Mojave National Preserve

National Park Service

U.S. Department of the Interior

ENVIRONMENTAL ASSESSMENT for

Installation of Cathodic Protection on the Calnev Pipeline in Soda Lake, Mojave National Preserve, San Bernardino County, California

July 2015

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Please address written comments to:

Superintendent
Mojave National Preserve
ATTN: Calnev Pipeline EA Comments
2701 Barstow Road
Barstow, California 92311

Environmental Assessment for Installation of Cathodic Protection on the Calnev Pipeline in Soda Lake, Mojave National Preserve, San Bernardino County, California

SUMMARY

Calnev Pipe Line, LLC (Calnev), an operating partnership of Kinder Morgan Energy Partners (Kinder Morgan), proposes to install a cathodic protection (CP) system to its Calnev Pipeline system as it crosses Soda Lake in Mojave National Preserve. Cathodic protection is necessary to ensure the long-term integrity of two petroleum transport pipelines. The Calnev Pipeline system consists of one 8 5/8-inch pipeline and one 14-inch pipeline transporting petroleum products from Colton California to delivery points in San Bernardino County and terminating in Las Vegas, Nevada. Both pipelines pre-date the 1994 establishment of Mojave National Preserve. The 8 5/8" pipeline was constructed in the early 1960s, while the 14" pipeline was installed in the early 1970s.

Underground pipelines are protected from corrosion by an exterior coating. They are further protected by CP systems designed to resist corrosion. These systems can take several forms but generally involve the installation of metal components in the subsurface, in close proximity to the pipeline, which are sacrificially corroded in place of the pipeline itself. Other pipeline inspection and maintenance activities are also required by the Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) regulations (49 CFR Part 195).

A CP system, consisting of a combination of sacrificial magnesium anode CP stations, two solar impressed current CP stations, and 39 above-ground test stations, is currently in place along the Calnev Pipeline across Soda Lake in Mojave National Preserve. Based on testing results, Calnev has determined the magnesium anodes are depleted, that the pipelines are now protected wholly by solar impressed current, and that the coating on the 8-inch pipeline has begun to corrode. Calnev needs to replace the CP system to adequately protect the two pipelines and reduce the potential for future releases of fuels within the Preserve. An in-line corrosion inspection was run in July 2013 in response to the depleted state of the CP system. During this inspection, no pipeline conditions requiring immediate response were detected. Another comprehensive Smart Pig run on the 8-inch pipeline is scheduled for May/June 2015.

The purpose of this environmental assessment (EA) is to analyze the consequences of taking no action and compare it to three action alternatives, all of which would protect the Calnev Pipeline system from corrosion and associate leaks.

1. Alternative A: No Action. Under No Action, the existing magnesium anode system, with two above-ground solar impressed current stations and 39 above-ground test stations, would remain in place in a depleted condition. The pipelines would continue to corrode, increasing the risk of an unscheduled fuel leak and threat to public health and safety, or shutdown of the pipelines due to unsafe conditions.

2. Alternative B: Install two additional solar impressed current CP stations, and upgrade the two existing solar impressed current CP stations. This alternative would include the installation of 24 Hi Silicon cast iron anodes to a depth of 7 feet below ground surface, a central solar power unit at each station, and buried electric cables connecting each anode to the solar power unit, each solar power unit to the 8-inch pipeline, and, at two locations, between the 8-inch and 14-inch pipelines. Each new solar impressed current station would consist of a triangular 8- by 10-foot steel cage mounted with solar

photovoltaic electrical panels. The solar panels on the two existing stations would be replaced with larger panels.

3. Alternative C: Upgrade Existing Magnesium Sacrificial Anode CP Systems with Zinc Anode Stations. For this alternative, the 39 magnesium anodes would be replaced with 60 zinc anode stations, spaced 200 feet apart along the length of the pipelines, installed to a depth of 25 feet.
4. Alternative D: Replace existing magnesium anode system with zinc anode system in the same locations. This alternative would install new zinc anodes and wiring in the 39 locations where magnesium anodes currently exist.

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1.0 PURPOSE AND NEED FOR ACTION

1.1 PURPOSE AND NEED

The Calnev Pipeline System transports petroleum product from Colton, California to Las Vegas, Nevada with several delivery points between the start and end points. Two pipelines, 8 5/8-inch and 14-inch in diameter, cross Mojave National Preserve, a unit of the National Park System, for 18.2 miles, at a depth of 24 to 30 inches. They are collectively referred to as the Calnev Pipeline. Within this segment, 4.5 miles of the pipeline traverse the Mojave Wilderness, established in 1994 with the California Desert Protection Act, under the Wilderness Act of 1964. Above-ground ancillary facilities include two solar-powered impressed current CP stations, and 39 CP anode test stations. The majority of this segment is buried in Soda Lake, a highly corrosive environment in which the Calnev Pipeline System requires higher levels of cathodic protection than along the rest of the system.

Both pipelines operate under right-of-way (ROW) grants issued by the Bureau of Land Management (BLM). The grant for the 8 5/8-inch pipeline was authorized in 1962 for an indefinite period; it will remain valid until either the BLM decides to terminate the grant or Calnev ceases its operation, decommissions the line, and restores the ROW. The grant for Calnev 14-inch pipeline was initially issued in 1975 for a 30-year period; it was renewed in 2013 in two parts. Calnev Pipeline operates the entirety of the 14" pipeline on federal lands, except for the segment in Mojave National Preserve, under a 20-year BLM ROW grant. The segment of pipeline in Mojave National Preserve is authorized under a separate BLM ROW grant valid for 10 years.

The existing cathodic protection, a buried magnesium sacrificial anode system, has exhausted its useful life; the pipeline system is presently being protected by two solar impressed current (IC) systems at localized points on Soda Lake plus another solar IC system located east of Soda Lake at the Baker Pump Station in the Preserve. These solar IC systems have limited lifespans, and need to be replaced and/or enhanced to adequately protect the Calnev Pipeline System and prevent risks to health and human safety. The last evaluation of the CP system was performed in November 2014. At that time, the magnesium anodes were 100% depleted and provided no source of current to the pipelines. The impressed current systems, which are located outside of wilderness, are temporarily supplying current to protect the segment within wilderness. To distribute current far enough to compensate for the depleted anodes, the existing impressed current system must over-voltage the pipeline, causing the coating to separate from the metal. This temporary protective process is not sustainable over the long term.

In 2012 Calnev Pipeline, Inc. submitted a special use permit application to Mojave National Preserve to install cathodic protection along the Calnev Pipeline through Soda Lake. Calnev Pipeline wants to perform work on their pipeline that falls outside the scope of the ROW grant. In addition, the proposed work area lies in designated wilderness now administered by the National Park Service. Both the expired and existing ROW grants refer to "construction, operation, maintenance, [and] termination" for the Calnev Pipeline. This installation of cathodic protection is considered "maintenance" of the Calnev Pipeline.

Compliance with the National Environmental Policy Act (NEPA) must be completed before special use permits are issued. Moreover, due to the pipeline's location in wilderness, all work on the Calnev Pipeline must be carried out with due consideration and maximum protection of the wilderness character. This Environmental Assessment examines options for cathodic protection of the Calnev Pipeline System with consideration for its existence within a unit of the National Park System, within wilderness as defined by the 1964 Wilderness Act and 1994 California Desert Protection Act. It has been prepared according to the National Park Service Director's Order Number 12 (DO-12): Conservation Planning, Environmental Impact Analysis, and Decision-Making;

the Handbook, Conservation Planning, Environmental Impact Analysis and Decision-Making (National Park Service 2001a), and the 2011 update to DO-12 (National Park Service 2011). The EA also meets the requirements of the National Environmental Policy Act of 1969 and implementing regulations, 40 CFR Parts 1500-1508.

1.1.1 DESCRIPTION OF PRESERVE

Mojave National Preserve is a 1.6 million-acre unit of the National Park System, established by Congress on October 31, 1994, through the California Desert Protection Act. Mojave National Preserve is a vast expanse of desert land that represents a combination of Great Basin, Sonoran, and Mojave Desert ecosystems. This combination allows a visitor to experience a wide variety of desert plant life in combinations that exist nowhere else in the United States in such proximity. Of Mojave's 1.6 million acres, about 695,000 acres are designated wilderness. The Calnev Pipelines cross this wilderness in the area of Soda Dry Lake, for a distance of approximately 4.5 miles.

The National Park Service prepared a Foundation Document (NPS 2013) for Mojave National Preserve in 2013. This document reiterates the Preserve's significance as defined in its enabling legislation and general management plan.

1.2 LIST OF ISSUES AND IMPACT TOPICS

1.2.1 IDENTIFICATION OF ISSUES

Mojave National Preserve initiated a public scoping period for the Proposed Action in the publication and mailing of a news release on September 3, 2014, and in a re-issue of the news release to a wider mailing list on October 28, 2014. The initial scoping period ended on October 3, 2014, and no comments were received. The second scoping period ended on November 28, 2014. One comment was received, from the Lahontan Regional Water Quality Control Board. It has been considered in the development of this document.

Issues and impact topics for this EA were developed based on conformance of the project with the Preserve's purpose, significance, and management objectives; professional knowledge of the potentially-impacted resources within the project area; and conformance of the project with the legal requirements associated with the wilderness designation in the project area.

The presence of the project within a wilderness area was a primary consideration in working with the Applicant to design the specific tasks as part of their proposed action (discussed as Alternative B, in Section 2.1.2), in the development of alternatives (see Sections 2.1.3 and 2.1.4), in the consideration of alternatives which were eliminated from detailed evaluation (see Section 2.5), and in the impact analysis (see Section 3.6). In addition, the NPS has evaluated the proposed action and alternatives using the minimum tool analysis procedure in the draft Minimum Requirements Decision Guide (MRDG) provided in Appendix A.

Table 1. Justifications for topics retained to analyze potential impacts

Impact Topic	Reasons for Retaining Impact Topic
Public Health & Safety	The Calnev Pipeline transports petroleum products, which are hazardous to humans. Threats to public health and safety increase with the risk of petroleum spills on the pipeline. Options for reducing this risk involve handling, storage, use, and disposal of hazardous materials; physical hazards associated with heavy equipment; disturbance of contaminated soils and/or water; and increased risk of fire. For these numerous reasons, this topic is reserved for further analysis.
Visitor Experience	The project area lies in Soda Lake, a desert playa protected by Congressional designation as wilderness. It is a popular destination for visitors to Mojave National Preserve. The project area lies within the viewshed of Soda Lake near the I-15 Zzyzx Road exit where visitors frequently stop for photo opportunities. Impacts to the visitor experience from the project proposal will be further analyzed.
Special Status Species	Desert bighorn sheep (*Ovis canadensis nelsoni*) are protected as a California species of special concern. A herd populates the southern Soda Mountains, and frequently crosses Zzyzx Road to utilize surface waters on Soda Lake. Due to its protected status, impacts to desert bighorn from the proposed actions will be further analyzed.
Wildlife	Soda Lake provides unique habitat for desert wildlife, including perennial water sources. The numerous species found in vicinity of Soda Lake and Soda Mountains make this area popular for scientific field research. This impact topic is reserved for further analysis.
Wilderness	The project area, Calnev Pipeline right-of-way, crosses Soda Lake west-east within the Mojave Wilderness. Its presence is an exception to National Park Service policy, which does not allow for oil or gas leases within national park units, or for rights-of-way in wilderness. Further analysis of the project's impacts to wilderness must be considered.

1.2.2 IMPACT TOPICS DISMISSED FROM DETAILED ANALYSIS

CULTURAL RESOURCES

This section addresses effects on archeological sites, cultural landscapes, ethnographic resources, historic and prehistoric structures, and museum collections. Calnev conducted an inventory and survey for cultural resources in the project area, and the results are provided in the Cultural Resources Survey Report, Mojave National Preserve Project, dated October, 2014 (WSA 2014). Mojave National Preserve is currently in the process of submitting the report to the State Historic Preservation Office (SHPO) for their review and concurrence. Based on the results of the report and the nature of the proposed actions, the impact to cultural resources in Mojave National Preserve would be negligible to minor; they are discussed in detail below.

Archeological Resources

Four prehistoric sites were identified in Calnev's cultural resources inventory and survey. Of these, two (CA-SBR-1068 and CA-SBR-5119) were previously recorded sites for which no evidence was found during the survey. A third site, CA-SBR-541, is not in the project area, but is crossed by the pipeline access road. The Calnev report did not make recommendations for the site as a whole, but recommended that the features identified in their survey are not contributing elements to NRHP eligibility of the site. In addition, the report concluded that the project would not impact the site. The fourth site, WSA-KM-MNP-2, is located in the project area. The Calnev report recommended that this site is ineligible for inclusion in the NRHP, and that the project would not impact the site.

As a result, impacts to archeological resources would be none to negligible. Because no impacts would be greater than minor, archeological resources were dismissed from further analysis.

Cultural Landscapes

The proposed action would introduce new visible elements to the landscape. In the short-term, construction equipment would be present in the project area for up to 33 days. In the long-term, above-ground solar impressed current stations and test stations would remain in the project area. The impact would be minimized by the use of materials that would blend into the landscape, such as fences and other structures that are colored to resemble desert soils and vegetation. The project would result in negligible to minor impacts to cultural landscapes that would be mitigated by the measures described above. Because greater than minor impacts would not occur, this topic is dismissed from further analysis.

Ethnographic Resources

Native American groups traditionally associated with the Preserve were consulted through the mailing of the scoping notice on October 28, 2014. No groups responded with comments or concerns regarding the project. Because the project would not impact ethnographic resources, this topic is dismissed from further analysis.

Historic Structures

Three historic structures were identified in Calnev's cultural resources inventory and survey. Of these, one site, P-36-62395, was a previously recorded site for which no evidence was found during the survey. This site is also not located within the project area. The other two sites, WSA-KM-MNP-1 and CA-SBR-2340H, are both located in the project area. Site WSA-KM-MNP-1 was identified through review of the 1956 Soda Lake 7.5-minute topographic quadrangle, but no artifacts were identified during the survey. The Calnev report did not make recommendations for the site as a whole, but recommended that the portion of the road within the project area is not a contributing element to the NRHP eligibility of the site. The report also concluded that the project would not impact the site. Site CA-SBR-2340H is the railroad grade for the former Tonopah and Tidewater

Railroad, which crosses the Calnev Pipeline access road within the project area. The railroad ceased operations in 1940, and its rails were removed as scrap metal during World War II. The grade no longer has any of its original hardware, including tracks or ties, and the berm has been breached by the original construction of the Calnev Pipeline. The Calnev report did not make recommendations for the site as a whole, but recommended that the portion of the railroad berm within the project area is not a contributing element to the NRHP eligibility of the site. The report also concluded that the project would not impact the site.

Impacts to these historic structures would be negligible. Because there would be no impacts greater than minor, this topic is dismissed from further analysis.

Museum Objects

No potential museum objects were identified in the project area in the Calnev inventory and survey, and none are expected to be encountered during the project. Because potential museum objects would not be impacted or added to the Preserve collections at this time, there would be no impact to museum objects or collections. As a result, this topic is dismissed from further analysis.

SOUNDSCAPE

In accordance with Management Policies 2006 (National Park Service 2006) and Director's Order 47: Soundscape Preservation and Noise Management (National Park Service 2000), an important part of the NPS mission is preservation of natural soundscapes associated with national park units. Natural soundscapes exist in the absence of human sound. The proposed project would have negligible to minor short-term adverse impacts on soundscapes from construction equipment and vehicle noise to transport equipment. These short-term activities would also affect visitor experience, special status species, wildlife, and wilderness. Potential impacts are described and evaluated under the visitor experience, special status species, wildlife, and wilderness impact topics, which have been retained for further analysis. Since short-term construction impacts on soundscapes are transitory and do not exceed a minor threshold, and the short-term construction noise impacts to wilderness, wildlife and visitor use and experience are described and evaluated under other impact topics, soundscapes was dismissed from further analysis as a separate impact topic.

INDIAN TRUST RESOURCES

Sacred sites are managed according to requirements of Executive Order 13007 and Section 5.3.5.3.2 of Management Policies 2006 (National Park Service 2006). The proposed project would not affect any sacred sites or Indian Trust Lands. This impact topic is, therefore, dismissed from further analysis.

AIR QUALITY

Emissions of particulates that could affect air quality, including visibility in the general vicinity of the Preserve, would temporarily increase during ground disturbing activities from the use of vehicles on and off paved roads, and from exhaust from gasoline- or diesel-powered vehicles and equipment. This equipment would also temporarily emit various air pollutants. The duration of the impact would be a maximum of 33 days, and would cease upon the completion of construction. Because of the short-term, localized nature of the activities, the CP installation activities would not affect the attainment status of the airshed that encompasses Mojave National Preserve and would not affect the airshed designation (e.g. the Class II designation under the prevention of significant deterioration program) at the Preserve. Because the adverse impacts described above would not exceed a minor threshold, this impact topic is dismissed from further analysis.

CLIMATE CHANGE

Activities associated with the CP installation would have an incremental but negligible effect on climate change through the emission of additional carbon dioxide and other potential greenhouse gasses from construction equipment and operations of gasoline- or diesel-powered vehicles. This impact topic is, therefore, dismissed from further analysis.

SOILS

The Soda lake basin is filled with clays and clayey sands. Some studies infer the sediment thickness of the Soda Lake basin to be as great as 2000 feet (Billhorn and Feldmeth, 1985). This fine-textured soil is relatively stable in undisturbed areas of the lakebed where wet and dry cycles have formed a crust over the surface. When the crust is disturbed, soils are readily blown by wind, and large dust storms within the Soda Lake basin and vicinity are common.

Soils near the project area are largely composed of these fine silty clays, with a varying component of sands, rock and coarser rubble washed from the mountains directly west. Therefore, disturbance of soils by the project does have the potential for adverse impacts to soil resources. The EA quantifies the amount of soil disturbance for each alternative in Tables 1, 2, and 3; provides a comparison of the level of disturbance among the alternatives in Table 4; and uses the level of disturbance as an indicator of potential impacts to visitor experience and wilderness throughout Sections 3.3 and 3.6, respectively. Therefore, a separate analysis of soil disturbance, using the same quantities, would be repetitive and would not further inform the assessment. Therefore, a separate analysis of soil resource impacts is not provided.

VEGETATION – NATIVE PLANT COMMUNITIES

The western margin of Soda Lake features wetland or marshy areas, but their total extent and the amount of standing water associated with these areas vary with season and with the relative abundance of regional winter precipitation occurring from year to year. Vegetation occurring in these wetter margin areas include cattails and rushes as dominant species, with saltgrass (*Distichlis spicata*) and pickleweed (*Allenrolfia occidentalis*) as associates. Natural vegetation of the area is characteristic of creosote bush scrub and alkali sink-playa edge plant communities. Dominant native plant species found in the uplands near Soda Dry Lake include creosote bush (*Larrea tridentata*), burrobush (*Ambrosia dumosa*), saltbush species (*Atriplex* spp.), honey mesquite (*Prosopsis glandulosa*), and Saltgrass (*Distichlis spicata*). Cattails (*Typha domengensis*), bullrush (*Scirpus olneyi*) and rush (*Juncus cooperii*) occur along the wetland edges of the lake and are particularly abundant on the western and eastern lake edges (National Park Service 2001b).

Construction would be limited to the dry lake area, which is devoid of vegetation. The project would involve driving along the existing two-track road to access the work areas on the dry lake, but construction traffic would be limited to the existing disturbed area. Construction would not involve planting of non-native species of plants or otherwise cause the spread of these species through management of sources of backfill soil and other measures. The project would, therefore, have short-term, negligible adverse effects on vegetation-native plant communities. This impact topic has, therefore, been dismissed from further analysis.

WATER RESOURCES

Aquatic resources are either absent or rare in areas that could be affected by the proposed project. Although soil disturbance will be done as part of the project, the soil disturbance would occur on the flat surface of the dry lake, so there is no potential for associated erosion of soil into adjacent dry or ephemeral-flow drainages. Also, although Soda Dry Lake does flood with water, the project can only

be implemented when the project area is dry and the soil surface is hard. Therefore, no project activities would occur when water is present.

