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CH2MHILL

January 22, 2009
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07-AFC-5
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Ms. Roxanne Bittman, Botanist
California Natural Diversity Database
Department of Fish and Game
1807-13th Street, Suite 202
Sacramento, CA 95811

RE: Transmittal of Rare Plant Information to the CNDDB
Ivanpah Solar Electric Generating System (07-AFC-5)

Dear Ms. Bittman:

On behalf of Solar Partners I, LLC, Solar Partners II, LLC, Solar Partners IV, LLC, and Solar Partners VIII, LLC, please find enclosed a summary table that includes GPS coordinates for the rare plant locations identified with the Ivanpah SEGS project site. The GPS X and Y Coordinates are in State Plane, NAD 1983, California Zone V (U.S. Survey Feet).

One hard copy of the 2008 Rare Plant Survey Report (Attachment BR3-1A), which summarizes the results of the 2007 and 2008 rare plant surveys is also provided with this transmittal. An electronic copy of the summary data table and the 2008 Rare Plant Survey Report are also provided.

Additional information on the Ivanpah SEGS project can be found on the CEC website: http://www.energy.ca.gov/sitingcases/ivanpah/documents/index.html#intervenor.

Please call me if you have any questions. I can be reached at 916.286.0224 or jcarrier@ch2m.com.

Sincerely,

CH2M HILL

John L. Carrier, J.D.
Program Manager

c: POS List
Project File

TABLE 1

Summary of 2007 and 2008 Rare Plant Survey Data from Ivanpah Solar Generating System

Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Androstephium breviflorum	Small-flowered androstephium	1	1	35.553029287	-115.464780484	7315759.205	2397112.792	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Androstephium breviflorum	Small-flowered androstephium	8	2	35.541973173	-115.454208600	7319005.027	2393168.943	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Androstephium breviflorum	Small-flowered androstephium	2	3	35.540259697	-115.452438361	7319547.342	2392558.752	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Androstephium breviflorum	Small-flowered androstephium	1	4	35.539270216	-115.459668623	7317405.954	2392144.243	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	1	1	35.593006631	-115.487691829	7308582.04	2411489.738	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	3	2	35.595074932	-115.484543169	7309499.109	2412265.826	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	2	3	35.590589429	-115.482537832	7310136.051	2410648.432	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	2	4	35.588553010	-115.493618594	7306860.785	2409825.029	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	1	5	35.588550030	-115.491100426	7307609.355	2409842.623	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	8	6	35.589252387	-115.485058008	7309399.108	2410143.112	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	1	7	35.588701811	-115.486495088	7308976.941	2409932.065	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	1	8	35.589525223	-115.469977648	7313879.296	2410354.917	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	4	9	35.587829065	-115.491517765	7307491.847	2409577.159	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	3	10	35.587348626	-115.491696730	7307443.012	2409400.995	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	2	11	35.583900676	-115.493796728	7306850.054	2408130.677	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	1	12	35.583362241	-115.476670522	7311946.138	2408062.136	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	3	13	35.582545238	-115.477027379	7311847.518	2407762.159	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	2	14	35.580195702	-115.472797937	7313126.337	2406938.737	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	2	15	35.579975712	-115.473810956	7312827.193	2406851.109	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	35	16	35.578715697	-115.472814955	7313134.822	2406400.025	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	1	17	35.576757130	-115.485294925	7309442.466	2405594.217	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	5	18	35.576908511	-115.480611094	7310833.583	2405684.182	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	1	19	35.576091436	-115.488049341	7308629.635	2405331.486	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	4	20	35.575714261	-115.482118767	7310396.243	2405238.352	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	4	21	35.576083604	-115.471971911	7313409.546	2405448.493	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	7	22	35.575589985	-115.471586045	7313528.784	2405271.747	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	1	23	35.574974984	-115.488166187	7308605.052	2404924.332	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms

TABLE 1

Summary of 2007 and 2008 Rare Plant Survey Data from Ivanpah Solar Generating System

Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Asclepias nyctaginifolia	Mojave milkweed	1	24	35.574153384	-115.487037952	7308947.959	2404633.731	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	10	25	35.573647127	-115.489634087	7308180.707	2404430.209	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	3	26	35.573582895	-115.483081849	7310129.342	2404455.56	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	1	27	35.574106702	-115.468496800	7314460.821	2404755.094	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	2	28	35.573352666	-115.492832518	7307232.452	2404299.314	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	2	29	35.572610479	-115.480656349	7310859.339	2404119.761	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	2	30	35.572704850	-115.480417684	7310929.437	2404155.882	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	7	31	35.571958296	-115.484218561	7309806.185	2403855.895	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	3	32	35.571812408	-115.483268290	7310090.046	2403809.879	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	1	33	35.570915559	-115.486691700	7309080.37	2403458.037	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	3	34	35.569485136	-115.494282022	7306836.589	2402881.141	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	1	35	35.565156047	-115.486679185	7309136.508	2401362.205	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	1	36	35.564769373	-115.485165661	7309590.063	2401232.751	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	6	37	35.563126916	-115.478596896	7311558.231	2400683.993	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	4	38	35.563036111	-115.478909608	7311466.075	2400648.616	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	5	39	35.563035031	-115.478796271	7311499.786	2400649.068	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	1	40	35.551753470	-115.478475816	7311698.081	2396546.05	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	2	41	35.546639849	-115.459686638	7317332.805	2394825.919	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	2	42	35.546303699	-115.460919583	7316969.21	2394694.327	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	13	43	35.543490189	-115.465015958	7315776.742	2393639.731	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	1	44	35.544123561	-115.453850411	7319091.734	2393954.168	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	6	45	35.544284212	-115.451860487	7319682.085	2394027.629	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	1	46	35.543313836	-115.449010769	7320538.595	2393696.012	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	1	47	35.543082531	-115.449285619	7320458.986	2393609.765	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	2	48	35.541932904	-115.457680839	7317972.674	2393128.145	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	2	49	35.541289207	-115.443035538	7322334.478	2393004.416	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	2	50	35.539635011	-115.454593648	7318912.055	2392315.185	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms

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Summary of 2007 and 2008 Rare Plant Survey Data from Ivanpah Solar Generating System

Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Asclepias nyctaginifolia	Mojave milkweed	1	51	35.538720450	-115.443765710	7322141.084	2392064.124	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	2	52	35.538634155	-115.444121879	7322035.946	2392030.027	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	7	53	35.535561540	-115.448603963	7320731.207	2390878.032	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	2	54	35.535277164	-115.446594318	7321331.597	2390789.73	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	4	55	35.534564396	-115.455265890	7318758.833	2390464.93	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	2	56	35.529301037	-115.460921593	7317124.937	2388507.048	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	4	57	35.527767483	-115.452147549	7319749.09	2388015.048	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Asclepias nyctaginifolia	Mojave milkweed	1	58	35.601675465	-115.486696066	7308799.125	2414651.824	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	4	115	35.598354399	-115.489054902	7308128.255	2413425.724	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	116	35.598286886	-115.488130272	7308403.688	2413408.023	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	4	117	35.598249443	-115.485843302	7309083.766	2413411.395	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	118	35.598171476	-115.485456832	7309199.343	2413385.895	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	119	35.598241521	-115.484841693	7309381.537	2413415.961	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	3	120	35.597982948	-115.484982257	7309342.113	2413320.818	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	121	35.597365169	-115.488790901	7308215.717	2413067.692	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	122	35.597424147	-115.488107123	7308418.416	2413094.234	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	3	123	35.597502457	-115.487670139	7308547.586	2413125.979	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	124	35.597681880	-115.485826611	7309093.894	2413204.976	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	125	35.597699887	-115.485316195	7309245.437	2413215.325	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	3	126	35.597217049	-115.487588519	7308574.442	2413022.722	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	127	35.597392321	-115.485152398	7309296.923	2413104.616	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	3	128	35.596536194	-115.486641709	7308862.055	2412781.988	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	129	35.596440798	-115.485887640	7309087.053	2412752.879	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	6	130	35.595321642	-115.486591854	7308887.927	2412340.37	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	131	35.595362063	-115.484871230	7309398.983	2412367.875	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	132	35.594768593	-115.488405559	7308353.865	2412125.632	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	4	133	35.594055951	-115.487606133	7308597.966	2411872.233	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms

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Summary of 2007 and 2008 Rare Plant Survey Data from Ivanpah Solar Generating System

Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Coryphantha chlorantha	Desert pincushion	1	134	35.593213608	-115.488440514	7308357.618	2411559.496	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	135	35.593326621	-115.487107585	7308752.789	2411610.527	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	3	136	35.593048588	-115.487679983	7308585.179	2411505.094	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	137	35.594090631	-115.483835230	7309718.5	2411912.896	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	138	35.592968146	-115.486952448	7308802.164	2411481.228	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	139	35.592264459	-115.488355478	7308391.526	2411214.723	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	3	140	35.592791026	-115.485635031	7309195.366	2411426.567	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	141	35.593089891	-115.484652329	7309484.744	2411542.637	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	142	35.592595489	-115.484450151	7309549.343	2411364.223	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	143	35.592024186	-115.485480950	7309248.148	2411148.652	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	144	35.591568650	-115.487660697	7308604.376	2410966.673	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	145	35.591607665	-115.486250702	7309023.135	2410991.352	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	146	35.591885746	-115.484536849	7309530.037	2411105.295	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	147	35.591012907	-115.488127366	7308470.715	2410760.965	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	148	35.589773787	-115.488370665	7308409.665	2410308.229	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	149	35.589755728	-115.487996191	7308521.142	2410304.439	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	150	35.590036190	-115.487448495	7308681.395	2410410.572	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	151	35.590282970	-115.486183068	7309055.298	2410509.785	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	152	35.590314113	-115.484887483	7309440.127	2410530.753	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	153	35.590506942	-115.484583832	7309528.631	2410603.185	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	154	35.590597286	-115.483715381	7309785.954	2410642.524	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	155	35.590638673	-115.482621652	7310110.687	2410665.728	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	156	35.591300821	-115.474623643	7312482.027	2410966.337	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	157	35.590257648	-115.483534484	7309842.821	2410520.273	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	158	35.590495119	-115.480268879	7310811.355	2410631.014	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	159	35.590155137	-115.478958325	7311204.02	2410517.061	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	160	35.589490246	-115.482533657	7310147.312	2410248.459	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms

TABLE 1

Summary of 2007 and 2008 Rare Plant Survey Data from Ivanpah Solar Generating System

Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Coryphantha chlorantha	Desert pincushion	1	161	35.589270307	-115.481695632	7310398.423	2410174.663	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	162	35.588350337	-115.484486715	7309577.144	2409819.098	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	163	35.588889398	-115.478918855	7311227.308	2410056.742	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	164	35.587219801	-115.493697710	7306849.367	2409339.274	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	165	35.587712551	-115.484305445	7309636.838	2409588.35	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	166	35.586427920	-115.497987984	7305581.205	2409019.321	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	167	35.587297691	-115.483764791	7309801.332	2409441.403	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	168	35.587767621	-115.471755199	7313367.007	2409702.013	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	169	35.585972099	-115.486401535	7309029.596	2408939.393	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	170	35.586264391	-115.479779084	7310995.556	2409095.064	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	171	35.586136953	-115.478962491	7311239.464	2409054.777	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	172	35.585671237	-115.484369104	7309636.51	2408845.024	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	173	35.585800554	-115.480481730	7310790.916	2408921.032	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	174	35.585487136	-115.484831524	7309500.724	2408774.587	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	175	35.584979319	-115.487038846	7308849.18	2408573.373	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	176	35.584295223	-115.493120802	7307047.408	2408279.269	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	177	35.584283288	-115.493121363	7307047.35	2408274.921	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	178	35.584271093	-115.492951157	7307098.058	2408271.745	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	3	179	35.585368481	-115.468562625	7314338.018	2408852.838	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	180	35.584265077	-115.498198145	7305538.326	2408230.685	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	3	181	35.583819195	-115.498077582	7305578.206	2408069.317	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	182	35.581948154	-115.484477455	7309638.214	2407489.355	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	183	35.580333421	-115.488901015	7308337.859	2406868.851	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	184	35.578456899	-115.486143284	7309174.777	2406206.466	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	185	35.577931139	-115.493711077	7306929.693	2405958.943	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	186	35.576922584	-115.482489888	7310274.893	2405675.306	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	187	35.572089197	-115.491020977	7307782.524	2403852.969	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms

TABLE 1

Summary of 2007 and 2008 Rare Plant Survey Data from Ivanpah Solar Generating System

Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Coryphantha chlorantha	Desert pincushion	1	188	35.571348592	-115.474070300	7312829.003	2403709.705	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	189	35.570406950	-115.474875387	7312598.247	2403361.02	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	190	35.570606348	-115.470423832	7313919.962	2403466.868	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	191	35.570163907	-115.470774686	7313819.698	2403303.236	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	192	35.569349140	-115.482098134	7310460.412	2402922.194	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	193	35.567627656	-115.474644958	7312692.174	2402351.341	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	194	35.566957916	-115.478192908	7311643.372	2402081.129	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	195	35.566853243	-115.478452483	7311567.147	2402041.101	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	196	35.566795036	-115.478212279	7311639.1	2402021.711	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	197	35.566283422	-115.486531970	7309170.021	2401773.559	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	198	35.566000945	-115.484408406	7309804.008	2401686.563	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	199	35.565901823	-115.484271817	7309845.524	2401651.508	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	200	35.565694759	-115.468242669	7314613.494	2401695.847	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	201	35.561659516	-115.476834780	7312095.599	2400163.149	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	202	35.560485008	-115.477818842	7311813.712	2399728.395	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	203	35.559067780	-115.480852979	7310924.416	2399190.029	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	204	35.556733234	-115.476979140	7312097.68	2398369.376	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	205	35.556707831	-115.477043091	7312078.895	2398359.654	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	206	35.546971361	-115.473193288	7313312.802	2394845.287	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	207	35.546133303	-115.463000922	7316351.769	2394616.687	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	208	35.546009377	-115.462992720	7316355.347	2394571.651	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	209	35.544552182	-115.462562212	7316496.773	2394044.609	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	210	35.543260341	-115.464515796	7315927.61	2393559.842	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	211	35.543068784	-115.464644372	7315891.127	2393489.17	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	212	35.541868328	-115.466521029	7315343.986	2393038.246	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	213	35.542104706	-115.465393286	7315677.234	2393132.722	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	3	214	35.542247527	-115.464868033	7315832.145	2393188.635	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms

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Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Coryphantha chlorantha	Desert pincushion	1	215	35.540888732	-115.464929414	7315826.362	2392693.709	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	216	35.544086904	-115.456292150	7318365.862	2393922.438	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	217	35.544022238	-115.456297862	7318364.758	2393898.863	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	218	35.544130081	-115.455819790	7318505.951	2393941.706	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	219	35.543468322	-115.451319000	7319850.66	2393734.811	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	220	35.542954075	-115.451557138	7319784.58	2393545.88	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	221	35.543091021	-115.448089550	7320814.64	2393621.886	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	222	35.542547714	-115.445857913	7321483.395	2393441.039	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	223	35.540673362	-115.456030244	7318475.202	2392682.221	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	224	35.541191986	-115.453439237	7319241.056	2392890.467	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	225	35.541047092	-115.453492195	7319226.641	2392837.341	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	226	35.540793534	-115.449703695	7320355.781	2392773.645	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	227	35.540523080	-115.448219608	7320799.687	2392686.432	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	228	35.540638964	-115.446082678	7321434.197	2392744.748	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	229	35.540366203	-115.456278670	7318404.142	2392568.576	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	230	35.539755356	-115.460199876	7317243.48	2392316.791	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	231	35.535659696	-115.450151680	7320269.94	2390902.066	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	232	35.535075932	-115.453692979	7319221.979	2390662.928	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	233	35.532883249	-115.447199969	7321173.577	2389914.012	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	234	35.528801414	-115.452184782	7319728.476	2388391.013	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	19	235	35.602231583	-115.487576206	7308532.48	2414847.66	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	236	35.601946059	-115.488258977	7308332.153	2414738.682	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	4	237	35.601993882	-115.487052531	7308690.283	2414765.05	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	17	238	35.602122870	-115.486808674	7308761.585	2414813.802	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	8	239	35.601953913	-115.486523891	7308847.763	2414754.434	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	14	240	35.601824742	-115.486703076	7308795.683	2414706.095	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	18	241	35.601559508	-115.487987554	7308416.338	2414600.028	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms

TABLE 1

Summary of 2007 and 2008 Rare Plant Survey Data from Ivanpah Solar Generating System

Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Coryphantha chlorantha	Desert pincushion	9	242	35.601569155	-115.486356160	7308901.116	2414615.663	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	243	35.601412073	-115.486868368	7308750.312	2414554.691	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	244	35.601283602	-115.488320384	7308319.927	2414497.15	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	6	245	35.601320844	-115.487002899	7308711.159	2414520.492	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	4	246	35.601327635	-115.486401752	7308889.764	2414527.432	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	247	35.601187225	-115.489381274	7308005.496	2414454.199	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	248	35.601212026	-115.488511641	7308263.735	2414469.682	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	12	249	35.601180007	-115.487947814	7308431.602	2414462.219	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	3	250	35.601169404	-115.487725204	7308497.86	2414460.014	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	16	251	35.601182548	-115.487257996	7308636.6	2414468.269	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	252	35.601163183	-115.486747880	7308788.388	2414465.013	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	3	253	35.601163149	-115.486255834	7308934.63	2414468.658	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	254	35.601314359	-115.485648883	7309113.645	2414528.198	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	4	255	35.600979100	-115.489519665	7307966.256	2414377.432	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	7	256	35.601015098	-115.485639696	7309119.101	2414419.362	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	257	35.600695196	-115.488715198	7308207.935	2414280.09	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	4	258	35.600777633	-115.486944054	7308733.591	2414323.249	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	10	259	35.600771147	-115.486718001	7308800.836	2414322.568	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	6	260	35.600775008	-115.486290099	7308927.979	2414327.154	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	10	261	35.600783399	-115.485359432	7309204.508	2414337.128	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	262	35.600631447	-115.485674886	7309112.135	2414279.485	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	263	35.600554461	-115.485905992	7309044.148	2414249.751	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	264	35.600436571	-115.488287423	7308337.427	2414189.151	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	11	265	35.600255394	-115.489046879	7308113.354	2414117.578	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	3	266	35.600272359	-115.486391388	7308902.45	2414143.482	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	5	267	35.600274760	-115.486239613	7308947.537	2414145.484	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	7	268	35.600249583	-115.485124837	7309279.094	2414144.611	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms

TABLE 1

Summary of 2007 and 2008 Rare Plant Survey Data from Ivanpah Solar Generating System

Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Coryphantha chlorantha	Desert pincushion	2	269	35.600082999	-115.489548421	7307965.856	2414051.117	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	8	270	35.599993992	-115.489915723	7307857.497	2414015.999	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	11	271	35.600125302	-115.486130562	7308981.31	2414091.905	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	272	35.599844148	-115.488760205	7308202.298	2413970.049	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	5	273	35.599787028	-115.488446706	7308295.994	2413951.591	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	11	274	35.599896241	-115.487425408	7308598.546	2413998.923	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	3	275	35.599747781	-115.486680455	7308821.309	2413950.433	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	11	276	35.599841064	-115.485865709	7309062.615	2413990.437	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	3	277	35.599947868	-115.485007247	7309316.791	2414035.688	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	4	278	35.599595250	-115.487968283	7308439.934	2413885.355	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	279	35.599449385	-115.487994017	7308433.612	2413832.082	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	280	35.599484178	-115.485952186	7309040.162	2413859.919	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	5	281	35.599099357	-115.489349364	7308033.962	2413694.636	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	282	35.599264958	-115.487866474	7308473.198	2413765.914	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	5	283	35.599143293	-115.486397799	7308910.821	2413732.554	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	284	35.598894805	-115.489903586	7307871.096	2413616.082	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	4	285	35.598826830	-115.489200012	7308080.83	2413596.569	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	286	35.598963057	-115.488491258	7308290.246	2413651.408	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	4	287	35.598983194	-115.488208313	7308374.159	2413660.837	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	4	288	35.598828453	-115.487176883	7308682.128	2413612.189	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	4	289	35.598902502	-115.486216440	7308966.916	2413646.276	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	290	35.598865451	-115.486100326	7309001.765	2413633.656	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	291	35.598912985	-115.485657202	7309133.037	2413654.249	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	3	4	35.581273950	-115.497679276	7305719.675	2407146.025	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	2	5	35.571715544	-115.476868114	7311993.81	2403822.345	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	6	6	35.571983231	-115.474344955	7312741.539	2403938.602	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	7	35.567901723	-115.475400001	7312465.17	2402445.435	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms

TABLE 1

Summary of 2007 and 2008 Rare Plant Survey Data from Ivanpah Solar Generating System

Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Cynanchum utahense	Utah vine milkweed	4	8	35.567707444	-115.468576346	7314495.83	2402425.773	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	4	9	35.567068915	-115.478541573	7311538.688	2402118.92	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	2	10	35.566872779	-115.477403336	7311878.916	2402056.039	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	15	11	35.567040727	-115.476839020	7312045.172	2402121.368	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	12	35.567152239	-115.475469519	7312451.352	2402172.174	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	4	13	35.566917117	-115.472633891	7313296.63	2402107.804	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	2	14	35.566920677	-115.472308332	7313393.397	2402111.534	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	15	35.562392958	-115.479206798	7311383.577	2400412.352	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	8	16	35.562397864	-115.476762140	7312110.453	2400432.38	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	4	17	35.562271306	-115.474340004	7312831.834	2400404.417	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	18	35.562050656	-115.473733426	7313014.219	2400328.655	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	19	35.562237473	-115.469502282	7314270.643	2400428.292	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	5	20	35.561425550	-115.480740812	7310936.262	2400048.869	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	12	21	35.561443804	-115.479133977	7311413.895	2400067.493	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	22	35.561382676	-115.476653527	7312152.025	2400063.759	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	23	35.561041854	-115.480798378	7310922.645	2399908.811	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	8	24	35.561129731	-115.480254448	7311083.583	2399944.845	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	6	25	35.561015167	-115.479247125	7311384.162	2399910.666	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	15	26	35.560853514	-115.479613622	7311276.658	2399849.107	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	27	35.560622090	-115.479015216	7311456.71	2399769.354	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	28	35.560230264	-115.480837491	7310918.418	2399613.178	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	29	35.560423686	-115.478836713	7311511.6	2399698.485	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	6	30	35.560431307	-115.477391176	7311941.372	2399712.045	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	6	31	35.560115153	-115.479076480	7311443.12	2399584.42	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	2	32	35.559848594	-115.479932430	7311191.028	2399481.034	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	2	33	35.559880133	-115.478722201	7311550.614	2399501.538	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	3	34	35.559071854	-115.480072400	7311156.494	2399197.331	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms

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Summary of 2007 and 2008 Rare Plant Survey Data from Ivanpah Solar Generating System

Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Cynanchum utahense	Utah vine milkweed	3	35	35.558518372	-115.480681502	7310980.419	2398991.375	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	36	35.558408724	-115.480372209	7311073.392	2398953.779	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	8	37	35.558725441	-115.476483826	7312226.768	2399098.047	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	15	38	35.558427856	-115.471484855	7313716.005	2399027.119	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	4	39	35.558331784	-115.470330232	7314060.229	2399000.798	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	40	35.557679894	-115.473870672	7313013.389	2398737.09	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	41	35.555058737	-115.478185952	7311754.1	2397751.012	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	42	35.550673998	-115.476618441	7312260.307	2396167.091	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	6	43	35.546896579	-115.458342223	7317730.279	2394929.453	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	9	44	35.546421377	-115.455983213	7318436.239	2394774.279	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	2	45	35.545547527	-115.455854468	7318482.579	2394457.254	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	46	35.545614859	-115.455434059	7318606.992	2394484.922	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	2	47	35.544973724	-115.455147591	7318698.099	2394253.77	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	20	48	35.544906009	-115.447024057	7321114.759	2394290.408	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	5	49	35.544818142	-115.444852433	7321761.438	2394274.848	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	3	50	35.544855231	-115.442473765	7322468.538	2394306.34	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	8	51	35.544831099	-115.447125156	7321085.383	2394262.384	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	6	52	35.544688692	-115.447232085	7321054.898	2394209.755	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	53	35.544694861	-115.452615245	7319453.821	2394171.373	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	8	54	35.544722422	-115.451603139	7319754.58	2394189.034	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	20	55	35.544673853	-115.450117669	7320196.826	2394182.567	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	14	56	35.544613436	-115.450297633	7320143.86	2394159.223	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	8	57	35.544452827	-115.455782933	7318513.939	2394059.431	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	6	58	35.544179051	-115.452236645	7319571.18	2393986.525	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	6	59	35.544399107	-115.451739298	7319717.068	2394070.353	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	6	60	35.543823607	-115.457243616	7318085.305	2393819.462	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	6	61	35.544300059	-115.449436730	7320402.798	2394051.682	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms

TABLE 1

Summary of 2007 and 2008 Rare Plant Survey Data from Ivanpah Solar Generating System

Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Cynanchum utahense	Utah vine milkweed	15	62	35.544387185	-115.448481609	7320686.059	2394090.599	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	8	63	35.544281531	-115.447701787	7320918.966	2394058.041	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	9	64	35.544423920	-115.445087558	7321695.156	2394129.612	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	53	65	35.544474837	-115.444176415	7321965.671	2394155.032	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	3	66	35.544335005	-115.443986415	7322023.474	2394105.584	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	9	67	35.544282600	-115.445914127	7321450.631	2394071.937	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	23	68	35.544235111	-115.445211544	7321660.028	2394059.967	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	3	69	35.544163143	-115.453642190	7319153.297	2393970.14	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	4	70	35.544017272	-115.454112731	7319014.696	2393913.512	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	5	71	35.543955252	-115.451711193	7319729.522	2393909.046	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	9	72	35.543891519	-115.450530565	7320081.248	2393894.76	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	15	73	35.543761354	-115.449818107	7320294.346	2393852.769	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	10	74	35.543884069	-115.449419270	7320411.833	2393900.436	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	7	75	35.544021113	-115.449027975	7320526.944	2393953.26	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	31	76	35.544115223	-115.448508627	7320680.537	2393991.428	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	77	35.543989963	-115.448122493	7320796.536	2393948.762	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	30	78	35.543880693	-115.447711831	7320919.683	2393912.1	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	10	79	35.544040305	-115.446640557	7321236.821	2393978.276	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	6	80	35.544091103	-115.446591089	7321251.063	2393997.136	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	4	81	35.543988910	-115.445590991	7321549.452	2393967.506	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	2	82	35.544035830	-115.444819101	7321778.59	2393990.417	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	3	83	35.543350757	-115.457538485	7318001.96	2393645.173	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	6	84	35.543322071	-115.455512645	7318604.745	2393649.984	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	3	85	35.543405806	-115.451917964	7319673.095	2393707.544	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	2	86	35.543239436	-115.451659373	7319751.54	2393648.952	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	13	87	35.543288743	-115.450183228	7320190.117	2393678.031	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	15	88	35.543653902	-115.448667820	7320637.452	2393822.351	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms

TABLE 1

Summary of 2007 and 2008 Rare Plant Survey Data from Ivanpah Solar Generating System

Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Cynanchum utahense	Utah vine milkweed	6	89	35.543334271	-115.449013942	7320537.462	2393703.424	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	17	90	35.543477819	-115.448534718	7320678.666	2393759.28	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	4	91	35.543647526	-115.445370158	7321618.289	2393844.947	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	6	92	35.543722884	-115.444825413	7321779.608	2393876.488	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	6	93	35.543185944	-115.446170689	7321384.467	2393670.926	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	8	94	35.543223195	-115.445853363	7321478.501	2393686.88	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	4	95	35.543192113	-115.445060562	7321714.582	2393681.563	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	5	96	35.543345283	-115.443389162	7322210.267	2393749.944	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	7	97	35.543400700	-115.442915867	7322350.52	2393773.691	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	8	98	35.543493964	-115.441790546	7322684.345	2393816.148	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	18	99	35.543641533	-115.440869346	7322956.958	2393876.824	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	6	100	35.543121304	-115.442965712	7322338.282	2393671.642	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	19	101	35.543084981	-115.442427359	7322498.734	2393662.499	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	7	102	35.542689192	-115.450587731	7320075.345	2393456.802	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	2	103	35.542094882	-115.455744301	7318547.152	2393201.665	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	4	104	35.542562676	-115.453298968	7319270.136	2393390.317	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	21	105	35.542602213	-115.452954278	7319372.289	2393407.303	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	3	106	35.542186521	-115.450786777	7320020.785	2393272.379	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	4	107	35.542454079	-115.441765404	7322701.456	2393437.925	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	4	108	35.541856290	-115.445498989	7321596.542	2393192.143	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	5	109	35.541445838	-115.457752199	7317955.933	2392950.365	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	2	110	35.541198610	-115.455229782	7318708.441	2392879.387	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	3	111	35.541164401	-115.450787683	7320029.95	2392900.423	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	10	112	35.541322816	-115.446989909	7321158.04	2392986.744	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	113	35.541164327	-115.446075255	7321431.546	2392935.983	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	3	114	35.540840632	-115.454938567	7318798.355	2392751.312	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	14	115	35.540697710	-115.451636336	7319781.846	2392724.193	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms

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Summary of 2007 and 2008 Rare Plant Survey Data from Ivanpah Solar Generating System

Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Cynanchum utahense	Utah vine milkweed	50	116	35.540648088	-115.450062066	7320250.535	2392718.012	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	7	117	35.540832309	-115.447243462	7321087.162	2392806.334	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	4	118	35.541242662	-115.443170061	7322294.899	2392986.46	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	119	35.540751827	-115.446154717	7321411.727	2392785.274	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	2	120	35.540762921	-115.445594764	7321578.169	2392793.544	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	121	35.540859052	-115.444784171	7321818.372	2392834.655	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	7	122	35.540991660	-115.444322039	7321954.595	2392886.406	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	12	123	35.540301748	-115.452370444	7319567.155	2392574.567	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	124	35.540323413	-115.451443213	7319842.74	2392589.443	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	9	125	35.540430374	-115.450583529	7320097.447	2392634.851	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	4	126	35.540541854	-115.448724539	7320649.333	2392689.451	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	2	127	35.540518046	-115.447996490	7320866.095	2392686.285	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	128	35.540604530	-115.446191183	7321402.243	2392731.397	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	129	35.539522607	-115.462671144	7316510.586	2392213.526	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	130	35.539682571	-115.456326403	7318396.242	2392319.443	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	131	35.539667853	-115.456320237	7318398.211	2392314.134	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	132	35.539712761	-115.452387342	7319567.563	2392360.107	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	2	133	35.538980670	-115.445482788	7321627.96	2392145.831	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	5	134	35.538728905	-115.456266927	7318422.716	2391972.852	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	4	135	35.538251106	-115.456384798	7318392.058	2391798.094	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	5	136	35.538171493	-115.454873790	7318842.22	2391780.502	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	5	137	35.537788846	-115.457160713	7318165.529	2391624.038	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	138	35.537813657	-115.456320342	7318415.259	2391639.392	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	8	139	35.531640009	-115.448064210	7320927.993	2389455.071	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	3	140	35.531108706	-115.451809046	7319818.956	2389233.465	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	141	35.531301929	-115.450804465	7320115.997	2389311.357	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	8	142	35.530644483	-115.452628067	7319579.611	2389058.359	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms

TABLE 1

Summary of 2007 and 2008 Rare Plant Survey Data from Ivanpah Solar Generating System

Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Cynanchum utahense	Utah vine milkweed	8	143	35.530627783	-115.450530753	7320203.64	2389068.102	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	4	144	35.530094460	-115.450814221	7320124.241	2388871.888	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	145	35.530130934	-115.448860270	7320705.137	2388899.91	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	14	146	35.529346989	-115.445360674	7321753.397	2388641.08	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	15	147	35.528833009	-115.444844762	7321911.62	2388457.945	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	5	148	35.528806842	-115.443277620	7322378.039	2388460.28	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	149	35.599882965	-115.487416275	7308601.382	2413994.159	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	3	1	35.597967145	-115.487542474	7308581.304	2413296.033	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	61	2	35.598293125	-115.484814798	7309389.061	2413434.94	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	45	3	35.597526919	-115.487582036	7308573.55	2413135.536	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	35	4	35.597542003	-115.485091263	7309313.73	2413159.542	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	96	5	35.597381071	-115.484866739	7309381.93	2413102.647	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	63	6	35.596993320	-115.487878028	7308490.428	2412939.154	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	415	7	35.597054034	-115.485365348	7309236.709	2412979.926	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	23	8	35.597142454	-115.484815948	7309399.199	2413016.19	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	47	9	35.597161171	-115.484421681	7309516.215	2413025.934	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	260	10	35.596625863	-115.487311660	7308662.111	2412809.641	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	56	11	35.596526714	-115.487543547	7308594.09	2412771.836	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	20	12	35.596438600	-115.485930325	7309074.386	2412751.762	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	17	13	35.596114196	-115.485136149	7309313.392	2412639.614	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	22	14	35.595770313	-115.484543646	7309492.633	2412518.879	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	1	15	35.595511090	-115.484472549	7309516.127	2412425.073	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	50	16	35.595309993	-115.488189766	7308413.082	2412324.256	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	75	17	35.595290200	-115.485952087	7309078.373	2412333.685	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	30	18	35.595305606	-115.484903605	7309389.875	2412347.089	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	128	19	35.595035551	-115.485094715	7309335.53	2412247.391	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms

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Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Enneapogon desvauxii	Nine-awned pappus grass	35	20	35.595005953	-115.484572296	7309491.08	2412240.507	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	20	21	35.594795355	-115.487989390	7308477.322	2412138.463	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	48	22	35.594707738	-115.486506767	7308918.805	2412117.597	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	12	23	35.594603431	-115.484955013	7309380.99	2412091.178	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	30	24	35.594221448	-115.485328498	7309273.455	2411949.392	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	94	25	35.594233153	-115.484985467	7309375.31	2411956.203	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	55	26	35.593894316	-115.488629753	7308295.178	2411805.808	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	24	27	35.593971861	-115.487520360	7308624.225	2411842.269	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	37	28	35.593792004	-115.484565906	7309504.037	2411798.786	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	69	29	35.593808006	-115.483757002	7309744.328	2411810.628	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	289	30	35.593646411	-115.483998433	7309674.037	2411750.025	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	1	31	35.592974510	-115.488312594	7308397.815	2411473.437	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	240	32	35.592937085	-115.486722203	7308870.885	2411471.636	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	300	33	35.593028843	-115.485146268	7309338.481	2411516.746	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	26	34	35.592991501	-115.484742888	7309458.722	2411506.158	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	17	35	35.592567465	-115.488343005	7308392.478	2411325.082	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	58	36	35.592602982	-115.484454574	7309547.96	2411366.916	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	10	37	35.591835393	-115.488317838	7308406.617	2411058.861	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	8	38	35.591636685	-115.486463391	7308959.65	2411000.331	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	22	39	35.591333623	-115.484045521	7309681.112	2410908.028	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	35	40	35.591144088	-115.483704904	7309784.086	2410841.589	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	11	41	35.590626430	-115.483702995	7309789.37	2410653.223	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	55	42	35.588877938	-115.495473448	7306306.469	2409929.528	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	5	43	35.589191225	-115.492355569	7307230.432	2410066.648	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	7	44	35.589894359	-115.488589446	7308343.535	2410350.481	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	8	45	35.589835941	-115.488103163	7308488.615	2410332.834	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms

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Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Enneapogon desvauxii	Nine-awned pappus grass	1	46	35.590025705	-115.487349142	7308711.023	2410407.495	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	1	47	35.591086887	-115.476335083	7311975.264	2410875.705	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	10	48	35.591404913	-115.474285750	7312581.513	2411006.741	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	1	49	35.588464465	-115.496801552	7305915.43	2409769.224	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	30	50	35.587939153	-115.497437892	7305731.033	2409573.347	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	5	51	35.588539450	-115.493340512	7306943.57	2409822.156	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	37	52	35.588768453	-115.491358704	7307530.596	2409920.193	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	33	53	35.589346530	-115.485736015	7309196.71	2410172.329	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	19	54	35.589405332	-115.485002901	7309414.096	2410199.181	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	12	55	35.590632250	-115.477965935	7311494.651	2410698.089	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	22	56	35.590605006	-115.477592449	7311605.918	2410690.961	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	30	57	35.588308738	-115.493665849	7306848.955	2409735.785	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	12	58	35.588620196	-115.486809980	7308884.08	2409900.024	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	20	59	35.590532082	-115.471984069	7313273.667	2410706.313	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	3	60	35.587068629	-115.498046390	7305558.039	2409252.05	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	40	61	35.586332867	-115.497845674	7305624.371	2408985.784	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	1	62	35.588677532	-115.477687891	7311595.153	2409988.823	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	8	63	35.588915305	-115.475557547	7312226.235	2410091.252	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	1	64	35.589480146	-115.473376592	7312869.366	2410313.094	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	40	65	35.585502318	-115.492782144	7307137.122	2408721.054	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	1	66	35.586672926	-115.486468932	7309003.183	2409193.929	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	1	67	35.586763654	-115.485322679	7309343.096	2409235.47	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	2	68	35.588537092	-115.474506938	7312541.992	2409961.463	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	12	69	35.588039895	-115.475004562	7312398.617	2409776.812	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	2	70	35.589051513	-115.470816948	7313634.151	2410176.25	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	9	71	35.585433616	-115.488499445	7308410.856	2408727.842	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms

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Enneapogon desvauxii	Nine-awned pappus grass	28	72	35.585584162	-115.485734607	7309231.383	2408803.178	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	26	73	35.586241415	-115.482498308	7310187.437	2409066.443	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	30	74	35.586075421	-115.482660942	7310140.605	2409004.825	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	5	75	35.586062334	-115.479129286	7311190.563	2409026.379	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	1	76	35.587676849	-115.473201715	7312937.848	2409658.166	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	2	77	35.587860267	-115.471845620	7313339.28	2409735.052	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	2	78	35.588388453	-115.468843372	7314226.881	2409949.727	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	1	79	35.588893874	-115.467949289	7314488.018	2410140.349	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	16	80	35.586283214	-115.474720476	7312499.127	2409139.663	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	1	81	35.586824375	-115.468827893	7314245.818	2409380.663	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	1	82	35.587493729	-115.466107115	7315048.459	2409644.628	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	1	83	35.582856985	-115.498190529	7305553.346	2407718.323	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	11	84	35.583065025	-115.489723504	7308068.513	2407856.798	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	9	85	35.582954740	-115.489487362	7308139.716	2407818.418	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	1	86	35.582591900	-115.478633987	7311369.483	2407767.153	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	1	87	35.580792986	-115.482191886	7310328.201	2407085.995	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	1	88	35.579373601	-115.490533766	7307861.186	2406507.44	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	2	89	35.578535687	-115.494858753	7306583.01	2406170.436	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	1	90	35.578542528	-115.483403797	7309988.426	2406258.011	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	115	91	35.576373537	-115.493718014	7306941.767	2405392.067	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	3	92	35.576454770	-115.489324210	7308247.311	2405454.234	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	50	93	35.574624875	-115.493077222	7307148.15	2404760.466	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	60	94	35.570960958	-115.495253989	7306534.212	2403411	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	15	95	35.570169178	-115.495252466	7306541.846	2403122.876	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	25	96	35.567983724	-115.494272989	7306852.898	2402334.833	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	8	97	35.567602795	-115.474673616	7312683.88	2402342.08	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms

TABLE 1

Summary of 2007 and 2008 Rare Plant Survey Data from Ivanpah Solar Generating System

Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Enneapogon desvauxii	Nine-awned pappus grass	1	98	35.545307943	-115.473784716	7313152.124	2394235.543	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	126	99	35.545627598	-115.470801943	7314036.309	2394374.179	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	6	100	35.545904053	-115.463918716	7316080.915	2394526.373	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	44	101	35.544286669	-115.466747846	7315254.341	2393916.583	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	6	102	35.543573165	-115.470639157	7314103.54	2393627.786	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	2	103	35.544287099	-115.463628970	7316181.938	2393940.136	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	3	104	35.544398186	-115.461028208	7316954.423	2394000.093	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	7	105	35.544759575	-115.458012379	7317848.047	2394154.277	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	2	106	35.544820439	-115.457721651	7317933.953	2394178.613	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	4	107	35.545113575	-115.457170175	7318095.27	2394289.435	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	18	108	35.545346339	-115.455646494	7318546.286	2394385.608	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	51	109	35.542531078	-115.470371272	7314192.759	2393250.575	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	32	110	35.542594017	-115.468471268	7314757.285	2393287.708	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	35	111	35.542736551	-115.467899969	7314925.895	2393343.857	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	5	112	35.543227980	-115.465395916	7315666.142	2393541.463	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	23	113	35.543924023	-115.461711775	7316755.478	2393822.409	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	110	114	35.544176177	-115.459073569	7317537.803	2393933.997	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	45	115	35.543108748	-115.461445865	7316842.058	2393527.728	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	11	116	35.541904339	-115.469910739	7314335.474	2393025.952	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	16	117	35.542378340	-115.465908885	7315521.372	2393228.431	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	4	118	35.542423152	-115.462347805	7316580.104	2393271.464	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	8	119	35.541553924	-115.467269507	7315124.253	2392918.223	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	7	120	35.541825836	-115.466541613	7315338.253	2393022.629	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	28	121	35.541853656	-115.465845972	7315544.898	2393037.97	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	25	122	35.541853638	-115.465509290	7315645.036	2393040.488	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	60	123	35.541960422	-115.464711220	7315881.421	2393085.335	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms

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Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Enneapogon desvauxii	Nine-awned pappus grass	9	124	35.542086481	-115.463960222	7316103.628	2393136.843	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	42	125	35.542169152	-115.463413282	7316265.541	2393171.033	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	12	126	35.541289985	-115.466115468	7315469.916	2392830.828	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	4	127	35.541389089	-115.465443186	7315668.96	2392871.934	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	27	128	35.541131435	-115.465242161	7315731.115	2392779.682	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	5	129	35.541182893	-115.464082415	7316075.582	2392807.11	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	50	130	35.540885907	-115.464931885	7315825.653	2392692.662	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	1	131	35.544829819	-115.455703293	7318534.152	2394197.218	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	1	132	35.544941507	-115.450290590	7320142.926	2394278.661	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	45	133	35.544866461	-115.449385318	7320412.857	2394258.184	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	8	134	35.544135672	-115.457217505	7318090.198	2393933.22	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	30	135	35.544176600	-115.452236315	7319571.301	2393985.635	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	22	136	35.544420717	-115.450683761	7320030.8	2394086.179	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	10	137	35.543418592	-115.457336495	7318061.411	2393671.378	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	21	138	35.543432871	-115.451478206	7319803.637	2393720.709	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	25	139	35.543151702	-115.446351133	7321331.116	2393657.101	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	1	140	35.542934545	-115.451506572	7319799.799	2393539.155	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	100	141	35.542788543	-115.452375544	7319542.697	2393479.472	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	24	142	35.542630039	-115.451720788	7319738.897	2393426.729	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	10	143	35.541973976	-115.454198340	7319008.071	2393169.312	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	71	144	35.541836414	-115.457696061	7317969.035	2393092.918	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	135	145	35.540360654	-115.462617129	7316518.951	2392518.897	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	15	146	35.540664373	-115.460530068	7317136.912	2392645.1	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	25	147	35.540560338	-115.455946870	7318501.04	2392641.72	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	8	148	35.539733932	-115.462445735	7316575.688	2392292.12	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	6	149	35.602122999	-115.487175326	7308652.613	2414811.124	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms

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Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Enneapogon desvauxii	Nine-awned pappus grass	37	150	35.601850291	-115.488750587	7308186.913	2414700.18	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	1	151	35.601761675	-115.488822646	7308166.303	2414667.396	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	175	152	35.601529179	-115.488381511	7308299.526	2414586.064	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	40	153	35.601234889	-115.489305523	7308027.576	2414472.107	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	1	154	35.601526842	-115.487066538	7308690.37	2414594.984	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	52	155	35.601578221	-115.486359091	7308900.163	2414618.94	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	840	156	35.601392544	-115.487416140	7308587.687	2414543.514	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	105	157	35.601180081	-115.487763314	7308486.436	2414463.616	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	180	158	35.601324775	-115.486421157	7308884.023	2414526.247	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	77	159	35.601124384	-115.486133211	7308971.428	2414455.463	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	1	160	35.601101756	-115.485741424	7309088.077	2414450.141	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	160	161	35.600205326	-115.489950615	7307845.206	2414092.647	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	48	162	35.600069195	-115.489625700	7307943.013	2414045.52	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	117	163	35.600108377	-115.489018278	7308123.192	2414064.289	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	58	164	35.600397696	-115.488467620	7308284.224	2414173.665	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	45	165	35.600652015	-115.485761213	7309086.29	2414286.328	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	53	166	35.600694666	-115.485464182	7309174.183	2414304.058	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	48	167	35.600497104	-115.485155180	7309267.822	2414234.461	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	100	168	35.600280933	-115.486407607	7308897.551	2414146.481	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	115	169	35.600320433	-115.486040900	7309006.182	2414163.582	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	205	170	35.599744700	-115.488869210	7308170.804	2413933.049	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	4	171	35.599819627	-115.488443358	7308296.693	2413963.479	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	204	172	35.599835506	-115.485867909	7309062.012	2413988.398	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	16	173	35.599954381	-115.485020961	7309312.656	2414037.956	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	48	174	35.599155050	-115.489708940	7307926.583	2413712.234	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	40	175	35.599156626	-115.489530319	7307979.658	2413714.133	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms

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Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Enneapogon desvauxii	Nine-awned pappus grass	73	176	35.599248344	-115.488012058	7308430.078	2413758.787	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	82	177	35.599218107	-115.486754191	7308804.214	2413757.13	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	4	178	35.599366360	-115.485894489	7309058.383	2413817.473	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	4	179	35.598532168	-115.489714913	7307930.469	2413485.515	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	14	180	35.598903273	-115.488096025	7308408.261	2413632.587	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	4	181	35.598377378	-115.489475006	7308003.182	2413430.966	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Enneapogon desvauxii	Nine-awned pappus grass	76	182	35.598896849	-115.485683804	7309125.277	2413648.179	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	8	97	35.547402226	-115.468550619	7314689.61	2395036.828	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	1	98	35.545657498	-115.464838824	7315809.529	2394429.747	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	2	99	35.545371655	-115.464572833	7315891.262	2394327.724	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	1	100	35.544999515	-115.464871714	7315805.788	2394190.059	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	1	101	35.544604039	-115.467023779	7315169.363	2394030.006	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	3	102	35.543755137	-115.471874731	7313734.391	2393684.759	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	1	103	35.543753464	-115.470549749	7314128.48	2393694.067	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	22	104	35.543975295	-115.468865654	7314627.326	2393787.402	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	8	105	35.544190498	-115.467970122	7314891.699	2393872.425	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	3	106	35.544299987	-115.466667364	7315278.155	2393922.033	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	1	107	35.544487972	-115.464284014	7315985.274	2394008.318	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	1	108	35.545811956	-115.458388741	7317726.427	2394534.408	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	3	109	35.546272404	-115.456885065	7318169.394	2394713.279	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	1	110	35.546184117	-115.456350152	7318329.294	2394685.178	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	1	111	35.546220913	-115.455726758	7318514.357	2394703.261	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	1	112	35.543470835	-115.471263079	7313918.911	2393585.878	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	1	113	35.543233455	-115.471583998	7313825.637	2393497.094	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	1	114	35.543416621	-115.470416223	7314171.278	2393572.489	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	5	115	35.543765490	-115.467314975	7315090.448	2393722.674	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	2	116	35.544060927	-115.464581915	7315900.594	2393850.68	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms

TABLE 1

Summary of 2007 and 2008 Rare Plant Survey Data from Ivanpah Solar Generating System

Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Grusonia (=Opuntia) parishii	Parish's club cholla	3	117	35.543673393	-115.464943995	7315796.463	2393706.94	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	10	118	35.542950385	-115.467914134	7314919.721	2393421.565	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	25	119	35.542808757	-115.467432219	7315064.351	2393373.639	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	2	120	35.542518398	-115.469371169	7314490.328	2393253.449	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	1	121	35.542531189	-115.468153707	7314852.31	2393267.225	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	3	122	35.542529957	-115.466824962	7315247.52	2393276.735	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	2	123	35.541937238	-115.469973569	7314316.485	2393037.453	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	1	124	35.542165709	-115.463744269	7316167.129	2393167.295	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	1	125	35.541977895	-115.463226628	7316322.813	2393102.835	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	4	126	35.541381474	-115.466984737	7315210.533	2392857.603	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	2	127	35.541526714	-115.463769586	7316165.468	2392934.575	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	1	128	35.541124195	-115.464211748	7316037.654	2392784.779	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	1	129	35.540843071	-115.454933199	7318799.929	2392752.24	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	1	130	35.541080195	-115.450523620	7320109.267	2392871.773	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	1	131	35.539099361	-115.462203360	7316653.609	2392063.02	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	3	132	35.539677620	-115.456468541	7318354.011	2392316.572	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	11	133	35.538603828	-115.462335852	7316618.755	2391881.701	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	1	134	35.539278685	-115.456439213	7318366.408	2392171.62	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	1	135	35.530937258	-115.456220870	7318508.185	2389137.828	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	3	136	35.601169899	-115.488046682	7308402.309	2414457.806	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	26	137	35.601000639	-115.488044614	7308404.463	2414396.225	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	3	138	35.601037007	-115.487839585	7308465.069	2414410.983	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	18	139	35.601030998	-115.487843639	7308463.919	2414408.766	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	1	140	35.599644231	-115.489984813	7307840.142	2413888.204	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	2	141	35.598920231	-115.489245954	7308066.325	2413630.218	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	1	142	35.598525679	-115.489715106	7307930.471	2413483.152	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish's club cholla	1	143	35.598860617	-115.488505441	7308286.962	2413614.023	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms

TABLE 1

Summary of 2007 and 2008 Rare Plant Survey Data from Ivanpah Solar Generating System

Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Mortonia utahensis	Utah mortonia	1	1	35.601381104	-115.489444807	7307984.85	2414524.282	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Sphaeralcea rusbyi var. eremicola	Rusby's desert mallow	1	1	35.593951624	-115.487431644	7308650.78	2411835.564	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Sphaeralcea rusbyi var. eremicola	Rusby's desert mallow	2	2	35.593796210	-115.486984566	7308785.082	2411782.33	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Sphaeralcea rusbyi var. eremicola	Rusby's desert mallow	1	3	35.593002726	-115.486924644	7308810.114	2411494.018	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Sphaeralcea rusbyi var. eremicola	Rusby's desert mallow	1	4	35.593045529	-115.484541479	7309518.097	2411527.317	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Sphaeralcea rusbyi var. eremicola	Rusby's desert mallow	1	5	35.588316647	-115.487020814	7308824.171	2409787.992	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Sphaeralcea rusbyi var. eremicola	Rusby's desert mallow	1	6	35.566572108	-115.483534260	7310058.72	2401900.92	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Sphaeralcea rusbyi var. eremicola	Rusby's desert mallow	1	7	35.562976694	-115.474560041	7312759.955	2400659.467	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Sphaeralcea rusbyi var. eremicola	Rusby's desert mallow	1	8	35.550194978	-115.477986020	7311857.974	2395982.565	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Sphaeralcea rusbyi var. eremicola	Rusby's desert mallow	1	9	35.547334940	-115.474482109	7312926.174	2394967.959	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Sphaeralcea rusbyi var. eremicola	Rusby's desert mallow	1	10	35.538208654	-115.461669463	7316820.595	2391742.902	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Sphaeralcea rusbyi var. eremicola	Rusby's desert mallow	3	11	35.599970631	-115.487667492	7308525.919	2414024.195	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Sphaeralcea rusbyi var. eremicola	Rusby's desert mallow	1	12	35.599878094	-115.487383970	7308611.028	2413992.627	CH2M HILL	4/3 – 4/22 excluding 4/19	2008	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	1	2412318.255	7308879.779	7308879.5	2412318.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	2	2412264.1	7308956.129	7308956	2412263.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	3	2411816.45	7308937.214	7308937	2411816.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	4	2411062.7	7309190.719	7309190.5	2411063	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	5	2411067.261	7309279.2	7309279.5	2411067	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	6	2411026.037	7309186.807	7309186.5	2411026.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	7	35.590601444	-115.481448514	7310463.5	2410659	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	8	35.590645533	-115.480385945	7310778.5	2410682.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	9	35.591122580	-115.477135079	7311740.5	2410880.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	10	35.591200193	-115.473057632	7312952.5	2410939.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	11	35.591100857	-115.469296853	7314071	2410931.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	12	35.590540969	-115.470393655	7313749.5	2410719.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	13	35.590420126	-115.472716305	7313060.5	2410658	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	14	35.590020032	-115.479786076	7310962.5	2410460	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms

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Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Coryphantha chlorantha	Desert pincushion	1	15	35.590059614	-115.482868676	7310046	2410451.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	16	35.589097167	-115.482340766	7310212	2410104.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	17	35.589346311	-115.480385219	7310790.5	2410210.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	18	35.589284570	-115.480121181	7310869.5	2410189.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	19	35.590152394	-115.472483480	7313132.5	2410563	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	20	35.589809461	-115.467417704	7314641.5	2410476	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	21	35.589757495	-115.467611171	7314584	2410455	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	22	35.589612289	-115.467705142	7314557.5	2410401.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	23	35.589453804	-115.469420965	7314049.5	2410331.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	24	35.589466166	-115.469592819	7313998	2410334.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	25	35.589187052	-115.469741484	7313956.5	2410231.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	26	35.589008120	-115.470094360	7313853.5	2410164	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	27	35.588866119	-115.477721864	7311587.5	2410055.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	28	35.588767128	-115.477621317	7311618	2410020.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	29	35.588662736	-115.479247141	7311136	2409970	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	30	35.587621621	-115.484450012	7309598.5	2409552.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	6	31	35.587511930	-115.483174265	7309978.5	2409521.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	32	35.587131489	-115.482749381	7310108	2409387	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	33	35.587118024	-115.478762240	7311293	2409411.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	34	35.587472065	-115.476154018	7312065.5	2409560.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	35	35.587480886	-115.476164050	7312062.5	2409563.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	36	35.586426566	-115.470502248	7313755.5	2409221.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	37	35.586778325	-115.475352423	7312310	2409313.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	38	35.586134073	-115.477512928	7311674.5	2409063.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	39	35.586153072	-115.477504229	7311676.5	2409070	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	40	35.585908761	-115.482532214	7310183.5	2408943.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	41	35.585811411	-115.482920431	7310069.5	2408904.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms

TABLE 1

Summary of 2007 and 2008 Rare Plant Survey Data from Ivanpah Solar Generating System

Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Coryphantha chlorantha	Desert pincushion	1	42	35.585857241	-115.471663864	7313415	2409005.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	43	35.585851024	-115.471665010	7313415	2409003.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	44	35.585218809	-115.478822749	7311293	2408719.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	45	35.585330482	-115.480049348	7310927	2408751.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	2	46	35.584676942	-115.480727363	7310732	2408508.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	47	35.584411818	-115.479410427	7311126	2408421.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	48	35.583420264	-115.482648182	7310172.5	2408036.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	49	35.582670569	-115.489538882	7308130	2407712.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	50	35.582886940	-115.483005635	7310070.5	2407840.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	51	35.581474783	-115.472931026	7313078	2407401	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	52	35.581114237	-115.477416791	7311748.5	2407236.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	53	35.580794863	-115.490722510	7307795.5	2407021.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	54	35.580603373	-115.493922092	7306846	2406927.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	55	35.577736960	-115.488881936	7308371	2405922	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	56	35.576608657	-115.487304924	7308850	2405523	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	57	35.576366600	-115.481251650	7310651.5	2405480.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	58	35.576647103	-115.471519886	7313542.5	2405655.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	59	35.575215073	-115.473372965	7313005	2405120	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	60	35.575038171	-115.476498042	7312077.5	2405033	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	61	35.575007679	-115.476745041	7312004	2405019	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	62	35.574314828	-115.484815988	7309610	2404707.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	63	35.573132517	-115.481821014	7310512	2404299.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	64	35.573114540	-115.475105258	7312509	2404342.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	65	35.573077746	-115.474233354	7312768.5	2404336	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	66	35.572550142	-115.472748199	7313215	2404154.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	67	35.571816665	-115.474085568	7312824	2403878.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	68	35.568669544	-115.478065919	7311669.5	2402703.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms

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Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Coryphantha chlorantha	Desert pincushion	1	69	35.568140707	-115.475591591	7312410	2402529.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	70	35.567930632	-115.479634821	7311209	2402422.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	71	35.567104551	-115.478234130	7311634	2402132.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	72	35.567243425	-115.471609090	7313602	2402232.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	73	35.566960623	-115.478189901	7311647.5	2402080.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	74	35.566858879	-115.478454796	7311570.5	2402041	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	75	35.566849434	-115.478453008	7311570.5	2402038.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	76	35.566591644	-115.480403450	7310993.5	2401929.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	77	35.566454839	-115.480737008	7310895.5	2401877.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	78	35.566493175	-115.476318429	7312209	2401924.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	79	35.564009987	-115.466695573	7315093	2401092.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	80	35.564000334	-115.466854112	7315045.5	2401087.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	81	35.562564593	-115.474692423	7312727.5	2400506.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	82	35.562520839	-115.474741376	7312714	2400490.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	83	35.562353535	-115.474574207	7312765.5	2400430.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	84	35.562394251	-115.480167420	7311101	2400403.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	85	35.562348436	-115.480411045	7311030	2400385.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	86	35.562383557	-115.466753733	7315090	2400500.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	87	35.562427604	-115.464816123	7315666	2400530.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	88	35.560956159	-115.471703145	7313631.5	2399943.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	89	35.559334444	-115.480451599	7311044.5	2399288	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	90	35.555848452	-115.474344598	7312893	2398065.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	91	35.555575420	-115.474291139	7312911	2397966.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	92	35.551214958	-115.461529925	7316746	2396475.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	93	35.549801186	-115.480996947	7310969.5	2395815	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	94	35.548912965	-115.464622596	7315847	2395614	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	95	35.544717226	-115.458895509	7317589.5	2394130	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms

TABLE 1

Summary of 2007 and 2008 Rare Plant Survey Data from Ivanpah Solar Generating System

Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Coryphantha chlorantha	Desert pincushion	1	96	35.544517827	-115.459247562	7317486.5	2394054.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	97	35.544690045	-115.454094220	7319017	2394156.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	98	35.544566473	-115.454165453	7318997.5	2394111.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	99	35.544536065	-115.453205098	7319283.5	2394107.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	100	35.544411417	-115.453288857	7319260	2394061.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	101	35.544474930	-115.453351594	7319240	2394083.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	102	35.544328265	-115.451205810	7319879.5	2394046.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	103	35.544106523	-115.451101035	7319913	2393966.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	104	35.544489097	-115.440859489	7322955.5	2394183.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	105	35.543455491	-115.447973250	7320849.5	2393753.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	106	35.543545578	-115.450620857	7320060.5	2393766.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	107	35.543063892	-115.457858669	7317913.5	2393537	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	108	35.540789703	-115.456803502	7318248	2392717.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	109	35.541606474	-115.452717961	7319456	2393045	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	110	35.541485268	-115.448521856	7320704	2393032	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	111	35.541437033	-115.448433773	7320731	2393015.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	112	35.538227520	-115.449161583	7320544	2391842.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	113	35.538920081	-115.461124000	7316980	2392004.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Coryphantha chlorantha	Desert pincushion	1	114	35.531463567	-115.455640904	7318679.5	2389331.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	1	35.543652629	-115.448950544	7320556.5	2393818.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	2	35.543523854	-115.442293925	7322537.5	2393821.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Cynanchum utahense	Utah vine milkweed	1	3	35.529489951	-115.445140237	7321821	2388693	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	1	35.588911866	-115.484898645	7309453	2410018.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	2	2	35.587584418	-115.484959173	7309447	2409535.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	3	3	35.587317761	-115.483791728	7309796.5	2409446.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	8	4	35.585770086	-115.495206899	7306417.5	2408798.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	2	5	35.585575335	-115.495222352	7306414.5	2408727.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms

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Summary of 2007 and 2008 Rare Plant Survey Data from Ivanpah Solar Generating System

Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Grusonia (=Opuntia) parishii	Parish club-cholla	2	6	35.585194520	-115.495390663	7306368	2408588	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	3	7	35.584611494	-115.495429758	7306362	2408375.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	8	35.584546802	-115.495512575	7306337.5	2408351.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	7	9	35.584005990	-115.495297588	7306406.5	2408156.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	10	35.585255908	-115.483747143	7309829	2408697	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	11	35.584280087	-115.483741784	7309839	2408341.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	12	35.583594595	-115.483503134	7309916	2408094	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	13	35.581983302	-115.495468928	7306374	2407418.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	3	14	35.581710602	-115.495544120	7306354	2407318.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	15	35.581531748	-115.495295525	7306429.5	2407255.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	2	16	35.581419820	-115.494357441	7306709.5	2407221.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	17	2395350.982	7315838.188	7315838.5	2395350.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	18	35.546876381	-115.461071060	7316922.5	2394900.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	19	35.546462190	-115.462482874	7316506.5	2394738.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	20	35.546095795	-115.460568596	7317079	2394619	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	21	35.545050715	-115.463808703	7316125.5	2394215.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	22	35.545080402	-115.463508844	7316213.5	2394228	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	23	35.545737366	-115.465681788	7315562	2394450.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	3	24	35.545789050	-115.459740815	7317328.5	2394514.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	25	2394619.21	7317682.343	7317682.5	2394619	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	26	35.545801405	-115.460067342	7317231.5	2394516	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	2	27	35.545783760	-115.459081634	7317524.5	2394517	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	28	2394522.165	7317525.086	7317525.5	2394522	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	29	2394530.577	7317596.888	7317596.5	2394531	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	30	2394504.864	7317570.897	7317571	2394505.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	4	31	35.545490812	-115.460111833	7317220.5	2394403.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	2	32	35.545411045	-115.460690100	7317049	2394369.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms

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Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Grusonia (=Opuntia) parishii	Parish club-cholla	1	33	35.544838928	-115.442122108	7322577.5	2394301.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	2	34	35.545292001	-115.459866661	7317295.5	2394332	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	35	35.544654264	-115.441785684	7322678	2394237	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	36	35.545222106	-115.459160035	7317506.5	2394312.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	37	35.545195197	-115.457369522	7318039	2394316.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	38	35.545017289	-115.461894047	7316694.5	2394217.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	39	35.544925680	-115.459510338	7317404.5	2394201.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	40	35.545042640	-115.457994832	7317854	2394255.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	41	35.544878304	-115.457972625	7317862	2394196.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	42	35.544797877	-115.462682084	7316462	2394131	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	43	35.544681700	-115.462303034	7316576	2394091.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	44	35.544430021	-115.461169126	7316915.5	2394009.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	45	35.544582736	-115.459049477	7317545	2394080.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	46	35.543850326	-115.461363363	7316863	2393796.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	47	35.544260039	-115.458706946	7317650	2393965.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	48	35.544331073	-115.457467330	7318017.5	2394000.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	2	49	35.544224582	-115.453715205	7319135	2393990.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	50	35.543114931	-115.451769833	7319723	2393601.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	51	35.543111339	-115.451770206	7319723	2393599.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	52	35.541462336	-115.461065301	7316974	2392930.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	53	35.540974624	-115.461813922	7316756	2392747	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	54	35.540992535	-115.460848654	7317043	2392759.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	55	35.541013414	-115.453905493	7319107.5	2392820.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	5	56	35.540840615	-115.461466037	7316860	2392700.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	57	35.540678636	-115.456412074	7318365	2392679.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	58	35.540680527	-115.454671434	7318882.5	2392693.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	59	35.540525206	-115.450718188	7320059.5	2392666.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms

TABLE 1

Summary of 2007 and 2008 Rare Plant Survey Data from Ivanpah Solar Generating System

Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Grusonia (=Opuntia) parishii	Parish club-cholla	2	60	35.540405847	-115.457161175	7318145	2392574.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	2	61	35.540022706	-115.459180185	7317548	2392420.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	62	35.540110020	-115.456594812	7318316.5	2392470.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	63	35.539910978	-115.448936248	7320595.5	2392457	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	64	35.539910978	-115.448936248	7320595.5	2392457	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	65	35.539848016	-115.460502604	7317156	2392346	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	5	66	35.539766568	-115.460110107	7317274	2392319.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	67	35.539796230	-115.459718598	7317389.5	2392333.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	68	35.539591537	-115.460737661	7317088.5	2392251	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	2	69	35.539518967	-115.460696259	7317101.5	2392225.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	70	35.539698163	-115.456627017	7318310.5	2392321.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	71	35.539616648	-115.456621139	7318312.5	2392291.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	73	35.539116432	-115.460486817	7317168	2392080.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	2	74	35.538736404	-115.462600244	7316542	2391926.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	75	35.538985789	-115.459116089	7317577	2392043	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	76	35.538589384	-115.462266163	7316643	2391874.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	77	35.538546055	-115.462470885	7316583	2391858	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	78	35.538644178	-115.457522807	7318054	2391931.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	79	35.538449775	-115.461488753	7316876	2391830.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	80	35.538435876	-115.460085254	7317293.5	2391835.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	2	81	35.538240546	-115.461364851	7316914.5	2391755	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	82	35.538330462	-115.459800872	7317379	2391799.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	2	83	35.537911221	-115.461380647	7316912.5	2391635.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	84	35.537302155	-115.460813282	7317086.5	2391417.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	85	35.537593226	-115.453479769	7319265.5	2391578.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	86	35.537344186	-115.450539113	7320143	2391510.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	87	35.534605341	-115.461615382	7316873	2390430.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms

TABLE 1

Summary of 2007 and 2008 Rare Plant Survey Data from Ivanpah Solar Generating System

Scientific Name	Common Name	Population Size	Locality Identification Number	Latitude	Longitude	X Coordinate	Y Coordinate	Observer	Date Surveys Conducted	Survey Year	Habitat Type [1]	Plant Associates [1]
Grusonia (=Opuntia) parishii	Parish club-cholla	1	88	35.533915549	-115.459966743	7317370	2390191.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	89	35.530563178	-115.458870302	7317727	2388980	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	90	35.530610123	-115.456984532	7318287.5	2389010.75	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	91	35.530478451	-115.458411162	7317865	2388952.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	92	35.539634278	-115.456139319	7318456	2392301.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	92	35.530123766	-115.457083051	7318263	2388833.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	2	93	35.529773598	-115.462381373	7316689.5	2388666.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	94	35.529510297	-115.461817932	7316860	2388575.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	95	35.529395835	-115.460059271	7317383.5	2388546.5	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms
Grusonia (=Opuntia) parishii	Parish club-cholla	1	96	35.528946803	-115.461813665	7316866	2388369.25	CH2M HILL	4/16 – 4/22, 4/25 – 4/30, 5/1 – 5/4, 5/23 – 5/25, 5/29 – 6/10 excluding 6/3	2007	See 2008 CNDDB forms	See 2008 CNDDB forms

Sources:

CH2M HILL. 2007. Application for Certification for Ivanpah Solar Electric Generating System. Volume I and II. Prepared for Solar Partners I, Solar Partners II, Solar Partners VIII and Solar Partners IV. Submitted to California Energy Commission, August 2007.

CH2M HILL. 2008. Technical Report: Botanical Resources of the Ivanpah Solar Electric Generating System. Prepared for Solar Partners I, Solar Partners II, Solar Partners VIII and Solar Partners IV. September 2008.

Attachment BR3-1A

Technical Report: Botanical Resources of the Ivanpah Solar Electric Generating System

Solar Partners I, Solar Partners II, Solar Partners VIII, and Solar Partners IV

Ivanpah Valley,
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September 2008

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Executive Summary

Solar Partners I, LLC; Solar Partners II, LLC; Solar Partners VIII, LLC, the owners of the three separate solar plants, and Solar Partners IV, LLC, the owner of shared facilities required by the three solar plants (the "Applicant") are proposing to develop a solar facility (together referred to as the Ivanpah Solar Electric Generating System, or Ivanpah SEGS) in the eastern Mojave Desert of Southern California. The proposed Ivanpah SEGS site is located in eastern San Bernardino County, in the Ivanpah Valley, 4.5 miles southwest of the town of Primm, Nevada.

Protocol-level surveys for special-status plants were conducted throughout the project area in 2008 and 2007. The location of the site elements is shown on figures provided in Appendix A. Small adjustments to the project boundary were made in 2008; therefore, the 2008 survey boundary differs slightly from the boundaries shown on the 2007 maps. An area designated as the *one-mile buffer* surrounds the Property Boundary and extends out in all directions from it to a distance of one mile. Reconnaissance-level surveys of the *one-mile buffer* area were performed in 2007. The components of the Ivanpah SEGS project for 2008 have been organized into the following six project features:

- Ivanpah 1 – the southern site
- Ivanpah 2 – the middle site
- Ivanpah 3 – the northern site, which includes for the purposes of this report the proposed sites for relocating a BLM dirt road and a mining claim access road
- Colosseum Road – the access road to the project area, which includes the segment from the easternmost paved road south of Primm Valley Golf Club to the eastern boundary of Ivanpah 2
- Construction Logistics Area – between Ivanpah 1 and 2. It includes the substation, Administration Building, water supply wells, monitoring well, and detention ponds.
- Utility Corridor – including only the section extending north from the northern boundary of Ivanpah 3

The project area is located within the Mojave Desert, and its biogeography and climate are typical of that region. The project area is located on an alluvial fan, or bajada, that extends eastward from the base of the Clark Mountain Range toward Ivanpah Dry Lake. The alluvial fan is dissected by many ephemeral wash drainage features.

In 2007, a site-specific vegetation classification was developed for the project area, based on field observations and other sources of information. A reconnaissance-level survey of the one-mile buffer was completed in 2007. The vegetation types of the project area are based on Holland (1986), and include: Mojave Creosote Bush Scrub (including four

subtypes), Mojave Yucca – Nevada Ephedra Scrub and Mojave Wash Scrub. The predominant vegetation throughout the project area is the Larrea-Ambrosia subtype of Mojave Creosote Bush Scrub. Limestone features, which occur mainly in the one-mile buffer, are vegetated by the limestone-associated Larrea scrub subtype and Mojave Yucca – Nevada Ephedra Scrub. Larger ephemeral wash drainage features are vegetated with Mojave Wash Scrub.

Invasive weeds were searched for and documented in 2007 and 2008. Few weeds were found in 2007 because it was a very dry year. In 2008, a wetter year, five species of weeds were mapped and documented. Red brome (*Bromus madritensis* ssp. *rubens*) was the most commonly encountered weed. It was widespread throughout the project area, but dense concentrations were found only in the northern and northwestern parts of the project area. The other four weed species (Saharan mustard (*Brassica tournefortii*), cheat grass (*Bromus tectorum*), Russian thistle (*Salsola* sp.), and London rocket (*Sisymbrium irio*)) were each found in fewer than five locations, in low numbers.

Nine special-status plant species were identified in the project area. None of these are federally or state-listed. Eight special-status plant species were found during protocol-level surveys in 2008, including: small-flowered androstephium (*Androstephium breviflorum*), Mojave milkweed (*Asclepias nyctaginifolia*), desert pincushion (*Coryphantha chlorantha*), Utah vine milkweed (*Cynanchum utahense*), nine-awned pappus grass (*Enneapogon desvauxii*), Parish's club-cholla (*Grusonia (=Opuntia) parishii*), Utah mortonia (*Mortonia utahensis*) and Rusby's desert mallow (*Sphaeralcea rusbyi* var. *eremicola*). Four of these species (desert pincushion, Utah vine milkweed, Parish's club-cholla, and one non-specific locality of Mojave milkweed) also were detected in 2007. In addition to the eight special-status plant species found during protocol-level surveys, desert portulaca (*Portulaca halimoides*), an ephemeral summer annual, was observed within the project area boundaries in October 2007, following summer rainfall, by Jim Andre during independent visits that were not a part of the protocol-level survey effort for this project. In 2007, individuals in the genus *Penstemon* were encountered that could not be identified to species because no flowers were present. Leaf characters indicated these could be a rare species of *Penstemon*. In 2008, these were determined to be Palmer's penstemon (*Penstemon palmeri),* a common and widespread species.

A census of all individuals of California barrel cactus (*Ferocactus cylindraceus* var. *lecontei*) and clustered barrel cactus (*Echinocactus polycephalus* var. *polycephalus*) was completed throughout the project area in 2007 and, in 2008, within any areas not included in the 2007 survey. A total of 2,869 individuals of California barrel cactus and 3,501 individuals of clustered barrel cactus were mapped within the project area.

1 Introduction

1.1 Project Description

Solar Partners I, LLC; Solar Partners II, LLC; Solar Partners VIII, LLC, the owners of the three separate solar plants, and Solar Partners IV, LLC, the owner of shared facilities required by the three solar plants (the "Applicant") are proposing to develop a solar facility (together referred to as the Ivanpah Solar Electric Generating System, or Ivanpah SEGS) in the eastern Mojave Desert of Southern California. The proposed Ivanpah SEGS site is located in eastern San Bernardino County, in the Ivanpah Valley on land administered by the Bureau of Land Management (BLM). The location of project elements is shown on figures provided in Appendix A. Small adjustments to the project element boundaries were made in 2008; therefore, the 2008 survey boundary differs slightly from the boundary shown on the 2007 maps (see Appendix A). Results of the rare plant surveys conducted in 2007 were included in the Application for Certification (AFC) submitted to the California Energy Commission (CEC) (CH2M HILL 2007). A list of the Ivanpah SEGS project features included in the protocol-level special-status plant surveys is provided in Table 1-1.

TABLE 1-1. IVANPAH SOLAR ELECTRIC GENERATING SYSTEM: LIST OF PROJECT FEATURES

Project Feature
Ivanpah 1
Ivanpah 2
Ivanpah 3
Colosseum Road
Construction Logistics Area
Utility Corridor

1.2 Environmental Setting

The project area is located within the Ivanpah Valley, an elongated north-south trending topographic basin that crosses the California-Nevada border. The project area is northwest of Interstate Highway 15 (I-15), which runs through the northern part of the Ivanpah Valley. In the valley bottom are Ivanpah Dry Lake, in California, and Roach

Lake to the north, in Nevada. The Ivanpah Valley is bounded by the Lucy Grey Range and McCullough Mountains to the east, the New York Mountains and the Mid-Hills to the south, the Ivanpah Mountains, Mescal Range, and Clark Mountain to the west, and the Clark Mountain Range and southernmost Spring Range to the north.

The project area is located within the Mojave Desert, and its biogeography and climate are typical of that region. In terms of surface water hydrology, the Ivanpah Valley has no surface outlet to the ocean, so hydrologically, it is a part of the southwestern hydrographic Great Basin. The project area is located on an alluvial fan, or bajada, that extends eastward from the base of the Clark Mountain Range toward Ivanpah Dry Lake. The alluvial fan topography slopes very gradually (3 to 5 percent grade) to the east and southeast from a high elevation of about 3,500 feet in the northwest corner to about 2,850 feet in the southeast corner. The alluvial fan is dissected by many ephemeral washes. Most of these drainage features are small (active channels 1 to 3 feet wide), but some are much larger, with bank-to-bank widths of more than 50 feet and active channels 5 to 15 or more feet wide.

Two distinct small hills arise from the alluvial fan surface. To the east is a hill composed mainly of reddish brown metamorphic rocks that, in this report, will be referred to as Metamorphic Hill. To the west is a much smaller gray limestone hill, referred to in this report as Limestone Hill. To the north and west are the foothills of the Clark Mountain Range, composed mainly of limestone in the north, and a polymineralic suite of metamorphic and igneous rocks, as well as limestone, to the west. These features are referred to in this report as the limestone slopes and ridges of the northeastern foothills of the Clark Mountain Range.

