TABLE 4.5-5. SUMMARY OF PROJECTED GROUNDWATER BALANCE DURING LAKE FORMATION FOR BASE SIMULATION AND INDIVIDUAL AND MULTIVARIATE SENSITIVITY ANALYSES SIMULATIONS

		SIMULATION (gallons per minute)												
POST-PROJECT YEAR	GROUNDWATER FLOW COMPONENT	Base	Specific Yield / 2	Specific Yield x 3	Decreased Runoff	Increased Runoff	Decreased Precip	Increased Precip	Decreased Evap	Increased Evap	Lake Cell Conductance / 10	Lake Cell Conductance x 10	Multivariate Low	Multivariate High
1	Storage+	406	283	685	406	406	406	406	406	406	344	492	225	870
	CHead+	26,935	26,943	26,873	26,935	26,935	26,935	26,935	26,935	26,935	26,920	26,943	26,827	26,880
	Rech+	868	868	868	868	868	868	868	868	868	868	868	868	868
	Lake+	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total+	28,209	28,093	28,425	28,208	28,209	28,209	28,209	28,209	28,209	28,132	28,303	28,020	28,618
	Storage-	38	23	77	38	38	38	38	38	38	85	36	65	77
	CHead-	27,886	27,798	28,042	27,886	27,886	27,886	27,886	27,886	27,886	27,892	27,883	27,804	28,039
	Lake-	285	272	307	285	285	285	285	285	285	155	285	151	507
	Total-	28,209	28,093	28,425	28,209	28,209	28,209	28,209	28,209	28,209	28,132	28,303	28,020	28,618
	In-Out	0	0	0	0	0	0	0	0	0	0	0	0	0
	% Difference	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Storage+	295	162	605	296	294	296	295	295	295	206	304	139	651
	CHead+	28,085	28,132	27,924	28,087	28,082	28,086	28,084	28,084	28,085	28,057	28,095	27,973	28,207
	Rech+	868	868	868	868	868	868	868	868	868	868	868	868	868
	Lake+	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total+	29,247	29,162	29,396	29,251	29,244	29,249	29,246	29,247	29,248	29,191	29,267	28,977	29,726
	Storage-	0	0	1	0	1	0	0	0	0	0	1	0	5
	CHead-	29,011	28,939	29,135	29,013	29,010	29,012	29,011	29,011	29,011	29,027	29,006	28,816	29,441
	Lake-	236	223	260	238	234	237	235	236	236	164	260	159	281
	Total-	29,247	29,162	29,396	29,251	29,244	29,250	29,246	29,247	29,248	29,191	29,267	28,977	29,726
	In-Out	0	0	0	0	0	0	-1	0	0	0	0	0	0
	% Difference	0	0	0	0	0	0	0	0	0	0	0	0	0
50	Storage+	171	89	460	172	169	172	170	170	171	168	171	89	460
	CHead+	34,704	34,971	34,467	34,803	34,766	34,794	34,774	34,778	34,788	34,761	34,791	34,760	34,739
	Rech+	898	898	898	898	898	898	898	898	898	898	898	898	898
	Lake+	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total+	35,853	35,958	35,825	35,873	35,834	35,864	35,842	35,847	35,858	35,827	35,861	35,747	36,098
	Storage-	3	2	1	2	3	2	3	3	2	1	4	0	5
	CHead-	35,665	35,772	35,628	35,680	35,641	35,673	35,657	35,660	35,666	35,684	35,660	35,599	35,901
	Lake-	186	185	197	192	181	190	183	184	188	142	198	148	193
	Total-	35,854	35,958	35,826	35,874	35,835	35,865	35,843	35,847	35,856	35,827	35,861	35,747	36,099
	In-Out	-1	0	-1	0	0	0	-1	0	0	0	0	0	-1
	% Difference	0	0	0	0	0	0	0	0	0	0	0	0	0
100	Storage+	29	5	163	31	28	30	29	29	30	30	29	6	154
	CHead+	37,242	37,214	37,702	37,278	37,210	37,264	37,223	37,226	37,254	37,226	37,249	37,059	37,618
	Rech+	898	898	898	898	898	898	898	898	898	898	898	898	898
	Lake+	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total+	38,170	38,117	38,763	38,206	38,137	38,192	38,150	38,153	38,182	38,152	38,177	37,964	38,670
	Storage-	14	10	15	13	14	13	14	14	13	12	14	8	20
	CHead-	37,998	37,947	38,587	38,026	37,972	38,015	37,987	37,985	38,007	38,014	37,994	37,819	38,703
	Lake-	159	159	162	167	152	164	154	155	162	126	169	136	148
	Total-	38,171	38,116	38,765	38,206	38,138	38,193	38,151	38,154	38,183	38,153	38,176	37,964	38,870
	In-Out	-1	1	-2	0	-1	0	0	-1	-1	0	1	0	-1
	% Difference	0	0	0	0	0	0	0	0	0	0	0	0	0
200	Storage+	1	0	44	1	1	1	1	1	1	1	1	0	36
	CHead+	33,600	33,567	33,920	33,656	33,549	33,638	33,563	33,560	33,628	33,587	33,604	33,506	33,912
	Rech+	898	898	898	898	898	898	898	898	898	898	898	898	898
	Lake+	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total+	34,500	34,465	34,872	34,556	34,448	34,538	34,463	34,459	34,528	34,486	34,503	34,404	34,846
	Storage-	14	11	21	13	14	13	14	15	13	12	14	8	27
	CHead-	34,352	34,320	34,718	34,398	34,310	34,383	34,322	34,319	34,376	34,364	34,349	34,270	34,714
	Lake-	134	135	134	145	124	142	126	125	140	110	140	126	107
	Total-	34,500	34,465	34,873	34,556	34,448	34,538	34,463	34,459	34,528	34,486	34,503	34,404	34,847
	In-Out	0	0	-1	0	0	0	0	0	0	0	0	0	-1
	% Difference	0	0	0	0	0	0	0	0	0	0	0	0	0
1580	Storage+	0	0	0	0	0	0	0	0	0	0	0	0	0
	CHead+	29,299	29,583	29,583	29,583	29,441	29,583	29,299	29,299	29,583	29,441	29,299	29,583	29,156
	Rech+	898	898	898	898	898	898	898	898	898	898	898	898	898
	Lake+	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total+	30,197	30,481	30,481	30,481	30,339	30,481	30,197	30,197	30,481	30,339	30,197	30,481	30,054
	Storage-	0	0	0	0	0	0	0	0	0	0	0	0	0
	CHead-	30,152	30,294	30,152	30,436	30,294	30,436	30,294	30,152	30,436	30,294	30,152	30,436	29,867
	Lake-	98	98	98	114	83	112	82	69	113	82	105	114	43
	Total-	30,250	30,392	30,250	30,551	30,377	30,549	30,376	30,221	30,550	30,377	30,254	30,550	29,910
	In-Out	53	89	231	-70	-38	-68	-180	-25	-69	-38	-57	-69	144
	% Difference	0	0	1	0	0	0	-1	0	0	0	0	0	0

= indicates inflow to the groundwater system
= indicates outflow from the groundwater system

1212.1/Tbl4.5-5_MassBalanceSum.xls/26Apr2010

TABLE 4.6-1 PROCESSED ERS PAIRS USED FOR MEASUREMENT OF SUBSIDENCE IN DIAMOND VALLEY FOR THE PERIOD 1992 TO 2000

NO.	MASTER SCENE	MASTER SCENE DATE	SLAVE SCENE	SLAVE SCENE DATE	BASELINE (meters)	BASELINE (feet)
1	920617	6/17/1992	960406	4/6/1996	102	335
2	**920617**	**6/17/1992**	**960928**	**9/28/1996**	**18**	**59**
3	920617	6/17/1992	970705	7/05/1997	89	292
4	920930	9/30/199	960511	5/11/1996	7	23
5	930707	7/07/199	951118	11/18/1995	89	292
6	**960406**	**4/06/199**	**980411**	**4/11/1998**	**163**	**535**
7	960406	4/06/199	00415	4/15/2000	7	23
8	960928	9/28/199	970705	7/05/1997	71	233
9	960928	9/28/199	980411	4/11/1998	43	141
10	960928	9/28/199	991127	11/27/1999	70	230
11	970705	7/05/199	980411	4/11/1998	28	92
12	970705	7/05/199	990501	5/01/1999	162	532
13	**970705**	**7/05/199**	**991127**	**11/27/1999**	**141**	**463**
14	980411	4/11/199	990501	5/01/1999	134	440
15	980411	4/11/199	991127	11/27/1999	113	371
16	980411	4/11/199	00415	4/15/2000	156	512
17	990501	5/01/199	00415	4/15/2000	22	72
18	**991127**	**11/27/19**	**00415**	**4/15/2000**	**43**	**141**

Bolded values were used to make the cumulative stack (**Figure 4.6-1**)

Data Source: Scene pairs from European Remote Sensing satellite data, processed by National Bureau of Mines & Geology InSAR Lab (see Appendix N)

TABLE 4.6-2 CALIBRATION STATISTICS FOR LAND SUBSIDENCE TARGETS 1992-2000 TIME PERIOD

NAME	UTM EASTING (feet)	UTM NORTHING (feet)	OBSERVED SUBSIDENCE (feet)	COMPUTED SUBSIDENCE (feet)	RESIDUAL (feet)
CP1	1936853	14432761	0.99	1.05	-0.06
CP2	1931853	14432761	0.49	0.59	-0.10
CP3	1926853	14432761	0.16	0.25	-0.09
CP4	1911853	14432761	0.12	0.17	-0.05
CP5	1941853	14432761	0.86	0.85	0.01
CP6	1946853	14432761	0.14	0.18	-0.04
CP7	1936853	14440761	0.83	0.95	-0.12
CP8	1936853	14452761	0.80	0.87	-0.07
CP9	1936853	14459761	0.55	0.46	0.09
CP10	1936853	14469636	0.43	0.31	0.12
CP11	1936853	14479011	0.18	0.18	0.00
CP12	1936853	14489011	0.07	0.01	0.06
CP13	1906853	14454761	0.15	0.16	-0.01
CP14	1916853	14454761	0.29	0.25	0.04
CP15	1926853	14454761	0.27	0.28	-0.01
CP16	1936853	14454761	0.80	0.85	-0.05
CP17	1941853	14454761	0.37	0.33	0.04
CP18	1946853	14454761	0.16	0.23	-0.07
CP19	1951853	14454761	0.19	0.22	-0.03
CP20	1956853	14454761	0.03	0.00	0.03
CP21	1921853	14491511	0.14	0.02	0.12
CP22	1931853	14496511	0.01	0.01	0.00

Residual Statistics (units in feet)	
Residual Mean	-0.009
Residual Standard Deviation	0.065
Sum of Squares	0.096
Absolute Residual Mean	0.054
Min. Residual	-0.115
Max. Residual	0.123
Range in Target Values	0.980
Standard Deviation/Range	0.066

CERTIFICATE OF SERVICE

Pursuant to NRAP Rule 25(1)(c), I hereby certify that I am an employee of ALLISON, MacKENZIE, PAVLAKIS, WRIGHT & FAGAN, LTD., Attorneys at Law, and that on this date, I caused a CD-ROM version of same to be served to all parties to this action by:

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DATED this 21st day of December, 2012.

/s/ Nancy Fontenot

TABLE 4.1-6 HYDRAULIC CONDUCTIVITY VALUES IN MT. HOPE REGIONAL MODEL

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Clerk of Supreme Court

K ZONE	K_{X-Y} (ft/d)	K_Z (ft/d)	HYDROSTRATIGRAPHIC UNIT*
55	2.00E-01	5.00E-02	Siliciclastic Rocks – AQT1
56	1.67E-01	9.87E-03	Young Valley Fill – VF1
60	1.20E+01	6.62E-02	Carbonate Units – CA1
61	4.30E-02	7.61E-03	Carbonate Units – CA1, CA2, CA3
62	1.00E-01	1.00E-02	Carbonate Units – CA1, CA2
63	1.05E-03	7.44E-04	Carbonate Units – CA1, CA2, CA3
64	2.19E+00	1.83E-02	Carbonate Units – CA1, CA2, CA3
65	9.00E+00	8.02E-03	Carbonate Units – CA1, CA2, CA3
70	2.02E+01	1.38E-01	Carbonate Units – CA1, CA2, CA3
79	5.28E+00	1.87E-01	Older Valley Fill – VF1, VF2, VF3
80	1.00E-03	5.00E-05	Carbonate Units – CA1, CA2, CA3
81	1.15E-01	1.50E-02	Carbonate Units – CA1, CA2, CA3
85	4.00E-01	2.00E-01	Siliciclastic Rocks – AQT1
86	1.00E+01	2.00E-01	Young Valley Fill – VF1
90	2.50E+02	1.00E+02	Carbonate Units – CA1, CA2, CA3
91	3.26E-02	3.00E-03	Extrusive Igneous Rocks – VOL1
92	1.96E-02	7.25E-03	Siliciclastic Rocks – AQT1
93	1.36E-02	3.83E-03	Siliciclastic Rocks – AQT1
94	3.31E-01	5.41E-03	Extrusive Igneous Rocks – VOL1
95	3.83E-03	1.80E-04	Extrusive Igneous Rocks – VOL1
97	1.66E-03	4.10E-05	Extrusive Igneous Rocks – VOL1
98	2.14E-02	3.01E-03	Extrusive Igneous Rocks – VOL1
99	1.02E-01	5.02E-02	Older Valley Fill – VF1, VF2, VF3
100	1.94E-03	1.51E-04	Older Valley Fill – VF1, VF2, VF3
101	3.13E+00	3.01E-01	Extrusive Igneous Rocks – VOL1
102	2.00E-01	9.08E-02	Mixed Carbonate and Siliciclastic – CA4
105	1.10E-02	1.09E-04	Siliciclastic Rocks – AQT1
107	9.26E-02	5.55E-03	Extrusive Igneous Rocks – VOL1
115	1.01E-01	8.95E-03	Extrusive Igneous Rocks – VOL1
118	4.00E-01	2.25E-01	Extrusive Igneous Rocks – VOL1
119	4.00E-01	1.80E-01	Young Valley Fill – VF1
120	1.90E+01	8.77E-01	Young Valley Fill – VF1
121	5.78E-03	1.03E-03	Intrusive Rocks – Mt. Hope – VOL2
122	2.00E-01	2.00E-01	Siliciclastic Rocks – AQT1
123	1.02E-02	1.02E-02	Intrusive Rocks – Mt. Hope – VOL2
124	2.32E-02	2.32E-02	Intrusive Rocks – Mt. Hope – VOL2