The jurisdictional status of Soda Dry Lake was evaluated by the U.S. Army Corps of Engineers (USACE) in 2013 in association with the proposed Soda Mountain Solar project (USACE 2013). Soda Dry Lake is the elevation low point for drainages that fall within the Soda Lake Valley Groundwater Basin. It serves as the terminus for unnamed project drainages, as well as for all other waters within this isolated intermontane area. All surface flows that enter Soda Dry Lake either primarily evaporate or percolate into the groundwater table. Soda Dry Lake is located past the terminus of the Mojave River. In their analysis, the USACE determined that the published uses for Soda Dry Lake are limited to few non-surface water uses, including (historic) salt mining and hiking. Soda Dry Lake, as the essential terminus for all project drainages, is not a Traditional Navigable Water (TNW). Moreover, Soda Dry Lake is not an (a)(3) water as defined by 33 CFR 328.3. Soda Dry Lake does not meet criteria (a)(3)(i-iii), as it: i) does not have use for surface water recreation or other purposes by foreign or interstate travelers, ii) does not have harvesting activities of fish or shellfish that may be sold in interstate or foreign commerce, and iii) does not have surface water industrial usage by industries in interstate commerce. Since Soda Dry Lake is an intrastate, isolated water without a surface water connection to commerce, the USACE concluded that tributaries to the dry lake are non-jurisdictional waters of the United States.

Soda Dry Lake is considered a Water of the State of California. The proposed project will result in fill being placed in the lake, so Calnev will obtain a permit from the Regional Water Quality Control Board (RWQCB) per the Waste Discharge Requirements (WDR) program. Calnev will submit an application for a Lake and Streambed Alteration Agreement (LSAA) from the California Department of Fish and Wildlife (CDFW). For a project with the same impacts and in the same location that took place in 2006, CDFW indicated that an LSAA permit was not required. However, the agency has requested that Calnev submit a new application for the current project.

Based on these factors, there is no potential for the project to affect water resources, and this impact topic has, therefore, been dismissed from further analysis.

SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

The proposed project would provide local contractor jobs to construct the CP system, as well as benefits through the local purchase of materials needed for the activities. These activities would result in short-term, minor beneficial effects on the local economy in the vicinity of the Preserve. This impact topic has, therefore, been dismissed from further analysis. Impacts associated with the CP installation would also not disproportionately affect any minority or low-income population or community. This impact topic has, therefore, been dismissed from further analysis.

THE PRESERVE NATURAL LIGHTSCAPE (NIGHT SKY)

The project would be constructed during daytime hours and would have no adverse effects on natural lightscape quality. Similarly, the proposed CP installation would have no effects on natural lightscape (night sky). This impact topic has, therefore, been dismissed from further analysis.

ENERGY CONSERVATION

The project would require a negligible amount of oil, gas, and electrical energy to construct the CP installations. If an alternative requiring an electric current applied to the CP system is selected, that current would be supplied by solar panels. This impact topic has, therefore, been dismissed from further analysis.

PRESERVE OPERATIONS

The project would have a short-term, negligible effect on preserve operations during the installation of a CP system. The project would have a minor, long-term, beneficial effect on preserve operations by reducing the potential for releases of petroleum fuels from the pipelines. This impact topic has, therefore, been dismissed from further analysis.

2.0 ALTERNATIVES

2.1 DESCRIPTION OF ALTERNATIVES

Calnev and the National Park Service identified and evaluated four alternatives for CP systems at the Preserve, including a No Action alternative and three action alternatives. A variety of potential technologies and configurations were identified and considered in developing a reasonable range of alternatives. The features which were varied among the potential technologies and configurations included:

- The type of CP technology, including passive electric current versus imposed current, and composition of anodes;
- The type of equipment and transport needed to construct and operate the CP system;
- The location of the CP system;
- The number of areas and magnitude of soil disturbance, including an option with no new disturbance;
- The design life, which affects impacts by determining the frequency at which replacement of the system is needed in the future; and
- The residual visual effects, in terms of the number, size, and appearance of above-ground structures remaining for long-term operations.

Each potential feature was considered in terms of its ability to meet the purpose and need, technical feasibility, safety, and expected environmental impacts. Those which could not accomplish the purpose and need, were determined to be infeasible or unsafe, or had environmental impacts substantially greater than other alternatives, were eliminated from further consideration (see Section 2.5). In addition, one alternative which had the same impacts as other alternatives, but had no advantage in its technical effectiveness, was also eliminated from detailed evaluation. The remaining features were developed for detailed analysis in Section 3. The physical components, locations, and construction of each of remaining alternatives are presented as Alternatives A through D below.

2.1.1 ALTERNATIVE A: NO ACTION

Under the No Action alternative, a new CP system would not be installed on Soda Dry Lake. The existing CP system on the pipelines, which includes 39 subsurface magnesium anodes, 39 test stations, and 2 solar impressed current stations, would remain in operation. This would include continuation of PHMSA-required measurements and inspections of the CP system using motorized vehicles, which occurs 12 times per year.

Because the magnesium anodes are depleted and the pipelines are now protected solely by solar impressed current, this would eventually create unsafe pipeline operating conditions and thus be in violation of multiple regulations. This could lead to one of two potential consequences: the pipeline could be shut down due to the unsafe condition or non-compliance with regulations; or, if the unsafe condition were not recognized, further degradation of the condition of the pipeline could lead to releases of petroleum fuels.

2.1.2 FEATURES COMMON TO ALL ACTION ALTERNATIVES

The three action alternatives (Alternatives B, C, and D) have some common features, for which the impacts would be the same under each alternative. This section summarizes those features which are common among the three action alternatives.

Each of the action alternatives would require the use of motorized construction equipment and vehicles to bring construction materials and personnel into the work zone, and to move heavy components of the CP systems into place. For each action alternative, construction equipment would include:

- Back hoe with front loader bucket, mounted with low-impact, soft, wide rubber tires, to excavate and allow for proper re-compaction;
- 2.5-ton flatbed truck with boom hoist, to carry in heavy components and hoist into place;
- Skid-steer mounted auger drilling rig to drill holes for the anodes;
- Water truck for dust control and proper compaction;
- Three pick-up trucks to transport crew members and safety equipment; and
- Service trailer to transport additional CP equipment.

The pick-up trucks would be used to transport personnel and equipment, totaling two vehicle trips per day. Other equipment would enter the right-of-way corridor once at the beginning of its phase of work, remain in the ROW until its phase of work were completed, at which point it would be removed. Work sites would be accessed from each end of the dry lake segment on the pipeline right-of-way.

The estimated size of the work force is similar for each of the action alternatives. The work crew would include one superintendent, four equipment operators, four laborers, one inspector, one Calnev representative, one line rider, and one corrosion department representative. Calnev estimates on average six people onsite at any given time, with no greater than ten people maximum, if some construction phases are simultaneously conducted. The NPS may also have an onsite monitor present during construction.

Under each action alternative, construction will include drilling of subsurface borings, placement of anodes into borings, and trenching to bury connection wires in the subsurface between anodes, test stations, and the pipelines. The number and depth of the borings, type of anode, and amount of required trenching varies between alternatives. Each trench would be less than six inches in width by approximately two feet in depth. The length of each trench would vary depending on the distance between the two pipelines; assuming a maximum distance of 25 feet between pipelines, trenches will not exceed 50 feet in total. At each test station site, Calnev would dig two excavations four feet length by four feet width by two feet depth for cable connections to be installed between the pipelines. Each trench and excavation would be backfilled with native material and compacted. Excess excavated material that cannot be returned to the auger holes or trenches would be transported off site for proper disposal. All work areas would be restored to pre-construction conditions.

Each action alternative would result in the long-term presence of additional above-ground structures in the ROW corridor. The two existing solar impressed current units (shown in Photograph 1) would remain in place in each action alternative. These units would be modified, and slightly increased in size, under Alternative B, but would largely look the same under each action alternative. Each action alternative would also require anode test stations. The above-ground, pole-mounted test station would be approximately four feet high, and would consist of a small box, about the size of a one-liter bottle, mounted on top of a three-inch diameter plastic pipe. A photograph of the test station is shown in Photograph 2 (page 9). The four-foot height of the test station is needed to hold the junction box at least one foot above previously documented flood levels in Soda Dry Lake.

Operation of each of the action alternatives would require up to two trips per year in a motorized vehicle (pick-up truck) to perform repairs due to vandalism or severe weather events.

2.1.3 ALTERNATIVE B: INSTALL TWO ADDITIONAL SOLAR IMPRESSED CURRENT CP STATIONS AND UPGRADE TWO EXISTING STATIONS

Alternative B would include upgrading the solar panels at the two existing solar impressed current CP stations, and installing two additional solar impressed current CP stations within the Soda Dry Lake Bed. The locations of the existing and new stations are shown in Figure 1. The two new stations would be evenly spaced between the two existing solar units.

One of the existing stations is shown in Photograph 1. Photograph 1 shows the station as it currently exists, topped with a 2-foot by 3-foot solar panel. Under Alternative B, the only change would be to replace the existing 2-by-3 foot panel at each station with a new 4- by 6-foot panel. This would result in the upgraded stations being approximately 1 foot higher than the image shown in Photograph 1. The two existing stations provide boosted CP at localized points along the pipeline, and would remain in operation.

Photograph 1. Existing solar impressed current system with chain link fence perimeter.

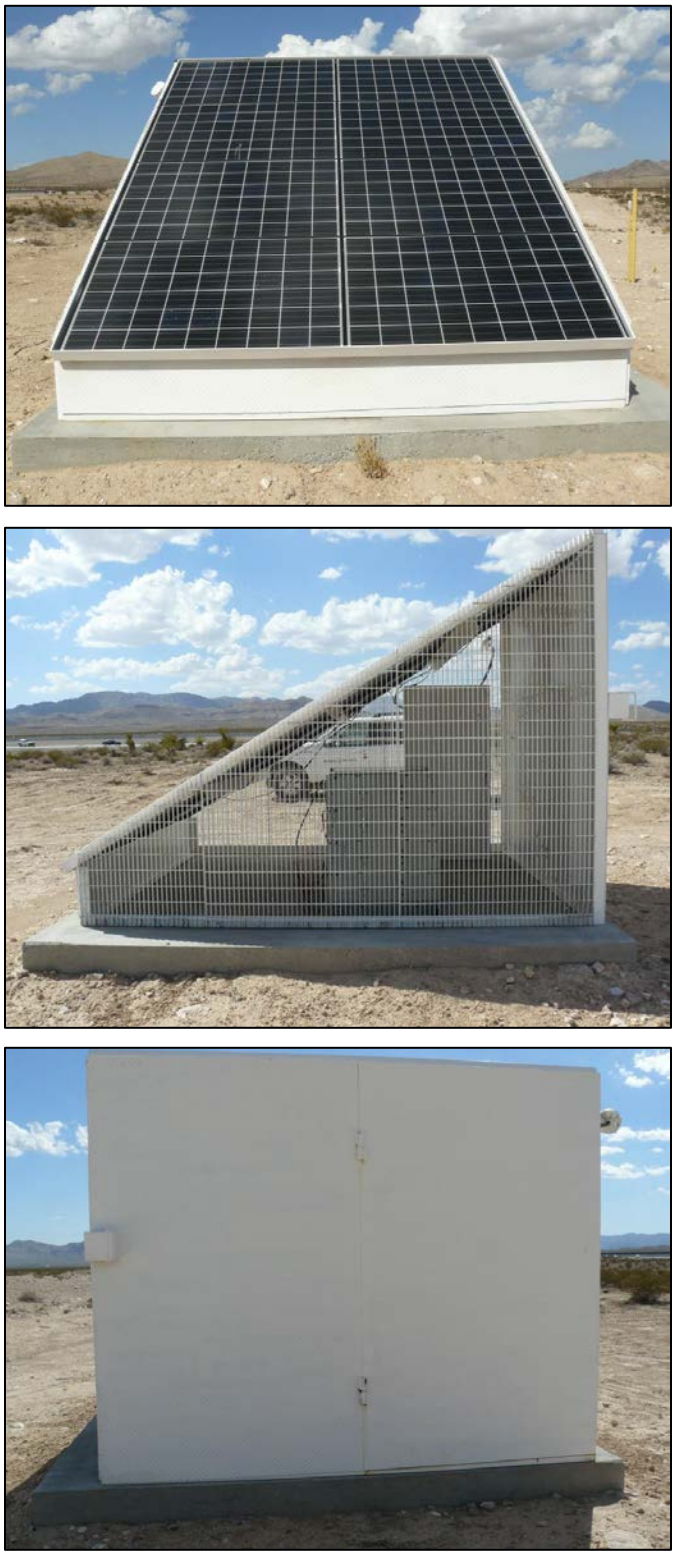
Photograph 2. Existing test station.

The two new solar impressed current CP stations would be different than the existing stations. Each new station would consist of a triangular 8- by 10-foot steel cage mounted with solar photovoltaic electrical panels. An array of storage batteries and electronic control equipment would be housed within the steel cage. The entire cage would be mounted on top of a poured concrete pad in order to keep the solar unit stable and raised above potentially high water levels in the lake bed. The system will face south, away from viewers on Interstate 15. The dark-colored face, with the solar panels, cannot be camouflaged without interfering with its operation. The back and sides of the cage, which would face Interstate 15, would be painted in a manner to blend with the desert landscape. A diagram showing the dimensions of the two new proposed stations is shown in Figure 2. Photographs 3, 4, and 5 show the front, side, and rear view appearance of the proposed stations.

Each new solar impressed current CP station would consist of 12 vertically-installed anodes, placed in line with the CP station and parallel to the pipelines. The configuration of the pipelines, solar station, anodes, and cable connections associated with each new station is shown in Figure 3. Six anodes would be installed on each side of the solar station, spaced about 10 feet apart. Each anode would be installed in a 12-inch diameter boring, vertically-augured 20 feet below existing ground surface. A profile view of each of the anodes is shown in Figure 4. Each anode would be 7 feet long, 3 inches in diameter, and be composed of Hi-Silicon cast iron. A photograph of the Hi-Silicon cast iron anodes is shown in Photograph 6. Each anode would sit on a 1-foot thick layer of metallurgical coke breeze, a conductive substrate material, at the bottom of the boring. Additional coke breeze would surround the anode to 1 foot above the anode. A 1-inch diameter plastic pipe, extending from the bottom of the boring to near the ground surface, would also be placed within the boring. This pipe would allow gases produced by reaction of the anode to vent to the atmosphere. The remaining space in the borehole would be backfilled with native material and compacted. The configuration and dimensions of the trenches and excavations required for installation of the new stations is shown in Figure 5.

Under this alternative, 29 of the existing 39 test stations would be removed. Instead of test stations being required every 300 feet, only one every 1,200 feet would be needed. The removal of each test station would involve trenching and excavations to remove the above-grade post-mounted test station and the buried wiring which connects the test station to the pipelines, and to repair and re-coat the pipelines at the wire connection locations. The configuration of trenches and excavations required for removal of the 29 test stations is shown in Figure 6.

In addition to the construction equipment that would be common to each action alternative, Alternative B would also require



Photographs 3-5. Front view (top), side view (middle), and rear view (bottom) of new proposed solar impressed current rectifier.

use of a cement truck, to pour two concrete pads for the solar units. Each 8x10 foot pad would be installed using the following parameters:

Photograph 6. High silicone cast iron anodes used with Alternative B.

- Each pad would be considered temporary, staying in place only through the operational life of the CP system;
- Each pad would be installed in a manner to facilitate future removal, once operation of the CP system is completed;
- The NPS would approve the sites for the pads in advance;
- Grading would be minimized to the extent necessary to create a stable surface;
- A durable, non-decaying material would be placed onto the ground before the concrete is poured;
- The concrete would be delivered by a vehicle with soft, wide tires to reduce soil impacts;
- The concrete pad, and the material placed on it, would be colorized and made non-reflective to reduce its visibility;
- The concrete and underlying material would be completely removed immediately upon termination of the CP system, at whatever season or date is most conducive to re-seeding or re-planting, if the area is vegetated; and
- If vegetated, the site would be re-seeded or\and planted with native species, collected and/or propagated by the Applicant.

Construction of Alternative B would last up to 22 days in duration.

Under PHMSA regulations, testing of the system is required six times per year. These inspections are performed by satellite, using a remote monitoring unit on the solar units. If the remote monitoring units are not operating, the inspections would be conducted on foot. In addition to the PHMSA-required readings, Calnev would conduct two additional maintenance inspections per year, via motorized vehicle.

Alternative B would have an estimated operating life of 25 years. The use of the solar impressed current CP system allows Calnev to adjust the voltage of the system as needed, throughout the operating life, to account for unexpected changes in the rate of anode depletion or degradation of the pipeline coating.

Table 1. Size of Work Areas and Soil Disturbance Needed for Alternative B Activities

Activity	Estimated Maximum Size of Each Work Area[1]	Total Maximum Area of Disturbance in Previously-Disturbed Area[1]	Total Maximum Area of Disturbance in Previously-Undisturbed Area[1]	Estimated Maximum Size of Trenches and Excavations[2]
Install two new solar impressed current CP stations	7500 ft^2 (150' X 50')	0 ft^2	15000 ft^2	117 ft^2 for each station, 234 ft^2 total
Upgrade two existing solar stations	2500 ft^2 (50' X 50')	5000 ft^2	0 ft^2	0 ft^2
Remove 29 test stations[3]	2500 ft^2 (50' X 50')	72500 ft^2	0 ft^2	70 ft^2 for each station, 2030 ft^2 total
Total		**77500 ft^2 (1.8 acres)**	**15000 ft^2 (0.34 acres)**	**2264 ft^2 (0.05 acres)**

1 – The maximum extent of the work areas is projected based on Calnev's description of each individual work area, in their proposed project description.

2 - The exact length of trenches will vary depending on the distance between the two pipelines at the work location, which is expected to be no more than 25 feet. Therefore, the actual area to be disturbed is likely to be smaller than this value.

3 – Note that, although soil disturbance and excavation listed for this activity would have adverse impacts, the purpose of this activity is to reduce the current number of above-ground test stations. Therefore, the temporary adverse impact would ultimately achieve a long-term, beneficial impact.

2.1.4 ALTERNATIVE C: INSTALL 60 NEW ZINC ANODE STATIONS

Alternative C would include installing 60 new sacrificial zinc anode stations within the Soda Dry Lake Bed. The locations of the new stations are shown in Figure 7.

The new stations would be spaced 200 feet apart for a distance of 12,000 feet. Figure 8 shows a map view of the configuration of the anodes, pipelines, reference electrodes, test station, and connecting wires at each station. At each station, there would be three anodes. The three anodes would be spaced 10 feet apart in a line perpendicular to the two parallel pipelines, with one anode being placed in between the two pipelines and the other two being placed 8 feet on each side of the pipelines. Two permanent reference electrodes would be installed in the subsurface outside of the pipelines.

A cross-section view of each anode station is shown in Figure 9. Each anode station would consist of three subsurface anodes, each installed in a 12-inch diameter, 25 foot deep hole. Each 40-pound zinc anode (pre-packaged with specially mixed backfill) would be lowered into the bottom of its boring with a wire attached. Each zinc anode would be about 3 feet long, and 12 inches in diameter. A photograph of the zinc anode is shown in Photograph 7. Each reference electrode would be approximately the size of a shoebox, and would be installed at the same depth as the two pipelines (approximately 2 feet deep).

Under this alternative, some of the existing 39 test stations can be re-used for the new anode stations, some can be re-used for reference electrode stations, and some would be completely removed. The existing test stations are spaced every 300 feet, while the new system would require test stations every 200 feet. Figure 10 shows the configuration of existing 39 test stations, and how the configuration would be changed under this alternative. Under this alternative, 20 of the existing stations would be re-used, 19 would be decommissioned, and 40 new stations would be installed. Of the 19 decommissioned stations, 13 would be completely removed (subsurface wiring and above-ground post), while permanent reference electrodes would be installed at the other 6 decommissioned stations. The subsurface wiring would be removed, but the above-ground, pole-mounted post would remain in place at these 6 locations. Therefore, the alternative would result in 66 above-ground, pole-mounted test stations remaining for operation.