The Ivanpah Valley experiences a climate typical of the eastern Mojave Desert. It is hot and arid with extreme fluctuations in daily and seasonal temperatures. Annually, sunny days occur 85 percent of the time. Strong, dry winds are characteristic in late winter and early spring, especially in the late afternoon to early evening. The average annual temperature is 70º F, with an average low of 55º F and an average high of 80º F. Monthly temperature maxima and minima range from 10º F to 120º F. Typically, there are 70 days each year with a maximum daily temperature of 100º F or above, usually between June and August. The average annual precipitation for Baker, California, approximately 45 miles to the west, is 4.14 inches, and for Las Vegas, Nevada, approximately 45 miles to the north, it is 4.49 inches. Precipitation in the project area will be somewhat greater since it lies at higher elevation than either of these sites. Precipitation falls primarily as winter rainfall between January and March, and as summer thunderstorms that occur between July and September. April, May and June are the driest months. On average, there are more than 300 days per year with no measurable precipitation. During the 2006-2007 rainfall season, precipitation was well below average, with 2.3 inches in 2006, and only 0.1 inch from January through June of 2007.

2 Methods

2.1 Introduction

This section describes the methods for the 2008 surveys, and summarizes the methods for the 2007 surveys, including tasks performed only in 2007. More details on the methods for the 2007 surveys can be found in Section 5.2 of the Application for Certification (CH2M HILL 2007). Plant surveys for the Ivanpah SEGS project were conducted in spring (April) of 2008, and in spring and early summer (late March through early June) of 2007. In both years, protocol-level surveys for special-status plants, counts of two species of barrel cacti, and weed surveys were completed, although the methods were slightly different in each year. In 2007, a detailed reconnaissance of the one-mile buffer was completed, and a site-specific vegetation classification based on field observations was developed for the project area.

Protocol-level rare plant surveys were conducted with the goal of locating and mapping special-status plants throughout the Ivanpah SEGS project area. The 2007 surveys targeted shrubs and herbaceous perennials because rainfall was very low during the 2006-2007 winter rainy season and very few live annuals were present in spring of 2007. The project area received significant amounts of rainfall during storms in August 2007 and during the winter of 2007-2008, resulting in an active growing season for summer annuals in late 2007, and for winter annuals, herbaceous perennials, and shrubs in spring of 2008. The protocol-level surveys for special-status plants were floristic in nature and, when taking into account all of the surveys performed in 2007 and 2008, followed the U.S. Fish and Wildlife Service's (USFWS) *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants* (USFWS *Guidelines*) (USFWS 1996a) and the recommendations of the botanical survey guidelines of the California Department of Fish and Game (CDFG 2000), and those of the California Native Plant Society (CNPS 2001).

In 2008, a larger survey team (38 total field staff) and more survey crews were used, compared to 2007. To assure consistency and accuracy of survey results with a larger team, pre-field preparations were enhanced and field training was increased. Each crew member was given project-specific photo guides of common and rare plant species and a preliminary species list for pre-field review. Field training included a one-day session on plant identification, followed by a half-day session on protocols for special-status plant, cactus and weed surveys. GPS operators received project-specific instruction on all aspects of data collection and quality control. The survey effort used from one to six field crews each day, each crew consisting of two to seven individuals. To assure crew

safety and data quality, each crew was led by a crew leader who received written crew leader instructions and specialized training in safety procedures, data collection, data quality control, and record keeping. These procedures allowed completion of all of the Ivanpah SEGS 2008 training and surveys within 18 days of work, using from 2 to 25 staff per day.

The purpose of the 2008 and 2007 barrel cactus census was to count and map all individuals of California barrel cactus (*Ferocactus cylindraceus* var. *lecontei*) and clustered barrel cactus (*Echinocactus polycephalus* var. *polycephalus*) within the project area. In 2008, this census was limited to a few small sites that were added to the project area after the 2007 surveys had been completed (see Figure 1-3, Appendix A). In 2007, all sites where project components were proposed, and their buffer areas, were included in the census.

In 2007, detailed reconnaissance surveys within the one-mile buffer were completed. These included meandering (non-protocol) surveys that provided site-specific qualitative data on vegetation that was used to describe the vegetation of the Ivanpah SEGS site and the one-mile buffer and to determine the likelihood of special-status plants occurring within the one-mile buffer. In addition, during the one-mile buffer reconnaissance, the characteristics of major drainage features were recorded. No additional surveys within the one-mile buffer were completed in 2008.

2.2 Pre-field Preparations

In 2008 and 2007, pre-field research was conducted to determine which special-status plant species had potential to occur within the project area. For each potentially occurring species, information was compiled on conservation status, distribution, blooming time, habitat characteristics, presence in the project region, including nearest known locations, and characters to use in field identification.

For both years, a plant was considered to be of special status if it met one or more of the following criteria:

- Federally or state-listed, proposed, or candidate for listing, as rare, threatened or endangered (USFWS 1996b, 2008; CNDDB 2007a, 2008a); or

- Special Plant as defined by the California Natural Diversity Database (CNDDB 2007a, 2008a); or

- Designated by the California Native Plant Society in its *Inventory of Rare and Endangered Plants of California* (CNPS 2001, 2007, 2008); or

- Designated by the BLM as a Sensitive plant on the California BLM Special Status Plants list (BLM 2004, 2007).

A species was determined to have potential to occur within the project area if its known or expected geographic range includes the project area or the vicinity of the project area, and if its known or expected habitat is found within or near the project area.

In 2007, a preliminary list of potentially occurring special-status plants was compiled from the results of eight-quadrangle searches of the CNDDB RareFind3 database (CNDDB 2007b) and the CNPS on-line Inventory (CNPS 2007), a review of the Nevada Natural Heritage Program special-status plant data for the Roach and State Line Pass 7.5' U.S. Geological Survey (USGS) quadrangles, and a review of the California BLM Special Status Plants list (BLM 2004, 2007). The project is located within the Ivanpah Lake 7.5' USGS quadrangle. Therefore, the CNDDB and CNPS eight-quad searches included these 7.5' USGS quadrangles: Ivanpah Lake, State Line Pass, Mesquite Lake, Clark Mountain, Mescal Range, Mineral Hill, Nipton, and Desert. In 2007, the preliminary list of potentially occurring special-status plants was revised after reviewing habitat and distribution information from several sources, as described in the AFC (CH2M HILL 2007). In 2008, the CNDDB (2008b) and CNPS (2008) searches were repeated to check for changes in conservation status and range, and to determine if any additional species should be added to the potentials list, based on new information.

Several species were added to the revised 2007 potentials list, based on new information from the 2008 eight-quad searches, and the recommendations of Jim Andre, Director of the U.C. Sweeney Granite Mountains Research Station, and Andrew Sanders, Director of the U.C. Riverside Herbarium, both of whom are experts on the flora of the eastern Mojave Desert. Table B-1 (Appendix B) is a list that compiles all species from the 2007 evaluation and the new species added in 2008 as well as information on flowering time, conservation status, habitat preferences, geographic distribution, elevation, and known locations in the vicinity of the project area. Table B-1 summarizes information on 55 special-status plants that have potential to occur within the project area. This information was compiled from the sources described above, and other sources (Parfitt 1980).

Surveyors received project-specific training prior to field surveys in 2007 and 2008. Training included plant identification and instruction in survey protocols. In 2007, surveyors were given information packets on selected special-status plants that included descriptions, keys, drawings and photographs from a variety of sources. In 2008, surveyors were given photo guides to the special-status and common plants of the project area that were compiled by Jim Andre. Also in 2008, surveyors were trained in the field by Andrew Sanders and Jim Andre to recognize all of the common annuals (including summer annuals from skeletons of the previous year), herbaceous perennials, and shrubs. Unknown plants found during surveys were checked or

identified by Andrew Sanders, Jim Andre or Mark Bagley. Crew leaders assisted the field supervisors (Ann Howald and Mark Bagley), and helped to ensure consistent methods. Crew leaders received special training in safety, data collection, quality control, and record keeping. Appendix C contains the names of staff that performed surveys during 2008. The names of staff that performed surveys in 2007 are included in Table 5.2-8 of the AFC (CH2M HILL 2007).

2.3 Field Survey Methods

In 2008, field surveys were conducted on April 3-18, and 21 and 22, for a total of 18 work days and 283 person-days (excluding travel days) (see Table C, Appendix C). In 2007, field surveys were conducted on March 28-30, April 16-22 and 25-30, May 1-4, 23-25 and 29-31, and June 1-10, 2007, for a total of 117 person-days.

Field survey methods for special-status plants, non-native invasive plants and barrel cacti are described separately below. In 2007, very few annual plants were observed due to unusually dry conditions. Therefore, the 2007 surveys focused on cacti, shrubs, and herbaceous perennial special-status plants. In 2008, a wetter year, annual plant species were present throughout the entire project area, and herbaceous perennials were much more abundant than in 2007. Perennial special-status plant locations were mapped and documented only if they were newly detected in 2008 or if they occurred outside of areas surveyed in 2007. In 2008, the special-status plant locations mapped in 2007 were displayed on the GPS units to avoid double-counting. All weeds observed throughout the project area were mapped in 2008. In 2007, weeds were searched for, even though it was a dry year (see AFC; CH2M HILL 2007). In 2008, barrel cacti were counted only in areas that were not previously surveyed in 2007.

2.3.1 Reconnaissance surveys and reference site visits

Reference site visits to known special-status plant populations were performed in 2007 and 2008 to determine the progress of the growing season and to orient key team members to characteristics necessary for correct identification. Photographs of many of the special-status plants reviewed during the reference checks are provided in Appendix D. Reconnaissance surveys and reference site visits completed in 2007 are described in Section 5.2 of the AFC (CH2M HILL 2007).

During 2008, reference sites were visited for several special-status plant species known to occur at the project site, and for others considered likely to be found at the project site, based on known ranges and habitat preferences. In a few cases, reference population checks were performed in October and November of 2007, and April and May of 2008, outside of the main field survey efforts, to confirm species identifications

or view known populations of special-status plants in the project vicinity. Reconnaissance surveys to determine the progress of the 2008 growing season were made on February 23, and March 6 and 19, 2008.

In 2008, reference sites were visited for the following species:

Clark Mountain agave (*Agave utahensis* var. *nevadensis*) (see Photo 1, Appendix D). Rosettes of leaves and the remains of flower stalks from the previous growing season were observed in two populations of more than 100 individuals and more than 50 individuals on limestone slopes in the Clark Mountain Range near the Umberci Mine, at about 3,700 feet elevation, on March 6, 2008. (Clark Mountain agave was found within the one-mile buffer during surveys conducted for this project in 2007. Rare plant resources within the one-mile buffer were not mapped because this was not the objective of that survey)

Small-flowered androstephium (*Androstephium breviflorum*) (see Photo 2, Appendix D) Hundreds of individuals in flowering and fruiting condition were seen on Mormon Mesa, north of Overton, Nevada, at about 2,000 feet elevation, from March 24-30, 2008. (Small-flowered androstephium was found within the Ivanpah project area during the 2008 surveys.)

Mojave milkweed (*Asclepias nyctaginifolia*) (see Photo 3, Appendix D). One individual in vegetative condition with fruits from the previous year was observed on the south side of BLM road NN135, 3.6 miles west of Primm, Nevada. This individual was located at the base of the northeastern Clark Mountain Range, at about 2,600 feet elevation, on April 4, 2008. Twenty individuals in flowering and fruiting condition were seen in the same general area on April 30, 2008. (Mojave milkweed was found within the project area during surveys conducted for this project in 2007 and 2008.)

Scaly cloak fern (*Astrolepis cochisensis* ssp. *cochisensis*). Four individuals were observed at the base of a limestone slope in the Clark Mountain Range adjacent to the Umberci Mine access road, at 3,400 feet elevation, on March 6, 2008. More than 100 individuals were observed about one mile southwest of the Stonewall Mine in the Mojave National Preserve, at 4,850 feet elevation, on March 8, 2008.

Black grama grass (*Bouteloua eriopoda*). About 400 individuals were seen flowering in the Clark Mountain Range, along the transmission line corridor, just east of Keany Pass, in the Mesquite Wilderness. These individuals were growing in limestone gravels at about 4,030 feet elevation, and were observed on November 9, 2007.

Red grama grass (*Bouteloua trifida*). Fifteen individuals were observed on April 29, 2008, just north of the transmission line corridor, about 3 miles east of Keany Pass in the

eastern Clark Mountain Range. These plants were observed flowering on limestone cliffs at about 4,120 feet elevation.

Revolute spurge (*Chamaesyce revoluta*): About 150 individuals were seen on November 9, 2007, by technical expert and survey team member, Jim Andre, during a visit conducted independently that was not a part of the protocol-level survey effort. These plants were in flowering condition, and were observed growing in limestone gravels in the Clark Mountain Range, along the transmission line corridor, just east of Keany Pass, in the Mesquite Wilderness, at about 4,030 feet elevation.

Desert pincushion (*Coryphantha chlorantha*) (see Photo 4, Appendix D). Fifteen non-flowering individuals were observed on limestone slopes near the Umberci Mine in the Clark Mountain Range on March 6, 2008. Eighteen non-flowering individuals were seen on limestone on the southern flank of Mesquite Mountain, at 4,100 feet elevation, on March 7, 2008. (Desert pincushion was found within the project area during surveys conducted for this project in 2007 and 2008.)

Gilman's cymopterus (*Cymopterus gilmanii*). Six individuals were seen in flowering and fruiting condition on limestone gravels in the Clark Mountain Range, just north of the transmission line corridor, about 3.5 miles east of Keany Pass, in the Mesquite Wilderness, at approximately 4,020 feet elevation, on April 29, 2008.

Utah vine milkweed (*Cynanchum utahense*) (see Photo 5, Appendix D). Nine individuals were seen in flowering and fruiting condition in limestone gravels in a gravelly wash at the north end of the Ivanpah Valley, along the transmission line corridor, about 3 miles west of Primm, Nevada, at about 2,550 feet elevation, on April 30, 2008. (Utah vine milkweed was found within the project area during the 2007 and 2008 surveys.)

Nine-awned pappus grass (*Enneapogon desvauxii*) (see Photo 6, Appendix D). Approximately 1,500 flowering individuals were observed on the west side of the Ivanpah Valley near the base of Colosseum Gorge, at 3,800 feet, in limestone gravels in Mojave creosote bush scrub, on October 27, 2007. About 2,000 flowering individuals were seen in the Clark Mountain Range along the transmission line corridor, just east of Keany Pass, in limestone/gypsum gravel, at about 4,030 feet elevation, on November 9, 2007. These observations were made by Jim Andre, technical expert and survey team member, during visits conducted independently from the main survey effort for this project. (Nine-awned pappus grass was found within the project area during surveys conducted for this project in 2008.)

Polished blazing star (*Mentzelia polita*): Forty individuals in flowering and fruiting condition were seen at the north end of the Ivanpah Valley, at the base of the eastern Clark Mountain Range, just north of the transmission line corridor, in limestone gravels at about 4,020 feet elevation, on April 29, 2008.

Utah mortonia (*Mortonia utahensis*) (see Photo 7, Appendix D). More than 100 non-flowering individuals were seen on limestone slopes near the Umberci Mine, Clark Mountain Range, at about 3,700 feet elevation, on March 6, 2008. Approximately ten flowering individuals were observed on a limestone outcrop south of the transmission line corridor, at the base of the northeastern extension of the Clark Mountain Range, at about 3,500 feet elevation, on April 3, 2008. (Utah mortonia was found within the project area during surveys conducted for this project in 2008.)

Crowned muilla (*Muilla coronata*). One flowering individual was observed in the foothills of the Clark Mountain Range, in Mojave creosote bush scrub, at 3,630 feet elevation, on March 8, 2008.

Cave-dwelling evening-primrose (*Oenothera cavernae*) (see Photo 8, Appendix D). Approximately 80 flowering and fruiting individuals were seen at the north end of the Ivanpah Valley, at the base of the eastern Clark Mountain Range, just north of the transmission line corridor, about 3.5 miles east of Keany Pass, in limestone gravels at about 4,020 feet elevation, on April 29, 2008.

White-margined beardtongue (*Penstemon albomarginatus*). A population of approximately 400 flowering individuals was observed about 0.8 mile south of Jean, Nevada, south of I-15, along the road to the quarry, 0.4 mile southwest of the prison, at about 3000 feet elevation, on March 29 and April 15, 2008.

Rosy two-toned beardtongue (*Penstemon bicolor*) (see Photo 9, Appendix D). About 55 flowering individuals were seen on the road to Goodsprings, Nevada, about 4.0 miles west of Jean, Nevada, at 3,445 feet elevation, on April 26, 2008. Most individuals in this population were the yellow-flowered subspecies *bicolor*, with a few individuals of the pink-flowered form, subspecies *roseus*.

Desert portulaca (*Portulaca halimoides*). A population of about 750 flowering individuals was seen on the west side of the Ivanpah Valley near the base of Colosseum Gorge, in Mojave creosote bush scrub, at 3,800 feet elevation, on October 24, 2007. This population was observed by Jim Andre, a technical expert and survey team member for this project, on a visit conducted independently from the project survey effort.

Bee-hive cactus (*Sclerocactus johnsonii*). Approximately 50 non-flowering individuals were observed along a transmission line road about 0.25 mile east of Highway 169 on a dry ridge about three miles north of Logandale, Nevada, at about 1,500 feet elevation, on March 18, 2008.

Rusby's desert mallow (*Sphaeralcea rusbyi var. eremicola*) (see Photo 11, see Appendix D). A population of about 35 flowering and fruiting individuals was observed in the Clark

Mountain Range above Umberci Mine, about four miles east of Keany Pass, in limestone gravels, at about 3,490 feet elevation, on May 1, 2008. (Rusby's desert mallow was found within the project area during the 2008 survey).

2.3.2 Special-status plant survey protocols

In 2007 and 2008, protocol-level surveys for special-status plants were conducted throughout the project area. The 2008 project area differed slightly from that of 2007, as shown on Figures 1-1 through 1-3 in Appendix A. The goal of these surveys was to census, map, photograph and record habitat data for every special-status plant encountered. Surveys in both years were floristic, meaning that all plants found in identifiable condition were identified. In 2007, a very dry year, surveyors focused on shrubs and cacti because annual plant species were not present. Details of the methodology for the 2007 surveys can be found in Section 5.2 of the AFC (CH2M HILL 2007). Late summer rains in 2007, and winter rains in 2008 provided enough moisture that both annuals and herbaceous perennials were present in much higher numbers in 2008 than in 2007. In general, plant species diversity and abundance within the project area was much higher in 2008 than in 2007 due to higher rainfall and warmer spring temperatures. The combined 2007 and 2008 protocol-level special-status plants surveys fully satisfy the recommendations of the botanical survey guidelines of the USFWS (1996a), CDFG (2000) and CNPS (2001).

The basic methods used to search for rare plants were the same in 2008 and 2007. The main differences between 2008 and 2007 were in the methods used for the intensive surveys, which required a different approach for some of the annual and perennial herbs found in 2008. These intensive survey methods are described below. Additionally, a larger number of biologists participated in the 2008 surveys than in 2007. In 2008, the ability of surveyors to distinguish common from special-status plant species was enhanced by one day of onsite training conducted by Andrew Sanders. During this training, special-status plant locations within and near the project area were visited, field characters used to distinguish special-status plants from common plants were reviewed, and many common species were reviewed to assure the accuracy of plant lists compiled by crew team botanists. All crew members used site-specific photo guides and preliminary plant lists during this orientation, as well as throughout the field surveys.

In both years, teams of two to seven surveyors walked transects spaced at 50-foot intervals. This narrow spacing was selected to permit detection of small, cryptically colored special-status plants, some of which were expected to be scarce and patchily distributed on the alluvial fan. Crew members frequently turned to look behind them to search for special-status plants tucked under the base of shrubs (as many of the desert pincushion were), as the survey team walked across the landscape. Crew members

stayed more or less together while walking each set of transects. Global Positioning System (GPS) units were used to maintain spacing between crew members. GPS methods were the same for rare plants, weeds and barrel cactus, and are discussed in Section 2.5.

Each time a special-status plant, or group of plants, was encountered, it was mapped with a GPS unit. Habitat data was recorded on CNDDB field survey forms or in the field notes of the crew leader. Habitat data included: scientific name, number of individuals, phenology (vegetative, in bud, in flower, old flowers, in fruit), substrate, vegetation type, associated species, and disturbance condition. Special-status plants were photographed in close-up view, and habitat photos were taken at most sites. While habitat data were being recorded, the other crew members completed intensive surveys extending to 100 feet in all directions from the plant initially encountered. Intensive surveys consisted of walking transects at 5- to 10-foot intervals.

For the summer annual, nine-awned pappus grass, and the herbaceous perennial, Mojave milkweed, both of which occupy distinctive microhabitats, the intensive surveys focused on the areas of suitable microhabitat in the vicinity, sometimes extending further than 100 feet from the initially detected individual, but not extending beyond the corridor being surveyed by that crew. Additional special-status plants were encountered often during intensive surveys and the intensive survey area was expanded when new individuals were found. The total number of individuals was recorded for each GPSed location. Rooted but dead individuals of the small cactus, desert pincushion, were not mapped or recorded, but intensive surveys were conducted in the vicinity.

2.3.3 Invasive weed survey protocols

Invasive non-native plants (weeds) were searched for during the 2007 and 2008 field surveys. As previously described, 2007 was a very dry year and very few weeds were observed within the project area (CH2M HILL 2007). The target list of weeds for 2008 included weeds from the Cal-IPC (2006) and CDFA (2007) lists, and weeds selected from the Mojave Weed Management Plan of San Bernardino County (Mojave Resource Conservation District 2003) (Table 2-1). Species included were those that could potentially grow in any of the vegetation types of the Ivanpah SEGS project area. Target weeds were searched for during floristic surveys that covered the entire project area. When weeds were found, the location was mapped as a point with a GPS unit (see Section 2.5), and data on abundance, percent cover estimates, and disturbance were recorded.

For each weed location, the data recorded included: 1) the number of individuals, 2) the estimated absolute cover of the weed at that location, and 3) disturbance characteristics.

The number of individuals was counted or estimated, and the data were recorded by abundance class. The abundance classes used were: 1-10, 11-100, 101-500, 501-1000, 1001-5000, and > 5000. Absolute cover was estimated within a polygon formed by the outermost individuals within a local area. The area of the polygon varied in size, depending on the size of the local weed population. Absolute cover was recorded by cover class, using these classes: <1%, 1-5%, 6-25%, 26-50%, and 51-100%. In the event

TABLE 2-1. NON-NATIVE INVASIVE PLANTS (WEEDS) WITH THE POTENTIAL TO OCCUR WITHIN THE IVANPAH SEGS PROJECT AREA.

Scientific Name	Common Name	Cal-IPC rating	CDFA rating
Brassica tournefortii	Saharan mustard	High	None
Bromus diandrus	ripgut brome	Moderate	None
Bromus madritensis ssp. *rubens*	red brome	High	None
Bromus tectorum	cheat grass	High	None
Cynodon dactylon	Bermuda grass	Moderate	C
Halogeton glomeratus	Halogeton	Moderate	A
Pennisetum setaceum	fountain grass	Moderate	None
Salsola spp.	Russian thistle species	Limited to moderate	A, C or Q, depending on species
Sisymbrium irio	London rocket	Moderate	None
Tamarix ramosissima	tamarisk or saltcedar	High	None
Tribulus terrestris	puncture vine	None	C

Sources:
California Department of Food and Agriculture (CDFA 2007).
California Invasive Plant Council (Cal-IPC 2006).
Mojave Resource Conservation District. 2003.

Notes:

Cal-IPC ratings:

High – These species have severe ecological impacts on physical processes, plant and animal communities and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed.

Moderate – These species have substantial and apparent – but generally not severe – ecological impacts on physical processes, plant and animal communities and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, although establishment is generally dependent on ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited – These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

CDFA ratings:

A rated weeds are those for which eradication, containment, control or other holding action is conducted at the discretion of the state-county level. Quarantine interceptions to be rejected or treated at any point in the state.

B rated weeds are those for which eradication, containment, control or other holding action is conducted at the discretion of the County Agricultural Commissioner.

C rated weeds are those for which state-endorsed holding action and eradication is conducted only when the weed is found in a nursery; action to retard spread outside of nurseries is at the discretion of the County Agricultural Commissioner; reject only when found in a cropseed for planting or at the discretion of the commissioner.

Q rated weeds are those that receive a temporary "A" action outside of nurseries at the state-county level pending determination of a permanent rating.

that a single individual was found, the absolute cover was estimated as 100% and recorded as 51-100%. The evaluation of disturbance condition was based on observations of the area in the immediate vicinity of the weed location. The disturbance categories included: natural, human-caused, natural and human-caused, and none. Natural disturbance conditions included such things as rodent burrowing or presence of the weed in an active wash. Examples of human-caused disturbance conditions included roads, off-road vehicle tracks, and water well sites.

2.3.4 Barrel cactus census methodology

In 2007, all barrel cacti encountered by surveyors during protocol-level surveys for special-status plants were mapped using GPS units (see Section 2.5). Two species of barrel cacti were mapped: California barrel cactus (*Ferocactus cylindraceus* var. *lecontei*) and clustered barrel cactus (*Echinocactus polycephalus* var. *polycephalus*). GPS points recorded single individuals or small groups of individuals (mainly 2-4, a few 5-10) of the same species growing in the immediate vicinity. For each point, the species of cactus, the number of individuals, and the vegetation type were recorded. In 2008, the same methodology was used, but barrel cacti were counted only in a few small areas that were added to the overall project footprint since the 2007 surveys. Barrel cacti are typically large individuals, obvious in the sparse vegetation of the project area, so it is unlikely that a significant number of individuals were missed during the 2007 surveys.

2.4 Methods for Classifying Vegetation

Vegetation within the project area was classified in 2007 using Holland's *Preliminary Descriptions of the Terrestrial Natural Communities of California* as a guide and primary reference (Holland 1986). Holland's system was selected because it includes all of the basic vegetation types found within the project area and can be applied when most data used in classification are qualitative, as they are for this project. Other systems, such as the series-based classification in *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995), and the alliance-based classification in the report "*Mojave Desert Ecosystem Program: Central Mojave Vegetation Database*" (Thomas et al. 2004) require quantitative transect data that is infeasible to obtain for large-scale projects that focus on special-status plants and other botanical resources. Site-specific information on species

composition and habitat characteristics was used to determine which Holland vegetation types were present within the project area, and to identify distinctive subtypes. Series from *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995) and alliances described in Thomas and others (2004) that are possible equivalents were identified and are listed in this report.

2.5 Global Positioning System/Geographic Information System Data Collection, Data Analysis and Quality Assurance

For 2007 and 2008, data from surveys for special-status plants, weeds, and barrel cacti were recorded using Trimble GeoXT and GeoXH GPS units. Data collected with these GPS units is accurate to the sub-meter level after data have been post-processed. GPS units were equipped with both data files, for navigation, and data dictionaries, for data collection. Project-specific data files included 100-foot spaced transect lines within the project boundary. These transects were used to space surveyors at 50-foot intervals. Survey teams lined up so that surveyors with GPS units walked the transect lines shown on the data files and surveyors without GPS units walked between them, visually spacing themselves 50 feet between the nearest GPS-using surveyors. Each surveyor was responsible for observing 25 feet on either side. Project-specific data dictionaries were developed and used in the field to increase the efficiency of data recording and to increase data quality.

In 2007 and 2008, surveyors operating GPS units were trained by GPS technicians from CH2M HILL. In 2008, this training included an intensive pre-field training session to familiarize operators with methods specific to the project. In 2008, a GPS protocols handbook was provided to each operator. GPS training assured that polygon delineation and other data collection and data management tasks were carried out accurately and efficiently, and ensured the integrity of the special-status plant, weed and barrel cactus data sets.

In 2007 and 2008, all special-status plant, weed and barrel cactus data collected with GPS units was downloaded and backed up nightly onto laptop computers. GPS data files were transmitted to the Geographic Information System (GIS) team via email. Following collection and transfer, GPS data were post-processed by the GIS analysts and downloaded into a project GIS database. A list of data files collected each day was checked against the list of post-processed files and was compared with those in the GIS database to confirm that all GPS files collected in the field were transmitted and received by the GIS staff and that the data set was complete. Data from each survey week were mapped onto the aerial photographic base maps showing the locations of all proposed project sites, buffers, and linear features.

3 Results: Vegetation

This section includes the results of the vegetation classification developed for this project and provides summary descriptions of the vegetation within each project component. The vegetation types of the project area, including the one-mile buffer, include: Mojave Creosote Bush Scrub, Mojave Yucca – Nevada Ephedra Scrub and Mojave Wash Scrub. Characteristics of each vegetation type, including the four subtypes of Mojave Creosote Bush Scrub, are described in more detail in Appendix E. Representative photos of the vegetation types of the project area, and detailed descriptions of the vegetation observed during the 2007 surveys and vegetation identified within the one-mile buffer are provided in Appendixes 5.2A and 5.2B of the AFC (CH2M HILL 2007).

The vegetation types and vegetation patterns found within the 2008 project feature boundaries are described below. All of the 2008 proposed project features are located on the Ivanpah Valley alluvial fan. Table 3-1 lists the vegetation types found in each 2008 project feature and gives the approximate percentage of vegetation, by type, within each site feature.

The Holland system of vegetation classification (Holland 1986) was used as a primary reference in classifying the vegetation of the project area. Holland types were modified, as needed, to provide accurate descriptions of project area vegetation. The equivalent series from *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995), and related alliances from *Mojave Desert Ecosystem Program: Central Mojave Vegetation Database* (Thomas et al. 2004) are given when possible. Alliance identification requires transect data on percent cover of individual species (Thomas et al. 2004); collection of this data was beyond the scope of this project.

Mojave Creosote Bush Scrub is the most abundant and widespread vegetation type, found throughout the project area. It includes four subtypes: Larrea-Ambrosia scrub, Larrea mixed scrub, Larrea scrub and Limestone-associated Larrea scrub. Mojave Yucca – Nevada Ephedra Scrub is restricted to a small area of limestone pavement plain at the base of the limestone hills of the eastern extension of the Clark Mountain Range, in the north-central area of the one-mile buffer. It extends into the northern end of the utility corridor. Mojave Wash Scrub is restricted to larger washes, which are found mainly in the north and northwest areas of the project area, including within Ivanpah 2 and 3, the utility corridor, and the northern section of the one-mile buffer. Further description of these vegetation types and their distribution within the project area are provided in Appendix E. A list of all of the plant species observed within the Ivanpah SEGS project area (not including the one-mile buffer) during surveys conducted for this project is provided in Appendix F.

Several generalized vegetation patterns are discernable on the Ivanpah Valley alluvial fan. At higher elevations (approximately 3,000-3,400 feet), and especially near the bases of hills, there is higher diversity in vegetation types and subtypes, higher density of shrubs and cacti, higher diversity in shrub and cactus species, and higher density of Mojave yucca (*Yucca schidigera*). At higher elevations on the alluvial fan, especially to the northwest, there are more large drainage features, many with distinctive wash vegetation. At middle elevations (around 2,900 feet), a single subtype of Mojave Creosote Bush Scrub, Larrea-Ambrosia scrub, is predominant. Shrub and cactus density and species diversity, and Mojave yucca density, are all, in general, intermediate between the levels found at the higher and lower elevations of the alluvial fan. At lower elevations (approximately 2,700-2,850 feet), Larrea-Ambrosia scrub is, with the exception of a few acacia washes, the only vegetation type found. Shrub and cactus density and species diversity, and Mojave yucca density, are all low to very low, with few or no barrel cacti or Mojave yucca individuals found within some local areas.

TABLE 3-1. VEGETATION TYPES AND SUB-TYPES WITHIN THE PROJECT FEATURES.

Project Feature	Vegetation Type Present	Approximate Percentage of Vegetation, by Type, Within Site Feature [1]
Site Feature		
Ivanpah 1	Mojave Creosote Bush Scrub: Larrea-Ambrosia Subtype	95 - 99
	Cheesebush-dominated washes	1 - <5
Ivanpah 2	Mojave Creosote Bush Scrub: Larrea-Ambrosia Subtype	90 - 95
	Cheesebush-dominated washes	1 - <5
	Mojave Wash Scrub	1 - <5
Ivanpah 3	Mojave Creosote Bush Scrub: Larrea-Ambrosia Subtype	75 - 80
	Cheesebush-dominated washes	1 - <5
	Mojave Creosote Bush Scrub: Larrea Mixed Scrub Subtype	10 - 15
	Mojave Wash Scrub	1 - <5
Utility Corridor	Mojave Creosote Bush Scrub: Larrea-Ambrosia Subtype	60 - 65
	Cheesebush-dominated washes	1 - <5
	Mojave Creosote Bush Scrub: Larrea Mixed Scrub Subtype	20 - 25
	Mojave Wash Scrub	10 - 15
	Mojave Yucca – Nevada Ephedra Scrub	1 - <5
Construction Logistics Area	Mojave Creosote Bush Scrub: Larrea-Ambrosia Subtype	95 - 99
	Cheesebush-dominated washes	1 - <5
Colosseum Road	Mojave Creosote Bush Scrub: Larrea-Ambrosia Subtype	95 - 99
	Cheesebush-dominated washes	1 - <5

Notes:

1. Percentage ranges based on visual observations within project feature sites and examination of high-resolution aerial photographs (scale: 1" = 500').

3.1.1 Ivanpah 1 – the southern site

Ivanpah 1 is the southernmost site of the three proposed solar generating sites. As shown in Table 3-1, the vegetation of Ivanpah 1 consists almost entirely of the Larrea-Ambrosia subtype of Creosote Bush Scrub (see Appendix E). Within Ivanpah 1, the Larrea-Ambrosia subtype occurs mainly in a form characterized by a low density and diversity of shrubs and cacti, and a very low density of Mojave yucca. Here, the dominant shrubs of the Larrea-Ambrosia subtype are mainly less than 3 feet in height, with many less than 1 foot in height, and relatively widely spaced. Creosote bush (*Larrea tridentata*) and burrobush (*Ambrosia dumosa*) are the most common shrubs, with cheesebush (*Hymenoclea salsola*), pima ratany (*Krameria erecta*), Nevada ephedra (*Ephedra nevadensis*), Mojave Desert California buckwheat (*Eriogonum fasciculatum* ssp. *polifolium*), silver cholla (*Opuntia echinocarpa*), buckhorn cholla (*Opuntia acanthocarpa* var. *coloradensis*), beavertail cactus (*Opuntia basilaris* var. *basilaris*) and pencil cholla (*Opuntia ramosissima*) all present in much lower abundance. Barrel cacti of both species (*i.e.*, California barrel cactus and clustered barrel cactus) and Mojave yucca are present in low to very low numbers.

This site slopes very gradually in elevation from about 3,050 feet at the southwestern corner to about 2,765 feet at the northeastern corner. The topography is relatively flat, although it is broken by a number of small- to medium-sized ephemeral washes that are dominanted by cheesebush. These are called *cheesebush washes* in this report and are considered a variant of the Larrea-Ambrosia subtype of Mojave Creosote Bush Scrub. These features flow from west to east in the northern half of Ivanpah 1 and from southwest to northeast and east in the southern half of Ivanpah 1. These drainage features are, in general, not as large or abundant as the drainage features of Ivanpah 2 and 3.

3.1.2 Ivanpah 2 – the middle site

Ivanpah 2 is the middle site of the three proposed solar electric generating sites. The vegetation of Ivanpah 2 consists predominantly of the Larrea-Ambrosia subtype of Mojave Creosote Bush Scrub (Table 3-1). At Ivanpah 2, this subtype varies in shrub and cactus density and species diversity from areas that are moderate in density and diversity at the upper elevation west end to areas that are low in density and diversity at the lower elevation east end. Creosote bush and burrobush are the dominant shrubs, and are typically 1 to 4 feet in height. Associated species include: cheesebush, pima ratany, Nevada ephedra, Mojave Desert California buckwheat, silver cholla, buckhorn cholla, beavertail cactus and pencil cactus. The density of barrel cacti, including California barrel cactus and clustered barrel cactus, and Mojave yucca, is highest in the northern third of the site, moderately high in the western half of the site, and lowest in the southern half, especially to the east.

The site slopes very gradually in elevation from 3,185 feet on the western margin to 2,885 feet at the northeastern corner. The topography is relatively flat overall, but is dissected by many small- to medium-sized ephemeral washes with active channels usually less than 5 feet wide that flow from west to east in the northern half of Ivanpah 2 and trend from southwest to northeast and east in the southern half of Ivanpah 2. The vegetation of most of these is composed mainly of shrub species typical of Larrea-Ambrosia scrub. Some washes are dominated by cheesebush in higher densities than in adjacent areas, and are referred to as *cheesebush washes*. North of Colosseum Road, in the southern half of Ivanpah 2, is a large drainage complex up to 75 feet wide in some areas, although the active channels are much narrower. This large wash system supports Mojave Wash Scrub (see Appendix E), although in a form distinguished mainly by the presence of catclaw acacia (*Acacia greggii*). This form has lower shrub species diversity than the Mojave Wash Scrub observed in Ivanpah 3.

3.1.3 Ivanpah 3 – the northern site

Ivanpah 3 is the northernmost and largest of the three proposed sites. The vegetation of Ivanpah 3 is more complex than that of Ivanpah 1 and 2 (Table 3-1). The Larrea-Ambrosia scrub subtype of Mojave Creosote Bush Scrub is the most common vegetation type, and occurs throughout Ivanpah 3, covering about 75-80 percent of the site. The Larrea mixed scrub subtype of Mojave Creosote Bush Scrub occurs north and south of the Limestone Hill, along the southwest margin, and also immediately adjacent to the northern boundary of Ivanpah 3. In the western and northern parts of Ivanpah 3, Larrea mixed scrub patches alternate with patches of Larrea-Ambrosia scrub. Some of the larger drainage features, which are concentrated in the northern and western sections of Ivanpah 3, contain well-developed Mojave Wash Scrub.

