model setup and calibration followed by an evaluation of the capability of the model to simulate groundwater conditions relevant to the Draft EIR/EIS.

Model Setup. The numerical groundwater model (based on the widely used MODFLOW software) went through a major update and revision for the 2004 report (Bookman-Edmonston, 2004) compared to the 1996 report (Bookman-Edmonston, 1996). The primary revision to the numerical model was to incorporate the revised geologic interpretation. The primary components of the revised geologic interpretation include:

- Identification that the groundwater basin is composed of two aquifers, an upper alluvial layer and a lower layer composed of the Palm Springs and Imperial formations.
- No Elsinore – Laguna Salada fault extension is present in the groundwater basin that forms a significant hydrologic barrier to groundwater flow.
- Variations in transmissivity and water quality are a result of the two different formation plus variations in the thickness of the alluvial aquifer and depth to the top of the lower aquifer.

The model-simulated water balance is one of the primary modeling results of interest for the Draft EIR/EIS. A review of the model setup shows that the only significant source of groundwater recharge to the model is from stream runoff along the local washes. The model assumes uniform stream recharge throughout the model run. The model setup also specifies that recharge only applies to Layer 1 and not to Layer 2. Because large portions of Layer 1 become inactive during the model simulation due to water levels below the Layer 1 bottom elevation, groundwater recharge is restricted to the center of the basin. Furthermore, this setup means that the only recharge to Layer 2 is seepage from Layer 1. Consequently, this model setup causes the model to under-represent the total groundwater recharge to the groundwater basin.

The groundwater outflow in the model is represented by subsurface flow through portions of the northeastern and southern boundaries and from groundwater pumping by wells. The subsurface outflow boundaries are simulated using a constant head boundary condition. The head values for these locations are set as steady-state values which do not change over time. The value of the

constant heads were based on available pre-development water levels (1925) and adjusted during calibration. These values ranged from 135 feet msl to 191 feet msl and are shown on **Figure 14**.

Pumping for ten cells is included in the model to represent current and future pumping. Historical USG pumping amounts are discussed in the previous section on *Water Balance*; for communities in the area, pumping is based on estimated per capita water usage. For the future scenarios, the non-USG groundwater usage is based on extrapolated population projections based on population growth of 1.4% from 1980 to 1990.

Groundwater outflows in Layer 1 are through pumping wells, groundwater outflows through the southern boundary along the Mexican border, and leakage to Layer 2. Groundwater outflows from Layer 2 primarily consist of subsurface outflows through the northeastern and southern boundaries. Only minor groundwater pumping is included in Layer 2.

Model Calibration. The groundwater model was calibrated to measured groundwater levels for fifteen wells in the basin. Of these calibration wells, nine wells represent Layer 1 and six wells represent Layer 2. The model calibration consisted on comparing simulated to observed groundwater levels. A statistical evaluation of the model results produces the following statistical parameters provided in **Table 5**.

The observed groundwater levels used for model calibration are averages of the two measurements collected for each year. Averages were used because the model stress periods are one year in length, so the model does not have the capability to evaluate seasonal changes. In most cases, the annual variation in water levels is minor with seasonal variations of less than one foot.

It should be noted that some degree of difference or residual between the observed and simulated groundwater elevations is expected. Residuals may be due in part to localized effects or data quality issues. For example, residuals can result from using groundwater elevations from pumping wells as calibration targets. MODFLOW also does not take into account the impact of well efficiency on groundwater elevations at pumping wells. In addition, the timing of the observed groundwater elevations does not exactly match the model stress periods.

The water levels in Well 25K2 have an atypical response to pumping compared to the other Layer 1 wells. Water levels in 25K2 my represent pumping water levels which can be significantly lower than those representing regional aquifer conditions. Most of the Layer 1 statistical error is generated from this one well. Removing initial Well 25K2 data would reduce the mean error to 1.5 and the standard deviation to 3.5 for Layer 1.

Equally important is evaluating whether the model is representing the appropriate trend or response to stresses (e.g., pumping) in the aquifer. Matching these trends is important to demonstrate that the model has the capability to simulate historical changes in groundwater elevations, and is therefore capable of forecasting future changes in groundwater elevations.

The nine calibration wells completed in Layer 1 are all clustered in the central portion of the basin near Ocotillo. **Figure 16** shows the comparison of simulated to observed groundwater levels for the Layer 1 wells. These results show that in general the calibration points tend to parallel the 1:1 comparison line. This indicates that the relative change in response to pumping is represented by the groundwater model. Water levels from wells 24D1, 36D2, 36H1 and 25Q1 show very close matches to the observed values. Water levels from wells 42A5, 29L1, and 29R2

show a reasonable match; however, the simulated water levels show a slight divergent trend by becoming progressively higher than the observed water levels over time.

The six calibration wells completed in Layer 2 are located in various locations in the basin. The calibration results for Layer 2 are more problematic. The trends show more significant variations between the simulated and observed groundwater levels (**Figure 17**). The Yuha Estates wells (11G1, 11G4 and 11H3) in particular show variations in both magnitude and trend. Wells 29H1, 24B1 and 36M1 show better agreement with the trend, but vary in magnitude by about 5 to 10 feet.

Because of the lack of wells and data, the model is not calibrated over its entire domain. Therefore, uncertainty remains in the model. However, the model is reasonably calibrated in the immediate vicinity of the US Gypsum wells near Ocotillo. The model shows reasonable capability to simulate groundwater level changes in response to pumping in Layer 1 near Ocotillo. Therefore, the model is useful as a tool to help in the evaluation of the impact of future groundwater pumping in the Ocotillo area, but needs to be supported by continued monitoring.

Model Scenarios. A series of modeling scenarios were presented (Bookman-Edmonston, 2004) to evaluate the effects of increased pumping on the basin. These scenarios include:

- The baseline case assumes 347 acre-feet per year (AFY) of groundwater pumping by US Gypsum and an additional 122 AFY of pumping by all other producers. These rates stay constant over the 80-year scenario.
- The 650 AFY Pumping Scenario assumes 650 AFY of groundwater pumping by US Gypsum. Pumping from other wells increases at 1.4% per year with the total pumping increasing from 122 AFY at the start of the scenario to 371 AFY at the end of the scenario. Total groundwater pumping at the end of the scenario is 1,021 AFY.
- The 767 AFY Pumping Scenario assumes 767 AFY of groundwater pumping by US Gypsum. Pumping from other wells increases at 1.4% per year with the total pumping increasing from 122 AFY at the start of the scenario to 371 AFY at the end of the scenario. Total groundwater pumping at the end of the scenario is 1,138 AFY.

The Baseline and potential future impacts from increased pumping at US Gypsum are summarized below in terms of annual decline in simulated groundwater levels:

- 0.1 to 0.2 feet per year for the Baseline case based on the results presented on Table 6-1 (Bookman-Edmonston, 2004).
- 0.2 to 0.5 feet per year for the 650 AFY Pumping Scenario based on the results presented on Table 6-2 (Bookman-Edmonston, 2004).
- 0.3 to 0.7 feet per year for the 767 AFY Pumping Scenario based on the results presented on Table 6-3 (Bookman-Edmonston, 2004)

The average rate of decline ranges from 0.4 feet per year or 1 foot every 2.5 years (Well 36H1) to 0.13 feet per year or 1 foot every 7.7 years (Well 34B1, not shown). By way of comparison, over the same time period, the numerical model predicts a range of declines from 1 foot every 4.4 years to 1 foot every 8 years. Using the wells currently monitored by the USGS, the average rate of decline from 1975 to 2007 was estimated at 0.27 feet per year. During these years, the total pumping was estimated to range from 440 to 880 AFY. These simulated annual drawdown

rates are consistent with the observed groundwater level measurements. This suggests that the model does provide a reasonable estimate of the potential future drawdown.

To further evaluate model performance, a local groundwater budget was derived from the model for the active region of Layer 1 north and west of the Yuha Wells fault. This area appears to be the best calibrated area in the model, so the hydrologic budget was isolated and analyzed. **Table 6** provides a summary of the local groundwater budget for this portion of Layer 1 at the end of the 80-year scenario when the total groundwater pumping is at its maximum.

The local groundwater budget presented in **Table 6** shows that groundwater inflow is primarily derived from stream runoff represented by the MODFLOW recharge module. Other sources of inflow include leakage from Layer 2 and release from groundwater storage through the decline of groundwater levels. The outflows consist of groundwater pumping from wells, leakage from Layer 1 to Layer 2, and Layer 1 subsurface flow to the south. The increased pumping simulated in the scenarios results in more recharge and less discharge. The change in the water budget—expressed as a percent of the total change in pumping—is described below:

- 53% of the pumping volume is derived from a decline in groundwater storage.
- 24% of the pumping volume is derived from a decline in groundwater leakage from Layer 1 to Layer 2.
- 14% of the pumping volume is derived from a decline in groundwater flow through Layer 1 to the south.
- 9% of the pumping volume is derived from increased leakage from Layer 2 into Layer 1.

The percent change in the water budget elements was the same in both pumping scenarios.

Figure 18 presents a comparison of the decline in groundwater storage as a function of the total groundwater pumping at the end of the 80-year scenario. This shows a linear relationship of pumping versus storage decline for the three different scenarios. A linear regression analysis on these scenario results indicates that every 100 AFY of increase in pumping produces a 52.4 AFY decrease in groundwater storage. This is consistent with the percentages presented above. Therefore, it is assumed that the other percentages also vary linearly. Accordingly, using this assumption based on the linear regression analysis presented in **Figure 16**, every 100 AFY increase in pumping would produce a:

- 53 AFY decrease in groundwater storage.
- 24 AFY decrease in groundwater leakage from Layer 1 to Layer 2.
- 14 AFY decrease in groundwater flow through Layer 1 to the south.
- 9 AFY increase in leakage from Layer 2 into Layer 1.

The Draft EIR/EIS cites the potential for groundwater quality deterioration in the Ocotillo/Coyote Wells Groundwater Basin should the relatively poor quality Layer 2 water migrate upward into the higher quality Layer 1 water. The model results indicate that every 100 AFY increase in pumping would produce a 9 AFY leakage from Layer 2 to Layer 1. The potential leakage from Layer 2 is primarily situated in upgradient areas to the north and west, and from upward migration directly underneath the larger production wells. Deterioration of

water quality, based on the model results, would not be expected to be widespread. However, it could be locally significant in the vicinity of the larger production wells.

Summary. With regard to the capabilities of the model, the calibration is strongest in the area of the USG wells near Ocotillo. Analysis of the model results show that the model simulations produce results that are comparable to the observed groundwater level data.

This model has reasonable capability to simulate groundwater conditions especially for Layer 1 in the vicinity of Ocotillo. Therefore, the future case scenarios presented in the Draft EIR/EIS should provide a reasonable estimation of the future results.

The model has limitations. Some of the model limitations noted herein include:

- There is a general lack of available hydrogeological data within the model domain. Because of this, there is an inherent degree of uncertainty since little to no data are available for significant portions of the model area.
- As noted above, the model calibration could be improved, especially for Layer 2. The Layer 2 calibration is particularly important for evaluating potential migration of lower quality water from Layer 2 to Layer 1.
- The understanding and representation of groundwater recharge is a key component of the model study. The current model allows recharge only to Layer 2 from leakage from Layer 1. However, significant portions of Layer 2 are the first saturated zone over much of the model domain. This could potentially change the overall groundwater recharge to increase from 1,077 AFY, but would not be expected to significantly change the local groundwater budget in the alluvial (Layer 1) aquifer near Ocotillo.

The groundwater model is best used as a tool to support analysis of the groundwater basin based on measured data. Specifically, the primary function of the groundwater model is to provide a hypothesis to be tested against measured data. The model can be used to project future groundwater level changes resulting from increased pumping. It also can provide a mechanism to evaluate monitoring data. With this perspective, the following steps are recommended as part of ongoing and future monitoring:

- Sensitivity analyses should be undertaken to understand the parameters with the greatest impact on the model.
- Additional calibration should be conducted prior to the monitoring program.
- Solute transport capability should be considered for future scenarios.
- The model should be updated every 3 – 5 years as new data become available.

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Table 1
Water Quality Information from the USGS National Water Information System

		Period of Record		Location			
State Well Number	**Label**	**Begin**	**End**	**Lat**	**Lon**	**No. of Sampling Events**	**Total No. of Measurements**
Wells with Recent Data							
17S 10E 11H3	11H3	15-Sep-87	31-Mar-05	32.68812	-115.92307	17	513
16S 9E 25K2	25K2	01-Dec-72	29-Mar-05	32.74423	-115.99362	26	731
16S 10E 30R1	30R1	27-Jun-59	30-Mar-05	32.74111	-115.97111	32	1630
16S 9E 34B1	34B1	06-May-97	31-Mar-05	32.74006	-116.0239	9	285
16S 9E 36C2	36C2	08-Feb-61	29-Mar-05	32.73784	-115.99557	17	495
16S 9E 36H1	36H1	07-Feb-63	24-Mar-05	32.73534	-115.98668	29	784
Previously Monitored							
17S 10E 11G1	11G1	00-Jan-00	15-Nov-72	32.68978	-115.92557	18	108
17S 10E 11G2	11G2	15-Nov-72	10-Mar-82	32.68978	-115.92612	7	176
17S 10E 11H1	11H1	27-Jun-75	27-Jun-75	32.68728	-115.9239	1	24
17S 10E 11H2	11H2	01-Apr-83	04-Apr-86	32.68839	-115.92334	4	93
17S 11E 16J1	16J1	29-Aug-72	11-Dec-74	32.67034	-115.8539	2	37
17S 11E 18K1	18K1	14-May-75	14-May-75	32.66923	-115.89056	1	25
17S 11E 22E2	22E2	24-Jun-75	24-Jun-75	32.65951	-115.84723	1	26
16S 9E 24N1	24N1	23-Jun-75	23-Jun-75	32.75839	-116.00251	1	26
16S 9E 24R1	24R1	28-Apr-77	15-Mar-89	32.75506	-115.98835	13	314
16S 9E 25K1	25K1	15-May-59	20-Nov-74	32.74534	-115.99251	7	144
16S 9E 25M1	25M1	06-Mar-62	22-Sep-67	32.74589	-116.00057	2	44
16S 9E 25M2	25M2	20-Jan-71	04-Nov-71	32.74617	-116.00057	2	39
16S 9E 25Q1	25Q1	27-Dec-74	30-Dec-74	32.74062	-115.99418	2	10
16S 10E 27R1	27R1	24-Jun-75	24-Jun-75	32.74173	-115.93279	1	26
16S 10E 28D1	28D1	16-Dec-48	16-Dec-48	32.75284	-115.94973	1	16
16S 10E 29H1	29H1	13-May-75	13-May-75	32.7495	-115.95168	1	28
16S 10E 29K1	29K1	25-Jun-75	25-Jun-75	32.74645	-115.9564	1	26
16S 10E 29L1	29L1	29-Apr-77	17-Mar-88	32.7445	-115.96279	12	288
16S 10E 32D2	32D2	07-Feb-18	07-Feb-18	32.73978	-115.96557	1	17
16S 10E 33E 1	33E1	13-May-75	13-May-75	32.73312	-115.95084	1	28
16S 10E 34N1	34N1	24-Jun-75	24-Jun-75	32.72589	-115.9339	1	26
16S 9E 35A1	35A1	25-Jun-75	25-Jun-75	32.73895	-116.00557	1	26
16S 9E 35M1	35M1	02-Jul-62	28-Jun-75	32.72923	-116.01751	4	82

Table 1. Water Quality Information from the USGS National Water Information System

		Period of Record		Location			
State Well Number	**Label**	**Begin**	**End**	**Lat**	**Lon**	**No. of Sampling Events**	**Total No. of Measurements**
16S 9E 36C3	36C3	20-Jan-71	20-Jan-71	32.73784	-115.99557	1	25
16S 9E 36D2	36D2	26-Jun-75	10-Apr-90	32.7395	-116.00168	15	360
16S 9E 36G4	36G4	10-Jan-74	28-Jun-75	32.73367	-115.99307	2	46
16S 9E 36L2	36L2	11-Mar-69	24-Jun-75	32.73062	-115.99446	7	120
16S 9E 36R1	36R1	17-Sep-48	19-Feb-58	32.72562	-115.98779	2	47
16S 10E 41M1	41M1	12-Oct-71	28-Jun-75	32.71673	-115.9639	2	41
16S 10E 42A1	42A1	30-Dec-74	30-Dec-74	32.72395	-115.96918	1	6
16S 10E 42A2	42A2	30-Dec-74	30-Dec-74	32.72339	-115.9689	1	3
16S 10E 42A4	42A4	31-Jul-95	31-Jul-95	32.72395	-115.96835	1	30
16S 10E 42A5	42A5	30-Dec-74	23-Mar-94	32.72478	-115.9689	17	398
16S 10E 42C1	42C1	28-Jun-75	28-Jun-75	32.72284	-115.97612	1	25
16S 10E 42H1	42H1	08-Jan-76	08-Jan-76	32.72006	-115.97085	1	22
16S 11E 42L1	42L1	24-Jun-75	24-Jun-75	32.71423	-115.87362	1	25
16S 11E 42M1	42M1	18-Jan-49	23-Aug-62	32.71617	-115.87723	2	33
16S 11E 42M2	42M2	18-Jan-49	23-Aug-62	32.71617	-115.87723	2	21
16S 11E 42M4	42M4	04-Mar-58	23-Dec-74	32.71617	-115.87834	2	45
16S 11E 42M5	42M5	18-Jan-49	22-Feb-72	32.71617	-115.8789	2	27
16S 11E 42M6	42M6	14-May-75	14-May-75	32.71339	-115.87834	1	28

Source: USGS NWIS

Table 2. Comparison of Water Quality by Well Location

Area		East of Ocotillo			Transition		Near Ocotillo
Well Name		29H1	29D1	27R1	34N1	29L1	36H1
Parameter	Units	Results					
Bicarbonate, unfiltered, field	MG/L	763	1060	159	151	170	125
Boron	UG/L	15000	1900	3800	300	400	200
Calcium	MG/L	140	3	16	170	13	20
Carbonate, unfiltered, field	MG/L	0	288	12		0	0
Chloride	MG/L	26000	2510	1700	280	230	66
Fluoride	MG/L	5		0.9	0.6	0.7	0.7
Iron, filtered	UG/L	80			<10	47	
Magnesium	MG/L	240	14	23	61	3.6	4.3
pH, field		7.3		9	7.8	8.6	8
Potassium	MG/L	72		17		5	3.9
Sodium	MG/L	21000	3140	1400	270	250	78
Specific conductance, field	uS/cm	74000		6000	2100	1360	525
Sulfate	MG/L	6300	1520	510	720	120	33
Sample Date		M-75	D-48	J-75	J-75	A-77	A-77

Table 3. Wells Monitored for Water Levels by the USGS since 2002

		Period of Record			
State Well Number	Label	Begin	End	Number of Data Points	Hydrogeology Layer
17S 10E 11B1	11B1	Jun-75	Mar-07	60	2
17S 10E 11G1	11G1	Apr-67	Mar-07	67	2
17S 10E 11G4	11G4	Jul-78	Mar-07	54	2
17S 10E 11H3	11H3	Oct-87	Oct-06	39	2
17S 11E 16J1	16J1	May-70	Mar-07	64	2
17S 11E 22E2	22E2	May-75	Mar-07	66	2
16S 10E 27R1	27R1	May-75	Mar-07	66	2
16S 10E 28D1	28D1	Dec-74	Mar-07	11	2
16S 10E 29H1	29H1	May-75	Mar-07	62	2
16S 9E 35M1	35M1	Jul-62	Mar-07	31	2
16S 9E 35N2	35N2	Jun-75	Mar-07	17	2
16S 9E 25M2	25M2	Apr-91	Mar-07	32	1
16S 9E 26F1	26F1	Nov-98	Mar-07	18	1
16S 10E 31B1	31B1	Sep-93	Mar-07	28	1
16S 10E 32P1	32P1	Oct-92	Mar-07	30	1
16S 9E 34B1	34B1	Mar-98	Mar-07	16	1
16S 9E 36C3	36C3	Jun-75	Oct-06	16	1
16S 9E 36D2	36D2	Jun-75	Mar-07	65	1
16S 9E 36H1	36H1	Mar-54	Mar-07	65	1
16S 11E 42L1	42L1	May-75	Mar-07	52	2

Table 4
Comparison of Previous Water Balances

All Units in AFY (annual average)	USGS(Skrivan) 1977		Huntley 1979	Mark 1988	Bookman-Edmonston 1996		2004
Study Period	1925	1975	1976-1978	1976	1976	1995	2002
Watershed Area	225 mi^2		40 mi^2	40 mi^2	225 mi^2		76 mi^2
Inflows							
Total Inflow	2,600	2,600	2,631	1,820	2,600	2,600	1,077
Infiltration of Precipitation	*2,600*	*2,600*		*1,650*	*2,600*	*2,600*	*1,077*
Subsurface Inflow				*170*			
TOTAL INFLOWS	**2,600**	**2,600**	**2,631**	**1,820**	**2,600**	**2,600**	**1,077**
Outflows							
Total Pumping	0	900	924	1,002	711	511	556
USG Pumping		*600*			*413*	*400*	*434*
Urban Use		*300*			*85*	*111*	*122*
Export to Mexico					*213*	*0*	
Total Groundwater Outflow	1,950	1,900	1,999	825	1,900	1,900	990
Underflow to Mexico	*1,500*	*1,450*	*1,245*		*1,450*	*1,450*	*515*
Underflow across Faults	*450*	*450*	*754*		*450*	*450*	
Underflow to East							*475*
ET Outflow	650	300	250		250	250	
TOTAL OUTFLOWS	**2,600**	**3,100**	**3,173**	**1,827**	**2,861**	**2,661**	**1,546**
Change in Storage	**0**	**-500**	**-542**	**-7**	**-261**	**-61**	**-469**

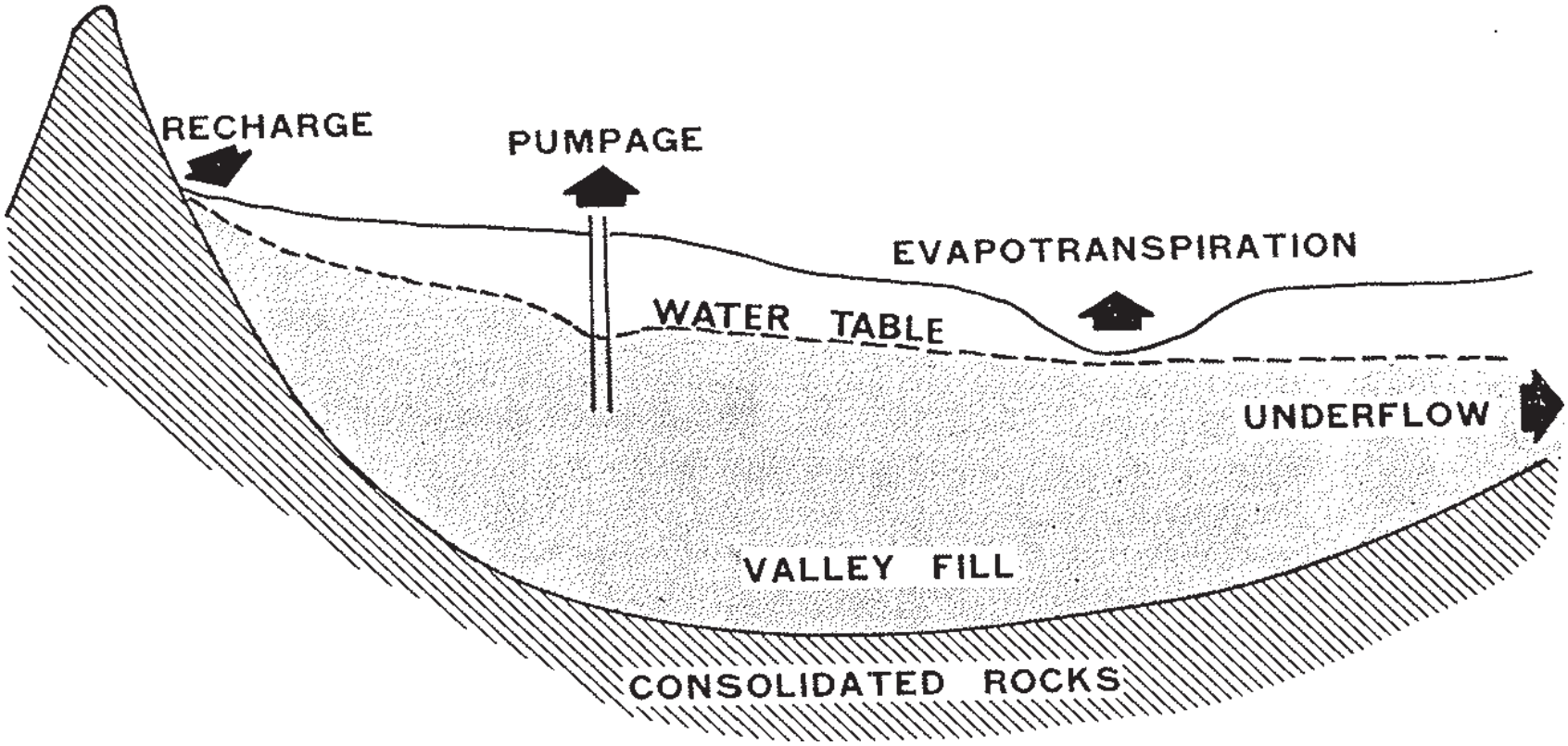
Table 5. Summary of Model Calibration Statistics

Statistical Measure	Layer 1 Calibration Wells	Layer 2 Calibration Wells
Number of Wells	9	6
Number of Observations	185	134
Mean Error	2.2	9
Root Mean Square Error	5.6	16.5
Standard Deviation	5.2	13.9

Table 6. Subregional Groundwater Budget for Layer 1 in the Ocotillo Area

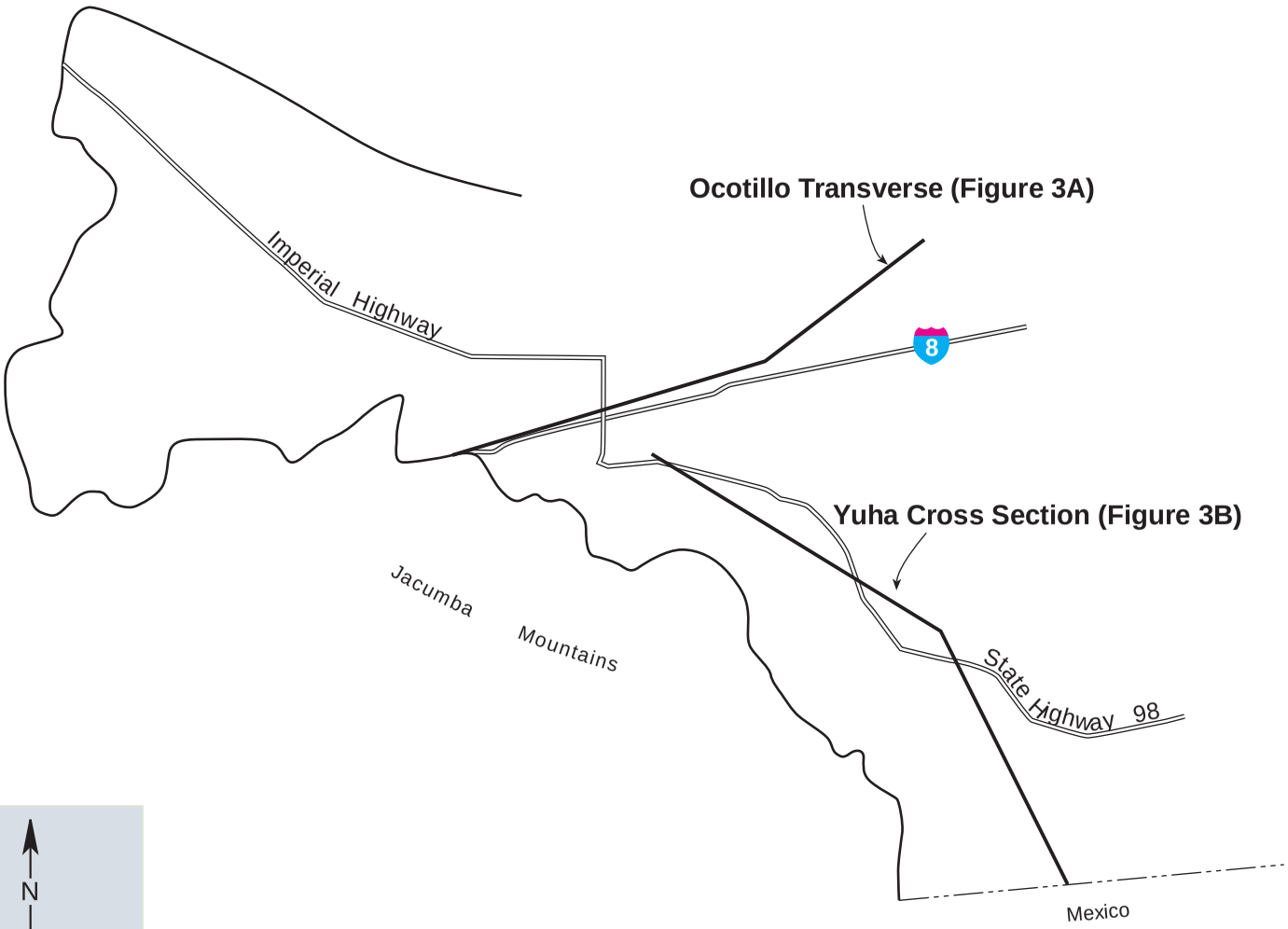
	Baseline	650 AFY Pumping Scenario	767 AFY Pumping Scenario
Inflow (in AFY)			
Recharge	1,018	1,018	1,018
Leakage from Layer 2	13	61	75
Decline in Groundwater Storage	140	434	488
Total Inflow	1,171	1,513	1,581
Outflow (in AFY)			
Wells	469	1,021	1,138
Layer 1 Outflow	265	187	166
Leakage to Layer 2	437	305	277
Total Outflow	1,171	1,513	1,581

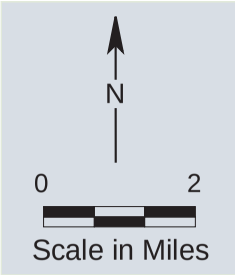
*At the end of the 80-year scenario when total groundwater pumping is at its maximum.



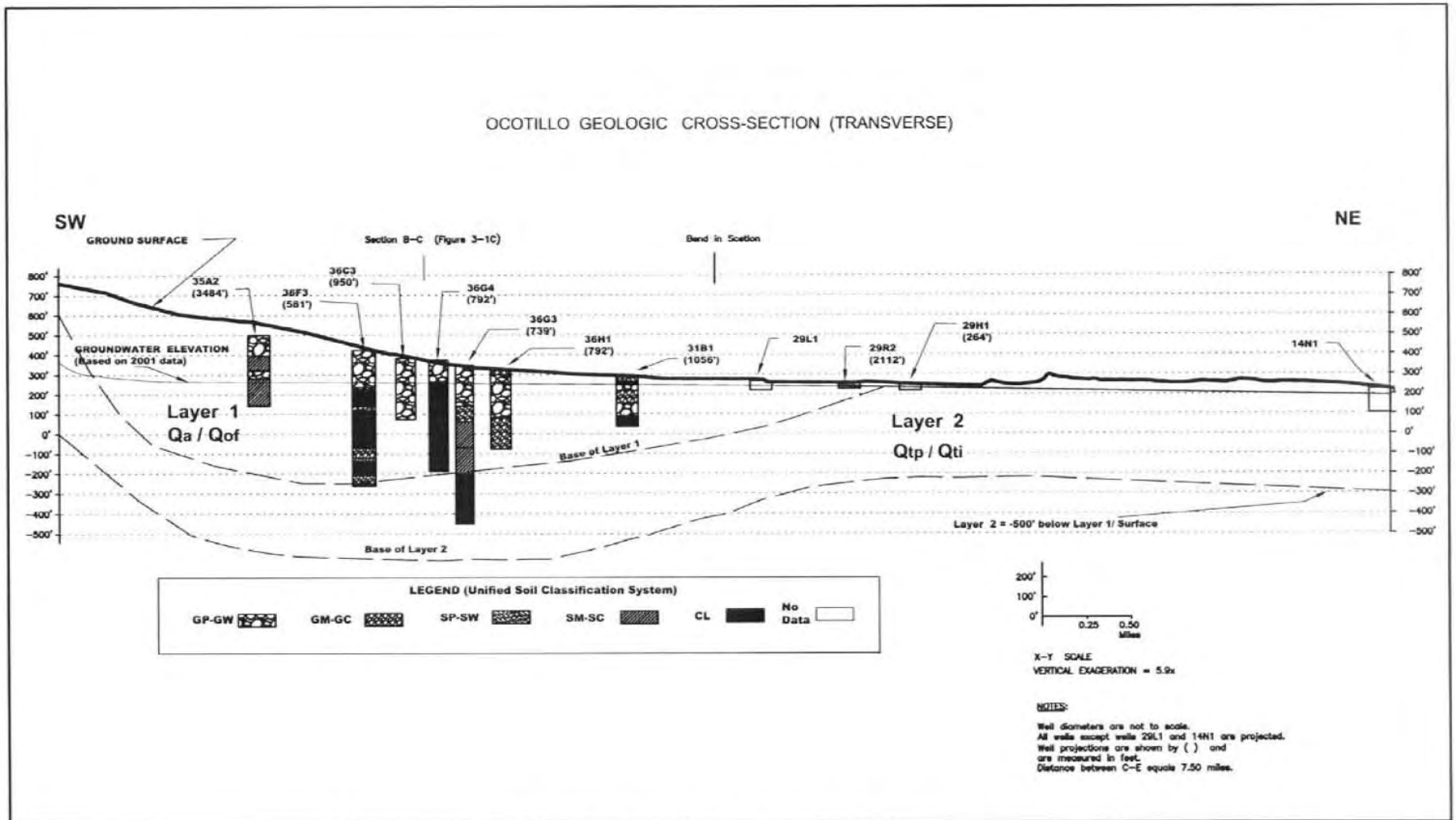
Source: Skrivan, Figure 1, 1977.

July 2007	**Figure 1 Conceptual Cross Section (1977)**
TODD ENGINEERS Emeryville, California	





July 2007	Figure 2 Cross Section Locations
TODD ENGINEERS Emeryville, California	



Bookman-Edmonston
A Division of GEI Consultants, Inc

Ocotillo/Coyote Wells Groundwater Study
Geologic Cross-Section (Ocotillo-Transverse)
U.S. Gypsum Company

9/24/03

FIGURE 3-1E

PROJECT NUMBER 33890

July 2007

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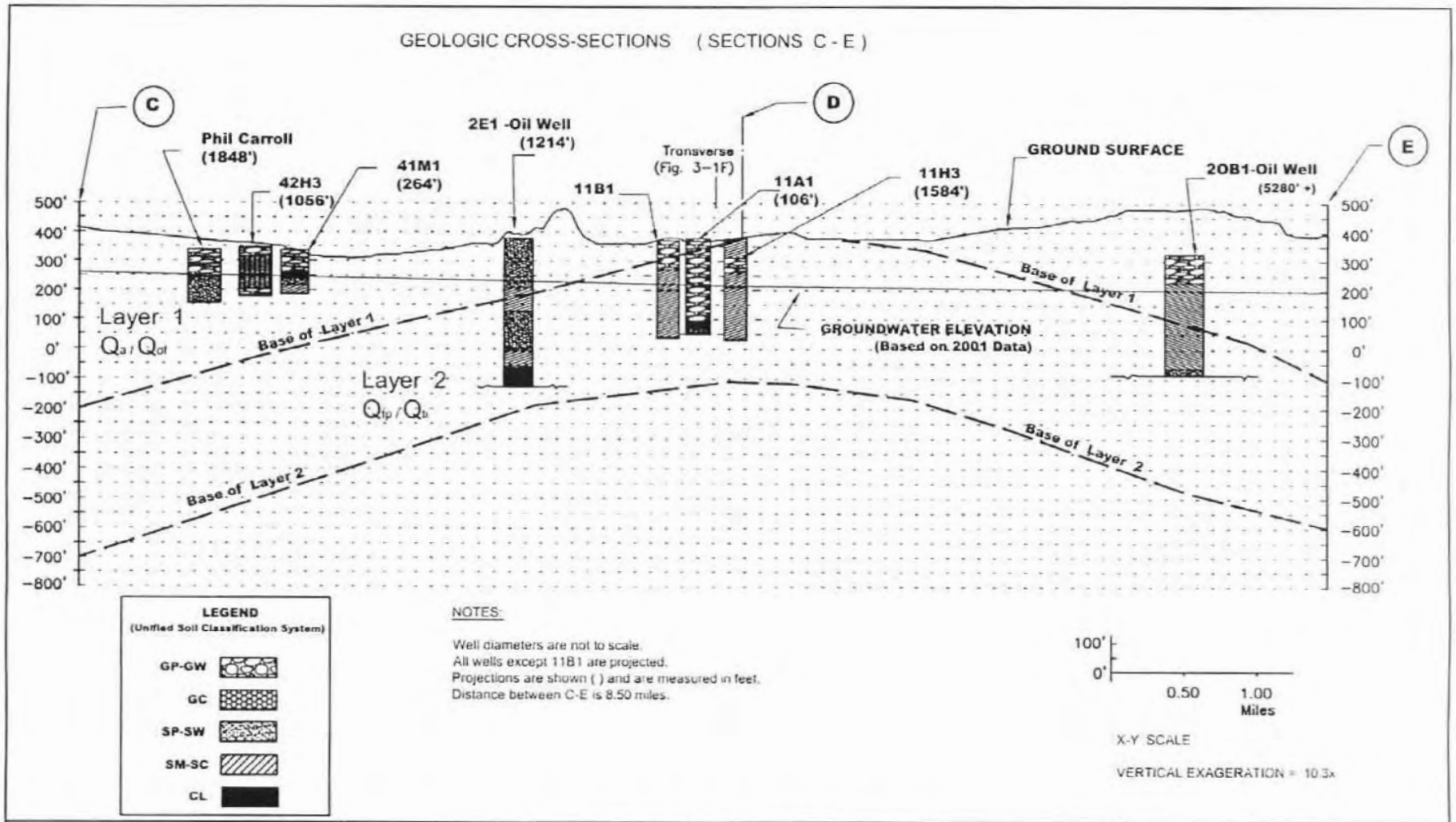
Emeryville, California

Figure 3A
Cross Section near Ocotillo



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Ocotillo/Coyote Wells Groundwater Study
Geologic Cross-Section
U.S. Gypsum Company

9/24/03

FIGURE 3-1D

PROJECT NUMBER 111320

July 2007

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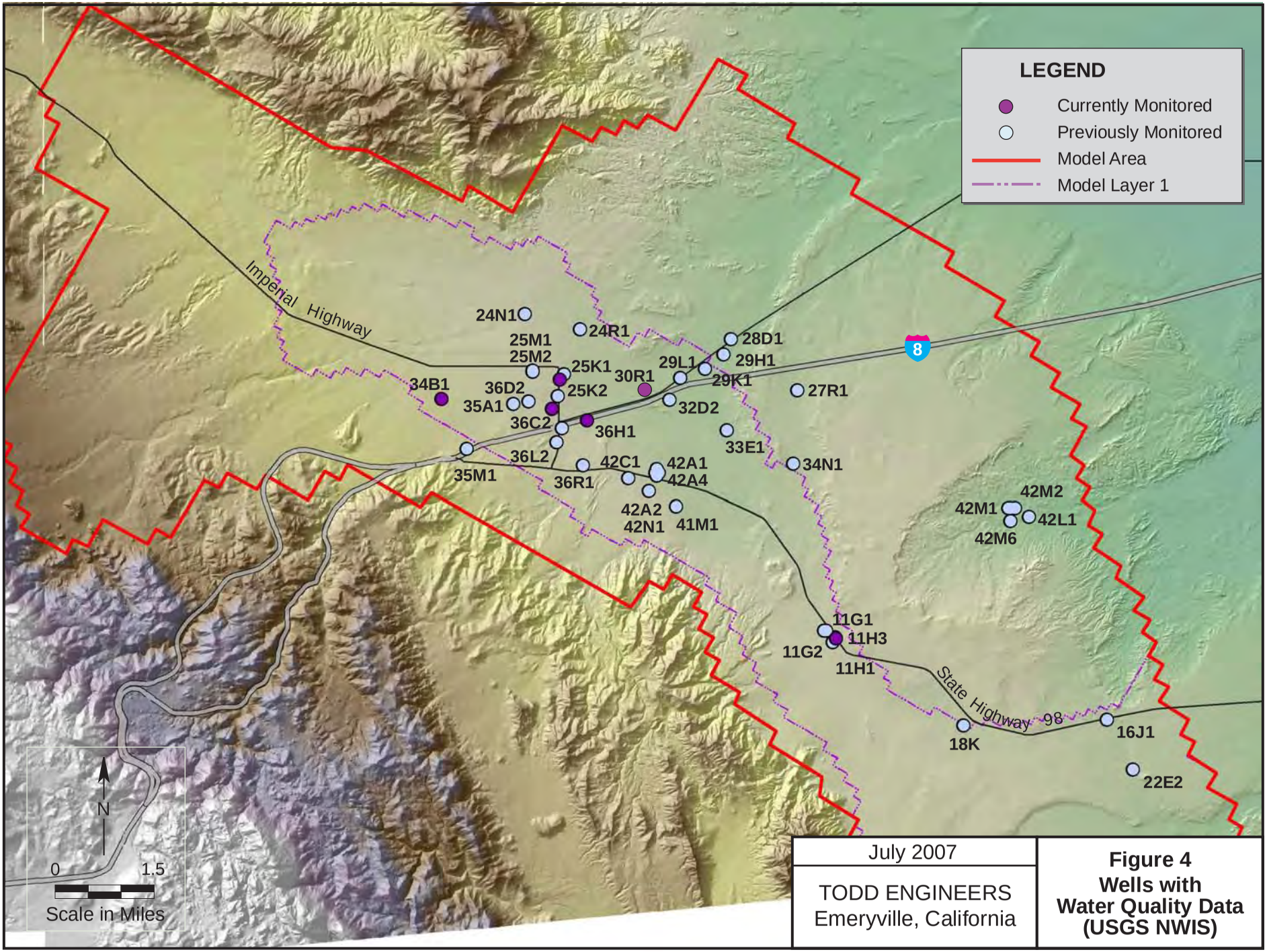
Figure 3B
Cross Section
near Yuha Estates



July 2007

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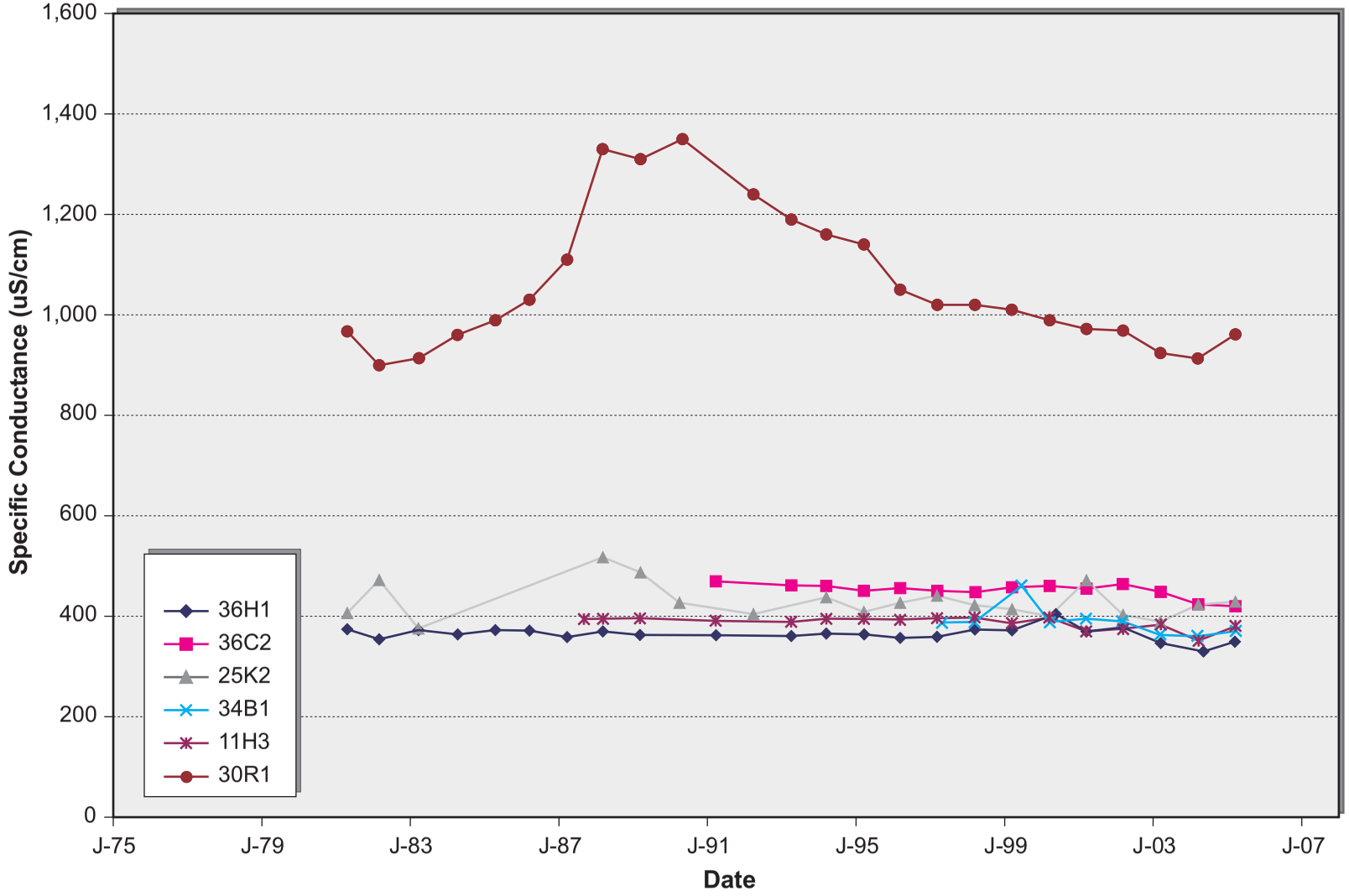
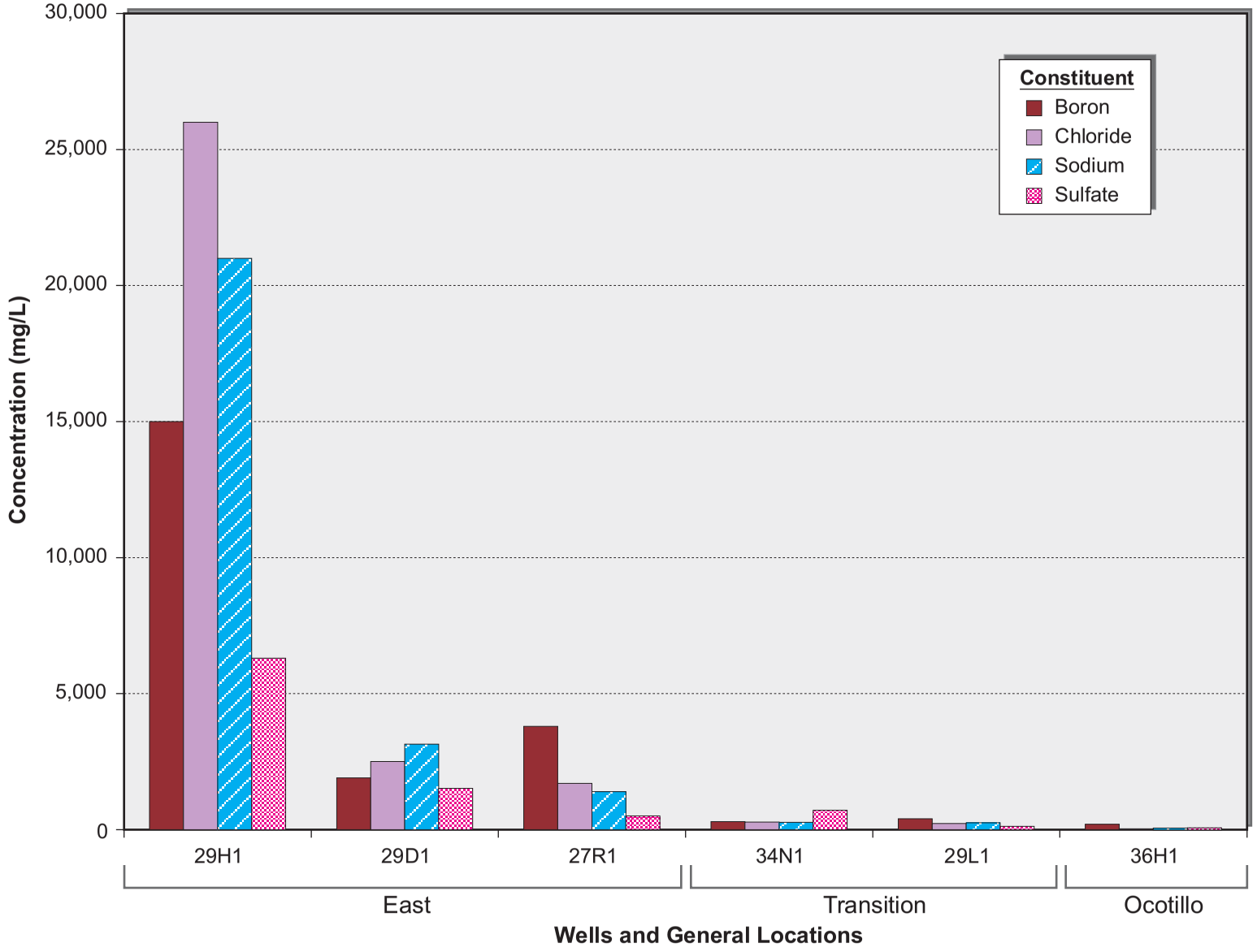
Emeryville, California

Figure 4
Wells with Water Quality Data (USGS NWIS)



Source: USGS NWIS.