Photograph 7. Cloth Sack is a Zinc Anode Inside Cloth Bag with Conductive Coke Breeze, for Use in Alternatives C and D. The Green/Yellow Object to the Left of the Anode is a Copper-Copper Sulphate Permanent Reference Electrode.

At each of the 19 test stations to be abandoned, the buried wiring would be removed. The removal of each test station would involve trenching and excavations to remove the buried wiring which connects the test station to the pipelines, and to repair and re-coat the pipelines at the wire connection locations. The configuration of trenches and excavations required for removal of the 19 test stations is shown in Figure 6.

Construction of Alternative C would have a duration of 33 days.

Long-term inspection and maintenance of the system during operations would require site access by motorized vehicles and use of mechanized equipment. Under PHMSA regulations, testing of the system is required twice per year. Each of these bi-annual events requires four separate site entries, one week apart, over the course of a month. Site entry is needed for the following:

- Take readings at each test station;
- Install current interrupters at each test station;
- Take a second set of readings at each test station; and
- Disconnect and remove the current interrupters.

Maintenance would require site entry by motorized vehicles a total of eight times per year. In addition to the PHMSA-required readings, Calnev would also conduct two maintenance inspections per year, accessing the pipeline by motorized vehicle.

Alternative C would have an estimated operating life of 25 years. The use of the passive sacrificial anode system does not allow Calnev to adjust the voltage of the system as needed to account for unexpected changes in the rate of anode depletion or degradation of the pipeline coating. Although this system is designed using standard engineering practices to perform for 25 years, there is

uncertainty which could result in a shorter operational life and, therefore, the need for system replacement.

Table 2. Size of Work Areas and Soil Disturbance Needed for Alternative C Activities

Activity	Estimated Maximum Size of Each Work Area[1]	Total Maximum Area of Disturbance in Previously-Disturbed Area[1]	Total Maximum Area of Disturbance in Previously-Undisturbed Area[1]	Estimated Maximum Size of Trenches and Excavations[2]
Install 60 new zinc anode stations	2500 ft^2 (50' X 50')	50000 ft^2	100000 ft^2	57.5 ft^2 for each station, 3450 ft^2 total
Remove subsurface wiring from 19 test stations[3]	2500 ft^2 (50' X 50')	47500 ft^2	0 ft^2	70 ft^2 for each station, 1330 ft^2 total
Total		**97500 ft^2 (2.2 acres)**	**100000 ft^2 (2.3 acres)**	**4780 ft^2 (0.11 acres)**

1 – The maximum extent of the work areas is projected based on Calnev's description of each individual work area, in their proposed project description.

2 - The exact length of trenches will vary depending on the distance between the two pipelines at the work location, which is expected to be no more than 25 feet. Therefore, the actual area to be disturbed is likely to be smaller than this value.

3 – 6 of these would be converted to reference electrode stations. This conversion is not expected to require any additional excavation or work area.

2.1.5 ALTERNATIVE D: REPLACE EXISTING MAGNESIUM ANODE SYSTEM WITH ZINC ANODE SYSTEM IN THE SAME LOCATIONS

Alternative D would include replacing the 39 existing anode stations with 39 new anode stations in the exact same locations. This alternative was developed to provide an alternative which minimized the amount of ground disturbance in previously undisturbed areas. The locations of the new stations would be the exact same as the current magnesium anodes, but the replacement anode would be composed of zinc, instead of magnesium, due to the longer performance life of zinc. Because the existing magnesium anodes are depleted and their original boreholes have collapsed, the new zinc anodes and wiring would need to be installed in new boreholes, trenches, and excavations. These would be located as close as possible to the existing boreholes, trenches, and excavations, so construction would not require ground disturbance in previously undisturbed areas. However, installation would still require mechanized equipment (drill rig, flat-bed truck with lift hoist, and backhoe) to be used.

The new zinc anode stations would require several trenches and excavations to be dug to allow cable connections between the anodes, the reference electrodes, the pipelines, and the test stations. The depth, length, and configuration of trenches and excavations at each anode station would be approximately the same as shown in Figure 8, but there would be 39 of the systems, as opposed to 60 for Alternative C. The 39 existing above-ground, pole-mounted test stations would be re-used. The size and appearance of the test stations and zinc anodes would be the same as shown in Photographs 2 and 7, respectively, for Alternative C.

Figure 10 shows the configuration of existing 39 test stations. Under this alternative, the 39 existing stations would be re-used, in their same locations. Six permanent reference electrodes would be installed, as well. Alternative D would result in 39 above-ground, pole-mounted test stations plus permanent reference electrodes attached to six additional test station markers.

Construction of Alternative D would have a duration of 26 days.

Long-term inspection and maintenance of the system during operations would be the same as described for Alternative C. Maintenance would require site entry by motorized vehicles a total of eight times per year. In addition to the PHMSA-required readings, Calnev would also conduct two maintenance inspections per year, accessing the pipeline by motorized vehicle.

Alternative D would have an estimated operating life of 10 years. As with Alternative C, the use of the passive sacrificial anode system does not allow Calnev to adjust the voltage of the system as needed to account for unexpected changes in the rate of anode depletion or degradation of the pipeline coating.

Table 3. Size of Work Areas and Soil Disturbance Needed for Alternative D Activities

Activity	Estimated Maximum Size of Each Work Area[1]	Total Maximum Area of Disturbance in Previously-Disturbed Area[1]	Total Maximum Area of Disturbance in Previously-Undisturbed Area[1]	Estimated Maximum Size of Trenches and Excavations[1]
Install 39 replacement zinc anode stations	2,500 ft^2 (50' X 50')	97,500 ft^2	0 ft^2	57.5 ft^2 for each station, 2,243 ft^2 total
Total		**97,500 ft^2 (2.2 acres)**	**0 ft^2 (0 acres)**	**2,243 ft^2 (0.05 acres)**

1 – The maximum extent of the work areas is projected based on Calnev's description of each individual work area, in their proposed project description.

2 - The exact length of trenches will vary depending on the distance between the two pipelines at the work location, which is expected to be no more than 25 feet. Therefore, the actual area to be disturbed is likely to be smaller than this value.

2.2 ALTERNATIVE COMPARISON

Table 4 compares the components and features of the four alternatives.

Table 4. Comparison of Components and Features of Project Alternatives

Project Component	Alternative A	Alternative B	Alternative C	Alternative D
Location with Respect to Resources	12,000-foot pipeline section on Soda Dry Lake, plus 5.2 miles of access road between Interstate 15 and project area	Same as Alternative A	Same as Alternative A	Same as Alternative A

Table 4. Comparison of Components and Features of Project Alternatives

Project Component	Alternative A	Alternative B	Alternative C	Alternative D
Conformance with Wilderness Act (see Appendix A, Minimum Requirements/Minimum Tool Analysis)	Does not conform (motorized vehicle use and above-ground structures)	Does not conform (motorized vehicle use and above-ground structures)	Does not conform (motorized vehicle use and above-ground structures)	Does not conform (motorized vehicle use and above-ground structures)
Site Access – Construction	0 trips	71 trips	135 trips	107 trips[1]
Duration - Construction	0 days	22 days	33 days	26 days[1]
Number of Construction Work Locations	0 locations	33 locations (31 previously disturbed, 2 new)	79 locations (39 previously disturbed, 40 new)	39 locations[1] (39 previously disturbed, 0 new)
Size of Construction Work Areas in Previously Undisturbed Area	0 ft^2 0 acres	15,000 ft^2 (0.34 acres)	100,000 ft^2 (2.3 acres)	0 ft^2 (0 acres)
Size of Construction Trenching/Excavation Area[2]	0 ft^2 0 acres	2,264 ft^2 0.05 acres	4,780 ft^2 0.11 acres	2,243 ft^2 0.05 acres[1]
Duration – Operations	No current timeline. Duration would be defined by rate of corrosion of the existing pipelines.	25 years	25 years	10 years
Site Access – Operations	12 trips/year	2 trips/year	10 trips/year	10 trips/year
Total Above-Ground Structures	41	14	68	41
"Large" Above-Ground Structures[3]	2	4	2	2
Effectiveness in Meeting Purpose and Need	Not effective	Effective (expected to be same as Alternatives C and D)	Effective (expected to be same as Alternative B and D)	Effective (expected to be same as Alternative B and C)
Flexibility in Controlling Rate of Anode Depletion	None	Very Flexible	Limited	None

1 – The actual comparable number of vehicle trips, construction duration, work locations, and size of project areas are 2.5 times higher for Alternative D than the 25-year life cycle of Alternatives B or C.

2 – Note that the adverse impact associated with the excavations cannot be compared directly. Of the 2,243 ft^2 of excavation associated with Alternative B, 2,030 ft^2 is for the purpose of removal of above-ground structures. The excavations for Alternatives C and D are entirely associated with installation of new above-ground structures.

3 - The solar impressed current stations are substantially larger than the test stations, having a different effect on the wilderness character of Soda Lake and the visual resources of the Preserve.

2.2.1 PROPOSED MITIGATION MEASURES

The proposed action on Soda Dry Lake, inside the Mojave Wilderness Area, would require site access using motorized vehicles, and ground disturbance involving trenching, installation of borings, movement and parking of vehicles, and placement of fill materials. The procedures to be used for site access, ground disturbance, and CP construction would be modified from standard practices in order to minimize impacts to wilderness values. For the CP system, the locations and extent of ground disturbance would vary, depending on the type of CP system selected. Therefore, there are a few options to modify the locations or reduce the extent of these activities within the wilderness area. Potential work practice modifications include the following:

- The use of motorized vehicles will be minimized, to the extent practicable. Passenger vehicles will each transport the legal maximum of crew members in order to reduce the number of vehicles required.
- The backhoe will be equipped with turf tires designed with special treads and a wide surface area to reduced ground pressure and minimize surface disturbance;
- Structures or anodes will be pre-fabricated off-site to minimize the labor and equipment required within the wilderness;
- Work within the dry lake bed will be restricted to periods of dry conditions when the ground surface is hard; and
- Tire tracks, especially near the ROW access points, will be broomed or smoothed using hand tools to minimize visual signs of disturbance and discourage future vehicular traffic.

During construction of the CP system, mitigation measures would be followed to ensure that adverse environmental effects would be either avoided or minimized. Measures would be selected based on judgments of what measures would be most effective in avoiding or minimizing impacts. In the arid to or semi-arid setting of most of the length of the pipelines, mitigation measures would focus on avoidance of special-status wildlife and plants, preventing and controlling soil erosion, and avoiding vegetation loss or damage. These actions would protect water quality and biological values associated with disturbance of soil and plant communities. Measures within the Mojave Wilderness Area on Soda Dry Lake would also include minimizing motorized vehicle access and any surface expression of the CP system or pipelines.

The following mitigation measures would typically be employed as appropriate to control soil erosion and vegetation loss and to configure the land surface to discourage soil erosion after site disturbing closure activities are finished. Given the small size of construction sites, and the limited amount of disturbance associated with the activities, the following measures would be considered effective.

General Measures

- Construction limits would be delineated by the NPS prior to any construction activity. Workers would be instructed to avoid conducting activities and disturbing areas beyond the construction limits.
- All tools, equipment, barricades, signs, surplus materials, demolition debris and rubbish would be removed from the project work limits upon project completion.
- Contractors would be required to properly maintain construction equipment and generators (i.e., mufflers) to minimize noise from use of the equipment.

- All equipment on the project would be maintained in a clean and well-functioning state to avoid or minimize contamination from automotive fluids. All equipment would be checked daily.
- Materials would be stored, used, and disposed of in a proper manner.
- A hazardous spill plan would be approved by the NPS prior to construction. This plan would state what actions would be taken in the case of a spill, notification measures, and preventive measures to be implemented, such as the placement of vehicles and generators.

Soil Erosion and Vegetation Loss

- Wait until just before beginning construction to clear vegetation and to disturb the soil;
- Minimize the area of bare soil within the approved work zone as much as possible;
- Maintain a buffer of natural vegetation around the work area to slow runoff and trap sediments;
- Consider phasing construction to minimize the extent of disturbed soils;
- Use existing roads and trails to access construction and maintenance locations to maximum extent practicable;
- Equip backhoe with soft, wide tires, and use skid-steer mounted drill rig, to reduce surface disturbance;
- Brush all work areas, including access roads within wilderness, following work activities, to remove tire tracks;
- Park vehicles and equipment and temporarily store materials on locations that are already devoid of vegetation and/or compacted from previous activities;
- If vegetation disturbance cannot be avoided and conditions warrant, reseed the disturbed area with a mixture of native, self-sustaining plant species in accordance with known, successful local techniques;
- Ensure the final land form is stable, minimizes soil erosion, and is hydrologically compatible with the surrounding area; and
- Provide slope and land form stability by reducing slope angles.

Visitor Experience

- Minimize adverse visual experiences by using fences and other structures that are colored to resemble desert soils and vegetation; and
- Minimize wilderness noise disturbance to the maximum extent possible.

Wildlife and Special Status Species

- Time construction and maintenance activities to avoid or take place outside reproductive or sensitive portions of species' life cycles; and
- For situations involving the desert tortoise, use the conservation measures specified by the "Biological Opinion for Small Projects Affecting Desert Tortoise Habitat in the Mojave National Preserve, San Bernardino County, California (1-8-98-F-17)" (U.S. Fish and Wildlife Service 1998).

Wilderness

- Restrict activities to a defined area at the construction or maintenance sites;
- Perform site restoration activities following construction to remove evidence of human activities and restore the natural conditions at the site to the extent possible. Use mitigation measures provided above under 'Soil Erosion and Vegetation Loss;'
- Keep construction equipment and crews vehicles on existing roads and trails to the maximum extent possible; and
- Minimize wilderness access and vehicle trips into and out of the site to the maximum extent possible.

2.3 ENVIRONMENTALLY PREFERRED ALTERNATIVE

In accordance with the criteria outlined in NEPA and DO-12 an environmentally preferred alternative must be identified, which must meet the following criteria:

Criterion 1: Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

Criterion 2: Ensure for all Americans, safe, healthful, productive, and aesthetically and culturally pleasing surroundings;

Criterion 3: Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;

Criterion 4: Preserve important historic, cultural, and natural aspects of national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;

Criterion 5: Achieve a balance between population and resource use that would permit high standards of living and wide sharing of life's amenities; and

Criterion 6: Enhance the quality of renewable resources and approach the maximum attainable recycling of resources.

Alternative A does not provide the necessary long-term protection for the pipelines in order to avoid potential releases of petroleum fuels in the future. Releases of fuels could result in an unsafe environment for visitors and Preserve staff, so Alternative A would not meet criteria 2 or 3. A release of fuels could have direct impacts to wildlife and special status species in close proximity to the pipeline, and could also contaminate soil and water resources close to and downgradient of the pipeline. Therefore, Alternative A would also not meet criteria 1, 3, or 4. Should the pipelines corrode to the extent that continued operation would be unsafe, the pipelines would cease operation, and would no longer serve their function in supporting the standard of living for their customers, so Alternative A would not meet criterion 5.

The three action alternatives (B, C, and D) serve to minimize the potential for future releases of fuels from the pipelines, thus minimizing the potential for unsafe conditions for visitors and Preserve staff, adverse direct impacts to wildlife and special status species, and contamination of soil and water resources. By minimizing the potential for an unsafe environment for visitors and staff, these alternatives serve to achieve criteria 2 and 3. By minimizing the potential for direct impacts to wildlife and special status species, and potential for contamination of soil and water resources, the action alternatives assist the NPS in achieving criteria 1, 3, and 4. Also, by allowing continued operation of the pipelines in the safest and most regulatory-compliant manner possible, the action

alternatives assist the NPS in maintaining a balance between the standard of living made possible by the pipeline, and maintaining the resources within the Preserve.

Among the action alternatives, each alternative would be equally effective in providing the necessary CP support for the pipelines, so would be equal in their support of criteria 1 through 5 in terms of preventing releases of fuel, and therefore maintaining safety and environmental protections during operation of the pipelines. However, each of the action alternatives would result in violation of the Wilderness Act, because each would require the use of motorized vehicles for construction, and the long-term presence of above-ground structures. There would be differences between the alternatives with respect to their impact on the experience of visitors and wilderness values within the wilderness area on Soda Dry Lake. These differences would result from different durations of construction, different areas of disturbance as a result of construction, different visual impacts associated with the surface expressions of the remaining solar impressed current stations and test stations, and different design lives of the action alternatives.

With respect to duration of construction, the differences between the alternatives are small, and the impacts from all action alternatives are short-term in duration. However, Alternative D would only have a 10-year design life, compared with a 25-year design life for either Alternative B or C. The proposed action in Alternative D would be repeated two additional times within the same 25-year duration of either Alternatives B or C. No construction is associated with Alternative A.

The level of soil disturbance, as estimated by the total number and size of the work locations, the number of work locations in previously undisturbed areas, and the amount of soil disturbance in previously undisturbed areas, also varies among alternatives. Alternative A would involve no soil disturbance. Alternative D would be the most favorable of the action alternatives, as it confines work locations and soil disturbance to areas which were already disturbed as a result of the construction of the current CP system. Alternative B would result in disturbance in two new areas, totaling 0.11 acres of new disturbance. Alternative C would result in disturbance in 40 new areas, totaling 2.3 acres of new disturbance.

The visual impact remaining from associated infrastructure would vary substantially between the alternatives, and the impact would be long-term. Alternative B would result in removal of 29 currently-existing above-ground structures, which would be beneficial to wilderness and the visitor experience, but would also result in the three- to four-fold magnitude enlargement of two solar units plus the addition of two more solar units of the same size. Alternative C would increase the total number of above-ground structures from 41 to 68. Alternatives A and D would maintain the current number of above-ground structures, which is 41. The identification of an environmentally preferred alternative requires a trade-off between impacts among the alternatives. No alternatives were identified which could completely avoid impacts to wilderness and the visitor experience. In general, Alternative B would be the most effective and flexible in providing long-term protection to the pipelines. It would result in two new solar units within the wilderness area, but would also allow removal of 29 existing test stations, and would only require construction in two previously undisturbed areas. Alternative C would require construction in 40 previously undisturbed areas, and would increase the total number of above-ground structures from 41 to 68. Alternative D would result in the least amount of disturbance, as it would require no construction activities in previously undisturbed areas. It would also not result in adding any new above-ground structures. However, it would be the least effective, among the action alternatives, in providing long-term protection to the pipelines. Alternative A would not provide any additional protection to the pipelines.

Based on these factors, Alternative A is identified as the environmentally preferred alternative.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED EVALUATION

The NPS considered a variety of alternatives, including different CP technologies, different construction and maintenance methods, and re-location of the pipeline, in order to reduce impacts and identify a means to achieve the purpose and need without violating the provisions of the Wilderness Act. Calnev Pipeline was installed prior to the 1994 establishment of Mojave National Preserve and designation of the Mojave Wilderness. It remains in compliance with the Bureau of Land Management's right-of-way regulations and policies, as defined in the Minerals Leasing Act, and may, therefore, continue to operate, in compliance with NPS regulations and policy. The NPS also considered the possibility of installing a cathodic protection system without violating wilderness character, but did not find any feasible technical option to meet this standard. It would not be feasible to sling in by air the heavy equipment required to construct any of cathodic protection system. There are no technical means of installing a cathodic protection system in the Calnev Pipeline ROW without requiring an exception to the Wilderness Act of 1964.

2.4.1 ALTERNATIVE CP TECHNOLOGIES

Calnev proposed three CP alternatives, any of which would achieve their objective of providing corrosion protection to the two pipelines. These three alternatives are.

1:1 Replacement of Current Magnesium Anodes with New Magnesium Anodes

This option would replace the current depleted magnesium anodes with new magnesium anodes, in the same locations. This alternative is similar to Alternative D, and would have the exact same impacts associated with construction. In both alternatives, a new anode would be installed in a borehole and connected to the pipelines and test stations by new subsurface wiring. Both alternatives would involve construction at the same 39 locations, each of which has previously been disturbed by the installation of the existing CP system. The only difference in the alternatives is the composition of the installed anode, with zinc being installed in Alternative D, and magnesium being installed in this eliminated alternative. This difference in composition affects the lifespan of the alternative, with the magnesium anodes projected to have a lifespan of 5 years, and the zinc anodes an operating life of 10 years.