Within Ivanpah 3, the Larrea-Ambrosia scrub subtype of Mojave Creosote Bush Scrub varies from the low density-low diversity form to the high density-high diversity form. The patterns are complex but, in general, vegetation with lower densities and diversity of shrubs and cacti, and lower densities of Mojave yucca, is more widespread in the southeastern section of Ivanpah 3. Larrea-Ambrosia scrub with higher densities and diversity of shrubs and cacti, and higher densities of Mojave yucca, predominates in the northern and western sections of Ivanpah 3.

Within the 2008 boundaries, the Larrea mixed scrub subtype of Mojave Creosote Bush Scrub makes up roughly 10-15 percent of Ivanpah 3, based on field observations and visual estimates from high-resolution aerial photographs (scale: 1 inch = 500 feet). Within Ivanpah 3, the Larrea mixed scrub subtype is composed of dense stands of shrubs, cacti and yucca, with most individuals 1 to 7-feet in height. This subtype is visually distinctive in the field due to plant density and to its color aspect. Larrea mixed scrub appears darker and grayer than the olive green of Larrea-Ambrosia scrub, likely due to the presence of blackbush (*Coleogyne ramosissima*), and the higher densities of

other grayish shrubs such as pima ratany and Nevada ephedra, and the lower density of olive green creosote bush. It is sometimes found on undulating terrain, and intermixes with stands of Larrea-Ambrosia scrub.

The elevation gradient within Ivanpah 3 trends very gradually downward from approximately 3,400 feet at the western margin to about 2,985 feet at the southeastern corner. The topography of Ivanpah 3 is more strongly undulating than that of Ivanpah 1 and 2 due to the presence of many small to large ephemeral wash drainage features that trend generally in a west-to-east direction. Mojave Wash Scrub is well-developed in some of the larger ephemeral wash drainage features in the northern and western sections of Ivanpah 3. These drainage features are typically 30 to 75 feet wide bank-to-bank, although the active channels occupy only a small portion of the entire feature.

Mojave Wash Scrub within Ivanpah 3 varies in density and diversity of shrubs. The dominant shrubs are drought-deciduous, and are typically 3 to 10 feet in height. The best-developed stands include many large individuals of catclaw acacia, some scattered large desert-willow (*Chilopsis linearis*), and a variety of wash-associated smaller shrubs, including: cheesebush, desert almond (*Prunus fasciculata*), black-banded rabbitbrush (*Chrysothamnus paniculatus*), bladder sage (*Salazaria mexicana*), Cooper's boxthorn (*Lycium cooperi*), and Anderson's boxthorn (*Lycium andersonii*). Cacti and Mojave yucca are not typically found in Mojave Wash Scrub, although they may be present in low densities in inactive sections of large drainage features. Some washes are dominated by cheesebush in higher densities than in adjacent upslope areas, and are referred to as *cheesebush washes*.

3.1.4 Utility Corridor

The utility corridor extends north from Ivanpah 3 to the vicinity of four major power lines that run in an east-west direction across the far northern end of the Ivanpah Valley. The utility corridor crosses the buried Kern River pipeline, which runs in an east-west direction south of the major power lines. The terrain within the utility corridor is flat to undulating because the corridor crosses areas of upland interspersed with many small- to medium-sized ephemeral wash drainage features.

The vegetation of the proposed utility corridor is composed of about 60-65 percent Larrea-Ambrosia scrub, 20-25 percent Larrea mixed scrub, 10-15 percent Mojave Wash Scrub, and 1 to less than 5 percent Mojave Yucca – Nevada Ephedra Scrub. The Larrea-Ambrosia scrub is of moderate shrub and cactus density and diversity, with Mojave yucca present in moderate to high densities. Most shrubs are 2 to 4 feet in height. Mojave Yucca – Nevada Ephedra Scrub is found within a small area of the northernmost part of the utility corridor. Mojave Wash Scrub vegetation is found within the larger drainage features. Smaller drainage features are dominated by cheesebush, and constitute small cheesebush washes.

The revegetated Kern River pipeline corridor, a portion of which is included in the utility corridor survey area, has not recovered the density or diversity of the adjacent natural vegetation, and it possesses some unique characteristics for the area. The terrain has a roughened texture not typical of nearby natural habitat. Cheesebush is the dominant shrub within the corridor, with creosote bush and burrobush almost completely lacking. The mature individuals of Mojave yucca appear to have been replanted, based on the presence of basins, possibly constructed to allow watering, at the base of each plant; a number have fallen over and are dead. Brittlebush (*Encelia farinosa*), which is not native to the Ivanpah Valley, is common within the corridor. Desert marigold (*Baileya multiradiata*), found in 2007 in several large stands northeast of the project area, but relatively uncommon within the project area in 2008, is very common within the Kern River pipeline corridor.

3.1.5 Construction Logistics Area

The vegetation within the construction logistics area (located between Ivanpah 1 and 2) consists almost entirely of the Larrea-Ambrosia subtype of Mojave Creosote Bush Scrub, mainly in a form that is moderately dense in shrub cover, but low in species diversity. Creosote bush and burrobush predominate, with a few scattered individuals of other shrubs characteristic of this vegetation subtype. Cacti are present in low diversity, although barrel cacti are relatively common, especially clustered barrel cactus. Mojave yucca occurs at low densities. Most drainage features are small, with active channels 1 to 2 feet in width, and support a higher density of cheesebush compared with the adjacent upslope vegetation.

3.1.6 Colosseum Road – the access road

The vegetation of the proposed access road survey corridor consists almost entirely of the Larrea-Ambrosia subtype of Mojave Creosote Bush Scrub. Within the survey corridor, Larrea-Ambrosia scrub is strongly dominated by creosote bush and burrobush, with a very low density and diversity of other shrubs and cacti, and a very low density of Mojave yucca. No barrel cacti were observed within the proposed access road survey corridor.

The terrain in the vicinity of the access road is flat, in general, with a slight slope in elevation from the higher west end at 2,880 feet in elevation to the lower east end at 2,700 feet. One small but well-defined ephemeral wash drainage feature runs parallel to Colosseum Road on its south side, near the water well. This narrow four-foot-deep wash may have developed or enlarged as a result of road or well construction. The wash vegetation is dominated by large creosote bush and cheesebush shrubs, with some black-banded rabbitbrush and Cooper's boxthorn.

4 Results: Non-native Invasive Plants

In 2007 and 2008, surveys for non-native invasive plants (weeds) were conducted concurrently with the floristic, protocol-level surveys for special-status plants. In 2007, conditions throughout the project site were extremely dry, and very few live weeds were found within the project area boundaries. Complete results of the 2007 weed surveys can be found in Section 5.2 of the AFC (CH2M HILL 2007). More information on noxious weeds in the project area is presented in the Weed Management Plan (CH2M HILL 2008).

In 2008, conditions throughout the project site were much wetter due to abundant winter rains, and the entire project area was re-surveyed for weeds. A description of the survey methodology and the target weed list for 2008 are provided in Section 2.3.3. In 2008, five species of weeds from the target list were found within the project area: Saharan mustard (*Brassica tournefortii*), red brome (*Bromus madritensis* ssp. *rubens*), cheat grass (*Bromus tectorum*), Russian thistle (*Salsola* sp.), and London rocket (*Sisymbrium irio*). The distribution and abundance of weeds within the project area is discussed below by weed species and by project component. Weed locations were mapped and their distribution within the project area is shown in Figure 4-1 (Appendix A). The number of weed individuals at each location was recorded by abundance category, as described in Section 2.3.3 of this report. Table 4-1 lists the number of weed locations recorded for each species, by abundance category, in 2008.

TABLE 4-1. NUMBERS OF WEED LOCATIONS FOUND WITHIN THE IVANPAH SEGS PROJECT AREA IN 2008.

Common Name (*Scientific Name*)	Project Element						
	Ivanpah 1	Ivanpah 2	Ivanpah 3	Utility Corridor	Construction Logistics Area	Access Road	Total Number of Localities
Abundance Categories							
Saharan mustard (*Brassica tournefortii*)							
1-10	0	0	0	1	0	0	**1**
11-100	0	0	1	0	0	0	**1**
Red brome (*Bromus madritensis* ssp. *rubens*)							
1-10	143	158	334	6	51	3	**695**
11-100	26	14	108	33	20	1	**202**
101-500	3	0	23	25	2	1	**54**
501-1,000	2	0	1	3	1	0	**7**
1,001-5,000	0	0	0	3	0	0	**3**

Common Name (*Scientific Name*)	Project Element						
	Ivanpah 1	Ivanpah 2	Ivanpah 3	Utility Corridor	Construction Logistics Area	Access Road	Total Number of Localities
Cheat grass (*Bromus tectorum*)							
1-10	3	1	2	0	1	0	**7**
11-100	1	0	0	0	0	0	**1**
101-500	1	0	0	0	0	0	**1**
Russian thistle (*Salsola* sp.)							
1-10	0	0	0	0	0	1	**1**
London rocket (*Sisymbrium irio*)							
1-10	0	1	0	0	0	0	**1**

In 2008, weeds within the project area were widespread but did not form a dominant element in any of the vegetation types. Red brome was by far the most abundant and widespread weed species. It was found throughout the project area, mainly growing at the bases of shrubs in small washes, where it occurs most frequently in groups of 1-10 individuals. Red brome occurs in the highest densities within the north and northwestern parts of the project area, in Ivanpah 3 and the utility corridor, where it extends beyond the shrub understory. The other weed species were each found within fewer than ten locations, in low abundance. Disturbance conditions were cataloged at each weed location. Natural disturbance in the form of small- to medium-sized active washes was the most common type of disturbance with which weeds were associated.

4.1 Saharan mustard (*Brassica tournefortii*)

Saharan mustard was found in two locations, both in the northern part of the project area. One location was within Ivanpah 3, and a second location was within the utility corridor. The abundance category for the Ivanpah 3 location was between 11-100 individuals. There were no observable disturbance factors at this location. The abundance category for the location within the utility corridor was between 1-10 individuals, and this locality was associated with human-caused disturbance.

4.2 Red brome (*Bromus madritensis* ssp. *rubens*)

Red brome was the most common and widespread weed encountered in 2008. It was found in 961 locations, scattered throughout the project area. About 72 percent of these locations consisted of 1-10 individuals, and most of these were associated with natural disturbances, mainly small- to medium-sized washes. An additional 21 percent of the

total locations consisted of 11-100 individuals, and these were also mainly associated with natural disturbance features. The highest local concentrations of red brome were found in the western half of Ivanpah 3, and the utility corridor. These sites contain the highest elevations of the project areas and are possibly somewhat less dry than the lower elevation sites. Ivanpah 3 is also the closest site to the Kern River Gas Transmission Line, where substantial disturbance has occurred.

4.3 Cheat grass (*Bromus tectorum*)

Cheat grass was found in nine widely scattered locations, with five in Ivanpah 1, one in Ivanpah 2, two in Ivanpah 3, and one in the Construction logistics area. Seven of these locations consisted of 1-10 individuals. All of the cheat grass locations were associated with natural disturbance factors.

4.4 Russian thistle (*Salsola* sp.)

One location of Russian thistle, consisting of 1-10 immature individuals that could not be identified to species, was found along the access road, Colosseum Road, in an area affected by human-caused disturbance.

4.5 London rocket (*Sisymbrium irio*)

One location of London rocket, consisting of 1-10 individuals, was found within the southern half of Ivanpah 2, in an area affected by natural disturbance.

5 Results: Special-status Plants and Barrel Cacti

This section presents the results for special-status plants and barrel cacti found during surveys within the project area in 2008 and 2007. For special-status plants, results are provided for 2008 and 2007 separately, and combined. Eight special-status plant species were found during protocol-level surveys conducted for this project. One additional species was observed within the project area boundaries in 2007 during visits to the area that were not a part of the protocol-level surveys conducted for this project. Detailed species accounts for all nine of these special-status plants are included in Appendix G. New species accounts have been prepared for species that were found in 2008, but not in 2007. For species first detected in 2007 and covered in the AFC (CH2M HILL 2007), species accounts have been updated, as needed. Information on special-status plants observed within the one-mile buffer in 2007 can be found in Section 5.2 of the AFC (CH2M HILL 2007).

The results of censuses for barrel cacti are provided for 2007 and 2008, separately and combined.

5.1 Special-status Plants Abundance and Distribution within the Project Area

Eight special-status plant species have been observed within project area boundaries during protocol-level surveys in 2008 and 2007. Species observed in 2008 include: small-flowered androstephium, Mojave milkweed, desert pincushion, Utah vine milkweed, nine-awned pappus grass, Parish's club-cholla, Utah mortonia and Rusby's desert mallow. Four of these (Mojave milkweed, desert pincushion, Utah vine milkweed and Parish's club-cholla) also were detected in 2007. In 2007, individuals in the genus *Penstemon* were encountered that could not be identified to species because no flowers were present. In 2008, these were determined to be Palmer's penstemon, a common and widespread species. In addition to the eight special-status plant species found during protocol-level surveys, desert portulaca (*Portulaca halimoides*), an ephemeral summer annual, was observed within the project area boundaries in October 2007, following summer rainfall, by Jim Andre, a technical expert for this project, during independent visits that were not a part of the protocol-level survey effort for this project (Andre pers. comm. 2008). Desert portulaca was not detected during 2008 spring protocol-level surveys, likely because the skeletons are small and disintegrate rapidly after flowering (see Section 5.2). Therefore, abundance and distribution data from the project site are not available for desert portulaca.

Table 5-1 summarizes the numbers of individuals and localities found within each project element, by year. Locations of special-status plants within the project area are shown in Figures 5-1, 5-2 and 5-3 (Appendix A). Figure 5-1 (Appendix A) shows the

distribution of special-status plant locations found within the Ivanpah SEGS project area during protocol-level surveys in 2008. Figure 5-2 (Appendix A) shows the same information for 2007, and Figure 5-3 (Appendix A) shows the 2007 and 2008 data combined. A summary of the distribution and abundance for each special-status plant species is provided below. Table 5-2 summarizes the conservation status of these species.

Small-flowered androstephium: In 2008, 12 individuals were mapped in four locations (Figure 5-1, Appendix A), within Ivanpah 1 and 2, in Mojave Creosote Bush Scrub. No individuals of this species were detected during protocol-level surveys in 2007.

Mojave milkweed: In 2008, 202 individuals of Mojave milkweed were mapped in 59 locations (Figure 5-1, Appendix A), mainly in small washes in Ivanpah 1, 2 and 3, and the construction logistics area (Table 5-1). In 2007, an unknown number of plants was found at one location in Ivanpah 1.

Desert pincushion: In 2008, 477 individuals were mapped in 177 locations within Ivanpah 1, 2 and 3, the construction logistics area, and the utility corridor. In 2007, an additional 122 individuals were found in 114 locations. The combined total for 2007 and 2008 is 599 individuals in 291 locations. Most individuals were found in Mojave Creosote Bush Scrub. See Figures 5-1, 5-2 and 5-3, Appendix A; and Table 5-1.

Utah vine milkweed: In 2008, 991 individuals were found in 146 locations, mainly in Ivanpah 1 and 2. In 2007, three individuals were mapped in three locations, all within Ivanpah 1. Most individuals were found in small washes in Mojave Creosote Bush Scrub. The total for 2007 and 2008 is 994 individuals in 149 locations. See Figures 5-1, 5-2 and 5-3, Appendix A; and Table 5-1.

Nine-awned pappus grass: In 2008, 8,145 dead individuals were mapped in 182 locations in Ivanpah 1 and 3, the utility corridor and the construction logistics area (Figure 5-1, Appendix A; Table 5-1). Most were found in the utility corridor, in Mojave Creosote Bush Scrub. No live individuals were observed. In 2007, no individuals of this species were detected within the project area.

Parish's club-cholla: In 2008, 196 individuals (clones) were mapped at 47 locations within Ivanpah 1, the utility corridor, and the construction logistics area. In 2007, 143 clones were mapped within 96 locations in Ivanpah 1 and 3, and the construction logistics area. All clones were found in Mojave Creosote Bush Scrub. For 2008 and 2007 combined, 339 individuals were mapped in 143 locations. See Figures 5-1, 5-2 and 5-3, Appendix A; and Table 5-1.

Utah mortonia: In 2008, one individual was found in at the northern end of the utility corridor, within Mojave Yucca – Nevada Ephedra Scrub (Table 5-1; Figure 5-1, Appendix A).

Rusby's desert mallow: In 2008, 15 individuals were mapped in 12 locations in Mojave Creosote Bush Scrub within Ivanpah 1, 2 and 3, the construction logistics area and the utility corridor (Figure 5-1, Appendix A; Table 5-1). No individuals of this taxon were detected in 2007.

TABLE 5-1. NUMBERS OF SPECIAL-STATUS PLANT INDIVIDUALS AND LOCALITIES BY PROJECT FEATURE.

Species Name and Survey Year	Project Element			Utility Corridor	Construction Logistics Area	Access Road	Total Number of Individuals	Total Number of Localities
	Ivanpah 1	Ivanpah 2	Ivanpah 3					
Small-flowered androstephium (*Androstephium breviflorum)*								
2008	11	1	0	0	0	0	**12**	**4**
2007	0	0	0	0	0	0	**0**	**0**
2008 & 2007	11	1	0	0	0	0	**12**	**4**
Mojave milkweed (*Asclepias nyctaginifolia)*								
2008	37	16	127	5	17	0	**202**	**59**
2007	*	0	0	0	0	0	**0**	**1***
2008 & 2007	37	16	127	3	17	0	**202**	**60**
Desert pincushion (*Coryphantha chlorantha)*								
2008	19	5	64	376	13	0	**477**	**177**
2007	20	16	79	7	0	0	**122**	**114**
2008 & 2007	39	21	143	383	13	0	**599**	**291**
Utah vine milkweed (*Cynanchum utahense)*								
2008	809	125	38	1	18	0	**991**	**146**
2007	3	0	0	0	0	0	**3**	**3**
2008 & 2007	812	125	38	0	18	0	**994**	**149**
Nine-awned pappus grass (*Enneapogon desvauxii)*								
2008	552	0	855	5,910	828	0	**8,145**	**182**
2007	0	0	0	0	0	0	**0**	**0**
2008 & 2007	552	0	855	5,910	828	0	**8,145**	**182**

Species Name and Survey Year	Project Element			Utility Corridor	Construction Logistics Area	Access Road	Total Number of Individuals	Total Number of Localities
	Ivanpah 1	Ivanpah 2	Ivanpah 3					
Parish's club-cholla (*Grusonia (=Opuntia) parishii)*								
2008	19	0	0	55	122	0	**196**	**47**
2007	91	0	39	0	13	0	**143**	**96**
2008 & 2007	110	0	39	0	135	0	**339**	**143**
Utah mortonia *(Mortonia utahensis)*								
2008	0	0	0	1	0	0	**1**	**1**
2007	0	0	0	0	0	0	**0**	**0**
2008 & 2007	0	0	0	1	0	0	**1**	**1**
Rusby's desert mallow (*Sphaeralcea rusbyi* var. *eremicola)*								
2008	1	2	2	9	1	0	**15**	**12**
2007	0	0	0	0	0	0	**0**	**0**
2008 & 2007	1	2	2	9	1	0	**15**	**12**

* Mojave milkweed was observed in Ivanpah 1 in 2007; however, the exact location and number of individuals is unknown. This locality is not included on maps, or in the total number of individuals, but it is included in the total locality count.

TABLE 5-2. CONSERVATION STATUS OF SPECIAL-STATUS PLANT SPECIES KNOWN FROM THE IVANPAH SEGS PROJECT AREA.

	Conservation Status in California					Presence in Other States			
Common Name/ Scientific Name	Federal status	State status	BLM sensitive	CNPS	CNDDB	Nevada	Arizona	Utah	Other
Small-flowered androstephium *Androstephium breviflorum*	-	-	-	2.3	G5 S1.3	Present; no conservation status	Present; no conservation status	Present; no conservation status	WY, CO, NM
Mojave milkweed *Asclepias nyctaginifolia*	-	-	-	2.3	G4G5 S1.3	Present; no conservation status	Highest reporting priority	Not present	Not present
Desert pincushion *Coryphantha chlorantha*	-	-	-	2.2	G2G3 S2.2	Present; no conservation status	Present; no conservation status	Present; no conservation status	Not present
Utah vine milkweed *Cynanchum utahense*	-	-	-	4.3	G4 S3.3	Present; no conservation status	Present; no conservation status	Watch list/ S2	Not present
Nine-awned pappus grass *Enneapogon desvauxii*	-	-	-	2.3	G5 S2?	Present; no conservation status	Present; no conservation status	Present; no conservation status	CO, NM, TX, Mexico, South America.
Parish's club-cholla *Grusonia (=Opuntia) parishii*	-	-	-	2.3	G3G4 S2.3?	Present; no conservation status	Present; no conservation status	Not present	TX?
Utah mortonia *Mortonia utahensis*	-	-	-	4.3	G4G5 S3.3	Present; no conservation status	Present; no conservation status	Peripheral: rare or uncommon in Utah, more common elsewhere	NM, TX
Desert portulaca *Portulaca halimoides* *	-	-	-	4.2	G5 S3.2	Present; no conservation status	Present; no conservation status	Additional data needed - taxonomy	CO, NM, OK, TX, and other states, Baja California
Rusby's desert mallow *Sphaeralcea rusbyi* var. *eremicola*	-	-	S	1B.2 endemic to CA	G4T1 S1.3	Not present	Not present	Not present	Not present

Sources: CNDDB 2008a, BLM 2007, CNPS 2008, NNPS 2008, NNHP 2007, ANHP 2008, ANPS 2008, UDWR 2008.

* In addition to the eight special-status plant species found during protocol-level surveys, desert portulaca (*Portulaca halimoides*), an ephemeral summer annual, was observed within the project area boundaries in October 2007, following summer rainfall, by Jim Andre, a technical expert for this project, during independent visits that were not a part of the protocol-level survey effort for this project (Andre pers. comm. 2008).

5.2 Special-status Plant Survey Limitations

When considered together, the 2007 and 2008 protocol-level special-status plants surveys fully satisfy the recommendations of the botanical survey guidelines of the USFWS (1996a), CDFG (2000) and CNPS (2001). The special-status plant surveys were conducted during times of the year when it was possible to detect and identify in the field the majority of special-status plants that could potentially be found within the project area. Reference site visits were conducted in 2007 and 2008 (see Section 2.3.1 and Section 5.2 of the AFC [CH2M HILL 2007]) to determine the growth stage and blooming condition of many potentially occurring special-status plants. Many of these can be identified from leaves, fruits and other characteristics, in addition to flowers. For example, the leaves and old fruits of Mojave milkweed, and the old fruits and stems of Utah vine milkweed, are distinctive and allow these plants to be recognized even when they are not in flower. (See species descriptions in Appendix G for more information.) By observing plants at reference sites, and using the expertise of project botanists, it was possible to identify a range of characters that could be used to identify special-status plants in the field. These reference site visits also confirmed that potentially occurring special-status plants are currently growing within the project vicinity, since other information sources can be out-of-date.

Fifty-five special-status plants with potential to occur within the project area are listed in Table B-1 of Appendix B. Five of these are summer annuals, meaning that they grow and flower in the fall, only after summer rains, which occur infrequently in the eastern Mojave Desert. Although no protocol-level surveys were conducted in the fall, the survey methods addressed the issue of detecting summer annuals.

During the early to late spring survey period in 2007, conditions at the project site were very dry, and no annual plants were expected or observed. In addition, few herbaceous perennials were observed. Therefore, the survey emphasis in 2007 was on detecting special-status shrubs and cacti. Late summer rains in August 2007 resulted in an abundance of summer annuals growing within the project area. This was confirmed during visits to the Ivanpah Valley in October and November, 2007, by Jim Andre, an expert on the flora of the eastern Mojave Desert. Mr. Andre was a member of the survey team for the Ivanpah SEGS project; however, these visits were made independently, not as a part of the project survey effort.

Most summer annuals can be detected after their blooming and growth periods because distinctive characters are still observable, even when the plants are dead. In 2008, the skeletons of most summer annuals that grew in late 2007 were still present, observable, and identifiable. Survey crews were taught to recognize these species by Mr. Andre and other botanical experts. During spring protocol-level surveys in 2008, a total of nine species of summer annuals were identified within the project area, including the

special-status plant, nine-awned pappus grass. The identification of these species was confirmed by Mr. Andre and other expert botanists working on this project.

Desert portulaca, a special-status summer annual, usually is not detectable outside of its fall growth period. This species was determined to be present within the project area by Jim Andre during visits to the Ivanpah Valley in October and November, 2007, that were independent of the survey effort for this project. Since survey team members were unable to detect desert portulaca during the spring 2008 protocol-level surveys, quantitative abundance and distribution data are unavailable for this species. However, its presence in the project area is noted in this report, and it is included in the tally of special-status plants found within the project area (Table 5-2).

None of the potentially occurring special-status summer annuals are federally or state-listed; therefore, no federally or state-listed summer annuals are expected to occur within the project area.

5.3 Barrel Cactus Distribution and Abundance within the Project Area

Censuses of two species of barrel cacti, California barrel cactus and clustered barrel cactus, were conducted in 2008 and 2007. Both of these are very abundant and widely distributed at the project site. For California barrel cactus, in 2008, 701 individuals were mapped in 261 locations (Figure 5-4, Appendix A), and in 2007, 2,168 individuals were mapped in 1266 locations (Figure 5-5, Appendix A). For clustered barrel cactus, in 2008, 1,145 individuals were mapped in 459 locations (Figure 5-4, Appendix A), and in 2007, 2,356 individuals were mapped in 1,625 locations (Figure 5-5, Appendix A). The combined totals for 2008 and 2007 are 2,869 individuals of California barrel cactus in 1,527 locations, and 3,501 individuals of clustered barrel cactus in 2,084 locations (Figure 5-6, Appendix A). Table 5-4 shows the numbers of barrel cacti found within each project feature for 2007, 2008 and 2007 and 2008 combined.

TABLE 5-3. NUMBERS OF INDIVIDUALS AND LOCATIONS OF BARREL CACTI FOUND WITHIN PROPOSED PROJECT FEATURE SITES.

Common Name and Survey Year	Project Element			Utility Corridor	Construction Logistics Area	Access Road	Total Number of Individuals	Total Number of Localities
	Ivanpah 1	Ivanpah 2	Ivanpah 3					
California barrel cactus (*Ferocactus cylindraceus* var. *lecontei*)								
2008	0	0	152	526	23	0	**701**	**261**
2007	74	389	1,615	85	5	0	**2,168**	**1,266**
2008 & 2007	74	389	1,767	611	28	0	**2,869**	**1,527**
Clustered barrel cactus (*Echinocactus polycephalus* var. *polycephalus*)								
2008	0	0	160	791	194	0	**1,145**	**459**
2007	706	156	1,353	93	48	0	**2,356**	**1,625**
2008 & 2007	706	156	1,513	884	242	0	**3,501**	**2,084**

Notes:

Ivanpah 1, 2, and 3 data for 2007 include the 250-foot buffer (see AFC; CH2M HILL 2007); in 2008, the site boundaries for these project components were expanded to include the buffer.

The 2007 cactus numbers presented in the AFC (CH2M HILL 2007) are slightly different than the numbers presented in this table because the project boundary changed slightly after the AFC was submitted.

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Appendix A.

Ivanpah SEGS: Figures

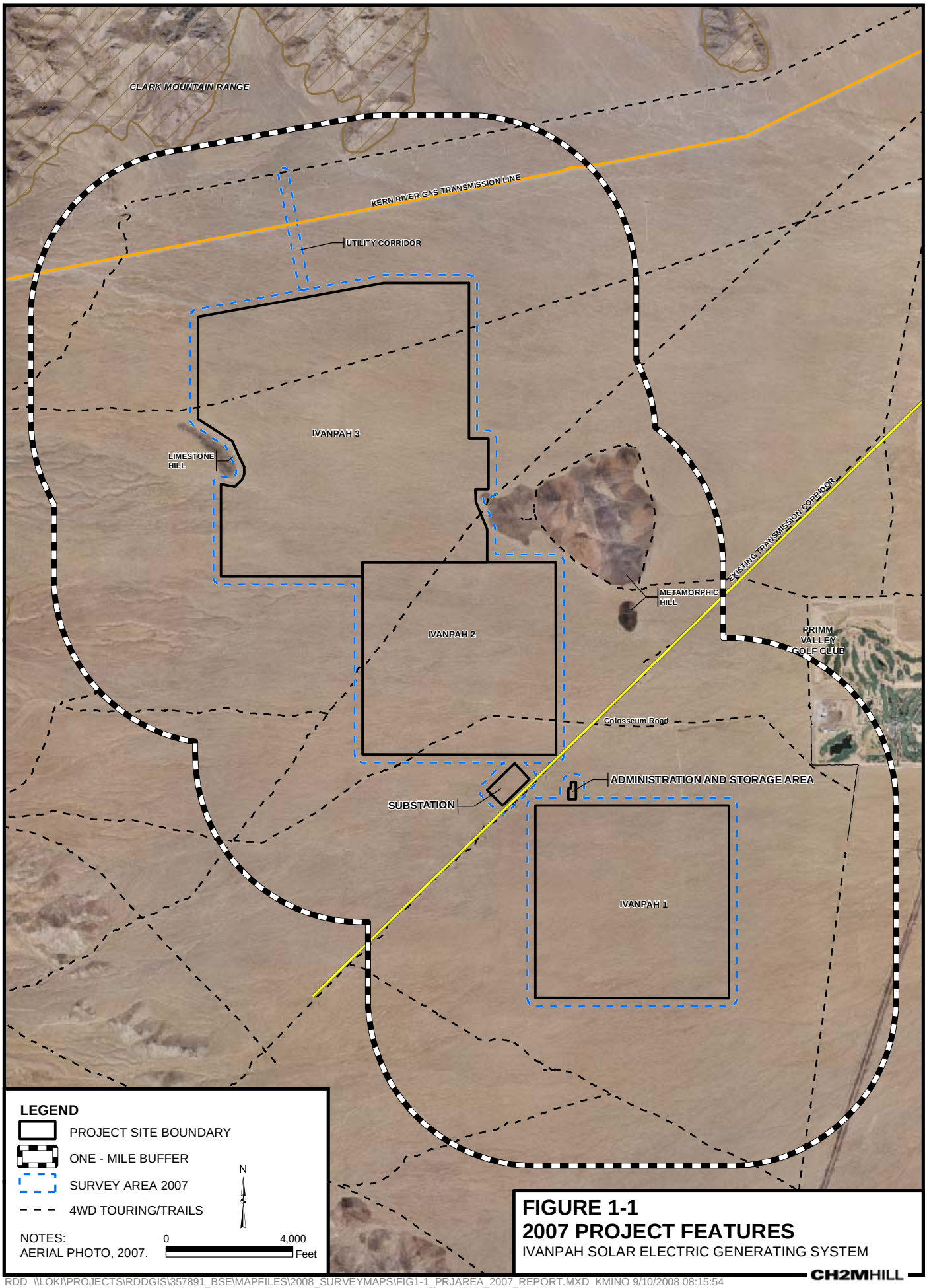

FIGURE 1-1
2007 PROJECT FEATURES
IVANPAH SOLAR ELECTRIC GENERATING SYSTEM

CH2MHILL

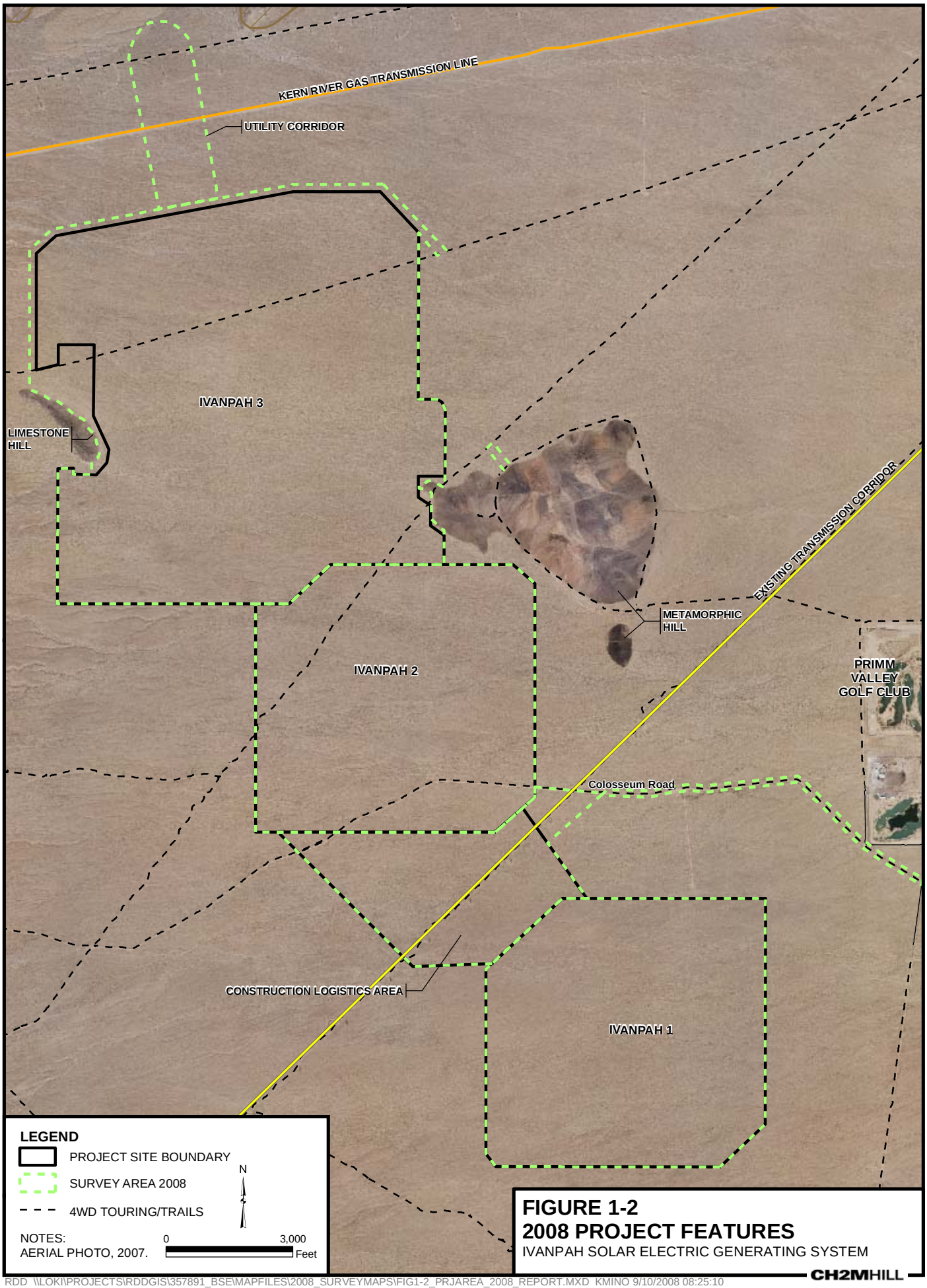

FIGURE 1-2
2008 PROJECT FEATURES
IVANPAH SOLAR ELECTRIC GENERATING SYSTEM

CH2MHILL

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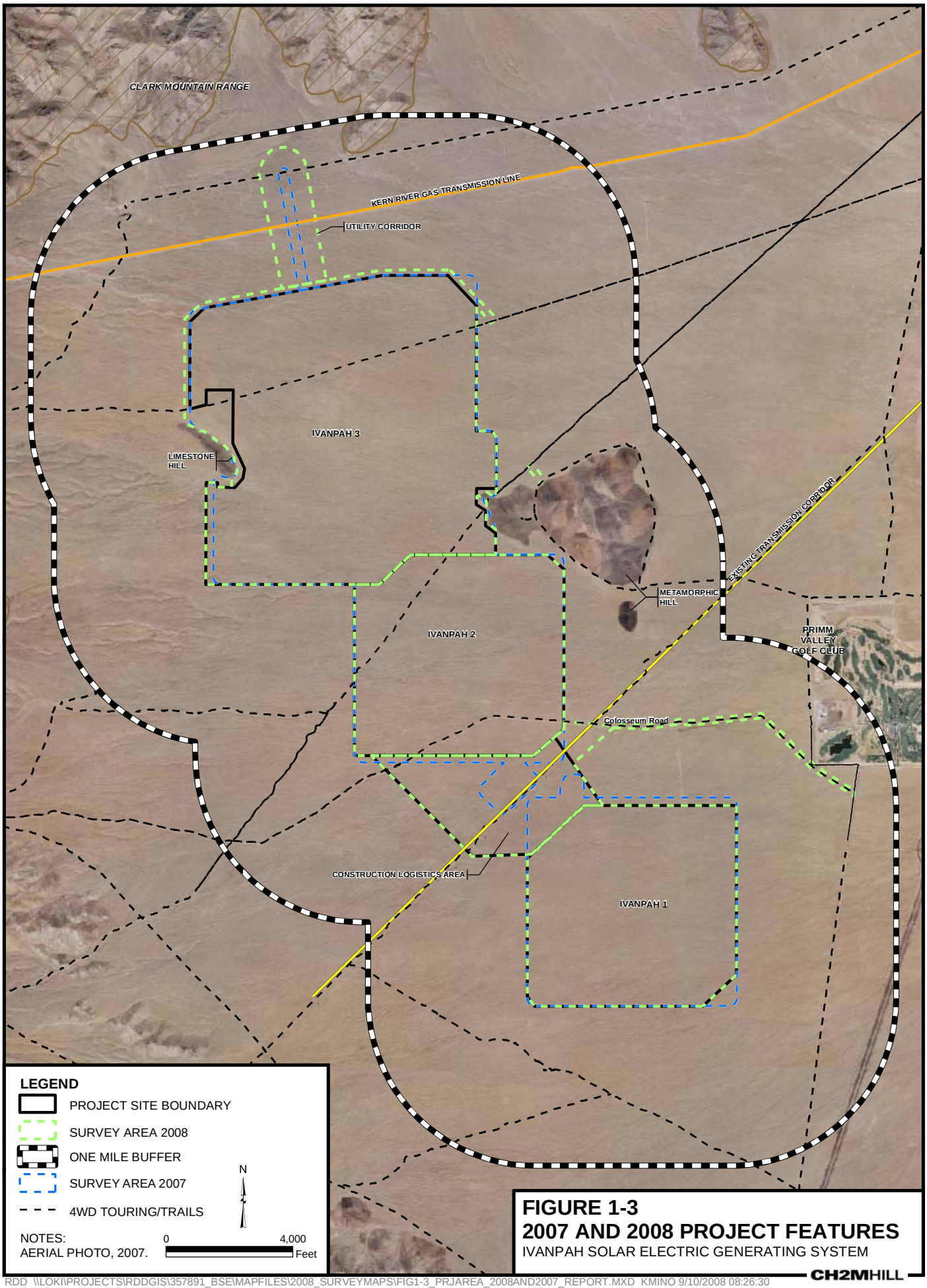