July 2007	**Figure 5**
TODD ENGINEERS Emeryville, California	**Wells with Recent NWIS Water Quality Data**



July 2007	**Figure 6**
TODD ENGINEERS Emeryville, California	**Water Quality Trend Differences by Area**

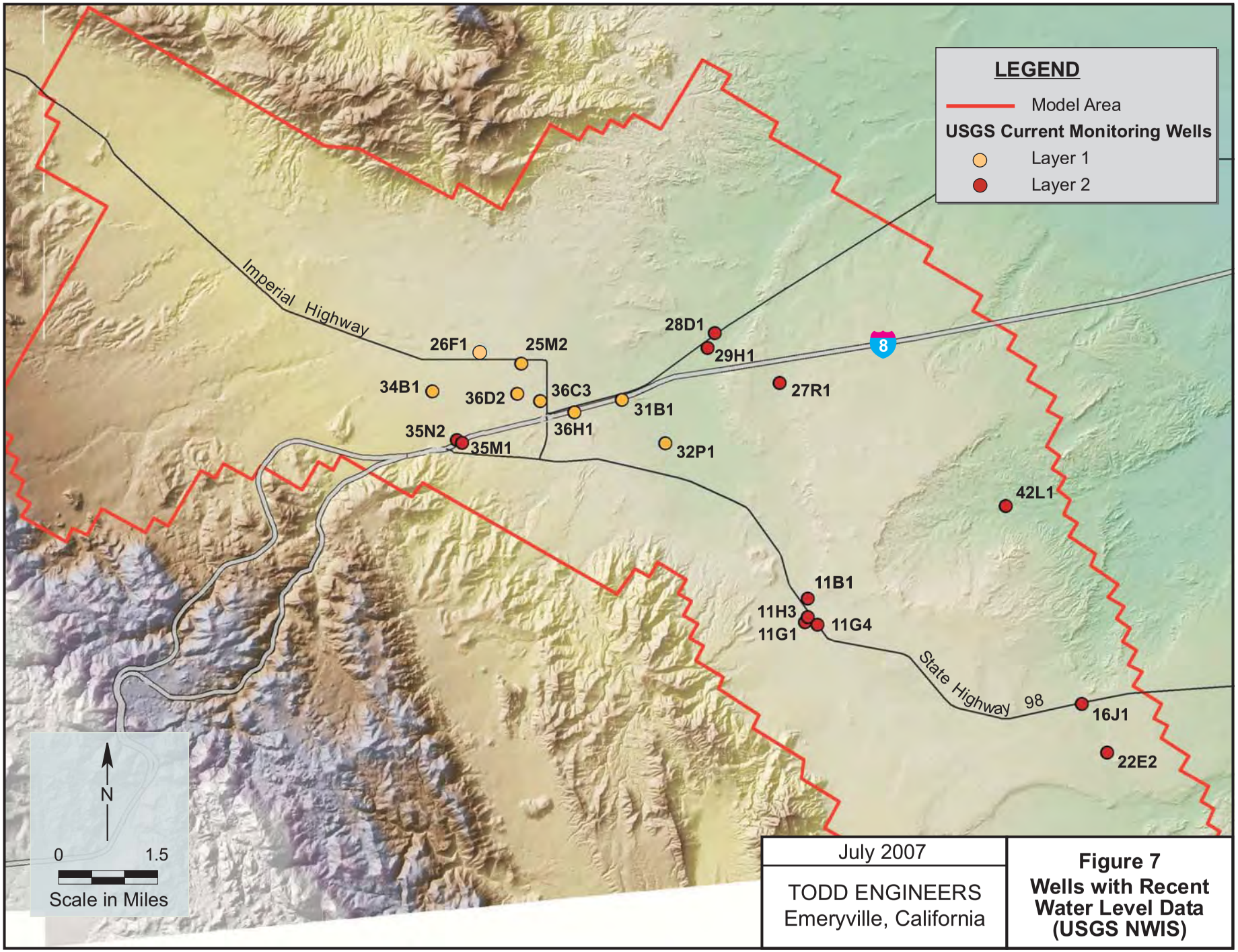


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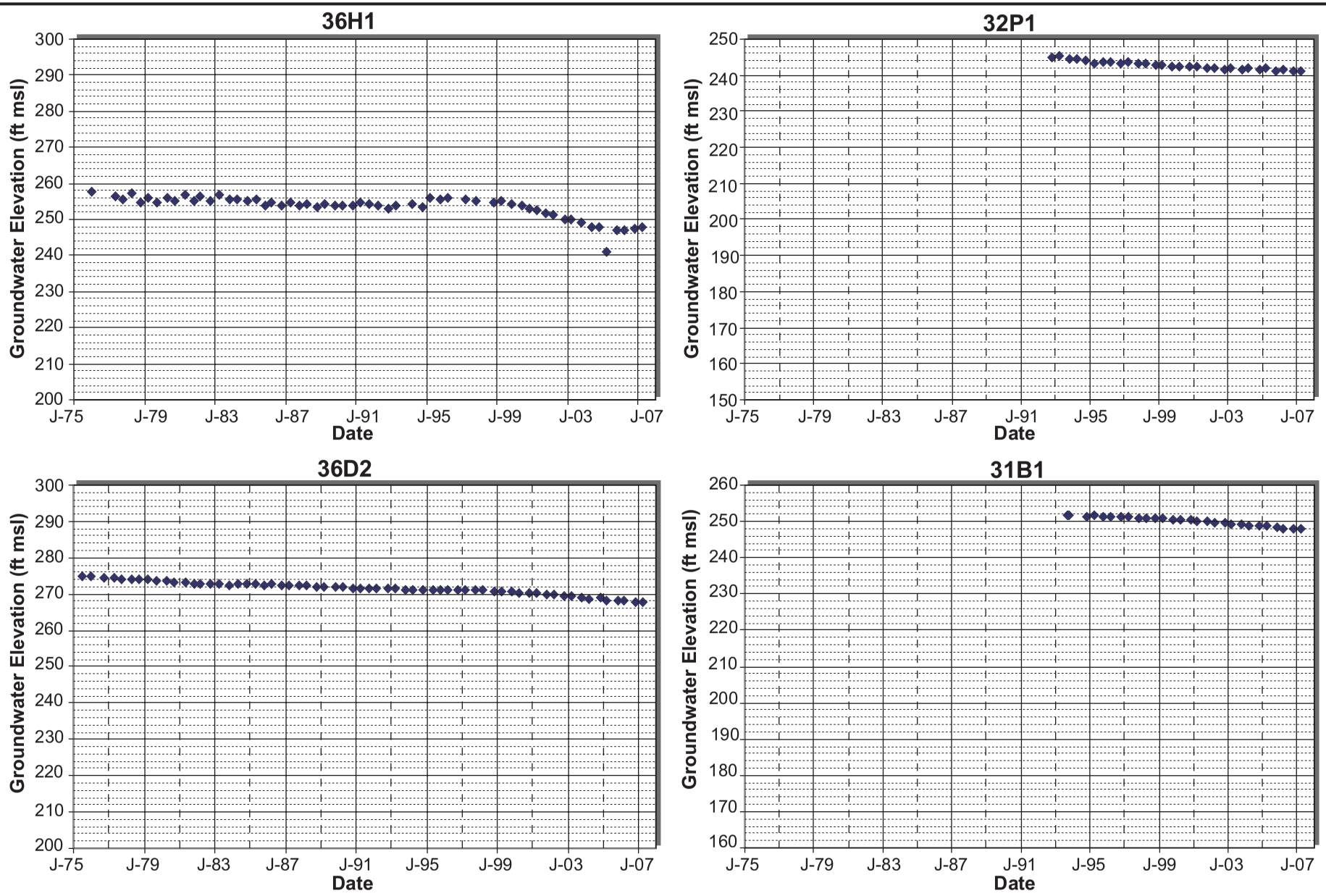
Figure 7
Wells with Recent Water Level Data (USGS NWIS)



Source: USGS NWIS.

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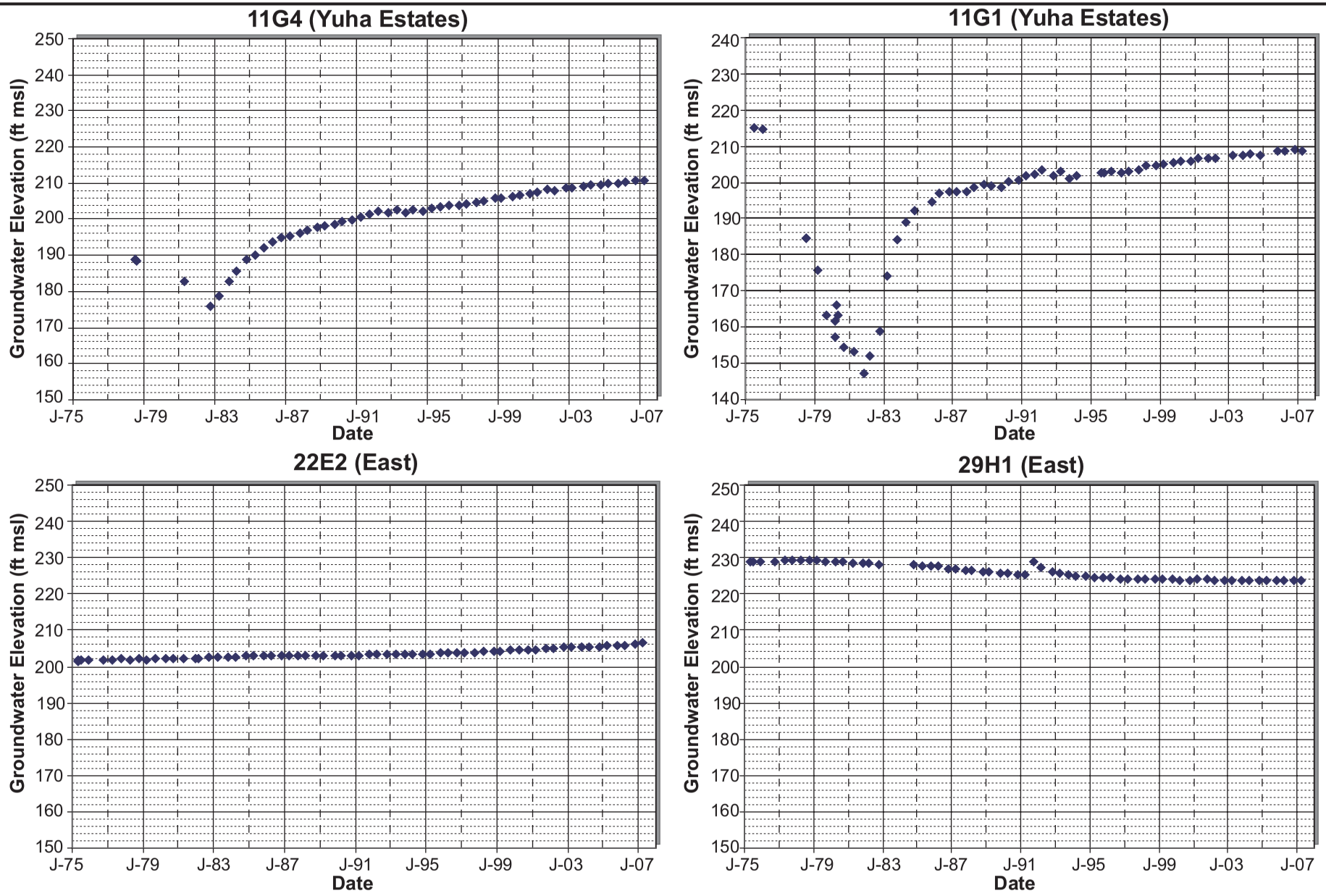
Figure 8
Hydrographs
Layer 1
Ocotillo



Source: USGS NWIS.

July 2007

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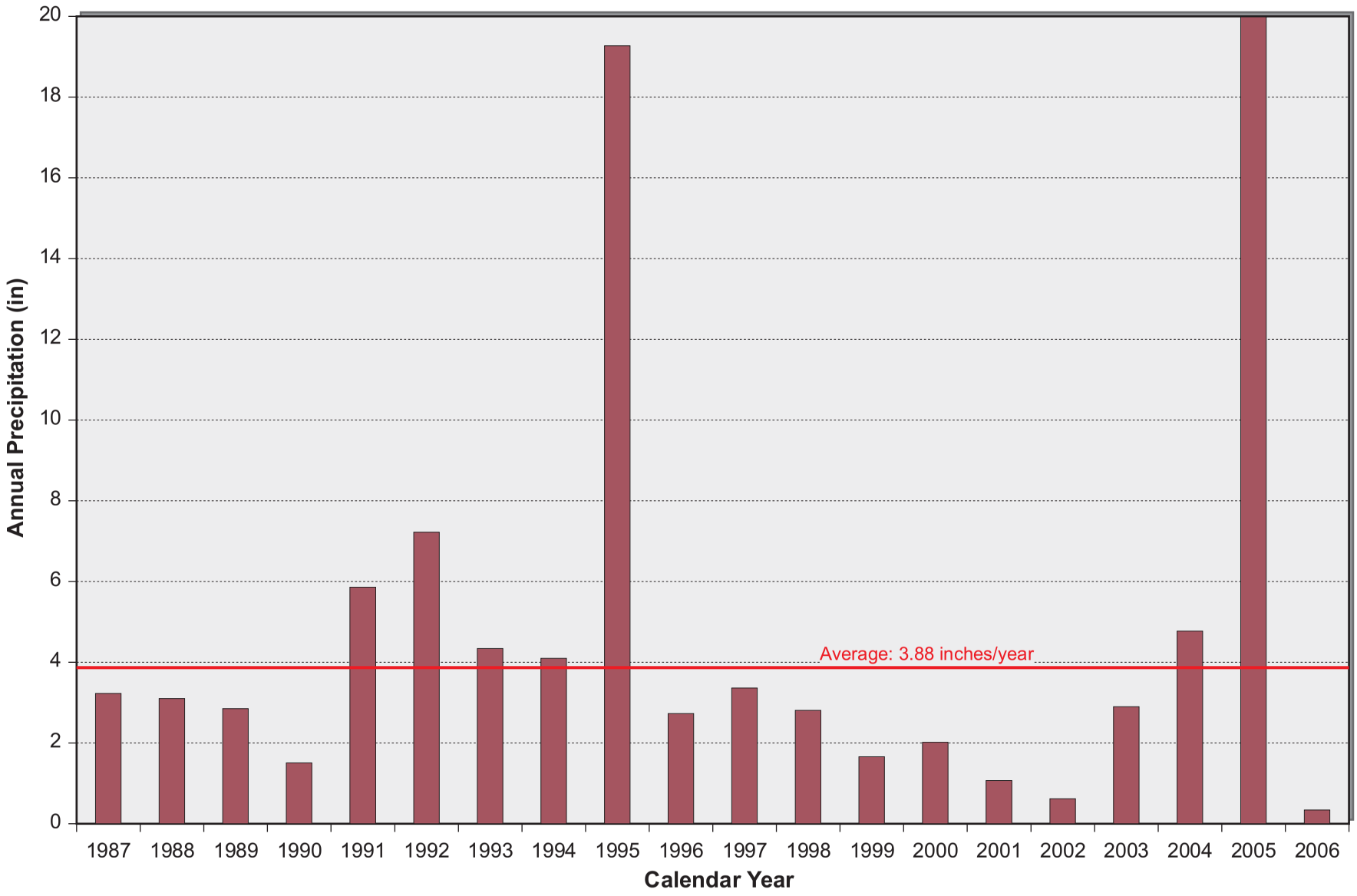
Emeryville, California

Figure 9
Hydrographs
Layer 2



Source: CIMIS.

July 2007	**Figure 10**
TODD ENGINEERS Emeryville, California	**Annual Precipitation at Seeley, CA**

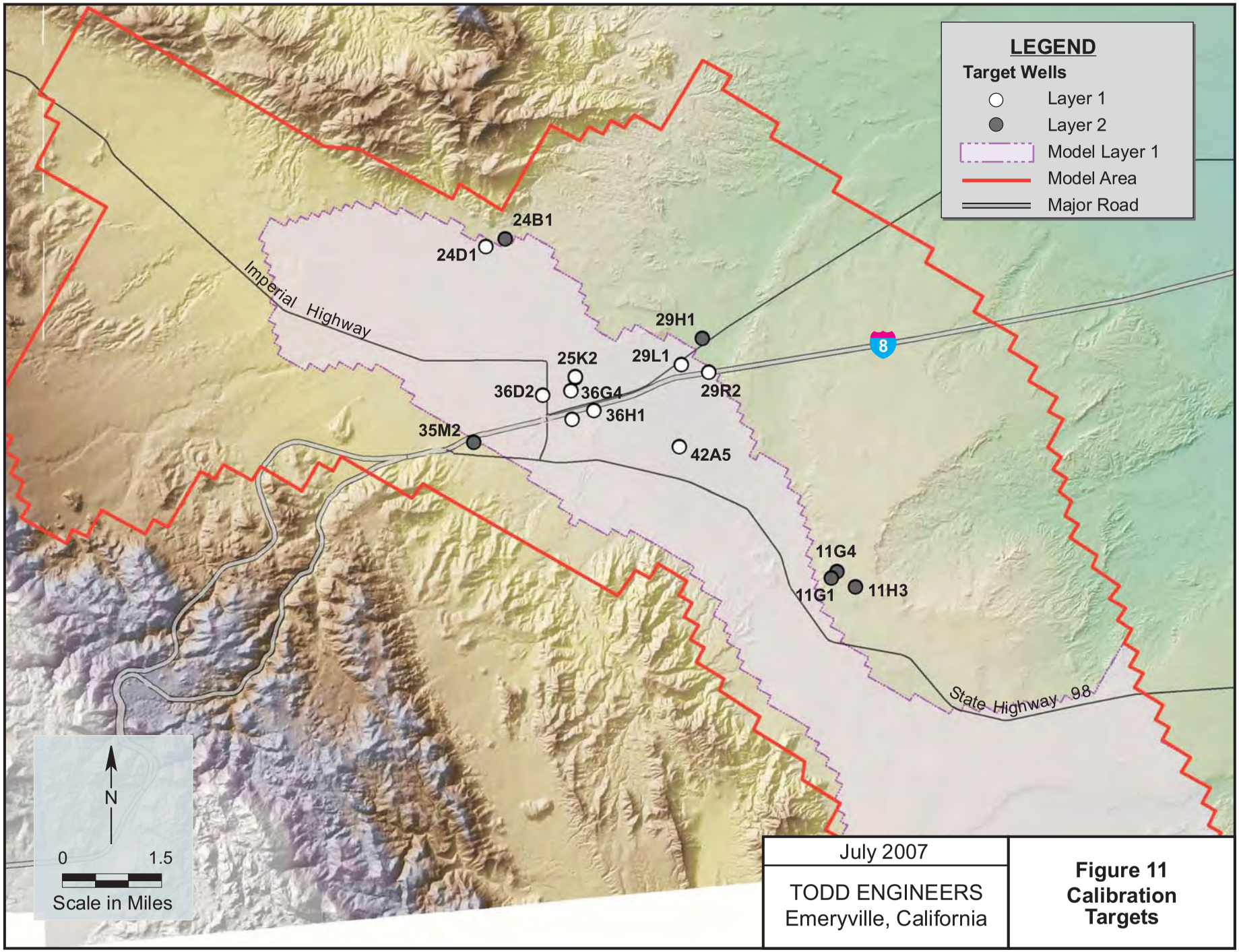


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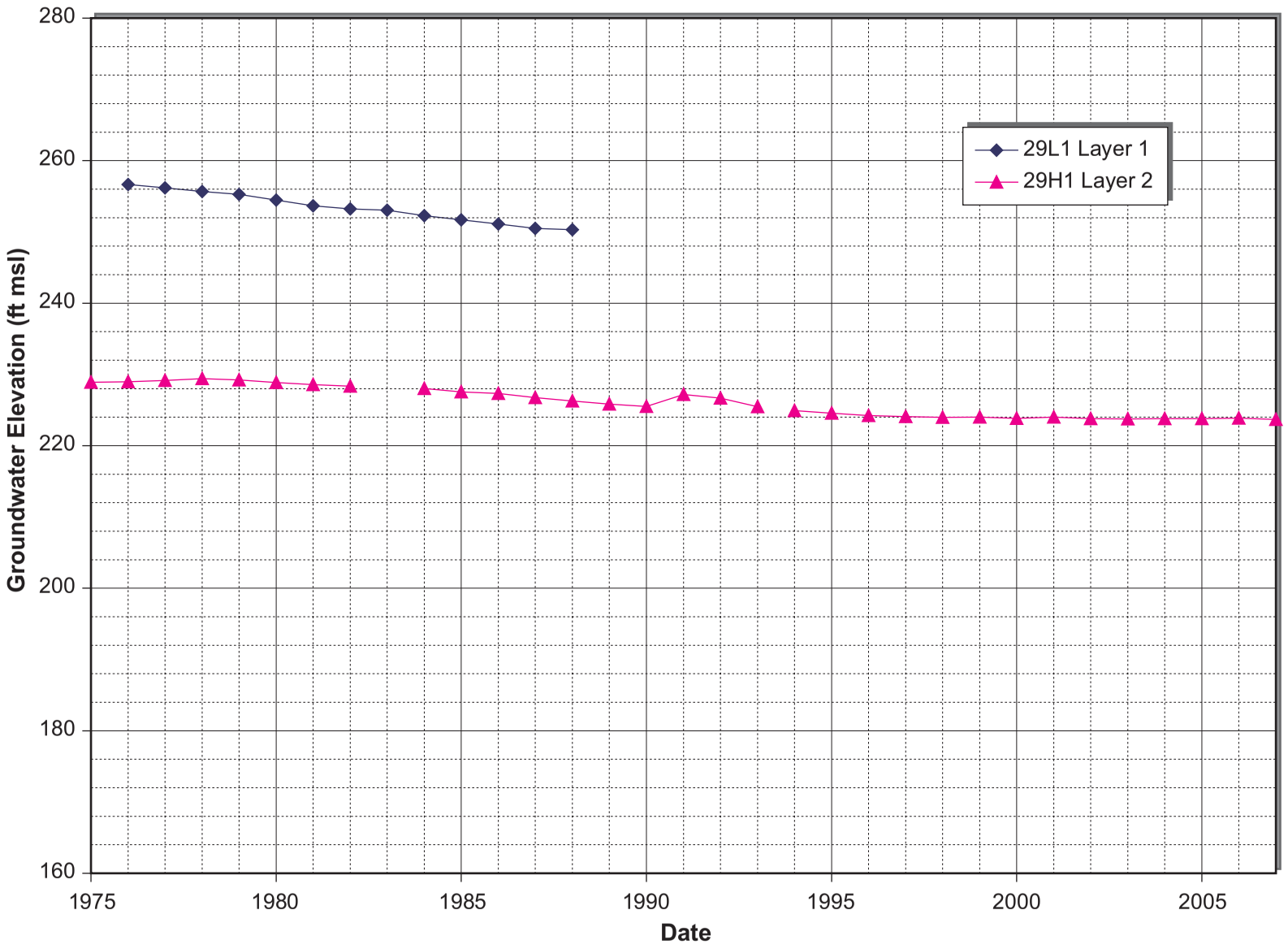
Figure 11
Calibration Targets



July 2007	**Figure 12**
TODD ENGINEERS Emeryville, California	**Water Levels in Wells 29L1 and 29H1**

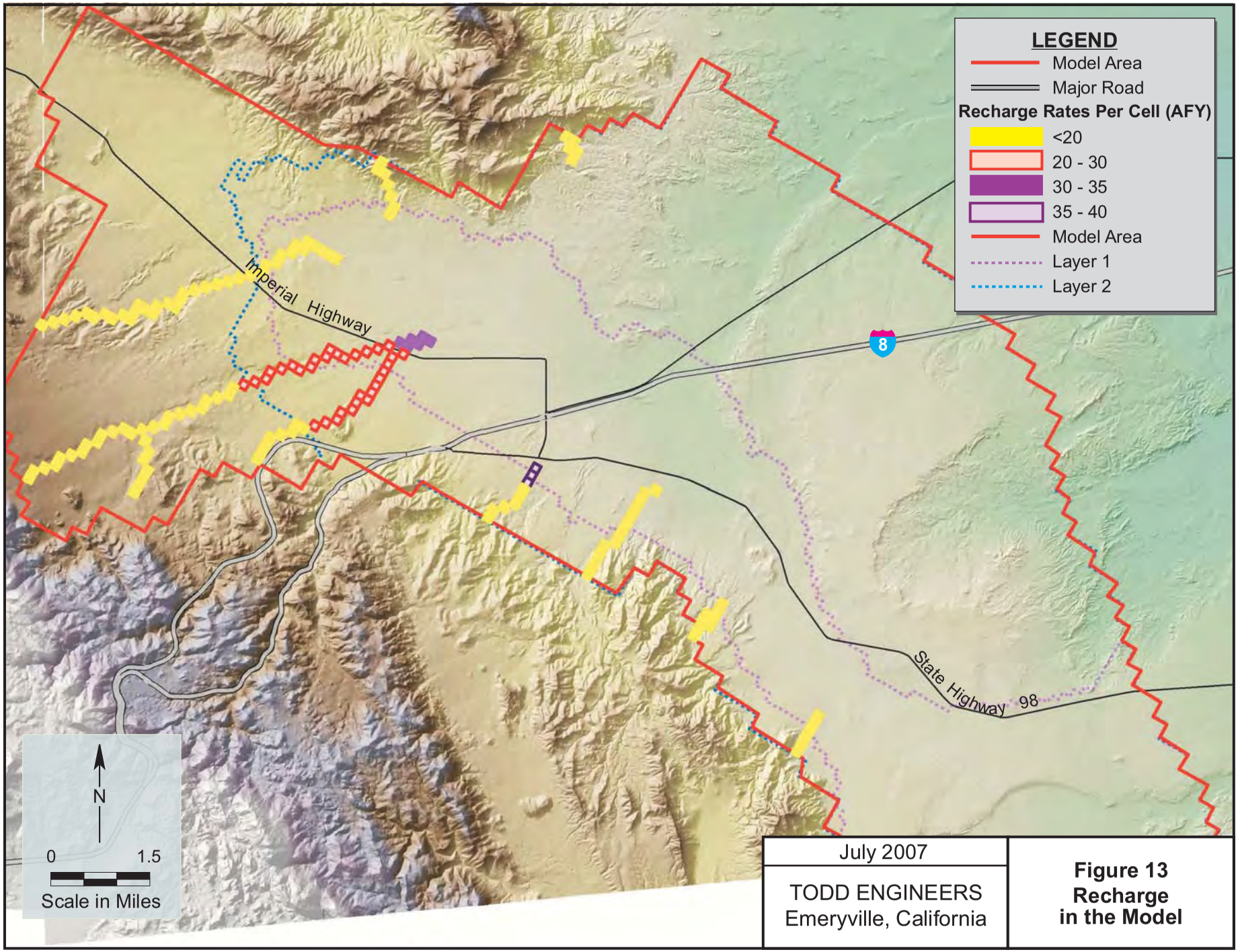


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Figure 13
Recharge in the Model

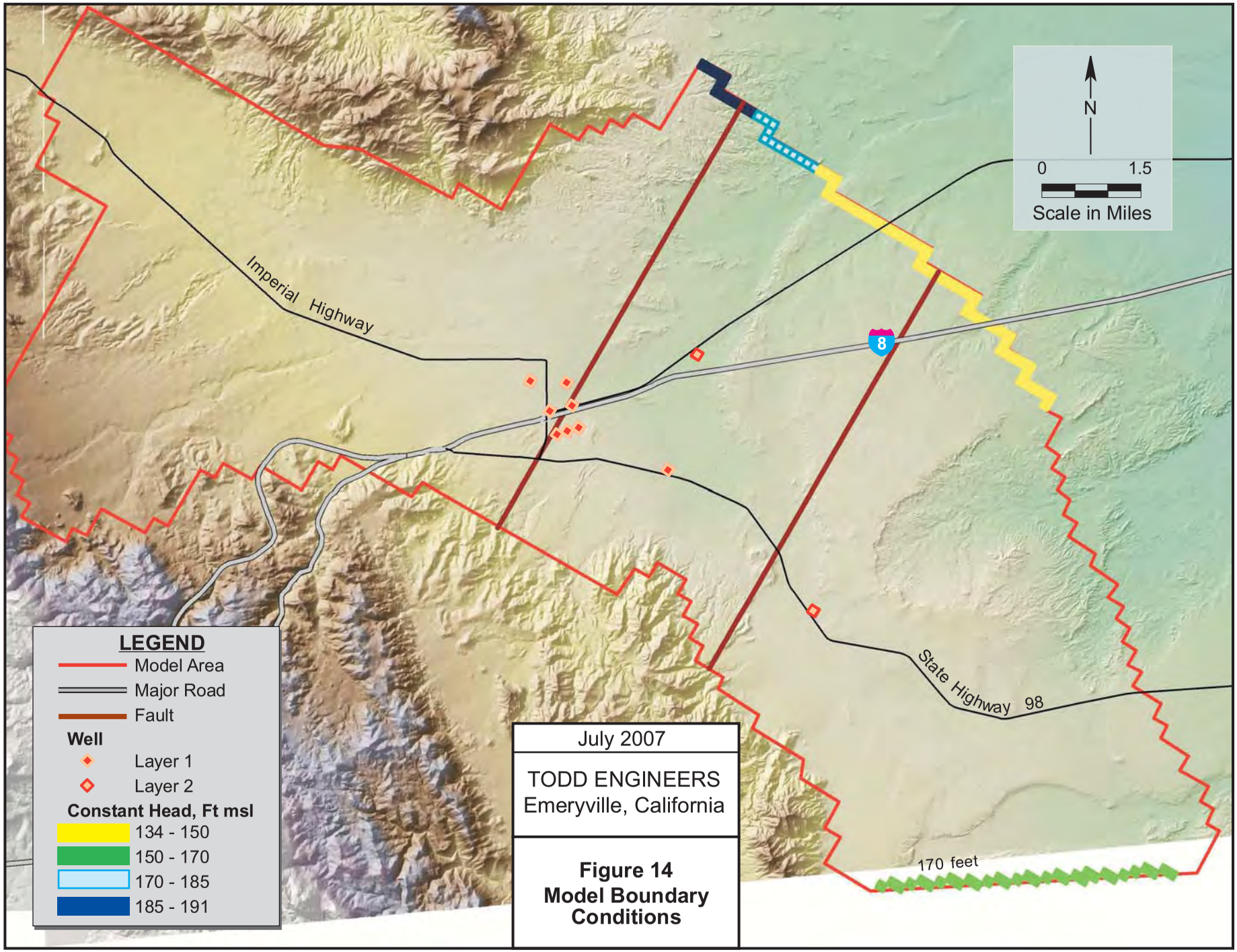

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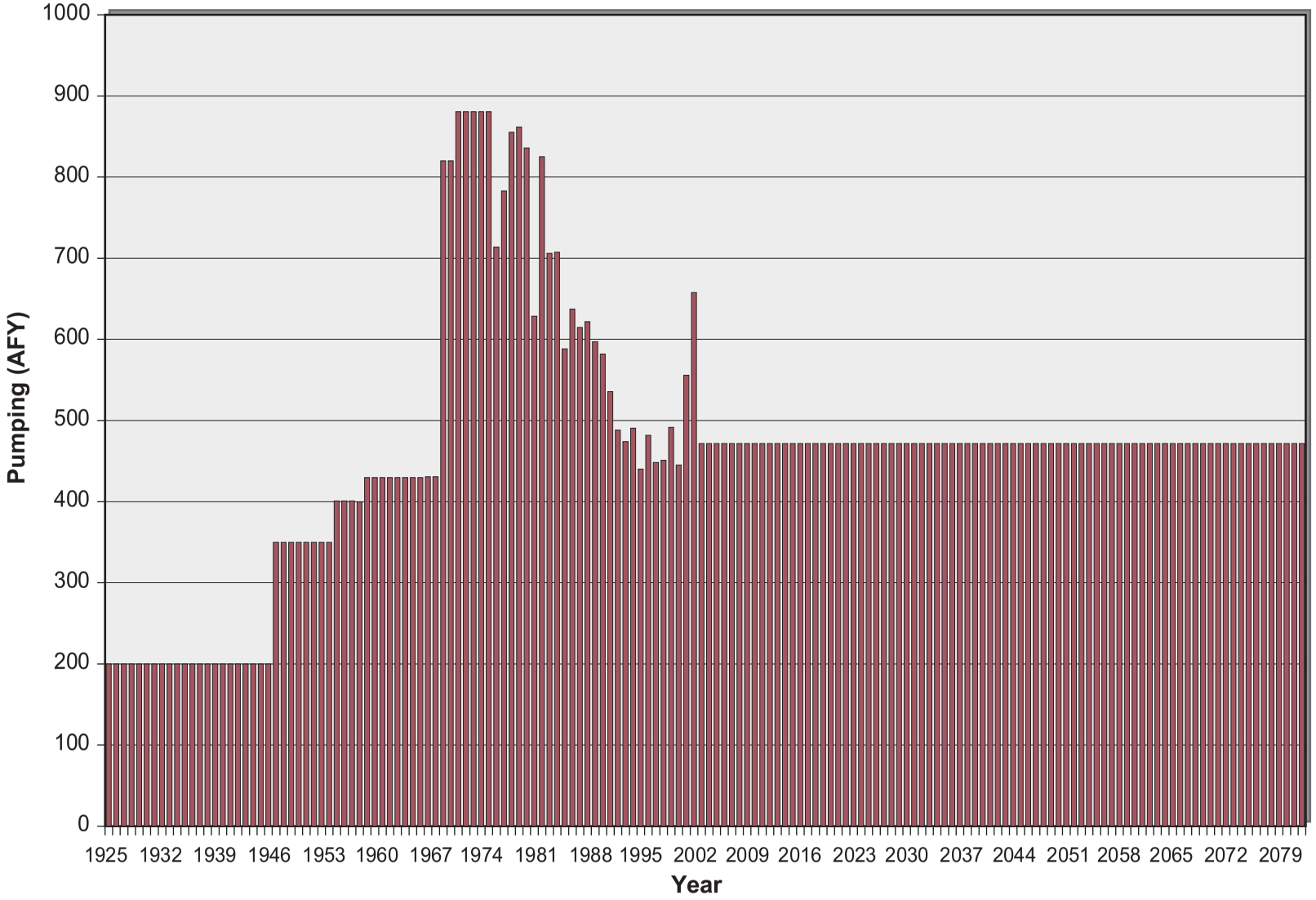
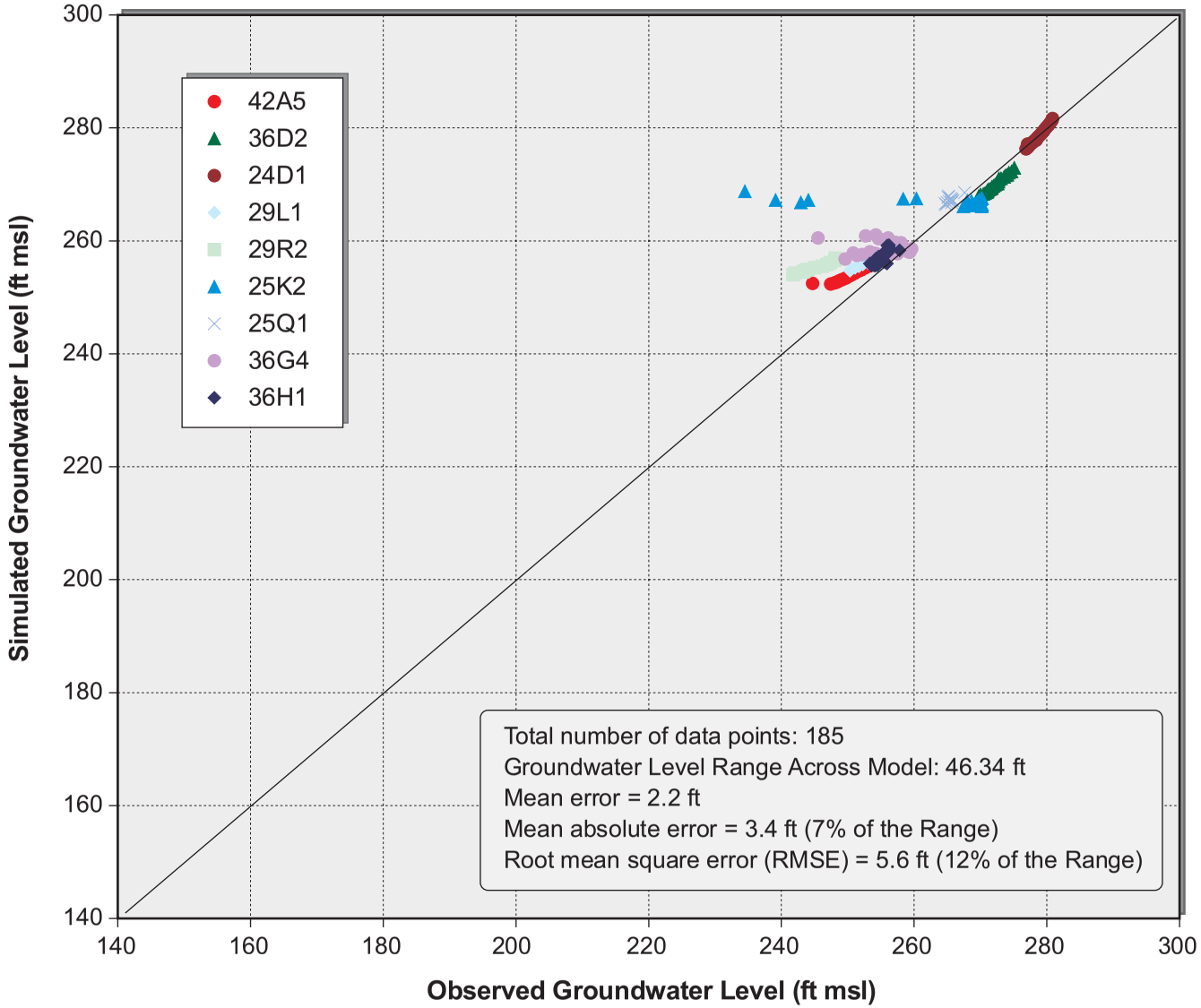
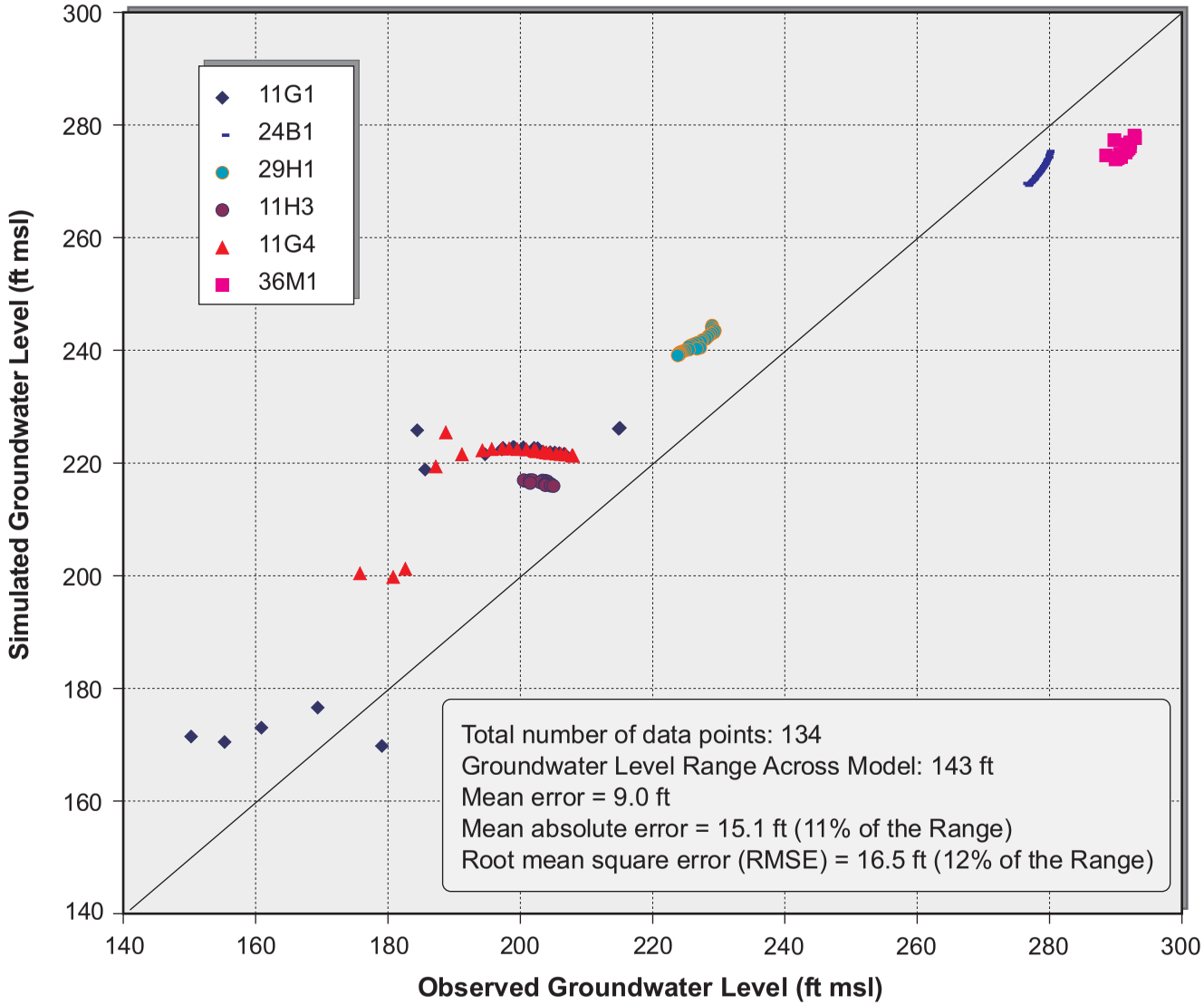
Figure 14
Model Boundary Conditions



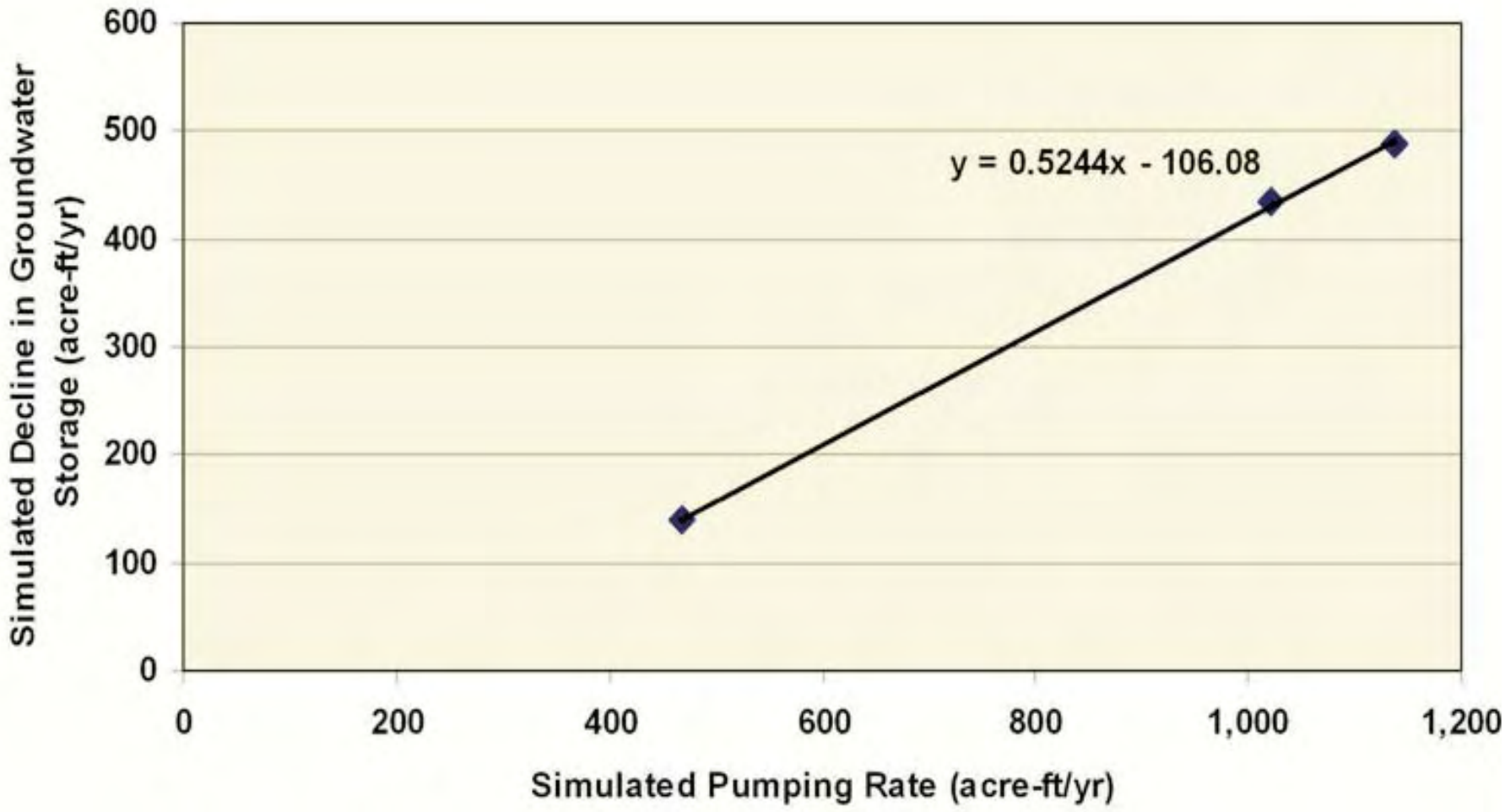
July 2007	**Figure 15**
TODD ENGINEERS Emeryville, California	**Total Basin Pumping in the 2004 Numerical Model - Baseline**



July 2007	**Figure 16**
TODD ENGINEERS Emeryville, California	**Calibration** **Layer 1**



July 2007	**Figure 17**
TODD ENGINEERS Emeryville, California	**Calibration** **Layer 2**



July 2007	**Figure 18 Relationship of Simulated Decline in Storage as a Function of Pumping**
TODD ENGINEERS Emeryville, California	

APPENDIX C-2
WATER SUPPLY ASSESSMENT

Water Supply Assessment
for
US Gypsum
Expansion/Modernization Project

November 2007

Prepared for
COUNTY OF IMPERIAL
El Centro, California

Prepared by

TODD ENGINEERS

2490 Mariner Square Loop, Suite 215

Alameda, California, 94501

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7. Hydrographs Layer 2
8. Water Supply by Source, Groundwater and IID

INTRODUCTION

Background

The United States Gypsum (US Gypsum) Company proposes to expand and modernize its gypsum processing and wallboard manufacturing facility and quarry near Plaster City, California (the "Project"). The expansion and modernization of the plant will include replacing older, less efficient production equipment and increasing the production. This increase in production will require an adequate water supply. An Environmental Impact Report/Environmental Impact Statement (EIR/EIS) has been prepared for the Project in compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

The USG Plaster City Quarry is located in the western portion of Imperial County, which is characterized by a series of low mountain ranges and valleys opening to the Salton Sea and Imperial Valley, as shown on **Figure 1**. Quarrying of gypsum has been occurring at the Plaster City Quarry since 1921 and USG has been quarrying gypsum at the site since 1946. Groundwater from the Ocotillo/Coyote Wells Groundwater Basin has been the primary source of water for USG's facilities and the nearby communities of Ocotillo, West Texas, Painted Gorge, Nomirage, and Yuha Estates. The groundwater basin outline is also shown on **Figure 1**. Water for processing and manufacturing purposes at the Plaster City Plant is currently delivered via an 8-inch diameter gravity-fed pipeline from the groundwater basin.

Purpose

The California Water Code section 10910 (also termed Senate Bill 610 or SB 610) requires that a water supply assessment be prepared for a project that is subject to the California Environmental Quality Act (CEQA). The lead city or county agency for the project is mandated to identify the public water system that might provide water supply to the project and then to request a water supply assessment. If there is no water system, the Water Supply Assessment must be prepared by the lead agency. In this case, there is no water system that may supply water to the Project. Thus, to the extent that a Water Supply Assessment is required for the Project, it must be prepared by Imperial County, the lead agency for the Project under CEQA.

As defined by the Water Code a “project” is defined as the following:

(1) A proposed residential development of more than 500 dwelling units.
(2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.
(3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.
(4) A proposed hotel or motel, or both, having more than 500 rooms.
(5) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.

(6) A mixed-use project that includes one or more of the projects specified in this subdivision.

(7) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.

The expansion and modernization of facilities like those of USG are not covered explicitly in the above definitions. Thus, the question presented is whether the Project would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project (definition 7). The average household size and water use per capita can be used to estimate the amount of water required by 500 dwelling units, as follows.

The EIR/EIS estimates the total water use per capita between 60 to 250 gallons per day, depending on the community. Given the average household size of 2.04 people per dwelling unit for all types of housing (US Census), the total water use per dwelling unit in the Ocotillo area is approximately 122 to 510 gallons per day, or about 0.14 to 0.46 acre feet per year (AFY). The total demand for 500 units would therefore range from 68.6 AFY to 285.8 AFY.

USG's allowed allocation of groundwater is 767 AFY. The expansion/modernization is not expected to increase water demand above this amount. Because the Project will not "demand" more water than USG is currently permitted to use, it is unclear whether a Water Supply Assessment is required under the Water Code. However, the proposed maximum water usage of 767 AFY is 420 AFY more than the baseline defined in the EIR/EIS. The baseline represents average pumping from 1994-1998, or 347 AFY. Based on the conservative assumption that the Project will increase actual water use by an additional 420 AFY above the stated baseline, the Project can be said to use an amount of water that exceeds the amount of water required by a 500 dwelling unit project (as calculated above).

This Water Supply Assessment documents sources of water supply, quantifies water demands, evaluates drought impacts, and provides a comparison of water supply and demand that is the basis for an assessment of water supply sufficiency. If the assessment concludes that water supplies are or will be insufficient, then the public water system or lead agency must provide plans for acquiring the additional water. If the lead agency decides that the water supply is insufficient, the lead agency may still approve the project, but must include that determination in its findings and must include substantial evidence to support its approval of the project.

The purpose of this Water Supply Assessment is to document the existing and future water supplies of US Gypsum and compare them to the build-out water demands put forth in the Draft EIR/EIS for the US Gypsum Expansion/Modernization Project. This comparison, conducted for both normal and drought conditions, is the basis for an assessment of water supply sufficiency in accordance with the requirements of California Water Code section 10910 (Senate Bill 610). This Water Supply Assessment uses the Department of Water Resources (DWR) *Guidebook for Implementation of Senate Bills 610 and 221* for guidance and table templates, plus project-specific information provided by Lilburn Associates, Imperial County, and US Gypsum.

Throughout this report, areas are shown to the nearest acre, and water budget items are shown to the nearest acre-foot (AF). As a result, large numbers may appear to be accurate to four or five digits, which may not be the case. Future water demand, water supply, and groundwater yield estimates are accurate only to two or possibly three significant digits. All digits are retained in the text and tables to preserve correct column totals in tables and to maintain as much accuracy as possible during subsequent calculations.

WATER DEMAND

This section summarizes water demands for the study area, defined here as the Ocotillo/Coyote Wells Groundwater Basin. The first part describes the factors affecting total water demand, including climate, population, and the mix of customer types, such as residential, industrial, commercial, and landscaping. The second part documents water demands not only under normal climatic conditions, but also during drought.

Climate

Table 1 summarizes representative climate data for the study area, including average monthly precipitation, temperature, and evapotranspiration (ETO). The basin has an arid climate, characterized by hot summers and warm winters. **Figure 2** is a chart of annual rainfall (by calendar year) from the Seeley CIMIS station. The precipitation in the area is highly variable. As shown on **Figure 2**, most years experience less than 4 inches of rainfall per year, but some years have experienced a fraction of an inch (e.g., 2006), while rainfall in 1995 amounted to nearly 20 inches. The average annual precipitation is 3.89 inches per year.

Population

In general, as population increases, so does water demand. **Table 2** and **Figure 3** shows projected population increases. The increases are projected through the duration of the USG project (to 2082), notwithstanding that Water Supply Assessments may be limited to a 20-year planning horizon. Nonetheless, to be cautious, this Assessment is extended to the 80 year life of the Project, or 60 years beyond a typical Assessment. This longer timeframe results in more uncertainty about future population and water demand.

Consistent with background studies used in the Draft EIR/EIS, the US Census for 1990 was used to develop base population estimates. To obtain future demand through the life of the USG project, population was assumed to increase by 1.4 percent each year from 1990 to 2082. The 1.4 percent rate of population increase was based on the observed annual population growth from 1980 to 1990. While this growth rate is reasonable on the time scale of 10 or 20 years, it likely overestimates the future population of the area when projected to 2082 when it would result in more than tripling of the population. It is noteworthy that the 2000 US Census reported a population of 290 in the Ocotillo Census Designated Place (CDP), representing a *decrease* of 9 percent from the 1990 estimate. For the purposes of the Draft EIR/EIS and this Water Supply Assessment, a future *increase* in population is conservatively assumed in order to be protective of groundwater resources.

Water Use Sectors and Water Demand

Industrial water demand for the USG facility is shown in **Table 3** from 1990 to 2025, and 2082. Pumping from the three USG wells have been monitored since 1981 and the actual water use from 1990 to 2004 is shown in the table. Future pumping is assumed to be the maximum pumping allocated to USG, 767 AFY. In addition to USG's pumping, **Table 3** shows the estimated residential water use in the groundwater basin. The residential water demand in the area is served by groundwater from unmonitored private wells and is based on projected population estimates and per capita water use estimates. The population estimates are shown in **Table 2** and the water use estimates used were 60 gallons per day (gpd) per capita for Painted Gorge and West Texas, 100 gpd/capita for Nomirage and Yuha Estates, and 250 gpd/capita for Ocotillo. **Figure 4** shows past and future water demand in the basin from 1990 through 2082.