The construction impacts of both alternatives are exactly the same. However, because the magnesium anodes would become depleted more quickly, the magnesium system would require more frequent replacement. Therefore, the construction impacts of the magnesium system would be repeated every 5 years, versus only every 10 years for the zinc system. Therefore, Mojave National Preserve chose to eliminate this option from detailed consideration, and instead consider the replacement of the current system with a zinc anode system, as Alternative D.

Reduce Scale of Calnev Proposal

The NPS considered approving a CP project of a reduced scale, which would involve installation of fewer anodes and a reduction in the number of above-ground test stations. This option ultimately led to the development of Alternative D, which is a scaled-down version of Alternative C. As discussed above, any reduction in the scale also results in a reduction in the operational life of any system. A smaller-scale system would reduce impacts in the short-term, but would result in increased impacts in the longer-term, as construction activities would need to be repeated more frequently.

Recoat the 8" pipeline crossing Soda Lake

This option would require excavation of the entire pipeline in Soda Lake. The earth would be removed from around the pipeline to approximately 2 feet below the pipe and 2 feet to each side of

the pipe, to facilitate application of new coating. The pipe would be prepared and coated using above-the-trench equipment designed for that purpose. In addition, the two existing solar impressed current units would need to be upgraded.

Install lineal mixed metal oxide anode along pipeline

Installation of this option would be completed by a plow-in method. Access pits would be dug at approximately 1000-foot intervals along the pipeline and a ribbon type anode would be plowed into the earth with a large tractor. An additional 8 solar powered CP units would be required in addition to the two existing units.

Each of these last two alternatives (re-coating and lineal mixed oxide) would require a substantially larger amount of ground disturbance than Alternatives B, C, and D. In addition, although both of these alternatives would be technically feasible and effective in meeting the purpose and need, they would not be more so than Alternatives B, C, or D. Because the initial impact analysis shows that these alternatives would have a substantially higher level of adverse impacts, these alternatives are eliminated as environmentally infeasible, as specified in Section 2.7.B of the DO-12 Handbook.

2.4.2 ALTERNATIVE CONSTRUCTION and/or MAINTENANCE ACTIVITIES

Mojave National Preserve also considered several specific features or components of the project that would reduce or eliminate construction or operations impacts. These features included:

Perform Construction without Motorized Vehicles

The NPS considered if it was possible to perform the installation of a new CP system by carrying in materials on foot or by horseback, and then installing them with hand tools only. For the solar impressed current system (Alternative B), the support structure and batteries weigh more than one ton. For each of the action alternatives, the anodes weigh 40 pounds each or up to 2,400 pounds of anodes for Alternative C. Materials of this weight cannot be carried into the project site on foot, horseback, horse-drawn wagon, or low-impact transport such as an air-cushioned vehicle. They could potentially be carried into the site by helicopter. However, once brought to the work site, these materials must be micro-sited into place, including lowering the 40-pound anodes into a 12-inch borehole. The required movement and placement of these materials cannot be done by helicopter or by hand, and require the use of a mechanized hoist or backhoe. Therefore, although a helicopter could be used to transport materials, it would not eliminate the need for the other heavy equipment, and would therefore add noise impacts without alleviating any of the other impacts.

The anodes must be installed in boreholes 25 feet deep, which would require 4-6 days each to excavate and re-fill by hand. If implemented for Alternative C, for example, this would result in approximately 300 work days for excavations, as opposed to 33 days for the drill rig. To meet benching requirements for worker safety, each hole would require surface disturbance of a minimum of a 50-foot diameter circle (for 1:1 benching), or up to 75 feet (for 1.5:1 benching). For Alternative C, hand excavation of 60 25-foot deep holes would generate direct surface disturbance of a minimum of 2.7 acres for 1:1 benching, and more than 6 acres for 1.5:1 benching. In contrast, a drill rig can excavate and re-fill each hole within 1-2 hours, and would result in total disturbance of about 0.11 acres. Therefore, a drill rig must be used as part of the construction equipment Finally, the extensive amount of trenching necessary to remove wiring from decommissioned test stations, or to install new anodes, reference electrodes, and test stations, cannot be done by hand. Similar to the boreholes, the use of hand tools would substantially increase the area of disturbance and duration of construction. These activities can only be performed using a motorized backhoe or Bobcat. Although the trenches could be excavated using a small-scale Bobcat, the backhoe is still required to provide lifting capability for the placement of the solar units, batteries, and anodes. The Bobcat

would not provide this capability. Because the Bobcat cannot completely replace the need for a backhoe, this second piece of equipment would add more impacts, without alleviating any impacts.

Both Calnev and the NPS also considered if it were possible to transport personnel into the work zone in small-scale all-terrain vehicles (ATVs), instead of pick-up trucks. While such transport is feasible, it would likely not result in reducing any impacts. Both are motorized vehicles with four wheels, so would have similar noise and tire impacts. There is also a concern that the presence of ATVs would attract recreational ATV users, thinking such vehicle use was permitted in the area. Finally, the larger size of the pick-up trucks will likely reduce the number of vehicle trips by making it easier to transport more personnel and materials per trip. Therefore, pick-up trucks will likely have the same, or fewer, impacts than ATVs.

Remove all Above-Ground Components and Features

The NPS considered if it was possible to implement the new CP system without installation of new above-ground components, or even with removal of the existing above-ground components. Replacement of the existing and proposed solar impressed current units with some form of subsurface unit is not technically feasible, as the solar units need exposure to the sun in order to function. The test stations could conceivably be placed in the subsurface, as they need no exposure to the sun to function. However, Soda Dry Lake does flood, and the electronic components within the test stations would be damaged or destroyed if they were exposed to water, especially in the saline environment of Soda Dry Lake. Therefore, the proposed test stations have been specifically designed using historical flooding information to be as low to the ground as possible, without exposing them to potential flood waters.

Install Masking Structure over Solar CP Stations

The NPS considered an option that would mask the solar CP units using a structure made of chicken wire and stucco, configured and painted to appear like a large boulder. This option would reduce visual impacts to wilderness and the visitor experience during operations, as the appearance of the structure from some angles, and from a distance, would not be that of an obviously manmade structure.

Calnev provided data regarding the construction and maintenance needs for this option. In general, this option would require more site visits using motorized and mechanized equipment during both construction and operations. The installation of the standard clamshell unit would require two mobilizations during construction, while installation of a unit treated to look like a boulder would require six mobilizations to apply various coats of chicken wire, stucco, texture, and paint to the structure. Two of those additional mobilizations would require an additional motorized vehicle carrying an additional piece of mechanized equipment, a compressor used for spraying stucco onto the structure. Based on operational experience, Calnev has also found that the boulder structure generally requires more frequent maintenance, and can be prone to vandalism. Therefore, it is estimated that this option would require two extra maintenance visits per year, each requiring re-entry of the vehicle used to apply stucco.

Although the long-term visual impact of the solar units would be reduced by this option, it would only be reduced for viewers located at some specific vantage points. The visual impact would still exist for other viewers. Also, impacts associated with the use of motorized vehicles and mechanized equipment for both construction and operations would be increased. Therefore, this option is not considered in further detail.

Perform Operations Measurements and Maintenance without Motorized Vehicles

The NPS considered if it was possible to perform the operations measurements and maintenance of the test stations on foot or horseback, without entering the project area using motorized vehicles. Calnev confirmed that the PHMSA-required measurements for the solar impressed current CP

system (Alternative B) could be performed by satellite, using remote monitoring units. In addition, if the remote units were not operable, those measurements could be conducted on foot. Therefore, this option has been partially incorporated into Alternative B. However, additional maintenance inspections and repair of damage from vandalism and/or severe weather would require use of a pick-up truck to carry equipment. For the maintenance inspections, the standard toolbox weighs more than 200 pounds, so cannot be carried by foot or horseback. For repairs, the required sandblasting equipment and paint compressor also weighs more than 200 pounds. The solar impressed current system also requires battery replacement every 5 years, and the battery would be too heavy to carry on foot or horseback.

For the zinc anode system (Alternatives C and D), the PHMSA-required inspections require installation or removal of interrupters that weigh 600 pounds for Alternative C, and 390 pounds for Alternative D. The interrupters must all be connected at the same time, so it is not possible to perform the measurements one at a time, using a single 10-pound interrupter. The readings require that the area at each test station be saturated with water, so the crew must carry a 20-gallon water tank, which would weigh 150 pounds. The requirements for the maintenance inspections and ad-hoc repairs are the same as for Alternative B. Therefore, all of the site visits required during operation of Alternatives C and D require the use of motorized vehicles and mechanized equipment.

2.4.3 RE-LOCATION OF PIPELINE OUTSIDE OF PRESERVE

The NPS considered whether implementation of a CP system could be avoided entirely by terminating the section of the Calnev Pipeline in wilderness and moving it north of Interstate Highway 15 outside of the Preserve. This option would be feasible only if agreed to by Kinder Morgan Energy Partners and Calnev Pipeline, Inc. In consideration of the ROW grants issued by the BLM for the Calnev Pipeline and existing federal law, as discussed in Section 1.1, there is no legal authority by which to require the Calnev Pipeline be relocated outside of Mojave National Preserve.

3.0 AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES

This section describes the characteristics of the affected environment that could be affected by construction and operation of the proposed CP system. The affected environment discussion is followed by Environmental Consequences, or the impact assessment. The assessment is limited to key aspects of existing conditions that relate to potential adverse effects or conditions that are of potential concern. In addition, only those aspects of the existing conditions that relate directly to the impact conclusion or form the basis for the impact conclusion are described.

3.1 CUMULATIVE IMPACT ANALYSIS METHOD

The environmental assessment also includes an assessment of cumulative impacts. The Council on Environmental Quality (1978) regulations for implementing the National Environmental Policy Act require assessment of cumulative effects in the decision making process for federal projects. Cumulative effects are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative effects are considered for both the no action and the action alternatives and are presented at the end of each impact topic discussion analysis.

Cumulative effects were determined by combining the qualitatively estimated effects of the alternatives with other past, present, and reasonably foreseeable future actions that are relevant to the operation of the pipelines within the Preserve. The only past, present, or reasonably foreseeable projects in the immediate vicinity of the proposed action area, and which could potentially combine

with the proposed action to cause cumulative effects to resources in the area, are the existing Calnev Pipeline, and the former Tonopah and Tidewater Railroad.

Because the proposed action of installing a new CP system would occur within the 50-foot right-of-way for the existing pipelines, any environmental effects associated with the construction, past operation, and future operation of those pipelines could potentially combine with those of the proposed action. There is no known or reported contamination, effects on wildlife or plants, or other effects on other resources associated with past construction and operations of the pipelines. The existing pipelines have associated above-ground facilities within the project area, including two solar impressed current systems and 39 test stations. In addition, operation of the pipelines requires inspection 26 times per year, which is generally conducted by plane, but in some cases must allow for motorized vehicle transport and mechanized tool use to make in-place measurements, observations, and maintenance. Therefore, any effects associated with above-ground structures and motorized vehicle use on the current pipelines has the potential to combine with similar effects from the proposed action.

The Tonopah and Tidewater Railroad was built in 1906-1907, to connect borax mines in Death Valley and silver and gold mines in central Nevada to the California coast. The line was never completed on either end, but a section crossing through the project area was completed and operated as a local railroad. It passes through the northwest part of Soda Dry Lake between Soda Station (the former name of Zzyzx) and the town of Baker. The T&T Railroad ceased operations in 1940, and the rails were removed for scrap metal during World War II.

The T&T Railroad grade across Soda Dry Lake can still be seen on aerial photos and topographic maps of the project area. On Figure 1, it appears as a linear feature trending just slightly east of due north, and crossing the Calnev Pipeline ROW southwest of the existing solar station #2 at milepost (MP) 140.840. The Calnev Pipeline ROW and the old railroad grade coincide at this intersection, less than 5,000 ft^2 (0.1 acres) in size, assuming a right-of-way width of 100 feet for the railroad and 50 feet for the pipelines.

There are no known or reported environmental effects associated with the old railroad grade. Nonetheless, because the railroad grade can be seen on recent aerial photographs, it may also be seen by visitors to the area. As a result, any visual expression of the railroad grade could potentially combine with the visual impact of the proposed action to create a cumulative impact to the visitor experience or wilderness values.

There are no other past or present projects in the immediate vicinity of the Calnev pipeline corridor on Soda Dry Lake. Because this area is designated as wilderness, no other projects could be implemented in the area in the reasonably foreseeable future.

The Bureau of Land Management issued right-of-way grants for two other linear rights-of-way within the Mojave Wilderness in Soda Lake, both of which pre-date the establishment of Mojave National Preserve. AT&T, Inc. and Sprint Corporation operate underground, fiber optic cables which enter the Preserve near the Zzyzx Road exit on Interstate 15, traverse along the northwestern boundary of Soda Dry Lake for approximately 4.7 miles, and then exit the Preserve near Baker. These linear utilities are located approximately halfway between Interstate 15 and Calnev Pipeline, approximately 0.5 miles from Calnev Pipeline. AT&T has applied to the Bureau of Land Management and the National Park Service for permits to install conduit and replace fiber optic cable along the entirety of the ROW. Within Mojave National Preserve, AT&T proposes to install four-inch conduit to house both existing and potential future fiber optic cable within Soda Lake.

There are additional past, present, and future projects outside of the Preserve boundaries, but still within the viewshed of Soda Dry Lake. The closest boundary of the Preserve is approximately one mile to the northeast of the proposed action location. Existing development at that location includes Interstate 15, and proposed projects include the Soda Mountain Solar Farm north of Interstate 15,

the Silurian Valley Solar project north of Baker, and a Calnev 16-inch pipeline. The proposed pipeline will run parallel to the 8 5/8" and 14" pipelines except between Zzyzx Road and Halloran Summit, where it will divert north of and adjacent to Interstate 15.

3.2 PUBLIC HEALTH AND SAFETY

3.2.1 AFFECTED ENVIRONMENT

The proposed action could potentially affect public health and safety if the construction activities have the potential to impact members of the public. Construction activities that could affect public health and safety include:

- Handling, storage, use, and disposal of hazardous materials in locations where the public could be exposed;
- Exposure of members of the public to physical hazards such as construction vehicles or heavy equipment;
- Disturbance of contaminated soil or groundwater in a location that could expose members of the public; or
- Creation of a fire hazard.

Some of these conditions do have the potential to occur in the work area during construction. Hazardous materials would be used during construction, and include petroleum products (diesel, gasoline, hydraulic fluid, transmission oil, lubricating oil and grease, waste oil, mineral oil), paint, solvents, and antifreeze. These materials would be transported on roads to the work site. Mitigation measures, discussed above as part of the proposed action, would be implemented to reduce the potential for releases of hazardous materials. These measures include the requirement to properly maintain construction equipment; maintaining equipment in a clean and well-functioning state to avoid or minimize contamination; and implementation of a hazardous spill plan approved by the NPS prior to construction.

The proposed action would also involve the use of heavy equipment and construction vehicles which, if used in close proximity to members of the public, could present a physical safety hazard. Construction of the proposed action does not present the potential for disturbing contaminated soil or groundwater. The work area on Soda Dry Lake is undeveloped, and there are no known soil or groundwater contamination issues. The proposed action also does not present the potential for creating a fire hazard. The area is also devoid of vegetation, and is not mapped as being included in any fire responsibility area by the California Department of Forestry and Fire Protection (Calfire) system. Therefore, these two potential impacts are not further analyzed.

Operation of the proposed action could affect public health and safety if the selected alternative were to create an unsafe condition which could release petroleum fuels from the pipelines in an area in which members of the public could be exposed. This could occur if the pipelines are permitted to degrade in the corrosive chemical environment present on Soda Dry Lake. The purpose and need for the project is to provide protection to the pipelines to minimize the potential for such releases.

3.2.2 ENVIRONMENTAL CONSEQUENCES

3.2.2.1 Impact Criteria and Thresholds

The following threshold definitions of impact intensity are used in the analysis of effects on Public Health and Safety:

Negligible: Overall public health and safety in the Preserve would not be affected, or the effects would be at low levels of detection and would not have an appreciable effect on public health and safety for typical visitor activities in the Preserve (considered to include the ability to participate in auto-touring/sightseeing, nature study/hiking, driving on unpaved roads, camping, hunting, and visiting ruins/historic sites).

Minor: The effect would be detectable, but would not have an appreciable overall effect on public health and safety in the Preserve for typical visitor activities (considered to include the ability to participate in auto-touring/sightseeing, nature study/hiking, driving on unpaved roads, camping, hunting, and visiting ruins/historic sites). If mitigation were needed, it would be relatively simple and likely successful.

Moderate: The effect would be readily apparent and would result in substantial, noticeable effects on public health and safety in the Preserve on a local scale for typical visitor activities (considered to include the ability to participate in auto-touring/sightseeing, nature study/hiking, driving on unpaved roads, camping, hunting, and visiting ruins/historic sites). Changes in rates of accidents or injuries could be measured. Mitigation would probably be necessary and would likely be successful.

Major: The effects would be readily apparent and would result in substantial, noticeable effects on public health and safety in the Preserve and within the county around the Preserve. Effects could lead to changes in the rate of mortality. Extensive mitigation measures would be needed and their success would not be assured.

Beneficial Effect: Beneficial effects would reduce the potential for accidents and limit hazard exposure.

Short-term: Effects of the CP installation on public health and safety would be associated with the construction period. The effect would end concurrent with or shortly after the end of the construction period.

Long-term: Effects of the presence of above-ground structures, on public health and safety would be evident indefinitely following completion of construction.

3.2.2.2 Impacts of Alternative A: No Action

Direct and Indirect Impacts. Under the No Action alternative, there would be no direct impacts to public health and safety because no construction, site access, or ground disturbance would occur, and because no structures would be constructed. No hazardous materials would be brought to the area, and there would be no heavy equipment or construction vehicles brought to the area.

Adverse impacts or threats to public health and safety could occur in the future if the lack of proper cathodic protection leads to releases from the pipeline, and members of the public were to be exposed to those releases. Because the purpose and need for the project is to respond to Calnev's identification of the depletion of the existing CP system, failure to install a new system under the No Action alternative would eventually lead to compromise of the structural integrity of the pipelines. However, even though the pipelines would continue to degrade, the potential for a threat to public health and safety would still be minimal. Instead of leading to a catastrophic failure of the pipeline and release of fuels, the No Action alternative would be more likely to lead to shut down of the pipelines before such releases could happen. In addition, even if catastrophic failure was to occur and petroleum fuels were to be released, they would be released in an uninhabited area in which vehicular traffic is prohibited. The potential for a release to happen at the same time that a visitor or park employee is present in the area is minimal.

If a release were to happen in close proximity to a park employee or visitor, the effects would be considered adverse, and major. The potential for this to happen is minimal, although the potential

would increase slightly through time as the pipelines continue to corrode. However, even with the increase in the potential for a release incident, the No Action alternative would still have a negligible effect on public health and safety for typical visitor activities in the Preserve.

Cumulative Effects. The past, present, and reasonably foreseeable future actions, including the projects identified in the section titled "Cumulative Impact Analysis Methods," would not have any effects on public health and safety. There is no known contamination or hazard to public health and safety from the existing Calnev Pipeline or the Tonopah and Tidewater Railroad, and there are no other projects in the immediate vicinity of the proposed action. The AT&T fiber optic cable replacement is 0.5 miles away, and projects outside of the Preserve are more than a mile away, and any public health or safety issues associated with those projects would not overlap with the proposed project area. There is a slight potential for an accidental release of petroleum fuels from the pipelines, such as a pipeline being struck by a vehicle or damaged by an earthquake. This potential would increase under the No Action alternative, as the pipelines would continue to corrode and would therefore be more susceptible to accidental releases. However, as discussed for the direct and indirect impacts, the pipelines would likely be shut down before such releases could happen.

Conclusions. There would be no effect on public health and safety associated with construction under the No Action alternative, because no construction activities would occur. In the long-term, failure to provide cathodic protection would increase the potential for releases of petroleum fuels in the future. Those releases could potentially occur in the presence of park service workers or visitors, although this likelihood is minimal. Therefore, the No Action alternative would have a negligible effect on visitor and employee safety. The No Action alternative would contribute a slight, adverse increment to overall cumulative impacts to public health and safety.