FIGURE 1-3
2007 AND 2008 PROJECT FEATURES
IVANPAH SOLAR ELECTRIC GENERATING SYSTEM

CH2MHILL

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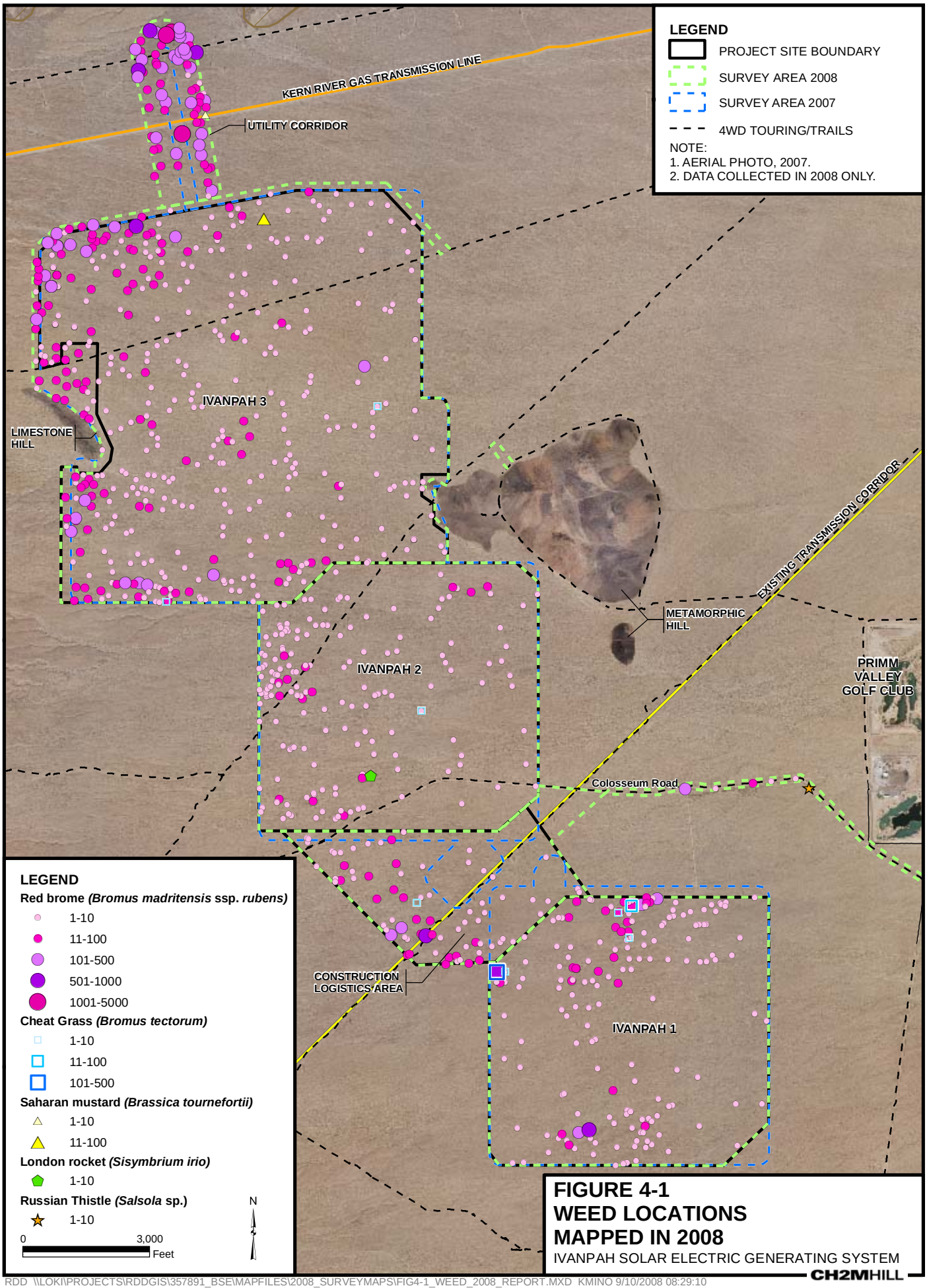

FIGURE 4-1
WEED LOCATIONS MAPPED IN 2008
IVANPAH SOLAR ELECTRIC GENERATING SYSTEM

CH2MHILL

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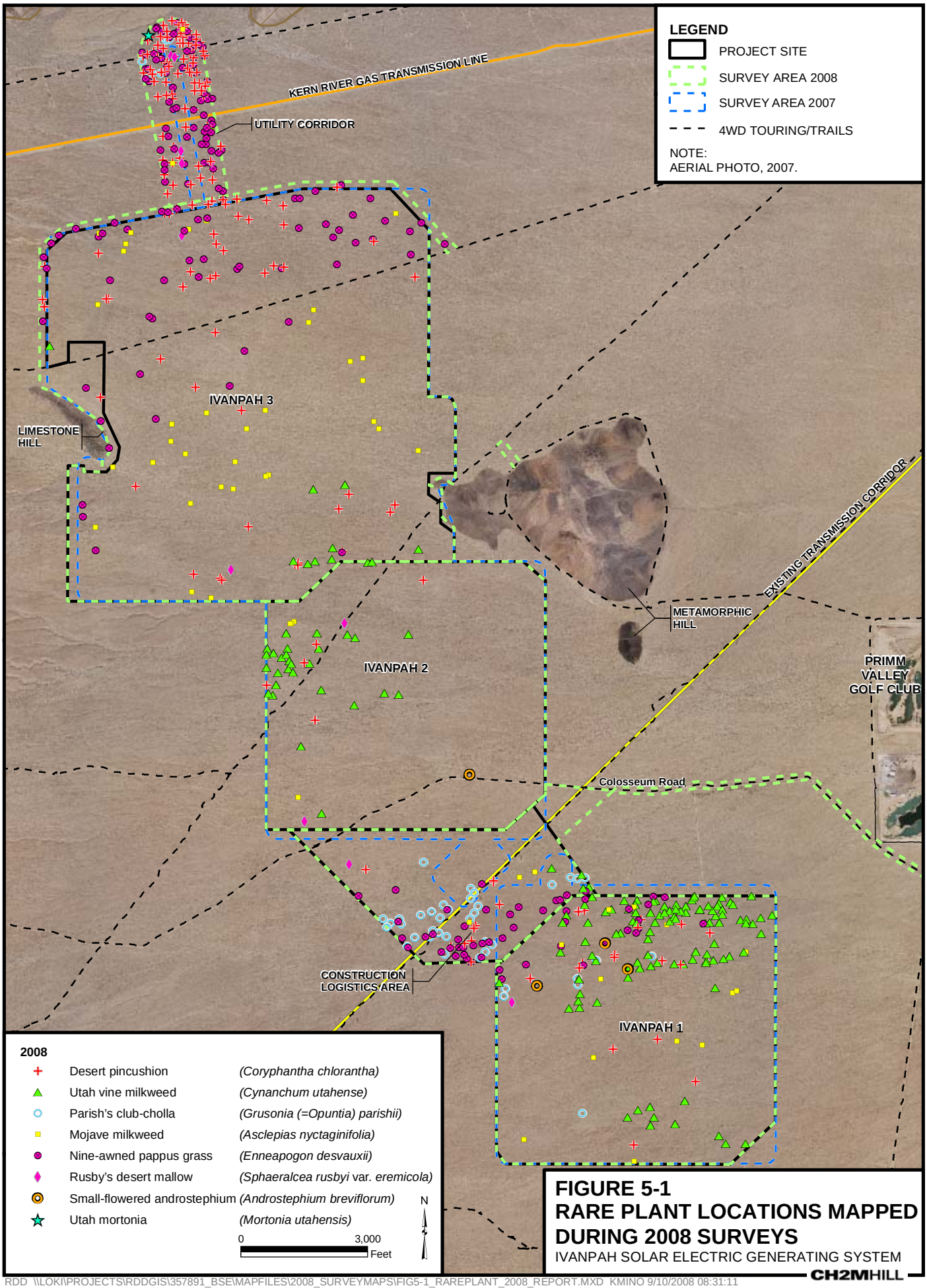

FIGURE 5-1
RARE PLANT LOCATIONS MAPPED DURING 2008 SURVEYS
IVANPAH SOLAR ELECTRIC GENERATING SYSTEM

CH2MHILL

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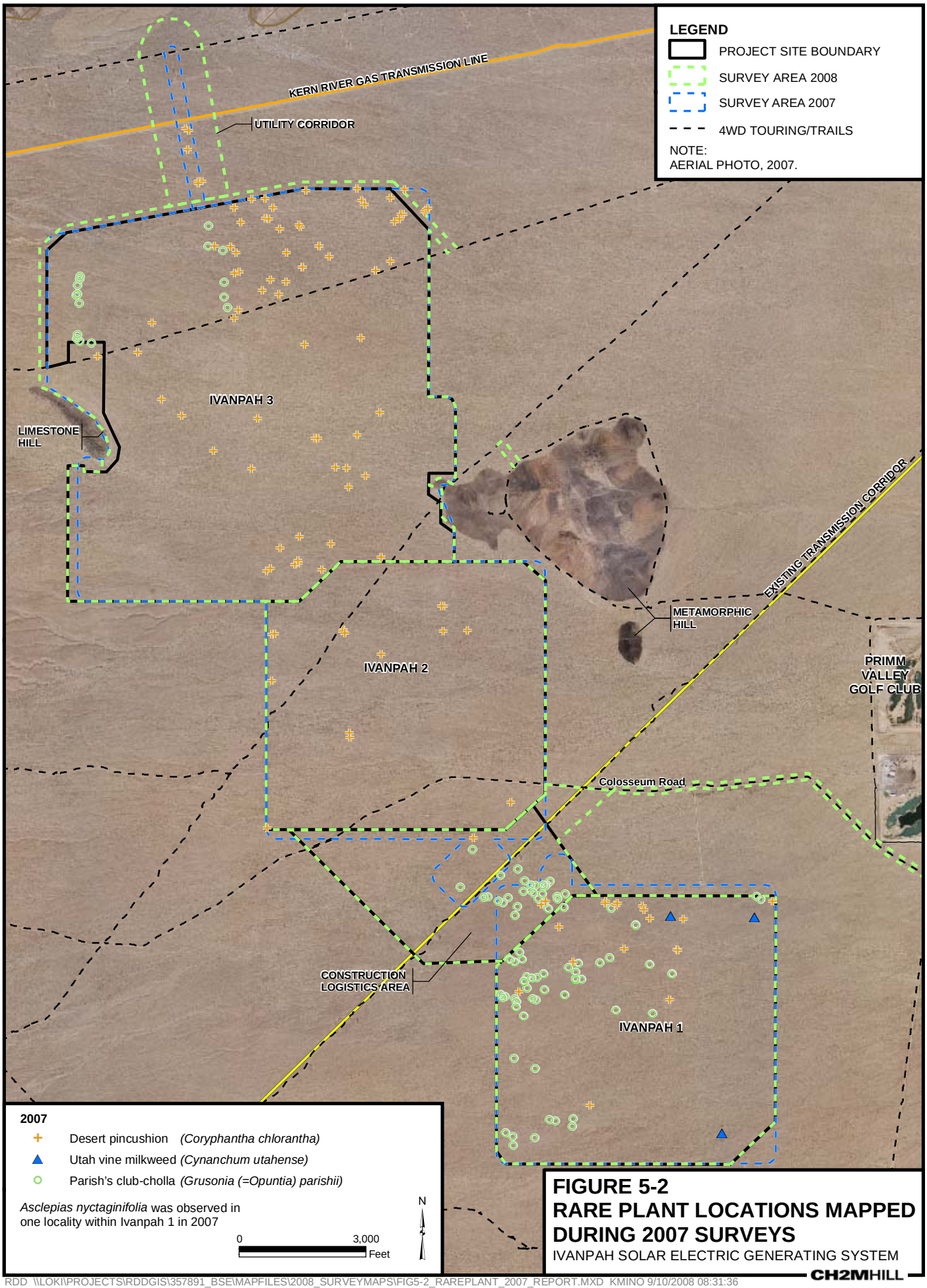

FIGURE 5-2
RARE PLANT LOCATIONS MAPPED DURING 2007 SURVEYS
IVANPAH SOLAR ELECTRIC GENERATING SYSTEM

CH2MHILL

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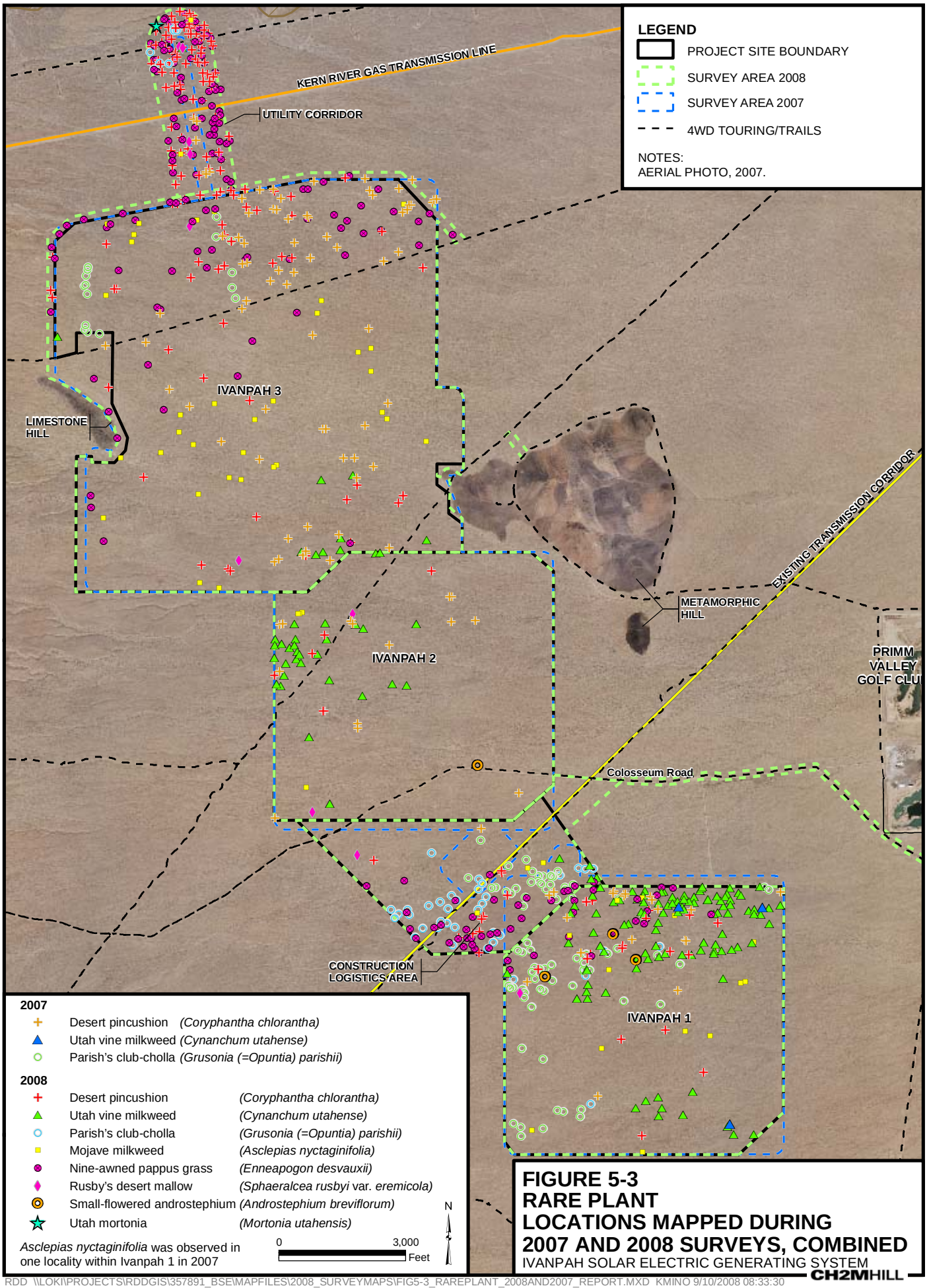

FIGURE 5-3
RARE PLANT LOCATIONS MAPPED DURING 2007 AND 2008 SURVEYS, COMBINED

IVANPAH SOLAR ELECTRIC GENERATING SYSTEM

CH2MHILL

RDD \\LOKI\PROJECTS\RDDGIS\357891_BSE\MAPFILES\2008_SURVEYMAPS\FIG5-3_RAREPLANT_2008AND2007_REPORT.MXD KMINO 9/10/2008 08:33:30

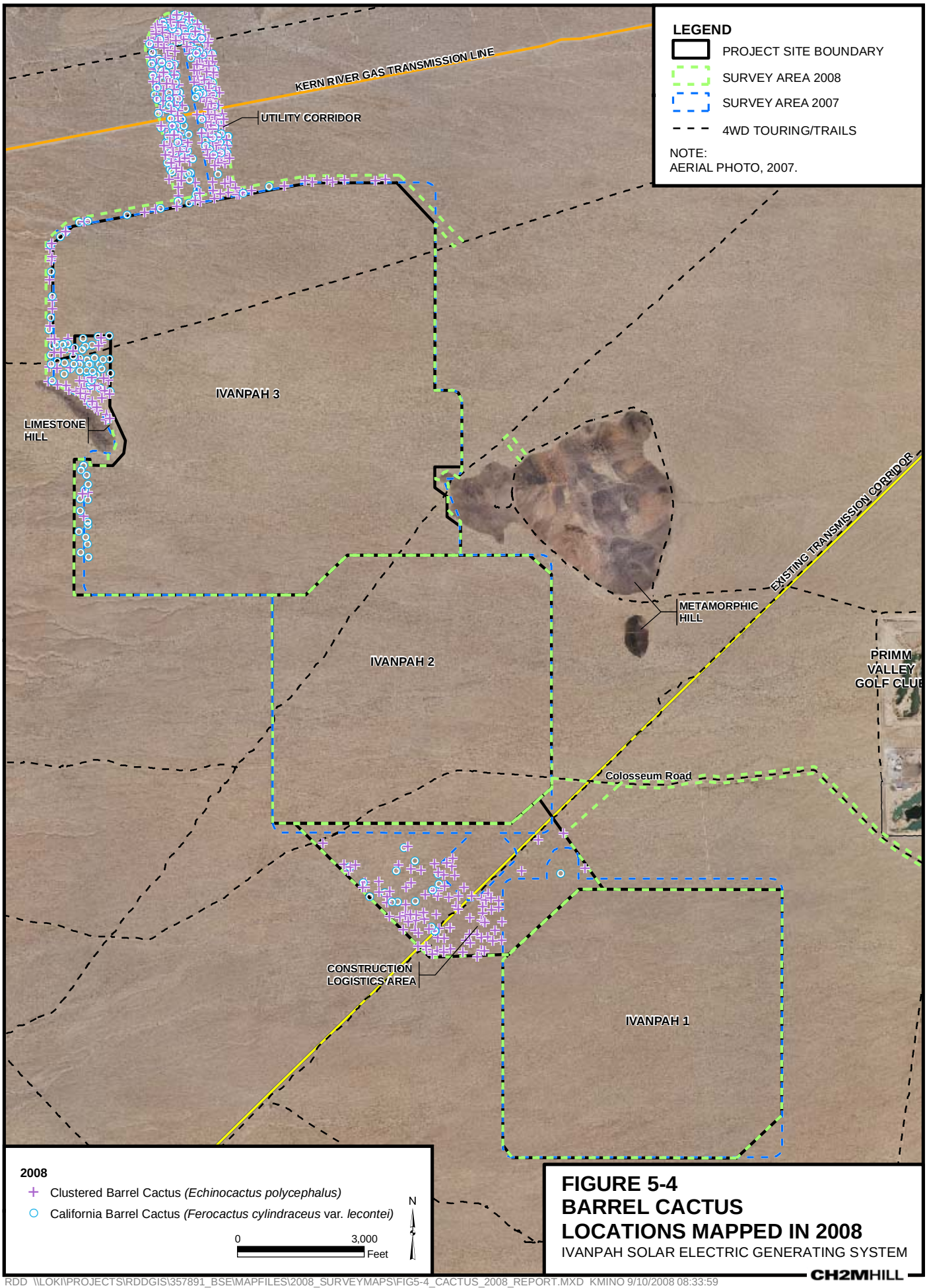

FIGURE 5-4
BARREL CACTUS LOCATIONS MAPPED IN 2008
IVANPAH SOLAR ELECTRIC GENERATING SYSTEM

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RDD \\LOKI\PROJECTS\RDDGIS\357891_BSE\MAPFILES\2008_SURVEYMAPS\FIG5-4_CACTUS_2008_REPORT.MXD KMINO 9/10/2008 08:33:59

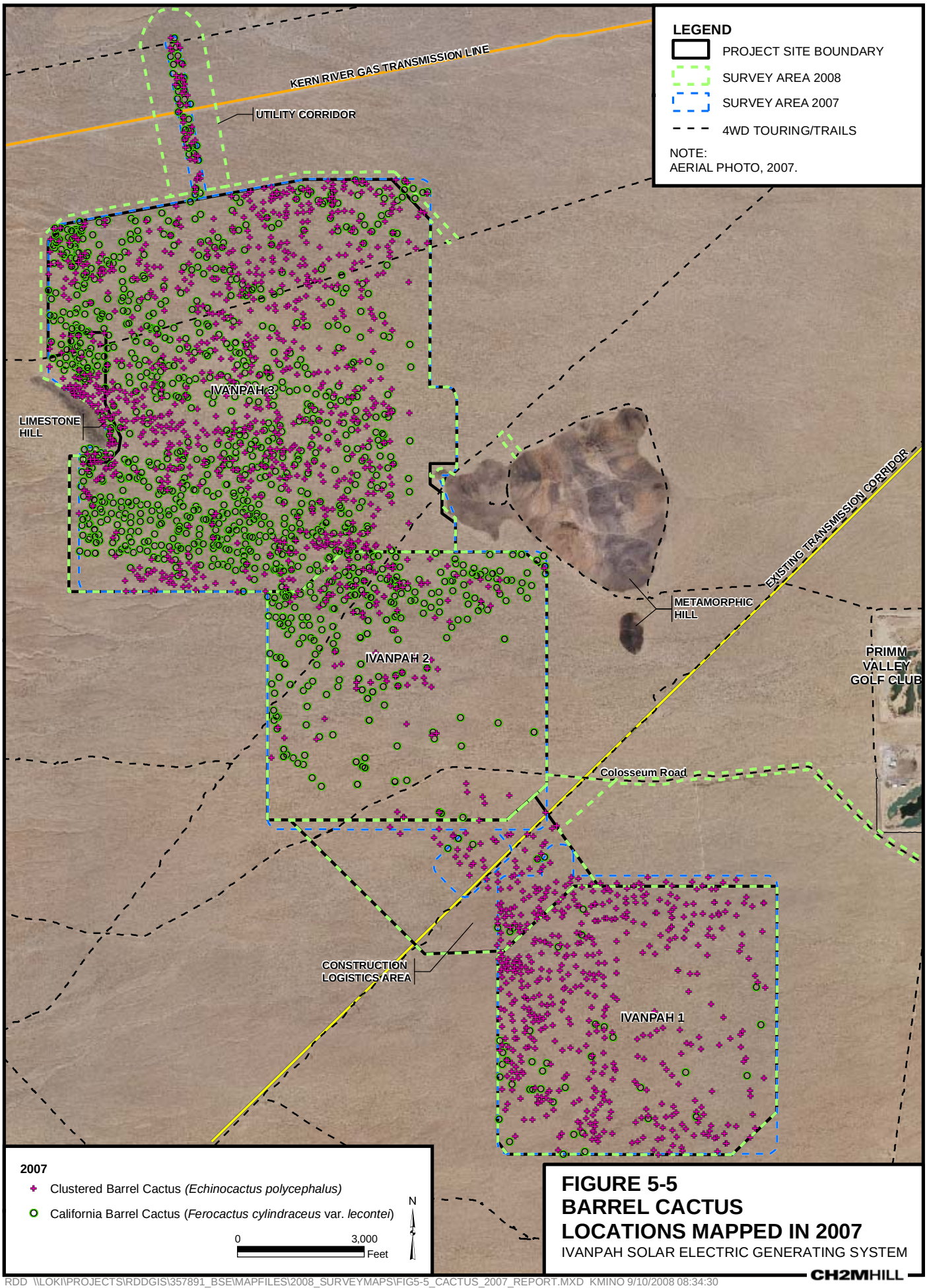

FIGURE 5-5
BARREL CACTUS LOCATIONS MAPPED IN 2007
IVANPAH SOLAR ELECTRIC GENERATING SYSTEM

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RDD \\LOKI\PROJECTS\RDDGIS\357891_BSE\MAPFILES\2008_SURVEYMAPS\FIG5-5_CACTUS_2007_REPORT.MXD KMINO 9/10/2008 08:34:30

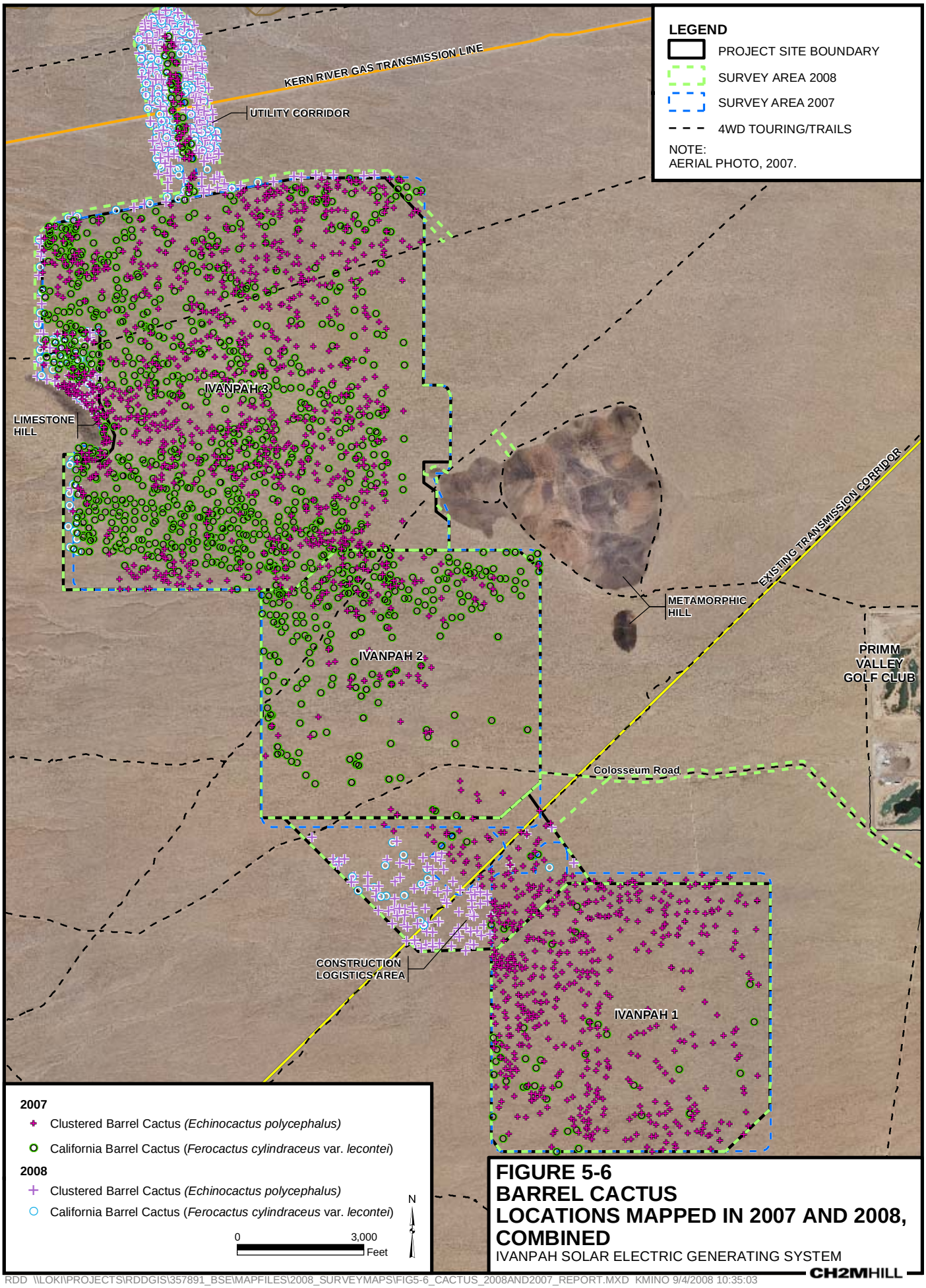

FIGURE 5-6
BARREL CACTUS LOCATIONS MAPPED IN 2007 AND 2008, COMBINED
IVANPAH SOLAR ELECTRIC GENERATING SYSTEM

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RDD \\LOKI\PROJECTS\RDDGIS\357891_BSE\MAPFILES\2008_SURVEYMAPS\FIG5-6_CACTUS_2008AND2007_REPORT.MXD KMINO 9/4/2008 10:35:03

Appendix B.

Ivanpah SEGS: Special-status Plants with Potential to Occur within the Project Area

Table B-1. Special-status plants with potential to occur within the Ivanpah SEGS project area.

Scientific/ Common Name	Ann/ Per [1]	Rank or Status [2]				Distribution [3]	Habitat Types [4]	Elevational Range and Habitat Preferences	Flowering Period/ Color	Known Locations Nearest To Project Area
		FWS	DFG	BLM	CNPS					
PLANTS KNOWN FROM THE PROJECT REGION WITH LOW TO MODERATE POTENTIAL TO OCCUR IN THE STUDY AREA										
Agave utahensis var. *nevadensis* Clark Mountain agave	P	-	-	-	4.2	E Mojave Desert; Clark Mtn. Range, Mescal Mtns., Ivanpah Mtns., Kingston Mtns., SBD; to NV.	JTWld, MDScr, PJWld	2,950-5,200 ft (900-1,585 m) Rocky slopes, often steep; calcareous and volcanic substrates. Occurs on limestone substrate.	May-July yellow	E edge of Clark Mtn. Range, about 2 miles WNW of Ivanpah 3 (CNDDB 2007c). Found within one-mile buffer during 2007 surveys.
Aliciella triodon Coyote gilia	A	-	-	-	2.2	E Mojave Desert; Clark Mtn. Range, Mid Hills, SBD; Nopah Range, INY; to NV, AZ, CO, NM, UT.	GBScr, PJWld	2,000-5,580 ft (610-1,700 m) Sometimes on sandy soils.	April-June purple	Clark Mtn. and Pinto Valley quads, within 3-30 miles of the project area (CNDDB 2007c).
Aloysia wrightii oreganillo	S	-	-	-	4.3	E Mojave and Colorado deserts; Clark, Providence, Whipple, and Granite mtns., SBD; to TX, NM.	JTWld, PJWld	2,700-4,800 ft (800-1600 m) Rocky slopes, often on carbonate substrates.	April-Oct white	Clark Mtn. Range, within 3 miles of project area (Jepson Online Interchange 2008).
Androstephium breviflorum small-flowered androstephium	P	-	-	-	2.3	E Mojave Desert from about Cronese Valley to Ivanpah Valley, and E of Whipple Mts., SBD; Cadiz Valley, RIV; to AZ, NV, CO, UT.	MDScr (MCBS), DeDns	720-5,260 ft (220-1,600 m) Dry loose sandy to rocky soil on sand dunes and alluvial fans.	Apr-May white	Ivanpah Valley at E edge of Clark Mtn. Range, about 2 miles WNW of Ivanpah 3 (CNDDB 2007). Found within project area during 2008 surveys.
Arctomecon merriamii white bear poppy	P	-	-	-	2.2	Death Valley region to Clark Co., NV; Last Chance Range to Resting Spring Range, INY; Silurian Vally, Clark Mtn. Range, SBD.	MDScr (MCBS, MMWS, DCS), ChScr	1,600-6,800 ft (490-2,075 m) Loose rocky slopes and flats of marine deposits: gypsum, limestone, dolomite. Occurs on limestone substrate.	Apr-May white	S edge of E Clark Mtn. Range, about 1.7 miles N of Ivanpah 3 (CNDDB 2007).

Table B-1. Special-status plants with potential to occur within the Ivanpah SEGS project area.

Scientific/ Common Name	Ann/ Per [1]	Rank or Status [2]				Distribution [3]	Habitat Types [4]	Elevational Range and Habitat Preferences	Flowering Period/ Color	Known Locations Nearest To Project Area
		FWS	DFG	BLM	CNPS					
Asclepias nyctaginifolia Mohave milkweed	P	-	-	-	2.3	E Mojave Desert; known in CA only from Clark, New York and Providence mtns, Lanfair, SBD; NV, AZ.	MDScr, PJWld	3,000-5,100 ft (1,000-1,700m) Small gravelly washes.	May-June cream	Clark Mtn. Range, Shadow Valley, about 8 miles SW of the project area (CNDDB 2008). Found within the project area during 2007 and 2008 surveys.
Cordylanthus parviflorus purple bird's-beak	SA	-	-	-	2.3	E Mojave Desert; New York, Providence mtns., Mid Hills, SBD; to AZ, NV, UT, ID.	MDScr, JTWld, PJWld	2,300-7,220 ft (700-2,200m). Sandy to rocky bajadas and arroyos.	Aug-Oct pink to lavender	Mid Hills, about 30 miles S of project area (CalFlora 2007).
Coryphantha chlorantha Desert pincushion	P	-	-	-	2.2	E Mojave Desert; Clark Mtn. Range, Mescal Range, Ivanpah Mtns., SBD; Kingston Range, SBD & INY; to NV, AZ, UT.	JTWld MDScr, PJWld	3,500-5,000 ft (1,050-1,525m) Carbonate, gravelly, and rocky soils. Occurs on limestone substrate.	Apr-Sept straw colored or yellow to pink	Mescal Range and Clark Mtn. Range, about 2 miles N of Ivanpah 3 (CNDDB 2007, CalFlora 2007). Found within project area during 2007 and 2008 surveys.
Coryphantha vivipara var. *rosea* viviparous foxtail cactus	P	-	-	-	2.2	E Mojave Desert; Clark Mtn. Range, Mescal Range, New York Mtns., Mid Hills, Cima, SBD; to NV, AZ.	MDScr (BBS), JTWld, PJWld	4,000-6,000 ft (1225-1,825m) Dry stony or gravelly slopes and ridges, in bare sandy or gravelly loam; in quartz monzonite and limestone.	May-June magenta to purplish	Clark Mtn. Range and Mescal Range, within 2-5 miles of project area (Thorne et al. 1981, CalFlora 2007, CNDDB 2007). Found within one-mile buffer during 2007 surveys.

Table B-1. Special-status plants with potential to occur within the Ivanpah SEGS project area.

Scientific/ Common Name	Ann/ Per [1]	Rank or Status [2]				Distribution [3]	Habitat Types [4]	Elevational Range and Habitat Preferences	Flowering Period/ Color	Known Locations Nearest To Project Area
		FWS	DFG	BLM	CNPS					
Cymopterus gilmanii Gilman's cymopterus	P	-	-	-	2.3	Death Valley region and E Mojave Desert; Last Chance, Cottonwood, Grapevine, Funeral, Kingston and Clark mtns., INY, SBD; to western NV.	MDScr (MCBS, DCS)	3,300-6,500 ft (1000-1,975m) Dry rocky or gravelly slopes, desert canyons, rock ledges or cliffs, often on carbonates. Occurs on limestone substrate.	Mar-May purplish	Clark Mtn. Range, about 0.75 mile SE of Umberci Mine, about 2 miles N of project area (CNDDB 2007).
Cynanchum utahense Utah vine milkweed	P	-	-	-	4.3	Mojave Desert; 29 Palms region, Joshua Tree, Old Woman Springs, Ivanpah mtns., SBD; Colorado Desert; Blythe, RIV; Anza-Borrego area, SDG, Ocotillo Wells, IMP; to NV, AZ, UT.	MDScr, SDScr	1,150-4,700 ft (350-1,435m) Sandy or gravelly soils, often in washes climbing up through shrubs.	Apr-June yellow and red	Ivanpah Mtns., about 15 miles S of project area (Thorne et al. 1981, Jepson Online Interchange 2007). Found within project area during 2007 and 2008 surveys.
Enceliopsis nudicaulis ssp. *nudicaulis* naked-stemmed daisy	P	-	-	-	4.3	Death Valley region and E Mojave Desert; Inyo, Saline, Last Chance, Panamint, and Clark mtn. ranges, INY, SBD; to AZ, NV, UT, ID.	MDScr (BBS), GBScr, PJWld	2,875-6,400 ft (875-1,950m) In clayey soil, or sand and gravel, on slopes, cliffs and ridges; in calcareous or gypsicolous soils. Occurs on limestone substrate.	Apr-May (Aug) yellow	Clark Mtn. Range, about 0.75 mile SE of Umberci Mine, about 2 miles N of project area (CNDDB 2007).
Enneapogon desvauxii nine-awned pappus grass	P (SA in CA)	-	-	-	2.3	E Mojave Desert; known in CA from Providence, New York and Clark mtns, SBD Co; to CO, NM, TX, Mexico, S. America.	PJWdl	3,825-5,475 ft (1275-1825m) Rocky areas on slopes and bajadas; sometimes on carbonate substrates. Summer annual in CA.	Aug-Sept green	Clark Mtn. Range, within 1 mile of the project area (CNDDB 2008). Found within the project area during 2008 surveys.