US Gypsum has made many improvements to reduce water consumption. Most of these have focused on process water which is about 95 percent of total water use. Indoor domestic and outdoor water uses are quite limited and accordingly, typical conservation opportunities also are limited. Currently, process wastewater is collected and reused with essentially no discharge of process water from the Plant. A small amount of water is used to clean adhesives from machinery, collected and removed by a licensed hauler and handler. In the past, equipment bearings were cooled using water that was not recycled. The Plant has moved away from the use of an open water cooling system to an enclosed system with no cooling water disposal. Wash water also is treated and recycled. In addition, USG has streamlined its procedures to repair leaks along its pipeline much more quickly, so less water is lost. Most importantly, through the use of USG proprietary and patented formulation changes and raw material substitutions, USG has been able to decrease the amount of water necessary for wallboard production. USG has implemented innovative technologies to use less water in its processes and thereby use less energy and water. Other than potential future reformulation and/or process improvements, all feasible water conservation measures have already been implemented.

Water Demand in Normal and Drought Periods

The water demand in a drought is projected to remain the same as the normal year water demand. The USG facilities have already reduced water consumption through various water conservation measures. Additional short term water demand reductions are not likely to be feasible. Residential demand in the area is also projected to remain the same during drought conditions. No community wide plans are in place to mandate or encourage drought conservation at this time. In the nearby City of El Centro previous droughts have not affected water demand, as the City uses reliable Colorado River water and previous droughts did not affect the City's water supply (El Centro, 2006). **Table 4a** presents an analysis of how water demand currently does not change in response to drought and **Table 4b** shows this steady demand will continue in the future.

WATER SUPPLY

Drinking water in the Ocotillo/Coyote Wells Groundwater Basin is currently supplied by local private groundwater production. A potential source of future water supply for the Project is imported water from the Imperial Irrigation District (IID) water system. The Draft EIR/EIS discusses two alternatives that would allow USG to obtain water from IID. These alternatives are identified in the Draft EIR/EIS as the "full use" of IID water alternative and the "partial use" of IID water alternative. As discussed in the Final EIR/EIS, the full IID alternative is considered infeasible. The partial IID alternative is being investigated actively by USG and therefore is addressed herein as a potential water supply.

Table 5 provides a summary of all existing and proposed water supply sources. The second column estimates the available supply. The next three columns on the left indicate the status of the source in terms of water rights, entitlements, and contracts. The basin has not been adjudicated, so no rights or entitlements are indicated.

Table 5 shows the available volume of groundwater as the total recharge. The “safe yield” of a basin—the volume of groundwater that may be safely withdrawn from an aquifer—is often portrayed as the total recharge into the basin. As described in the Draft EIR/EIS, recharge to the Ocotillo/Coyote Wells Groundwater Basin is from ephemeral runoff on the surrounding mountains that percolates through washes crossing the basin. The amount of recharge has been estimated in water balance studies by several investigators and through application of a numerical groundwater flow model (Bookman-Edmonston, 1996 and 2004). The current 2004 numerical model’s estimate of average annual recharge, 1,077 AFY, is lower than previous estimates. For the 2004 study, the contributing watershed for the washes in the area was estimated to be 76 square miles, within the range of previous estimates. Other previous estimates of recharge estimated a range of recharge from 1,650 AFY (Mark, 1987) to 2,600 AFY (Skrivan, 1977). These previous estimates varied depending on the size of the watershed considered.

However, local groundwater levels show long-term declines even while the amount of historical pumping is *less* than the amount of recharge. This indicates that the existing wells do not effectively capture the available recharge, a portion of which flows out of the basin as subsurface discharge, for example across the southern boundary into Mexico. As a result, the existing wells depend in part upon groundwater storage for supply.

Accordingly, the groundwater basin supply is not determined solely by recharge (safe yield) but also use of groundwater storage resulting in long-term water level declines. The sustained groundwater level declines raise the issue of groundwater overdraft. Overdraft is defined below by the California Department of Water Resources (DWR) Bulletin 118, *California’s Groundwater*:

> Groundwater overdraft is defined as the condition of a groundwater basin or subbasin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years, during which the water supply conditions approximate average conditions. Overdraft can be characterized by groundwater levels that decline over a period of years and never fully recover, even in wet years.

The Draft EIR/EIS cites an overdraft of a few hundred AFY. The overdraft (as indicated by decline in storage) is gradual and small relative to the overall storage in the basin. However, it is an adverse impact, representing depletion of a shared resource that undercuts the long-term reliability of groundwater supply. This groundwater resource is used beneficially for both industrial supply (USG) and as the sole source of municipal and domestic supply.

Table 6a shows the historical and projected supply under the scenario of groundwater as the sole water supply source, while **Table 6b** shows the projected water supply under the partial IID alternative. In **Table 6a**, historical and projected groundwater supply is the same as total water demand (see **Table 3**), recognizing that historical water demand has been fulfilled by groundwater derived from a combination of recharge and storage. Future water demand also is projected to be provided by groundwater, consistent with the Draft EIR/EIS, and recognizing that a portion of the groundwater would be obtained from storage, thus continuing and increasing the overdraft condition. In **Table 6b**, IID provides 420 AFY by 2010 and groundwater pumping is correspondingly reduced. **Table 7** summarizes the projected water supply, including groundwater and the partial IID alternatives, for normal, single-dry, and multiple-dry years.

The following subsections describe the groundwater supply and Imperial Irrigation District supply, respectively, in greater detail.

Groundwater Supply

US Gypsum currently operates groundwater production wells in the groundwater basin, which is locally identified as the Ocotillo/Coyote Wells Groundwater Basin and designated by the DWR as the Coyote Wells Basin, number 7-29. As defined by DWR, Coyote Wells Basin is located in the western part of Imperial County and bounded by the Jacumba Mountains to the west, the Coyote Mountains to the northwest, and the US/Mexico border to the south. The northeastern and eastern boundaries are roughly straight lines connecting Superstition Mountain in the north to the other basin boundaries. The location of the basin boundary is provided on **Figure 1**.

USG currently pumps from three groundwater wells located near Ocotillo. These wells are shown on **Figure 1.** The long-term reliability of groundwater supply for the USG project is defined by the overall state of the groundwater basin. This is recognized by the SB610 sections of the California Water Code, which require a detailed description and analysis of the location, amount, and sufficiency of groundwater to be pumped. The following paragraphs describe the basin, its management, and existing conditions in terms of groundwater quantity and quality.

Groundwater Quantity

As described in the Final EIR/EIS, the Coyote Wells Basin is currently understood to be a two-layer aquifer system in the basin rather than the single alluvial layer used in previous interpretations. The upper layer (Layer 1) consists of the alluvial deposits and the lower layer (Layer 2) is composed of the Palm Springs and Imperial formations, which have been uplifted in the area east of Ocotillo and are relatively near the ground surface. Using the revised geologic interpretation, the water-bearing alluvial deposits (Layer 1) are primarily restricted to the center of the basin. The alluvial thickness can be 550 feet or greater in the Ocotillo area. The alluvial

deposits thin toward the margins of the basin where they become unsaturated. Along the basin margins, the saturated zones occur in the Palm Springs and Imperial formations.

The USGS currently monitors 20 wells in the Ocotillo/Coyote Wells Groundwater Basin. The wells are shown on **Figure 5**. As shown on **Figures 6** and **7**, water levels in the both Layer 1 and Layer 2 generally have been declining since the 1970s. In the Draft EIR/EIS text, two general estimates of groundwater level declines are given: one foot every five years and one foot every eight years. To clarify the range of water level declines in the alluvium (Layer 1), the water level data were examined from wells currently monitored by the USGS. For these, the average rate of decline from 1975 to 2007 was calculated at 0.266 feet per year (or one foot every four years). However, the declines are not uniform. In addition, the water levels in Layer 1 are chiefly controlled by pumping. The average rate of decline ranges from 0.4 feet per year or 1 foot every 2.5 years (well 36H1) to 0.13 feet per year or 1 foot every 7.7 years (well 34B1, not shown).

While the water levels show a long term downward trend, water levels in the basin are generally characterized by little or no short term variation. Although the rainfall in the region is flashy both seasonally and annually, water levels in wells exhibit little fluctuation over time. For comparison, **Figure 2** illustrates the highly variable annual precipitation, as measured at the California Irrigation Management Information Systems (CIMIS) station in Seeley east of the study area. The lack of groundwater level response to precipitation may reflect a significant lag time between rainfall events and recharge to the water table resulting from the distance from the washes to the monitored wells and in some areas, the significant thickness of the unsaturated (vadose) zone.

Because groundwater levels in the vicinity of local communities do not respond to short-term drought events, the supply of groundwater is effectively the same through normal and drought periods. This is reflected in **Table 7**, showing the expected supply during normal and dry years. However, it should be noted that the decline in water levels will reduce the total groundwater in storage over the course of the project.

Groundwater Quality

The general quality of groundwater from the alluvium is characterized by total dissolved solids concentrations of about 400 milligrams per liter (mg/L). Water in the Palm Springs/Imperial formations is characterized by relatively poor water quality, specifically with relatively high concentrations of chloride and sodium, and total dissolved solids concentrations of about 1,000 to 4,500 mg/L. Some potential exists for future water quality deterioration in the Ocotillo area as a result of migration of groundwater from Layer 2 to Layer 1. Currently, groundwater levels in Layer 1 are higher than those in Layer 2, representing a vertical gradient that reduces upward migration of poor quality water from Layer 2 to Layer 1. However, continued groundwater level declines in Layer 1—at more rapid rates than those in Layer 2—present a potential for reversal of that vertical gradient in future decades. In that case, relatively poor groundwater from Layer 2 could migrate into Layer 1, resulting in water quality deterioration in Layer 1.

The USGS monitors five wells in the Ocotillo-Coyote Wells Groundwater Basin for

water quality. Four of the five wells are located near Ocotillo and are screened in the alluvium; the other well is located near Yuha Estates. These wells are monitored on an annual basis for physical properties (pH, specific conductance, and temperature), general minerals (chloride, sodium, sulfate, etc.), iron, and manganese.

Water Resources Management

In 1998, the County adopted a comprehensive Groundwater Management Ordinance for the express purpose of preserving and managing groundwater resources within the County. The Groundwater Ordinance, codified as Chapter 1 of Title 9 of the Imperial County Code, is implemented by the Planning Commission acting upon the direction of the Board of Supervisors. The Commission is charged by the Board of Supervisors with the regulation of groundwater and can request preparation of an annual report on groundwater supplies and conditions, determine the need for and recommend groundwater management activities (see Section 92202.00), recommend groundwater extraction standards and charges, and establish standards for artificial recharge, among other things.

The Groundwater Ordinance provides the County with various regulatory tools that are designed to avoid or minimize the impact of existing and proposed groundwater extraction activities on groundwater resources and other users. For example, Section 92201.13 provides a remedy for water users who are aggrieved by well interference (defined as a substantial water level decline in a short time period in a localized area caused by extraction) or other impairment or infringement of the groundwater use caused by the extraction activities of another party. In such cases, the Commission may issue any order that it determines necessary to provide the petitioning water user with an adequate remedy.

The Groundwater Ordinance also requires that existing extraction facilities be registered with the County. On March 8, 2006, the County Planning & Development Services Director approved, with conditions, registrations for USG's three existing water wells used to extract groundwater from the Ocotillo-Coyote Wells Groundwater Basin and for the water pipeline used to transport water to the Plant. USG’s pumping is permitted at 767 acre-feet of groundwater per year (AFY).

Imperial Irrigation District – Imported Water

The Draft EIR/EIS describes a range of alternatives to the project that would avoid or substantially lessen the potential significant effects on groundwater resources. The Draft EIR/EIS discusses two alternatives that would require USG to obtain water from the Imperial Irrigation District (IID) to supply all or a portion of the water needed for Plant operations. These alternatives were identified in the Draft EIR/EIS as the "partial use" of IID water alternative and the "full use" of IID water alternative. The implementation of the full use alternative would require significant infrastructure and the fluctuating salinity of canal water over time presents technical and practical issues that cannot be overcome. Based on these environmental and technological factors, the full use alternative was determined to be infeasible. Under the partial use alternative, only a portion of the water needed for the Plant operations would be supplied by the IID. The balance (up to a maximum of approximately 347 AFY would continue to be supplied by USG's existing wells in Ocotillo. Water from IID would be blended with water from Ocotillo to achieve the level of water quality need for use in manufacturing wallboard without

the need for further treatment of the process water. **Figure 8** shows the projected water supply to the area for both industrial (USG) and residential uses.

IID water supply is unlikely to be reduced during drought, as shown on **Table 7**. As stated in the Urban Water Management Plan of the nearby City of El Centro, the "Imperial Irrigation District's senior water rights are such that drought conditions have never impacted its water supply" (El Centro, 2006).

The Water Code section 10910d requires wholesale water supply information to be provided in any Water Supply Assessment. The required information is discussed below.

- **Written contracts or other proof of entitlement to an identified water supply**
  USG is currently investigating the feasibility of implementing the partial use alternative. Toward this end, representatives of USG met with IID staff to discuss a potential partnership to provide water to the Plant. In order to more fully evaluate this alternative, IID staff advised USG to file a Petition for Inclusion within the boundaries of the IID. In accordance with this advice, USG filed a Petition for Inclusion with the IID for the purpose of providing up to 1,000 AFY of IID water to be used exclusively by USG in its operations. In April 2006, the IID Board adopted a Resolution of Application requesting that the Local Agency Formation Commission of Imperial County (LAFCO) take such action as may be necessary to grant USG's application for inclusion in the IID. USG's application was subsequently accepted by LAFCO and is currently under review.
- **Copies of capital outlay program for financing the delivery of a water supply that has been adopted by the public water system**
  USG would be responsible for the capital outlay for any infrastructure required to provide IID water to the manufacturing plant.
- **Federal, State, and local permits and regulatory approvals for construction of necessary infrastructure associated with delivering the water supply and any necessary regulatory approvals that are required in order to be able to convey or deliver the water supply**
  USG would be responsible for obtaining the required regulatory approvals from Imperial County. USG or IID will also be required to follow all provisions of CEQA that apply to the development of the water supply and delivery system.

COMPARISON OF SUPPLY AND DEMAND

In accordance with the requirements of California Water Code section 10910 (Senate Bill 610), this section of the Water Supply Assessment provides a comparison of water supply and demand as the basis for an assessment of water supply sufficiency. Specifically, the Water Code requires discussion of the total projected water supplies available during normal, single dry, and multiple dry years during a 20-year projection and documentation of whether or not the supplies will meet the projected water demands associated with the proposed project in addition to existing and future uses.

As noted in the Introduction, this Water Supply Assessment makes use of suggested tables provided in the DWR *Guidebook for Implementation of Senate Bills 610 and 221*. With regard to comparison of supply and demand, the relevant tables compel the quantification and direct comparison of water supply and demand. However—when applied to the specific circumstances of Project and the Ocotillo/Coyote Wells Groundwater Basin—the tables alone do not support an informed assessment.

Table 8 compares the available supply and demand under current conditions. Groundwater supply is defined in **Table 8** as the estimated recharge (1,077 AFY, see **Table 5**). Comparison in **Table 8** of this value with the total water demand of 474 AFY indicates that supply exceeds demand. However, this simple comparison does not account for the inability of the existing network of wells to capture available recharge nor does it account for the area's sustained groundwater level declines and overdraft condition.

Similarly, **Tables 9a** and **9b** provide comparisons of water supplies and water demands in 2082 for the basin under the two supply alternatives: groundwater only and groundwater plus partial IID, respectively. **Table 9a** water supply scenario defines groundwater supply as the estimated recharge. In this future scenario, groundwater supply alone would be insufficient to meet demand in 2082, with a small estimated shortfall of 76 AFY. Note that the comparison provided here is for 2082, representing the life of the proposed project and extending far beyond the 20-year projection required in the Water Code.

As documented in the EIR/EIS, increased pumping would increase the rate of groundwater level decline and overdraft. The water supply scenario in **Table 9b** envisions 420 AFY of IID water plus 1,077 AFY of supplemental groundwater. Referring back to **Tables 6a** and **6b**, the partial IID scenario would reduce groundwater pumping and overdraft rates relative to the groundwater-only scenario in **Table 6a**, but the existing overdraft would continue.

However, an additional consideration is the availability of groundwater storage to fulfill water demands. As documented in the EIR/EIS, an ample supply of groundwater exists in the Ocotillo/Coyote Wells Groundwater Basin to serve the Project. The Project's proposed water usage of up to 767 AF/yr would represent only a small fraction of the total amount of groundwater in storage in the aquifer, which is estimated to be approximately 1.2 million AF or more. It is noteworthy that US Gypsum wells have supplied the Plant and some Quarry water needs for over 60 years. Groundwater levels and storage have declined historically and are expected to continue to decline under baseline conditions (i.e., without the project) over the next 80 years. If US Gypsum were to increase pumping as proposed, then the decline is expected to increase. Nonetheless, it should be noted that the thickness of the Basin in the Ocotillo area is approximately 460-500 feet and the expected additional drawdown is relatively minor.

Because of the overdraft condition, the sustainable groundwater supply is by definition insufficient for the proposed project. However, the water demands of the Project and other existing and future water can be supplied by available groundwater storage.

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Table 1. Climate Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
ETO (inches)	2.73	3.59	6.03	7.86	8.87	10.01	9.38	8.37	7.11	5.32	3.41	2.30	74.97
Avg precip (inches)	0.44	0.48	0.29	0.08	0.09	0.08	0.39	0.33	0.33	0.30	0.19	0.90	3.89
Avg temp (ºF)	54.33	58.41	64.35	70.19	78.00	85.26	90.33	90.22	85.04	74.09	61.14	52.61	72.00

* Source: CIMIS Station at Seeley, CA

Table 2. Population Projections

Year	1990	1995	2000	2005	2010	2015	2020	2025	2082
Painted Gorge	38	41	44	47	50	54	58	62	137
Ocotillo	319	342	367	393	421	452	484	519	1,146
Residential	10	11	11	12	13	14	15	16	36
Nomirage	83	89	95	102	110	117	126	135	298
					13	14	15	16	36
TOTAL	460	493	529	567	607	651	698	748	1,653

Source: Estimated in Model Study (BE, 2004), 1990 US Census data and a 1.4 percent annual growth rate

Table 3. Water Demand by Water Use Sectors, AFY

Customer type	1990	1995	2000	2005**	2010	2015	2020	2025	2082
Industrial	476	327	324	575	767	767	767	767	767
Residential*	103	110	118	127	136	146	156	168	357
TOTAL	579	437	442	702	903	913	923	935	1,124

*Source: Estimated in Model Study (BE, 2004)

** 2004 data used

Table 4a. Baseline Water Demand during Drought Periods, AFY

Customer type	Normal	Single dry	Multiple - 2	Multiple - 3
Industrial**	347	347	347	347
Residential*	127	127	127	127
TOTAL	474	474	474	474

* Residental demand for 2005

**Baseline USG demand 347 AFY

Table 4b. Projected 2082 Water Demand during Drought Periods, AFY

Customer type	Normal	Single dry	Multiple - 2	Multiple - 3
Industrial	767	767	767	767
Residential	386	386	386	386
TOTAL	1,153	1,153	1,153	1,153

Table 5. Water Supply Sources and Total Available Supply, AFY

Supply	AFY	Entitlement	Right	Contract	Ever used
Groundwater *	1,077				Yes
IID Water	420				No

*Groundwater supply is represented by the total annual recharge into the basin

Table 6a. Water Supply in a Normal Year, AFY, Groundwater Only

Water Supply Sources	1990	1995	2000	2005	2010	2015	2020	2025	2082
Groundwater**	579	437	442	702	903	913	923	935	1,124
TOTAL	579	437	442	702	903	913	923	935	1,124

Table 6b. Water Supply in a Normal Year, AFY, Groundwater and IID

Water Supply Sources	1990	1995	2000	2005	2010	2015	2020	2025	2082
Groundwater**	579	437	442	702	483	493	503	515	704
IID Water	0	0	0	0	420	420	420	420	420
TOTAL	579	437	442	702	903	913	923	935	1,124

** Groundwater supply is provided by recharge and storage

Table 7. Projected Water Supply in Normal and Dry Years, AFY

Source	Normal	Single Dry	Multiple - 2	Multiple - 3
Groundwater*	1,077	1,077	1,077	1,077
IID	420	420	420	420
TOTAL	1,497	1,497	1,497	1,497

*Groundwater supply is represented by the total annual recharge into the basin

Table 8. Comparison of Current Supply and Demand for Normal and Dry Years, AFY, 2005

2005 Supply and Demand	Normal	Single dry	Multiple 2	Multiple 3
Supply total*	1,077	1,077	1,077	1,077
Demand total**	474	474	474	474
Difference	603	603	603	603

Based on 2005 data

* Includes groundwater only

**Baseline USG demand 347 AFY and estimated residential use

Table 9a. Comparison of Projected Supply and Demand for Normal and Dry Years, AFY, Groundwater Only

2082 Supply & Demand	Normal	Single dry	Multiple 2	Multiple 3
Supply total*	1,077	1,077	1,077	1,077
Demand total**	1,153	1,153	1,153	1,153
Difference	-76	-76	-76	-76

* Includes groundwater only

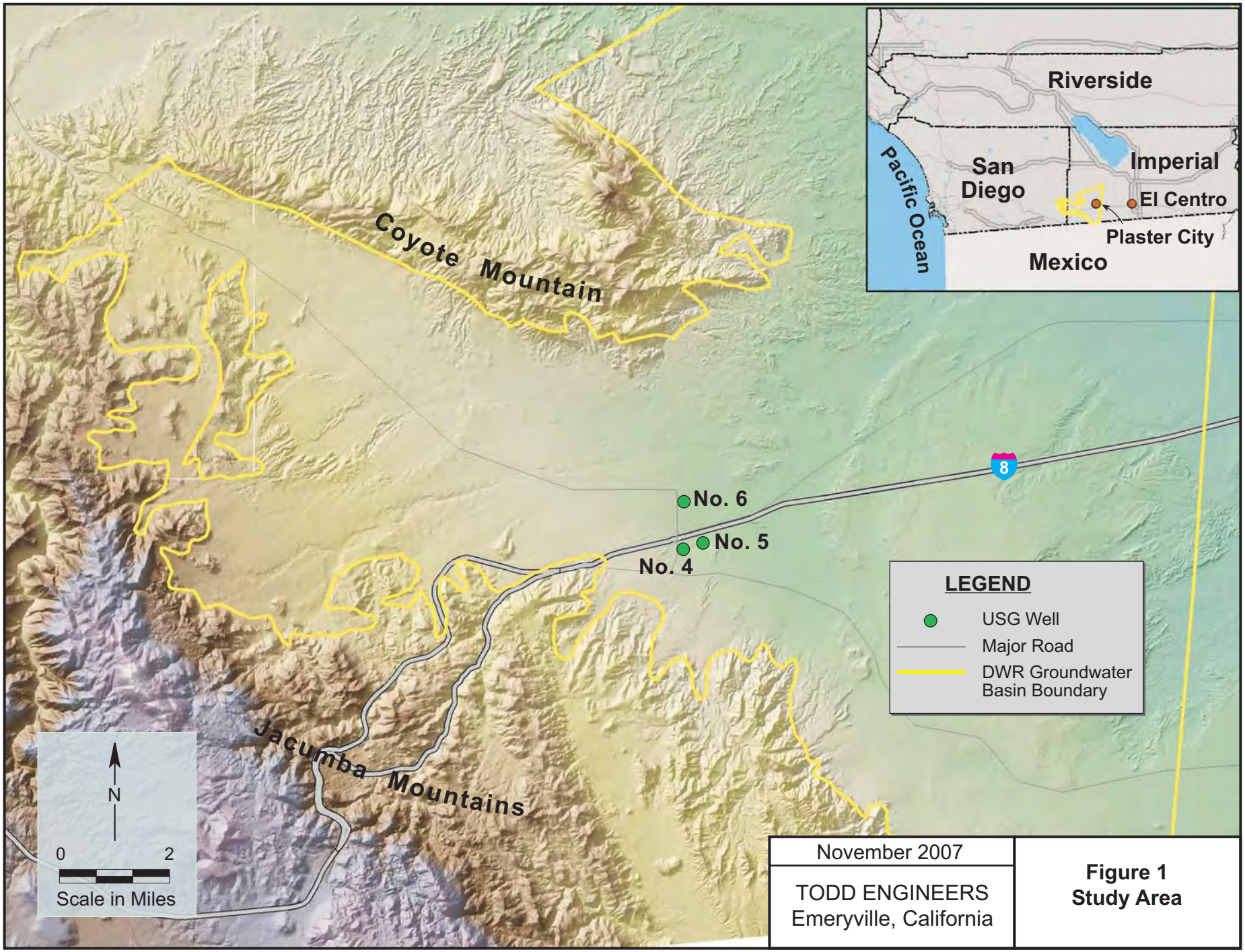
**Maximum USG demand 767 AFY and projected residential use

Table 9b. Comparison of Projected Supply and Demand for Normal and Dry Years, AFY, Groundwater and IID

2082 Supply & Demand	Normal	Single dry	Multiple 2	Multiple 3
Supply total*	1,497	1,497	1,497	1,497
Demand total**	1,153	1,153	1,153	1,153
Difference	344	344	344	344

* Includes groundwater and IID

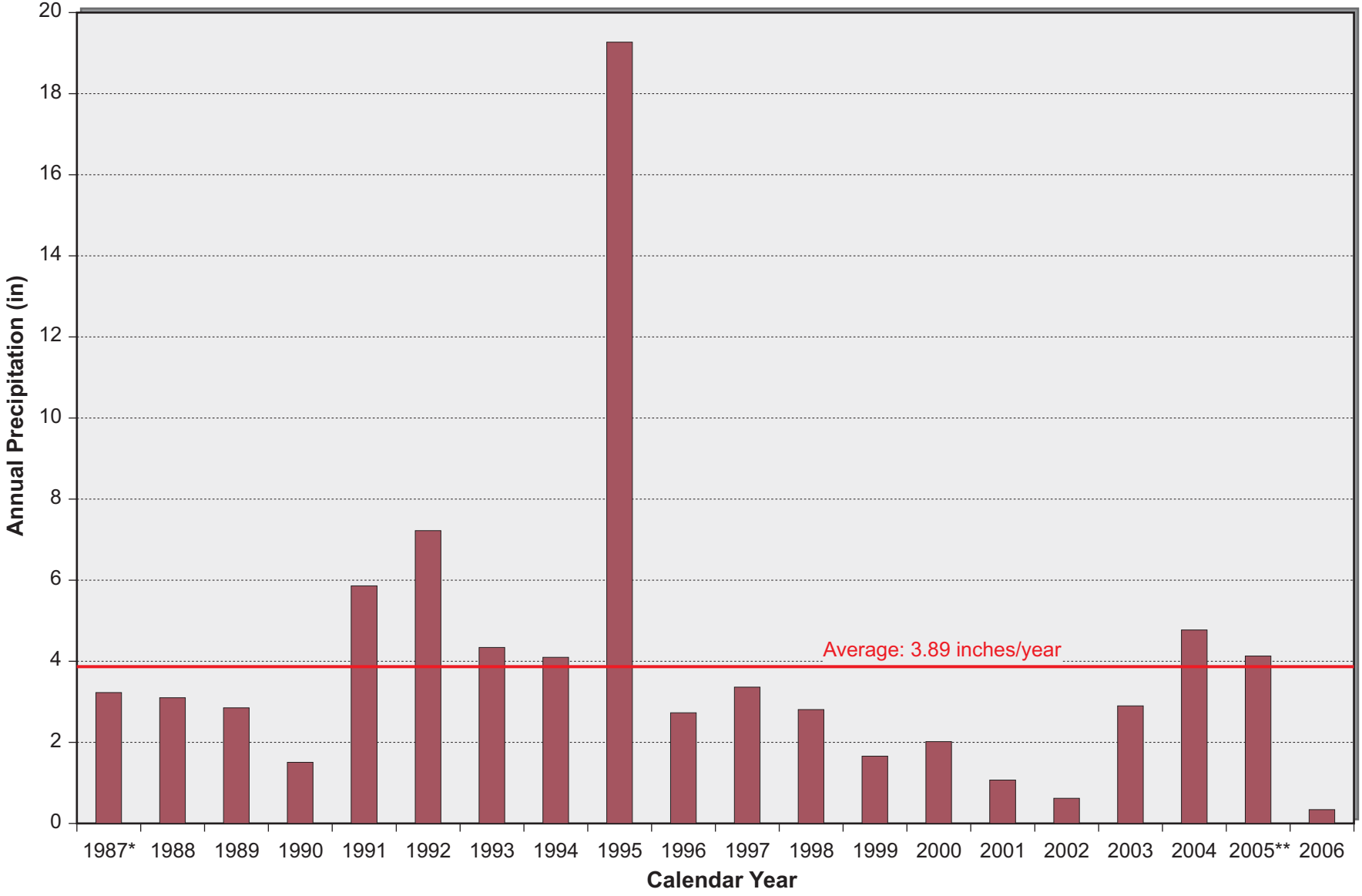
**Maximum USG demand 767 AFY and projected residential use



November 2007

TODD ENGINEERS
Emeryville, California

Figure 1
Study Area



Source: CIMIS, Seeley.

* Based on partial year (May - December).
** Anomalous data point removed (recorded as 113.94 on 12/31/05).

November 2007

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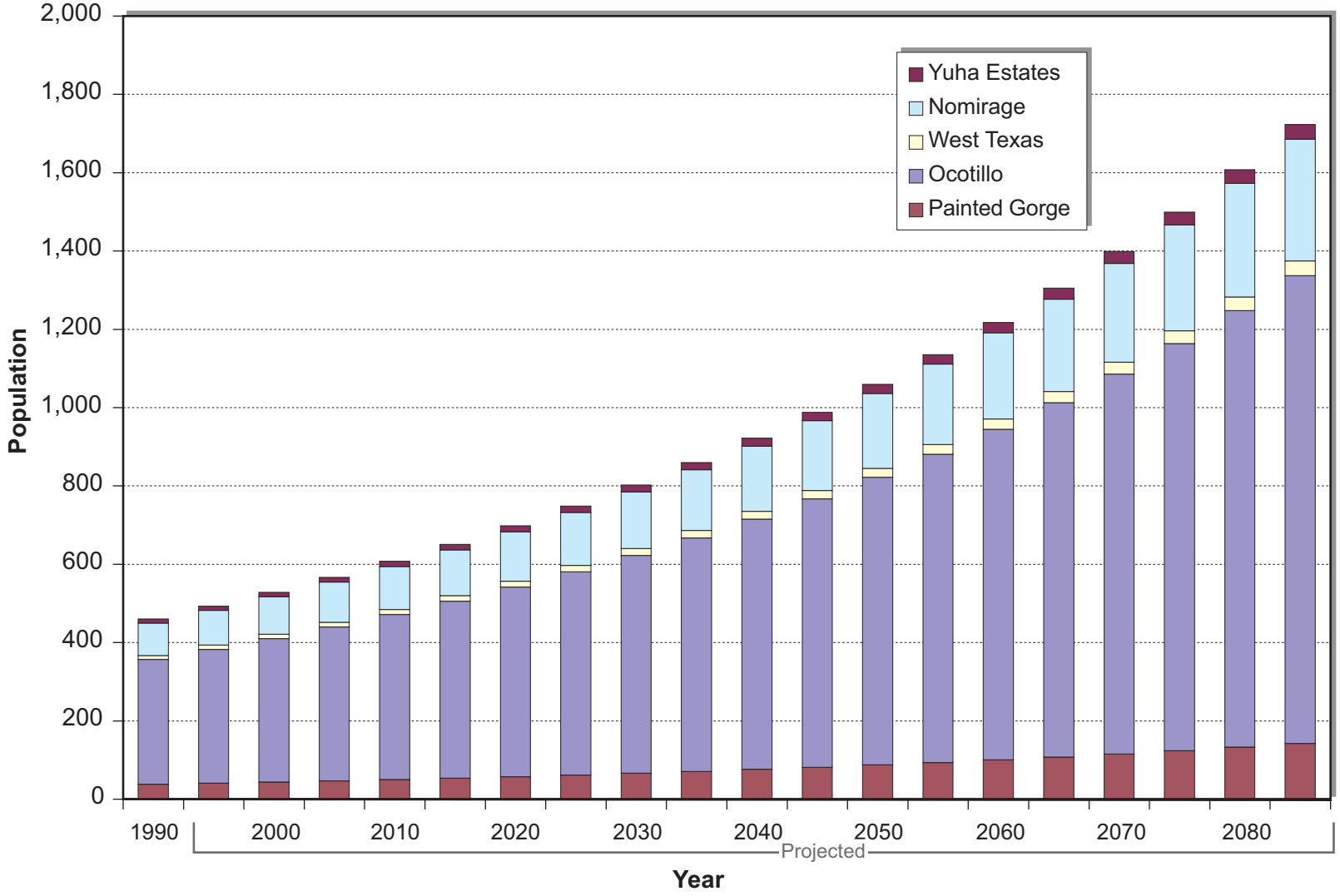
Figure 2
Annual Precipitation at Seeley, CA



November 2007

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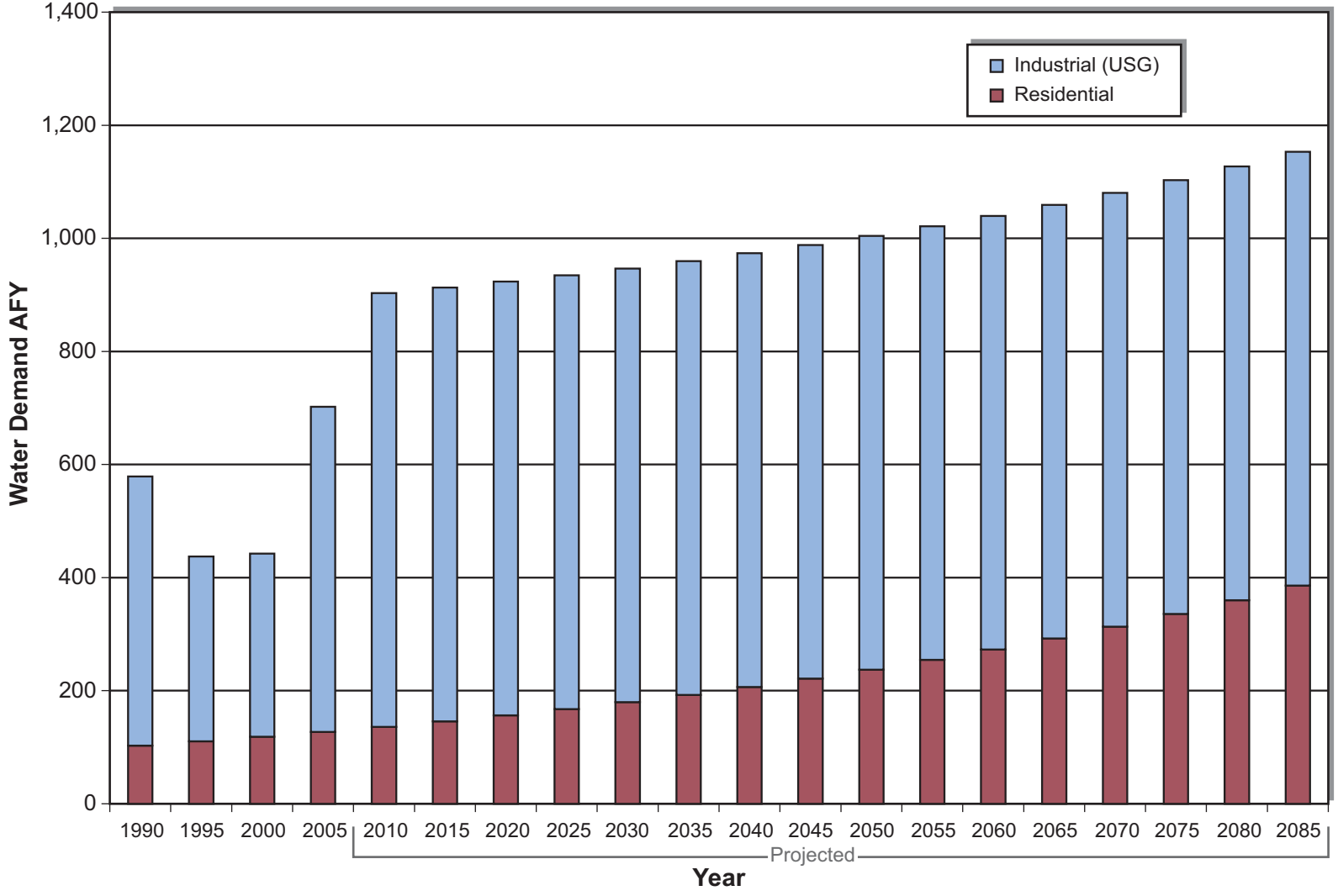
Emeryville, California

Figure 3
Population Growth by Community



November 2007

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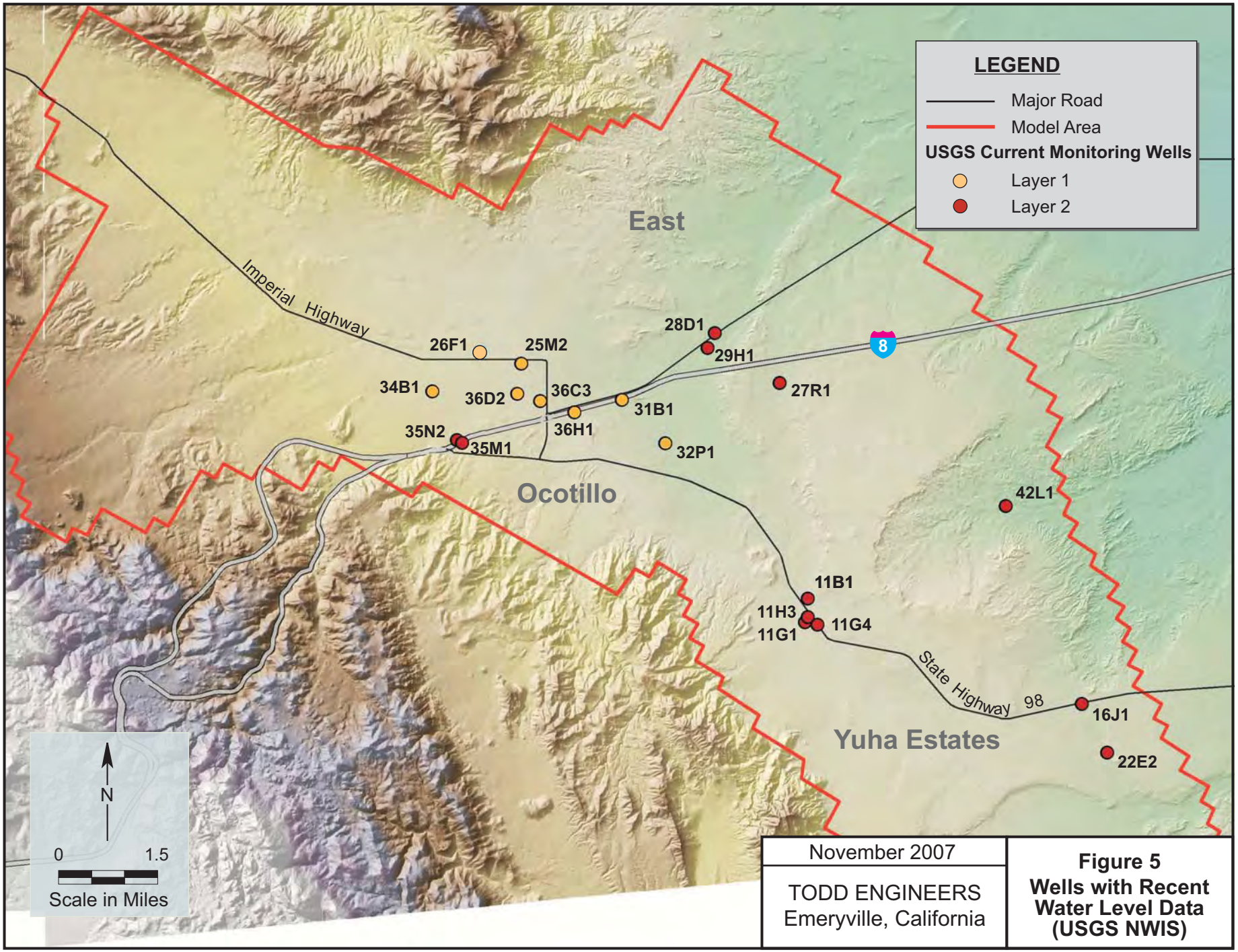
Emeryville, California

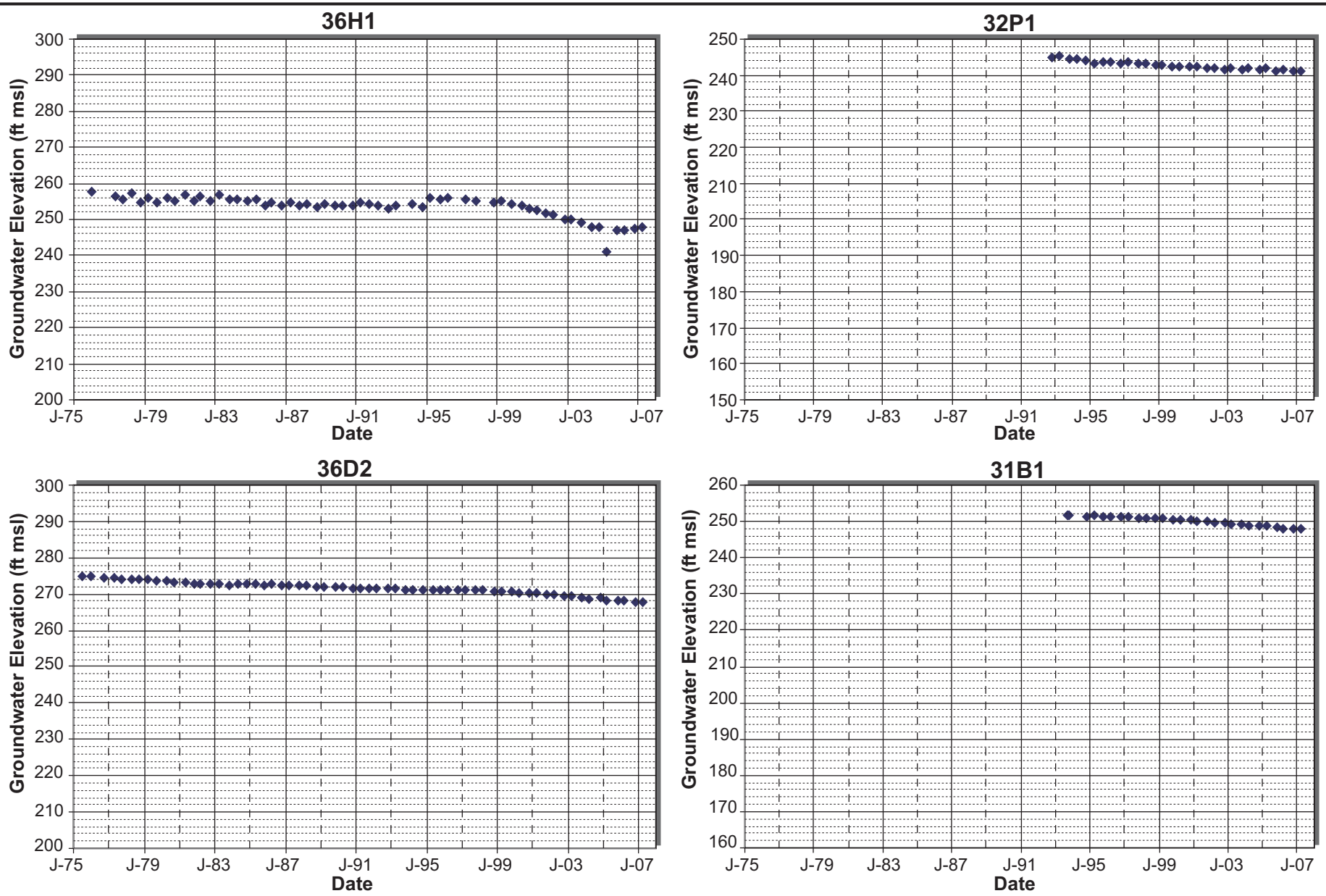
Figure 4
Water Demand by Use



November 2007

TODD ENGINEERS
Emeryville, California

Figure 5
Wells with Recent Water Level Data (USGS NWIS)

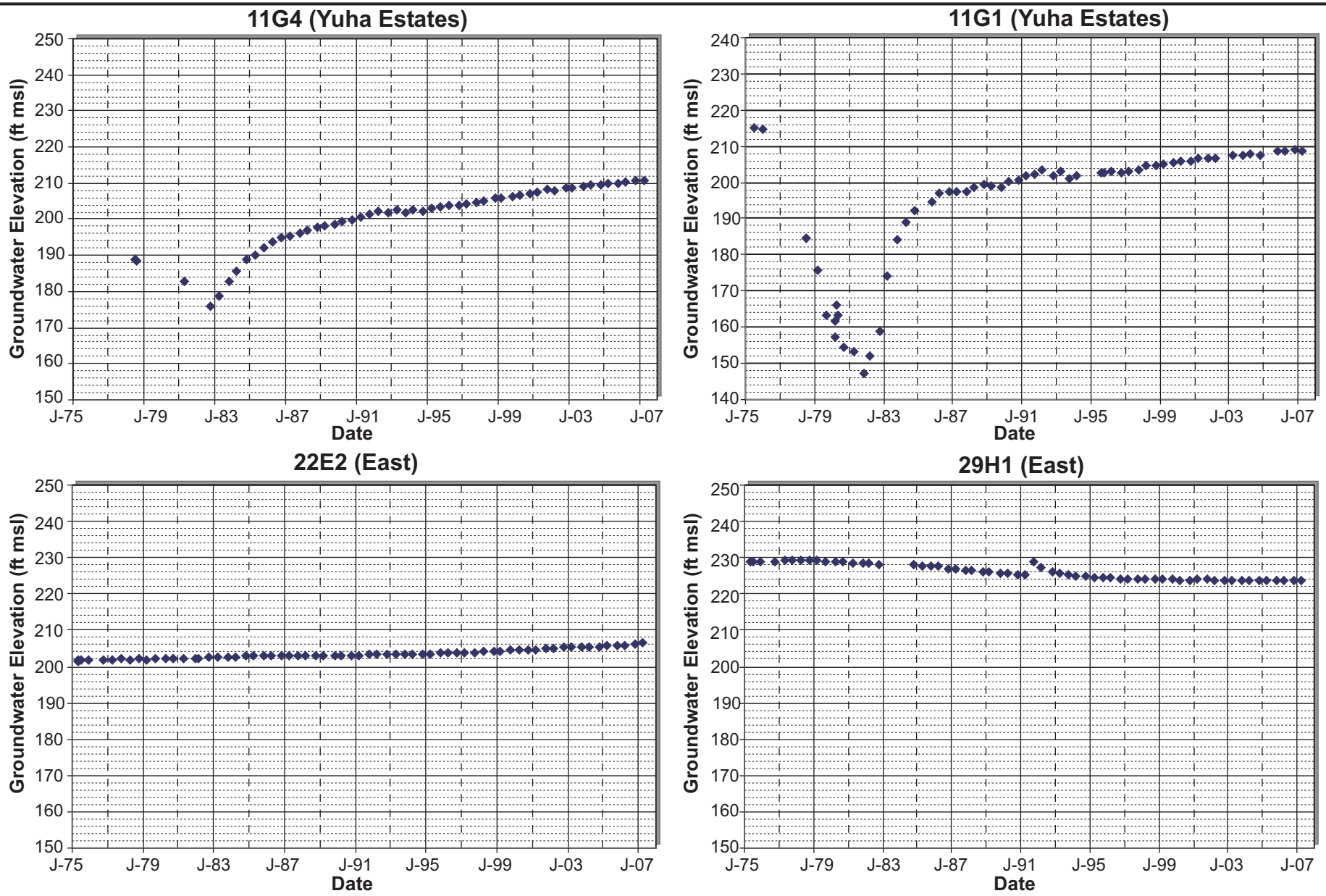


Source: USGS NWIS.

November 2007

TODD ENGINEERS
Emeryville, California

Figure 6
Hydrographs
Layer 1
Ocotillo

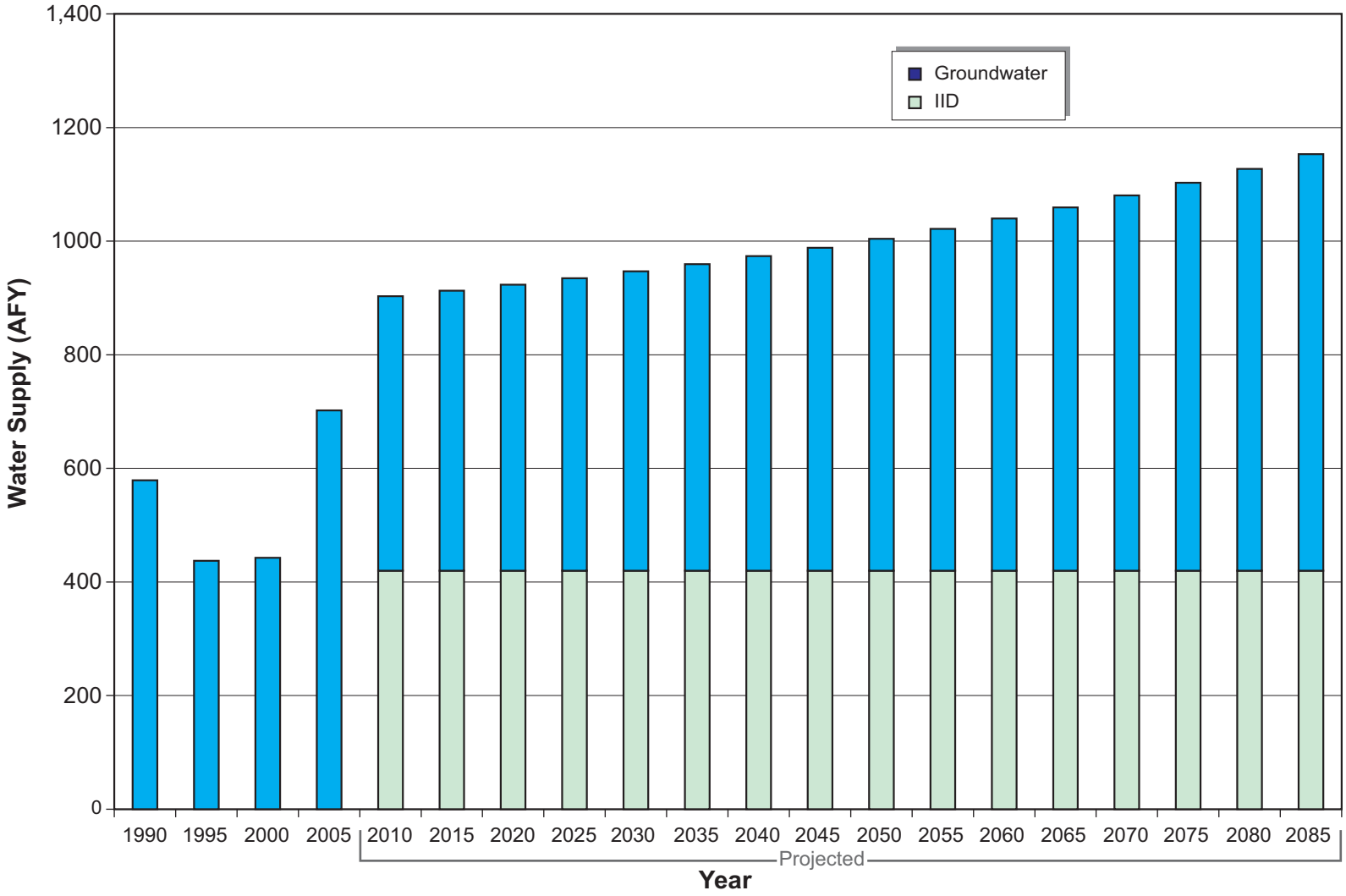


Source: USGS NWIS.