3.2.2.3 Impacts Common to All Action Alternatives

This section discusses the impacts to public health and safety that could occur from any of the action alternatives (Alternatives B, C, and D). The subsections following this section summarize the difference between the action alternatives, with respect to potential impacts to public health and safety.

Direct and Indirect Impacts. Adverse impacts to health and safety for park visitors and employees could occur due to handling, storage, use, and disposal of hazardous materials in locations where the public could be exposed; or exposure of members of the public to physical hazards such as construction vehicles or heavy equipment.

These conditions do have the potential to occur during construction of any of the action alternatives. Hazardous materials would be used during construction; these include petroleum products (diesel, gasoline, hydraulic fluid, transmission oil, lubricating oil and grease, waste oil, mineral oil), paint, solvents, and antifreeze. Hazardous materials would be transported by motorized vehicle to the work site. Because each action alternative involves the use of heavy equipment and construction vehicles, the added presence of hazardous materials on site could present a physical safety hazard.

The potential for members of the public to be exposed to any of these hazards is negligible. The project area on the Soda Lake is several miles from traffic corridors or inhabited structures. Public access to the project area excludes the use of motorized vehicles or mechanized transport; moreover, Preserve visitors would be excluded from the work site. All hazardous materials used during construction would be containerized, handled, transported, and disposed of according to State and Federal regulations. The potential for release of these materials would be reduced by implementation of mitigation measures, as part of the alternative. Hazardous materials would need to be stored in containers with sufficient secondary containment that meet Federal and State HazMat regulations.

Under all action alternatives, CP would reduce the potential for unscheduled releases of petroleum products from the pipelines. Although the potential for such releases to occur in close proximity to park visitors or employees, and thus cause adverse public health and safety effects, is minimal, each of the action alternatives would reduce the potential for this occurrence even further. Therefore, each of the action alternatives would have a long-term, beneficial effect on public health and safety.

Cumulative Effects. The past, present, and reasonably foreseeable future actions, including the projects identified in the section titled "Cumulative Impact Analysis Methods," would not have any effects on public health and safety. There is no known contamination or hazard to public health and safety from the existing Calnev Pipeline or the Tonopah and Tidewater Railroad, and there are no other projects in the immediate vicinity of the proposed action. The AT&T fiber optic cable replacement is 0.5 miles away, and projects outside of the Preserve are more than a mile away, and any public health or safety issues associated with those projects would not overlap with the proposed project area. There would be no other use of hazardous materials, or physical hazards from construction vehicles, associated with any other projects.

There is low risk of a petroleum release from the pipelines due to unintended causes other than corrosion, such as damage by motor vehicle or earthquake. This potential would be further reduced under each of the action alternatives, as implementation of any of the proposed CP systems would ensure the long-term structural integrity of the pipeline, maintaining its resistance to rupture as a result of accidents. Although the potential for such releases to occur in close proximity to park visitors or employees is minimal, each of the action alternatives would have an incremental, beneficial contribution to cumulative public health and safety impacts in the long-term.

Conclusions. There is a slight potential for public health and safety effects associated with construction under any of the action alternatives, because each action alternative would include the use of hazardous materials and construction vehicles. However, park visitors would not be permitted into the immediate work area during construction, and park employees present to monitor construction activities would be trained and would operate under the same health and safety requirements as the construction workers themselves. Therefore, public health and safety effects associated with construction of any of the action alternatives would be negligible.

3.2.2.4 Impacts of Alternative B: Install Two Solar Impressed Current Stations, Upgrade Two Existing Stations

The solar impressed current CP system under Alternative B would not have adverse effects on public health or safety. Most of the components of the system would be buried below ground surface. The remaining above-ground components include two new angular 8 foot by 10 foot steel cages mounted with solar photovoltaic electrical panels, two existing solar impressed current stations, and 10 test stations. These would not contain hazardous materials, and would not present any physical threat to the health or safety of park visitors or employees.

Alternative B would provide protection to the pipelines, and ensure that they do not degrade throughout the lifetime of the alternative, which is 25 years. Therefore, the Alternative B would have a beneficial effect on visitor and employee safety for that period of 25 years. Alternative B would also have an incremental, beneficial contribution to cumulative public health and safety impacts for that same time period.

3.2.2.5 Impacts of Alternative C: Install 60 New Zinc Anode Stations

Once construction is complete, the structures associated with the zinc anode CP system under Alternative C would not have any adverse effect on public health or safety. Like Alternative B, most of the components of the system would be in the subsurface. The remaining above-ground

components would be 66 4-foot high test stations, and the two existing solar impressed current stations. These would not contain hazardous materials, and would not present any physical threat to the health or safety of park visitors or employees.

Alternative C would provide protection to the pipelines, and ensure that they do not degrade throughout the 25-year expected lifetime of this CP option. Alternative C would have a beneficial cumulative impact on visitor and employee safety for this 25-year period, and no adverse impacts to the visitor experience from additional CP installations during that time.

3.2.2.6 Impacts of Alternative D: Replace Existing Magnesium Anode System with Zinc Anode System in Same Locations

Under Alternative D, structures associated with the new zinc anode CP system would not have any adverse effect on public health or safety. Similarly to Alternatives B and C, most of the components of the system would be in the subsurface. The remaining above-ground components would be 39 4-foot high test stations, and the two existing solar impressed current stations. These would not contain hazardous materials, and would not present any physical threat to the health or safety of park visitors or employees.

Alternative D would provide protection to the pipelines, and ensure that they do not degrade throughout the lifetime of the alternative, which is 10 years. Therefore, the Alternative D would have a beneficial effect on visitor and employee safety as Alternatives B and C but for a shorter period of time. The zinc anode CP system in the alternative would need to be installed every 10 years; over a 25-year period, the expected lifetime of Alternatives B and C, the Calnev Pipeline would be re-trenched and the CP system replaced three times.

3.3 VISITOR EXPERIENCE

3.3.1 AFFECTED ENVIRONMENT

Mojave National Preserve provides a wide variety of experiences for visitors from all over the world. Its proximity to major population centers such as Los Angeles and Las Vegas, combined with major interstate highways, gives residents and visitors the opportunity for relatively easy access to many parts of the desert. Most of the landscape is open with broad vistas of relatively undeveloped land. The vastness of the landscape offers visitors an opportunity for seclusion and a sense of wilderness, even while in a vehicle. Early miners and ranchers developed roads that today offer visitors a chance to drive into many remote locations where informal camping traditionally occurred. There are several major sand dune systems. Hikers play on and explore the Kelso Dunes. There are many highly popular cultural sites such as abandoned mining districts. Mountain ranges, such as the New York and Providence Mountains, offer a contrast to the dry hot valleys, attracting many people in summer with cooler temperatures and forested areas. Volcanic cinder cones, lava flows, rock outcrops, and unique wildlife and vegetation are other elements that attract people. The land has many extremes and contrasts that people come to experience, such as the high summer temperatures. Most visitors come to the desert simply to see the outstanding scenery of this diverse landscape.

The visitor experience of Soda Lake does not apply strictly to visitors in wilderness; Soda Lake's beauty can be appreciated from its edges. The Zzyzx Road exit from Interstate 15 is a popular destination and photo opportunity for park visitors, with easy access to viewsheds of the Soda Mountains and Soda Lake. Many visitors take the Zzyzx Road off-ramp for a brief stop to the northern edge of Soda Lake before continuing on their journey. Soda Lake is also experienced by visitors entering the Preserve from I-15 at Kelbaker Road.

The Long-Range Implementation Plan (LRIP) (National Park Service 2004) specified Visitor Experience Goals for the Preserve. Visitors of all ages, backgrounds, and abilities will have opportunities to:

- Have a safe and enjoyable visit
- Learn about primary interpretive themes (as listed in the LRIP)
- Learn about the availability of recreational activities such as hiking, nature study, hunting, and camping
- Experience a sense of solitude; establish a spiritual connection with the area; appreciate the natural quiet and vastness of the Preserve and the values of wilderness
- Enjoy a sense of exploration and discovery
- Support resource management by participating in a spectrum of activities that range from simply complying with park regulations through active involvement such as volunteer activities
- Interact with park staff (should visitors so desire).

The visitor uses of the proposed work areas on Soda Dry Lake are expected to be different from visitor experiences in other parts of the Preserve. First, the proposed work areas are within a wilderness area, in which motorized vehicles and mechanized transport are prohibited. A majority of visitors experience the Preserve from their vehicles. Preserve visitors seeking a wilderness experience in Soda Lake would access the project area by non-motorized means – e.g., on foot or horseback.

The second reason that visitor use would be different in the work areas is the mostly flat, featureless landscape of the dry lake. Most persons visiting the Preserve for hiking, camping, hunting, sightseeing, and other activities are expected to be drawn to mountainous areas, areas with water (such as springs), areas with wildlife to observe, areas of geologic interest (such as Cinder Cones), or historical or developed areas (such as Kelso). None of these areas are associated with the northern portion of Soda Dry Lake, where the proposed work areas are located. Therefore, although visitor use of the work areas is permitted, and some visitor use may be expected, the level of use is expected to be minimal compared to other parts of the Preserve.

Adverse impacts to the visitor experience could occur if construction and operation of a CP system would limit visitor access to any area, or would interfere with the Visitor Experience Goals outlined in the LRIP (National Park Service 2004).

3.3.2 ENVIRONMENTAL CONSEQUENCES

3.3.2.1 Impact Criteria and Thresholds

The following definitions of impact intensity are used in the analysis of effects on visitor experience:

Negligible: Changes in visitor use and the quality or nature of the visitor experience would not occur. There would be no noticeable changes in visitor experience or in defined indicators of visitor satisfaction or behavior, which are considered to include the ability to participate in auto-touring/sightseeing, nature study/hiking, driving on unpaved roads, camping, hunting, and visiting ruins/historic sites.

Minor: Changes in visitor experience would be small but detectable. Visitors could be aware of the effects but the changes would not appreciably alter important characteristics of the overall visitor experience or visitor satisfaction (considered to include the ability to participate in auto-

touring/sightseeing, nature study/hiking, driving on unpaved roads, camping, hunting, and visiting ruins/historic sites), or levels of use of preserve facilities.

Moderate: Some changes in important characteristics (considered to include the ability to participate in auto-touring/sightseeing, nature study/hiking, driving on unpaved roads, camping, hunting, and visiting ruins/historic sites) of the overall preserve experience would be readily apparent, or the number of visitors engaging in an activity or in the use of areas within the Preserve would be substantially altered in comparison to historical trends. Most visitors would be aware of changes and many would be able to express an opinion regarding the difference. Visitor satisfaction would change as a result.

Major: Changes in multiple important characteristics (considered to include the ability to participate in auto-touring/sightseeing, nature study/hiking, driving on unpaved roads, camping, hunting, and visiting ruins/historic sites) of the desired experience would be readily apparent. Visitors would be aware of the effects and would likely express a strong opinion about the changes. Participation in desired experiences or in Preserve visitation would be considerably altered and would result in substantial changes in the defined indicators of visitor satisfaction or behavior.

Beneficial Effects: Beneficial effects on visitor experience including, but are not limited to, an improved ability to view and experience scenery and wildlife, and to experience solitude or quiet.

Short-term: Effects of the CP installation on visitor enjoyment and recreational or educational opportunities would be associated with the construction period. The effect would end concurrent with or shortly after the end of the construction period.

Long-term: Effects of the presence of above-ground structures on visitor enjoyment and recreational or educational opportunities would be evident indefinitely following completion of construction.

3.3.2.2 Impacts of Alternative A: No Action

Direct and Indirect Impacts. Under the No Action alternative, there would be no direct or indirect impacts to the visitor experience associated with construction because no construction, site access, or ground disturbance would occur, nor would any structures be built. Adverse impacts to the visitor experience associated with operations would likely result, due to the presence of above-ground structures and an estimated 12 motorized vehicle trips per year to conduct PHMSA-required measurements and system maintenance. These activities are expected to have a negligible effect on the visitor experience.

Adverse impacts to visitor experience could occur in the future if the lack of proper cathodic protection leads to releases from the pipeline, and those releases deterred visitation to specific areas. However, even though the pipelines would continue to degrade, the potential for a release of petroleum fuels that could impact visitor use would still be minimal. Instead of leading to a catastrophic failure of the pipeline and release of fuels, the No Action alternative would be more likely to lead to shut down of the pipelines before such releases could happen. In addition, even if catastrophic failure was to occur and petroleum fuels were to be released, the area in which they would be released is not expected to be an important location for visitors. While visitors may be precluded from visiting an area due to the health and safety reasons, the visitors would be expected to go to a similar nearby area, and the effect on their visit would be negligible. Even with the increase in the potential for a release incident, the No Action alternative would still have a negligible effect on the visitor experience in the Preserve.

Cumulative Effects. The past, present, and reasonably foreseeable future actions, including the projects identified in the section titled "Cumulative Impact Analysis Methods," are expected to have a direct, adverse, long-term effect on visitor experience. The existing Calnev Pipeline, the old

railroad grade, and the communications cables occur within a wilderness area in which motorized vehicle use and human development are generally prohibited. It is likely that most visitors to any wilderness area, including Soda Dry Lake, visit with the intention of getting away from any signs of human use or development. Although the existing pipelines are buried in the subsurface, there are several above-ground facilities that are clearly human developments. These include the two-track road used for pipeline inspection and maintenance, the 39 existing test stations, and the two existing solar impressed current CP stations. In addition, the old railroad grade may be visible in the project area, and the communications cables are marked by above-ground marker posts. Also, traffic noise on Interstate 15 and the visual appearance of solar power projects outside of the Preserve contribute to degradation of visitor experience within the wilderness area. These features likely interfere with the Visitor Experience Goals outlined in the LRIP (National Park Service 2004), especially the following goal: Experience a sense of solitude; establish a spiritual connection with the area; appreciate the natural quiet and vastness of the Preserve and the values of wilderness. Therefore, the existing pipelines, railroad grade, and communications cables, by themselves, create an adverse effect that is long-term, and that ranges from minor to moderate in intensity. Most visitors to the proposed work areas are likely aware of the above-ground components, and may express an opinion regarding the components. It is likely that visitor satisfaction is decreased for some visitors. However, it is unlikely that Preserve visitation is considerably altered from what it would be without the structures.

The No Action alternative would not increase or decrease the number or locations of these above-ground structures, so would not benefit nor be adverse to these existing cumulative effects.

Conclusions. There would be no effect on visitor experience associated with construction under the No Action alternative, because no construction activities would occur. In the long-term, failure to provide cathodic protection would increase the potential for releases of petroleum fuels in the future. Those releases could potentially deter visits to specific areas, although this likelihood is minimal. Therefore, the No Action alternative would have a negligible effect on the visitor experience. The No Action alternative would not contribute, as either a beneficial or adverse impact, to the existing adverse impact to the visitor experience associated with the above-ground features of the existing Calnev Pipeline, communications cables, or the old railroad grade.

3.3.2.3 Impacts Common to All Action Alternatives

This section discusses the impacts to the visitor experience that could occur from any of the action alternatives (Alternatives B, C, and D). The subsections following this section summarize the difference between the action alternatives, with respect to potential impacts to the visitor experience.

Direct and Indirect Impacts. Construction of a CP system under any action alternative would potentially have short-term, adverse impacts, ranging from negligible to moderate in intensity, on the visitor experience. Although visitors would be precluded from accessing the construction work areas during construction, the size of the work areas for any of the action alternatives comprise a negligible amount of the total area available for visitor activities in the Preserve. Therefore, the effect of construction on visitor access, although adverse, would be negligible.

Construction of any of the action alternatives would potentially interfere with the Visitor Experience Goals outlined in the LRIP (National Park Service 2004), especially the following goal: Experience a sense of solitude; establish a spiritual connection with the area; appreciate the natural quiet and vastness of the Preserve and the values of wilderness

During construction, the presence of heavy equipment and construction vehicles, noise generated by those vehicles, and visual character of soils disturbed for trenching and excavations, could potentially have an adverse impact on visitors' sense of solitude, natural quiet, and the values of wilderness. In general, the potential for visitors to experience impacts from these activities is

expected to be minimal. The impact would be short-term in duration for each of the action alternatives, occurring only for the duration of the construction period, which would range from 22 to 33 days. However, if visitors were present during this period, the intensity of the adverse impact on their experience would range from negligible to moderate. Some visitors, viewing or hearing the activities from a distance such as from the northern end of Soda Dry Lake or Interstate 15, may not notice or be disturbed by the activities. Other visitors would be aware of the construction activities, and may express an opinion regarding the construction. It is likely that visitor satisfaction would be decreased for some visitors, including viewers from Interstate 15. Implementation of mitigation measures would reduce the potential for visitors to notice the activities, and may assist in reducing the intensity of the adverse impact for visitors who do notice them. However, for some visitors, the intensity of the impact may still be moderate, even with implementation of mitigation measures.

During operation, the CP system installed under any of the action alternatives would reduce the potential for releases of petroleum fuels from the pipelines. If releases were to occur, they would potentially have an adverse impact on visitor experience by limiting visitor access to the release area, impacting visitor safety, and/or interfering with the Visitor Experience Goals outlined in the LRIP (National Park Service 2004). Although the potential for such releases to occur and have these adverse impacts on the visitor experience is minimal, each of the action alternatives would reduce the potential for this occurrence even further.

Cumulative Effects. Similarly to the No Action alternative, past, present, and reasonably foreseeable future actions are expected to have a direct, adverse, long-term effect on visitor experience. The above-ground facilities associated with the existing pipelines, communications cables, and the old railroad grade are man-made intrusions in wilderness. These include the two-track road used for pipeline inspection and maintenance, 39 existing test stations, the two existing solar impressed current CP stations, and the communications cable marker posts. Also, traffic noise on Interstate 15 and the visual appearance of solar power projects outside of the Preserve contribute to degradation of the visitor experience within the wilderness area. Therefore, the existing pipelines, the old railroad grade, the communications cables, and the developments outside of the Preserve, by themselves, create an adverse effect that is long-term in duration, and that ranges from minor to moderate in intensity. Construction of the proposed AT&T fiber optic cable replacement would also result in a short-term adverse effect during the construction period for that project.

Each of the action alternatives would contribute, incrementally, to this adverse effect. During construction, the existing impact associated with the above-ground structures and the old railroad grade would be combined with an additional visual and noise impact from construction vehicles, heavy equipment, and ground disturbance. This contribution to existing cumulative impacts would affect a limited number of visitors, and would be short-term in duration. However, if the area were to be visited during the construction period, the contribution of the action to cumulative impacts on those visitors would be adverse, and would range from minor to moderate in intensity.

Conclusions. Construction of a new CP system under any of the action alternatives would potentially have a short-term, adverse impact, ranging from negligible to moderate in intensity, on the visitor experience throughout the period of construction. In the long-term, each of the action alternatives would reduce the potential for releases of petroleum fuels in the future. Although the potential for such releases to occur and have adverse impacts on the visitor experience is minimal, the action alternatives would reduce the potential for this occurrence even further.

3.3.2.4 Impacts of Alternative B: Install Two Solar Impressed Current Stations, Upgrade Two Existing Stations

Once construction is complete, the above-ground components that remain as part of the solar impressed current CP system under Alternative B would have a long-term impact on visitor

experience. The impact would be adverse, and would range in intensity from negligible to moderate. The alternative would result in the long-term presence of two new angular 8 foot by 10 foot steel cages mounted with solar photovoltaic electrical panels. These units would be located approximately a mile from viewers on the northern end of Soda Dry Lake or on Interstate 15. Also, the black solar panels of these units would face south, away from Interstate 15, and the backside facing Interstate 15 would be painted a color to blend in with the desert surroundings. Therefore, the visual appearance of these units to visitors outside of the Preserve would be negligible.