Table B-1. Special-status plants with potential to occur within the Ivanpah SEGS project area.

Scientific/ Common Name	Ann/ Per [1]	Rank or Status [2]				Distribution [3]	Habitat Types [4]	Elevational Range and Habitat Preferences	Flowering Period/ Color	Known Locations Nearest To Project Area
		FWS	DFG	BLM	CNPS					
Grusonia (=Opuntia) parishii Parish's club-cholla	P	-	-	-	2.3	Mojave and Colorado deserts; known in CA from 11 sites, including the New York, Ivanpah and Clark mtns, SBD, RIV, IMP; to NV, AZ, TX?.	MDScr,SDScr, JTWld	980-5,000 ft (300-1,524m) Sandy or sandy-gravelly soil on flats, valleys, plains, gravelly-rocky bajadas, gentle limestone slopes.	May-June (July) red to yellow	Clark Mtn. Range, within 5 miles of the project area (Jepson Online Interchange 2007). Found within project area during 2007 and 2008 surveys.
Menodora scabra rough menodora	P	-	-	-	2.3	E Mojave and Colorado deserts; Clark, New York, Providence mtns., SBD; Vallecitos Mtns., Little Blair Valley, SDG; Inkopah Mtns., IMP; to CO, TX, northern Mexico.	JTWld, MDScr, PJWld	3,600-5,400 ft (1,200-1,800m) Canyons, rocky soils.	May-June yellow	Clark Mtn. Range, within 2 miles of project area (Jepson Online Interchange 2008).
Mentzelia pterosperma wing-seeded blazing star	A/P	-	-	-	2.2	E Mojave Desert; Clark Mtn. Range, and near Valley Wells, SBD; to AZ, NV, UT.	MDScr	3,150-3,420 ft (1,050-1,140m) Gypsum soils.	Apr-June yellow	Clark Mtn. Range, within 2 miles of project area (Jepson Online Interchange 2008).
Mortonia utahensis Utah mortonia	S	-	-	-	4.3	Death Valley region and E Mojave Desert; Nopah, Funeral, Grapevine, Kingston, Clark Mtn. ranges, INY, SBD; to S NV, AZ, UT.	MDScr, JTWld, PJWld	2,500-6,300 ft (760-2,100m) Rocky areas. Occurs on limestone substrate.	Mar-May white	Clark Mtn. Range, about 0.75 mile SE of Umberci Mine, about 2 miles N of project area (CNDDB 2007). Found within project area during 2007 surveys.
Muilla coronata crowned muilla	P	-	-	-	4.2	Owens Valley and southern Sierra south to Antelope Valley and east to the Spring Range, NV; INY, KRN, LAX, SBD, TUL.	ChScr, MDScr, JTWld, PJWld	2,300-6,620 ft (700-2,010m) Sandy or sandy-gravelly soil, or heavy soils.	Mar-Apr white with green line on outside of petals	Clark Mtn. Range, about 1 mile SW of the project area (Elliott pers. obs., field survey form 3-8-2008).

Table B-1. Special-status plants with potential to occur within the Ivanpah SEGS project area.

Scientific/ Common Name	Ann/ Per [1]	Rank or Status [2]				Distribution [3]	Habitat Types [4]	Elevational Range and Habitat Preferences	Flowering Period/ Color	Known Locations Nearest To Project Area
		FWS	DFG	BLM	CNPS					
Munroa squarrosa false buffalo grass	SA	-	-	-	2.2	E Mojave Desert; known in CA only from Clark and New York mtns., SBD; AZ, NV and elsewhere.	PJWld	3,500-5,400 ft (1,500-1,800m) Gravelly or rocky soils.	October green	Clark Mtn. Range, less than 2 miles from project area (CNDDB 2008)
Oenothera cavernae cave-dwelling evening-primrose	A	-	-	-	2.2 added 8/4/08	E Mojave Desert; known in CA only from Clark Mtn. Range, SBD; NV, AZ, UT.	MDScr	3,000-3,600 ft (1,000-1,200m) Rocky soils.	April-May white	Clark Mtn. Range, less than 2 miles from project area (Andre, pers. observation, April 8, 2008). First observed in CA in 2008.
Opuntia curvospina (=O. chlorotica) Curved-spine beavertail	P	-	-	-	2.2	E Mojave Desert; known in CA from 3 sites in the vicinity of the New York Mtns., SBD; NV, AZ.	Chprl, MDScr, PJWld	3,280-4,650 ft (1,000-1,400m) A stabilized hybrid between *O. phaeacantha* and *O. chlorotica*.	Apr-June yellow	Between Nipton and Searchlight, NV, about 20 miles SE of project area (Jepson Online Interchange 2008).
Penstemon albomarginatus white-margined beardtongue	P	-	-	S	1B.2	E Mojave Desert; between Pisgah and Lavic and between Cadiz and Danby, SBD; a few widely scattered sites in NV, AZ.	MDScr (MCBS)	800-2,200 ft (250-675m) Sandy soils along washes.	Mar-May pink to purple; lvs with white margin	About 7 miles ENE of Primm, NV, in the Ivanpah Valley, E of Roach Dry Lake (NNHP 2007).
Penstemon bicolor ssp. *roseus* Rosy two-toned beardtongue	P	-	-	-	2.3	E Mojave Desert; known in CA from 3 sites, Clark Mtn. Range, Castle Mtns., and Piute Spring, SBD; to NV.	JTWld MDScr	3,000-4,900 ft (700-1,500m) Rocky or gravelly soils, sometimes in disturbed areas.	May cream to magenta; corolla gibbous, like *P. floridus*	Clark Mtn. Range, about 2 miles N of project area, 2 miles E of Keany Pass (CNDDB 2007); and about 8 miles N of project area, 4 miles W of Jean, NV (Howald, pers. obs.; field survey form 4-28-08).

Table B-1. Special-status plants with potential to occur within the Ivanpah SEGS project area.

Scientific/ Common Name	Ann/ Per [1]	Rank or Status [2]				Distribution [3]	Habitat Types [4]	Elevational Range and Habitat Preferences	Flowering Period/ Color	Known Locations Nearest To Project Area
		FWS	DFG	BLM	CNPS					
Phacelia anelsonii Aven Nelson's phacelia	A	-	-	-	2.3	Mojave Desert; Clark Mtns., SBD; near Darwin, INY; NV.	JTWld, PJWld	3,600-4,500' (1,200-1,500m) Sandy or gravelly carbonate substrates.	Apr-May white	Clark Mtn. Range, near Keany Pass, about about 5 miles W of project area (Jepson Online Interchange 2008).
Portulaca halimoides desert portulaca	SA	-	-	-	4.2	Mojave Desert; Clark, New York, Providence, Granite mtns., SBD; Little San Bernardino Mtns., RIV; NV, AZ, UT, and elsewhere.	JTWld MDScr	3,000-3,600 ft (1,000-1,200m) Sandy soils of valleys and bajadas.	Aug-Oct yellow	Clark Mtn. Range, within 2 miles of project area (Jepson Online Interchange 2008). Observed within project area in October 2007 (Andre, pers. obs.).
Sclerocactus johnsonii bee-hive cactus	P	-	-	-	2.2	Death Valley region and E Mojave Desert; Funeral, Greenwater, Resting Spring and Nopah ranges, INY; Clark Mtn. Range, SBD; to Clark Co., NV, UT, AZ;	MDScr	1,640-4,000 ft (500-1,200m) Granitic soils of hills and alluvial fans.	Apr-May magenta to pink or greenish turning yellow	E edge of Clark Mtn. Range, about 2.4 miles NW of Ivanpah 3; only known SBD site, probably extirpated by pipeline construction (CNDDB 2007).
Sphaeralcea rusbyi var. eremicola Rusby's desert mallow	P	-	-	S	1B.2	Death Valley region and E Mojave Desert; Panamint Mts., Clark Mtn. Range, other locations, SBD; Emigrant Cyn., INY.	MDScr (CBS, BBS), JTWld	2,265-4,800 ft (995-1,500m) Desert slopes and gravelly sandy washes, often in carbonate. Occurs on limestone substrate.	May-June red-orange	Clark Mtn. Range at Ivanpah Springs and 0.25 mile NNW of Umberci Mine, about 2 miles N of project area (CNDDB 2007). Found within the project area during 2008 surveys.

Table B-1. Special-status plants with potential to occur within the Ivanpah SEGS project area.

Scientific/ Common Name	Ann/ Per [1]	Rank or Status [2]				Distribution [3]	Habitat Types [4]	Elevational Range and Habitat Preferences	Flowering Period/ Color	Known Locations Nearest To Project Area
		FWS	DFG	BLM	CNPS					
Tragia ramosa desert tragia	P	-	-	-	4.3	Mojave Desert; New York, Clark, Providence mtns., SBD; Santa Rosa Mtns., RIV; AZ, NV, NM, TX, UT and elsewhere.	ChScr, PJWld	2,700-5,580 ft (900-1,860m) Rocky soils.	Apr-May greenish	Clark Mtn. Range, Antimony Gulch, about 3 miles SW of project area (Jepson Online Interchange 2008).
PLANTS KNOWN FROM THE PROJECT REGION WITH VERY LOW POTENTIAL TO OCCUR IN THE STUDY AREA										
Achnatherum aridum Mormon needle grass	P	-	-	-	2.3	Death Valley region and E Mojave Desert; Last Chance, Cottonwood, Funeral, Kingston, and Clark mtn. ranges eastward; INY, SBD; to AZ, NV, TX.	MDScr (BBS, DCS), GBScr, PJWld	3,700-7,400 ft (1,125-2,250m) Dry limestone on slopes, ridges and rock outcrops. Occurs on limestone substrate.	May-June greenish	Clark Mtn. Range, within 5 miles of project area (CNDDB 2007).
Astragalus cimae var. *cimae* Cima milk-vetch	P	-	-	-	1B.2	E Mojave Desert; from mountains east of Cima; New York, Ivanpah, Clark, Mescal and Marl mtns., Mid Hills, SBD; to NV.	GBScr, JTWld, PJWld	2,900-6,000 ft (875-1,825 m) Calcareous soils, mesas and stony hillsides; also in granite sand. Occurs on limestone substrate.	Apr-May (reddish-purple, white or pale-tipped)	Clark Mtn. Range, within 5 miles of project area (CNDDB 2007).
Astragalus nutans Providence Mountain milk-vetch	P	-	-	-	4.2	E Mojave Desert in Clark, New York, Providence, Granite and Old Dad mtns.; N Colorado Desert; IMP, RIV, SBD.	MDScr (MCBS), JTWld, PJWld, SDScr	1,500-6,500 ft (450-1,975 m) Sandy to rocky washes, canyon bottoms and foothill slopes. Thorne, Prigge and Henrickson (1981) report it from 1250-1925 m in the E Mojave Desert.	Mar-June (Oct) pink-purple	Clark Mtn. Range, within 5 miles of project area (Jepson Online Interchange 2007).
Astrolepis cochisensis ssp. *cochisensis* scaly cloak fern	P	-	-	-	2.3	E Mojave Desert; Providence, Clark, Ivanpah, and Mescal mtns., SBD; to AZ, northern Mexico.	JTWld, PJWld	3,200-5,500 ft (975-1,675m) Dry limestone slopes and crevices.	Apr-Oct none	Clark, Ivanpah, and Mescal mtns. 5-30 miles from project area (CNDDB 2007).

Table B-1. Special-status plants with potential to occur within the Ivanpah SEGS project area.

Scientific/ Common Name	Ann/ Per [1]	Rank or Status [2]				Distribution [3]	Habitat Types [4]	Elevational Range and Habitat Preferences	Flowering Period/ Color	Known Locations Nearest To Project Area
		FWS	DFG	BLM	CNPS					
Bouteloua eriopoda black grama grass	P	-	-	-	4.2	E Mojave Desert in CA, eastward through NV and AZ, to west TX and west OK, northern Mexico.	MDScr (MCBS), JTWld, PJWld	2,950-6,250 ft (900-1,900m) Sandy or gravelly washes, clayey flats, and rocky slopes. Thorne, Prigge and Henrickson (1981) report it from 1,220-1,830m in the Eastern Mojave.	May-Aug (Oct) greenish	Clark Mtn. Range, within 5 miles of project area (Thorne et al. 1981, Jepson Online Interchange 2007).
Bouteloua trifida red grama grass	P	-	-	-	2.3	Death Valley region and E Mojave Desert; Furnace Creek area, Kingston Range, Clark, New York and Providence mtns., INY, SBD; common from TX and northern Mexico to NM, AZ, UT and NV.	MDScr, PJWld	975-6,400 ft (300-1,950m) In CA, on rocky limestone slopes and ravines. Thorne, Prigge and Henrickson (1981) report it from 1,220-1,950m in the Eastern Mojave. Occurs on limestone substrate.	May-June (Sept) greenish	Clark Mtn. Range, within 5 miles of project area (Thorne et al. 1981, Jepson Online Interchange 2007).
Calochortus striatus alkali mariposa lily	P	-	-	S	1B.2	Southern Sierra Nevada near Weldon, KRN; Mojave Desert, Red Rock Cyn., Antelope Valley KRN, LAX; to N base San Gabriel and San Bernar-dino mtns., SBD; also TUL; and E to Ash Meadows, Las Vegas NV.	Chprl, ChScr, MDScr, Medws seeps	230-5,230 ft (70-1,595m) Alkaline meadows and springy places; low winter-wet subalkaline places in desert chenopod scrub.	Apr-Jun lavender with purple veins	Ash Meadows, Las Vegas, NV, > 40 miles N and NE of project area (CNDDB 2008).
Chamaesyce revoluta revolute spurge	SA	-	-	-	4.3	Mojave Desert, Providence, Clark, Ord, New York mtns., Mescal Range, SBD; Santa Rosa Mtns., RIV; SDG; AZ, NV, TX and elsewhere.	MDScr	3,300-9,300 ft (1,095-3,100m) Rocky sites.	Aug-Sept greenish	Clark Mtn. Range, n side Clark Mtn., about 7 miles W of project area (Jepson Online Interchange 2008).

Table B-1. Special-status plants with potential to occur within the Ivanpah SEGS project area.

Scientific/ Common Name	Ann/ Per [1]	Rank or Status [2]				Distribution [3]	Habitat Types [4]	Elevational Range and Habitat Preferences	Flowering Period/ Color	Known Locations Nearest To Project Area
		FWS	DFG	BLM	CNPS					
Cryptantha holoptera winged cryptantha	A (P)	-	-	-	4.3	Very scattered in the Colorado and eastern Mojave deserts of CA; IMP, INY, RIV, SBD, SDG, to western AZ.	SDScr, MDScr (MCBS)	400-2,600 ft (125-800m) Moist washes and gravelly or rocky slopes and ridges.	Mar-Apr white	About 70 miles SW of project area near Pisgah Crater (Jepson Online Interchange 2007).
Eriogonum bifurcatum forked buckwheat	A	-	-	S	1B.2	E Mojave Desert, Pahrump, Mesquite and Stewart valleys, eastern INY to Nye Co., southern NV.	ChScr, MDScr (MCBS)	2,500-2,600 ft (750-800m) In sand; sandy loam near sand dunes.	May-June white to reddish	Known from Mesquite Valley, E San Bernardino County, about 20 miles NE of project area (Jepson Online Interchange 2007).
Erioneuron pilosum hairy erioneuron	P	-	-	-	2.3	E Mojave, Clark, New York, Providence, Mescal mtns., SBD; INY; NV and elsewhere.	PJWld	4,500-6,030 ft (1,500-2,010m) Rocky slopes, ridges, sometimes on limestone.	May-Jun greenish	Clark Mtn. Range, near Colosseum Mine, about 4 miles W of project area (Jepson Online Interchange 2008).
Galium munzii Munz's bedstraw	P	-	-	-	4.3	Mojave Desert and southern Sierra Nevada, Providence, New York, Clark, Granite mtns., SBD; Chimney Creek Cyn, TUL; Inyo Mtns., INY; to southern UT.	GBScr, LCFrs, PJWld, UCFrs	3,300-10,000 ft (1,100-3,330m) Cool, n- or e-facing slopes, shady canyon bottoms.	May-Jul greenish	Clark Mtn. Range, Colosseum Gorge, about 5 miles W of project area (Jepson Online Interchange 2008).
Juncus nodosus knotted rush	P	-	-	-	2.3	Southern Sierra Nevada, White-Inyo Range, northern desert mts., Clark Mtns.; INY, SBD, STA, TUL; scattered across US, southern Canada.	Mesic Medws, seeps, MshSw	100-6,500 ft (30-1,980m) Streambanks, lake shores, wet meadows, and seeps.	July-Sept greenish	Clark Mtn. Range, Colosseum Gorge, about 5 miles W of project area (CNDDB 2007).

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Scientific/ Common Name	Ann/ Per [1]	Rank or Status [2]				Distribution [3]	Habitat Types [4]	Elevational Range and Habitat Preferences	Flowering Period/ Color	Known Locations Nearest To Project Area
		FWS	DFG	BLM	CNPS					
Linum puberulum plains flax	P	-	-	-	2.3	E Mojave Desert, New York, Clark, Castle mtns., SBD; AZ, NV, UT and elsewhere.	GBScr, JTWld, MDScr, PJWld	3,000-7,500 ft (1,000-2.500m)	May-July yellow	Clark Mtn. Range, near Colosseum Mine, about 5 miles W of project area (Jepson Online Interchange 2008).
Matelea parvifolia spearleaf	P	-	-	-	2.3	Mojave Desert near Kelso and several locations in the Colorado Desert; RIV, SBD, SDG; to TX.	MDScr, SDScr	In CA, 1,450-3,600 ft (440-1095 m) Dry rocky ledges and slopes.	Mar-May greenish or purple	Near Kelso, about 35 miles SSW of project area (CNDDB 2007).
Mentzelia polita polished blazing star	P	-	-	-	1B.2	E Mojave Desert, in CA known only from Clark Mtn. Range, SBD; NV.	MDScr	3,600-4,500 ft (1,200-1,500m) Rocky limestone and gypsum slopes.	May-Aug white to pale yellow	Clark Mtn. Range, near Keany Pass, about 6 miles W of project area (Jepson Online Interchange 2008).
Muhlenbergia appressa apressed muhly	A	-	-	-	2.2	Mojave Desert, Channel Islands; Providence, Ord mtns., SBD; LAX, SCM; AZ, Baja CA.	CoScr, MDScr, VFGrs	60-4,800 ft (20-1,600m) Open canyon bottoms and rocky slopes.	Apr-May greenish	Providence Mtns., about 40 miles S of project area (Jepson Online Interchange 2008).
Muhlenbergia arsenei tough muhly	P	-	-	-	2.3	E. Mojave Desert, Clark and New York mtns., SBD; AZ, NV, UT and elsewhere.	PJWld	4,200-5,580 ft (1,400-1,860m) Limestone rock outcrops, slopes.	Aug-Oct greenish	Clark Mtn. Range, S of Colosseum Mine, about 5 miles W of the project acre (Jepson Online Interchange 2008).
Opuntia basilaris var. *brachyclada* short-joint beavertail	P	-	-	S	1B.2	Endemic to CA. Desert slopes of San Gabriel and San Bernardino mtns. and in the Providence Mtns.; LAX, SBD.	Chprl, MDScr, JTWld, PJWld	1,400-5,900 ft (425-1800 m) Sandy soils.	Apr-June pink	Providence Mtns., at 3,000 ft, about 40 miles S of project area (CNDDB 2007).

Table B-1. Special-status plants with potential to occur within the Ivanpah SEGS project area.

Scientific/ Common Name	Ann/ Per [1]	Rank or Status [2]				Distribution [3]	Habitat Types [4]	Elevational Range and Habitat Preferences	Flowering Period/ Color	Known Locations Nearest To Project Area
		FWS	DFG	BLM	CNPS					
Pellaea truncata spiny cliff-brake	P	-	-	-	2.3	Mojave Desert, Colorado Desert, southern Sierra Nevada; Pinto Hills, New York, Mescal, Providence, Kingston Mtns., SBD; Panamint Mtns., INY; SDG; AZ, NV, UT and elsewhere.	PJWld	3,600-6,450 ft (1,200-2,150m) Volcanic or granitic rocky slopes.	No flowers (spore-bearing)	Mescal Range, about 6 miles SW of the project area (Jepson Online Interchange 2008).
Penstemon calcareus limestone beardtongue	P	-	-	-	1B.3	Death Valley region and E. Mojave Desert; Last Chance, Cottonwood, Panamint, Grapevine, and Providence mtns.; INY, SBD; to NV.	DCS in MDScr, JTWld, PJWld	3,500-7,800 ft (1060-2375m) Gravelly slopes and dry crevices in limestone; dry canyon sides. Occurs on limestone substrate.	Apr-May light rose to rose-purple	Providence Mtns., about 40 miles S of project area (CNDDB 2007).
Penstemon fruticiformis var. amargosae Death Valley beardtongue	P	-	-	S	1B.3	Death Valley region, Funeral, Argus, Avawatz, Grapevine Mtns., INY; Kingston Range, INY, SBD; to NV.	MDScr	2,800-5,335 ft (850-1,400 m) Rocky scree slopes and sandy or gravelly washes and drainages.	Apr-June purple and white	Kingston Range, about 35 miles NW of the project area (CNDDB 2007).
Penstemon stephensii Stephen's beardtongue	P	-	-	S	1B.3	E Mojave Desert, Nopah, Kingston, Providence, Old Dad, and Granite mtns., Mid Hills, INY, SBD.	MDScr, GBScr, PJWld	3,700-6,100 ft (1,125-1,850m) Gravelly to rocky slopes, crevices or cliffs; granite, limestone or dolomite. Occurs on limestone substrate.	Apr-Jun purple	Kingston Range, about 35 miles NW of project area, and Mid Hills, about 30 miles S of the project area (CNDDB 2007).
Penstemon utahensis Utah beardtongue	P	-	-	-	2.3	E Mojave Desert, New York, Providence, Kingston and Clark Mtn. ranges, INY, SBD; to AZ, UT.	ChScr, GBScr, MDScr, PJWld	3,500-8,200 ft (1,065-2,500m) Gravelly to rocky soils on slopes. Thorne, Prigge and Henrickson (1981) report it from 1,220-1,740m in the Eastern Mojave.	Apr-May pink	Clark Mtn. Range, near Colosseum Mine, about 5 miles W of the project area (CNDDB 2007).

Table B-1. Special-status plants with potential to occur within the Ivanpah SEGS project area.

Scientific/ Common Name	Ann/ Per [1]	Rank or Status [2]				Distribution [3]	Habitat Types [4]	Elevational Range and Habitat Preferences	Flowering Period/ Color	Known Locations Nearest To Project Area
		FWS	DFG	BLM	CNPS					
Phacelia parishii Parish's phacelia	A	-	-	S	1B.1	Mojave Desert, near Lucerne, Calico, and Coyote dry lakes, SBD; southern NV.	playas, MDScr (MCBS)	1,775-6,000 ft (550-1,825m) Alkaline playas and in NV also on barren alkali knolls in MDScr and JTWld.	Apr-Jul lavender with yellow tube	Coyote Dry Lake at Fort Irwin National Training Center, about 70 miles W of the project area (CNDDB 2007).
Piptatherum micranthum little-seed ricegrass	P	-	-	-	2.3	E Mojave Desert, Kingston and Clark mtn. ranges, SBD; White Mtns., INY, MNO: to Saskatchewan, North Dakota and NM.	UCFrs,DCS, PJWld	3,000-10,300 ft (900-3,150m) Rocky crevices, gravelly carbonate or granitic slopes and canyon bottoms. Occurs on limestone substrate.	Jun-Sept greenish	Curtis Canyon, 1.3 miles NE of Clark Mtn. summit, and about 7 miles W of project area (CNDDB 2007).
Selaginella leucobryoides Mojave spike-moss	P	-	-	-	4.3	Sierra Nevada, Mojave Desert, Panamint, Inyo mtns., INY; Providence Mtns., Kingston Range, SBD; Spring Mtns., NV.	MDScr, PJWld	2,000-7,500 ft (600-2,275m) Dolomite and limestone crevices and in shade among bolders. Occurs on limestone substrate.	No flowers (spore-bearing)	Kingston Range, about 25 miles W of project area (Jepson Online Interchange 2007).

Notes:

[1] A = annual, SA = summer annual, P = perennial herb, S = shrub

[2] Conservation status abbreviations:

U.S. Fish and Wildlife Service designations:

- FE Endangered: Any species in danger of extinction throughout all or a significant portion of its range.
- FT Threatened: Any species likely to become endangered within the foreseeable future.

California Department of Fish and Game designations:

- SE Endangered: Any species in danger of extinction throughout all or a significant portion of its range.
- ST Threatened: Any species likely to become endangered within the foreseeable future.
- SR Rare: Any species not currently threatened with extinction, but in such small numbers throughout its range that it may become endangered if its present environment worsens.

Bureau of Land Management designation:

- S Sensitive: species that are not federally or state-listed, but are designated by the BLM State Director for special management consideration.

California Native Plant Society designations:

- 1B Plants rare, threatened or endangered in California and elsewhere.
- 2 Plants rare, threatened or endangered in California, but more common elsewhere.

3 Plants for which more information is needed – a review list.
4 Plants of limited distribution – a watch list.

California Native Plant Society threat categories:
.1 Seriously endangered in California.
.2 Fairly endangered in California.
.3 Not very endangered in California.
.? Threat level not determined.

[3] Abbreviations used under distribution are: AZ=Arizona; CA=California; CO=Colorado; FRE=Fresno Co., CA; ID= Idaho; IMP=Imperial Co., CA; INY=Inyo Co., CA; KNG=Kings Co., CA; KRN=Kern Co., CA; LAS=Lassen Co., CA; LAX=Los Angeles Co., CA; MER=Merced Co., CA; MNO=Mono Co., CA; MOD - Modoc Co., CA; NM=New Mexico; NV=Nevada; OK=Oklahoma; OR=Oregon, PLU=Plumas Co., CA; RIV=Riverside Co., CA; SBD=San Bernardino Co., CA; SDG - San Diego Co., CA; SIS - Siskiyou Co., CA; SO=Sonora, Mexico; TUL=Tulare Co., CA; TX=Texas; UT=Utah; WA=Washinton; and WY=Wyoming.

[4] Habitat types reported for taxa in California. Designations largely follow the nomenclature developed by the California Natural Diversity Data Base (Holland, 1986) and abbreviations used in CNPS (2001). They include: BBS - blackbush scrub; BUFrs - broadleaf upland forests; Chprl - chaparral; ChScr - chenopod scrub; CmWld - cismontane woodland; DeDns - desert dunes; GBScr - Great Basin scrub; JTWld - Joshua tree woodland; MDScr - Mojavean Desert scrub (of which MCBS, Mojave creosote bush scrub, MMWS, Mojave mixed woody scrub, and DCS, desert calcicolous scrub are elements); Medws - meadows; MshSw - marshes and swamps; PJWld - pinyon-juniper woodland; RpFrs - riparian forest; SCFrs - subalpine conifer forest; SDScr - Sonoran desert scrub; UCFrs - upper montane coniferous forest and VFGrs - valley and foothill grasslands.

Appendix C.

Ivanpah SEGS: Botanical Resources Field Personnel

TABLE C
Ivanpah Staffing Table

Name	4/03/2008	4/04/2008	4/05/2008	4/06/2008	4/07/2008	4/08/2008	4/09/2008	4/10/2008	4/11/2008	4/12/2008	4/13/2008	4/14/2008	4/15/2008	4/16/2008	4/17/2008	4/18/2008	4/20/2008	4/21/2008	4/22/2008
Andy Sanders	x	x/T																	
Ann Howald	x	x	x	x	x	T							T	x	x	x	T	x	
Ava Edens											T	x	x	x	x	x	T	x	x
Bill Clark	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		T	x	x
Brian Elliott	x	x	x	x	x	x	x	x	x	x	x		x	x	x/T				
Christine Halley	x	x/T				T	x	x	x	x	x	x	x	x	x	T			
Darina Roediger	x/T					T	x	x	x	x	x	x	x	x	x		T	x	x/T
Donna Ball	x	x	x	x	T														
Eliza Shepard	x/T					T	x	x	x	x	x	x	x	x	x	T			
Eve Laeger	x/T				T	x	x	x	x	x	x	x	T						
Florence Caplow							T	x	x	x	x	x	x	x					
Geof Spaulding									x	x									
Jason (Jay) Sexton							T	x	x	x	x	x	x	T					
Jason Brooks								T	x	x	x	x	x	x	x				
Jeanne Knox	x	T																	
Jeff Baubiltz	x	x	x	x	x	x	x	x	x	x	x	x	x	T					
Jeff Davis			T	x	x	x	x	x	x	T									
Jim Andre					x/T	x/T													
Josh Utter	x	x	x	x	x	x	x	x	T										
Kathryn (Katy) Beck						T	x	x	x	x	x	x	T						
Kevin Downing	x	x	x	x	x	x	x	x	x/T									T	x
Liz Bartelt					T	x	x	x	x	x	x	x	x	T					
Marc Meyer	x	x	x	x	T						T	x	x	x	x				
Mariah Moser	x/T					T	x	x	x	x	x	x	x	x	x				
Mark Bagley			T	x	x	x	x	T		T	x	x	x	x	x				
Meghan Bishop	x/T					T	x	x	x	x	x	x	x	x	x/T				
Mitch Provance	x/T																		

TABLE C
Ivanpah Staffing Table

Name	4/03/2008	4/04/2008	4/05/2008	4/06/2008	4/07/2008	4/08/2008	4/09/2008	4/10/2008	4/11/2008	4/12/2008	4/13/2008	4/14/2008	4/15/2008	4/16/2008	4/17/2008	4/18/2008	4/20/2008	4/21/2008	4/22/2008
Molly Graber	x/T					T	x	x	x	x	x	x	x	T					
Morgan King			x	x	x	x	x	x	x	x			x	x	x				
Randy Sisk	x	x	x	x	x	x	x	T			T	x	x	T					
Robert Hernandez	x	x	x	x	x	x/T						x/T	x	x	x		T	x	x
Russell Kokx						T	x	x	x	x	x	x	x	T					
Ryan Young	x	x/T				T	x	x	x	x	x	x	x	x	x	T			
Steve Ingram	x	T			T	x	x	x	x	T									
Susan Infalt				T	x	x	x	x	x	x	x	T							
Teresa Salvato	x	x/T																	
Victor Leighton III	x	x/T			x/T	x	x	x	x/T										
Virginia Dains	x	x	x	x	x	x	T												
Total	**25**	**18**	**14**	**15**	**20**	**27**	**26**	**26**	**25**	**23**	**22**	**22**	**24**	**22**	**15**	**5**	**5**	**6**	**5**
Total not incl T	**25**	**16**	**12**	**14**	**15**	**17**	**23**	**23**	**24**	**20**	**19**	**21**	**21**	**16**	**15**	**2**	**0**	**5**	**5**

Note: Total number of person-days used in report (283) includes only x (staff worked an average 10 hour workday) and x/T (full workday and travel), and does not include T (travel only).

Appendix D:

Ivanpah SEGS: Photos of Special-status Plants

Photo 1: Clark Mountain agave (*Agave utahensis* var. *nevadensis*) at reference site near Umberci Mine, Clark Mountain Range, 2007.

Photo 2: Small-flowered androstephium (*Androstephium breviflorum*), in fruit, at the project site, 2008.

Photo 3: Mojave milkweed (*Asclepias nyctaginifolia*) at reference site, 2008 (photo by Jim Andre).

Photo 4: Desert pincushion (*Coryphantha chlorantha*) at the project site, 2007.

Photo 5: Utah vine milkweed (*Cynanchum utahense*) in the project area, 2007.

Photo 6: Nine-awned pappus grass (*Enneapogon desvauxii*) in the project area, 2008.

Photo 7: Utah mortonia (*Mortonia utahensis*) in the project area, 2008.

Photo 8: Cave-dwelling evening-primrose (*Oenothera cavernae*) at site in California near project area, 2007, whole plant (left), fruit (right). Photo by Jim Andre.

Photo 9: Rosy two-toned beardtongue (*Penstemon bicolor*) at reference site near Jean, Nevada, 2008.

Photo 10: Palmer's beardtongue (*Penstemon palmeri*), a common species with leaves indistinguishable from rosy two-toned beardtongue (photo by Jim Andre).

Photo 11: Rusby's desert mallow (*Sphaeralcea rusbyi* ssp. *eremicola*) at the Keany Pass reference site, 2007.

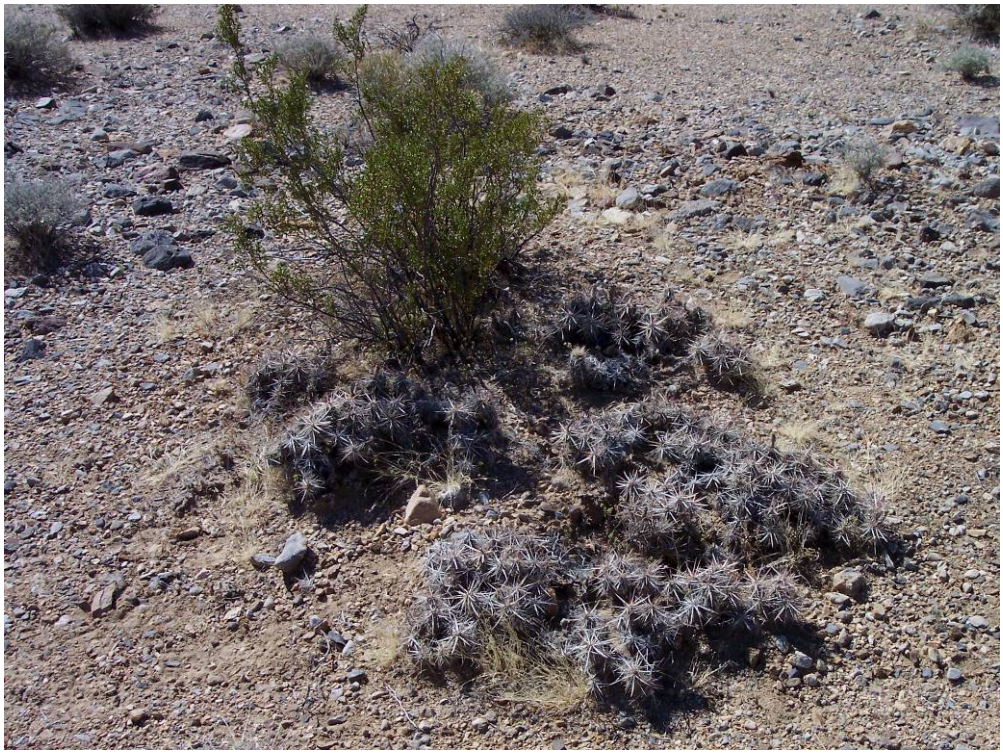

Photo 12: Parish's club cholla (*Grusonia (=Opuntia) parishii*) at the project site, 2008.

Appendix E
Vegetation types and distribution within the Ivanpah SEGS project area

Mojave Creosote Bush Scrub

Mojave Creosote Bush Scrub is the predominant vegetation type of the valleys, alluvial fans (bajadas) and lower mountain slopes of the Mojave Desert. This type corresponds to the Holland type of the same name (Holland 1986) and may correspond to one or more of the Creosote Bush, Creosote Bush-White Bursage, or Black Bush series of *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995). This type may include one or more of the following shrub alliances (Thomas et al. 2004): *Larrea tridentata* Shrubland Alliance, *Larrea tridentata-Ambrosia dumosa* Shrubland Alliance, *Yucca schidigera* Shrubland Alliance, *Coleogyne ramosissima* Shrubland Alliance, *Ephedra nevadensis* Shrubland Alliance, *Menodora spinescens* Shrubland Alliance, and *Mortonia utahensis* Unique Stand.

According to Holland (1986), Mojave Creosote Bush Scrub is composed of widely spaced evergreen and drought-deciduous shrubs, cacti and yucca, from 1 to 9 feet in height. Creosote bush (*Larrea tridentata*) is the dominant species and the indicator species for this vegetation type. Burrobush (*Ambrosia dumosa*, sometimes called white bursage), cheesebush (*Hymenoclea salsola*), Nevada ephedra (*Ephedra nevadensis*) and Mojave yucca (*Yucca schidigera*) are common associates throughout the range of this type. The habitat is characterized by well-drained non-alkaline and non-saline sandy to gravelly soils with very low water-holding capacity, and temperatures ranging from below 32º F in winter to above 100º F in summer (Holland 1986). Annual precipitation in most locations is less than 5-7 inches. The growing season for plants is late spring (April to early June). Perennials and shrubs grow and flower even in dry years. Wet years result in a longer growing season, with more biomass production by perennials and shrubs, and the presence of annuals that are often completely lacking in dry years. Mojave Creosote Bush Scrub extends from Death Valley (Inyo County) south throughout the Mojave Desert to the San Bernardino Mountains, and east to southern Nevada and northwestern Arizona (Holland 1986).

Within the project area, Mojave Creosote Bush Scrub occurs as four subtypes. The following three intergrade: Larrea-Ambrosia scrub, Larrea mixed scrub, and Larrea scrub. Larrea-Ambrosia scrub is widespread throughout the project area. Larrea mixed scrub is restricted mainly to the higher sections of the alluvial fan, especially in the north and west parts of the project area. Larrea scrub is restricted to a single topographic feature, the Metamorphic Hill. These subtypes differ mainly in density and species diversity of shrubs and cacti. An additional subtype, a species-rich, limestone-associated type of Larrea scrub, is restricted to limestone features.

Larrea-Ambrosia scrub

The Larrea-Ambrosia scrub subtype, which is dominated by creosote bush and burrobush, is the most widespread and abundant vegetation type within the project area. A rough estimate based on observations in the field, and visual examination of high resolution aerial photos (scale 1" = 500') indicates that about 90 to 95 percent of the project area, using 2008 boundaries and not including the one-mile buffer, is covered with Larrea-Ambrosia scrub. Within this subtype, there is considerable variation in shrub and cactus species diversity and density, and Mojave yucca density. Most of the special-status plant locations found within the project area during surveys conducted for this project in 2008 and 2007 were found within Larrea-Ambrosia scrub.