TABLE 4.1-6 HYDRAULIC CONDUCTIVITY VALUES IN MT. HOPE REGIONAL MODEL

K ZONE	K_{X-Y} (ft/d)	K_Z (ft/d)	HYDROSTRATIGRAPHIC UNIT*
127	3.95E-03	3.91E-03	Intrusive Rocks – Mt. Hope – VOL2
128	1.28E-02	1.01E-02	Siliciclastic Rocks – AQT1
129	1.01E-03	1.00E-06	Intrusive Rocks – Mt. Hope – VOL2
130	1.36E-02	7.53E-03	Intrusive Rocks – Mt. Hope – VOL2
135	2.20E-04	2.20E-04	Intrusive Rocks – Mt. Hope – VOL2
137	3.00E-04	3.00E-04	Intrusive Rocks – Mt. Hope – VOL2
142	2.57E-02	1.59E-03	Siliciclastic Rocks – AQT1
143	5.09E-04	1.00E-06	Siliciclastic Rocks – AQT1
144	7.58E-03	7.29E-05	Intrusive Rocks – Mt. Hope – VOL2
146	2.11E-04	6.00E-05	Intrusive Rocks – Mt. Hope – VOL2
148	2.00E+00	1.00E-01	Young Valley Fill – VF1
149	7.00E-03	7.00E-03	Siliciclastic Rocks – AQT1
150	6.00E+01	1.00E+01	Young Valley Fill – VF1

* See Table 3.1-1 and Figure 3.1-4
ft/d = feet per day
K_{X-Y} = horizontal hydraulic conductivity
K_Z = vertical hydraulic conductivity

TABLE 4.1-7 COMPARISON OF MEASURED HYDRAULIC CONDUCTIVITY VALUES VERSUS CALIBRATED VALUES IN THE KOBEH VALLEY PORTION OF THE MT. HOPE REGIONAL MODEL

WELL NAME	K ZONE IN MODEL	K_{X-Y} MODEL VALUE (ft/d)	K FROM AQUIFER TEST (ft/d)	K ESTIMATED FROM WELL SPECIFIC CAPACITY (ft/d)	HYDROSTRATIGRAPHIC UNIT & GENERAL LOCATION
EW1 (Atlas 1)	17	2	Avg = 8 Range= 6 - 10	---	VF1 Younger / Older Valley Fill, Valley fill Northwestern Kobeh Valley
EW2 (Atlas 2)	17	2	7	---	VF1 Younger / Older Valley Fill, Valley fill Northwestern Kobeh Valley
*KV11	12	29	Avg = 21 Range= 18 - 24	---	VF1 Younger / Older Valley Fill,Valley fill, Eastern Kobeh Valley
9211R	11	15	50 – 145 (shallow materials)	---	VF1 Younger / Older Valley Fill, Valley fill Eastern Kobeh Valley
KCT	12	29	Avg = 10 Range= 0.1 - 23	---	VF1 Younger / Older Valley Fill, Valley fill Eastern Kobeh Valley
206T	90	250	9 - 254*	---	CA1 / CA2, Carbonate Aquifer – Along Fault Zone, North-central Kobeh Valley
214T	60	12	Avg = 14.1 Range= 8 - 18	---	CA1 / CA2, Carbonate Aquifer, North-central Kobeh Valley
220T	65	9	9	---	CA2, Carbonate Aquifer North-central Kobeh Valley
222T	120	19	19	---	VF1 Younger / Older Valley Fill, Valley fill Northern Kobeh Valley
223T	92	0.02	Avg = 0.1 Range= 0.9 - 0.11	---	AQT1 - Vinini Formation (mudstones, shale) – targeted fracture zone
228T	27	5	5	---	VF1 Younger / Older Valley Fill, Valley fillNorthern Kobeh Valley

TABLE 4.1-7 COMPARISON OF MEASURED HYDRAULIC CONDUCTIVITY VALUES VERSUS CALIBRATED VALUES IN THE KOBEH VALLEY PORTION OF THE MT. HOPE REGIONAL MODEL

WELL NAME	K ZONE IN MODEL	K_{X-Y} MODEL VALUE (ft/d)	K FROM AQUIFER TEST (ft/d)	K ESTIMATED FROM WELL SPECIFIC CAPACITY (ft/d)	HYDROSTRATIGRAPHIC UNIT & GENERAL LOCATION
229T	30	6.5	Avg = 5.5 Range= 4.5 - 7	---	VF1 Younger / Older Valley Fill, Valley fillNorthern Kobeh Valley
TMB	105	0.01	Avg = 0.24 Range= 0.18 - 0.29	---	AQT1 - Vinini Formation – targeted fracture zone, Whistler Range
TFX-2	105	0.01	Avg = 0.12 Range= 0.07 - 0.16	---	AQT1 - Vinini Formation – targeted fracture zone, Whistler Range,
Bobcat Ranch Wells	13, 28	2, 35	---	3 - 36	VF1 Younger / Older Valley Fill, Valley fillSouthwestern Kobeh Valley
Data from Falling Head Tests, Kobeh Valley					
209MS	85	0.4	0.2	---	VF3 - Lacustrine sediments, Northern Kobeh Valley
209MD	29	0.1	0.2	---	AQT1 - Vinini Formation, Northern Kobeh Valley
203MS	29	0.1	0.1	---	VF3 - Lacustrine sediments, Northern Kobeh Valley
203T	29	0.1	0.5	---	VF3 and VOL1 - Lacustrine Sediments/Basalt, Northern Kobeh Valley
204P	41	0.01	0.7	---	VOL1 - Basalt, Northern Kobeh Valley – targeted fracture zone

*254 ft/d represents near-well hydraulic conductivity of karst/fracture system derived from early time data for 206T. As the test progressed, and more aquifer material was stressed, the average hydraulic conductivity approached 9 ft/d, a value similar to that observed in 214T

ft/d = feet per day

K = hydraulic conductivity

K_{X-Y} = horizontal hydraulic conductivity

TABLE 4.1-8 STORAGE PROPERTIES UTILIZED IN REGIONAL TRANSIENT MODELING

ZONE	STORAGE COEFFICIENT	SPECIFIC YIELD	HYDROSTRATIGRAPHIC UNIT
2	1.00E-03	1.00E-01	VF1 - Young Valley Fill - Kobeh / Antelope
3	8.00E-04	1.00E-01	VF1 - Young Valley Fill - Pine Valley
4	1.00E-04	3.00E-02	AQT1 - Clastic Sedimentary and VOF1 - Volcanic Rocks
5	5.00E-04	3.00E-02	AQT1 - Clastic Sedimentary and VOL1 - Volcanic Rocks
6	5.00E-04	3.00E-02	CA1-4 - Carbonate Rocks
7	5.00E-05	1.00E-02	CA1-4 - Carbonate Rocks
13	1.00E-03	1.00E-01	VF1 - Young Valley Fill - Kobeh Valley
18	1.00E-03	1.00E-01	VF1-3 - Intermediate depth Valley Fill - Northern Kobeh Valley
20	1.00E-04	1.15E-02	VOL2 - Intrusive Rocks - Whistler Peak
21	1.00E-04	5.00E-02	VF1 - Young Valley Fill - Diamond Valley playa
22	1.00E-03	8.00E-02	VF1 - Young Valley Fill - Diamond Valley
23	1.00E-03	1.20E-01	VF1 - Young Valley Fill - Diamond Valley
24	1.00E-03	2.00E-01	VF1 - Young Valley Fill - Diamond Valley
25	2.38E-03	9.92E-02	VF1-3 - Intermediate depth Valley Fill - Northern Kobeh Valley
27	3.00E-03	1.00E-01	VF1-3 - Intermediate depth Valley Fill - Northern Kobeh Valley
29	1.00E-03	5.00E-02	VOL1 - Basalt/Volcanic Rocks
31	9.00E-04	1.00E-01	AQT1 - Clastic Sedimentary and Metasedimetary
35	1.00E-04	5.00E-02	VF1-3 - Deep Valley Fill - Diamond Valley
36	1.00E-04	5.00E-02	VF1-3 - Deep Valley Fill - Antelope Valley
41	5.00E-04	1.00E-02	VF1-3 - Deep Valley Fill and VOL1 - Volcanic Rocks
42	5.00E-04	3.00E-02	AQT1 - Clastic Sedimentary and VOL1 - Volcanic Rocks
50	5.00E-04	3.00E-02	AQT1 - Clastic Sedimentary and VOL1 - Volcanic rocks
51	5.00E-04	5.00E-02	VF1-3 - Intermediate depth Valley Fill - Kobeh and Antelope
52	1.00E-04	5.00E-02	VF1-3 - Intermediate depth Valley Fill - Pine Valley
54	1.00E-04	5.00E-02	VF1-3 - Deep Valley Fill - Pine Valley
60	1.60E-03	3.77E-02	CA1-4 - Carbonate Rocks - Roberts Mountains
62	1.00E-03	5.00E-02	CA1-4 - Carbonate Rocks - Roberts Mountains
65	5.00E-04	3.00E-02	CA1-4 - Carbonate Rocks - Roberts Mountains
71	3.70E-04	2.50E-02	VOL2 - Intrusive Rocks - Mt. Hope
72	2.96E-07	2.00E-02	AQT1 - Clastic Sedimentary and Metasedimetary
73	7.40E-05	2.43E-04	AQT1 - Clastic Sedimentary and Metasedimetary
74	3.40E-05	5.26E-03	VOL2 - Intrusive Rocks - Mt. Hope
75	1.00E-06	5.00E-03	AQT1 - Clastic Sedimentary
90	2.00E-03	2.00E-02	CA1-2 - Carbonate Rocks - Along Fault Zone
92	5.00E-04	2.00E-02	AQT1 - Clastic Sedimentary and VOL1 - Volcanic Rocks
100	1.00E-04	5.00E-02	VF1-3 - Deep Valley Fill - Kobeh Valley
120	1.10E-03	1.00E-01	VF1 - Young Valley Fill - Kobeh Valley

TABLE 4.1-9 SUMMARY OF WATER LEVEL TARGETS IN THE STEADY-STATE CALIBRATION

ID[a]	SITE NAME	EASTING UTM (feet)	NORTHING UTM (feet)	LAYER	OBSERVED (feet, amsl)	COMPUTED (feet, amsl)	RESIDUAL (feet)
384	053 N25 E51 34AA	1863964.4	14531161.3	1	5865.00	5775.57	89.43
385	053 N25 E51 35BC	1864632.5	14531124.0	3	5871.00	5784.28	86.72
11	151 N17 E50 25A 1	1840554.8	14281205.2	2	6280.00	6246.03	33.97
50	153 N19 E53 08AB 1 Old Holly Well	1915210.5	14359483.6	3	5929.18	5938.32	-9.14
54	153 N20 E53 31DAAC1	1912641.3	14365322.9	3	5941.45	5936.23	5.22
64	153 N20 E53 29BD 1 Lions Club	1914227.7	14370701.3	3	5870.00	5916.01	-46.01
84	139 N20 E52 20A 1	1882619.9	14376549.7	3	5984.00	5995.96	-11.96
116	139 N20 E49 09D 1	1791619.1	14385350.3	2	6143.00	6133.33	9.67
117	139 N20 E49 09C 1	1788330.2	14385836.6	1	6157.70	6138.93	18.77
130	153 N21 E53 36DC 1	1935848.8	14396537.5	3	5877.43	5887.97	-10.54
167	153 N21 E53 22CDD 1	1923300.6	14406509.8	3	5862.30	5879.80	-17.50
243	139 N21 E48 10C 1	1759275.6	14419733.9	1	6693.00	6618.93	74.07
282	153 N21 E54 04AD 1	1951911.2	14425966.5	2	5851.50	5865.68	-14.18
275	153 N21 E53 05CBBC1	1910682.2	14423973.0	1	5854.13	5865.19	-11.06
375	N25 E51 03DBDB1	1863498.3	14554610.9	3	5675.00	5597.33	77.67
374	N25 E49 07B 1	1783007.4	14550883.3	3	5606.00	5686.44	-80.44
28	139 N19 E47 36BBBA	1741351.2	14336450.2	3	6201.00	6216.38	-15.38
49	139 N19 E48 12ABCC	1776203.7	14356638.9	2	6158.00	6163.73	-5.73
100	139 N20 E52 17BDDA	1882109.8	14380793.2	1	6002.00	5994.00	8.00
204	139 N21 E49 16CCBB	1785990.4	14411716.5	1	6193.00	6159.69	33.31
9	151 N17 E51 27C	1860540.8	14277627.0	3	6257.00	6259.41	-2.41