November 2007

TODD ENGINEERS
Emeryville, California

Figure 7
Hydrographs
Layer 2



November 2007	**Figure 8**
TODD ENGINEERS Emeryville, California	**Water Supply by Source Groundwater and IID**

APPENDIX D
ADDITIONAL MATERIALS SUBMITTED TO THE BLM DURING THE FEDERAL SCOPING PROCESS

Anza-Borrego Desert State Park
200 Palm Canyon Drive
Borrego Springs, CA 92004
(760) 767-4962 FAX 767-7492

May 30, 2003

Mr. Greg Thomsen
Field Office Manager
Bureau of Land Management
1661 South 4th Street
El Centro, CA 92243

Mr. Thomsen:

I am writing to you concerning the proposed expansion of the U.S. Gypsum Company operation on Public Lands in the Fish Creek Mountains adjacent to Anza-Borrego Desert State Park. My staff and I have grave concerns about the expansion of the strip mining operation and patent application adjacent to the State Wilderness area, and within designated Critical Habitat of the Peninsular bighorn sheep. We have worked with the U.S. Gypsum Company over the years and have been good neighbors. The proposal to expand into the south part of the land there, and to threaten the resources and viewshed of the park boundary is worrisome in the least.

I am sure you share my concern for the continued degradation of habitat within the range to the Federally Endangered Peninsular bighorn sheep. We have numerous locations of our radio telemetered bighorn in the Fish Creek Mountains, east of Split Mountain. Many of these location points are of ewes in lambing areas and of bighorn likely visiting remote watering locations known as "tinajas", which fill with rain and provide water for wildlife several months of the year.

Please consider what you can do to curtail uncontrolled expansion of the strip mine, reconsider the Patent Application, and help us preserve the integrity of the nearby Anza-Borrego Desert State Park and State Wilderness area.

Thank you for your consideration.

Sincerely,

Mark C. Jorgensen
Superintendent
Anza-Borrego Desert State Park

APPENDIX D-1
FEDERAL REGISTER
VOL. 67, NO. 84
WEDNESDAY, MAY 1, 2002/NOTICES

(OMB) for approval under the provisions of the Paperwork Reduction (44 U.S.C. Chapter 3501 *et seq.*). On August 21, 2001, the BLM published a notice in the **Federal Register** (66 FR 43899) requesting comments on the collection. The comment period ended October 22, 2001. No comments were received. You may obtain copies of the proposed collection of information and related explanatory material by contacting the BLM Information Clearance Officer at the telephone number listed below.

OMB is required to respond to this request within 60 days but may respond after 30 days. For maximum consideration, your comments and suggestions on the requirement should be made within 30 days directly to the Office of Management and Budget, Interior Department Desk Officer (1004–0185), Office of Information and Regulatory Affairs, Washington, D.C. 20503. Please provide a copy of your comments to the Bureau Information Collection Clearance Officer (WO–630) 1849 C St., NW., Mail Stop 401 LS, Washington, DC. 20240.

Nature of Comments: We specifically request your comments on the following:

1. Whether the collection of information is necessary for the proper functioning of the Bureau of Land Management, including whether the information will have practical utility;

2. The accuracy of our estimates of the information collection burden, including the validity of the methodology and assumptions we use;

3. Ways to enhance the quality, utility, and clarity of the information collected; and

4. How to minimize the information collection burden on those who are to respond, including the use of appropriate automated, electronic, mechanical, or other technological collection techniques or other forms of information technology.

Title: Onshore Oil and Gas Drainage Protection, 43 CFR 3100 and 3162.

OMB Approval Number: 1004–0185.

Abstract: Federal and Indian (except Osage) oil and gas lessees and operating rights owners must monitor drilling activities of offending wells that may result in drainage situations of Federal oil and gas mineral resources. Respondents are oil and gas companies, lessees, operators, operating rights owners, and individuals.

Form Number: None.

Frequency: On occasion; nonrecurring.

Description of Respondets: Jessees and operating rights owners.

Estimated Completion Time: For ease of reference, this table summarizes the burden items in this information collection request:

Type of analysis	Number of analyses and reporting per respondent	Hours
Preliminary	1,000@ 2 hours	2,000
Detailed	100@ 24 hours ..	2,400
Additional	10@ 20 hours	200
Total	1,110	4,600

Annual Responses: 1,110.

Annual Burden Hours: 4,600.

Bureau Clearance Officer: Michael H. Schwartz (202) 452–5033.

Dated: April 5, 2002.

Michael H. Schwartz,

Bureau of Land Management, Information Collection Clearance Officer.

[FR Doc. 02–10689 Filed 4–30–02; 8:45 am]

BILLING CODE 4310–84–M

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[CACA–44014]

Notice of Intent To Prepare an Environmental Impact Statement (EIS) on the Proposed Expansion/ Modernization of an Existing Wallboard Manufacturing Facility and Associated Quarry Operation

AGENCY: Bureau of Land Management, Interior.

ACTION: Notice of intent.

SUMMARY: United States Gypsum (USG) has proposed the expansion and modernization of USG's Plaster City wallboard manufacturing operations and Fish Creek Quarry operations located in Imperial County, California. Although USG's facilities are primarily on private land, several appurtenances cross public land. Using the U.S. government survey method, the areas within which the existing and proposed facilities are located are generally described as follows: SBBM, T.16S., R.11E. (Plaster City wallboard plant and portion of Interstate rail line; T.13S., R.9E. (Fish Creek quarry); T.13S., R.9E.; T.13S., R.10E.; T.14S., R.10E.; T.15E., R.10E., T.15S., R.11E.; T.16S., R.11E. (narrow gauge rail line between quarry and plant); T.16S., R.10E.; T.16S, R.11E. (water pipeline between Ocotillo and plant).

Pursuant to section 102(2)(c) of the National Environmental Policy Act of 1969, the BLM will direct the preparation of an environmental impact statement (EIS) by a third-party contractor on the impacts of this proposed project. Interested members of the public are encouraged to identify significant issues or concerns related to the proposed action to determine the scope of the issues (including alternatives) that need to be analyzed and to eliminate from detailed study those issues that are not significant. One public scoping meeting will be held. The location and time of the meeting will be announced in local newspapers or may be obtained by contacting Nicole Riven at 760–337–4426 or e-mail *nriven@ca.blm.gov*. Comments recommending that the EIS address specific environmental issues should include supporting documentation. Written comments must be received at the El Centro Field Office no later than June 10, 2002. Comments, including names and street addresses of respondents, will be available for public review at the El Centro Field Office during regular business hours and may be published as part of the EIS. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations and businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be available for public inspection in their entirety.

ADDRESSES: Written comments should be addressed to Greg Thomsen, Field Manager, Bureau of Land Management, El Centro Field Office, 1661 South 4th Street, El Centro, CA 92243.

FOR FURTHER INFORMATION CONTACT: Linda Self (760) 337–4426.

SUPPLEMENTARY INFORMATION: USG's Plaster City wallboard plant has been in operation for over 55 years and is located adjacent to Evan Hewes Highway in Plaster City approximately 18 miles west of El Centro and 2 miles north of Interstate 8. The Fish Creek Quarry operations are located on Split Mountain Road approximately 26 miles north by northwest of Plaster City. The quarry operations are located within designated critical habitat for the Peninsular bighorn sheep (*Ovis canadensis*). Water for the facility is delivered via pipeline from the Ocotillo-Coyote Wells Groundwater Basin. Generally, the overall expansion/ modernization project consists of construction of new buildings, a

doubling in wallboard production by removing one operating production wallboard line, and installing a new state-of-the-art high speed line and increased mining of gypsum from 1.1 million tons per year (mty) to approximately 1.9 mty on land reserves owned and mined by USG. The project also includes expanding existing and planned quarry areas. The accumulated inert materials associated with the expanded manufacturing activities at the Plaster City site will be recycled or transferred to a landfill. To accommodate the expanded operations, water usage will increase from 400 acre-feet per year (AF/Yr) to a maximum of 767 AF/Yr. The project will include modernizing the existing warehouses, storage structures, and rail loading facility; upgrading electrical transmission lines (by Imperial Irrigation District); maintaining the narrow gauge rail line which runs between the plant and the quarry; replacing the existing pipeline that runs between Ocotillo and the plant and relocating a short portion of the Interstate rail line that runs through the Plaster City facility. Some of these facilities may be located within habitat for the Flat-tailed horned lizard (*Phrynosoma mcalli*). Although certain aspects of the project have already been implemented pursuant to Imperial County's previous decision to adopt a Negative Declaration for portions of the project, for purposes of this EIS, the '' baseline'' for evaluating the potential impacts of the project on the environment shall be the physical conditions that existed prior to project implementation.

Dated: April 25, 2002.

Greg Thomsen,

Field Manager.

[FR Doc. 02–10687 Filed 4–30–02; 8:45 am]

BILLING CODE 4310–40–P

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[AK–040–1430–EU; AA–083994, A–029786]

Notice of Realty Action: Direct Sale, Alaska

AGENCY: Bureau of Land Management, Interior.

ACTION: Notice of Realty Action: Direct Sale of Reversionary Interest of Recreation & Public Purpose Patent, Number 1230095; Chugiak, Alaska.

SUMMARY: Reversionary interest held by the United States in the following lands has been determined to be suitable for direct sale to the Chugiak Benefit Association (CBA), under the authority of section 203 of the Federal Land Policy and Management Act of October 21, 1976 (43 U.S.C. 1713), at no less than the appraised fair market value of $31,649.25. The land is described as T. 15N., R. 1 W., Sec. 9, Lots 16 and 17, and 20 Seward Meridian, Alaska, located southwest of the North Birchwood Interchange, containing 3 acres, more or less. The land is currently owned by CBA, but is restricted by a reversionary clause in the patent. The land is an isolated parcel, difficult and uneconomic to manage as part of the public lands, and not needed for federal purposes. The sale is consistent with BLM's land use planning for the area involved and the public interest will be served by the sale.

FOR FURTHER INFORMATION CONTACT: Callie Webber, Anchorage Field Office, 6881 Abbott Loop Road, Anchorage, Alaska 99507, (907) 267–1272.

SUPPLEMENTARY INFORMATION: This action will accommodate and provide for the expansion of an existing senior housing and community development project, located on adjacent land. Funding is made available through a U.S. Department of Housing and Urban Development grant. The patent, when issued, will be for reversionary interest only. All other terms and conditions of Patent No. 1230095 will continue to apply to the lands involved. For a period of 45 days from the date of publication of this notice in the **Federal Register**, interested parties may submit comments regarding the proposed direct sale of the reversionary interest to the Anchorage Field Office Manager. Adverse comments will be evaluated, and could result in the modification or vacation of this decision. The reversionary interest will not be offered for conveyance until at least 60 days after the date of this notice.

Dated: March 29, 2002.

June Bailey,

Acting Anchorage Field Office Manager.

[FR Doc. 02–10703 Filed 4–30–02; 8:45 am]

BILLING CODE 4310–JA–P

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[AZ–010–02–1430–ES; A–31350]

Notice of Realty Action; Recreation and Public Purposes (R&PP) Act Classification; Arizona

AGENCY: Bureau of Land Management.

ACTION: Notice.

SUMMARY: The following public lands in the community of Littlefield in Mohave County, Arizona have been examined and found suitable for classification for lease or conveyance to the Littlefield School District under the provisions of the Recreation and Public Purposes Act, as amended (43 U.S.C. 869 *et seq.*). The Littlefield School District proposes to use the land for schools.

Gila and Salt River Meridian

T. 40 N., R. 16 W.,
Sec. 13, SE¼.
T. 41 N., R. 15 W.,
Sec. 33, portions of Lots 1, 4 and 5.
Containing 139 acres, more or less.

The lands are not needed for Federal purposes. Lease or conveyance is consistent with current BLM land use planning and would be in the public interest. The lease/patent, when issued, will be subject to the following terms, conditions and reservations:

1. Provisions of the Recreation and Public Purposes Act and to all applicable regulations of the Secretary of the Interior.

2. A right-of-way for ditches and canals constructed by the authority of the United States.

3. All minerals shall be reserved to the United States, together with the right to prospect for, mine, and remove the minerals.

4. Those rights for Old Highway 91, 200 feet wide granted by right-of-way AZA–021195.

5. Those rights for a 30 foot wide telephone line granted by right-of-way AZAR–035969.

6. Any other valid and existing rights of record not yet identified.

Detailed information concerning this action is available for review at the office of the Bureau of Land Management, Arizona Strip Field Office, 345 E. Riverside Dr., St. George, Utah 84790.

Upon publication of this notice in the **Federal Register**, the lands will be segregated from all other forms of appropriation under the public land laws including the general mining laws, except for lease or conveyance under the Recreation and Public Purposes Act and leasing under the mineral leasing laws. For a period of 45 days from the date of publication of this notice in the **Federal Register**, interested persons may submit comments regarding the proposed lease or conveyance or classification of the lands to the Field Office Manager, Arizona Strip Field Office, 345 E. Riverside Dr., St. George, UT 84790.

APPENDIX D-2
FEDERAL REGISTER
VOL. 72, NO. 195
WEDNESDAY, OCTOBER 10, 2007/
PROPOSED RULES

Federal Register

Wednesday,
October 10, 2007

Part III

Department of the Interior

Fish and Wildlife Service

50 CFR Part 17

Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Peninsular Bighorn Sheep (Ovis canadensis nelsoni) and Proposed Taxonomic Revision; Proposed Rule

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018–AV09

Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Peninsular Bighorn Sheep *(Ovis canadensis nelsoni)* and Proposed Taxonomic Revision

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), propose to revise currently designated critical habitat for the Peninsular bighorn sheep (*Ovis canadensis nelsoni*) under the Endangered Species Act of 1973, as amended (Act). In total, approximately 384,410 acres (ac) (155,564 hectares (ha)) of land in Riverside, San Diego, and Imperial counties, California, fall within the boundaries of the proposed revised critical habitat designation. Of the area proposed as revised critical habitat, approximately 4,512 ac (1,826 ha) of land are Tribal; 93,720 ac (37,927 ha) are Federal; 249,840 ac (101,107 ha) are State; 35,824 ac (14,497 ha) are private; and 514 ac (208 ha) are local. We are proposing to exclude from the final designation, under section 4(b)(2) of the Act, approximately 4,512 ac (1,826 ha) of Agua Caliente Band of Cahuilla Indians Tribal land. We are also evaluating and considering the possible exclusion of approximately 19,211 ac (7,774 ha) of private land covered under the draft Coachella Valley Multiple Species Habitat Conservation Plan. Further, we are acknowledging a taxonomic change to the species and are proposing a taxonomic revision of the listed entity from distinct population segment (DPS) of species *Ovis canadensis*, to DPS of subspecies *Ovis canadensis nelsoni.*

DATES: We will accept comments from all interested parties until December 10, 2007. We must receive requests for public hearings, in writing, at the address shown in the **ADDRESSES** section by November 26, 2007.

ADDRESSES: If you wish to comment on this proposed rule, you may submit your comments and materials concerning by any one of several methods:

1. *By mail or hand-delivery to:* Jim Bartel, Field Supervisor, U.S. Fish and Wildlife Service, Carlsbad Fish and Wildlife Office, 6010 Hidden Valley Road, Carlsbad, CA 92011.

2. *By electronic mail (e-mail) to: fw8cfwocomments@fws.gov.* Please see the Public Comments Solicited section below for other information about electronic filing.

3. *By fax to:* the attention of Jim Bartel at 760–431–5901.

4. *Via the Federal eRulemaking Portal at: http://www.regulations.gov.* Follow the instructions for submitting comments.

FOR FURTHER INFORMATION CONTACT: Jim Bartel, Field Supervisor, Carlsbad Fish and Wildlife Office, 6010 Hidden Valley Road, Carlsbad, CA 92011; telephone 760–431–9440 ; facsimile 760–431–5901. If you use a telecommunications device for the deaf (TDD), call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Public Comments

We intend that any final action resulting from this proposal to revise the current critical habitat designation for the Peninsular bighorn sheep will be as accurate and as effective as possible. Therefore, we request comments or suggestions on this proposed rule. We particularly seek comments concerning:

(1) The reasons why we should or should not designate habitat as ''critical habitat'' under section 4 of the Act (16 U.S.C. 1531 *et seq.*), including whether there are threats to the subspecies from human activity, the degree of which can be expected to increase due to the designation, that outweigh the benefit of designation, such that the designation of critical habitat is not prudent, and whether there are areas we previously designated, but are not proposing for revised designation here, that should be designated as critical habitat;

(2) Specific information on the amount and distribution of Peninsular bighorn sheep habitat, what areas occupied at the time of listing and that contain features essential for the conservation of the subspecies we should include in the designation and why, and what areas not occupied at the time of listing are essential for the conservation of the subspecies and why;

(3) The appropriateness of the proposed exclusion of approximately 4,512 ac (1,826 ha) of Peninsular bighorn sheep habitat from the final designation in consideration of Secretarial Order 3206, ''American Indian Tribal Rights, Federal Tribal Trust Responsibilities, and the Endangered Species Act'' (June 5, 1997); the President's memorandum of April 29, 1994, ''Government-to-Government Relations with Native American Tribal Governments'' (59 FR 22951); Executive Order 13175; and the relevant provision of the Departmental Manual of the Department of the Interior (512 DM 2) (see ''Proposed Exclusion of Agua Caliente Band of Cahuilla Indians Tribal Lands Under Section 4(b)(2) of the Act'' for a detailed discussion); specifically any additional information regarding the benefits of including these Tribal lands in the designation or of excluding these lands from the designation;

(4) The appropriateness of the possible exclusion of approximately 19,211 acres (ac) (7,774 hectares (ha)) of Peninsular bighorn sheep habitat from the final designation based on the benefits to the conservation of the subspecies and its PCEs provided by the draft Coachella Valley Multiple Species Habitat Conservation Plan (MSHCP) (see ''Areas Considered for Exclusion Under Section 4(b)(2) of the Act'' for a detailed discussion), specifically any additional information on the benefits of including land covered by the draft Coachella Valley Multiple Species Habitat Conservation Plan in the designation or of excluding these lands from the designation. At this time we are only considering private lands under the draft Coachella Valley MSHCP for exclusion and soliciting comment on the appropriateness of excluding California Department of Fish and Game, and Bureau of Land Management lands as Memorandum of Understanding partners to the MSHCP;

(5) Land use designations and current or planned activities in the subject areas and their possible impacts on proposed revised critical habitat;

(6) Any foreseeable economic, national security, or other potential impacts resulting from the proposed revised designation and, in particular, any impacts on small entities, and the benefits of including or excluding areas that exhibit these impacts; and

(7) Whether we could improve or modify our approach to designating critical habitat in any way to provide for greater public participation and understanding, or to better accommodate public concerns and comments.

You may submit your comments and materials concerning this proposal by one of several methods (see **ADDRESSES**). If you use e-mail to submit your comments, please include ''Attn: Peninsular bighorn sheep'' in your e-mail subject header, preferably with your name and return address in the body of your message. If you do not receive a confirmation from the system that we have received your e-mail, contact us directly by calling our Carlsbad Fish and Wildlife Office at 760–431–9440. Please note that we must

receive comments by the date specified in the **DATES** section in order to consider them in our final determination.

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you may ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Comments and materials we receive, as well as supporting documentation we used in the preparation of this proposed rule, will be available for public inspection, by appointment, during normal business hours at the Carlsbad Fish and Wildlife Office, 6010 Hidden Valley Road, Carlsbad, CA 92011 (telephone 760–431–9440).

Background

In this proposed rule, it is our intent to discuss only those topics directly relevant to the revision of designated critical habitat for the Peninsular bighorn sheep and the proposed taxonomic revision of the current listed entity. For more information on the biology, and ecology of the Peninsular bighorn sheep, refer to the final listing rule published in the **Federal Register** on March 18, 1998 (63 FR 13134), and the proposed and final critical habitat rules published in the **Federal Register** on July 5, 2000, and February 1, 2001, respectively (65 FR 41405 and 66 FR 8650).

In the 1998 final listing rule, Peninsular bighorn sheep were listed as a distinct population segment (DPS) of the species *Ovis canadensis*. As stated in the 2001 critical habitat rule, based on morphometric and genetic analysis, Wehausen and Ramey (1993, p. 9) synonymized Peninsular bighorn sheep with the subspecies *nelsoni*, which is the current taxonomy. Although we accepted this taxonomy at the time of the designation in 2001, we have yet to formally revise the taxonomy of the listed entity. Therefore, we are formally proposing a taxonomic revision to amend the final listing rule from a DPS of the species *Ovis canadensis*, to a DPS of the subspecies *Ovis canadensis nelsoni*. Therefore, within this proposed critical habitat rule we will refer to the listed entity as a subspecies and not a species. The taxonomic revision does not materially affect discreteness and significance of the Peninsular bighorn sheep as a DPS entity. As stated in the final listing rule (63 FR 13134), regardless of taxonomic issues surrounding this species at the time of listing, the biological evidence supports recognition of Peninsular bighorn sheep as a distinct vertebrate population segment in the Service's Recognition of Distinct Vertebrate Population Segments (DPS) (61 FR 4722). For a detailed discussion of the DPS analysis for Peninsular bighorn sheep, see the Distinct Vertebrate Population Segment section of the final listing rule.

Peninsular bighorn sheep (a large mammal in the family Bovidae) occupying the Peninsular Ranges of southern California were determined, at the time of listing in 1998, to be a distinct vertebrate population segment (DPS) of bighorn sheep based on their geographic isolation and separation from other desert bighorn sheep (63 FR 13134; March 18, 1998). Peninsular bighorn sheep occur on moderate to steep (greater than 20 percent) (NRCS 1993, p. 66) open slopes, canyons, and washes in hot and dry desert regions of the Peninsular Ranges of southern California in Riverside, San Diego, and Imperial counties (66 FR 8650; February 1, 2001). Peninsular bighorn sheep use several different habitat types, elevations, and slopes depending on seasonal environmental conditions and/or their life history stage. The 2001 final critical habitat rule (66 FR 8650) stated that most Peninsular bighorn sheep live between 300 and 4,000 feet (ft) (91 and 1,219 meters (m)) in elevation. Upon review of available literature, we now believe 4,600 ft (1,400 m) (below forested vegetation) is a more widely accepted upper elevational limit in the Peninsular Ranges (Jorgensen and Turner 1975, p. 51; DeForge *et al.* 1997, p. 11; Rubin *et al.* 1998, p. 541; Ernest *et al.* 2002, p. 76). Desert bighorn sheep are frequently found on slopes greater than 20 percent (Elenowitz 1983, p. 87; Andrew and Bleich 1999, p. 13; Dunn 1996, p. 5), and our Geographic Information System (GIS) records and occurrence data confirm this observation for Peninsular bighorn sheep. Steep terrains with slopes of 60 percent or greater used for predator evasion and lambing are a crucial component of Peninsular bighorn sheep habitat (Dunn 1996, p. 1; Service 2000, p. 6). Peninsular bighorn sheep will use caves and rock outcrops for shelter during inclement weather and for shade during summer months. Bighorn sheep are primarily diurnal (Krausman *et al.* 1985, p. 25), but Peninsular bighorn sheep may be active at any time of day or night (Miller *et al.* 1984, p. 24). A wide range of forage resources and vegetation associations are required by this subspecies to meet annual and drought-related variations in forage quality and availability. In a study of Peninsular bighorn sheep, Scott (1986, p. 21) found that diets were dominated by shrub species, while grasses and forbs species made up a smaller portion of the Peninsular bighorn sheep's diet depending on the season. Valley floors, rolling hills, and alluvial fans and washes with productive soils provide seasonal vegetation and water resources important to the Peninsular bighorn sheep, especially for ewes during the reproductive season (Service 2000, p. 8). Please see the ''Primary Constituent Elements'' section of this proposed rule for a detailed discussion of the habitat requirements of this subspecies.

At the time of listing (1998), Peninsular bighorn sheep were known to occupy habitat along the Peninsular Mountain Ranges from the San Jacinto Mountains of southern California into the Volcan Tres Virgenes Mountains in Baja California, Mexico (63 FR 13134; March 18, 1998). Population estimates at the time indicated approximately 280 Peninsular bighorn sheep existed within the United States, divided amongst approximately 8 subpopulations or ewe groups (63 FR 13134; March 18, 1998). At the time of the final critical habitat designation in 2001, a range-wide census estimated approximately 400 Peninsular bighorn sheep existed within the United States (Torres 2000, p. 1). We have extensive occurrence data documenting bighorn sheep within the entire range identified in the listing rule. Population estimates for 2006, derived from data collected by the Bighorn Institute, California Department of Fish and Game (CDFG), and Anza Borrego Desert State Park, indicate approximately 793 adult and yearling Peninsular bighorn sheep exist within the United States (Torres 2007). Population estimates for various regions within the Peninsular Ranges in 2006 are as follows: San Jacinto Mountains, 21; North Santa Rosa Mountains, 49; Central Santa Rosa Mountains, 163; South Santa Rosa Mountains, 179; Coyote Canyon, 42; North San Ysidro Mountains, 79; South San Ysidro Mountains, 38; Vallecito and Fish Creek Mountains, 77; and Carrizo Canyon, 145 (Torres 2007).

A captive breeding program has been maintained by the Bighorn Institute since 1984 in cooperation with CDFG, the Bureau of Land Management (BLM), and the Service (Ostermann *et al.* 2001, p. 751). Originally instituted to conduct disease research on low lamb survival, the captive breeding program was formalized in 1995, with the goals of safeguarding a sample of the Peninsular bighorn sheep gene pool and

augmenting and reestablishing wild populations (Ostermann *et al.* 2001, p. 751). Captive-bred Peninsular bighorn sheep have been released in the northern Santa Rosa Mountains and the San Jacinto Mountains (Ostermann *et al.* 2001, p. 751), areas historically occupied by the subspecies.

Within the Peninsular Ranges, habitat is patchy, and the sheep populations are naturally fragmented (Bleich *et al.* 1990, p. 386; Rubin *et al.* 1998, p. 547). Male and female bighorn sheep remain loosely segregated much of the year and come together during the breeding period or rut (Bleich *et al.* 1997, p. 7). In the Peninsular Ranges, the rut occurs in the late summer and fall months (Service 2000, p. 15), peaking from August to October (Rubin *et al.* 2000, p. 774). As parturition (giving birth) approaches, ewes seek isolated sites (escape terrain) with shelter and unobstructed views (Turner and Hansen 1980, p. 148), seclude themselves from other females, and find sites to give birth (Geist 1971, p. 239; Etchberger and Krausman 1999, p. 358). Ewes usually give birth to one lamb after an approximately 6-month gestation period (Geist 1971, p. 239; Turner and Hansen 1980, p. 146). During the period of sexual segregation, ewes and their lambs are typically found in steeper, more secure habitat, while rams inhabit less steep or less rugged terrain (Geist 1971, p. 239; Bleich *et al.* 1997, p. 23).

Previous Federal Actions

On February 1, 2001, we designated approximately 844,897 ac (341,919 ha) of land in Riverside, San Diego, and Imperial counties, California, as critical habitat. The designation followed the Service's release of the final Recovery Plan for Bighorn Sheep in the Peninsular Ranges, California (dated October 25, 2000). On March 7, 2005, the Agua Caliente Band of Cahuilla Indians filed a complaint against the Service alleging that the economic analysis developed for our 2001 designation used a methodology similar to that ruled to be insufficient by the Tenth Circuit Court in *New Mexico Cattle Growers Association* v. *U.S. Fish and Wildlife Service*, 248 F.3d 1277 (10th Cir. 2001). Other parties subsequently intervened as plaintiffs in the case. A July 31, 2006, court-approved consent decree enacted a limited partial vacatur of Tribal, mining, and Desert Riders lands (29,925 ac (12,110 ha)) and remanded the critical habitat designation back to the Service for new rulemaking. Publication of this proposed revision of critical habitat satisfies our obligation under the consent decree to submit a revised proposed rule to the **Federal Register** on or before September 30, 2007. The final rule is due to the **Federal Register** on or before September 30, 2008. For more information on previous Federal actions concerning the Peninsular bighorn sheep, refer to the final listing rule published in the **Federal Register** on March 18, 1998 (63 FR 13134), and the designation of critical habitat for the Peninsular bighorn sheep published in the **Federal Register** on February 1, 2001 (66 FR 8650).

Critical Habitat

Critical habitat is defined in section 3 of the Act as:

(1) The specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features

(a) Essential to the conservation of the species and

(b) That may require special management considerations or protection; and

(2) Specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

Conservation, as defined under section 3 of the Act, means the use of all methods and procedures that are necessary to bring any endangered species or threatened species to the point at which the measures provided under the Act are no longer necessary.

Critical habitat receives protection under section 7 of the Act through the prohibition against Federal agencies carrying out, funding, or authorizing the destruction or adverse modification of critical habitat. Section 7(a)(2) of the Act requires consultation on Federal actions that may affect critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow the government or public to access private lands. Such designation does not require implementation of restoration, recovery, or enhancement measures by the landowner. Where the landowner seeks or requests federal agency funding or authorization that may affect a listed species or critical habitat, the consultation requirements of Section 7(a)(2) would apply, but even in the event of a destruction or adverse modification finding, the landowner's obligation is not to restore or recover the species, but to implement reasonable and prudent alternatives to avoid destruction or adverse modification of critical habitat.

For inclusion in a critical habitat designation, habitat within the geographical area occupied by the species at the time it was listed must first have features that are essential to the conservation of the species. Critical habitat designations identify, to the extent known using the best scientific data available, habitat areas that provide essential life cycle needs of the species (areas on which are found the primary constituent elements, as defined at 50 CFR 424.12(b)).

Occupied habitat that contains the features essential to the conservation of the species meets the definition of critical habitat only if its essential features may require special management considerations or protection.

Under the Act, we can designate unoccupied areas as critical habitat only when we determine that the best available scientific data demonstrate that the designation of that area is essential to the conservation needs of the species.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific and commercial data available. Further, our Policy on Information Standards Under the Endangered Species Act (published in the **Federal Register** on July 1, 1994 (59 FR 34271)), the Information Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106–554; H.R. 5658)), and our associated Information Quality Guidelines provide criteria, establish procedures, and provide guidance to ensure that our decisions are based on the best scientific data available. They require our biologists, to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat.

When we are determining which areas should be proposed as critical habitat, our primary source of information is generally the information developed during the listing process for the species. Additional information sources may include the recovery plan for the species, articles in peer-reviewed journals, conservation plans developed by States and counties, scientific status surveys and studies, biological assessments, or other unpublished materials and expert opinion or personal knowledge.

Habitat is often dynamic, and species may move from one area to another over time. Furthermore, we recognize that

designation of critical habitat may not include all of the habitat areas that we may eventually determine, based on scientific data not now available to the Service, are necessary for the recovery of the species. For these reasons, a critical habitat designation does not signal that habitat outside the designated area is unimportant or may not be required for recovery of the species.

Areas that support populations, but are outside the critical habitat designation, will continue to be subject to conservation actions we implement under section 7(a)(1) of the Act. They are also subject to the regulatory protections afforded by the section 7(a)(2) jeopardy standard, as determined on the basis of the best available scientific information at the time of the agency action. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans (HCPs), or other species conservation planning efforts if new information available to these planning efforts calls for a different outcome.

Methods

As required by section 4(b) of the Act, we used the best scientific data available in determining areas occupied at the time of listing that contain the features essential to the conservation of the Peninsular bighorn sheep, and areas unoccupied at the time of listing that are essential to the conservation of the Peninsular bighorn sheep, or both. Material reviewed included information from the final listing rule (63 FR 13134; March 18, 1998) and final critical habitat rule (66 FR 8650; February 1, 2001), information and survey observations published in peer-reviewed literature and provided in academic theses and agency reports; location data and survey information provided in agency status and monitoring reports and on GIS maps; habitat analysis and other information provided in the Peninsular bighorn sheep recovery plan (Service 2000); material submitted during section 7 consultations; data made available through members of the Peninsular Bighorn Sheep Recovery Team, Coachella Valley Multiple Species Habitat Conservation Plan program, and Agua Caliente Band of Cahuilla Indians Tribal Habitat Conservation Plan program; and regional GIS coverages.

We are not proposing any areas outside the geographical area presently occupied by the Peninsular bighorn sheep as revised critical habitat because presently occupied areas are sufficient for the conservation of the subspecies.

Primary Constituent Elements

In accordance with section 3(5)(A)(i) of the Act and the regulations at 50 CFR 424.12, in determining which areas occupied at the time of listing to propose as critical habitat, we consider the primary constituent elements (PCEs) to be those physical and biological features that are essential to the conservation of the species and that may require special management considerations or protection. These include, but are not limited to:

(1) Space for individual and population growth and for normal behavior;

(2) Food, water, air, light, minerals, or other nutritional or physiological requirements;

(3) Cover or shelter;

(4) Sites for breeding, reproduction, or rearing (or development) of offspring; and

(5) Habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

We derive the specific primary constituent elements (PCEs) required for the Peninsular bighorn sheep from its biological needs.

Space for Individual and Population Growth and for Normal Behavior

Peninsular bighorn sheep occur on moderately steep to very steep open slopes, canyons, and washes in hot and dry desert regions where the land is rough and rocky, and sparsely vegetated (66 FR 8650; February 1, 2001). This subspecies is primarily restricted to the east-facing lower elevation slopes (generally below 4,600 ft (1,400 m)) of the Peninsular Ranges along the northwestern edge of the Sonoran Desert (Jorgensen and Turner 1975, p. 51; DeForge *et al.* 1997, p. 11; Rubin *et al.* 1998, p. 541; Ernest *et al.* 2002, p. 76). A wide range of topography provides a diversity of habitats and plant communities across the mountainous slopes, canyons, washes, and alluvial fans within the home range of the Peninsular bighorn sheep (Service 2000, p. 156). This diverse topography is necessary to provide shelter from the elements and predators, areas for rearing, areas used to meet thermal requirements, seasonal water and forage sources, and space for mating and movement of this subspecies.

Diverse topographic features are especially important because of the extreme temperatures Peninsular bighorn sheep must cope with in this desert region. During hot weather, desert bighorn sheep seek shade under boulders and cliffs, or move to north-facing slopes (Merritt 1974, p. 14; Andrew 1994, p. 52). In the event of inclement weather they may seek protected caves or overhangs, or move to sunny, south-facing slopes (Andrew 1994, p. 52), or slopes that are protected from strong winds. According to GIS data and occurrence records, Peninsular bighorn sheep largely utilize habitat with 20 to 60 percent slopes, broken by canyons and washes. The preference for slopes greater than 20 percent has been shown in other populations of desert sheep as well (Andrew 1994, p. 53). Nighttime bedding areas are chosen carefully according to the topography of the habitat and may be considered a limiting factor in bighorn sheep distribution (Hansen 1980, p. 78). These bedding areas are usually located along ridges and spurs with long distance visibility where bighorn sheep can escape if necessary in a matter of seconds (Hansen 1980, p. 78).

Generally, bighorn sheep primarily rely on their sense of sight to detect predators. They prefer the lower elevations of the Peninsular Ranges where the vegetation associations are less dense and provide better visibility than those at higher elevations. Research has shown that bighorn sheep will avoid habitat in which dense vegetation reduces visibility and regularly use habitat with vegetative canopy cover less than or equal to 30 percent (Risenhoover and Bailey 1985, p. 799; Etchberger *et al.* 1989, p. 906; Dunn 1996, p. 1). Bighorn sheep in the Peninsular Ranges avoid higher elevations (above 4,600 ft (1,400 m)), likely due to decreased visibility (and therefore increased predation risk) associated with the denser vegetation (chaparral and conifer woodland) found at higher elevations (Service 2000, p. 10).

Along with occupying open habitat, bighorn sheep also use very steep, precipitous terrain for predator evasion (Service 2000, p. 6). Bighorn sheep use their climbing abilities rather than speed to escape from predators, and mountainous slopes of greater than or equal to 60 percent (escape habitat) are steep enough to provide this function (Andrew 1994, p. 57; Dunn 1996, p. 1; McKinney *et al.* 2003, p. 1231; Service 2000, p. 6). Very steep escape habitat is also used for lambing (Service 2000, p. 6). As parturition approaches, ewes seek isolated sites (escape terrain with slopes

60 percent or greater) with shelter and unobstructed views (Turner and Hansen 1980, p. 148), and seclude themselves from other females while finding sites to give birth (Geist 1971, p. 239; Etchberger and Krausman 1999, p. 358). Ewes usually give birth to one lamb born after an approximately 6-month gestation period (Geist 1971, p. 239; Turner and Hansen 1980, p. 146). These areas of steep and very steep terrain are vital to Peninsular bighorn sheep because lambs have increased vulnerability to predation, and these protective slopes are rarely visited by predators (Geist 1971, p. 239). Ewe groups with lambs usually stay close to escape terrain, while feeding on lower gradient slopes. Berger (1991, p. 72) reported that when feeding on bajadas (compound alluvial fans) or away from escape terrain, ewes and lambs were more than three times more vulnerable to predation. Predators of Peninsular bighorn sheep include mountain lion, bobcat, and coyote (Hayes *et al.* 2000, p. 954; 66 FR 8650).

Metapopulation Structure

Within desert mountain ranges like the Peninsular Ranges, bighorn sheep habitat is patchy, and the population structure is naturally fragmented (Bleich *et al.* 1990, p. 384). This fragmentation has led to the application of a broad landscape approach to their population ecology, grouping geographically distinct herds into metapopulations, which are networks of interacting ewe groups or subpopulations (Schwartz *et al.* 1986, pp. 182–183; Bleich *et al.* 1990, p. 386). This approach considers long-term viability not of individual subpopulations, but rather of entire metapopulations; thus both genetic and demographic factors are considered. Decreasing population sizes can lead to decreasing levels of heterozygosity that may have negative demographic effects through inbreeding depression (Lande 1988, p. 1,456) and loss of adaptability. A small amount of genetic exchange among herds by movements of males can counteract inbreeding and associated increases in homozygosity that might otherwise develop within small, isolated populations (Schwartz *et al.* 1986, p. 185). Males have larger home ranges and have a much greater tendency than females to explore new areas, which they may do in search of females during the mating season. If geographic distances between female groups within metapopulations are not extreme (greater than 31 miles (mi) 50 kilometers (km) (Witham and Smith 1979, p. 24)), and no insurmountable barriers exist, movement by males occurs readily. If movement is precluded by human-constructed obstacles, populations will become isolated and the metapopulation structure dismantled.

A study of Peninsular bighorn sheep distribution and abundance by Rubin *et al.* (1998, p. 545) concluded that ewes exhibit a fragmented distribution within the Peninsular Ranges making up at least eight ewe groups or subpopulations. It is suggested that although the distribution of these ewe groups could be considered naturally fragmented, construction and use of roads through bighorn sheep habitat may have increased fragmentation within the Peninsular Ranges because ewes avoided crossing highways (Rubin *et al.* 1998, p. 547). Ewes show strong gregarious and philopatric behavior (faithful to natal home range), which limits their dispersal abilities (Boyce *et al.* 1999, p. 99; Service 2000, p. 10). Movement of ewes between ewe groups appears infrequent, but direct observation and aerial-telemetry locations and genetic analysis revealed ram movement between up to three ewe groups (Boyce *et al.* 1999, p. 99; Rubin *et al.* 1998, pp. 543–544). Substructuring also can occur within single herds (ewe groups) of bighorn sheep (Festa-Bianchet 1986, pp. 327–330; Andrew *et al.* 1997, pp. 74–75; Rubin *et al.* 1998, pp. 543–548). Such substructuring is defined by separate home range patterns. Although demonstrated more with females, it can occur in both sexes.

Another important long-term process in metapopulation dynamics is the balance between rates of natural extinction and colonization among subpopulations. Colonization rates must exceed extinction rates for a metapopulation to persist (Hanski and Gilpin 1991, pp. 8–9). In recent history this balance has not occurred for Peninsular bighorn sheep due to fragmentation, disease, predation, and low recruitment (Rubin *et al.* 1998, pp. 545–547; Rubin *et al.* 2002, p. 803–805). In addition to fragmentation, remaining subpopulations consist of small, isolated groups of bighorn sheep. Small groups are more vulnerable to extirpation due to random naturally occurring events, disease, or predation because of their small population size. Local extinction of small subpopulations can be prevented by occasional immigrants from neighboring subpopulations (rescue effect) (Brown and Kodric-Brown 1977, p. 445).

Because of the metapopulation structure of the Peninsular bighorn sheep population, it is important for genetic exchange and the conservation of the subspecies to ensure space for movement and connectivity between ewe groups. Furthermore, maintaining connectivity within the metapopulation will help safeguard against local extinctions of the remaining subpopulations.

Food

A wide range of forage resources and vegetation associations are required by Peninsular bighorn sheep to meet annual and drought-related variations in forage quality and availability (Hansen 1980, p. 76). Valley floors, rolling hills, and alluvial fans and washes with productive soils provide seasonal vegetation and water resources important to the Peninsular bighorn sheep. In a mountainous environment like the Peninsular Ranges, temperature and soil moisture vary widely with slope and elevation. This causes variation in plant growth throughout this subspecies' habitat on a seasonal basis. Peninsular bighorn sheep need to have access to the seasonal abundance of plant life at various elevations to maximize resources and survive in the desert environment. Berger (1991, p. 70) found that bighorn sheep adjusted their feeding ranges to exploit more nutritive portions of their home ranges, such as bajadas, early in the season when high protein grasses were emerging. Due to the high energetic costs of pregnancy and lactation, ewes are especially dependent on areas with nutritious forage to increase success of rearing offspring (Service 2000, p. 8). Berbach (1987, p. 97) reported that when ewes were confined to an enclosure and prevented from using all vegetation associations during late gestation and early lactation, they and their lambs died of malnutrition. During the reproductive season for Peninsular bighorn sheep, ewe foraging is typically concentrated on specific sites, such as alluvial fans, bajadas, and washes, where more productive, wetter soils support greater herbaceous growth than steeper, drier, rockier soils (Service 2000, p. 8). There is a tendency for plants that dry out during summer months on the mountain sides to remain green longer (and thus more nutritious, higher in protein, and more easily digested) because groundwater is generally closer to the surface and in greater quantity. Furthermore, the greater soil moisture supports a suite of nutritious plants that do not grow on the dry mountain sides. Therefore, washes and alluvial fans play an important role in allowing desert bighorn sheep to acquire quality forage during the heat of summer months and through times of drought.

In a study of Peninsular bighorn sheep, Scott (1986, p. 21) found that

diets were dominated by shrub species (64 to 76 percent), with grasses and forbs species making up a smaller portion of the diet (19 to 30 percent and 2 to 6 percent, respectively). In the following section, plant nomenclature has been updated to conform to treatments in Hickman (1993). Common names generally conform with those given in Hickman (1993) and/or Abrams *et al.* (1992–1960). Cited scientific names are retained in brackets for ease of reference. Foraging studies by Scott (1986, p. 21) and Cunningham (1982, p. 31) noted that Peninsular bighorn sheep preferentially feed on different plants seasonally. Shrubs such as *Ambrosia dumosa* (burro bush), *Caesalpinia virgata* [*Hoffmannseggia microphylla*] (small-leaved Hoffmannseggia), *Hyptis emoryi* (desert lavender), *Sphaeralcea* spp. (globemallow), and *Simmondsia chinensis* (joboba) are a primary food source year round; grasses such as *Aristida adscensionis* (sixweeks threeawn) and *Bromus rubens* (red brome) along with cacti *Opuntia* spp. (cholla) are a primary food source in the fall; forbs such as *Plantago* spp. (woolly plantain), *Plantago ovata* [*insularis*] var. *fastigiata* (woolly plantain), and *Ditaxis neomexicana* (common ditaxis) are a primary food source in the spring. However, Peninsular bighorn sheep are generalist foragers, and will browse on a wide variety of plant species depending on seasonal availability. Other plants reportedly consumed by Peninsular bighorn sheep include *Ephedra* spp. (Mormon tea), *Agave deserti* (desert agave), *Quercus* spp. (scrub oak), *Phoradendron californicum* (desert mistletoe), *Eriogonum fasciculatum* (California buckwheat), *Prunus fremontii* (desert apricot), *Acacia greggii* (catclaw), *Prosopis juliflora* (mesquite), *Krameria grayi* (ratany), and *Malosma laurina* (laurel-leaf sumac) (Browning and Monson 1980, p. 88).

Water

In the Peninsular Ranges, the presence of perennial water is known to be a limiting factor only during prolonged droughts or summers without significant thunderstorm activity (Service 2000, p. 156). Water sources are most valuable to bighorn sheep if they occur in proximity to escape terrain with good visibility (Service 2000, p. 9). However, bighorn sheep have been observed to travel at least 10 mi (16 km) from sources of perennial water. According to Service biologists familiar with the subspecies, bighorn sheep usually visit a water source every 2 to 3 days, but it is not unusual for them to drink more often. During the hot summer months, desert bighorn sheep typically stay close to reliable sources of water and drink large quantities of water at a time. It has been hypothesized that desert bighorn sheep can survive without a permanent water source, although this view is not widely accepted (Turner and Weaver 1980, p. 104). In desert ranges like the Peninsular Ranges, rainwater can collect in natural collection tanks and potholes in the rock and provide seasonal or perennial water sources. Natural springs also provide a reliable source of water for Peninsular bighorn sheep. Desert sheep also rely on consuming vegetation, including cacti, to meet water requirements when standing water sources are scarce (Turner and Weaver 1980, p. 102). Water is especially important to lactating ewes, as they need sufficient water to produce milk. Water sources contribute greatly to the Peninsular bighorn sheep's ability to survive the hot and dry summer months.

Primary Constituent Elements for the Peninsular Bighorn Sheep

Within the geographical area occupied by the Peninsular bighorn sheep at the time of listing, we must identify the PCEs that may require special management considerations or protection.

Based on the above needs and our current knowledge of the life history, biology, and ecology of the subspecies, we have determined that the Peninsular bighorn sheep's PCEs are:

(1) Moderate to steep, open slopes (20 to 60 percent) and canyons, with canopy cover of 30 percent or less (below 4,600 feet (1,402 meters) elevation in the Peninsular Ranges) that provide space for sheltering, predator detection, rearing of young, foraging and watering, mating, and movement within and between ewe groups.

(2) Presence of a variety of forage plants, indicated by the presence of shrubs (e.g., *Ambrosia* spp., *Caesalpinia* spp., *Hyptis* spp., *Sphaeralcea* spp., *Simmondsia* spp.), that provide a primary food source year round, grasses (e.g., *Aristida* spp., *Bromus* spp.) and cacti (e.g., *Opuntia* spp.) that provide a source of forage in the fall, and forbs (e.g., *Plantago* spp., *Ditaxis* spp.) that provide a source of forage in the spring.

(3) Steep, rugged, slopes (60 percent slope or greater) (below 4,600 feet (1,402 meters) elevation in the Peninsular Ranges) that provide secluded space for lambing as well as terrain for predator evasion.

(4) Alluvial fans, washes, and valley bottoms that provide important foraging areas where nutritious and digestible plants can be more readily found during times of drought and lactation and that provide and maintain habitat connectivity by serving as travel routes between and within ewe groups, adjacent mountain ranges, and important resources areas, such as foraging areas and escape terrain.

(5) Intermittent and permanent water sources that are available during extended dry periods and that provide relatively nutritious plants and drinking water.

This proposed revision to currently designated critical habitat for the Peninsular bighorn sheep is designed for the conservation of PCEs necessary to support the life history functions that are the basis for our proposal and the areas containing those PCEs.

We propose units for designation based on sufficient PCEs being present to support at least one of the subspecies' life history functions. For this subspecies, all of the units proposed contain all of the PCEs and support the multiple essential life history functions identified above.

Special Management Considerations or Protection

When designating critical habitat, we assess whether the occupied areas contain the features that are essential to the conservation of the subspecies and that may require special management considerations or protection. We have also considered how revising the current critical habitat designation for the Peninsular bighorn sheep highlights habitat that needs special management considerations or protection.

Peninsular bighorn sheep habitat and the PCEs upon which the sheep depends are threatened by the direct and indirect effects of: Development and expansion of urban areas; human disturbance related to recreation; construction of roadways and power lines; and mineral extraction and mining operations.

The development and expansion of urban and associated industrial areas threaten Peninsular bighorn sheep and their habitat through direct and indirect effects. Habitat loss (especially in canyon bottoms), degradation, and fragmentation associated with the proliferation of residential and commercial development, roads and highways, water projects, and vehicular and pedestrian recreational uses threaten the Peninsular bighorn sheep throughout its range (63 FR 13134; March 18, 1998). The cities that occur along the eastern boundary of proposed revised critical habitat, from the base of the San Jacinto and Santa Rosa Mountains to the Salton Sea area (Units

1 and 2A), continue to grow. Development adjacent to and within Peninsular bighorn sheep habitat affects the quality and quantity of lower elevation habitat and associated vegetation, alluvial fans, and water sources (PCEs 1, 2, 4, and 5). By 2000, at least 18,500 ac (7,490 ha) of suitable Peninsular bighorn sheep habitat had been lost to urbanization and agriculture along the urban interface between the cities of Palm Springs and La Quinta (Service 2000, p. 38). Much of the lost habitat consisted of low elevation alluvial fans and washes that provided important sources of nutrients to ewes when they are rearing their lambs (PCE 2 and 4) (66 FR 8650; February 1, 2001). Moreover, in the northern Santa Rosa Mountains, from 1991 to 1996, 34 percent of adult mortalities appear to have been directly caused by urbanization (66 FR 8650; February 1, 2001). Five Peninsular bighorn sheep were killed by cars; five died from feeding on toxic, nonnative ornamental plants; and one was strangled in a wire fence (DeForge and Ostermann 1997, p. 1).

Continued urban and commercial development within the range of Peninsular bighorn sheep could fragment the Peninsular bighorn sheep metapopulation into isolated groups too small to maintain long-term viability. Maintenance of genetic diversity allows small ewe groups like those in the Peninsular Ranges to persist. The inability of rams and occasional ewes to move between groups erodes the genetic fitness of isolated groups (PCE 1 and 4) (63 FR 13134; March 18, 1998). Special management considerations or protection may be needed to alleviate the effects of development on Peninsular bighorn sheep habitat, especially lower elevation habitat, alluvial fans, and areas of possible ewe group connectivity near urban areas. This protection could be accomplished by controlling the expansion of urban, industrial, and agricultural development into these areas.

In the Peninsular Ranges (Units 1, 2 and 3), increased activity and disturbance adjacent to, and within Peninsular bighorn sheep habitat are adversely affecting bighorn sheep by altering their normal behavior. This altered behavior can lead to abandonment of habitat and prevent use of preferred habitat, including lambing areas, water sources, and foraging areas, and cause negative physiological effects (PCE 1, 2, 3, 4, and 5) (66 FR 8650; 63 FR 13134). A variety of human activities, such as hiking, mountain biking, horseback riding, camping, hunting, livestock grazing, and use of aircraft and off-road vehicles, have the potential to disrupt normal bighorn sheep social behaviors. Special management considerations or protection may be needed to alleviate the effects of human activity and disturbance to Peninsular bighorn sheep. Restricting human use of trail systems and natural areas during lambing season and exclusionary fencing around urban areas may reduce human effects on Peninsular bighorn sheep behavior.

