

Section 4 Supplemental Information

4.1 Floodplain Statement of Findings

Western is required by U.S. Department of Energy (DOE) policy and procedures in 10 CFR 1022 to make an assessment of activities affecting floodplains regulated under EO 11988, Floodplain Management (42 FR 26951, May 24, 1977). Western finds that all necessary information to conduct the assessment and comply with the DOE requirement has been included in the Draft and Final EIS. Proposed project activities, regardless of plant site selection or transmission line route, would involve designated 100-year floodplains in only a few locations where proposed transmission lines span dry washes. There are no practical alternatives that entirely avoid the designated 100-year floodplains. Any single or cumulative impact to the 100-year floodplain due to structure location or construction would be negligible and insignificant. The proposed action would conform to state and local flood protection standards. Measures to minimize harm to floodplains during construction and maintenance activities are incorporated. These measures include, as examples, prompt revegetation of temporarily disturbed areas, use of silt fences and soil stabilization techniques for erosion and drainage control, structure placement to avoid floodways, and use of existing access roads and other previously disturbed areas to the greatest extent possible to reduce new disturbance in the floodplain.

4.2 Western's Fault Duty Mitigation

Several new generation and transmission facilities have been proposed for southern Nevada. Some (the IEC and the Ivanpah-Mead 230-kV transmission line) interconnect directly at Mead Substation. Others interconnect away from Mead Substation. The addition of multiple new generators will indirectly increase the fault duty requirements or 230-kV service at Mead Substation beyond its current rated capability. Fault duty is the capability of substation circuit breakers to safely interrupt power flow in the event of a short circuit. Current capability at Mead may be exceeded within one year.

Western is proposing, as an independent action, to mitigate the potential fault duty deficiency by replacing 48 230-kV 63-kA (63,000 amp) circuit breakers with 80-kA breakers. This action is related to, but not driven by the proposed IEC interconnection at Mead. Western is conducting a separate environmental review for the fault duty mitigation per the DOE NEPA Implementing Procedures (10 CFR 1021).

4.3 Thermal Plume Analysis

A concern was expressed by the BLM regarding potential effects of a thermal plume on aircraft operations at the proposed Ivanpah Airport. The concern was based on the premise that heat generated from normal plant operations could create turbulence that could affect aircraft landing or taking off from the airport.

Calculations have been made regarding potential effects of a thermal plume from the Ivanpah Energy Center, if the plant were to be located at the Primm, Nevada plant site. Potential effects on aircraft operations can only be estimated due to a wide range of uncertainties related to airport design and runway orientation, specific plant site (and therefore, heat source) location, flight path orientation, and actual physical effects on aircraft stability.

Thermal plume associated with the Ivanpah Energy Center would originate from the two main turbine exhaust stacks and the air cooling tower. Based on worst case atmospheric conditions (light to moderate winds [1 - 5 m/sec, or 2 - 11 mph], in the daytime or on cloud-covered nights), higher wind velocities and/or clear nights would reduce thermal plume emissions.

Plume rise from the main stacks is calculated by the EPA air quality model based on engineering calculations of stack exhaust temperature and volume flow. The same equations can be used to estimate plume rise from the heated air rejected from the cooling tower. The cooling tower volume flow was estimated from fan size and power to be about 40 million standard cubic feet per minute. Based on the flow volume, the known heat capacity of air, and the rejected heat (Btus) (i.e., that not directly converted to electricity), the temperature rise above ambient can be calculated. It was assumed for this calculation that 95% of the unused British thermal units (Btus) were rejected to the atmosphere via the cooling tower. Calculated results are as follows:

Plume Height from Main Stacks - 1,000 ft to 5,000 ft above ground level (higher plume is associated with lower wind speed of 2 mph)

Plume Height from Cooling Tower - 3,300 ft to 15,000 ft above ground level

Estimated plume heights on clear nights with light winds are 600 ft for the main stacks and 1200 ft for the cooling tower.

Based on available data, the Primm plant site would be offset to the east from the flight path that would be used for the southern end of the east runway of Ivanpah Airport and commercial aircraft approaching (using instrument landing system) or departing from the nearest runway would be more than 2,000 horizontal feet from the plant site. The existing Bighorn Generating Facility would be closer to the flight path than that of the proposed Ivanpah Energy Center. Smaller aircraft on visual approach or landing could overfly the plant site; however, using a typical 20:1 flight path, such aircraft would be at a minimum altitude of 660 feet above ground level.