TABLE 4.1-9 SUMMARY OF WATER LEVEL TARGETS IN THE STEADY-STATE CALIBRATION

ID[a]	SITE NAME	EASTING UTM (feet)	NORTHING UTM (feet)	LAYER	OBSERVED (feet, amsl)	COMPUTED (feet, amsl)	RESIDUAL (feet)
14	151 N17 E52 07CA	1876568.1	14294864.0	4	6242.00	6234.61	7.39
15	151 N18 E51 34DCCB	1862274.6	14304142.5	3	6248.00	6203.14	44.86
315	153 N22 E54 27CAB	1954037.9	14443393.1	2	5852.00	5849.85	2.15
313	153 N22 E54 28AACC	1951558.7	14441844.8	3	5849.00	5850.56	-1.56
44	139 N19 E50 24AA	1841589.4	14351330.2	3	6048.00	6068.19	-20.19
264	139 N21 E50 03CC 1 USGS-MX	1824840.6	14421579.9	3	6156.00	6150.93	5.07
293	139 N22 E49 32CC 1 USGS-MX	1782389.2	14427122.2	3	6210.00	6233.32	-23.32
378	053 N23 E52 18 BC1	1871323.5	14482521 7	3	6309.79	6373.50	-63.71
335	153 N23 E53 23DB 1	1930069.5	14477342.1	3	5793.66	5798.93	-5.27
342	153 N24 E54 34BAC 1	1955290.9	14500291.0	3	5809.89	5789.40	20.49
344	153 N25 E54 28BCBC	1948979.7	14536262.4	3	5791.62	5783.42	8.20
336	153 N23 E52 13CDDD	1899281.0	14478202.8	3	5790.00	5832.19	-42.19
343	153 N24 E53 6BDAB	1908966.1	14525621.9	3	5790.25	5781.66	8.59
292	139 N22 E50 31CCAC	1809656.8	14426764.8	3	6174.00	6201.64	-27.64
341	153 N24 E52 36CCCA	1901900.3	14496134.8	3	5788.00	5784.73	3.27
351	IGM-152	1869676.1	14460790.9	3	6992.12	6906.34	85.78
125	153 N20 E53 01BDDA	1934705.1	14393995.2	3	5865.62	5889.84	-24.22
262	153 N21 E53 04CDBB	1918436.2	14422236.5	3	5851.00	5866.23	-15.23
321	153 N22 E54 7DDCD	1941108.6	14453857.4	3	5833.00	5834.86	-1.86
143	153 N21 E53 36ACDC	1935499.3	14399669.4	3	5873.00	5885.62	-12.62
193	153 N21 E53 23AACC	1930526.8	14410435.9	3	5859.00	5876.62	-17.62

TABLE 4.1-9 SUMMARY OF WATER LEVEL TARGETS IN THE STEADY-STATE CALIBRATION

ID[a]	SITE NAME	EASTING UTM (feet)	NORTHING UTM (feet)	LAYER	OBSERVED (feet, amsl)	COMPUTED (feet, amsl)	RESIDUAL (feet)
241	153 N21 E53 11CDBB	1927857.4	14418295.8	3	5857.00	5869.67	-12.67
376	N25 E50 28B 1	1823532.4	14536177.4	3	5792.36	5747.70	44.66
252	153 N21 E53 11BCAA	1927750.5	14420823.6	3	5857.00	5867.47	-10.47
70	153 N20 E53 30ABCC	1909987.4	14371869.7	3	5933.40	5918.58	14.82
19	139 N18 E48 07ACDD	1748693.1	14324242.3	3	6217.00	6216.68	0.32
331	153 N23 E53 29CCBD	1911776.7	14469585.3	1	5805.79	5808.11	-2.32
340	153 N23 E52 11ADAB	1900702.6	14489722.7	2	5791.00	5801.71	-10.71
40	153 N19 E53 14DA 1 Eureka County	1932098.9	14348545.0	3	6602.63	6542.61	60.02
332	153 N23 E54 27ADBA	1957788.9	14473992.5	4	5822.00	5901.35	-79.35
334	153 N23 E54 20DDDD	1947390.7	14476189.8	3	5819.60	5810.16	9.44
45	153 N19 E53 14AD 1	1931564.9	14354102.5	3	6340.14	6325.45	14.69
350	IGM-158	1898529.1	14456482.2	3	5809.34	5849.41	-40.07
1	151 N15 E50 02CCBD	1834466.1	14234531.1	3	6327.00	6352.09	-25.09
3	151 N16 E50 27CADC	1830447 1	14245829.0	3	6336.00	6334.71	1.29
5	151 N16 E50 8DDCD	1821544.0	14261568.1	3	6342.00	6301.45	40.55
7	139 N20 E52 18ABDB	1879910.3	14381986.8	2	6002.00	5991.91	10.09
10	151 N17 E50 26BCCC	1833188.0	14278822.2	3	6259.00	6254.26	4.74
12	151 N17 E51 20DD	1853823.5	14282222.8	3	6247.00	6247.08	-0.08
13	151 N17 E51 22BBBD	1860946.2	14287366.1	3	6246.00	6238.87	7.13
16	151 N18 E51 31BCDD	1843837 1	14305430.7	3	6208.00	6183.63	24.37
18	151 N18 E51 22BCCD	1858308.4	14318167.8	3	6154.00	6162.46	-8.46
20	139 N18 E48 09CBBB	1758463.0	14322416.7	3	6278.00	6269.57	8.43

TABLE 4.1-9 SUMMARY OF WATER LEVEL TARGETS IN THE STEADY-STATE CALIBRATION

ID[a]	SITE NAME	EASTING UTM (feet)	NORTHING UTM (feet)	LAYER	OBSERVED (feet, amsl)	COMPUTED (feet, amsl)	RESIDUAL (feet)
21	139 N20 E49 27CBBC	1795721.4	14374494.5	3	6138.00	6123.08	14.92
22	151 N18 E51 10BADB	1860600.2	14327418.1	3	6075.00	6144.19	-69.19
24	151 N18 E49 02DBAA	1804119.0	14330633.4	3	6547.00	6495.85	51 15
25	139 N18 E50 05DACA	1821099.9	14332542.7	3	6160.00	6107.60	52.40
26	139 N19 E48 34BCCB	1764586.7	14334051.0	3	6196.00	6200.78	-4.78
29	151 N19 E51 33CBBD	1853654.5	14338184.0	3	6089.00	6106.62	-17.62
31	139 N19 E49 29CCCA	1785092.7	14340932.0	3	6187.00	6227.27	-40.27
32	139 N19 E50 30DBCB	1813605.8	14342639.7	3	6133.00	6095.80	37.20
34	139 N19 E48 22BDAA	1765391.5	14344517.2	3	6191.00	6190.90	0.10
35	139 N19 E51 27ACBC	1860442.6	14345623.8	3	6046.00	6081.28	-35.28
43	139 N19 E49 24BBCA	1804989.8	14350437.1	3	6157.00	6110.80	46.20
46	139 N19 E49 18CABD	1781383.5	14353473.4	3	6171.00	6156.96	14.04
51	139 N19 E49 08BDDD	1787017.3	14359440.6	3	6166.00	6143.76	22.24
52	139 N19 E49 04CCDC	1790443.0	14361791.0	3	6176.00	6136.68	39.32
76	139 N20 E52 21DBDA	1890708.1	14374745.0	3	5997.00	5980.58	16.42
95	139 N20 E49 23CACB	1800996.8	14377950.3	3	6122.00	6112.00	10.00
98	139 N20 E52 17DBAB	1882111.7	14380590.9	2	6003.00	5994.05	8.95
103	139 N20 E52 17BBDD	1882661.6	14382241.3	3	6009.00	5994.60	14.40
104	139 N20 E52 18BBBB	1877027.9	14382188.0	3	5995.00	5995.11	-0.11
105	139 N20 E49 24ACAB	1810127.6	14381760.4	3	6107.00	6097.98	9.02
112	139 N20 E48 10CABA	1764337.5	14385026.9	3	6195.00	6199.28	-4.28
123	139 N20 E51 05CBCC	1848769.6	14392864.1	3	6128.00	6087.10	40.90

TABLE 4.1-9 SUMMARY OF WATER LEVEL TARGETS IN THE STEADY-STATE CALIBRATION

ID[a]	SITE NAME	EASTING UTM (feet)	NORTHING UTM (feet)	LAYER	OBSERVED (feet, amsl)	COMPUTED (feet, amsl)	RESIDUAL (feet)
127	139 N21 E51 36DCDC	1870488.7	14395059.2	5	6043.00	6052.42	-9.42
135	139 N21 E48 35DBAC	1769914.3	14395978.7	3	6161.00	6171.19	-10.19
162	139 N21 E49 25BBDA	1804828.2	14403974.1	3	6174.00	6133.81	40.19
165	139 N21 E51 24DDCA	1871392.8	14405981.3	3	6071.00	6061.06	9.94
196	139 N21 E50 23AABD	1834233.5	14409953.3	3	6155.00	6137.78	17.22
218	139 N21 E50 17BACC	1814945.0	14414964.6	3	6163.00	6138.86	24.14
244	139 N21 E51H 07BBDD	1873051.6	14420652.0	3	6068.00	6066.19	1.81
260	139 N21 E51 01 CCCA	1867601.9	14421648.9	3	6069.00	6067.02	1.98
407	206MD	1844001.7	14434571.2	4	6344.48	6326.57	17.91
401	204MS	1850177.4	14437528.0	2	6456.56	6469.05	-12.49
403	203MD	1851660.1	14439934.0	5	6488.55	6447.08	41.47
404	205MS	1846151.1	14429656.5	3	6344.88	6315.62	29.26
405	205MD	1846925.3	14429908.2	5	6345.34	6334.78	10.56
399	TM-1	1874242.1	14420015.5	3	6060.47	6066.00	-5.53
408	USGS South Devils Gate	1909502.1	14362717.5	3	5949.00	5950.43	-1.43
425	USGS Devils Gate 2	1900017.7	14373412.6	3	5928.80	5956.17	-27.37
424	USGS Antelope Valley	1848800.8	14360030.1	3	6040.00	6054.07	-14.07
432	PV432	1862174.6	14592306.5	2	5405.95	5396.77	9.18
433	PV433	1824445.0	14531708.4	2	5825.33	5770.80	54.53
434	PV434	1875341.8	14593460.6	1	5492.93	5386.04	106.90
435	PV435	1851467.1	14528078.3	3	5661.09	5728.02	-66.93
437	PV437	1867325.1	14597613.5	3	5373.54	5363.98	9.56
439	PV439	1883257.4	14626394.0	1	5247.15	5270.22	-23.07
440	PV440	1866924.6	14624418.0	3	5307.58	5286.70	20.87
441	PV441	1855467.9	14542274.6	3	5681.09	5664.79	16.30
442	PV442	1807658.8	14494568.1	3	6408.87	6446.60	-37.73
443	PV443	1806889.3	14493146.8	4	6444.28	6491.47	-47.20
444	PV444	1875506.4	14618428.3	2	5284.71	5287.11	-2.40
445	PV445	1805607.7	14486664.6	3	6522.30	6612.27	-89.97

TABLE 4.1-9 SUMMARY OF WATER LEVEL TARGETS IN THE STEADY-STATE CALIBRATION

ID[a]	SITE NAME	EASTING UTM (feet)	NORTHING UTM (feet)	LAYER	OBSERVED (feet, amsl)	COMPUTED (feet, amsl)	RESIDUAL (feet)
446	PV446	1876727.7	14555213.3	4	6000.16	5902.21	97.95
447	PV447	1802377.7	14492105.7	3	6559.77	6449.57	110.20
448	PV448	1871544.8	14627596.8	3	5336.33	5265.74	70.59
449	PV449	1874154.3	14630251.6	3	5267.59	5251.16	16.43
450	PV450	1778553.8	14595789.7	1	6909.20	6856.52	52.68
453	PV453	1880765.4	14611700.8	1	5280.12	5304.95	-24.83
460	PV460	1794681.2	14489690.7	1	6983.59	6939.03	44.57
464	PV464	1783986.6	14591257.6	3	6189.00	6246.39	-57.39
469	PV469	1839133.8	14581995.7	3	5465.93	5479.11	-13.18
470	PV470	1912310.9	14619918.7	3	6064.64	6066.93	-2.28
409	USGS West Diamond	1896107.2	14420419.1	3	5832.00	5890.53	-58.53
545	LRCMW	1839223.6	14449621.3	3	6679.84	6618.56	61.28
546	MRCMW	1836491 7	14451311.0	3	6693.86	6704.63	-10.77
472	KFWMW	1815939.3	14436661.8	3	6461.26	6454.10	7 16
471	KFEMW	1853607.5	14445944.4	3	6663.47	6575.25	88.22
402	203MS	1851835.8	14439929.2	3	6491.64	6503.21	-11.57
549	RWX 203T	1851753.8	14439948.9	3	6492.42	6503.27	-10.85
401	RWX 204P	1850260.9	14437563.6	4	6456.56	6436.17	20.39
400	RWX 206T	1844041.0	14434597.6	4	6346.09	6326.72	19.37
407	RWX 206MD	1844033.5	14434588.5	4	6344.48	6326.68	17.80
406	RWX 206MS	1844088.8	14434555.4	3	6344.06	6326.65	17.41
474	RWX 209MS	1830171.3	14432980.1	3	6440.25	6387.31	52.94
541	RWX 213M	1840591.8	14444502.9	5	6347.57	6381.79	-34.22
543	RWX 214T	1841783.2	14440779.0	5	6344.35	6370.00	-25.65
542	RWX 214M	1841796.3	14440758.3	5	6345.54	6369.93	-24.39
544	RWX 215M	1841779.5	14441576.3	4	6344.30	6356.60	-12.30
547	RWX 219M	1857279.0	14441054.6	4	6521.67	6516.74	4.93
530	RWX 220T	1826778.8	14424091.8	5	6230.38	6158.13	72.25
521	RWX 220M	1826768.9	14424131.2	5	6229.65	6158.14	71.51
523	RWX 222T	1844077.2	14416625.2	4	6192.56	6172.07	20.49
521	RWX 222M	1844072.9	14416342.1	4	6190.68	6171.45	19.23
525	RWX 223T	1852160.6	14413382.6	4	6092.91	6155.63	-62.72
524	RWX 223M	1852170.4	14413363.0	5	6095.23	6154.29	-59.06
527	RWX 228T	1839532.0	14431162.4	4	6208.22	6274.29	-66.07
526	RWX 228M	1839591.1	14431146.0	4	6203.34	6274.30	-70.96