Roadways and power line structures occur in, and are proposed for construction within, Peninsular bighorn sheep habitat. Two major highways run through the Peninsular Ranges and fragment bighorn sheep habitat. In the northern portion of the Peninsular Ranges, State Route 74 runs through the Santa Rosa Mountains (Unit 2A). Further south, State Route 78 cuts through habitat between the San Ysidro Mountains and Pinyon Mountains (Unit 2B). These roadways have degraded habitat and have generally impeded the movement of Peninsular bighorn sheep (especially ewes) between ewe groups in the surrounding areas (PCE 1, 2, 3, 4, and 5) (Rubin *et al.* 1998, p. 547), which can erode the genetic fitness of isolated groups (63 FR 13134; March 18, 1998). However, some movement has been documented across State Route 74 (Service 2004, pp. 1–2). Epps *et al.* (2005, p. 1035) showed that nuclear genetic diversity of desert bighorn sheep populations was negatively correlated with the presence of human-made barriers (highways), which essentially eliminated dispersal. Furthermore, in some portions of their range, collisions with automobiles can be a significant cause of Peninsular bighorn sheep mortality (DeForge and Ostermann 1997, p. 1). The construction of power lines and associated structures may also degrade and fragment bighorn sheep habitat. Currently, a large power line (Sunrise Powerlink) is proposed for construction through Unit 2B along Highway 78. Special management considerations or protection may be needed to alleviate the effects of roadway and power line structures on Peninsular bighorn sheep and their habitat. Future construction of roadways and power lines should be avoided, and if unavoidable, should be constructed in a way that minimizes effects to habitat and allows for continued connectivity among ewe groups.

Mining operations occur within southern portions of the habitat used by Peninsular bighorn sheep. Mining activities and associated facilities threaten Peninsular bighorn sheep by causing the loss of vegetation structure required for foraging activities and destroying habitats used for escape, bedding, lambing, or connectivity between ranges (PCE 1, 2, 3, 4, and 5). Disturbance could modify the sheep's behavior or cause bighorn sheep to flee an area. Mining occurs within the habitat of Peninsular bighorn sheep in Units 2B and 3. Special management considerations or protection may be needed to alleviate the effects of mining operations on Peninsular bighorn sheep habitat. Further mining operations should avoid to the maximum extent possible, areas considered essential to Peninsular bighorn sheep conservation.

Criteria Used To Identify Critical Habitat

All proposed revised critical habitat units are within areas that we have determined were occupied at the time of listing, and that contain sufficient PCEs to support the life history functions essential for the conservation of the subspecies. Lands were proposed for designation based on sufficient PCEs being present to support the life processes.

We used the following data to delineate proposed revised critical habitat: (1) Areas known to be occupied at the time of listing (1998) and currently occupied; (2) areas within the ewe group distribution (subpopulations) boundaries identified by Rubin *et al.* (1998); (3) areas where occupancy data points indicate repeated Peninsular bighorn sheep use, but which were not captured within the ewe groups distribution boundaries identified by Rubin *et al.* (1998); and (4) areas that contain the PCEs required by the subspecies as determined from aerial imagery and GIS data on vegetation, elevation, and slope.

We also gathered information from our files, staff biologists, the California Department of Fish and Game, the Bighorn Institute, and Dr. Ester Rubin. Our proposed revision to critical habitat is designed to capture ewe groups; lambing areas; foraging areas, including alluvial fans; water sources; ram groups; and areas used for associated herd (male, female, and young) movements and migrations.

We delineated the proposed revised critical habitat boundaries using the following steps:

(1) As a first step in the delineation process, we mapped ewe group areas from Rubin *et al.* (1998) over GIS imagery of the Peninsular Ranges to delineate the distribution of ewe groups in the proposed revised critical habitat. We consider Rubin *et al.* (1998) to be the best available data on Peninsular bighorn sheep ewe group distribution.

Rubin *et al.* (1998) examined the population structure, distribution, and abundance of Peninsular bighorn sheep in California using observational data from radio-collared and uncollared male (ram) and female (ewe) sheep between 1971 and 1996. This is the only data we are aware of that identifies the distribution of ewe groups and subgroups within the Peninsular Ranges.

(2) To ensure that Rubin *et al.* (1998, pp. 539–561) still accurately represents the boundaries of the ewe groups and to capture possible ram movement, we compared the ewe group delineation from Rubin *et al.* (1998, pp. 539–561) with all occupancy data collected since the time of listing on GIS imagery maps. We then expanded the ewe group delineation to include areas where occupancy data points indicate repeated Peninsular bighorn sheep use and recent sheep movements (post Rubin *et al.* 1998, pp. 539–561), and areas that contain the PCEs for Peninsular bighorn sheep. In particular, we expanded the northernmost ewe group delineation (San Jacinto Mountains) to include the area north of Chino Canyon where (1) we have evidence of recent ewe and ram movements and (2) the Bighorn Institute has released, and continues to release, captive-born sheep to help recover this subspecies. We also expanded the southernmost ewe group delineation (Carizzo Canyon area) to the south to capture water sources (PCE 5), including habitat near the Interstate 8-State Route 98 split, where there are consistent, recent sightings of uncollared Peninsular bighorn sheep.

(3) We then examined all pre-listing occurrence data in our files to determine if our revised critical habitat missed any areas of historical repeated Peninsular bighorn sheep use. We identified an area of historical repeated use that was occupied at the time of listing between two ewe subgroups documented in Rubin *et al.* (1998, pp. 539–561) as (1) Santa Rosa Mountains east of State Route 74 (Martinez Canyon) and (2) Santa Rosa Mountains east of State Route 74 (south)). Use of this area is consistent with the Rubin *et al.* (1998, pp. 539–561) demographic study, which indicated possible connectivity between these subgroups through this area. This area is important in light of genetic findings by Boyce *et al.* (1999, pp. 99–106) that indicate ewe groups within these ranges maintain genetic connectivity, probably through male-mediated nuclear gene flow. Based on the importance of this area for connectivity between subgroups, we expanded the proposed revised critical habitat boundaries to include areas where occupancy data points indicate historically occupied habitat. Since the number of occurrence data points in historically occupied areas is relatively small, we delineated the unit boundaries in these areas to follow the boundaries of the PCEs, such as elevations below 4,600 ft (1,400 m), areas with 30 percent canopy cover or less, escape terrain, alluvial fans, washes, and water sources immediately adjacent to the identified ewe groups.

(4) As a final step in refining our delineation, we closely examined our revised units to ensure they capture all of the PCEs to support life history functions essential for the conservation of the subspecies. Where appropriate, we expanded the boundaries to capture the extent of an alluvial fan or water source (PCE 4 or 5, respectively). We also removed areas that we determined do not contain the PCEs or otherwise do not contain suitable Peninsular bighorn sheep habitat, such as areas above 4,600 ft (1,400 m) elevation (PCE 1), areas containing conifer woodland with canopy cover greater than 30 percent (PCE 1), and slopes less than 20 percent (PCE 1), unless those areas overlapped specifically with Rubin *et al.*'s (1998, pp. 539–561) ewe group distributions and had documented use by Peninsular bighorn sheep.

On May 22, 2007, Drs. Esther Rubin and Walter Boyce, in cooperation with Steve Torres and Chris Stermer of the California Department of Fish and Game, submitted a draft predictive habitat model for bighorn sheep in the Peninsular Ranges. We did not adopt this predictive habitat model to delineate critical habitat because the model was submitted in draft form, prior to final steps of model validation and peer review, and model development was based on just two years of Global Positioning System (GPS) data (Rubin 2007, p. 2); nevertheless, the model supports our proposed delineation. Areas we are designating roughly fall within the upper level habitat suitability classes derived from the preliminary model.

When determining the proposed revisions to critical habitat boundaries within this proposed rule, we made every effort to avoid including developed areas such as buildings, paved areas, and other structures that lack PCEs for the Peninsular bighorn sheep. The scale of the maps we prepared under the parameters for publication within the Code of Federal Regulations may not reflect the exclusion of such developed areas. Any such structures and the land under them inadvertently left inside critical habitat boundaries shown on the maps of this proposed revision to critical habitat have been excluded by text in the proposed rule and are not proposed for designation as revised critical habitat. Therefore, Federal actions limited to these areas would not trigger section 7 consultation, unless they may affect the subspecies or primary constituent elements in adjacent critical habitat.

Summary of Proposed Changes From Previously Designated Critical Habitat

The areas identified in this proposed rule constitute a proposed revision to the areas we designated as critical habitat for the Peninsular bighorn sheep on February 1, 2001 (66 FR 8650). The main differences include the following:

(1) The 2001 final rule used a generalized methodology for delineating critical habitat that resulted in the designation of one critical habitat unit for Peninsular bighorn sheep totaling 844,897 ac (341,919 ha) (66 FR 8650; February 1, 2001). This proposed revision is based on a more specific methodology that resulted in three critical habitat units including approximately 384,410 ac (155,564 ha) of land in Riverside, San Diego, and Imperial counties, California, a reduction of 460,487 ac (186,355 ha) from the 2001 final rule (66 FR 8650). The areas included in this proposed revised critical habitat are almost entirely within the boundaries of the existing (2001) critical habitat. There are approximately 72 ac (29 ha) of BLM land in Unit 3 that are outside the boundary of the 2001 critical habitat.

The reduction in total area from the 2001 final critical habitat designation is primarily the result of using a revised methodology to delineate critical habitat in this proposed revision. In our 2001 final critical habitat designation, we delineated critical habitat based on the methodology used in the Recovery Plan for Bighorn Sheep in the Peninsular Ranges, California (Service 2000).

In developing this proposed revision, we reexamined the methodology outlined in the 2000 recovery plan and the 2001 critical habitat designation, and updated that methodology based on the best available information to identify areas essential for the conservation of the subspecies (see ''Criteria Used To Identify Critical Habitat'' section). Since publication of the 2000 recovery plan and the 2001 critical habitat designation, more specific and up-to-date information has become available regarding habitat use by Peninsular bighorn sheep and areas containing the features essential to the conservation of this subspecies. New information indicates that many areas included in the 2001 critical habitat

designation do not support the features essential for the conservation of the Peninsular bighorn sheep and/or otherwise contain unsuitable habitat for the subspecies. For example, the 2001 final rule included high elevation (above 4,600 ft (1,402 m)), densely vegetated, and forested habitat that is inappropriate for sheep use in the San Jacinto, Santa Rosa, and Vallecito Mountains. The differences between the generalized methodology applied in the 2001 critical habitat designation and the methodology used in this proposed rule, including our reasons for revising the approach, are outlined below.

The recovery plan generally used two criteria, the presence of escape terrain and unobstructed view, as key habitat requirements when delineating the areas essential to Peninsular bighorn sheep with little consideration of the presence of the PCEs required by this subspecies. In this proposed revision, we have considered all five of the revised PCEs in delineating proposed revised critical habitat which results in a more precise determination of essential habitat (see ''Primary Constituent Elements for the Peninsular Bighorn Sheep'' and ''Criteria Used to Identify Critical Habitat'' sections).

Additionally, little consideration was given to occurrence data in the recovery plan methodology and specific ewe group distributions, resulting in expanses of critical habitat in the 2001 designation in which we have little to no occurrence records that would indicate sheep use those areas. For example, we have occupancy data dating back to 1940, yet extensive areas along the western and southern boundary of the 2001 designation contain little to no documented sheep use. In light of all the recent research efforts and occupancy data, we are not including those lands in this proposed revision as we have determined that those lands are not essential to the conservation of Peninsular bighorn sheep. Because a detailed vegetation map was not available at the time of the recovery plan, a team of biologists flew the entire western boundary in a helicopter and visually assessed vegetation associations (Service 2000, p. 159). The western boundary was determined by consensus and recorded by GPS from the helicopter position every ten seconds (Service 2000, p. 159). A 0.5 mi (0.8 km) buffer was added to this line to account for the advent of fire suppression (Service 2000, p. 160). In determining the western boundary of essential habitat in this proposed revision, we used vegetation maps that cover the entire range of the Peninsular bighorn sheep, along with detailed aerial photography, expert opinion, and sheep use data to delineate boundaries, which we have determined more precisely captures the areas essential to the subspecies.

Like our methodology for this proposed revision, the 2001 methodology used a minimum slope criterion of 20 percent to delineate essential habitat; however, a 0.5 mi (0.8 km) buffer was included around slopes of greater than or equal to 20 percent (Service 2000, p. 158). This proposed rule does not include a buffer zone area around habitat determined to be essential to the subspecies.

In summary, we consider the recent data and methodology used in this proposed revision to more accurately and specifically delineate the areas essential to the Peninsular bighorn sheep. The methods used in the 2000 recovery plan and the 2001 critical habitat designation resulted in a more inclusive delineation of essential habitat due to limited data. Application of the revised methodology, based on the best available information, identified 460,487 ac (186,355 ha) of previously designated critical habitat that is not essential to the subspecies, and therefore we are not including these areas in this proposed revision to the critical habitat designation.

(2) We re-evaluated and revised the PCEs in light of the Alameda whipsnake court case (*Homebuilder's Ass'n of Northern Cal.* v. *U.S. Fish and Wildlife Service*, 268 F. Supp.2d 1197 (E.D. Cal. 2003)) and other relevant case law, and followed current Service guidelines and policies. The PCEs differ from those in the existing critical habitat rule in that they are reorganized into five separate PCEs for clarity. Furthermore, we have added specific information on elevational range, plant species used for foraging, and range of slopes required by the subspecies. This additional specificity was gained by evaluating the recovery plan and examining all recent sheep data, including data from radio collars and GPS collars providing precision to the identification of habitats used and preferred by Peninsular bighorn sheep. Applying the more precise PCEs to the mountain ranges inhabited by Peninsular bighorn sheep allowed us to fine tune the proposed revision to those areas containing preferred habitat for sheep use, and removing those areas unlikely to be used by Peninsular bighorn sheep.

(3) Approximately 29,924 ac (12,110 ha) of designated critical habitat were vacated in the July 31, 2006, consent decree. A portion of those acres are now within proposed revised critical habitat. Of the 13,213 ac (5,347 ha) of vacated Agua Caliente Band of Cahuilla Indians Tribal lands, approximately 4,512 ac (1,826 ha) are now included in this proposal. However, we are proposing to exclude all Tribal lands from the final designation. Approximately 16,691 ac (6,756 ha) of mining lands at Ocotillo Mineral Material Sites and Fish Canyon Quarry property were vacated. In this proposed revision to critical habitat we are including roughly 50 percent of those vacated lands; specifically, we are including lands along the northernmost portion of the Ocotillo Mineral Material Sites property and the middle to southern portion of the Fish Canyon Quarry property. Both of these mining properties contain actively mined lands, but also contain areas in which we have recent documented use by Peninsular bighorn sheep and areas that meet the criteria used to identify critical habitat as described above. The Desert Riders lands vacated in the consent decree (approximately 20 ac (8 ha)) are not included in this proposed revision.

Our 2001 final critical habitat rule included the statement that ''* * *; we are not aware of any information suggesting that particular areas within designated critical habitat are currently unsuitable or unused over the generational timeframe needed for the long-term conservation of bighorn sheep in the Peninsular Ranges'' (66 FR 8655). However, we have reconsidered the information that was available to us at the time of the 2001 designation in light of all the information currently available to us, and we have determined that the methodology used in this proposed revision, which utilized the best available information, provides a more accurate and specific delineation of the areas essential to the Peninsular bighorn sheep, than that relied upon in the 2001 critical habitat designation.

Proposed Revisions to the Critical Habitat Designation

We are proposing four units as critical habitat for the Peninsular bighorn sheep. These units, which are almost entirely within the area included in the 2001 designation, if finalized, would replace the current critical habitat designation for the Peninsular bighorn sheep at 50 CFR 17.95(a). The critical habitat areas we describe below constitute our current best assessment of areas that meet the definition of critical habitat for the Peninsular bighorn sheep. Table 1 shows the occupancy status of each unit being proposed as revised critical habitat.

TABLE 1.—OCCUPANCY STATUS OF CRITICAL HABITAT UNITS PROPOSED FOR THE PENINSULAR BIGHORN SHEEP

Unit	Occupied at time of listing?	Currently occupied?	Size of proposed revised critical habitat unit in acres (Hectares)
1. San Jacinto Mts.	Yes	Yes	15,273 (6,180 ha).
2A. N. Santa Rosa Mts.	Yes	Yes	74,998 ac (30,350 ha).
2B. S. Santa Rosa Mts. south to Vallecito Mts..	Yes	Yes	226,211 ac (91,545 ha).
3. Carrizo Canyon	Yes	Yes	67,928 ac (27,489 ha).
Total			384,410 ac (155,564 ha).

The four areas we propose as revised critical habitat are: (1) Unit 1—San Jacinto Mountains, (2) Unit 2A—North Santa Rosa Mountains, (3) Unit 2B—South Santa Rosa Mountains south to Vallecito Mountains, and (4) Unit 3—Carrizo Canyon.

The approximate area of each proposed revised critical habitat unit is shown in Table 2.

TABLE 2.—PROPOSED REVISED CRITICAL HABITAT UNITS FOR THE PENINSULAR BIGHORN SHEEP WITH LAND OWNERSHIP

[Area estimates reflect all land within proposed critical habitat unit boundaries]

Critical habitat unit	Land ownership by type	Size of proposed revised critical habitat unit in acres (Hectares)
1. San Jacinto Mts.	Tribal [1]	4,512 ac (1,826 ha).
	BLM [2]	3,757 ac (1,520 ha).
	USFS [3]	1,266 ac (512 ha).
	Private	5,738 ac (2,322 ha).
	Subtotal	15,273 ac (6,180 ha).
2A. N. Santa Rosa Mts.	BLM	44,669 ac (18,077 ha).
	State [4]	16,856 ac (6,821 ha).
	Private	13,473 ac (5,452 ha).
	Subtotal	74,998 ac (30,350 ha).
2B. S. Santa Rosa Mts. south to Vallecito Mts.	BLM	16,266 ac (6,583 ha).
	State [5]	197,509 ac (79,929 ha).
	Private	12,436 ac (5,033 ha).
	Subtotal	226,211 ac (91,545 ha).
3. Carrizo Canyon	BLM	27,762 ac (11,235 ha).
	State [6]	35,475 ac (14,356 ha).
	Private	4,177 ac (1,690 ha).
	Local [7]	514 ac (208 ha).
	Subtotal	67,928 ac (27,489 ha).
Total		384,410 ac (155,564 ha).

1—Tribal = Agua Caliente Band of Cahuilla Indians Reservation and Tribal Lands
2—BLM = Bureau of Land Management
3—USFS = United States Forest Service
4—State = California Department of Fish and Game (CDFG) and California State Lands Commission (CSLC)
5—State = CDFG, CSLC, and California Department of Parks and Recreation (CDPR)
6—State = CDPR
7—Local = City/County Park

We present brief descriptions of all units and reasons why they meet the definition of critical habitat for the Peninsular bighorn sheep below.

Unit 1: San Jacinto Mountains

Unit 1 consists of approximately 15,273 ac (6,180 ha) in the San Jacinto Mountains, Riverside County. Unit 1 is generally located within an area bounded on the east by the city of Palm Springs; bounded on the north by Windy Point and Snow Canyon; and that extends south to the northern Palm Canyon area. Land ownership within the unit includes approximately 4,512 ac (1,826 ha) of Agua Caliente Band of Cahuilla Indians Tribal land; 3,757 ac (1,520 ha) of BLM land; 1,266 ac (512 ha) of USFS land; and 5,738 ac (2,322 ha) of private land (Table 2).

Unit 1 begins at a low elevation of about 450 ft (137 m) on the eastern slope and rises to about 4,600 ft (1,400 m) to the west. It is the northernmost unit proposed as revised critical habitat for the Peninsular bighorn sheep. This unit was occupied at the time of listing and is currently occupied (Table 1). Habitat in this unit contains features that are essential to the conservation of the Peninsular bighorn sheep including a

range of vegetation types (PCE 2), foraging and watering areas including alluvial fans (PCE 4 and 5), and steep to very steep, rocky terrain with elevations and slopes that provide for sheltering, lambing, mating, movement among and between ewe groups (PCE 1), and predator evasion (PCE 3).

The PCEs in Unit 1 may require special management considerations or protection to ameliorate the threats of urban and industrial development, particularly in lower elevation areas, and to decrease the direct and indirect effects of human disturbance to the Peninsular bighorn sheep and its habitat, due to the proximity of this unit to the Palms Springs area. Please see the ''Special Management Considerations or Protection'' section of this proposed rule for a detailed discussion of the threats to Peninsular bighorn sheep habitat and potential management considerations.

This unit includes approximately 4,512 ac (1,826 ha) of Agua Caliente Band of Cahuilla Indians (Tribe) tribal lands supporting essential Peninsular bighorn sheep habitat. We are proposing to exclude these lands from the final designation. The designation of critical habitat would be expected to adversely impact our working relationship with the Tribe and we believe that Federal regulation through critical habitat designation would be viewed as an unwarranted and unwanted intrusion into tribal natural resource programs. Furthermore, these approximately 4,512 ac (1,826 ha) of Tribal land are currently managed by the Tribe in a manner that provides some conservation benefits to the Peninsular bighorn sheep, and are also within the plan area of the draft Agua Caliente Band of Cahuilla Indians Tribal Habitat Conservation Plan (Tribal HCP) (see ''Proposed Exclusion of Agua Caliente Band of Cahuilla Indians Tribal Lands Under Section 4(b)(2) of the Act'' for a detailed discussion).

This unit also includes lands within the plan area for the draft Coachella Valley Multiple Species Habitat Conservation Plan (MSHCP). We are considering the possible exclusion of approximately 5,738 ac (2,322 ha) of private land from the final critical habitat designation based on benefits provided to the Peninsular bighorn sheep and its PCEs by the MSCHP, which is in draft form and under review by the Service (see ''Lands Covered by Management Plans '' Exclusions Under Section 4(b)(2) of the Act'' for a detailed discussion).

Unit 2A: North Santa Rosa Mountains

Unit 2A consists of approximately 74,998 ac (30,350 ha) in the northern Santa Rosa Mountains, Riverside County. Unit 2A is generally located on the east-facing slopes of the northern Santa Rosa Mountains, is loosely bounded on the east by communities of the northern Coachella Valley, and extends from the Rancho Mirage area in the north to Martinez Canyon in the south. Land ownership within the unit includes approximately 44,669 ac (18,077 ha) of BLM land; 16,856 ac (6,821 ha) of land owned by the State of California; and 13,473 ac (5,452 ha) of private land (Table 2).

Unit 2A begins at a low elevation of about 50 ft (15 m) on the eastern slope and rises to about 4,600 ft (1,400 m) to the west. This unit was occupied at the time of listing and is currently occupied (Table 1). Habitat in this unit contains features that are essential to the conservation of the Peninsular bighorn sheep including a range of vegetation types (PCE 2), foraging and watering areas including alluvial fans (PCE 4 and 5), and steep to very steep, rocky terrain with elevations and slopes that provide for sheltering, lambing, mating, movement among and between ewe groups (PCE 1), and predator evasion (PCE 3).

The PCEs in Unit 2A may require special management considerations or protection to ameliorate the threats of urban, industrial, and agricultural development, and to decrease the direct and indirect effects of human disturbance to Peninsular bighorn sheep and its habitat, due to the proximity of this unit to the highly developed northern Coachella Valley. Additionally, the PCEs in this unit may require special management considerations or protection to alleviate threats to Peninsular bighorn sheep and its habitat associated with roadways; State Route 74 cuts through the midsection of this unit and may impede movement between ewe groups. Please see the ''Special Management Considerations or Protection'' section of this proposed rule for a detailed discussion of the threats to Peninsular bighorn sheep habitat and potential management considerations.

This unit includes lands that are within the plan area for the draft Coachella Valley Multiple Species Habitat Conservation Plan (MSHCP). We are considering the possible exclusion of approximately 13,473 ac (5,452 ha) of private land in Unit 2A from the final critical habitat designation based on benefits provided to the Peninsular bighorn sheep habitat under this plan, which is in draft form and under review by the Service (see ''Areas Considered for Exclusion Under Section 4(b)(2) of the Act'' for a detailed discussion).

Unit 2B: South Santa Rosa Mountains south to Vallecito Mountains

Unit 2B consists of approximately 226,211 ac (91,545 ha) in the southern Santa Rosa Mountains, Coyote Canyon, San Ysidro Mountains, Pinyon Mountains, and Vallecito Mountains, in Riverside, San Diego, and Imperial counties. Unit 2B is generally located on the east-facing slopes of the above ranges; it is loosely bounded on the east by the Coachella Valley floor and extends from the southern Santa Rosa Mountains in the north to the Fish Creek Mountains in the south. Land ownership within the unit includes approximately 16,266 ac (6,583 ha) of BLM land; 197,509 ac (79,929 ha) of land owned by the State of California; and 12,436 ac (5,033 ha) of private land (Table 2). Portions of the Anza-Borrego Desert State Park occur within this unit.

Unit 2B begins at a low elevation of about 150 ft (45 m) on the eastern slope and rises to about 4,600 ft (1,400 m) to the west. This unit was occupied at the time of listing and is currently occupied (Table 1). Habitat in this unit contains features that are essential to the conservation of the Peninsular bighorn sheep including a range of vegetation types (PCE 2), foraging and watering areas including alluvial fans (PCE 4 and 5), and steep to very steep, rocky terrain with elevations and slopes that provide for sheltering, lambing, mating, movement among and between ewe groups (PCE 1), and predator evasion (PCE 3).

The PCEs in Unit 2B may require special management considerations or protection to ameliorate the threats of urban, industrial, and agricultural development due to the proximity of this unit to the Coachella Valley, especially the lower elevation areas in the northeastern portions of this unit. Additionally, the PCEs in this unit may require special management considerations or protection to decrease the direct and indirect effects of human disturbance to Peninsular bighorn sheep and its habitat due to recreational activity. Most of this unit includes lands within Anza-Borrego Desert State Park, which is open to recreation activities. Furthermore, the PCEs in this unit may require special management considerations or protection to alleviate threats to Peninsular bighorn sheep and its habitat associated with State Route 78, which cuts through the southern portion of this unit and may impede movement between ewe groups, and mining operations at Fish Canyon Quarry. Please see the ''Special Management Considerations or Protection'' section of this proposed rule

for a detailed discussion of the threats to Peninsular bighorn sheep habitat and potential management considerations.

Unit 3: Carrizo Canyon

Unit 3 consists of approximately 67,928 ac (27,489 ha) in the Carrizo Canyon area, in San Diego and Imperial counties. Unit 3 is generally located in Carrizo Canyon and the surrounding In-Ko-Pah Mountains, Jacumba Mountains, Coyote Mountains, and Tierra Blanca Mountains; it is loosely bounded on the north, east, and west by the Coachella Valley floor. Land ownership within the unit includes approximately 27,762 ac (11,235 ha) of BLM land; 35,475 ac (14,356 ha) of land owned by the State of California; 4,177 ac (1,690 ha) of private land; and 514 ac (208 ha) of local park land (Table 2). Portions of the Anza-Borrego Desert State Park occur within this unit.

Unit 3 begins at a low elevation of about 400 ft (122 m) on the eastern slope and rises to about 4,600 ft (1,400 m) to the west. This unit was occupied at the time of listing and is currently occupied (Table 1). Habitat in this unit contains features that are essential to the conservation of the Peninsular bighorn sheep including a range of vegetation types (PCE 2), foraging and watering areas including alluvial fans (PCE 4 and 5), and steep to very steep, rocky terrain with elevations and slopes that provide for sheltering, lambing, mating, movement among and between ewe groups (PCE 1), and predator evasion (PCE 3).

The PCEs in Unit 3 may require special management considerations or protection to decrease the direct and indirect effects of human disturbance due to recreational activity to Peninsular bighorn sheep and its habitat. Most of this unit occurs within the Anza-Borrego Desert State Park, which is open to recreation activities. The PCEs in Unit 3 may also require special management considerations or protection to protect Peninsular bighorn sheep habitat from mining operations at Ocotillo Mineral Material Site. Please see the ''Special Management Considerations or Protection'' section of this proposed rule for a detailed discussion of the threats to Peninsular bighorn sheep habitat and potential management considerations.

Table 3 provides approximate areas (ac, ha) of lands that meet the definition of critical habitat but that we are proposing to exclude from the final revised critical habitat designation. Table 3 also provides reasons for the proposed exclusions.

TABLE 3.—PROPOSED EXCLUSIONS BY CRITICAL HABITAT UNIT

Unit	Statutory	Reason for proposal exclusion	Area meeting the definition of critical habitat in acres (Hectares)	Area proposed for exclusion in acres (Hectares)
1. San Jacinto Mts.	4(b)(2)	Government-to-Government Relationship [1]	4,512 ac (1,826 ha)	4,512 ac (1,826 ha).
Total				4,512 ac (1,826 ha).

[1] Government-to-Government Relationship = Secretarial Order 3206, '' American Indian Tribal Rights, Federal Tribal Trust Responsibilities, and the Endangered Species Act'' (June 5, 1997); the President's memorandum of April 29, 1994, '' Government-to-Government Relations with Native American Tribal Governments'' (59 FR 22951); Executive Order 13175; and the relevantprovision of the Departmental Manual of the Department of the Interior (512 DM 2).

Effects of Critical Habitat Designation

Section 7 Consultation

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to ensure that actions they fund, authorize, or carry out are not likely to destroy or adversely modify critical habitat. Decisions by the 5th and 9th Circuit Court of Appeals have invalidated our definition of ''destruction or adverse modification'' (50 CFR 402.02) (see *Gifford Pinchot Task Force* v. *U.S. Fish and Wildlife Service,* 378 F. 3d 1059 (9th Cir. 2004) and *Sierra Club* v. *U.S. Fish and Wildlife Service et al.*, 245 F.3d 434, 442 (5th Cir. 2001)), and we do not rely on this regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat. Under the statutory provisions of the Act, we determine destruction or adverse modification on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would remain functional (or retain the current ability for the PCEs to be functionally established) to serve its intended conservation role for the species.

Section 7(a)(4) of the Act requires Federal agencies to confer with us on any action that is likely to jeopardize the continued existence of a species proposed for listing or result in destruction or adverse modification of proposed critical habitat. This is a procedural requirement only, as any conservation recommendations in a conference report or opinion are strictly advisory. However, once a species proposed for listing becomes listed, or proposed critical habitat is designated as final, the full prohibitions of section 7(a)(2) apply to any discretionary Federal action.

The primary utility of the conference procedures is to allow a Federal agency to maximize its opportunity to adequately consider species proposed for listing and proposed critical habitat and to avoid potential delays in implementing their proposed action because of the section 7(a)(2) compliance process, if we list those species or designate critical habitat. We may conduct conferences either informally or formally. We typically use informal conferences as a means of providing advisory conservation recommendations to assist the agency in eliminating conflicts that the proposed action may cause. We typically use formal conferences when we or the Federal agency believes the proposed action is likely to jeopardize the continued existence of the species proposed for listing or adversely modify proposed critical habitat.

We generally provide the results of an informal conference in a conference report, while we provide the results of a formal conference in a conference opinion. We typically prepare conference opinions on proposed species or critical habitat in accordance with procedures contained at 50 CFR 402.14, as if the proposed species were already listed or the proposed critical habitat was already designated. We may adopt the conference opinion as the biological opinion when the species is listed or the critical habitat is designated, if no substantial new information or changes in the action alter the content of the opinion (see 50 CFR 402.10(d)).

If a species is listed or critical habitat is designated, section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. As a result of this consultation, we document compliance with the requirements of section 7(a)(2) through our issuance of:

(1) A concurrence letter for Federal actions that may affect, but are not likely to adversely affect, listed species or critical habitat; or

(2) A biological opinion for Federal actions that may affect, and are likely to adversely affect, listed species or critical habitat.

When we issue a biological opinion concluding that a project is likely to jeopardize the continued existence of a listed species or destroy or adversely modify critical habitat, we also provide reasonable and prudent alternatives to the project, if any are identifiable. We define ''Reasonable and prudent alternatives'' at 50 CFR 402.02 as alternative actions identified during consultation that:

- Can be implemented in a manner consistent with the intended purpose of the action,
- Can be implemented consistent with the scope of the Federal agency's legal authority and jurisdiction,
- Are economically and technologically feasible, and
- Would, in the Director's opinion, avoid jeopardizing the continued existence of the listed species or destroying or adversely modifying critical habitat.

Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate consultation on previously reviewed actions in instances where we have listed a new species or subsequently designated critical habitat that may be affected and the Federal agency has retained discretionary involvement or control over the action (or the agency's discretionary involvement or control is authorized by law). Consequently, Federal agencies may sometimes need to request reinitiation of consultation with us on actions for which formal consultation has been completed, if those actions with discretionary involvement or control may affect subsequently listed species or designated critical habitat.

Federal activities that may affect the Peninsular bighorn sheep or its designated critical habitat require section 7(a)(2) consultation under the Act. Activities on State, Tribal, local, or private lands requiring a Federal permit (such as a permit from the U.S. Army Corps of Engineers under section 404 of the Clean Water Act (33 U.S.C. 1251 *et seq.*) or a permit from us under section 10 of the Act) or involving some other Federal action (such as funding from the Federal Highway Administration, Federal Aviation Administration, or the Federal Emergency Management Agency) are subject to the section 7(a)(2) consultation process. Federal actions not affecting listed species or critical habitat, and actions on State, Tribal, local, or private lands that are not federally funded, authorized, or permitted, do not require section 7(a)(2) consultations.

Application of the ''Adverse Modification'' Standard

The key factor related to the adverse modification determination is whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation role for the species, or would retain its current ability for the primary constituent elements to be functionally established. Activities that may destroy or adversely modify critical habitat are those that alter the PCEs to an extent that appreciably reduces the conservation value of critical habitat for the Peninsular bighorn sheep. Generally, the conservation role of the Peninsular bighorn sheep critical habitat units is to support viable core area populations.

Section 4(b)(8) of the Act requires us to briefly evaluate and describe, in any proposed or final regulation that designates critical habitat, activities involving a Federal action that may destroy or adversely modify such habitat, or that may be affected by such designation.

Activities that, when carried out, funded, or authorized by a Federal agency, may affect critical habitat and therefore should result in consultation for the Peninsular bighorn sheep include, but are not limited to:

(1) Actions that would significantly reduce ongoing management and conservation efforts that benefit the Peninsular bighorn sheep on public lands. Such activities could include, but are not limited to, the sale, exchange, or lease of lands managed by BLM or other Federal agencies, and the State of California. These activities could reduce the amount of space that is available for individual and population growth and normal behavior, as well as reduce or eliminate the number and extent of sites for foraging, watering, breeding, reproduction, and rearing of offspring. These activities could also reduce the opportunities available to Federal agencies to exercise their section 7(a)(1) responsibilities to carry out programs to conserve listed species.

(2) Actions that would significantly reduce the availability of or accessibility to seasonal ranges. Such activities could include, but are not limited to, grazing, mining, and power line and road construction activities. These activities could degrade, reduce, fragment, or eliminate available foraging resources or alter current foraging activities of Peninsular bighorn sheep.

(3) Actions that would result in the significant expansion of dense vegetation communities within Peninsular bighorn sheep habitat. Such activities could include, but are not limited to, fire suppression. These activities could allow expansion of vegetation cover such that movement patterns of bighorn sheep are altered by avoidance of these areas. Tall, dense vegetation decreases visibility for bighorn sheep and provides cover for predators such as the mountain lion, a common predator of Peninsular bighorn sheep.

(4) Actions that would create significant barriers to movement. Such activities could include, but are not limited to, road construction, residential development, and resort or campground facility development or expansion. These activities could interfere with movement within and between habitats, thereby reducing the availability of habitat for foraging, watering, breeding, reproduction, sheltering, and rearing of offspring. These activities could also reduce opportunities for movement between existing populations, dispersal, and genetic interchange between ewe groups.

(5) Actions that would significantly degrade habitat or cause a disturbance to Peninsular bighorn sheep. Such activities could include, but are not limited to, recreational activities, such as off-road vehicle use, hiking, camping, rock climbing, horseback riding, and outfitter guided activities. These activities could displace animals from foraging areas, water sources, and escape terrain, and could impact the quality and quantity of forage.

Exemptions and Exclusions

Application of Section 4(b)(2) of the Act

Section 4(b)(2) of the Act states that the Secretary must designate and revise critical habitat on the basis of the best available scientific data after taking into consideration the economic impact, impact on national security, and any other relevant impact of specifying any particular area as critical habitat. The Secretary may exclude an area from critical habitat if he determines that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, unless he determines, based on the best scientific data available, that the failure to designate such area as critical habitat will result in the extinction of the species. In making that determination, the legislative history is clear that the Secretary has broad discretion regarding which factor(s) to use and how much weight to give to any factor.

Under section 4(b)(2) of the Act, in considering whether to exclude a particular area from the designation, we must identify the benefits of including the area in the designation, identify the benefits of excluding the area from the designation, and determine whether the benefits of exclusion outweigh the benefits of inclusion. If we consider an exclusion we must determine whether excluding the area would result in the extinction of the species.

In the following sections, we address a number of general issues that are relevant to the exclusions we are considering. In addition, we are conducting an economic analysis of the impacts of the proposed critical habitat designation, which will be available for public review and comment when it is complete. Based on public comment on that document, the proposed designation itself, and the information in the final economic analysis, the Secretary may exclude from critical habitat additional areas beyond those identified in this assessment under the provisions of section 4(b)(2) of the Act. This is also addressed in our implementing regulations at 50 CFR 424.19.

Benefits of Designating Critical Habitat

The process of designating critical habitat as described in the Act requires that the Service identify those lands on which are found the physical or biological features essential to the conservation of the species that may require special management considerations or protection, and those areas outside the geographical area occupied by the species at the time of listing that are essential to the conservation of the species. In identifying those lands, the Service must consider the recovery needs of the species, such that, on the basis of the best scientific and commercial data available at the time of designation, the habitat that is identified, if managed, could provide for the survival and recovery of the species.

The identification of those areas that are essential for the conservation of the species and can, if managed, provide for the recovery of a species is beneficial. The process of proposing and finalizing a critical habitat rule provides the Service with the opportunity to determine the features or PCEs essential for conservation of the species within the geographical area occupied by the species at the time of listing, as well as to determine other areas essential to the conservation of the species. The designation process includes peer review and public comment on the identified features and areas. This process is valuable to land owners and managers in developing conservation management plans for identified areas, as well as any other occupied habitat or suitable habitat that may not have been included in the Service's determination of essential habitat.

The consultation provisions under section 7(a) of the Act constitute the regulatory benefits of critical habitat. As discussed above, Federal agencies must consult with us on actions that may affect critical habitat and must avoid destroying or adversely modifying critical habitat. Federal agencies must also consult with us on actions that may affect a listed species and refrain from undertaking actions that are likely to jeopardize the continued existence of such species. The analysis of effects to critical habitat is a separate and different analysis from that of the effects to the species. Therefore, the difference in outcomes of these two analyses represents the regulatory benefit of critical habitat. For some species, and in some locations, the outcome of these analyses will be similar, because effects on habitat will often result in effects on the species. However, the regulatory standard is different: the jeopardy analysis looks at the action's impact on survival and recovery of the species, while the adverse modification analysis looks at the action's effects on the designated habitat's contribution to the species' conservation. This will, in many instances, lead to different results and different regulatory requirements.

For 30 years prior to the Ninth Circuit's decision in *Gifford Pinchot*, consistent with the 1986 regulations, we essentially combined the jeopardy standard with the standard for destruction or adverse modification of critical habitat when evaluating Federal actions that affected currently occupied critical habitat. However, the court of appeals ruled that the two standards are distinct and that adverse modification evaluations require consideration of impacts on species recovery. Thus, critical habitat designations may provide greater regulatory benefits to the recovery of a species than would listing alone.

There are two limitations to the regulatory effect of critical habitat. First, a section 7(a)(2) consultation is required only where there is a Federal nexus (an action authorized, funded, or carried out by any Federal agency)—if there is no Federal nexus, the critical habitat designation of private lands itself does not restrict any actions that destroy or adversely modify critical habitat. Second, the designation only limits destruction or adverse modification. By its nature, the prohibition on adverse modification is designed to ensure that the conservation role and function of those areas that contain the physical and biological features essential to the conservation of the species or of unoccupied areas that are essential to the conservation of the species is not appreciably reduced. Critical habitat designation alone, however, does not require property owners to undertake specific steps toward recovery of the species.

Once an agency determines that consultation under section 7(a)(2) of the Act is necessary, the process may conclude informally when we concur in writing that the proposed Federal action is not likely to adversely affect critical habitat. However, if we determine through informal consultation that adverse impacts are likely to occur, then we would initiate formal consultation, which would conclude when we issue a biological opinion on whether the proposed Federal action is likely to result in destruction or adverse modification of critical habitat.

For critical habitat, a biological opinion that concludes in a determination of no destruction or adverse modification may contain discretionary conservation recommendations to minimize adverse effects to primary constituent elements, but it would not suggest the implementation of any reasonable and prudent alternative. We suggest reasonable and prudent alternatives to the proposed Federal action only when our biological opinion results in an adverse modification conclusion.

As stated above, the designation of critical habitat does not require that any management or recovery actions take

place on the lands included in the designation. Even in cases where consultation has been initiated under section 7(a)(2) of the Act, the end result of consultation is to avoid jeopardy to the species and/or adverse modification of its critical habitat, but not specifically to manage remaining lands or institute recovery actions on remaining lands. Conversely, voluntary conservation efforts implemented through management plans institute proactive actions over the lands they encompass and are put in place to remove or reduce known threats to a species or its habitat; therefore, implementing recovery actions. We believe that in many instances the benefit to a species and/or its habitat realized through the designation of critical habitat is low when compared to the conservation benefit that can be achieved through voluntary conservation efforts or management plans. The conservation achieved through implementing HCPs or other habitat management plans can be greater than what we achieve through multiple site-by-site, project-by-project, section 7(a)(2) consultations involving consideration of critical habitat. Management plans may commit resources to implement long-term management and protection to particular habitat for at least one and possibly additional listed or sensitive species. Section 7(a)(2) consultations commit Federal agencies to preventing adverse modification of critical habitat caused by the particular project only, and not to providing conservation or long-term benefits to areas not affected by the proposed project. Thus, implementation of any HCP or management plan that considers enhancement or recovery as the management standard may often provide as much or more benefit than a consultation for critical habitat designation.

Another benefit of including lands in critical habitat is that designation of critical habitat serves to educate landowners, State and local governments, and the public regarding the potential conservation value of an area. This helps focus and promote conservation efforts by other parties by clearly delineating areas of high conservation value for the Peninsular bighorn sheep. In general, critical habitat designation always has educational benefits; however, in some cases, they may be redundant with other educational effects. For example, HCPs have significant public input and may largely duplicate the educational benefits of a critical habitat designation. Including lands in critical habitat also would inform State agencies and local governments about areas that could be conserved under State laws or local ordinances.

Conservation Partnerships on Non-Federal Lands

Most federally listed species in the United States will not recover without cooperation of non-Federal landowners. More than 60 percent of the United States is privately owned (National Wilderness Institute 1995, p. 2), and at least 80 percent of endangered or threatened species occur either partially or solely on private lands (Crouse *et al.* 2002, p. 720). Stein *et al.* (1995, p. 400) found that only about 12 percent of listed species were found almost exclusively on Federal lands (90 to 100 percent of their known occurrences restricted to Federal lands) and that 50 percent of federally listed species are not known to occur on Federal lands at all.

Given the distribution of listed species with respect to land ownership, conservation of listed species in many parts of the United States is dependent upon working partnerships with a wide variety of entities and the voluntary cooperation of many non-Federal landowners (Wilcove and Chen 1998, p. 1407; Crouse *et al.* 2002, p. 720; James 2002, p. 271). Building partnerships and promoting voluntary cooperation of landowners are essential to our understanding the status of species on non-Federal lands, and necessary for us to implement recovery actions such as reintroducing listed species and restoring and protecting habitat.

Many non-Federal landowners derive satisfaction from contributing to endangered species recovery. We promote these private-sector efforts through the Department of the Interior's Cooperative Conservation philosophy. Conservation agreements with non-Federal landowners (HCPs, safe harbor agreements, other conservation agreements, easements, and State and local regulations) enhance species conservation by extending species protections beyond those available through section 7 consultations. In the past decade, we have encouraged non-Federal landowners to enter into conservation agreements, based on the view that we can achieve greater species conservation on non-Federal land through such partnerships than we can through regulatory methods (61 FR 63854; December 2, 1996).

Many private landowners, however, are wary of the possible consequences of attracting endangered species to their property. Mounting evidence suggests that some regulatory actions by the Federal Government, while well-intentioned and required by law, can (under certain circumstances) have unintended negative consequences for the conservation of species on private lands (Wilcove *et al.* 1996, pp. 5–6; Bean 2002, pp. 2–3; Conner and Mathews 2002, pp. 1–2; James 2002, pp. 270–271; Koch 2002, pp. 2–3; Brook *et al.* 2003, pp. 1639–1643). Many landowners fear a decline in their property value due to real or perceived restrictions on land-use options where threatened or endangered species are found. Consequently, harboring endangered species is viewed by many landowners as a liability. This perception results in anti-conservation incentives because maintaining habitats that harbor endangered species represents a risk to future economic opportunities (Main *et al.* 1999, pp. 1264–1265; Brook *et al.* 2003, pp. 1644–1648).

According to some researchers, the designation of critical habitat on private lands significantly reduces the likelihood that landowners will support and carry out conservation actions (Main *et al.* 1999, p. 1263; Bean 2002, p. 2; Brook *et al.* 2003, pp. 1644–1648). The magnitude of this outcome is greatly amplified in situations where active management measures (such as reintroduction, fire management, and control of invasive species) are necessary for species conservation (Bean 2002, pp. 3–4). We believe that the judicious use of excluding specific areas of non-federally owned lands from critical habitat designations can contribute to species recovery and provide a superior level of conservation than critical habitat alone.

The purpose of designating critical habitat is to contribute to the conservation of threatened and endangered species and the ecosystems upon which they depend. The outcome of the designation, triggering regulatory requirements for actions funded, authorized, or carried out by Federal agencies under section 7(a)(2) of the Act, can sometimes be counterproductive to its intended purpose on non-Federal lands. Thus the benefits of excluding areas that are covered by effective partnerships or other conservation commitments can often be high.

Benefits of Excluding Lands With Approved Management Plans

The benefits of excluding lands within approved long-term management plans (including HCPs) from critical habitat designation include relieving landowners, communities, and counties of any additional regulatory burden that

might be imposed by critical habitat. Many conservation plans provide conservation benefits not only to listed species, but to unlisted sensitive species as well, resulting in enhanced ecosystem management. Imposing an additional regulatory review as a result of the designation of critical habitat may undermine conservation efforts and partnerships in many areas. Designation of critical habitat within the boundaries of management plans that provide conservation measures for a species could be viewed as a disincentive to entities currently developing these plans or contemplating them in the future, because one of the incentives for undertaking conservation is greater ease of permitting where listed species will be affected. Addition of a new regulatory requirement would remove a significant incentive for undertaking the time and expense of management planning.

A related benefit of excluding lands within management plans from critical habitat designation is the unhindered, continued ability it gives us to seek new partnerships with future plan participants, including States, counties, local jurisdictions, conservation organizations, and private landowners, which together can implement conservation actions that we would be unable to accomplish otherwise. Designating lands within approved management plan areas as critical habitat would likely have a negative effect on our ability to establish new partnerships to develop these plans, particularly plans that address landscape-level conservation of species and habitats. By preemptively excluding these lands, we preserve our current partnerships and encourage additional conservation actions in the future.

Furthermore, both HCP and Natural Community Conservation Plan (NCCP)–HCP applications require consultation, which would review the effects of all HCP–covered activities that might adversely impact the species under a jeopardy standard, including possibly significant habitat modification (see definition of ''harm'' at 50 CFR 17.3), even without the critical habitat designation. In addition, Federal actions occurring within the plan area that may affect listed species would still require consultation under section 7(a)(2) of the Act, and we would review these actions for possibly significant habitat modification, in accordance with the definition of harm referenced above.

The information provided in the previous sections applies to all the following discussions of the benefits of inclusion and exclusion of critical habitat.

Areas Considered For Exclusion Under Section 4(b)(2) of the Act

We are proposing to exclude Tribal lands in Unit 1 in consideration of Secretarial Order 3206, ''American Indian Tribal Rights, Federal Tribal Trust Responsibilities, and the Endangered Species Act'' (June 5, 1997); the President's memorandum of April 29, 1994, ''''Government-to-Government Relations with Native American Tribal Governments'' (59 FR 22951); Executive Order 13175; and the relevant provision of the Departmental Manual of the Department of the Interior (512 DM 2). Furthermore, we are evaluating and considering the possible exclusion of private lands in Unit 1 and 2A, which are covered under the draft Coachella Valley Multiple Species Habitat Conservation Plan (MSHCP), under section 4(b)(2) of the Act, and may exclude them from the final revised critical habitat designation for the Peninsular bighorn sheep. With regard to the draft Coachella Valley MSHCP plan area, we are only considering private lands for exclusion at this time, while also soliciting comment on the appropriateness of excluding CDFG and BLM lands as Memorandum of Understanding (MOU) partners to the MSHCP. We are considering the possible exclusion of the areas covered by the draft MSHCP because we believe when the plan is finalized that:

(1) The lands' value for conservation will be preserved for the foreseeable future by existing protective actions, and

(2) They are appropriate for exclusion under the ''other relevant factor'' provisions of section 4(b)(2) of the Act.

We specifically solicit comments on the inclusion or exclusion of these areas. In the paragraphs below, we provide a detailed analysis for consideration of exclusion of these lands under section 4(b)(2) of the Act.

Proposed Exclusion of Agua Caliente Band of Cahuilla Indians Tribal Lands Under Section 4(b)(2) of the Act—American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act

In accordance with the Secretarial Order 3206, ''American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act'' (June 5, 1997); the President's memorandum of April 29, 1994, ''Government-to-Government Relations with Native American Tribal Governments'' (59 FR 22951); Executive Order 13175; and the relevant provision of the Departmental Manual of the Department of the Interior (512 DM 2), we believe that fish, wildlife, and other natural resources on Tribal lands are better managed under Tribal authorities, policies, and programs than through Federal regulation wherever possible and practicable. Based on this philosophy, we believe that, in most cases, designation of tribal lands as critical habitat provides very little additional benefit to threatened and endangered species. Conversely, such designation is often viewed by tribes as unwarranted and an unwanted intrusion into tribal self governance, thus compromising the government-to-government relationship essential to achieving our mutual goals of managing for healthy ecosystems upon which the viability of threatened and endangered species populations depend.

We have determined that approximately 4,512 ac (1,826 ha) of tribal land owned by the Agua Caliente Band of Cahuilla Indians are essential to the conservation of the Peninsular bighorn sheep, and are proposing to exclude these lands under section 4(b)(2) of the Act. In making our final decision with regard to these Tribal lands, we will be considering several factors including our relationship with the Tribe, the Tribe's current management of Peninsular bighorn sheep habitat, and the Tribe's ongoing cooperation with us in the development of the Agua Caliente Band of Cahuilla Indians Tribal Habitat Conservation Plan (Tribal HCP).

The Agua Caliente Band of Cahuilla Indians highly values its wildlife and natural resources, and is charged to preserve and protect these resources under the Tribal Constitution. Consequently, the Tribe has long worked to manage the habitat of wildlife on its lands, including the habitat of endangered and threatened species. The Tribe currently implements a conservation strategy for the Peninsular bighorn sheep to protect and manage bighorn sheep habitat on Tribal lands (as set forth in the draft Tribal Habitat Conservation Plan adopted by the Tribe on or about November 11, 2002). This conservation strategy requires conservation of at least 85 percent of bighorn sheep habitat identified by the Tribe on Tribal lands and 100 percent of bighorn sheep use areas and habitat linkages identified by the Tribe on Tribal lands. These management measures provide a substantial conservation benefit to the subspecies.

In addition, we are currently working with the Tribe to develop the first Tribal multiple-species HCP in the United States. Through this cooperative effort, the Tribe has demonstrated a sustained commitment to manage its lands in a

manner consistent with the subspecies' conservation. We are currently processing the Tribe's application for a section 10(a)(1)(B) permit based on a revised draft Tribal Habitat Conservation Plan (2007), and anticipate publishing a Notice of Availability for public review in the **Federal Register** in October 2007.