In summary, it is unlikely that a commercial aircraft would overfly the Primm Plant site during normal takeoff or landing operations. However, the site could be overflowed by smaller aircraft operating without instrument landing system. Actual effects of flights through the calculated thermal plume would differ in accordance with aircraft type, atmospheric conditions, and other factors.

4.4 Archaeological Analyses

A Class III cultural resources survey was conducted following completion of the site file search, literature review, and research design. Survey transects that were conducted as part of the survey were a maximum of 30 meters apart covering the area of approximately 64 square miles, which included the area of potential effects (APE).

Sixteen new sites were recorded during the survey. A site description was prepared for each site, which included artifact summaries, feature(s) descriptions, and other pertinent site data. An IMACS site form was filled out for each site. Site sketch maps were drawn for each site, and boundaries and datums were recorded using a Trimble Geo Explorer III[®] GPS unit. Photographs were taken of each site, and diagnostic artifacts were recorded with a GPS and plotted on the site sketch map. Shovel probes were conducted where topography suggested potential subsurface cultural deposits of the eligibility of the site was questioned. The site datum (consisting of a rebar spike with an orange cap) was established and labeled with a metal site tag for each site. Finally, sites were evaluated for eligibility using the National Register of Historic Places (NRHP) criteria, the historic contexts, and the research questions that were prepared for the project. Nine previously recorded archaeological sites that are located within the APE were revisited and IMACS forms were updated accordingly. Thirty isolated artifacts also were recorded during the Ivanpah Energy Center survey. Each of the isolated finds was recorded on an isolated find table and recorded with a GPS. There were no artifacts collected during the cultural resources survey.

Inventory Results and Eligibility Recommendations.

Ten previously recorded archaeological sites and 16 new archaeological sites were recorded during the Ivanpah Energy Center inventory. Of the 26 sites, 20 are historic, four are prehistoric, one is multi-component, and one is documented as an “isolated artifact.” All 16 newly recorded sites are recommended as ineligible for nomination to the NRHP. Of the 10 previously recorded sites, one is eligible and nine are ineligible for nomination to the NRHP. Although Site 26Ck5180 includes NRHP-eligible transmission line, the segment through the project area is a non-contributing element. Previously recorded sites are summarized in the following table. Location information has not been included to ensure confidentiality.

BLM No.	State No.	Description	NRHP Eligibility
CrNV-53-4685	26Ck4685	Historical Artifact Scatter	Ineligible
CrNV-53-5829	26Ck4692	Historic and Modern Dump	Ineligible
CrNV-53-5843	26Ck4723	Historical Isolated Artifact	Ineligible
CrNV-53-5844	26Ck4724	Isolated Artifact	Ineligible
CrNV-53-7090	26Ck5090	Prehistoric and Historical	Ineligible
CrNV-53-5914	26Ck5180	Historic Transmission Line System	Ineligible*
CrNV-53-7232	26Ck5685	Railroad	Eligible**
	26Ck6110	Historical Artifact Scatter	Ineligible
	26Ck6111	Historical Artifact Scatter	Ineligible
	26Ck6112	Historical Artifact Scatter	Ineligible

*Within the project area, Site 26Ck5180 is a non-contributing element to a NRHP eligible transmission line.
**The segment of 26Ck5685 within the APE is recommended as a non-contributing element.

Newly Recorded Archaeological Sites

Sixteen new sites were recorded during the Ivanpah Energy Center Class III field survey. Of the 16 sites, 12 are historical and four are prehistoric. All 16 newly recorded sites are recommend as ineligible for nomination to the NRHP. Newly recorded sites are summarized in the following table. Location information has not been included to ensure confidentiality.

Field Number	Description	NRHP Eligibility
IV-01	Mining Operation	Ineligible
IV-02	Prospecting/Mining	Ineligible
IV-03	Transmission Line	Ineligible
IV-04	Mining Operation and Camp	Ineligible
IV-05	Historical Artifact Scatter	Ineligible
IV-06	Historical Artifact Scatter	Ineligible
IV-07	Lithic Scatter	Ineligible
IV-08	Historical Artifact Scatter	Ineligible
IV-09	Historical Artifact Scatter	Ineligible
IV-10	Historic Artifact Scatter	Ineligible
IV-11	Historical Artifact Scatter	Ineligible
IV-12	Historical Artifact Scatter and Dump	Ineligible
IV-13	Historical Artifact Dump	Ineligible
IV-14	Lithic Scatter	Ineligible
IV-15	Lithic Scatter	Ineligible
IV-16	Lithic Scatter	Ineligible

Newly Recorded Isolated Finds

A total of 30 isolated finds were recorded during field surveys for the Ivanpah Energy Center project. Historic and prehistoric finds totaled 21 and nine, respectively. Newly

recorded finds are summarized in the following table. Location information has not been included to ensure confidentiality.