TABLE 4.1-9 SUMMARY OF WATER LEVEL TARGETS IN THE STEADY-STATE CALIBRATION

ID[a]	SITE NAME	EASTING UTM (feet)	NORTHING UTM (feet)	LAYER	OBSERVED (feet, amsl)	COMPUTED (feet, amsl)	RESIDUAL (feet)
529	RWX 229T	1843147.7	14430640.7	4	6198.39	6285.42	-87.03
528	RWX 229M	1843167.4	14430673.5	4	6202.64	6285.77	-83.13
514	IEMLLC-234P (TM-A)	1880241.0	14430983.0	2	6535.34	6521.47	13.87
487	IEMLLC-235P (TM-B)	1883273.0	14422187.0	3	6278.54	6298.79	-20.25
516	IEMLLC-236P (TM-C)	1885254.0	14426047.0	2	6488.70	6450.42	38.28
518	TSF-2	1881104.4	14429378.0	2	6495.36	6522.22	-26.86
475	209MD	1830073.3	14432952.7	4	6382.69	6382.52	0.17
547	219M	1857186.0	14441017.0	3	6519.50	6518.41	1.09
536	237-P	1878096.0	14437163.0	1	6495.29	6526.08	-30.79
348	IGM-156	1880739.1	14444039.5	1	6320.20	6328.34	-8.14
377	N23-E51-24 1	1872989.0	14475739.0	1	6476.37	6503.56	-27 19
418	171-P	1875020.4	14451252.0	4	6626.43	6551.89	74.54
416	177-P	1874446.2	14450674.1	3	6625.37	6600.00	25.37
419	178-P	1868860.1	14455234.5	1	7209.53	7231.56	-22.03
420	179-P	1866957.7	14455026.8	1	7151.49	7120.65	30.84
411	220-Pb	1873100.0	14450051.0	3	6681.03	6724.60	-43.57
412	221-P	1873322.9	14452694.0	1	6659.85	6732.72	-72.87
413	222-P	1870542.8	14456932.5	1	7161.39	7089.86	71.53
417	225-P	1868781.6	14449810.2	3	6998.34	6935.98	62.36
480	226-P	1878078.2	14451055.1	5	6385.00	6266.81	118.19
481	227-P	1878050.1	14451034.0	4	6375.09	6334.80	40.29
484	231-P	1874016.0	14449158.8	4	6625.89	6539.01	86.88
485	232-P	1877679.3	14455385.2	5	6306.25	6325.32	-19.07
346	IGM-154	1862294.5	14452685.0	1	6905.98	6907 16	-1 18
347	IGM-155	1874522.9	14449562.7	1	6624.29	6632.20	-7.91
349	IGM-157	1874854.8	14444641.4	1	6415.83	6470.22	-54.39
345	IGM-169P	1870846.1	14450157.5	1	6932.91	6899.85	33.06
553	NDWR-15462	1884239.0	14448308.0	3	6113.46	6121.02	-7.56
556	PDT-3B	1873178.9	14455276.4	3	6675.07	6722.98	-47.91
482	228P	1876000.1	14449460.2	4	6409.87	6454.09	-44.22
479	233P	1877661.4	14455363.3	4	6422.65	6407.55	15.10

Note: Coordinates in NAD83 (feet), Zone 11
[a]Refers to ID numbers and Appendix F
feet, amsl = feet above mean sea level

TABLE 4.1-10 SUMMARY OF STEADY-STATE REGIONAL MODEL CALIBRATION STATISTICS

CALIBRATION STATISTIC	ENTIRE MODEL DOMAIN	KOBEH VALLEY ONLY	DIAMOND VALLEY ONLY	ANTELOPE VALLEY ONLY	PINE VALLEY ONLY
Number of Head (Water Level) Targets	181	85	54	14	28
Residual Mean	4.38 ft	4.99 ft	-0.03 ft	2.96 ft	11.69 ft
Residual Standard Deviation	40.33 ft	33.71 ft	40.18 ft	28.30 ft	58.82 ft
Absolute Residual Mean	30.20 ft	25.66 ft	29.59 ft	20.51 ft	50.00 ft
Correlation Coefficient (r^2)	0.988	0.977	0.990	0.822	0.985
Minimum Residual	-89.99 ft	-87.04 ft	-79.35 ft	-69.19 ft	-89.99 ft
Maximum Residual	118.18 ft	88.21 ft	118.18 ft	44.86 ft	110.14 ft
Observed Range in Head	1,962.38 ft	1,167.49 ft	1,421.53 ft	267.00 ft	1662.05 ft
Residual Mean/Range	0.002	0.004	0.000	0.011	0.007
Res. Standard Deviation/Range	0.021	0.029	0.028	0.106	0.035
Absolute Residual Mean/Range	0.015	0.022	0.021	0.077	0.030

ft = feet

TABLE 4.1-11 SUMMARY OF SIMULATED SPRING DISCHARGES IN THE STEADY-STATE MODEL USING CALIBRATED DRAIN CELLS

SITE ID	SPRING NAME	HYDROGRAPHIC BASIN	RANGE IN PRE-DEVELOPMENT DISCHARGE MEASUREMENTS* (cfs)	MEAN OF PRE-DEVELOPMENT DISCHARGE MEASUREMENTS* (cfs)	TIME FRAME OF DISCHARGE MEASUREMENT RECORDS*	STEADY-STATE CALIBRATED DISCHARGE (cfs)
62	Shipley Spring	Diamond Valley	5.13 – 8.04	6.61	1965 – 1991	6.54
361	Thompson Spring	Diamond Valley	0.56 – 4.23	2.09	1965 – 1987 (except 1981-82 - questionable)	2.21
140	Tonkin Spring	Pine Valley	1 17 – 2.42	1.73	2007 – 2009	1.61
337	Hot Springs Hill spring	Kobeh Valley	0.0045	0.0045	1980, 2007	0.01
140	Bartine Ranch artesian wells**	Kobeh Valley	0.29 – 0.35	0.32	1949, 2007–2009	0.36

* see Tables 3.3-1 and 3.3-2
** see Table 3.4-1 and recent measurements by EMLLC
cfs = cubic feet per second

TABLE 4.1-12 SUMMARY OF EVAPOTRANSPIRATION VOLUME SIMULATED IN CALIBRATED STEADY-STATE REGIONAL MODEL

HYDROSTRATIGRAPHIC UNIT (HSU)	HYDROLOGIC ACCOUNTING AREA	STEADY-STATE MODEL (AF/yr)	CONCEPTUAL MODEL* (AF/yr)
1	Kobeh Valley	16,150	14,900
2	Antelope Valley	1,439	3,000
3	South Diamond Valley	2,994	1,380
4	North Diamond Valley, including playa evaporation and combined southern playa spring discharge and ET	24,578	28,900
5	Pine Valley, excluding Garden Valley subarea	16,824	17,130
6	Garden Valley	307	570

* see Table 3.5-2
AF/yr = acre-feet per year
ET = evapotranspiration

TABLE 4.1-13 SUMMARY OF INTERBASIN FLOWS REPRESENTED IN STEADY-STATE REGIONAL MODEL

COMPONENT OF WATER BALANCE	STEADY-STATE MODEL (AF/yr)	CONCEPTUAL MODEL (AF/yr)*
Inflow to Kobeh Valley from N. Monitor Valley	1,368	1,680
Inflow to Kobeh Valley from Antelope Valley	2,655	1,000
Inflow to Kobeh Valley from Pine Valley	272	---
Inflow to Kobeh Valley from Garden Valley	232	---
Outflow from Kobeh to S. Diamond Valley	1,583	1,100
Devils Gate Shallow Flow	34	40
Devils Gate – Carbonate Flow of Intermediate Depth	156	10-250
Deep Carbonate Flow Predominately North of Whistler Mountain	1,393	810 - 1,050
Outflow from South Diamond Valley Subarea to North Diamond Valley Subarea	12,147	12,120
Garden Valley outflow to Diamond Valley	5,724	7,780
Garden Valley outflow to Pine Valley	4,415	1,650
Outflow to northern Pine Valley	11,324	10,000

* see Table 3.5-2
AF/yr = acre-feet per year

TABLE 4.1-14 SUMMARY OF REGIONAL TRANSIENT MODEL CALIBRATION STATISTICS FOR HISTORICAL WATER LEVEL CHANGES IN DIAMOND VALLEY

CALIBRATION STATISTIC (884 OBSERVATIONS)	MODEL VALUE
Residual Mean	-2.35 feet
Residual Standard Deviation	21.48 feet
Absolute Residual Mean	16.0 feet
Coefficient of Determination (R^2)	0.92
Observed Range in Head	873.63 feet
Residual Mean/Range	0.003
Residual Standard Deviation/Range	0.025
Absolute Residual Mean/Range	0.018

TABLE 4.2-1 GROUNDWATER LEVELS USED AS TARGETS FOR STEADY-STATE MODEL CALIBRATION

TARGET IDENTIFIER	TMR MODEL LAYER	OBSERVED GROUNDWATER ALTITUDE (feet, amsl)[a]	SIMULATED GROUNDWATER ALTITUDE (feet, amsl)[a]	RESIDUAL[b] (feet)
IGM-152	1	6,992	7,019	-27
IGM-156	1	6,320	6,257	63
IGM-157	1	6,416	6,378	38
IGM-158	1	5,792	5,846	-54
IGM-169P	1	6,933	6,900	33
172-P	1	6,626	6,598	28
177-P	1	6,625	6,598	27
178-P	1	7,210	7,193	17
179-P	1	7,151	7,141	10
220-Pb	1	6,681	6,702	-21
221-P	1	6,660	6,674	-14
222-P	1	7,161	7,165	-4
225-P	1	6,998	6,950	48
PDT-1	1	7,000	6,951	49
PDT-2	1	7,213	7,193	20
PDT2009-240	1	7,002	6,952	50
PDT2009-245	1	6,672	6,691	-19
MH-1 Well	1	6,108	6,110	-2
Romano Windmill	1	6,093	6,096	-3
Unknown Well	1	6,098	6,098	0
NDWR-15462	1	6,109	6,114	-5
IGM-155	2	6,624	6,577	47
171-P	2	6,626	6,571	55
227-P	2	6,375	6,367	8
230P	2	6,535	6,483	52
231-P	2	6,626	6,579	47
PDT2009-244	2	6,675	6,691	-16
PDT-3B	2	6,675	6,690	-15
PDT-4	2	6,624	6,586	38
233P	3	6,423	6,394	29
226-P	6	6,385	6,364	21
228-P	7	6,410	6,368	42
232-P	8	6,306	6,369	-63

[a] feet, amsl = feet above mean sea level
[b] equals observed groundwater elevation minus simulated groundwater elevation
TMR = telescopic mesh refinement

TABLE 4.2-2 PRECIPITATION-RECHARGE RELATIONSHIP

ANNUAL PRECIPITATION (in/yr)	PERCENT OF PRECIPITATION BECOMING RECHARGE	RANGE OF RECHARGE VALUES (in/yr)
8-12	0.8%	0.064 – 0.096
12-16	13.0%	1.56 – 2.08
16-20	14.4%	2.30 – 2.88
20-34	15.8%	3.16 – 5.37
>34	62.8%	21.35 +

Source: USGS (Nichols, 2000)
in/yr = inches per year

TABLE 4.2-3 SUMMARY OF ESTIMATED HYDRAULIC CONDUCTIVITY FROM 2008-2009 SLUG TESTS

WELL IDENTIFIER[a]	GENERAL LOCATION	LITHOLOGIC AND STRUCTURAL CHARACTERISTICS	DEPTH OF SCREENED INTERVALS FROM – TO (feet)	REPRESENTATIVE HYDRAULIC CONDUCTIVITIES[b] (ft/d)
228P, 231P, and 232P	Vinini Formation Outside of the Proposed Pit Area (east-southeast and northeast of proposed pit)	Vinini. Unaltered rocks. 228P and 232P distant from mapped structure. 231P north from NW-SE trending structure (Corridor Trend).	1,015-1,025, 560-580, and 998-1,018, respectively	1.4E-03, 1.5E-01, and 1.9E-04, respectively
227P, 230P, and 233P	Rhyolite Rocks Outside of the Proposed Pit Area (east and northeast of proposed pit)	Rhyolite Tuff. Unaltered rocks. Distant from mapped structure.	385-425, 425-445, and 548-568, respectively	5.8E-05, 5.7E-05, and 9.4E-05, respectively
220PB	Altered Rocks Within the Proposed Pit Area (southeast part of proposed pit); Skarn, Hornfels, and Altered Rocks at Pit Margin	Hornfels and other altered rocks. Intersecting NW-SE and NE-SW trending structures.	280-440	1.6E-02