In the sites with highest species diversity, creosote bush and burrobush dominate, and common shrub associates include: Nevada ephedra, Mojave yucca, cheesebush, pima ratany (*Krameria erecta*), and Mojave Desert California buckwheat (*Eriogonum fasciculatum* ssp. *polifolium*). Cacti found in high diversity sites include: California barrel cactus (*Ferocactus cylindraceus* var. *lecontei*), clustered barrel cactus (*Echinocactus polycephalus* var. *polycephalus*), Engelmann's hedgehog cactus (*Echinocereus engelmannii*), silver cholla (*Opuntia echinocarpa*), buckhorn cholla (*Opuntia acanthocarpa* var. *coloradensis*), pencil cholla (*Opuntia ramosissima*) and beavertail cactus (*Opuntia basilaris* var. *basilaris*).

In the sites with lowest species diversity, creosote bush and burrobush dominate, with cheesebush, Nevada ephedra, pima ratany and Mojave Desert California buckwheat present in much lower abundance. Cacti in low diversity sites range from none to very low numbers of individuals, of the same species found in high diversity sites. Areas of low diversity Larrea-Ambrosia scrub are characteristic of the low elevation southern and eastern portions of the project area.

The vegetation of small washes (active channels 1-3 feet wide) is included within this subtype. These washes lack distinctive wash plant species entirely or are characterized by a higher density of cheesebush than found in adjacent areas upslope. In some small washes, Mojave Desert California buckwheat and pima ratany occur in higher densities than in adjacent uplands. Washes dominated by cheesebush are referred to as *cheesebush washes* in this report.

Larrea mixed scrub

The Larrea mixed scrub subtype, characterized by a high density and diversity of codominant shrubs in addition to creosote bush and burrobush, is best-developed in the western and northern, higher elevation, portions of the project area, in Ivanpah 3 and the utility corridor. A rough estimate, based on field observations and a comparison of

color signature differences in high resolution aerial photographs (scale 1" = 500') for Larrea-Ambrosia scrub and Larrea mixed scrub, suggests that 5 to 10 percent of the entire project area, using 2008 boundaries and not including the one-mile buffer, is composed of Larrea mixed scrub. Within this subtype, creosote bush and burrobush are present but not dominant, and shrub and cactus density and diversity is consistently higher than in Larrea-Ambrosia scrub. Mojave yucca density is typically moderately high to high, as high as or higher than that found within the high density and diversity form of Larrea-Ambrosia scrub.

In Larrea mixed scrub, creosote bush and especially burrobush are less important as dominants, compared with Larrea-Ambrosia scrub. Many other shrub species co-dominate in Larrea mixed scrub, including: cheesebush, Mojave yucca, Mojave Desert California buckwheat, pima ratany, Nevada ephedra, blue sage (*Salvia dorrii*), spiny menodora (*Menodora spinescens*), blackbush (*Coleogyne ramosissima*), and, to a lesser degree, Virgin River brittlebush (*Encelia virginensis*), wire-lettuce (*Stephanomeria pauciflora* var. *pauciflora*), Cooper's goldenbush (*Ericameria cooperi* var. *cooperi*), and Death Valley ephedra (*Ephedra funerea*). A few of these also are co-dominants in Mojave Wash Scrub.

Larrea scrub

The Larrea scrub subtype, characterized by the presence of creosote bush and the absence of or very low density of burrobush, moderately high diversity of other shrub species, and high density of some cactus species, is restricted to some sites on the Metamorphic Hill and is found only within the one-mile buffer, not within the 2008 project area boundaries. This type is found on rocky slopes with southern, northern or eastern exposures. Creosote bush is the dominant shrub in this subtype. Co-occurring shrubs and cacti include: California barrel cactus, clustered barrel cactus, California brickellbush (*Brickellia cf. californica*), and spearleaf brickellbush (*Brickellia arguta* var. *arguta*).

Limestone-associated Larrea scrub

A distinctive species-rich form of Larrea scrub occurs on all of the limestone hills, slopes and ridges of the project area. This subtype is not found within the 2008 project area boundaries, only within the one-mile buffer. This subtype is distinct from the vegetation of the limestone pavement plain at the base of the northern foothills of the Clark Mountain Range, which is a different vegetation type: Mojave Yucca – Nevada Ephedra Scrub. Creosote bush is common in the limestone-associated Larrea scrub subtype of Mojave Creosote Bush Scrub; however, the distinctive features of this subtype are high species diversity and the presence of a number of limestone endemic and limestone-

associated plant species. Special-status plant diversity and density are higher within this subtype than for any other vegetation type within the project area. Habitat factors include steeply sloping or ridgetop terrain, a substrate composed mainly of limestone bedrock with a wind and water-eroded surface riddled with cracks, and a calcium-rich mineral composition. The vegetation is 3 to 6 feet in height, and is composed of a diverse mixture of shrubs, cacti, yucca, and herbaceous perennial forbs and grasses, with annual forbs and grasses abundant in wet years such as 2008.

In addition to creosote bush, the dominant shrubs of this subtype include: sticky snakeweed (*Gutierrezia microcephala*), catclaw acacia (*Acacia greggii*), Mojave Desert California buckwheat, pima ratany, turpentine-broom (*Thamnosma montana*), winterfat (*Krascheninnikovia lanata*), spear-leaf brickellbush, California brickellbush, blue sage, Nevada ephedra, Cooper's boxthorn (*Lycium cooperi*), and Virgin River brittlebush. Characteristic cacti include: California barrel cactus, clustered barrel cactus, Engelmann's hedgehog cactus, and the special-status cactus, desert pincushion. Limestone endemic and limestone-associated plants found here include: Panamint butterfly bush (*Buddleja utahensis*), Heermann's buckwheat (*Eriogonum heermannii* var. *sulcatum*), and the special-status shrub Utah mortonia (*Mortonia utahensis*). Other plants observed in limestone-associated Larrea scrub, but not seen elsewhere, include: Parry's cloak fern (*Cheilanthes parryi*), desert tobacco (*Nicotiana obtusifolia*), rock nettle (*Eucnide urens*), Mojave thistle (*Cirsium mojavense*), skunkbrush (*Rhus trilobata*), purple three-awn (*Aristida purpurea*), and six-weeks three-awn (*Aristida adscensionis*). Species composition within the limestone-associated Larrea scrub varies between limestone features.

Mojave Yucca – Nevada Ephedra Scrub

Within the 2008 project area boundaries, Mojave Yucca – Nevada Ephedra Scrub extends into the northernmost part of the utility corridor. It covers less than 1 percent of the project area. It also is found in a small area of limestone-dominated pavement plain on the northern edge of the one-mile buffer. This vegetation type may correspond to the Mojave Yucca Scrub and Steppe type, which is named but not described by Holland (1986). It also may correspond to the Mojave Yucca series of Sawyer and Keeler-Wolf (1995). One or more of the following shrub alliances (Thomas et al. 2004) may be included in this type: *Ephedra nevadensis* Shrubland Alliance, *Yucca schidigera* Shrubland Alliance, and *Mortonia utahensis* Unique Stand.

The dominant plants are Mojave yucca and Nevada ephedra, which form a moderately dense plant cover from 3 to 6 feet in height. Creosote bush and burrobush are almost entirely lacking. Indicator species include gray coldenia (*Tiquilia canescens* var. *canescens*), which can occur on limestone, granite or gneiss, and Utah mortonia, a limestone endemic and special-status plant. Spiny menodora and Engelmann's hedgehog cactus are also relatively common. This vegetation type was found only on a

flat to very gradually sloping plain covered with desert pavement composed almost entirely of flat-surfaced limestone rocks. This area is located at the base of the limestone foothills of the northeastern Clark Mountain Range, which extend into the northern edge of the one-mile buffer. The limestone plain is dissected by a few small- to medium-sized ephemeral wash drainage features. Utah mortonia is especially common along the margins of these washes. The special-status cactus, desert pincushion, is found in higher densities in this type than in Mojave Creosote Bush Scrub.

Mojave Wash Scrub

Mojave Wash Scrub is a shrub-dominated vegetation type found in larger washes, arroyos and canyons throughout the Mojave Desert. It covers approximately 5 percent of the project area. This type corresponds to the Holland vegetation type of the same name (Holland 1986) and may correspond to the Catclaw Acacia series in *A Manual of California Vegetation* (Sawyer and Keeler-Wolf 1995). One or more of the following alliances may be included in this type: *Acacia greggii* Shrubland Alliance, *Chilopsis linearis* Intermittently Flooded Shrubland Alliance, *Encelia virginensis* Shrubland Alliance, *Ericameria (=Chrysothamnus paniculatus) paniculata* Intermittently Flooded Shrubland Alliance, *Eriogonum fasciculatum* Shrubland Alliance, *Hymenoclea salsola* Shrubland Alliance, *Prunus fasciculata* Shrubland Alliance, *Salazaria mexicana* Shrubland Alliance, and *Salvia dorrii* Dwarf-shrubland Alliance (Thomas et al. 2004).

The dominant shrubs are mainly drought-deciduous and range from 1 to 12 feet in height. According to Holland, dominant species include: catclaw acacia (*Acacia greggii*), desert-willow (*Chilopsis linearis*), cheesebush, pygmy-cedar (*Peucephyllum schottii*), black-banded rabbitbrush (*Chrysothamnus paniculatus*), mesquite (*Prosopis* species), desert almond (*Prunus fasciculata*), bladder sage (*Salazaria mexicana*), and blue sage. Perennial herbs are regular components of this vegetation type. Annual herbs may be present in high density and diversity during wet years and after localized flood events.

The habitat of Mojave Wash Scrub is characterized by well-drained sandy and gravelly to cobbled or boulder-strewn substrates, highly seasonal and intermittent stream flow that includes irregular floods, and temperatures ranging from below 32º F in winter to above 100º F in summer. The growing season for plants is less dependent on annual precipitation than in upland vegetation types because many shrubs of Mojave Wash Scrub are deep-rooted and use groundwater as well as surface flow. In general, the period of active growth and flowering begins somewhat later than for upland plants. Mojave Wash Scrub extends throughout the Mojave Desert region (Holland 1986).

Within the project area, Mojave Wash Scrub occupies the larger washes, which are drainage features typically with bank-to-bank widths greater than 15 feet (often much wider), with active channels more than 5 feet wide, banks more than 3 feet high, and

sandy to gravelly bottoms. These washes usually contain catclaw acacia as an indicator species, although the size and density of this shrub varies within large washes of the project area. Other characteristic species include: cheesebush, Mojave Desert California Buckwheat, desert willow, black-banded rabbitbrush, bladder-sage, desert almond, Virgin River encelia, Anderson's boxthorn (*Lycium andersonii*), Cooper's boxthorn, sand-wash groundsel (*Senecio flaccidus* var. *monoensis*), wire-lettuce and blue sage.

Appendix F
Ivanpah SEGS: Plant species observed within sites where project features are proposed

Plant species observed within the Ivanpah SEGS project area during the 2007 and 2008 botanical surveys (1-mile buffer not included).
Nomenclature from Baldwin et al., Editors, 2002, The Jepson desert manual, UC Press.

Plant Group / Family / Species [1]	Common Name	Solar Array Sites [2] MCBS	Solar Array Sites [2] MWS	Other Project Areas [3] Main Access Road	Other Project Areas [3] Utility Corridor	Other Project Areas [3] CLA	Other Project Areas [3] North BLM Acc Rd	Other Project Areas [3] Mining Claim Acc Rd	Rocky Hills [4] Lime-stone	Rocky Hills [4] Meta-morphic	Habit
Ferns											
Pteridaceae	Brake Family										
Cheilanthes parryi	Parry's cloak fern								o		fern
Gymnosperms (Conifers)											
Ephedraceae	Ephedra Family										
Ephedra nevadensis	Nevada ephedra	1,2,3	3		x	x	x	x	x o	x	shrub
Ephedra funerea	Death Valley ephedra	1,2,3			x				x o		shrub
Dicot Angiosperms (Flowering Plants)											
Amaranthaceae	Amaranth Family										
d Amaranthus fimbriatus	fringed amaranth	1,2,3	3	x	x	x	x				annual
Apocynaceae	Dogbane Family										
Amsonia tomentosa	woolly amsonia	1, 3	3		x	x	x				per
Asclepiadaceae	Milkweed Family										
Asclepias nyctaginifolia	Mojave milkweed	1,2,3	3		x	x					per
Cynanchum utahense	Utah vine milkweed	1,2,3	3								per
Asteraceae	Sunflower Family										
Acamptopappus sphaerocephalus	goldenhead	1,2,3			x	x	x				shrub
Adenophyllum cooperi	Cooper's dyssodia	1,2,3			x	x	x				per
Ambrosia dumosa	burrobush	1,2,3	3	x	x	x	x	x	x o	xo	shrub
Ambrosia eriocentra	woolly bursage	3	3		x		x				shrub
Amphipappus fremontii var. *spinosus*	Fremont's chaff-bush	1									shrub
Anisocoma acaulis	scale bud	2									annual
Baccharis brachyphylla	short-leaved baccharis	3									shrub
Baileya multiradiata var. *m.*	desert marigold	1, 3			x		x				annual
Bailey pleniradiata	woolly marigold	1,2,3		x		x					annual
Bebbia juncea var. *aspera*	sweetbush	1,2	3								shrub
Brickellia arguta var. *a.*	spearleaf brickellbush	3							o	o	shrub
Brickellia cf. *californica*	California brickellbush	3							o	o	shrub
Brickellia incana	woolly brickellbush	1, 2		x			x				shrub
Calycoseris parryi	yellow tack-stem	2									annual
Chaenactis carphoclinia	pebble pincushion	1,2,3			x	x	x				annual
Chaenactis fremontii	desert pincushion	1,2,3		x	x	x	x				annual
Chaenactis macrantha	Mojave pincushion	3									annual
Chaenactis stevioides	gray-leaved pincushion	2,3			x	x	x				annual
Chrysothamnus paniculatus	black-banded rabbitbrush	1,2,3	3	x	x		x				shrub

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Plant Group / Family / Species [1]	Common Name	Solar Array Sites [2] MCBS	MWS	Other Project Areas [3] Main Access Road	Utility Corridor	CLA	North BLM Acc Rd	Mining Claim Acc Rd	Rocky Hills [4] Lime-stone	Meta-morphic	Habit
Cirsium cf. mohavense	Mojave thistle	1,2									annual
Coleogyne ramosissima	blackbush	3			x		x				shrub
# *Encelia farinosa*	brittlebush	3			x						shrub
Encelia frutescens	rayless encelia	2									shrub
Encelia virginensis	Virgin River brittlebush	1,2,3	3		x	x	x		x o		shrub
Ericameria cooperi var. *c.*	Cooper's goldenbush	1,2,3		x	x				x		shrub
Eriophyllum wallacei	Wallace's woolly daisy	1,2,3		x	x	x	x	x			annual
Filago depressa	spreading filago	1,2,3					x				annual
Glyptopleura marginata	holly dandelion	2									annual
Gutierrezia microcephala	sticky snakeweed	2,3							x o		shrub
Hymenoclea salsola	cheesebush	1,2,3	3	x	x	x	x	x	x		shrub
Layia glandulosa	white tidy-tips	2,3			x						annual
Malacothrix glabrata	desert dandelion	1,2,3		x	x	x					annual
Monoptilon bellidiforme	small desert star	1,2,3									annual
Monoptilon bellioides	desert star	1,2,3			x		x				annual
d *Pectis papposa*	chinch-weed	1,2,3				x					annual
Porophyllum gracile	slender poreleaf	1,2,3	3		x	x	x	x	x	x	per
Psilostrophe cooperi	paper-daisy	1,3	3		x		x				sub-shrub
Rafinesquia neomexicana	desert chicory	1,2,3			x	x	x				annual
Senecio flaccidus var. *monoensis*	sand-wash groundsel	1,2,3	3		x	x	x				sub-shrub
Sonchus sp.	sow thistle	2									
Stephanomeria exigua	small wirelettuce	1,2,3									annual
Stephanomeria pauciflora var. *p.*	wire-lettuce	1,2,3	3	x	x	x	x		o	x	per
Stylocline micropoides	desert nest-straw	1,2,3			x		x				annual
Thymophylla pentachaeta	thymophylla	1,2,3	3		x	x	x				per
Uropappus lindleyi	silver puffs	3			x						annual
Viguiera parishii	Parish's golden-eye	1,2,3			x						shrub
Xylorhiza tortifolia	Mojave aster	3			x		x			x	per
Bignoniaceae	Bignonia Family										
Chilopsis linearis	desert-willow		3		x		x				shrub/ tree
Boraginaceae	Borage Family										
Amsinckia tessellata	checker fiddleneck	1,2,3			x	x	x				annual
Cryptantha angustifolia	narrow-leaved cryptantha	1,2,3		x	x	x	x				annual
d *Cryptantha* sp.	cryptantha	1,2,3							o	o	annual
Cryptantha sp. 1	cryptantha									o	annual
Cryptantha barbigera	fuzzy cryptantha	2,3									annual
Cryptantha circumscissa	capped cryptantha	1,2,3					x				annual

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Plant Group / Family / Species [1]	Common Name	Solar Array Sites [2]		Other Project Areas [3]					Rocky Hills [4]		
		MCBS	MWS	Main Access Road	Utility Corridor	CLA	North BLM Acc Rd	Mining Claim Acc Rd	Lime-stone	Meta-morphic	Habit
Cryptantha decipiens	gravel cryptantha	1									annual
Cryptantha dumetorum	flexuous cryptantha	1,2,3	2		x	x					annual
Cryptantha micrantha ssp. *m.*	purple-rooted cryptantha	1,2,3		x		x					annual
Cryptantha nevadensis	Nevada cryptantha	1,2,3		x	x	x	x				annual
Cryptantha pterocarya	wing-nut cryptantha	1,2,3			x	x	x				annual
Cryptantha recurvata	curved cryptantha	1,3									annual
Cryptantha utahensis	Utah cryptantha	1,2,3			x		x				annual
Pectocarya heterocarpa	wing-nutted combseed	1,2,3		x	x	x	x				annual
Pectocarya platycarpa	broad-fruited combseed	1,2,3		x		x	x				annual
Pectocarya recurvata	curved combseed	3									annual
Pectocarya setosa	round combseed	1,3									annual
Plagiobothrys arizonicus	Arizona popcorn-flower	3									annual
Plagiobothrys jonesii	Jones's popcorn-flower	2		x							annual
Tiquilia canescens var. *c.*	gray coldenia	3			x	x	x				sub-shrub
Brassicaceae	Mustard Family										
* *Brassica tournefortii*	Saharan mustard	3			x						annual
Caulanthus cooperi	Cooper's jewelflower	1,2,3			x	x	x				annual
Descurainia pinnata ssp. *glabra*	tansy mustard	1,2,3		x	x	x	x				annual
Dithyrea californica	spectacle-pod	1,2,3		x		x					annual
Draba cuneifolia	desert draba	1,2									annual
Guillenia lasiophylla	California mustard	1,2,3		x		x					annual
Lepidium fremontii	desert alyssum	1,2,3	3	x	x	x	x				sub-shrub
Lepidium lasiocarpum var. *l.*	modest peppergrass	1,2,3		x	x	x	x				annual
* *Sisymbrium irio*	London rocket	2		x							annual
Streptanthella longirostris	long-beaked twist flower	1,2,3		x		x					annual
Thysanocarpus curvipes	fringe-pod	3				x					annual
Buddlejaceae	Buddleja Family										
Buddleja utahensis	Panamint butterfly bush								o		shrub
Cactaceae	Cactus Family										
Coryphantha chlorantha	desert pincushion	1, 2, 3			x	x	x	x			shrub
Echinocactus polycephalus var. *p.*	clustered barrel cactus	1, 2, 3			x	x	x		x o	o	shrub
Echinocereus engelmannii	hedgehog cactus	1, 2, 3			x	x	x		x o	xo	shrub
Ferocactus cylindraceus var. *lecontei*	California barrel cactus	1, 2, 3	3		x	x	x		o	xo	shrub
Grusonia (=Opuntia) parishii	Parish's club cholla	1, 3				x					shrub

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Mammillaria tetrancistra	fish-hook cactus	1, 2, 3			x	x	x				shrub
Opuntia acanthocarpa var. *coloradensis*	buckhorn cholla	1, 2, 3	3	x	x	x	x		x o	xo	shrub
Opuntia basilaris var. *b.*	beavertail cactus	1, 2, 3		x	x	x	x		x		shrub
Opuntia chlorotica	pancake prickly-pear	3					x				shrub
Opuntia echinocarpa	silver cholla	1, 2, 3		x	x	x	x		x	xo	shrub
Opuntia echinocarpa X *O. ramosissima*	hybrid silver X pencil cholla	3									shrub
Opuntia erinacea	Mojave prickly-pear	2, 3			x						shrub
Opuntia ramosissima	pencil cholla	1, 2, 3	3	x	x	x	x		x o		shrub
Campanulaceae	Bellflower Family										
Nemacladus glanduliferus	glandular thread-plant	1,2,3									annual
Nemacladus cf. gracilis	slender thread-plant	3									annual
Nemacladus cf. rubescens	yellow-flowered thread-plant	2									annual
Nemacladus sp. nov.	thread-plant	3									annual
Nemacladus sp.	thread-plant				x						annual
Celastraceae	Staff-tree Family										
Mortonia utahensis	Utah mortonia				x						shrub
Chenopodiaceae	Goosefoot Family										
Atriplex canescens ssp. *c.*	fourwing saltbush	3									shrub
Atriplex polycarpa	cattle spinach	2									shrub
Grayia spinosa	hop-sage	1,2									shrub
Krascheninnikovia lanata	winterfat	3									shrub
* *Salsola* sp.	Russian thistle			x							annual
Cuscutaceae	Dodder Family										
Cuscuta cf. californica	California dodder	1,2				x					parasitic
Euphorbiaceae	Spurge Family										
Chamaesyce albomarginata	rattlesnake weed	1,2,3	3	x	x	x	x				per
Chamaesyce micromera	Sonoran sand-mat	1,2				x					annual
d *Chamaesyce polycarpa*	golondrina	1,2									annual
Chamaesyce setiloba	Yuma spurge	1,2			x		x				annual
Fabaceae	Legume Family										
Acacia greggii	catclaw acacia	1,2,3	3		x	x	x		o		shrub
Astragalus acutirostris	keel-beak milk-vetch	3									annual
Astragalus lentiginosus var. *fremontii*	freckled milk-vetch	1,2,3				x					per
Astragalus nuttallianus var. *imperfectus*	Nuttall's milk-vetch	1,2,3									annual
Dalea mollisima	silk dalea	1,2,3		x	x	x	x				annual

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Plant Group / Family / Species [1]	Common Name	Solar Array Sites [2]		Other Project Areas [3]					Rocky Hills [4]		
		MCBS	MWS	Main Access Road	Utility Corridor	CLA	North BLM Acc Rd	Mining Claim Acc Rd	Lime-stone	Meta-morphic	Habit
Lotus strigosus var. *tomentellus*	stiff-haired lotus	1,2,3				x					annual
Lupinus brevicaulis	short-stemmed blue lupine	3					x				annual
Lupinus concinnus	bajada lupine	1,2,3				x					annual
Lupinus flavoculatus	yellow-eyed lupine	2									annual
Lupinus odoratus	royal desert lupine	3									annual
Geraniaceae	Geranium Family										
* *Erodium cicutarium*	red-stemmed filaree	1,2,3		x	x	x	x				annual
Hydrophyllaceae	Waterleaf Family										
Eucrypta micrantha	desert eucrypta	1,2,3				x					annual
Nama demissum	purple mat	1,2,3									annual
Phacelia crenulata var. *ambigua*	purple phacelia	1,2,3		x	x	x	x				annual
Phacelia distans	common phacelia	2,3									annual
Phacelia fremontii	yellow-throats	1,2,3		x	x	x	x				annual
Phacelia perityloides	cliff phacelia								o		per
Phacelia rotundifolia	round-leaved phacelia								o		annual
Phacelia vallis-mortae	Death Valley phacelia	3			x		x				annual
Krameriaceae	Rhatany Family										
Krameria erecta	pima ratany	1,2,3		x	x	x	x		x o	xo	shrub
Lamiaceae	Mint Family										
Salvia columbariae	chia	1,2,3	3		x	x	x				annual
Salazaria mexicana	Mexican bladder sage	1,2,3	3		x	x	x		x o		shrub
Salvia dorrii	blue sage	1,2,3	3		x	x	x		x o		shrub
Loasaceae	Sandpaper-plant Family										
Eucnide urens	rock nettle								o		shrub
Mentzelia cf albicaulis	little blazing star	1,2,3		x	x	x	x				annual
Petalonyx thurberi ssp. *t.*	Thurber's sandpaper plant	2, 3	3				x				shrub
Malvaceae	Mallow Family										
Sphaeralcea ambigua	apricot mallow	1,2,3		x	x		x				per
Sphaeralcea rusbyi var. *eremicola*	Rusby's desert mallow	1,2,3			x						per
Molluginaceae	Carpet-weed Family										
d *Mollugo cerviana*	carpet-weed	1,2									annual
Nyctaginaceae	Four O'clock Family										
Allionia incarnata	windmills	1,2,3			x	x	x				per
d *Boerhavia triquetra*	slender spiderling	2									annual
d *Boerhavia wrightii*	Wright's spiderling	2,3		x	x	x	x				annual
Mirabilis bigelovii	wishbone bush	1,2,3					x				per

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Plant Group / Family / Species [1]	Common Name	Solar Array Sites [2]		Other Project Areas [3]					Rocky Hills [4]		
		MCBS	MWS	Main Access Road	Utility Corridor	CLA	North BLM Acc Rd	Mining Claim Acc Rd	Lime-stone	Meta-morphic	Habit
Mirabilis multiflora	giant four-o'clock	1,2,3				x	x				per
Oleaceae	Olive Family										
Menodora spinescens	spiny menodora	1,2,3			x		x		x o		shrub
Onagraceae	Evening Primrose Family										
Camissonia boothii ssp. *condensata*	woody bottle-washer	1,2,3		x	x	x	x			x	annual
Camissonia brevipes	yellow cups	2,3			x		x				annual
Camissonia cf. campestris	Inyo suncups				x						annual
Camissonia chamaenerioides	modest primrose	1,2,3									annual
Camissonia claviformis ssp. *aurantiaca*	brown-eyed primrose	1,2,3		x		x	x				annual
Camissonia refracta	narrow-leaved primrose	1,2									annual
Oenothera deltoides	birdcage	1									per
Oenothera primiveris ssp. *bufonis*	large yellow evening-primrose	1,2,3									per
Orobanchaceae	Broom-rape Family										
Orobanche cooperi	Cooper's broom-rape	1,2,3				x	x				parasitic
Papaveraceae	Poppy Family										
Eschscholzia glyptosperma	desert gold-poppy	1,2,3			x	x	x				annual
Eschscholzia minutiflora	little gold-poppy	1,2,3									annual
Plantaginaceae	Plantain Family										
Plantago ovata	woolly plantain	1,2,3			x		x				annual
Plantago patagonica	Patagonia plantain	1,2,3									annual
Polemoniaceae	Phlox Family										
Eriastrum diffusum	diffuse woolly star	2									annual
Eriastrum eremicum ssp. *e.*	desert woolly star	1,2,3		x		x	x				annual
Eriastrum sparsiflorum	few-flowered woolly star	3			x	x					annual
Gilia cana ssp. *speciformis*	showy gilia	2,3			x		x				annual
Gilia ophthalmoides	pinyon gilia	3									annual
Gilia sinuata	cinder gilia	1,2,3			x	x					annual
Gilia stellata	dotted-throat gilia	1,2,3									annual
Gilia transmontana	star gilia	1,2,3									annual
Gilia sp.	gilia				x						annual
Ipomopsis polycladon	spreading gilia	2,3									annual
Langloisia setosissima ssp. *punctata*	lilac sunbonnet	1,2,3			x		x				annual
Linanthus aureus	golden linanthus	1									annual
Linanthus bigelovii	Bigelow's linanthus	2									annual
Linanthus demissus	desert snow	1,2,3					x				annual

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Linanthus jonesii	Jones's linanthus	1,2,3			x	x					annual
Loeseliastrum matthewsii	desert calico	2									annual
Loeseliastrum schottii	little sunbonnets	1,2,3			x						annual
Phlox stansburyi	cold-desert phlox	1									
Polygonaceae	Buckwheat Family										annual
Chorizanthe brevicornu	brittle spineflower	1,2,3		x	x	x	x				annual
Chorizanthe rigida	rigid spiny-herb	1,2,3		x	x	x	x		x	x	annual
Eriogonum brachypodium	glandular skeleton-weed	2,3			x		x				annual
Eriogonum deflexum	flat-topped buckwheat	3									annual
Eriogonum fasciculatum ssp. *polifolium*	Mojave Desert California buckwheat	1,2,3	3		x	x	x		x o	xo	shrub
Eriogonum inflatum var. *i.*	desert trumpet	1,2,3			x	x	x		x o	xo	per
Eriogonum maculatum	spotted buckwheat	1,2,3									annual
Eriogonum nidularium	birdnest buckwheat	2,3				x	x				annual
Eriogonum palmerianum	Palmer's buckwheat	2									annual
Eriogonum pusillum	yellow turbans	1,2,3				x					annual
Eriogonum thomasii	Thomas's buckwheat	1									annual
d Eriogonum sp.	annual buckwheat	3		x							annual
Eriogonum trichopes	little desert trumpet	1,2,3			x						annual
Portulacaceae	Portulaca Family										
Calyptridium monandrum	sand cress	2									annual
Rosaceae	Rose Family										
Coleogyne ramosissima	blackbush	1, 3			x		x		o		shrub
Prunus fasciculata	desert almond	1,2,3	3				x		x o		shrub
Rutaceae	Rue Family										
Thamnosma montana	turpentine-broom	3							o		shrub
Scrophulariaceae	Figwort Family										
Antirrhinum filipes	twining snapdragon	1,2,3					x				annual
Castilleja angustifolia	desert paintbrush	3			x						per
Mimulus bigelovii	Bigelow's monkeyflower	2,3			x		x				annual
Penstemon palmeri	Palmer's penstemon	1,3	3		x	x					per
Solanaceae	Nightshade Family										
Lycium andersonii	Anderson's box-thorn	1,2,3	3	x	x	x	x		x o	xo	shrub
Lycium cooperi	Cooper's box-thorn	1,2,3		x	x	x			x o		shrub
Nicotiana obtusifolia	desert tobacco	1,2,3					x		o	o	per
Physalis crassifolia	thickleaf ground-cherry	3					x			o	per
Viscaceae	Mistletoe Family										
Phoradendron californicum	desert mistletoe	1,2,3	3		x	x	x				parasitic

Plant species observed within the Ivanpah SEGS project area during the 2007 and 2008 botanical surveys (1-mile buffer not included).
Nomenclature from Baldwin et al., Editors, 2002, The Jepson desert manual, UC Press.

Plant Group / Family / Species [1]	Common Name	Solar Array Sites [2]		Other Project Areas [3]					Rocky Hills [4]		
		MCBS	MWS	Main Access Road	Utility Corridor	CLA	North BLM Acc Rd	Mining Claim Acc Rd	Lime-stone	Meta-morphic	Habit
Zygophyllaceae	Caltrop Family										
d Kallstroemia californica	California caltrop	1,2				x					annual
* *Kallstroemia cf. parviflora*	few-flowered caltrop	1,2									annual
Larrea tridentata	creosote bush	1,2,3	3	x	x	x	x	x	x o	xo	shrub
Monocot Angiosperms (Flowering Plants)											
Liliaceae	Lily Family										
Androstephium breviflorum	small-flowered androstephium	1,2									per
Yucca schidigera	Mojave yucca	1,2,3	3	x	x	x	x	x	x o		shrub
Poaceae	Grass Family										
Achnatherum speciosum	desert needlegrass	1,2,3			x	x	x				per
Aristida adscensionis	six-weeks three-awn	1,2,3			x	x	x		o	o	annual
Aristida purpurea	purple three-awn	1,2,3			x	x	x		o		per
d Bouteloua aristidoides var. *a.*	needle grama	2									annual
d Bouteloua barbata	six-weeks grama	1,2,3		x	x	x	x				annual
* *Bromus madritensis* ssp. *rubens*	red brome	1,2,3	x	x	x	x	x	x	x o	xo	annual
* *Bromus tectorum*	cheat grass	1,2,3				x					annual
d Enneapogon desvauxii	nine-awned pappus grass	1,2,3			x	x	x				annual
Erioneuron pulchellum	fluff grass	1,2,3		x	x	x	x		x o	o	per
Muhlenbergia microsperma	little-seed muhly	2			x						per
Muhlenbergia porteri	Porter's muhly	1,2,3			x	x	x				per
Pleuraphis rigida	big galleta	1,2,3		x	x	x	x		x	xo	per
* *Schismus* sp.	Mediterranean grass	1,2,3	x	x	x	x	x	x	x	xo	annual
Vulpia octoflora var. *hirtella*	six-weeks fescue	1,2,3			x	x	x				annual

Footnotes:

[1] * = introduced species (not native to California)

\# = California native species not native to area; probably planted during restoration work on Kern River Pipeline

d = annual species observed only as dead plants from previous year (noted for annual species only)

[2] Species observed in proposed solar array sites were recorded by plant community and by site:

MCBS = Mojave creosote bush scrub plant community
MWS = Mojave wash scrub plant community
1 = species present in the southern site, Ivanpah 1
2 = species present in the middle site, Ivanpah 2
3 = species present in the northern site, Ivanpah 3

Plant species observed within the Ivanpah SEGS project area during the 2007 and 2008 botanical surveys (1-mile buffer not included).
Nomenclature from Baldwin et al., Editors, 2002, The Jepson desert manual, UC Press.

Plant Group			Solar Array Sites [2]		Other Project Areas [3]					Rocky Hills [4]		
Family	Species [1]	Common Name	MCBS	MWS	Main Access Road	Utility Corridor	CLA	North BLM Acc Rd	Mining Claim Acc Rd	Lime-stone	Meta-morphic	Habit

[3] Other proposed project areas surveyed outside of the solar array sites include:

Access Road = unpaved access road, along Colosseum Road west from the paved golf course road to the junction with the electrical transmission line access road east of the middle site

Utility Corridor = proposed utility corridor extending north from Ivanpah 3

CLA (Construction Logistics Area) = This area will include up to 10 single-wide full-length trailer offices or equivalent, chemical toilets, and parking for 200 vehicles. Additionally, it will be used during construction as a laydown area, equipment storage, and materials fabrication.

x = species present in the survey area

[4] Two rocky hills occur near the middle and northern solar array sites:

Limestone hill = hill of gray limestone located on the west edge of the northern site; an intensive survey was conducted over most of the limestone hill outside of the buffer zone in 2007

Metamorphic hill = large hills of red and black metamorphic rock located at the southeastern edge of the northern site and just north and northeast of the middle site; no intensive survey was conducted of the metamorphic hill outside the buffer zone

x = species present on hill within the northern site 250-foot buffer zone (2007)

o = species present on hill outside of the northern site 250-foot buffer zone, and out of the project area (2007)

Appendix G
Distribution and abundance of Special-status plants within the Ivanpah SEGS project area

Special-status Plant Distribution and Abundance within the Project Area

Small-flowered androstephium (*Androstephium breviflorum*)

Small-flowered androstephium is a bulb-forming perennial with white to pale violet flowers in the Lily Family (Liliaceae). The erect stem is typically 12 inches or less in height, and bears an umbel of 3-12 flowers, each with 6 floral parts (Baldwin et al. 2002, Flora of North America 2007). The leaves are up to 12 inches in length, channeled, and appear before the flowering stalk. In California, small-flowered androstephium flowers in March to April. The fruit is a 3-lobed capsule (see Photo 2, Appendix D) that splits open at maturity to reveal rows of large black seeds. Line drawings of this species are found in Baldwin and others (2002) and Cronquist (1977).

Small-flowered androstephium grows in open desert scrub in California (Baldwin et al. 2002). The CNDDB (2008b) describes its habitat in California as desert dunes, and on bajadas in Mojavean desert scrub, from about 700 to 4,800 feet.

Distribution

In California, small-flowered androstephium is known from the Mojave Desert in San Bernardino County and the Colorado Desert in Riverside County. It is also found in Nevada, Arizona, Utah, Wyoming, Colorado and New Mexico (USDA 2008, Cronquist 1977). The CNDDB (2008b) lists 20 occurrences, all from San Bernardino County. Many are in the vicinity of Cronese Lake, Baker or Fort Irwin. The Consortium of California Herbaria (Jepson On-line Interchange 2008) lists nine specimens of small-flowered androstephium. Eight are from San Bernardino County locations near Cronese Lake, several areas near Baker, the Cady Mountains, the Whipple Mountains, and the Pizgah Lava Flow; and one location is from Riverside County, in the Cadiz Valley of the Colorado Desert, near the San Bernardino County line.

In 2008, 12 individuals of small-flowered androstephium were mapped in four locations during protocol-level surveys at the Ivanpah SEGS project area (Table 5-1; Figure 5-1, Appendix A), within Ivanpah 1 and 2, in Mojave Creosote Bush Scrub dominated by creosote bush and burrobush. No individuals of this species were detected during protocol-level surveys in 2007.

Conservation status

Table 5-2 (see Section 5.1) summarizes the conservation status of small-flowered androstephium. It is not federally or state-listed, nor is it included on the list of California BLM Special Status Plants (BLM 2007). The CNPS places it on List 2, meaning that it is considered rare, threatened or endangered in California, but is more common elsewhere (CNPS 2008). Its CNPS threat extension code is .3, meaning that it is

not very endangered in California. The CNDDB, using the natural heritage methodology ranking system (NatureServe 2008), has assigned small-flowered androstephium a global rank of G5 and a state rank of S1.3 (CNDDB 2008a). A global rank of G5 means that, considering its entire (worldwide) range, small-flowered androstephium is common enough to be demonstrably secure to ineradicable. A state rank of 1.3 means that within California this species is known from less than six occurrences[1], or fewer than 1000 individuals, or less than 2000 acres, and the threat extension of .3 means that it is not very threatened in California.