Isolated Find Number	Description
IV-IF-01	Isolated rock cairn with a milled lumber post in the center that cannot be dated.
IV-IF-02	A modified five-gallon fuel can (bucket) with no base mark.
IV-IF-03	A modified five-gallon fuel can with dial spout, steel bucket handle and a spider web base pattern.
IV-IF-04	Two modified, rectangular five gallon fuel cans (buckets)
IV-IF-05	Five sherds and a base of a glass jar made by Brucking Glass Company (1925 – 1971) (Toulouse, 2001)*
IV-IF-06	Two aqua thick walled bottle fragments*
IV-IF-07	One HIT milk can with “punch here” on it (1930 – 1975) (Simonis, 1997).
IV-IF-08	One HIT milk can, not measurable.
IV-IF-09	Isolated grinding slab fragment of unknown igneous material.
IV-IF-10	Rock cairn, roughly curricular, 32 inches high and 46 inches wide.
IV-IF-11	Chalcedony multi-directional core.
IV-IF-12	Fruit can 3-15/16 x 4-9/16
IV-IF-13	10 sherds of Maopa Gray Ware with a smooth finish*
IV-IF-14	Hinged tobacco tin with a ridged base
IV-IF-15	Eight fragments of aqua glass with bubble inclusions*
IV-IF-16	12 fragments of aqua glass with bubble inclusions “R&Co 29” on the base.
IV-IF-17	A hole-in-cap can 3-4/16 (D) x 4-7/16 (L), with a cap that is 1-11/16
IV-IF-18	20 pieces of aqua glass with a “cola” finish auto bottle*
IV-IF-19	23 pieces of purple glass*
IV-IF-20	An isolated distal biface fragment composed of purple siltstone.
IV-IF-21	Aqua glass insulator (in 6-8 pieces) and part of a steel cable.
IV-IF-22	Three amethyst glass sherds*
IV-IF-23	A brown chert core and an internal flake*
IV-IF-24	An isolated HIT milk can 214 X 406 cm.
IV-IF-25	An isolated HIT milk can 215 X 314 cm.
IV-IF-26	Two middle stage white chert flakes.
IV-IF-27	Crushed HIT milk can.
IV-IF-28	An isolated red chert secondary flake
IV-IF-29	Three mid-late stage white chert flakes
IV-IF-30	Two middle stage chert flakes

* Multiple fragments from original artifacts.

HIT refers to “Hole in Top”

Project-related Impacts and Summary of Conclusions

Site 26CK5685, located along the Union Pacific Railroad right-of-way (ROW) near Jean, Nevada, is the only NHRP-eligible site within the APE. Site 26CK5685 is the San Pedro, Los Angeles, & Salt Lake Railroad (SP, LA, & SL). Under the leadership of William A. Clark, the SP, LA, & SL was chartered on March 20, 1901 (Myrick, 1992). The route was constructed from 1903 to 1905, and operated until 1921. The early focus of the SP, LA, & SL was the development of freight service; however, passenger service also was developed by the line. With the annexation of the City of San Pedro by Los Angeles in 1916, the railroad changed its name to the Los Angeles and Salt Lake Railroad (LA & SL) (Signor, 1988). The Union Pacific Railroad (UPRR) assumed the route in 1921 and has continuously operated, maintained, retrofitted, and upgraded the ROW. Passenger service on the LA & SL ended in 1971. By 1988, the LA & SL was formally merged into the UPRR system (Signor, 1988).

The railway segment that is within the Ivanpah Energy Center APE consists of a raised fill and gravel track grade, rails and ties, and a paralleling maintenance access road. The features have been upgraded and modified and most of the original materials have been replaced by regular maintenance and/or advances in technology. Maintenance repairs and upgrades have altered or removed the original planned features of the track and only the coarse remains intact. The maintenance road also has experienced continuous use and has lost historic integrity.