[a] well identifiers have common prefixes of IGMI-MH-
[b] hydraulic conductivity = rate of flow of groundwater through a square foot of aquifer under a unit hydraulic gradient, expressed as feet per day

ft/d = feet per day

TABLE 4.2-4 SUMMARY OF ESTIMATED HYDRAULIC CONDUCTIVITIES
2009 PIT AREA COREHOLE PACKER TESTING

TEST NO.	CORE-HOLE ID	TEST INTERVAL FROM (feet)	TEST INTERVAL TO (feet)	TEST INTERVAL LENGTH (feet)	EST. DEPTH TO WATER (feet)	MEASURED DEPTH TO WATER (feet)	TEST TYPE	AVERAGE PUMPING RATE (gpm)[a]	HYDRAULIC CONDUCTIVITY RECOVERY OR INJECTION (ft/d)[b]	HYDRAULIC CONDUCTIVITY HVORSLEV (ft/d)	HYDRAULIC CONDUCTIVITY MEAN VALUE RECOVERY, HVORSLEV, LUGEON (ft/d)
1	MH2009-246	1,024	1,190	166	---	---	Injection	---	1.9E-03	---	1.9E-03
2		1,204	1,398	194	---	---	Injection	---	3.5E-04	---	3.5E-04
3		1,310	1,726	416	210-350	257	Air-lift	13.40	2.6E-02	3.2E-02	2.9E-02
4		1,750	2,034	284	1,180	480	Air-lift	0.35	3.9E-04	3.2E-03	3.2E-03
5		1,729	2,039	310	408	455	Air-lift	0.50	9.5E-05	2.8E-03	2.8E-03
6		2,020	2,763	743	1,100	475	Air-lift	2.20	---	1.4E-02	1.4E-02
7		2,450	2,763	313	650	---	Air-lift	0.00	---	3.6E-03	3.6E-03
7-6		2,020	2,763	743	1,100	---	Calc[c]	---	2.2E-02		2.2E-02
1	MH2009-247	564	797	233	---	---	Injection	---	3.8E-04	---	3.8E-04
2		715	993	278	---	---	Injection	---	3.3E-03	---	3.3E-03
3		1,000	1,207	207	---	---	Injection	---	1.7E-02	---	1.7E-02
4		1,212	1,412	200	---	---	Injection	---	2.3E-03	---	2.3E-03
5		1,412	1,721	309	---	---	Injection	---	1.5E-03	---	1.5E-03
6		1,724	1,986	262	257	306	Air-lift	2.58	2.4E-03	7.6E-03	5.0E-03
7		1,963	2,245	282	570	560	Air-lift	1.41	5.0E-02	1.5E-01	7.1E-02
8		1,963	2,245	282	---	---	Injection	---	1.5E-02	---	7.1E-02
9		2,242	2,554	312	570	---	Air-lift	3.90	1.8E-01	7.7E-02	1.3E-02
10		2,534	2,694	160	565	550	Air-lift	2.90	1.5E-01	8.3E-02	1.2E-01
11		908	2,694	1,786	270	---	Air-lift	15.10	2.4E-02	1.4E-02	1.9E-02

TABLE 4.2-4 SUMMARY OF ESTIMATED HYDRAULIC CONDUCTIVITIES 2009 PIT AREA COREHOLE PACKER TESTING

TEST NO.	CORE-HOLE ID	TEST INTERVAL FROM (feet)	TEST INTERVAL TO (feet)	TEST INTERVAL LENGTH (feet)	EST. DEPTH TO WATER (feet)	MEASURED DEPTH TO WATER (feet)	TEST TYPE	AVERAGE PUMPING RATE (gpm)[a]	HYDRAULIC CONDUCTIVITY RECOVERY OR INJECTION (ft/d)[b]	HYDRAULIC CONDUCTIVITY HVORSLEV (ft/d)	HYDRAULIC CONDUCTIVITY MEAN VALUE RECOVERY, HVORSLEV, LUGEON (ft/d)
1	MH2009-248	434	647	213	---	---	Injection	---	7.0E-03	---	7.1E-03
2		654	948	294	110	---	Air-lift	12.16	2.1E+00	3.8E-01	1.2E+00
3		952	1,292	340	340	---	Air-lift	5.50	5.6E-01	6.6E-02	3.1E-01
4		1,289	1,456	167	350	---	Air-lift	9.76	2.5E-01	1.8E-01	2.1E-01
5		1,444	1,748	304	350	---	Air-lift	1.90	9.6E-03	1.2E-02	1.1E-02
6		1,742	1,990	248	530	---	Air-lift	0.83	5.6E-04	4.7E-03	2.4E-03
7		1,742	1,990	248	---	---	Injection	---	4.8E-05	---	2.4E-03
8		2,000	2,278	278	405	---	Air-lift	0.37	1.2E-04	3.6E-03	1.8E-03
9[7]		2,000	2,278	278	---	---	Injection	---	2.7E-05	---	1.8E-03
11[7]		2,284	2,560	276	---	---	Injection	---	9.3E-06	---	9.3E-06
12		2,560	2,998	438	---	---	Injection	---	1.0E-07	---	1.0E-07

[a]gpm = gallons per minute

[b]Hydraulic conductivity is defined as the rate of flow of groundwater through a square foot of aquifer under a unit hydraulic gradient; ft/d = feet per day.

[c]Calculation = Hydraulic conductivity calculated using additive properties of transmissivity

[7] Used results from 7-step Lugeon test

--- = not applicable or not available

= Test data not used to calculate hydraulic conductivity mean value

TABLE 4.2-5 SUMMARY OF ESTIMATE AQUIFER PARAMETERS 2009 PIT AREA SHORT-TERM AND LONG-TERM PUMPING TESTS

PUMPED WELL IDENTIFIER	OBSERVATION WELL IDENTIFIER	DATE PUMPING STARTED	DURATION OF PUMPING (DAYS)	AVERAGE PUMPING RATE (gpm)[a]	DISTANCE FROM PUMPED WELL (feet)	ESTIMATED AQUIFER THICKNESS PENETRATED AT WELL (feet)	COOPER-JACOB SEMI-LOG DRAWDOWN METHOD	THEIS SEMI-LOG RECOVERY METHOD	MOENCH LOG-LOG DRAWDOWN AND RECOVERY METHOD			
							TRANSMISSIVITY		FRACTURE HYDRAULIC CONDUCTIVITY[b] (ft/d)	FRACTURE SPECIFIC STORAGE[c] (ft^{-1})	MATRIX HYDRAULIC CONDUCTIVITY (ft/d)	MATRIX SPECIFIC STORAGE (ft^{-1})
							(ft^2/d)	(ft^2/d)				
240	---	05-24-09	0.048	5.1	---	600	0.5	0.4	---	---	---	---
241	---	05-21-09	0.50	25	---	660	40	170	---	---	---	---
244	---	06-03-09	0.25	20	---	408	125	180	---	---	---	---
245	---	05-31-09	0.50	20	---	217	40	55	---	---	---	---
PDT-1	---	05-28-09	7.33	60	---	540	15	30	2.4E-03	3.5E-06	9.6E-04	2.3E-03
	225P	---	---		30	380	---	---	7 1E-03	3.8E-08	6.8E-06	1.7E-04
	240	---	---		228	600	---	---	5.9E-03	3.7E-10	8.3E-06	2.9E-06
PDT-2	---	07-08-09	12.17	121	---	330	120	190	1.5E-01	9.4E-05	1.4E-07	9.8E-04
	178P	---	---		14	208	---	---	1.7E-01	3.7E-07	2.6E-04	5.8E-03
	242	---	---		496	373	---	---	3.3E-01	5.2E-07	7.8E-05	2.6E-03
PDT-3	---	06-06-09	26	70	---	650	110	140	1.6E-01	2.2E-06	1.9E-05	2.3E-04
	245	---	---		245	217	---	---	1.1E-01	1.7E-05	1.4E-06	2.6E-05
	244	---	---		365	408	---	---	1.6E-01	9.6E-07	4.5E-08	3.6E-06
	221P	---	---		2,585	488	---	---	1.2E-01	1.7E-07	1.9E-08	8.2E-07

[a] gpm = gallons per minute
[b] hydraulic conductivity = rate of flow of groundwater through a square foot of aquifer under a unit hydraulic gradient, expressed as feet per day
[c] Specfic Storage = volume of water that a unit volume of aquifer releases from storage per unit decline in head by the expansion of water and compression of the aquifer, expressed as per foot (1/L)

ft/d = feet per day
ft^{-1} = 1/ft
--- = not applicable

TABLE 4.2-6 HYDRAULIC CONDUCTIVITIES USED IN THE LOCAL MODEL

HYDROGEOLOGIC ZONE	SYMBOL	MODEL LAYER	SIMULATED HYDRAULIC CONDUCTIVITY (ft/d)	
			MINIMUM	MAXIMUM
Quartz porphyry, silicic	Tqps	1-19	4.63E-03	1.47E-02
Quartz porphyry, potassic	Tqpp	1-19	1.94E-04	4.54E-01
Hornfels	Hf	1-15	1.11E-04	5.11E-01
Rhyolite Tuff	Tv	1-7	1.07E-04	5.21E-01
Vinini Formation	Ov	1-16	1.00E-06	7.08E-01
Garden Valley Formation	Pgl	1-16	5.92E-03	7.28E-03
Paleozoic carbonates	Pzca	1	4.00E+00	4.00E+00
Paleozoic carbonates	Pzca	2-16	4.21E-01	4.21E-01
Paleozoic carbonates	Pzca	17	3.99E-03	3.99E-03
Paleozoic carbonates	Pzca	18-19	1.0E-03	1.15E-01
Paleozoic clastics	Pzcl	17	5.38E-02	5.38E-02

ft/d = feet per day

TABLE 4.2-7 HORIZONTAL vs. VERTICAL HYDRAULIC CONDUCTIVITY FOR THE LOCAL MODEL

HYDROGEOLOGIC ZONE	SYMBOL	MODEL LAYER	K_x:K_z RATIO*
Quartz porphyry, silicic	Tqps	1-19	1:1
Quartz porphyry, potassic	Tqpp	1-19	1:1
Hornfels	Hf	1-15	1:1
Rhyolite tuff	Tv	1-7	1:1
Vinini Formation	Ov	1-16	1:1
Garden Valley Formation	Pgl	1-16	10:1
Paleozoic carbonates	Pzca	1-16	10:1
Paleozoic carbonates	Pzca	17	4:1
Paleozoic carbonates	Pzca	18-19	20:1
Paleozoic clastics	Pzcl	17	7:1
Paleozoic clastics	Pzcl	18-19	10:1

*K_x:K_z Ratio = ratio of horizontal to vertical hydraulic conductivity

TABLE 4.4-1 SUMMARY OF GROUNDWATER WITHDRAWALS SIMULATED FOR REGIONAL MODEL PROJECTIONS

	KOBEH VALLEY AGRICULTURAL		KVCWF[b] MINING USE		MINE CONSTRUCTION USE		DIAMOND VALLEY AGRICULTURAL		EUREKA MUNICIPAL		RUBY HILL MINING USE		PIT DEWATERING (derived from Local Model)		DRAWDOWN COMPUTATION METHOD	NOTES
	Pumping Rate (AF/yr)[a]	Calendar Years	Pumping Rate (AF/yr)[a]	Calendar Years	Pumping Rate (AF/yr)[a]	Calendar Years	Pumping Rate (AF/yr)[a]	Calendar Year	Pumping Rate (AF/yr)[a]	Calendar Years	Pumping Rate (AF/yr)[a]	Calendar Years	Pumping Rate (AF/yr)[a]	Calendar Years		
NO ACTION ALTERNATIVE (Simulated)	500-2,900	1963 - 2011	0	all	0	all	1,000-65,900	1955-2008	120-300	1955-2006	450	1997-2012	0	all	Drawdown computed by subtracting projected No Action water levels from simulated 2009 water levels	Diamond Valley groundwater withdrawals reduced by 60% beginning in year 2106
	3,570	2012 - end					55,800	2009 - 2105	300	2006 - end						
							22,320	2106 - end								
CUMULATIVE ACTION SCENARIO (Simulated)	500-2,900	1963 - 2011	11,300 (includes pit dewatering)	2012 - 2055	480	2011	1,000-65,900	1955-2008	120-300 (population dependant)	1955-2006	450	1997-2012	94 - 742	2011 - 2044	Drawdown computed by subtracting projected Cumulative Action water levels from simulated steady-state (1955) water levels	KVCWF pumpage is reduced by water from pit used in process
	3,570	2012 - end					55,800	2009 - 2105	300	2006 - end			677 - 180	2044 - end		
							22,320	2106 - end								
PROPOSED ACTION ALTERNATIVE (Derived by Comparison)	0 (by subtraction)	all	11,300 (includes pit dewatering)	2012 - 2055	480	2011	0 (by subtraction)	all	0 (by subtraction)	all	0 (by subtraction)	all	94 - 742	2011 - 2044	Drawdown computed by subtracting projected No Action water levels from projected Cumulative Action water levels	KVCWF pumpage is reduced by water from pit used in process
													677 - 180	2044 - end		