The Tribal HCP area will cover approximately 36,720 ac (14,860 ha) of land, including approximately 4,512 ac (1,826 ha) in Unit 1. The Tribe's goals for conservation of Peninsular bighorn sheep are: (1) Conserving habitat within the Tribal HCP plan area (PCE 1, 2, 3, 4, and 5); (2) maintaining connectivity, preventing fragmentation, and allowing movement within key linkage areas (PCE 1 and 4); and (3) adaptively managing habitat quality and subpopulations/ewe groups to alleviate threats in the Tribal HCP plan area (Tribal HCP 2007, p. 4–8). Conservation objectives of the draft Tribal HCP for Peninsular bighorn sheep include the following: (1) Ensure implementation of the Tribal HCP is consistent with the recovery plan (Service 2000); (2) conserve a minimum of 17,692 ac (7,160 ha) of habitat within the plan area; (3) conserve 100 percent of Use Areas (areas defined by the Tribal HCP to have high functional value); (4) conserve land necessary to maintain linkages/connectivity; (5) minimize direct and indirect impacts from Covered Activities by ensuring implementation of development standards, including avoidance and minimization measures; (6) minimize impacts from recreational activities; (7) alleviate threat of disease transfer from livestock or nonnative wildlife; (8) monitor population size and mortality rates; (9) fund or undertake additional studies regarding this subspecies; (10) ensure management action thresholds are routinely assessed; (11) implement adaptive management; and (12) conserve habitat quality through plan implementation (Tribal HCP 2007, p. 4–9).

To aid in the public review of this proposed revised critical habitat, we are providing maps of the areas that we are proposing to exclude. Maps and GIS layers for areas proposed for exclusion are available from the Carlsbad Fish and Wildlife Office (see **ADDRESSES**) and on our Web site at *http://www.fws.gov/Carlsbad*.

The Benefits of Exclusion Outweigh the Benefits of Inclusion

The general benefits of critical habitat described in the ''Benefits of Critical Habitat Designation'' section would apply to habitat designated on Tribal lands. Activities occurring on Tribal lands will generally involve a Federal nexus. However, as discussed above, the Tribe is aware of the value of Tribal lands to the conservation of the Peninsular bighorn sheep and currently implements management measures that contribute to the conservation of the subspecies and protect its essential habitat. Conservation measures will continue to be implemented by the Tribe regardless of whether the areas are designated as critical habitat. In light of this continued commitment by the Tribe to manage its lands in a manner that promotes the conservation of the Peninsular bighorn sheep, the designation of critical habitat would provide minimal additional benefit to the subspecies on these Tribal lands.

The designation of critical habitat would be expected to adversely impact our working relationship with the Tribe and we believe that Federal regulation through critical habitat designation would be viewed as an unwarranted and unwanted intrusion into tribal natural resource programs. Our working relationship with the Tribe has been extremely beneficial in implementing natural resource programs of mutual interest. The benefits of excluding Agua Caliente Band of Cahuilla Indians Tribal lands from critical habitat include: (1) The advancement of our Federal Indian Trust obligations and our deference to tribal conservation and natural resource management plans for their lands and resources, which includes the Peninsular bighorn sheep and other Federal trust species; (2) the maintenance of effective working relationships to promote the conservation of the Peninsular bighorn sheep and its habitat; (3) the allowance for continued meaningful collaboration and cooperation on Peninsular bighorn sheep management and other resources of interest to the Federal government; and (4) the provision of conservation benefits to desert ecosystems and a host of species, including the Peninsular bighorn sheep and its habitat, that might not otherwise occur.

We believe that the Tribe should be the governmental entity to manage and promote the conservation of the Peninsular bighorn sheep on its lands. We recognize and endorse the Tribe's fundamental right to provide for tribal resource management activities, including those relating to Peninsular bighorn sheep. We have determined that the identified benefits of excluding the Tribal lands from the critical habitat designation outweigh the minimal benefits of inclusion, and are proposing to exclude approximately 4,512 ac (1,826 ha) of Tribal lands in Unit 1 from the final designation under section 4(b)(2) of the Act.

Exclusion Will Not Result in Extinction of the Species

We have determined that the exclusion of approximately 4,512 ac (1,826 ha) from the final designation of critical habitat for Peninsular bighorn sheep will not result in the extinction of the subspecies because the Tribe currently implements a conservation strategy for the Peninsular bighorn sheep that requires conservation of at least 85 percent of bighorn sheep habitat identified by the Tribe on Tribal lands and 100 percent of bighorn sheep use areas and habitat linkages identified by the Tribe on Tribal lands. In addition, working cooperatively with us, the Tribe has made substantial progress in developing its Tribal HCP. Through this cooperative effort, the Tribe has demonstrated a sustained commitment to manage its lands in a manner consistent with the subspecies' conservation. Furthermore, the area proposed for exclusion is occupied by the Peninsular bighorn sheep, and the jeopardy standard of section 7 and routine implementation of conservation measures through the section 7 consultation process also provide assurances that the subspecies will not go extinct. The proposed exclusion of critical habitat leaves these protections unchanged from those that would exist if the proposed excluded areas were designated as critical habitat. Therefore, we have determined that the exclusion of the Tribal lands will not result in the extinction of the subspecies.

Lands Covered by Management Plans—Exclusions Under Section 4(b)(2) of the Act

When performing the required analysis under section 4(b)(2) of the Act, the existence of a management plan (HCPs as well as other types) that considers enhancement or recovery of listed species as its management standard is relevant to our weighing of the benefits of inclusion of a particular area in the critical habitat designation. In analyzing particular areas covered by management plans under section 4(b)(2) of the Act, we generally consider a number of factors including the following:

(1) Whether the plan is complete and provides the same or better level of protection from adverse modification or destruction than that provided through a consultation under section 7(a)(2) of the Act;

(2) Whether there is a reasonable expectation that the conservation management strategies and actions will

be implemented for the foreseeable future, based on past practices, written guidance, or regulations; and

(3) Whether the plan provides conservation strategies and measures consistent with currently accepted principles of conservation biology.

Coachella Valley Multiple Species Habitat Conservation Plan (MSHCP)

We believe that the Coachella Valley MSHCP, when implemented, will provide conservation strategies and measures consistent with the conservation of the Peninsular bighorn sheep. We are confident that the plan will be completed in the near future, and are considering the exclusion of non-Federal lands covered by the plan that provide for the conservation of the Peninsular bighorn sheep and its PCEs. We are requesting comments on the benefit to the Peninsular bighorn sheep and its PCEs from the conservation measures established by the Coachella Valley MSHCP.

The draft MSHCP has been in development from the mid-1990s to present. The following entities signed an MOU (Planning Agreement) to govern the preparation of the MSHCP: the Coachella Valley Association of Governments (CVAG); Cities of Cathedral City, Coachella, Desert Hot Springs, Indian Wells, Indio, La Quinta, Palm Desert, Palm Springs, and Rancho Mirage; County of Riverside; Service; California Department of Fish and Game; BLM; U.S. Forest Service; and National Park Service. Subsequently, the California Department of Transportation, Coachella Valley Water District, Imperial Irrigation District, Riverside County Flood Control and Water Conservation District, Riverside County Regional Parks and Open Space District, Riverside County Waste Management District, California Department of Parks and Recreation, and Coachella Valley Mountains Conservancy decided to participate in preparation of the MSHCP. The parties later amended the Planning Agreement to also address the requirements of the Natural Community Conservation Planning (NCCP) Act and prepared an NCCP pursuant to California Fish and Game Code Section 2810. The Coachella Valley Association of Governments, Coachella Valley Conservation Commission, County of Riverside, Riverside County Flood Control and Water Conservation District, Riverside County Regional Parks and Open Space District, Riverside County Waste Resources Management District, City of Cathedral City, City of Coachella, City of Indian Wells, City of Indio, City of La Quinta, City of Palm Desert, City of Palm Springs, City of Rancho Mirage, Coachella Valley Water District, Imperial Irrigation District, Coachella Valley Mountains Conservancy, California Department of Transportation, and California Department of Parks and Recreation have submitted an application to the Service for a section 10(a)(1)(B) permit under the Act.

The MSHCP area encompasses approximately 1.2 million ac (485,623 ha), of which 69,000 ac (27,923 ha) are Tribal lands and are not included in the MSHCP, leaving a total of approximately 1.1 million ac (445,154 ha) addressed by the MSHCP in Riverside County. BLM has been an official participant in the draft Coachella Valley MSHCP planning process and has committed, under their California Desert Conservation Area Plan Amendment (CDCAPA), 95 percent of their public land base within the conservation areas of the MSHCP to be managed consistent with the Coachella Valley MSHCP once it is completed.

CVAG has demonstrated a sustained commitment to develop the MSHCP to comply with section 10(a)(1)(B) of the Act, the California Endangered Species Act, and the State's NCCP program. On April 21, 2006, the Service published a notice of availability of the Final Environmental Impact Statement/ Environmental Impact Report (EIS/EIR) for the MSHCP (71 FR 20719). On March 30, 2007, the Service published a notice of availability of a supplement to the Final EIS for the MSHCP (72 FR 15148).

The MSHCP adopted the Peninsular bighorn sheep habitat model described in the 2000 recovery plan for this subspecies (Service 2000). Accordingly, the MSHCP area includes 172,811 ac (69,934 ha) of modeled Peninsular bighorn sheep habitat. These 172,811 ac (69,934 ha) include the approximately 10,761 ac (4,354 ha) we are proposing in Unit 1 and the approximately 74,998 ac (30,350 ha) we are proposing in Unit 2A. The draft MSHCP proposes to ensure conservation of a minimum of 97 percent of all modeled habitat for Peninsular bighorn sheep as part of the preferred alternative reserve design that includes large areas of suitable habitat (CVAG 2007, p. 9–261). Approximately 78 percent of the proposed conserved modeled habitat are within Existing Conservation Lands and will be managed as part of the Reserve System (CVAG 2007, p. 9–261); the remaining 19 percent will also be conserved according to the draft MSHCP (CVAG 2007, p. 9–261). Conservation objectives of this draft MSHCP include: (1) Ensuring conservation of important habitat (PCE 1, 2, 3, 4, and 5); (2) ensuring connectivity by preventing fragmentation and maintaining biological corridors and linkages within essential habitat to allow dispersal, provide for population fluctuation, and enhance genetic diversity (PCE 1 and 4); and (3) ensuring conservation of habitat quality through biological monitoring and adaptive management (PCE 1, 2, 3, 4, and 5) (CVAG 2007, p. 9–261).

According to the draft MSHCP, disturbance to Peninsular bighorn sheep with implementation of the plan is expected to be low because: (1) Conserved habitat areas are large enough to maintain self-sustaining populations of Peninsular bighorn sheep and incorporate key habitat elements for the subspecies; (2) implementation of the MSHCP is consistent with the recovery strategy delineated in the 2000 recovery plan; (3) implementation of the conservation objectives to protect habitat for this subspecies will provide connectivity; and (4) lands in the MSHCP reserve system would be managed and monitored to address significant edge effect problems, human disturbance, fragmentation, impacts from exotic species, and other stressors to Peninsular bighorn sheep (CVAG 2007, p. 9–261).

Although not yet completed and implemented, CVAG has made significant progress in the development of its MSHCP to meet the requirements outlined in section 10(a)(1)(B) of the Act. In light of the Service's confidence that CVAG will reach a successful conclusion to its MSHCP development process, we are evaluating and considering the possible exclusion of approximately 19,211 ac (7,774 ha) of private land within their preferred alternative reserve design from the final revised critical habitat designation for Peninsular bighorn sheep depending on the progress made on the draft MSHCP between now and the publication of the final rule. We are requesting comments on the benefits to the Peninsular bighorn sheep and its PCEs from the conservation measures established by the MSHCP.

Included within the MSHCP plan area are BLM lands, outside of the Coachella Valley Preserve System, which we are soliciting comment on the appropriateness of excluding from the final revised critical habitat designation based on BLM's official participation in the draft Coachella Valley MSHCP planning process and commitment under their CDCAPA to manage their lands consistent with the Coachella Valley MSHCP once it is completed. We are also soliciting comment on the appropriateness of excluding CDGF

lands within the MSHCP plan area based on their involvement with the Coachella Valley MSHCP.

Provisions of the Coachella Valley MSHCP Specific to Peninsular Bighorn Sheep

In general, we find that the benefits of critical habitat designation on lands within pending HCPs that cover those species are small, while the benefits of excluding such lands from designation of critical habitat are substantial. We are evaluating and considering the possible exclusion of approximately 19,211 ac (7,774 ha) of private land within CVAG's MSHCP preferred alternative reserve design area from the designation of critical habitat. The evaluation process involves determining whether the benefits of excluding these lands from Units 1 and 2A outweigh the benefits of including these lands. We expect the PCEs required by Peninsular bighorn sheep to benefit by the conservation measures outlined in the MSHCP and as described above. In summary, these conservation measures include: Conservation of habitat and implementation of the MSHCP consistent with the recovery plan (Service 2000); preservation of essential habitat and connectivity; biological monitoring and adaptive management; and minimization of disturbance and edge effects. These specific conservation actions, avoidance and minimization measures, and management for Peninsular bighorn sheep and PCEs, if implemented, are expected to exceed any conservation value that could be provided as a result of regulatory protections afforded through a critical habitat designation.

Designation of critical habitat alone does not achieve recovery or require management of those lands identified in the critical habitat rule. The exclusion of these lands that we are currently evaluating and considering for possible exclusion from the final critical habitat designation would help preserve the partnerships that we have developed with the local jurisdictions and project proponents in the development of the MSHCP. The benefits of excluding these lands from critical habitat, should the MSHCP be finalized and implemented, are expected to outweigh the minimal benefits of including these lands as critical habitat, including the educational benefits of critical habitat designation through informing the public of areas important for the long-term conservation of Peninsular bighorn sheep. Such educational benefits can still be accomplished from materials provided on our Internet website and through the overall designation process, including the notice and public comment period, which will occur whether or not these particular areas are designated.

Economics

We are preparing an analysis of the economic impacts of proposing revised critical habitat for the Peninsular bighorn sheep. We will announce the availability of the draft economic analysis as soon as it is completed, at which time we will seek public review and comment. At that time, copies of the draft economic analysis will be available for downloading from the Internet at *http://carlsbad.fws.gov*, or by contacting the Carlsbad Fish and Wildlife Office directly (see **ADDRESSES**). We may exclude areas from the final revised rule based on the information in the economic analysis.

Peer Review

In accordance with our joint policy published in the **Federal Register** on July 1, 1994 (59 FR 34270), we are requesting the expert opinions of at least three appropriate independent specialists regarding this proposed rule. The purpose of peer review is to ensure that our proposed revised critical habitat designation is based on scientifically sound data, assumptions, and analyses. We have invited these peer reviewers to comment during this public comment period on our specific assumptions and conclusions in this proposed revision of critical habitat.

We will consider all comments and information we receive during this comment period on this proposed revised critical habitat rule during our preparation of a final determination. Accordingly, our final decision may differ from this proposal.

Public Hearings

The Act provides for one or more public hearings on this proposal, if we receive any request for hearings. We must receive your request for a public hearing within 45 days after the date of publication in the **Federal Register**. Send your request to the person named in **FOR FURTHER INFORMATION CONTACT**. We will schedule public hearings on this proposal, if any are requested, and announce the dates, times, and places of those hearings, as well as how to obtain reasonable accommodations, in the **Federal Register** and local newspapers at least 15 days before the first hearing.

Required Determinations

Regulatory Planning and Review

In accordance with Executive Order (E.O.) 12866, this document is a significant rule in that it may raise novel legal and policy issues. However, based on information available from the previous designation, we do not anticipated that it will have an annual effect on the economy of $100 million or more or to affect the economy in a material way. To determine the economic consequences of designating the specific area as critical habitat, we are preparing a draft economic analysis of this proposed action, which will be available for public comment. This economic analysis also will be used to determine compliance with E.O. 12866, the Regulatory Flexibility Act, the Small Business Regulatory Enforcement Fairness Act, E.O. 12630, and E.O. 13211.

Further, E.O. 12866 directs Federal agencies promulgating regulations to evaluate regulatory alternatives (OMB Circular A–4, September 17, 2003). Under Circular A–4, once an agency determines that the Federal regulatory action is appropriate, the agency must consider alternative regulatory approaches. Because the determination of critical habitat is a statutory requirement under the Act, we must evaluate alternative regulatory approaches, where feasible, when promulgating a designation of critical habitat.

In developing our designations of critical habitat, we consider economic impacts, impacts to national security, and other relevant impacts under section 4(b)(2) of the Act. Based on the discretion allowable under this provision, we may exclude any particular area from the designation of critical habitat providing that the benefits of such exclusion outweigh the benefits of specifying the area as critical habitat and that such exclusion would not result in the extinction of the species. As such, we believe that the evaluation of the inclusion or exclusion of particular areas, or a combination of both, constitutes our regulatory alternative analysis for designations.

We will announce the availability of the draft economic analysis in the **Federal Register** and in local newspapers so that it is available for public review and comments. At that time, the draft economic analysis will also be available on the Internet at *http://carlsbad.fws.gov,* or by contacting the Carlsbad Fish and Wildlife Office directly (see **ADDRESSES**).

Regulatory Flexibility Act (5 U.S.C. 601 et seq.)

Under the Regulatory Flexibility Act (RFA: 5 U.S.C. 601 *et seq.*, as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996), whenever an agency must

publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. SBREFA amended RFA to require Federal agencies to provide a statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities.

At this time, we lack the available economic information necessary to provide an adequate factual basis for the required RFA finding. Therefore, we defer the RFA finding until completion of the draft economic analysis prepared under section 4(b)(2) of the Act and E.O. 12866. This draft economic analysis will provide the required factual basis for the RFA finding. Upon completion of the draft economic analysis, we will announce availability of the draft economic analysis of the proposed revised designation in the **Federal Register** and reopen the public comment period for the proposed revised designation. We will include with this announcement, as appropriate, an initial regulatory flexibility analysis or a certification that the rule will not have a significant economic impact on a substantial number of small entities accompanied by the factual basis for that determination. We have concluded that deferring the RFA finding until completion of the draft economic analysis is necessary to meet the purposes and requirements of the RFA. Deferring the RFA finding in this manner will ensure that we make a sufficiently informed determination based on adequate economic information and provide the necessary opportunity for public comment.

Unfunded Mandates Reform Act

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501 *et seq.*), we make the following findings:

(a) This proposed rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute, or regulation that would impose an enforceable duty upon State, local, or Tribal governments, or the private sector, and includes both ''Federal intergovernmental mandates'' and ''Federal private sector mandates.'' These terms are defined in 2 U.S.C. 658(5)–(7). ''Federal intergovernmental mandate'' includes a regulation that ''would impose an enforceable duty upon State, local, or Tribal governments'' with two exceptions. It excludes ''a condition of Federal assistance.'' It also excludes ''a duty arising from participation in a voluntary Federal program,'' unless the regulation ''relates to a then-existing Federal program under which $500,000,000 or more is provided annually to State, local, and Tribal governments under entitlement authority,'' if the provision would ''increase the stringency of conditions of assistance'' or ''place caps upon, or otherwise decrease, the Federal Government's responsibility to provide funding,'' and the State, local, or Tribal governments ''lack authority'' to adjust accordingly. At the time of enactment, these entitlement programs were: Medicaid; AFDC work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement. ''Federal private sector mandate'' includes a regulation that ''would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance or (ii) a duty arising from participation in a voluntary Federal program.''

The designation of critical habitat does not impose a legally binding duty on non-Federal Government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7. While non-Federal entities that receive Federal funding, assistance, or permits, or that otherwise require approval or authorization from a Federal agency for an action may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act would not apply, nor would critical habitat shift the costs of the large entitlement programs listed above onto State governments.

(b) Due to current public knowledge of the subspecies' protection, the prohibition against take of the subspecies both within and outside of the areas proposed in this rule for designation and the fact that the vast majority of the areas proposed in this rule are currently designated as critical habitat, we do not believe that this proposed rule will significantly or uniquely affect small governments. Therefore, a Small Government Agency Plan is not required. However, as we conduct our economic analysis, we will further evaluate this issue and revise this assessment if appropriate.

Takings

In accordance with E.O. 12630 (Government Actions and Interference with Constitutionally Protected Private Property Rights), we have analyzed the potential takings implications of designating revised critical habitat for the Peninsular bighorn sheep in a takings implications assessment. The takings implications assessment concludes that this proposed revised designation of critical habitat for the Peninsular bighorn sheep does not pose significant takings implications for lands within or affected by the designation.

Federalism

In accordance with E.O. 13132 (Federalism), this proposed rule does not have significant Federalism effects. A Federalism assessment is not required. In keeping with Department of the Interior and Department of Commerce policy, we requested information from, and coordinated development of, this proposed revised critical habitat designation with appropriate State resource agencies in California. Critical habitat is already designated for the Peninsular bighorn sheep. If finalized, this proposal to revise the designated critical habitat will result in a significant decrease in the area designated. Thus, the designation of revised critical habitat for the Peninsular bighorn sheep would not impose any additional regulatory restrictions to those currently in place and, therefore, has little incremental impact on State and local governments and their activities. The designation may have some benefit to these governments because the areas that contain the features essential to the conservation of the subspecies are more clearly defined, and the PCEs of the habitat necessary to the conservation of the subspecies are specifically identified. This information does not alter where and what federally sponsored activities may occur. However, it may assist local governments in long-range planning (rather than having them wait for case-by-case section 7 consultations to occur).

Civil Justice Reform

In accordance with E.O. 12988 (Civil Justice Reform), the Office of the Solicitor has determined that this proposed rule does not unduly burden the judicial system and that it meets the requirements of sections 3(a) and 3(b)(2) of the Order. We have proposed revised critical habitat in accordance with the provisions of the Act. This proposed rule uses standard property descriptions and identifies the PCEs within the areas proposed for designation to assist the public in understanding the habitat needs of the Peninsular bighorn sheep.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

This proposed rule does not contain any new collections of information that require approval by OMB under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). This rule will not impose recordkeeping or reporting requirements on State or local governments, individuals, businesses, or organizations. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act (NEPA) (42 U.S.C. 4321 et. seq.)

It is our position that, outside the jurisdiction of the Circuit Court of the United States for the Tenth Circuit, we do not need to prepare environmental analyses as defined by NEPA (42 U.S.C. 4321 et seq.) in connection with designating critical habitat under the Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244). This assertion was upheld by the Circuit Court of the United States for the Ninth Circuit Court (*Douglas County* v. *Babbitt,* 48 F.3d 1495 (9th Cir. Ore. 1995), cert. denied 116 S. Ct. 698 (1996)).

Clarity of the Rule

We are required by Executive Orders 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must:

(a) Be logically organized;

(b) Use the active voice to address readers directly;

(c) Use clear language rather than jargon;

(d) Be divided into short sections and sentences; and

(e) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in the **ADDRESSES** section. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the numbers of the sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.

Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994, Government-to-Government Relations with Native American Tribal Governments' (59 FR 22951), E.O. 13175, and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes. We have identified Tribal lands that meet the definition of critical habitat for the Peninsular bighorn sheep, and have included them in this proposal. However, we are proposing to exclude all Tribal lands from the final critical habitat designation under section 4(b)(2) of the Act (see ''Proposed Exclusion of Agua Caliente Band of Cahuilla Indians Tribal Lands Under Section 4(b)(2) of the Act'' for a detailed discussion). We will continue to coordinate with the Tribe during the designation process.

Energy Supply, Distribution, or Use

On May 18, 2001, the President issued an Executive Order (E.O. 13211; Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use) on regulations that significantly affect energy supply, distribution, and use. E.O. 13211 requires agencies to prepare Statements of Energy Effects when undertaking certain actions. While this proposed rule to designate revised critical habitat for the Peninsular bighorn sheep is a significant regulatory action under E.O. 12866 in that it may raise novel legal and policy issues, we do not expect it to significantly affect energy supplies, distribution, or use. Therefore, this action is not a significant energy action, and no Statement of Energy Effects is required. However, we will further evaluate this issue as we conduct our economic analysis, and review and revise this assessment as warranted.

References Cited

A complete list of all references cited in this rulemaking is available upon request from the Field Supervisor, Carlsbad Fish and Wildlife Office (see **ADDRESSES**).

Author

The primary author of this package is Justin Shoemaker of the Carlsbad Fish and Wildlife Office.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Proposed Regulation Promulgation

Accordingly, we propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500; unless otherwise noted.

2. In § 17.11(h), revise the entry for ''Sheep, bighorn'' under ''MAMMALS'' in the List of Endangered and Threatened Wildlife to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
MAMMALS							
*	*	*	*	*	*		*
Sheep, Peninsular bighorn.	*Ovis canadensis nelsoni*.	U.S.A. (western conterminous States), Canada (south-western), Mexico (northern).	U.S.A. (CA) Peninsular Ranges.	E	634	17.95(a)	NA.
*	*	*	*	*	*		*

3. In § 17.95(a), revise the entry for Bighorn Sheep (Peninsular Ranges)(*Ovis canadensis*) to read as follows:

§ 17.95 Critical habitat—fish and wildlife.

(a) Mammals.

* * * * *

Bighorn Sheep (Peninsular Ranges) (*Ovis canadensis nelsoni*)

(1) Critical habitat units are depicted for Riverside, San Diego, and Imperial Counties, California, on the maps below.

(2) The primary constituent elements of critical habitat for the Peninsular bighorn sheep are:

(i) Moderate to steep, open slopes (20 to 60 percent) and canyons, with canopy cover of 30 percent or less (below 4,600 feet (1,402 meters) elevation in the Peninsular Ranges) that provide space for sheltering, predator detection, rearing of young, foraging and watering, mating, and movement within and between ewe groups.

(ii) Presence of a variety of forage plants, indicated by the presence of shrubs (e.g., *Ambrosia* spp., *Caesalpinia* spp., *Hyptis* spp., *Sphaeralcea* spp., Simmondsia spp.), that provide a primary food source year round, grasses (e.g., *Aristida* spp., *Bromus* spp.) and cacti (e.g., *Opuntia* spp.) that provide a source of forage in the fall, and forbs (e.g., *Plantago* spp., *Ditaxis* spp.) that provide a source of forage in the spring.

(iii) Steep, rugged, slopes (60 percent slope or greater) (below 4,600 feet (1,402 meters) elevation in the Peninsular Ranges) that provide secluded space for lambing as well as terrain for predator evasion.

(iv) Alluvial fans, washes, and valley bottoms that provide important foraging areas where nutritious and digestible plants can be more readily found during times of drought and lactation and that provide and maintain habitat connectivity by serving as travel routes between and within ewe groups, adjacent mountain ranges, and important resources areas, such as foraging areas and escape terrain.

(v) Intermittent and permanent water sources that are available during extended dry periods and that provide relatively nutritious plants and drinking water.

(3) Critical habitat does not include manmade structures (such as buildings, aqueducts, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on the effective date of this rule.

(4) Critical habitat map units. Data layers defining map units were created on a base of USGS 1:24,000 maps, and critical habitat units were then mapped using Universal Transverse Mercator (UTM) coordinates.

(5) Note: Index map of critical habitat units for the Peninsular bighorn sheep (Map 1) follows:

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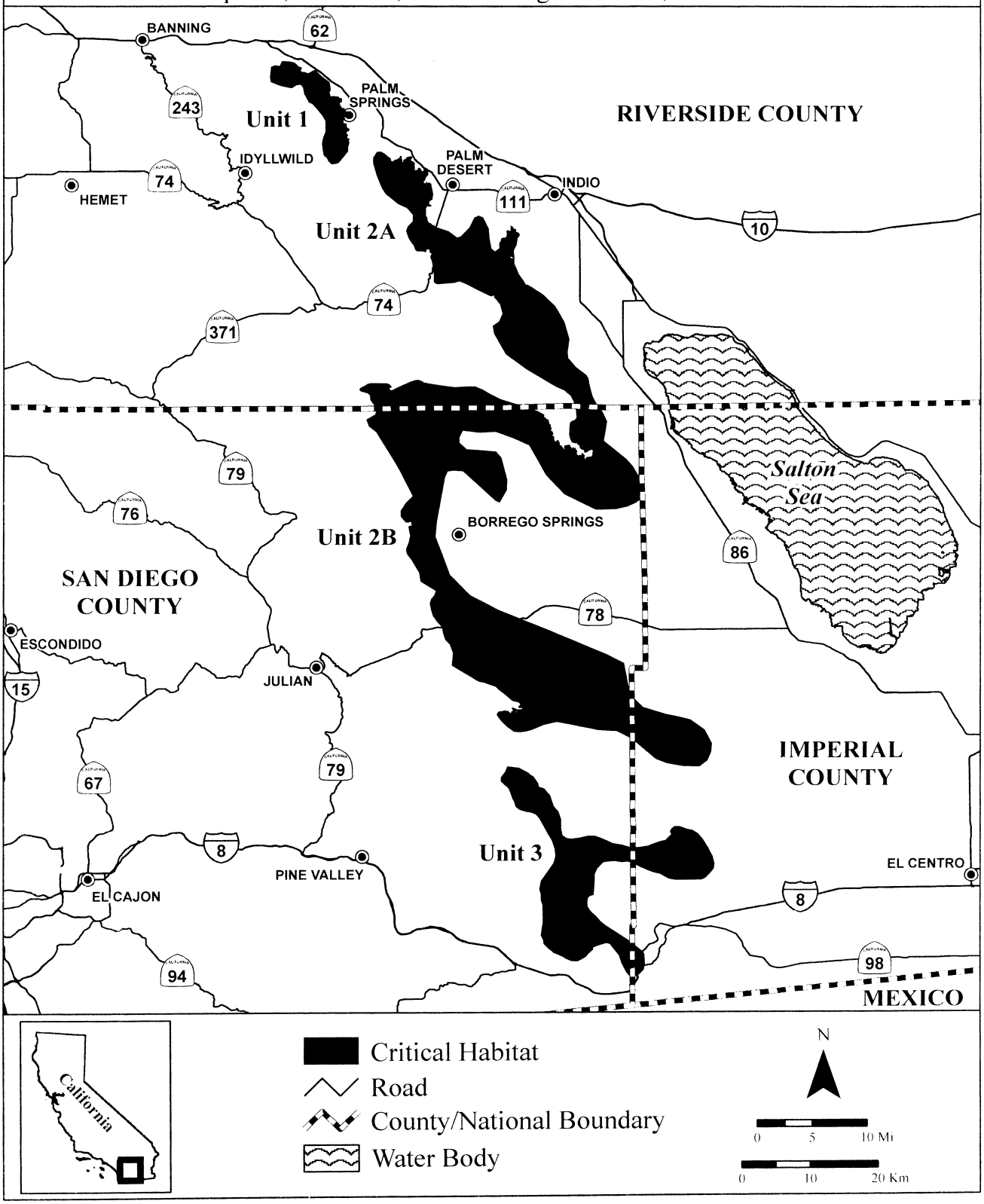
Map 1. Index Map
Critical Habitat for Peninsular bighorn sheep (Ovis canadensis nelsoni)
Imperial, Riverside, and San Diego Counties, California



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(6) Unit 1: San Jacinto Mountains, Riverside County, California.

(i) From USGS 1:24,000 quadrangles Desert Hot Springs, Palm Springs, and San Jacinto Peak, and White Water. Land bounded by the following Universal Transverse Mercator (UTM) North American Datum of 1927 (NAD27) coordinates (E, N): 534134, 3750021; 534465, 3749681; 534495, 3749651; 534495, 3749651; 534495, 3749651; 534495, 3749651; 534572, 3749621; 534997, 3749456; 534792, 3749102; 534885, 3748934; 535128, 3748785; 535310, 3748807; 535426, 3748822; 535471, 3748798; 535663, 3748697; 535706, 3748674; 535706, 3748652; 535713, 3748654; 535739, 3748650; 535777, 3748637; 535816, 3748627; 535834, 3748623; 535944, 3748624; 535999, 3748624; 536000, 3748624; 536000, 3748624; 536056, 3748624; 536056, 3748656; 536499, 3748909; 536927, 3749153; 537308, 3748794; 538009, 3748134; 538064, 3748082; 538535, 3747726; 538535, 3747703; 538566, 3747702; 538901, 3747449; 539106, 3747293; 539235, 3746550; 539240, 3746463; 539240, 3746455; 539254, 3746181; 539088, 3745848; 539244, 3745133; 539265, 3745144; 539562, 3745200; 539802, 3745192; 540194, 3745168; 540512, 3745097; 540512, 3744900; 540511, 3744851; 540512, 3744847; 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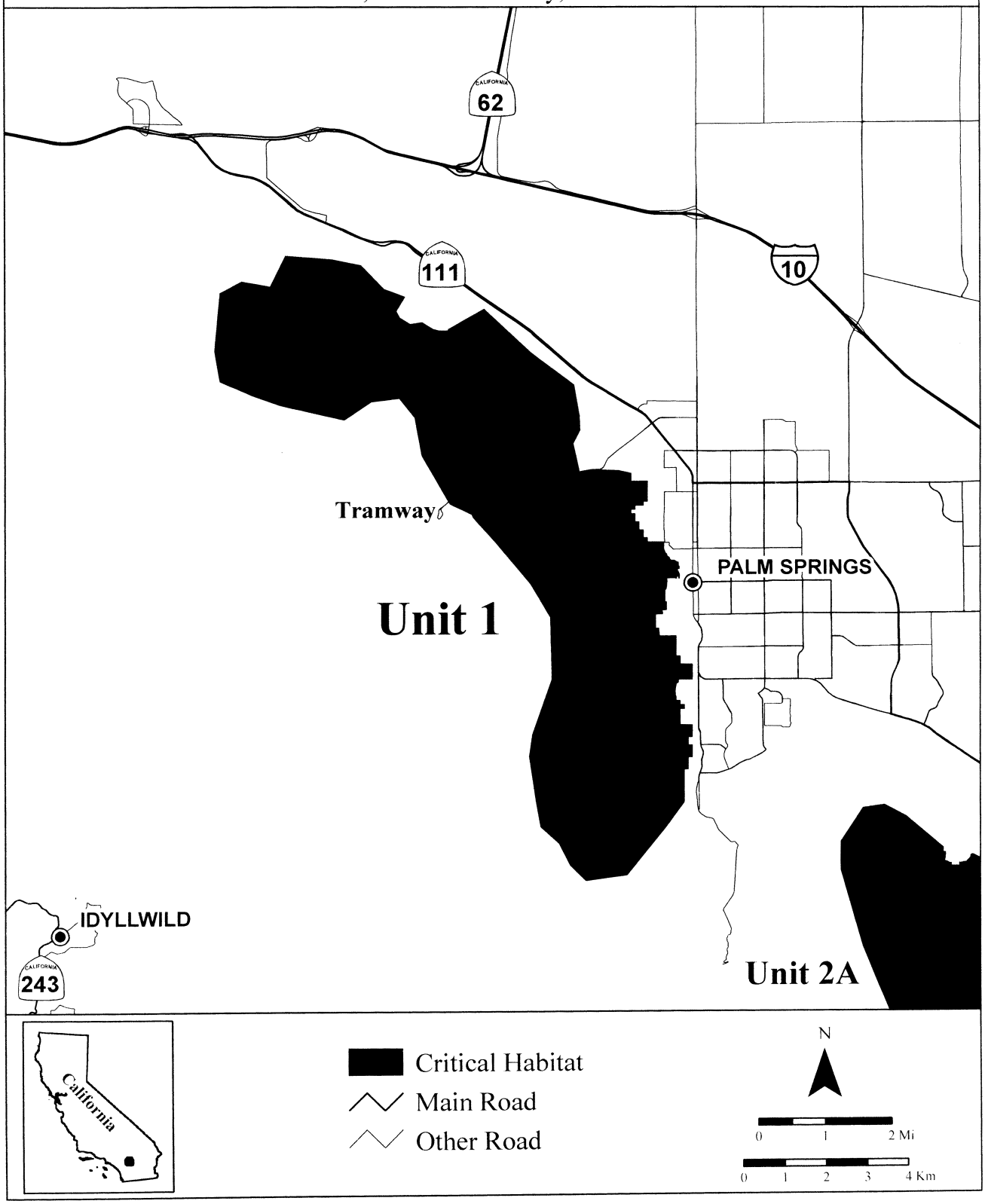
(ii) Note: Map of Unit 1, San Jacinto Mountains (Map 2) follows:

BILLING CODE 4310–55–P

Map 2.
Critical Habitat for Peninsular bighorn sheep (Ovis canadensis nelsoni)
Unit 1, Riverside County, California



BILLING CODE 4310–55–C

(7) Unit 2A: North Santa Rosa Moutains, Riverside County, California.

(i) From USGS 1:24,000 quadrangles Cathedral City, Clark Lake NE, La Quinta, Martinez Mountain, Palm Springs, Palm View Peak, Rabbit Peak, Rancho Mirage, Toro Peak, and Valerie. Land bounded by the following Universal Transverse Mercator (UTM) North American Datum of 1927 (NAD27) coordinates (E, N): 548200, 3735505; 548200, 3735500; 548211, 3735500; 548229, 3735493; 548242, 3735488; 548253, 3735483; 548278, 3735474; 548285, 3735471; 548300, 3735465; 548300, 3735400; 548400, 3735400; 548500, 3735400; 548500, 3735480; 548515, 3735478; 548523, 3735478; 548560, 3735481; 548580, 3735488; 548591, 3735491; 548607, 3735496; 548608, 3735496; 548608, 3735496; 548644, 3735490; 548659, 3735497; 548673, 3735503; 548690, 3735520; 548716, 3735546; 548720, 3735550; 548736, 3735569; 548768, 3735606; 548773, 3735615; 548783, 3735631; 548778, 3735657; 548778, 3735659; 548799, 3735678; 548821, 3735687; 548825, 3735689; 548844, 3735682; 548868, 3735674; 548874, 3735672; 548890, 3735664; 548892, 3735663; 548909, 3735654; 548955, 3735628; 549021, 3735590; 549038, 3735580; 549075, 3735551; 549085, 3735544; 549101, 3735534; 549131, 3735513; 549131, 3735526; 549125, 3735553; 549111, 3735581; 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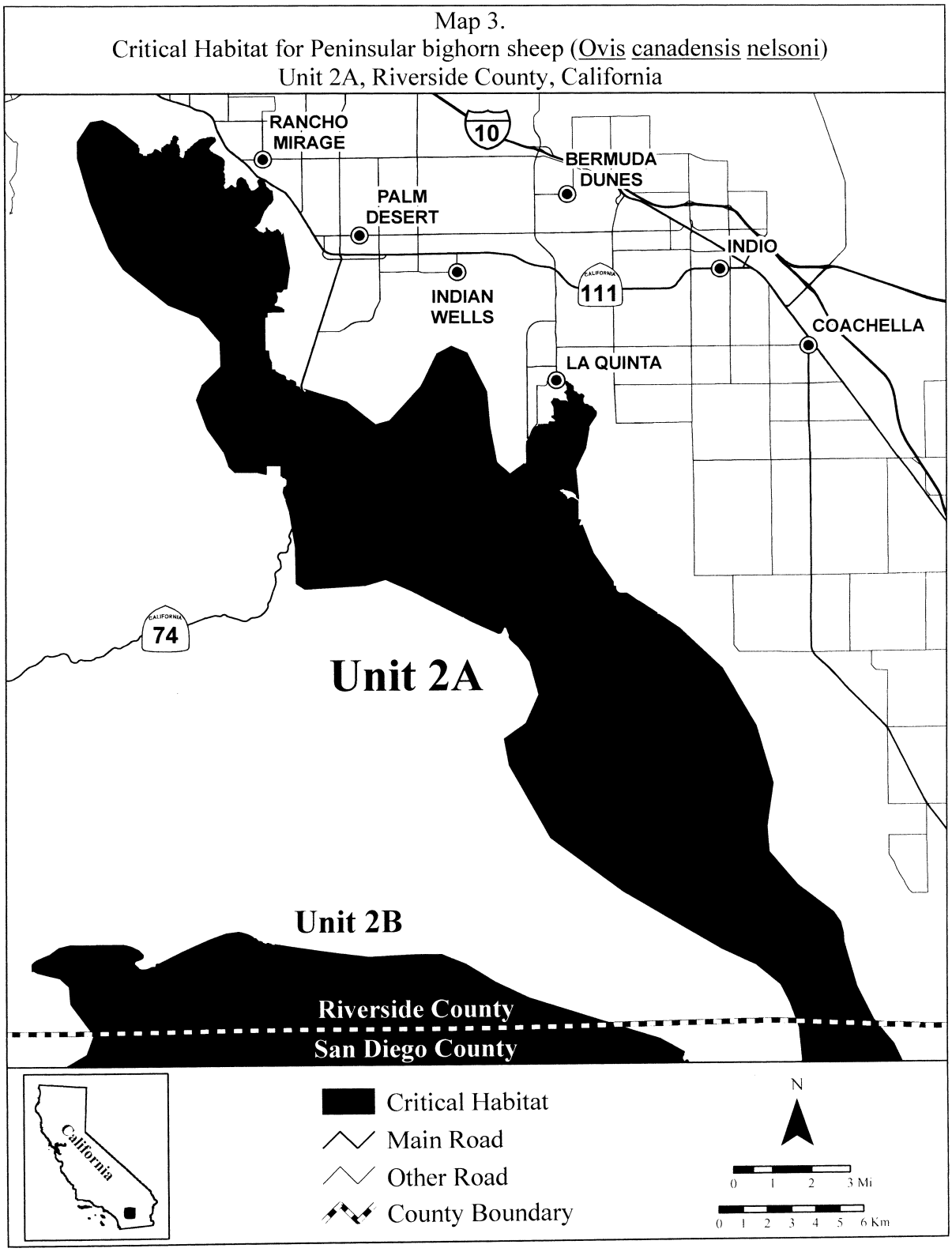
(ii) Note: Map of Unit 2A, North Santa Rosa Mountains (Map 3) follows:

BILLING CODE 4310–55–P



BILLING CODE 4310–55–C

(8) Unit 2B: South Santa Rosa Mountains south to Vallecito Mountains, Riverside, San Diego, and Imperial Counties, California.

(i) From USGS 1:24,000 quadrangles Agua Caliente Hot Springs, Arroyo Tapiado, Borrego Mountain, Borrego Mountain SE, Borrego Palm Canyon, Borrego Sink, Bucksnort Mountain, Carrizo Mountain NE, Clark Lake, Clark Lake NE, Collins Valley, Earthquake Valley, Fonts Point, Harper Canyon, Plaster City NW, Rabbit Peak, Seventeen Palms, Tubb Canyon, and Whale Peak. Land bounded by the following Universal Transverse Mercator (UTM) North American Datum of 1927 (NAD27) coordinates (E, N): 552772, 3702586; 552772, 3702567; 552801, 3702567; 552801, 3702539; 552829, 3702539; 552829, 3702511; 552914, 3702511; 552914, 3702482; 552943, 3702482; 552943, 3702454; 552971, 3702454; 552971, 3702426; 552999, 3702426; 552999, 3702397; 553113, 3702397; 553113, 3702369; 553170, 3702369; 553170, 3702340; 553198, 3702340; 553198, 3702312; 553255, 3702312; 553255, 3702284; 553311, 3702284; 553311, 3702255; 553340, 3702255; 553340, 3702284; 553368, 3702284; 553368, 3702312; 553453, 3702312; 553453, 3702284; 553538, 3702284; 553538, 3702255; 553567, 3702255; 553567, 3702227; 553624, 3702227; 553624, 3702199; 553652, 3702199; 553652, 3702227; 553709, 3702227; 553709, 3702255; 553717, 3702255; 554616, 3702119; 556163, 3701891; 557619, 3701709; 559531, 3701800; 560669, 3701800; 561670, 3701390; 562899, 3700617; 564310, 3699934; 569738, 3698190; 570758, 3697602; 570758, 3697546; 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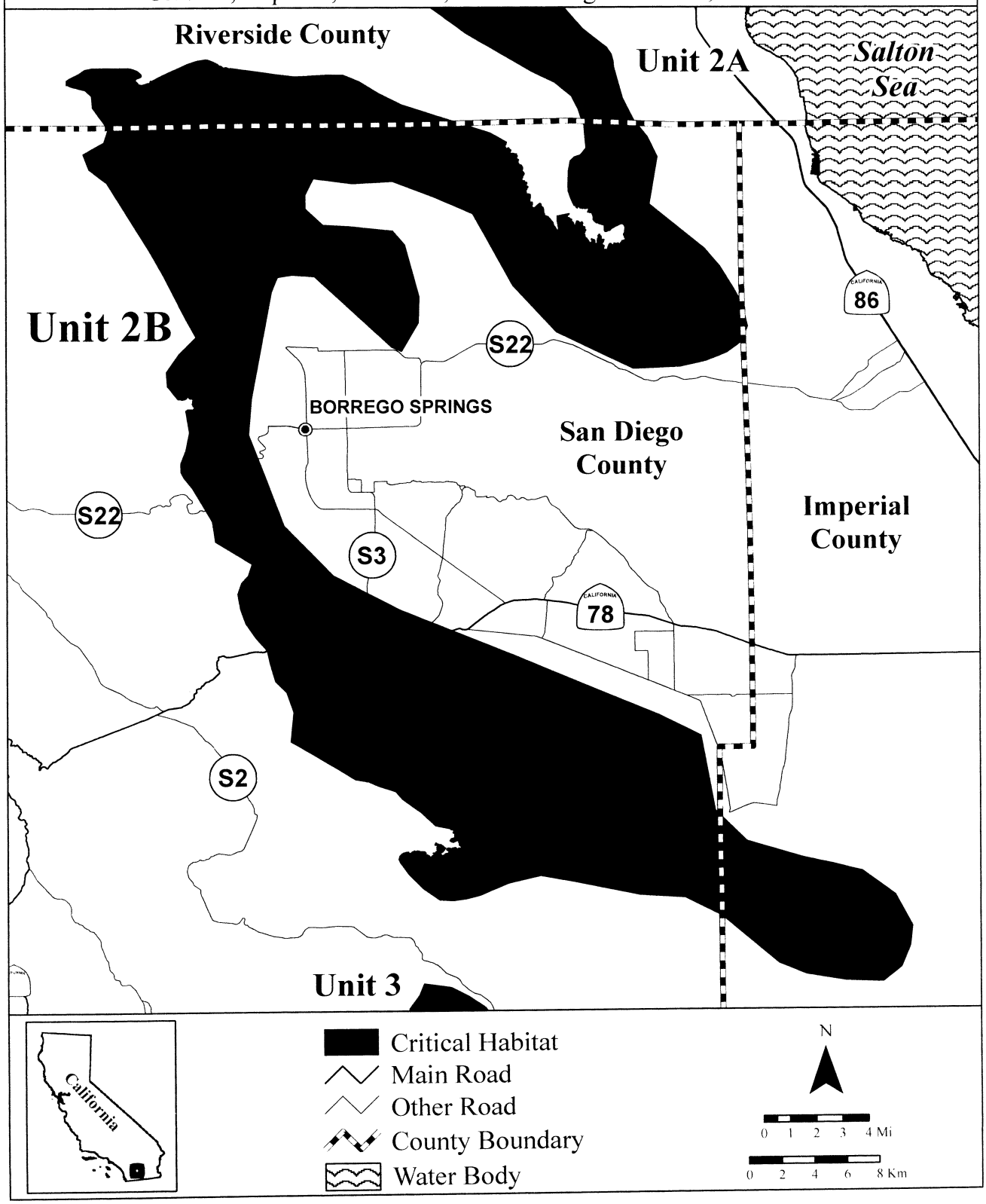
(ii) Note: Map of Unit 2B, South Santa Rosa Mountains south to Vallecito Mountains (Map 4) follows:

BILLING CODE 4310–55–P

Map 4.
Critical Habitat for Peninsular bighorn sheep (Ovis canadensis nelsoni)
Unit 2B, Imperial, Riverside, and San Diego Counties, California



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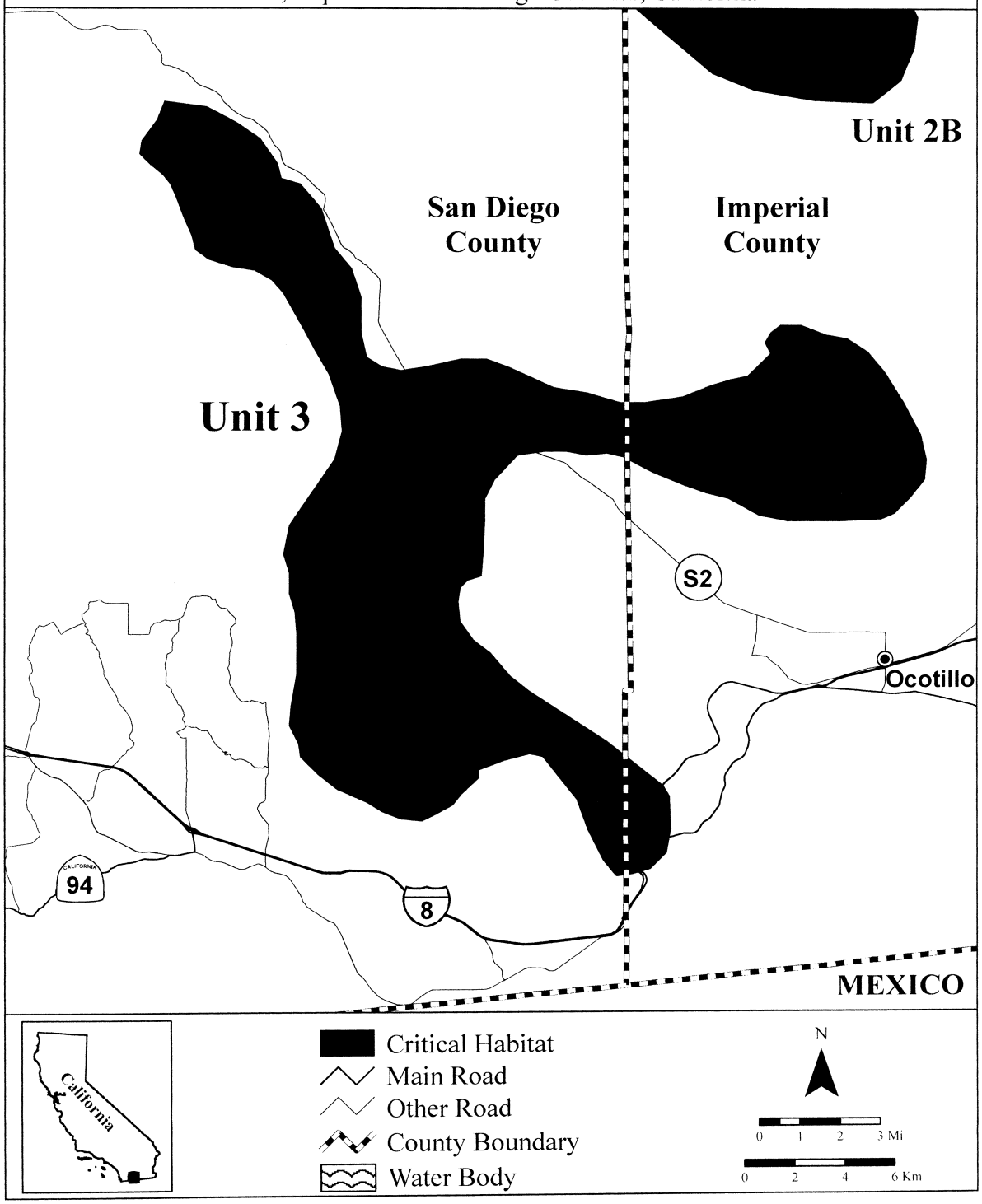
(9) Unit 3: Carrizo Canyon, San Diego and Imperial Counties, California.