Significance

The development of western railroads is significant to the broad pattern of regional, state, and national history. As a whole, the site has been previously recommended as eligible to the NRHP under Criteria (a) and (c). However, the segment that is located within the project area is not recommended as a contributing element to Site 26Ck5685. The operation of the UPRR within the ROW of the SP, LA, & SL Railroad has compromised the integrity of the segment. Regular maintenance and upgrades to the fill and gravel track grade, rails and ties, and the maintenance road have replaced the original historic components and only the course remains.

The BLM has recommended that Site 26Ck5685 not be eligible for inclusion in the NRHP and has indicated that it is unlikely to provide any additional information beyond that gathered during the field survey. Avoidance of the site is not necessary and no additional work is needed.

4.5 Paleontological Analyses

A field reconnaissance was conducted during January 15 and 16, 2003 to determine paleontological resources that could be affected by construction, operation, or maintenance of the Ivanpah Energy Center at either the Goodsprings Plant Site or the Primm Plant Site. The reconnaissance also included ancillary facilities such as: permanent and temporary access roads, transmission lines, and pipeline corridors. No

significant paleontological resources were observed during the reconnaissance; however, invertebrate fossils were noted in the Devonian Sultan Limestone, near the north end of the project area. The invertebrates consisted of molds of a small brachiopod and a poorly preserved horn coral (order Rugosa). The uppermost map unit in the area is noted on available geologic maps as Qal (Quaternary alluvium). A lower alluvial unit that was noted by Corsetti (2002), and considered by several authors to be Qoa (older Quaternary alluvium), occurs in an outcrop near the proposed Table Mountain Substation, but would not be affected by the project (regardless of plant site location). Although no fossils were observed within the unit, it contains some medium to fine grained sediments that have been interpreted as having at least a low potential for vertebrate fossils of Pleistocene age.

A sequence of volcanic mud flows (lahars) and inter-bedded water laid tuffs were noted in Tertiary volcanic rocks (unit Tv) near the summit of McCullough Pass. Although the Tertiary volcanic unit was not noted in the class one (literature) survey as having paleontological potential, the presence of the inter-bedded clastic units indicates that the unit does have at least a low to moderate potential for significant paleontological resources. Cave deposits or pack rat middens were not encountered during field surveys.

Survey of Transmission Line Segments and Localities

Paleontological field surveys were conducted at the proposed Goodsprings Plant Site and along transmission line corridors to Mead Substation. The following information provides an overview of resources along each transmission line segment:

Transmission Line Segment	Description	Potential Likelihood for Paleontological Resources
30	Formations noted include the Goodsprings Dolomite (DCg), Sultan Limestone (Ds), Monte Cristo Limestone, and Pleistocene to Recent alluvium (Qal).	Recrystallization of the Goodsprings Dolomite within the area precluded the presence of any paleontological resources. However, a small rugose coral was collected from the Sultan Limestone.
50	The segment lies along Quaternary alluvium (Qal).	Periodic spot-checking confirmed that depositional environment is not suitable for paleontological resources.



Transmission Line Segment	Description	Potential Likelihood for Paleontological Resources
60	A small area of Pre-Cambrian rocks (pCU) that have been metamorphosed to the point of serpentinization was noted. Outcrops of Goodsprings Dolomite and some unaltered and undivided Cambrian quartzite and shale (Cu) occur adjacent to the corridor; however no fossils were found.	Although no fossils were noted during the field reconnaissance, Tertiary volcanic rocks in the McCullough Range unconformably overly a sequence of inter-bedded volcano-clastic rocks, including several lahar flows.
90	The segment consists of Quaternary alluvium (Qal).	There is no potential for paleontological resources along the segment.
110 and 130	The segments consist of Quaternary alluvium (Qal).	There is no potential for paleontological resources along the segments.
140	The segment lies over fine grained Quaternary alluvium (Qal) which appears to be primarily of eolian deposition.	There is no potential for paleontological resources along the segment.

Conclusions

Fossils were only found within the Sultan Limestone and only consisted of a small horn coral of an undetermined genus. Sultan Limestone is limited to the vicinity of the proposed Table Mountain Substation. The lack of substantive paleontological resources within the area indicates that construction, operation, and maintenance of the Ivanpah Energy Center (and ancillary facilities) at the Goodsprings Plant Site would not adversely affect paleontological resources in the area.