[a] AF/yr = acre-feet per year

[b] KVCWF = Kobeh Valley Central Well Field

TABLE 4.4-2 LOCATIONS OF SIMULATED PUMPING WELLS IN THE EMLLC KOBEH VALLEY CENTRAL WELL FIELD

EXPLORATION WELL ID	UTM EASTING, (feet) (NAD83)	UTM NORTHING, (feet) (NAD83)	MODEL LAYERS	GEOLOGIC UNIT	PERCENT TOTAL WELLFIELD PRODUCTION	SIMULATED CONTINUOUS FLOW RATE* (gpm)
206P	1843632	14434526	3-4	Carbonate Rock (CA1, CA2)	5	350
220P	1826747	14422995	4-5	Carbonate Rock (CA1, CA2)	5	350
222P	1843791	14416548	4	Valley Fill (VF1, VF2)	18	1,260
224	1833700	14408003	3-4	Valley Fill (VF1, VF2)	12	840
226	1841133	14395159	2-4	Valley Fill (VF1, VF2)	11	770
227	1818938	14394381	2-4	Valley Fill (VF1, VF2)	11	770
228P	1840389	14430858	4	Valley Fill (VF1, VF2)	8	560
229P	1843132	14431105	4	Valley Fill (VF1, VF2)	8	560
PoO-1	1835422	14419823	4	Valley Fill (VF1, VF2)	11	770
PoO-3	1832018	14394464	2-4	Valley Fill (VF1, VF2)	11	770

* Maximum flow for years when dewatering does not contribute to process water supply
gpm = gallons per minute

TABLE 4.4-3 SIMULATED PUMPING DISTRIBUTION FOR THE EMLLC KOBEH VALLEY CENTRAL WELL FIELD THROUGH 44-YEAR SIMULATED MINE LIFE

MINE YEAR	REGIONAL MODEL STRESS PERIOD	WELLS 206P & 220P (gpm)	WELL 222P (gpm)	WELL 224 (gpm)	WELLS 226, 227, POO-1 & POO-3 (gpm)	WELLS 228P & 229P (gpm)	CONSTRUCTION WATER SUPPLY -- TSF WELLS (gpm)	PIT DEWATERING (gpm)	NOTES
0	57	0	0	0	0	0	300	0	Pre-mining
1	58	345	1,243	833	764	555	0	58	Start of Dewatering
2	59	346	1,247	829	760	552	0	94	
3	60	341	1,228	831	762	554	0	72	
4	61	343	1,234	819	750	546	0	177	
5	62	343	1,233	823	754	548	0	145	
6	63	342	1,230	822	754	548	0	149	
7	64	335	1,204	820	752	547	0	165	
8	65	340	1,224	803	736	535	0	310	
9	66	339	1,221	816	748	544	0	201	
10	67	337	1,214	814	746	542	0	219	
11	68	337	1,214	809	742	540	0	255	
12	69	337	1,214	809	742	540	0	255	
13	70	337	1,214	809	742	540	0	255	
14	71	337	1,214	809	742	540	0	255	
15	72	332	1,196	809	742	540	0	255	
16	73	332	1,196	797	731	532	0	356	
17	74	332	1,196	797	731	532	0	356	
18	75	332	1,196	797	731	532	0	356	
19	76	332	1,196	797	731	532	0	356	
20	77	330	1,189	797	731	532	0	356	
21	78	330	1,189	793	727	529	0	393	
22	79	330	1,189	793	727	529	0	393	
23	80	330	1,189	793	727	529	0	393	
24	81	330	1,189	793	727	529	0	393	
25	82	327	1,177	793	727	529	0	393	

TABLE 4.4-3 SIMULATED PUMPING DISTRIBUTION FOR THE EMLLC KOBEH VALLEY CENTRAL WELL FIELD THROUGH 44-YEAR SIMULATED MINE LIFE

MINE YEAR	REGIONAL MODEL STRESS PERIOD	WELLS 206P & 220P (gpm)	WELL 222P (gpm)	WELL 224 (gpm)	WELLS 226, 227, POO-1 & POO-3 (gpm)	WELLS 228P & 229P (gpm)	CONSTRUCTION WATER SUPPLY – TSF WELLS (gpm)	PIT DEWATERING (gpm)	NOTES
26	83	327	1,177	785	719	523	0	460	
27	84	327	1,177	785	719	523	0	460	
28	85	327	1,177	785	719	523	0	460	
29	86	327	1,177	785	719	523	0	460	
30	87	329	1,184	785	719	523	0	460	
31	88	329	1,184	790	724	526	0	420	
32	89	350	1,260	790	724	526	0	420	End of dewatering
33	90	350	1,260	840	770	560	0	0	
34	91	350	1,260	840	770	560	0	0	
35	92	350	1,260	840	770	560	0	0	
36	93	350	1,260	840	770	560	0	0	
37	94	350	1,260	840	770	560	0	0	
38	95	350	1,260	840	770	560	0	0	
39	96	350	1,260	840	770	560	0	0	
40	97	350	1,260	840	770	560	0	0	
41	98	350	1,260	840	770	560	0	0	
42	99	350	1,260	840	770	560	0	0	
43	100	350	1,260	840	770	560	0	0	
44	101	350	1,260	840	770	560	0	0	End of mining

gpm = gallons per minute

TSF = Tailings Storage Facility

Note: Flow rates are from Local Model

TABLE 4.4-4 SIMULATED BASIN FLOW SUMMARY FOR CURRENT CONDITIONS (2009)

PARAMETER	(1) STEADY-STATE FLOWS (PRE-DEVELOPMENT CONDITIONS) [1] (AF/yr)	(2) CURRENT (2009) CONDITIONS FLOWS [2] (AF/yr)	(3) DIFFERENCE IN FLOWS BETWEEN PRE-DEVELOPMENT AND CURRENT CONDITIONS [3] (AF/yr)
Kobeh ET	16,150	15,912	-238
Kobeh Outflow to S. Diamond	1,583	2,001	418
Kobeh Inflow from N. Monitor	1,368	1,586	218
Kobeh Inflow from Antelope	2,655	2,658	3
South Diamond Valley ET	2,994	345	-2,649
North Diamond Valley ET	24,578	14,379	-10,199
Antelope Valley ET	1,439	1,439	0
Garden Valley ET	307	300	-7
Garden Valley Outflow to Diamond	5,724	5,816	92
Garden Valley Outflow to Pine	4,415	4,407	-8
Garden Valley Outflow to Kobeh	232	251	19
Pine Valley ET	16,824	16,812	-12
Pine Valley Outflow to N. Pine	11,324	11,333	9
Pine Outflow to Kobeh	272	275	3
TOTAL	**89,865**	**77,514**	**12,351**

[1] Steady-state condition represents year 1955 in transient model, prior to any extensive pumping for agriculture.

[2] Simulation Year 2009 represents current (pre-mining) conditions and is transient model stress period 55.

[3] Column 2 minus Column 1.

ET = evapotranspiration
AF/yr = acre-feet per year

TABLE 4.4-5 NO ACTION ALTERNATIVE BASIN FLOW SUMMARY FOR MAJOR WATER BUDGET COMPONENTS

PARAMETER	(1) SIMULATED FLOWS FOR CURRENT (2009) CONDITIONS [1] (AF/yr)	(2) NO ACTION ALTERNATIVE SIMULATED FLOWS AT YEAR 2055 [2] (AF/yr)	(3) DIFFERENCE BETWEEN NO ACTION ALTERNATIVE FLOWS FOR YEAR 2055 AND CURRENT CONDITIONS [3] (AF/yr)	(4) NO ACTION ALTERNATIVE SIMULATED FLOWS AT YEAR 2105 [4] (AF/yr)
Kobeh ET	15,912	15,031	-881	14,291
Kobeh Outflow to S. Diamond	2,001	2,365	364	2,637
Kobeh Inflow from N. Monitor	1,586	1,874	288	2,051
Kobeh Inflow from Antelope	2,658	2,676	18	2,700
South Diamond Valley ET	345	0	-345	0
North Diamond Valley ET	14,379	9,123	-5,256	6,298
Antelope Valley ET	1,439	1,432	-7	1,416
Garden Valley ET	300	280	-20	250
Garden Valley Outflow to Diamond	5,816	5,939	123	6,072
Garden Valley Outflow to Pine	4,407	4,379	-28	4,330
Garden Valley Outflow to Kobeh	251	268	17	282
Pine Valley ET	16,812	16,798	-14	16,766
Pine Valley Outflow to N. Pine	11,333	11,331	-2	11,327
Pine Outflow to Kobeh	275	279	4	283
TOTAL	**77,514**	**71,775**	**5,739**	**68,703**

[1] Simulation Year 2009 represents Current Conditions and is transient model stress period 55 (annual stress periods).

[2] Simulation Year 2055 represents the end of the predicted 44-year mine life and is transient model stress period 101.

[3] Column 2 minus Column 1 values.

[4] Simulation Year 2105 represents 50 years post-project and is transient model stress period 151.

AF/yr = acre-feet per year

TABLE 4.4-6 CUMULATIVE ACTION SCENARIO BASIN FLOW SUMMARY FOR MAJOR WATER BUDGET COMPONENTS

PARAMETER	(1) SIMULATED STEADY-STATE FLOW (PREDEVELOPMENT CONDITIONS, 1955) [1] (AF/yr)	(2) SIMULATED PROJECT YEAR 44 (2055) FLOW [2] (AF/yr)	(3) DIFFERENCE BETWEEN FLOWS FOR YEAR 2055 AND STEADY-STATE [3] (AF/yr)	(4) SIMULATED POST PROJECT YEAR 50 (2105) FLOW [4] (AF/yr)
Kobeh ET	16,150	11,016	-5,134	11,977
Kobeh Outflow to S. Diamond	1,583	2,380	797	2,639
Kobeh Inflow from N. Monitor	1,368	1,875	507	2,064
Kobeh Inflow from Antelope	2,655	2,709	54	2,738
South Diamond Valley ET	2,994	0	-2,994	0
North Diamond Valley ET	24,578	9,071	-15,507	6,233
Antelope Valley ET	1,439	1,416	-23	1,386
Garden Valley ET	307	272	-35	232
Garden Valley Outflow to Diamond	5,724	5,994	270	6,112
Garden Valley Outflow to Pine	4,415	4,341	-74	4,293
Garden Valley Outflow to Kobeh	232	350	118	350
Pine Valley ET	16,824	16,795	-29	16,749
Pine Valley Outflow to N. Pine	11,324	11,331	7	11,327
Pine Outflow to Kobeh	272	364	92	353
TOTAL	**89,865**	**67,914**	**-21,951**	**66,453**

[1] Steady-state condition represents year 1955 in transient model, prior to any extensive pumping for agriculture.
[2] Simulation Year 2055 represents the end of the predicted 44-year mine life and is transient model stress period 101
[3] Column 2 minus Column 1 values.
[4] Simulation Year 2105 represents 50 years post-project and is transient model stress period 151.

ET = evapotranspiration
AF/yr = acre-feet per year

TABLE 4.4-7 PROPOSED ACTION ALTERNATIVE BASIN FLOW SUMMARY (CUMULATIVE ACTION SCENARIO MINUS NO ACTION ALTERNATIVE)

PARAMETER	(1) NO ACTION ALTERNATIVE: SIMULATED FLOWS AT YEAR 2055 [1] (AF/yr)	(2) CUMULATIVE ACTION SCENARIO: SIMULATED PROJECT YEAR 44 (2055) FLOW [2] (AF/yr)	(3) PROPOSED ACTION ALTERNATIVE: DIFFERENCE BETWEEN NO ACTION ALTERNATIVE AND CUMULATIVE ACTION SCENARIO FLOWS AT YEAR 2055 [3] (AF/yr)	(4) NO ACTION ALTERNATIVE: SIMULATED FLOWS AT YEAR 2105 [4] (AF/yr)	(5) CUMULATIVE ACTION SCENARIO: SIMULATED POST-PROJECT YEAR 50 (2105) FLOW [5] (AF/yr)	(6) PROPOSED ACTION ALTERNATIVE: DIFFERENCE BETWEEN NO ACTION ALTERNATIVE AND CUMULATIVE ACTION SCENARIO FLOWS AT YEAR 2105 [6] (AF/yr)
Kobeh Valley ET	15,031	11,016	-4,015	14,291	11,977	-2,314
Kobeh Outflow to S. Diamond	2,365	2,380	15	2,637	2,639	2
Kobeh Inflow from N. Monitor	1,874	1,875	1	2,051	2,064	13
Kobeh Inflow from Antelope	2,676	2,709	33	2,700	2,738	38
South Diamond Valley ET	0	0	0	0	0	0
North Diamond Valley ET	9,123	9,071	-52	6,298	6,233	-65
Antelope Valley ET	1,432	1,416	-16	1,416	1,386	-30
Garden Valley ET	280	272	-8	250	232	-18
Garden Valley Outflow to Diamond	5,939	5,994	55	6,072	6,112	40
Garden Valley Outflow to Pine	4,379	4,341	-38	4,330	4,293	-37
Garden Valley Outflow to Kobeh	268	350	82	282	350	68

TABLE 4.4-7 PROPOSED ACTION ALTERNATIVE BASIN FLOW SUMMARY (CUMULATIVE ACTION SCENARIO MINUS NO ACTION ALTERNATIVE)

PARAMETER	(1) NO ACTION ALTERNATIVE: SIMULATED FLOWS AT YEAR 2055 [1] (AF/yr)	(2) CUMULATIVE ACTION SCENARIO: SIMULATED PROJECT YEAR 44 (2055) FLOW [2] (AF/yr)	(3) PROPOSED ACTION ALTERNATIVE: DIFFERENCE BETWEEN NO ACTION ALTERNATIVE AND CUMULATIVE ACTION SCENARIO FLOWS AT YEAR 2055 [3] (AF/yr)	(4) NO ACTION ALTERNATIVE: SIMULATED FLOWS AT YEAR 2105 [4] (AF/yr)	(5) CUMULATIVE ACTION SCENARIO: SIMULATED POST-PROJECT YEAR 50 (2105) FLOW [5] (AF/yr)	(6) PROPOSED ACTION ALTERNATIVE: DIFFERENCE BETWEEN NO ACTION ALTERNATIVE AND CUMULATIVE ACTION SCENARIO FLOWS AT YEAR 2105 [6] (AF/yr)
Pine Valley ET	16,798	16,795	-3	16,766	16,749	-17
Pine Valley Outflow to N. Pine	11,331	11,331	0	11,327	11,327	0
Pine Valley Outflow to Kobeh	279	364	85	283	353	70
TOTAL	**71,775**	**67,914**	**-3,861**	**68,703**	**66,453**	**2,250**

[1] Table 4.4-5 Column 2.
[2] Table 4.4-6 Column 2.
[3] Column 2 minus Column 1 values.
[4] Table 4.4-5 Column 4.
[5] Table 4.4-6 Column 4.
[6] Column 5 minus Column 4 values.