(i) From USGS 1:24,000 quadrangles Agua Caliente Hot Springs, Arroyo Tapiado, Carrizo Mountain, In-Ko-Pah Gorge, Jacumba, Painted Gorge, Sombrero Peak, and Sweeney Pass. Land bounded by the following Universal Transverse Mercator (UTM) North American Datum of 1927 (NAD27) coordinates (E, N): 574159, 3634261; 574922, 3634108; 575915, 3634261; 577290, 3634566; 578359, 3634566; 579199, 3634261; 580039, 3633879; 581032, 3633421; 582406, 3633192; 583705, 3632810; 584697, 3632810; 586225, 3633039; 587370, 3633497; 588134, 3633726; 588821, 3633879; 589738, 3634795; 589508, 3635253; 589738, 3635635; 590119, 3635941; 590959, 3635941; 591952, 3635559; 592792, 3635406; 593632, 3634871; 594320, 3634031; 595083, 3632810; 595771, 3631511; 596000, 3630519; 595923, 3629679; 595312, 3628915; 594702, 3628304; 594167, 3628075; 592411, 3627998; 591189, 3627998; 590425, 3627998; 589280, 3628228; 588058, 3628915; 587141, 3629144; 586301, 3629449; 585003, 3629984; 583857, 3630595; 583170, 3630748; 582330, 3630671; 581566, 3630824; 580650, 3630824; 579581, 3630671; 578664, 3629679; 578283, 3628915; 578283, 3628151; 578206, 3626700; 578130, 3625784; 577595, 3625631; 577290, 3625326; 577214, 3624791; 577290, 3623951; 577825, 3623187; 578512, 3622653; 579275, 3621736; 580039, 3621126; 583136, 3619091; 585446, 3617261; 585698, 3616826; 585744, 3615522; 585561, 3614538; 584920, 3613898; 584193, 3613692; 583552, 3613600; 583021, 3614241; 582399, 3615485; 581960, 3616712; 580596, 3618451; 580070, 3618565; 579046, 3618300; 578054, 3617918; 578061, 3617609; 577347, 3616950; 576981, 3616492; 576221, 3616085; 575763, 3615856; 574923, 3615933; 574159, 3616238; 573548, 3616620; 573013, 3616849; 572326, 3617154; 571562, 3617765; 570875, 3618453; 570799, 3618987; 570417, 3619751; 570493, 3620515; 570722, 3621813; 570722, 3622500; 570722, 3623493; 570646, 3624333; 570417, 3625097; 570417, 3625937; 570188, 3626700; 570417, 3627846; 572249, 3630519; 572555, 3631664; 572478, 3632657; 572020, 3633955; 571486, 3634872; 570951, 3635864; 570187, 3637239; 569729, 3637774; 569042, 3638156; 568125, 3638308; 567209, 3638614; 566674, 3638996; 566522, 3639606; 566216, 3640294; 565911, 3641134; 565681, 3641668; 565376, 3642050; 564841, 3642508; 564460, 3642890; 564536, 3643425; 565147, 3644265; 565452, 3645029; 567132, 3644799; 568278, 3644189; 569271, 3643501; 569958, 3642508; 570111, 3641897; 570874, 3641668; 571715, 3640676; 572249, 3639072; 572937, 3638232; 573318, 3637086; 573318, 3635635; 573548, 3634643; thence returning to 574159, 3634261.

(ii) Note: Map of Unit 3, Carrizo Canyon (Map 5) follows:

BILLING CODE 4310–55–P

Map 5.
Critical Habitat for Peninsular bighorn sheep (Ovis canadensis nelsoni)
Unit 3, Imperial and San Diego Counties, California



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Dated: September 28, 2007.

Todd Willens,

Acting Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 07–4959 Filed 10–9–07; 8:45 am]

BILLING CODE 4310–55–C

APPENDIX D-3
BLM PUBLIC SCOPING MEETING
MAY 22, 2002
TRANSCRIPTION FROM AUDIO TAPE

BLM PUBLIC SCOPING MEETING
UNITED STATES GYPSUM COMPANY
EXPANSION/MODERNIZATION PROJECT
May 22, 2002
El Centro Board of Supervisors Chambers
El Centro, California
(Transcription from Audio Tape)

Jurg Heuberger:	Okay it is after 7:00 so we have given everybody an opportunity to arrive here, we'll get started. First of all good evening ladies and gentlemen. I appreciate everybody's attendance here tonight. Tonight's meeting here in the County Board of Supervisors Chambers, this May 22, 2002, 7:00 p.m. The purpose of the meeting is a public scoping meeting for the United States Gypsum Company expansion and modernization project. The purpose of which the meeting tonight is to discuss or to listen to the public comments regarding the environmental impact report and the environmental impact statement that the County of Imperial and the Bureau of Land Management _____ will be preparing. In the back of the room as you came in there should have been some sign in sheets and also some information and I would ask that if you had not signed in that if you would not mind doing so that you please do so at some point before you leave. Also during this presentation if you have any comments to make I would ask that you jump to one of the two microphones at the front of the room here, the 2 podiums and speak to the microphone so that the tape recording of this meeting will pick you up clearly. We also ask that you please state your name and preferably spell your name and state your address for the record so that in the event that you wish for us to send you some information we can decipher from the tape if we need to the information we might have missed elsewhere. Let me first introduce a couple of people up here with me and then turn this over to my left over on this side - Linda Self, representative from BLM and to my right Mr. David Brown from Resource Design Technology, the consultant retained by the County of Imperial in cooperation with BLM to prepare the EIS/EIR. Mr. Brown will pretty much lead the meeting tonight and make some comments and also I would like to introduce the representatives that will be presenting on behalf of the applicant information which includes I believe an overhead and all of the information that you see around here are also available for public review. Sitting in the front is Mr. John Bowman, an attorney representing the United States Gypsum and Bill Castrey sitting sort of in the back or standing up. To my understanding they will pretty much lead the applicant's presentation and probably also have some comments to make along the way. Again we appreciate everyone's attendance. I am sorry I can't see all of you, but the board does, but you are more than welcome to come up at the appropriate time and present us your comments and depending upon how many commenter's we have, we'll certainly afford everyone a time to speak, however we will also reserve the right to cut your dissertation off if it looks like its going to be too lengthy to where someone

	else may not have an opportunity to speak. So we ask that if you have the same comments to make that have already been made, we certainly welcome ditto or whatever terminology you wish to use to reiterate what somebody else may have already said. But everybody will get an opportunity to speak as we go through this. Again on behalf of the County of Imperial my name is Jurg Heuberger. I guess I should have said that first for those of you who don't know me. I am Planning Director for the county and I guess that makes me the responsible person in charge of this project, having said that I am going to let Mr. Brown go through his format and process a little bit and then we'll allow an opportunity for Mr. Bowman and Mr. Castrey to present the project.
Mr. Brown:	Thank you, I always like to get a feel for the audience and their familiarity with the process. There are a number of faces I recognize from the CEQA scoping meeting that we had back in January; if I could get a quick show of hands -- how many people are new to scoping for this project, were not involved in the CEQA scoping meeting -- I see a couple of new faces, at least four people, five people -- that's great -- and how many people have participated previously in a NEPA/CEQA process? Most of us -- good part. Well I won't bore you too much with this, but I do like to remind everybody of what we're trying to accomplish during a public scoping process. Public scoping has been a part of the NEPA process even more than the CEQA process for a number of years through Council on environmental quality guidance and the purpose of that process is to obtain early input by the public on the scope of the issues to be addressed in the document. NEPA traditionally does that through the scoping process even more strongly than CEQA which works through an initial study but does distribute public notices and asks for input also early in the process. The purpose of the environmental review process that we are engaging in, we've been engaged in since the CEQA process started in January and the federal process which was initiated on May 1st with circulation of the notice of the federal register is to analyze the potential impacts of the project that's proposed in front of us and to develop recommendations that would reduce or avoid significant negative impacts from the project. Under NEPA this process is primarily a public and agency disclosure process and acknowledgement of those impacts. The review process is triggered when a project requires a discretionary governmental approval in that the governmental body will invoke or make a decision. In BLM's case it's probably the district manager of this region or sometimes it's the CBCA office out of Riverside; in the County it's the Planning Commission or Board of Supervisors has the decision as to whether or not the project should be granted its permanent land-use entitlements. It's important to note that the EIR or the EIS is not a decision document in that it does not recommend approval or denial. It's a technical document. It's an analytical document that evaluates a project and the impacts that could arise from that project. It's a tool. This meeting then is to gather public input, then publications and federal registers; there have

	been publications directly to state agencies, through the county process, now at the federal agencies, also directly they are being consulted but we are attempting to get public input as part of this meeting and that period will continue through the 10th of June to receive public comment into the BLM. The format of tonight's meeting is that first we're going to ask the applicant to spend a few moments to present the project that it is proposing and then I'm going to talk again a few minutes about the environmental review process a little bit more specifically as it pertains to this project and then we'll open it up for public comment. So at this time, if U.S. Gypsum would like to tell us a little bit about their project.
John Bowman:	Thank you Mr. Brown, Mr. Heuberger and yourself. My name is John Bowman and as Mr. Heuberger has indicated, I'm with the law firm that is outside legal counsel for U.S. Gypsum on this project and, in just a couple of minutes I'm going to turn the podium over to Bill Castrey. Bill is the manager of U.S. Gypsum's Plaster City Plant and Bill is going to walk you all through the various components of the project that is the subject of this EIR/EIS. But we think it would be useful if I maybe spend just a couple of minutes and provide all of you with a little bit more background as to how we end up here this evening. Part of the project includes the modernization and expansion of the Plaster City Plant. That particular part of the project was formally proposed back in, I think, early 1998 and at that time the county made a determination that the project as proposed did not have a potential significant impact on the environment and therefore issued what's called a negative declaration. That determination was challenged in court by the Sierra Club. The Sierra Club brought a lawsuit claiming that an environmental impact report was required. Eventually it reached its way to trial court. The trial court here in El Centro did uphold the county's determination; ruled that that determination was correct under CEQA. At that time, U.S. Gypsum proceeded with construction of the Plaster City improvements as it was legally allowed to do. Meanwhile, however, the Sierra Club had filed an appeal and took its appeal to the California Court of Appeal of the Fourth District and eventually the Court of Appeal did issue a ruling which overturned the trial court decision. The Court of Appeal found that there was evidence in the record that there are at least potential impacts in two areas. One, potentially impacts on ground water in the Ocotillo area, and two, in terms of traffic generation. And for that reason, the Court of Appeal ruled that an EIR was required under the California Environmental Quality Act. By that time, however, the plant expansion had basically been completed -- substantially completed at that point. So that component of the project, as you'll hear, has basically been implemented and is up and running. The project has since been described more broadly to include other components that you're going to be hearing about in just a little bit and of course includes a variety of governmental approvals including a federal approval by the BLM for basically a right of way for the water pipeline. And that's where we have a NEPA trigger and that's why we're preparing a joint

	document at this point, an EIR/EIS. What's important to understand and I'll make one last point before I turn it over to Bill, it's important to understand that because of the unique situation where we find ourselves with part of the project essentially already been implemented, the baseline for purposes of environmental review for this EIR/EIS will be the physical conditions that existed in 1998; what we use typically is the physical conditions that exist when you start your EIR/EIS process. We feel its been back dated essentially because of the history that I just outlined for you so for an impacts analysis perspective, it will compare the impacts of the project basically in the conditions that existed in 1998. So with that background I'd like to turn it over to Bill and I think he has a Powerpoint presentation. Bill, if you want to come on this side of the microphone you're more than welcome to do so because . . . I don't mind you standing with your back to us but it might be easier for you to speak to the audience.
Bill Castrey:	Good evening. I want to thank the Imperial County and the BLM for the opportunity to make this presentation tonight. I'd like to start by introducing myself. My name is Bill Castrey. I work for the United States Gypsum Company and have been the plant manager at the Plaster City facility for over the past three years. I've worked with the company -- I've worked with the company for almost 22 years and actually started with the company at Plaster City back in 1980. The company has moved me around a little bit but I've been back to Plaster City three different times and actually lived at the company site in the company village for three years when my wife and I first were married and so have been very much involved with the plant for quite awhile. As an overview I want to first give a brief plant history, cover what the existing operations were before the expansion and then a brief overview of the areas where the expansion has occurred and as John said, there's a few places that are still to occur. The operations at this location really start as the result of gypsum being discovered in 1920 out in Fish Creek Mountains. From that a gypsum processing plant was built at Plaster City. That location was fit because it was closest to the location of then commercial railroad and to main highways for transportation. To transport the gypsum rock, a narrow gauge industrial railroad was built that we still use today. From the Fish Creek Mountains it's 26 miles to the plant. All of this was previously owned and operated by the Pacific Portland Cement Company. In 1945 U.S. Gypsum took ownership and then began operating the plant in 1946. Soon after the purchase we built a gypsum board machine which we refer to as the No. 1 Board Machine. It essentially made our standard products of 1/2" and 5/8" thickness. In 1956 there was a need for more specially type products such as our water resistant board and for 2 ft. width products with different thicknesses and so a similar but smaller and slower machine was built that could handle those kind of products.

	Since the No. 1 machine has had several equipment improvements but were only small incremental increases over the years to meet the ever increasing demand for homes and commercial buildings. There was really a need to modernize and expand our facilities as we tried to meet our market demands, which include LA, San Diego, Arizona, Las Vegas and even into Colorado on some of our products. We also include some of our products that go into Mexicali and into the Baja region. The demand for our products has increased and so there is a need to meet that demand. The slower, smaller specialty machine costs continued to rise and with the increase in our competition and the need to continue to be competitive in the market, there was a need to improve our overall infrastructure so that we can make lower cost product and continue to be competitive. We have since spent roughly $120 million at this location to install a new state of the art manufacturing line. It is probably the most technically advanced gypsum operation in the world, with a lot of USG technology and know-how put into it. As soon as we had the machine up and running, we shut down the old high-cost No. 2 machine, and it has been completely removed as of this time. So there's no way that we'll be able to operate that machine again. We've gone from an operation that employed roughly 325 employees at its capacity to our current level of operation where we now have 410 employees and we are still not at our full capacity. The new line has the capability of producing 800 million square feet a year when we are at full capacity and at its full efficiency, which we are not there yet. And when you look at the first 10 years of operation of this facility, of this new expansion, it is estimated that we will increase to the local economy in the range of $424 million. Some of the changes that were needed for the expansion is the new production facility which we refer to as the No. 3 Board Machine and an expanded warehouse in order to handle the additional board capacity and shipments. Previously we had a rock storage area that was uncovered and open to the environment. Now we have a covered rock storage area to control dust and is used for any emergency needs due to problems with our industrial railroad or at the quarry. There was a relocation of a switch for the San Diego/Imperial Valley Railroad that was moved as part of this expansion and the UP Railroads, also their easement was changed and their track was moved to make room for the expansion. The facility is designed to recover all waste product that is manufactured there as well as the opportunity to begin to reclaim the pile that we have that has been built there for the last 50 years. And so there is essentially no waste going out of the plant other than your normal paper and office type waste that goes out of most plants. All board is being reclaimed at our plant.

	In order to meet the needs of this additional capacity at the plant we had to increase the rock production at the quarry. Part of that was a new crusher that has been installed. We will also be updating the quarry reclamation plan and we've expanded our rock storage at the quarry, our covered rock storage also, to put it under, to also control dust. And it allows us for better efficient loading to our industrial narrow gauge railroad. There is also a need at the quarry for a new water well for dust suppression on our haul roads at the quarry. Our current well production is not enough to keep up with our needs to maintain that dust suppression. Other items that are still needed to be addressed as part of this scope and that were not part of the major expansion project is to replace the 15 year old water line that comes from our Ocotillo water wells. We continue to have leaks out in the desert and obviously that's not very efficient use of the water and we would like to replace that line so that we can conserve that water and it is also recognized that we will see us using water as part of this capacity when we are at full capacity of right at 767 acre feet per year at full capacity. The last item that needs to be addressed in the scope is the possibility of installing a co-generation facility for production of heat that we can use in our kiln and electrical power. To summarize, the reason we did this is we needed to meet the demand for new family home construction, home repair and remodeling, as well as commercial businesses in our market areas. We needed to remain price competitive and cost effective. This expanded facility will enable us to continue our long tradition of strong, stable employment for the people of the Imperial Valley and the county. That's all I have. Thank you.
Bowman:	I'd like to point out that we do have graphics -- 4 or 5 graphics here [inaudible] if you haven't had a chance to look at them, please feel free to take a closer look; the purpose of these diagrams is really just again to help you understand the nature of the project in its regional setting. Obviously in the draft EIR/EIS [inaudible] probably a few months down the road there will be many more maps and many more diagrams that will [inaudible] the environmental setting in relationship between project and the various; this is really just [inaudible] perspective [inaudible]. Feel free to come up and take a closer look.
Jurg:	Thank you John and thank you Bill. That was the presentation that you guys had, right, there's no other presentation right now?
Bowman:	That's correct.
Jurg:	Thank you. In that case, Mr. Brown, you're going to go through the basic CEQA/NEPA procedures?

Brown:	Yes. The steps in the process that were engaged in are the following: Right now we're involved in determining the relevant issues. Again we have done some of that under the CEQA process. We're now engaged under the federal process with federal agencies determining relevant issues of concern. We then move into a period of draft EIR/EIS preparation wherein we establish the existing conditions as were mentioned. Some of those are as they were in 1998; some of them we are backtracking for the plant as to what those conditions were; we then analyze the environmental impacts of the project whether those components are constructed or not, that the project in its totality is evaluated and determine measures that could reduce or avoid any of the environmental impacts that are identified. Alternatives to the project are also evaluated in terms of identified impacts and methods to reduce those impacts. At that point we'll issue a draft document for public review and everybody gets a chance to write in comments, tell us what we missed your point and need to elaborate on and we evaluate all of those comments and then prepare a final EIR which can take the form of revisions to sections of the draft EIR, can take the form of explaining, clarifying what the draft EIR meant where more explanation is needed or simply giving responses to the comments explaining for the particular comment or where the information is to be found or so forth. Following that the county and the BLM consider the environmental document as to whether it has adequately evaluated and disclosed the environmental consequences of the project and at that point on the county side the EIR is certified and it escapes me what BLM's process is called at the moment, and that is certified -- the R.O.D. is issued, I guess that moves right into the decision I was trying to separate the decision on the environmental document itself, that it has done its job and adequately discloses the circumstances and then the decisions are made actually after that. The county, for example, has to find that the document has done its job and then a decision is rendered. And I make that point because of what I said earlier where this document is not the decision document; it's simply one piece of information that's used by the agencies. The county and the BLM had identified a full range of issues for us to evaluate as part of this document. Those are listed in the public information packet that you have with some details below them. I'll mention just briefly the major subject areas and those are hydrology and water quality, air quality, transportation, circulation, biology, geology, paleontology, public health and safety, acoustics, recreation and scenic, cultural resources, hazardous materials and land use. We've received a number of comments from the scoping that we have already had under CEQA. Some of you already participated; submitted both verbal and written comments. Those have all been compiled and we have a running list of the comments that have been raised and will continue to expand that to keep track of all the issues that are submitted from the federal agencies as those come in. So I only

	mention that in that if you have commented on those issues before, we heard you and those will be considered through this process. The preliminary schedule at this point is I mentioned the BLM scoping period ends June 10th. We're moving in to the final stages up to that point of draft the EIR evaluations and then write up and in the summertime with the draft EIR perhaps issued in August or September. Public agency and review comment would happen over the next six to eight weeks following that and following that would go into the final EIR preparation period that I mentioned. At this point, unless there is anything that I've missed…
Jurg:	Before we go just for the decision process, excuse me, at the county level this project will ultimately ask for the final EIR has been prepared and ready for consideration the county's processes that will go before the Imperial County Planning Commission meets here on the 2nd and 4th Wednesday of every month in this room; that meeting will be noticed but it is in this room at a date and time yet to be determined. Typically a project of this type can be approved or denied by the Planning Commission; however, there is an appeal from the Planning Commission's decision to the Board of Supervisors unless there is a legislative action required, the Board of supervisors does not automatically hear these items; they will hear it only on an appeal. So the notices that you will need to look for or be on the mailing list for will be for the Planning Commission for the county. Just to alert you to that fact so that when you see those notices or if you'd like to get direct mail notice and you are not on our list for some reason please let us know, we will put you on that list. Certainly your sign-in sheet has the right amount of information will be used as also providing notice, but if your sign-in list can't be read, I'm sorry, we can't mail it to you and you know, that's the way it is. So, I think at this point in time, Linda, you didn't want to make any comments …
Linda:	I don't have anything.
Jurg:	Thank you. Again, this is going to be a public comment period which essentially means that we will take your comments and we would like you to come to the microphone in any order you would like. Please feel free to take either microphone but please speak into the microphone because this recording system is not the best in the world and we do ask that you state your name clearly. Preferably also spell it and give us your address as well and proceed to give us your comments. And again, as I said, we will certainly allow an adequate amount of time but we'd like to make sure that everyone has an opportunity to address it. So, you know, I will reserve the right to terminate your discussion if it seems like it will take the rest of the night and nobody else can speak. So whoever wants to dare to be first, now's your chance.

	Surely someone's going to say something. [inaudible] That doesn't mean you get all night, but okay.
James Ricker:	My name is James Ricker; I'm speaking as a private citizen tonight. And because I'm first I don't really have a lot to say. I am concerned that this EIR address social justice issues; I'm concerned that the outreach for the scoping process reach people of color, people who speak Spanish, people who live in Mexico. The water from which the will, the Ocotillo clarity wells, ground water is part of the, at least at its southern half, goes into Mexico. I feel that issue should be addressed with whatever -- with the Mexican authorities, water authorities and environmental authorities, possibly the DEEC, the border environmental agencies, and I feel that a socioeconomic analysis should be part of the EIR process telling us all how many jobs, how long the jobs will last and how well they're paying for the people of Imperial County, who deserve good jobs. The air quality issues should be addressed, especially considering the prison right down the street. Those guys don't get to move out of the way and I feel that's an important issue that probably hasn't been looked at too closely. I think that's all for me. Thanks.
Jurg:	Thank you Mr. Ricker. [inaudible]
Terry Weiner:	Hi. My name is Terry Weiner. I live at 4544 Maryland Street, San Diego, California 92116 and I'd like to speak to you as a lover of the desert, and one of the big issues I think for me is the fact that the fish and wildlife service has designated critical habitat in Imperial County for the endangered big horn sheep and from what I understand reading the BLM notice about this project is that your expansion of your quarry will definitely go into big horn sheep habitat. I too applaud you for being such a long-term good employer for Imperial County but we have to figure out a way for you to continue to do business without endangering the few remaining sheep. I understand that the quarry would dig down into the wash that will effect the water that flows down to an area, San Sebastian Marsh which has the endangered desert pup fish which again is a species that is about to go bye-bye and we can't afford to lose an inch more of its wetland habitat. The other issue I've been hearing about is, and we hear about it all throughout the desert is the ground water issue. Desert aquifers are ancient and they're being stressed all over the desert and people have to realize that in Imperial County the general plan calls for limiting population growth because they want to protect the aquifer from being downdrafted and from what I understand the downdraft is alarming in the Ocotillo/Coyote Wells aquifer and your statement that you're going to go from 400 acre feet to 767 acre feet annually I don't think is justifiable, especially when Imperial County has approved transfer of water

	to Imperial County for industrial uses, I think you definitely ought to use water from the Colorado river. I know you have to treat it, but so what. This is fossil aquifer water in Ocotillo that needs to be protected. You know, you can make a good profit but we want to see a cost analysis of just how much profit you'll lose by having to treat Colorado river water. I'm also following the proposed listing of the flattailed horned lizard whose habitat has been stated you'll be effecting by this quarry expansion. So I believe that any decisions in the draft EIR stage should be postponed until the Fish & Wildlife Service in December has decided whether or not to list this as threatened species because it's going to need, as it does now, to have its habitat protected from anymore degradation. I'm also interested in the fact that NEPA you know is a public process and I don't think one scoping meeting is enough to give the people in the Imperial County and other areas who enjoy the desert and who want to see big horn and the flat tailed horned lizard and the wilderness area protected, they need a chance to list some of their issues too. This expansion is going to effect Fish Creek Wilderness area so you must address the quality of wilderness area; quality of the wilderness, which will be impacted by this expansion and Imperial County being a non-attainment air basin, every time I come, not today, but when we were coming over the mountains from San Diego, the air was pretty clear except in the south over towards Mexicali, but generally speaking I can be anywhere in Anza Borrego or up in the mountains and I can see the plumes of dust from Plaster City factory for 20 miles and that needs to be addressed in detail, how many tons of particulate pollutants are gonna increase, although it sounds like you've made some good strides with covering over some of the processing -- that sounds great. But I would like you to have another scoping meeting so I can get people -- the people in Borrego Springs and the Anza Borrego State Park people are doing a new general plan -- they're first general plan right now and I'm sure they'd like to hear about how this expansion is going to effect the state park whose boundary isn't very far away, although I know it's over 300 feet, but not too far away from expansion and the dust and the noise is certainly going to effect the quality of the park experience. Thank you.
Jurg	Now can I ask you a question for clarification -- I thought I heard you say something and I may have misunderstood you -- think you made a statement about the County has approved the transfer of water, or something to that effect.
Terry Weiner:	I'm sorry, I didn't speak very clearly on that -- I saw your face on that. What I understand is that it is approved -- Imperial Irrigation District has approved the use of Colorado River water for industrial uses in Imperial County. This is all aside from any water transfers to any other county.

Jurg:	Okay, I think I understand you. Thank you.
Jurg:	Come on up, we don't bite.
	[inaudible]
Richard Dennison:	I'm Richard Dennison. I live in San Diego at 3814 Boone St. I'm gonna be living at 960 Sage Road here within about 4 years so I'm very concerned about the water that we're pulling out of my son's well. Making sure that its quality is still there for generations on. I say ditto the gentlemen and the lady that just spoke. One of my concerns was that what happens to this water that they're taking outside of the Ocotillo area to use for dust control; what's gonna happen if that drops down below a point that affects the basin that we're using. I guess I'm selfish because I'm concerned about the water quality for our wells and I hope it remains usable. Thank you.
Jurg:	Thank you Mr. Dennison and thank you for your ditto comment.
Harriet Allen:	Thank you for the opportunity to speak. I'm Harriet Allen. I live at 3750 Elcanto Drive in Spring Valley. I have been working on desert issues for many years. In fact, the other day I uncovered a 1977 letter which I had written to the governor regarding the air quality problems associated with the coal fired power plant to be located in Plaster City. So, Plaster City has been in the news for a long time and the air pollution was noticeable what, 30 some years ago, and we have not improved it. As a matter of fact, in a recent newspaper article, both congressman Fillner and Hunter expressed concerns about the air quality in Imperial County due to the new power plants that were going in Mexicali related to the Baja pipeline. So goes a long way back the people who have been concerned about this area. I speak as an individual today, but I'm going to start out with some comments that my engineering husband raised after your scoping meeting the last time. You probably have addressed them completely and we'll be looking for the timelines and so forth as to the waste material that is behind the Plaster City plant. It's highly visible from Highway 8; it looks like it's longer than the old building site and the question that an engineer raises is what kind of a management does Gypsum have that allows so much waste from a process? Apparently about 10% of that waste pile can be absorbed in a single batch, but that leaves 90% of the waste still in the pile which would appear that the pile is going to keep going faster than recycling by reprocessing can take care of. We wonder if the waste is being stored for future use and this is not a politic thing to say but when the gypsum supply diminishes there would be a good market for recycled gypsum. We don't know whether the stockholders know . . . [END OF FIRST TAPE SIDE A -- NOTHING ON SIDE B] [BEGIN TAPE 2]

	. . . be a good market for recycled gypsum. We don't know whether the stockholders know of this excessive waste from the product line or not. We're not into that kind of thing. But I think that the whole waste situation and recycling statements have been made tonight we need to get a handle on it. We need timelines on when that waste pile is going to go down to a level which meets modern production standards and we wonder if by any chance that waste pile can be reduced. I'm referring the matter to groups like Habitat for Humanity, President Carter's group, who helps build homes for the low income people. It might be that they could use some of those pieces of good wallboard that are out there. We have a social obligation to some of our people. Okay, most of these are other concerns have been covered already. I presume both the county and the BLM are working on all the factors that are included in the lawsuit; I won't go into that. My second main concern is the impact of the expansion on Anza Borrego Desert State Park. Probably the largest state park in the country; the most diverse; highly visited. A part of the bio-international, international biosphere reserve; a national natural landmark; and very visible in this area. Fish Creek and the elephant trees are tourist points; they're hiking points; they're meditation points; they're valuable to the park visitors and how can we put a monetary price on inspiration? One group in Anza Borrego, the Anza Borrego Foundation, since 1967 has been dedicating its time and money to acquire private in holdings within Anza Borrego State Park. In 1967 there were over 67,000 acres of private in holdings; it's down to around 25 and it's all been private money. The Natural History Association, a different group, has many hikes and tours and features in the Fish Creek areas and its tributaries. Oil Peak, all of the places that converge on the expansion area. I am not sure if the county of Imperial has studied the roads situation. I know that San Diego County probably has some jurisdiction over the roads leading into Fish Creek which is on the San Diego side of the border. The state park has responsibility and liability. And how does a visitor in Anza Borrego going to know when they step onto a piece of Gypsum property; at that point, Gypsum then becomes liable. I think that the vision that the county has made between San Diego County, Imperial County, between Imperial County and the Anza Borrego State Park, has to be addressed. There have to be findings not only in the draft but in the final EIS/EIR section 15125 requires an investigation of the vicinity of the project and it's quite explicit; NEPA has similar requirements under adjacent jurisdictions. I didn't bring my library so I don't know its number but I'm -- I think it can be identified easily. I'm extremely concerned about the visual impact of expansion, of these rock storage places that will be under roof. Anza Borrego is noted for its amenities and not by its industrial thing. The peak power that involves Fish Creek, the wilderness area, the Fish Creek wilderness, within as far as I can tell from past papers from peak power, would be on the east side, up above your railroad. There's a lot of work to do in this facility and you can't sweep it under the rug. We won't let you.

	I think that that's all I'm going to talk to you today. You might want to check with the regular chamber of commerce to see what they think with their tourist industry. And the cumulative impact will have to be addressed. The mitigations, the stipulations of the U.S. Fish & Wildlife Service for endangered species. There are three overlays here as I understand it. Of animals, not to mention plants. So we hope that the draft will address these things so we don't have to keep coming back and getting supplementals, so forth and so on. Thank you for letting me spout off.
Jurg:	Thank you ma'am, before you leave, just one clarification.
Harriet Allen:	Yes Mr. Heuberger.
??	I wasn't quite clear what you meant by the peak power?
Harriet Allen:	Peak power? You mentioned coal generation along someplace. Peak power is the facility that would be up on Whale Peak. Whale Peak? My geography just flew out the door. But it's above your railroad, around the curve from the quarry. We have the papers on it. The documents. It's the one where they pump power up -- water up; store it; then when they need a lot of energy somewhere they drop the water down and hold it until they can pump it up again. It's a rather exotic process. Thank you.
??	Thank you.
Edith Harmon:	Edith Harmon; and I'm speaking tonight as an individual because I only had one hour of sleep last night and I want to make sure that I don't make technical mistakes in what I'm saying. Ocotillo. And I've lived in the Ocotillo area since 1975 and been familiar and working in Imperial County since 1974 in western Imperial County. Involved in a lot of research on groundwater issues, as I'm sure the county is well aware and wildlife issues; doing a lot of research on wildlife. I was involved in the preparation of the scoping comments for CEQA which were submitted by Sierra Club as a protective counsel and the center for biological diversity and at the request of Mr. Brown the consultant the comments were submitted in three bound volumes totaling 819 pages. Included one copy of everything that these organizations had submitted that we could find since 1993 when the first proposal for the U.S. Gypsum expansion came along and comments that were submitted following the filing of the lawsuit in January of 1991 because after that point the County started talking about the expansion of the quarry lot mergers and so every set of comments that was submitted at every opportunity through I think 2001 and I have found even some more so there are quite a lot of issues that have been raised and addressed because some of the people in the room, probably from Ocotillo and may not be familiar with the issues; this project involved two separate ground water basins. One is the Ocotillo/Coyote Wells Groundwater Basin

	which supplies domestic water to the residents of Ocotillo and No Mirage and Yuha and the overlying about 15,000 acres of private land; the majority of land over that groundwater basin on the U.S. side is in fact public lands that belong to all of us that are managed by the Bureau of Land Management. The rights of way that are being proposed by U.S. Gypsum would go through public lands managed by BLM and regardless, there's two options for the factory to use water. One is from to continue siphoning an unspecified, unmonitored amount of water from the Ocotillo Basin and I don't know if there is a flow meter on the well but there certainly should be a flow meter on each of the three wells that are pumping from the Ocotillo Basin and the amount that's being pumped from each well should be disclosed. The date and size and capacity of each well should be included. Those three wells are located very close together between the communities of Ocotillo and No Mirage and there's a very large cone of depression that extends throughout most of the private property in the basin centered at the U.S. Gypsum pumping point. The basin has its terminus in the Laguna Salvia in Mexico and our understanding is that there is indeed development on the Mexican side. At one point in the early 1990's there was a proposal to pump about 1000 acre feet of groundwater from around Sunrise Butte for agricultural purposes and the draw down that was done in that study was pretty amazing, the amount of water that was going to be drained out. I would encourage that this study, because of the controversy and the fact that U.S. Geological Survey has been gathering data and monitoring since 1975, with fewer wells being monitored now than were originally monitored, all those wells should be remonitored both for water level and water quality and I believe there should be an independent analysis, groundwater analysis, and I would urge that that study be independent evaluation, be contracted and done by David Huntley, who used to be the county's groundwater consultant. He was the consultant on groundwater issues for both San Diego County and Imperial County, and he is very much familiar with the issues in this groundwater basin and served as the County's expert witness in litigation to prevent or to stop the export of potable groundwater to Mexico. And the export of potable groundwater to Mexico was a small fraction of what U.S. Gypsum proposes to use. So the concerns of U.S. Gypsum's operation are far more and I would note that the public that wasn't at the meeting before, if you read the decision of the appellate court, the court pointed out that the documents that were prepared by U.S. Gypsum _____ study originally could not substantiate -- there was no production to indicate, that could substantiate U.S. Gypsum's asserted highest annual usage, which is a claim of 760 acre feet a year. I think the public deserves to know what the production records were for the time and the estimated water usage for that. There is a technology, it's a no___ technology -- there is no reason to disturb the surface of the ground; no dig technology is being used to install pipe and water system; you can get the information from the internet; there's any number of companies that's being used worldwide and when you're talking about putting a right-of-way

	for water resource through public lands it should be no-dig technology; one more reason why using Colorado river from the west side main canal, which is only four miles away is much more appropriate, and the right-of-way -- it was in the early 1980's when Texas Industries, the Creole Corporation, wanted to put a cement plant out to the northwest of Plaster City, the Board of Supervisors was not willing to approve the use of 250 acre feet of groundwater at that time for industrial purposes and at that time BLM and Imperial Irrigation District did whatever was necessary in terms of paperwork and my understanding there was by act of Congress, the boundaries of Imperial Irrigation District were extended out to past to the west of Plaster City so that Colorado river water could be used for industrial purposes for both the Plaster City site and the Creole Corporation. The County general plans specifically states that with regard to the Ocotillo/Coyote roles groundwater resource that the County would be working with Plaster City and Imperial Irrigation District to secure Colorado river water for industrial purposes rather than continue to use potable groundwater for industrial purposes. The groundwater basin at the Fish Creek Quarry, and I should add first of all the map that you've got, the vicinity map, is dated 1992, which is two years before the passage of the California Desert Protection Act. That map shows an inaccurate location and boundary for the U.S. Naval Facility and it does not disclose the location of any of the wilderness area, including the Fish Creek Wilderness area which surrounds, pretty much surrounds the quarry site. The EIR/EIS should eliminate this map that's being shown and use a current map. AAA provides a map of Imperial County which shows the location of the quarry, the rail line and all the wildernesses and navel reserve lands, and I'm assuming that that information came to AAA from BLM and that the boundaries are probably correct, or at least certainly more correct than that map. With regard to the quarry operation, I find it very troubling that U.S. Gypsum would want to go, what I've heard, a hundred feet deep into the Fish Creek wash. I don't know what the standing water table in that area is but I understand that there are radio collared Peninsular Big Horn Sheep in that area right now. One of the issues that has to be addressed since it is an endangered species and the area for expansion and the area that is being sought for patenting, in other words, to get the land from BLM to private land, is all in critical habitat for the Big Horn Sheep and I believe that the patenting issue should address the impacts of a transfer of federal land for mining purposes on this land is in critical habitat and that habitat is a wash being used by a species with really a fairly small population and very sensitive. If the wash is diverted that will have impacts on subsurface infiltration and possible migration of groundwater to which ends up in the San Sebastian Marsh and the Felipe Creek critical habitat for desert pup fish. Water does not seep into the swirls; either way it depends a lot on the subsurface geology, so if you're talking about diverting the creek or

	backfilling or whatever, you're talking about changing the existing topography in the way in which groundwater or rainfall is going to seep in to the area. I think there needs to be consistent water quality samples and I don't know whether this has been done in the water that's the source for the critical habitat for desert pupfish, but monitoring ought to be done now and continuously on a regular basis at least quarterly. There are real issues as to the quality and quantity of water available for desert pupfish. If you go deep into the wash and you're below the groundwater table, there's a potential for dewatering of that portion of the groundwater basin. It's my understanding that the groundwater basin that feeds into the San Sebastian marsh and the _____ creek area has not been detailed; certainly detailed the same way the Ocotillo basin has been; there's been some monitoring but there needs to be a complete hydro-geological study of that basis and I would urge that that be also independently reviewed by Dr. David Huntley. But the water quality issue -- so at the quarry we have two endangered species issues, each one the quarry operations has a potential to impact critical habitat and the very survival of animals that are using their area. I think the quarry operation needs to look at severely restricting the hours and the manner of operation, the types of lighting, the times of blasting; if this is an area that's important during a lambing season and for use by the ewes and the lambs; I've just been reading through the recovery plan for _____ big horn sheep and there are specific issues addressed to mining. And I think that needs to be looked at. In terms of -- for the quarry I would like a tour of the quarry before the end of next week, before the comment deadline, so I can see for myself what's going on out there. I would request that during that site visit that there be someone from U.S. Fish & Wildlife service and someone from the office of mine reclamation, perhaps somebody from the California Department of Fish & Game; I would like to see the quarry in the presence of some really knowledgeable people whose agencies have a responsibility, a mandatory duty to comment on varying aspects of this project as affects their jurisdiction. And I think that would be very useful. It's pretty difficult to go wandering around on patented land that's already private without permission. The unpatented land technically one could get to, but I feel it's much better to see the site with people either from the company, with BLM and with state and federal people. So I would make that specific request. And while I'm at it, as another specific request, I request that the transcript of this meeting be made available on the internet or BLM website so that responsible parties for responsible agencies with a duty to respond can find out what has been said by the public and the presentation that's been made by the County and the responsible party for doing the draft EIR/EIS, so those who were not here can hear for themselves what was going on. Where was I. The quarry operation; there's a concern, given the quarrying and also the .. there's a growing body of published material on the impacts of

dust -- fine dust and particulate matter interfering with the sunlight getting through the _____; interfering with photosynthesis; I think there needs to be an evaluation of what during this particularly strong drought period increased accumulation of dust from the vegetation that's really important to the big horn sheep is doing to the health of the sheep, whether it's rams, ewes or lambs. If we're seeing a significant reduction in the quality of forage it may be effecting the reproductive success of the species and that needs to be covered in detail and I hope that whoever the biologists is that are looking at these issues have some specific expertise on the species that they're looking at.

In terms of dust, whether its from the quarry or the factory site, and at times when the particulate matter is really bad in the air there's like a low underlay, almost looks like snow, as I go down Interstate 8. I'm assuming the light that's below the dark air pollution is fine particulates that are leaving the Plaster City site. I think that there needs to be a study looking at the impacts of dust on vegetation that produces the seed for the harvester ants which are the main source of food for the Flat Tailed Horned Lizard. The project goes through two Flat Tailed Horned -- between two Flat Tailed Horned Lizard management areas -- the West Mesa management area and West Mesa ACEC and the Yuha management area and ACEC. I would also add that the Ocotillo/Coyote Wells Groundwater Basin also underlies significant portion of critical habitat for all the Peninsular Big Horn Sheep and some of the wash vegetation is there. If the groundwater level declines below the root zones, the unusual plant assemblage, the mesquite ____ or the wash vegetation, there's a possibility of the decline of those populations or depth of the root if the water goes too far. So I think that's an issue that has to be addressed by BLM because these lands are on public lands. Critical habitat.

I might add something that's real interesting -- please let me do this and don't stop me. I found when I went through the county files a memo called "Background U.S. Gypsum" -- it was submitted as Exhibit 116; it was describing the court impacts and it talks about the order of the superior court following the appellate court decision -- the 4th Appellate Court decision. An EIR was ordered to be prepared and fully not all the issues were before the Appellate Court because of the way the project had been piecemealed before, but one of the other things that the Superior Court had in its decision was revocation of the permits for the Plaster City facility. I want to read one section in here on ramifications.

> "Revoking Building Permits." This is an unusual step insofar that the construction is nearly done. No one seems to know exactly what revoking will accomplish. One possibility would be for the Sierra Club to then request the county to order the demolition of all work done to date which will be the

	standard requirement for any project built without a permit. Next best case is that the permits will be revoked and USG will be ordered not to use the buildings pending completion of the EIR. The best case is that USG is allowed to continue to operate even though the construction technically does not have permits." This document has a footer at the bottom that says "JLY Gypsum Summary One" and I'm assuming that JLY is county assistant county counselor; I'm not sure what the position is now, it's Jan Yeager, who prepared this, and this document was prepared before U.S. Gypsum filed for bankruptcy, so right now it was submitted as part of the documents in our earlier submission that the appellate court put things on hold pending the proceedings and completion of bankruptcy proceedings. I think the EIR/EIS needs to have a full discussion and disclosure of what the bankruptcy proceedings, how they have altered the whole EIR/EIS process and the significance of what it means to comply with the county's requirements for building permits. I'd like to know when U.S. Gypsum, and this was a voluntary filing -- I've read the Securities & Exchange Commission filings for the past four years -- one of the notes in the SEC filing from U.S. Gypsum was that environmental litigation would not affect the operations of the company. Great. There was an ongoing lawsuit and it didn't affect because the company filed for bankruptcy and that's not the way things are supposed to be done. So I'd like to know when bankruptcy proceedings are going to be completed and why the U.S. Gypsum and Plaster City operation felt a need to file for bankruptcy, particularly given the financial information that was provided on the paperwork that the company supplied to BLM about annual sales of wallboard. If my memory is correct it was $2 billion, with a B, a year. And I don't understand why a company that has that kind of sales needs to go through bankruptcy. I think the EIR/EIS should also include full disclosure of the taxpayer subsidies from Imperial County to this company. Again, there should be a flow meter on each and every well and that should be regularly monitored. The last time I believe I asked I was told that to date U.S. Gypsum has not put a flow meter on and does not know how much water is being siphoned from the wells in Ocotillo. I would assert that there are several water rights that go with public lands and the critical habitat for desert pupfish. There's a court case on the Devil's Hole pupfish and again one needs to look very carefully at the operations of the quarry on water quality and availability to the pupfish. There's a public trust issue associated with each groundwater basin and the uses of the water from that basin.

	I guess that's sort of it for right now. There will be additional comments I'll be submitting and I suspect other organizations will be submitting and can I get a date for a tour of the quarry now, or who do I have to call to find out when and where I'm going to be able to get a tour of the U.S. Gypsum quarry?
Jurg:	I would suggest you contact United States Gypsum Company; it's not one of the purviews of the county to request tours. I request that this be done after the meeting or tomorrow; it's not part of . . .
Edith Harmon:	I'm suggesting if Mr. Bowman -- are you the appropriate person? Or . . .
Jurg:	You can deal with Mr. Castrey or whoever. [inaudible]
Edith Harmon:	But I just want to let you know that when there have been proposals at the Mesquite Mine, whether it's for expansion or landfill or the proposed Clamas/Imperial project and _____ mine, there've always been the opportunities for public tours of the site and the ability for the public to see . . .
Jurg:	And I don't think we've said there wasn't the opportunity, we're just not in a position tonight to grant you a tour of property we don't own either.
Edith Harmon:	I know, I'm just telling you that I, it's very useful to the public.
??	I think Mr. Bowman's expressed that the company's willing to talk to you about a tour; he may not be the one to do that; it may be Mr. Castrey or whoever from the plant that has to arrange that and I don't know if he's still here or not; I saw him earlier but he may be . . . he stepped out for a minute. Okay, thank you. Anyone else wish to make a comment? [inaudible] Well could we wait and see if there's anybody else? In case that one more comment takes an hour and they have an opportunity? Anyone else that wishes to make a comment at this time? Alright Edith, one more comment.
Edith Harmon	I did get a call, an answering machine call, and returned the call, got a call from someone from the ___[Quitfom]___ Tribe whom I'm assuming that there is a concern about the archeological and cultural resources. I think it's critically important that every aspect of this project look at offsite impacts

	more than just very short limit away from the actual footprint of the project and when it comes to archeological or cultural resources and biological resources that you be sure that things are done at the right time and that there be knowledgeable people and for archeological and cultural resources that means knowledgeable people from this area, whether it's Jayva Moreloff or whether it's tribal members, the Quitfom Tribe has a trained archeologist, Laurie Kachura and he is certified and qualified; there are other tribal members that have expressed great concern and I think that that be done and these issues come because of problems that BLM faced and the county faced with regard to the proposed Glamis gold Imperial project; an inadequate archeological and cultural resources survey was done it was criticized from all directions and as a result of that there had to be another revised draft EIR/EIS. Also the biological resource review, botanical review on that project was done by a consultant from Colorado who came down at the wrong time of the year to do the plant survey and couldn't even find gypsum weed which even Ed Hasty the BLM state director agreed you could identify at 55 miles an hour going down the road, so it was woefully inadequate technical study because they were done by people who were not here at the right time of the year and in fact, on the biological resources study, the survey was done in January but the cover date was May, which really misled people unless you read through the fine print, so I would encourage you please be careful.
Jurg:	Okay, thank you. Okay, I'm going to make one last call to see if anyone wishes to come forward and make any comments, because if not, we're going to close the meeting, so, I'll give you about 15 seconds to think about it. Come on up and state your case. Well I don't see a mad rush for the microphone so I'm gonna assume that you've all had an opportunity. Certainly I would hope none of you would think you didn't have the opportunity. On behalf of the County of Imperial, on behalf of the United States government, the Bureau of Land Management office and on behalf of the company, we would like to thank . . .
Edith Harmon:	I have one more question; [inaudible] the IRS [inaudible] postmark . . .
Jurg:	You have the wrong department; this is the BLM, not the IRS . . . if you want to send us a check though, we'll consider it postmarked, but other than that, let's proceed. Again, as I was saying, just that we should note that as part of that, that it says on the introduction page, [inaudible] comments cannot be received by BLM by fax but they can receive them by email, so we do have that other way of getting comments to them.

	Yes sir.
??	Will there be an adequate noticing in San Diego and possibly a newspaper [inaudible] the draft EIR/EIS?
Jurg	There will be noticing; I'm not going to debate with you whether it's adequate or not because for that I'd have to consult a whole bunch of attorneys and we'd never agree, so let's just say it's going to be noticed. Any other questions that we can answer? Alright, once again if you haven't signed in, we would kindly ask that you do so; if you'd like to be on the mailing list to get notices, please make sure that we can read your name, mailing address and feel free at any time if you do have comments or questions you can email them to the County of Imperial or to the BLM office. Do not mail them to our consultants. They're not authorized to accept them on our behalf. You need to send the information to us either at the County of Imperial or the Planning Department or the Bureau of Land Management at their South Fourth Street address, and again, I thank every one of you for attending tonight, for making your comments and please take note of the notices that will be published and/or sent out and at that time avail yourselves to make comments on the draft document when it comes out for public comment. And again, thank you very much for being here tonight.

APPENDIX E
OFFICE OF THE SOLICITOR DECISION: CROWN RESOURCES CORPORATION, 12-20-2004

United States Department of the Interior

OFFICE OF THE SOLICITOR

CERTIFIED MAIL - Return Receipt Requested

DECISION

Protesters	:	MAG 30
	:	MAG 31
Confederated Tribes of the Colville	:	MAG 32
Reservation, Okanogan Highlands	:	MAG 33
Alliance, Washington Environmental	:	MAG 34
Council, Kettle Range Conservation	:	MAG 39
Group, and Colville Indian	:	MAG 40
Environmental Protection Alliance	:	MAG 41
	:	MAG 42
	:	MAG 53
	:	

DEC 2 0 2004

Protest Dismissed

On April 16, 1992, Crown Resources Corporation (Crown) submitted a patent application for sixteen lode claims located for gold. The mining claims were located in April and May 1991 (amended on November 17, 1991), and are situated almost entirely within the Okanogan National Forest and in the Myers Creek Mining District near Chesaw, Washington. The Secretary of the Interior signed the First Half of Mineral Entry Final Certificate (FHFC) on June 5, 1995. The United States Forest Service (Forest Service), through an agreement with the Bureau of Land Management (BLM), examined the mining claims on October 6 and 7, 1998. BLM completed the original mineral report in May 2000, recommending nine claims covering approximately 155 acres for patent.[1] Western Mine Engineering (WME) of Spokane, Washington prepared the economic analysis for the mineral report under an agreement with BLM.

BLM's initial recommendation to patent Crown's claims was based on the company's original proposal to mine the deposit using open pit methods. However, before development could begin or the patenting process could be completed, Crown redesigned the project as a much smaller underground mine called the Buckhorn Mountain Project. Crown submitted to BLM a revised reserves estimate on June 1, 2002, based on a newly-designed underground mining operation.

WME's economic analysis factored in a royalty on net smelter returns payable to Newmont Gold Corporation (successor to Crown's former development partner Battle Mountain Gold

[1] Crown requested the following claims to be withdrawn from the patent application: Mag 36, Mag 37, Mag 38, Mag 51, and Mag 52 in 1995; Mag 35 in 1999; and Mag 34 in 2003.

Company). The economic analysis also included the capital costs of constructing a mill, although Crown recently signed an agreement with Kinross Gold Company to use an existing mill nearby, which will substantially reduce overall costs.

BLM completed a revised mineral report analyzing the underground mining operation on March 10, 2003, and again recommended the nine remaining claims for patent. BLM's Headquarters Office gave its technical approval of the mineral report on May 13, 2003.

Since Crown filed its patent application, several environmental groups and Indian tribes have filed legal challenges before both state and federal tribunals. In May 2000, the Confederated Tribes of the Colville Reservation, Okanogan Highlands Alliance, Washington Environmental Council, Kettle Range Conservation Group, and Colville Indian Environmental Protection Alliance (collectively, Protesters) filed this joint protest against issuance of the Crown Resources patent, alleging that patent should not issue because Crown had failed to demonstrate a discovery of a valuable mineral deposit and because Crown's mining claims were improperly located. Protesters state that the allegations they put forth are grounds for BLM to deny the patent application.

We have reviewed the protest under the standard of review discussed below, and find that Protesters have not demonstrated that BLM's determination that patent should issue was in error. Consequently, for the reasons stated below, the protest is denied.

I. Standard of Review

In a patent application protest, the burden is on the protester to demonstrate by a preponderance of the evidence that BLM[2] incorrectly determined that the mining claims are valid and that patent should issue. In Re Pac. Coast Molybdenum Co., 75 IBLA 16, 30 (1983). The protester's burden is similar to that of an adverse claimant in a private mining claim contest. Id. at 22 n.4. In a private mining claim contest, the adverse claimant must establish mining claim invalidity by a preponderance of the evidence. Morales v. Baudendistel, 105 IBLA 211 (1988). The burden is on the adverse party bringing the private contest, rather than the mining claimant, because the adverse party is "the proponent of the rule, i.e., the invalidity of the contested claim." Massiro v. Western Hills Mining Ass'n, 78 IBLA 155, 160 (1983); In Re Pac. Coast Molybdenum Co., 75 IBLA at 30 ("The mineral claimant is not required in this case to affirmatively show his entitlement to patent. BLM has already determined that matter in favor of the claimant. Appellants must establish that this decision was wrong.").[3]

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[2] Although the Forest Service performs mineral examinations under a memorandum of understanding with BLM, BLM makes the ultimate determination about whether a patent should issue on lands managed by the Forest Service. References to BLM in this Decision will include the Forest Service unless otherwise indicated.