4.6 Tribal Consultation

As discussed in the Draft EIS, the Bureau of Land Management contacted 14 Native American Tribes regarding the proposed Ivanpah Energy Center project. Upon issuance of the Draft EIS, the tribes were notified in writing that the Draft EIS was available for review. Additionally, a supplemental letter was mailed to notify interested parties, including Native American Tribes of Public Hearing meeting places, dates, and times. As of this writing, no formal comments or concerns have been submitted by the tribes. Western Area Power Administration is conducting an expanded consultation with the Native American tribes to meet Native American Consultation requirements of the U.S. Department of Energy. Comments or concerns received on the Ivanpah Energy Center as

a result of Western's expanded Native American consultation will be recorded in the project's Administrative Record.

4.7 Expanded "No-Action" Text

Discussion of the "No Action" Alternative has been expanded at the request of BLM staff. The expanded discussion is provided by resource category in the following text.

Geology

Application of the No Action Alternative would result in no affects to geological, minerals, and soils in the project area. Current and (potentially) future mining activities in the area would be unaffected for the foreseeable future.

Groundwater and Surface Water

Application of the No Action Alternative would result in no affects to groundwater or surface waters in Ivanpah Valley.

Biological Resources

Application of the No Action Alternative would result in no affects to biological resources in the project area. The plant site would remain in its current relatively undisturbed condition for the foreseeable future. Areas that would be used for access, water supply pipeline, and transmission lines that have been previously disturbed would continue to undergo revegetation into the future.

Cultural Resources

Selection of the No Action Alternative would result in no impacts to cultural resources that are known to be, or could be, within the project area. Existing sites of archaeological interest would remain unchanged for the foreseeable future.

Paleontological Resources

Important paleontological resources are not known to be present in the project area. Selection of the No Action Alternative would preclude the potential disturbance of such resources, should they be present, although presently unknown.

Land Use and Zoning

Selection of the No Action Alternative would result in continuation of present land uses into the foreseeable future. The alternative would preclude rezoning of plant site lands to industrial use; the plant, access roads, water supply pipeline, or transmission lines would not be constructed.

Rangeland Management

Grazing in the area is presently limited to the Jean Lake Allotment, which is located west of I-15. A No Action Alternative would result in no affect to grazing; areas that would

receive relatively minor temporary impacts due to transmission line construction would remain in their present, previously disturbed condition.

Recreation

The Ivanpah Energy Center, access roads, and water supply pipeline would be located within an area of little or no recreational use. A portion of the transmission line crosses areas that are used for recreational purposes. However, if the proposed action were not to be constructed, ongoing recreational activities would continue unaffected.

Transportation

Traffic levels and safety along SR 161 would remain at current levels if the Ivanpah Energy Center were not to be constructed.

Hazardous Materials

Selection of the No Action Alternative would ensure that no hazardous or non-hazardous materials would be in use as a result of the Ivanpah Energy Center. However, the presence of such substances would continue to occur through other sources.

Visual Resources

If the Ivanpah Energy Center or any of the project components were not to be constructed, visual resources within those areas would remain in their present condition. The plant site, access roads, wastewater treatment plant site, and transmission line corridors would remain in their present condition, which includes native desert and areas that have been previously modified as a result of industrial facilities, roads, and transmission lines.

Climate and Air Quality

Numerous mobile and stationary emission sources are presently in the Ivanpah Valley. If the Ivanpah Energy Center were not to be constructed, those sources would continue to be present. However, incremental increases to air pollutants that would be attributable to the facility would not be incurred.

Noise

The Goodsprings area is relatively remote and absent of noise-generating activities that are common within metropolitan areas. Selection of the No Action Alternative would eliminate potential sources of noise from the Ivanpah Energy Center, but would not ensure that other (possibly more offensive) noise levels would not be introduced in the area as development within Ivanpah Valley increases.

Socioeconomics and Environmental Justice

If the Ivanpah Energy Center or any of its components were not to be constructed, benefits to employment, local tax revenues, and local businesses would not be realized.

Consequently, implementation of the No Action Alternative would result in no affect on Goodsprings, Jean, or Clark County in general.