Visitors inside of the Preserve would be precluded from accessing the very small area (less than 100 ft^2, or 8 feet by 10 feet) that would be occupied by the solar impressed current station during operation. Because this area is so small, the effect of limiting visitor access to this area is negligible. However, the presence of the industrial-looking CP stations would have an adverse impact on visitors' sense of solitude, natural quiet, and the values of wilderness. A total of 14 above-ground structures would remain in the project area, including 10 test stations which are relatively small, and 4 solar units which are relatively large. The structures would be in place over the long-term, and visitors coming to the wilderness area specifically to seek solitude and quiet would be aware of the structures, and may express an opinion regarding their presence or appearance. Alternative B would also involve up to two trips by motorized vehicles per year to perform maintenance on the solar units. It is likely that visitor satisfaction would be decreased for some visitors due to the above-ground structures and motorized vehicle trips. However, it is unlikely that Preserve visitation would be considerably altered. Although the number of visitors to the area that could be affected is expected to be very small, the intensity of the impact on those few visitors is expected to range from minor to moderate. Alternative B would also result in the decommissioning and removal of 29 of the existing 39 test stations in the project area. This removal would be permanent, and would be beneficial to the visitor experience in those 29 areas.

Following construction, Alternative B would result in changing the current number of visible, above-ground features from the current total of 41(2 solar CP stations and 39 test stations), to a new total of 14 (4 solar CP stations and 10 test stations). Instead of being spaced approximately every 300 feet, as they are currently, these features would be spaced approximately every 1200 feet. This reduction in the total number of features, and increase in their spacing, would be beneficial to the visitor experience. Alternative B would also change the number of the largest and most visible of the features, the solar impressed current stations, from two to four. Therefore, the contribution of Alternative B to cumulative impacts to the visitor experience would be beneficial in some locations, and adverse in others. In all cases, the contribution to cumulative impacts would be long-term in duration. The adverse impacts would range from minor to moderate in intensity.

3.3.2.5 Impacts of Alternative C: Install 60 New Zinc Anode Stations

Once construction is complete, the above-ground structures associated with the zinc anode CP system under Alternative C would have similar effects on the visitor experience as those associated with Alternative B. The remaining above-ground components would be 66 4-foot high test stations, spaced approximately every 200 feet apart. This would be an increase of 27 from the existing 39 stations, and a reduction of the spacing from the current 300 feet. These structures would not be visible to viewers from outside of the Preserve. The presence of the test stations would have an adverse impact on visitors' sense of solitude, natural quiet, and the values of wilderness. The structures would be in place over the long-term, and visitors coming to the wilderness area specifically to seek solitude and quiet would be aware of the test stations, and may express an opinion regarding their presence. Alternative C would also involve up to 10 trips by motorized vehicles per year to test and maintain the CP stations. It is likely that visitor satisfaction would be decreased for some visitors due to the above-ground structures and motorized vehicle trips. However, it is unlikely that Preserve visitation would be considerably altered. As a result, although

the number of visitors to the area that could be affected is expected to be very small, the intensity of the impact on those few visitors is expected to range from minor to moderate.

Following construction, Alternative C would result in changing the current number of visible, above-ground features from the current total of 41 (2 solar CP stations and 39 test stations), to a new total of 68 (2 solar CP stations, 60 test stations, and 6 reference electrode stations). Instead of being spaced approximately every 300 feet, as they are currently, these features would be spaced approximately every 200 feet. This increase in the total number of features, and reduction in their spacing, would contribute incrementally to a cumulative adverse impact to the visitor experience. This contribution to cumulative impacts would be long-term in duration. The adverse impacts would range from minor to moderate in intensity.

3.3.2.6 Impacts of Alternative D: Replace Existing Magnesium Anode System with Zinc Anode System in Same Locations

The construction effects of Alternative D are expected to be similar to those of Alternatives B and C. However, because the expected lifespan of Alternative D is only 10 years, similar construction effects would be expected to occur again at 10 year intervals. Therefore, although the construction effects on the visitor experience would be about the same magnitude for the three action alternatives, the effects would be repeated every 10 years under Alternative D in order to maintain the effectiveness of the alternative.

Once construction is complete, the above-ground structures associated with the new zinc anode CP system under Alternative D would have similar effects on the visitor experience as those associated with Alternatives B and C. The existing above-ground components, which include 39 4-foot high test stations spaced approximately 300 feet apart, would remain in place. These structures would not be visible to viewers from outside of the Preserve. The presence of the test stations would have an adverse impact on visitors' sense of solitude, natural quiet, and the values of wilderness. The structures would be in place over the long-term, and visitors coming to the wilderness area specifically to seek solitude and quiet would be aware of the test stations, and may express an opinion regarding their presence. It is likely that visitor satisfaction would be decreased for some visitors. However, it is unlikely that Preserve visitation would be considerably altered. As a result, although the number of visitors to the area that could be affected is expected to be very small, the intensity of the impact on those few visitors is expected to range from minor to moderate.

During operation, the effectiveness of the new zinc anode CP system under Alternative D is expected to be the same as that of the proposed systems under Alternatives B and C. This effect would be about the same as Alternatives B and C, but would only operate for a period of 10 years, unless the construction activities were repeated.

Following construction, Alternative D would maintain the current number of visible, above-ground features, which include 2 solar CP stations and 39 test stations. Maintaining the current number and locations of above-ground structures would not result in any change to the current cumulative impact of above-ground structures to the visitor experience.

3.4 SPECIAL STATUS SPECIES

3.4.1 AFFECTED ENVIRONMENT

Special status species are defined as plant and wildlife species listed by the U.S. Fish and Wildlife Service as endangered, threatened, proposed, or candidate (U.S. Fish and Wildlife Service 2009 a, b) or by the California Department of Fish and Wildlife as endangered, threatened, species of special concern, or fully-protected species (State of California Department of Fish and Game 2009 a, b, and

c). The process used to identify special status species which could potentially be impacted by the project was as follows:

- Special status species documented within the vicinity (i.e., within approximately 10 miles) of the project area were compiled based on information obtained from the California Natural Diversity Database (CDFW 2014b), communication with Mojave National Park staff, and review of publically available literature and reports.
- Information regarding the habitat, nesting, and foraging of each of the species was identified, and was used to determine the potential for the species to occur in the project area.
- Only species with at least a moderate potential to occur in the project area were evaluated in detail.

Note that this section evaluates impacts only to wildlife which is classified as special-status species, as defined in the paragraph above. Section 3.5, below, discusses impacts to wildlife other than special-status species. This process resulted in the identification of five species which have at least moderate potential to occur within or immediately adjacent to the project area: desert tortoise (*Gopherus agassizii*), loggerhead shrike (*Lanius ludovivianus*); pallid bat (*Antrozous pallidus*); Townsend's big-eared bat (*Corynorhinus townsendii*), and American badger (*Taxidea taxus*). Potential effects to the two bat species are not expected given that their occurrence within the project area would be temporary during nocturnal foraging; no work is anticipated to occur during the time when bats may forage in the project area. Similarly, effects to foraging loggerhead shrikes are not expected given the nature of proposed activities. The proposed project may result in effects to desert tortoise and American badger.

The project work areas in which construction would occur, and in which the proposed action would operate, are located outside of tortoise and badger habitats. Therefore, there is no potential for construction activities to directly impact these species through construction vehicle strikes at the project site, soil disturbance, or disturbances associated with noise, vibrations, and human presence. In addition, the project location is distant enough from tortoise and badger habitat that any accidental release of petroleum fuels from the pipeline in this area would not impact individuals or suitable habitat for these species. Therefore, construction and operation of a CP system on Soda Dry Lake does not have the potential to impact these species, and these issues are not discussed further.

Tortoises and badgers are potentially present along portions of the two-track road needed to access Soda Dry Lake for construction of the proposed CP system, and periodically for maintenance of the proposed CP system during operations. Therefore, the potential impacts associated with site access are discussed below.

3.4.2 ENVIRONMENTAL CONSEQUENCES

3.4.2.1 Impact Criteria and Thresholds

The following definitions of impact intensity are used in the analysis of effects on Special Status Species:

Negligible: State- and federally listed species and their habitats would not be affected or the effects to an individual of a listed species or its critical habitat would be at or below the level of detection and would not be measurable or of perceptible consequence to the protected individual or its population. Negligible effect would equate with a "no effect" determination in Endangered Species Act Section 7 terms.

Minor: The action would result in detectable effects to an individual (or individuals) of a federally or state-listed species or its critical habitat, but they would not be expected to result in substantial

population fluctuations and would not be expected to have any measurable long-term effects on species, habitats, or natural processes sustaining them. Minor effects would equate with a "may affect/not likely to adversely affect" determination in Endangered Species Act Section 7 terms.

Moderate: An action would result in detectable effects on individuals or population of a federally or state listed species, its critical habitat, or the natural processes sustaining them. Key ecosystem processes may experience disruptions that may result in population or habitat condition fluctuations that would be outside the range of natural variation (but would return to natural conditions). Moderate level adverse effects would equate with a "may affect/likely to adversely affect/adversely modify critical habitat" determinations in Endangered Species Act Section 7 terms.

Major: Individuals or populations of a federally or state-listed species, its critical habitat, or the natural processes sustaining them, would be measurably affected. Key ecosystem processes might be permanently altered resulting in long-term changes in population numbers and permanently modifying critical habitat. Major adverse effects would equate with a "may affect/likely to adversely affect/adversely modify critical habitat" determinations in Endangered Species Act Section 7 terms.

Beneficial Effect: Beneficial effects are likely to protect or restore the abundance and distribution of special status species. This could occur through increased survival, reproduction, or availability of habitat or required resources.

Short-term: Effects of the CP installation on special-status species would be associated with the construction period. The effect would end concurrent with or shortly after the end of the construction period.

Long-term: Effects of the presence of above-ground structures on special-status species would occur following completion of construction.

3.4.2.2 Impacts of Alternative A: No Action

Direct and Indirect Impacts. Under the No Action alternative, there would be no construction impacts to the desert tortoise or American badger, because no site access to support construction of a new CP system would occur. Impacts associated with site access for operations of the existing system could occur due to vehicle strikes, which would occur only if tortoises or badgers were present on the access road when the road is used. These impacts would be similar to those for the action alternatives, because the No Action Alternative includes an estimated 12 motorized vehicle trips per year to conduct PHMSA-required measurements and system maintenance. These impacts are expected to be adverse, short-term, and minor.

Cumulative Effects. The only past, present, and reasonably foreseeable future projects in the proposed action area are the operation of the existing Calnev Pipeline, the old railroad grade, the communications cables, and the projects outside of the Preserve. Currently, the access road is used by a pick-up truck 12 times per year to take measurements and maintain the test stations. This activity has the potential to have an adverse effect on tortoises, badgers, and their habitats because that operation involves use of motorized vehicles on the access road to access the test stations. Tortoises and badgers could be impacted by vehicle strikes if they are present on the road. However, because there would be no additional use of the road to support construction or operation of a CP system, this alternative would not contribute to this cumulative adverse impact.

Conclusions. There would be no effect on desert tortoises, American badgers, or their habitats associated with construction under the No Action alternative, because no construction activities or site access would occur. Adverse impacts associated with site access for operations could occur due to vehicle strikes, but these impacts are expected to be short-term and minor. The overall effect on the federally listed desert tortoise would be negligible, which would equate with a "no effect" determination in Endangered Species Act Section 7 terms.

Cumulative effects of the past, present, and reasonably foreseeable future projects on the desert tortoise and American badger would be limited to potential vehicle strikes along the existing access road. These impacts would be long-term, minor, and adverse. This would equate with a "may affect/not likely to adversely affect" determination for the federally listed desert tortoise according to Endangered Species Act Section 7 terms. The No Action alternative would not contribute to overall cumulative impacts.

3.4.2.3 Impacts Common to All Action Alternatives

This section discusses the impacts to special-status species that could occur from any of the action alternatives (Alternatives B, C, and D). The subsections following this section summarize the difference between the action alternatives, with respect to potential impacts to special status species.

Direct and Indirect Impacts. Site access under any of the action alternatives would require use of the existing two-track road which parallels the existing pipeline. Although the work areas on Soda Dry Lake are not within tortoise or badger habitat, the access road from Interstate 15 to Soda Dry Lake may pass through tortoise and badger habitat for a distance of approximately 5.2 miles. In the cases of both construction and operation of any of the action alternatives, vehicle and equipment traffic would be limited to the existing road, and no new road would be constructed. Therefore, there would be no adverse impacts to the desert tortoise, American badger, or their habitats due to new ground disturbance.

Any potential impacts to the desert tortoise and American badger would occur only from vehicle strikes, which could occur only if tortoises or badgers were present on the access road when the road is used. The vehicles that would use the access road during construction of any of the action alternatives would include a back hoe with front loader bucket, 2.5 ton flatbed truck with boom hoist, an auger drilling rig, a water truck for dust control and proper compaction, three pick-up trucks to transport crew members and safety equipment, and a service trailer to transport additional CP equipment. Of these, the backhoe, drilling rig, and water truck would each traverse the access road one time during construction. Each piece of equipment would use the road to access Soda Dry Lake at the beginning of construction, be left in place during the construction period, and then leave at the end of the construction period. The three pick-up trucks, one pulling the service trailer, would each use the access road daily, entering in the morning and exiting at the end of the work day.

The potential for vehicles strikes is expected to be very low, and would be reduced by implementation of mitigation measures. While mitigation measures would help to reduce the probability of a vehicle strike, they would not reduce the intensity of the impact if a strike occurs. If such a vehicle strike were to occur, the impact to the individual would likely be fatal. The overall impact to the tortoise and badger populations would be adverse, but minor in intensity and short-term in duration. There would not be substantial population fluctuations, or any measurable long-term effects on species, habitats, or natural processes sustaining them. Minor effects to the federally listed desert tortoise would equate with a "may affect/not likely to adversely affect" determination in Endangered Species Act Section 7 terms.

The access road would also be used by a single pick-up truck to take measurements and maintain the test stations during operations. The impact of a vehicle strike during operations would be the same as during construction: adverse, short-term, and minor.

Cumulative Effects. The only past, present, and reasonably foreseeable future actions associated with the access road are the existing Calnev Pipeline, the old railroad grade, the communications cables, and projects outside of the Preserve. Currently, the access road is used by a pick-up truck once every three months to take measurements and maintain the test stations. This activity has the potential to have an adverse effect on tortoises, badgers, and their habitats because that operation involves use of motorized vehicles on the access road to access the test stations. The impacts of that

use are the same as described for the direct and indirect impacts of any of the action alternatives. The projects outside of the Preserve also likely have an adverse effect on tortoises, badgers, and their habitats in those areas.

Construction of any of the action alternatives would increase the frequency of use of the access road for the duration of the construction period. The access road would also be used by a single pick-up truck an estimated four times per year to take measurements and maintain the test stations during operations. Because there would be no other motorized use of the access road, the potential for any of the action alternatives to combine with other projects, resulting in adverse impacts to the tortoise, badger, or their habitats, is negligible.

Conclusions. The use of motorized vehicles on the access road during construction of any of the action alternatives could result in vehicle strikes, if tortoises or badgers are present on the road. The potential for vehicles strikes is expected to be very low, and would be reduced by implementation of mitigation measures. If such a vehicle strike were to occur, the impact to the individual would likely be fatal. The overall impact to the tortoise and badger populations would be adverse, but minor in intensity and short-term in duration. There would not be substantial population fluctuations, or any measurable long-term effects on species, habitats, or natural processes sustaining them. Minor effects to the federally listed desert tortoise would equate with a "may affect/not likely to adversely affect" determination under Section 7 of the Endangered Species Act.

The action alternatives would also increase the frequency of use of the access road for the construction period, and periodically during operations. The potential for this use to combine with other projects to cause adverse impacts to tortoises, badgers, or their habitat is negligible.

3.4.2.4 Impacts of Alternative B: Install Two Solar Impressed Current Stations, Upgrade Two Existing Stations

The potential for impacts to occur to special status species under each action alternative is roughly proportional to the number of vehicle trips required through tortoise and badger habitat for that alternative. The number of trips, in turn, is governed by the duration of the construction period, and the number of trips required to support Calnev's operations. Under Alternative B, the construction duration is 22 days, and the maximum number of vehicle trips on the access road during construction would be 71. During operations of Alternative B, the access road would be used by a single pick-up truck an estimated two times per year to perform maintenance on the test stations.

3.4.2.5 Impacts of Alternative C: Install 60 New Zinc Anode Stations

Under Alternative C, the construction duration is 33 days, and the maximum number of vehicle trips on the access road during construction would be 135. During the operations phase, the access road would be used by a single pick-up truck an estimated 10 times per year to take measurements and maintain the test stations.

3.4.2.6 Impacts of Alternative D: Replace Existing Magnesium Anode System with Zinc Anode System in Same Locations

Under Alternative D, the construction duration is 26 days, and the maximum number of vehicle trips on the access road during construction would be 107. Because the expected lifespan of Alternative D is only 10 years, similar effects related to site access for construction would be expected to occur again at 10-year intervals. Therefore, although the effects of site access on special-status species would be about the same magnitude for the three action alternatives, the effects would be repeated every 10 years under Alternative D in order to maintain the effectiveness of the alternative.

During operations of Alternative D, the access road would be used by a single pick-up truck an estimated 10 times per year to take measurements and maintain the test stations.

3.5 WILDLIFE

3.5.1 AFFECTED ENVIRONMENT

The three locations and situations in which wildlife could potentially be affected by the proposed action include the proposed project area on the dry lake, while the dry lake is flooded; the proposed project area on the dry lake, while the dry lake is not flooded; and the access road in and out of the dry lake.

Wildlife present on Soda Dry Lake when it is flooded may include migrating and overwintering waterfowl such as Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), gadwall (*Anas strepera*), green-winged teal (*Anas carolinensis*), American wigeon (*Anas americana*), cinnamon teal (*Anas cyanoptera*), ring-necked duck (*Aythya collaris*), Ruddy duck (*Oxyura jamaicensis*), and lesser scaup (*Aythya affinis*). In addition, if flooded, the dry lake would likely attract other migratory avian species that may occupy riparian/wetland habitat bordering the lakebed such as western white grebe (*Aechmophorus occidentalis*), snowy egret (*Egretta thula*), green heron (*Butorides virescens*), cattle egret (*Bubulcus ibis*), great egret (*Ardea alba*), American bittern (*Botarus lentiginosus*), great blue heron (*Ardea herodias*), and species of sandpipers (Family *Scolopacidae*). The lake is generally not flooded frequently enough to support fish species, although major flooding could result in temporary occurrence of fish species such as mosquito fish (*Gambusia affinis*) and less likely the Saratoga Springs pupfish (*Cyprinodon nevadensis nevadensis*) and Mojave tui chub (*Gila bicolor mohavensis*). These fish species would not sustain in the lake as major flooding would be temporary and infrequent.

Because there would be no construction on the dry lake when it is flooded, there is no potential for project construction to impact these species. During operation, releases of petroleum fuels from the pipelines could impact these species, if the releases were to coincidentally occur when the dry lake is flooded. However, the potential for this to occur is very low. Therefore, the potential for impacts to these species to occur is not discussed any further in this EA.

Wildlife occurrence on Soda Dry Lake when it is dry is limited given the general lack of vegetative cover. Species that occupy the two-track access road (discussed below) may at least temporarily occupy dry portions of the lakebed; however, most wildlife species will tend to occupy the margins of the lakebed and nearby desert scrub habitat where vegetation grows. Because no wildlife is expected in the project area in the middle of the dry lake, and project construction would not occur on the margins, the only potential impact of the proposed action on these species would be associated with site access.

Wildlife present on the two-track access road, and potentially on the margins of the dry lake, includes a variety of species that occur in desert scrub habitats. Common reptiles found along the access road may include common side-blotched lizard (*Uta stansburiana*), zebra-tailed lizard (*Callisaurus draconoides*), great basin collared lizard (*Crotaphytus bicinctores*), coachwhip (*Coluber flagellum*), sidewinder (*Crotalus cerastes*), Mojave green rattlesnake (*Crotalus scutulatus*), and California kingsnake (*Lampropeltis californiae*). Common avian species found along the access road may include red-tailed hawk (*Buteo jamaicensis*), prairie falcon (*Falco mexicanus*), greater roadrunner (*Geococcyx californianus*), mourning dove (*Zenaida macroura*), rock wren (*Salpinctes obsoletus*), phainopepla (*Phainopepla nitens*), black-throated sparrow (*Amphispiza bilineata*), common raven (*Corvus corax*), and house finch (*Carpodacus mexicanus*). Common mammals occurring along the access road may include coyote (*Canis latrans*), kangaroo rat (*Dipodomys* sp.), desert woodrat (*Neotoma lepida*), white-tailed antelope squirrel (*Ammospermophilus leucurus*), and round-tailed ground squirrel (*Spermophilus tereticaudus*).