AF/yr = acre-feet per year

TABLE 4.4-9 PROPOSED ACTION ALTERNATIVE EXISTING NON-EMLLC WATER RIGHTS WITHIN AREA OF 10-FOOT DRAWDOWN PREDICTED AT PROJECT YEAR 44 AND POST-PROJECT YEARS 10, 30, 50, 100, 200, 300, AND 400

PERMIT NO.	CERTIFICATE NO.	STATUS	WELL OR SPRING NO.	OWNER OF RECORD	BASIN NO.	SOURCE	SOURCE DESCRIPTION	MANNER OF USE	DUTY (AF/yr)	DIVERSION RATE (cfs)	POINT OF DIVERSION UTM_X	POINT OF DIVERSION UTM_Y	PREDICTED DRAWDOWN AT END OF 44-YR PROJECT LIFE (SIMULATION YEAR 2055) (feet)	PREDICTED DRAWDOWN AT 10 YRS POST-PROJECT (SIMULATION YEAR 2065) (feet)	PREDICTED DRAWDOWN AT 30 YRS POST-PROJECT (SIMULATION YEAR 2085) (feet)	PREDICTED DRAWDOWN AT 50 YRS POST-PROJECT (SIMULATION YEAR 2105) (feet)	PREDICTED DRAWDOWN AT 100 YRS POST-PROJECT (SIMULATION YEAR 2155) (feet)	PREDICTED DRAWDOWN AT 200 YRS POST-PROJECT (SIMULATION YEAR 2255) (feet)	PREDICTED DRAWDOWN AT 300 YRS POST-PROJECT (SIMULATION YEAR 2355) (feet)	PREDICTED DRAWDOWN AT 400 YRS POST-PROJECT (SIMULATION YEAR 2455) (feet)
2732	480	CER	---	ETCHEVERRY FAMILY LTD PARTNERSHIP	139	STR	ROBERTS CREEK	IRR	120.00	0.300	1838206	14440799	51	51	32	22	9	5	1	1
4768	1986	CER	637	ETCHEVERRY FAMILY LTD PARTNERSHIP	139	SPR	UNNAMED SPRING	STK	24.21	0.100	1862047	14452937	51	54	61	63	70	71	69	68
9440	2000	CER	597	FLORIO, A C	153	SPR	GARDEN SPRING	STK	67.87	0.090	1873057	14462900	18	21	23	24	28	28	28	28
9441	2001	CER	646	FLORIO, A C	153	SPR	CALL SPRING	STK	67.21	0.090	1870720	14447022	59	54	43	41	39	38	35	34
9442	2002	CER	619	DIAMOND STAR RANCH CORP	139	SPR	MT. HOPE SPRING	STK	67.21	0.094	1868991	14457848	118	124	144	150	140	141	141	140
9552	2004	CER	612	FLORIO, A C	153	SPR	MCBRIDE SPRING	STK	67.21	0.090	1876057	14459835	15	15	10	10	5	5	5	5
11188	4039	CER	494	FLORIO, A C	139	UG	TREASURE WELL*	STK	1.69	0.005	1823740	14379392	12	11	7	5	2	1	0	0
12748	5880	CER	721	ETCHEVERRY FAMILY LTD PERTNERSHIP	139	SPR	MUD SPRING	STK	10.86	0.015	1840531	14393372	54	42	23	15	6	3	1	1
16802	5078	CER	---	ETCHEVERRY FAMILY LTD PARTNERSHIP	139	SPR	ROBERTS CREEK & TRIBS	IRR	117.00	---	1837576	14440799	51	51	32	22	9	5	2	1
43025	11338	CER	123	BLM	139	UG	---	STK	5.16	0.007	1846292	14387354	42	39	22	15	6	3	1	1
43321	16269	CER	604	ETCHEVERRY FAMILY LTD PARTNERSHIP	053	SPR	UNNAMED SPRING	STK	7.24	0.010	1873571	14466189	67	71	76	79	84	86	87	86
44774	11352	CER	292	BLM	139	UG	RUTABEGA	STK	6.51	0.009	1812618	14426753	10	11	14	13	7	5	1	1
44775	11353	CER	218	BLM	139	UG	WAGON WELL	STK	5.77	0.008	1814104	14414930	30	31	23	17	7	4	1	1
47907	12306	CER	317	BUFFHAM, JAMES W & PAMELA M	153	UG	---	STK	5.06	0.007	1884033	14448990	12	12	10	10	9	9	9	8
48684	12338	CER	162	ETCHEVERRY FAMILY LTD PARTNERSHIP	139	UG	---	STK	8.68	0.012	1803546	14403636	18	19	15	12	5	3	1	1
71594	17500	CER	127	RISI, ROY	139	UG	EXXON WELL	STK	0.00	0.050	1872344	14396077	13	14	14	10	4	2	1	1
R06940	---	RES	619	BLM	153	SPR	MT. HOPE SPRING	OTH	10.65	0.015	1868991	14457848	118	124	144	150	140	141	141	140
R06941	---	RES	638	BLM	153	SPR	UNNAMED SPRING	OTH	10.65	0.015	1871466	14450500	395	379	333	323	480	473	454	442
R06942	---	RES	597	BLM	153	SPR	GARDEN SPRING	OTH	10.65	0.015	1873057	14462900	18	21	23	24	28	28	28	28

TABLE 4.4-8 PROPOSED ACTION ALTERNATIVE
EXISTING NON-EMLLC WELLS WITHIN THE AREA OF 10-FOOT DRAWDOWN
PREDICTED AT MINING YEAR 44 AND POST-PROJECT YEARS 10, 30, 50, 100, 200, 300, AND 400

WELL SITE ID	WATER RIGHT PERMIT NO.	MANNER OF USE*	WATER RIGHT DUTY (AF/yr)	SITE NAME	UTM NORTHING NAD 83 (feet)	UTM EASTING NAD 83 (feet)	WELL DEPTH (feet)	DEPTH TO WATER (feet)	PREDICTED DRAWDOWN AT END OF 44-YR PROJECT LIFE (SIMULATION YEAR 2055) (feet)	PREDICTED DRAWDOWN AT 10 YRS POST-PROJECT (SIMULATION YEAR 2065) (feet)	PREDICTED DRAWDOWN AT 30 YRS POST-PROJECT (SIMULATION YEAR 2085) (feet)	PREDICTED DRAWDOWN AT 50 YRS POST-PROJECT (SIMULATION YEAR 2105)** (feet)	PREDICTED DRAWDOWN AT 100 YRS POST-PROJECT (SIMULATION YEAR 2155)** (feet)	PREDICTED DRAWDOWN AT 200 YRS POST-PROJECT (SIMULATION YEAR 2255)** (feet)	PREDICTED DRAWDOWN AT 300 YRS POST-PROJECT (SIMULATION YEAR 2355)** (feet)	PREDICTED DRAWDOWN AT 400 YRS POST-PROJECT (SIMULATION YEAR 2455)** (feet)
123	43025	STK	5.16	139 N20 E51 07DABC1 LONE MOUNTAIN	14392864	1848770	Unknown	10	42	34	22	15	6	3	1	1
127	71594	STK	0.00	139 N21 E51 36DCDB1	14395059	1870489	1,100	37	13	15	14	10	4	2	1	1
162	48684	STK	8.68	139 N21 E49 25BBDA1	14403974	1804828	45	9	18	19	15	12	5	3	1	1
204	---	---	---	139 N21 E49 16CCBB1	14411717	1785990	50	42	8	10	11	11	6	4	1	1
218	44775	STK	5.77	139 N21 E50 17BACC1 WAGON	14414965	1814945	124	59	30	30	23	17	7	4	1	1
292	44774	STK	6.51	139 N22 E50 31CCAC1 RUTABAGA	14426765	1809657	289	234	10	13	14	13	7	5	1	1
310	---	---	---	139 N22 E51 30BABB1 ROBERTS CREEK	14436616	1841916	350	149	69	46	28	19	8	5	1	1
317	47907	STK	5.06	153 N22 E52 16CCCB1 ROMANO WINDMILL	14447812	1884843	Unknown	33	12	11	10	10	9	9	9	8
494	11188, R06952	STK, OTH	1.69, 3.93	139 N20 R50 21C TREASURE WELL	14378730	1823990	Unknown	(flowing)	12	10	7	5	2	1	0	0

* Manner of Use: STK = Stockwater
OTH = Other

** Predicted Water Table Drawdown at Post Project Years (**Appendix** L).

AF/yr = acre-feet per year

--- = not applicable or not available

TABLE 4.4-9 PROPOSED ACTION ALTERNATIVE EXISTING NON-EMLLC WATER RIGHTS WITHIN AREA OF 10-FOOT DRAWDOWN PREDICTED AT PROJECT YEAR 44 AND POST-PROJECT YEARS 10, 30, 50, 100, 200, 300, AND 400

PERMIT NO.	CERTIFICATE NO.	STATUS	WELL OR SPRING NO.	OWNER OF RECORD	BASIN NO.	SOURCE	SOURCE DESCRIPTION	MANNER OF USE	DUTY (AF/yr)	DIVERSION RATE (cfs)	POINT OF DIVERSION UTM_X	POINT OF DIVERSION UTM_Y	PREDICTED DRAWDOWN AT END OF 44-YR PROJECT LIFE (SIMULATION YEAR 2055) (feet)	PREDICTED DRAWDOWN AT 10 YRS POST-PROJECT (SIMULATION YEAR 2065) (feet)	PREDICTED DRAWDOWN AT 30 YRS POST-PROJECT (SIMULATION YEAR 2085) (feet)	PREDICTED DRAWDOWN AT 50 YRS POST-PROJECT (SIMULATION YEAR 2105) (feet)	PREDICTED DRAWDOWN AT 100 YRS POST-PROJECT (SIMULATION YEAR 2155) (feet)	PREDICTED DRAWDOWN AT 200 YRS POST-PROJECT (SIMULATION YEAR 2255) (feet)	PREDICTED DRAWDOWN AT 300 YRS POST-PROJECT (SIMULATION YEAR 2355) (feet)	PREDICTED DRAWDOWN AT 400 YRS POST-PROJECT (SIMULATION YEAR 2455) (feet)
R06943	---	RES	638	BLM	153	SPR	UNNAMED SPRING	OTH	10.65	0.015	1871466	14450500	562	537	514	501	480	473	454	442
R06944	---	RES	612	BLM	153	SPR	MCBRIDE SPRING	OTH	10.65	0.015	1876057	14459835	15	15	10	10	5	5	5	5
R06949	---	RES	1100	BLM	139	SPR	UNNAMED SPRING	OTH	3.93	0.005	1863367	14394073	17	19	16	12	5	2	1	1
R06951	---	RES	742	BLM	139	SPR	LONE MT. SPRING	OTH	3.93	0.005	1839436	14383961	42	37	19	13	5	2	1	0
R06952	---	RES	494	BLM	139	SPR	TREASURE WELL SPRING*	OTH	3.93	0.005	1823740	14379392	12	11	7	5	2	1	2	1
V01953	---	VST	---	DAI BEI	139	STR	MEADOW CANYON CR & TRIB	IRR	350.00	---	1828014	14457107	7	8	11	11	7	5	3	1

Notes:

Status: CER = certificate
RES = reserved
VST = vested right

Basin No.: 053 = Pine Valley
139 = Kobeh Valley
153 = Diamond Valley

Source: UG = Underground
SPR = Spring
STR = Stream

Manner of Use:
IRR=Irrigation
STK=Stockwater
OTH=Other

*The Treasure Well is a flowing, artesian well, but has two water rights associated at the point, a well and spring water right; no actual spring exists since the well was installed.