4.8 Revised Acreage Tables

Acreage tables presented as Tables ES-2 and ES-3 and corresponding Tables 6-2 and 6-3 in the DEIS have been revised as a result of comments received. The revisions represent minor adjustments in proposed water supply pipeline lengths and acreages reported for the Goodsprings and Primm Plant Site Alternatives and additional temporary work areas that would be needed to construct the natural gas supply pipeline from the Kern River Gas Transmission pipeline to the Primm Plant Site. The revised tables are presented as follows:

**Areas of Disturbance by Project Component
Proposed Goodsprings Plant Site Alternative**

Goodsprings Site – includes Option 2 across toe of mountain and line to Table Mountain						
	BLM ROW	Land Disturbance Within BLM ROW		Land Disturbance Outside of BLM ROW		Private and State Lands
		Permanent	Temporary	Permanent	Temporary	
Ivanpah Energy Center						
Plant Site (N-75493)	30.0	30.0				
Temporary Laydown Area (N-75493)	10.0		10.0			
Natural Gas Supply Pipeline (N-75471)	Negligible	Negligible	Negligible			
Telecommunications Line (N-75895) ⁽¹⁾	1.7		0.8			
Access Roads (N-75493)						
Northern Access Road (County Road 53Y) ⁽²⁾				2.7		
Southern Access Road ⁽³⁾					2.6	
Water Treatment Plant (no BLM permit required)	State of Nevada Land					0.7
Water Supply Pipeline (N-75475)						
Parallel to UPRR ROW and Co-located with Transmission Corridor (~52,600 linear ft)	12.1 ⁽⁴⁾		48.3 ⁽⁵⁾			
Ivanpah-Mead #2, Ivanpah-Table Mountain #1 & #2, and Pahrump-Mead Interconnections (N-75471 and N-75472)						
Approx. Line Length (~251,000 linear ft)						
Pole Sites (380)		<0.1				
Pole Work Areas (100x200 each)			174.5			
P&T Sites			2.8 ⁽⁶⁾		27.6 ⁽⁷⁾	
New Access Roads		4.8 ⁽⁸⁾				
Spur Roads		4.1 ⁽⁹⁾			5.2 ⁽¹⁰⁾	
OPGW	69.2 ⁽¹¹⁾					
Temp. Laydown Areas (total)					18.0	
Total Proposed Goodsprings Site		38.9*	236.4	2.7	53.4	0.7

Goodsprings Site – includes Option 2 across toe of mountain and line to Table Mountain

- (1) Total length - 7,200 linear ft -- 10 ft wide permanent ROW, 25 ft temporary disturbance along 1,400 linear feet.
- (2) 7,500 linear ft – increase from 10 ft wide to 26 ft wide, pave 20 ft. width.
- (3) 14,000 linear ft – increase from 10 ft side to 18 ft wide.
- (4) 10 ft wide permanent ROW, partially within project transmission line corridors,
- (5) 40 ft wide temporary disturbance
- (6) 4 sites within ROW, (100x300 each)
- (7) 40 sites outside of ROW, (100x300 each)
- (8) 5,000 linear feet x 18 ft, from Table Mountain Sub. to Mead Sub. (2.1 ac), plus 6,500 linear feet x 18 ft, across toe of mountain (2.7 ac)
- (9) 10,000 linear feet (spur roads) x 18 ft (4.1 ac)
- (10) 12,500 linear feet (spur roads) x 18 ft from Table Mountain Sub. to Mead Sub. (5.2 ac)
- (11) OPGW = 12 ft wide throughout length of ROW

Note: Linear feet and acreages among transmission line alternatives and plant access options differ slightly.

*Includes Western Area Power Administration's withdrawn lands at the Mead Substation.



Areas of Disturbance by Project Component Primm Plant Site Alternative

Primm Site – Includes to Table Mountain Circuit						
	BLM ROW	Land Disturbance Within BLM ROW		Land Disturbance Outside of BLM ROW		Private and State Lands
		Permanent	Temporary	Permanent	Temporary	
<i>Ivanpah Energy Center</i>						
Plant Site (N-75493)	Private Industrial Land					30.0
Temporary Laydown Area (N-75493)	Private Industrial Land					10.0
Natural Gas Supply Pipeline (N-75471)	19.9 ⁽¹⁾	0.5 ⁽²⁾	32.1 ⁽³⁾			
Telecommunications Line (N-75895)	None required					
Access Roads (N-75493)	None required					
Water Treatment Plant (no BLM permit required)	State of Nevada Land					0.7
Water Supply Pipeline (N-75475)						
Parallel to UPRR ROW (~60,000 linear ft)	13.8 ⁽⁴⁾		55.1 ⁽⁵⁾			
Ivanpah-Mead and Ivanpah-Table Mountain Circuits (N-75471 and N-75472)						
Approx. Line Length (~285,900 linear ft)						
Pole Sites (410)		<0.1				
Pole Work Areas (100x200 each)			188.3			
P&T Sites			3.4 ⁽⁶⁾		30.3 ⁽⁷⁾	
New Access Roads		4.2 ⁽⁸⁾				
Spur Roads		4.1 ⁽⁹⁾			5.2 ⁽¹⁰⁾	
OPGW	78.8 ⁽¹¹⁾					
Temp. Laydown Areas (total)					18.0	
Total Primm Site Alternative		8.8*	278.9	- 0 -	53.5	40.7