3.5.2 ENVIRONMENTAL CONSEQUENCES

3.5.2.1 Impact Criteria and Thresholds

The following definitions of impact intensity are used in the analysis of effects on wildlife:

Negligible: The action would have no perceptible or measurable impacts on wildlife species, including their habitats, the natural processes sustaining them, or the assemblage of species comprising their community.

Minor: The action would have perceptible or measurable impacts to wildlife species, including their habitats, the natural processes sustaining them, or the assemblage of species comprising their community. However, the effects on wildlife would not have any substantial change on populations, communities, or ecosystems and would be within the range of natural variation.

Moderate: The action would have perceptible or measurable impacts to wildlife species, including their habitats, the natural processes sustaining them, or the assemblage of species comprising their community. The effects could result in changes in survival rates of individuals, changes in quality or quantity of habitat, and/or relocation of individuals from or to other habitats. Although there could be a temporary effect on populations, communities, or ecosystems, the changes would be within the range of natural variation.

Major: The action would have substantial permanent impacts on wildlife species, including their habitats, the natural processes sustaining them, or the assemblage of species comprising their community. The effects could threaten the continued existence of a species' population within the Preserve. Changes in quality or quantity of habitat and/or relocation of individuals from or to other habitats could be irreversible. There could be a substantial effect on populations, communities, or ecosystems and the changes would be outside the range of natural variation.

Beneficial Effects: The action would have positive effects on wildlife and wildlife habitat, including, but not limited to, metrics such as survival, reproduction rates, recruitment rates, or improvements in habitat or community conditions.

Short-term: Effects of the CP installation on wildlife would be associated with the construction period. The effect would end concurrent with or shortly after the end of the construction period.

Long-term: Effects of the presence of above-ground structures on wildlife would occur following completion of construction.

3.5.2.2 Impacts of Alternative A: No Action

Direct and Indirect Impacts. Under the No Action alternative, there would be no impacts to wildlife associated with construction, because no construction of a new CP system would occur. Impacts associated with site access for operations of the existing system could occur due to vehicle strikes, which would occur only if wildlife were present on the access road when the road is used. These impacts would be similar to those for the action alternatives, because the No Action Alternative includes an estimated 12 motorized vehicle trips per year to conduct PHMSA-required measurements and system maintenance. These impacts are expected to be adverse, short-term, and minor.

Cumulative Effects. The only past, present, and reasonably foreseeable future projects in the proposed action area are the operation of the existing Calnev Pipeline, the old railroad grade, and projects outside of the Preserve. Operation of the current pipelines has the potential to have an adverse effect on wildlife because that operation involves use of motorized vehicles on the access road to access the test stations and conduct ongoing pipeline inspection and maintenance. Wildlife could be impacted by vehicle strikes if individuals are present on the road. Because there would be

no additional use of the road to support construction of a CP system, the alternative would not contribute to this cumulative adverse impact.

Conclusions. There would be no effect on wildlife associated with construction under the No Action alternative, because no construction activities or site access would occur. Adverse impacts associated with site access for operations could occur due to vehicle strikes, but these impacts are expected to be short-term and minor. Cumulative effects of the past, present, and reasonably foreseeable future projects on wildlife would be limited to potential vehicles strikes along the existing access road. These impacts would be long-term, minor, and adverse.

3.5.2.3 Impacts Common to All Action Alternatives

This section discusses the impacts to wildlife (other than special-status species) that could occur from any of the action alternatives (Alternatives B, C, and D). The subsections following this section summarize the difference between the action alternatives, with respect to potential impacts to wildlife.

Direct and Indirect Impacts. Site access under any of the action alternatives would require use of the existing two-track road which parallels the existing pipeline. Although no wildlife is expected to be present at the work areas on Soda Dry Lake, the access road from Interstate 15 to Soda Dry Lake may pass through wildlife habitat for a distance of approximately 5.2 miles. In the cases of both construction and operation of any of the action alternatives, vehicle and equipment traffic would be limited to the existing road, and no new road would be constructed. Therefore, there would be no adverse impacts to wildlife or wildlife habitat due to new ground disturbance.

Any potential impacts to wildlife would occur only from vehicle strikes, which could occur only if individuals were present on the access road when the road is used. The vehicles that would use the access road during construction would include a back hoe with front loader bucket, 2.5 ton flatbed truck with boom hoist, an auger drilling rig, a water truck for dust control and proper compaction, three pick-up trucks to transport crew members and safety equipment, and a service trailer to transport additional CP equipment. Of these, the backhoe, drilling rig, and water truck would each traverse the access road one time during construction. Each piece of equipment would use the road to access Soda Dry Lake at the beginning of construction, be left in place during the construction period, and then leave at the end of the construction period. The three pick-up trucks, one pulling the service trailer, would each use the access road daily, entering in the morning and exiting at the end of the work day.

The potential for vehicles strikes is expected to be very low, and would be reduced by implementation of mitigation measures. While mitigation measures would help to reduce the probability of a vehicle strike, they would not reduce the intensity of the impact if a strike occurs. If such a vehicle strike were to occur, the impact to the individual would likely be fatal. The overall impact to wildlife populations would be adverse, but minor in intensity and short-term in duration. There would not be substantial population fluctuations, or any measurable long-term effects on species, habitats, or natural processes sustaining them.

The access road would also be used by a single pick-up truck to take measurements and maintain the test stations during operations. The impact of a vehicle strike during operations would be the same as during construction: adverse, short-term, and minor.

Cumulative Effects. The only past, present, and reasonably foreseeable future actions associated with the access road are the existing Calnev Pipeline, the old railroad grade, the communications projects, and projects outside of the Preserve. Currently, the access road is used by a pick-up truck once every three months to take measurements and maintain the test stations. The impacts of that

use are the same as described for the direct and indirect impacts of any of the action alternatives. The projects outside of the Preserve also likely have an adverse effect on wildlife in those areas.

Construction of any of the action alternatives would increase the frequency of use of the access road for the duration of the construction period. The access road would also be used by a single pick-up truck to take measurements and maintain the test stations during operations. Because there would be no other motorized use of the access road, the action alternatives would not contribute to cumulative impacts to wildlife or wildlife habitat.

Conclusions. The use of motorized vehicles on the access road during construction of any of the action alternatives could result in vehicle strikes, if individuals are present on the road. The potential for vehicle strikes is expected to be very low, and would be reduced by implementation of mitigation measures. If such a vehicle strike were to occur, the impact to the individual would likely be fatal. The overall impact to wildlife populations would be adverse, but minor in intensity and short-term in duration. There would not be substantial population fluctuations, or any measurable long-term effects on species, habitats, or natural processes sustaining them.

The action alternatives would also increase the frequency of use of the access road for the construction period, and periodically during operations. The potential for this use to combine with other projects to cause adverse impacts to wildlife or wildlife habitat is negligible.

3.5.2.4 Impacts of Alternative B: Install Two Solar Impressed Current Stations, Upgrade Two Existing Stations

The potential for impacts to occur to wildlife under each action alternative is roughly proportional to the number of vehicle trips required through wildlife habitat for that alternative. The number of trips, in turn, is governed by the duration of the construction period, and the number of trips required to support operations. Under Alternative B, the construction duration is 22 days, and the maximum number of vehicle trips on the access road during construction would be 71. During operations of Alternative B, the access road would be used by a single pick-up truck an estimated two times per year to take perform maintenance on the test stations.

3.5.2.5 Impacts of Alternative C: Install 60 New Zinc Anode Stations

Under Alternative C, the construction duration is 33 days, and the maximum number of vehicle trips on the access road during construction would be 135. During operations of Alternative C, the access road would be used by a single pick-up truck an estimated 10 times per year to take measurements and maintain the test stations.

3.5.2.6 Impacts of Alternative D: Replace Existing Magnesium Anode System with Zinc Anode System in Same Locations

Under Alternative D, the construction duration is 26 days, and the maximum number of vehicle trips on the access road during construction would be 107. Because the expected lifespan of Alternative D is only 10 years, similar effects related to site access for construction would be expected to occur again at 10 year intervals. Therefore, although the effects of site access on wildlife would be about the same magnitude for the three action alternatives, the effects would be repeated every 10 years under Alternative D in order to maintain the effectiveness of the alternative.

During operations of Alternative D, the access road would be used by a single pick-up truck an estimated 10 times per year to take measurements and maintain the test stations.

3.6 WILDERNESS

3.6.1 AFFECTED ENVIRONMENT

The California Desert Protection Act of 1994 designated wilderness in the establishment of Mojave National Preserve (National Park Service 2002). After boundary adjustments as mandated in the Act, the final Mojave Wilderness totals 806,000 acres. The Wilderness Act of 1964 further prescribes the purpose of the wilderness-designated lands. The purpose is to preserve lands in their natural condition "for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness." The Wilderness Act defines wilderness as "an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain,… an area of undeveloped federal land retaining its primeval character and influence without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions…." (National Park Service 2002).

The extensive wilderness and backcountry areas in Mojave provide opportunities for primitive recreational activities as well as for solitude. The absence of motorized/mechanized activities in wilderness, the grand vistas, and the limited visitation enable the hiking and backpacking visitor to enjoy a truly unique desert experience.

The Wilderness Act at 16 *United States Code* 1133(c) states that "except as necessary to meet minimum requirements for the administration of the area for the purposes of this Act (including measures required in emergencies involving the health and safety of persons within the area) there shall be no temporary road, no use of motor vehicles, motorized equipment, or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation...." The "minimum requirement" exception can never be used to allow a commercial enterprise or a permanent road in a wilderness area. A backcountry patrol station, fire lookout, a radio repeater, a helicopter rescue of an injured person, or a chainsaw may all be permitted in a wilderness only if such use is determined through a documented decision process, such as the National Environmental Policy Act, to be the "minimum requirement for the administration of the area" for wilderness purposes. This environmental assessment, which includes a draft minimum requirements analysis, provides for public review of this documented decision process.

Congress incorporated into the 1964 Wilderness Act several "special provisions," or exceptions. Providing a CP system is required to meet the regulatory requirements of PHMSA, and to ensure the integrity of the pipeline in order to prevent releases of petroleum fuels into the area, and would therefore fall under the exemption to the special provision entitled "To meet the minimum requirements for the administration or area, including emergencies involving health/safety of persons (Section 4c of the Wilderness Act). Because of the general prohibition of mechanized or motorized equipment in wilderness, the CP construction and operation located in a wilderness area needs to be evaluated by minimum tool analysis following the Minimum Requirements Decision Guide. Appendix A includes an MRDG analysis of the cathodic protection alternatives.

3.6.2 ENVIRONMENTAL CONSEQUENCES

3.6.2.1 Impact Criteria and Thresholds

The following definitions of impact intensity are used in the analysis of effects on wilderness:

Negligible: Impacts of the action would have no discernible effect on wilderness character. Wilderness would remain untrammeled and free from modern human control or manipulation, natural conditions would prevail, wilderness would remain undeveloped and retain its primeval character and influence, and wilderness would provide outstanding opportunities for solitude or primitive conditions. The forces of nature would primarily affect the wilderness zone.

Minor: The action would have perceptible or measurable impacts resulting in small changes to existing natural conditions. There would be a small effect on the untrammeled and undeveloped qualities of wilderness character, including a small presence of modern human activity and manipulation within limited areas of the wilderness zone. The wilderness area would generally appear to have been affected primarily by the forces of nature. Opportunities for solitude and primitive conditions would change slightly, but most of the zone would continue to provide opportunities for solitude or primitive conditions.

Moderate: The action would have perceptible or measurable impacts resulting in intermediate changes to existing natural conditions. There would be an intermediate effect on the untrammeled and undeveloped qualities of wilderness character, including an intermediate presence of modern human activity and manipulation within limited areas of the wilderness zone. It would be apparent that natural conditions within the zone are affected by the action. Opportunities for solitude and primitive conditions would change substantially, but over a relatively small area and most of the zone would continue to provide opportunities for solitude or primitive conditions for the majority of the time.

Major: The action would have substantial permanent impacts resulting in large changes to existing natural conditions. There would be a large effect on the untrammeled and undeveloped qualities of wilderness character, including a large presence of modern human activity and manipulation throughout a large portion of the wilderness zone. It would be apparent that natural conditions are substantially affected by the action. Opportunities for solitude and primitive conditions would change by a large amount, affecting the ability of a large portion of the zone to have a wilderness character for much of the time.

Beneficial Effect: Actions taken would enhance opportunities for solitude and primitive recreational activities and experiences. Evidence of human activities or remnants of past human activities may be removed, returning the wilderness zone to a more natural condition.

Short-term: Effects of the CP installation on wilderness would be associated with the construction period. The effect would end concurrent with or shortly after the end of the construction period.

Long-term: Effects of the presence of above-ground structures on wilderness would occur following completion of construction.

3.6.2.2 Impacts of Alternative A: No Action

Direct and Indirect Impacts. Under the No Action alternative, there would be no direct impacts to wilderness. No construction, site access, or ground disturbance would occur, and no new structures would be erected. There would be no additional effect on the untrammeled and undeveloped qualities of wilderness character, no additional presence of modern human activity and no manipulation within the wilderness zone. Natural conditions within the zone would not be affected by the No Action alternative. Opportunities for solitude and primitive conditions would not change. Adverse impacts to wilderness associated with the continued presence of above-ground structures, and an estimated 12 motorized vehicle trips per year to conduct PHMSA-required measurements and system maintenance, would continue but not increase. These activities are expected to have an adverse effect on wilderness.

The potential for adverse impacts to wilderness would rise over time in both risk and intensity as the pipelines become more vulnerable to petroleum releases from lack of adequate cathodic protection. Both pipelines would continue to deteriorate under the No Action alternative, with the 8 5/8" pipeline more immediately vulnerable to corrosion. If the Calnev Pipeline continues operation, the 8 5/8" pipeline will continue to corrode until a petroleum release occurs. A release on the Calnev Pipeline last occurred in 2004 on Bureau of Land Management lands near Cronese Lake Area of

Critical Environmental Concern, south of the Preserve's westernmost boundary at Zzyzx Road. The 14" pipeline released gasoline in the form of an 80' geyser. The spill was contained, pipeline repaired, and operation re-started within three days. Spill recovery was completed within seven weeks of the leak. If such a release occurred again, the impact on wilderness would be adverse. Contamination of soils by released fuels would affect natural conditions, and would affect opportunities for solitude and primitive conditions. The duration of the impact would be long-term, as remediation of the effects of a release is likely to take a substantial amount of time. Calnev would likely be forced to mobilize response crews, which would include vehicles, heavy equipment, and personnel. The intensity of the impact would likely range from minor to moderate, as the impact would cover a relatively small area, and most of the zone would continue to provide opportunities for solitude or primitive conditions for the majority of the time.

Rather than risk a fuel release, Kinder Morgan Energy Partners, owner of the Calnev Pipeline, could shut down operation of the 8 5/8" and 14" pipelines. Kinder Morgan could either voluntarily perform this action or be mandated to do so by the Pipeline & Hazardous Materials Safety Administration (PHMSA), the federal agency that regulates oil and gas transport. This scenario requires an action outside the scope of the EA.

Even without a release of fuels, continued corrosion of the pipeline under the No Action alternative could lead to the need for urgent repairs to avoid a release. Similar to a pipeline shutdown, urgent repairs require actions outside the scope of the EA. This scenario would require heavy equipment to excavate and repair the pipeline. It has a elevated risk of limiting Calnev's ability to control the scale of the response, ultimately requiring a large mobilization of personnel and equipment. The impact to wilderness would be adverse. The intensity of the impact would likely range from minor to moderate, as the impact would cover a relatively small area, and most of the zone would continue to provide opportunities for solitude or primitive conditions for the majority of the time.

Cumulative Effects. The past, present, and reasonably foreseeable future actions, including the projects identified in the section titled "Cumulative Impact Analysis Methods," are expected to have a direct, adverse, long-term effect on wilderness. Although the existing Calnev Pipeline are buried in the subsurface, there are several above-ground facilities that are clearly human developments. These include the two-track road used for pipeline inspection and maintenance, the 39 existing test stations, two existing solar impressed current CP stations, and a block valve and rectifier. The presence of these ancillary facilities combined with the use of motorized vehicles for pipeline inspection and maintenance, create long -term adverse effects that range from minor to moderate in intensity. Natural conditions within the project area are affected by the existing conditions. The presence of the Calnev Pipeline limits opportunities for solitude and primitive conditions within the vicinity of the right of way, those opportunities more abundant the further one moves away from the Calnev Pipeline.

The No Action alternative would not increase or decrease the number or locations of these above-ground structures or the use of motorized vehicles, so would not benefit nor be adverse to these existing cumulative effects.

Conclusions. In the short term, the No Action alternative would not increase human presence or intrusions into wilderness. Adverse impacts to wilderness associated with the continued presence of above-ground structures, and an estimated 12 motorized vehicle trips per year to conduct PHMSA-required measurements and system maintenance, would continue. These activities are expected to have an adverse effect on wilderness.

In the long term, failure to provide cathodic protection would increase the potential for releases of petroleum fuels and/or emergency repair activities. Although the likelihood of either releases or emergency repair activities would be minimal, either scenario would have an adverse impact on wilderness. The adverse impact associated with emergency repairs would be short-term in duration,

but an impact associated with releases of fuels would be long-term. The adverse impact from either scenario would range from minor to moderate in intensity.

The No Action alternative would not contribute, as either a beneficial or adverse impact, to the existing adverse impact to wilderness associated with the above-ground features of the existing Calnev Pipeline or the old railroad grade.

3.6.2.3 Impacts Common to All Action Alternatives

This section discusses the impacts to wildlife (other than special-status species) that could occur from any of the action alternatives (Alternatives B, C, and D). The subsections following this section summarize the difference between the action alternatives, with respect to potential impacts to wildlife. A Minimum Requirements Decision Guide (MRDG) has been drafted and may be found in Appendix A. Its preliminary findings conclude a minimum tool common to all three action alternatives, and do not point to any one action having less impact than the others.

Direct and Indirect Impacts. Construction of the solar impressed current CP stations under any of the action alternatives would have a short-term, adverse impact on wilderness. The adverse impact would occur as a result of the presence of construction vehicles and heavy equipment, and from disturbance of soil associated with vehicle movements, trenching, and excavation.

The action alternatives would include soil excavations ranging in size from 0.05 to 0.11 acres, and would involve potential soil disturbance of areas that have not previously been disturbed ranging in size from 0 to 2.3 acres. These represent a negligible amount of the total size of the wilderness area. Because the impact would cover a relatively small area, and most of the zone would continue to provide opportunities for solitude or primitive conditions for the majority of the time, the effect of construction on wilderness, although adverse, would range in intensity from minor to moderate. The impact of construction would be short-term in duration, occurring only for the duration of the construction period, which would range from 22 to 33 days. The action alternatives would also involve trips by motorized vehicles to inspect and maintain the CP system. These trips would also be adverse to wilderness values.

Once construction is complete, each of the action alternatives would result in the presence of above-ground components, which would a long-term impact on wilderness. The presence of the industrial-looking structures would have an adverse impact on the untrammeled and undeveloped qualities of wilderness character. They would indicate the presence of modern human activity and manipulation, and it would be apparent that natural conditions within the zone are affected by the action. Opportunities for solitude and primitive conditions near these structures would change substantially. The impact would cover a relatively small area, and most of the zone would continue to provide opportunities for solitude or primitive conditions for the majority of the time.

During operation, the new CP system under any of the action alternatives would reduce the rate of corrosion of the existing pipelines, and would therefore reduce the potential for releases of petroleum fuels from the pipelines, and the potential need for emergency repairs. Although the potential for such releases to occur, or repairs to be needed, is minimal, any of the action alternatives would reduce the potential for these occurrences even further.