AF/yr = acre-feet per year
cfs = cubic feet per second
--- = not applicable or not available

TABLE 4.4-10 PROPOSED ACTION ALTERNATIVE
SPRINGS WITHIN THE AREA OF 10-FOOT DRAWDOWN
PREDICTED AT PROJECT YEAR 44 AND POST-PROJECT YEARS 10, 30, 50, 100, 200, 300, AND 400

SPRING ID NO.	CHEM ID	WATER RIGHT PERMIT NO.	SPRING NAME	BASIN NAME	UTM EASTING (feet)	UTM NORTHING (feet)	TEMP (°F)	TOTAL DISSOLVED SOLIDS (mg/L)	FLOW (gpm)	DATE MEASURED	PREDICTED DRAWDOWN AT END OF 44-YR PROJECT LIFE (SIMULATION YEAR 2055) (feet)	PREDICTED DRAWDOWN AT 10 YRS POST-PROJECT (SIMULATION YEAR 2065) (feet)	PREDICTED DRAWDOWN AT 30 YRS POST-PROJECT (SIMULATION YEAR 2085) (feet)	PREDICTED DRAWDOWN AT 50 YRS POST-PROJECT (SIMULATION YEAR 2105) (feet)	PREDICTED DRAWDOWN AT 100 YRS POST-PROJECT (SIMULATION YEAR 2155) (feet)	PREDICTED DRAWDOWN AT 200 YRS POST-PROJECT (SIMULATION YEAR 2255) (feet)	PREDICTED DRAWDOWN AT 300 YRS POST-PROJECT (SIMULATION YEAR 2355) (feet)	PREDICTED DRAWDOWN AT 400 YRS POST-PROJECT (SIMULATION YEAR 2455) (feet
578	---	---	Unnamed Spring	Kobeh	1833503	14466409	---	---	---	---	11	12	11	10	4	3	1	1
580	---	---	Unnamed Spring	Pine	1863844	14465798	---	---	---	---	4	5	9	11	15	16	17	17
583	---	---	Unnamed Spring	Pine	1860205	14464823	---	---	---	---	3	4	6	8	8	9	9	9
587	---	---	Unnamed Spring	Kobeh	1834312	14464257	---	---	---	---	4	4	5	5	4	3	1	1
592	C-162	---	Unnamed Spring	Pine	1859371	14463686	60	390	9	5/10/2006	4	5	8	11	10	11	11	11
597	C155	9440, R06942	Garden Spring	Pine	1873057	14462900	64.4	663	<0.1	10/4/2006	18	21	23	24	28	28	28	28
600	---	---	Unnamed Spring	Kobeh	1834717	14462006	---	---	---	---	9	10	11	10	6	4	2	1
601	---	---	Unnamed Spring	Kobeh	1834821	14461933	---	---	---	---	9	10	11	10	6	4	2	1
604	C-157	43321	Unnamed Spring	Diamond	1872153	14461589	69.3	1,767	<0.1	10/4/2006	67	71	76	79	84	86	87	86
605	---	---	Unnamed Spring	Kobeh	1835268	14461586	---	---	---	---	5	5	7	7	6	4	2	1
606	C153	---	Unnamed Spring	Pine	1859388	14461428	63.9	604	0.15	8/11/2006	5	6	11	14	15	16	17	16
608	---	---	Unnamed Spring	Kobeh	1835406	14461327	---	---	---	---	12	13	12	11	6	4	2	1
609	---	---	Unnamed Spring	Pine	1859191	14460462	---	---	---	---	5	5	10	12	16	17	18	17
610	C151	---	Unnamed Spring	Pine	1859948	14460327	56.7	341	1.53	8/11/2006	5	6	12	15	18	19	20	19
612	C-238	9552, R06944	McBrides Spring	Diamond	1876057	14459835	58.3	1,815	1.8	10/9/2006	15	15	10	10	5	5	5	5
617	---	---	Unnamed Spring	Kobeh	1842047	14458144	---	---	---	---	10	11	11	10	7	5	2	1
619	C-149	9442, R06940	Mount Hope Spring	Diamond	1868991	14457848	56.5	327	0.03	10/9/2006	118	124	144	150	140	141	141	140
630	C-133	---	Unnamed Spring	Kobeh	1847184	14453045	54.7	437	6.9	8/8/2006	18	19	16	13	9	7	4	4
631	C135	---	Unnamed Spring	Kobeh	1862047	14452937	68.5	797	NM	8/8/2006	36	39	49	53	57	59	58	57
634	C-129	---	Farrington Spring	Kobeh	1836615	14451418	55.0	NM	<0.1	5/15/2007	8	9	10	9	7	4	2	1
637	C124	4768	Unnamed Spring	Kobeh	1862720	14450837	52.8	601	1.59	8/8/2006	51	54	61	63	70	71	69	68
638	---	R06941, R06943	Unnamed Spring	Diamond	1871466	14450500	---	---	---	---	SPRING WILL BE MINED OUT DURING PIT ADVANCEMENT							
639	C121	---	Unnamed Spring	Diamond	1875116	14450412	54.3	620	8	5/13/2006	182	147	123	117	111	107	98	95
640	---	---	Unnamed Spring	Kobeh	1839402	14450010	---	---	---	---	16	17	16	13	7	5	2	1
641	C113	---	Unnamed Spring	Kobeh	1848559	14449503	52.8	467	2.4	5/12/2007	11	11	12	11	8	6	4	3
646	C107	9441	Call Spring	Diamond	1870720	14447022	55.4	1,136	NM	10/4/2007	59	54	43	41	39	38	35	34
719	---	---	Unnamed Spring	Kobeh	1842174	14395137	---	---	---	---	54	42	23	15	6	3	1	1
721	C77	12748	Mud Spring	Kobeh	1842255	14394418	52.8	NM	<1	5/15/2007	54	42	23	15	6	3	1	1
742	C-72	R06951	Lone Mountain Spring	Kobeh	1839714	14386269	61	245	<0.1	10/11/2007	42	37	19	13	5	2	1	0
1100	---	R06949	Unnamed Spring	Kobeh	1863408	14394219	---	---	---	---	17	19	16	12	5	2	1	1

°F = degrees Fahrenheit
mg/L = milligrams per liter
gpm = gallons per minute

--- = not applicable or not available

Blue Highlighting indicates springs near the proposed pit area that may have permanent water level impacts. Green Highlighting indicates springs in the valley, all others are in the mountain block distant from the proposed pit area

TABLE 4.4-11 DISTRIBUTIONS OF WELLFIELD PUMPING IN THE NORTH AND SOUTH PUMPING DISTRIBUTIONS SHIFT SIMULATIONS

SIMULATED PROJECTION WELL ID	BASE CASE PERCENT TOTAL WELLFIELD PRODUCTION	BASE CASE SIMULATED CONTINUOUS FLOW RATE (gpm)	NORTH SHIFT IN WELLFIELD PRODUCTION PERCENT PUMPING	NORTH SHIFT SIMULATED CONTINUOUS FLOW RATE (gpm)	SOUTH SHIFT IN WELLFIELD PRODUCTION PERCENT PUMPING	SOUTH SHIFT SIMULATED CONTINUOUS FLOW RATE (gpm)
206P	5	350	12	560	5	350
220P	5	350	5	350	5	350
222P	18	1,260	18	1,260	18	1,260
224	12	840	10	700	12	840
226	11	770	8	840	15	1,050
227	11	770	8	560	15	1,050
228P	8	560	10	700	5	350
229P	8	560	10	700	5	350
PoO-1	11	770	11	770	5	350
PoO-3	11	770	8	560	15	1,050

gpm = gallons per minute

TABLE 4.4-12 SUMMARY OF MAJOR SIMULATED FLUXES IN KOBEH VALLEY RESULTING FROM THE NORTH AND SOUTH PUMPING DISTRIBUTION SHIFT SIMULATIONS

PARAMETER	(1) BASE CASE PUMPING MINE YEAR 44 FLOW [1] (AF/yr)	(2) NORTH PUMPING SHIFT MINE YEAR 44 FLOW (AF/yr)	(3) DIFFERENCE BETWEEN NORTH SHIFT AND BASE CASE PUMPING DISTRIBUTION [2] (AF/yr)	(4) SOUTH PUMPING SHIFT MINE YEAR 44 FLOW (AF/yr)	(5) DIFFERENCE BETWEEN SOUTH SHIFT AND BASE CASE PUMPING DISTRIBUTION [3] (AF/yr)
Kobeh Valley ET	11,016	11,467	451	10,592	-424
Kobeh Outflow to South Diamond	2,380	2,380	0	2,380	0
Kobeh Inflow from North Monitor	1,875	1,875	0	1,875	0
Kobeh Inflow from Antelope	2,709	2,704	-5	2,714	5
South Diamond Valley ET	0	0	0	0	0
North Diamond Valley ET	9,071	9,069	-2	9,069	-2
Antelope Valley ET	1,416	1,418	2	1,413	-3
Garden Valley ET	272	272	0	273	1
Garden Valley Outflow to Diamond	5,994	5,994	0	5,994	0
Garden Valley Outflow to Pine	4,341	4,328	-13	4,346	5
Garden Valley Outflow to Kobeh	350	366	16	344	-6
Pine Valley ET	16,795	16,805	10	16,805	10
Pine Valley Outflow to North Pine	11,331	11,322	-9	11,322	-9
Pine Valley Outflow to Kobeh	364	400	36	350	-14

[1] Refer to Table 4.4-7, Column 2 for pumping distribution. Mine Year 44 represents simulation year 2055 and is transient model stress period 101.

[2] Column 2 minus Column 1 values

[3] Column 4 minus Column 1 values

AF/yr = acre-feet per year

TABLE 4.5-1 SUMMARY OF PIT INFLOWS DURING MINING

YEAR OF MINING OPERATIONS	AVERAGE ANNUAL INFLOW RATE (gpm)
0[a]	0[a]
1	58
2	94
3	72
4	177
5	145
6	149
7	165
8	310
9	201
10	219
11-15[b]	255
16-20[b]	356
21-25[b]	393
26-30[b]	460
31-32[b]	420

[a]Represents 1-year pre-mining period
[b]Average rate over time period
gpm = gallons per minute

TABLE 4.5-2 LOCAL MODEL SENSITIVITY ANALYSIS PARAMETERS

VARIED INPUT PARAMETER		DECREASED LAKE STAGE (Low Multivariate)	BASE SIMULATION	INCREASED LAKE STAGE (High Multivariate)
Specific yield		1/2 of Base	Variable	3 times Base
Percentage of precipitation runoff		20%	30%	40%
Lake surface precipitation		12.70 in/yr	14.94 in/yr	17.18 in/yr
Lake evaporation		42.08 in/yr (0.82 pan[a])	37.46 in/yr (0.73 pan[a])	30.79 in/yr (0.60 pan[a])
Lake cell conductance	Bottom	0.12 ft^2/d	1.20 ft^2/d	12.0 ft^2/d
	Side	0.06 ft^2/d	0.60 ft^2/d	6.0 ft^2/d

[a] Pan coefficient

in/yr = inches per year
ft^2/d = square feet per day

TABLE 4.5-3 SUMMARY OF FINAL PIT-LAKE STAGES FOR THE BASE AND INDIVIDUAL SENSITIVITY SIMULATIONS

SINGLE VARIABLE MODEL SENSITIVITY SIMULATION	FINAL PIT-LAKE STAGE (feet, amsl)
Base	5,912
Increased Specific Yield [u]	5,912
Decreased Specific Yield [l]	5,912
Increased precipitation runoff [u]	5,988
Decreased precipitation runoff [l]	5,824
Increased Lake Surface Precipitation [u]	5,992
Decreased Lake Surface Precipitation [l]	5,834
Increased lake evaporation [l]	5,829
Decreased lake evaporation [u]	6,051
Increased lake cell conductance [u]	5,924
Decreased lake cell conductance [l]	5,868

u = upper bound for multivariate simulation
l = lower bound for multivariate simulation

feet, amsl = feet above mean sea level

TABLE 4.5-4. SUMMARY OF PROJECTED LAKE FORMATION WATER BALANCE FOR BASE SIMULATION AND INDIVIDUAL AND MULTIVARIATE SENSIVITY ANALYSIS SIMULATIONS

POST-PROJECT YEAR	LAKE FLOW COMPONENT	SIMULATION (gallons per minute)												
		Base	Specific Yield / 2	Specific Yield x 3	Decreased Runoff	Increased Runoff	Decreased Precip	Increased Precip	Decreased Evap	Increased Evap	Lake Cell Conductance / 10	Lake Cell Conductance x 10	Multivariate Low	Multivariate High
1	Precipitation	**6**	6	6	6	7	5	7	6	6	6	7	4	9
1	Evaporation	**16**	16	16	15	17	15	16	13	18	14	18	14	17
1	Runoff Interflow	**174**	174	174	116	231	148	200	174	174	174	173	99	265
1	Groundwater Interflow	**285**	272	307	285	285	285	285	285	285	155	383	151	506
10	Precipitation	**28**	28	29	26	30	23	34	29	28	25	30	18	39
10	Evaporation	**71**	69	73	65	76	68	74	59	79	63	75	61	71
10	Runoff Interflow	**167**	167	167	112	222	142	192	167	167	168	167	96	253
10	Groundwater Interflow	**236**	223	260	238	234	237	235	236	236	164	260	159	280
50	Precipitation	**64**	63	65	58	68	51	76	65	62	57	65	40	90
50	Evaporation	**160**	159	164	145	171	150	166	134	176	143	164	132	162
50	Runoff Interflow	**156**	157	156	105	207	134	179	156	157	158	156	92	233
50	Groundwater Interflow	**186**	185	197	192	181	190	183	184	188	143	198	148	193
100	Precipitation	**86**	86	88	79	94	69	104	90	84	79	88	54	124
100	Evaporation	**216**	215	221	197	235	205	228	186	235	198	221	179	223
100	Runoff Interflow	**150**	150	149	101	197	128	171	149	151	152	149	89	219
100	Groundwater Interflow	**159**	159	162	167	152	164	154	155	162	126	168	136	148
200	Precipitation	**112**	112	113	100	122	89	137	120	106	103	114	68	165
200	Evaporation	**281**	280	284	252	305	261	299	247	299	257	286	224	295
200	Runoff Interflow	**142**	142	142	97	185	123	161	140	144	145	141	86	203
200	Groundwater Interflow	**134**	135	134	145	124	142	126	125	140	110	140	126	107
1580	Precipitation	**150**	150	150	134	165	115	190	177	135	141	152	84	253
1580	Evaporation	**376**	376	376	337	413	340	414	365	381	354	380	279	453
1580	Runoff Interflow	**131**	131	131	90	168	115	145	122	135	133	130	83	168
1580	Groundwater Interflow	**98**	98	98	114	83	112	82	69	113	82	101	114	36

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