- (1) 0.5 ac metering station plus 19.4 ac permanent pipeline ROW (50 ft width)
 - (2) 100 x 200 ft metering station
 - (3) 1.0 acre temporary workspace at metering station, 2.0 acre temporary workspace along pipeline corridor, and 75 foot-wide temporary disturbance along pipeline ROW (16,900 linear ft x 75 foot-wide = 29.1 acres.
 - (4) 10 ft wide permanent ROW
 - (5) 40 ft wide temporary disturbance (an alternative using transmission line corridors would result in 69,800 linear feet, and 64.1 acres of disturbance).
 - (6) 5 sites within ROW, (100x300 each)
 - (7) 44 sites outside of ROW, (100x300 each)
 - (8) 5,000 linear feet x 18 ft, from Table Mountain Sub. to Mead Sub.(2.1 ac), plus 5,000 linear feet x 18 ft from IEC to the north (2.1 ac)
 - (9) 10,000 linear ft (spur roads) x 18 ft (4.1 ac)
 - (10) 12,500 linear feet x 18 ft from Table Mountain Sub. to Mead Sub. (5.2 ac)
 - (11) OPGW = 12 ft wide throughout length of ROW
- Note: Linear feet and acreages among transmission line and water supply pipeline alternatives options differ slightly.
*Includes Western Area Power Administration's withdrawn lands at the Mead Substation.



4.9 HAP Emissions

The table below (replaces Table 5-15a of the DEIS) shows a full inventory of HAPs emissions for the Ivanpah Energy Center facility. As discussed in Section 2, Response to Comment # M1.5, the total estimated emissions of all HAPs are 6.38 tons/yr. This is less than the limits given in DAQM Rule 12.2.18 of 10 tons/yr for a single HAP or 25tons/yr for total HAPs. Thus, the requirements of Rule 12.2.8 would not apply for this project. This information is included in the application submitted by the applicant to the DAQM.

Estimated Hazardous Air Pollutant (HAP) Emissions

HAP	Turbines		Aux. Boiler		Fire Water Pump	
	Emfac ^a lb/MMBtu	tons/yr	Emfac ^a lb/MMBtu	tons/yr	Emfac ^a lb/MMBtu	tons/year
Formaldehyde ^b	1.1×10^{-4}	1.64	7.1×10^{-5}	4.3×10^{-5}	7.9×10^{-4}	4.0×10^{-6}
Benzene	1.2×10^{-5}	0.18	2.0×10^{-6}	1.2×10^{-6}	7.8×10^{-4}	3.9×10^{-5}
1,3 Butadiene	4.3×10^{-7}	0.01				
Acrolein	6.4×10^{-6}	0.10			7.9×10^{-6}	3.9×10^{-7}
Dichlorobenzene	--		1.1×10^{-6}	6.9×10^{-7}		
Naphthalene	1.3×10^{-6}	0.02	5.8×10^{-7}	1.0×10^{-3}	1.3×10^{-4}	6.5×10^{-6}
Toluene	1.3×10^{-4}	1.94	3.2×10^{-6}	3.5×10^{-7}	2.8×10^{-4}	1.4×10^{-5}
PAH	2.2×10^{-6}	0.03			8.2×10^{-5}	4.1×10^{-6}
Propylene Oxide	2.9×10^{-5}	0.43			2.8×10^{-4}	1.4×10^{-5}
Acetaldehyde	4.0×10^{-5}	0.60			2.5×10^{-5}	1.3×10^{-6}
Xylenes	6.4×10^{-5}	0.97			1.9×10^{-4}	9.7×10^{-6}
Ethyl benzene	3.2×10^{-5}	0.48				
Arsenic	--	--	1.9×10^{-7}	1.1×10^{-7}		
Beryllium	--	--	1.1×10^{-8}	6.9×10^{-9}		
Cadmium	--	--	1.1×10^{-6}	6.3×10^{-7}		
Chromium	--	--	1.3×10^{-6}	8.0×10^{-7}		
Cobalt	--	--	8.0×10^{-8}	4.8×10^{-8}		
Manganese	--	--	3.6×10^{-7}	2.2×10^{-7}		
Mercury	--	--	2.5×10^{-7}	1.5×10^{-7}		
Nickel	--	--	2.0×10^{-6}	1.2×10^{-6}		
Polycyclic Organic Matter	--	--	8.4×10^{-7}	5.0×10^{-7}		
Selenium	--	--	2.3×10^{-8}	1.4×10^{-8}		
Subtotals (tons/yr)		6.38		1.0×10^{-3}		9.3×10^{-5}
TOTAL HAPS		6.38	tons/yr			