Cumulative Effects. As discussed for the No Action alternative, the past, present, and reasonably foreseeable future actions are expected to have a direct, adverse, long-term effect on wilderness. The above-ground facilities associated with the existing pipelines are clearly human developments. These include the two-track road used for pipeline inspection and maintenance, the 39 existing test stations, and the two existing solar impressed current CP stations. In addition, the presence of the old Tonopah and Tidewater Railroad grade is likely to be visible, and the communications cables are marked by above-ground marker posts. These are clearly human developments. Also, traffic noise

on Interstate 15 and the visual appearance of solar power projects outside of the Preserve contribute to degradation of visitor experience within the wilderness area. The presence of these features, and the need to use motorized vehicles for pipeline inspection and maintenance, create an adverse effect that is long-term, and that ranges from minor to moderate in intensity. It is apparent that natural conditions within the zone are affected by the existing conditions. Opportunities for solitude and primitive conditions are reduced from what would be the case without the existing pipelines and the old railroad grade, but over a relatively small area, and most of the zone continues to provide opportunities for solitude or primitive conditions for the majority of the time.

Each of the action alternatives would contribute, incrementally, to this adverse effect. During construction, the existing impact associated with the above-ground structures and the old railroad grade would be combined with an additional visual and noise impact from construction vehicles, heavy equipment, and ground disturbance. This contribution to existing cumulative impacts would be short-term in duration during the construction period, which would range from 22 to 33 days. The contribution of any of the action alternatives to cumulative impacts to wilderness would be adverse, and would range from minor to moderate in intensity.

Following construction, each of the action alternatives would result in leaving above-ground structures in place. In all cases, the contribution to cumulative impacts would be long-term in duration. The adverse impacts would range from minor to moderate in intensity.

Conclusions. Construction of any of the action alternatives would have a short-term, adverse impact, ranging from minor to moderate in intensity, on wilderness for the duration of the construction period. The remaining above-ground components that are part of each of the action alternatives would have a long-term impact on wilderness. The impact of the structures would be adverse, ranging in intensity from minor to moderate.

In the long-term, each of the action alternatives would reduce the potential for releases of petroleum fuels in the future. Although the potential for such releases to occur and have adverse impacts on wilderness is minimal, each of the action alternatives would reduce the potential for this occurrence even further.

Each of the action alternatives would contribute, incrementally, to adverse effects on wilderness associated with operation of the existing pipelines, the old railroad grade, and developments outside of the wilderness area. Noise and visual impacts associated with the construction vehicles, as well as ground disturbance, would combine with existing above-ground structures, the old railroad grade, and developments outside of the wilderness area to contribute to a cumulative, adverse impact that ranges from minor to moderate in intensity. The above-ground structures associated with each of the action alternatives would also contribute to the long-term, adverse cumulative impacts to wilderness in the area.

3.6.2.4 Impacts of Alternative B: Install Two Solar Impressed Current Stations, Upgrade Two Existing Stations

The intensity of the impacts to wilderness under each action alternative is roughly proportional to the following features of each alternative:

- The number of vehicle trips required for construction;
- The duration of the construction phase;
- The number of vehicle trips associated with operations;
- The acreage of soil disturbance in previously undisturbed areas;
- The total area of soil disturbance;

- The total number of work locations;
- The number of work locations in previously undisturbed areas;
- The number of "large" above-ground structures remaining throughout operations (i.e., solar impressed current units);
- The total number of above-ground structures remaining throughout operations; and
- The number of currently-existing above-ground structures that would be removed under each alternative.

This information for each of the action alternatives, as well as the No Action Alternative, is presented in Table 4.

Under Alternative B, the construction duration is 22 days, and the maximum number of vehicle trips on the access road during construction would be 71. During operations of Alternative B, the access road would be used by a single pick-up truck an estimated two times per year to take perform maintenance on the solar units and test stations.

Construction of Alternative B would involve work at 33 separate work locations, including 31 locations which were already disturbed as a result of the construction of the existing CP system, and 2 new work locations. The alternative would include soil excavations totaling 0.05 acres, and would involve potential soil disturbance of 0.34 acres of area that has not previously been disturbed.

Following construction, Alternative B would result in changing the number of visible, above-ground features from the current total of 41(2 solar CP stations and 39 test stations), to a new total of 14 (4 solar CP stations and 10 test stations). Alternative B would result in the decommissioning and removal of 29 of the existing 39 test stations in the project area. Instead of being spaced approximately every 300 feet, as they are currently, these features would be spaced approximately every 1200 feet. This reduction in the total number of features, and increase in their spacing, would be beneficial to wilderness in those 29 areas. However, Alternative B would also change the number of the largest and most visible of the features, the solar impressed current stations, from two to four. In addition to the two existing solar units, the alternative would result in the long-term presence of two new angular 8 foot by 10 foot steel cages mounted with solar photovoltaic electrical panels. The presence of the industrial-looking CP stations would have a long-term, adverse impact on the untrammeled and undeveloped qualities of wilderness character. Overall, the direct and indirect impacts of the long-term operation of Alternative B would be beneficial in some locations, and adverse, ranging from minor to moderate in intensity, in others. The remaining above-ground structures would also contribute, along with operation of the existing pipelines, the old railroad grade, and developments outside of the wilderness area, to adverse cumulative impacts to wilderness in the area.

3.6.2.5 Impacts of Alternative C: Install 60 New Zinc Anode Stations

Under Alternative C, the construction duration is 33 days, and the maximum number of vehicle trips on the access road during construction would be 135. During operations of Alternative C, the access road would be used by a single pick-up truck an estimated 10 times per year to take measurements and maintain the test stations.

Construction of Alternative C would involve work at 79 separate work locations, including 39 locations which were already disturbed as a result of the construction of the existing CP system, and 40 new work locations. The alternative would include soil excavations totaling 0.11 acres, and would involve potential soil disturbance of 2.3 acres of area that has not previously been disturbed.

Following construction, Alternative C would result in changing the number of visible, above-ground features from the current total of 41(2 solar CP stations and 39 test stations), to a new total of 68 (2 solar CP stations and 66 test stations). The test stations would be spaced 200 feet apart, closer than the current spacing of 300 feet. This increase in the total number of features, and decrease in their spacing, would be adverse to wilderness along the entire length of the project area. Overall, the direct and indirect impacts of the long-term operation of Alternative C would be adverse, ranging from minor to moderate in intensity. The additional above-ground structures would contribute, along with operation of the existing pipelines, the old railroad grade, and developments outside of the wilderness area, to an increase in adverse, cumulative impacts to wilderness in the area.

3.6.2.6 Impacts of Alternative D: Replace Existing Magnesium Anode System with Zinc Anode System in Same Locations

Under Alternative D, the construction duration is 26 days, and the maximum number of vehicle trips on the access road during construction would be 107. During operations of Alternative D, the access road would be used by a single pick-up truck an estimated 10 times per year to take measurements and maintain the test stations.

Construction of Alternative D would involve work at 39 separate work locations, each of which was already disturbed as a result of the construction of the existing CP system. No work would occur in areas which have not been previously disturbed. The alternative would include soil excavations totaling 0.05 acres, and would involve potential soil disturbance of 0 acres of area that has not previously been disturbed. Because the expected lifespan of Alternative D is only 10 years, similar construction effects would be expected to occur again at 10 year intervals. Therefore, although the construction effects on wilderness would be about the same magnitude for the three action alternatives, the effects would be repeated every 10 years under Alternative D in order to maintain the effectiveness of the alternative.

Once construction is complete, the existing above-ground components, which include 39 4-foot high test stations and 2 solar impressed current stations, would remain in place. The presence of the test stations would continue the existing adverse impact on the untrammeled and undeveloped qualities of wilderness character. They would indicate the presence of modern human activity and manipulation, and it would be apparent that natural conditions within the zone are affected by the action. Overall, the impact of the long-term operation of Alternative D would be adverse, ranging from minor to moderate in intensity. The continued presence of the above-ground structures would contribute, along with operation of the existing pipelines, the old railroad grade, and developments outside of the wilderness area, to adverse, cumulative impacts to wilderness in the area.

4.0 CONCLUSIONS

Table 5 presents a comparison of the environmental effects of the three alternatives, for each impact topic. The impact assessments summarized in Table 5 are based on the detailed analyses in the Environmental Consequences section above. A determination of whether the alternative meets the purpose and need of the proposed action is also included in the last row of the table.

Table 5. Comparison of the Alternatives

Impact Topic	Alternative A - No Action Alternative	Alternative B – 2 New Solar Impressed Current Stations	Alternative C – 60 New Zinc Anode Stations	Alternative D – Replace Existing Magnesium Anode System with Zinc Anode System in Same Locations
Public Health and Safety	Negligible potential for effect.	Negligible potential for effect during construction. Beneficial effect in long-term due to protection of the pipelines. Beneficial effects equal to Alternatives C and D.	Negligible potential for effect during construction. Beneficial effect in long-term due to protection of the pipelines. Beneficial effects equal to Alternatives B and D.	Negligible potential for effect during construction. Beneficial effect in long-term due to protection of the pipelines. Beneficial effects equal to Alternatives B and C.
Visitor Experience	No potential effects from construction. Current adverse impact, ranging from negligible to moderate, due to presence of 41 above-ground features, would continue.	Potential effects from site access, ground disturbance, and construction are adverse, and range from negligible to moderate. Construction effects are lower than those of Alternative C due to smaller project footprint, fewer vehicle trips, and shorter duration. Long-term adverse impact, ranging from negligible to moderate, due to presence of 14 above-ground features. Long-term impact is beneficial in some locations, due to removal of 29 test stations.	Potential effects from construction are adverse, and range from negligible to moderate. Construction effects are higher than those of Alternative B due to larger project footprint, more vehicle trips, and longer duration. Long-term adverse impact, ranging from negligible to moderate, due to presence of 68 above-ground features.	Potential effects from construction are adverse, and range from negligible to moderate. Construction effects are higher than those of Alternative B due to larger project footprint, more vehicle trips, and longer duration. Potential construction impacts would be repeated every 10 years. Long-term adverse impact, ranging from negligible to moderate, due to presence of 41 above-ground features.
Special Status Species	No potential effect.	Potential short-term, adverse, minor impact during site access, lower than Alternative C due to fewer vehicle trips. No potential effect from construction or operation of CP system.	Potential short-term, adverse, minor impact during site access, higher than Alternative B due to more vehicle trips. No potential effect from construction or operation of CP system.	Potential short-term, adverse, minor impact during site access, higher than Alternative B due to more vehicle trips. Potential site access impacts would be repeated every 10 years. No potential effect from construction or operation of CP system.

Table 5. Comparison of the Alternatives

Impact Topic	Alternative A - No Action Alternative	Alternative B – 2 New Solar Impressed Current Stations	Alternative C – 60 New Zinc Anode Stations	Alternative D – Replace Existing Magnesium Anode System with Zinc Anode System in Same Locations
Wildlife	Negligible potential for effect.	Potential short-term, adverse, minor impact during site access and ground disturbance, lower than Alternative C due to smaller project footprint, fewer vehicle trips, and shorter duration. No potential effect from construction or operation of CP system.	Potential short-term, adverse, minor impact during site access and ground disturbance, higher than Alternative B due to larger project footprint, more vehicle trips, and longer duration. No potential effect from construction or operation of CP system.	Potential short-term, adverse, minor impact during site access and ground disturbance, higher than Alternative B due to larger project footprint, more vehicle trips, and longer duration. Potential site access impacts would be repeated every 10 years. No potential effect from construction or operation of CP system.
Wilderness	No potential effects from construction. Current adverse impact, ranging from minor to moderate, due to presence of 41 above-ground features and use of access road, would continue.	Potential effects from construction are adverse, and range from minor to moderate. Construction effects are lower than those of Alternative C due to smaller project footprint, fewer vehicle trips, and shorter duration. Long-term adverse impact, ranging from minor to moderate, due to presence of 14 above-ground features. Long-term impact is beneficial in some locations, due to removal of 29 test stations.	Potential effects from construction are adverse, and range from minor to moderate. Construction effects are higher than those of Alternative B due to larger project footprint, more vehicle trips, and longer duration. Long-term adverse impact, ranging from minor to moderate, due to presence of 68 above-ground features.	Potential effects from construction are adverse, and range from minor to moderate. Construction effects are higher than those of Alternative B due to larger project footprint, more vehicle trips, and longer duration. Potential construction impacts would be repeated every 10 years. Long-term adverse impact, ranging from minor to moderate, due to presence of 41 above-ground features.
Flexibility in Controlling Rate of Anode Depletion	None	Very Flexible	Limited	None
Effectiveness in Meeting Purpose and Need	Not effective.	Effective, equal to Alternatives C and D.	Effective, equal to Alternatives B and D.	Effective, equal to Alternatives B and C.

Of the action alternatives, Alternative B, the solar impressed current CP system, has one substantial disadvantage compared to Alternatives C and D. Alternative B would result in the long-term presence of four above-ground structures of relatively large-scale –two new and two upgraded solar impressed current CP stations. Each new station would consist of a triangular 8- by 10-foot steel cage mounted with solar photovoltaic electrical panels. The visual impact caused by the appearance of the units would be partially reduced by painting the structure to blend in with the desert surroundings. Calnev Pipeline proposed to camouflage the solar grids as boulders using a chicken wire-and-stucco framework. Calnev has used this technique previously. While such camouflage would reduce the appearance of a solar array, it would not eliminate them it altogether; moreover, the presence of boulders on a lake playa would be unnatural and intrusive. Camouflage boulders would also require more frequent access and maintenance, increasing wilderness intrusions by motorized vehicles and mechanized transport.

Alternative B would otherwise have the fewest adverse impacts compared to the other action alternatives. Alternative B requires the least number of vehicle trips during construction, plus a shorter construction phase than Alternatives C and D. Construction of solar IC would require fewer work sites and less soil disturbance. Alternative B would allow remote current measurements by satellite, reducing the number of motorized vehicle trips during the operations phase. Alternative B would have beneficial impacts to the visitor experience and wilderness by removing and performing site restoration at 29 existing test stations. While the alternative would result in installation of two of the larger above-ground structures, it would also reduce the overall number of above-ground structures from the current 41 to 14.

Alternative B offers the most flexibility to ensure the long-term effectiveness of a CP system. Although Alternative C has also been designed to be effective for a 25-year design period, it is a passive system in which the voltage, and therefore the level of cathodic protection, cannot be controlled. If the pipeline coating degrades, or the anode depletion rate increases, at a rate faster than anticipated, the design life would be shortened. With a solar IC system, electrical current applied to the pipelines can be adjusted. If the pipeline coating degrades more rapidly than expected, the voltage can be increased in compensation to ensure long-term effectiveness.

Conclusion. Based on the environmental analysis and finding summarized above, the park concludes that the foreseeable impacts: (1) are consistent with Mojave's purpose and values; (2) do not prevent the attainment of desired future conditions for natural and cultural resources; (3) do not create an unsafe environment; (4) do not diminish opportunities for future enjoyment of the Preserve; and (5) do not unreasonably interfere with preserve programs or activities, an appropriate use, or concessioner or contractor operations.+

5.0 CONSULTATION AND COORDINATION

5.1 LIST OF PERSONS, ORGANIZATIONS AND AGENCIES CONTACTED

Scoping includes early input from any interested agency or any agency with jurisdiction by law or expertise. Mojave National Preserve initiated a public scoping period for the Proposed Action in the publication and mailing of a news release on September 3, 2014, and in a re-issue of the news release to a wider mailing list on October 28, 2014. The initial scoping period ended on October 3, 2014, and no comments were received. The second scoping period ended on November 28, 2014. News releases were issued to individuals on the Preserve's distribution list plus:

Media: Victorville Daily Press/Barstow Desert Dispatch; and Route 66 Magazine.

Radio: Art Bell; Dos Costas Communication; Lotus Broadcasting, Las Vegas Public Radio; KPCC-FM; 1230 AM; 94.3 AM; and 95.9 FM.

Websites: www.desertUSA.com, www.gorp.away.com, www.mojave.areaparks.com, www.digital-desert.com, www.schweich.com, www.mojavenp.org, www.nipton.com, www.29palmsinn.com, www.recreation.gov, and www.californiadesert.gov.

One comment was received, from the Lahontan Regional Water Quality Control Board.

The project site lies outside of critical habitat for desert tortoise, precluding the need for formal consultation with the US Fish & Wildlife Service under the Endangered Species Act. The National Park Service has informally consulted with the USFWS-Palm Springs Field Office due to Mojave National Preserve's policy to manage the entire Preserve as potential desert tortoise habitat.

5.2 LIST OF PREPARERS

The following individuals were responsible for preparation of this environmental assessment:

Table 6. List of Preparers

National Park Service		
Name	**Title**	**Project Role**
Danette Woo	Environmental Compliance Specialist	Mojave National Preserve
Debra Hughson	Chief of Science and Resource Stewardship	Mojave National Preserve
Neal Darby	Wildlife Biologist	Mojave National Preserve
Dave Nichols	Archaeologist	Mojave National Preserve
AECOM		
Name	**Title**	**Project Role**
Robert Dover	Project Manager	B.S. Geology, M.S. Geology. Responsible for overall project management, preparing the project and alternative descriptions, and sections on public health and safety, visitor experience, and wilderness.

Mark Roll	Biologist	B.S., Wildlife Biology. Author of sections on special-status species and wildlife.
Tanya Wahoff	Archeologist	M.A., Anthropology, M.A. Archeology and Heritage. Reviewer of cultural resources survey report, and cultural resources text.
Erika Grace	Project Coordinator, Technical writer/editor	B.S. Biological Sciences, M.S. Environmental Toxicology. Responsible for document editing and quality control.

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GLOSSARY

California Desert Protection Act – Section 5.2 of the California Desert Protection Act (CDPA) of 1994 established the Mojave National Preserve.

Cathodic protection – Cathodic protection is a method of preventing electrolytic corrosion of a metallic structure, such as a pipeline, by causing it to act as the cathode instead of the anode of an electrochemical cell. Cathodic protection uses metallic devices, called anodes, which have a different electrical potential than the structure being protected, in order to attract electrolytic corrosion towards themselves and away from the structure.

Reference electrode – Reference electrodes are devices used to measure electrical potential in soils adjacent to buried metallic structures, such as underground tanks and pipelines. Reference electrodes provide information on electrical characteristics caused by soil and moisture conditions, allowing an operator to plan and implement cathodic protection for their structures.

Sacrificial anode – A sacrificial anode is a metallic object installed adjacent to buried metallic structures, such as underground tanks and pipelines. The anode is connected to the metallic structure, and is made of a material that will corrode at a faster rate than the tank or pipeline. Because it corrodes, the anode has an operating life, after which it must be replaced – thus, it is sacrificed in order to protect the tank or pipeline.

Solar impressed current – Impressed current is a method of applying an electrical current to a sacrificial anode, modifying the electrical behavior of the anode. Without an impressed current, the anode acts passively to modify the electrical conditions in the subsurface. By applying an impressed current to the anode, the effect of the anode on electrical conditions can be strengthened or reduced, as needed, to control the level of protection for the underground tank or pipeline. Solar impressed current is a method of impressed current in which the source of the applied electrical current derives from solar panels. Use of solar impressed current allows impressed current to be applied in areas where there is no other source of electricity.

Test station – Above-ground structure connected by wires to buried anodes and pipeline. By providing an accessible, above-ground electrical connection to the pipeline and cathodic protection system, test stations allow the operator to measure the subsurface electrical conditions without disturbing the soils or exposing the pipeline by excavation. Test stations are required by PHMSA to obtain periodic electrical measurements indicating the adequacy of cathodic protection.

U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) - PHMSA is the federal agency responsible for regulating and ensuring the safe and secure movement of hazardous materials to industry and consumers by all modes of transportation, including pipelines.

Wilderness Act - The Wilderness Act, signed into law in 1964, created the National Wilderness Preservation System and recognized wilderness as “an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain.” The Act further defined wilderness as "an area of undeveloped Federal land retaining its primeval character and influence without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions . . . ." Through the Wilderness Act, Congress has designated more than 106 million acres of federal public lands as wilderness: 44 million of these acres are in 47 parks and total 53 percent of National Park System lands.