[3] Similarly, the burden in a government contest rests on the proponent of the rule: the mining claimant. United States v. Knoblock, 131 IBLA 48, 49 (1994). That is, although the government is responsible for establishing a prima facie case of invalidity, the mining claimant is the proponent of the rule that the claim is valid. Id. Consequently, in government contests, the

In In Re Pacific Coast Molybdenum, the protesters alleged that the patent applicant had failed to demonstrate a discovery within the requirements of the Mining Law. In Re Pac. Coast Molybdenum, 75 IBLA at 23. The protesters in that case provided little to demonstrate specific examples of how BLM had erred in its determination that there was a discovery. The Interior Board of Land Appeals (IBLA) held that the protesters' speculations that BLM's cost estimates were too low

> miss the point that [the protesters] bear the burden of showing that the cost figures used by [the claimant] and BLM are so understated that a reasonable likelihood of success in developing a paying mine does not exist. It is not enough to merely suggest that such might be the case. Appellants are required to show that such is the case.

Id. Consequently, to prevail in a patent application protest, the protester's evidence must be supported by facts and must be more than mere suggestion. Id. at 30.

II. Discussion

1. Protesters Bear the Burden of Proof

Protesters begin with a detailed discussion of rules of construction for grants from the sovereign. Protest, at 5-7. Protesters then discuss these rules with respect to tribal rights. Id. at 7-8. It appears from this section of the protest that Protesters believe that the burden of proof for purposes of this protest rests on Crown.

As discussed above, however, the burden of proof in a patent application protest rests on Protesters themselves. The appropriate question in deciding this protest is whether Protesters have shown by a preponderance of the evidence that BLM was unreasonable in its determination that patent should issue. This includes showing that BLM's analysis was so insufficient and unreliable that it is unreasonable for it to have concluded that a reasonable likelihood of success in developing a paying mine exists. As described in further detail below, Protesters have not provided evidence to support such a finding. Consequently, Protesters cannot prevail on their protest because they have not met their burden of proof.

2. The Record Supports BLM's Determination that a Discovery Exists

Protesters allege that nothing "in the record" supports a valid discovery on every claim under patent application. Protest, at 13. Protesters also allege that "many, if not most, of the mining claims at the proposed mine site" do not pass the test for discovery, since "only a small portion of [Crown's] mining claims actually contain locatable minerals." Id.

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mining claimant has the burden of persuasion to overcome the government's prima facie case of invalidity by a preponderance of the evidence. Id. The current action, however, is not a contest proceeding and the burden is not on Crown.

The "record" to which Protesters refer consists primarily of information from the Final Environmental Impact Statement (FEIS) prepared for the Crown Jewel Mine Proposed Plan of Operations, a letter from the Departments of Agriculture and Interior to Battle Mountain Gold Company, a discovery report prepared by Battle Mountain Gold Company, and findings of fact from the Washington State Pollution Control Hearings Board. All of these documents are specific to the Crown Jewel mine, the now-defunct large-scale open-pit project that Crown previously proposed to develop with Battle Mountain Gold Company. While some of the basic location and historical information from these documents is still accurate, the challenged analysis and conclusions in Protesters' "record" are largely irrelevant because of the significant changes in the mine plan.[4]

Protesters' failure to identify any flaws in BLM's analysis of the underground mine plan is on the one hand understandable since the protest was submitted at a time when Crown was still considering an open-pit mine plan. Crown's restructuring of this project and BLM's reevaluation of the patent application subsequent to the protest being filed have been widely publicized.[5] Although Crown announced its amended mine plan in June 2003, Protesters have not revised their protest to address the underground mine plan.[6]

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[4] Environmental planning documents for a proposed plan of operations are not created for the purpose of analyzing whether mining claims satisfy the legal requirements for patenting under the Mining Law. As such, the environmental analysis for the Crown Jewel Mine on which Protesters rely did not form the basis for BLM's patenting recommendation.

[5] Crown's 2002 Annual Report and ongoing information about the progress of the Buckhorn Mountain Project appear on Crown's website, with which Protesters have demonstrated familiarity. See Protest, at 13 n.5. Detailed information about the underground mine plan appears in Crown's 2002 Annual Report.

In addition, as of April 2003, Protester Okanogan Highlands Alliance demonstrated, on its website, awareness that the mine plan had changed, and in April 2004 counsel for Protesters acknowledged to the Department that he was aware of Crown's amended mine plan. Telephone conversation between Karen Hawbecker, Office of the Solicitor, Department of the Interior, and Roger Flynn, Western Mining Action Project (Apr. 2, 2004).

[6] On May 18, 2004, more than a year after they knew about the underground mine plan, Protesters filed a Freedom of Information Act (FOIA) request with the Department of the Interior seeking all documents related to this patent application that were generated after Protesters' September 23, 1999, FOIA request. The FOIA Office in the BLM Oregon State Office did not initially find any responsive documents in that office's file room. However, after the FOIA request came to the attention of the Solicitor's Office in October 2004, the Solicitor's Office informed the FOIA Office in the BLM Oregon State Office that BLM had completed a new mineral report. After locating the new mineral report and other related documentation, the BLM Oregon State Office sent its response to the May 18, 2004, FOIA request on December 3, 2004. The Solicitor's Office in Washington D.C. and the Secretary's FOIA Office also sent responses to the May 18, 2004, FOIA request on December 3, 2004.

By contrast, the record upon which BLM based its decision to recommend patent to Crown's claims included Crown's patent application, BLM's revised mineral report, and WME's analysis of Crown's current underground mine plan, known as the Buckhorn Mountain Project. These documents contain a thorough analysis of all aspects of the proposed underground mining operation and fully support BLM's determination that each claim recommended for patent contains locatable minerals and that there is a valid discovery on each such claim. In addition, the changes in the mine plan address many of the concerns raised in the protest, with substantial reductions in surface disturbance, water usage, and other environmental impacts.

Protesters fail to show how BLM's reliance on any analysis or facts contained in the documents used to make the patenting determination was unreasonable. For example, Protesters fail to provide any evidence that the cost figures used by BLM were understated, or that any of the other economic data used by BLM were improper. Accordingly, Protesters fail to demonstrate by a preponderance of the evidence that the claims fail to meet the test for discovery and, thus, fail to demonstrate that BLM's conclusion was in error.

3. Protesters' Allegations with Respect to "Aggregation" Are Unfounded

Protesters also allege that Crown is attempting to circumvent discovery requirements by "aggregating" its claims, a theory that Protesters allege is "illegal." Protest, at 14. Protesters argue that even if aggregation is allowed, the claims must comply with the "pro-rata share" test for discovery. Id. at 21. Protesters claim that since Crown cannot pass the "pro-rata share" test, the patenting decision is invalid. Id. at 27.

These arguments rely on the initial premise that the deposit in the claims under patent application is "of low-grade mineralization." Id. at 13. Based on this assumption, Protesters argue that BLM's recommendation for patent must be grounded on IBLA case law that determines claim validity based on whether the claimant can develop "a valuable mine" (what Protesters call the "aggregation rule"). Protesters argue that the "valuable mine" analysis is not good law and assert that the standard BLM should use is whether each claim can support "an independently marketable mine."[7] Protest, at 13.

In the May 18, 2004, FOIA request, Protesters also requested that BLM not issue a decision regarding their protest until after they received the newly-requested documents and had time to review them and respond. They also requested that, if BLM denies the protest, that it give Protesters 60 days to review the denial decision before issuing the patent. Neither the law nor the regulations provide for these procedures and BLM declines to follow them.

[7] While it is not clear what authority Protesters rely on to derive the term "independently marketable mine," the term "valuable mine" used in Schlosser v. Pierce, 92 IBLA 109, 130 (1986), and related cases comes directly from the "prudent person" test enunciated in Castle v. Womble, 19 Pub. Lands Dec. 455 (1894) (stating that a discovery is made "where minerals have been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of his labor and means, with a reasonable prospect of success, in developing a valuable mine" (emphasis added)).

The mineral report amply demonstrates that Protesters' initial premise and the conclusions drawn from it are incorrect. The deposit in the claims recommended for patent is gold, a high unit value metal of limited occurrence, and each of the nine claims recommended for patent contains a discovery of a valuable mineral deposit within the meaning of the Mining Law. In making their recommendation for patent, the mineral examiners analyzed the mineralization in each of the claims under patent application and determined that each claim satisfied the requirements for patenting. See Mineral report, at 58-61.

The remainder of Protesters' arguments with respect to discovery are without support. BLM did not utilize the discovery analysis that Protesters dismiss. Consequently, Protesters' arguments and conclusions with respect to "aggregation" and the "pro-rata share" test suffer from "straw-man" logic and fail to carry Protesters' evidentiary burden in this protest. As a result, these allegations regarding "aggregation" and "pro-rata share" test also provide no grounds on which to sustain the protest.

Contrary to Protesters' assertions, the IBLA's "valuable mine" analysis continues to be viable. In cases where the "valuable mine" analysis is appropriate, BLM analyzes marketability in terms of mining, removing, and disposing of the deposit as a whole, as opposed to whether each claim can support an individual mining operation. The administrative case law on this issue makes it clear that mining claims may be considered together for the purpose of ascertaining marketability, so long as each mining claim contains mineralization in sufficient quality and quantity that it can be extracted profitably under an overall mining plan for the entire deposit. See Schlosser v. Pierce, 92 IBLA 109, 130 (1986).[8] Thus, under the current case law, what is required is not proof that each claim can support an independent mine, but proof of sufficient quality and quantity of mineral to warrant development which may take into consideration the overall mining operation. See also United States v. Cactus Mines Ltd., 79 IBLA 20 (1984). As stated above, it was not necessary for BLM to use the "valuable mine" analysis set forth in Schlosser and related cases to

[8] In reaching the conclusion in Schlosser that the appropriate inquiry was whether the applicant could demonstrate the existence of "a valuable mine," the IBLA did not "drop[] the independent discovery requirement" as Protesters suggest. See Protest, at 15. Rather, the IBLA examined the prior administrative case law, including some of the cases Protesters cite for support, and determined that the holdings do not support the proposition that each claim must be able to support an independent mine. For example, the IBLA explained that the language in United States v. Melluzzo, 76 Pub. Lands Dec. 181 (1969) and United States v. Melluzzo, 32 IBLA 46 (1977) -- including the identical language quoted on page 12 of the Protest -- is dicta and cannot be relied upon to require each mining claim to be able to support a paying mine. See Schlosser, 92 IBLA at 124-27. The IBLA went on to distinguish other cases Protesters cite, such as United States v. Bunkowski, 5 IBLA 203 (1972), and United States v. Gardener, 14 IBLA 276 (1974), as not good authority for requiring each claim to support its own mining operation because those cases dealt with claims located under the Building Stone Placer Act that have certain validity requirements in addition to the requirements for other types of mining claims. See Schlosser, 92 IBLA at 127. Schlosser and similar cases have not been overturned and Protesters provide no convincing reason to disregard this line of administrative case law in favor of an "independently marketable mine" standard for each claim, that Protesters appear to support.

determine that Crown had satisfied the requirements for patenting. Nevertheless, the current case law makes it clear that even if it were appropriate to apply the Schlosser analysis to the facts in Crown's patent application, BLM's use of such an analysis would have been reasonable.

4. Crown's Mining Claims Are Properly Located

Protesters also allege that Crown is attempting to patent more land than it is entitled to under the Mining Law. It is worth noting that Protesters do not allege that Crown's mining claims exceeded the 1500 feet by 600 feet maximum size limitation specified in the Mining Law.[9] Rather, Protesters raise the novel theory that the Mining Law allows patenting "only to the extent that surface ground actually overlies a lode or vein containing valuable minerals." See id. at 27. Protesters allege that any portion of the surface of Crown's claims that does not actually have the lode beneath it is "extra surface ground" that is barred from patenting. See id. at 31, 32, 34. Protesters allege that such "extra surface ground" abounds in this instance because Crown's claims were "mislocated" as "crosswise" or "sideways locations" instead of along the general course of the lode. Id. at 32.

As an initial matter, Protesters mistakenly identify Crown's claims as "mislocated." Each of Crown's claims under patent application is located with the long axis of the claim running east to west. As Protesters admit, Crown's location notices state that the "general course of the lode is East to West." See Protest, at 31 (citing amended location notices at Protest, Exh. I). Crown's claims thus properly followed the Mining Law's requirement to align the length of the claim with the general course of the lode and the claims are neither "crosswise" nor "sideways."

Moreover, even if the general course of the deposit were determined to be perpendicular to the long axis of the claim, the prevailing case law is clear that it would have no impact on the validity of the claims or on Crown's right to all of the surface staked. Protesters provide no viable authority to the contrary.[10] Nor do Protesters provide any judicial or administrative case

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[9] Protesters' allegation that Crown's claims encompass more land than it would be entitled to under the Mining Law alludes to, but does not actually allege, violation of a Solicitor's Opinion entitled Limitations on Patenting Millsites under the Mining Law of 1872, M-36988 (Nov. 7, 1997). That Solicitor's Opinion concluded that a mining claimant was entitled to patent only five acres of mill site land per associated previously or concurrently patented mining claim. Id. at 2. That opinion has since been superseded. See Mill Site Location and Patenting Under the 1872 Mining Law, M-37010 (Oct. 7, 2003). In addition, because Crown's patent application contains only lode claims, Protesters could not allege that any of the claims in this patent application should be barred from patenting because they are "excess" mill sites.

[10] Protesters' reliance on Patterson v. Hitchcock, 3 Colo. 533 (1877) and a lengthy citation to an 1880 treatise by Edward P. Weeks, Protest, at 30-31, have little persuasive value as is clear from leading commentators. See, e.g., 1 Am. L. Mining § 32.03[1][d], at 32-22 to 32-23 (2d ed. 1987) (stating that several early Colorado cases where the holding was similar to Protesters' theory "have not been followed and appear to have been outdated by cases restricting only the extent of extralateral rights and not the area of the surface location"); Emilio D. deSoto & Arthur R. Morrison, Mining Rights on the Public Domain, 19 (16th ed. 1936) (stating that "the doctrine of

law to support their "rule" about claim size and orientation other than selective quotation from cases resolving disputes between rival claimants over extralateral rights. As shown below, however, the extralateral rights case law Protesters cite does not support their underlying premise that only the portion of the surface with a mineral deposit underneath it may be patented.

The doctrine of extralateral rights allows a claimant to follow the width (or "dip") of the claimed section of a lode or vein downward beyond the side lines of the claim, so long as the end lines are parallel. See 30 USC 26. Because the down-dip of the deposit may cross underneath the surface of an adjacent property owner, the extralateral rights case law is primarily concerned with adjudicating the rights of competing locators to the discovered veins, lodes, and ledges within the boundaries of their respective claims.

In determining the claim boundaries through which extralateral rights will be allowed, the courts look at the actual course and extent of the deposit. Courts will not allow a claimant to assert extralateral rights through the side line of its claim if doing so would mean that the claimant could follow the entire length (or "strike") of the lode or vein. Rather, in such cases, the court will treat the side lines as end lines and disallow extralateral rights through the claim boundary that intersects the strike of the vein. See Flagstaff Silver Mining Co. v. Tarbet, 98 U.S. 463, 467 (1878) (stating that a claim located perpendicular to the vein would not give the claimant extralateral rights to follow the claim along its strike through the sidelines of the claim).

Protesters cite several extralateral rights cases defining the right to develop minerals outside the claim boundaries for the unrelated proposition of limiting the right to patent the surface inside the claim boundaries. Protesters quote portions of these cases, claiming that the same principles apply to the "extra rights" to surface not covering a lode. See Protest, at 28-35. A closer examination of the factual background and legal conclusions of the extralateral rights cases, however, reveals that the portions of those cases cited in the protest are out-of-context or otherwise fail to support Protesters' premise that only the lands actually overlying the deposit may be patented.

For example, Protesters quote selected portions of the Flagstaff Silver Mining case, 98 U.S. at 467, to support their claim that locating perpendicular to the vein forfeits rights to any surface not directly overlying the vein. See Protest, at 33-34. The portion quoted makes it appear that the case supports Protesters' theory that any surface beyond 300 feet of the midline of the vein would be considered "extra rights" that would be disallowed under the Mining Law. However, the omitted portions of the opinion make it clear that the Flagstaff Silver Mining decision was only intended to address the extent of rights outside the boundaries of the claim, and to reinforce the notion that the extralateral rights doctrine was not a vehicle for a claimant to appropriate the entire lode merely by locating a claim so that the strike passed through the claim's side lines:

> We think that the intent of both statutes is, that mining locations on lodes or veins shall be made thereon lengthwise, in the general direction of

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the Patterson case has been frequently denied in other states); Wilson I. Snyder, Mines and Mining § 449, at 420 (1902) (rejecting the Patterson case as "hastily and inconsiderately made").

> such veins or lodes on the surface of the earth where they are discoverable; and that the end lines are to cross the lode and extend perpendicularly downwards, and to be continued in their own direction either way horizontally; and that the right to follow the dip outside of the side lines is based on the hypothesis that the direction of these lines corresponds substantially with the course of the lode or vein at its apex on or near the surface. It was not the intent of the law to allow a person to make his location crosswise of a vein so that the side lines shall cross it, and thereby give him the right to follow the strike of the vein outside of his side lines.

Flagstaff Silver Mining, 98 U.S. at 467 (emphasis added to show language omitted from protest).

The language Protesters quote from Harper v. Hill, 113 P. 162 (Cal. 1911), similarly fails to support Protesters' theory. In Harper, the question was whether the boundaries of a claim were fixed at the time of location, or whether the claimant was required to correct the boundaries to comport with the statutory "300 feet on either side of the apex" width requirement if the apex were subsequently determined to be elsewhere other than the midline of the claim. By quoting language from Harper stating that "the vein is the principal thing, and the surface but an incident thereto," Protest, at 29 (citing Harper v. Hill, 113 P. 162, 165 (Cal. 1911) (citation to Golden Fleece Co. v. Cable Consol. Co., 12 Nev. 312 (1877) omitted)), Protesters imply that Harper supports their theory that the boundaries of the claim are subject to revision based on the ultimate location of the vein. However, the California Supreme Court in Harper squarely rejected this theory, stating:

> [T]he locator who has in good faith made the discovery and marked the boundaries with regard to the position of the apex as he then finds and believes it to be, shall be protected in the possession of the surface thus ascertained, and that the monuments he then sets shall control the location of the claim.

Harper, 113 P. at 165. Thus, the California Supreme Court made it clear that there is no requirement for a claimant to readjust claim boundaries as the ore body is defined, so long as the boundaries were established in good faith.

The Department came to the same conclusion in a 1986 Solicitor's Opinion regarding the relationship of claim boundaries to the actual course of the vein. See Apex and Extralateral Rights Issues Raised by the Stillwater Mineral Patent, M-36955, 91 Int. Dec. 369 (Apr. 18, 1986) (approved by Donald P. Hodel, Secretary of the Interior) [hereinafter "Stillwater Opinion"]. In that opinion, the Solicitor was asked to consider whether lode mining claimants were required to orient their claims so that the center line of the claim matched the actual course and center line of the lode, or whether a good faith attempt to locate along the general course of the deposit would be enough to comply with the law. Stillwater Opinion, at 371. Consistent with two Supreme Court decisions, the Solicitor stated clearly that "the relationship between the actual course of the lode and the position of the mining claim's lateral boundaries and center line does not affect the validity of the claim." Id. at 372-73 (citing Iron Silver Mtn. Co. v. Elgin Mining Co., 118 U.S.

196, 205 (1886), and King v. Amy Silversmith Mining Co., 152 U.S. 222 (1894)). The Solicitor went on to state that if a claimant later determines that the lode deviates from the center line, there is no requirement to adjust the claim boundaries to reflect the actual course of the lode, so long as the original location was made in good faith for mining purposes. Id.

The Stillwater Opinion specifically overruled a Departmental decision where the holding was identical to the legal theory that Protesters advance here. See Stillwater Opinion, at 384 (overruling United States v. Alaska Empire Gold Mining Co., 71 Int. Dec. 273 (1964)). In Alaska Empire Gold Mining Co., the Assistant Solicitor had ruled that the Department "has no power to issue a mineral patent to any surface ground exceeding 300 feet in width on each side of the middle of the vein or lode, and a patent so issued is void as to the excess over 300 feet and is subject to collateral attack." Id. at 377 (quoting United States v. Alaska Empire Gold Mining Co., 71 Int. Dec. 273, 276 (1964)). The Stillwater opinion rejected Alaska Empire Gold, to the extent that Alaska Empire Gold's holding would -- just as Protesters urge here -- void any portion of the claim more than 300 feet from the actual midline of the deposit. Instead, the Solicitor stated that the "patent cannot convey land more than 300 feet from the center line of the claim as located." Id. (emphasis added). In this way the Solicitor made it clear that the actual course of a vein may materially deviate from the center line of the mining claim without jeopardizing the claimant's rights to the entire claim staked and that "[n]o portion of the claim shall be considered excessive where the statutory dimensions, 1500 by 600 feet, are not exceeded," Stillwater Opinion, at 378.

Based on this reasoning, it is clear that Protesters are simply incorrect that the Mining Law disallows patenting any portion of a claim that does not contain any mineralization. As such, it is of no consequence in terms of validity that the discovery points on Crown's amended locations are close to one endline rather than midway between the endlines, nor would it affect Crown's ability to patent the claims as located if the general course of the deposit were determined to be north-south instead of east-west. The only question for purposes of ascertaining validity is whether each claim contains a discovery and whether each claim was located in good faith for mining purposes. See, e.g., Terrible Mining Co. v. Argentine Mining Co., 89 F 583 (D. Colo. 1883) (stating that a miner may designate any of the shafts on the claim as the "discovery shaft, but it must disclose a lode or vein in rock in place"). Protesters have provided no evidence that tends to show that Crown's claims were not located in good faith for mining purposes, or that the claims otherwise exceeded the statutory size limitations, and, as such have not carried their burden with respect to this allegation.

5. Indian Trust Issues

Although Protesters allude in the early part of their Protest to various violations of reserved treaty rights and a vague "federal trust duty to insure compliance with environmental standards and reclamation requirements," Protesters do not allege any specific violations of the trust responsibility within the two principal arguments presented. Protesters' only allegation with respect to a violation of the Department's responsibility to the Confederated Tribes of the Colville Reservation is that issuing a patent in contravention of the Mining Law could also be

inconsistent with the trust responsibility.[11] However, the mineral report and supporting documents demonstrate that Crown has satisfied the requirements for patenting. Since we have determined that the issuance of this patent will not contravene the Mining Law, there can be no breach of the alleged trust obligation. The protest does not allege nor does it suggest any other basis on which there has been a violation of any trust responsibility.[12]

III. Conclusion

Protesters have not demonstrated that BLM incorrectly determined that Crown's mining claims are valid and that patent should issue. For the forgoing reasons, the protest of the Confederated Tribes of the Colville Reservation, Okanogan Highlands Alliance, Washington Environmental Council, Kettle Range Conservation Group, and Colville Indian Environmental Protection Alliance is denied.

Kathleen Clarke
Director
Bureau of Land Management

[11] Protesters quote from a footnote that appeared in the letter from the Departments of Agriculture and Interior to Battle Mountain Gold Company denying the plan of operations for the now-defunct Crown Jewel mine. The footnote stated that approving the plan of operations "in contravention of the Mining Law may also be inconsistent with [the government's] trust responsibility to the Confederated Tribes of the Colville Reservation." See Protest, at 8 (quoting Letter from Sylvia Baca, Department of the Interior et al., to Greg Etter, Battle Mountain Gold Corporation (March 25, 1999)), at 3 n.10. The letter was not addressing patenting and has no persuasive value here.

[12] We note that in the litigation involving the NEPA analysis on the now-defunct Crown Jewel Mine plan of operations, the United States District Court for the District of Oregon found that the government had satisfied its responsibility to consult with the Tribes on the proposed plan and consider the impacts of the proposed open-pit mine on the tribes' reserved rights. Okanogan Highlands Alliance v. Williams, No. 97-806, 1998 U.S. Dist. LEXIS 21680, at *62-63 (D. Or. Dec. 31, 1998) In particular, the magistrate concluded that while the NEPA documents made no decision regarding patenting, the government had considered the impacts of patenting in accordance with its procedural trust obligation to the Tribes. The district court did not address the question of whether the government violated its substantive trust responsibility with respect to protecting the Tribes' reserved treaty rights, as the Tribes withdrew their claim on that matter.

APPENDIX F
OFFICE OF THE SOLICITOR DECISION: MOUNT EMMONS MINING COMPANY, 4-03-2004

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Washington, D.C. 20240
http://www.blm.gov

APR 2 - 2004

CERTIFIED MAIL - Return Receipt Requested

DECISION

Board of Commissioners of Gunnison County, Colorado	:	Park City 10 (CMC 8044, 52218)
	:	Park City 15 (CMC 8048, 52222)
	:	Park City 16 (CMC 8049, 52223)
High Country Citizens' Alliance	:	Park City 17 (CMC 8050, 52224)
	:	Park City 18 (CMC 8051, 52225)
Town of Crested Butte	:	Park City 19 (CMC 8052, 52226)
	:	Park City 27 (CMC 8059, 52227)
	:	Park City 28 (CMC 8060, 52228)
	:	Park City 32 (CMC 8062, 52229)
	:	Park City 33 (CMC 8062, 52230)
	:	

Protest Dismissed

On December 30, 1992, Mount Emmons Mining Company (Mount Emmons)[1] submitted a patent application for ten lode claims covering approximately 174 acres located for molybdenum. The mining claims were located on April 12, 1977 (amended in July 1978), and are situated within the Gunnison National Forest near Crested Butte, Colorado. The Secretary of the Interior signed the First Half of Mineral Entry Final Certificate (FHFC) on December 23, 1997.[2] The United States Forest Service (Forest Service) through an agreement with the Bureau of Land Management (BLM) examined the mining claims on November 19, 1998. The Forest Service prepared a mineral report in September 2000. Western Mine Engineering (WME) of Spokane, Washington,

[1] At the time the patent application was filed, Mount Emmons was a subsidiary of AMAX Exploration. Mount Emmons is now a subsidiary of Phelps Dodge. Mineral Report, at 4.

[2] The Secretary signed the FHFC following a decision of the United States Court of Appeals for the Tenth Circuit, which allowed the processing of this patent application to continue despite BLM's initial determination that it was prohibited from reviewing the application by the patent funding moratorium. Mount Emmons Mining Co. v. Babbitt, 117 F.3d 1167 (10th Cir. 1997).

prepared the economic analysis for the mineral report pursuant to a third party contract directed and administered by the Forest Service.

In the economic analysis it prepared for the Forest Service, WME consulted a variety of sources to estimate the costs Mount Emmons would incur in developing this deposit, including two feasibility reports that Mount Emmons included with its patent application. Mineral report, at 62. These feasibility reports included a study prepared for Mount Emmons in 1990 by American Mine Services, Inc., as well as a pre-feasibility report by Behre Dolbear & Company, Inc. (BDC Report), which analyzed the project economics.[3] Mount Emmons included the BDC Report as part of its patent application. The BDC Report concluded that the project would have a net present yield of $17.6 million at a 12% discount rate. BDC report, at 2.

The Mount Emmons underground mining operation, as analyzed by BLM and WME, would use vertical blast hole stoping to produce 6000 short tons per day. The mine would operate 24 hours per day, 365 days per year for the estimated 11-year mine life. BLM estimates that there are about 23 million tons of mineable reserves containing 0.689% molybdenite, and that Mount Emmons could recover about 267 million pounds of molybdenium trioxide.

Based on the information provided by Mount Emmons and gathered by the mineral examiners, WME initially determined that the after-tax profit from the sale of molybdenum trioxide would be approximately $152 million as of December 23, 1997, (the date the FHFC was signed) and $158 million as of November 19, 1998 (the date of the mineral examination). Based on these figures, the internal rate of return for the project was estimated to be about 14% for both dates. As detailed below, WME's subsequent recalculation of these figures lowered the internal rate of return to 11.5% for the date of the FHFC, and 11.7% for the date of the mineral examination. The mineral report was completed on September 25, 2000, and BLM's Headquarters Office gave its technical approval of the patent application on April 9, 2001.[4]

In June 1993, the Board of County Commissioners of Gunnison County, the Town of Crested Butte and the High Country Citizens Alliance (protesters)[5] filed protests against

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[3] As HCCA notes in the Supplemental protest, Supplemental protest, at 17 n.9, the BDC report was included with Mount Emmons's patent application and was not submitted to the State of Colorado or the Forest Service as part of a mining plan of operations. The BDC report does not purport to be a mining plan of operations, nor does the Mining Law require Mount Emmons to submit a mining plan of operations before applying for patent.

[4] An addendum to the mineral report containing the recalculations of the internal rate of return was completed in June 2003 for the reasons described on page 7 below.

[5] Because the protests filed by all three protesters were virtually identical, the protesters will be identified collectively unless otherwise noted, and all citations to the protest will be to the protest filed by HCCA.

issuance of the Mount Emmons patent.[6] The three protests raised virtually identical issues alleging the patents should not issue for failure to demonstrate a discovery of a valuable mineral deposit. On October 15, 2001, High Country Citizens Alliance (HCCA) filed a supplement to its protest. In the supplement, HCCA alleged a lack of a discovery of a valuable mineral deposit for three primary reasons. HCCA asserted that Mount Emmons (1) did not have the water rights necessary to mine; (2) had failed to meet the prudent person and marketability tests; and (3) had failed to demonstrate control over sufficient lands for the ancillary facilities.

The relief sought by each protester is slightly different. Gunnison County requests that Mount Emmons's patent application not be granted unless all applicable requirements are satisfied. Gunnison County protest, at 5. Crested Butte requests that BLM deny Mount Emmons's patent application[7] and declare the subject mining claims null and void. Crested Butte protest, at 5. Crested Butte also requests that BLM require Mount Emmons to "surrender possession" of its claims. Id. HCCA similarly requests that BLM deny Mount Emmons's patent application, and that "all proceedings [on the patent application] be suspended until a decision on the merits of this Patent Contest and Protest" has been made. HCCA protest, at 8.[8] In a supplemental protest filed on October 15, 2001, HCCA repeats several times the statement that BLM must deny Mount Emmons's patent application, as well as stating that BLM cannot issue the patent. Supplemental protest, at 1, 25, 28.

I. Standard of Review

In a patent application protest, the burden is on the protester to demonstrate by a

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[6] The protesters styled their protests as actions against Mount Emmons, rather than BLM. *See infra* note 8.

[7] Crested Butte and HCCA assert that the appropriate relief in granting their protests would be to deny Mount Emmons's patent application. See, e.g. Supplemental protest at 37. Under U.S. Steel, 52 IBLA 319, 325 (1981), if BLM concludes that the evidence submitted by the applicant does not demonstrate the discovery of a valuable mineral deposit, the proper procedure, with or without a protest, is for BLM to initiate a contest action against the claims to determine whether the claims are valid. Id. Except where claims have been declared null and void by operation of law, BLM may not simply deny a patent application. Rather, it must give patent applicants an opportunity for a hearing before invalidating a mining claim.

[8] Although HCCA captions its protest a "patent contest," HCCA has no standing to bring a contest action against Mount Emmons's mining claims.

preponderance of the evidence that the government[9] incorrectly determined that the mining claims were valid and that patent should issue. In Re Pacific Coast Molybdenum Co., 75 IBLA 16, 30 (1983). The protester's burden is similar to that of an adverse claimant in a private mining claim contest. Pacific Coast Molybdenum Co., 75 IBLA 16, 22 n.4 (1983). In a private mining contest, the adverse claimant must establish the invalidity of the other party's mining claim by a preponderance of the evidence. Morales v. Baudendistel, 105 IBLA 211 (1988). The burden is on the adverse party bringing the private mining contest, rather than the mining claimant, because the adverse party is "the proponent of the rule, i.e., the invalidity of the contested claim." Massiro v. Western Hills Mining Ass'n, 78 IBLA 155, 160 (1983).[10]

In Re Pacific Coast Molybdenum involved an appeal of a patent application protest where the protester alleged, among other things, that the patent applicant did not adequately analyze development costs, including costs of environmental protection and reclamation. Pacific Coast Molybdenum, 75 IBLA at 27. The protesters in that case did not provide any evidence to support their case beyond licensing and reclamation cost factors. The Interior Board of Land Appeals (IBLA) held that a protester's statements that environmental costs might be as much as five to ten times higher than those estimated by the company:

> miss the point that [the protesters] bear the burden of showing that the cost figures used by [the claimant] and BLM are so understated that a reasonable likelihood of success in developing a paying mine does not exist. It is not enough to merely suggest that such might be the case. Appellants are required to show that such is the case.

Id. To meet its burden of persuasion and prevail in a patent application protest, the protester's evidence must be supported by facts and must be more than mere suggestion. Pacific Coast Molybdenum., 75 IBLA at 30.

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[9] BLM has the authority to issue mineral patents for land managed by the Forest Service. Although the Forest Service performs mineral examinations under a memorandum of understanding, BLM makes the ultimate determination about whether patent should issue. Consequently, references to BLM in this Decision will include the Forest Service unless otherwise indicated.

[10] Similarly, the burden in a government contest rests on the proponent of the rule: the mining claimant. United States v. Knoblock, 131 IBLA 48, 49 (1994). That is, although the government is responsible for establishing a prima facie case of invalidity, the mining claimant is the proponent of the rule that the claim is valid. Id. Consequently, in government contests, the mining claimant has the burden of persuasion to overcome the government's prima facie case of invalidity by a preponderance of the evidence. Id.

II. Discussion

In general, the protesters' allegations regarding why they believe the Department of the Interior should reject Mount Emmons's patent application are unsupported in fact and in law. These allegations are related to whether Mount Emmons has produced sufficient information to satisfy the Mining Law requirements for patenting, in particular whether it has produced sufficient information with regard to environmental costs, market information, and water rights and availability to meet the prudent person and marketability tests. HCCA's supplemental protest also makes several allegations challenging whether Mount Emmons has demonstrated it has made a discovery of a valuable mineral deposit under the Mining Law.

1. Burden of proof

HCCA begins its arguments in the Supplemental protest by stating that "Mount Emmons bears a substantial burden in applying for patent." Supplemental protest, at 3. HCCA then discusses in detail the standard for granting a patent application and why it believes Mount Emmons's patent application did not meet this standard. See id. at 3-7. It appears from these arguments that HCCA believes that the burden of proof for purposes of this protest rests on Mount Emmons.

As discussed above, however, the question for purposes of reviewing this protest is whether the protesters have shown by a preponderance of the evidence that BLM was unreasonable in its determination that patent should issue. This includes showing that BLM's analysis was so insufficient and unreliable that it is unreasonable for it to have concluded that a reasonable likelihood of success in developing a paying mine exists. As described in further detail below, the protesters have not provided evidence to support such a finding, and consequently cannot prevail on their protests.

2. Prudent person and marketability tests

All of the protests allege that the mining claims did not satisfy the prudent person and marketability tests under the Mining Law due to the aggregate costs in general, and the aggregate costs of reclamation, environmental protection, and land use regulation. Protest, at 5 and 6.[11] The protesters make the contradictory allegations that these costs would reduce the net return to such an extent that the prudent person test would not be met, and that these costs are unknown. Id. The three original protests provide only these conclusory statements regarding the costs, without further specificity as to why the information BLM relied upon to make its decision was so understated that a reasonable likelihood of success in developing a paying mine does not exist.

HCCA in its Supplemental protest provides more detailed reasons for its contention that the Department should not patent Mount Emmons's mining claims. However, the

[11] The protesters similarly allege that patents cannot issue because the reclamation and environmental costs to mine the deposit are unknown. Protest at 6.

information in the Supplemental protest still fails to identify any specific BLM error. In part this is because, like the three original protests, many of the allegations do not provide sufficient detail to support the flaws HCCA alleges exist in BLM's analysis.

a. Commodity pricing

Where the protesters' allegations are more detailed, they are inaccurate or otherwise mischaracterize the facts or applicable law. For example, HCCA alleges that the Mount Emmons mine is not economically feasible because the price when Mount Emmons submitted its mining plan of operations in the 1970s was "abnormally high." Supplemental protest, at 14. HCCA also cites several other dates and prices, all to support its allegation that the mine would not be economically feasible. Id. HCCA's implication is that BLM used the highest prices in its economic evaluations and that it should have used a much lower price based on the average price for a certain timeframe, or the price in 1992 when Mount Emmons submitted its patent application.

Contrary to HCCA's implication, WME's analysis was based on the average of the monthly prices for the 5-year period before the date of FHFC and the date of mineral examination. Those prices were $4.52 and $4.61 respectively, and were used in the economic analysis in the mineral examination that showed that the nine claims recommended for patent satisfied the patenting requirements. BLM did not, as the protesters allege, use the price as of the date that the mining plan of operations was submitted because that date is not relevant to the determination of whether the claims have met the requirements for patenting.

b. Economic analysis - internal rate of return

HCCA also makes erroneous and irrelevant statements about other parts of the economic analysis. HCCA alleges that in the BDC report Mount Emmons "admits that, at an internal rate of return of 12%, the molybdenum oxide price must be at least $5.00/lb" and states that molybdenum prices have not been that high since the early 1980s. Supplemental protest, at 17. HCCA's misinterpretation of the information in the BDC report demonstrates significant confusion about the use and significance of internal rates of return.[12] See also id. (misinterpreting Figure 14.3 of the BDC report at page 161 to

[12] Internal rates of return are benchmarks companies use in the planning stages to determine whether a project would be viable. Companies calculate the internal rate of return by taking the net free cash flow for each year, and discounting it by a specific rate to determine the net present value of the project. In general, a low discount rate will result in a higher net present value. As the discount rate increases, the net present value will decrease until the net present value eventually reaches zero. The discount rate at which the net present value is zero -- in other words, the discount rate that exactly balances the net present value of expenditures against the net present value of revenues -- is called the internal rate of return and is roughly equivalent to the interest rate that the operator would earn on its investment.

mean that "if the molybdenum oxide price dropped to $4.25/lb, the internal rate of return dropped to only 7.30% and the Net Present Value (at 12% internal rate of return) was $ -26,000,000"); id. at 19-20.

Contrary to what HCCA alleges in the Supplemental protest, there is no "standard mining industry benchmark" for minimum rates of return.[13] Supplemental protest, at 19-20, 20 n.11 (stating that "a prudent rate of return would be at least 15%" and citing to a brief filed in a case involving a different company, a different state, a different mineral, and a different mining method). Rather, the minimum rate of return investors will accept as reasonable varies based on several factors, including the type of mineral, where in the country or world the mine is located, the prevailing economic climate, the company proposing the project, the life and size of the project, inflation rates, interest rates, and rates of return used by industry and government.

Based on all these factors, WME concluded that discount rates of at least 10% to 12% would be of interest to investors in the Mount Emmons mine. Using a molybdenum price of $4.52 per pound, WME initially determined that the internal rate of return would be 14% for both the date of FHFC and the date of the mineral examination. Using similar parameters and based on a molybdenum price of $4.52 per pound as of the date of FHFC, BLM also calculated the internal rate of return at 14%. At a price per pound of $4.61 as of the date of the mineral examination, the internal rate of return was calculated to be 14.2%. Mineral report, at 71.

The Supplemental protest alleged that net smelter return royalties owed to third parties not considered in the economic evaluation would result in a finding that the project would be uneconomic. At the request of the Solicitor's Office, WME reevaluated the cash flow economic analysis to determine the effect of the net smelter return royalties. WME determined that the after-tax profit would be reduced from approximately $151.8 million to $120.6 million as of FHFC, and $125.5 million for the date of the mineral examination. Based on these figures, the internal rate of return realized by Mount Emmons would be reduced to 11.5% for the date of FHFC, and 11.7% for the date of the mineral examination.

The economic analysis in the revised mineral report does not change or impact the reasonableness of BLM's conclusion that the claims satisfy the requirements for patenting. Consequently, HCCA's allegations regarding the price and net present value are unsubstantiated, and do not demonstrate BLM error.

c. Other costs

HCCA also challenges the information in the BDC report contracted by Mount Emmons, alleging in particular that the BDC report fails to account for long-term costs associated

[13] The lack of a "standard industry benchmark" is in part because many mining companies consider minimum rates of return confidential and do not release discount rate information to the public for projects under development. See WME report, at 12-51.

with the water treatment plant; that the BDC report did not contain any analysis about whether any treatment will be necessary to meet the aquatic life standards; and that Mount Emmons does not have sufficient land for the water storage reservoirs based on HCCA's assertion that the BDC report does not include land acquisition costs for this purpose. Supplemental protest at 20-22. However, HCCA's examples of what it believes are flaws in Mount Emmons's contractor's analysis are not persuasive because it has not demonstrated how BLM's analysis was unreasonable.

Moreover, the costs of the water treatment plant and the discussion of environmental permitting were indeed accounted for in BLM's economic analysis and considered when recommending Mount Emmons's application for patent. See Mineral report, at 51 (discussing existing Keystone mine water treatment plant; id. at 69 (considering long-term costs associated with water treatment as part of the discussion on environmental permitting); WME report, at 12-38 (more detailed discussion of water treatment); WME report, at 12-27 (considering costs of environmental permitting, in particular stating that the NPDES permit would require modification). With regard to land acquisition for pipelines, Mount Emmons controls over 5357 acres at the mine site. The protesters provide no evidence to demonstrate that this will not be sufficient.

Also, HCCA relies on economic feasibility reports it commissioned for the water rights dispute discussed below to argue against patent issuance. Supplemental protest, at 18-19. The documents HCCA references were not created for or by BLM, and there is no indication that HCCA's "minerals economics experts" reached their decisions regarding whether the deposit is "profitable" using the marketability and prudent person tests under the Mining Law. In addition, there is no indication that those reports were intended to be used for the purpose of determining whether the mining claims satisfy the legal requirements for patent. As such, the portions quoted cannot be considered persuasive with regard to whether BLM correctly concluded that the claims met the patenting requirements.

HCCA also raises several issues with regard to whether the economic analysis considered adequate reclamation costs. Supplemental protest, at 21-22. HCCA cites in particular costs of "infrastructure removal, tailings pipeline corridor reclamation, and other necessary reclamation costs" that it alleges BLM did not consider. HCCA also uses a comparison to an underground mining project in Montana as support for alleging that the reclamation costs are too low. HCCA acknowledges that "every mine differs in some respects" but states without further explanation or support that the estimates at the Montana mine "can serve as a model for what the Forest Service would require at Mt. Emmons." Supplemental protest, at 22.

The mineral report states that the reclamation costs in the economic analysis were based on the estimated costs of mine closure in the BDC report, with an additional $1 million for post-mining monitoring. Mineral report, at 68. These costs cover site closure and monitoring, including administration costs, mine adit sealing, revegetation, removal of buildings and ancillary facilities, and reclamation of the mill building area, roads, waste rock facility, and tailings impoundment. Id. HCCA fails to provide any specificity as to

deficiencies in BLM's analysis with regard to the "other necessary reclamation costs" and as such the Department concludes that these allegations are not sufficient to sustain the protest.

d. Discovery issues

HCCA also mischaracterizes certain deposition testimony from the water rights litigation, implying that Mount Emmons has "admitted" it does not have a discovery. Supplemental protest, at 11-12. Specifically, HCCA states that Mount Emmons "believes that undertaking mining development of the lode claims is not prudent at this time (or any time in the reasonable past or future)." Id. at 11. HCCA goes on to state that Mount Emmons "has admitted that under current conditions (i.e., lacking the necessary water rights and the patent) it has no plans to proceed with the mine" and that Mount Emmons's "Vice President Jerry Danni stated that without a patent, the mine would not go forward[.]" Id. at 12. HCCA appears to allege that Mount Emmons is "argu[ing] that it has passed the prudent person test based on an event yet to occur (i.e. the granting of the patent)."[14] Id.

Again, HCCA has not provided any evidence along with its allegation to demonstrate that BLM erred in its determination that patent should issue. As such, this allegation provides no basis on which to sustain the protest.

2. Water rights

HCCA also alleges that the claims are invalid due to a lack of water necessary to develop the deposit. Supplemental protest, at 7. This allegation was predicated on a ruling by the Colorado District Court, Water Division No. 4 (the Water Court), which denied Mount Emmons's application for a conditional water right, finding that Mount Emmons did not have a subordination contract with the Bureau of Reclamation.

On January 28, 2002, the Colorado Supreme Court overturned the Water Court's ruling that a subordination agreement with the Bureau of Reclamation was a prerequisite to a finding that water was available to satisfy the application, and remanded the matter to the Water Court for a determination of whether water was available. Mount Emmons Mining Co. v. Town of Crested Butte, 40 P.3d 1255 (Colo. 2002) reh'g denied (Feb. 25, 2002). On July 25, 2002, the Water Court issued a decree granting the water rights for which

[14] HCCA misinterprets the statements quoted from the transcript of the deposition in the water rights litigation. The question posed to Mount Emmons was whether anyone from Mount Emmons attending an unidentified meeting was given any tasks with regard to moving "the project" forward. Mount Emmons's response was in the negative, meaning that no one from Mount Emmons who attended the unidentified meeting was given any tasks related to moving the mining project forward. Mount Emmons did state that it was the company's priority to secure water rights and the patent, but nothing in the transcript indicates that Mount Emmons believes that it will not have a discovery until after the patent.

Mount Emmons had applied. Therefore, the Department concludes that this allegation does not justify granting the protest.

3. Approvals to mine

HCCA also states that Mount Emmons is not entitled to patent because it cannot show that it could obtain the necessary approvals to mine the lode claims in this patent application. HCCA bases this statement on its bare assertion that Mount Emmons's ancillary facilities, in particular the tailings impoundment, will require more mill site acreage than it is entitled to under the Mining Law and that Mount Emmons would be precluded by Forest Service regulations from using any other lands necessary for mining purposes without such mill sites. Protest, at 25-26.

HCCA's assumption that Mount Emmons requires more land than it would be entitled to under the Mining Law is premised on a Solicitor's Opinion entitled Limitations on Patenting Millsites under the Mining Law of 1872, M-36988 (Nov. 7, 1997). That Solicitor's Opinion concluded that a mining claimant was only entitled to patent five acres of mill site land per associated previously or concurrently patented mining claim. Id. at 2. It has since been superseded. See Mill Site Location and Patenting under the 1872 Mining Law, M-37010 (Oct. 7, 2003); 68 Fed. Reg. 61,046, 61,070 (Oct. 24, 2003) (to be codified at 43 C.F.R. 3832.32). Because Mount Emmons's patent application contains only lode claims, HCCA is not alleging that any of the claims in this patent application cannot be patented because they are "excess" mill sites. Rather, HCCA is arguing that the economic analysis was invalid because it did not take into account the limitations stated in the now-obsolete Solicitor's Opinion regarding the amount of mill site acreage available to Mount Emmons under the Mining Law.

The mining method analyzed for purposes of this patent application calls for approximately 85% of tailings from Mount Emmons's mining operations to be backfilled into the underground mine. Mineral report, at 51. The impoundment for the remainder of the tailings will cover about 10 acres. See WME report, at 12-28, tbl. 12.2.16. According to the BDC report, Mount Emmons controls 5457.9 acres at the proposed mine site. BDC report, at 90. Only 155 of those 5457.9 acres are the subject of this patent application. HCCA provided no specific evidence that demonstrates that the lands under patent application or the remaining lands that Mount Emmons controls are insufficient for this purpose or that BLM's determination was otherwise incorrect. HCCA's arguments with regard to the Forest Service regulations need not be addressed because there is no indication that sufficient mill site acreage does not exist.

4. Other discovery issues

HCCA further alleges that Mount Emmons has not shown that it has a discovery within the limits of each of the mining claims in this patent application. HCCA states that "many, if not most, of the mining claims" at issue do not pass the discovery test and claims that Mount Emmons is attempting to circumvent discovery requirements by "aggregating" its claims. Supplemental protest, at 28. HCCA also argues that even if

aggregation is allowed, that the claims must comply with the "pro-rata" share test for discovery.

HCCA cites, and then dismisses, a series of cases that squarely address the issue of what constitutes a discovery where the deposit is a high-tonnage, low-grade, disseminated ore body such as the molybdenum under patent application here. Those cases make it clear that for high-tonnage, low-grade, disseminated deposits such as the Mount Emmons molybdenum deposit, the focus of the discovery analysis is on whether the claimant can develop "a valuable mine." In those cases, the marketability rule is presented in terms of mining, removing, and disposing of the deposit as a whole, as opposed to whether each claim can support an individual mining operation. These cases make it clear that mining claims may be considered together for the purpose of ascertaining validity, so long as each claim contains sufficient quality and quantity of mineral that can be extracted profitably under an overall mining plan for the entire deposit. See Schlosser v. Pierce, 92 IBLA 109, 130 (1986).

In reaching this conclusion, the IBLA did not "drop the independent discovery requirement" as HCCA suggests. Rather, the IBLA examined the prior administrative case law, including some of the cases HCCA cites for support, and determined that the holdings do not support the proposition that each claim must be able to support an independent mine. For example, in Schlosser, the IBLA explained that the language in the two Melluzzo cases, including the identical language quoted in the Supplemental protest, is dicta and why it cannot be relied upon to require each mining claim to be able to support a paying mine. In addition, the IBLA distinguished other cases such as United States v. Bunkowski and United States v. Gardner, also cited by HCCA, as not good authority for requiring each claim to support its own mining operation because those cases dealt with claims located under the Building Stone Placer Act that have certain validity requirements in addition to the requirements for other types of mining claims. Schlosser and similar cases have not been overturned and HCCA provides no convincing reason to disregard this line of administrative case law.

HCCA also fails to provide specific, convincing evidence that the mineral examiners were incorrect in recommending nine of the claims for patent. The mineral examiners analyzed the amount of mineralization in each individual claim and made a determination for each claim as to whether the claim satisfied the requirements for patenting. This was based on the amount of mineralization on each claim. See Mineral report, at 33, fig. 24.

5. Remaining issues

HCCA raises three remaining issues. The first is that Mount Emmons has not "rebutted the presumption" that its claims are invalid for lack of development. See Supplemental protest, at 23-25. The issue HCCA raises refers to the presumption that mining claims with little or no development do not contain a discovery of a valuable mineral deposit. See, e.g., United States v. Zweifel, 508 F.2d 1150 1156 n.5 (10th Cir. 1975).

Although failure to develop may serve as an independent basis for determining a mining claim's invalidity, this is generally considered a weak basis for a contest complaint. United States v. Hess, 46 IBLA 1, 9 (1980). Any presumption of invalidity is easily rebutted by evidence of marketability, or even a reasonable justification for nondevelopment. See id.; Schlosser, 92 IBLA at 142. When analyzing whether patent to Mount Emmons's claims should issue, the mineral examiners based their recommendation on the determination that the deposit was marketable. Under the prevailing case law, this is sufficient to rebut the presumption.

HCCA also alleges that patent cannot issue because the costs of mining cannot be determined without an EIS. HCCA protest, ¶ 4(e)(i), at 6-7. It is well-established that section 102(2)(c) of the National Environmental Policy Act, 42 U.S.C. § 4332(c), does not require the Department to perform an EIS prior to the issuance of a mineral patent. See South Dakota v. Andrus, 614 F.2d 1190, 1192-95 (8th Cir. 1980) (stating that issuance of a mineral patent is not a major federal action); see also United States v. Kosanke Sand Corp. (on recon.), 12 IBLA 282, 286 (1973). Moreover, the government performed a detailed economic analysis that took into consideration all the relevant costs. The fact that an EIS was not performed is irrelevant to the Department's patenting recommendation.

HCCA's final argument is that Mount Emmons is not entitled to the full amount of land in each mining claim. See Supplemental protest, at 37-41. HCCA argues that Mount Emmons should only be entitled to the land directly overlying the "vein or lode" itself. However, HCCA provides no persuasive legal authority for this novel theory. Even if such persuasive legal authority did exist, it would be impracticable to apply to dispersed ore deposits like the one under patent application.

Consequently, none of the three remaining issues the protesters raise provides a basis for sustaining their protests.

III. Conclusion

The protesters have not demonstrated that BLM's determination regarding Mount Emmons's patent application was in error. The BLM concludes that a contest action is not warranted based on the protesters' allegations. Consequently, the protests of the Board of County Commissioners of Gunnison County, the Town of Crested Butte and the High Country Citizens Alliance are dismissed.

Kathleen Clarke
Director
Bureau of Land Management