^a HAPS emission factors are from AP-42: Turbines - Section 3.1; Aux Boiler: Section 1.4; Pump: Section 3.4
^b Formaldehyde emissions reduced by 85% control efficiency provided by CO oxidation catalyst. (S. Roy, Docket A-95-51, USEPA, December 30, 1999). No credit taken for control of other HAP constituents.

4.10 Relocation of Table Mountain Substation

A concept that would co-locate the proposed Table Mountain Substation for the Table Mountain Wind Generation Facility (TMWGF) within the Ivanpah Energy Center Goodsprings plant site (if selected) was identified after the preparation of the Draft Environmental Impact Statement. If such a co-location were to take place, it would prove beneficial to both projects and the environment in general. If the Table Mountain Substation were to be co-located at the Ivanpah Energy Center, potential visual impacts of the Table Mountain Substation along Sandy Valley Road would be mitigated and 10 acres of currently undeveloped public land would not be required. The Table Mountain Substation is not part of the Ivanpah Energy Center project; however, both facilities would interconnect with the Valley Electric Association system. Two 230-kV circuits would interconnect the two facilities and would enhance overall electrical systems reliability. The two new circuits would slightly increase visual impacts between Sandy Valley Road and the co-located substation. These two circuits and the Table Mountain portion of the IEC substation would not be constructed if Table Mountain Wind Energy Project were not to be constructed.

The co-location would only be a viable option if both the Goodsprings Plant Site and the Table Mountain Wind Energy Project were constructed. Development of the Ivanpah Energy Center at the Goodsprings Plant Site would eliminate the need for a separate Table Mountain Substation. If the Ivanpah Energy Center were not to be developed, but the Table Mountain Wind Energy Project were to be developed, previously identified plans for the Table Mountain Substation along Sandy Valley Road would remain unchanged.

Relocation of the Table Mountain Substation to the Ivanpah Energy Center at the Goodsprings Plant Site would require four 34.5-kV circuits to be constructed from the vicinity of the proposed Table Mountain Substation site near Sandy Valley Road to the Ivanpah Energy Center switchyard. Existing Pahrump-Mead 230-kV single-circuit structures from Sandy Valley Road through Crystal Pass would be rebuilt to include two 34.5-kV circuits that would be constructed under the 230-kV circuit. The other two 34.5-kV circuits would be installed within the corridor that would have been used for the 230-kV double-circuit interconnections. The four 34.5-kV circuits would enter the Ivanpah Energy Center across the toe of the mountain west of the plant site (as originally described as Option 2 and shown on Figure 3-12 in the DEIS). Two 230-kV circuits would continue to be needed to interconnect to the existing VEA Pahrump-Mead 230-kV Transmission Line and one single-circuit 230-kV transmission line would be required for the Ivanpah-Mead Transmission Line, as originally proposed. The original circuit configuration was shown on Figure 3-8 of the DEIS; the modified circuit configuration is shown on the following figure (Figure 4-1). The lines would be constructed within the same parallel corridors, as originally described in the DEIS; no additional land or right-of-way would be required. Structure configurations would consist of combinations of 230-kV single-circuit with 34.5-kV underbuilt circuits. A typical 230/34.5-kV structure configuration is shown on Figure 4-2.

Land required for the reconfigured 230-kV and 34.5-kV circuits would be essentially the same as originally proposed for the Ivanpah Energy Center Goodsprings Plant Site. Although not part of the Ivanpah Energy Center Project, Table Mountain Substation would no longer be needed, thus eliminating related impacts along Sandy Valley Road. Inclusion of the substation at the Ivanpah Energy Center would be within the original footprint of the facility and essentially the same number of single-pole structures would be required. The original Ivanpah Energy Center footprint would remain unchanged; components within the plant site would be reconfigured, as shown on Figure 4-3. Potential impacts related to the co-location of Table Mountain Substation are summarized in the following table (Table 4-1).