In Nevada, neither the Nevada Native Plant Society nor the Nevada Natural Heritage Program includes small-flowered androstephium on any of its conservation status lists (NNPS 2008, NNHP 2007). The Arizona Natural Heritage Program does not include small-flowered androstephium on its tracking list for at-risk plant species (ANHP 2008). The Arizona Native Plant Society does not include this species on its list of rare plants (ANPS 2008). The Utah Division of Wildlife Resources' Inventory of Sensitive Species and Ecosystems in Utah (UDWR 1998) does not include small-flowered androstephium on any of its lists.

Mojave milkweed (*Asclepias nyctaginifolia*)

Mojave milkweed is a perennial herb with pale green to ivory flowers in the Milkweed Family (Asclepiadaceae) (see Photo 3, Appendix D). The stems are branched, prostrate to decumbent, and reach about 1 foot in height. The leaves are broadly ovate to lanceolate, opposite, and vary from green to deep purple when young. In California, Mojave milkweed blooms from May to June. The fruit is a pod about 1.5 inches in length. Based on observations made during surveys for this project, Mojave milkweed is much more likely to appear above-ground in wetter years. There are very few illustrations of this species available in published sources or on the web. A rough line drawing is found in Jaeger (1941). No photos of Mojave milkweed are currently accessible through CalFlora (2008).

The habitat of Mojave milkweed in California includes washes and dry slopes from about 3,000 to 5,100 feet in elevation (Baldwin et al. 2002), in Mojavean desert scrub and pinyon and juniper woodland (CNPS 2008).

[1] *Occurrence* is a location where a plant is found; an occurrence can consist of a single individual or a group of individuals, which may include sub-groups. Occurrences are, by definition, separated from the nearest occurrence(s) by ¼ mile or more (NatureServe 2008, CNDDB 2008a). An occurrence may or may not be equivalent to a biological population.

Distribution

In California, Mojave milkweed is known only from a few locations in the eastern Mojave Desert in San Bernardino County (CNDDB 2008b, Jepson Online Interchange 2008). It also occurs in Nevada and Arizona. The CNDDB (2008b) lists locations in the New York Mountains, the Providence Mountains, Lanfair Valley, and Shadow Valley (west of the Clark Mountain Range). The Consortium of California Herbaria (Jepson Online Interchange 2008) lists six specimens of Mojave milkweed from four locations, including: Shadow Valley; the New York Mountains; Lanfair Valley; and Cajon Pass. The Shadow Valley specimens were collected in 1977. All of the others were collected prior to 1920.

In 2008, 202 individuals of Mojave milkweed were mapped in 59 locations during protocol-level surveys at the Ivanpah SEGS project area (Figure 5-1, Appendix A). Most locations supported ten or fewer individuals, with a range of 1-35 individuals per location. Mojave milkweed was found within these project components: Ivanpah 1, 2 and 3, the construction logistics area, and the utility corridor (Table 5-1). In 2007, a single locality was located in Ivanpah 1, with an unspecified number of individuals. The combined total for 2007 and 2008 is 202 individuals in 60 locations. As shown in Figure 5-1, Mojave milkweed is widely scattered throughout the project area, although most locations are within Ivanpah 1 and 3.

Within the project area Mojave milkweed typically grows in small- to medium-sized washes with sandy to gravelly substrates. Some individuals were found growing beneath larger shrubs. Common associated species include: creosote bush, burrobush, cheesebush, Mojave Desert California buckwheat, Nevada ephedra and slender poreleaf (*Porophyllum gracile*).

Conservation status

Table 5-2 (see Section 5.1) summarizes the conservation status of Mojave milkweed. It is not federally or state-listed, nor is it included on the list of California BLM Special Status Plants (BLM 2007). The CNPS places it on List 2, meaning that it is considered rare, threatened or endangered in California, but is more common elsewhere (CNPS 2008). Its threat extension code is .3, meaning that it is not very endangered in California. The CNDDB, using the natural heritage methodology ranking system (NatureServe 2008), has assigned Mojave milkweed a global rank of G4G5 and a state rank of S1.3 (CNDDB 2008a). This global rank means that, considering its entire range, Mojave milkweed is apparently to demonstrably secure to ineradicable. A state rank of 1.3 means that within California this species is known from less than 6 occurrences, or fewer than 1000 individuals, or less than 2000 acres, and the threat extension of .3 means that it is not very threatened in California.

In Nevada, neither the Nevada Native Plant Society nor the Nevada Natural Heritage Program includes Mojave milkweed on any of its conservation status lists (NNPS 2008, NNHP 2007). The Nevada Natural Heritage Program assigns its conservation priorities based on rarity and endangerment on a global, not a statewide basis, and Mojave milkweed is not globally rare. However, the Arizona Natural Heritage Program places Mojave milkweed on its tracking list for at-risk plant species, giving it a "highest reporting priority" designation (ANHP 2008).

Desert pincushion (*Coryphantha chlorantha*)

Desert pincushion is a small yellow-green-flowered stem succulent in the Cactus Family (Cactaceae) (see Photo 4, Appendix D). The stems are typically solitary or few (up to 5 is typical, occasionally up to 15 or more), 3-3.5 inches in diameter and 3-6 inches tall (Benson 1969, 1982; Flora of North America 2007). The flowers are straw-yellow, yellow-green, or rarely pink, with narrowly lanceolate, mucronate petals 0.5-1.0 inch long and about 0.25 inch wide (Benson 1982). The blooming time is stated as April to September (CNPS 2008), although at the project area flowering took place between mid-April and mid-May. The fruit is about 1.0 inch long. The fruiting time is unknown. A color photograph of this species (as *Coryphantha vivipara* var. *desertii*) is found in Benson (1969). No photos of this species are accessible through CalFlora (2008).

The Jepson Desert Manual (Baldwin et al. 2002) gives the habitat of desert pincushion in California as limestone soils from about 3,000 to 7,000 feet in elevation. The CNPS on-line Inventory (2008) describes its habitat in California as Joshua tree woodland, Mojavean desert scrub and pinyon and juniper woodland, on gravelly or rocky carbonate substrates, from 150 to 4,500 feet. (The lower elevation limit is not substantiated by other sources and is probably in error.)

Distribution

In California, desert pincushion is known from the Mojave Desert, in San Bernardino and Inyo counties (CNDDB 2008b); it also occurs in Nevada, Arizona and Utah (Flora of North America 2007). Although earlier publications reported it from Riverside and Imperial counties (Benson 1969), these records were based on misidentifications (Zimmerman 1985). *The Jepson Desert Manual* (Baldwin et al. 2002) describes its range in California (as *Escobaria vivipara* var. *deserti*) as limited to the mountains of eastern San Bernardino County. DeDecker (1984) and York (CNDDB 2007c) report it from the Kingston Range in southeastern Inyo County.

Details of the distribution of desert pincushion in California are imperfectly known, likely due to survey limitations, difficulty in separating this species from other taxa in the genus *Coryphantha,* and incomplete reporting. Based on available information,

desert pincushion's distribution in California is restricted to a few mountain ranges in the eastern Mojave Desert, in eastern San Bernardino County and southeastern Inyo County. The Consortium of California Herbaria (Jepson Online Interchange 2008) lists 11 specimens of desert pincushion from California. These are all from locations in the eastern Mojave Desert, in eastern San Bernardino County. Five are from Clark Mountain or the Clark Mountain Range, one is from the Mescal Range, two are from the Ivanpah Mountains, two are from the valley between the Mescal Range and the Ivanpah Mountains, and one is from the Kingston Range (Jepson Online Interchange 2008). It has also been reported from the Kingston Range in southeastern Inyo County (DeDecker 1984, CNDDB 2007c). Clark Mountain and the Clark Mountain Range lie immediately to the west and north of the project area. The Mescal Range and the Ivanpah Mountains are south of I-15, and about 5 to 10 miles south of the project area. The Kingston Range is about 30 miles northwest of the project area, along the border between Inyo and San Bernardino counties.

Desert pincushion is widely scattered throughout the Ivanpah SEGS project area. In 2008, 477 individuals of this species were mapped in 177 locations during protocol-level surveys, within Ivanpah 1, 2 and 3, the construction logistics area, and the utility corridor (Table 5-1; Figure 5-1, Appendix A). In 2007, an additional 122 individuals were found in 114 locations (Figure 5-2, Appendix A). The combined total for 2007 and 2008 is 599 individuals in 291 locations (Figure 5-3, Appendix A). Most locations include a single individual of desert pincushion, with a range of 1 to 6.

Conservation status

Table 5-2 (see Section 5.1) summarizes the conservation status of desert pincushion. It is not federally or state-listed, nor is it included on the list of California BLM Special Status Plants (BLM 2007). The CNPS places desert pincushion on List 2, meaning it is rare and endangered in California, but more common elsewhere, with a threat extension code of .2, meaning that it is fairly endangered in California (CNPS 2008). The CNDDB has assigned desert pincushion a global rank of G2G3 and a state rank of S2.2 (CNDDB 2008a). A global rank of G2G3 means that throughout its entire (worldwide) range, this species is known from 6 to 80 occurrences, 1,000 to 10,000 individuals, or 2,000 to 50,000 acres. A state rank of 2 means that within California this species is known from 6 to 20 occurrences, or 1,000 to 3,000 individuals, or 2,000 to 10,000 acres. The threat extension of .2 means that it is considered threatened in California.

In Nevada, neither the Nevada Native Plant Society nor the Nevada Natural Heritage Program has included desert pincushion on any of its conservation status lists (NNPS 2008, NNHP 2007). In compiling its at-risk plant lists, the Nevada Natural Heritage Program has based its conservation priorities on species that are globally rare and endangered, and has not focused on plants that are rare only within the state. According to Dr. James Morefield, Natural Heritage Program Botanist, desert

pincushion may merit reconsideration, now that it has been recognized as a species separate from *Coryphantha vivipara* and its global range has been ranked as G2 or G3. Its distinctive features probably make it more vulnerable to poaching than many other cacti, which could qualify it for at-risk status according to Dr. Morefield. Although it has been frequently encountered in southern Nevada, more fieldwork in Nevada is needed to clarify its statewide abundance and distribution (Morefield pers. comm. 2007).

In Arizona, the Arizona Natural Heritage Program does not include desert pincushion on its tracking list for at-risk plant species (ANHP 2008). Marc Baker reports that he has seen it in many locations in Arizona, and that it is probably under-represented in herbaria (CNDDB 2007c). The Arizona Native Plant Society does not include it on its list of rare plants (ANPS 2008). The Utah Division of Wildlife Resource's Inventory of Sensitive Species and Ecosystems in Utah (1998) does not include desert pincushion on any of its lists.

Utah vine milkweed (*Cynanchum utahense*)

Utah vine milkweed is a yellow- to red-flowered perennial herbaceous vine in the Milkweed Family (Asclepiadaceae) (see Photo 5, Appendix D). The plants have thread-like, bright green stems and small red and yellow flowers clustered in umbellate heads about 1 inch wide (Baldwin et al. 2002). The fruit is a pod (follicle) about 2 inches long (Cronquist et al. 1984). These small vines grow up through and entwine themselves within woody shrubs. The blooming time in California is April to June. Based on the results of surveys conducted for this project, Utah vine milkweed is much more likely to be detected in wetter years than in drier years. Line drawings of Utah vine milkweed are found in Baldwin and others (2002) and Cronquist and others (1984), and photos are accessible through CalFlora (2008).

The Jepson Desert Manual (Baldwin et al. 2002) describes the habitat as dry, sandy or gravelly areas below 3000 feet elevation. The CNPS online Inventory (2008) says that Utah vine milkweed occurs in Mojavean desert scrub and Sonoran desert scrub at approximately 450 to 4500 feet elevation.

Distribution

Utah vine milkweed is known from the Mojave and Colorado deserts and elsewhere in southern California, where it has been recorded in San Bernardino, Riverside, San Diego and Imperial counties (CalFlora 2008, Jepson Online Interchange 2008, CNDDB 2007c). It is also found in southern Nevada, northwestern Arizona and southwestern Utah (Cronquist et al. 1984, Shreve and Wiggins 1964).

According to the available records, Utah vine milkweed is widely scattered within the Mojave and Colorado deserts of California. The Consortium of California Herbaria (Jepson Online Interchange 2008) lists 53 specimens, including 15 specimens from the vicinity of 29 Palms, and several specimens from other locations in San Bernardino County, including the Ivanpah Mountains, Joshua Tree National Monument, and Old Woman Springs. None of the specimens listed in the on-line records of the Consortium is from the vicinity of the Ivanpah SEGS project area. In Riverside County it has been reported from two locations, near Blythe (CalFlora 2008) and near Rancho Mirage, along the Pines to Palms Highway (CNDDB 2007c). In San Diego County, it is reported from the Sentenac Canyon, San Felipe, Blair Valley, Dolomite Mine, Earthquake Valley and Coyote Mountain regions of the Colorado (Sonoran) Desert of Anza-Borrego Desert State Park (Beauchamp 1986, Reiser 1994, Jepson Online Interchange 2008, CNDDB 2007c). The CNPS on-line Inventory (2008) reports it from Imperial County, where Reiser (1994) cites a location from near Coyote Wells, and there is a specimen from near Ocotillo Wells (CNDDB 2007c).

Utah vine milkweed is abundant and widely distributed within the Ivanpah SEGS project area. In 2008, 991 individuals of Utah vine milkweed were found in 146 widely scattered locations during protocol-level surveys (Table 1; Figure 5-1, Appendix A). Most individuals were found in Ivanpah 1 and 2; a few were found in Ivanpah 3 and the construction logistics area. In 2007, three individuals of this species were mapped in three locations, all within Ivanpah 1 (Figure 5-2, Appendix A). Most locations found in 2008 supported five or more individuals, with a range of 1 to 53. The combined total for 2007 and 2008 is 994 individuals in 149 locations (Figure 5-3, Appendix A).

The typical habitat for Utah vine milkweed at the Ivanpah SEGS project area is within small washes, where it grows within several species of shrubs, including: burrobush, cheesebush, and slender poreleaf.

Conservation status

Table 5-2 (see Section 5.1) summarizes the conservation status of Utah vine milkweed. It is not federally or state-listed, nor is it included on the list of California BLM Special Status Plants (BLM 2007). In California, the CNPS Inventory (2008) places it on List 4, a "watch" list, meaning that it is a plant of limited distribution. Its CNPS threat extension code is .3, meaning that it is not very endangered in California. The CNDDB, using the natural heritage methodology ranking system (NatureServe 2008), has assigned Utah vine milkweed a global rank of G4 and a state rank of S3.3 (CNDDB 2007c, 2008a). A global rank of G4 means that throughout its entire (worldwide) range, this species is apparently secure but factors exist that cause concern, such as threats or somewhat narrowly limited habitat. A state rank of 3 means that within California this species is known from 21 to 80 occurrences, or 3,000 to 10,000 individuals, or 10,000 to 50,000 acres, and the threat extension of .3 means that it is not very endangered in California.

According to Reiser (1994), Utah vine milkweed populations in San Diego County are probably stable, based on historically low levels of impact to its habitat, but those on the western edge of the Colorado desert are uncommon and should be protected.

In Nevada, neither the Nevada Native Plant Society nor the Nevada Natural Heritage Program has included Utah vine milkweed on any of its conservation status lists (NNPS 2008, NNHP 2007). The Arizona Natural Heritage Program does not include Utah vine milkweed on its tracking list for at-risk plant species (ANHP 2008). The Arizona Native Plant Society does not include this species on its list of rare plants (ANPS 2008). The Utah Division of Wildlife Resources' Inventory of Sensitive Species and Ecosystems in Utah (1998) includes Utah vine milkweed on its "watch" list. Within Utah, it is known only from Washington County, in southwestern Utah (UDWR 1998).

Nine-awned pappus grass (*Enneapogon desvauxii*)

Nine-awned pappus grass is a small bunch grass in the Grass Family (Poaceae) (see Photo 6, Appendix D). Although published sources describe it as a perennial (Baldwin et al. 2002, USDA 2008, Hitchcock 1950, Cronquist et al. 1977), in California it behaves as a summer annual (see further discussion, below). The stems are ascending to erect, from 0.3 to 1.3 feet in height. This grass's most characteristic feature is the lemma (a sterile flower part), which has an awn at the tip that is divided into 9 parts, each of which is plumose (feathery) (Baldwin et al. 2002). These distinctive awns are visible even when the plants are dried and dead. The flowering time in California is given as August to September (Baldwin et al. 2002). Line drawings of this species are found in Baldwin and others (2002), Hitchcock (1950) and Cronquist and others (1977), and photos are accessible through CalFlora (2008).

The Jepson Desert Manual (Baldwin et al. 2002) describes the habitat of nine-awned pappus grass in California as rocky slopes, crevices, calcareous soils, in desert woodland, from 3,825 to 5,475 feet in elevation. The CNPS on-line Inventory (2008) decribes its habitat as rocky, carbonate soils in pinyon and juniper woodland. In the Ivanpah Valley, this species grows within the Ivanpah Valley alluvial fan, on the often north-facing sides of medium-sized to large washes, and on cobble mounds within and outside of washes that include some calcareous rocks, from 2,900 to 3,400 feet, in Mojave Creosote Bush Scrub.

Although nine-awned pappus grass is described as a perennial (Baldwin et al. 2002, USDA 2008, Hitchcock 1950), it appears to behave in California strictly as a summer annual (Andre pers. comm. 2008, Sanders pers. comm. 2008). In 2007 and 2008 in the Ivanpah Valley, during surveys conducted for this project, the growth pattern of this species was that of a *summer annual*. Summer annuals are plants that germinate and grow only following summer rain. No plants of nine-awned pappus grass, including

dead skeletons, were observed during protocol-level surveys in spring of 2007, following a very dry year. However, in October 2007, many live individuals of this grass were scattered throughout the Ivanpah Valley and on the lower slopes of the Clark Mountains following August rains. These plants were observed by Jim Andre, a technical expert and survey team member for this project, during independent visits not a part of the survey effort for this project (Andre pers. comm. 2008). During spring of 2008, all of the thousands of plants of this species mapped during protocol-level surveys for the Ivanpah SEGS project were the dead skeletal remains of plants that likely had grown and flowered during the late summer and fall of 2007. In spite of above-average rainfall in winter of 2007-2008, no living plants of this species were observed during surveys conducted in April 2008.

Distribution

Nine-awned pappus grass is a widespread species of the southwestern U.S., Mexico and South America (Baldwin et al. 2002, Cronquist et al. 1977). In California, nine-awned pappus grass is known only from the eastern Mojave Desert, in San Bernardino County (CNDDB 2008b). The CNDDB (2008b) lists seven occurrences from the Providence, New York and Clark mountains. The Consortium of California Herbaria (Jepson Online Interchange 2008) lists 12 specimens from the Striped, Providence, Clark, and New York mountains; six of these are from the Clark Mountain Range. All of these collections were made between August and October, in either 1950 or 1977. Within the U.S., nine-awned pappus grass also occurs in Nevada, Arizona, Utah, Colorado, New Mexico, and Texas (USDA 2008, Cronquist et al. 1977).

In 2008, dead individuals of nine-awned pappus grass were very abundant, and were widely scattered throughout the Ivanpah SEGS project area. No live individuals were observed during protocol-level surveys in 2008. In 2008, 8,145 dead individuals of this species were mapped in 182 locations during protocol-level surveys, within Ivanpah 1, 2 and 3, the construction logistics area, and the utility corridor (Table 5-1; Figure 5-1, Appendix A). Most locations included ten or more individuals, with a range of 1-300. In 2007, no individuals of this species were detected within the Ivanpah SEGS project area.

Conservation status

Table 5-2 (see Section 5.1) summarizes the conservation status of nine-awned pappus grass. It is not federally or state-listed, nor is it included on the list of California BLM Special Status Plants (BLM 2007). The CNPS places it on List 2, meaning that it is considered rare, threatened or endangered in California, but is more common elsewhere (CNPS 2008). Its threat extension code is .3, meaning that it is not very endangered in California. The CNDDB, using the natural heritage methodology ranking system (NatureServe 2008), has assigned it a global rank of G5 and a state rank of S2? (CNDDB 2008a). A global rank of G5 means that, considering its worldwide distribution, nine-

awned pappus grass is demonstrably secure to ineradicable. A state rank of 2? means that within California the status of this species is uncertain, but is estimated to consist of 6 to 20 occurrences, or 1,000 to 3,000 individuals, or 2,000 to 10,000 acres. No threat extension is given, so its threat status is likely unknown.

Neither the Nevada Native Plant Society nor the Nevada Natural Heritage Program includes nine-awned pappus grass on any of its conservation status lists (NNPS 2008, NNHP 2007). The Nevada Natural Heritage Program assigns its conservation priorities based on rarity and endangerment on a global, not a statewide basis, and nine-awned pappus grass is not globally rare. The Arizona Natural Heritage Program does not include this species on its tracking list for at-risk plant species (ANHP 2008). The Arizona Native Plant Society does not include this species on its list of rare plants (ANPS 2008). The Utah Division of Wildlife Resources' *Inventory of Sensitive Species and Ecosystems in Utah* (1998) does not include nine-awned pappus grass on any of its lists.

Parish's club-cholla (*Grusonia* (=*Opuntia*) *parishii*)

Parish's club-cholla is a red- to yellow-flowered clonal stem succulent in the Cactus Family (Cactaceae). Its stem joints are 2-3 inches long and obovoid, with separate tubercles. The major spines are distinctly flattened, with rough papillae on the largest spine (Baldwin et al. 2002). The fruits are usually not spiny, or only weakly so. The plants form spreading mats, with the ascending stems usually no more than about 8 inches in height (see Photo 12, Appendix D). The blooming time is May to June or July. A line drawing of this species (as *Opuntia stanlyi* var. *parishii*) is found in Benson (1969), and photos of this species are accessible through CalFlora (2008).

The Jepson Desert Manual (Baldwin et al. 2002) describes the habitat of Parish's club-cholla (as *Opuntia parishii*) as sandy flats from 2,950 to 3,935 feet elevation. The CNPS online Inventory (2008) says that it occurs in Mojavean desert scrub, Sonoran desert scrub, and Joshua tree woodland, in sandy areas, at approximately 985 to 5,000 feet elevation. *A Flora of the Higher Ranges and the Kelso Dunes of the Eastern Mojave Desert in California* (Thorne et al. 1981) give its habitat as sandy-gravelly flats, gravelly-rocky bajadas, and gentle limestone slopes.

Parish's club-cholla has undergone several taxonomic revisions in recent years. Benson (1982) classified it as *Opuntia stanlyi* var. *parishii*. *The Jepson Desert Manual* (Baldwin et al. 2002) refers to it as *Opuntia parishii*. In the *Flora of North America*, Volume 4 (2008), Zimmerman and Parfitt use the name *Grusonia parishii*. This treatment will be followed in the second edition of *The Jepson Manual* (Parfitt, in preparation), and is used in the CNPS Inventory (2008) and by the CNDDB (2008a).

Distribution

In California, Parish's club-cholla is known from the Mojave and Colorado deserts in San Bernardino, Riverside and Imperial counties (Jepson Online Interchange 2008). It is also known from Nevada and Arizona (USDA 2008). The Consortium of California Herbaria (Jepson Online Interchange 2008) lists 11 specimens of Parish's club-cholla from California (five as *Opuntia stanlyi* var. *parishii*). Of four specimens from eastern San Bernardino County, three are from the New York Mountains and the Clark Mountain Range. Five specimens are from north-central Riverside County, including three from the Colorado Desert, in the Little San Bernardino Mountains. One specimen is from Imperial County, from the western Salton Basin in the Colorado Desert, near Westmorland. Thorne et al. (1981) note Parish's club-cholla (as *Opuntia stanlyi* var. *parishii*) as infrequent in the New York, Ivanpah and Clark mountains of eastern San Bernardino County.

Parish's club-cholla is abundant within the Ivanpah SEGS project area, where it is discontinuously distributed, with most locations found in Ivanpah 1 and 3, and the construction logistics area. This species grows in clones consisting of spreading mats that may form separate patches over time. In areas that contain many closely spaced mats, it is impossible to determine in the field how many and which of these mats constitute one genetic individual. For this project, one individual was defined as all mats growing together, of which none are separated by more than 10 feet. Using this definition, many individuals consisted of five to ten or more mats in close proximity. In 2008, 196 individuals of Parish's club-cholla were mapped at 47 locations within Ivanpah 1, the construction logistics area, and the utility corridor (Table 5-1; Figure 5-1, Appendix A). In 2007, 143 clones of this species were mapped within 96 locations in Ivanpah 1 and 3, and the construction logistics area (Figure 5-2, Appendix A). For 2008 and 2007 combined, 339 individuals were mapped in 143 locations (Figure 5-3, Appendix A).

The habitat of Parish's club-cholla within the project area consists of sandy to somewhat gravelly uplands in the Larrea-Ambrosia sub-type of Mojave Creosote Bush Scrub.

Conservation status

Table 5-2 (see Section 5.1) summarizes the conservation status of Parish's club cholla. It is not federally or state-listed, nor is it included on the list of California BLM Special Status Plants (BLM 2007). In 2007 the conservation status of Parish's club-cholla was evaluated by the CNPS and the CNDDB. In March 2007 the CNPS added Parish's club-cholla to List 2 and the CNDDB added it to its Special Plants, Lichens and Bryophytes List. The CNPS assigned Parish's club-cholla a threat extension of .3, meaning that it is not very endangered in California. The CNDDB, using the natural heritage methodology ranking system (NatureServe 2008), assigned it a global rank of G3G4 and

a state rank of S2.3? (CNDDB 2008a). A global rank of G3G4 means that, considering its entire (worldwide) range, this species is intermediate between ranks G3 and G4 (see Table B-1, notes, Appendix B, for further explanation). A state rank of 2 means that within California this species is known from six to 20 occurrences, or 1,000 to 3,000 individuals, or 2,000 to 10,000 acres, and the threat extension of .3? means that it is probably not threatened in California, but more information on threat is needed.

In Nevada, neither the Nevada Native Plant Society nor the Nevada Natural Heritage Program has included Parish's club-cholla on any of its conservation status lists (NNPS 2008, NNHP 2007). In Arizona, the Arizona Natural Heritage Program does not include Parish's club-cholla on its tracking list for at-risk plant species (ANHP 2008). The Arizona Native Plant Society does not include this species on its list of rare plants (ANPS 2008).

Utah mortonia (*Mortonia utahensis*)

Utah mortonia is a white-flowered evergreen shrub in the Staff-tree Family (Celastraceae) (see Photo 7, Appendix D). The clusters of five-parted white flowers and sand-papery, ascending leaves (Baldwin et al. 2002) are distinctive. The blooming time for Utah mortonia in California is March to May (CNPS 2008). A line drawing of this plant is in *The Jepson Desert Manual* (Baldwin et al. 2002), and photos of flowering plants are accessible through CalFlora (2008).

The Jepson Desert Manual (Baldwin et al. 2002) describes the habitat of Utah mortonia as limestone slopes and canyon bottoms from 2,700 to 6,300 feet elevation. The CNPS online Inventory (2008) says that it occurs in Mojavean desert scrub, Joshua tree woodland, and pinyon-juniper woodland, on carbonate substrates, at approximately 2,300 to 6,300 feet elevation.

During surveys for the Ivanpah SEGS project in 2007, Utah mortonia was observed to be fairly common on the limestone hills of the northeastern extension of the Clark Mountain Range, within the one-mile buffer; however, no plants of this species were found within the project area. In 2008, the boundaries of the utility corridor were revised slightly, and one individual was found in a single location, at the northern end of the utility corridor, within Mojave Yucca – Nevada Ephedra Scrub (Table 5-1; Figure 5-1, Appendix A).

Distribution

In California, Utah mortonia is known only from the eastern Mojave Desert in San Bernardino County and the Death Valley region in Inyo County. It has been collected in the Nopah, Funeral, Grapevine, Kingston, Mesquite and Clark mountains (Jepson Online Interchange 2008). The Consortium of California Herbaria (Jepson Online

Interchange 2008) lists 61 specimens of Utah mortonia. Most of these are from the eastern Mojave Desert, including 29 from the Clark Mountain Range.

Conservation status

Table 5-2 (see Section 5.1) summarizes the conservation status of Utah mortonia. It is not federally or state-listed, nor is it included on the list of California BLM Special Status Plants (BLM 2007). The CNPS places it on List 4, a "watch" list, meaning that it is a plant of limited distribution. Its CNPS threat extension code is .3, meaning that it is not very endangered in California. The CNDDB, using the natural heritage methodology ranking system (NatureServe 2008), has assigned Utah mortonia a global rank of G4G5 and a state rank of S3.3 (CNDDB 2008a). A global rank of G4G5 means that, considering its entire range, Utah mortonia is apparently to demonstrably secure to ineradicable. A state rank of 3 means that within California this species is known from 21 to 80 occurrences, or 3,000 to 10,000 individuals, or 10,000 to 50,000 acres, and the threat extension of .3 means that it is not very endangered in California.

Neither the Nevada Native Plant Society nor the Nevada Natural Heritage Program includes Utah mortonia on any of its conservation status lists (NNPS 2008, NNHP 2007). The Nevada Natural Heritage Program assigns its conservation priorities based on rarity and endangerment on a global, not a statewide basis, and Utah mortonia is not globally rare. The Arizona Natural Heritage Program does not include this species on its tracking list for at-risk plant species (ANHP 2008). The Arizona Native Plant Society does not include this species on its list of rare plants (ANPS 2008). The Utah Division of Wildlife Resources' *Inventory of Sensitive Species and Ecosystems in Utah* (1998) includes Utah mortonia in its *Peripheral* category; species in this category are rare or uncommon in Utah, but more common and widespread elsewhere. Within Utah, Utah mortonia occurs only in Washington County, in southwest Utah.

Unidentified *Penstemon* individuals from 2007

In 2007, 12 individual plants in the genus *Penstemon* were mapped within the Ivanpah SEGS project area. None of these were in flowering condition. The leaf characteristics of these plants indicated that they were either rosy two-toned beardtongue (*Penstemon bicolor*) (see Photo 9, Appendix D), a special-status plant known from only three locations in California (CNDDB 2007b, 2008b), or Palmer's beardtongue (*Penstemon palmeri*) (see Photo 10, Appendix D), a common species. Flowers are required to distinguish between these two taxa. In 2008, all of the *Penstemon* individuals that were mapped in 2007 were located in the field. Most were found in flowering condition and all of these were identified as Palmer's beardtongue. The remaining plants were dead, so these could not be identified to species. Photos of both species of beardtongue are accessible on CalFlora (2008).

Desert portulaca (*Portulaca halimoides*)

Desert portulaca is a diminutive, yellow-flowered, fleshy summer annual herb in the Purslane Family (Portulacaceae). The spreading to ascending stems are about 0.5-2.5 inches long. The flowers are in clusters of 2-10, with 2 reddish sepals and 5 yellow petals that turn red as they dry out (Baldwin et al. 2002). The latter character was responsible for the apparent prior misidentification of this species in California as *Portulaca mundula* or *P. parvula*. Kelley (1989) examined specimens from California previously identified as *P. mundula* or *P. parvula* and determined that these are all *P. halimoides*. Baldwin and others (2002) note that additional study is needed. Desert portulaca is a summer annual that flowers in California from August to October (Jepson Online Interchange 2008). A line drawing of this species is found in Baldwin and others (2002), and photos of this species are accessible on CalFlora (2008).

The Jepson Desert Manual (Baldwin et al. 2002) describes the habitat of desert portulaca as sandy washes and flats, from about 3,000 to 3,600 feet in elevation. The CNPS on-line Inventory (2008) says that it grows in sandy soil in Joshua tree woodland.

Distribution

In California, desert portulaca is found in the Mojave Desert in San Bernardino and Riverside counties, and possibly in San Diego County (Jepson Online Interchange 2008). It is also known from Nevada, Arizona, Utah, Colorado, New Mexico, Oklahoma, Texas and other states, and Baja California (USDA 2008). The Consortium of California Herbaria lists 25 specimens of desert portulaca, including locations in the vicinity of the New York, Providence, Granite, Van Winkle and Clark mountains in San Bernardino County, and in Joshua Tree National Monument and the Little San Bernardino Mountains in Riverside County. There is one specimen from the vicinity of the Clark Mountains.

At the Ivanpah SEGS project area, no individuals of desert portulaca were detected during protocol-level surveys conducted in April, May and June of 2007, or in April of 2008. However, desert portulaca was observed within the Ivanpah SEGS project area in October of 2007, following rains in August 2007, by Jim Andre, a technical expert and survey team member for this project, during independent visits to the Ivanpah Valley that were not a part of the survey effort for this project (Andre pers. comm. 2008). Although other species of summer annuals were found in abundance, desert portulaca could not be detected within the project area during protocol-level surveys conducted for this project in April 2008, likely because the dead skeletons do not persist for long in identifiable condition. Therefore, quantitative data on the distribution and abundance of desert portulaca within the Ivanpah SEGS project area is not available.

Conservation status

Table 5-2 (see Section 5.1) summarizes the conservation status of desert portulaca. It is not federally or state-listed, nor is it included on the list of California BLM Special Status Plants (BLM 2007). In California, the CNPS (2008) places it on List 4, a "watch" list, meaning that it is a plant of limited distribution. Its CNPS threat extension code is .2, meaning that it is endangered in California. The CNDDB, using the natural heritage methodology ranking system (NatureServe 2008), has assigned desert portulaca a global rank of G5 and a state rank of S3.2 (CNDDB 2008a). A global rank of G5 means that throughout its entire (worldwide) range, this species is apparently secure. A state rank of 3 means that within California this species is known from 21 to 80 occurrences, or 3,000 to 10,000 individuals, or 10,000 to 50,000 acres, and the threat extension of .2 means that it is endangered in California.

In Nevada, neither the Nevada Native Plant Society nor the Nevada Natural Heritage Program has included desert portulaca on any of its conservation status lists (NNPS 2008, NNHP 2007). The Arizona Natural Heritage Program does not include it on its tracking list for at-risk plant species (ANHP 2008). The Arizona Native Plant Society does not include this species on its list of rare plants (ANPS 2008). The Utah Division of Wildlife Resources's Inventory of Sensitive Species and Ecosystems in Utah (1998) does not include desert portulaca on any of its lists.

Rusby's desert mallow (*Sphaeralcea rusbyi var. eremicola*)

Rusby's desert mallow is a small, soft-woody shrub with dark apricot-colored flowers, in the Mallow Family (Malvaceae) (see Photo 11, Appendix D). The erect stems grow to about 1 foot in height. The leaves are ovate, about 1 inch long, and are palmately compound (deeply divided to the midrib) (Baldwin et al. 2002). The compound leaves are one important characteristic that distinguishes this taxon from desert mallow (*Sphaeralcea ambigua*), a similar species that is widespread in the western U.S. and consists of many varieties. Desert mallow has lobed leaves that are not cut to the midrib. The flowers of Rusby's desert mallow are dark apricot-colored. The flowering time is May to June.

The Jepson Desert Manual (Baldwin et al. 2002) describes the habitat of Rusby's desert mallow as desert scrub from 3,900 to 4,500 feet in elevation. The CNPS on-line Inventory (2008) says that it grows in Mojavean desert scrub and Joshua tree woodland from 2,925 to 4,500 feet.

Distribution

Rusby's desert mallow is endemic to California, where it is found only in the eastern Mojave Desert in San Bernardino County and in the Death Valley region in Inyo County (Baldwin et al. 2002, CNPS 2008). The Consortium of California Herbaria (Jepson Online Interchange 2008) lists 24 specimens of this taxon, including 22 from San Bernardino County. Most of these are from the Clark Mountain Range. One is from the Kingston Range and several are from Cima Dome. The Consortium lists two specimens from Inyo County, both from the Panamint Mountains, west of Death Valley. The CNDDB (2008b) lists 19 locations for Rusby's desert mallow; most of these are in the vicinity of the Clark Mountain Range.

Rusby's desert mallow is widely distributed within the Ivanpah SEGS project area, where it occurs in very low numbers. In 2008, 15 individuals of Rusby's desert mallow were mapped in 12 locations within the Ivanpah SEGS project area, within Ivanpah 1, 2 and 3, the construction logistics area and the utility corridor (Table 5-1; Figure 5-1, Appendix A). All of these locations consisted of one or two individuals. No individuals of this taxon were detected in 2007, likely because most *Sphaeralcea* shrubs were nearly leafless due to drought at the time of the field surveys, so it would not have been possible to distinguish Rusby's desert mallow from the much more common desert mallow.

Conservation status

Table 5-2 (see Section 5.1) summarizes the conservation status of Rusby's desert mallow. It is not federally or state-listed. Rusby's desert mallow is identified as Sensitive on the list of California BLM Special Status Plants (BLM 2007). *Sensitive* plants are defined as those that are not federally or state-listed, but are designated by the BLM State Director for special management consideration. The CNPS Inventory (2008) includes Rusby's desert mallow on List 1B, meaning that it is rare and endangered throughout its range. The CNDDB, using the natural heritage methodology ranking system (NatureServe 2008), has assigned Rusby's desert mallow to a global rank of G4T1 and a state rank of S1.3. A global rank of G4T1 means that the variety *eremicola* of *Sphaeralcea rusbyi*, known as Rusby's desert mallow, is limited to fewer than 6 occurrences, or fewer than 1000 individuals, or less than 2000 acres, throughout its range; whereas, all varieties of *Sphaeralcea rusbyi* considered together have a global rank of 4, meaning that the species as a whole is apparently secure, although there are some reasons for concern. The state ranking of S1.3 means that Rusby's desert mallow (*S. rusbyi* var. *eremicola*) is limited to fewer than 6 occurrences, or fewer than 1000 individuals, or less than 2000 acres, and the threat extension of .3 means that it is not very threatened in California.

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APPLICATION FOR CERTIFICATION,
DOCKET NO. 07-AFC-5

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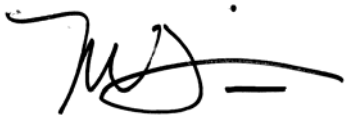

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